Technical Report

Olympias Mine

Greece

Centered on Latitude N 40° 36’ and Longitude E 23° 50'

Effective Date: December 31, 2023

Prepared by:
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GLOSSARY

Units of Measure

Annum (year)	a
Billion	B
Centimeter	cm
Cubic centimeter	cm^3
Cubic meter	m^3
Day	d
Days per year (annum)	d/a
Degree	°
Degrees Celsius	°C
Dollar (American)	US$
Dollar (Canadian)	CAN$
Euro	€
Gram	g
Grams per litre	g/L
Grams per tonne	g/t
Greater than	>
Hectare (10,000 m^2)	ha
Hour	h
Kilo (thousand)	k
Kilogram	kg
Kilograms per cubic meter	kg/m^3
Kilograms per hour	kg/h
Kilograms per square meter	kg/m^2
Kilometer	km
Kilometers per hour	km/h
Kilopascal	kPa
Kilo tonne	kt
Kilo tonne per annum	ktpa
Kilovolt	kV
Kilowatt hour	kWh
Kilowatt hours per tonne	kWh/t
Kilowatt hours per year	kWh/a
Kilowatt	kW
Less than	<
Litre	L
Megavolt Ampere	MVA
Megawatt	MW

Meter	m
Meter above Sea Level	masl
Meters cubed per hour	m^3/hr
Meters cubed per second	m^3/s
Metric ton (tonne)	t
Microns	µm
Milligram	mg
Milligrams per litre	mg/L
Millilitre	mL
Millimeter	mm
Million cubic meters	Mm^3
Million ounces	Moz
Million tonnes per Annum	Mtpa
Million tonnes	Mt
Million	M
Million Years	Ma
Newton	N
Ounce	oz
Parts per billion	ppb
Parts per million	ppm
Percent	%
Percent by Weight	wt%
Pound	lb
Square centimeter	cm^2
Square kilometer	km^2
Square meter	m^2
Thousand tonnes	kt
Three-Dimensional	3D
Tonnes per day	t/d or tpd
Tonnes per hour	tph
Tonnes per operating hour	tpoh
Tonnes per year	tpa
Volt	V
Watt	W
Weight/volume	w/v
Weight/weight	w/w

Abbreviations and Acronyms

Acidity or Alkalinity	pH
Acid Base Accounting	ABA
Aluminum	Al
ALS	ALS

Antimony	Sb
Argillic	ARG
Argon	Ar
Arsenic	As
Atomic Adsorption	AA
Barium	Ba
Block Model	BM
Bond Abrasion Index	Ai
Bottle Roll	BR
Bed Volumes	BV
Business Opening and Operations Permit	GSM
Cadmium	Cd
Calcium Hydroxide	$Ca(OH)_2$
Canadian Institute of Mining, Metallurgy, and Petroleum	CIM
Cemented Aggregate Fill	CAF
Certified Reference Material	CRM
Cobalt	Co
Coefficient of Variance	CV
Concentric Cylinder Rotational Viscometry	CCRV
Construction Management	CM
Copper	Cu
Copper Sulfate	$CuSO_4$
Critical Solids Density	CSD
Cyanide	CN
Drift and Fill	DAF
Semi pure gold alloy	Doré
East	E
Eldorado Gold Corporation	Eldorado
Engineering, Procurement, Construction Management	EPCM
Environmental Impact Assessment	EIA
Environmental Impact Statement	EIS
Environmental Management Plan	EMP
European Goldfields	EGL
European Union	EU
Factor of Safety	FOS
Feasibility Study	FS
Fine Ore Bin	FOB
Flocculant	FLOC
Foot Wall	FW
General and Administrative	G&A
Geological Strength Index	GSI
Geosynthetic Clay Liner	GCL
Gold	Au
Gold Equivalent	Au Equiv

