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Technical Report

Challacollo Silver-Gold Mineral Resource Estimate

Aftermath Silver Ltd.

Region of Tarapacá (Region 1), northern Chile

In accordance with the requirements of National Instrument 43-101 "Standards of Disclosure for Mineral Projects" of the Canadian Securities Administrators

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1 Summary

1.1 Introduction

This Technical Report (Report) on the Challacollo Property (Property) has been prepared by AMC Mining Consultants (Canada) Ltd. (AMC) of Vancouver, Canada on behalf of Aftermath Silver Ltd. (Aftermath), of Vancouver, Canada. This report is an initial report for the issuer who has entered into a share purchase agreement with Mandalay Resource Corporation (Mandalay) in which Aftermath can acquire 100% of the Challacollo Property by making certain staged payments, and the granting of a 2% Net Smelter Return (NSR) to Mandalay. There are many earlier Technical Reports on the Property, the most recent of which is titled "NI 43-101 Technical Report for the Challacollo Silver Project, Region 1, Chile" for Minera Mandalay Challacollo Limitada authored by Mining Plus and with an effective date of 31 December 2014 (2015 MP Technical Report).

This Report has been prepared by AMC in accordance with the requirements of National Instrument 43-101 (NI 43-101) "Standards of Disclosure for Mineral Projects" and the Canadian Securities Administrators (CSA) for lodgement on CSA's System for Electronic Document Analysis and Retrieval (SEDAR). Aftermath is a Canadian junior exploration company focused on silver and is listed as AAG.V on Tier 2 of the TSX.V exchange, and as AAGFF on the OTCQB.

1.2 Property description and location

The Property is situated in the province of El Tamarugal, Region of Tarapacá (Region 1), in northern Chile, about 130 km south-east of the major Pacific port city of Iquique. The approximate coordinates for the centre of the Property are 20° 57'10" S latitude, 69° 21'20" W longitude, at an altitude of between 1,300 m and 1,550 m above sea level. Iquique is the capital of the Tarapacá Region and is the largest regional centre in the area, with a population of 191,000 according to the 2017 census. The city of Pozo Almonte where basic services are also available which is the capital of the Tamarugal Province is 90 km to the north-north west and has a population of over 15,000.

The Property can be accessed from Iquique initially on Route 16, then travelling south on the Pan American Highway (Route 5), to the intersection with the Quebrada Blanca and Collahuasi copper mines access road. This is a private surfaced road and use of this route for access to the Challacollo Property is through an access agreement. Continuing south east after 30 km a turnoff onto an unformed gravel road leads to the Property.

The Property comprises Exploitation Concessions created under the Chilean Mining Code of 1932 (Codigo 32) and the Chilean Mining Code of 1983 (Codigo 83). There are 98 Exploitation Concessions covering 19,362 ha. The concessions do not have a defined expiry date and are valid as long as payments are made.

Until such time as Aftermath has completed its payments, Mandalay, through its wholly owned Chilean subsidiary, Minera Mandalay Challacollo Limitada (MMC) own the concessions and they remain registered in the name of MMC.

MMC has two water rights for use on the project; these are located approximately 18 km east of the Property. These rights were purchased outright in 2005 by Silver Standard Resources Inc. (Silver Standard) and registered in the name of MMC in February 2014. The wells are located on private property.

All surface rights on the Property are owned by the Chilean State.

Challacollo is located in the Atacama Desert, a virtually rainless plateau located between the Pacific coast and the Andean Mountains. Temperatures are relatively consistent thought out the year, with an average of 13°C during the winter months of June to August, with a daily minimum of around 8°C. In the summer months of January and February the maximum average temperatures are 20°C, with a maximum daily recorded temperature of 25.7°C. Daily maximum temperatures experienced in the summer months are around 25°C. There is zero precipitation in the area of the Property.

Vegetation is absent or sparse and desert based. Most vegetation occurs in water accumulating basins or depends on getting water out of coastal fog and includes some cacti (Eulychnia), perennials (Nolana), and mesquites (Prosopis). Animals and insects are generally small, often coming out nocturnally from below the surface to feed.

The regional infrastructure currently supports significant mining operations at the Quebrada Blanca, Collahuasi and Cerro Colorado copper mines to the east of Challacollo, as well as SQM nitrate operations located to the west of Challacollo along Route 5. There is adequate skilled and unskilled labour available in northern Chile.

High voltage power lines are located along Route 5 and, from the Laguna Substation high voltage power lines branch to the east to the power the Quebrada Blanca and Collahuasi copper mines. As part of the Quebrada Blanca expansion project a high voltage power line is currently being constructed approximately 5 km north of the Property.

There is no exploration camp or other infrastructure at the Property, only core logging and storage area. The town of Pica was used during past programs as a base of exploration activities. The Property caretaker resides in Pica. Labour during past exploration programs was sourced in Pica.

Water used for the Mandalay drilling programs was trucked from a well in the community of Las Pintados.

The Property is sufficiently large enough, at 19,862 ha, to locate a processing plant, tails management facility and other infrastructure required to operate a mine.

1.3 History

Mining has occurred intermittently at Challacollo since 1772; principally from 1896 through 1931 on an industrial scale under the ownership of Gildemeister. From 1932 to 1980, production continued at a reduced scale by artisanal miners with no legal title, until the concession owners reasserted formal control.

In 1980 Gildemeister recovered its rightful possession and exploited the existing ore dumps until the beginning of 1981. Production records indicate the ore extracted to that date amounted to approximately 550 t/month, with average grades of 660 g/t Ag and 1.43 g/t Au, with ore being sold to the Pozo Almonte Agency of Empresa Nacional de Minería (ENAMI). During the second half of 1981, mining was suspended due to a drop in the silver market price.

In 1988 Gildemeister decided to install its own beneficiation plant with 100 tpd capacity, to produce via leaching and zinc precipitation a silver "cement" for export to Europe, or by flotation a concentrate for sale to ENAMI's Hernán Videla Lira smelter at Copiapo. At the end of 1989, a self-sustaining operation was achieved, however with a new drop in precious metals prices the operation became unprofitable by early 1990. Between 1991 and 1992 approximately 70,000 tonnes were processed, the plant was removed by the end of 1992.

Modern exploration has occurred in several programs starting in 1995 when initially the Property was optioned by Empresa Minera Mantos Blancos (Mantos Blancos). Between 1995 and 1996 Mantos Blancos conducted geological, geophysical surveys and drilling and in December 1996, Mantos Blancos terminated its option.

In 1998 Minera Challacollo sold the entire property to Minera Septentrion (Septentrion). Shortly after purchasing the property Minera Septentrion divided the property into two claim groups and started to market the property based on two distinct mineral potentials in each block of claims. One block covered the Challacollo Range, including the Challacollo Silver-Gold Project, while the other covered a very much larger claim group lying to the southeast that had potential to host porphyry copper mineralization. This second block of claims is not part of the report and no data referred to here has been collected on those claims.

Silver Standard optioned the Property from Septentrion in November 2001, completing the acquisition in 2003 to own 100%. Transfer of titles was completed in February 2014. During the several programs conducted in 2002, 2003, and 2007 Silver Standard completed surface and underground sampling, underground surveying, drilling, metallurgical test work, water exploration, and resource estimates.

Mandalay through MMC purchased the Challacollo Project from Silver Standard and registered their 100% ownership of the Property on 6 February 2014 and 7 February 2014. For clarity, the work carried out will be referred to as having been carried out by Mandalay. Mandalay undertook surface sampling and trenching, drilling, metallurgical studies, water exploration, surveying and produced an unpublished feasibility study on a 660 tpa underground operation.

In November 2019 Aftermath entered into a share purchase agreement with Mandalay but until the payments to Mandalay are complete the concessions remain registered in the name of MMC.

1.4 Geology and mineralization

The Andes formed in a continental-oceanic plate convergent setting with subduction of the Nazca Plate under the South American Plate. This resulted in three distinctly north-south oriented domains which are the result of differential shortening recording periods of Andean deformation and uplift. The large-scale physiography of the fore-arc region is considered as a direct expression of the tectonic processes operating during the late Cenozoic. The Challacollo deposit is located in the Central Depression which is located immediately east of the Coastal Cordillera.

The Challacollo Range which hosts the Property is interpreted as being a fault-bound prism brought to the higher elevations by the inferred Challacollo Reverse Fault, and its associated back thrust fault. Both the Challacollo Fault and the back-thrust fault are covered by Neogene and Paleogene sediments that fill the Central Depression.

The volcanic and sedimentary units exposed in the Challacollo Range strike approximately 030° and dip about 25° to the southeast. Hence the oldest outcropping units are on the Challacollo Ridge and the youngest being on the south eastern slopes. The beds steepen locally near faults such as the Lolón Structure where dips increase to as much as 50°. These vein-fault structures generally occur parallel to the north-south trending normal faults which bracket the Challacollo Range.

The local geology consists of the Upper Jurassic Challacollo Formation, which is unconformably overlain by the Upper Cretaceous Challacollo Volcanic Complex (CVC). The Challacollo Formation is a sequence of shales with subordinate interbedded limestone, siltstone, calcareous, siliceous siltstone, sandstone, and fine quartzite, with interlayers of gypsum near the top of the sequence. The CVC which has been dated at between 83 to 80 Ma consists of dacitic and rhyolitic volcanic rocks with various intercalated volcaniclastic sedimentary beds.

All of the above units have been intruded by Upper Cretaceous granitoid stocks and dykes of compositions that vary from diorite and quartz diorite and monzodiorite. These are termed the Cretaceous Intrusive Complex and outcrop in the north west and south west sectors of the Challacollo Range.

The Challacollo epithermal mineralization cuts the CVC. The mineralized structures which are the most prominent structures in the area, the Lolón, Gladys, and Lucy structures, all occupy east side down faults which may have some minor strike slip movement. The Lolón Structure shows normal movements on the order of 100 m while the others show offset on the order of tens of meters or less. All of these structures generally trend about 0 to 030° and dip steeply (70 to 85°) to the west. Northwest trending structures, fracture sets and minor faults with small offset are also observed. These transverse faults control some quartz veining and pyritic fracturing. The four most significant transverse faults have been modelled for use in the Mineral Resource estimate, using the surface mapping corroborated with drilling data.

The Lolón Structure is best described as a breccia composed of multiphase rock fragments hosted in a rock flour matrix, all of which have been silicified. The Lolón Structure averages approximately 20 m in width at surface between the north-end of the Catalina workings and the Challacollo Sur workings but can extend up to 40 m wide due to cross-faulting. At depth, the Lolón Structure narrows to 3 to 7 m width. There are a number of splay structures off the main structure predominantly in the hangingwall. The surrounding host rock typically exhibits stockwork quartz veining extending several meters into the wall rock. In many areas, the Lolón Structure comprises several veins. Where this occurs, stockworks can be found between the branches of the main vein.

Enrichment of economically valuable minerals can be seen in both outcropping veins and in historical adits as well as in drill core. The primary economic metals identified on the project are silver and gold while lead and zinc have also been identified.

The geologic features of Challacollo clearly indicate that it is an epithermal type of deposit.

1.5 Drilling, sampling, and verification

Overall, 185 diamond drillholes (DDH) and reverse circulation (RC) holes totalling approximately 34,500 m in length have been drilled on the Challacollo Project since 1995. Of this total, seven holes for 986.5 m were drilled for water investigation purposes in 2015 and 2017. This drilling has been carried out by Mantos Blancos, Silver Standard, and Mandalay, since 1995. No drilling has been performed by Aftermath to date.

The estimate is based on 97 holes drilled by all operators but only four holes from the early drilling by Mantos Blancos were used.

Other than the Mantos Blancos drilling, for which there is no documentation, the data collection procedures used are to industry standard, and drilling was carried out by reputable contractors. Core recovery was generally good and even in the vuggy and brecciated Lolón Structure, core recovery by Mandalay was noted as being 88%.

Sampling procedures by Silver Standard and Mandalay were as per normal industry standards, with RC sample splitting being carried out at the drill rig and drill core being sawed in the core sheds. All samples and core have been retained and are secure and available. Assaying by both operators was carried out by accredited laboratories; generally ALS, and in one year by Actlabs for Silver Standard.

Silver Standard did not have a complete quality control and quality assurance (QA/QC) program on the analytical process. No standards and a limited number of blanks were inserted with the submitted samples. They did however assay field duplicates, and some umpires were submitted. Mandalay on the other hand inserted certified reference material (CRMs) and blanks and ran umpire samples.

From the information available the blanks from both operators do not show any contamination issues and the CRM’s analysed by Mandalay show a fair to reasonable accuracy. The majority of umpire assays submitted were close to or below the detection limit. Therefore, no meaningful analysis could be undertaken.

To overcome any uncertainty in the Silver Standard data, the QP for Section 14 compared the Silver Standard and Mandalay data sets. A comparison of sample statistics for each data set inside the Indicated shell for the Lolón Structure showed similar means and standard deviations. A QQ plot shows the distribution is similar up to 200 g/t silver which is above the average grade of the deposit. These comparisons suggest that the Silver Standard data can be used for Mineral Resource estimation.

Overall, the QP considers the sample preparation, security, and analytical procedures to be adequate for Mineral Resource estimation.

Data verification was carried out by way of a site inspection and verification of the database by comparing over 20% of the assay certificate values to those in the database. The site inspection verified collar locations, inspected core, and compared marked intersections to sample results and confirmed that the core, samples, and rejects were securely stored. In addition, the geological descriptions were confirmed, and the site layout inspected.

The QPs are of the opinion that the exploration data is adequate for the purposes used in the Technical Report.

1.6 Metallurgical testwork

Preliminary scoping metallurgical test work was conducted from 2002 to 2004 to provide an indication of the amenability of the precious metals to be extracted by direct cyanidation. The origin and representativity of the samples used in the early scoping level metallurgical test work was not known. A more extensive metallurgical test work program was carried out by ALS Minerals Division at their laboratory in Santiago, Chile during 2014 and 2015. The locations from which the bulk samples and drill core were taken for the metallurgical test work program done from 2014 to 2015 were well documented.

The metallurgical test work conducted to date has focused on material from the Lolón Structure. The surrounding host rocks also typically exhibit quartz stockwork veining / breccia which carry some silver mineralization. Although this has been subjected only to limited test work to date, it is considered sufficient to consider the evaluation of the stockwork mineralization for a resource estimate.

The metallurgical test work demonstrated that direct agitated cyanide leaching would be the preferred method for precious metal extraction from the Challacollo material. Silver extractions were consistently over 90% for the material tested from the main Lolón Structure in the 2014 to 2015 test work. Silver extractions for the limited number of stockwork zone samples tested in the 2014 to 2015 test work ranged from 82% to 96%. This method of extraction would result in higher precious metal recoveries and is considered more suitable to the style of mineralization when compared to conventional bulk flotation and gravity separation techniques.

A grind size P_{80} of 80 µm was used for the 2014 variability metallurgical test work program. However, grind sensitivity test work was carried out on the Master Composite sample in the 2014 test work, and the different grind sizes selected were 80% passing 150, 106, 80, 53, and 38 microns. Final leach silver extraction for the samples ranged from 92% to 96%, illustrating the high silver recoveries still possible at the coarser grind sizes with only relatively small improvements to overall silver extraction at finer grind sizes.

The sodium cyanide consumption for the samples tested in the 2014 to 2015 test work program was relatively high, averaging 1.2 kg/t. The base metal concentrations of zinc and copper in the final leach solutions would represent the main cyanide consumers along with silver.

1.7 Mineral Resources

The Mineral Resources for the Challacollo deposit have been estimated by Ms Dinara Nussipakynova, P.Geo., of AMC, who takes responsibility for these estimates. The resource estimate was completed using Datamine Studio RM™ (Datamine) software.

A summary of the Mineral Resources is shown in Table 14.1. The open pit and underground Mineral Resources are quoted at two different cut-offs, see notes below.

Table 1.1 Summary of Mineral Resources as of 30 November 2020

Classification	Material type	Tonnes (kt)	Ag (g/t)	Au (g/t)	Ag (Koz)	Au (Koz)
Indicated	Open pit	5,597	170	0.27	30,639	49
	Underground	1,043	134	0.29	4,510	10
	Total	**6,640**	**165**	**0.27**	**35,150**	**58**
Inferred	Open pit	2,360	117	0.15	8,912	11
	Underground	443	157	0.26	2,232	4
	Total	**2,803**	**124**	**0.17**	**11,144**	**15**

Notes:
- CIM Definition Standards (2014) were used for reporting the Mineral Resources.
- The effective date of the estimate is 30 November 2020.
- The Qualified Person is Dinara Nussipakynova, P.Geo., of AMC.
- Mineral Resources are constrained at a long-term metal price of US$20/oz Ag with recovery of 92% Ag and metal price of US$1,400/oz Au with recovery of 75%.
- Silver equivalency formula is AgEq (g/t) = Ag (g/t) + 57.065 *Au (g/t).
- The open pit Mineral Resources are based on a pit optimization using the following assumptions:
  - Ore mining costs of $3.5/t and waste mining cost of US$2.5/t.
  - Processing costs of $17/t and General and Administration costs of US$2.5/t.
  - Edge dilution of 7.5% and 100% mining recovery.
  - 45-degree slope angles.
  - Reported at a cut-off grade of 35 g/t AgEq.
- The underground Mineral Resources are reported within Datamine MSO constraints based on the following assumptions:
  - Ore mining costs of US$35/t.
  - Processing costs of US$17/t and General and Administration costs ofUS$2.5/t.
  - Minimum width of 2.5 m.
  - No dilution or mining recovery.
  - Isolated MSO stopes were removed from the total.
  - Reported at a cut-off grade of 93 AgEq g/t.
- Bulk density used was 2.47 t/m^3.
- Includes drilling results up to 31 December 2016.
- Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability.
- The numbers may not compute exactly due to rounding.
- Mineral Resources are depleted for historical mined out material.

To the extent known there is no indication that the Mineral Resource estimates could be materially affected by environmental, permitting, legal, title, taxation, socio-economic, marketing, political, or other relevant factors.

In addition to the Lolón Structure, a number of hangingwall structures and an oblique vein were interpreted and modelled. The interpolation method was ordinary kriging (OK) for the Lolón Structure and inverse distance squared (ID^2) for the other veins for which there was less density of data. The bulk density used for the veins was 2.47 t/m^3.

The analysis of probability plots of the Ag grades for the domains demonstrated the presence of high-grade outliers in the Lolón Structure. Top capping was applied individually to the zones.

The top cut value of 1,500 g/t Ag was selected for Lolón Main zone and the other Lolón zones which were individually treated, varied from 800 g/t Au to 190 g/t Au. No capping was applied to the hangingwall zones.

Economic constraints were applied to the model to demonstrate reasonable prospects for economic extraction for the statement of open pit and underground Mineral Resources. In the case of the open pit, a pit shell was created using the Lerchs Grossman algorithm and for the portion of the model potentially to be mined by underground methods, a stope optimization process using Datamine's Mineable Shape Optimiser (MSO) was used. The underground mining method was assumed to be longhole open stoping method with a stope height 20 m and a minimum mining width 2.5 m.

1.8 Conclusions and recommendations

The Lolón Structure is a substantial mineralized feature on which several periods of exploration have been carried out. The geology is fairly well known, and the area is prospective. Most work has concentrated on the Lolón Structure itself but there is further potential in the hangingwall veins in addition to minor stockwork mineralization adjacent to the structures. There is good opportunity to both increase the size of the defined mineralized zone in the Lolón Structure and other mineralized veins on the project and to expand on the Challacollo deposit's economic potential. Opportunities may also be available to investigate additional processing routes to treat lower grades and enhance economics.

The following recommendations are made, many of which are in regard to operational improvement, for example a complete QA/QC program. The cost of these are included in the costs elsewhere. Thus costs are shown where there are additional costs to the program budget.

1.8.1 Geology and Mineral Resources

- Implement an assay quality assurance / quality control (QA/QC) program which includes insertion of appropriate control samples, blanks and submission of duplicates and repeats.
- Establish QA/QC protocols to determine when sample analyses fail and that QA/QC programs are continually monitored and re-runs requested where samples are considered to fail.
- Continue to include umpire samples in the QA/QC program.
- Continue using large diameter (HQ or PQ) triple tube diamond core to maximize sample size and core recovery, minimizing the loss of vein material.
- Checking of old data required including twinning of selected existing RC holes to test recovery and sample volume effects between the two drilling methods and survey a subset of the existing RC holes to determine if all RC holes should be surveyed.
- Collect more drill data in the hangingwall zone.
- Enhance geology model to include lithologies.
- Carry out routine bulk density measurements to supplement the bulk density sample database.
- Resubmit 10% of the pulps from the Silver Standard drilling along with the full QA/QC suite to fill QA/QC gap. These should be from within the mineralized domains only and amount to about 370 samples. Estimated cost is $30,000.
- Upon receipt of results of the sampling of old core build a simple grade model to assess value of further sampling for an open pit and possible heap leach scenario. To include an open pit optimization study. Estimated cost is $30,000.

- Build a new model incorporating the 2021 drilling and the infill sampling, optimize an open pit and report. Estimated cost is $100,000.

1.8.2 Metallurgy

The 2014 metallurgical test work done on the Lolón Structure material is considered to be reasonably comprehensive. However, the following actions are recommended:

- Verification that the samples used in the 2014 test work program are adequately representative of the mineralogical species present in the mineralization model is recommended.
- Additional variability test work on separate samples of various mineralogy, grade and location should be conducted pending confirmation of previous sample representivity and include:
  - Chemical characterization.
  - Comminution test work such as CWi, SMC, BRWi, BBWi, Ai.
  - Direct cyanide leach tests using optimum conditions established.
  - Vendor filtration test work.
- Additional variability test work will need to be carried out similarly on samples from Lolón adjacent hangingwall and footwall parallel structures and lower grade halo mineralization which are subject of the additional resource drilling.
- Future characterization tests should include a cyanide soluble analysis. A detailed chemical analysis of selected leach solutions to indicate the levels of metals other than gold and silver that will be present is also recommended.
- It is recommended that a sample of the potential site raw water be analysed and both lime demand and additional cyanide leach tests conducted to establish site water effects.

The variability test work and characterization testing will have an estimated cost of $70,000.

1.8.3 Exploration program and follow up

- Complete sampling of unsampled core surrounding the Lolón Structure as previously it was only selectively sampled based on visual recognition of mineralization. A sampling program of some 3,228 m has been designed to investigate the grades outside of these high-grade intervals, (estimated cost $350,000).
- A drill program is recommended focussing on the general area within and adjacent to the resource optimized open pit thus infilling and upgrading the data for the Lolón Structure and parallel structures. This is currently estimated as 48 DDH for 10,100 m. The estimated cost for this program is $5,000,000 as an all-up cost and incorporating any survey work on the RC holes as recommended under drilling.
- The above would constitute a phase 1 program and contingent on results, the recommendation would be to move to a Preliminary Economic Assessment (PEA) which would involve geotechnical investigation, engineering work and include testwork for a heap leach scenario for the material not reporting to an agitated leach plant. The cost for that study would be in the order of $250,000.

A summary of the costs for the work recommended is shown in Table 1.2.

Table 1.2 Cost summary

Item	**Cost (US$)**
Follow up metallurgical testing	70,000
Resubmitting Silver Standard pulps with CRMs and blanks	30,000
Sampling of old core	350,000
Simple model and pit shell	30,000
Drilling	5,000,000
New model, optimized pit shell and reporting	100,000
Total phase 1	**5,580,000**
PEA as part of phase 2	250,000

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Abbreviations & Acronyms

Abbreviations & Acronyms	Description
$	Dollar
$/t	US dollar per ton
%	Percentage
°	Degree
°C	Degrees Celsius
µm	Micrometre
3D	Three-dimensional
AA	Atomic absorption
Aftermath	Aftermath Silver Ltd.
AgCl	Chlorargyrite
Ag	Silver
AgEq	Silver equivalent
AgI	Iodargyrite
Ag^2S	Acanthite / argentite
Ai	Bond abrasion index
ALS	ALS Chemex Laboratories Ltd.
AMC	AMC Mining Consultants (Canada) Ltd.
ARD	Acid rock drainage
Au	Gold
BC	British Columbia
BRWi, BBWi	Bond rod and ball mill work index
CIM	Canadian Institute of Mining, Metallurgy and Petroleum
Cm^3	Centimetre cubed
Codigo 32	Chilean Mining Code of 1932
Codigo 83	Chilean Mining Code of 1983
CV	Coefficient of variation
COG	Cut-off grade
CPI	Consumer Price Index
CRM	Certified reference material
CSA	Canadian Securities Administrators
CSAMT	Controlled Source Audio-frequency Magneto Tellurics
Cu	Copper
CVC	Challacollo Volcanic Complex
Cwi	Bond crushing work index
Datamine	Datamine Studio RM™
DDH	Diamond drillholes
DGPS	Differential global positioning system
DWG	Drawing
Dwi	Drop weight index test
EAR	Environmental Approval Resolution
EIAS	Environmental impact assessment
EID	Environmental impact declaration
ENAMI	Pozo Almonte Agency of Empresa Nacional de Minería
ENAP	La Empresa Nacional del Petróleo
GPS	Global positioning system
g	Gram

Abbreviations & Acronyms	Description
G&A	General and Administration
g/t	Grams per ton
ha	Hectare
Ha	Holocene
Hg	Mercury
hrs	Hours
HW	Hangingwall
ICP	Inductively Coupled Plasma
ICP-AES	Induced Coupled Plasma Atomic Emission Spectroscopy
ID^2	Inverse distance squared
ID^3	Inverse distance cubed
INTEM	Instituto Nacional de Technologia, Estandarizacion y Metrologia Ltda.
K-dio	Quartz diorite
K-Mzd	Monzodiorite
kg	Kilogram
Kg/t	Kilogram per tonne
km	Kilometre
Koz	Thousand ounces
Ksh	Rhyolitic-microgranitic porphyry of the Upper Cretaceous
kt	Thousand (short) tons
kV	Kilo volts
kWh/tonne	Kilowatt-hour per tonne
$kWhr/m^3$	Kilowatt-hour per cubic metre
L/s	Litres per second
LDL	lower detection limit
LME	London Metal Exchange
m	Metre
Ma	Million years / mega annum
Mandalay	Mandalay Resource Corporation
Mantos Blancos	Empresa Minera Mantos Blancos
Max	Maximum
mg	Milligram
Mg/L	Milligram per litre
Min	Minimum
Minera Challacollo	Sociedad Contractual Minera Cerro Challacollo
mm	Millimetre
MMC	Minera Mandalay Challacollo Limitada
Moz	Million ounces
MSO	Mineable Shape Optimizer
N samples	Number of samples
NaCN	Sodium cyanide
NI 43-101	National Instrument 43-101
NN	Nearest neighbour
NSR	Net Smelter Return
NW	North-west
OK	Ordinary Kriging
oz	Troy ounce

Abbreviations & Acronyms	Description
P_{80}	80% Passing
Pb	Lead
PEA	Preliminary Economic Assessment
pH	pH is a measure of hydrogen ion concentration; a measure of the acidity or alkalinity of a solution
PIHa	Plistocene-Holocene unconsolidated silt, sand and gravel.
PMA	Particle Mineral Analysis
ppm	Parts per million
PRA	Process Research Associates
Property	Challacollo Property
QA/QC	Quality assurance and quality control
QP	Qualified Person as defined by NI 43-101
RC	Reverse circulation
Region 1	Region of Tarapacá, second most northern of Chile's 16 administrative regions
Report	Technical Report
Route 5	Pan American Highway / Ruta 5
RPA	Roscoe Postle Associates
RPD	Relative paired difference
RQD	Rock quality designation
S	Sulfur
SAG	Semi-autogenous grinding
SEDAR	System for Electronic Document Analysis and Retrieval
Septentrion	Minera Septentrion
SERNAGEOMIN	The National Geology and Mining Service (Servicio Nacional de Geología y Minería)
SG	Specific gravity
Silver Standard	Silver Standard Resources Inc.
SMA	Superintendence of the Environment
SMC	SAG mill comminution
SQM	Sociedad Quimica y Minera de Chile
Standdev	Standard deviation
t/m^3	Tonne per cubic metre
ton	Short (US) ton = 2,000 lb
tonne	Tonne = 1,000 kg
tpa	Tons per annum
tpd	Tons per day
UAV	Unmanned aircraft
UCS	Unconfined Compressive Strength
US	United States of America
US$	United States dollars
US$/tonne	US dollar per tonne
US CPI	United States of America Consumer Price Index
UTM	Universal Transversal Mercator
W	West
WGS84	World Geodetic System 1984
w/w	Weight for weight
XRD	X Ray Diffraction
Zn	Zinc

2 Introduction

2.1 General and terms of reference

This Technical Report (Report) on the Challacollo Property (Property) has been prepared by AMC Mining Consultants (Canada) Ltd. (AMC) of Vancouver, Canada on behalf of Aftermath Silver Ltd. (Aftermath), of Vancouver, Canada. This report is an initial report for the issuer who has entered into a share purchase agreement with Mandalay Resource Corporation (Mandalay), in which Aftermath can acquire 100% of the Challacollo Property by making certain staged payments, and the granting of a 2% Net Smelter Return (NSR) to Mandalay as outlined in Section 4.3.2.

There are many earlier Technical Reports on the Property, the most recent of which is titled "NI 43-101 Technical Report for the Challacollo Silver Project, Region 1, Chile" for Minera Mandalay Challacollo Limitada authored by Mining Plus and with an effective date of 31 December 2014 (2015 MP Technical Report).

This Report has been prepared by AMC in accordance with the requirements of National Instrument 43-101 (NI 43-101) "Standards of Disclosure for Mineral Projects" and the Canadian Securities Administrators (CSA) for lodgement on CSA's System for Electronic Document Analysis and Retrieval (SEDAR).

2.2 The issuer

The issuer, Aftermath is a Canadian junior exploration company focused on silver and is listed as AAG.V on Tier 2 of the TSX.V exchange, and as AAGFF on the OTCQB.

2.3 Qualification of authors

The names and details of persons who prepared, or who have assisted the Qualified Persons (QPs), in the preparation of this Technical Report are listed in Table 2.1. The QPs meet the requirements of independence as defined in NI 43-101.

Table 2.1 Persons who prepared or contributed to this Technical Report

Qualified Persons responsible for the preparation of this Technical Report						
Qualified Person	**Position**	**Employer**	**Independent of Aftermath**	**Date of last site visit**	**Professional designation**	**Sections of report**
Mr J.M. Shannon	General Manager / Principal Geologist	AMC Mining Consultants (Canada) Ltd.	Yes	No visit	P.Geo. (ON & BC)	2 - 6, 8 - 9, 11, 15 - 24, and parts of 1, 7, 10, 12, 25, 26, and 27
Ms D. Nussipakynova	Principal Geologist	AMC Mining Consultants (Canada) Ltd.	Yes	No visit	P.Geo. (ON & BC)	14 and parts of 1, 25, and 26
Mr S. Alvarado	Consultant Geologist, General Manager	Geoinvest Sergio Alvarado Casas E.I.R.L.	Yes	7-10 Sep. 2020	Chilean Mining Commission (#0004)	Parts of 1, 7, 10, 12
Mr B. Mulvihill	Senior Process Engineer	GR Engineering Services Limited	Yes	No visit	MAusIMM (CP Met), RPEQ	13, and parts of 1, 25, 26, and 27
Other Experts who have assisted the Qualified Persons						
Expert	**Position**	**Employer**	**Independent of Aftermath**	**Visited site**	**Professional designation**	**Sections of report**
Mr P. Voulgaris	Technical Advisor	Aftermath	No	Yes	MAusIMM, MAIG	All
Ms K. Zunica	Senior Geologist	AMC Consultants (UK) Ltd	Yes	No	None	Section 11

An inspection of the Property was undertaken by QP, Mr Sergio Alvarado of GeoInvestmant Limitada, Santiago, Chile, on 7 – 10 September 2010, accompanied by Mr Juan Carlos Fernandez a consultant to Aftermath. The scope of the visit covered the geology, data collection, and sampling aspects of the Property, including inspections of drill core and old drill sites.

2.4 Sources of information

Certain information was compiled from previous Technical Reports. These are "NI 43-101 Technical Report for the Challacollo Silver Project, Region 1, Chile", Mining Plus, with an effective date of 31 December 2014 (2015 MP Technical Report) and "Technical Report on the Challacollo Silver-Gold Project, Region 1, Chile" RPA 2014, (2014 RPA Technical Report). The text for parts of Sections 4 to 10 were supplied in draft form by Peter Voulgaris of Elysium Mining and validated and edited by the QPs. This information was supplemented by the report titled "Challacollo Project, Verification visit, Geological validation and exploration campaigns, Pica, First Region of Tarapaca, Chile" by Sergio Alvarado, September 2020.

Other public older reports are also cited, namely:

- "Challacollo Silver Property Technical Report" 24 April 2002, Henricksen and Smith (2002 Challacollo Technical Report).
- "Report on Challacollo Property, Chile" with an effective date of 3 December 2002, by Wallis and Rennie (2002 RPA Technical Report).

Any costs are shown in US dollars (US$ or $) unless shown otherwise.

2.5 Effective date

This report is effective as of 15 December 2020.

Aftermath was provided with a draft of this report to review for factual content and conformity with the brief.

3 Reliance on other experts

The QPs have relied, in respect of legal aspects, upon the work of the Experts listed below. To the extent permitted under NI 43-101, the QPs disclaim responsibility for the relevant section of the Technical Report.

The following disclosure is made in respect of this Expert:

- Carey y Cia Ltda

Report, opinion, or statement relied upon:

- Due Diligence Report, Compania Minera Mandalay Challacollo Limitada, prepared for Aftermath Silver Limited, dated 1 February 2019.

Extent of reliance:

- Full reliance

Portion of Technical Report to which disclaimer applies:

- Section 4.2 and 4.3

The following disclosure is made in respect of this Expert:

- ICCF Abogados

Report, opinion, or statement relied upon:

- List of concessions in a letter dated 11 September 2020.

Extent of reliance:

- Full reliance following a review by the QP.

Portion of Technical Report to which disclaimer applies:

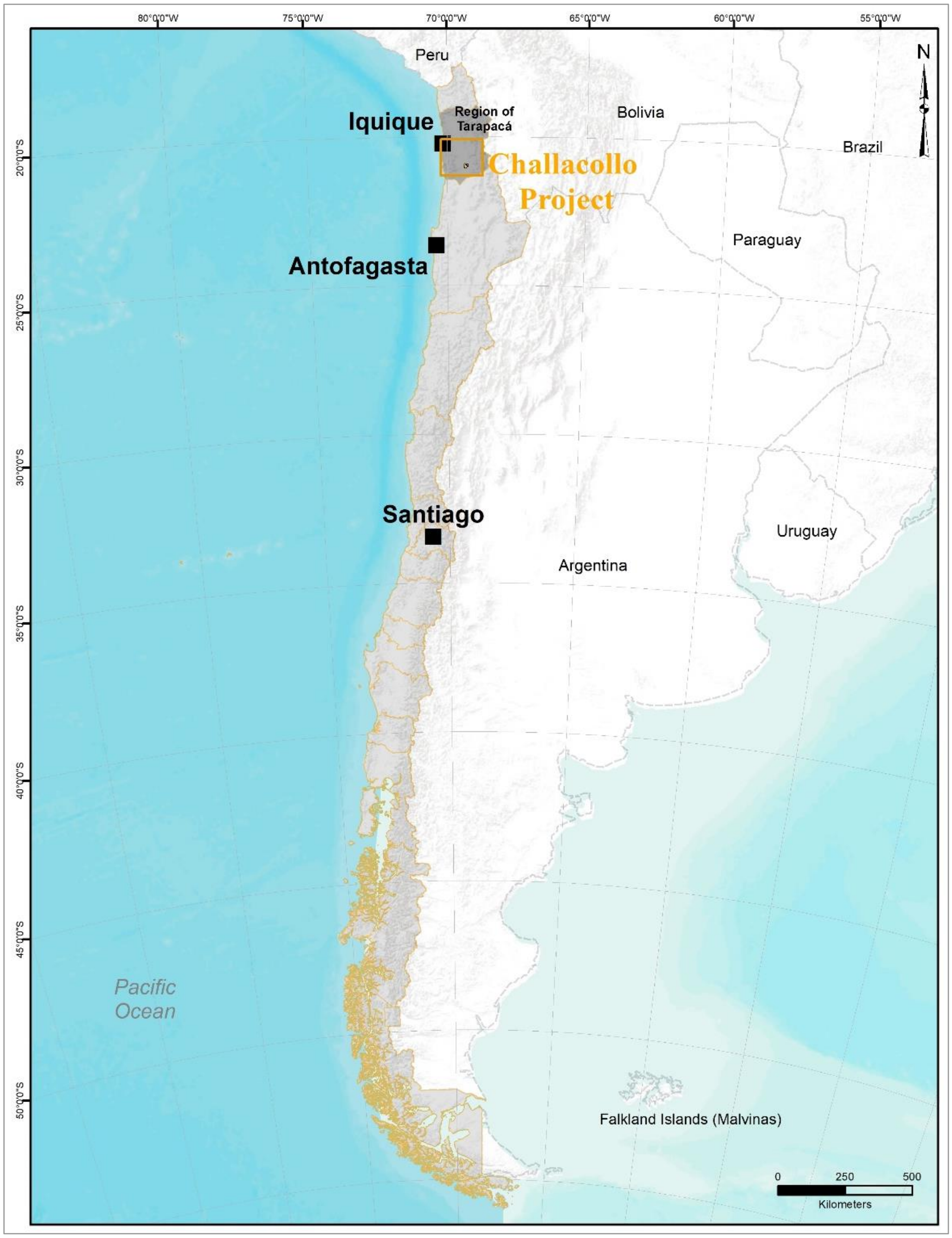
- Section 4.3

4 Property description and location

4.1 Property location

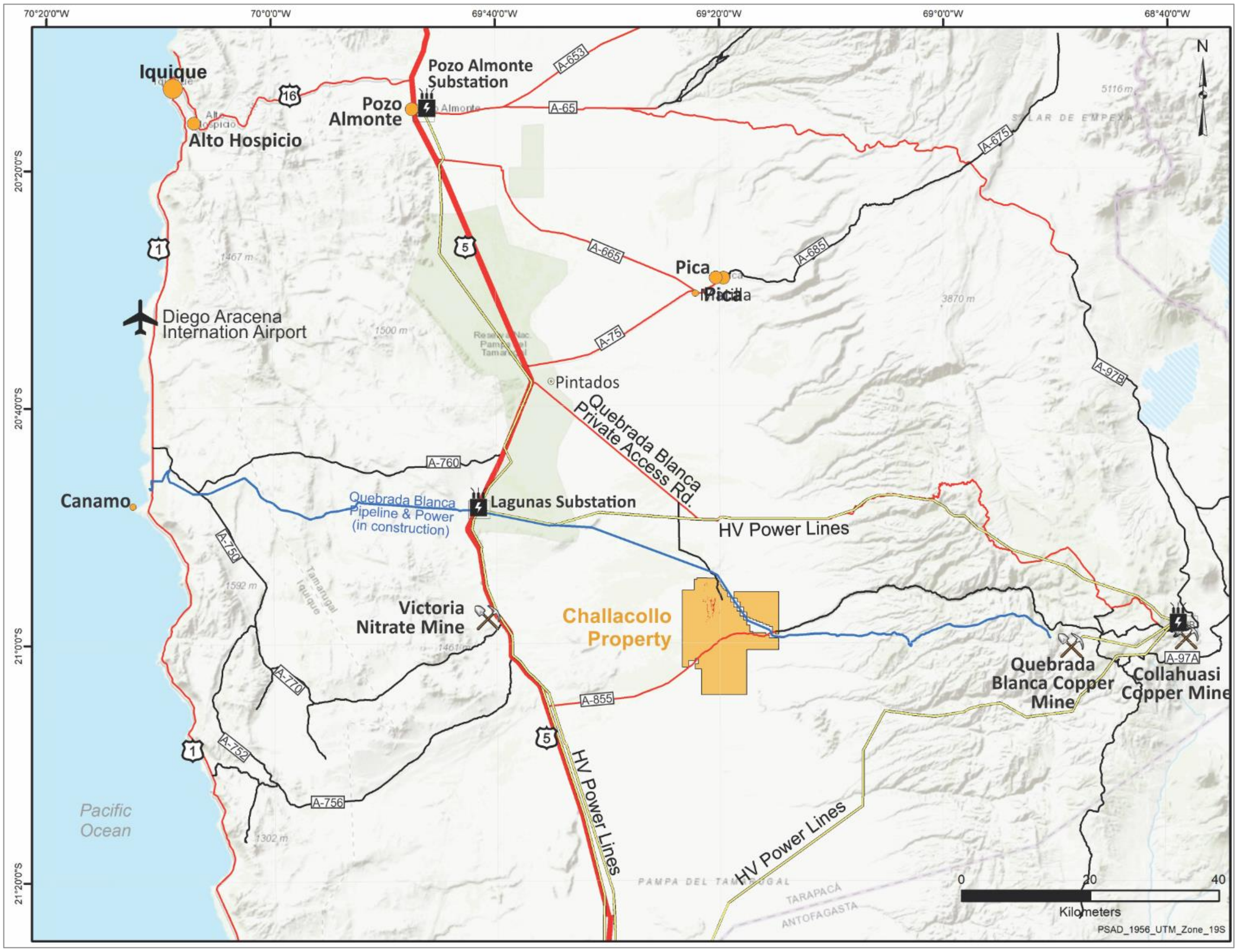
The Property is situated in the province of El Tamarugal, in the Region of Tarapacá (Region I), in northern Republic of Chile, about 130 km southeast of the major Pacific port city of Iquique. The approximate coordinates for the centre of the Property are 20° 57'10" S latitude, 69° 21'20" W longitude, at an altitude of between 1,300 m and 1,550 m above sea level. The location of the Property is shown in Figure 4.1 and Figure 4.2.

Figure 4.1 Republic of Chile showing Property location



Source: Aftermath Silver 2020.

Figure 4.2 Challacollo Property location map



Source: Aftermath Silver 2020.

4.2 Chilean regulatory framework

4.2.1 Chilean exploration and mining rights

Under the Chilean Constitution, the State is the absolute, exclusive, and permanent owner of all minerals. Through Mining Organic Constitutional Law, the State grants individuals (domestic and foreign) the opportunity to acquire, explore and exploit mineral deposits, through a mining concession granted by the courts of justice with technical approval provided by The National Geology and Mining Service (Servicio Nacional de Geología y Minería – "SERNAGEOMIN").

The current Chilean Mining Code (Codigo 83), enacted on 14 December 1983, describes the regulations, descriptions of mining concessions, including rules on their shape and purpose, the procedures necessary for them to be granted, the rights and obligations attached to the concessionaires, the mining concession protection regime, and certain forms of contracts associated with them. Concessions are real property rights, distinct from and independent of title to surface property. They can be transferred, signed over and mortgaged and generally have the same legal standing as other rights contemplated in legal acts or contracts. Mining concessions are regulated by civil laws applicable to all real property rights. Concession awards are kept in force by payment of an annual licence (patent), which remains as sole obligation and assurance mechanism.

Note there are also concessions granted under the Chilean Mining Code of 1932 (Codigo 32), as shown in Section 4.3.2.

Chilean mining legislation acknowledges two forms of mining concessions:

(i) An Exploration Concession, known as "Pedimento" must have a minimum measure of 1,000 m and not exceed 5,000 ha, with a duration limited to two years, which grants its holder the exclusive right to investigate and prospect the existence of all mineral substances that may be granted in concession. The owner of an Exploration Concession has the exclusive right to investigate and prospect the existence of all mineral substances that may be granted within the concession.

(ii) An Exploitation Concession, must have a minimum measure of 100 m and are not to exceed 10 ha, although it is possible to request up to 1,000 ha per exploitation claim. Exploitation Concessions have an indefinite duration, which grants its holder an exclusive right freely to explore and exploit the exploitation concession and become the owner of all the mineral substances (metallic and non-metallic) that are extracted from within the limits of the exploitation concession, with the sole exception of the minerals that the law has reserved to the State.

The owner of the Exploitation Concession has the obligation to pay a yearly mining licence called a patente, to the benefit of the State, which is calculated based on the surface of the concession and the type of concession. The non-payment of the mining licence may give rise to an auction process affecting the concession. The highest bidder may acquire the mining concession, in the value of the unpaid mining licenses.

4.2.2 Environmental protection

Pursuant to Article 10 (i) of Law No. 19,300, mining projects – including prospections that involve more than 40 drill platforms - must be environmentally assessed under the Environmental Impact Assessment System (EIAS). A report on the Project was submitted to the EIAS on 10 October 2017, by means of an Environmental Impact Declaration (EID), which ended with the issuance of Resolution No. 101/2018 (EAR 101/2018), dated 17 December 2018, which approved the Project from an environmental standpoint. This is further discussed in Section 4.3.5.

The Project includes the following temporary facilities: (i) one generator set; (ii) portable sanitary facilities; (iii) storage site for industrial wastes; and (iv) containers for household waste.

Additionally, the Project includes the following permanent facilities: (i) 100 drilling platforms; (ii) storage for materials facility; and (iii) storage for hazardous wastes.

It is the responsibility of the Property owner to inform the authority of the initiation of each exploration program.

Pursuant to the information provided and the public information available in the official site of the Superintendence of the Environment (SMA), the Project has not initiated any construction. Furthermore, the QP is not aware of any opposition by third parties concerning its construction and operation.

4.2.3 Taxes and encumbrances

The mining industry in Chile is subject to corporate income taxes and a mining specific profit-based tax which is applied over the operational mining income of the company.

Corporate income tax is applied at the rate of 25% in the Attributed Regime or 27% in the case of the Partially Integrated Regime. Features of corporate:

- Accelerated depreciation for mining plant and equipment is generally at straight-line over 3 years.
- Corporate income tax losses can be carried forward indefinitely.
- The mining tax is deductible for income tax purposes.
- Distributions made to a non-resident corporate shareholder would be subject to a dividend withholding tax; the rate will depend on the country in which the corporate shareholder is domiciled and whether a tax treaty is in place between Chile and the country of domicile, among other things.

The rate of the mining profit-based tax depends on the annual sales and in the mining operational margin of the taxpayer, according to the following:

- The taxpayers are exempt if the annual sales are less than the equivalent of 12,000 tonnes of refined copper.
- The rate ranges from 0.5% to 4.5% if the annual sales are greater than 12,000 but less than the equivalent of 50,000 tonnes of refined copper.
- The rate ranges from 5% to 14% if the annual sales are greater than the equivalent of 50,000 tonnes of refined copper. In this last case, the determination of the rate depends on the mining operational margin.

The value of refined copper is calculated as according to the average value of grade A copper registered at the London Metal Exchange (LME). Note as Chile is predominantly a copper producer this is written for copper, but all other minerals are paid on an equivalent basis.

4.3 Challacollo Property land tenure and ownership

4.3.1 Ownership

Mandalay, through its wholly owned Chilean subsidiary, Minera Mandalay Challacollo Limitada (MMC) purchased the Challacollo Project from Silver Standard Resources Inc. (Silver Standard) and registered their 100% ownership of the Property on 6 February 2014 and 7 February 2014.

On 9 November 2019, Aftermath entered into a share purchase agreement with Mandalay in which Aftermath can acquire 100% of the Challacollo Property by making certain staged payments, and the granting of a 2% NSR to Mandalay as outlined in Section 4.3.2 and the progress against the payments is described in Table 4.1. Until the payments to Mandalay are complete the Exploitation Concessions remain registered in the name of MMC.

Table 4.1 Aftermath Challacollo acquisition payment terms and progress

Date	Payments	Status
8 Nov 2019	C$500,000 cash	Paid
30 Dec 2019	C$500,000 cash	Paid
30 Dec 2020	C$1,000,000 cash	Paid
Final closing payment options		
30 Apr 2021	C$5,500,000 cash	
	OR at Mandalay's election	
	Aftermath common shares to a maximum value of C$2,750,000 and cash to the difference of C$5,500,000 and the value of the common shares issued	
OR at Aftermath's election made on or before 30 Mar 2021		
30 Apr 2021	C$3,000,000 cash	
	OR at Aftermath's election	
	Aftermath common shares to a maximum value of C$1,500,000 and cash to the difference of C$3,000,000 and the value of the common shares issued	
30 Apr 2022	C$3,000,000 cash	
	OR at Aftermath's election	
	Aftermath common shares to a maximum value of C$1,500,000 and cash to the difference of C$3,000,000 and the value of the common shares issued	

4.3.2 Land tenure

The Property comprises Exploitation Concessions created under the Codigo 32 and the Codigo 83.

These consist of 98 Exploitation Concessions covering 19,362 ha. A full list of the concessions is given in Table 4.2 and a plan of the concessions is shown in Figure 4.3.

The Challacollo Mineral Resources estimated in this report are located on certain Codigo 32 concessions, and a more detailed plan of the Codigo 32 concessions highlighting the concession which have Mineral Resources is shown in Figure 4.4.

Note these concessions do not have a defined expiry date and are valid as long as payments are made.

In addition to the Property concessions shown in Table 4.2, the Challacollo Project includes a group of 5 non-contiguous concessions for water exploration. These are discussed in Section 4.3.3.

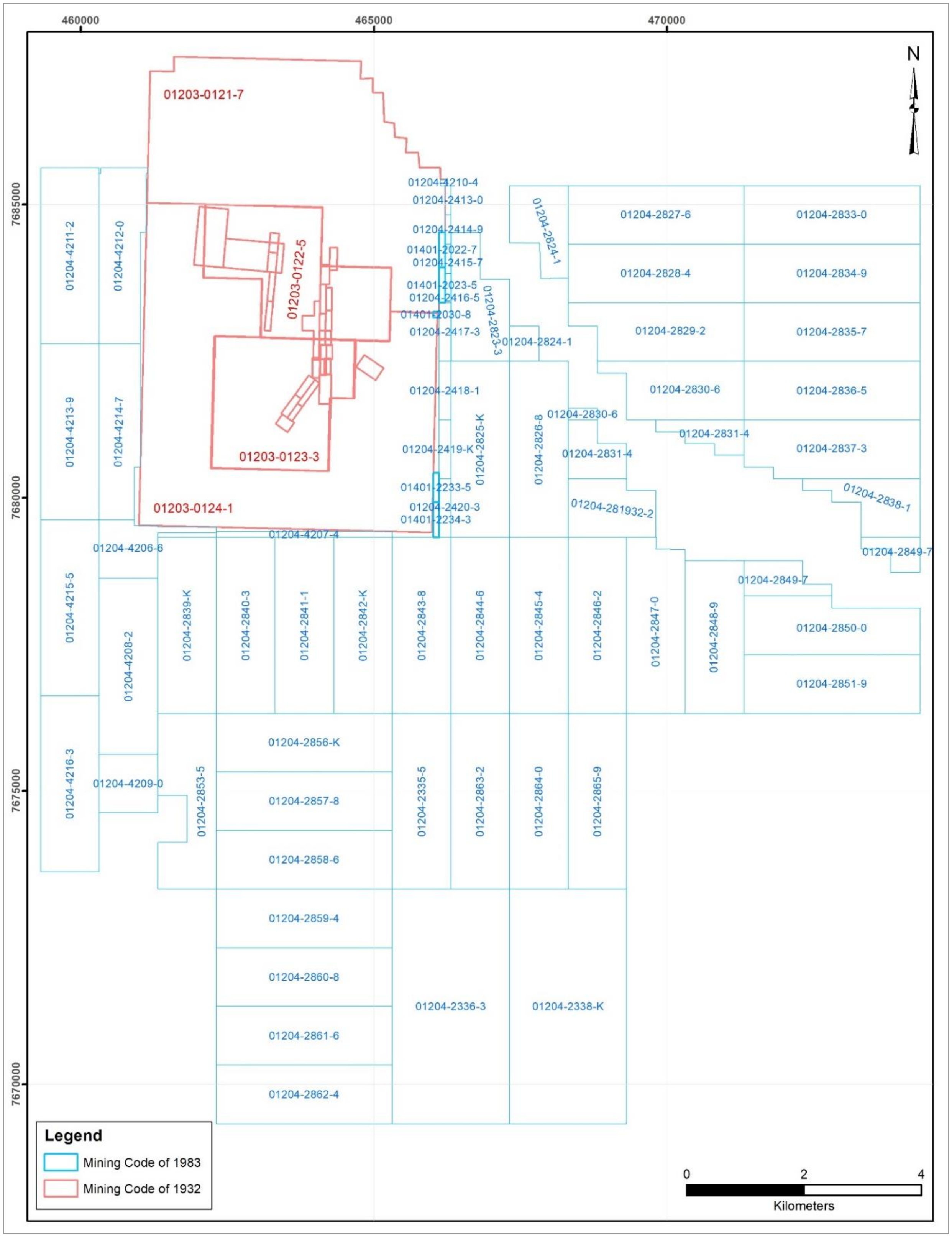
Table 4.2 List of issued Exploitation Concessions

Name	National register number	Issued under Mining Code	Area (ha)
Alida	01203-0049-0	1932	3
Arena	01203-0048-2	1932	5
Bellavista & Bellavista II	01203-0051-2	1932	10
Buena Esperanza	01203-0050-4	1932	3
Calixena	01203-0071-7	1932	50
Calixito	01203-0072-5	1932	50
Carla	01203-0055-5	1932	5
Carmela	01203-0057-1	1932	5
Carmelita	01203-0056-3	1932	5
Challa Sur 10, 1/20	01204-4209-0	1983	100

Name	National register number	Issued under Mining Code	Area (ha)
Challa Sur 12, 1	01204-4210-4	1983	1
Challa Sur 13, 1/60	01204-4211-2	1983	300
Challa Sur 14, 1/60	01204-4212-0	1983	221
Challa Sur 15, 1/60	01204-4213-9	1983	300
Challa Sur 16, 1/60	01204-4214-7	1983	201
Challa Sur 17, 1/60	01204-4215-5	1983	300
Challa Sur 18, 1/60	01204-4216-3	1983	300
Challa Sur 3, 1/22	01204-4206-6	1983	106
Challa Sur 4, 1/6	01204-4207-4	1983	30
Challa Sur 5, 1/60	01204-4208-2	1983	300
Cometa I, II & III	01203-0053-9	1932	15
Constancia	01203-0052-0	1932	3
Corneta I, III & IV	01203-0054-7	1932	15
Erna	01203-0059-8	1932	3
Estella 1 1-30	01204-2823-3	1983	180
Estrella 2 1-30	01204-2824-1	1983	160
Estrella 3 1-30	01204-2825-K	1983	300
Estrella 4 1-30	01204-2826-8	1983	300
Estrella 5 1-30	01204-2827-6	1983	300
Estrella 6 1-30	01204-2828-4	1983	300
Estrella 7 1-30	01204-2829-2	1983	270
Estrella 8 1-30	01204-2830-6	1983	220
Estrella 9 1-30	01204-2831-4	1983	140
Estrella 10 1-30	01204-281932-2	1983	140
Estrella 11 1-30	01204-2833-0	1983	300
Estrella 12 1-30	01204-2834-9	1983	300
Estrella 13 1-30	01204-2835-7	1983	300
Estrella 14 1-30	01204-2836-5	1983	300
Estrella 15 1-30	01204-2837-3	1983	290
Estrella 16 1-30	01204-2838-1	1983	130
Estrella 17 1-30	01204-2839-K	1983	300
Estrella 18 1-30	01204-2840-3	1983	300
Estrella 19 1-30	01204-2841-1	1983	300
Estrella 20 1-30	01204-2842-K	1983	300
Estrella 21 1-30	01204-2843-8	1983	300
Estrella 22 1-30	01204-2844-6	1983	300
Estrella 23 1-30	01204-2845-4	1983	300
Estrella 24 1-30	01204-2846-2	1983	300
Estrella 25 1-30	01204-2847-0	1983	290
Estrella 26 1-30	01204-2848-9	1983	260
Estrella 27 1-30	01204-2849-7	1983	110
Estrella 28 1-30	01204-2850-0	1983	270
Estrella 29 1-30	01204-2851-9	1983	300
Estrella 31 1-30	01204-2853-5	1983	260
Estrella 34 1-30	01204-2856-K	1983	300
Estrella 35 1-30	01204-2857-8	1983	300

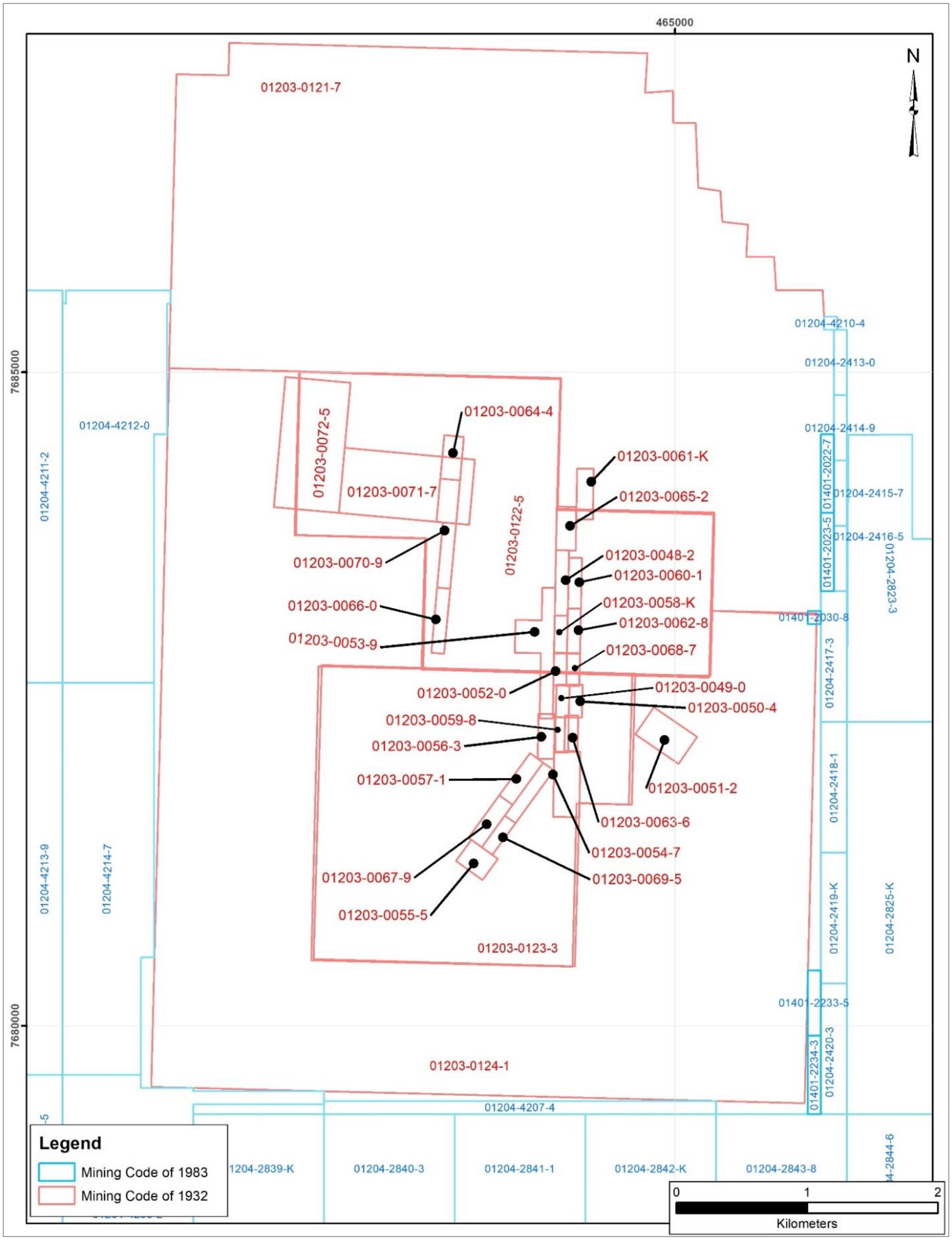
Name	National register number	Issued under Mining Code	Area (ha)
Estrella 36 1-30	01204-2858-6	1983	300
Estrella 37 1-30	01204-2859-4	1983	300
Estrella 38 1-30	01204-2860-8	1983	300
Estrella 39 1-30	01204-2861-6	1983	300
Estrella 40 1-30	01204-2862-4	1983	300
Estrella 41 1-30	01204-2863-2	1983	300
Estrella 42 1-30	01204-2864-0	1983	300
Estrella 43 1-30	01204-2865-9	1983	300
Éxito	01203-0058-K	1932	3
Froilana	01203-0060-1	1932	4
Hilda	01203-0061-K	1932	5
Hospital	01203-0062-8	1932	4
Juliet Primera 1-30	01204-2335-5	1983	300
Juliet Segunda 1-80	01204-2336-3	1983	800
Kilo Primera 1-80	01204-2338-K	1983	800
Lolón	01203-0063-6	1932	3
Marina	01203-0064-4	1932	5
Palermo	01203-0066-0	1932	5
Panchita	01203-0067-9	1932	5
Pancho 1/300	01203-0121-7	1932	1340
Plomo Ronco 1-98 & 99-100	01203-0122-5	1932	500
Punta	01203-0065-2	1932	5
Rosa 13 1-6	01401-2022-7	1983	6
Rosa 14 1-6	01401-2023-5	1983	6
Rosa 15 1-5	01401-2233-5	1983	5
Rosa 16 1-6	01401-2234-3	1983	6
Rosa 21	01401-2030-8	1983	1
Rosa 22 1-20	01401-2696-9	1983	100
Rosa 23 1-40	01401-2698-5	1983	200
Rosa Cinco and Seis	01204-2417-3	1983	20
Rosa Cuatro	01204-2416-5	1983	5
Rosa Dos	01204-2414-9	1983	5
Rosa Nueve & Diez	01204-2419-K	1983	20
Rosa Once & Doce	01204-2420-3	1983	20
Rosa Siete & Ocho	01204-2418-1	1983	20
Rosa Tres	01204-2415-7	1983	5
Rosa Uno	01204-2413-0	1983	5
Rosario	01203-0068-7	1932	3
Rosicler De Plata 1/98	01203-0123-3	1932	490
San ENRIQUE 1/300	01203-0124-1	1932	1500
San FÉLIX I and II	01203-0070-9	1932	10
San Francisco	01203-0069-5	1932	5
			19,362

Figure 4.3 Challacollo Exploitation Concession plan



Note: PSAD56 grid.
Source: Aftermath Silver downloaded from SERGIOMEN on 23 October 2020.

Figure 4.4 Challacollo Exploitation Concession plan detail



Note: PSAD56 grid.
Source: Aftermath Silver downloaded from SERGIOMEN on 23 October 2020.

4.3.3 Water exploration land tenure

MMC holds five non-contiguous Mining Exploitation Concessions where it has conducted ground water exploration drilling. These are located near Ruta 5 (Route 5), located about 20 km to the south west of the main group of Challacollo concessions. Total area of this group of concessions is 500 ha. These details are listed in Table 4.3 and are shown in Figure 4.5.

Table 4.3 Exploitation Concessions held for ground water exploration

Name	National register number	Issued under Mining Code	Area (ha)
Pedro 1, 1 al 20	01401-2809-0	1983	100
Pedro 2, 1 al 20	01401-2808-2	1983	100
Pedro 3, 1 al 20	01401-2810-4	1983	100
Pedro 4, 1 al 20	01401-2811-2	1983	100
Pedro 5, 1 al 20	01401-2812-0	1983	100
			500

4.3.4 Land holding costs

Maintenance fees for the Exploitation Concession titles and the water rights are due to the Chilean government in March each year.

The Exploitation Concession maintenance costs paid in March 2020 totalled US$66,476. The 2020 maintenance cost of the water rights totalled US$4,539.

Based on information provided on 11 September 2020, by Aftermath's Chilean counsel, ICCF Aborgados, all fees are fully paid and in good standing.

4.3.5 Environmental permits

The project was environmentally approved by means of Environmental Approval Resolution (EAR) No. 101/2018. This sets out the obligations of the project holder to operate the exploration activities.

With respect to the archaeological and paleontological areas, the authority requests certain measures related to the perimeter fencing of archaeological sites, (there is a historic graveyard on the Property), implementation of any fossil rescue for any fossils identified in the field and the incorporation of palaeontology in site inductions, among other items. This relates to the Jurassic calcareous unit which is a type locality for the formation.

4.4 Existing environmental liabilities

The Challacollo site is listed on the Chilean National Register of Environmental Sites held by SERNAGEOMIN. Challacollo is on the register due to the hazards related to steep historic excavation walls and their potential to collapse and the danger of open historic mine excavations and open holes.

Aftermath's Chilean council has indicated that they are not aware of any claim against the EAR of the Project and the QP is not aware of any environmental liabilities which are not documented above.

4.4.1 Water rights

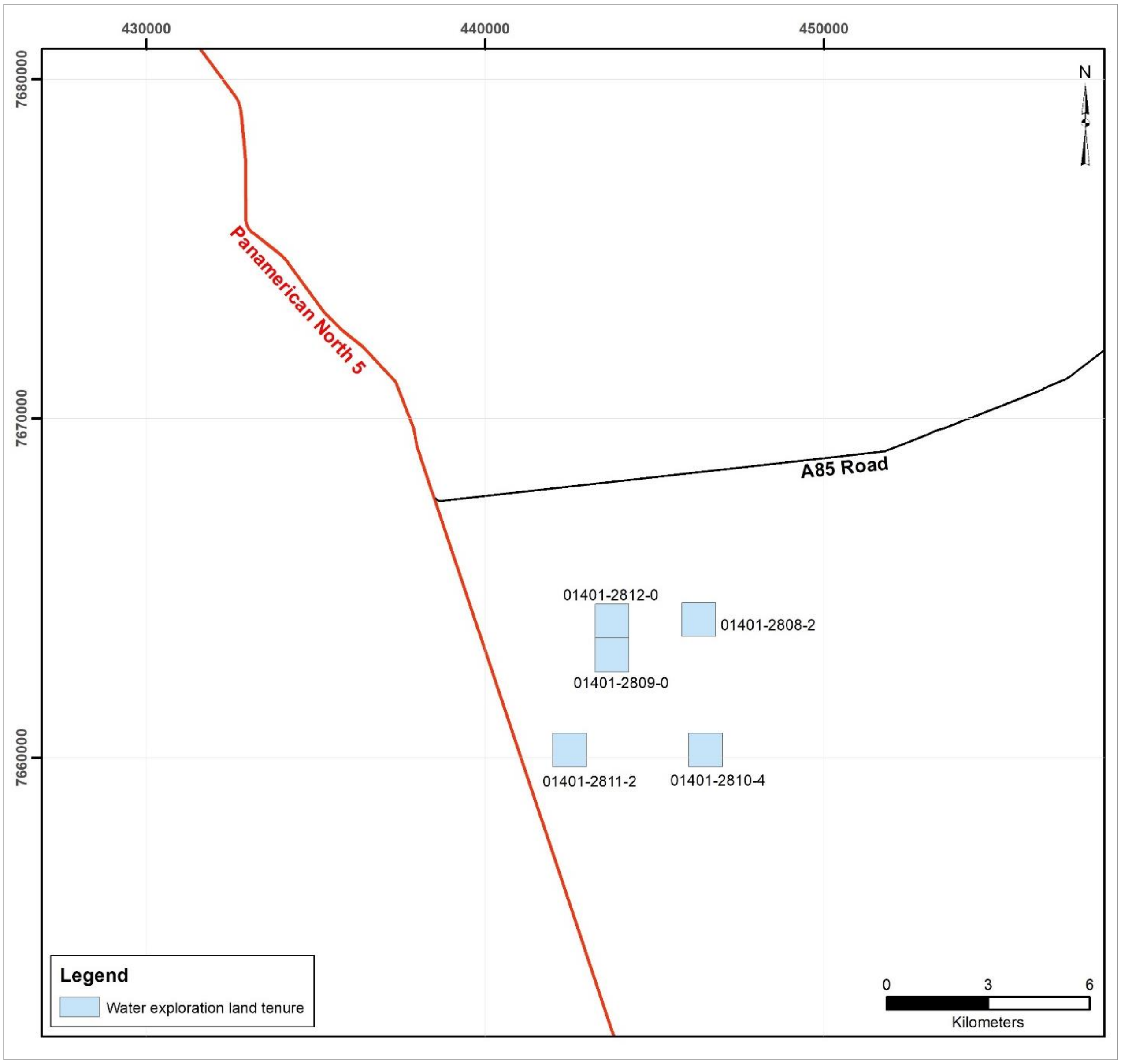
MMC has two water rights, 6.2 (WR 1) and 5.8 (WR 2) l/s for use on the Challacollo Project. The water rights are located approximately 18 km east of the Property. These rights were purchased outright in 2005 by Silver Standard and registered in the name of MMC in February 2014. The wells are located on private property.

Aftermath's Chilean council has indicated that they are not aware of any claim against the water rights.

4.4.2 Surface rights

All surface rights on the property are owned by the Chilean State.

Figure 4.5 Plan detail of Exploitation Concessions held for water exploration



Note: PSAD56 grid.
Source: Aftermath Silver 2020.

4.4.3 Royalties and production payments

The royalties are defined based on the when the concessions were granted, under the Mining Codes of 1932 or 1983, and in the case of Silver Standard and Mandalay for both.

4.4.3.1 1932 and 1983 code concessions

Silver Standard now by way of SSR Mining retains a 2% NSR royalty, payable after 36 million ounces of silver have been produced, with a cap of US$5M. This cap is not subject to United States of America Consumer Price Index (US CPI) adjustment.

As part of the Aftermath agreement, Mandalay retains a 3% NSR royalty, payable after the SSR Mining NSR, at US$3M. This cap is not subject to any US CPI adjustment.

4.4.3.2 1932 code concessions

Under a 1997 agreement, Sociedad Contractual Minera Septentrion (Septentrion) has a 2% NSR royalty with a cap of US$850,000, adjusted pursuant to variations in the US CPI, as published by the Chilean Central Bank, from 1 January 1998. Septentrion was purchased by Finning in 2003.

Under a 2001 agreement, Septentrion retains a 2% NSR royalty that escalates to 3% after Finning's royalty cap is reached. The Septentrion royalty can be purchased at any time for US$1.5M, adjusted to 50% of the US CPI, from 1 December 2002.

These royalties apply from the commencement of metal production from the Codigo 32 concessions.

The royalties on the Exploitation Concessions granted under the 1932 Mining Code are listed in Table 4.4.

Table 4.4 Royalties granted under the 1932 Mining Code

Originator	Current owner	NSR rate	Start date	Cap (US$)	US CPI adjustment
Sociedad Contractual Minera Septentrion 1997	Finning Servicios Especializados	2%	Commercial Production	850,000	100% from 1 Jan 1998
Sociedad Contractual Minera Septentrion 2001	Sociedad Contractual Minera Capricornio 2003	2%	Commercial Production	No, but $1,500,00 buy out at any time	50% from 1 Dec 2002
		3%	After 1997 NSR cap		

4.4.3.3 1983 code concessions

In 1997 Septentrion (now Finning) retained a 1% NSR royalty on metal production on the 1983 Code group that is capped at US$850,000, adjusted pursuant to variations in the US CPI, as published by the Chilean Central Bank, from 1 January 1998.

4.4.3.4 Deferred production-based payments

The agreement between Mandalay and Silver Standard for the purchase of the Property in 2014 includes payment obligations to Silver Standard which become due after commercial silver production is attained on the Property. In the event that Aftermath completes the option agreement. these payments will be payable by Aftermath The following production-based payments are to be paid to Silver Standard.

- At the end of the first quarter of commercial production, the cash equivalent of five million common shares of Aftermath will be payable to Silver Standard.
- Aggregate cash payment equal to the equivalent of 240,000 ounces of refined silver, in eight quarterly instalments, equal to the cash equivalent of 30,000 ounces of refined silver per quarter and based on the average silver price during each quarter. These payments begin from the quarter immediately following the quarter in which commencement of commercial production at the Project occurs.

5 Accessibility, climate, local resources, infrastructure, and physiography

5.1 Accessibility

The Property is located about 120 km south-east of the major Pacific port city of Iquique, Chile. Iquique is the capital of the Tarapacá Region and is the largest regional centre in the area, with a population of 191,000 according to the 2017 census. The city of Pozo Almonte where basic services are also available which is the capital of the Tamarugal Province is 90 km to the north-north west and has a population of over 15,000. The town of Pica, approximately 50 km to the north of the Property, has a population of 6,000 and the small farming community at Las Pintados is about 42 km to the north-west.

Located approximately 35 km south of Iquique is the Diego Aracena (Iquique) International Airport, with daily domestic air services to Santiago and international flights to Bolivia and Argentina.

From the city of Iquique, the Property can be accessed by taking the Iquique-Alto Hospicio road east on Route 16, to the intersection with the Pan American Highway (Route 5), turning south, through Pozo Almonte, to the intersection with the Quebrada Blanca and Collahuasi copper mines access road which is a private surfaced road operated by the companies that operate those mines. Use of the Quebrada Blanca / Collahuasi access road for access to the Challacollo Property is through an access agreement. The Quebrada Blanca access road is followed in a south-easterly direction for approximately 30 km until a turnoff onto an unformed gravel road which runs to the south for approximately 20 km. The Challacollo access road passes the Quebrada Blanca water and concentrate pipeline route, currently under construction. This gravel road provides four-wheel drive access to the Challacollo property.

Access to the project from the south is possible via national road A-85, a paved road heading to the north-east off Route 5, which transects the Property, about 5 km to the south of the Mineral Resource area.

Approximate driving times from Iquique International Airport is 1.5 hours, from Iquique 2 hours 50 minutes, 2 hours from Pozo Almonte, and 30 minutes from Pica.

Figure 4.2 shows all these cities, towns, and access to site.

5.2 Topography and physiography

Challacollo is located in the Atacama Desert, a virtually rainless plateau located between the Pacific coast and the Andean Mountains. The coast is referred to as the “Cordillera de la Costa”. The Cordillera de la Costa is characterized by a coastal escarpment, that can fall near vertically into the Pacific Ocean. The escarpment can be up to 500 m in elevation, and results in a barrier that prevents drainage from reaching the Pacific. The eastern, interior slope of the Cordillera de la Costa, slope gently to the east, merging with the Central Depression or Central Valley.

The Central Depression is a wide plain inclined towards the west. In the area of Challacollo this sector is called the Pampa del Tamarugal, with an elevation of about 1,100 m above sea level.

The Central Depression hosts several internal drainage basins known as “salars” and clay playas.

South of Iquique, and about 67 km east of Challacollo is the largest salt lake, Salar Grande, a basin of more than 100 km^2 and 80 m deep on average, exclusively filled with salt. Salt is mined in the Salar Grande at two sites.

Other salars east of Challacollo, from north to south include: Salar de Pintados, Salar de Lagunas, Salar de Bella Vista, Salar de Sur Viejo, Salar de Llamara. Several of these salars contain concentrations of nitrate ("saltpeter") which have historically being mined, the closest operating nitrate mine to Challacollo being Oficina Victoria owned by Sociedad Quimica y Minera de Chile (SQM), 35 km to the East.

The Property is located on an approximately seven km long, rugged north-south mountain ridge, an "island" withing the Pampa del Tamarugal. The highest peak on the Challacollo ridge (termed Range) is Cerro Challacollo at an elevation of 1,573 m above sea level.

Further to the east is the Pre-Cordillera, sometimes referred to as the Altiplano, at elevation of around 2,000 to 4,000 m, this also includes an area described as the Pre-Andean Depression. The Pre-Andean Depression hosts dormant volcanos, rising as isolated peaks and saline lakes and salt flats. Finally, the Western Cordillera, which rises to an altitude of 5,000 in this region.

The Andes block moist air from the east, casting a rain shadow over the Atacama Desert. This, along with cold ocean currents along the Pacific coast results in insufficient evaporation to form rain clouds causing hyperarid conditions. There are however deeply incised drainage systems, called Quebrada. Around the Property although the drainage channels are predominately dry, subsurface flow can occur, fed by snow melt and from concentrated storm events on the Andean altiplano to the east, during the summer season from January through to March.

To the north of the Property is the Quebrada Chipana, which at its closest point is 1.3 km to the north of the Challacollo concession boundary. In the southern portion of the property there are two drainage channels transecting the Property; Quebrada Guatacondo and Quebrada Pintados. These drainage channels start to form alluvial fans to the west of the Challacollo ridge and ultimately drain into one of the salars.

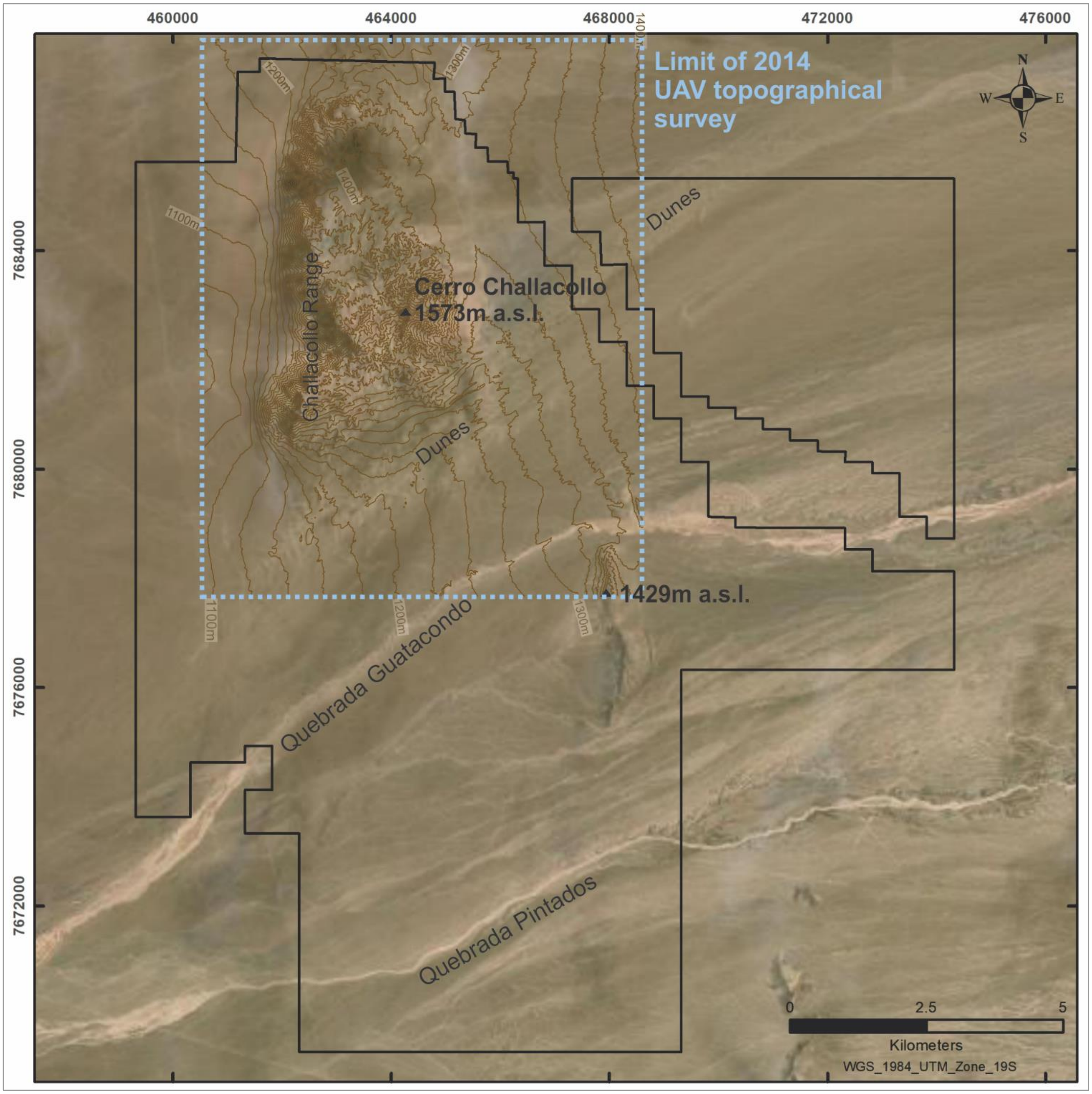
On the south western side of the Challacollo ridge at the south end of the Challacollo Range, winds, generally from the west and south west, cause sand to accumulate in an 11 km long dune field. Figure 5.1 is an arial view showing the Challacollo Silver-Gold Project, looking south-east.

Figure 5.1 View of Challacollo Silver-Gold Project

Source: Aftermath, March 2020.

Figure 5.2 is a satellite view showing the main topographical and physiographic features in and around the Property.

Figure 5.2 Satellite view of topographical and physiographic features



Notes:
- Datum: WGS84 UTM Zone 19S.
- Concession outline shown in black.

Source: Aftermath 2020, topographic drape from Mapsat S.A 2014.

5.3 Climate

The closest weather station to the Property is in Pozo Almonte. Temperatures are relatively consistent thought out the year, with an average of 13°C during the winter months of June to August, with a daily minimum of around 8°C. In the summer months of January and February the maximum average temperatures are 20°C, with a maximum daily recorded temperature of 25.7°C.

Daily maximum temperatures experienced in the summer months are around 25°C. There is zero precipitation in the area of the Property. Table 5.1 shows the average temperature ranges by month.

Vegetation is absent or sparse and desert based. Most vegetation occurs in water accumulating basins or depends on getting water out of coastal fog and includes some cacti (Eulychnia), perennials (Nolana), and mesquites (Prosopis). Animals and insects are generally small, often coming out nocturnally from below the surface to feed.

None of these climate factors preclude operations from being conducted year-round.

Table 5.1 Annual weather data from Pozo Alomte

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Avg. temperature (°C)	20.2	20.4	18.7	16.6	14.4	13	12.7	13	14.9	15.7	16.8	18.5
Min. temperature (°C)	15	15.1	13.5	11.3	9.2	8.1	7.9	8.1	9.9	10.5	11.5	12.6
Max. temperature (°C)	25.4	25.7	24	22	19.6	17.9	17.6	17.9	19.9	20.9	22.2	24.4
Precipitation (mm)	0	0	0	0	0	0	0	0	0	0	0	0

Source: www.climate-data.org.

5.4 Local resources and infrastructure

The regional infrastructure currently supports significant mining operations at the Quebrada Blanca, Collahuasi and Cerro Colorado copper mines to the east of Challacollo, as well as SQM nitrate operations located to the west of Challacollo along Route 5. There is adequate skilled and unskilled labour available in northern Chile.

High voltage power lines are located along Route 5, part of the Chilean national power grid. Approximately 40 km to the north west on Route 5 is the 220 kV Laguna substation / switching station. From the Laguna Substation high voltage power lines branch to the east to power the Quebrada Blanca and Collahuasi copper mines, passing within 9 km to the north of the Property. As part of the Quebrada Blanca expansion project a high voltage power line is currently being constructed approximately 5 km north of the Property.

There is no exploration camp or other infrastructure at the Property, only core logging and storage area. The town of Pica was used during past programs as a base of exploration activities. The Property caretaker resides in Pica. Labour during past exploration programs was sourced in Pica.

Water used for the Mandalay drilling programs was trucked from a well in the community of Las Pintados.

The Property is sufficiently large enough, at 19,862 ha, to locate a processing plant, tails management facility and other infrastructure required to operate a mine.

6 History

6.1 Discovery and early years

It is believed that the presence of silver was known at Challacollo since the time of the Incas. The following is a summary of the long history of mining at and around Challacollo:

- The first large mineral deposit mined in the Tarapaca Region was the Huantajaya Silver deposit, north east of Iquique. It is believed that owners associated with that mine began to explore silver deposits in the Pampa del Tamarugal when production of Hunatajaya began to decline, discovering silver at Challacollo.
- In 1763 Challacollo was prospected by Andrés de Soto, Melchor Blanco, Tadeo Lecaros, José de Soto, Francisco Soto, Domingo Iglesias, Gervasio Maldonado, and Antonio de Loayza.
- In 1772 an area was prospected by two well-known landowners from Pica, Gabriel de Soto and Domingo Almonte, who named the silver deposit after San Antonio de Challacollo, the saint of Matilla, an area adjacent to Pica. (Castro 2010). The first mining concession was recorded in the vicinity of Challacollo in 1772. The "San Gabriel" vein was exploited that same year. Apparently due to legal conflicts between the owners the venture did not progress (Villalobos 1979).
- Challacollo is mentioned in the travels of William Bollaert (Bollaert 1860), where at some time between 1853 and 1854, he visited the abandoned silver mines of Challacollo on the "isolated silicious mountains".
- In May 1885, the Compañía Minera y Beneficiadora de Challacollo was formed, however small-scale private mining continued including mines owned by Don Domingo Lecaros and Don Francisco Fuentes Díaz. The 1892 census records showing 646 residents at Challacollo.
- Gildemeister acquired Challacollo in 1896, initiating formal mining. A cable car and railway line in all more than 35 km long, was built between the mine and a beneficiation plant installed at the Cerro Gordo railway station, this was used until 1907, when declining grades resulted in its closure.
- During the period 1917 to 1920 Glidemiester leased the mines to Mr Mariano Hartman. Gildemeister suspended mining between 1929 and 1931 due to low silver prices.
- Between 1932 and 1980, the main zone of mineralization was mined by artisanal miners (called pirquineros), with no legal title, until Gildemeister, reformed as Minera Challacollo in 1980, reasserted its legal claim and resumed formal mining into the early 1990's.
- Between 1979 and 1980, before the high silver price period, the main deposit was exploited by miners who possessed no legal title to it.
- In 1980 Gildemeister recovered its rightful possession and exploited the existing ore dumps until the beginning of 1981. Production records indicate the ore extracted to that date amounted to approximately 550 t/month, with average grades of 660 g/t Ag and 1.43 g/t Au, with ore being sold to the Pozo Almonte Agency of Empresa Nacional de Minería (ENAMI). During the second half of 1981, mining was suspended due to a drop in the silver market price.
- In 1988 Gildemeister decided to install its own beneficiation plant with 100 tpd capacity, to produce via leaching and zinc precipitation a silver "cement" for export to Europe, or by flotation a concentrate for sale to ENAMI's Hernán Videla Lira smelter at Copiapo. At the end of 1989, a self-sustaining operation was achieved; however with a new drop in precious metals prices the operation became unprofitable by early 1990. Between 1991 and 1992 approximately 70,000 tonnes were processed. The plant was removed by the end of 1992.
- In 1992, a pre-feasibility study to increase capacity to 200 tpd was carried out with encouraging results. However, Gildemeister holding company Sociedad Contractual Minera Cerro Challacollo (Minera Challacollo) elected not to proceed continuing to evaluate options, this resulted in two purchase options being negotiated and signed during, including a 1993

agreement with Canada Tungsten, however no work was conducted, and the project returned to Minera Challacollo.

6.2 Recent ownership

- In 1995 Challacollo was optioned by Empresa Minera Mantos Blancos (Mantos Blancos). Between 1995 and 1996 Mantos Blancos conducted geological, geophysical surveys and drilling. In December 1996, Mantos Blancos terminated its option.
- In 1998 Minera Challacollo sold the entire property to Minera Septentrion (Septentrion), a closely held Chilean corporation represented by a lawyer in Santiago, Antonio Urrutia. Shortly after purchasing the property Minera Septentrion divided the property into two claim groups and started to market the property based on two distinct mineral potentials in each block of claims. One block covered the Challacollo Range, including the Challacollo Silver-Gold Project, while the other covered a very much larger claim group lying to the southeast that had potential to host porphyry copper mineralization. This second block of claims is not part of the report and is no data referred to here has been collected on those claims.
- Silver Standard optioned the Property from Septentrion in November 2001, completing the acquisition in 2003 to own 100%. Transfer of titles was completed in February 2014. Septentrion retained certain royalties, as described in Section 4.4.3. During the several programs conducted in 2002, 2003, and 2007 Silver Standard completed surface and underground sampling, underground surveying, drilling, metallurgical test work, water exploration and resource estimates.
- In 2013 Silver Standard sold Challacollo to MMC the wholly owned subsidiary of Mandalay who registered their 100% ownership of the Property in February 2014. For clarity, the work carried out will be referred to as having been carried out by Mandalay. Mandalay undertook surface sampling and trenching, drilling, metallurgical studies, water exploration, surveying, and an unpublished feasibility study on the extraction of a 660 tpa underground operation.
- In November 2019 Aftermath entered into a share purchase agreement with Mandalay but until the payments to Mandalay are complete the concessions remain registered in the name of MMC.

The exploration and drilling carried out by these operators is discussed in Section 9 and Section 10 as Aftermath has not as yet carried out any exploration or drilling. The drilling discussed in Section 10 and the discussions In Section 11 and 12 relates to the data used in the Mineral Resource estimate reported in Section 14.

6.3 Historical resource estimates

There have been several unpublished and published Mineral Resource estimates on the Challacollo Property.

In 1975 probable reserves were estimated for blocks immediately adjacent to underground workings using underground samples (Herrera 1975), a total probable reserve was quoted as 115,743 tonnes at 367 g/t Ag and 0.5 g/t Au. This figure likely gives an impression of the grades being mined underground.

In 1996 Minera Challacollo reported (Sociedad Contractual Minera Cerro Challacollo 1996) a proven and probable reserve for the central portion of the Lolón Structure, a strike length of 700 m to a depth of up to 400 m. A proven-probable reserve of 2.3 million tonnes at a grade of 341 g/t Ag and 1.03 g/t Au is reported. This estimate used the data obtained by Mantos Blancos.

Silver Standard prepared a Mineral Resource estimate (Holtby 2002) estimating silver only, using the polygonal method. The estimate used both drilling and underground channel sampling; there was no information on the cut-off used. The resource was reported for both cut and uncut silver grades; there was essentially no difference in the results of each, see Table 6.1. The estimate was reviewed by Roscoe Postle Associates (RPA) and published in two Technical Reports in 2002, namely the 2002 Challacollo Technical Report and 2002 RPA Technical Report.

Table 6.1 2002 Silver Standard polygonal resource estimate

Classification	Mt	Ag (g/t)	Contained Ag (Moz)	Ag (g/t) Cut	Contained Ag (Moz)
Indicated	2.21	202	14.4	202	14.4
Inferred	4.15	182	24.4	182	24.4

Notes:
- Prepared by non-independent Qualified Person Max Holtby, P.Geo.
- CIM (2000) definitions were followed for classification of Mineral Resources.
- A density 2.7 g/cm³ was used.
- Cut resource was prepares by capping high silver assay values to 826 g/t Ag.
- No cut-off grade information was provided.

In January 2014, RPA prepared a Mineral Resource estimate for Mandalay, as summarized in the 2014 RPA Technical Report The estimate used 55 drillholes and 40 underground channel traverses. The estimate used inverse distance cubed (ID^3) to estimate 5 x 5 x 5 m blocks. The results are summarized in Table 6.2.

Table 6.2 2014 RPA resource estimate summary

Classification	Mt	Ag (g/t)	Au (g/t)	AgEq (g/t)	Contained Ag (Moz)	Contained Au (Koz)
Indicated	1.03	242	0.40	267	8	13.4
Inferred	3.90	193	0.32	214	24.3	40.1

Notes on the RPA 2014 Resource estimate:
- Prepared by Qualified Person Evans, L. P.Eng.
- CIM (2010) definitions were followed for classification of Mineral Resources.
- Mineral Resources are estimated at a silver equivalent (AgEq) cut-off grade of 110 g/t.
- Mineral Resources are estimated using a silver price of US$24/oz and a gold price of US$1,400 per ounce.
- High silver and gold assay values were capped to 700 g/t Ag and 3.0 g/t Au, respectively.
- A density value of 2.4 g/cm³ was used.
- The silver equivalent equation was AgEq = g/t Ag + 63.97 * g/t Au.

In March 2015, Mining Plus prepared a Mineral Resource estimate for Mandalay, which is reported in the 2015 MP Technical Report.

Table 6.3 2015 Mining Plus resource estimate summary

Classification	Mt	Ag (g/t)	Au (g/t)	Contained Ag (Moz)	Contained Au (Koz)
Indicated	4.70	200	0.32	30.2	48,400
Inferred	1.60	134	0.31	6.9	15,900

Notes on the Mining Plus 2015 Resource estimate:
- Mineral Resources estimated as of 31 December 2014.
- Mineral Resources stated according to CIM Definition Standards (2014).
- Mineral Resources are estimated at a cut-off grade of 60 g/t Ag.
- Mineral Resources are estimated using a silver price of US$24/oz, a gold price of US$1,400 per ounce, metallurgical recoveries of 92% for silver and 75% for gold, and operating costs of US$50 per tonne.
- A density 2.45 g/cm³ is used as a base density with adjustments according to the variation of the estimated barium, lead and zinc grades.
- No capping of Ag grades has been applied due to low grade variability. Au grades have been capped at 3 g/t for two sample composites 4.57 g/t Au and 4.11 g/t Au respectively.

The QP has not done sufficient work to classify the historical estimates as current Mineral Resources or Mineral Reserves and the issuer is not treating the historical estimates as current Mineral Resources or Mineral Reserves.

7 Geological setting and mineralization

7.1 Regional geology

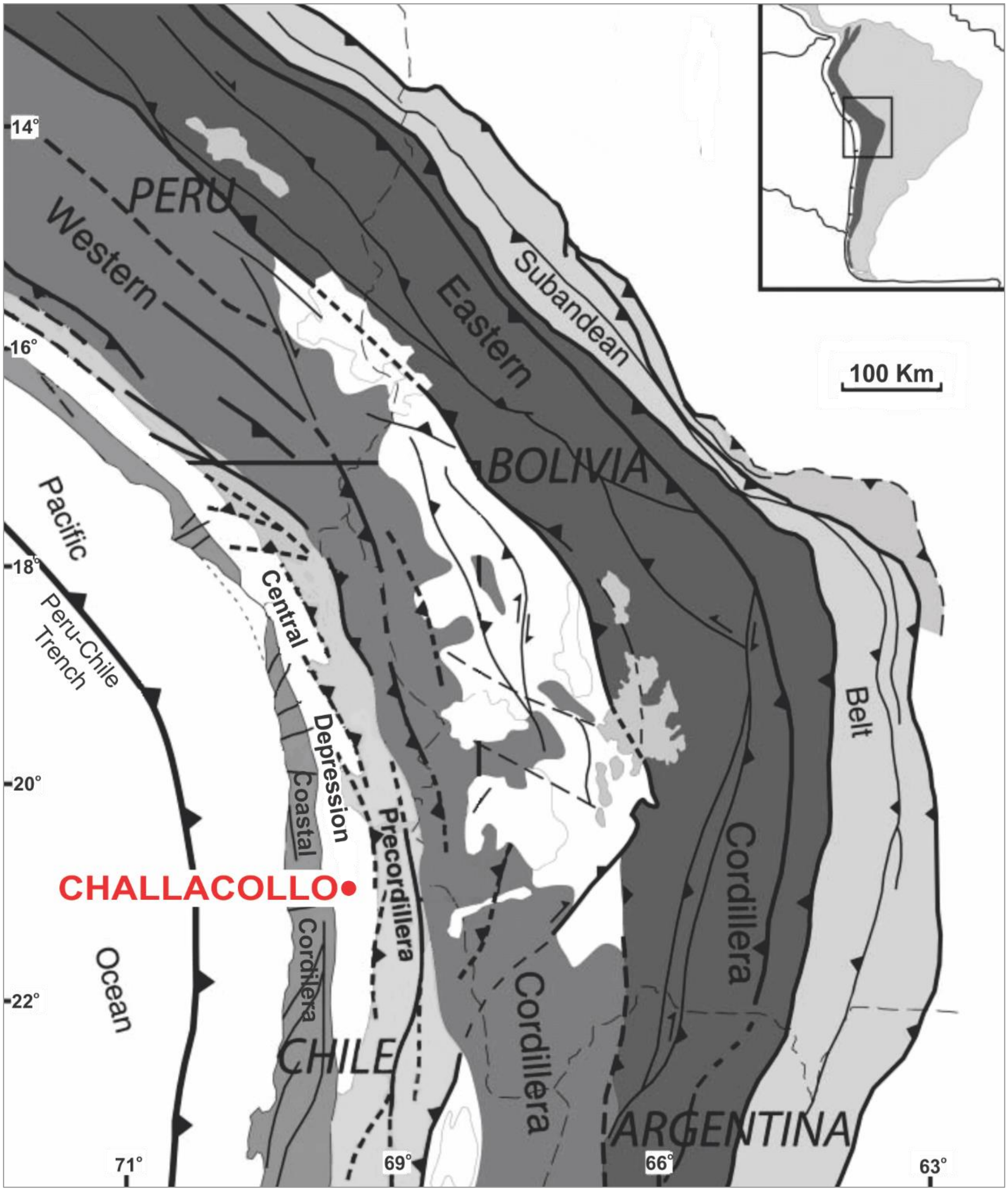
The Andes formed in a continental-oceanic plate convergent setting with subduction of the Nazca Plate under the South American Plate. This resulted in three distinctly north-south oriented domains which are the result of differential shortening recording periods of Andean deformation and uplift. The large-scale physiography of the fore-arc region is considered as a direct expression of the tectonic processes operating during the late Cenozoic; hence the geological domains are described in similar terms as those used to describe the physiography discussed in Section 5.2. The location of Challacollo relative to these physiographic – geological domains is shown in Figure 7.1.

These geological domains and mappable regional scale structures, from west to east are summarized below:

- Coastal Cordillera, largely made of marine sedimentary and volcanic deposits ranging from the Palaeozoic through the Paleogene with Jurassic and Cretaceous andesites, diorites, and granodiorites.
- Separating the Coastal Cordillera and the Central Depression is the Atacama Fault Zone. This is the most prominent fault in northern Chile and can be traced from Tal Tal to Iquique.
- The Central Depression is a basin filled with a continental succession of late Eocene to early Pliocene sediments and volcanic deposits. This succession consists of conglomerates and sandstones of alluvial and fluvial facies in the lower portions that grade upwards to alluvial conglomerates. The Central Valley in Tarapaca appears to have been tilted westward in late Pleistocene or Holocene time so that the lowest part of the valley is adjacent to the Coastal Range. Five or more separate topographic basins within the Central Valley are attributable partly to faulting and partly to development of large alluvial fans where major valleys drain from the Andes.
- The Central Depression is bounded to the east and the Pre-Cordillera by the first of a series of thrusts that form part of a west vergent fault system.
- Pre-Cordillera, containing plutonic and volcanic remnants of a Cretaceous-Paleogene arc rising into the Western Cordillera with Mesozoic sedimentary and volcanic sequences underlying more recent Cenozoic cover. The second thrust of the west vergent fault system, the Belén Thrust system, is located in the eastern Pre-Cordillera. The Pre-Cordillera is the host of the nearby copper porphyry deposits of Quebrada Blanca and Collahuasi.
- Western Cordilleran uplift is thought to have occurred by way of a crustal-scale monocline of which the Pre-Cordilleran slope constitutes the limb.

A series of 2D Seismic sections through the Pampa del Tamarulgal combined with outcrop mapping has allowed authors to interpret the architecture of the area between the Coastal Cordillera through to the Western Cordillera in the area between Pica and Challacollo, see; Victor et al. (2004), Blanco et al. (2012), Blanco and Tomlinson (2013), and Fuentes et al. (2018). One of the seismic traverses is located immediately to the south of the Challacollo Range. See Figure 5.2 for location of range within the northern part of the Property.

Figure 7.1 Physiographic / structural belts of the central Andes

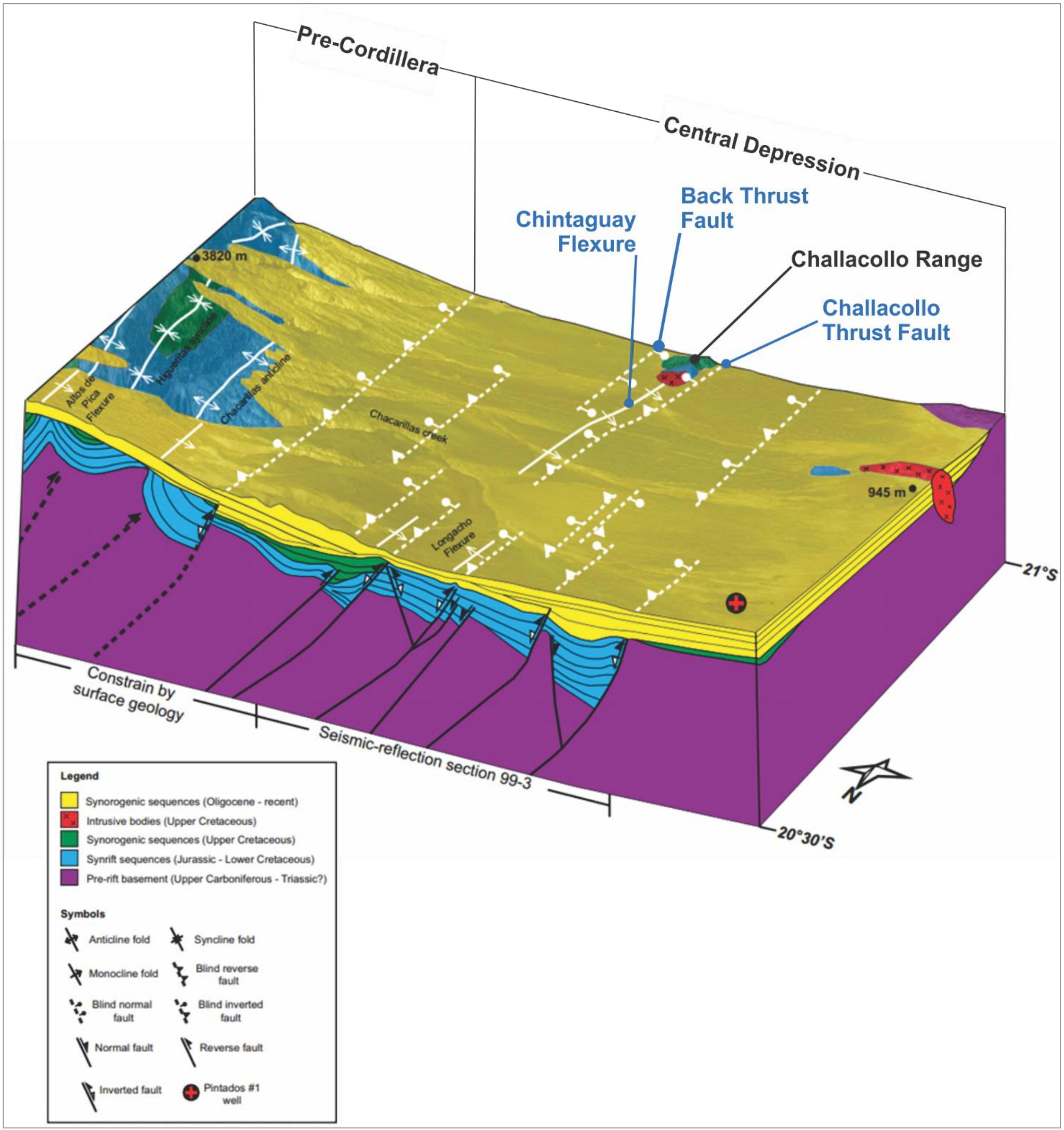


Source: Modified after Garcia, et al. 2011.

The Challacollo Range is interpreted as being a fault bound prism brought to the higher elevations by the inferred Challacollo Reverse Fault, and its associated back thrust fault, see Figure 7.2. (Blanco and Tomlinson 2013). This figure shows the interpreted 3D Isometric model of the Pampa del Tamarugal to the north of Challacollo. Both the Challacollo Fault and the back-thrust fault are covered by the Neogene and Paleogene sediments that fill the Central Depression.

As discussed in Section 7.2.5 the mineralized structures at Challacollo clearly show normal offsets, east side down. At some stage, the compressional regime inverted, and an extensional event resulted in reactivation of the Challacollo Fault and its back-thrust fault in a normal sense and resulted in normal faulting within the Challacollo fault bound block and the associated mineralization.

Figure 7.2 Interpreted 3D isometric model of the Pampa del Tamarugal



Source: Aftermath after Fuentes et al. 2018.

7.2 Local and Property geology

The volcanic and sedimentary units exposed in the Challacollo Range strike approximately 030° and dip about 25° to the southeast. Hence the oldest outcropping units on the Challacollo Ridge and the youngest being on the south eastern slopes. The beds steepen locally near faults such as the Lolón Structure where dips increase to as much as 50°. These vein-fault structures generally occur parallel to the north-south trending normal faults which bracket the Challacollo Range.

The geology of the Challacollo District has been described in detail by Blanco et al. (2012) and shown on the 1:100,000 SERNAGEOMIN Gautacondo map sheet (Blanco and Tomlinson 2013). The Property has been mapped in detail over several periods and the current geological map is shown in Figure 7.3.

7.2.1 Jurassic Challacollo Formation

Upper Jurassic Challacollo Formation, formally "Jsch", is a sequence of shales with subordinate interbedded limestone, siltstone, calcareous, siliceous siltstone, sandstone, and fine quartzite, with interlayers of gypsum near the top of the sequence. The shales, siltstones and sandstones are light gray, light brown, and locally reddish-brown shales, well laminated and well stratified. The limestones are light gray to light brown limestone, well stratified, in layers 0.1 to 1 m thick. This sequence, dated as Jurassic using fossil (ammonite) data, has been assigned as the type locality for the Challacollo Formation.

7.2.2 Cretaceous Challacollo Volcanic Complex

The Challacollo Formation is unconformably overlain by the Upper Cretaceous Challacollo Volcanic Complex (CVC), formally "Ksch". Zircon dating has put the age between 83 to 80 Ma (Blanco and Tomlinson 2012). This unit consists of dacitic and rhyolitic volcanic rocks with various intercalated volcaniclastic sedimentary beds. Formally the CVC is divided into three units; Ksch-d, r, and c, however locally this formation is subdivided into beds based on mappable (outcrop and core) lithfacies based on differences in texture and mineralogy. They do repeat in the sequence which has a minimum thickness of 1,200 m. CVC lithofacies mappable units are:

- KVC: Equates to the formal Ksch-c unit. It consists of sandstones and volcanoclastic conglomerates, mudstones, and siltstones. Generally, well stratified in a sequence of up to 120 m thick.
- KTF: Corresponds to the formal Ksch-d unit. Comprising dacitic lava, rhyolite tuff and dacitic tuff breccias. This sequence is 60 to 360 m in thickness.
- KRD: Correlates to the formal Ksch-r. Consisting of feldspar porphyry rhyodacite flows and densely welded vitric feldspar porphyry tuffs; commonly flow banded and locally quite prominently spherulitic. These textural differences are the basis of further division of the lithofacies; KRD-sph for spherulitic, -po for porphyritic and -fl for flow banded.

Figure 7.4 shows examples of these rock units.

7.2.3 Cretaceous Intrusive Complex

All of the above units have been intruded by Upper Cretaceous (formally Ksg) granitoid stocks and dykes of compositions that vary from diorite and quartz diorite (K-dio), and monzodiorite (K-Mzd). The granitoid outcrop in the north west and south west sectors of the Challacollo Range. Hydrothermal alteration of these intrusives and local overprinting by vein mineralization indicate a pre-mineral age for the intrusions, they are zircon dated at 79 – 75 Ma (Blanco et al. 2012).

In the northern most outcrop of the Challacollo Range is a rhyolitic-microgranitic porphyry of the Upper Cretaceous (Ksh) age (83 – 81 Ma).

Figure 7.3 Challacollo property mapped geology

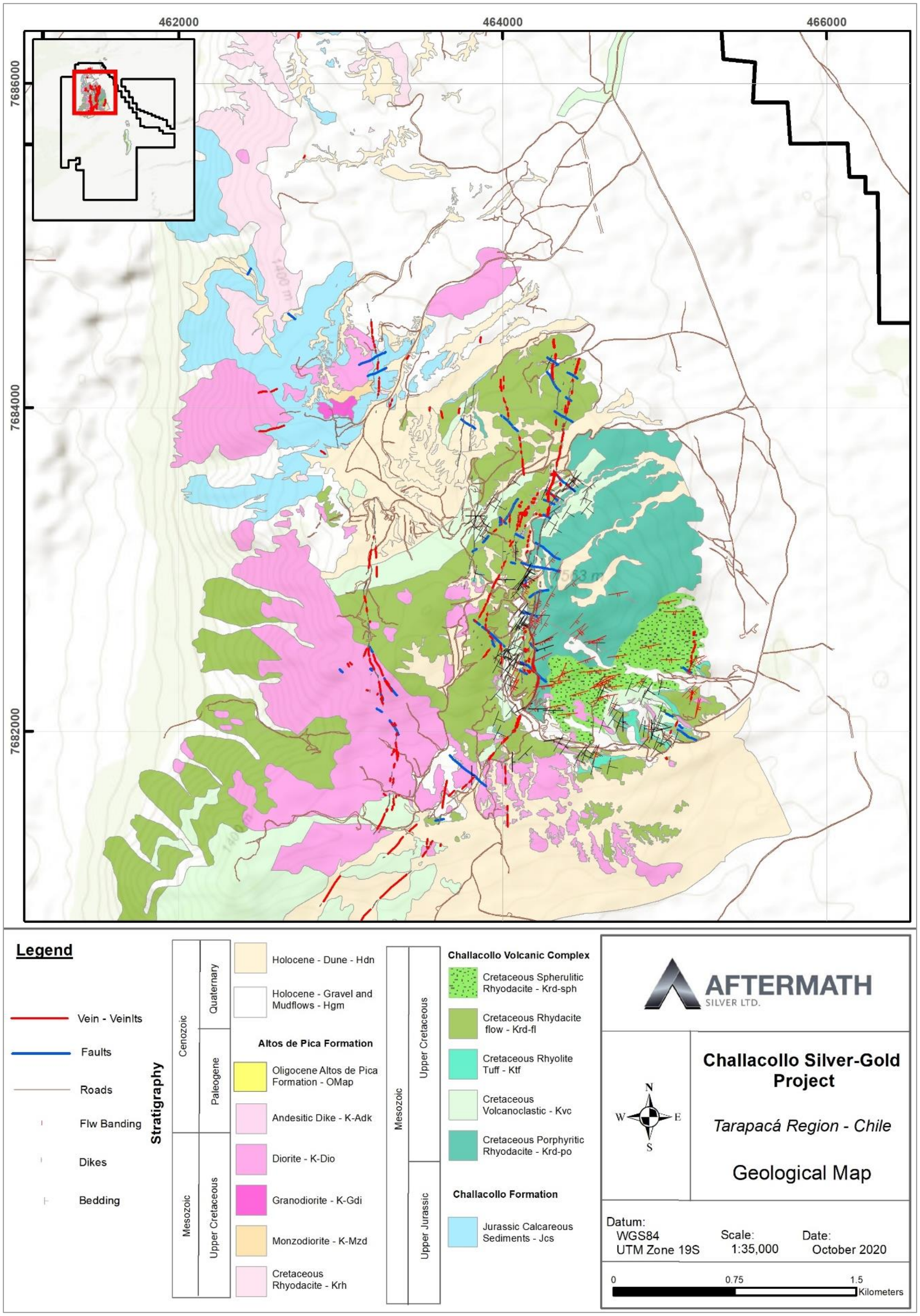
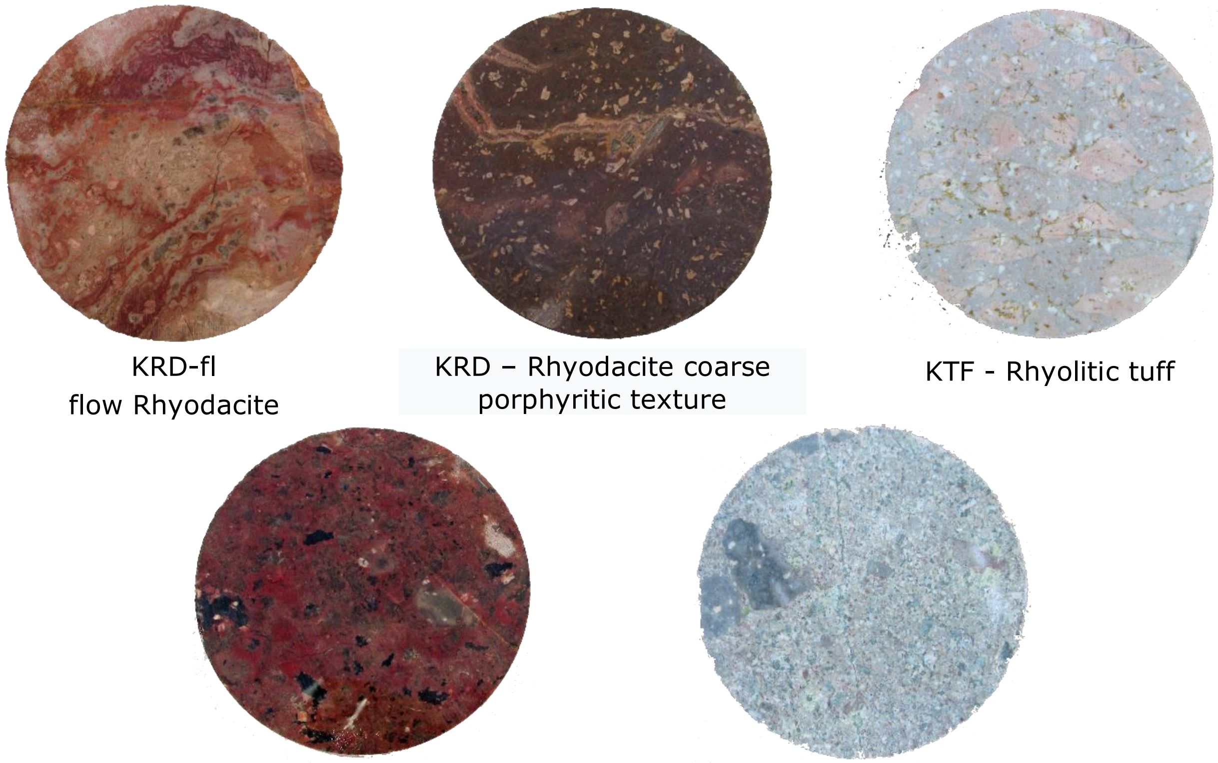


Figure 7.4 Examples of the Challacollo Volcanic Complex lithologies



Source: Juan Carlos Fernandez, Aftermath Silver.