Hellenic Fertilizer Company	HFC
High Density Polyethylene	HDPE
High Grade	HG
Hydrochloric Acid	HCl
Hydrogen	H
Hydrogen Oxide	H_2O
Inline Stream Analyser	ISA
Induced Polarization	IP
Inductively Coupled Plasma	ICP
Inductively Coupled Plasma Emission Spectroscopy	ICP-ES
Inductively Coupled Plasma Mass Spectrometry	ICP-MS
Inner Diameter	ID
Internal Rate of Return	IRR
International Financial Reporting Standards	IFRS
International Organization for Standardization	ISO
Investment Agreement	IA
Iron	Fe
Kokkinolakkas Tailings Management Facility	KTMF
Lead	Pb
Life-of-mine	LOM
Locked Cycle Test	LCT
Manganese	Mn
Measured & Indicated	M&I
Mercury	Hg
Methyl Isobutyl Carbinol	MIBC
Ministry of Environment	MOE
National Instrument 43-101	NI 43-101
Nearest Neighbour	NN
Nearest Neighbour Kriging	NNK
Net Acid Generation	NAG
Net Smelter Return	NSR
Nickel	Ni
North	N
Northeast	NE
Northwest	NW
Operator Control Station	OCS
Ordinary Kriging	OK
Outer Diameter	OD
Oxygen	O
Paste Fill	PF
Polyvinyl Chloride	PVC
Potassic	POT
Potassium	K
Potential of Hydrogen	pH

Prefeasibility Study	PFS
Probability Assisted Constrained Kriging	PACK
Public Power Corporation	PPC
Quarter	Q
Qualified Person(s)	QP(s)
Quality assurance	QA
Quality control	QC
Quantitative Evaluation of Minerals by Scanning Electron Microscopy	QEMSCAN
Quartz	Qz
Request for Quotations	RFQ
Rock Quality Designation	RQD
Run of Mine	ROM
Selenium	Se
Silicon	Si
Silver	Ag
Sodium Cyanide	NaCN
Sodium Hydroxide	NaOH
Sodium Metabisulphite	$Na_2S_2O_5$
Sodium Metabisulphite	SMBS
South	S
Southeast	SE
Southwest	SW
Specific Gravity	SG
Spherical	SPH
Standard Reference Material	SRM
Strontium	Sr
Sub-level Caving	SLC
Sulfur	S
Sulfur Dioxide	SO_2
Sulphide	S^{2-}
Sulfuric Acid	H_2SO_4
Synthetic Precipitation Leaching Procedure	SPLP
Tailings Management Facility	TMF
Technical Study	TS
Toxicity Characteristic Leaching Procedure	TCLP
Transportable Moisture Limit	TML
Transverse Longhole Open Stoping	TLHOS
TVX Gold Inc.	TVX
Unconfirmed Compressive Strength	UCS
Underflow	U/F
Underground	UG
Universal Transverse Mercador	UTM
Uranium	U
Value Added Tax	VAT

West	W
Work Breakdown Structure	WBS
Xanthate Collector	SIPX
Zinc	Zn

SECTION • 1 SUMMARY

1.1 INTRODUCTION

This Technical Report on the Olympias Property located in Halkidiki Peninsula in northern Greece has been prepared by Eldorado Gold Corporation (Eldorado or the Company) of Vancouver, Canada. This Technical Report has been prepared to a standard which is in accordance with the requirements of National Instrument 43-101, Standards of Disclosure for Mineral Projects (NI 43-101), of the Canadian Securities Administrators.

The report, with an effective date of December 31, 2023, is an update to the 'Technical Report, Olympias Mine, Greece' prepared by Eldorado Gold Corporation effective date December 31, 2019 (Eldorado, 2019). The main purpose of this Technical Report is to support the annual statement of the Mineral Resources and Mineral Reserves, and to provide an update on the operation and a discussion of future plans.

The Property is located within the Kassandra Mines complex, located on the Halkidiki Peninsula of northern Greece. Eldorado owns the Kassandra Mines complex, through ownership of its 100%-owned subsidiary, Hellas Gold S.A. Hellas Gold was acquired by Eldorado as part of the acquisition of European Goldfields Limited in 2012.

The Kassandra Mines complex comprises a group of mining and exploration concessions, covering 317 km^2, located approximately 100 km east of Thessaloniki. The properties within the complex include Olympias, which is currently in production; Stratoni, which also includes the Madem Lakkos and Mavres Petras mines, which is currently in care and maintenance; and Skouries, a copper-gold porphyry deposit currently under development. This Technical Report is specific to the Olympias Property, which is an operating mine (commercial production declared in 2017) producing three concentrates: an arsenopyrite / pyrite concentrate containing gold, a lead concentrate that also contains silver and gold, and a zinc concentrate that also contains gold.

Information and data for this Technical Report were obtained from the Olympias mine and Eldorado's corporate office. The work entailed review of pertinent geological, mining, process, and metallurgical data in sufficient detail to support the preparation of this Technical Report.