7.2.4 Cenozoic cover sequence

The cover sequence comprises coarse, medium, and fine sands, silts and, to a lesser extent, gravel and blocks. These accumulate at the bottom of drainage channels, structural depressions and, occasionally, in alluvial fans. The following interpretation is from Godoy (2015) based on the interpretation of a seismic refraction surveys, with a line immediately south of the Challacollo Range.

In the Central Depression there is an extensive cover of Plistocene-Holocene unconsolidated silt, sand, and gravel (PIHa) which are the most distal parts of alluvial fans that come from the Pre-cordillera and also by active wind deposits (He). Within the quebrada drainage channels there are deposits of gravels and mudflows formed during the occasional flood events of the Holocene (Ha).

Underlying the piedmont deposits in erosive unconformity is the Middle to Upper Miocene El Diablo formation. This formation varies from 50 to 300 m, and includes sandstones, partly aeolian, and coarse gravels (Blanco et al. 2012). It is assigned an Early Miocene – Middle Miocene age based on numerous K-Ar and Ar-Ar dating in tuffs (Blanco et al. 2012).

The above-mentioned piedmont deposits are interpreted to lie within structural sub-basins formed by the belt parallel west verging thrust faults.

An angular unconformity exists between the El Diablo Formation and the Lower Miocene Altos de Pica Formation. The Alton de Pica formation is divided into two members, the Member I Imagua and II Sagasca. The Imagua Member is made up of conglomerates, sandstones, tuff, and tuffites, of up to 320 m thickness. The Sagasca Member is a conglomerate with sandstone and intercalations of rhyolitic welded tuff of up to 17 m thickness.

7.2.5 Structure

The epithermal mineralization cuts the CVC. The mineralized structures are the most prominent structures in the area; the Lolón, Gladys, and Lucy structures, all of which occupy east side down faults which may have some minor strike slip movement. The Lolón Structure shows normal movements on the order of 100 m while the others show offset on the order of tens of meters or less. All of these structures generally trend about 0° to 030° and dip steeply (70° to 85°) to the west.

Northwest trending structures, fracture sets and minor faults with small offset (typically on the order of meters or less) are common throughout the area. These structures clearly control some quartz veining and pyritic fracturing; and they may control and offset mineralization where they intersect the major veins. The four most significant transverse faults have been modelled for use in the Mineral Resource estimate, using the surface mapping corroborated with drilling data.

- San Francisco Fault separates Lolón North and the East Off-set Mineralized blocks, with an approximate dip and dip direction of 86° towards 190°. Lolón East Off-set block is displaced to the east by an apparent horizontal displacement of 32 m relative to the Lolón North block.
- Guacolda Fault separates Lolón East Off-set block and the Main Lolón block. This fault has a dip and dip direction of approximately 70° towards 335°. The East Off-set block is displaced relative to Lolón Main block by 9 m to the east.
- Soledad Fault separates Lolón Main block and Lolón Main 2 blocks. This fault has a dip and dip direction of approximately 78° towards 225°. The Lolón Main block is displaced relative to Lolón Main 2 block by 34 m horizontally to the west.
- San Lorenzo Fault divides Lolón South and Lolón Main 2 block. San Lorenzo fault has an approximate dip and dip direction of approximately 80° towards 235°. Lolón Main 2 has a relative horizontal displacement by 32 m to the west.

The location of the main mineralized normal fault structures and the four major transverse faults used in the Mineral Resource estimate are shown on Figure 7.5, and a representative cross section looking north is shown in Figure 7.6.

Figure 7.5 Challacollo structural mapping around the Lolón Structure

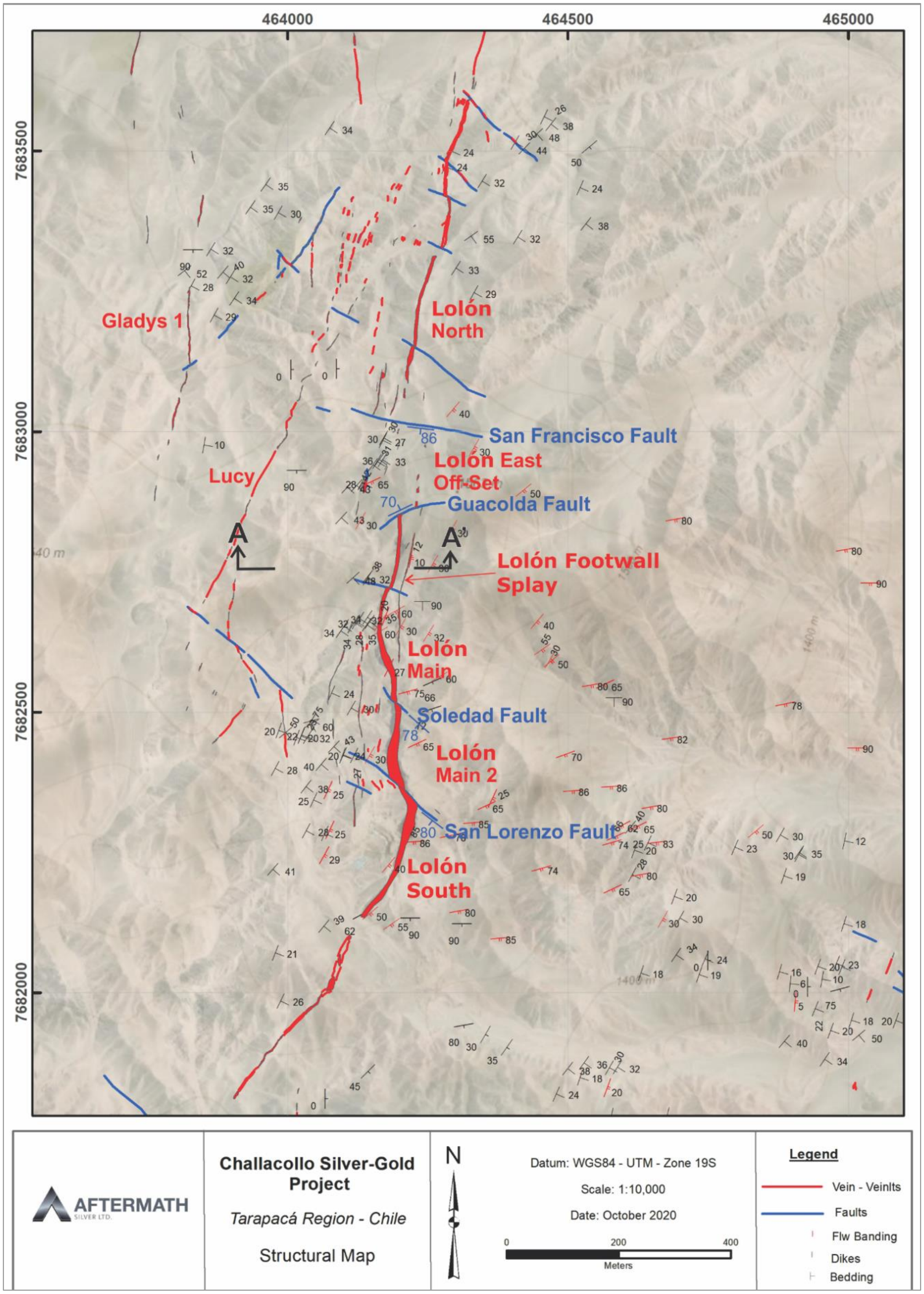
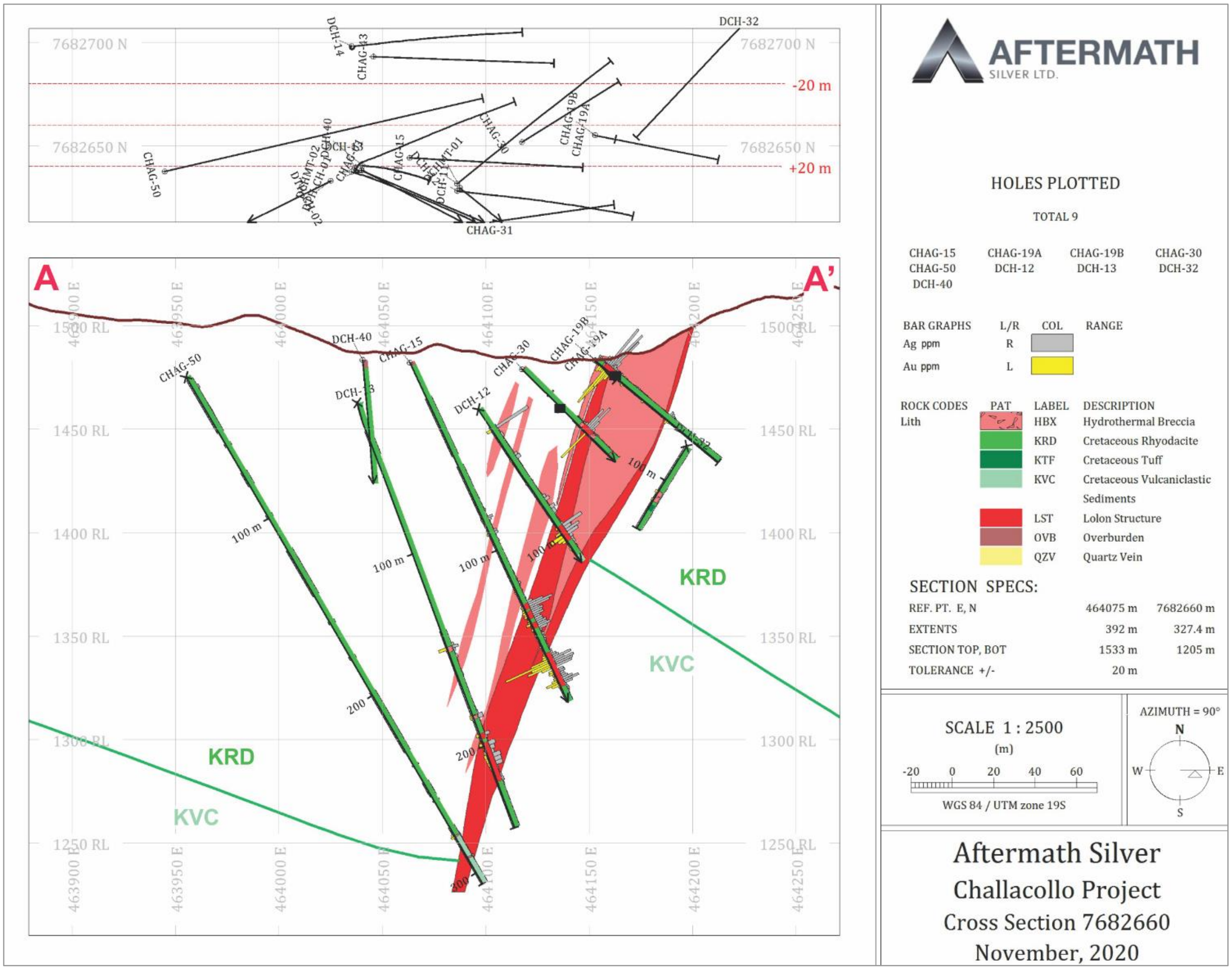


Figure 7.6 Cross section through Main Segment



Note: For location see Figure 7.5.

7.2.6 Alteration

7.2.6.1 Silicification

Silicification occurs locally and is only observed within the volcaniclastic tuffs north of Cerro Challacollo. This is evident from erosion resistant silicified beds protruding from the hill slopes. In many cases, zones of quartz stockwork surround quartz veins which contain precious metal mineralization. Higher silver grades are associated with zones of more abundant quartz stockwork and silicification.

7.2.6.2 Pyritic-Argillic alteration

Abundant disseminated and fracture-controlled pyrite is the most visible alteration feature of the Challacollo Range. In areas of strongest alteration, rocks of the CVC have widespread pyritic fracturing and quartz-pyrite veining with well developed, pervasive white crystalline clays, possibly illite, formed after primary mafic minerals and feldspars.

Primary pyrite content in these areas (based on limonite mineralogy) was three to five percent or more over most of the central part of the map area. A large part of the CVC contained from one to three percent pyrite as well. Quartz veinlets within pyritic-argillic alteration commonly have narrow silicified and pyritized halos extending several times the vein width into the surrounding rocks (Fahey 2014).

Pyritic-argillic alteration is best developed in the upper part of the CVC, especially the upper rhyodacite members, and the sedimentary members are generally much less affected. Pyritic-argillic alteration post-dates propylitic alteration where they are juxtaposed.

There is a single radiometric date on mineralization noted in Blanco et al. (2012), a whole rock K-Ar age of 68±3 Ma. The sample was described as the host rhyolite with sericitic alteration and was taken from immediately adjacent to the Lolón Structure. This age is significantly younger than any reported from the CVC or the dioritic intrusive complex (Blanco et al. 2012). This date may represent the age of the pyritic-argillic alteration or might have been reset by a later event.

7.2.6.3 Propylitic alteration

Propylitic alteration is the most widespread alteration feature in the Challacollo Range. It is well developed in all lithologies of the lower parts of the CVC; and is common in the sedimentary members of the upper part of the unit.

Relict propylitic alteration is also present within the pervasive areas of pyritic-argillic alteration that affects rhyodacite flows, tuffs, and flow domes over much of the upper part of the CVC.

Alteration within the granitoid stocks is propylitic with chlorite-epidote and magnetite observed. Host rocks intruded by the K-Mzd display contact metasomatism in the northwest part of the Property.

7.2.7 Mineralization

Several major mineralized structures (sometimes termed veins) have been identified on the Property along a strike length of more than 3 km. The most significant is the Lolón Structure. Other sub-parallel mineralized structures located in the hangingwall of the Lolón Structure include: Lucy, Santa Rosa, Palermo, Gladys 4, and Gladys 1. To date only one mineralized structure has been located in the footwall of the Lolón Structure; the Millsite vein.

The veins are primarily found in the CVC, although in the southern portion of the field, the veins are also seen to be hosted by K-Mzd stocks. The Lolón Structure generally trends north-south, dipping at 85° near surface flattening to 65° at depth, towards the west.

At the southern end of the Property near the San Francisco workings, the vein trends northeast-southwest.

The Lolón Structure is best described as a breccia composed of multiphase rock fragments hosted in a rock flour matrix, all of which have been silicified. The Lolón Structure averages approximately 20 m in width at surface between the north-end of the Catalina workings and the Challacollo Sur workings but can extend up to 40 m wide due to cross-faulting. At depth, the Lolón Structure narrows to 3 to 7 m width. A distinct narrow footwall splay is present in the central portion. The breccia is in turn cut by later anastomosing banded quartz veins. The surrounding host rock typically exhibits stockwork quartz veining extending several meters into the wall rock. In many areas, the Lolón Structure comprises several veins. Where this occurs, stockworks can be found between the branches of the main vein.

Veins within the Lolón Structure are composed of white to grey silica with massive white quartz and locally opaline / chalcedonic quartz. Examples of the epithermal textures are shown Figure 7.7.

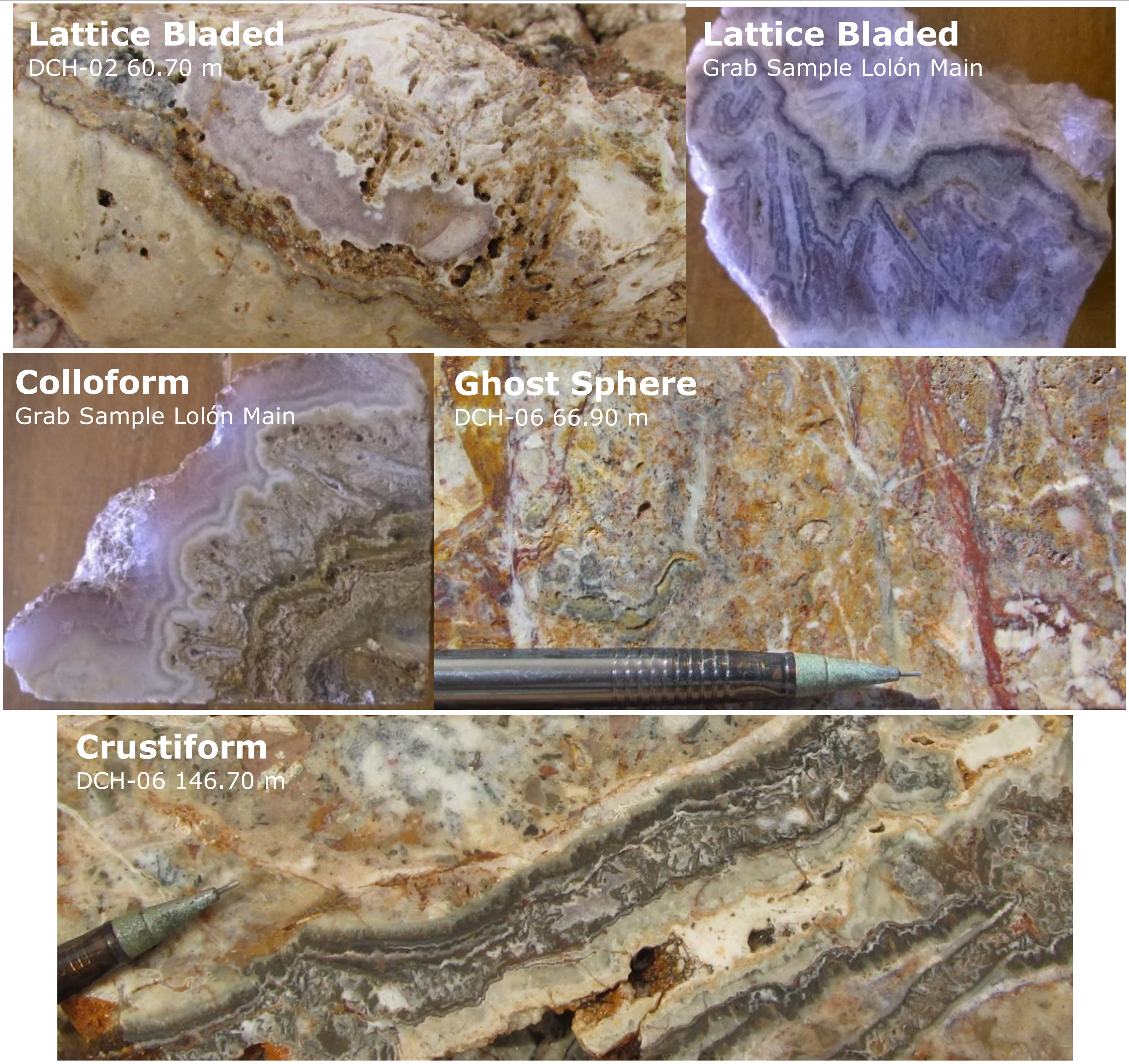
There is evidence of repeated explosive brecciation and phases of veining. Locally amethyst, barite, calcite, clay, and very minor sericite occur. The highest silver grades generally follow the footwall of the Lolón Structure.

At the edges of the Lolón Structure, there is generally more intense brecciation with a matrix of chalcedonic quartz followed outwards by a rapidly decreasing zone of quartz stockwork. Where the vein has split, higher silver values are found associated with rocks proximal to the footwall side of the split or the vein to the east rather than those on the hangingwall (western) side of the split.

In parts of the Lolón Structure where the adjacent wall rock is fractured, elevated silver grades are evident up to 4 m into the hangingwall and / or footwall. Gold values decline more dramatically at the edge of the vein than silver values. In the surrounding wall rock close to the vein, the silver-gold ratio is much higher.

Intense leaching may be present to a depth of 10 m below surface, where grades are low due to primary and secondary minerals being leached out. Below this there is a zone to an approximate depth of 40 m characterized by silver oxides, copper, and manganese oxides. Mineralogical studies carried out as part of the metallurgical program identified silver being present as native silver, with trace amounts of iodargyrite (AgI), acanthite / argentite (Ag_2S), and chlorargyrite (AgCl) (ALS 2015). It was noted in that study that gold has been found to occur as fine free grains. Other authors have noted the presence of occasional freibergite, pyrargyrite, and proustite (Carrasco 1985). Copper minerals observed include boleite, olivenite, chalcanthite, atacamite and the copper sulphide covellite. Lead can be found as wulfenite, caracolite, anglesite, cerussite and challacolloite. Challacollo is the type locality for challacolloite, a potassium lead chloride (Schluter et al. 2005). Zinc is present as hemimorphite. There is a positive correlation between the value of the base metals (lead, zinc, and copper) and the precious metal content. Very little pyrite occurs within the vein system.

Figure 7.7 Examples of epithermal textures from the Lolón Structure



Source: Juan Carlos Fernandez, Aftermath Silver 2020.

8 Deposit types

The geologic features of Challacollo clearly indicate it is an epithermal type deposit. Epithermal deposits are broadly grouped into high-, intermediate- and low-sulphidation types based on their hypogene sulphide assemblages. Although data from Challacollo is entirely from the oxide zone, on balance it has the characteristics of silver-gold-zinc-lead intermediate sulphidation mineralization based on the classifications described in Hedenquist et al. (2000), Sillitoe and Hedenquist (2003), and Einaudi et al. (2003).

The following observations about Challacollo assist in determining the deposit type and classification:

- A high silver to gold ratio (on average up to 600:1). Zinc and lead are present.
- An extensional (normal) and strike-slip structural regime, structural permeability controls the silver-gold-zinc-lead mineralization in a system of faulting, veining and brecciation, with hydraulic gradients and interconnections between fluid pathways controlling hydrothermal fluid flow. The high-grade mineralization being concentrated at zones of maximum fluid circulation.
- A long, overall tabular aspect, with a known strike of over 2 km and approximately 250 m of vertical extent.
- Hosted in felsic sub-aerial volcanics; rhyodacite flows, aqueous tuffs and volcaniclastic rocks.
- One dating sample taken from the host rock adjacent to the Lolón Structure; a K-Ar age of 68 ± 3 Ma (Upper Cretaceous) is estimated (Orrego et al 1997), which is close to the age of hydrothermal alteration and mineralization, significantly younger than the rhyolitic / dacitic magmatism from 83 to 90 Ma. and monzodioritic / dioritic from 79 to 75 Ma. (Blanco 2012).
- Sealing temperature range between 210° and 298°C and salinity ranging from 1.7 to 2.8% (by weight) NaCl (Orrego et al. 1997).
- Mapping and logging indicate a pyritic-argiilic alteration at surface, centred on the main mineralized structure and following the easterly dip to the east. Propyllitic alteration is present elsewhere.
- Barite is present and adularia is absent.

Examples of high silver to gold ratio intermediate sulphidation deposits include: Fresnillo (Mexico), Creede (USA), and Arcata (Peru) (Sillitoe and Hedenquist 2003).

9 Exploration

There is a long history of exploration on the Property and this is presented in various reports. The current understanding of the mineralization has a foundation on the work of Silver Standard between 2001 and 2013 and Mandalay between 2014 and 2018.

9.1 Topographical survey

In 2014 Mandalay commissioned Mapsat S.A. to undertake an unmanned aircraft (UAV) topographical survey in World Geodetic System 1984 (WGS84) map grid for an area of approximately 8,247 ha, as shown in Figure 5.2. This program also included the establishment of five ground control points with differential GPS. The UAV flew at a height of 600 m above ground level, with 60% overlap of photographs. The photos were rectified, an initial mosaic in 3D space and point cloud is made, is later adjusted to the known ground control points. The resulting survey was provided by four map sheets in DXF format, with 1 m contours intervals. The survey was conducted in WGS84 ellipsoid and datum, maps produced using the Universal Transversal Mercator (UTM) Zone 19 South map projection co-ordinate system.

9.2 Geological mapping

In 2002 Silver Standard completed geological mapping using a tape measure and Brunton compass on both surface and underground exposures of the Lolón Structure. On the surface, 2 km along strike and 100 m on either side of the vein were mapped. Underground, approximately 4,500 m of workings were mapped. The results of the mapping are reported in the 2002 Challacollo Technical Report and the 2002 RPA Technical Report.

Silver Standard conducted another 4 km^2 of geological mapping in 2003 in conjunction with drilling reverse circulation (RC) holes. The mapping focused on the geology beyond the Lolón Structure. The Lucy Vein was mapped over a distance of 600 m and was tested as part of the 2003 drilling (Smith 2003).

In 2014 Mandalay started a surface mapping campaign, validating the work by Silver Standard. A new lithological coding was generated and 1: 2,000 scale mapping was carried out from the drilling zone towards the Millsite Vein west of Lolón. That same year, a geochemical vein sampling campaign was started, starting at the veins parallel to Lolón. From 2015 to 2018, the mapping continued at 1: 2,000 scale, advancing towards the Palermo Vein to the east and sampling the veins discovered through the mapping.

9.3 Geophysics

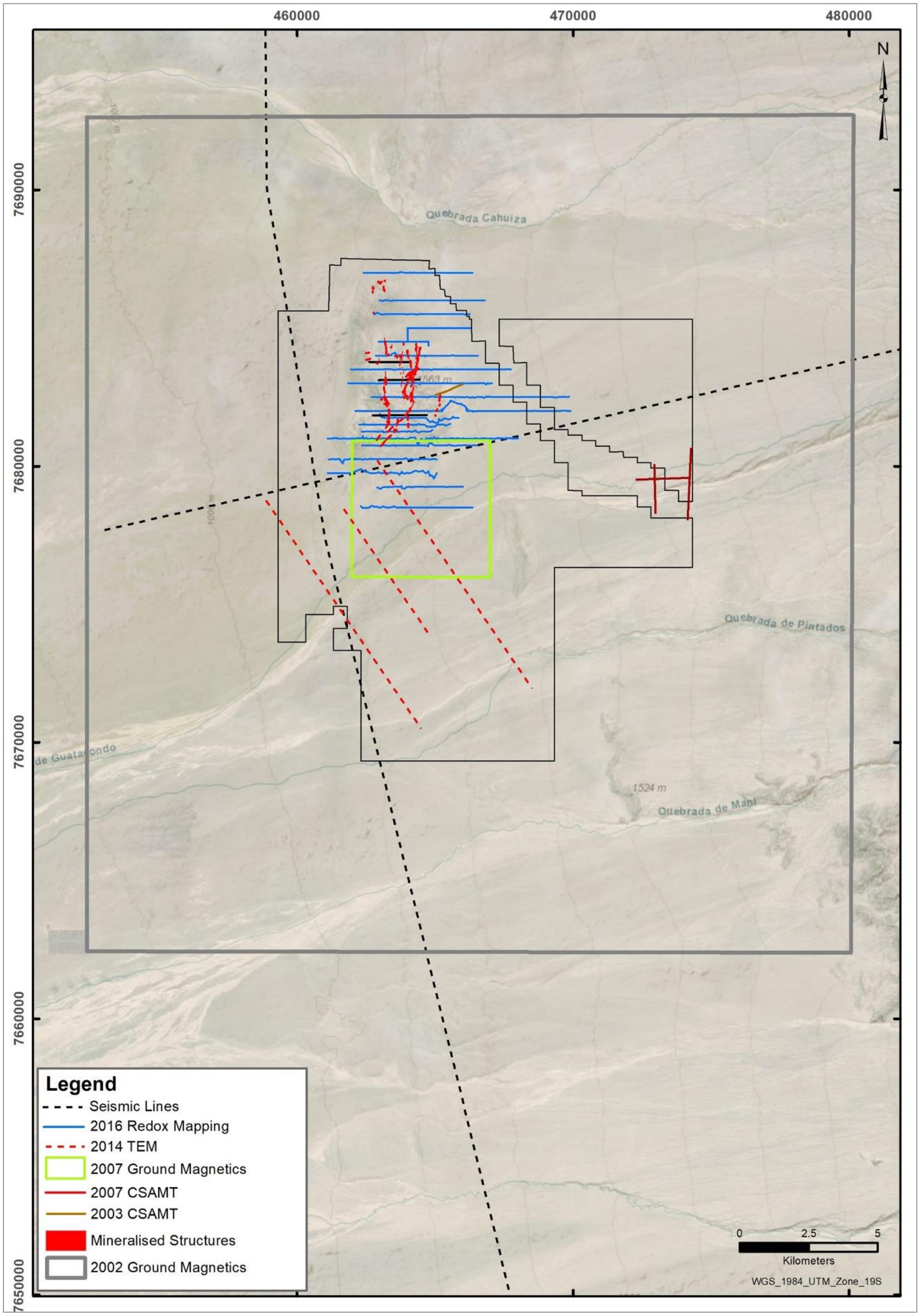
The first geophysical studies were conducted in 1992. The initial work focused on identifying the response of known mineralized structures and exploring for new ones. The geophysical programs are summarized below:

- 1965 - La Empresa Nacional del Petróleo (ENAP) ran several seismic reflection surveys in the Pampa de Tamarulga exploring for hydrocarbons. Two of these seismic lines cross the property and have been reinterpreted in Hernandez and Pablo (2015).
- 1982 - SERNAGEOMIN regional aeromagnetic survey at 600 m height above ground level, on 2.5 km spaced lines, covering an area of 30 km north-south and 27 km east-west.
- 1992 - Geodatos ground magnetic survey, 41 lines, 200 m spacing, 200 m stations (Geodatos 1992a).
- 1992 – Geodatos three east-west audio magneto telluric source (CSAMT) profiles. carried out with a square transmitting antenna (Loop) of 1 km x 1 km square. The apparent resistivity measurement stations (dipole size) were 30 m apart. Surface geochemical samples were also taken on the survey lines (Geodatos 1992b).

- 2003 – Quantec CSAMT survey of a single 2 km long line at N70°E. from the foothills of the Challacollo Range ending at the sand dune (Smith 2003). The intention of the survey was to identify epithermal and porphyry targets. The survey identified a fault on the east side of the Challacollo Range that is possibly the Back-Thrust Fault.
- 2007 – Quantec ground magnetic survey over an area being explored for copper under cover to south-east of Challacollo Range (Ferraris 2007). Magnetic features were later drilled with four holes (SSR-32 to 35) however no significant mineralization was intersected.
- 2014 – Geodatos TEM survey on 2 lines, L1 and L2. TEM using 200 m x 200 m transmitter and receiving loops using frequencies 0.5, 1, 2, 4, 8, 16, and 32 Hz. Later, a third line was added (L3), with added gravimetric survey (Geodatos 2014a & 2014b).
- 2014 – Geodatos TEM and gravimetric survey on 3 lines (L4, 5 and 6) in an area to the east of the earlier 2014 survey (Geodatos 2014c).
- 2016 – Redox Mapping™ survey, a spontaneous potential method, of 19 east-west lines. The aim of this program was to identify mineralized structures along strike to the north and south of the known mineralized structures and possible copper porphyry targets to the north-east.

The location of these surveys relative to the current concession boundary is summarized in Figure 9.1. No review of these surveys has been carried out by Aftermath at this point, and as historic this information is simply included here for completeness.

Figure 9.1 Summary map of the geophysical surveys at Challacollo



Source: Aftermath Silver 2020.

9.4 Geochemical sampling

9.4.1 Surface sampling

Limited surface sampling was undertaken in the years 2001 to 2003 by Silver Standard. A total of 306 samples were taken. These were chosen for surface sampling to check total widths of the Lolón Structure beyond the stoped areas or to check surface showings north and south of the known mineralization along strike, and were predominantly chip samples. There is no discussion about the results of the surface sampling in the Silver Standard reports, but the samples are plotted in the Smith (2003) report. A surface channel sample program was undertaken part of the 2001 / 2002 underground channel sampling program (see Section 9.4.3). As part of this program a total of 91 samples were taken from rock faces of the Lolón Structure. These are plotted in the 2002 RPA Technical Report.

In 2007 surface sampling along the outcrops of veins was carried out to help drill planning, to investigate the correlation between different major elements and to make a comparison between the surface geochemistry with that found in proximal drilling. Ferraris (2007) presents the results of this sampling program, concluding that no strong correlation has been established for any of the major elements. A weak relationship can be defined between copper - zinc (0.527) and silver - lead (0.301) and a very weak correlation is present for lead - zinc (0.207). Ferraris (2017) found that the surface samples were relatively enriched in silver and molybdenum and relatively depleted in lead and zinc, compared to nearby drill intersections at depth.

Also, in 2007 a copper prospect was tested with seven rock chip samples, anomalous copper, lead, and zinc were returned within a strongly hydrothermal altered granodiorite with large garnets, suggesting the presence of a copper skarn (Ferraris 2007). In total 93 samples are available from the 2007 field program.

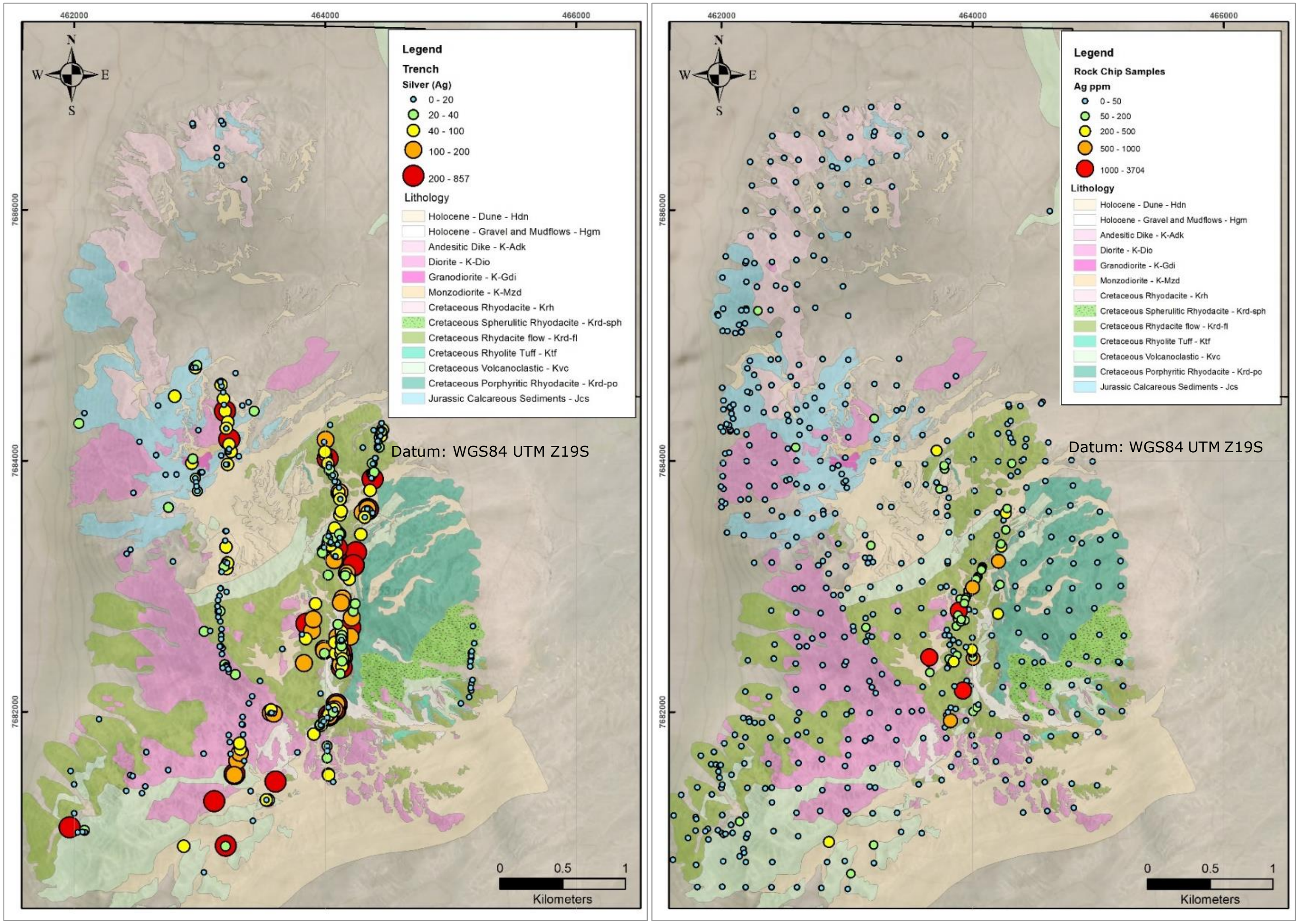
In 2010 Silver Standard ran a broader, more regularized, geochemical survey over the Challacollo Range, there is a total of 93 rock chip samples in this dataset.

The surface rock chip geochemical results for silver are summarized in Figure 9.2 on the right-hand side of the figure for spatial comparison with the trench samples.

9.4.2 2014 trenches

In 2014 Mandalay undertook a surface trenching program within the known veins. A total of 370 composites, from 327 locations, over 695.8 linear metres was sampled. A 5 kg rock chip sample was taken for each linear metre. Figure 9.2 shows the trench assay results for silver on the left-hand side of the figure for spatial comparison with the chip samples.

Figure 9.2 Challacollo geochemical sampling summary



Source: Aftermath Silver 2020.

9.4.3 Underground channel sampling

Historical underground workings at Challacollo comprise adits, shafts, drifts, crosscuts, and stopes on the Lolón Structure. They were first systematically sampled in 1983 (Carrasco 1983).

In late 2001 the historical workings were surveyed for Silver Standard by JRC Servicio de Ingeneria y Topographia of Iquique. AutoCAD drawing (DWG) files for the surveyed levels are available. As part of this program Silver Standard undertook a detailed channel sampling program along with limited geological mapping.

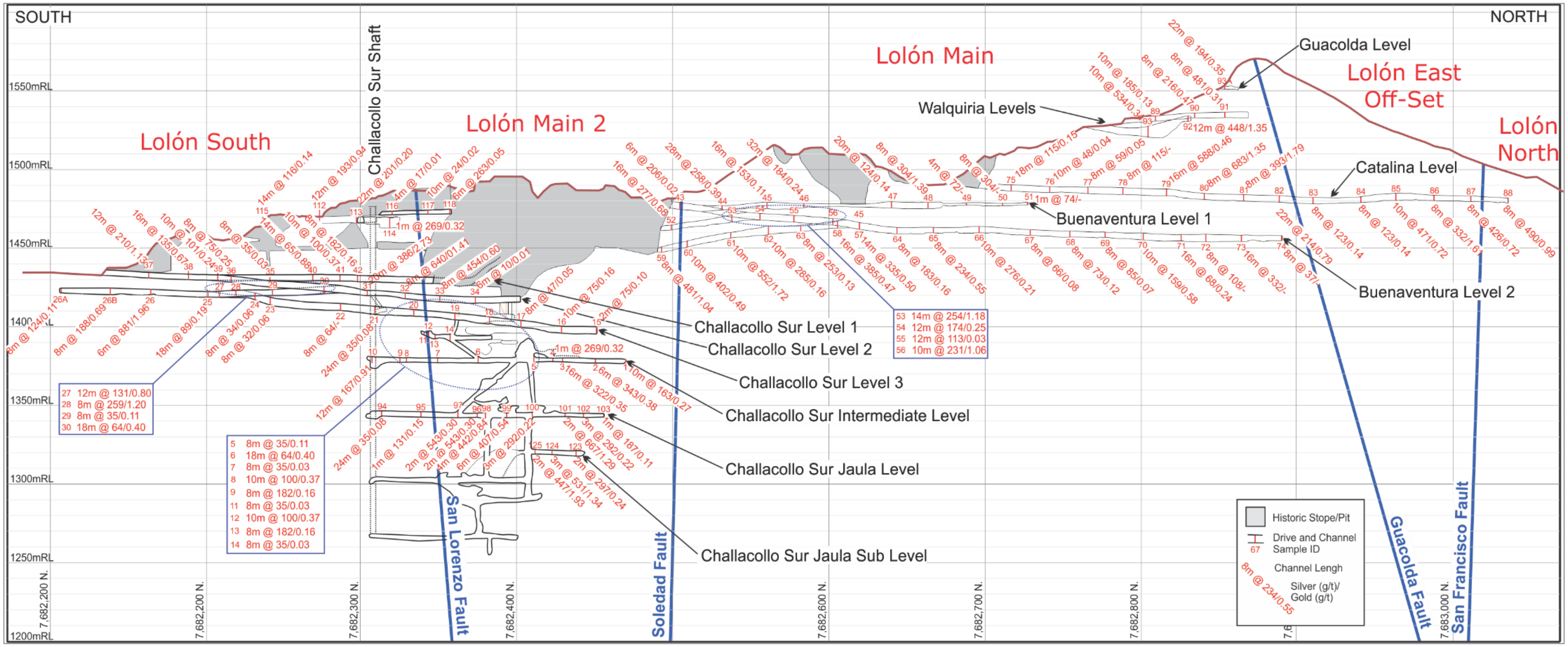
The program was described in Henricksen and Smith (2002). Rock chip samples averaged 2 m in length and a minimum of 5 kg. These were chipped using rock hammers and / or chisels and taken at a mean sample interval of 25 m along the underground workings. Samples were taken across the back from one wall to the other by a three-person crew using ladders and scaffolding. Nylon tarps were laid on the floor of the drift to collect the chip samples. The deeper parts of the mine were accessed by lowering personnel down the Challacollo Sur Shaft using a boom truck and custom constructed metal cage. The lowest levels of the Challacollo Sur Shaft were not accessible.

The underground channel samples were used in the 2002 polygonal historic resource, discussed in Section 6.3. The underground development was exploring the structure, frequently meandering from hangingwall to footwall trying to locate high grade areas. As such the full width of the mineralization is infrequently exposed across its full width. The underground sampling program does however confirm the continuity of the mineralization.

A total of 150 separate channels were sampled for a total of 772 samples. Of these 129 channels (604 samples) were taken approximately perpendicular to the strike of the Lolón Structure, but as noted seldom across its entire mineralized width and sometimes outside of the Lolón Structure. The location and the average silver and gold grades for the 129 across strike channels are shown on a long section projection in Figure 9.3.

In 2014 channel samples for use in the metallurgical test work were collected from underground workings, see Section 13 for details.

Figure 9.3 Long section showing the 2001 / 2002 underground channel sampling



Source: Aftermath Silver, after Henricksen and Smith 2002.

10 Drilling

10.1 Introduction

This section describes the drilling conducted on the Property since 1995 and includes drillholes used in the current Mineral Resource estimate, as well as drilling used for other mineral and ground water exploration. Under each program a discussion is given on the purpose of each program, the methods and procedures used. Despite this all being historical work it is included here as some of the data is used in the estimation of the Mineral Resource, and it is the first Technical Report disclosed by the issuer.

No drilling has been performed by Aftermath to date. The drilling data is stored in an MS Access Database which has been built and managed by Aftermath.

For specific details on the drilling used in the Mineral Resource estimate please refer to Section 14.2.

10.2 Drilling summary

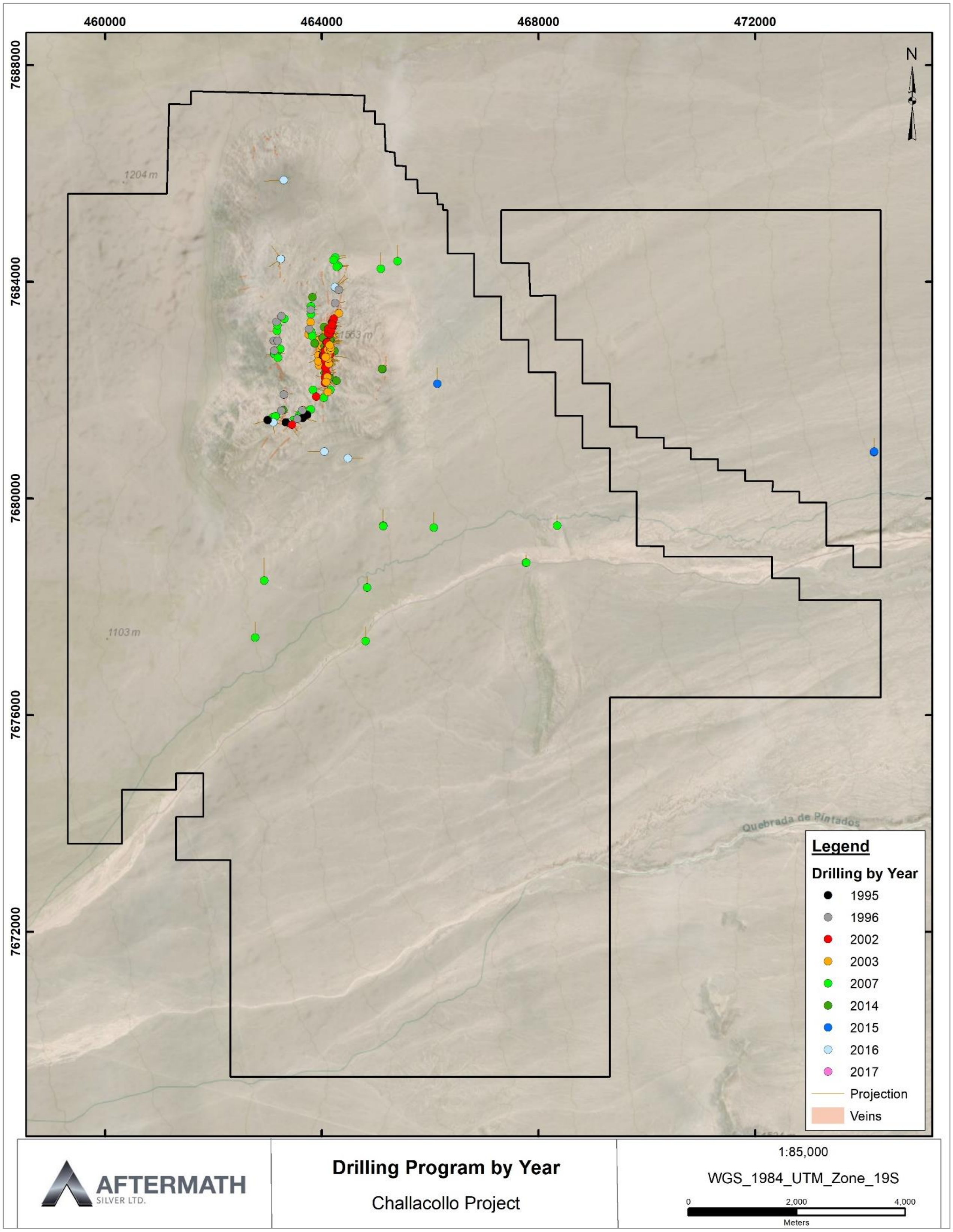
Overall, 185 diamond drillholes (DDH) and RC holes totalling approximately 34,500 m in length have been drilled on the Challacollo Project since 1995. Of this total, seven holes for 986.5 m were drilled for water investigation purposes in 2015 and 2017. A summary of the drillholes is shown in Table 10.1. The location of these drillholes is shown in Figure 10.1 and Figure 10.2 in relation to the Property and the main area of mineralization, respectively.

Table 10.1 Challacollo Property drilling summary

Year	Company name	Diamond core holes			RC holes			Total meters
		Num.	Length (m)	Number assayed	Num.	Length (m)	Number assayed	
1995	Minera Blancos	-	-	-	6	1,687	6	1,687
1996	Minera Blancos	-	-	-	16	1,969	16	1,969
2002	Silver Standard	7	746.3	7	18	2,562	18	3,308.3
2003	Silver Standard	-	-	-	32	5,685	32	5,685
2007	Silver Standard	-	-	-	42	8,256	26	8,256
2014	Mandalay	53	9,115.3	53	-	-	-	9,115.3
2015	Mandalay	-	-	-	3	570	-	570
2016	Mandalay	13	3,536.6	13	-	-	-	3,536
2017	Mandalay	-	-	-	4	416.5	-	416.5
Total		**73**	**13,398.2**	**73**	**121**	**21,145.5**	**98**	**34,543.1**

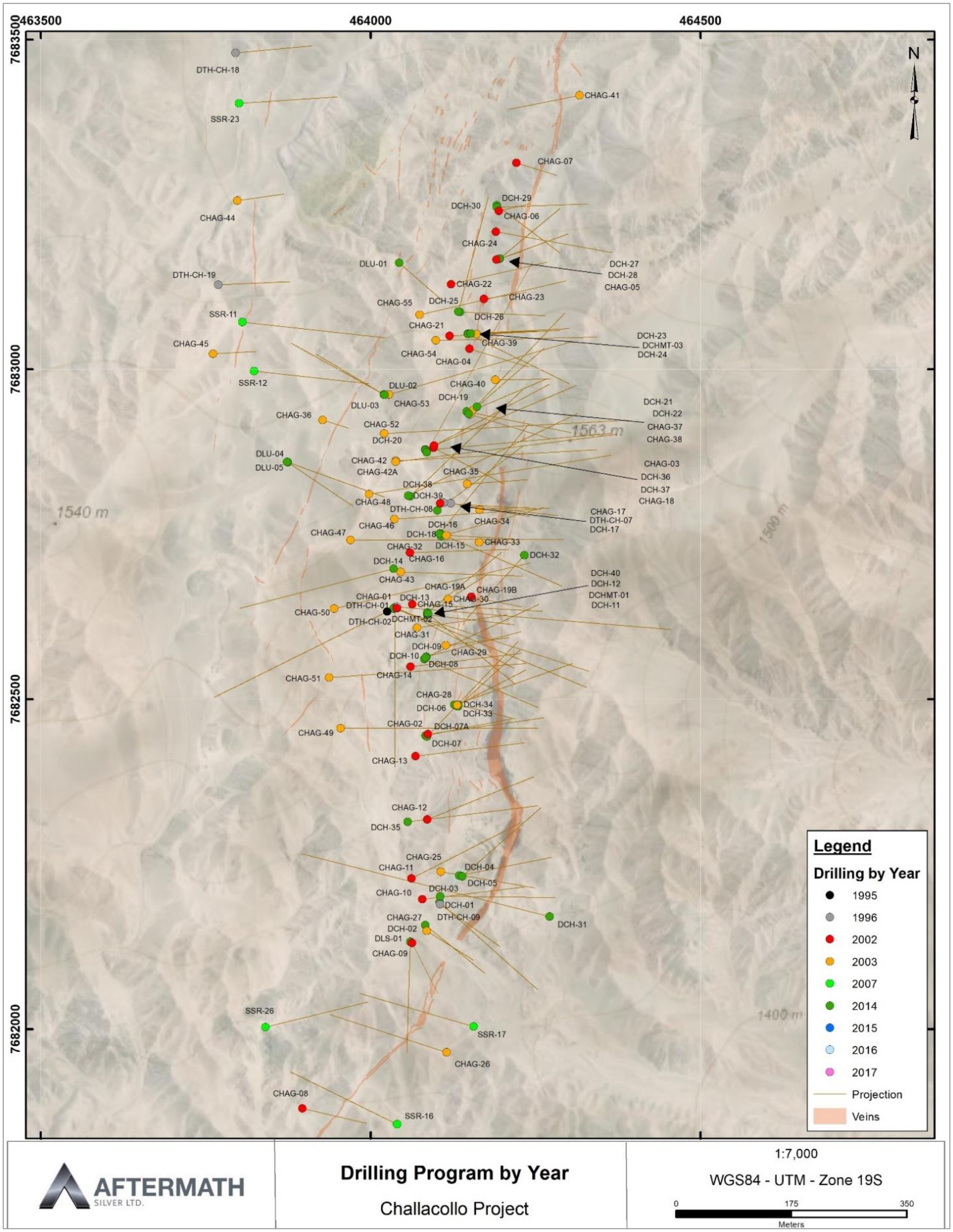
Note: The 2015 and 2017 drilling by Mandalay was for water investigation purposes and no sampling was caried out.

Figure 10.1 Location of Property drillholes by program



Source: Aftermath 2020.

Figure 10.2 Location of drillholes by program, in Lolón Structure



Source: Aftermath 2020.

10.3 Drilling progress by year and operator

10.3.1 Mantos Blancos 1995-1996

Two drilling campaigns were conducted by Mantos Blancos in 1995 and 1996. These programs are briefly discussed in contemporary report titled "Proyecto Challacollo", December 1996 by Sociedad Contractual Minera Cerro Challacollo. The procedures used in Mantos Blancos programs are not documented.

Mantos Blancos drilled twenty-two RC holes, a widely spaced preliminary reconnaissance of the known veins. Ten holes were drilled to test the Lolón Structure. Five of the ten holes were drilled in the central part of the vein between the Challacollo Sur portal and the Walkiria portal areas. The locations of the portals are shown on Figure 9.3.

10.3.2 Silver Standard 2002

In 2002 Silver Standard completed two programs, which are well documented in the 2002 Challacollo Technical Report and the 2002 RPA Technical Report. All 2002 holes were drilled toward the east in order to intersect the steeply westerly dipping Lolón Structure. The purpose of the program was to increase the number of and confidence in the Lolón Structure assay values. The central part of the Lolón Structure was targeted by this drilling.

Major Drilling Chile S.A. was contracted to undertake an initial seven DDH for a total of 746.3 m in early 2002. The holes were collared with HQ core diameter (63.5 mm) but when the ground conditions deteriorated, the diameter was reduced to NQ core diameter (47.6 mm).

A follow up RC drilling program totalling 2,562 m in 18 holes was completed later that year with the objective of infill drilling the widely spaced core holes from the original program.

Drill core was logged and the mineralized zone sampled on site. The Silver Standard geologists logged and photographed the drill core. A standardized drill log form was used to record observed data including collar information, survey data, lithological intervals rock type, oxidation state, structure and alteration type. A column was also dedicated to display the graphic depiction of core. The geologist marked out the individual samples, generally at 2 m intervals, and the core was cut in half longitudinally with one half placed in the core box for future reference. The reference core was stored in the town of Pica, which is close to the project area. The samples for analysis were placed into nylon woven bags, and once a sufficient number of samples were collected, they were transported by company vehicle to Pozo Almonte where they were shipped to the respective laboratory via independent commercial carriers.

Diamond core hole depths ranged from 40 to 199.65 m. RC downhole depths ranged from 14 m to 198 m. Downhole surveys were not conducted for either the core or RC holes.

10.3.3 Silver Standard 2003

A total of 32 RC holes were completed for an aggregate length of 5,685 m between March and June 2003, this work is well documented in Smith (2003).

The initial program consisted of 29 holes designed as infill holes on the Lolón Structure and to test deeper and shallower elevations in an effort to decrease or eliminate the dependency on the use of the underground channel samples that did not extend across the full width of the mineralization. Two holes were also drilled to test the Gladys 1 Vein, and one hole was drilled to test the Lucy Vein. The drilling was undertaken by Major Drilling.

Sampling of the RC cuttings was carried out by Major Drilling personnel. Samples were taken every metre for holes that were less than 150 m long. For longer holes, a sample was taken every two metres for the first 100 to 150 m, and then samples were taken every metre until the end of the hole. Each sample was split at the rig using a splitter and subsamples weighing approximately 3 to 5 kg were placed in separate bags. Of the split pair, one sample was stored inside the underground workings while the other was either sent for analysis or discarded according to the geologist’s instructions after logging. Samples chosen for assay were sent to ALS Chemex Laboratories Ltd. (ALS) in Antofagasta, Chile.

Hole depths ranged from 72 to 372 m. Downhole surveys were not conducted on the RC holes.

10.3.4 Silver Standard 2007

The 2007 the Silver Standard drilling program consisted of forty-two RC holes for an aggregate length of 8,256 m. The program is documented by Ferraris in December 2007. In contrast to the two previous drilling programs by Silver Standard the 2007 program's objective was to explore the extremities of the known Lolón Structure and test the other sub-parallel structures. The drilling was performed by Adviser Drilling.

Three drillholes were drilled in the footwall and hangingwall of Lolón South segment. They were stopped prior to intersecting the Lolón Structure. A total of thirty holes were drilled on sub-parallel structures Gladys (1 and 4), Humberto, Palermo, and San Francisco (the southern extension to Lolón South). Four drillholes were competed in a short exploration program searching for buried porphyry targets to the south of the Challacollo Range, without intersecting significant copper mineralization. A total of seven holes were drilled as part of a groundwater exploration program.

Hole depths ranged from 100 to 420 m. Downhole surveys were not conducted on the RC holes. Only 26 out of the 42 holes were sampled. Samples were shipped to Actlabs in Coquimbo.

10.3.5 Mandalay 2014

In 2014 Mandalay conducted an extensive program of 53 diamond core holes, for a total 9,115.3 m. The main objective of the program was to infill the Lolón Structure to reclassify the 2014 RPA Inferred Resource as an Indicated Resource. Griffith Drilling Perforaciones Ltda. conducted the drilling.