This Technical Report: will be publicly filed with Canadian and U.S. securities regulatory authorities; may be publicly filed with and published by any stock exchange and other regulatory authority and any publication of this technical report for regulatory purposes, including electronic publication in the public company files on their websites accessible by the public; and may be published by Eldorado on its company website or otherwise.

1.1.1 Cautionary Statement

The Technical Report presented contains forward-looking information regarding the following Project elements:

- Mineral reserve estimates.

- Commodity prices.
- Exchange rates.
- Proposed mine production plan.
- Projected recovery rates, estimation, and realization of mineral reserves.
- Estimated costs and timing of capital, sustaining, and operating expenditures.
- Construction costs.
- Closure costs and requirements.
- Schedule.

The results of the economic analysis are subject to several known and unknown risks, uncertainties and other factors that may cause actual results to differ materially from those presented here.

Additional risks to the forward-looking information include:

- Changes to costs of production from what are estimated.
- Unrecognized environmental and social risks.
- Unanticipated reclamation expenses.
- Unexpected variations in quantity of mineralized material, grade, or recovery rates.
- Geotechnical or hydrogeological considerations during mining being different from what was assumed.
- Failure of mining methods to operate as anticipated.
- Failure of plant, equipment, or processes to operate as anticipated.
- Changes to assumptions as to the availability of electrical power, and the power rates used in the operating cost estimates and financial analysis.
- Ability to maintain the social license to operate.
- Accidents, labour disputes, and other risks of the mining industry.
- Changes to interest rates.
- Changes to tax rates or mining royalties.

1.2 CONTRIBUTORS AND QUALIFIED PERSONS

The qualified persons responsible for preparing this technical report as defined in NI 43-101, and in accordance with 43-101F1 (the “Technical Report”) are:

- David Sutherland, P.Eng., Eldorado Gold, author of items 1 through 6, 18, 20, 26.3, and 27.
- Sean McKinley, P.Geo., Eldorado Gold, author of items 7 through 10, and 23.
- Ertan Uludag, P.Geo., Eldorado Gold, author of items 11, 12, and 14.
- Peter Lind, P.Eng., Eldorado Gold, author of items 13, 17, 19, 21, 22, 24, 26.2.
- Victor Vdovin, P.Eng. Hellas Gold author of items 15, 16, 21, 22; 25, and 26.1.

Mr. Sutherland, Mr. McKinley, Mr. Uludag, and Mr. Lind are all qualified persons, employees of Eldorado, and have visited the Olympias project.

Mr. Vdovin is a qualified person, an employee of Hellas Gold working at the Kassandra Mine Complex, and on site regularly.

1.3 RELIANCE ON OTHER EXPERTS

The qualified persons relied on appropriate experts within the Eldorado organization concerning legal, political, environmental, or tax matters relevant to the technical report and the external experts for the following sections.

Section 4.2: Minister of Finance and the Minister of Development of the Government of Greece regarding land tenure

Section 20: ENVECO S.A., Environmental Protection, Management and Economy S.A. regarding environmental regulations and legislation.

1.4 PROPERTY DESCRIPTION AND LOCATION

The Property is located within the Kassandra Mines complex located on the Halkidiki Peninsula of Northern Greece. The Olympias mine lies 9 km north-northwest of the Stratoni port and loading facility and is accessed by a paved road along the coast.

The Property consists of mining concession numbers F13 and F14, which have a combined area of 47.27 km^2. Hellas Gold has been granted mining rights over these concessions until March 6, 2026. The Investment Agreement signed with the Greek State in 2021 and ratified by law, provides the further renewal for two consecutive periods of 25 years each, Hellas Gold has applied for the first 25-year renewal and approval is expected. Hellas Gold has ownership of a small portion of private land within the concessions.

In July 2011, the Ministry of Environment (MOE) formally approved the Environmental Impact Statement (EIS) submitted by Hellas Gold for the three Kassandra Mines complex mine sites, being Olympias, Skouries, and Stratoni, which was subsequently amended in 2021, 2022 and 2023, is now valid until 2038 and as provided in Greek environmental legislation (law 4014/2011) is subject to an extension for 4 years, if Hellas Gold is certified with ISO 14001, or for 6 years if it is certified with EMAS.

For production to commence, the MOE required the submission of a technical study. A study was submitted to the MOE and approved in early 2012. The installation permit for what was termed the Phase II process plant was issued on March 22, 2016. Hellas Gold received the operating permit for the Phase II plant in September 2017, allowing commencement of commercial production operations. Also, in September 2017 Hellas Gold received an extension of the installation permit and an interim operating permit for the Kokkinolakkas Tailings Management Facility (KTMF), as well as the delayed installation permit for the paste backfill plant.

Notifications for the Operation of the Olympias Paste Plant and Kokkinolakkas TMF were formally submitted in 2018 and remain in force in line with new legislation that replaced previous operating permit issuance procedures.

On February 5, 2021, Eldorado entered into an amended Investment Agreement (IA) with the Hellenic Republic to govern the further development, construction, and operation of the Kassandra Mines complex. The Agreement became legally effective on March 23, 2021 following ratification by the Hellenic Parliament and publication in the Greek Government Gazette. The Agreement is governed by Greek law. Its initial term continues to 2051 and may be extended by an additional 25 years subject to certain conditions.

The Investment Agreement includes a planned expansion of Olympias to 650 kilo tonnes per annum (ktpa) of ore, from 2023 throughput of 454 ktpa. On an annualized basis, the operation has demonstrated capability to achieve approximately 520 ktpa with its current configuration, considering highest monthly throughputs achieved. The Investment Agreement also outlines additional benefits to the region, including additional jobs, increased fiscal revenues and community development. The new Environmental Impact Assessment (EIA) approved in 2023 includes the expansion of Olympias.

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

The Project is located in the Halkidiki peninsula in the Northern Macedonia region about 100 km by road from Thessaloniki, the second largest city in Greece with access on paved roads directly to site.

A new sub-station was commissioned in 2023 and the site is connected to the national grid via a 150 kV powerline.

The labour force lives in the local communities in the vicinity of the mine. Supplies and consumables are readily available in northern Greece with access to European markets.

The Halkidiki Peninsula climate is generally mild with limited rainfall. Average temperatures have limited fluctuations during the year. The lowest temperatures occur in the winter, ranging between 3.5°C to 19°C, highest temperatures in the summer, ranging between 23°C and 34°C. Temperatures below 0°C are limited to the mountainous areas. Rainfall varies from 19 mm to 40 mm in a month, with October to December the wettest months. Operations can continue all year round.

The area is characterized by hills rising to about 600 metres above sea level (masl) with steeply incised valleys which are primary forest.

1.6 HISTORY

Mining has occurred since ancient times in the area peaking during the time of Philip II of Macedon and Alexander the Great, in the period 350 to 300 BC with bulk ores extracted from the mine.

Modern mining began in 1933 with an exploration shaft and drilling programs intermittently through to the 1960s. Operations began in 1970 and were suspended in 1995. Eldorado acquired European Goldfields Mining (Netherlands) B.V. (EGL) in 2012 and indirectly a 95% interest in the project through European Goldfields’ then its wholly owned subsidiary Hellas Gold. In 2020, Eldorado purchased the remaining 5% ownership in Hellas Gold previously held by Aktor, an unrelated third party.

1.7 GEOLOGICAL SETTING AND MINERALIZATION

The Western Tethyan orogenic belt in southeast Europe contains several major metallogenic provinces including the Serbo-Macedonian Metallogenic Province that hosts the Kassandra mining district. Crystalline basement within the district includes the upper Serbo-Macedonian Vertiskos Unit and the lower Kerdilion Unit exposed within the southern Rhodope metamorphic core complex.

The Olympias deposit is located 6 km north of the Stratoni fault within the Kerdilion unit. Replacement-style sulphide orebodies are hosted by marble interlayered within a sequence of quartzo-feldspathic biotite gneiss, amphibolite, and plagioclase microcline orthogneiss. The massive sulphide orebodies plunge shallowly to the southeast for over 1.8 km, subparallel to the orientation of F2 fold hinges and a locally developed L2 intersection lineation. The locations of the sulphide lenses, however, are largely controlled by strands of the ductile-brittle Kassandra fault and East fault and sub-horizontal shear zones that occur between the two faults.

Sulphide mineralogy of the Olympias deposit consists of coarse-grained, massive, and banded lenses dominated by variable amounts of sphalerite, galena, pyrite, arsenopyrite, chalcopyrite, and boulangerite. Gold occurs primarily in solid solution within arsenopyrite and pyrite.