A total of 46 holes were drilled as infill on the Lolón Structure at a nominal spacing of 50 m. All infill holes were drilled to HQ3 (63.5 mm) diameter for the full length of the hole. This included three metallurgical holes at PQ3 (85.9 mm) diameter were drilled to collect samples for metallurgical test work. Two metallurgical holes were drilled in the Main Zone and one in the North Zone of the Lolón Structure. In addition, seven exploration holes were drilled to test parallel structures: two holes at Millsite, three holes at Lucy, one each at Gladys 1 and 4 veins.

Core recovery averaged 92% in the wall rock and 88% in the Lolón Structure. The brecciated and vuggy rock in the Lolón Structure had an impact on core recovery. A standardized drill log form was used to record data including collar information, survey data, lithological intervals, rock types, oxidation state, structure, alteration type, economic and gangue minerals, core recovery, RQD, number of fractures, type of fractures, and rock condition. The logging geologist marked out individual sample locations while honouring lithological-structural unit contacts. Accordingly, sample length varied depending on the width of the intersected Lolón Structure.

The core was placed in wooden boxes and photographed, then areas identified for sampling were sawn in half longitudinally. One half of the sampled core was placed in a labelled sample bag for shipment to the laboratory, and the remaining half of the core was left in the core box for reference.

All core from the 2014 drilling program is stored on site in a fenced yard with a locked gate. The whole core from the three metallurgical holes was submitted for metallurgical testing at the ALS Laboratory.

Hole depths ranged from 61.3 to 387.5 m. The downhole surveys were conducted using a Reflex digital multishot survey instrument. Early holes were surveyed every 30 m, this was later changed to 15 m intervals.

10.3.6 Mandalay 2015

Mandalay drilled three vertical holes water exploration holes, including a re-drill, for a total of 570 m. The holes were drilled to the east of Challacollo between the Challacollo Range and Quebrada Guatacondo. No significant water flow was located.

10.3.7 Mandalay 2016

Mandalay conducted an exploration program investigating the known mineralized veins outside of the known Lolón Structure at their extremities. Thirteen holes for an aggregate length of 3,536 m were completed by Griffith Drilling Perforaciones Ltda. Drilling used HQ3 core size. Hole depths ranged from 94 to 416.6 m. The downhole surveys were performed using a Reflex digital multishot survey instrument. Downhole surveys were conducted at either 6, 12, or 15 m intervals.

One hole was drilled on the Lolón Structure Main segment at depth, two holes tested the northern extent and one the southern extent of the Lolón Structure. Five holes were drilled at the northern end of the Palermo Vein Structure and two holes at the end southern end of the Gladys 4 Structure. Two exploration holes tested for southern extensions the Millsite vein.

All field procedures were the same as those used in the 2014 program.

10.3.8 Mandalay 2017

A program of four vertical water bores for a total of 416.5 m were drilled near Pan-American Highway, about 25 km to the south west of Challacollo, on the non-contiguous concessions called Pedro 1 to 5. Hole depth ranged from 91.5 to 126.5 m.

Water was intersected at a depth of about 80 m in all holes, with flows of up to 25 l/s measured with air lift tests. These boreholes are not permitted for extraction. This program and the testing of the bores is described in a series of reports by hydrogeological consultants aQuest.

10.4 Collar surveys and observations from site visit

A complete list of the collar details of the Challacollo drillhole database is given in Table 10.2.

Mandalay undertook two campaigns of surveying the then existing drillhole collars with precise differential global positioning system (DGPS), a system that used fixed ground-based stations and a roving GPS receiver. The DGPS results are reported by Mapsat (April 2014) and by consulting surveyor Becerra (2014, 2016, and 2017).

Of the 194 holes in the Challacollo database 178 have been surveyed with DGPS. The remaining sixteen have been surveyed with a standard hand-held GPS receiver. The surveys were conducted using WGS84 and reported in UTM Zone 19S co-ordinates.

Hand-held GPS receivers are not as accurate in elevation as they are in north and east position. Aftermath draped the collar of the sixteen holes without DGPS survey over the digital model of the UAV topographical survey to inform the database of the elevation of these collars.

The location of a selection of these collars were verified by Casas during the QP site visit during September 2020:

- Eight collars were verified from the 1995 and 1996 programs, 36% of the total.
- 25 collars, were verified from the holes drilled between 2002 to 2007, 26% of the total.
- 47 collars were verified, 89% of the total holes drilled during that program.

This is further discussed in Section 12.

Table 10.2 Challacollo drill collar summary

Year	Hole type1	Hole name	X	Y	Z	Survey method2	Dip (°)	Azimuth (°)
1995	RC	DTH-CH-01	464039.84	7682638.09	1483.28	GPS	-70	112.75
1995	RC	DTH-CH-02	464024.92	7682633.12	1488.31	GPS	-58.52	243.72
1995	RC	DTH-CH-03	463003.10	7681445.00	1378.00	GPS	-51.50	254.31
1995	RC	DTH-CH-04	463338.00	7681402.90	1373.99	GPS	-52.35	287.88
1995	RC	DTH-CH-05	463729.55	7681544.51	1375.49	DGPS	-57.90	286.15
1995	RC	DTH-CH-06	463648.99	7681485.07	1366.21	DGPS	-58.38	105.10
1996	RC	DTH-CH-07	464121.61	7682797.08	1517.42	DGPS	-54.17	99.55
1996	RC	DTH-CH-08	464111.04	7682798.11	1516.77	GPS	-80.55	96.62
1996	RC	DTH-CH-09	464105.17	7682189.64	1435.39	DGPS	-54.48	125.42
1996	RC	DTH-CH-10	463549.74	7681467.20	1376.04	DGPS	-60.32	109.43
1996	RC	DTH-CH-11	463297.35	7681914.43	1409.19	DGPS	-54.48	82.07
1996	RC	DTH-CH-12	463257.14	7681621.67	1387.53	DGPS	-61.83	82.27
1996	RC	DTH-CH-13	464252.12	7683602.09	1404.62	DGPS	-59.00	80.40
1996	RC	DTH-CH-14	463163.45	7683263.73	1464.23	DGPS	-59.97	80.10
1996	RC	DTH-CH-15	463118.46	7682911.46	1484.91	DGPS	-58.35	84.10
1996	RC	DTH-CH-16	463119.99	7682726.45	1492.28	DGPS	-57.90	83.38
1996	RC	DTH-CH-17	463184.33	7682910.55	1481.86	DGPS	-58.13	272.23
1996	RC	DTH-CH-18	463795.23	7683480.02	1446.13	DGPS	-58.83	84.97
1996	RC	DTH-CH-19	463769.28	7683128.46	1464.39	DGPS	-57.20	87.55
1996	RC	DTH-CH-20	463255.75	7683365.70	1454.36	DGPS	-57.43	271.62
1996	RC	DTH-CH-21	464311.89	7683851.91	1394.84	DGPS	-61.17	88.15
1996	RC	DTH-CH-22	463641.68	7681625.54	1377.54	DGPS	-54.40	127.27
2002	DDH	CHAG-01	464039.88	7682638.28	1483.30	GPS	-70.00	117.17
2002	DDH	CHAG-02	464087.04	7682447.39	1459.73	GPS	-60	82.17
2002	DDH	CHAG-03	464095.38	7682881.13	1515.99	DGPS	-45	117.17
2002	DDH	CHAG-04	464149.83	7683031.53	1489.38	GPS	-45	107.17
2002	DDH	CHAG-05	464190.91	7683166.62	1458.42	GPS	-50	72.17
2002	DDH	CHAG-06	464194.38	7683240.23	1445.67	DGPS	-50	77.17
2002	DDH	CHAG-07	464221.08	7683313.13	1433.48	DGPS	-50	107.17
2002	RC	CHAG-08	463896.68	7681880.16	1398.69	DGPS	-50	103.17
2002	RC	CHAG-09	464062.93	7682130.68	1435.94	DGPS	-50	153.17
2002	RC	CHAG-10	464078.39	7682196.90	1436.97	DGPS	-50	83.17
2002	RC	CHAG-11	464062.20	7682228.60	1440.31	DGPS	-50	63.17
2002	RC	CHAG-12	464086.01	7682317.82	1450.04	DGPS	-44	68.17
2002	RC	CHAG-13	464068.40	7682414.19	1455.07	DGPS	-55	83.17
2002	RC	CHAG-14	464060.65	7682549.39	1468.33	GPS	-50	83.17
2002	RC	CHAG-15	464063.18	7682644.23	1482.19	DGPS	-65	93.17

Year	Hole type1	Hole name	X	Y	Z	Survey method2	Dip (°)	Azimuth (°)
2002	RC	CHAG-16	464059.90	7682722.30	1500.29	DGPS	-55	88.17
2002	RC	CHAG-17	464105.77	7682797.02	1515.61	DGPS	-65	93.17
2002	RC	CHAG-18	464096.21	7682884.64	1516.00	DGPS	-60	62.17
2002	RC	CHAG-19A	464152.80	7682655.18	1483.27	DGPS	-45	101.17
2002	RC	CHAG-19B	464152.80	7682655.18	1483.27	GPS	-39	101.17
2002	RC	CHAG-20	463449.65	7681359.17	1375.31	DGPS	-50	137.17
2002	RC	CHAG-21	464119.86	7683050.91	1488.96	GPS	-65	87.17
2002	RC	CHAG-22	464122.14	7683129.32	1479.28	DGPS	-53	77.17
2002	RC	CHAG-23	464171.68	7683106.78	1471.52	DGPS	-60	81.17
2002	RC	CHAG-24	464189.95	7683208.54	1450.94	GPS	-90	100.17
2003	RC	CHAG-25	464106.68	7682238.98	1448.70	GPS	-50	100.01
2003	RC	CHAG-26	464115.34	7681965.06	1419.01	GPS	-45	288.01
2003	RC	CHAG-27	464084.97	7682149.09	1441.52	DGPS	-50	122.01
2003	RC	CHAG-28	464131.35	7682491.41	1467.29	DGPS	-60	63.01
2003	RC	CHAG-29	464114.18	7682581.89	1479.75	DGPS	-42	83.01
2003	RC	CHAG-30	464117.47	7682651.88	1479.03	DGPS	-40	58.01
2003	RC	CHAG-31	464070.37	7682608.78	1472.77	DGPS	-48	82.01
2003	RC	CHAG-32	464115.06	7682748.58	1508.05	DGPS	-52	93.01
2003	RC	CHAG-33	464164.86	7682738.16	1508.48	DGPS	-52	91.01
2003	RC	CHAG-34	464165.34	7682787.14	1522.54	DGPS	-48	87.01
2003	RC	CHAG-35	464146.56	7682826.55	1527.90	DGPS	-40	86.01
2003	RC	CHAG-36	463927.28	7682923.22	1497.11	GPS	-54	107.01
2003	RC	CHAG-37	464150.78	7682932.01	1524.43	DGPS	-45	107.01
2003	RC	CHAG-38	464154.40	7682937.89	1524.17	DGPS	-47	67.01
2003	RC	CHAG-39	464160.57	7683053.58	1485.36	DGPS	-45	87.01
2003	RC	CHAG-40	464189.18	7682984.10	1509.24	DGPS	-49	89.01
2003	RC	CHAG-41	464316.58	7683415.42	1413.93	DGPS	-46	259.01
2003	RC	CHAG-42	464038.36	7682861.67	1508.59	DGPS	-52	87.01
2003	RC	CHAG-42A	464037.83	7682860.13	1508.32	DGPS	-48	83.01
2003	RC	CHAG-43	464045.62	7682693.13	1494.74	DGPS	-62	92.01
2003	RC	CHAG-44	463797.86	7683255.84	1451.16	DGPS	-60	82.01
2003	RC	CHAG-45	463761.06	7683023.71	1478.39	DGPS	-57	87.01
2003	RC	CHAG-46	464036.39	7682773.32	1510.77	DGPS	-52	86.01
2003	RC	CHAG-47	463969.39	7682741.67	1528.69	DGPS	-62	90.01
2003	RC	CHAG-48	463997.72	7682811.11	1528.13	DGPS	-67	81.01
2003	RC	CHAG-49	463954.64	7682456.13	1472.95	DGPS	-50	90.01
2003	RC	CHAG-50	463944.72	7682637.64	1492.70	DGPS	-59	77.01
2003	RC	CHAG-51	463937.26	7682532.91	1488.43	DGPS	-51	86.01
2003	RC	CHAG-52	464020.78	7682903.09	1504.17	DGPS	-64	87.01
2003	RC	CHAG-53	464027.56	7682962.25	1495.10	DGPS	-48	74.01
2003	RC	CHAG-54	464098.86	7683044.19	1493.52	DGPS	-65	89.01
2003	RC	CHAG-55	464074.67	7683082.79	1494.56	DGPS	-65	77.01
2007	RC	SSR-01	467768.26	7678810.79	1308.94	DGPS	-90	0
2007	RC	SSR-01A	467774.04	7678812.31	1309.06	DGPS	-90	0
2007	RC	SSR-02	468346.36	7679501.34	1326.16	DGPS	-90	0
2007	RC	SSR-03	466066.22	7679458.44	1259.44	DGPS	-90	0

Year	Hole type1	Hole name	X	Y	Z	Survey method2	Dip (°)	Azimuth (°)
2007	RC	SSR-04	465133.61	7679500.27	1232.84	DGPS	-90	0
2007	RC	SSR-04A	465133.30	7679489.97	1232.77	DGPS	-90	0
2007	RC	SSR-05	464279.70	7684279.14	1366.66	DGPS	-60	86.36
2007	RC	SSR-06	464304.46	7684294.06	1363.89	DGPS	-60	86.36
2007	RC	SSR-06A	464305.19	7684292.34	1363.73	DGPS	-80	86.36
2007	RC	SSR-07	464250.72	7684448.03	1358.71	DGPS	-60	76.36
2007	RC	SSR-08	464217.52	7684402.37	1363.54	DGPS	-60	76.36
2007	RC	SSR-09	465094.42	7684240.04	1332.82	DGPS	-90	0
2007	RC	SSR-10	465400.45	7684377.62	1326.00	DGPS	-90	0
2007	RC	SSR-11	463805.64	7683071.64	1469.93	DGPS	-60	96.36
2007	RC	SSR-12	463823.51	7682997.51	1479.99	DGPS	-60	96.36
2007	RC	SSR-13	463582.58	7681530.71	1379.06	DGPS	-60	96.36
2007	RC	SSR-13A	463581.34	7681527.55	1379.21	DGPS	-80	96.36
2007	RC	SSR-14	463694.22	7681599.73	1376.57	DGPS	-60	296.36
2007	RC	SSR-15	463796.73	7681643.59	1375.98	DGPS	-60	296.36
2007	RC	SSR-16	464040.01	7681856.33	1405.66	DGPS	-60	296.36
2007	RC	SSR-17	464156.34	7682004.02	1421.06	DGPS	-60	286.36
2007	RC	SSR-18	463229.79	7682755.78	1491.61	DGPS	-60	266.36
2007	RC	SSR-18A	463232.60	7682756.45	1491.53	DGPS	-80	266.36
2007	RC	SSR-19	463177.11	7683094.80	1473.31	DGPS	-60	266.36
2007	RC	SSR-20	463313.08	7683314.17	1457.22	DGPS	-60	266.36
2007	RC	SSR-21	463179.69	7683198.65	1471.45	DGPS	-60	86.36
2007	RC	SSR-22	463804.38	7683548.46	1442.44	DGPS	-60	86.36
2007	RC	SSR-23	463800.52	7683403.38	1449.55	DGPS	-60	86.36
2007	RC	SSR-24	464278.54	7684277.19	1366.74	DGPS	-80	86.36
2007	RC	SSR-25	463485.48	7681446.53	1370.66	DGPS	-60	121.36
2007	RC	SSR-26	463840.83	7682003.46	1406.29	DGPS	-60	76.36
2007	RC	SSR-27	463120.94	7682668.09	1497.86	DGPS	-60	266.36
2007	RC	SSR-27A	463130.62	7682666.77	1497.97	DGPS	-60	86.36
2007	RC	SSR-27B	463129.32	7682667.00	1497.94	DGPS	-80	86.36
2007	RC	SSR-28	463094.99	7681496.21	1373.84	DGPS	-60	86.36
2007	RC	SSR-29	463150.74	7681520.09	1377.56	DGPS	-60	106.36
2007	RC	SSR-30	463625.58	7681586.48	1377.21	DGPS	-60	121.36
2007	RC	SSR-31	463189.16	7682595.71	1490.80	DGPS	-60	266.36
2007	RC	SSR-32	464839.88	7678353.18	1221.51	DGPS	-90	0
2007	RC	SSR-33	464810.43	7677368.37	1215.29	DGPS	-90	0
2007	RC	SSR-34	462935.88	7678484.53	1164.80	DGPS	-90	0
2007	RC	SSR-35	462772.17	7677432.06	1158.15	DGPS	-90	0
2014	DDH	DCH-01	464104.59	7682192.79	1435.18	DGPS	-69.74	131.96
2014	DDH	DCH-02	464082.90	7682158.13	1442.70	DGPS	-63.65	132.42
2014	DDH	DCH-03	464105.56	7682201.57	1435.30	DGPS	-72.38	91.66
2014	DDH	DCH-04	464134.57	7682232.93	1443.21	DGPS	-70.27	78.48
2014	DDH	DCH-05	464139.12	7682231.84	1443.40	DGPS	-59.44	49.35
2014	DDH	DCH-06	464127.00	7682491.90	1470.00	DGPS	-80.13	67.36
2014	DDH	DCH-07	464083.53	7682444.94	1458.84	DGPS	-74.53	79.35
2014	DDH	DCH-07A	464085.74	7682443.97	1459.09	DGPS	-63.04	46.03

Year	Hole type1	Hole name	X	Y	Z	Survey method2	Dip (°)	Azimuth (°)
2014	DDH	DCH-08	464081.69	7682561.26	1472.64	DGPS	-74.04	111.31
2014	DDH	DCH-09	464084.89	7682564.77	1472.67	DGPS	-50.32	75.32
2014	DDH	DCH-10	464083.54	7682563.37	1472.51	DGPS	-71.12	65.00
2014	DDH	DCH-11	464086.15	7682628.27	1475.21	DGPS	-49.32	99.43
2014	DDH	DCH-12	464086.03	7682631.76	1475.24	DGPS	-48.45	51.50
2014	DDH	DCH-13	464036.59	7682639.38	1483.14	DGPS	-68.13	66.96
2014	DDH	DCH-14	464034.95	7682698.19	1495.33	DGPS	-68.59	83.76
2014	DDH	DCH-15	464106.94	7682747.27	1507.73	DGPS	-72.03	77.65
2014	DDH	DCH-16	464105.68	7682751.16	1507.80	DGPS	-84.54	111.70
2014	DDH	DCH-17	464101.06	7682786.55	1513.70	DGPS	-70.46	51.20
2014	DDH	DCH-18	464104.08	7682751.04	1508.10	DGPS	-79.91	34.76
2014	DDH	DCH-19	464145.73	7682936.20	1523.99	DGPS	-71.30	104.14
2014	DDH	DCH-20	464082.73	7682878.74	1513.44	DGPS	-64.89	68.36
2014	DDH	DCH-21	464161.00	7682943.41	1524.08	DGPS	-60.63	49.18
2014	DDH	DCH-22	464148.68	7682932.80	1523.88	DGPS	-75.02	44.39
2014	DDH	DCH-23	464147.19	7683054.07	1485.17	DGPS	-59.97	87.74
2014	DDH	DCH-24	464147.99	7683053.83	1485.13	DGPS	-57.54	116.98
2014	DDH	DCH-25	464135.17	7683087.08	1478.55	DGPS	-65.62	94.01
2014	DDH	DCH-26	464133.27	7683087.88	1477.83	DGPS	-70.31	60.04
2014	DDH	DCH-27	464195.74	7683167.87	1458.14	DGPS	-74.79	70.14
2014	DDH	DCH-28	464195.14	7683167.87	1458.12	DGPS	-83.94	49.22
2014	DDH	DCH-29	464191.19	7683248.69	1445.21	DGPS	-60.31	128.77
2014	DDH	DCH-30	464191.25	7683246.07	1445.44	DGPS	-74.72	88.14
2014	DDH	DCH-31	464271.34	7682170.96	1429.23	DGPS	-59.25	292.16
2014	DDH	DCH-32	464233.36	7682718.67	1498.42	DGPS	-46.87	223.67
2014	DDH	DCH-33	464132.04	7682489.28	1467.03	DGPS	-46.21	49.69
2014	DDH	DCH-34	464133.02	7682491.92	1467.36	DGPS	-44.66	104.23
2014	DDH	DCH-35	464056.17	7682314.62	1446.22	DGPS	-46.95	84.20
2014	DDH	DCH-36	464083.45	7682877.73	1513.40	DGPS	-75.16	82.98
2014	DDH	DCH-37	464085.20	7682874.65	1513.81	DGPS	-63.94	38.18
2014	DDH	DCH-38	464059.98	7682807.97	1527.07	DGPS	-46.39	51.06
2014	DDH	DCH-39	464057.05	7682808.53	1527.21	DGPS	-73.33	63.64
2014	DDH	DCHMT-01	464087.42	7682629.70	1475.33	DGPS	-60.41	131.37
2014	DDH	DCHMT-02	464035.11	7682637.53	1483.00	DGPS	-76.38	110.83
2014	DDH	DCHMT-03	464151.94	7683054.35	1485.08	DGPS	-61.89	83.25
2014	DDH	DGL-01	463287.81	7681631.32	1386.35	DGPS	-61.17	116.30
2014	DDH	DGL-02	463831.31	7683713.40	1431.09	DGPS	-47.01	38.67
2014	DDH	DLS-01	464060.28	7682132.68	1436.06	DGPS	-60.77	181.30
2014	DDH	DLU-01	464043.47	7683161.52	1474.35	DGPS	-60.06	131.41
2014	DDH	DLU-02	464020.33	7682961.99	1494.36	DGPS	-44.65	300.98
2014	DDH	DLU-03	464021.07	7682961.64	1494.38	DGPS	-60.58	299.12
2014	DDH	DLU-04	463874.51	7682859.27	1500.51	DGPS	-57.81	118.51
2014	DDH	DLU-05	463873.75	7682859.73	1500.50	DGPS	-80.83	115.89
2014	DDH	DMV-01	465116.65	7682387.04	1333.70	DGPS	-49.13	117.67
2014	DDH	DMV-02	465114.63	7682389.34	1333.79	DGPS	-65.76	51.20
2015	RC	PE-08	474194.01	7680855.63	1560.53	DGPS	-90.00	0.00

Year	Hole type1	Hole name	X	Y	Z	Survey method2	Dip (°)	Azimuth (°)
2015	RC	PE-08B	474195.80	7680864.63	1561.25	DGPS	-90.00	0.00
2015	RC	PE-10	466134.76	7682118.92	1297.08	DGPS	-90.00	0.00
2016	DDH	DCH-40	464040.35	7682640.43	1483.57	DGPS	-85.40	98.37
2016	DDH	DCN-01	463302.42	7685877.75	1351.97	DGPS	-61.00	262.67
2016	DDH	DCS-01	463380.82	7681396.19	1377.38	DGPS	-54.50	138.87
2016	DDH	DCS-02	463103.57	7681402.36	1386.36	DGPS	-42.60	175.57
2016	DDH	DCS-03	463103.60	7681406.95	1386.23	DGPS	-48.60	103.07
2016	DDH	DCS-04	464483.25	7680742.73	1254.03	DGPS	-54.50	91.07
2016	DDH	DCS-05	464052.19	7680863.81	1291.51	DGPS	-69.80	273.17
2016	DDH	DLN-01	464244.07	7683900.04	1407.71	DGPS	-61.80	55.47
2016	DDH	DLN-02B	464245.29	7683901.08	1407.75	DGPS	-45.70	40.37
2016	DDH	DPA-01	463245.46	7684423.75	1415.66	DGPS	-59.20	237.67
2016	DDH	DPA-02	463245.94	7684423.98	1415.61	DGPS	-73.40	236.97
2016	DDH	DPA-03	463243.89	7684420.13	1415.76	DGPS	-47.60	328.17
2016	DDH	DPA-04	463247.04	7684421.21	1415.66	DGPS	-49.90	197.57
2017	RC	LWH-01	440742.13	7661556.70	793.33	DGPS	-90	0
2017	RC	LWH-02	440592.64	7662298.02	794.74	DGPS	-90	0
2017	RC	LWH-03	441807.33	7661724.80	798.83	DGPS	-90	0
2017	RC	LWH-04	443371.05	7663838.99	814.99	DGPS	-90	0

Notes:
- RC = reverse circulation, DDH = diamond core.
- GPS = hand-held global positioning receiver, DGPS = licenced surveyor differential global positioning receiver with base station.

Source: Aftermath Challacollo Database.

10.5 Summary of results

The drilling which has been carried out by three operators, from review of available documentation which includes a number of Technical Reports, has been carried out in a reasonable manner. This is consolidated into a modern database and allows the Mineral Resource estimate to be completed as described in Section 14.

10.6 Conclusions

At this time there are no known drilling, sampling or recovery factors that could impact the accuracy and reliability of the results. However, the following recommendations are made:

- Aftermath to continue using large diameter (HQ or PQ) triple tube diamond core to maximize sample size and core recovery, minimizing the loss of vein material.
- Twinning of selected existing RC holes to test recovery and sample volume effects between the two drilling methods.
- While few Mantos Blancos drillholes contribute to the Mineral Resource, review impact, and consider twinning these holes as there are no assay certificates available.
- A subset of the existing RC holes used in the Mineral Resource estimate should be re-entered and downhole surveys conducted. Holes of various lengths should be selected and the relative difference to the current hole paths assessed and a recommendation on additional re-surveying should made.

11 Sample preparation, analyses, and security

11.1 Introduction

At the time of this report, Aftermath had not carried out any sampling, analysis, or Quality Assurance / Quality Control (QA/QC) at the Project. Prior to Aftermath acquiring the Property, three other companies had carried out exploration work and collected sampling and analytical information. These are Mantos Blancos, Silver Standard and Mandalay. While this information is historical, it is included here as pertains to the data underpinning the current Mineral Resource estimate reported in Section 14.

The main sources of information for this section of the report come from:

- Raw data and assay certificates supplied by Aftermath.
- Notes and explanations accompanying the raw data.
- 2002 Challacollo Silver Property Technical Report, April 2002.
- Challacollo Silver Property Technical Report, September 2002.
- Report on Challacollo Property – NI 43-101, December 2002.
- Challacollo Silver Property Technical Report, September 2003.
- Sundance Ventures Resources Review, September 2003.
- Challacollo Project – 2007 Drilling Campaign Results, December 2007.
- 2015 MP Technical Report.

11.2 Sample preparation, analyses, and security

11.2.1 Mantos Blancos

No data is available for the sampling or QA/QC work carried out by Mantos Blancos. Of the 22 drillholes in the database drilled in these programs, only four were used in the estimate. This represents less than 5% of the assays used and the areas informed were classified as Inferred Mineral Resources.

11.2.2 Silver Standard

The following is a summary of sample preparation and assaying carried out in 2002 is taken from 'Report on Challacollo Property – NI 43-101, December 2002' and 'Challacollo Silver Property Technical Report, September 2002':

- Samples collected through underground, surface and core drilling methods were prepared for analysis by ALS Chemex Antofagasta in Chile.
- Samples were sent to ALS Vancouver for Inductively Coupled Plasma (ICP) analysis of 32 elements. The majority of elements in the package are determined with direct ICP atomic emission spectroscopy (ICP-AES). Two elements, lead and silver, are measured by atomic absorption (AA) spectroscopy from the same digestion in order to eliminate any possible inter-element interference.
- Samples with grades of economic interest were subject to fire assay, also by ALS Vancouver. The prepared sample was fused with a mixture of lead oxide, sodium carbonate borax, silica, and other reagents as required and inquarted with 6 mg of gold-free silver and then cupelled to yield a precious metal bead. Following acid digestion and other standard practices, the samples were analyzed for silver and gold by AA spectrometry.
- RC sampling was done at the drill, where two bags weighing approximately 3 - 5 kg were taken from the cyclone and split through a splitter. One sample was stored underground within the Buena Ventura workings and the other was sent off for assaying at ALS Chemex's Lab in Antofagasta where lead, zinc, and copper were assayed by AA. A part of the sample was sent

to La Serena to be assayed for silver and gold. The gold-silver assays in La Serena were done by AA and fire assayed if over 100 g/t Ag.

- Every tenth RC sample was split for check assaying from the sample stored in the Buena Ventura underground workings. These samples were sent to Antofagasta where they were shipped to Vancouver to be assayed.

Sampling of the diamond drill core is discussed in Section 10.3.2.

The following information for the 2003 program is taken from 'Challacollo Silver Property Technical Report, September 2003'. No DDH sampling was conducted in 2003.

- RC sampling was done at the drill, where two bags weighing approximately 3 - 5 kg were taken from the cyclone and split through a splitter. One sample was stored underground within the Buena Ventura or Santa Catalina workings and the other was sent off for assaying at ALS Chemex's Lab in Antofagasta where lead, zinc, and copper were assayed by AA. A part of the sample was sent to La Serena to be assayed for silver and gold. The gold-silver assays in La Serena were done by AA and fire assayed if over 100 g/t Ag.
- Every 20 m an RC sample was split into three samples with the third being sent to Vancouver for a check assay. ALS Chemex in Vancouver analyzed all the check assays. Check assays were also run for the mineralized interval. Check samples of the mineralized interval were taken approximately every 4 m depending on the width of the mineralized intercept.

The following is an excerpt of sample preparation and assaying carried out in 2007, taken from 'Challacollo Project – 2007 Drilling Campaign Results, December 2007':

> "As a part of the normal process of sampling in a RC system the samples were recovered from the cyclone, weighted and divided twice in a splitter. Part of the cutting was washed and put in a plastic box to be described. Two equivalents plastic bags (around 10 kg ea.) were stored in site and after the geological description one of them was sent to the Actlabs facilities in Antofagasta where samples were prepared and pulps were sent to La Serena laboratory. When ICP was required, samples were processed in Canada. When the required analysis was for Ag, Cu, Zn, Pb, and Mo suite, samples were processed in La Serena."

11.2.3 Mandalay

Detailed information on the 2014 sample preparation and analysis can be found in the 2014 RPA Technical Report. The salient points from that report are included below.

The core samples were received in Antofagasta by ALS laboratory Chile. The samples were dried and crushed to 90% less than 2 mm and riffle split into representative sub-samples of about one kilogram. That one-kilogram sample was pulverized to 96% passing 106 µm. A pulverized sample split was initially forwarded to the ALS laboratory in Santiago and later in the program to Lima, Peru.

From the pulverized sample material, a 30 g weight of sample was submitted for fire assay and gravimetric finish. The lower detection limit (LDL) in ME GRA-21 is 5 ppm for Ag and 0.05 ppm for Au. ALS Laboratories inserted its own laboratory duplicates and standards into the sample stream in addition to those from Mandalay.

Multi-element assay was conducted using the ICP41a method for Ag, AL, A, Ba, Be, Bi, Ca, Cd, Co, Cr, Cu, Fe, Ca, Hg, K, La, Mg, Mn, Mo, Na, Ni, P, Pb, S, Sb, Sc, Sr, Th, Ti, Tl, U, V, W, and Zn. The split of the pulverized sample with minimum sample size 1 g was digested in aqua regia and analyzed by Inductively Couple Plasma – AES Instrument. Ag, Au, and Cu were additionally analyzed using cyanide leach testing to establish the potential cyanide extraction efficiency for gold and silver. Nominal sample weights of 30 g were used for the cyanide leach with AA Spectrometry finish.

11.2.4 Laboratory summary

Table 11.1 summarizes the laboratories used for preparation and analysis of samples. Note that all laboratories are independent of the current and past issuers.

Table 11.1 Summary of laboratories and accreditation

Company	Year	Laboratory	Location	Accreditation
Silver Standard	2002	ALS	Prep - Antofagasta, Chile	ISO/IEC 17025:2017
			Analytical (core) - Vancouver	ISO/IEC 17025:2005
		ALS Chemex	Analytical (RC) - La Serena, Chile	ISO/IEC 17025:2017
	2003	ALS	Prep - Antofagasta, Chile	ISO/IEC 17025:2017
			Analytical - Santiago / La Serena	ISO/IEC 17025:2017
	2007	ALS	Prep - Antofagasta, Chile	ISO/IEC 17025:2017
		Actlabs	Analytical - La Serena, Chile	ISO/IEC 17025:2017
Mandalay	2014	ALS	Prep - Antofagasta, Chile	ISO/IEC 17025:2017
			Analytical - Santiago / Lima	ISO/IEC 17025:2017
	2016	ALS	Prep - Antofagasta, Chile	ISO/IEC 17025:2017
			Analytical - Lima	ISO/IEC 17025:2017

11.3 QA/QC sample summary

The following is a brief description of the different type of QA/QC samples that have been used to check the precision and accuracy of the analyses used in the Mineral Resource estimate.

Accuracy is the measure of how close the assay is to reality. Accuracy problems can be caused by issues with sample preparation and analytical equipment and can occur at any time throughout the analytical process. Accuracy of the analytical process must be quantified on a batch-by-batch basis and over time periods by inserting certified reference material (CRMs) and monitoring the results.

The variability or repeatability of an assay result is a measure of precision that can be assessed by collecting duplicate samples. Failures in precision can occur at any / all stage(s) of the sampling procedure – collection, preparation, and analysis. Field duplicates monitor sampling variance, sample preparation and analytical variance, and geological variance. Coarse duplicates monitor sample preparation, analytical variance and geological variance and pulp duplicates monitor analytical precision including homogenization and pulverization quality. Umpire duplicates (also called check assays) involves independent re-assaying of selected pulps from the primary sample by a second laboratory and provides a measure of precision.

Table 11.2 summarizes the QA/QC samples taken for the Project. Note that the total samples are a count of the total silver assays recorded for each yearly campaign. The total QA/QC samples taken are in addition to those listed in the total samples count.

Table 11.2 Summary of QA/QC samples analyzed for Challacollo

Company	Year	Total Ag assays	CRMs	Blanks	Field duplicates	Laboratory coarse duplicates	Laboratory pulp duplicates	Umpire duplicates
Mantos Blancos	1995	326	-	-	-	-	-	-
	1996	964	-	-	-	-	-	-
Silver Standard	2002	2,195	-	21	193	-	-	0
	2003	2,369	-	10	291	-	-	34
	2007	1,834	-	-	-	-	-	-
Mandalay	2014	1,953	105	102	-	-	-	142
	2016	643	42	39	-	-	-	35
Total		**10,284**	**147**	**172**	**484**	**0**	**0**	**211**

As no QA/QC protocols were carried out on the Mantos Blancos drilling as far as is known, there is no further reference to it. It is noted that the Mantos Blancos assays comprise 12.5% of the total assays on the property and only four drillholes contribute and inform Inferred Mineral Resources.

11.4 Assay results for CRMs

The following comments are made regarding selection of CRMs:

- CRMs should be obtained for all economic minerals. For each economic mineral, there should be three corresponding standards:
  - At around the expected cut-off grade (COG) of the deposit.
  - At the expected average grade of the deposit.
  - At a higher grade.

CRM insertion should be approximately 1:20 samples or 5% of the total samples assayed.

11.4.1 Silver Standard

No CRM analysis was undertaken by Silver Standard.

11.4.2 Mandalay

In 2014 two CRMs were used in the QA/QC program, one high-grade CRM, IN-A087-76, and one low-grade CRM, IN-A087-75. These samples were prepared by the Instituto Nacional de Technologia, Estandarizacion y Metrologia Ltda. (INTEM) of Antofagasta, Chile. Certificates are available which describe the origins of the materials and the results of the round robin testing amongst various laboratories. The samples were collected by Mandalay geologists from surface samples from different locations within the Lolón Structure and were custom made and certified by INTEM.

In 2016, the low-grade CRM was replaced with another high-grade CRM – CDN-ME-1505 manufactured by CDN Research Laboratories Limited. The CRM certificate describes the origins of the materials and the results of the round robin testing amongst ten laboratories. This CRM was made from gold / silver ore extracted from underground mine operations located in the Pozo Almonte Region of Tarapaca, Chile sourced by the CRM vendor.

CRMs were only analyzed in the 2014 and 2016 Mandalay QA/QC programs. The values for each CRM used are summarized in Table 11.3.

Table 11.3 CRMs used by Mandalay

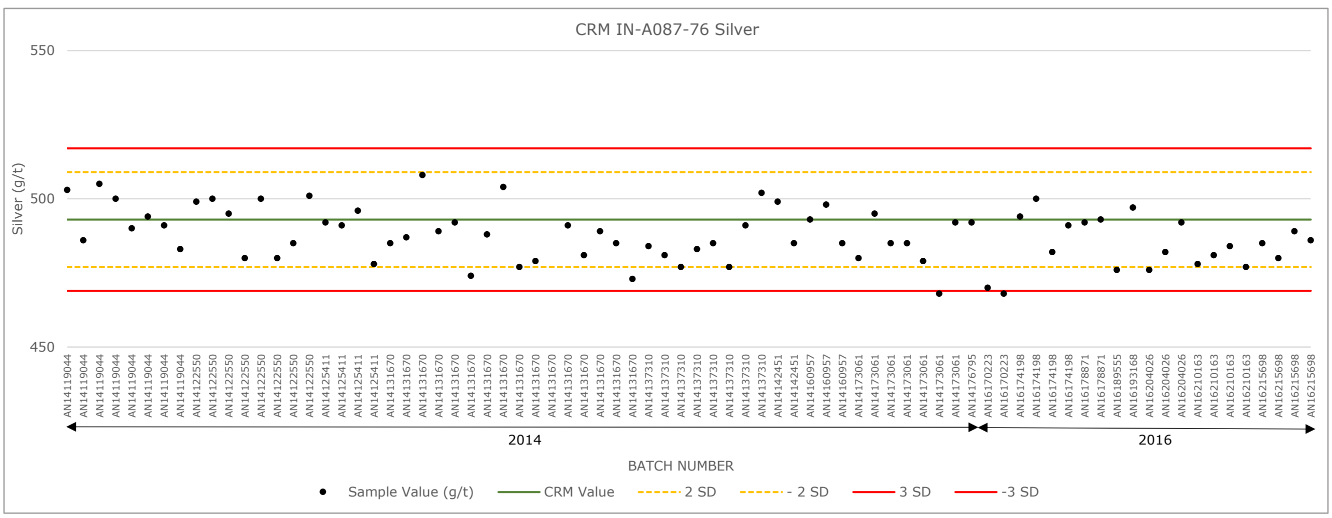
Year	CRM	Silver		Gold		No. assays
		Expected value	1 SD	Expected value	1 SD	
		g/t		g/t		
2014, 2016	IN-A087-76	493	8	0.99	0.04	78
2014	IN-A087-75	48	2	0.1	0.01	48
2016	CDN-ME-1505	360	12	1.29	0.11	21

The following observations are made regarding the selection of CRMs:

- The CRMs do not cover the required grade range. The low-grade CRM used in 2014 was subsequently found to be below the economic cut-off grade used for the estimation of the Mineral Resource. In addition, in 2016 the two CRMs used only covered high-grade values.
- CRMs were inserted at approximately 1:17 samples (6%). This is an acceptable rate of submission.

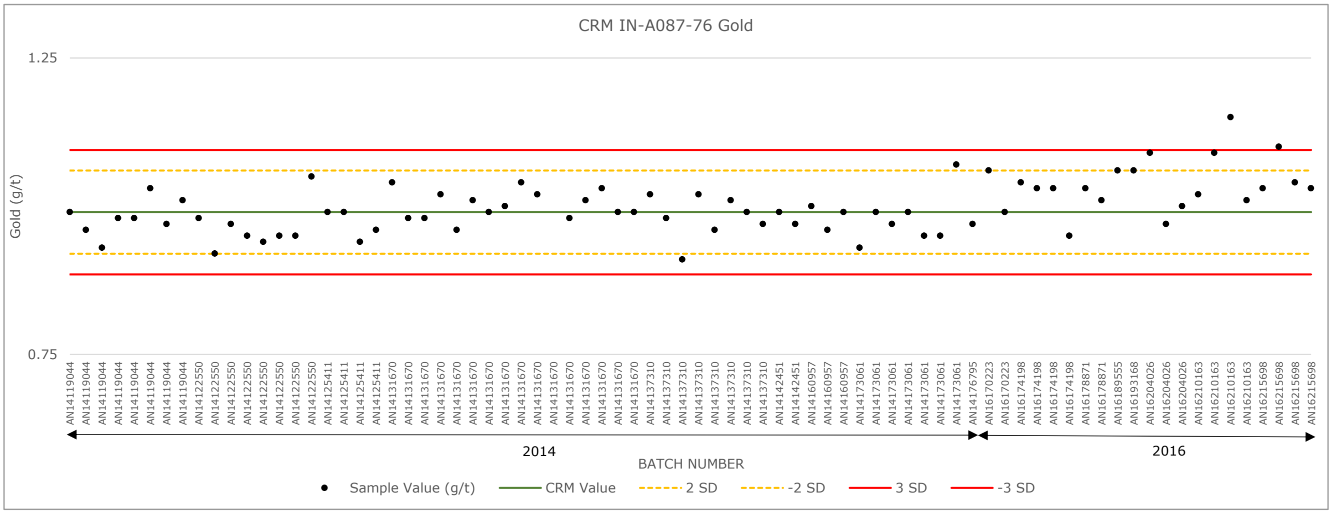
Results of the CRM analysis are presented in Figure 11.1 to Figure 11.6. Note, in each CRM figure, the red line indicates three times the standard deviation, the yellow dashed line indicates two times the standard deviation, the green line represents the expected value and the black dots are the results of the assayed samples.

Figure 11.1 Silver CRM - IN-A087-76



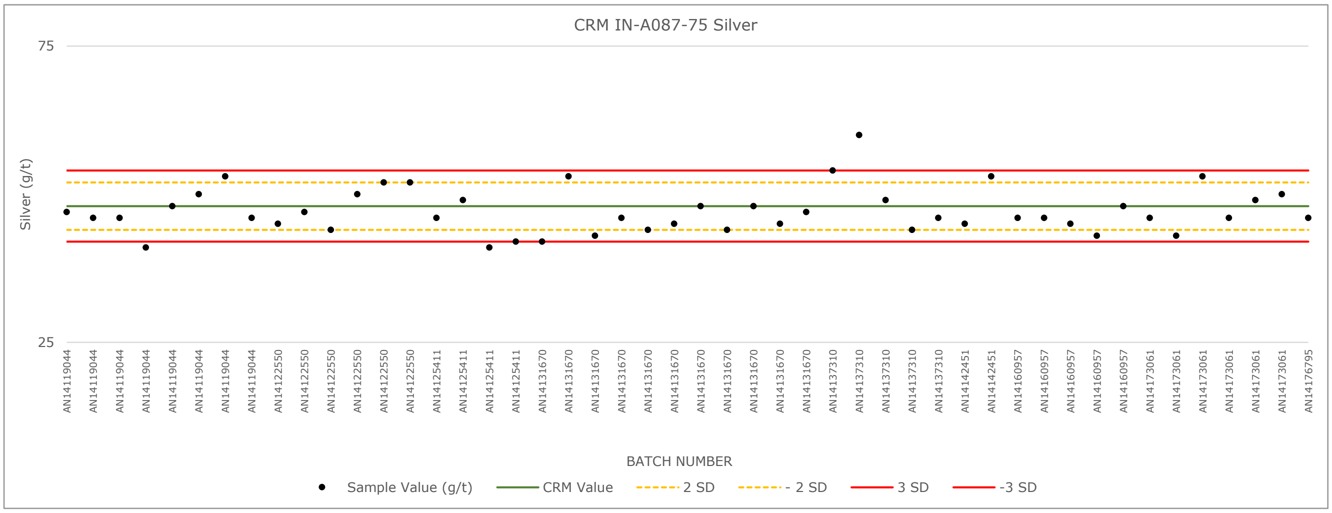
Source: AMC 2020.

Figure 11.2 Gold CRM - IN-A087-76



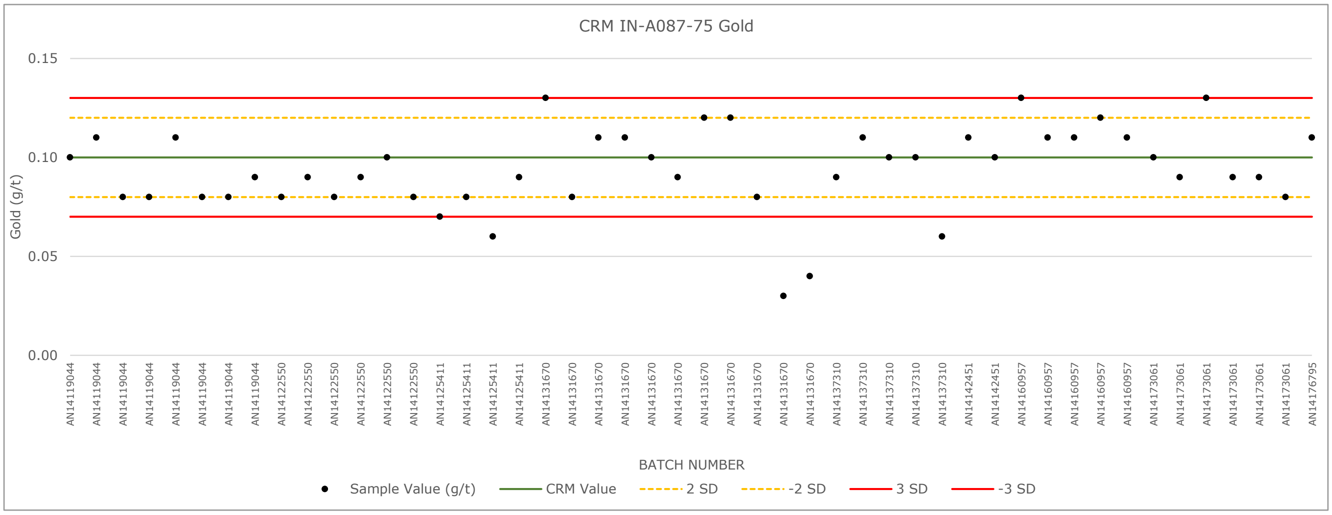
Note: Analytical drift from 2014 to 2016.
Source: AMC 2020.

Figure 11.3 Silver CRM - IN-A087-75



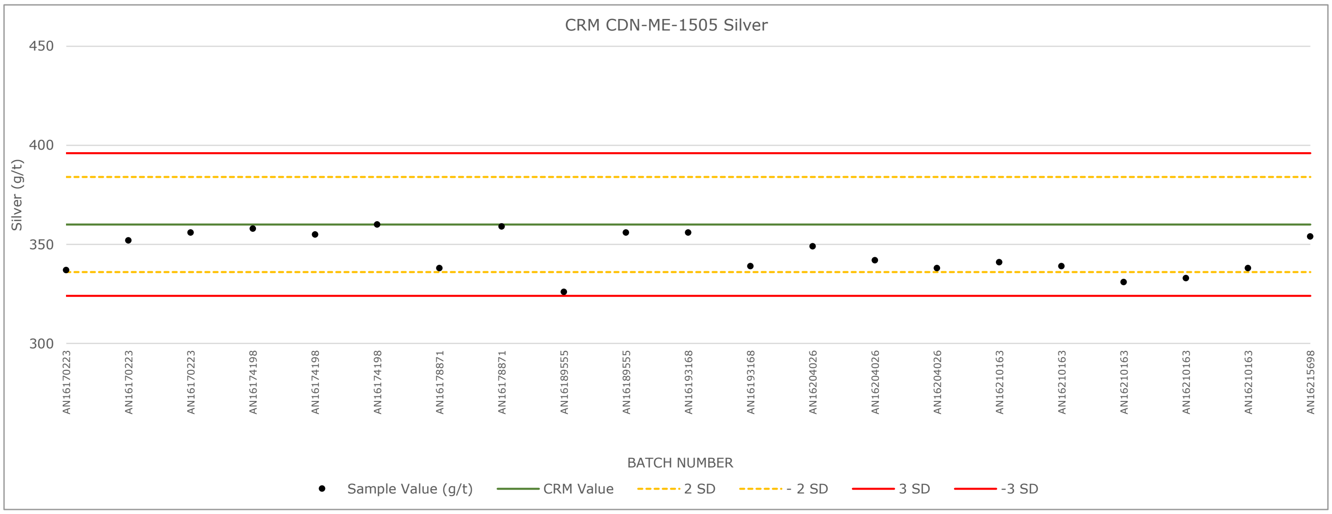
Source: AMC 2020.

Figure 11.4 Gold CRM - IN-A087-75



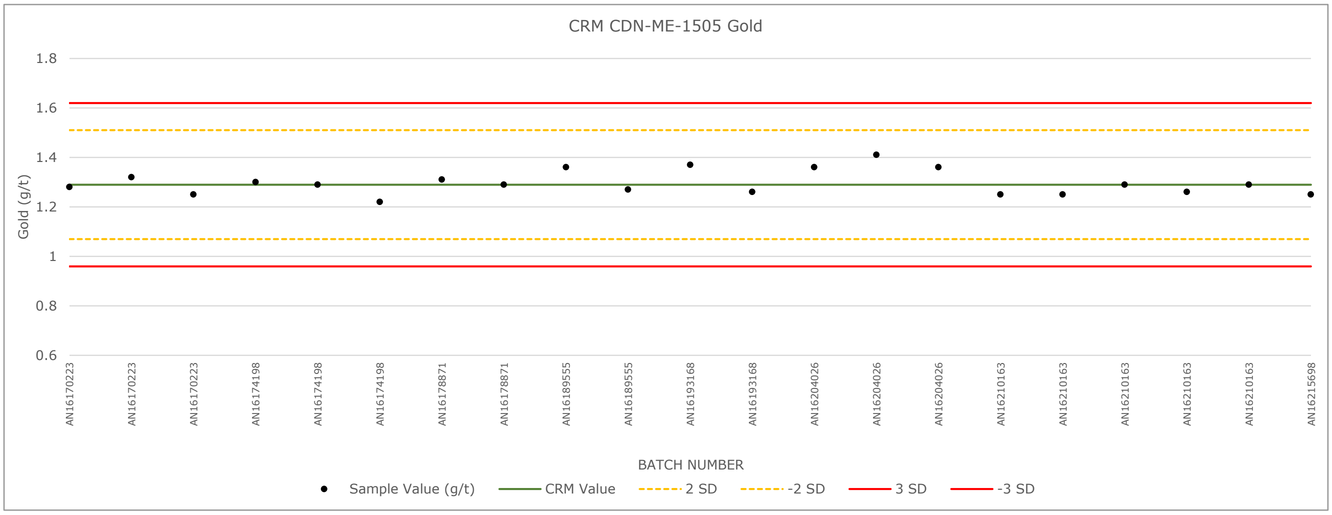
Source: AMC 2020.

Figure 11.5 Silver CRM – CDN-ME-1505



Note: Low bias.
Source: AMC 2020.

Figure 11.6 Gold CRM – CDN-ME-1505



Source: AMC 2020.

The following observations are made on the CRMs:

- Sample ID, 1252, from drillhole DCH-30 recorded an exceptionally low silver and gold value of 46 g/t and 0.1 g/t, respectively. This sample has not been included in the charts for CRM IN-A087-76 as it skewed the chart significantly.
- For CRM IN-A087-76, all values that exceeded 2 SD for gold are above +2SD of the CRM value.
- For CRM IN-A087-75, all values that exceeded 3 SD for gold are below -2SD of the CRM value.

Table 11.4 shows the number of samples for each CRM which exceed either 2 or 3 standard deviations from the expected CRM value.

Table 11.4 Number of samples exceeding 2 and 3 standard deviations

CRM	No. of CRM assays	No. assays outside 2 or 3 standard deviations			
		Silver		Gold	
		>2SDs	>3SDs	>2SDs	>3SDs
IN-A087-76	78	3	3	4	3
IN-A087-75	48	8	3	4	4
CDB-ME-1505	21	1	0	0	0

Ideally, batches with two consecutive CRMs outside two standard deviations should be re-run, and that assay batches with one CRM outside three standard deviations should also be re-run. Using these criteria, the following batches would need to be re-run:

- CRM IN-A087-76 – AN16170223 (Ag), AN14173061 (Ag), and AN16210163 (Au).
- CRM IN-A087-75 – AN14137310 (Ag and Au), AN14125411 (Ag and Au), AN14119044 (Ag), and AN14131670 (Au).

There is no documentation of remedial action and it is not clear if the above batches were rerun.

11.5 Assay results of blank samples

Blank samples monitor for sample contamination during the sample preparation and assay process. A submission rate of 1:20 or approximately 5% of total samples for blanks is recommended. Blank sample results should not exceed three to five times the detection limit.

11.5.1 Silver Standard

The origin of the blank sample material submitted in the 2002 and 2003 programs is not known. The samples are labelled as either quartz pulp or quartz gravel. The blank samples in the analytical certificates are labelled as quartz, which might indicate that the blank samples were not 'blind'. There appears to be no Silver Standard inserted blank material in 2007.

Table 11.5 shows the number of blank samples analyzed as a proportion of the total samples taken each year by Silver Standard. The submission rate is very low and should be closer to 5% to obtain an accurate assessment of potential contamination occurring during sample processing.

Table 11.5 Silver Standard blank sample compliance

Year	Total samples	# of blank samples	Submission
2002	2,195	21	1.0%
2003	2,369	10	0.4%
2007	1,834	0	0.0%

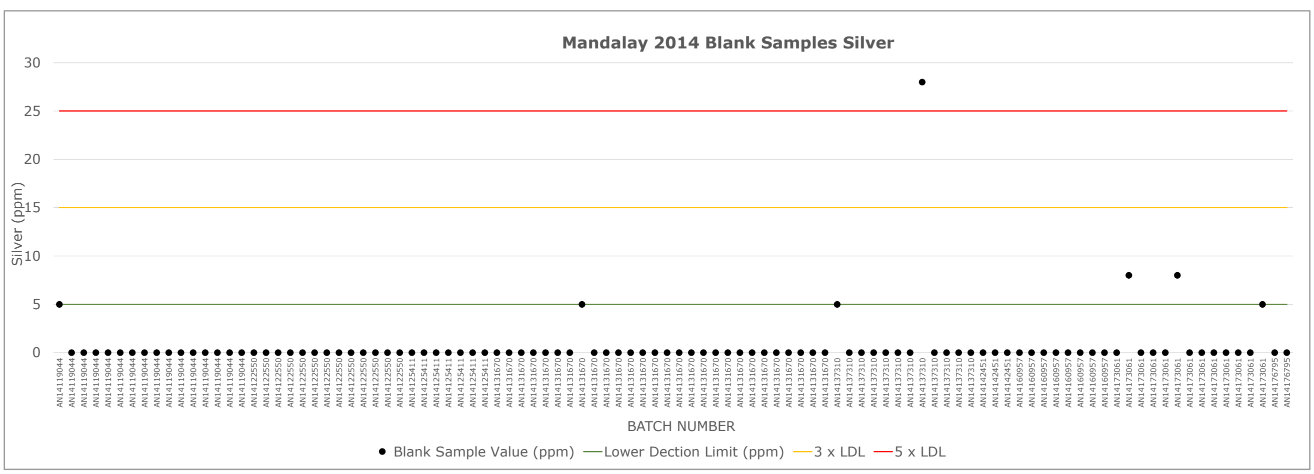
Graphical review of results of the blank sample analysis indicates that no samples, with one exception, were recorded above the LDL. The one sample records a value of the detection limit.

11.5.2 Mandalay

A total of 141 blank samples were submitted by Mandalay in 2014 (102 blank samples) and 2016 (39 blank samples). The blank sample material, quartz gravel, was purchased from ALS. Samples were submitted 'blind' into the sample stream at a rate of approximately 1:18 or approximately 5% of all samples analyzed. This is considered an acceptable submission rate.

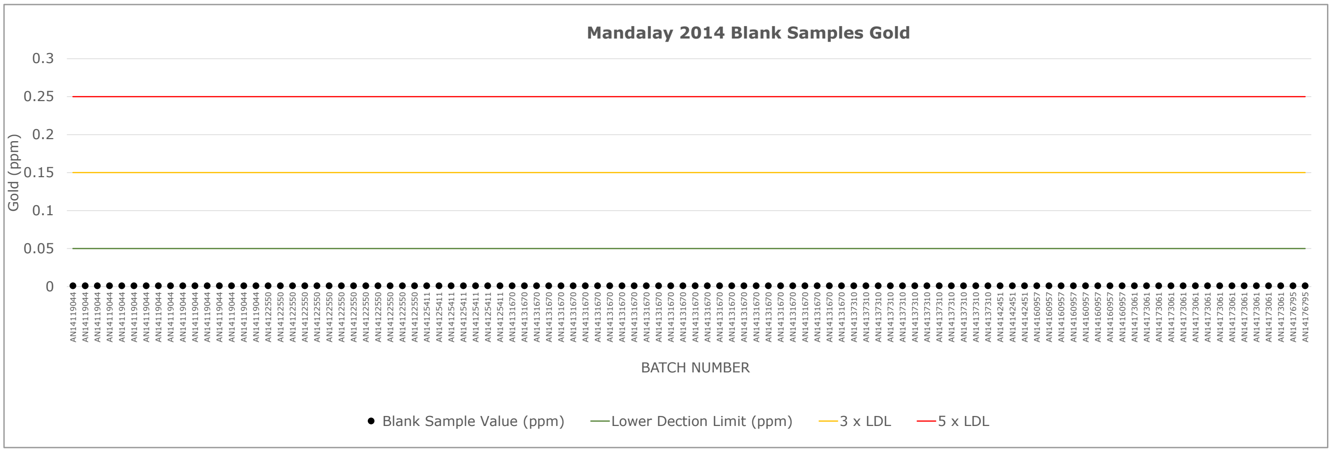
Figure 11.7 and Figure 11.8 display the results of the 2014 blank samples for silver and gold respectively. Only one sample, 1531, from drillhole DCH-36, exceeded five times the detection limit for silver.

Figure 11.7 Mandalay 2014 blank samples - silver



Source: AMC 2020.

Figure 11.8 Mandalay 2014 blank samples - gold



Source: AMC 2020.

For the 2016 blank samples for silver and gold, no samples exceeded the LDL.

The results indicate that no contamination was occurring during the sampling process.

11.6 Assay results for duplicate samples

Coarse, uncrushed duplicate samples monitor sampling variance, including that arising from crushing, analytical variance, and geological variance. Pulp duplicate samples, where the prepared sample is re-assayed, quantifies the precision of the analytical procedure. Unmineralized samples should not be sent as duplicates because assays near the detection limit are commonly inaccurate.

From the records, no company has submitted laboratory coarse or pulp duplicates, however field duplicates are discussed below.

To review the difference between the grades of the field duplicate samples the relative paired difference (RPD)[1] method in employed. This method measures the absolute difference between a routine sample and its duplicate. For field duplicates, it is desirable to achieve 80% to 85% of the pairs having less than 20% RPD between the original assay and check assay (Stoker 2006).

Field duplicates monitor sampling variance, sample preparation and analytical variance, and geological variance. The RPD of a field duplicate will depend in part on the style of mineralization and the short-range variability of the grade distribution.

11.6.1 Silver Standard

In 2002, a total of 17 batches were sent, these contained 215 field duplicate samples obtained from RC drilling. Two samples were taken at the drilling rig. Sample "A" was sent to ALS Chile for sample preparation and the shipped to ALS Vancouver for analysis. Every 10th sample was split and later sent to ALS Antofagasta for preparation and then shipped to ALS Vancouver for analysis. However, not all the original samples analyzed used the same analytical method as the duplicate. As such, there are only 193 field duplicate samples available for comparison.

[1] The (absolute) Relative Paired Difference (RPD) is the absolute difference between the sample and its duplicate, divided by the mean of the sample and its duplicate, expressed as a percentage. RPD = ABS ((xoriginal – xduplicate)/((xoriginal + xduplicate)/2)*100.

In 2003, every 20th sample was split three ways with additional sample split every 4 m in mineralization. The field duplicates used for comparison were analyzed at different laboratories. Both original and duplicate samples were prepared at ALS Calama or Antofagasta, with the original samples analyzed by ALS Santiago and the duplicate samples analyzed by ALS Vancouver. In 2010, Mining Plus commissioned 10 field duplicate sample pairs be assayed. These samples were again analyzed at different laboratories, the originals were assayed at ALS Vancouver, with the duplicate analyzed at ALS Lima. Therefore, differences seen in the duplicate dataset could arise from geological variance or differences between the two laboratories.

The submission rates of field duplicates in 2002 and 2003 were acceptable as shown Table 11.6.

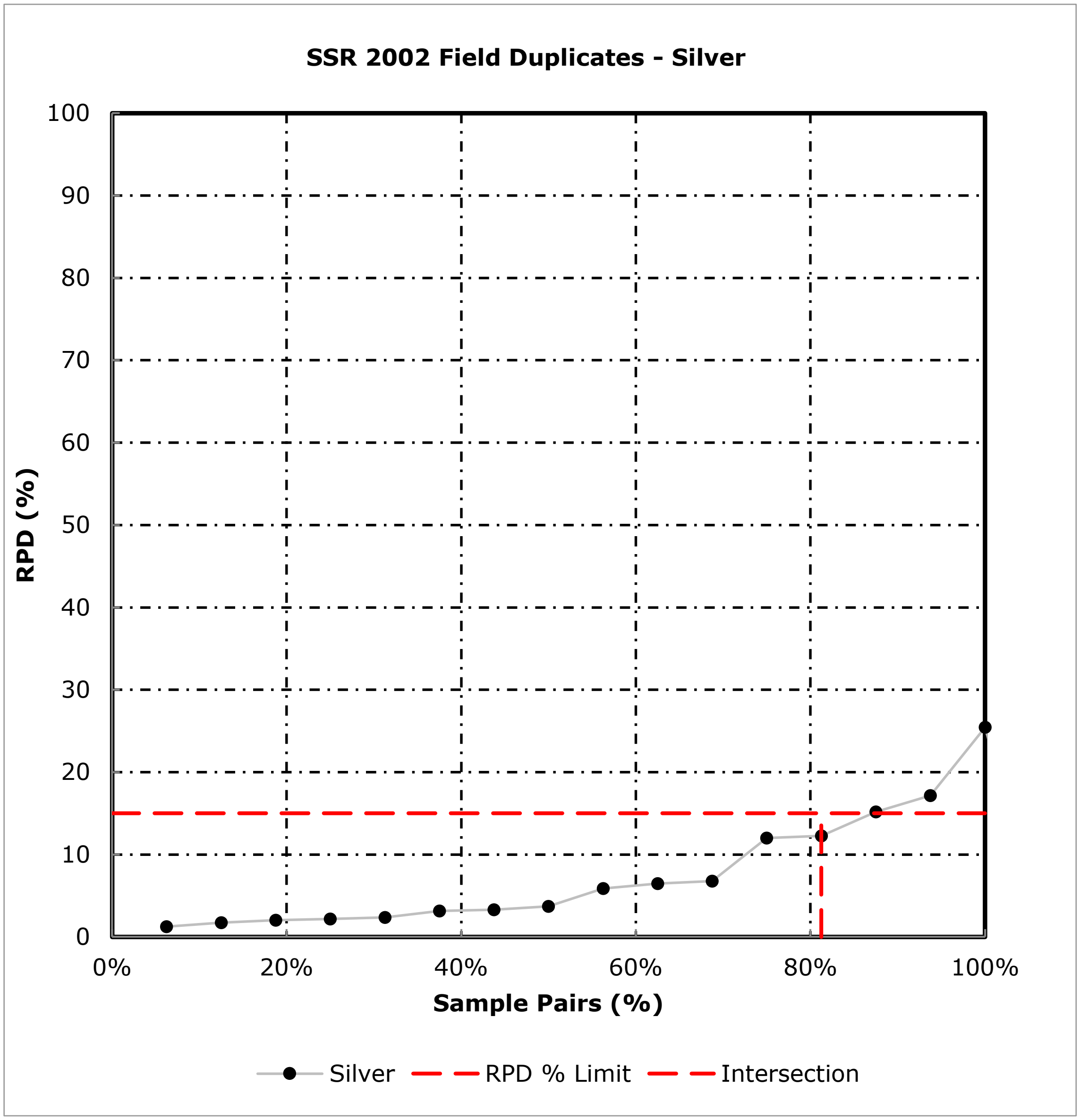
Table 11.6 Silver Standard duplicate sample compliance

Year	Total samples	Field duplicates	Submission
2002	2,195	193	8.8%
2003 + 2014	2,369	281 + 10	11.9%
2007	1,834	0	0.0%

RPD plots and scatter plots were prepared to graphically review the field duplicate data. In preparing the RPD plots for field duplicate sample pairs, where the mean of the original and the duplicate is less than 15 times the detection limit, the pairs have been removed. This is to prevent duplicate sample pairs near the detection limit unduly influencing the evaluation and the RPD plot. The number of duplicates removed for each analysis is shown in the table of results. It is generally desirable to achieve 80% to 85% of the pairs of less than 15% RPD for a coarse duplicate within one batch.

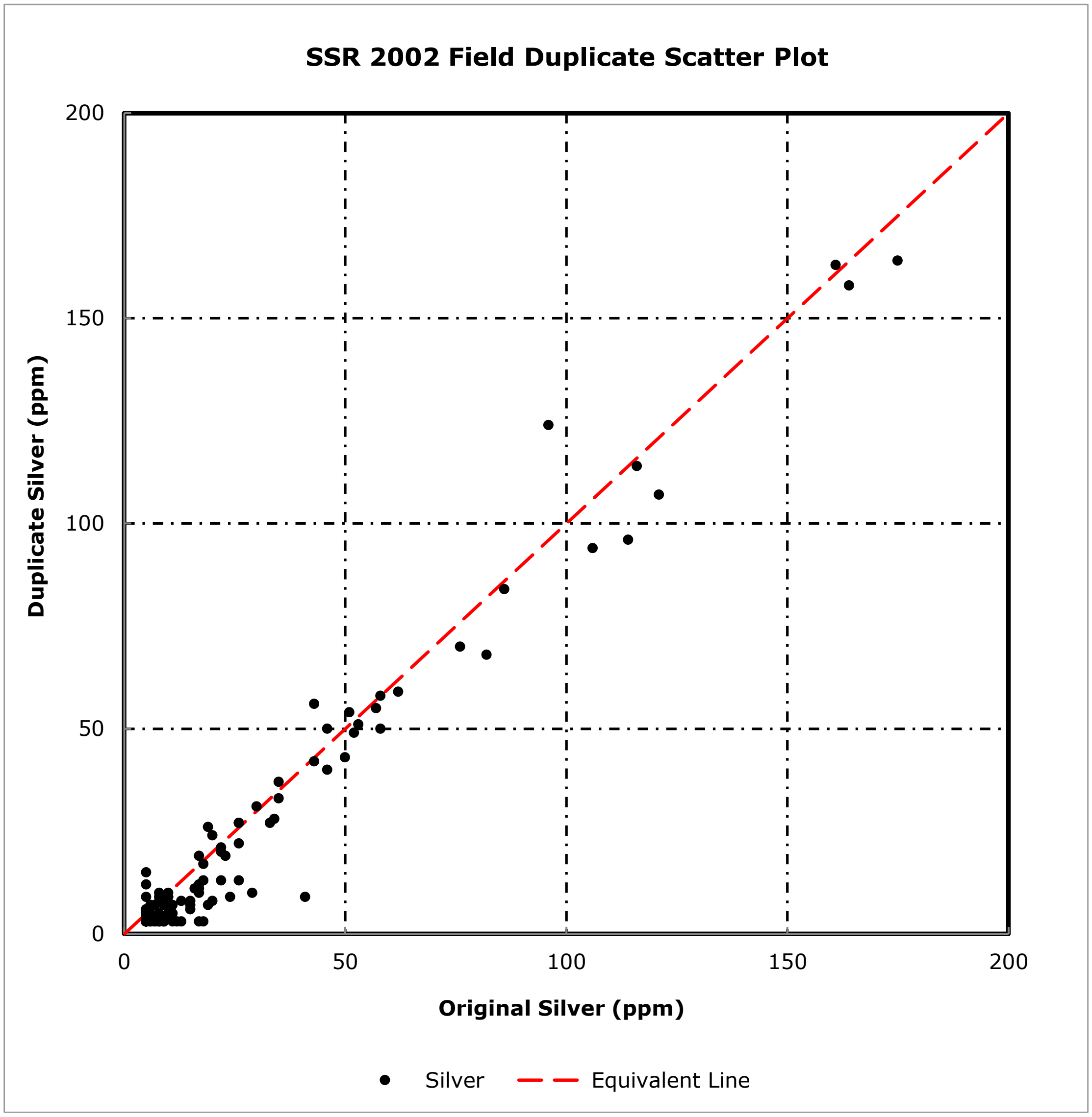
Figure 11.9, Figure 11.10, and Table 11.7 summarize the results of the field duplicate evaluation for the 2002 silver analysis.

Figure 11.9 Silver Standard 2002 RPD plot of field duplicates - silver



Source: AMC 2020.

Figure 11.10 Silver Standard 2002 scatter plot of field duplicates – silver



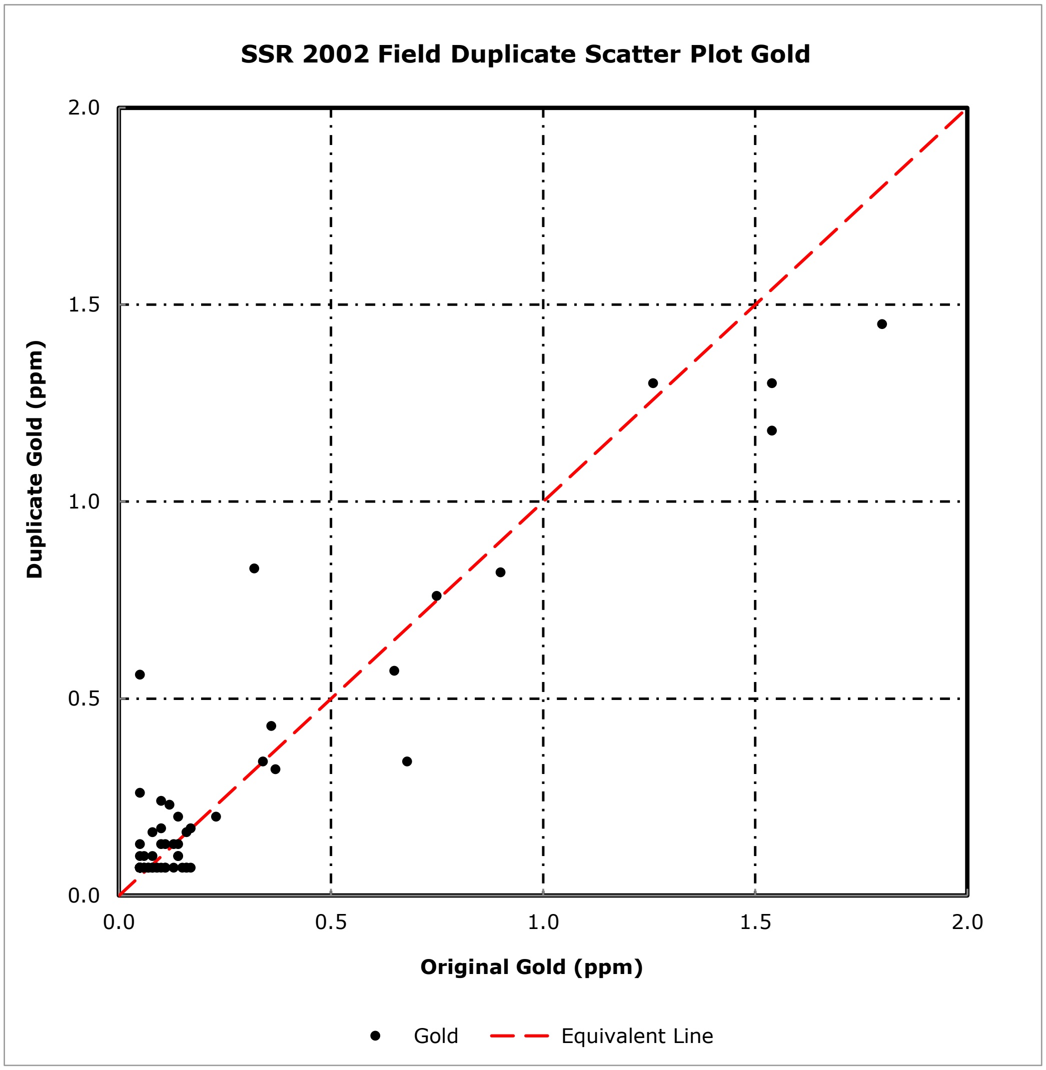
Note: X and Y axes limited to Ag 200 pm.
Source: AMC 2020.

Table 11.7 Silver Standard 2002 statistical summary of field duplicates - silver

Silver (ppm)	Primary	Duplicate
Number of samples	193	193
Number of samples > 15 times detection limit	16	16
Mean	39.03	31.18
Maximum	913.00	895.00
Minimum	5.00	3.00
Pop Std Dev.	114.19	95.87
CV	2.93	3.07
Cor Coeff	0.82	
Bias (all data)	20.11%	
Percent samples >15% RPD	81.25	

Figure 11.11 and Table 11.8 summarize the 2002 Silver Standard field duplicate data for gold. An RPD plot was produced for review, however, not included because of limited sample pairs above 15 times the detection limit.

Figure 11.11 Silver Standard 2002 scatter plot of field duplicates – gold



Source: AMC 2020.

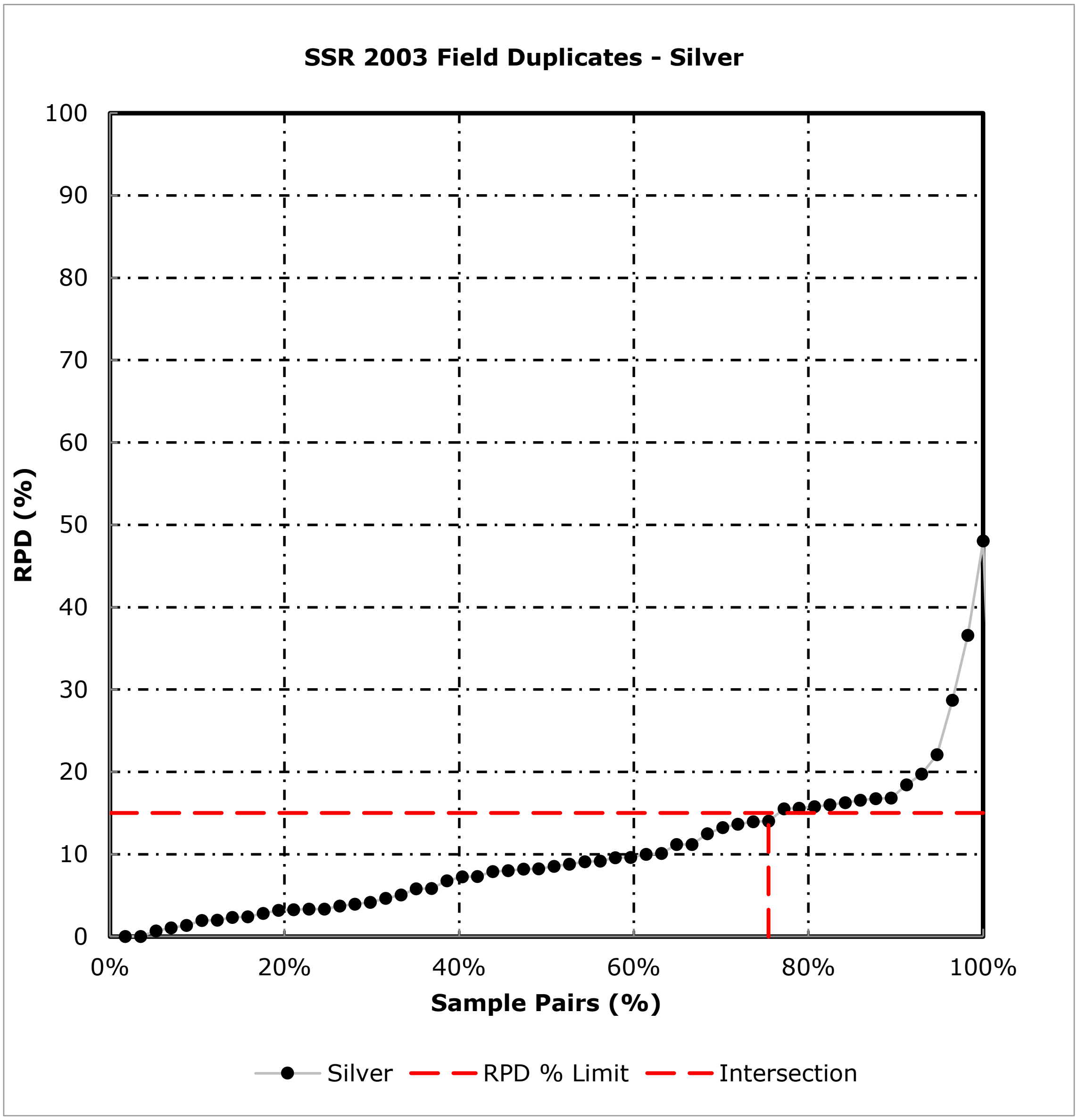
Table 11.8 Silver Standard 2002 statistical summary of field duplicates – gold

Gold (ppm)	Primary	Duplicate
Number of samples	193	193
Number of samples > 15 times detection limit	5	5
Mean	0.11	0.13
Maximum	1.80	1.45
Minimum	0.05	0.07
Pop Std Dev.	0.24	0.21
CV	2.10	1.63
Cor Coeff	0.95	
Bias (all data)	-12.44%	
Percent samples >15% RPD	40.00	

There are insufficient samples above 15 times the detection limit for meaningful analysis for either gold or silver.

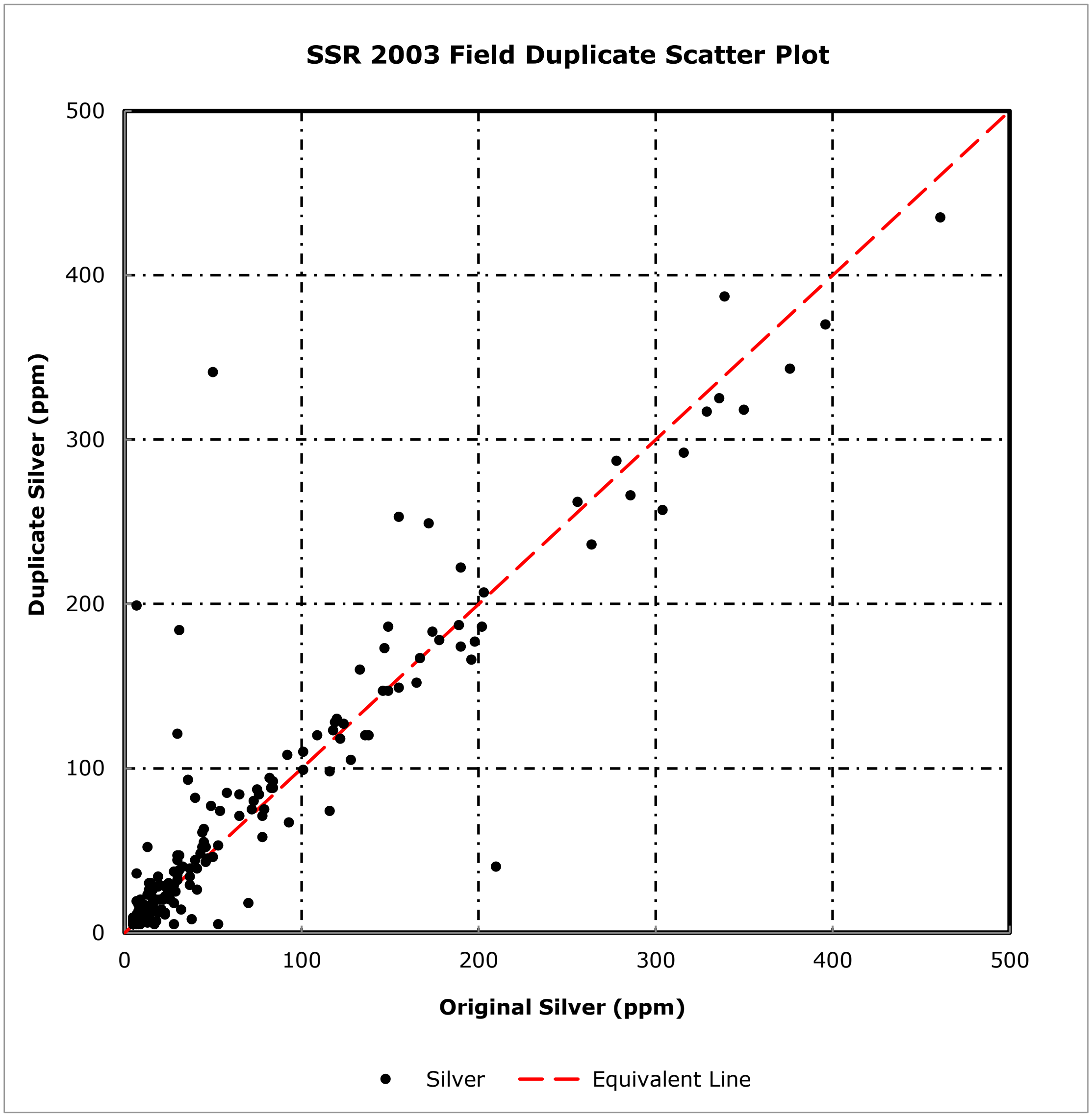
Figure 11.12, Figure 11.3, and Table 11.9 summarize the 2003 field duplicate analysis for silver.

Figure 11.12 Silver Standard 2003 RPD plot of field duplicates – silver



Source: AMC 2020.

Figure 11.13 Silver Standard 2003 scatter plot of field duplicates – silver



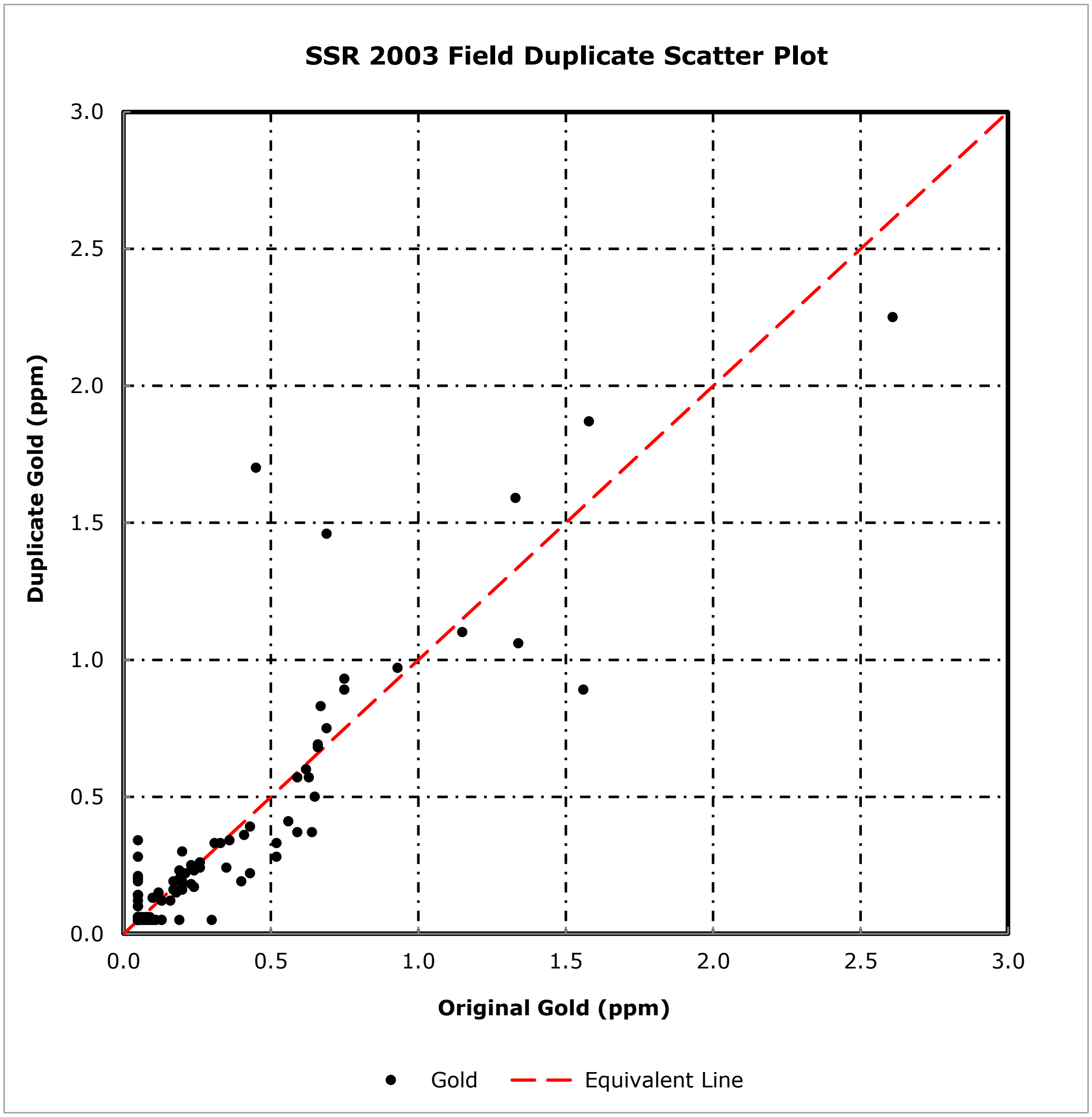
Note: X and Y axes are limited to a maximum value of 500 ppm.
Source: AMC 2020.

Table 11.9 Silver Standard 2003 statistical summary of field duplicates – silver

Silver (ppm)	Primary	Duplicate
Number of samples	291	291
Number of samples > 15 times detection limit	57	57
Mean	66.64	68.83
Maximum	1280.00	1095.00
Minimum	5.00	5.00
Pop Std Dev.	148.38	145.19
CV	2.23	2.11
Cor Coeff	0.97	
Bias (all data)	-3.29%	
Percent samples >15% RPD	75.44	

Figure 11.14 and Table 11.10 summarize the 2003 field duplicate analysis for gold. The RPD plot was reviewed but not included because of the limited sample pairs above 15 times the detection limit.

Figure 11.14 Silver Standard 2003 scatter plot of field duplicates – gold



Source: AMC 2020.

Table 11.10 Silver Standard 2003 statistical summary of field duplicates – gold

Gold (ppm)	Primary	Duplicate
Number of samples	291	291
Number of samples > 15 times detection limit	7	7
Mean	0.14	0.14
Maximum	2.61	2.25
Minimum	0.05	0.05
Pop Std Dev.	0.27	0.28
CV	1.91	1.96
Cor Coeff	0.91	
Bias (all data)	-0.73%	
Percent samples >15% RPD	42.86	

The following observations are made regarding the 2003 duplicate analysis:

- For silver, there are 57 sample pairs above 15 times the detection limit. Of these 57, approximately 95% are less than the 20% RPD threshold.
- There appears to be a very minor positive bias (~3%) towards the duplicate sample values for silver.
- For gold, there are only 7 sample pairs above 15 times the detection limit. This precludes meaningful analysis.

11.6.2 Mandalay

No field, laboratory coarse, or laboratory pulp duplicates were submitted by Mandalay.

11.7 Assay results for umpire assays

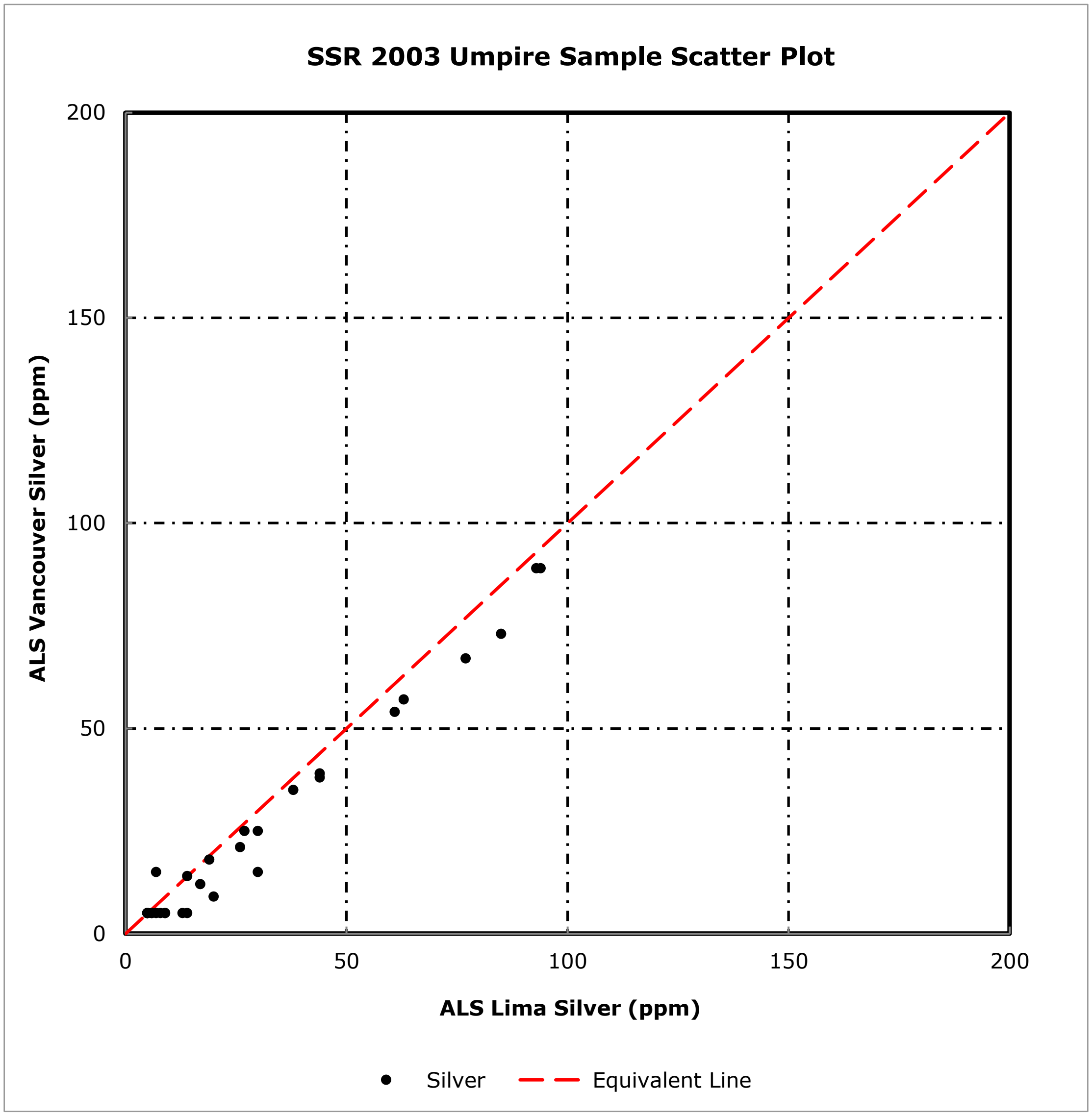
11.7.1 Silver Standard Resources

A total of 34 umpire samples were provided relating to the 2003, Silver Standard data. This equates to an approximate submission rate of 2%. The samples were prepared by ALS Antofagasta and sent to ALS Lima (Original) and ALS Vancouver (Duplicate) for analysis.

It is noted that the 2014 RPA Technical Report discusses 169 umpire samples for 2003 Silver Standard data, but as this data could be sourced it is not part of the analysis.

Figure 11.15 and Table 11.11 summarize the results for the 2003 umpire samples for silver. No RPD plots were generated for the external check assays as only four sample pairs exceeded the detection limit.

Figure 11.15 Silver Standard 2003 umpire sample scatter plot – silver



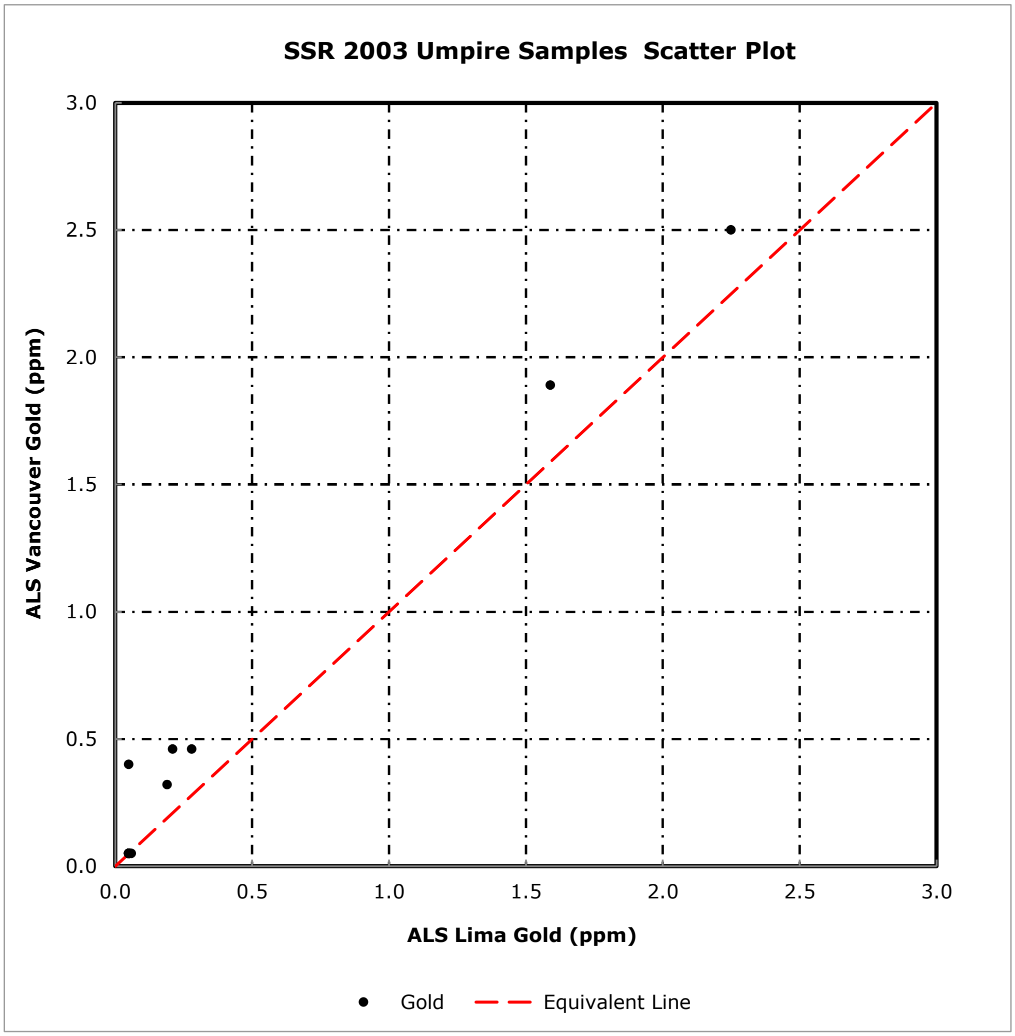
Note: X and Y axis limited to 200 pm Ag.
Source: AMC 2020.

Table 11.11 Silver Standard 2003 statistical summary of umpire samples - silver

Silver (ppm)	ALS Lima	ALS Vancouver
Number of samples	34	34
Number of samples > 15 times detection limit	4	4
Mean	63.06	58.35
Maximum	866.00	850.00
Minimum	5.00	5.00
Pop Std Dev.	157.01	153.95
CV	2.49	2.64
Cor Coeff	1.00	
Bias (all data)	7.46%	
Percent samples >15% RPD	100.00	

Figure 11.16 and Table 11.12 summarize the results for the 2003 umpire samples for gold. No RPD plots were generated for the external check assays as only two sample pairs exceeded the detection limit.

Figure 11.16 Silver Standard 2003 umpire sample scatter plot - gold



Source: AMC 2020.

Table 11.12 Silver Standard 2003 statistical summary of umpire samples - gold

Gold (ppm)	ALS Lima	ALS Vancouver
Number of samples	34	34
Number of samples > 15 times detection limit	2	2
Mean	0.18	0.22
Maximum	2.25	2.50
Minimum	0.05	0.05
Pop Std Dev.	0.45	0.52
CV	2.58	2.38
Cor Coeff	0.99	
Bias (all data)	-24.25%	
Percent samples >15% RPD	50.00	

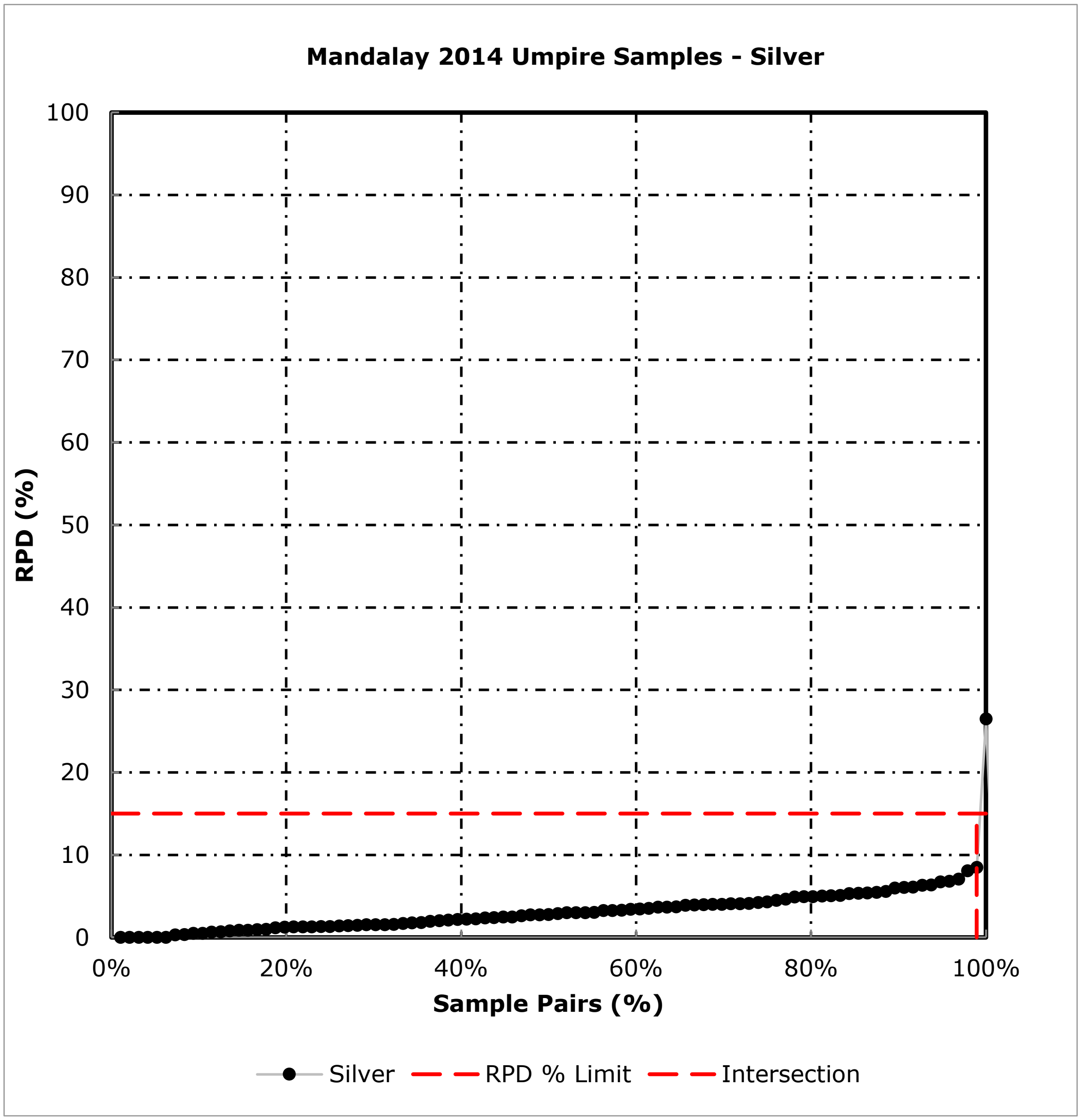
There are insufficient samples above 15 times the detection limit for meaningful analysis for either gold or silver.

11.7.2 Mandalay

In 2014, 142 umpire samples were submitted, which equates to approximately 7% of total samples. In 2016, Mandalay submitted 35 umpire samples, all in batch AN17032054, which equates to approximately 5% of total samples taken. The submission rates for umpire samples are acceptable. The original samples were analyzed at ALS Lima, with the duplicates analyzed at ALS Vancouver.

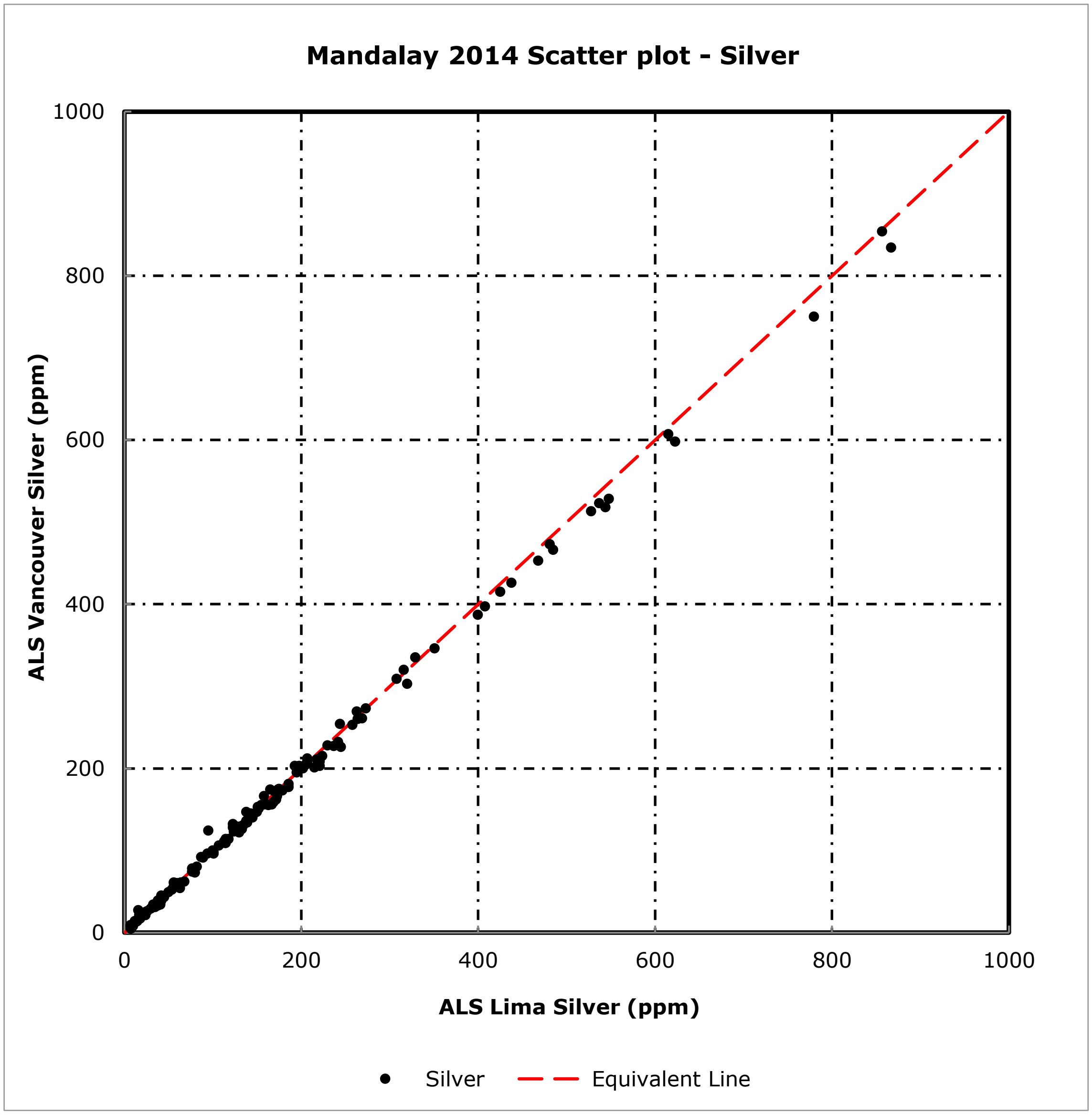
Figure 11.17, Figure 11.8, and Table 11.13 summarize the 2014 umpire sample results.

Figure 11.17 Mandalay 2014 RPD plot of umpire samples – silver



Source: AMC 2020.

Figure 11.18 Mandalay 2014 umpire sample scatter plot – silver



Source: AMC 2020.

Table 11.13 Mandalay 2014 statistical summary of umpire samples – silver

Silver (ppm)	**ALS Lima**	**ALS Vancouver**
Number of samples	142	142
Number of samples > 15 times detection limit	96	96
Mean	179.54	175.94
Maximum	1110.00	1070.00
Minimum	7.00	5.00
Pop Std Dev.	185.74	180.20
CV	1.03	1.02
Cor Coeff	1.00	
Bias (all data)	2.00%	
Percent samples >15% RPD	98.96	

Table 11.14 summarizes the results of the umpire samples for gold.

Table 11.14 Mandalay 2014 statistical summary of umpire samples – gold

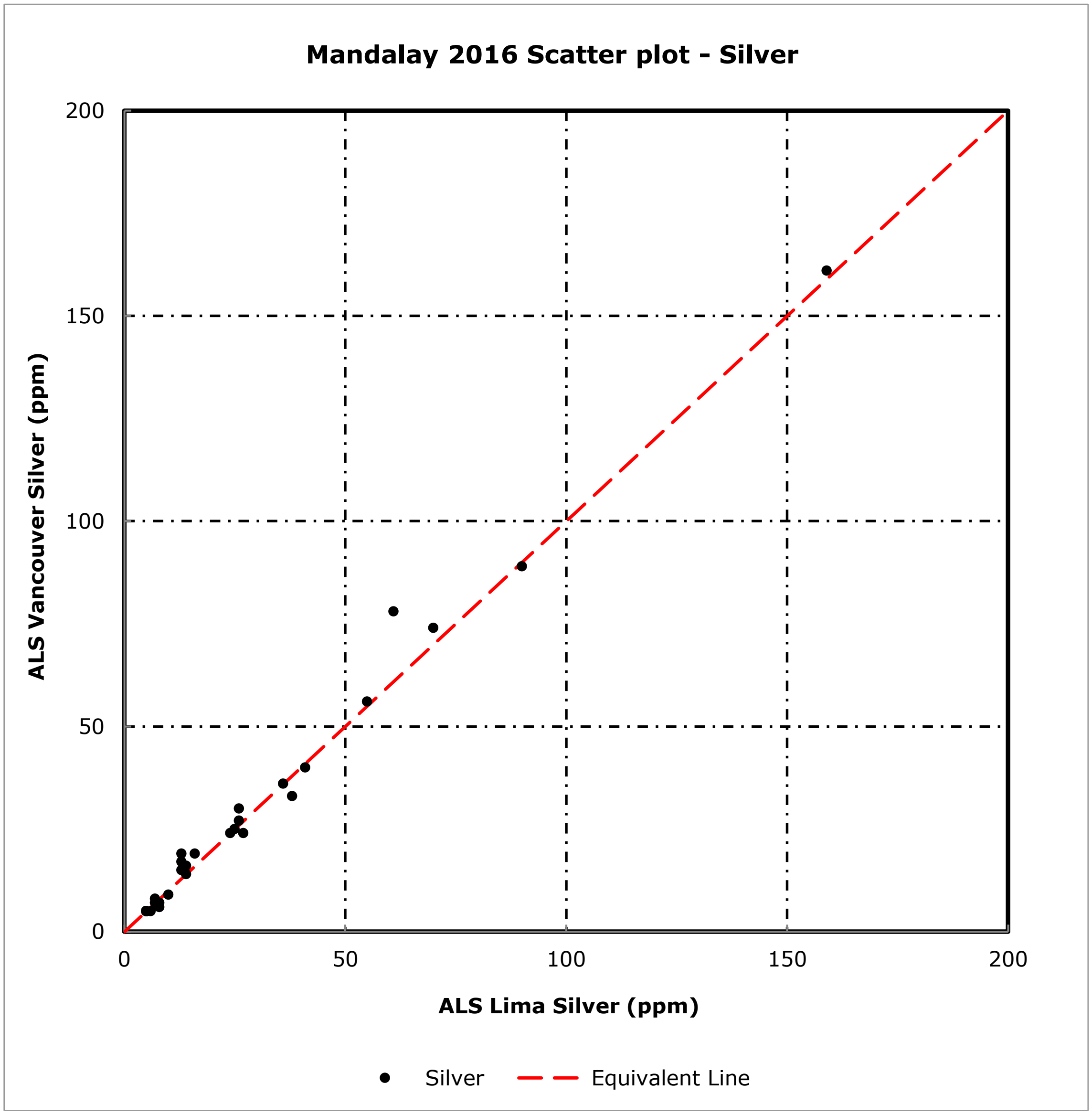
Gold (ppm)	ALS Lima	ALS Vancouver
Number of samples	142	142
Number of samples > 15 times detection limit	12	12
Mean	0.31	0.35
Maximum	1.99	2.03
Minimum	0.05	0.05
Pop Std Dev.	0.37	0.41
CV	1.21	1.18
Cor Coeff	0.96	
Bias (all data)	-13.69%	
Percent samples >15% RPD	83.33	

The following observations are made regarding the 2014 umpire sample results:

- For silver, there are 96 sample pairs above 15 times the detection limit. Of these 96, 99% are less than the 10% RPD threshold.
- There is negligible bias between the two sample sets. For grades above 400 pm silver, the scatter plot shows some positive bias towards the primary laboratory (ALS Lima).
- For gold, there are only 12 sample pairs above 15 times the detection limit, hence there are insufficient samples for meaningful analysis.

Figure 11.19 and Table 11.15 summarize the 2016 umpire sample results for silver. No RPD plots were produced as only 2 sample pairs exceeded 15 times the detection limit.

Figure 11.19 Mandalay 2016 umpire sample scatter plot – silver



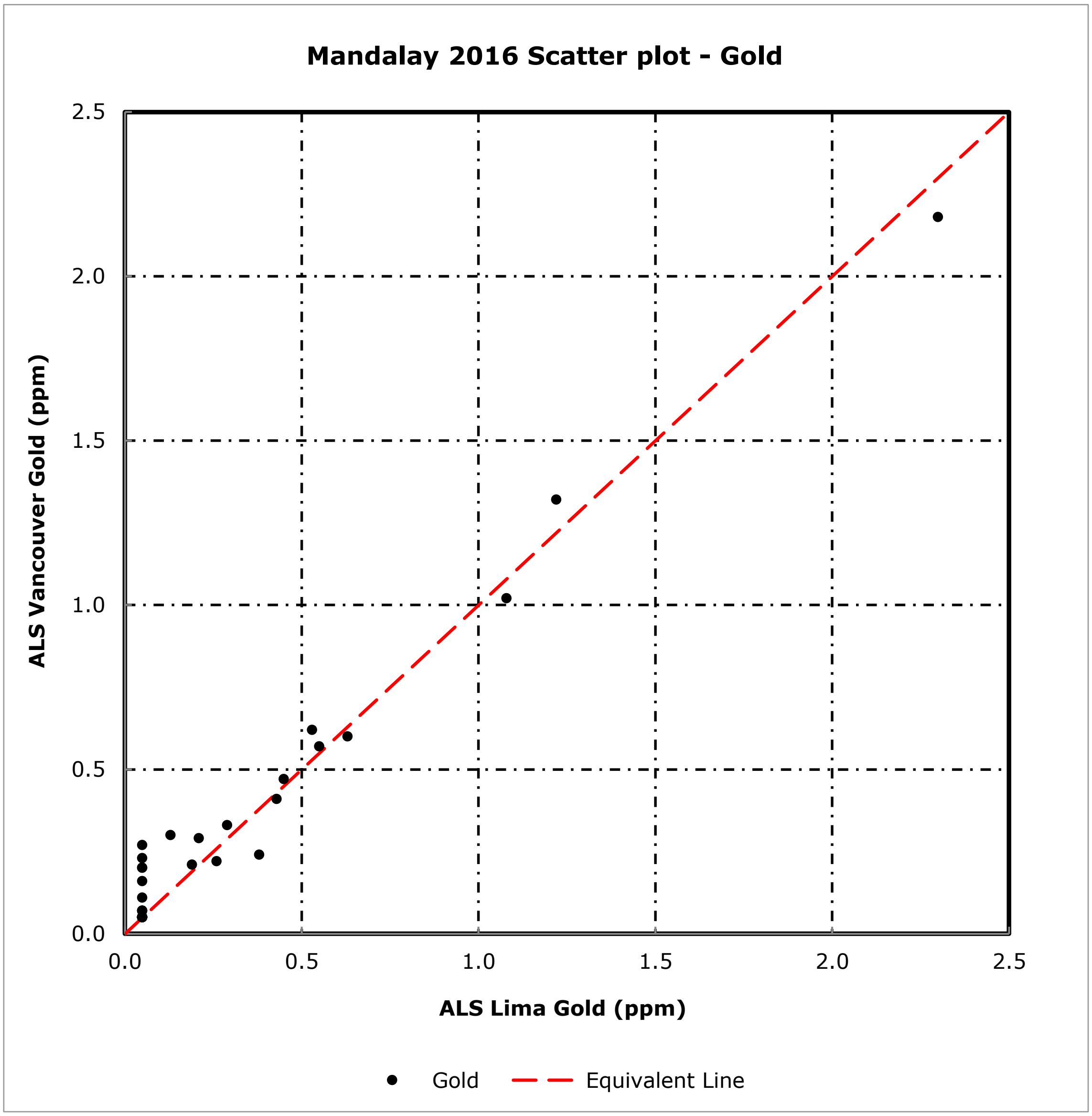
Source: AMC 2020.