1.8 DEPOSIT TYPES

Olympias is an example of a polymetallic carbonate replacement deposit. However, it is somewhat unusual due to the high gold content of the deposit. Key characteristics of this class of deposit include carbonate host rocks, massive sulphide mineralization, spatial and temporal relationship with magmatism, and zoned metal distribution.

1.9 EXPLORATION

Eldorado has conducted limited exploration since 2012 as focus has been on improving definition of the known resource. Several geological studies, including surface mapping and hyperspectral analyses, have been carried out. In 2023, a surface induced polarization (IP) geophysical survey and a soil geochemical survey were conducted above and to the west and north of the deposit to identify possible future drilling targets.

1.10 DRILLING, SAMPLING, AND VERIFICATION

Diamond drillholes are the sole source of subsurface geologic and grade data for the Olympias Mineral Resource estimation. The previous operator, TVX, drilled 764 drillholes for a total of 93,246 m. These drillholes are becoming less important as new information is acquired. Currently, holes are drilled by Eldorado using contractors drilling HQ or NQ-size (63.5 mm or 47.6 mm nominal core diameter). The average drillhole depth is approximately 100 m, as the holes are drilled from locations underground giving good intersection angles with the zones. A total of 2,860 drillholes for

309,822 m have been drilled on the property, of which 2,749 drillholes for 286,950 m were drilled by Eldorado since 2014 for the purposes of exploration, delineation, infill and mine services.

Core is delivered to secure core logging areas, and the core is logged in detail straight into a database using computer tablets. Lithology, alteration, structure, and mineralization data are collected; core recovery data are also measured. Core photos are routinely taken of all the core, both wet and dry, using a camera stand to ensure consistent photographs. Collar and downhole survey data are collected. Downhole surveys are taken using either a Devico Devigyro or Deviflex multishot instrument. Both of these instruments are calibrated annually.

A dataset of measured bulk densities from over 900 mineralized samples is used to inform the resource block model.

Sampling of the core is carried out on approximately 1 m intervals or to geological contacts. The core is sawn using an automated core saw and half is bagged for dispatch, with the remainder being placed in the core box for storage. Drill core samples are routinely sent to the ALS Global (ALS) facility in Romania. They are bagged and packed in large sealed wooden bins before being trucked to ALS. The sample rejects are returned to the mine site in the same bins. The samples are prepared for assaying at the ALS facility.

All samples were assayed for gold by 30 g fire assay with an AAS finish, with Au values above 10 ppm determined by a gravimetric finish. Multi-element determination was carried out by inductively coupled plasma mass spectrometry (ICP-MS) analysis and / or inductively coupled plasma emission spectroscopy (ICP-ES) analysis.

Eldorado employs a comprehensive quality control / quality assurance (QA/QC) program as part of the assaying procedure, involving regular insertion of Certified Reference Materials (CRMs), duplicates and blank samples. Site geologists regularly monitor the performance of CRMs, blanks, and duplicates as the assay results arrive on site. In the QP's opinion, the QA/QC results demonstrate that the Olympias mine's assay database is sufficiently accurate and precise for the resource estimation.

An important measure of performance at any producing mine is reconciliation of the block model to the final mill production figures, adjusted for stockpiles as necessary. The reconciliation conducted at Olympias is detailed and thorough. It is currently providing a quarterly snapshot and demonstrating that the block model, and thus the Mineral Resources, are valid and robust. This validates the data underpinning the model and is, by association, a good verification of the data inputs.

1.11 SAMPLE PREPARATION, ANALYSES AND SECURITY

A comprehensive QA/QC program is in place incorporating CRM, blanks, and duplicate samples. CRMs are used that contain all of the payable metals at Olympias (Au, Ag, Pb, Zn). Blank samples are used to monitor contamination during the sample preparation and assay processes.

In the opinion of the QP, the sampling, sample preparation, security, and analytical procedures, as demonstrated by the QA/QC results, show that the Olympias mine's assay database is adequate for Mineral Resource estimation.

1.12 DATA VERIFICATION

All of the QP's carried out verification of data pertaining to the sections for which they are responsible. Details of the verification activities carried out are described in Section 12.

1.13 METALLURGICAL TESTWORK

Metallurgical testwork was carried out ahead of the re-start of the Olympias operation with the current process flowsheet in 2017.