Table 11.15 Mandalay 2016 statistical summary of umpire samples – silver

Silver (ppm)	**ALS Lima**	**ALS Vancouver**
Number of samples	35	35
Number of samples > 15 times detection limit	2	2
Mean	24.49	25.40
Maximum	159.00	161.00
Minimum	5.00	5.00
Pop Std Dev.	31.40	32.35
CV	1.28	1.27
Cor Coeff	0.99	
Bias (all data)	-3.73%	
Percent samples >15% RPD	100.00	

Figure 11.20 and Table 11.16 summarize the 2016 umpire sample results for gold. No RPD plots were produced as only 3 sample pairs exceeded 15 times the detection limit.

Figure 11.20 Mandalay 2016 umpire sample scatter plot – gold



Source: AMC 2020.

Table 11.16 Mandalay 2016 statistical summary of umpire samples – gold

Gold (ppm)	ALS Lima	ALS Vancouver
Number of samples	35	35
Number of samples > 15 times detection limit	3	3
Mean	0.28	0.31
Maximum	2.30	2.18
Minimum	0.05	0.05
Pop Std Dev.	0.46	0.43
CV	1.65	1.41
Cor Coeff	0.99	
Bias (all data)	-10.93%	
Percent samples >15% RPD	100.00	

There are insufficient samples above 15 times the detection limit for meaningful analysis for either gold or silver.

11.8 Summary of observations of QA/QC results

11.8.1 Silver Standard

The following observations are made:

- No CRMs were submitted.
- Very low blank submission rate, and blank samples submitted were not 'blind'.
- Field duplicate evaluation is limited by the lack of samples above the detection limit. Ideally, unmineralized samples should not be sent as results near the detection limit can be unreliable.
- Field duplicates were analyzed at different laboratories, therefore it is difficult to quantify sampling variances.
- The umpire assays that were collected are used to verify the accuracy between labs.
- The submission rate of umpire samples is low. The majority of umpire samples submitted are close to or below the detection limit. Therefor no meaningful analysis could be undertaken.

Based on the observations stated above, it is difficult for the QP to make an informed judgement on the accuracy or precision of the Silver Standard data. However, the 2003 duplicates indicate a reasonable performance for check assays.

The Silver Standard analytical data represents approximately 64% of the analysis used in the Mineral Resource estimate (3,695 out of 5,757 used). This means there is a heavy reliance on the Silver Standard analyses to inform the Mineral Resource estimate.

To overcome any uncertainty in the Silver Standard data, the QP for Section 14 compared the Silver Standard and Mandalay data sets. A comparison of sample statistics for each data set inside the Indicated shell for the Lolón Structure showed similar means and standard deviations. A QQ plot shows the distribution is similar up to 200 g/t silver which is above the average grade of the deposit. These comparisons suggest that the Silver Standard data can be used for Mineral Resource estimation.

11.8.2 Mandalay

The following observations are made:

- Overall, the CRM results seem reasonable. Several sample batches would have needed to be re-run based on the criteria presented. The CRMs used by Mandalay are only representative of high-grade material. There is not enough information to make an informed judgement on the accuracy of the laboratory at the estimated cut-off grade and to a lesser extent at lower grades. The submission rate is acceptable.
- The results of the blank samples are considered reasonable with an acceptable submission rate.
- No field, laboratory coarse or laboratory pulp duplicates were submitted.
- The submission rates of the umpire samples are acceptable, and the results show a good level of accuracy for silver. The results of the 2014 campaign have enough samples to make a meaningful comparison for silver but not gold.

The Mandalay analytical data represents approximately 31% of the analysis used in the Mineral Resource estimate (1,789 out of 5,757 used).

11.9 Conclusions and recommendations

The QP makes the following conclusions in regard to the historical QA/QC data:

- There is limited QA/QC data available.
- The entire suite of QA/QC samples has not been collected. Only field duplicates have been submitted in all campaigns.
- The Silver Standard analysis makes up 65% of the analysis used in the Mineral Resource estimate. The Mandalay analysis makes up 31%.
- Although the CRMs taken by Mandalay do not cover the entire grade range of the deposit, they do show fair to reasonable accuracy.
- For Mandalay, the blank samples results indicated that no contamination was occurring during the sample processing. For Silver Standard, the submission rate was too low to accurately assess potential contamination.
- No laboratory coarse or pulp duplicates have been submitted, therefore it is difficult to quantify the precision of the laboratories used for assaying. Particularly for sample preparation and analytical method.
- The field duplicates submitted were analyzed by different laboratories making it difficult to distinguish between differences in analytical methods or geological variance between duplicate sample results.
- The umpire samples taken during the Mandalay campaign show good agreement between laboratories for silver.
- Limited umpire samples taken during the Silver Standard campaign do not allow meaningful assessment of laboratory performance.
- Resubmit 10% of the pulps from the Silver Standard drilling along with the full QA/QC suite to further assess the accuracy of this data. These should be from within the mineralized domains contributing to the estimate and amount to about 370 samples for assay.

Based on the conclusions summarized above, there are some concerns regarding the confidence in the assays used to inform the Mineral Resource estimate. The submission rate QA/QC programs improved during the Mandalay campaigns. However, the Mandalay assays only comprise approximately a third of the assays used to inform the Mineral Resource estimate.

To fill the QA/QC gap in the Silver Standard data, submitting a selection of say 20% of the Silver Standard pulps for assay with a full QA/QC suite would give further confidence in the data.

The following is recommended to improve confidence in the sampling and analytical procedures:

- Appropriate selection of CRMs to cover the appropriate grade range.
- Selection of duplicate samples in mineralized material.
- Ensure field duplicates are analyzed at the same laboratory so they can be used to quantify geologic variance appropriately.
- Increased submission of blanks.
- Include laboratory pulp and coarse repeats in the sample stream to quantify any weaknesses in the sample preparation or procedures.
- Establish QA/QC protocols to determine when sample analyses fail.
- Ensure QA/QC programs are continually monitored and request re-runs where samples are considered to fail.
- Continue to include umpire samples in the QA/QC program.
- Ensure CRMs, blanks and duplicate samples are submitted with each batch sent to the laboratory.

If coarse rejects or pulp samples are available for the Silver Standard campaigns, a portion (5%) of mineralized samples should be collected and submitted to laboratory with CRMs to provided further confidence in this data.

Despite any concerns highlighted above, the QP does not consider these issues to be material to the global, long term Mineral Resource estimate. The deficiencies should be addressed by further drilling which employs industry standard QA/QC procedures.

Overall, the QP considers the sample preparation, security, and analytical procedures to be adequate for Mineral Resource estimation.

12 Data verification

Data verification was carried out in two ways, one being a site based exercise carried out by Mr Sergio Alvarado and described in Section 12.1 and the other verification aspects discussed in Sections 12.2 and 12.3 being carried out by Ms Dinara Nussipakynova, P.Geo., of AMC, who is the QP for Section 14.

12.1 Site verification

Qualified Person Mr Sergio Alvarado of Geoinvest SAC E.I.R.L. (Chile) conducted a site inspection of the Property between 7 to 12 September 2020. Mr Alvarado was accompanied on the site visit by the site caretaker Carlos Lopez and Juan Carlos Fernandez a consultant to Aftermath. The results of the inspection are provided in a report titled "Challacollo Project, Verification visit, Geological Validation and Exploration Campaigns, Pica, First Region of Tarapaca, Chile" (Alvarado 2020). The following is a summary of the observations made from the site inspection.

12.1.1 Introduction

The general scope of this work was to verify and validate the field information from historical exploration campaigns as this data is being used in estimating Mineral Resources.

To fulfill the proposed work, the following specific objectives were defined:

- GPS verification of the different exploration campaigns regarding drill collars with photographs evidencing the location of these in the field.
- Take notes and photographs of outcrop geology around the veins and host rocks areas.
- Take samples of the main lithological units and mineralized zones (veins), for their macroscopic description and as a geology verification measure.
- Review diamond drilling cores and RC cutting of previously mineralized selected sections (intersection with mineralized veins).
- Verification and validation of storage sites for diamond drilling cores and RC cutting and the corresponding safety and quality of the storage sites.
- Procedures review and validation:
  - Boreholes logging and registration (review of drilling folders).
  - Sampling and density taking procedures for lithologic units and mineralized veins.
  - Chain of custody procedure used for samples (storage, transport, and safety).
  - QA/QC procedures and management used in the field.
  - Data base procedures and management.
  - Drillhole deviation data collection procedure.
  - Landscape photographs for report.

12.1.2 On site information checking

During the field inspection the following activities were completed. Some of these are summarized in the following sub-sections, and some observations are incorporated into other sections of the report.

- Walk around the Project Area marking control points with Garmin GPS, Model GPSMAP 64, in datum WGS84 Zone 19 South.
- Recognition of the different types of exploration: DDH drilling, RC drilling, and old underground works.
- Photographs of surveys and outcrops.

- Description of the host rocks and recognition of major structures.
- Review and validation of mineralized sections in previously selected diamond drillholes and reverse air cuttings selected by the QP.
- Review of samples storage and safety at the project site.

12.1.3 Exploration campaigns verification and validation

Three types of drilling were identified:

- Diamond Drilling (DDH).
- Reverse Circulation Drilling (RC).
- DTH drilling, (in fact the DTH labelled holes are RC drilled by Mantos Blancos and only four holes used in the estimate).

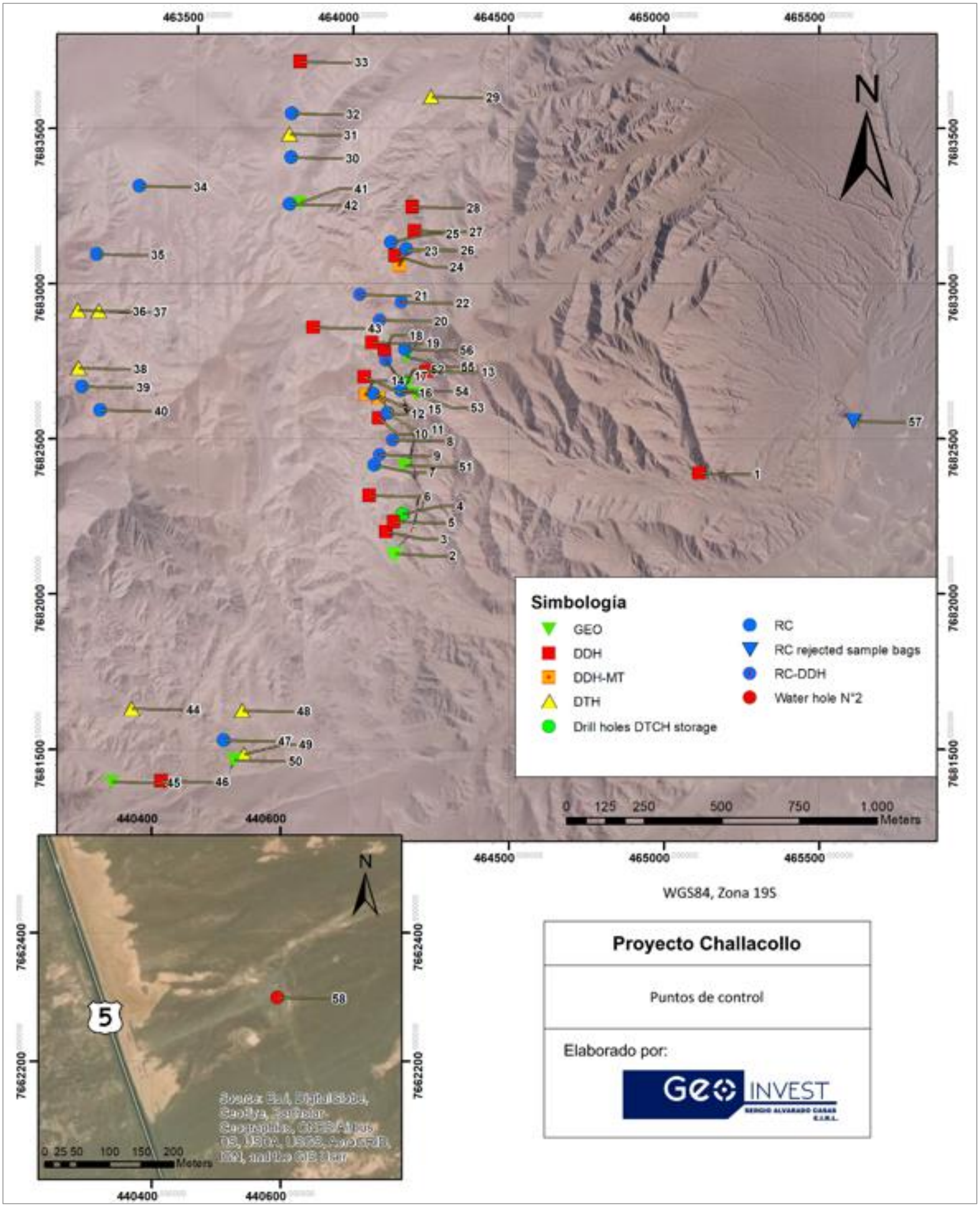
12.1.4 Control points taken

To validate locations a total of 58 control points were surveyed, to verify and validate the exploration carried out in the project. These are shown in Figure 12.1.

A total of 25 RC drill collars were verified and validated. Of these 15 correspond to the drilling carried out by Silver Standard between years 2002 and 2003 and 10 drill collars also carried out by Silver Standard in 2007. Figure 12.2 shows the marked collar of CHARG-23 at control point 26 on the left-hand side and the marked collar of SSR-23 at control point 30 on the right-hand side of the figure.

A total of 44 diamond drill collars were verified and validated, corresponding to 85% of the total DDH drilling carried out by Mandalay Resources in 2014. Figure 12.3 shows the marked collar of DCH-07A and 07 at control point 9.

Figure 12.1 Location of control points taken



Source: Alvarado 2020.

Figure 12.2 Typical marked Silver Standard RC drill collars

Note: Collar of CHAG-23 (left), Collar of SSR-23 (right).
Source: Alvarado 2020.

Figure 12.3 Typical marked Mandalay diamond drill collars

Note: Collar of DCH-07A (foreground) DCH-07 (background).
Source: Alvarado 2020.

Additionally, during the 2014 campaign, carried out by Mandalay, three holes with PQ diameter were drilled for metallurgical purposes.

A total of 08 DTH boreholes (normal RC drilling) were verified and validated in the field, corresponding to 36% of the total drilling carried out by Mantos Blancos between years 1995 and 1996.

Figure 12.4 shown the marked collar of DTH-CH-18 at control point 31.

Figure 12.4 Typical marked Mantos Blancos RC drill collar

Note: Collar of DTH-CH-18.
Source: Alvarado 2020.

12.1.5 Geological verification

During the QP's site visit, lithologic units and veins were identified and verified. Numerous photographs were taken and some of these and supplemental text is incorporated into Section 7.

12.1.6 Drill core verification

Five DDH holes and three RC holes were selected by the QP for verification of mineralized sections, which were chosen due to the high grades of silver found in these intersections. In the eight selected drillholes, evidence of mineralization was seen corresponding to the logged intervals. A couple of examples are included here.

In DCH-06 the section 62.75-68.30, exhibits a hydrothermal breccia, with limonite and hematite veins. Figure 12.5 shows an intersection from 66.9 m to 68.3 m which has grades of 2,530 g/t Ag and 0.56 g/t Au.

Figure 12.5 Mineralized section in DCH-06

Source: Alvarado 2020.

In CHAG-09 the section 76.00-80.00, corresponds to a fault zone with intense argillic alteration, hematite, and quartz in veins. Figure 12.6 shows a chip tray where silver grades range from 112 to 312 g/t Ag.

Figure 12.6 Mineralized section in CHAG-09A

Source: Alvarado 2020.

12.1.7 Sample storage

Mandalay ensured that the drill core was well protected, excellently ordered and with restricted access only to those who wish to visit it. Figure 12.7 shows the storage site. The site is maintained by a caretaker who is a resident of Pica and regularly visits the site.

Figure 12.7 Storage site of Mandalay core

Source: Alvarado 2020.

The RC drilling samples, corresponding to the CHAG and SSR prefixed drillholes carried out by Silver Standard in 2002, 2003 and 2007, are stored underground in an adit entrance to the Lolón Structure in the Catalina sector. Access to this warehouse is protected by a padlocked door and the access is by internal permit. Like the core, the RC samples are very well ordered and easily located.

Only the DTH series of holes, drilled by Mantos Blancos between 1995 and 1996 do not have sample backup.

Figure 12.8 shows the secure storage facility with the RC split samples and returned laboratory assay pulps on pallets inside.

Figure 12.8 Storage site of RC and laboratory pulp samples

Source: Alvarado 2020.

12.1.8 Conclusions from the field inspection

- The verification and validation carried out in the field confirm that all exploration campaigns were carried out as reported.
- The Challacollo Project is located on sedimentary volcanic rocks of the Upper Cretaceous, where systems of hydrothermal vein associated to the fault system of northern Chile of NS orientation are emplaced.
- The mineralized veins can be easily recognized on surface and can be traced for about 3 km.
- There was important mining activity in the last century, with underground mining by means of ramp access and a process plant for silver extraction.
- In general, the area geology is well identified as are the veins system.
- Systematic sampling of the lithological units and the mineralized veins is recommended for density testing.

12.2 Database verification

Aftermath rebuilt the database from first principals and carried out their internal checks. The QP received the database and ran validations and plotted out the drillholes spotting a number of gaps or errors. These were then rectified in the master database prior to being used in the Mineral Resource estimation process.

12.3 Assay verification exercise

The QP undertook random cross-checks of assay results in the database with the original assay results on the assay certificates returned from ALS Laboratories (Canada), ALS Chemex (Chile), and ALS Mineral (Chile). This verification consisted of comparing 1,210 of the 5,757 assay results used in the estimate and in the database, to those in the certificates. This is approximately 21% of the total samples. No errors were detected.

12.4 Conclusion

The QPs are of the opinion that the exploration data is adequate for the purposes used in the Technical Report.

13 Mineral processing and metallurgical testing

13.1 Introduction

From 2002 to 2014, three metallurgical test work programs have been conducted on mineralization from the Challacollo Silver-Gold Project. The results of the historical metallurgical test work conducted from 2002 to 2004 were reported in the 2015 MP Technical Report. A more extensive metallurgical test work program was carried out by ALS Minerals Division at their laboratory in Santiago, Chile during 2014 and 2015 to support more advanced studies (Pupazzoni and Smith 2015).

It should be noted that the samples used for the metallurgical test work conducted from 2002 to 2004 were not identified in sufficient detail to confirm the origin of the samples and how they would relate to the mineralogical zones of Challacollo deposit. The locations from which the bulk samples and core were taken for the 2014 metallurgical test work program were well documented.

The metallurgical test work conducted to date has focused on material from the Lolón Structure system. The surrounding host rocks also typically exhibit quartz stockwork veining / breccia which also carry some silver mineralization however, this has been subjected only to limited test work to date. However, it is considered sufficient to consider the evaluation of the stockwork mineralization for a Mineral Resource estimate.

13.2 Screening metallurgical test work 2002

Early scoping level metallurgical test work was completed by Process Research Associates (PRA) Ltd. in Vancouver, Canada in May 2002 on four samples of Challacollo mineralization selected by Silver Standard. These samples were tested to provide an initial indication of the amenability of the precious metals to be extracted by direct cyanidation.

Silver and gold extractions of greater than 90% were reportedly achieved for these samples after grinding to approximately 80% passing 75 µm and leaching for 72 hours. The results for cyanidation tests conducted on material crushed to less than 6 mm in size were not documented in the 2015 MP Technical Report.

13.3 Scoping metallurgical test work 2004

The 2004 scoping metallurgical test work carried out by PRA comprised mainly of direct cyanidation bottle roll tests. Conditions which were explored in the 2004 scoping test work program included grind size, leach retention time and sodium cyanide concentration. The Bond ball mill work index was determined for the composites tested and preliminary settling and filtration test was also done.

Twelve samples were selected by Silver Standard to represent different geological rock types and a range of silver grades. The samples were tested individually and then a "high silver grade" composite (with an average head grade of 474 g/t Ag) and a "low silver grade" composite (with an average head grade of 183 g/t Ag) were prepared for further cyanidation test work. The location of the samples used to form the composite samples is not documented.

A primary grind size of 80% passing 45 microns was used for the cyanide leach tests conducted on the composite samples. The total silver extractions ranged from 86% to 94% after 72 hours of leaching for the "high silver grade" composite. The overall silver extraction was reduced to 80% after 72 hours of leaching for the "low silver grade" composite. Sodium cyanide concentrations greater than 1,000 ppm had minimal effect on overall silver and gold extractions after 72 hours of leaching. The Bond ball mill work index was determined to be 23 kWh/t indicating hard material.

13.4 Metallurgical testwork 2014 – 2015

The previous metallurgical test work programs had indicated the potential for satisfactory silver and gold extractions for the main Lolón Structure material by direct cyanidation after grinding to between 80% passing 45 and 75 microns. A more extensive metallurgical test work program was carried out by the previous owners Mandalay in 2014 at the ALS Minerals Division laboratory in Santiago, Chile, and reported by ALS in February 2015.

The objective of this testwork was to verify the method of extraction, precious metal recoveries, and to provide design criteria suitable for a more advanced internal engineering study.

In 2014, Mandalay selected ten underground bulk channel samples for metallurgical test work program from the existing underground workings, most of the bulk samples were from the Lolón Structure however, some were from the adjacent hangingwall stockwork / breccia, these samples were designated MT-CH-01 to MT-CH-10, see Table 13.1. Samples were taken from Lolón South, Main 2, Main, Lolón North segments.

Table 13.1 Location and details of the bulk underground channel samples

Sample ID	X	Y	Z	Mass (kg)	% in Master Composite
MT-CH-01	464151	7682244	1413.0	108	4.3
MT-CH-02	464133	7682203	1414.0	124	13.4
MT-CH-03	464138	7682471	1388.0	122	12.1
MT-CH-04	464166	7682528	1449.0	100	11.0
MT-CH-05	464143	7682617	1466.0	95	7.5
MT-CH-06	464138	7682895	1451.0	103	8.2
MT-CH-07	464191	7683034	1458.5	106	11.5
MT-CH-08	464185	7682878	1522.0	106	11.4
MT-CH-09	464255	7683300	1438.9	137	11.1
MT-CH-10	464151	7682244	1413.0	93	9.4

A “Master Composite” sample weighing 446 kg was made up from the ten bulk channel samples and was used for feed mineralogy and the additional leach tests in the 2014 metallurgical test work program. The head assay obtained for the Master Composite of 231 g/t Ag and 0.48 g/t Au was consistent with the then average 2014 historical resource average silver and gold grade for the Lolón Structure, see Section 6.3. In addition, three bulk samples were taken of both the hangingwall and footwall dilution material; however these were not tested during the 2014 test work program.

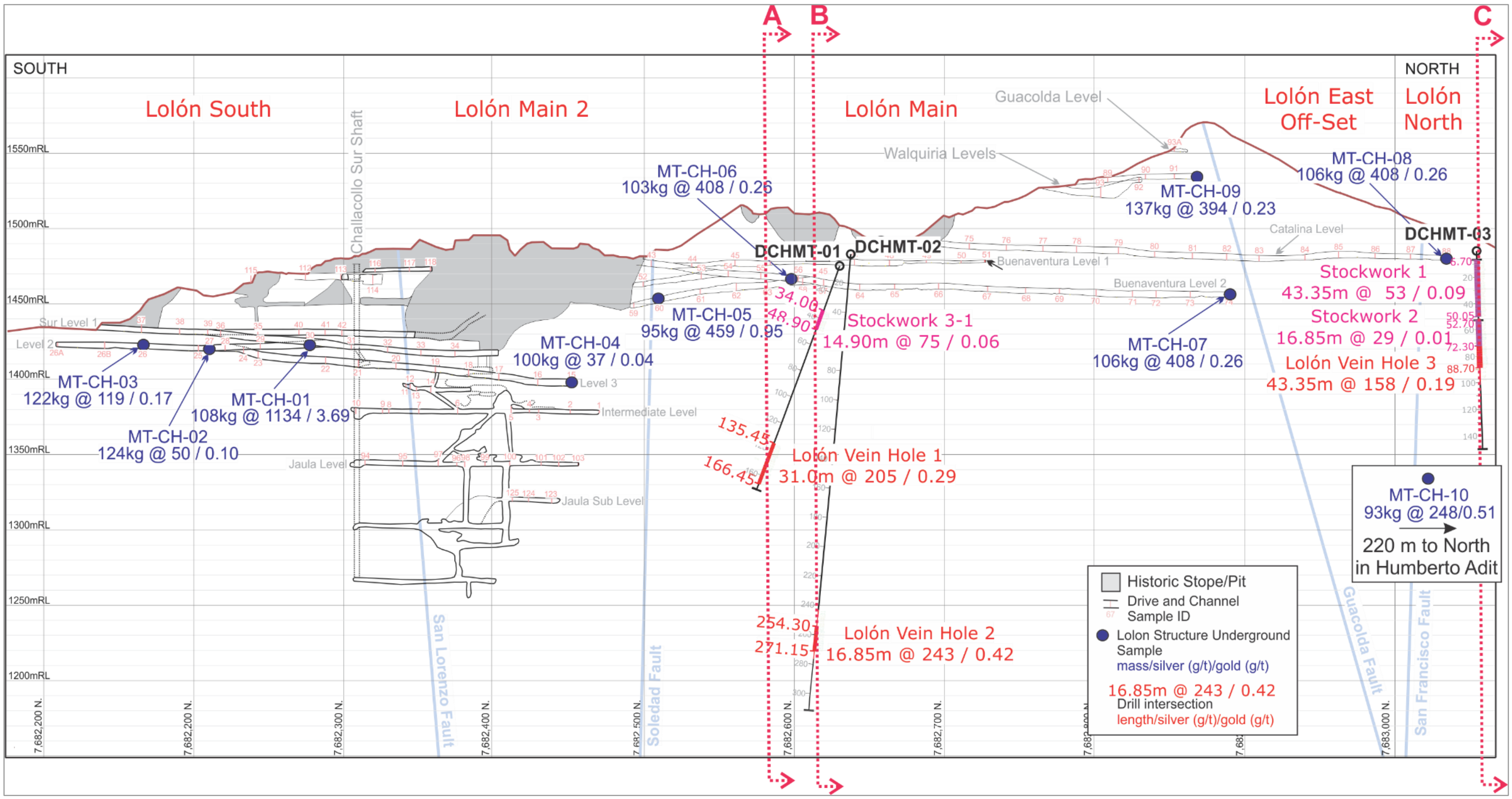
To supplement the bulk samples six additional metallurgical composite samples were assembled from three specifically drilled metallurgical drillholes: DCHMT-01, DCHMT-02, and DCHMT-03. Three of these samples were derived from the drill core and were defined as being representative of the Lolón Structure mineralization and the remaining three core samples were classified as being from the hangingwall quartz stockwork / breccia zone, see Table 13.2. These composites were tested individually to assess variability in both comminution characteristics and extraction by direct cyanidation.

Table 13.2 Location and details of the bulk sample composites

Drillhole	Material type	Sample ID	Depth from (m)	Depth To (m)	Total length (m)	Mass (kg)
DCHMT-01	Lolón Structure	Lolón Vein1	135.45	166.45	31.00	324.80
DCHMT-02	Lolón Structure	Lolón Vein2	254.30	271.15	16.85	174.70
DCHMT-03	Lolón Structure	Lolón Vein3	72.30	88.70	16.40	197.70
DCHMT-03	Hangingwall Stockwork / Breccia	Stockwork 1	6.70	50.05	43.35	515.72
DCHMT-03	Hangingwall Stockwork / Breccia	Stockwork 2	52.70	72.30	19.60	237.60
DCHMT-01	Hangingwall Stockwork / Breccia	Stockwork 3-1	34.00	48.90	14.90	Not reported

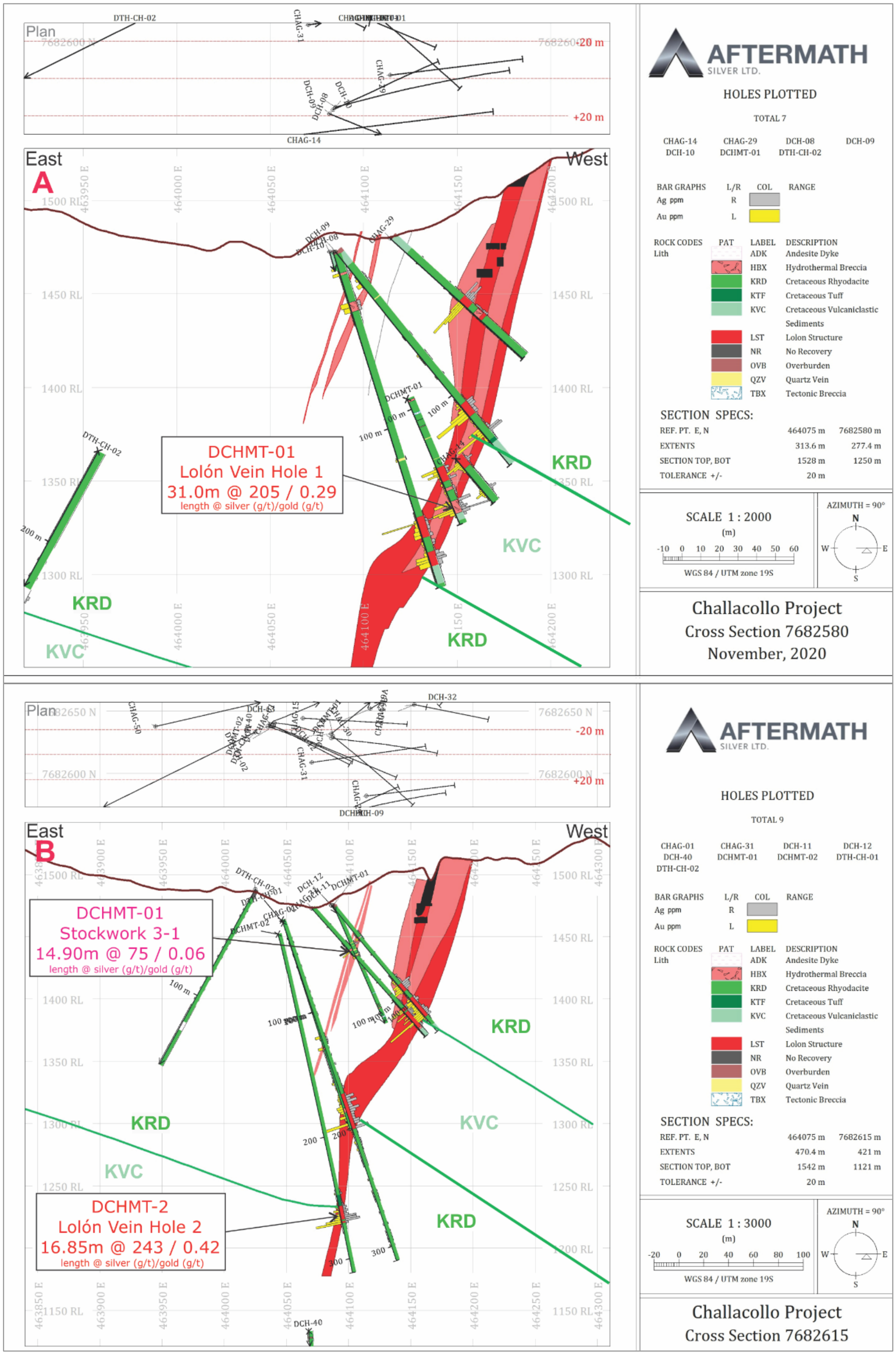
Figure 13.1 shows the location of the 2014 metallurgical sample locations on a long section looking west. Figure 13.2 incorporate two cross sections (A and B) which show metallurgical drillholes DCHMT-01 and 02. Figure 13.3 shows the location of metallurgical drillhole DCHMT-03.

Figure 13.1 Challacollo long section showing 2014 metallurgical sample locations



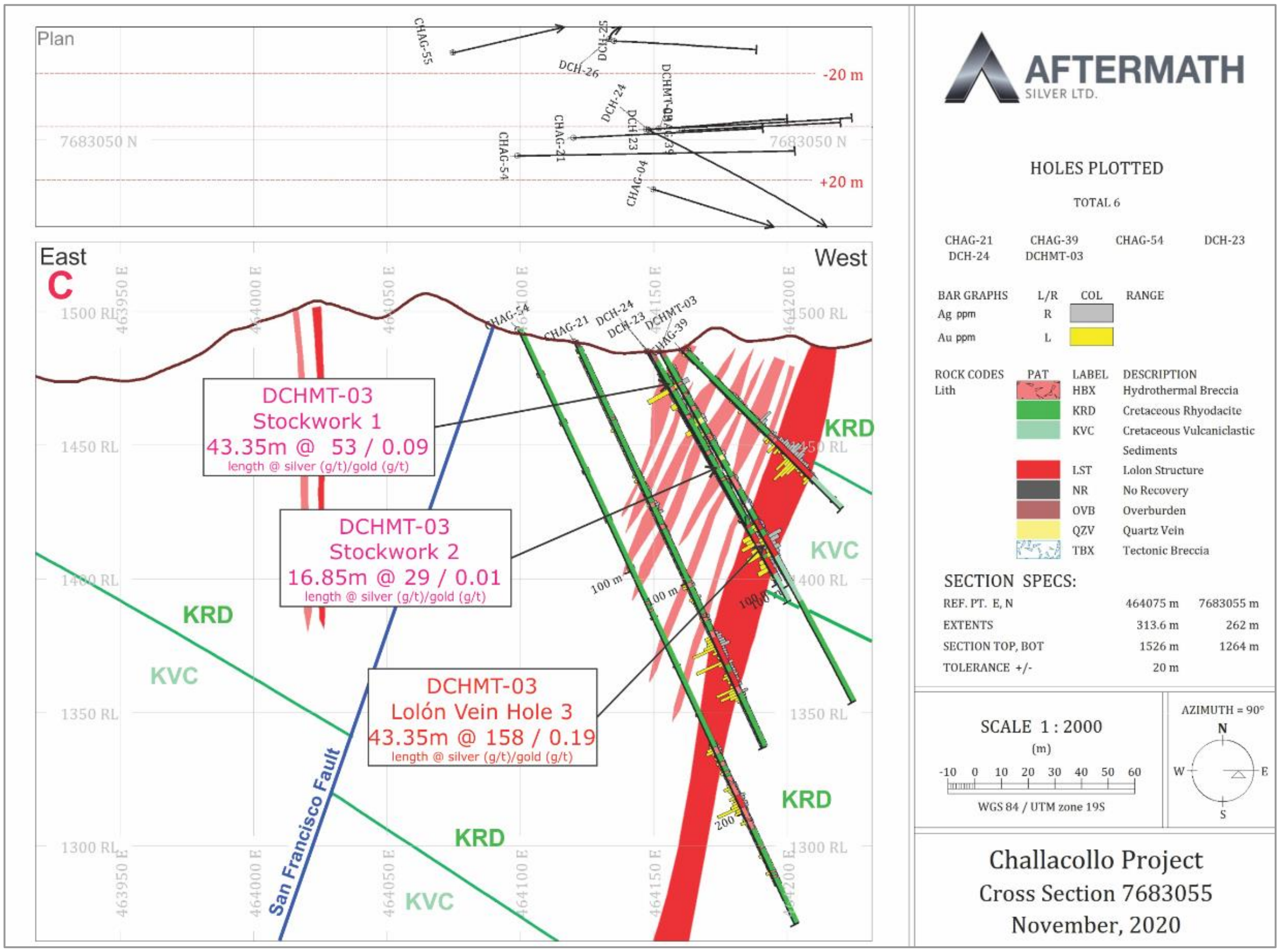
Source: Aftermath, after Errey 2015.

Figure 13.2 Cross sections showing metallurgical drillholes DCHMT-01 and 02



Source: Aftermath 2020.

Figure 13.3 Cross section showing metallurgical drillhole DCHMT-03



Source: Aftermath.

13.4.1 Sample characterization test work

A program of mineral characterization was completed, which included the following tests:

- Underground bulk, Master Composite, and drill core sample detailed head assays for silver, gold, total sulphur, sulphate sulphur, organic carbon, total carbon analysis, and multi-element ICP analysis.
- Specific gravity (SG).
- Master Composite mineralogy using QEMSCAN and X Ray Diffraction (XRD).
- Size fraction analysis.

13.4.1.1 Head assays

The head assay results for the key elements of interest included in the bulk, Master Composite and drill core samples used in the 2014 test work are summarized in Table 13.3.

Table 13.3 Summary of key metallurgical sample and composite head assay results

Sample	SG (t/m³)	Ag (g/t)	Au (g/t)	Ba (%)^	Pb (%)^	Zn (%)^	Cu (ppm)^	S_T (%)	SO_4 (%)*	As (ppm)
MT-CH-01	2.87	1134	3.69	0.01	13.9	0.05	135	2.87	8.16	97
MT-CH-02	2.65	50	0.10	0.14	0.75	0.03	60	0.87	2.05	250
MT-CH-03	2.72	119	0.17	0.33	0.13	0.03	36	0.54	1.24	76
MT-CH-04	2.70	37	0.04	0.54	0.15	0.19	142	0.55	1.15	139
MT-CH-05	2.59	459	0.95	0.18	0.79	0.08	163	0.67	1.73	64
MT-CH-06	2.64	408	0.26	0.20	0.49	0.43	113	0.74	1.73	113
MT-CH-07	2.62	71	0.31	0.57	0.17	0.97	178	1.25	3.28	26
MT-CH-08	2.70	183	0.26	0.04	1.05	0.79	541	1.47	4.15	36
MT-CH-09	2.53	394	0.23	0.10	0.37	0.08	146	0.96	2.50	77
MT-CH-10	2.69	248	0.51	0.07	4.42	0.72	466	1.63	4.46	373
Master Composite	-	231	0.48	0.13	1.40	0.37	-	1.06	2.19	111
Lolón Vein 1	2.38	205	0.29	0.22	0.65	0.39	-	0.17	1.72	366
Lolón Vein 2	2.48	243	0.42	0.11	5.02	3.33	-	0.72	0.27	803
Lolón Vein 3	2.60	158	0.19	0.06	0.42	0.31	-	2.79	1.23	171
Stockwork 1	2.45	40	0.02	0.12	0.10	0.16	-	0.97	2.43	34
Stockwork 2	2.75	29	0.01	0.19	0.09	0.23	-	1.55	1.40	68
Stockwork 3-1	-	75	0.06	0.22	0.21	0.20	-	0.82	1.83	79

Notes:
- Gold (ALS method Au-AA23).
- Silver (ALS method Ag-OG62).
- Sulphur total by Leco instrumentation.
- Stoichiometric calculation from total sulphur and sulphate sulphur.
- ^ ICP (ALS method ME-ICP61m and OG62 on overlimit lead and zinc).

The key findings from the ALS head assays were:

- The silver head grade for the samples ranged from 37 g/t Ag to 1,134 g/t Ag in the bulk samples and 29 g/t to 205 g/t in the drill core samples.
- Gold was also present at grades ranging from 0.04 g/t to 3.69 g/t in the bulk samples and 0.01 (detection limit) to 0.42 g/t in the core samples.
- Barium ranged from 0.01% (detection limit) to 0.57%.
- Lead ranged from 0.09% to 13.9% in the bulk samples and 0.09 (detection limit) to 5.02% in the core samples. Lead is not typically soluble in cyanide but will require monitoring in future test work programs.
- Arsenic was present at concentrations which ranged between 36 mg/L and 475 mg/L in the bulk samples and 34 mg/L and 803 mg/L in the core samples. Arsenic is not soluble in cyanide but would also require monitoring in the test work and further consideration in relation to any future tailings deposition.
- Both zinc and copper are soluble in cyanide to varying degrees. Both were present at concentration levels which would potentially result in elevated reagent consumption.
- Mercury is soluble in cyanide, and head grades greater than 0.3 g/t – 0.5 g/t would require further investigation and need to be managed carefully in future circuit designs.
- There was an elevated presence of sulphates. Sulphate would increase lime consumption and impact operating costs. Under alkaline conditions sulphate can produce gypsum leading to potential scaling problems in the plant.
- Organic carbon was low, below detection (<0.01) to 0.01 in all samples and composites and would not likely cause preg-robbing issues with silver and gold leach extractions.

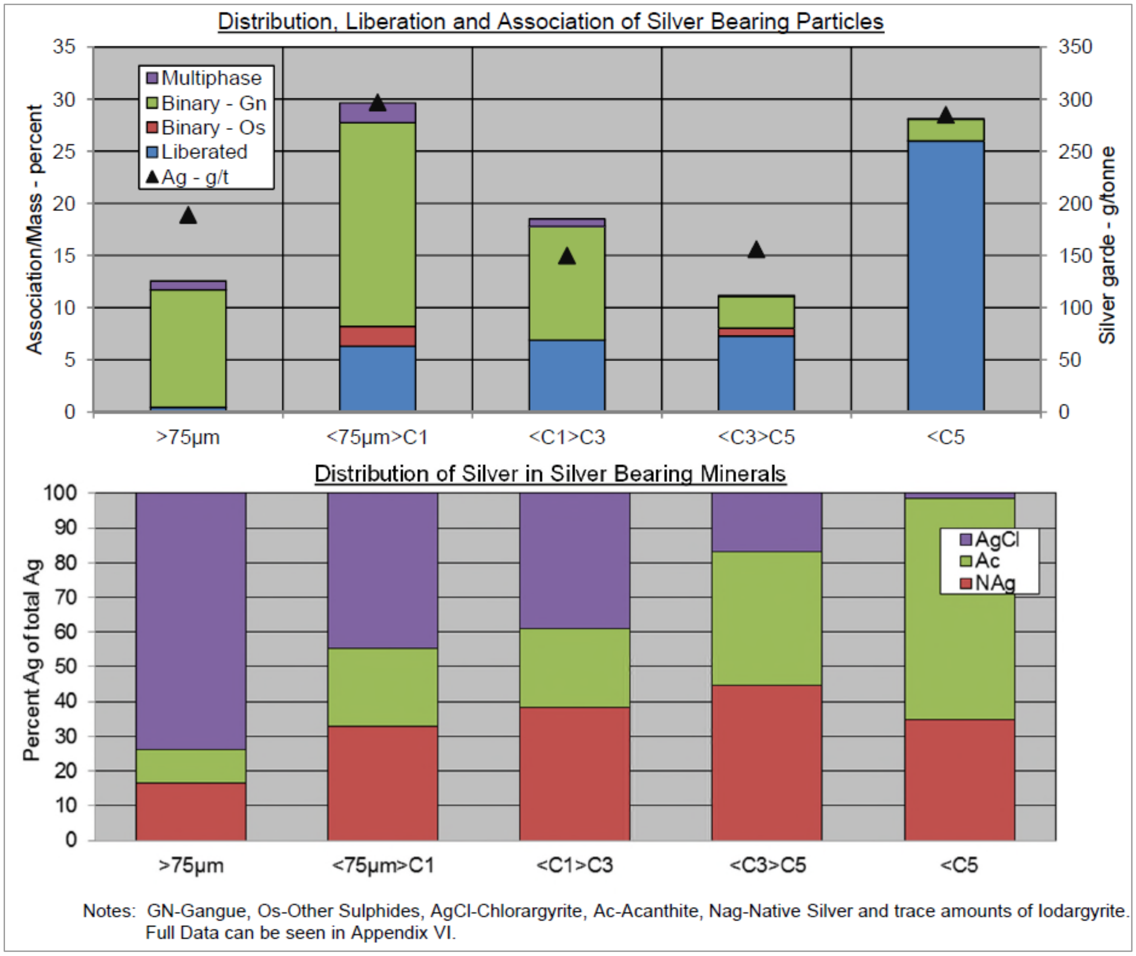
13.4.1.2 Master Composite mineralogy

A sub-sample of the Master Composite was sent to the ALS Mineralogical laboratory in Kamloops, Canada for mineralogical analysis using QEMSCAN Particle Mineral Analysis (PMA) and X-ray Diffraction on a sized Master Composite sample at a P_{80} of 67 µm.

A summary of the results and mineralogical composition is summarized in Figure 14.4. QEMSCAN search identified the main silver-bearing minerals were native Ag, Ag_2S, AgCl, AgI. These silver minerals are amenable to recovery by direct cyanidation when sufficiently liberated but typically exhibit slower leaching characteristics and require higher cyanide addition. The gold particles identified were mostly as exposed liberated pieces.

The mineralogy liberation analysis done on the Master Composite sample indicated 47% of silver minerals were classified as being liberated after grinding 80% passing 67 µm and there was a relatively fine nature to the silver minerals. There were few liberated silver minerals in the +75 µm and -75 µm +43 µm size fractions examined with the majority of the silver particles occurring as binary composites in association with gangue. Silver minerals were, however, mostly classified as liberated in the -20 µm size fractions tested. Only fine gold particles were observed but predominately as well exposed liberated pieces. Approximately half of the liberated gold particles identified were in the -11 µm size fraction. Note Figure 14.4 shows the Master Composite distribution, liberation, and association of silver bearing particles after grinding 80% passing 67 µm.

Figure 13.4 Master Composite distribution, liberation, and association



Source ALS 2015.

13.4.2 Comminution testing

Comminution testwork to evaluate material competency, hardness and abrasiveness were carried out on the ten bulk samples, the Master Composite, selected pieces from the three diamond drill core samples and the five diamond drill core composites.

Comminution tests on the bulk samples and Master Composite included:

- JK Drop Weight test (Master Composite only).
- SAG mill comminution (SMC) drop weight index test (Dwi)
- Bond crushing work index (CWi).
- Apparent relative density (ARD).
- Bond rod and ball mill work index (BRWi, BBWi).
- Bond abrasion index (Ai).

The results are summarized in Table 13.4.

Table 13.4 Summary of comminution testwork samples and composite assay results

Sample	DWi (kWhr/m^3)	CWi (kW-hr/tonne)	ARD	BRWi (kW-hr/tonne)	BBWi (kW-hr/tonne)	Ai
MT-CH-01	3.75	9.0	3.00	13.8	17.7	0.3653
MT-CH-02	-	9.5	2.42	17.2	17.9	0.3983
MT-CH-03	-	11.1	2.54	17.9	19.0	0.4961
MT-CH-04	-	11.7	2.43	17.0	18.5	0.3009
MT-CH-05	5.61	14.5	2.27	18.5	20.6	0.4776
MT-CH-06	5.03	11.4	2.36	16.3	18.1	0.4247
MT-CH-07	-	12.8	2.45	18.1	20.7	0.3982
MT-CH-08	-	9.7	2.43	15.9	18.7	0.2713
MT-CH-09	5.75	12.1	2.41	16.7	20.0	0.3257
MT-CH-10	-	14.4	2.51	15.9	19.5	0.5198
Master Composite	-	-	-	19.1	18.7	0.3920
Lolón Vein 1	4.97	7.44	-	20.3	17.7	0.3738
Lolón Vein 2	4.10	5.61	-	19.2	19.3	0.3863
Lolón Vein 3	4.29	10.44	-	19.6	15.8	0.2981
Stockwork 1	4.71	-	-	23.1	21.8	0.3113
Stockwork 2	4.02	6.73	-	17.0	19.7	0.2829
Stockwork 3-1	-	-	-	20.9	20.1	-

A total of 15 core samples were also tested for unconfined compressive strength (UCS), all but one failed in shear, with results ranging from 5.1 to 65.9 MPa. The only axial failure returned 139.5 MPa.

In summary the comminution values categorize the Master Composite as having a low resistance to impact breakage (moderate competency), hard for milling, and abrasive.

13.4.3 Bulk flotation

Scoping-level bulk rougher flotation test work at natural pH and investigating standard flotation reagents were also carried out in the 2014 test work program for comparison with the cyanidation test work conducted to date. The flotation tests were carried out to determine if it was possible to concentrate the silver and gold into a bulk sulphide flotation concentrate. The outcomes from this test work were compared with outcomes from a direct leach in cyanide.

Silver and gold recoveries into the flotation concentrates averaged only around 83%.

Flotation tests were also carried out to determine if the barite that was contained in the samples could be recovered into a saleable concentrate. The outcome from the barite flotation testwork resulted in a low recovery of barium ranging between 2% to 24% with an average mass recovery of approximately 30%. Little selectivity was observed in the flotation concentrates due to the high mass recovery and using different collectors was not effective in the recovery of barium to the concentrate.

13.4.4 Gravity separation test work

Gravity separation by Knelson concentration on the Master Composite, ground to 78 µm, did not result in adequate recoveries of silver and gold to warrant further consideration. The silver and gold recoveries were 5% and 16% respectively with a high mass recovery of 1.1%.

13.4.5 Cyanide leach testing

ALS Minerals Division in Santiago conducted 16 bottle roll leach tests on the Master Composite at varying conditions in order to optimize the process variables, such as grind size, leach time, solids percent, cyanide concentration, and pH as per the following:

- Grinding size (P_{80}): 38, 53, 79, 106, and 150 µm.
- Leaching time control: 2, 4, 6, 24, 48, and 72 hours.
- Solid Percent: 40%, 45%, and 50%.
- NaCN Concentration: 250 ppm, 500 ppm, and 1,000 ppm.
- pH: 10 and 10.5.
- Oxygen sparged: Yes and no.

The leach testwork indicated an average 92.2% silver extraction. The median value is 92.7% with a standard deviation of 4.9. From the samples tested, the probability to obtain a silver extraction in this range is high.

Gold extraction was variable with 3 out of the 10 bulk samples tested in the 2014 test work ranging between 35% to 60% extraction, the remaining bulk samples reported gold extraction between 85% and 95%. The gold dissolution rate and overall extraction significantly improved for the Master Composite sample by adding cyanide and lime into the milling stage.

Despite a significant proportion of the silver minerals being of a relatively fine-nature and occurring in association with gangue, the overall silver extraction averaged over 92% and gold averaged 75% for all samples tested in the 2014 metallurgical test work after grinding to 80% passing 80 µm. Silver extraction was consistently over 90%, illustrating the Challacollo mineralization from the main Lolón Structure is highly amenable to cyanide leaching in terms of silver extraction. This indicates the majority of the silver is accessible to the cyanide leach solution after grinding to 80% passing 80 µm.

The optimized leach conditions for Challacollo mineralization were determined as being:

- Grind size P_{80} of 80 µm.
- Total leach retention time of 72 hours.
- Pulp density of 45% solids w/w.
- Initial sodium cyanide concentration of 500 ppm maintained at 250 ppm after 48 hours.
- Slurry pH of 10.5 to 10 after 24 hours (with lime).
- Air sparging to achieve dissolved oxygen 8 to 9 ppm.

13.4.6 Variability leach testwork

Variability testwork using the optimized leach conditions was carried out on the ten bulk samples, Master Composite and the six drill core composites using the final optimized conditions.

13.4.6.1 Bulk samples and Master Composite

The results of the variability testwork on the bulk and Master Composite samples showed total silver extractions varied between 63% and 97% and total gold extractions between 34.7% and 91.9%, see Table 13.5. Silver leaching results were consistent with the results obtained from the tests done using the Master Composite. However, gold extractions improved for the tests done on individual samples compared to the Master Composite. This may indicate some negative interaction between the different species contained in the samples which could produce passivation on the surface of gold particles, reducing the overall gold extraction obtained for the Master Composite. It is postulated the presence of ferrous and sulphate species in solution may be causing selective gold precipitation. These species may have been introduced through the interactions of different minerals present in individual samples during the preparation of the Master Composite sample.

Table 13.5 Summary of bulk sample leach conditions and results

Drill composite sample	Leach time (hrs)	Grind size P_{80} um	Sodium cyanide conc. ppm	Pulp Density % solids	pH	Reagent consumption (kg/t)		Leach extraction (%)	
						Cyanide	Lime	Silver	Gold
MT-CH-01	72	89	500	45	10.5	1.9	48.3	92.1	91.3
MT-CH-02	72	89	500	45	10.5	0.9	5.5	91.1	34.7
MT-CH-03	96	77	500	45	10.5	0.6	1.8	97.2	87.2
MT-CH-04	96	84	500	45	10.5	0.1	2.3	83.6	93.2
MT-CH-05	72	86	500	45	10.5	1.3	5.9	96.2	89.5
MT-CH-06	72	82	500	45	10.5	1.1	3.5	96.3	90.9
MT-CH-07	72	71	500	45	10.5	1.9	1.3	63.2	90.8
MT-CH-08	72	82	500	45	10.5	1.1	12.8	93.0	53.5
MT-CH-09	72	82	500	45	10.5	0.9	7.6	94.6	88.4
MT-CH-10	72	68	500	45	10.5	1.3	13.9	97.2	59.7
MT-CH-01	96	82	500	45	11.0	1.9	57.0	94.1	68.8
MT-CH-07	96	74	500	45	12.5	0.7	8.6	93.0	91.9
MT-CH-10	96	74	500	45	10.6	1.3	15.4	90.2	69.9

13.4.6.2 Drill core samples

The six drill core composites Lolón Vein 1, 2, and 3 along with Stockwork 1, 2, and 3-1 were leached using the optimized conditions.

Lolón Vein 2 composite had two additional tests investigating increased leach time of 96 hours and sodium cyanide concentration of 500 ppm and 1,000 ppm.

The un-weighted average of the silver extraction for the drill core composites was 88% and ranged from 75% to 98%. The tests with increased leach time and sodium cyanide concentration on the Lolón Vein 2 composite improved the silver extraction from approximately 75% to 89%, see Table 13.6.

Gold extraction ranged from approximately 52% to 89%. Increased sodium cyanide concentration and leach time had no effect on gold extraction for the Lolón Vein 2 Composite.

The average sodium cyanide consumption was approximately 1.4 kg/t for this series of tests. Test 46 conducted at sodium cyanide concentration of 1,000 ppm, resulted in a consumption of 3.1 kg/t. Lime consumption ranged from 1.9 kg/t to 13.5 kg/t with an average of about 6.5 kg/t and was generally lower for the Stockwork Composites. High lime consumptions are due to the high sulphate content of these composites. In general, the results showed that silver is readily amenable to leaching using an alkaline cyanide solution.

Table 13.6 Summary of drillhole composite leach conditions and results

Drill composite sample	Leach time (hrs)	Grind size P_{80} um	Sodium cyanide conc. ppm	Pulp density % solids	pH	Reagent consumption (kg/t)		Leach extraction (%)	
						Cyanide	Lime	Silver	Gold
Lolón Vein 1	72	81	500	45	10.5	0.9	1.9	86.6	88.5
Lolón Vein 2	72	80	500	45	10.5	2.2	11.4	74.9	65.2
Lolón Vein 2	96	80	500	45	10.7	1.8	13.4	87.4	51.9
Lolón Vein 2	96	80	500	45	11.0	3.1	13.5	89.0	53.6
Lolón Vein 3	72	81	500	45	10.5	0.7	2.0	98.2	68.6
Stockwork 1	72	79	500	45	10.5	1.0	4.3	96.4	81.7
Stockwork 2	72	79	500	45	10.5	0.6	1.9	82.2	82.0
Stockwork 3-1	72	80	500	45	10.5	1.1	3.3	88.7	82.7

13.5 Tailings dewatering testwork

Thickening test work showed that the leach residue had moderately fast settling properties with moderate flocculant consumption. Filtration test work also indicated either vacuum or pressure filtration technology are potentially suitable options to maximize the recycle of process water from the final tailings after CCD washing. The maximum filtration capacity was 661 kg/m^2/h (dry) for horizontal vacuum belt filtration and 288 kg/m^2/h (dry) for pressure filtration. Both technologies obtained high wash efficiency around of 98% using wash ratio of 0.3 m^3/t (dry).

13.6 Conclusions

The metallurgical test work demonstrated that direct agitated cyanide leach would be the preferred method for precious metal extraction from the Challacollo material. This method of extraction would result in higher precious metal recoveries and is considered more suitable to the style of mineralization when compared to conventional bulk flotation and gravity separation techniques.

Grind sensitivity test work was carried on the Master Composite sample in the 2014 test work, and the different grind sizes selected were 80% passing 150, 106, 80, 53, and 38 microns. Final leach silver extraction for the samples ranged from 92% to 96%, illustrating the high silver recoveries still possible at the coarser grind sizes with only relatively small improvements to overall silver extraction at finer grind sizes.

A grind size P_{80} of 80 µm was used for the 2014 variability test work program.

Reducing the initial sodium cyanide concentration from 1,000 ppm to 500 ppm had no noticeable effect on the overall silver extraction after 72 hours of leaching. The leach kinetics were however much faster when higher initial concentrations were used, and to promote faster leach kinetics an initial sodium cyanide concentration of 500 ppm to be maintained at 250 ppm after 48 hours, was used in subsequent leaching test work.

The sodium cyanide consumption for the Challacollo samples tested in the 2014 test work program was still relatively high, averaging 1.2 kg/t. The base metal concentrations of zinc and copper in the final leach solutions from the bulk leach tests done on the Master Composite were significant at 74 ppm to 54 ppm respectively. These appear to represent the main cyanide consumers along with silver. The zinc and copper bound cyanide in the solution are estimated to represent approximately 60% of the total sodium cyanide added.

The zinc bound cyanide and a proportion of the copper typically report as residual free cyanide in a silver nitrate titration. Therefore, it was likely that a low concentration of “true-free” cyanide was used in some of the 2014 leaching test work. The zinc bound cyanide is still available for leaching however and it is common operating practice to maximize recycle of excess barren solutions containing zinc cyanide to make optimal use of cyanide for silver leaching.

Of note is that lime consumption was also high with an average consumption of 10.5 kg/t. Elevated levels of sulphate were detected in the bulk sample head assays which will consume lime.

Zinc precipitation tests that were done to simulate the recovery of silver and gold from leach solution in the Merrill Crowe process gave lower than expected efficiencies of 90% and 77% respectively. Precious metal recoveries in excess of 95% are typical for operating plants. The reduced precipitation efficiency is possibly also as a result of insufficient residual fresh cyanide in the final leach solution.

Heap and vat leaching are alternative methods of extracting gold and silver from precious metal deposits at relatively low capital and operating costs. To further test the amenability of heap leaching, 14-day intermittent bottle roll cyanidation tests were conducted on the Master Composite in the 2014 test work at crush sizes of 100% passing 9.25 mm and 100% passing 19.7 mm. The silver extraction averaged only 50% and gold extraction averaged 45%.

The finer crush size of 100% passing 9.25 mm appeared to show no improvement in silver and gold extraction. However, the silver and gold extraction increased to approximately 75% for silver and 65% for gold for the additional intermittent bottle roll cyanidation test done at a very fine 100% passing 3.35 mm crush size.

14 Mineral Resource estimates

14.1 Introduction

The Mineral Resource estimate was completed for silver and gold, which are the primary economic elements. Lead and zinc are accessory elements occurring with the silver mineralization and are not considered to have economic value. The resource estimate was conducted for the purpose of future open pit mining using cyanide leaching mineral process to recover the silver and gold.

The Mineral Resources for the Challacollo deposit have been estimated by Ms Dinara Nussipakynova, P.Geo., of AMC, who takes responsibility for these estimates. The resource estimate was completed using Datamine Studio RM™ software (Datamine).

The QP is not aware of any known environmental, permitting, legal, title, taxation, socio-economic, marketing, political, or other similar factors that could materially affect the stated Mineral Resource estimates. Chile would be regarded as a stable mining jurisdiction with good legal and taxation structures.

The drillhole files were provided in an in Excel spreadsheet format and the interpreted mineralization solid and surfaces were provided in AutoCAD dxf format. All data is in the metric system and UTM coordinates.

A summary of the Mineral Resources is shown in Table 14.1. The open pit and underground Mineral Resources are quoted at two different cut-offs, as shown in the notes below.

Table 14.1 Summary of Mineral Resources as of 30 November 2020

Classification	Material type	Tonnes (kt)	Ag (g/t)	Au (g/t)	Ag (Koz)	Au (Koz)
Indicated	Open pit	5,597	170	0.27	30,639	49
	Underground	1,043	134	0.29	4,510	10
	Total	**6,640**	**165**	**0.27**	**35,150**	**58**
Inferred	Open pit	2,360	117	0.15	8,912	11
	Underground	443	157	0.26	2,232	4
	Total	**2,803**	**124**	**0.17**	**11,144**	**15**

Notes:

- CIM Definition Standards (2014) were used for reporting the Mineral Resources.
- The effective date of the estimate is 30 November 2020.
- The Qualified Person is Dinara Nussipakynova, P.Geo., of AMC.
- Mineral Resources are constrained at a long-term metal price of US$20/oz Ag with recovery of 92% Ag and metal price of US$1,400/oz Au with recovery of 75%.
- Silver equivalency formula is AgEq (g/t) = Ag (g/t) + 57.065 *Au (g/t).
- The open pit Mineral Resources are based on a pit optimization using the following assumptions:
  - Mill feed mining costs of $3.5/t and waste mining cost of US$2.5/t.
  - Processing costs of $17/t and General and Administration costs of US$2.5/t.
  - Edge dilution of 7.5% and 100% mining recovery.
  - 45-degree slope angles.
  - Reported at a cut-off grade of 35 g/t AgEq.
- The underground Mineral Resources are reported within Datamine MSO constraints based on the following assumptions:
  - Mill feed mining costs of US$35/t.
  - Processing costs of US$17/t and General and Administration costs of US$2.5/t.
  - Minimum width of 2.5 m.
  - No dilution or mining recovery.
  - Isolated MSO stopes were removed from the total.
  - Reported at a cut-off grade of 93 AgEq g/t.
- Bulk density used was 2.47 t/m^3.
- Includes drilling results up to 31 December 2016.
- Mineral Resources are depleted for historical mined out material.
- Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability.
- The numbers may not compute exactly due to rounding.
- Mineral Resources are depleted for historical mined out material.

14.2 Data used

14.2.1 Drillhole database

Aftermath has provided the data of collars, surveys, assays, and lithology logs in Excel tables. The data was imported and validated using Datamine software.

In the block model area there are 112 drillholes with a total length of 19,213 m. Table 14.2 shows a summary of the hole details and assay records in the model area and Figure 14.1 show location of all drillholes used in the mineralization interpretation. This data comprises 57 diamond and 55 RC drillholes.

Table 14.2 Drillholes data in the model area

Year drilled	No. of drillholes	No. of assays	Meters drilled (m)
1995	2	159	605
1996	3	140	287
2002	24	2,029	3,140
2003	30	2,303	5,547
2007	3	240	520
2014	49	1,897	8,697
2016	1	47	417
Total	**112**	**6,815**	**19,213**

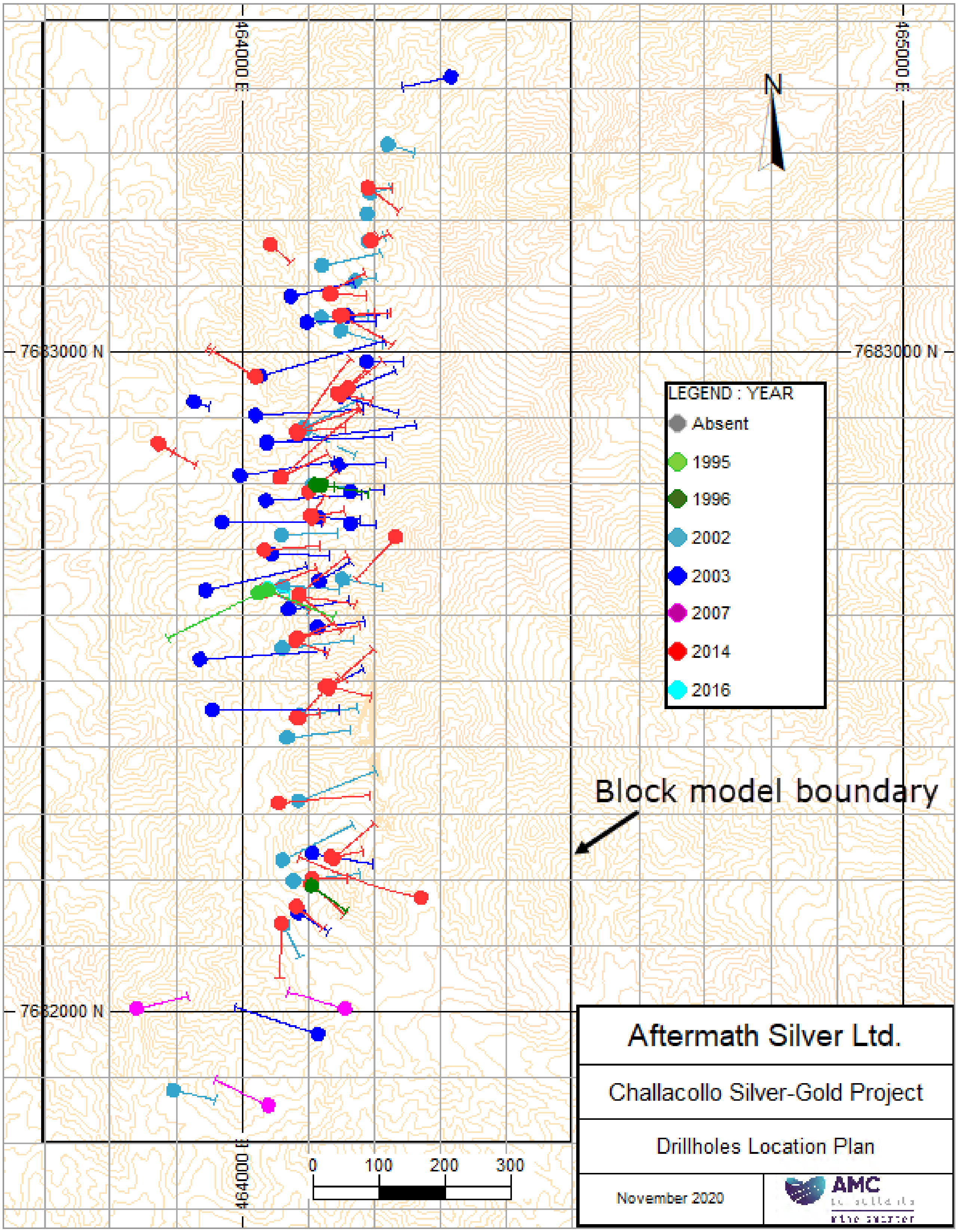
The mineralization was intercepted in 97 drillholes that were used in the grade estimation. Table 14.3 shows a summary of the drillholes used in the estimation. Of the 97 drillholes, 46 were RC holes and 51 were DDH.

Table 14.3 Drillhole data used in the grade estimation

Year drilled	No. of drillholes	No. of assays	Meters drilled (m)
1995	1	73	312
1996	3	200	408
2002	23	1,998	2,941
2003	25	1,697	3,851
2014	45	1,789	7,903
Total	**97**	**5,757**	**15,414**

Note: The numbers may not compute exactly due to rounding.

Figure 14.1 Challacollo drillhole location plan



Source: AMC 2020.

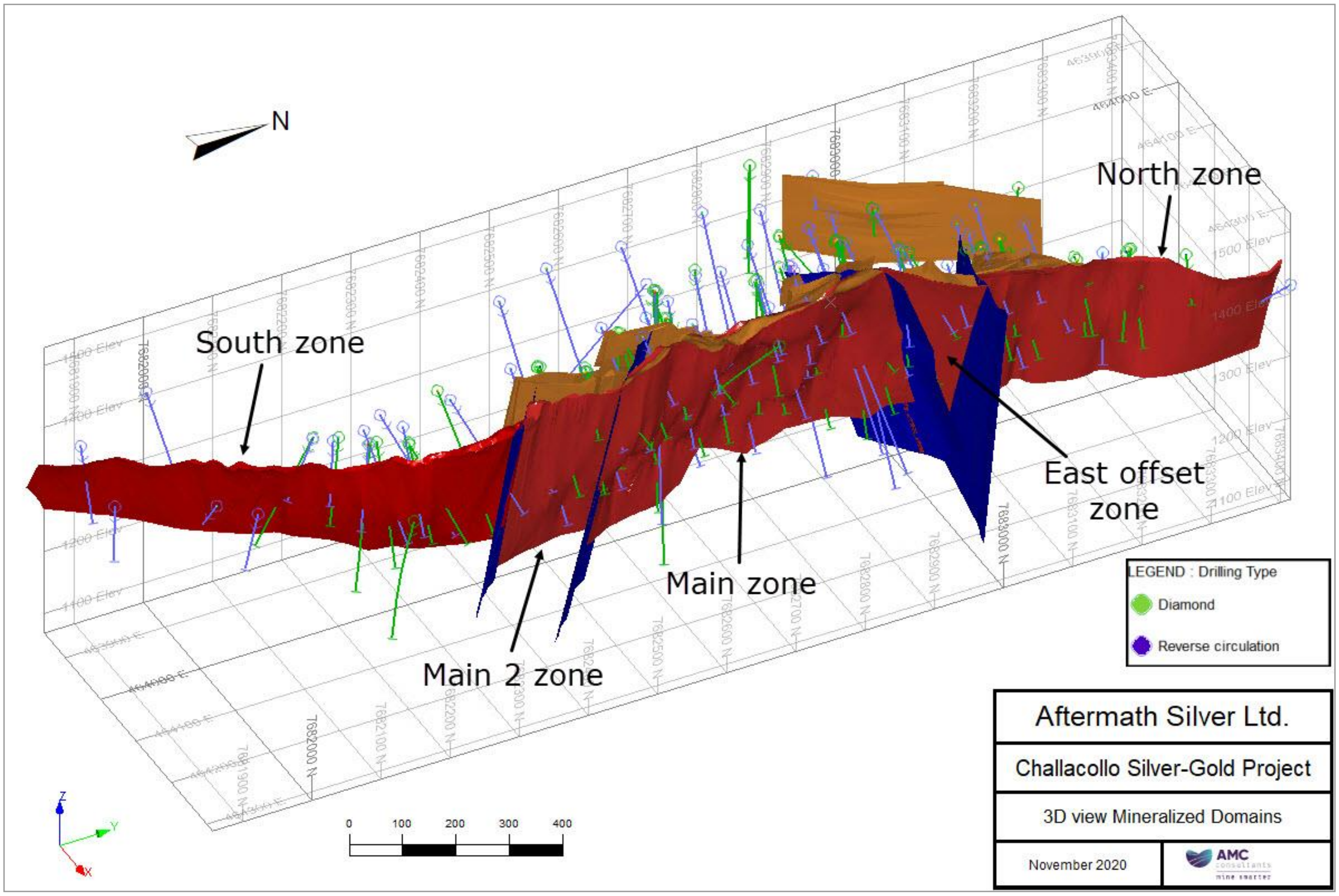
14.3 3D modelling

14.3.1 Mineralization domains

Aftermath provided the main Lolón mineralized domains which were validated by the QP.

The mineralized wireframes for the Lolón Structure were based on a silver threshold of 60 g/t Ag. This structure is split into the Main zone, Main 2 zone, South zone, North zone, and East offset zone and as shown in Figure 14.2. In addition, there are 29 other sub parallel zones in the hangingwall modelled by the QP including an oblique vein, for which a 40 g/t Ag threshold was used.

Figure 14.2 3D view of mineralization domains



Source: AMC 2020.

In addition to the five Lolón domains a further 29 domains were modelled. In Figure 14.2 the main Lolón domains are shown in red and the minor hangingwall and oblique domains in orange colour. Cross faults are shown in blue. Each domain has been assigned a numeric attribute for estimation.

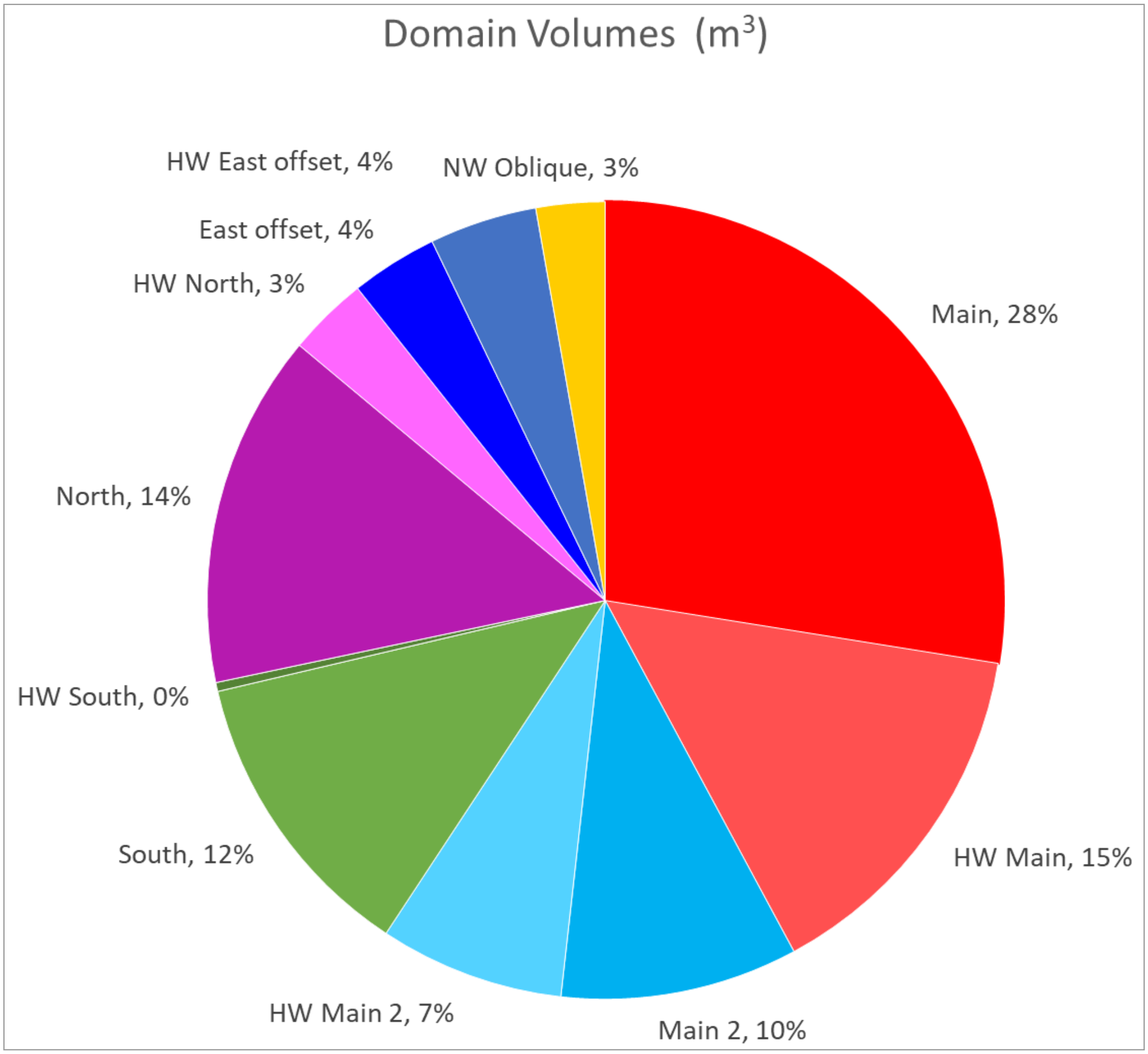
Table 14.4 shows the domain numbers for main and hangingwall mineralization.

Table 14.4 Domain names

Zone	Domain #	HW domain #
Lolón Main	100	101, 102, 103, 104, 105, 106, 107, 108, 109, 110
Lolón Main 2	200	201, 202, 203
Lolón South	300	301
Lolón North	400	401, 402, 403, 404, 405, 406, 407
Lolón East offset	500	501, 502, 503, 504, 505, 506
N-W oblique	600	601

The Main Domain (100), Main 2 domain (200), South Domain (300), North domain (400), and East offset Domain (500) contain about 67% of the entire volume. Figure 14.3 demonstrates the percentage distribution of the main zones and their hangingwall mineralization domains.

Figure 14.3 Pie chart of Lolón main and hangingwall domains by volume



Notes: HW=hangingwall. All names without the prefix HW are Lolón veins except the East offset.
Source: AMC 2020.

14.3.2 Historical as-builts

The client has provided as-builts for the historical mining as dxf wireframes files for four areas:

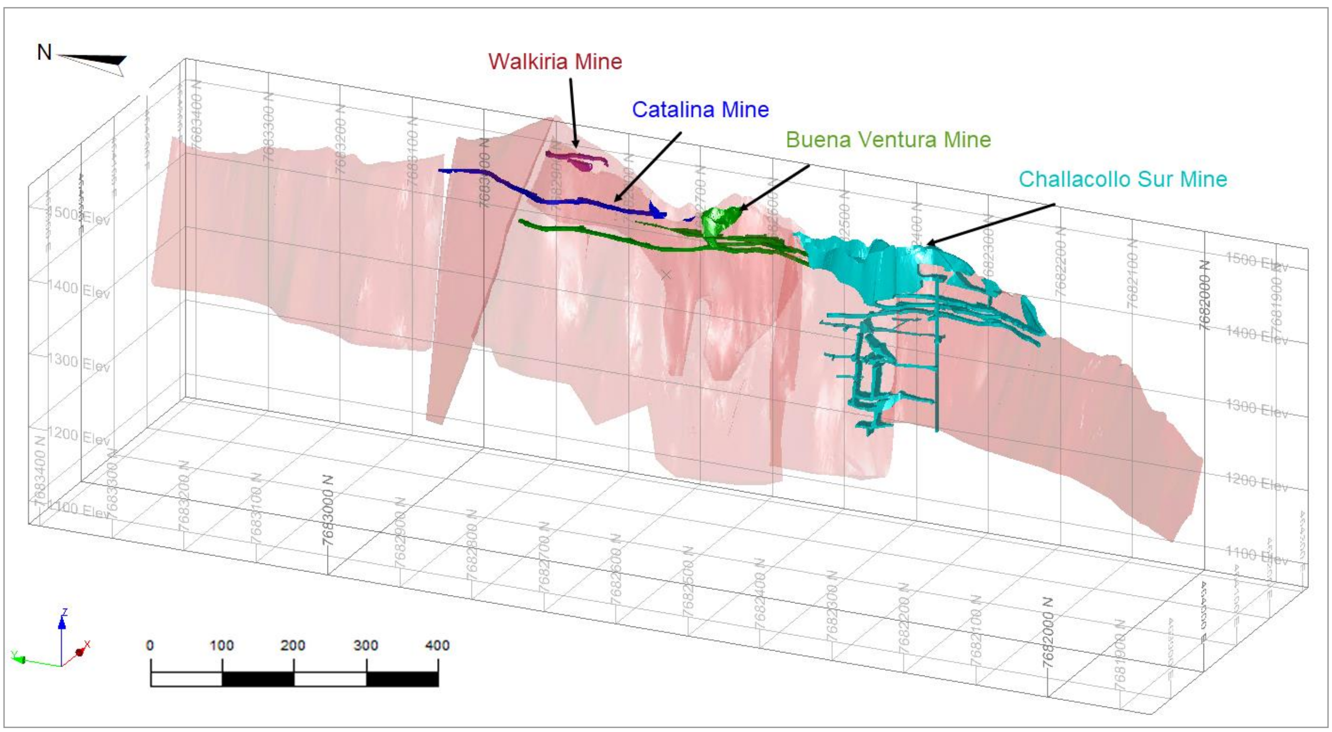
- Buena Ventura Mine
- Catalina Mine
- Challacollo Sur Mine
- Walkiria Mine

The level surveys were used to create 3D volumes of the as-built development and stopes. In the deeper levels, where surveys were not available from the modern period of exploration, historic surveys of the development and stopes were used; however as there is reliable control on their horizontal position a more conservative approach was taken by extruding the long section profile of the mined out void out to the full width of the Lolón Structure. This likely represents 3 to 4 times greater volume than which was actually mined.

Figure 14.4 shows a 3D view of the as-builts.

These wireframes were reviewed by the QP and accepted.

Figure 14.4 3D view of the historical mine as-builts



Source: AMC 2020.

14.4 Bulk density

Aftermath provided a memo (2020-01-21 Ladon Bulk Density Summary) with a summary of available historical density data. No new bulk density data has been collected by Aftermath.

Bulk density measurements were taken at several different periods. Silver Standard 2003 measurements were taken on drill core (5) and RC cuttings (2), Mandalay 2014 measurements on drill core (18) and Mandalay 2015 measurements on drill core (4) and underground channel samples (29). Two samples, one each from 2003 and 2015 were excluded as being high outliers.

Based on the statistics of 52 Lolón Structure bulk density measurements, a bulk density of 2.47 t/m^3 was applied to the mineralization. The average bulk density for the structure was derived from 22 samples from drillholes and 29 channel samples. Other values used for the estimate are summarized in Table 14.5.

Table 14.5 Average rock densities for estimate

Model domain	Lithology	Number of samples	Average bulk density (t/m^3)	Standard deviation (t/m^3)
Country rock	Tuff	1	2.42	N/A
	Volcanoclastic sediment	2	2.47	0.06
	Rhyodacite	3	2.44	0.07
Total waste		6	2.45	0.05
Mineralized domains	Lolón Structure	52	2.47	0.18

Source: Aftermath 2020.

14.5 Statistical data analysis

All domains have been assigned an individual domain number. The following statistical tables will be showing by Domain.

14.5.1 Selected samples

Samples were selected inside each domain as a first step for grades analysis. Statistics and probability plots for Ag, Au, Pb, Zn, and S were generated and reviewed.

Table 14.6 Statistics of mineralized domains

Domain	Statistics	Ag (g/t)	Au (g/t)	Pb (%)	Zn (%)	S (%)
Main 100	Number of samples	488	478	442	442	239
	Minimum	2.5	0.0025	0.01	0.013	0.025
	Maximum	4610	3.6	19.3	6.42	3.96
	Mean	**206**	**0.32**	**0.76**	**0.94**	**0.44**
	Variance	64,763	0.22	2.29	1.03	0.18
	Stand. dev.	254.49	0.47	1.51	1.02	0.42
	CV	1.23	1.45	1.98	1.08	0.97
	Median	143	0.15	0.29	0.58	0.24
Main 2 200	Number of samples	70	63	63	63	30
	Minimum	2.5	0.025	0.08	0.06	0.05
	Maximum	3110	1.79	9.59	8.87	1.47
	Mean	**202**	**0.34**	**1.14**	**1.10**	**0.29**
	Variance	132,786	0.17	3.86	1.80	0.10
	Stand. dev.	364.40	0.41	1.97	1.34	0.32
	CV	1.81	1.20	1.73	1.22	1.11
	Median	89.5	0.16	0.28	0.52	0.15
South 300	Number of samples	120	114	120	120	50
	Minimum	1	0.01	0	0.005	0.025
	Maximum	612	4.57	14.5	2.07	1.39
	Mean	**56**	**0.22**	**0.61**	**0.15**	**0.29**
	Variance	3,616	0.28	2.49	0.06	0.07
	Stand. dev.	60.13	0.53	1.58	0.24	0.27
	CV	1.08	2.37	2.60	1.61	0.94
	Median	44	0.03	0.22	0.08	0.22
North 400	Number of samples	280	280	280	280	128
	Minimum	2	0.0025	0.0278	0.027	0.025
	Maximum	2310	1.87	9.88	4.46	5.22
	Mean	**161**	**0.23**	**0.66**	**0.77**	**0.72**
	Variance	32,784	0.08	1.54	0.71	0.45
	Stand. dev.	181.06	0.28	1.24	0.84	0.67
	CV	1.13	1.21	1.89	1.09	0.92
	Median	113	0.14	0.24	0.46	0.68
East offset 500	Number of samples	79	79	63	63	36
	Minimum	10	0.025	0.035	0.026	0.025
	Maximum	882	4.11	4.55	1.85	1.73
	Mean	**191**	**0.46**	**0.67**	**0.39**	**0.66**
	Variance	26,686	0.54	0.88	0.17	0.19
	Stand. dev.	163.36	0.73	0.94	0.42	0.44
	CV	0.86	1.60	1.40	1.07	0.67
	Median	152	0.2	0.27	0.19	0.58
N-W Oblique 600	Number of samples	28	28	18	18	18
	Minimum	2.5	0.025	0.008	0.012	0.98
	Maximum	857	0.75	0.538	2.03	2.57
	Mean	**137**	**0.17**	**0.21**	**0.71**	**1.60**
	Variance	29,201	0.05	0.03	0.51	0.14
	Stand. dev.	170.88	0.22	0.18	0.72	0.37
	CV	1.24	1.30	0.86	1.00	0.23
	Median	94	0.04	0.16	0.34	1.59

Domain	Statistics	Ag (g/t)	Au (g/t)	Pb (%)	Zn (%)	S (%)
All HW domain 100	Number of samples	377	377	326	326	115
	Minimum	1.05	0.0025	0.004	0.012	0.025
	Maximum	1110	0.78	1.13	0.965	3.14
	Mean	**55**	**0.07**	**0.13**	**0.24**	**0.40**
	Variance	6,876	0.01	0.02	0.03	0.21
	Stand. dev.	82.92	0.11	0.15	0.17	0.46
	CV	1.51	1.65	1.13	0.72	1.14
	Median	33	0.025	0.10	0.22	0.25
All HW domain 200	Number of samples	258	239	239	239	120
	Minimum	2	0.005	0.022	0.018	0.025
	Maximum	3110	1.79	9.59	8.87	3.48
	Mean	**153**	**0.14**	**0.37**	**0.44**	**0.45**
	Variance	90,380	0.06	1.15	0.61	0.28
	Stand. dev.	300.63	0.25	1.07	0.78	0.53
	CV	1.97	1.75	2.90	1.77	1.18
	Median	63.5	0.025	0.11	0.2	0.29
All HW domain 300	Number of samples	20	20	20	20	13
	Minimum	17	0.025	0.043	0.059	0.05
	Maximum	150	0.42	0.229	0.57	0.8
	Mean	**60**	**0.07**	**0.12**	**0.15**	**0.18**
	Variance	1,114	0.01	0.00	0.01	0.03
	Stand. dev.	33.38	0.10	0.04	0.12	0.18
	CV	0.55	1.32	0.35	0.76	1.04
	Median	46	0.025	0.11	0.13	0.13
All HW domain 400	Number of samples	482	482	482	482	240
	Minimum	2	0.0025	0.011	0.027	0.025
	Maximum	2310	1.87	9.88	4.46	6.4
	Mean	**123**	**0.16**	**0.44**	**0.58**	**0.79**
	Variance	23,473	0.06	1.00	0.52	0.58
	Stand. dev.	153.21	0.24	1.00	0.72	0.76
	CV	1.24	1.52	2.27	1.25	0.96
	Median	76	0.07	0.16	0.23	0.7
All HW domain 500	Number of samples	217	217	155	155	79
	Minimum	2.5	0.025	0.012	0.0092	0.025
	Maximum	882	4.11	4.55	1.845	1.73
	Mean	**108**	**0.25**	**0.35**	**0.27**	**0.67**
	Variance	16,560	0.27	0.47	0.10	0.15
	Stand. dev.	128.69	0.52	0.69	0.32	0.38
	CV	1.19	2.10	1.94	1.16	0.58
	Median	57	0.06	0.13	0.16	0.72

Notes: Stand. Dev=standard deviation, CV=coefficient of variation.
Source: AMC 2020.

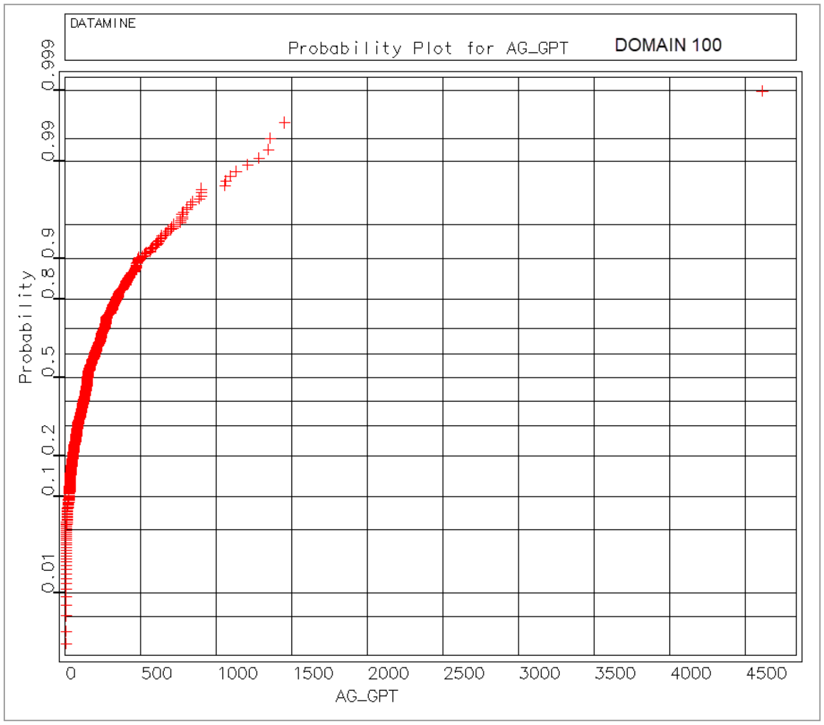
The statistical analysis shows that the grades of Pb and Zn are not significant compared to the silver and gold grades. The following analysis will be dedicated only to silver and gold.

14.5.2 Grade capping

The analysis of probability plots of the Ag grades for the domains demonstrated the presence of high-grade outliers in the Lolón Structure. Top capping was applied individually to the zones.

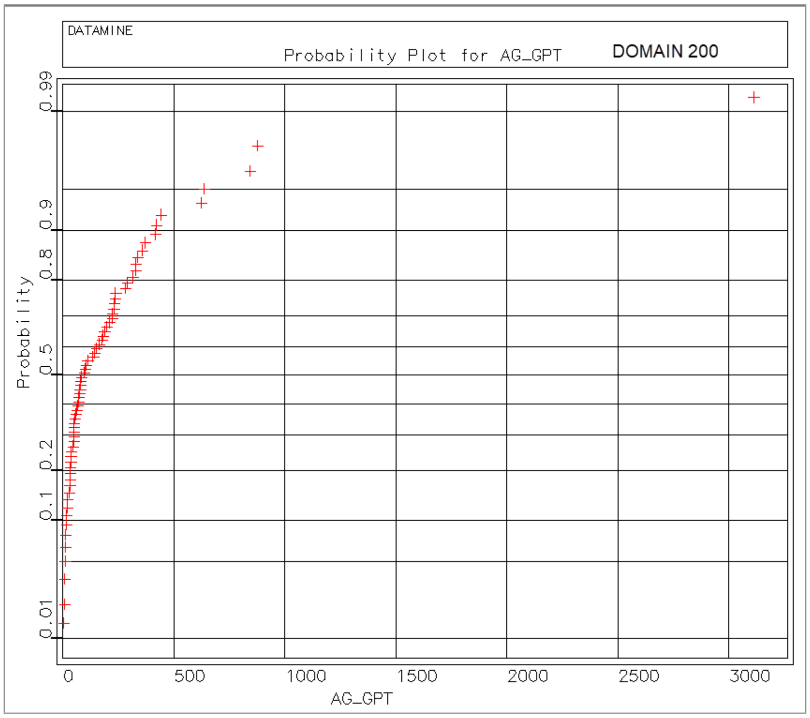
Probability plots of the silver grades for the main domains are shown in Figure 14.5 to Figure 14.9.

Figure 14.5 Probability plot of silver in domain 100



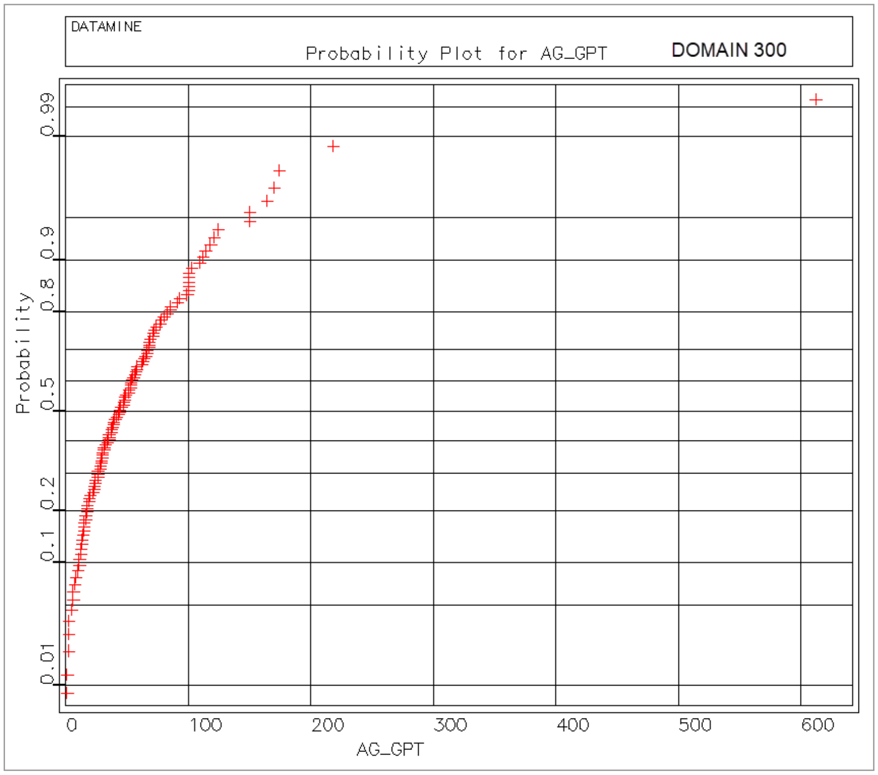
Source: AMC 2020.

Figure 14.6 Probability plot of silver in domain 200



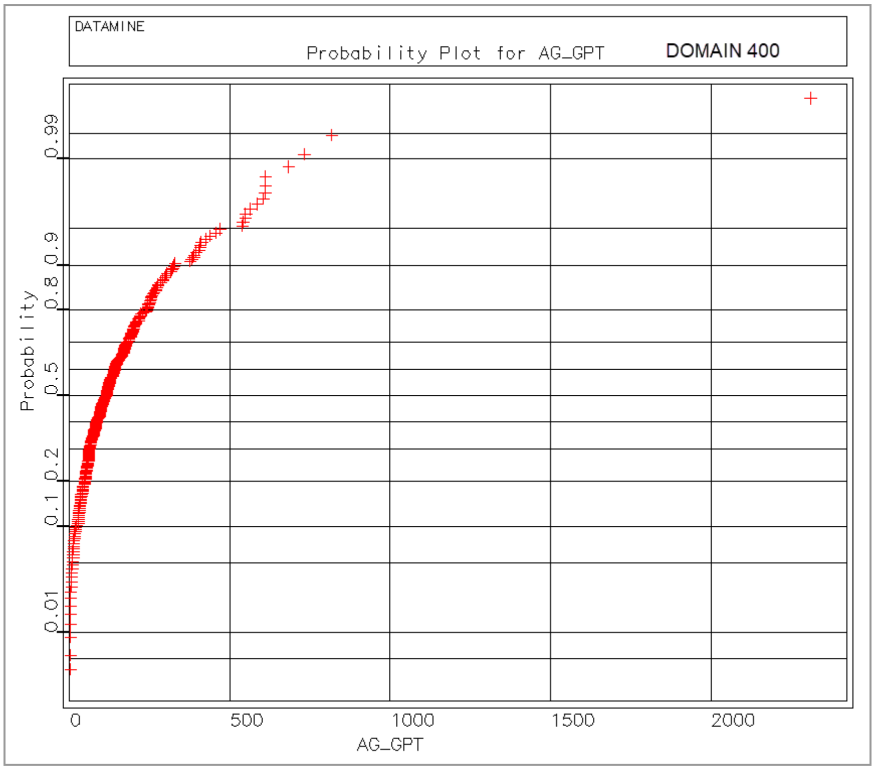
Source: AMC 2020.

Figure 14.7 Probability plot of silver in domain 300



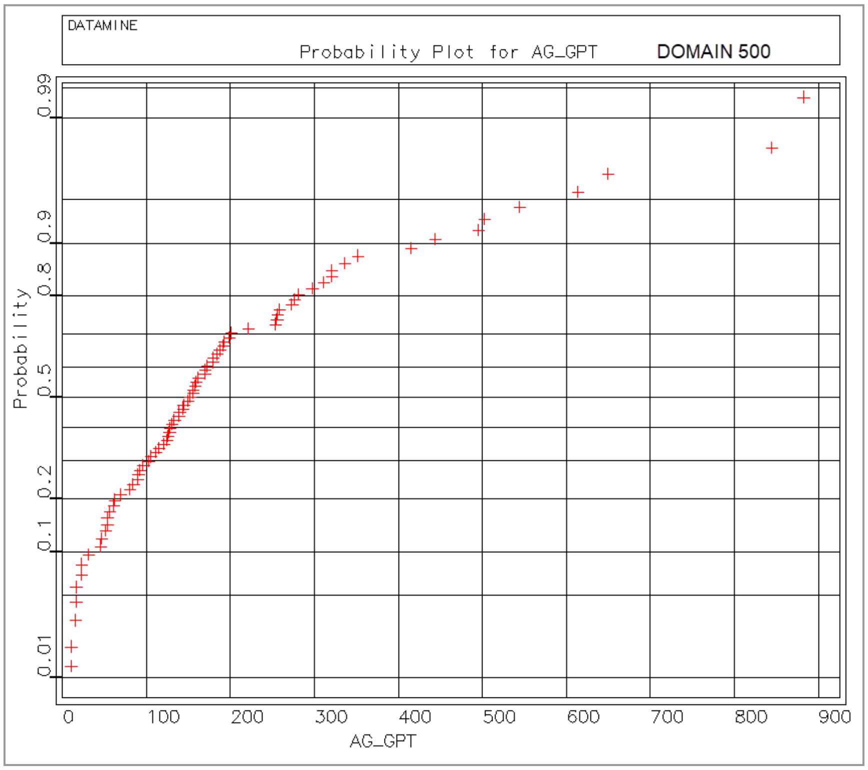
Source: AMC 2020.

Figure 14.8 Probability plot of silver in domain 400



Source: AMC 2020.

Figure 14.9 Probability plot of silver in domain 500



Source: AMC 2020.

A top cut value of 1,500 g/t Ag was selected for the Lolón Main zone and the other Lolón zones, which were individually treated, varied from 800 g/t Au to 190 g/t Au, as shown in Table 14.7. No capping was applied to the hangingwall zones.

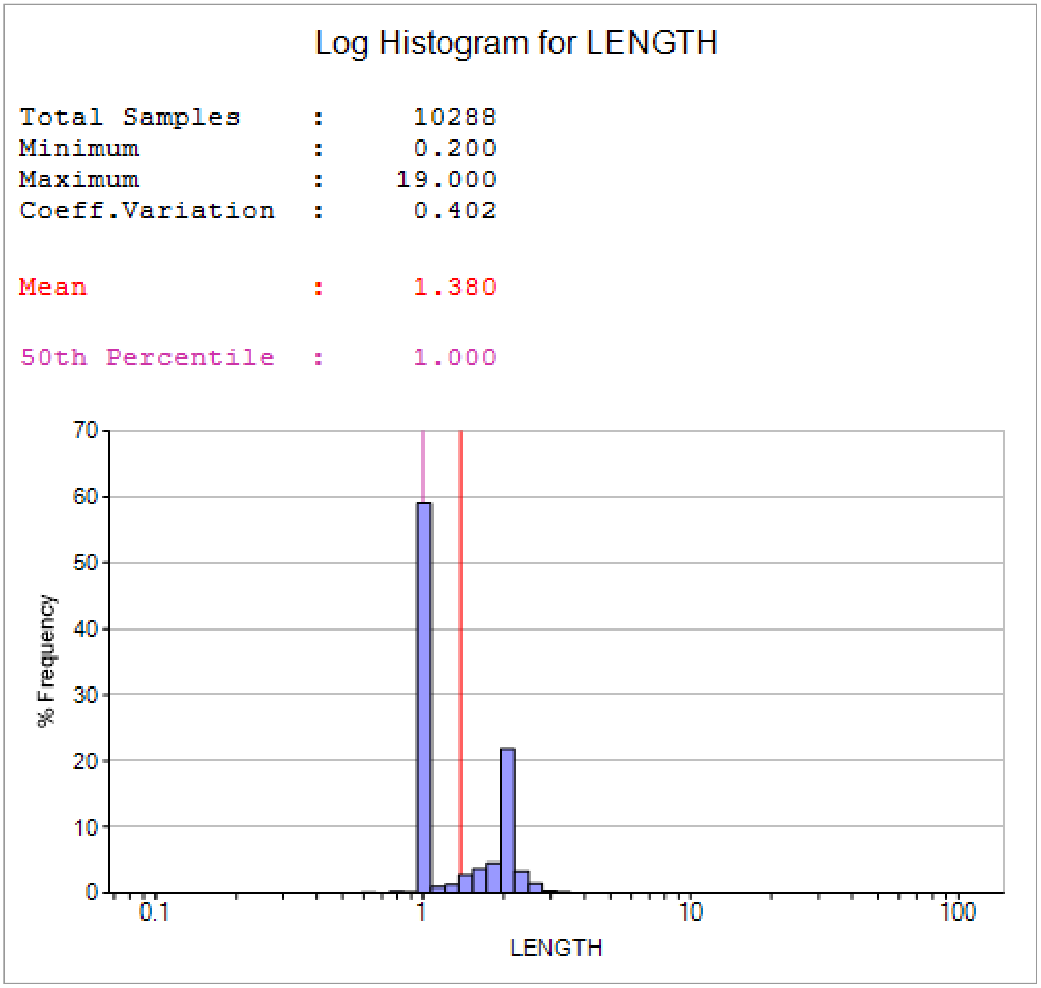
Table 14.7 Capping of silver grades in Lolón Structure

Zone name	Domain No.	Top cut (Ag g/t)	Original mean (Ag g/t)	New mean (Ag g/t)	Number of samples top cut	New mean grade as % of original
Lolón Main zone	100	1500	211	208	1	98.6
Lolón Main 2 zone	200	500	202	160	5	79.2
Lolón South zone	300	190	55	52	2	94.5
Lolón North zone	400	800	160	156	2	97.5
Lolón East offset zone	500	700	191	188	2	98.4

14.5.3 Composites

After capping the data was composited. The statistical analyses show that sample length ranges from 0.2 m to 19 m. The mean sample length is 1.38 m and the median 1 m. Figure 14.10 shows the log histogram and basic statistics of the sample lengths. The compositing interval was selected as 1 m. Samples were composited by domain as equal length composites with no discards.

Figure 14.10 Log histogram of sampling length



Source: AMC 2020.

Table 14.8 shows the summary statistics of selected samples, capped samples, and composites for the Lolón domains. The composting of capped samples did not impact the mean grades of silver and gold, but slightly decreased the median grades, except the Domain 400, where the median increased slightly from 112 g/t to 116 g/t Ag.

Table 14.8 Sample summary statistics for the Lolón and East offset domains

		Ag (g/t)			Au (g/t)		
Domain	**Statistics**	**Selected samples**	**Capped samples**	**Composites**	**Selected samples**	**Capped samples**	**Composites**
100 Lolón Main zone	N Samples	473	473	611	473	473	611
	Minimum	0	0	0	0.00	0.00	0.00
	Maximum	4610	1500	1450	3.60	3.60	3.60
	Mean	**211**	**208**	**208**	**0.32**	**0.34**	**0.32**
	Variance	65,683	48,276	45,223	0.22	0.26	0.21
	Stand. dev.	256	220	213	0.47	0.51	0.46
	CV	1.21	1.06	1.02	1.45	1.47	1.42
	Median	147	147	143	0.15	0.15	0.16
200 Lolón Main 2 zone	N Samples	70	70	100	70	70	100
	Minimum	3	3	3	0.00	0.00	0.00
	Maximum	3110	500	500	1.79	1.79	1.79
	Mean	**202**	**160**	**160**	**0.30**	**0.29**	**0.30**
	Variance	132,786	21,790	20,168	0.16	0.15	0.15
	Stand. dev.	364	148	142	0.40	0.38	0.38
	CV	1.81	0.92	0.89	1.35	1.33	1.30
	Median	90	90	91	0.13	0.13	0.13
300 Lolón South zone	N Samples	122	122	169	122	122	169
	Minimum	0	0	0	0.00	0.00	0.00
	Maximum	612	190	190	4.57	4.57	4.57
	Mean	**55**	**52**	**52**	**0.21**	**0.22**	**0.21**
	Variance	3,610	1,764	1,724	0.27	0.32	0.26
	Stand. dev.	60	42	42	0.52	0.57	0.51
	CV	1.09	0.80	0.79	2.44	2.62	2.42
	Median	44	44	41	0.025	0.025	0.05
400 Lolón North zone	N Samples	281	281	388	281	281	388
	Minimum	0	0	0	0.00	0.00	0.00
	Maximum	2310	800	800	1.87	1.87	1.87
	Mean	**160**	**156**	**156**	**0.23**	**0.23**	**0.23**
	Variance	32,758	21,745	20,536	0.08	0.08	0.08
	Stand. dev.	181	147	143	0.28	0.28	0.28
	CV	1.13	0.94	0.92	1.22	1.22	1.19
	Median	112	112	116	0.14	0.14	0.15
500 Lolón East offset zone	N Samples	79	79	118	79	79	118
	Minimum	10	10	10	0.025	0.025	0.025
	Maximum	882	700	700	4.11	4.11	4.11
	Mean	**191**	**188**	**188**	**0.46**	**0.43**	**0.46**
	Variance	26,686	23,430	22,636	0.54	0.37	0.49
	Stand. dev.	163	153	150	0.73	0.61	0.70
	CV	0.86	0.81	0.80	1.60	1.40	1.53
	Median	152	152	151	0.20	0.20	0.21

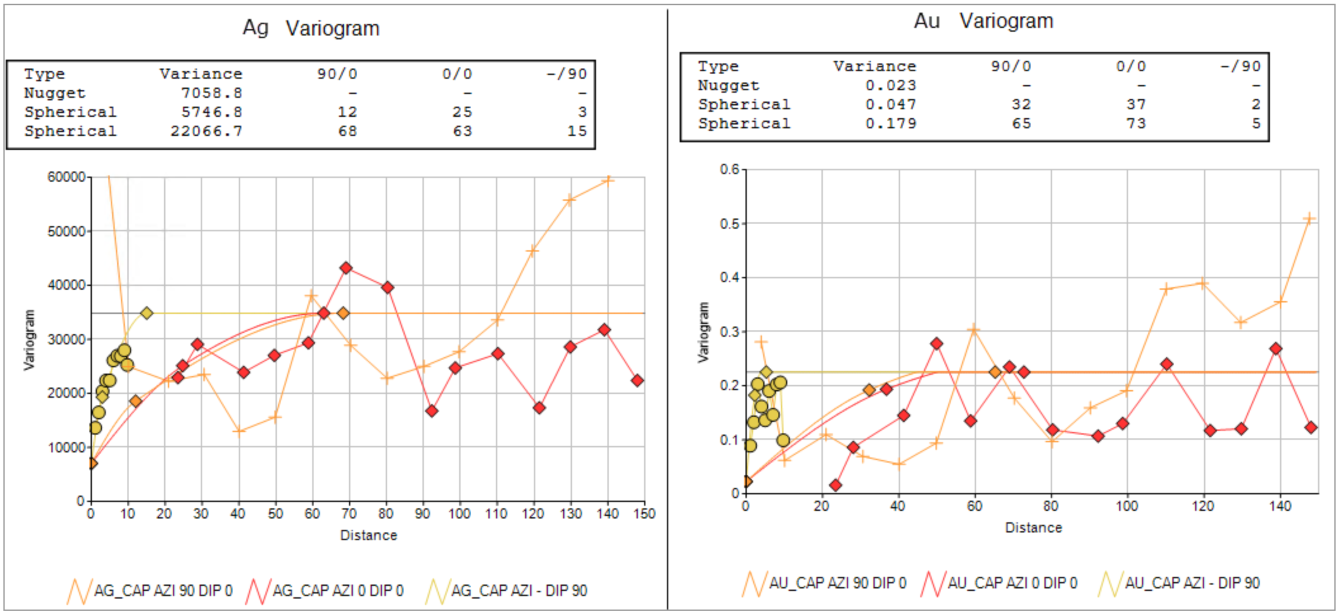
Notes: N samples=number of samples, Stand. Dev=standard deviation, CV=coefficient of variation.
Source: AMC 2020.

14.6 Variography

The composites of all five main domains were combined into one file which totalled 1025 samples. The composites were unfolded for better variogram modelling. The variograms were produced for silver and gold grades.

Two structure spherical variograms were modelled in Datamine. Figure 14.11 demonstrates the modelled variograms for silver and gold.

Figure 14.11 Variograms models for silver and gold



Source: AMC 2020.

14.7 Block model

A block model was generated in Datamine software using 4 m x 10 m x 5 m parent block size. Sub-blocking was employed and resulted in minimum cell dimensions of 0.1 m E by 1 m N by 0.25 m RL.

Table 14.9 Challacollo silver deposit block model parameters

Description	**X**	**Y**	**Z**
Minimum	463,700	7,681,800	1,150
Maximum	464,500	7,683,500	1,600
Maximum block size	4	10	5
Minimum block size	0.1	1	0.25
Number of blocks	200	170	90

Source: AMC 2020.

A block model of the as-builts was constructed and added to the Challacollo block model. The block model has an attribute MINEDOUT. This attribute was used for determining the mined-out blocks and depleting the Mineral Resources.

14.8 Grade estimation

Silver and gold grades were estimated into the block model. Ordinary kriging (OK) was used for estimating the Lolón Structure. The estimation of the Lolón zones was also interpolated using the Dynamic Anisotropy feature in Datamine. Dynamic anisotropy re-orientates the search ellipsoid for each estimated block, based on the local orientation of the mineralization using the wireframe modelling the vein.

OK was not used for hangingwall domains due to the small number of samples. Inverse-distance squared (ID^2) was employed instead.

For all domains, grade estimation was carried out using three passes and the grades were estimated for each domain individually.

Search parameters for silver are detailed in Table 14.10. Search parameters for gold are detailed in Table 14.11.

Table 14.10 Search parameters for silver

Domain	Pass	Search distance for Ag			Min No. of samples	Max No. of samples	Min No. of drillholes
		X (m)	Y (m)	Y (m)			
Domain 100	1	75	75	10	12	16	6
	2	150	150	20	8	16	4
	3	300	300	40	4	16	2
Domain 200	1	70	70	5	20	30	7
	2	105	105	7.5	20	30	7
	3	280	280	20	3	16	2
Domain 300	1	60	60	5	12	20	6
	2	120	120	10	8	20	4
	3	240	240	20	4	16	2
Domain 400	1	70	70	5	12	20	6
	2	140	140	10	8	20	4
	3	280	280	20	4	16	2
Domain 500	1	60	60	5	20	30	7
	2	120	120	10	20	30	7
	3	240	240	20	4	16	2
All other domains	1	60	60	15	10	20	5
	2	120	120	30	8	20	4
	3	240	240	60	2	16	1

Source: AMC 2020.

Table 14.11 Search parameters for gold

Domain	Pass	Search distance for Au			Min No. of samples	Max No. of samples	Min No. of drillholes
		X (m)	Y (m)	Y (m)			
Domain 100	1	75	75	10	6	16	3
	2	150	150	20	4	16	2
	3	300	300	40	2	16	1
Domain 200	1	70	70	5	6	16	3
	2	140	140	10	4	16	2
	3	280	280	20	2	16	1
Domain 300	1	60	60	5	6	16	3
	2	120	120	10	4	16	2
	3	240	240	20	2	16	1
Domain 400	1	70	70	5	6	16	3
	2	140	140	10	4	16	2
	3	280	280	20	2	16	1
Domain 500	1	60	60	5	6	16	3
	2	120	120	10	4	16	2
	3	240	240	20	2	16	1
All other domains	1	60	60	15	6	16	3
	2	120	120	30	4	16	2
	3	240	240	60	2	16	1

Source: AMC 2020.

14.9 Mineral Resource classification

Mineral Resource classification was completed using an assessment of geological and mineralization continuity, data quality, and data density. Search passes, different from those used to estimate the grade, were used as an initial guide for classification. Wireframes were then generated manually to build coherent areas defining the different classes.