In 2015, metallurgical testwork and mineralogical investigations were carried out on ore samples from the Olympias deposit. The main sulphide minerals in these samples were found to be galena, sphalerite, pyrite, and arsenopyrite. Other than quartz, all other minerals can be considered minor. The liberation of all sulphide minerals was excellent at a grind of 120 µm P_{80}. Flotation of galena, sphalerite and pyrite / arsenopyrite in a sequential flowsheet was found to be effective at producing lead / silver, zinc, and gold concentrates.

Lead flotation was shown to be effective with collector Aerophine 3418A, with lime, zinc sulfate and sodium cyanide added as depressants. Copper activation and zinc flotation were found to be optimum at pH 11.8 with SIPX as the collector. Flotation of pyrite and arsenopyrite was effective at pH 6.0 controlled with sulfuric acid and SIPX as the collector.

Some challenges were observed in rejecting arsenic and antimony from the lead concentrate in some of the testwork although the presence of these deleterious elements is variable across the deposit.

Tests confirmed good settling-thickening characteristics for the concentrates and tailings samples. Vacuum filtration of the tails underflow sample showed high throughput and low residual cake moisture. Pressure filtration on concentrate underflow samples indicated high throughput and low residual moisture.

Additional variability testwork was carried out in 2021, with composites and blends produced from the East, West, and Flats area of the deposit. Comminution results from this testwork confirmed that future ores would continue to be considered as soft in terms of grindability. Flotation testwork identified that the proportion of lead hosted within galena, boulangerite, or bournonite had a direct impact on the amount of antimony recovered to the final lead concentrate.

1.14 MINERAL RESOURCES

Mineral Resource estimates for Olympias mine were made from a 3D block model utilizing MineSight 3D software. Project limits, in UTM coordinates, are 478105 to 479700 East, 4491165 to 4493480 North and -800 to +60 m elevation. Block size for the project was 5 m east x 5 m west x 5 m high.

A grade-based discriminant was developed to allow for more consistent interpretations to be made. This was accomplished by creating a simplistic value formula based on the logic of a Net Smelter Return (NSR) formula that used a combination of metal prices and metal recoveries to act as weighting factors against each metal. This metric, a dollar value, proved to be an excellent surrogate for a comprehensive equivalent grade. Inspection of these resource defining values (RDV) showed that, for the parameters used, a value of $50 best defined what one would classify as likely economically mineralized zones.

For the Olympias modelling, the deposit was divided into three zones: East, West, and Flats. Within each of these zones, modelling domains were created using the $50 RDV. Assays and composite samples were tagged by these domain shapes ahead of data analysis and grade interpolation. The assays were top capped prior to compositing and were composited into 1 m composites within the domains.

Grade estimates for Au, Ag, As, Pb, Zn, and Fe were interpolated using ordinary kriging (OK). Nearest–neighbor (NN) grades were also interpolated as a declustered distribution to validate the estimation method. Note that bulk density and sulfur were calculated as a function of the estimated block grades. Areas of previous mining are located in the East and West Zones, and these were removed from the initial Mineral Resource estimate.

The metal models were validated by visual inspection, checks for global bias and local trends and for appropriate levels of smoothing (change-of-support checks).

The Mineral Resource was classified using the CIM Definition Standards for Mineral Resources and Mineral Reserves (May 10, 2015) that are incorporated by reference into NI 43-101. The mineralization of the mine satisfies sufficient criteria to be classified into Measured, Indicated, and Inferred Mineral Resource categories.

Olympias mine Mineral Resources, as of September 30, 2023, are shown in Table 1-1. The Olympias mine Mineral Resources are reported within 3D constraining volumes whose design was guided by the reporting cut-off value of NSR $125, contiguous areas of mineralization and mineability. Only material internal to these volumes was eligible for reporting, to satisfy “reasonable prospects for eventual economic extraction” as required in the CIM Definition Standards (2014).