Interpolation for classification was carried out using the OK method. A number of passes were employed, each using different search distances and multiples as follows:

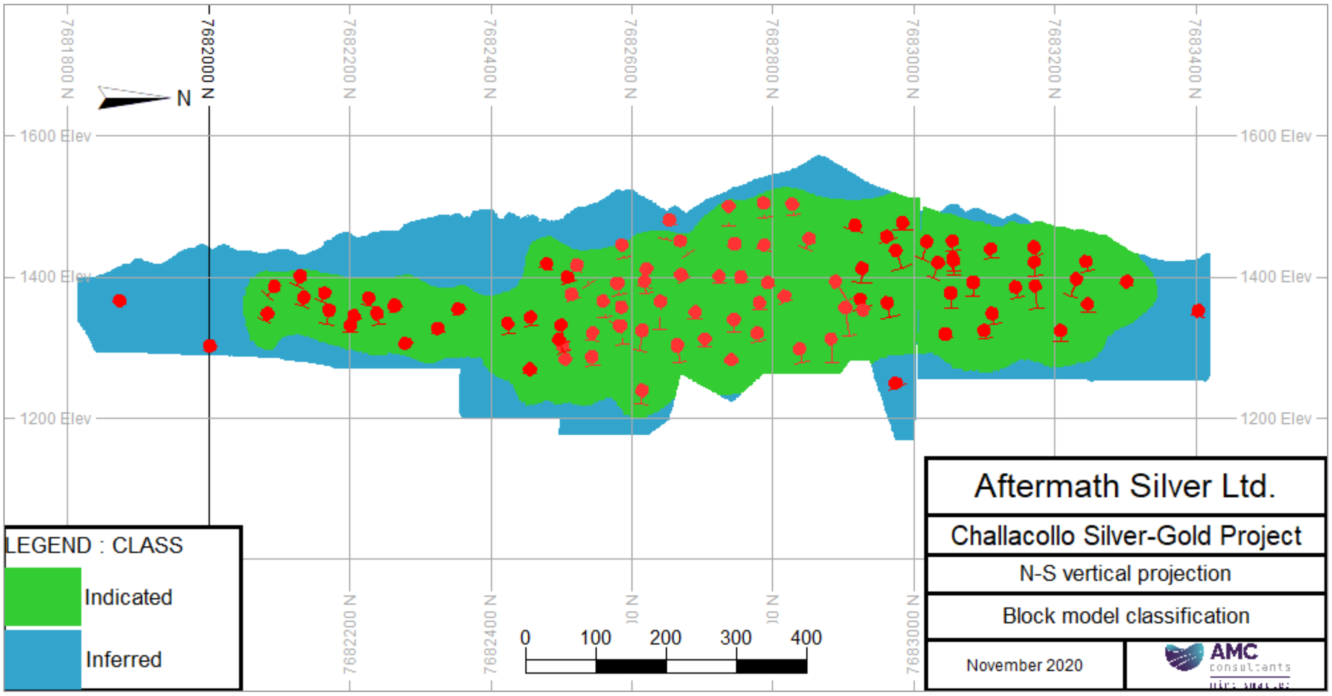
- Pass 1 = 1 x search distance
- Pass 2 = 2 x search distance
- Pass 3 = 4 x search distance

These are shown in Table 14.12 along with the minimum and maximum number of samples used for each pass. Figure 14.12 shows a vertical section through the block model coloured by classification.

Table 14.12 Class interpolation search parameters

Pass	X (m)	Y (m)	Z (m)	Minimum no. of samples	Maximum no. of samples	Minimum no. of drillholes
1	30	30	10	10	20	5
2	60	60	20	6	16	3
3	90	90	30	2	16	2

Figure 14.12 N-S vertical section with block model classification



Source: AMC 2020.

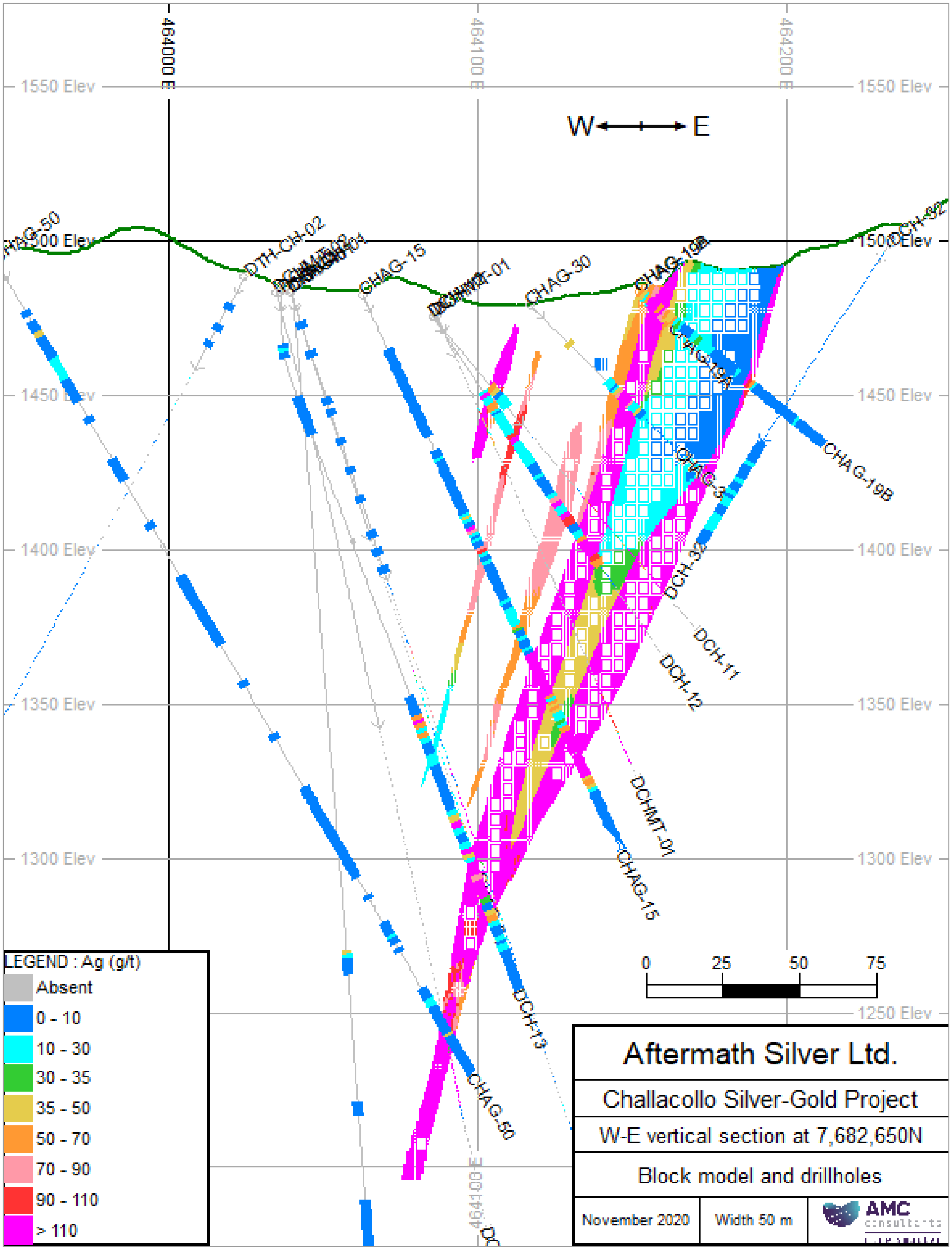
14.10 Block model validation

The block model was validated by visual checks, swath plots, statistical comparisons, and comparisons between different interpolation methods.

14.10.1 Visual checks

Visual checks were carried out to ensure that the estimated grades were consistent with the drillhole grades and to check that the estimated grade distribution was consistent with the style of mineralization. Figure 14.13. shows an example of the drillhole silvers grades compared to the block model. The results are acceptable.

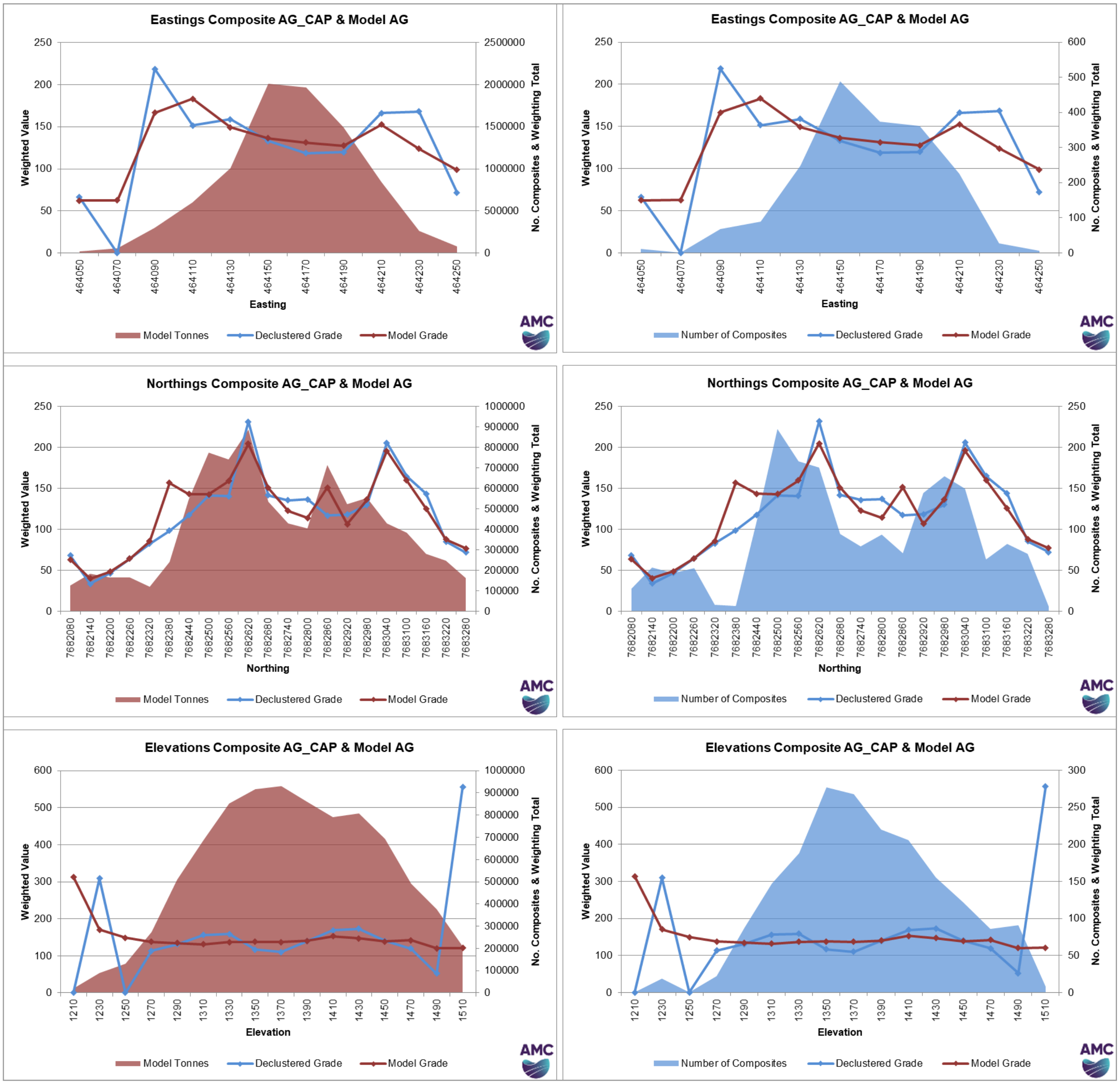
Figure 14.13 Block Model and drillholes coloured by silver grades



14.10.2 Swath plots

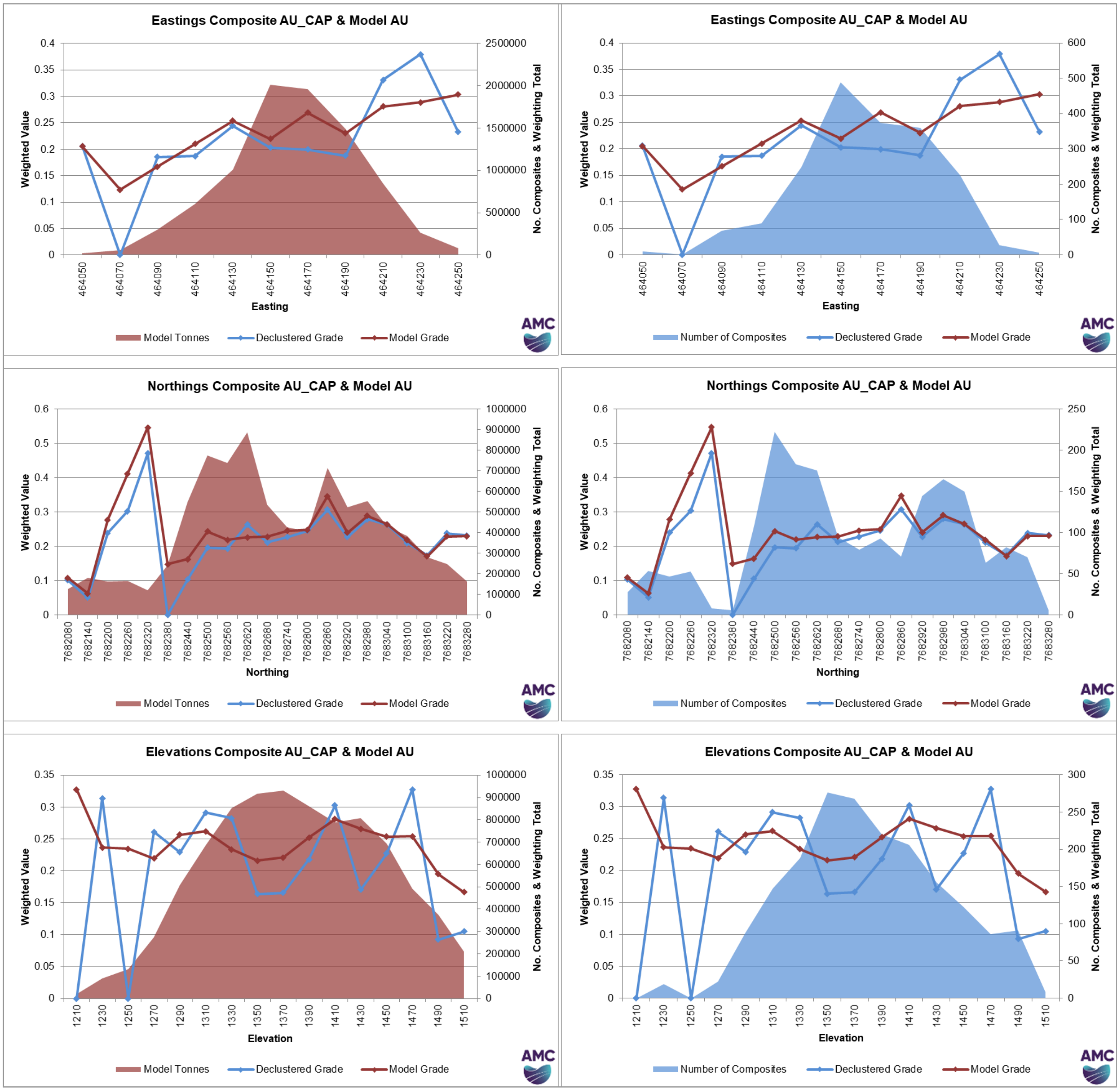
Swath plots were generated comparing all domains to the composited (non-declustered) drillholes. Figure 14.14 and Figure 14.15 shows the swath plots for Indicated material for silver and gold, respectively. In all cases these is a good match between the block model and the composited drillhole grade.

Figure 14.14 Swath plot of silver grades for Indicated class



Source: AMC 2020.

Figure 14.15 Swath plot of Au grades for Indicated class



Source: AMC 2020.

14.10.3 Statistical comparison

Table 14.13 and Table 14.14 show the comparison of the block model and the composite grades for the various domains. The composites for main domains were declustered. The results of the statistical comparison are satisfactory for all domains.

Table 14.13 Block model and composites statistics for Ag (g/t)

Domain	Data	N records	Minimum	Maximum	Mean	Stand. Dev.	CV
100	Model	315,425	0.90	796.2	197	101.61	0.52
	Composite	611	0.00	1,450.0	187	222.63	1.19
200	Model	82,108	19.57	434.1	171	58.57	0.34
	Composite	100	2.50	500.0	166	140.96	0.85
300	Model	200,551	5.58	149.7	57	20.96	0.37
	Composite	169	0.00	190.0	56	47.68	0.85
400	Model	163,657	6.30	567.6	128	79.30	0.62
	Composite	388	0.00	800.0	125	115.71	0.93
500	Model	51,544	33.69	571.8	195	88.76	0.46
	Composite	118	10.00	700.0	188	160.28	0.85
NW 600	Model	90,627	13.29	402.7	134	40.18	0.30
	Composite	41	2.50	857.0	137	161.04	1.17
HW 100	Model	174,163	1.77	1,041.9	39	33.16	0.84
	Composite	444	0.00	1,110.0	55	78.19	1.43
HW 200	Model	80,769	0.10	2,091.2	130	125.25	0.96
	Composite	294	0.00	2,530.0	133	260.91	1.96
HW 300	Model	5,815	5.21	94.2	60	9.56	0.16
	Composite	36	0.00	148.3	57	34.77	0.61
HW 400	Model	65,238	1.91	506.1	68	28.19	0.42
	Composite	272	0.00	582.0	68	67.73	1.00
HW 500	Model	50,987	3.33	206.3	55	21.99	0.40
	Composite	176	2.50	211.0	53	45.77	0.86

Table 14.14 Block model and composites statistics for Au (g/t)

Domain	Data	N records	Minimum	Maximum	Mean	Stand. Dev.	CV
100	Model	315,425	0.00	2.51	0.32	0.24	0.77
	Composite	611	0.00	3.60	0.32	0.50	1.53
200	Model	81,316	0.00	1.50	0.28	0.21	0.75
	Composite	100	0.00	1.79	0.25	0.37	1.48
300	Model	200,957	0.00	3.32	0.23	0.29	1.23
	Composite	169	0.00	4.57	0.31	0.79	2.59
400	Model	163,658	0.01	1.70	0.23	0.12	0.53
	Composite	388	0.00	1.87	0.25	0.28	1.13
500	Model	51,544	0.03	3.76	0.49	0.41	0.84
	Composite	118	0.03	4.11	0.45	0.61	1.36
NW 600	Model	90,627	0.03	0.68	0.18	0.13	0.72
	Composite	41	0.03	0.75	0.17	0.21	1.24
HW 100	Model	174,163	0.00	0.64	0.05	0.05	1.14
	Composite	444	0.00	0.78	0.07	0.11	1.64
HW 200	Model	80,769	0.00	0.55	0.07	0.05	0.81
	Composite	294	0.00	0.64	0.07	0.10	1.46
HW 300	Model	5,815	0.00	0.35	0.08	0.04	0.56
	Composite	36	0.00	0.42	0.07	0.09	1.30
HW 400	Model	65,238	0.00	0.36	0.05	0.03	0.60
	Composite	272	0.00	0.90	0.05	0.09	1.75
HW 500	Model	50,987	0.03	1.11	0.09	0.08	0.83
	Composite	176	0.03	1.25	0.10	0.18	1.73

14.10.4 Comparison with other interpolation methods

Grade estimation was carried out using four interpolation methods for comparison purposes: OK (Lolón domains only), ID^2, ID^3, and nearest neighbour, (NN). The mean silver grades of the Lolón domains, estimated by four different methods, are shown in Table 14.15. The grades estimated by OK are lower than ID^2 or ID^3 for 3.9% and higher than NN for maximum 3.8%.

Table 14.15 Four estimation method mean Ag grades (g/t)

Domain	Ag OK	Ag ID^2	Ag ID^3	Ag NN
100	197	202	201	190
200	171	175	175	167
300	57	59	60	59
400	128	129	129	125
500	195	198	197	191

The results are acceptable.

14.11 Mineral Resource statement

14.11.1 Silver equivalent calculation

Metallurgical recoveries were based on an agitated cyanide leach process. Silver and gold prices were selected from analysis of selected major producers and developers, as well as a consensus forecast. The inputs and AgEq calculation are shown in Table 14.16.

Table 14.16 AgEq input and output

Commodity	Long term price assumed	Recovery	AgEq factor
Ag	$20/oz	92%	1
Au	$1,400/oz	75%	57.065

Silver equivalent values were calculated in the block model by using the formula:

$$AgEq = Ag\ (g/t) + 57.065 \times Au\ (g/t)$$

14.11.2 Open pit Mineral Resources

The Mineral Resources, potentially mineable by an open pit mining method, were reported using a constraining pit shell. This was carried out using the Lerchs Grossman algorithm in Whittle and the parameters are listed in Table 14.17.

Table 14.17 Parameters for conceptual open pit shell

Item	Unit	Value
Silver price	US$/oz	20
Gold price	US$/oz	1,400
Mining cost feed	US$/tonne	3.5
Mining cost waste	US$/tonne	4.5
Processing costs	US$/tonne	17.0
G&A	US$/tonne	2.5
Overall pit slope angle	degrees	45
Metallurgical recovery Ag	%	92
Metallurgical recovery Au	%	75

The cut-off applied for reporting the Mineral Resources is 35 g/t AgEq. The model is depleted for historical mining activities. A summary of open pit Mineral Resources are shown in Table 14.18.

Table 14.18 Open pit Mineral Resources as of 30 November 2020

Class	Tonnes (Kt)	Ag (g/t)	Au (g/t)	Ag (Koz)	Au (Koz)
Indicated	5,597	170	0.27	30,639	49
Inferred	2,360	117	0.15	8,912	11

Notes:
- CIM Definition Standards (2014) were used for reporting the Mineral Resources.
- The Qualified Person is Dinara Nussipakynova, P.Geo. of AMC.
- Cut-off grade is 35 g/t AgEq.
- Mineral Resources are constrained by an optimized pit shell at a long-term metal price of US$20/oz Ag with recovery of 92% Ag and metal price of US$1400/oz Au with recovery of 75%.
- Silver equivalency was estimated as AgEq (g/t) = Ag (g/t) + 57.065 *Au (g/t).
- The pit optimization was based on following cost assumptions:
  - Mill feed mining costs of $3.5/t and waste mining cost of $2.5/t.
  - Processing costs of $17/t and General and Administration costs of $2.5/t.
  - Edge dilution of 7.5% and 100% mining recovery.
- Bulk density used as 2.47 t/m^3.
- Drilling results up to 31 December 2016.
- Mineral Resources are depleted for historical mined out material.
- The numbers may not compute exactly due to rounding.

Source: AMC.

14.11.3 Underground Mineral Resources

Constraining shapes were applied using a Mineable Shape Optimiser (MSO) routine in Datamine for reporting the underground Mineral Resources. The underground mining method was assumed to be a longhole open stoping method with a stope height of 20 m and a with minimum mining width of 2.5 m. The MSO input parameters are shown in Table 14.19.

Table 14.19 MSO input parameters

Item	Unit	Value
Silver price	US$/oz	20
Gold price	US$/oz	1,400
Mining cost	US$/tonne	35.0
Processing costs	US$/tonne	17.0
G&A	US$/tonne	2.5
Metallurgical recovery Ag	%	92
Metallurgical recovery Au	%	75

The input parameters for MSO resulted in a cut-off grade 93 g/t AgEq for potential underground mining.

MSO produced the wireframes of stopes shapes that were used for reporting the underground Mineral Resources. The underground Mineral Resource is reported at 0 cut-off grade within the stope shapes assuming that all material is to be mined. The model is depleted for historical mining activities.

Table 14.20 shows a summary of underground Mineral Resources.

Table 14.20 Underground Mineral Resources as of 30 November 2020

Class	Tonnes (Kt)	Ag (g/t)	Au (g/t)	Metal Ag (Koz)	Metal Au (Koz)
Indicated	1,043	134	0.29	4,510	10
Inferred	443	157	0.26	2,232	4

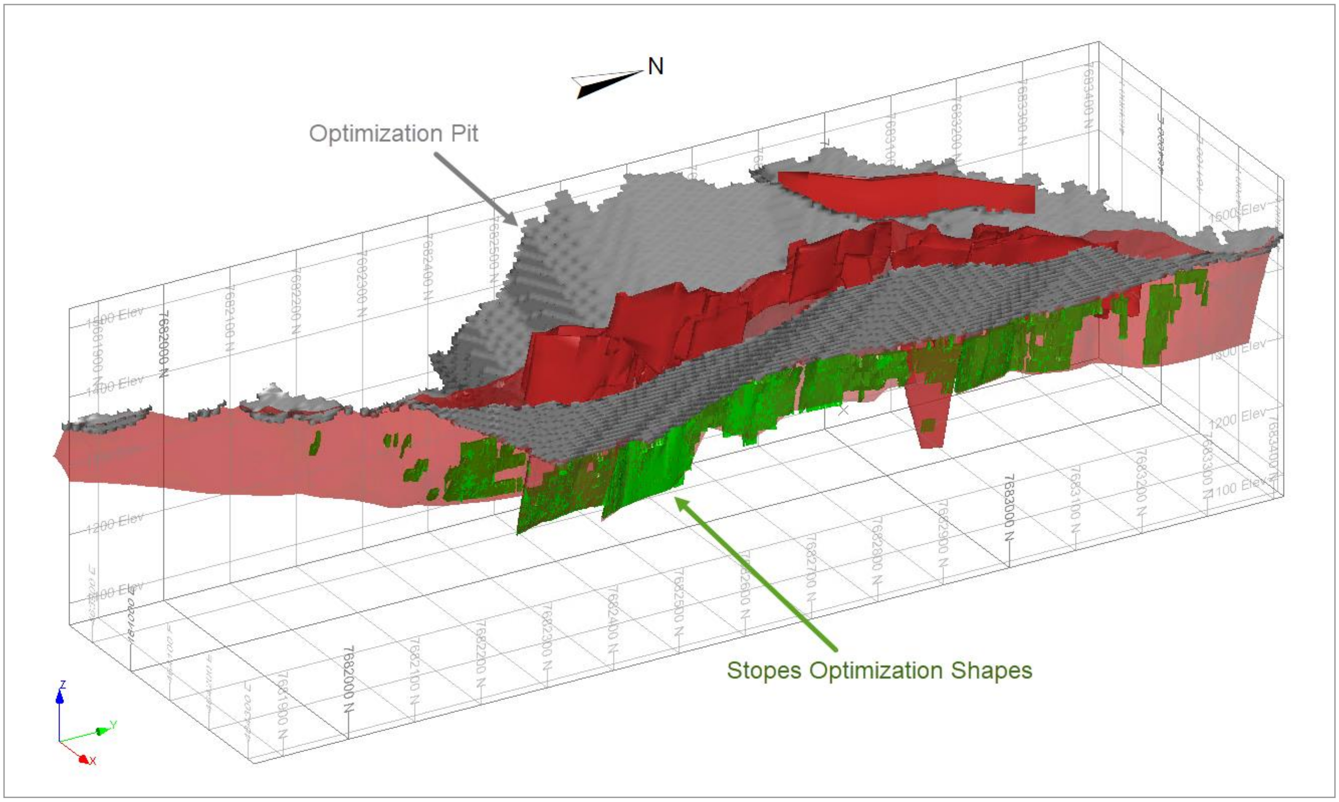
Notes:

- CIM Definition Standards (2014) were used for reporting the Mineral Resources.
- The Qualified Person is Dinara Nussipakynova, P.Geo. of AMC.
- Cut-off grade is 0 g/t AgEq.
- Mineral Resources are constrained by the optimization stopes solids.
- MSO run at a long-term metal price of US$20/oz Ag with recovery of 92% Ag and metal price of US$1400/oz Au with recovery of 75%.
- Silver equivalency was estimated as AgEq (g/t) = Ag (g/t) + 57.065 *Au (g/t).
- The MSO was based on following cost assumptions:
  - Mill feed mining costs of $35/t.
  - Processing costs of $17/t and General and Administration costs of $2.5/t.
  - No dilution and mining recovery.
- Density used as $2.47 t/m^3.
- Drilling results up to 31 December 2014.
- Mineral Resources are depleted for historical mined out material.
- The numbers may not compute exactly due to rounding.

Source: AMC.

Figure 14.16 shows 3D view of optimized open pit shell and optimized underground stopes for the Challacollo deposit.

Figure 14.16 3D view of open pit shell and underground stope optimization solids



Notes: Mineralization inside the optimization pit is red. Mineralization below the pit is pink.
Source: AMC 2020.

14.11.4 Grade-tonnage information

The sensitivity to cut-off grade for the open pit is shown in Table 14.21 (Indicated material) and Table 14.22 (Inferred material). Note the selected cut-off for reporting is shown in bold font.

Table 14.21 Grade and Tonnes sensitivities for Indicated open pit material

AgEq cut-off (g/t)	Tonnes	Ag (g/t)	Au (g/t)
20	5,836,417	164	0.26
30	5,696,207	168	0.27
35	**5,596,687**	**170**	**0.27**
40	5,444,411	174	0.28
50	5,130,770	182	0.29
60	4,893,540	189	0.30
70	4,691,521	194	0.31
80	4,505,274	199	0.32
90	4,343,802	204	0.33
100	4,175,585	208	0.33
120	3,825,282	218	0.35
140	3,409,188	231	0.36
160	2,972,846	244	0.38

Table 14.22 Grade and Tonnes sensitivities for Inferred open pit material

AgEq cut-off (g/t)	Tonnes	Ag (g/t)	Au (g/t)
20	2,518,877	112	0.14
30	2,422,069	115	0.15
35	**2,360,258**	**117**	**0.15**
40	2,266,246	121	0.16
50	2,021,405	130	0.17
60	1,768,581	141	0.19
70	1,559,426	152	0.20
80	1,350,950	165	0.22
90	1,181,591	178	0.23
100	1,049,558	189	0.25
120	803,114	216	0.28
140	654,612	237	0.31
160	568,413	252	0.33

The grade-tonnage curves for Indicated and Inferred open pit silver are shown in Figure 14.17 and Figure 14.18.

Figure 14.17 Grade-tonnage curve for Indicated material (open pit)

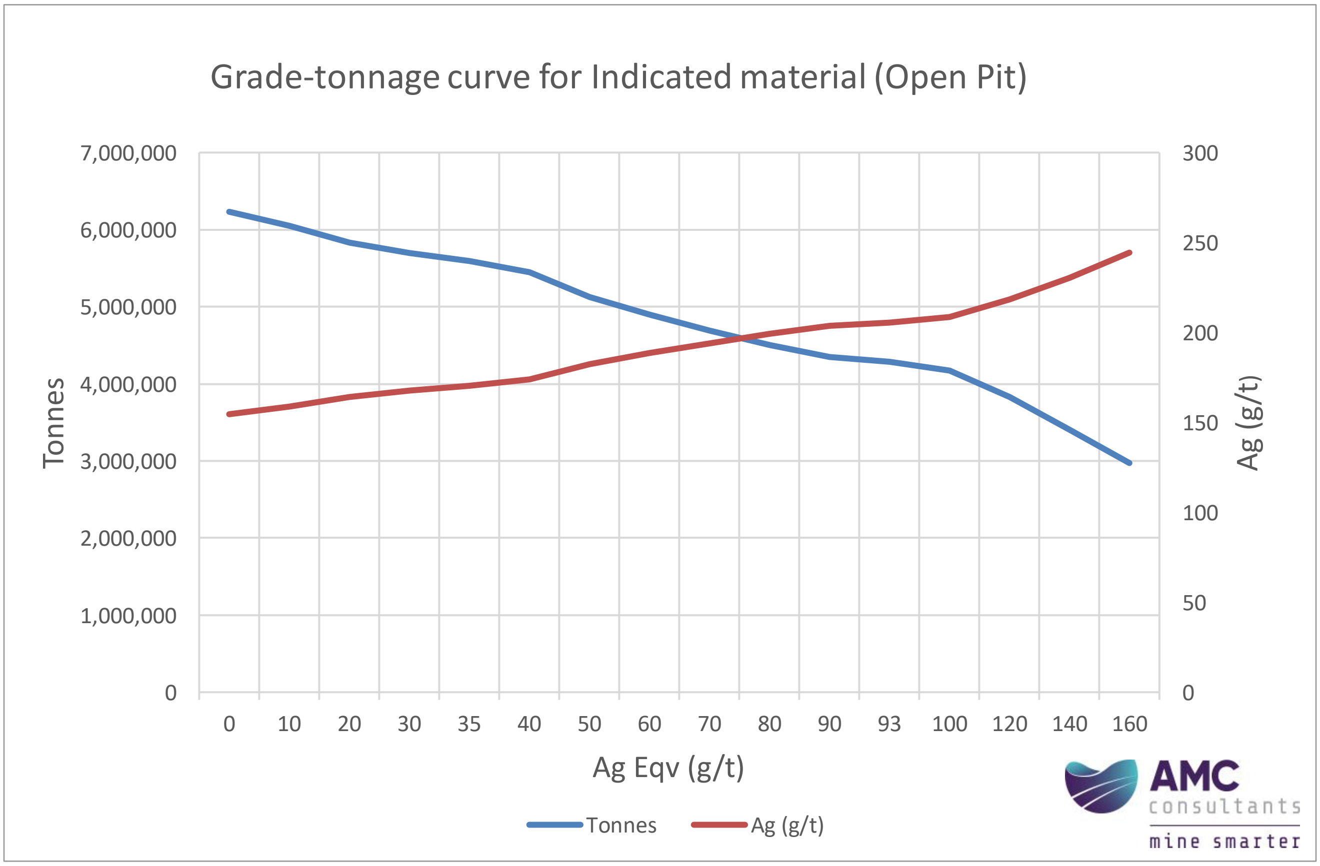
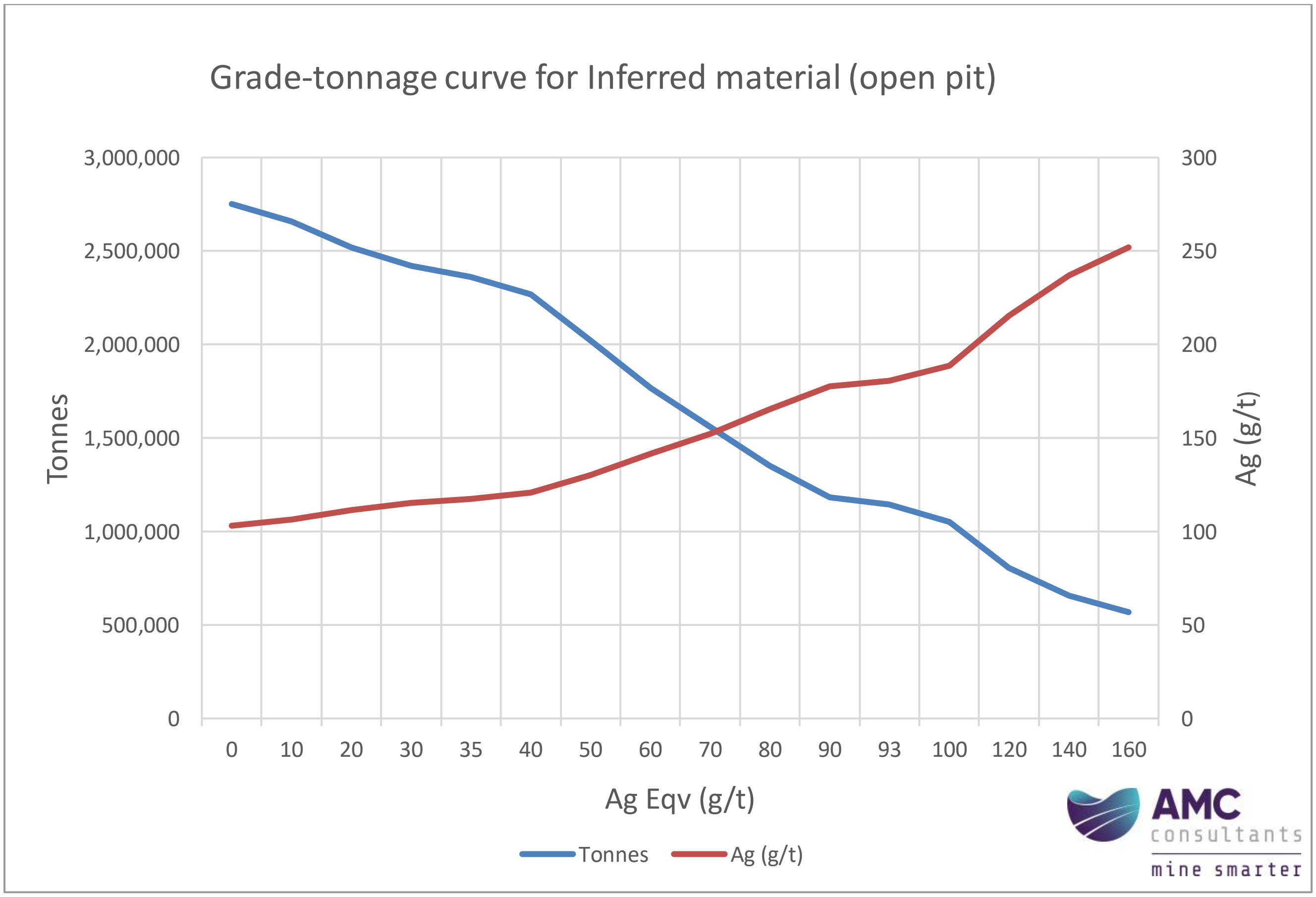


Figure 14.18 Grade-tonnage curve for Inferred material (open pit)



As the underground Mineral Resources were reported from within constrained shapes, sensitivity tables have not been included.

14.12 Comparison with previous estimate

The previous Mineral Resource estimate on the Property dated 31 March 2015 was published in the 2015 MP Technical Report for Mandalay. Changes to the Mineral Resource estimate in this report are due predominantly to:

- New interpretation of mineralized domains, and all included in estimate.
- New estimation was based on individual domains for hangwall zones.
- MP only reported the Lolón Structure results at an underground COG.
- The 2020 estimate reports both open pit and underground Mineral Resources
- Updated prices used and reporting at different COGs.
- Updated classification.

Table 14.23 shows the comparison of the Mineral Resources at the published COGs.

Table 14.23 Comparison of Mineral Resource estimate with previous estimate

Estimate	Classification	Tonnes (Kt)	Silver (g/t)	Gold (g/t)	Silver (Koz)	Gold (Koz)
2020	Indicated	6,640	165	0.27	35,150	58
	Inferred	2,803	124	0.17	11,144	15
2015	Indicated	4,700	200	0.32	30,200	48
	Inferred	1,600	134	0.31	6,900	16
Difference (%)	Indicated	41	-18	-16	16	21
	Inferred	75	-7	-45	62	-6

Notes for 2015:
- Mineral Resources estimated as of 31 December 2014.
- Mineral Resources are estimated at a cut-off grade of 60 g/t Ag as interpreted and modelled using GEOVIA Surpac™ software.
- Mineral Resources are estimated using a silver price of US$24/oz, a gold price of US$1,400 per ounce, metallurgical recoveries of 92% for silver and 75% for gold, and operating costs of US$50 per tonne.
- A density of 2.45 g/cm^3 is used as a base density with adjustments according to the variation of the estimated barium, lead and zinc grades.
- No capping of Ag grades was applied due to low grade variability. Au grades have been capped at 3 g/t for two sample composites 4.57 g/t Au and 4.11 g/t Au respectively.
- Includes drilling results up to September 2014.
- Only reports the Lolón Structure.
- Channel data was included.

Notes for 2020:
- The effective date of the estimate is 30 November 2020.
- The Qualified Person is Dinara Nussipakynova, P.Geo., of AMC.
- Mineral Resources are constrained at a long-term metal price of US$20/oz Ag with recovery of 92% Ag and metal price of US$1,400/oz Au with recovery of 75%.
- Silver equivalency formula is AgEq (g/t) = Ag (g/t) + 57.065 *Au (g/t).
- The open pit mineral resources are based on a pit optimization using the following assumptions:
  - Feed mining costs of $3.5/t and waste mining cost of US$2.5/t.
  - Processing costs of $17/t and General and Administration costs of US$2.5/t.
  - Edge dilution of 7.5% and 100% mining recovery.
  - 45-degree slope angles.
  - Reported at a cut-off grade of 35 g/t AgEq.
- The underground mineral resources are reported within Datamine MSO constraints based on the following assumptions:
  - Mill feed mining costs of US$35/t.
  - Processing costs of US$17/t and General and Administration costs of US$2.5/t.
  - Minimum width of 2.5 m.
  - No dilution or mining recovery.
  - Isolated MSO stopes were removed from the total.
  - Reported at a cut-off grade of 93 g/t AgEq.
- Bulk density used was 2.47 t/m^3.
- Includes drilling results up to 31 December 2016, no channel data included.
- Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability.
- The numbers may not compute exactly due to rounding.
- Mineral Resources are depleted for historic mined out material.

The comparison of the 2020 Mineral Resource estimate with previous estimate shows:

- Indicated tonnes have increased by 41%, Ag grades have decreased for 18%. Overall, the silver metal content increased by 16% and gold metal by 21%.
- Inferred tonnes increased by 75%, the silver grades decreased by 7% and the gold grades have decreased by 45%. Overall, the silver metal increased by 62%, but gold metal decreased by 6%.

One of the main reasons of differences is that 2015 Mineral Resource was considered for open pit mining only, while the 2020 Mineral Resource is based on open pit and underground mining scenarios. The reporting of the 2015 Mineral Resources were based on a silver cut-off 60 g/t. In 2020 the cut-offs were based on Ag equivalency, where the cut-off for open pit was 35 g/t AgEq and for underground the cut-off was 93 g/t of AgEq.

15 Mineral Reserve estimates

There are no Mineral Reserves on the Property.

16 Mining methods

As there are no Mineral Reserves, this section is not required.

17 Recovery methods

As there are no Mineral Reserves, this section is not required. Potential recovery methods are discussed in Section 13.

18 Project infrastructure

As there are no Mineral Reserves, this section is not required. Logistics and infrastructure are discussed in a summary fashion in Section 5.

19 Market studies and contracts

As there are no Mineral Reserves, this section is not required.

20 Environmental studies, permitting and social or community impact

As there are no Mineral Reserves, this section is not required.

21 Capital and operating costs

As there are no Mineral Reserves, this section is not required.

22 Economic analysis

As there are no Mineral Reserves, this section is not required.

23 Adjacent properties

There are no adjacent properties with mineralization similar to that seen on the portion of the project that hosts the silver / gold mineralization that is the subject of this Report.

Properties in the region around Challacollo are generally porphyry-related copper mineralization. There are some prospective porphyry copper areas in other parts of the Challacollo district.

24 Other relevant data and information

To the best of the QP's knowledge there is no other information or explanation required so as to make the report more understandable or not misleading.

25 Interpretation and conclusions

25.1 Overview

The Challacollo property in the northern Atacama Desert, Region 1 Tarapaca, Chile is a polymetallic epithermal vein deposit. It has a lengthy history with periods of minor production. Modern exploration has been carried out by Silver Standard and Mandalay. The Lolón Structure, which has been the focus of activity, is a strongly mineralized feature. It is reasonably well constrained, having been accessed from underground and drilled over several different periods of time. There are also additional structures which have been party evaluated but require more attention. Previously the Lolón Structure has been evaluated with underground mining methods being the most likely method of extraction. Aftermath considers the deposit to be amenable primarily to open pit mining methods and the Mineral Resources are reported on that basis.

25.2 Risk and uncertainties

No significant risks and / or uncertainties have been identified that could reasonably be expected to affect the reliability or confidence in the exploration information and Mineral Resource. The information gathered so far forms a good platform for directed exploration in the next phase.

The geological understanding of the deposit is good and will be supplemented by Aftermath programs which will be designed to grow the Mineral Resource and reduce risk.

The data collection, sampling, sample preparation, security, and analytical procedures adopted by Silver Standard and Mandalay for its exploration programs generally meet accepted industry standards. While the normal suite of assay QA/QC protocols were implemented for the most recent drilling (by Mandalay), the Silver Standard work which represents 64% of the assay data did not have any CRMs inserted thus it was not subjected to a full QA/QC suite. This uncertainty has been partly addressed by a statistical comparison of datasets. However, some twinning of drillholes should be carried out to duplicate the Silver Standard work. In addition, twinning should be considered to validate the Mantos Blancos drilling which does not have assay certificates, even if it only represents 4% of the data set. Notwithstanding the above the data was deemed adequate for the Mineral Estimate.

25.3 Conclusion

The QPs conclude that based on the information gathered to date, further exploration is warranted on the Property. There is an opportunity to increase the size of the defined mineralized zone in the Lolón Structure and other adjacent mineralized veins on the project and to expand the project's resource base and economic potential. A further enhancement to the project would be to explore additional metallurgical routes, specifically heap leaching of low-grade material surrounding the Lolón Structure.

26 Recommendations

The following recommendations are made by activity. Many are in regard to operational improvement and data quality and thus their costs are part of the recommended exploration program. The exploration component is costed below as are other discrete items.

26.1 QA/QC

The following is recommended to improve confidence in the sampling and analytical procedures:

- Appropriate selection of CRMs to cover the appropriate grade range.
- Selection of duplicate samples in mineralized material.
- Ensure field duplicates are analyzed at the same laboratory so they can be used to quantify geologic variance appropriately.
- Increased submission of blanks.
- Include laboratory pulp and coarse repeats in the sample stream to quantify any weaknesses in the sample preparation or procedures.
- Establish QA/QC protocols to determine when sample analyses fail.
- Ensure QA/QC programs are continually monitored and request re-runs where samples are considered to fail.
- Continue to include umpire samples in the QA/QC program.
- Resubmit 10% of the pulps from the Silver Standard drilling within the resource shells along with the full QA/QC suite to further assess the accuracy of this data. These should be from within the mineralized domains only and amount to about 370 pulps for assay for silver and gold plus QA/QC inserts, duplicates, and umpires. Estimated cost is $30,000.

Where not shown these costs will be incorporated into any drilling costs.

26.2 Drilling items

At this time there are no known drilling, sampling or recovery factors that could impact the accuracy and reliability of the results. However, the following recommendations are made:

- Aftermath to continue using large diameter (HQ or PQ) triple tube diamond core to maximize sample size and core recovery, minimizing the loss of vein material.
- Twinning of selected existing RC holes to test recovery and sample volume effects between the two drilling methods.
- While few Mantos Blancos drill contribute to the Mineral Resource, review impact, and consider twinning these holes as there are no assay certificates available.
- A subset of the existing RC holes used in the Mineral Resource estimate are re-entered and down hole surveys conducted. Holes of various lengths should be selected and the relative difference to the current hole paths assessed and a recommendation on additional re-surveying should made.

These costs will be incorporated into any drilling costs.

26.3 Metallurgical testwork

The 2014 metallurgical test work done previously on the Lolón Structure material was considered to be reasonably comprehensive. However as follow up these are recommended actions:

- Verification that the samples used in the 2014 test work program are adequately representative of the mineralogical species present in the geological model.

- Additional variability test work on separate samples of various mineralogy, grade and location should be conducted pending confirmation of previous sample representivity and include:
  - Chemical characterization.
  - Comminution test work such as CWi, SMC, BRWi, BBWi, Ai.
  - Direct cyanide leach tests using optimum conditions established.
  - Vendor filtration test work.
- Additional variability test work will need to be carried out similarly on samples from Lolón adjacent hangingwall and footwall parallel structures and lower-grade halo mineralization which are subject of the additional Mineral Resource drilling.
- Future characterization tests should include a cyanide soluble analysis. A detailed chemical analysis of selected leach solutions to indicate the levels of metals other than gold and silver that will be present.
- A sample of the potential site raw water be analysed and both lime demand and additional cyanide leach tests conducted to establish site water effects.

The variability test work and characterization testing will have an estimated cost of $70,000.

26.4 Mineral Resources

The historical data collection has been focused on an underground mining method. As this estimate considers an open pit, there are some activities required and discussed below.

- Collect more drill data in the hangingwall zone, see Section 26.5.1.
- Build geology model.
- Carry out routine bulk density measurements to supplement the bulk density sample database.
- Upon receipt of results of the sampling of old core build a simple grade model to assess value of further sampling for an open pit and possible heap leach scenario. To include an open pit optimization study. Estimated cost is $30,000.
- Build a new model incorporating the 2021 drilling and the infill sampling, optimize an open pit and report. Estimated cost is $100,000.

26.5 Exploration program

26.5.1 Sampling of old core

Historically the core surrounding the Lolón Structure was only selectively sampled, with geologists selecting for analysis only the higher-grade structures based on visual recognition of mineralization. A sampling program of some 3,228 m has been designed to investigate the grades outside of these high-grade intervals. Estimated cost is $350,000.

26.5.2 Drilling program

A drill program is recommended focussing on the general area within and adjacent to the resource optimized open pit thus infilling and upgrading the data for the Lolón Structure and parallel structures.

This is currently estimated as 48 diamond drillholes DDH for 10,100 m. The estimated cost for this program is $5,000,000 as an all-up cost and incorporating any survey work on the RC holes as recommended under drilling.

26.6 Follow up

The above would constitute a phase 1 program and contingent on results the recommendation would be to move to a Preliminary Economic Assessment (PEA) which would involve geotechnical investigation, engineering work and include testwork for a heap leach scenario for the material not reporting to an agitated leach plant. The cost for that study would be in the order of $250,000.

26.7 Cost summary

A summary of the costs for the work recommended is shown in Table 26.1.

Table 26.1 Cost summary

Item	Cost US$
Follow up metallurgical testing	70,000
Resubmitting Silver Standard pulps with CRMs and blanks	30,000
Sampling of old core	350,000
Simple model and pit shell	30,000
Drilling	5,000,000
New model, optimized pit shell and reporting	100,000
Total phase 1	**5,580,000**
PEA as part of phase 2	250,000

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28 QP Certificates

CERTIFICATE OF AUTHOR

I, John Morton Shannon, P.Geo., of Vancouver, British Columbia, do hereby certify that:

1 I am currently employed as Principal Geologist with AMC Mining Consultants (Canada) Ltd., with an office at Suite 202, 200 Granville Street, Vancouver, British Columbia V6C 1S4.

2 This certificate applies to the technical report titled "Challacollo Silver-Gold Mineral Resource Estimate", with an effective date of 15 December 2020, (the "Technical Report") prepared for Aftermath Silver Ltd. ("the Issuer").

3 I am a member in good standing of the Engineers and Geoscientists British Columbia (Registration #32865) and the Association of Professional Geoscientists of Ontario (Registration #0198), and a member of the Canadian Institute of Mining, Metallurgy, and Petroleum. I am a graduate of Trinity College Dublin in Dublin, Ireland (BA Mod Nat. Sci. in Geology in 1971). I have practiced my profession continuously since 1971 and have been involved in mineral exploration and mine geology for over 45 years since my graduation from university. This has involved working in Ireland, Zambia, Canada, and Papua New Guinea. My experience is principally in base metals and precious metals. I have both been Chief Geologist at Porgera Mine in PNG and also worked on a similar deposit to this in Chile.

I have read the definition of "qualified person" set out in National Instrument 43-101 (NI 43-101) and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a "qualified person" for the purposes of NI 43-101.

4 I have not visited the Challacollo Property.

5 I am responsible for Sections 2-6, 8-9, 11, 15-24 and parts of 1, 7, 10, 12, and 25-27 of the Technical Report.

6 I am independent of the Issuer and related companies applying all of the tests in Section 1.5 of the NI 43-101.

7 I have not had prior involvement with the property that is the subject of the Technical Report.

8 I have read NI 43-101 and the section of the Technical Report for which I am responsible has been prepared in compliance with NI 43-101.

9 As of the effective date of the Technical Report, to the best of my knowledge, information, and belief, the section of the Technical Report for which I am responsible contains all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

Effective Date: 15 December 2020
Signing Date: 4 February 2021

Original signed and sealed by

John Morton Shannon, P.Geo.

General Manager / Principal Geologist

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I, Dinara Nussipakynova, P.Geo., of Vancouver, British Columbia, do hereby certify that:

10 I am currently employed as Principal Geologist with AMC Mining Consultants (Canada) Ltd., with an office at Suite 202, 200 Granville Street, Vancouver, British Columbia V6C 1S4.

11 This certificate applies to the technical report titled “Challacollo Silver-Gold Mineral Resource Estimate”, with an effective date of 15 December 2020, (the “Technical Report”) prepared for Aftermath Silver Ltd. (“the Issuer”).

12 I am a graduate of Kazakh National Polytechnic University (B.Sc. and M.Sc. in Geology, 1987). I am a member in good standing of the Engineers and Geoscientists of British Columbia (License #37412) and the Association of Professional Geoscientists of Ontario (License #1298). I have practiced my profession continuously since 1987 and have been involved in mineral exploration and mine geology for a total of 34 years since my graduation from university. My experience is principally in Mineral Resource estimation, database management, and geological interpretation.

I have read the definition of "qualified person" set out in National Instrument 43-101 (NI 43-101) and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a "qualified person" for the purposes of NI 43-101.

13 I have not visited the Challacollo Property.

14 I am responsible for Section 14 and parts of 1, 25, and 26 of the Technical Report.

15 I am independent of the Issuer and related companies applying all of the tests in Section 1.5 of the NI 43-101.

16 I have not had prior involvement with the property that is the subject of the Technical Report.

17 I have read NI 43-101 and the section of the Technical Report for which I am responsible has been prepared in compliance with NI 43-101.

18 As of the effective date of the Technical Report, to the best of my knowledge, information, and belief, the section of the Technical Report for which I am responsible contains all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

Effective Date: 15 December 2020
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Original signed and sealed by

Dinara Nussipakynova, P.Geo.

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CERTIFICATE OF AUTHOR

I, Sergio Alvarado Casas, of Antofagasta, Chile, do hereby certify that:

19 I am currently employed as Consultant Geologist, General Manager, and partner with Geoinvest Sergio Alvarado Casas E.I.R.L, with an office at Badajoz 100, office 523, Las Condes, Santiago de Chile.

20 This certificate applies to the technical report titled "Challacollo Silver-Gold Mineral Resource Estimate", with an effective date of 15 December 2020, (Technical Report) prepared for Aftermath Silver Ltd. (Issuer).

21 My professional title is Geologist with the degree of Geology obtained in 1991 at Universidad Católica del Norte, Chile, with post graduate studies in resource assessment at the Universidad de Chile, in 1997. I have practiced my profession continuously since 1985. I have estimated and audited Mineral Resources for a variety of early and advanced international base and precious metals projects. I have worked in the mining industry on several underground and open pit mining operations and held various senior operational and corporate positions. I am a Competent Person from the Chilean Mining Commission, with Registration No. 0004. I am registered at the Institute of Chilean Mining Engineers (IMCH), License No. 1939, and with the Canadian Institute of Mine (CIM), License No. 144015.

I have read the definition of "qualified person" set out in National Instrument 43-101 (NI 43-101) and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a "qualified person" for the purposes of NI 43-101.

22 I have visited the Challacollo Property from 7 – 10 September 2020, for three days.

23 I am responsible for parts of Sections 1, 7, 10, 12 of the Technical Report.

24 I am independent of the Issuer and related companies applying all of the tests in Section 1.5 of the NI 43-101.

25 I have not had prior involvement with the property that is the subject of the Technical Report.

26 I have read NI 43-101 and the section of the Technical Report for which I am responsible has been prepared in compliance with NI 43-101.

27 As of the effective date of the Technical Report, to the best of my knowledge, information, and belief, the section of the Technical Report for which I am responsible contains all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

Effective Date: 15 December 2020
Signing Date: 4 February 2021

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I, Brendan Mulvihill, MAusIMM (CP Met), RPEQ, of Queensland, Australia, do hereby certify that:

28 I am currently employed as Senior Process Engineer at GR Engineering Services Limited, Building 3, Level 3, Kings Row Office Park 42 McDougall Street, Milton, Queensland, 4064, Australia.

29 This certificate applies to the technical report titled "Challacollo Silver-Gold Mineral Resource Estimate", with an effective date of 15 December 2020, (Technical Report) prepared for Aftermath Silver Ltd. (the Issuer).

30 I am a Chartered Professional Member of the Australasian Institute of Mining and Metallurgy (#309808) and Registered Professional Engineer of Queensland under the discipline of Metallurgy (#15189). I graduated from the La Trobe University Bendigo, Australia (B.App.Sc. Metallurgy (Hons.), in 1995. I have practiced my profession for 25 years in the minerals industry and have experience in preliminary and feasibility studies, process optimization, process engineering design, and operation of mineral processing plants. I have been directly involved in feasibility studies and process engineering design of base metal and precious metal extraction plants in Australian and International projects.

I have read the definition of "qualified person" set out in National Instrument 43-101 (NI 43-101) and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a "qualified person" for the purposes of NI 43-101.

31 I have not visited the Challacollo Property.

32 I am responsible for Section 13 and parts of 1, 25, 26, and 27 of the Technical Report.

33 I am independent of the Issuer and related companies applying all of the tests in Section 1.5 of the NI 43-101.

34 I have not had prior involvement with the property that is the subject of the Technical Report.

35 I have read NI 43-101 and the section of the Technical Report for which I am responsible has been prepared in compliance with NI 43-101.

36 As of the effective date of the Technical Report, to the best of my knowledge, information, and belief, the section of the Technical Report for which I am responsible contains all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

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