Table 1-1: Mineral Resources as of September 30, 2023

Category	Tonnes (kt)	Au (g/t)	Au (koz)	Ag (g/t)	Ag (koz)	Pb (%)	Pb (kt)	Zn (%)	Zn (kt)
Measured	3,447	10.59	1,174	152	16,849	4.8	167	5.9	204
Indicated	8,992	7.00	2,024	144	41,770	4.9	441	6.6	593
M&I	**12,439**	**8.00**	**3,198**	**147**	**58,619**	**4.9**	**608**	**6.4**	**797**
Inferred	2,339	7.84	589	179	13,488	6.2	146	6.8	160

Notes:

- CIM Definition Standards (2014) were used for reporting the Mineral Resources.
- Mineral Resources include those Resources converted to Mineral Reserves.
- Tonnages of mined out blocks and sterilized areas were depleted from the model.
- Mineral Resources were constrained by 3D volumes whose design was guided by the reporting cut-off grade of $125 NSR, contiguous areas of mineralization and mineability. Only material internal to these volumes was eligible for reporting.
- The NSR value is based on a combination of metal price and individual metal recoveries which are variable throughout the deposit, and smelter considerations.

- Prices used to define potentially mineable shapes are as follows, gold $1,800/oz, silver $24/oz, zinc $2,600/t, lead $2,400/t.
- The drillhole database was closed at end-April 2023.
- The numbers may not compute exactly due to rounding.
- Measured Mineral Resources in this table include 2.8 kt of stockpiled ore at the end of September 2023.

1.15 MINERAL RESERVES AND MINING

The Mineral Reserve estimates were classified using the CIM Definition Standards for Mineral Resources and Mineral Reserves (May 10, 2014) that are incorporated by reference into NI 43-101. All design and scheduling have been completed using the Mineral Resource model and estimate. Only Measured and Indicated Mineral Resources have been used for Mineral Reserve estimation. The estimation assumes that the mining method employed at the mine will be Drift and Fill (DAF).

The cut-off values supporting the estimation of underground Mineral Reserves were developed in 2023 from the 2023 budget and future projected operating and sustaining capital costs at a steady-state target production rate of 650 ktpa. The cost assessment indicated that NSR values of $218/t for DAF mining would adequately cover all site operating and sustaining capital costs. The DAF costs were used to create potentially mineable stope shapes from the NSR block model.

In the evaluation of underground Mineral Reserves, modifying factors were applied to the tonnages and grades of all mining shapes to account for dilution and ore losses. In the DAF stopes, a mining dilution factor of 15% and a mining recovery of 95% were used to estimate Mineral Reserves.

The Mineral Reserve estimate is summarized in Table 1-2 and has an effective date of September 30, 2023.

Table 1-2: Mineral Reserves as of September 30, 2023

Class	Tonnes (kt)	Au (g/t)	Au (koz)	Ag (g/t)	Ag (koz)	Pb (%)	Pb (kt)	Zn (%)	Zn (kt)
Proven	2,353	8.9	672	126.5	9,568	4.0	94	4.7	111
Probable	6,502	5.9	1,235	125.5	26,242	4.3	280	5.5	357
Total	**8,855**	**6.7**	**1,907**	**125.8**	**35,811**	**4.2**	**374**	**5.3**	**468**

Notes:

- Mineral Reserves are included in Measured and Indicated Mineral Resources.
- Figures in the tables may not compute exactly due to rounding.
- The Mineral Reserves are based on a planning cut-off value of $218/t for DAF.
- Cut-off grades are based on a gold metal price of $1,300/oz, silver metal price of $17/oz, zinc metal price of $2,300/t, and lead metal price of $2,000/t.
- Metallurgical recoveries are based on feed grade and metallurgical algorithms.
- Exchange rate used is €1.00 = US$1.20.
- Average mining dilution and mining recovery factors of 17% and 95%, respectively, for DAF are assumed.
- Mineral Reserves are reported on a 100% ownership basis; Eldorado owns 100% of Hellas Gold.
- A stockpile of 2 kt of ore is not included in the Reserves at the end of September 2023.

1.16 MINING METHODS

The Olympias mine is an underground mining operation extracting ore from three main Zones: East, West and Flats; the Remnants are a sub-zone of the West Zone. These are shown in Figure 1-1 as an isometric view of the Olympias underground zones looking north-west.

Total mined material, including ore, operating waste, and capitalized waste, at Olympias will ramp up from an expected 810 kt in 2024 to an average of 990 ktpa over the 2025 – 2031 period, following by a decline in total mined material averaging 720 ktpa over the 2025 – 2032 period. Annual mined waste quantities follow a general decreasing trend from 2025 onward. Correspondingly, ore production will increase from an expected 500 kt in 2024 to an average of 645 ktpa over the 2025 – 2035 period.

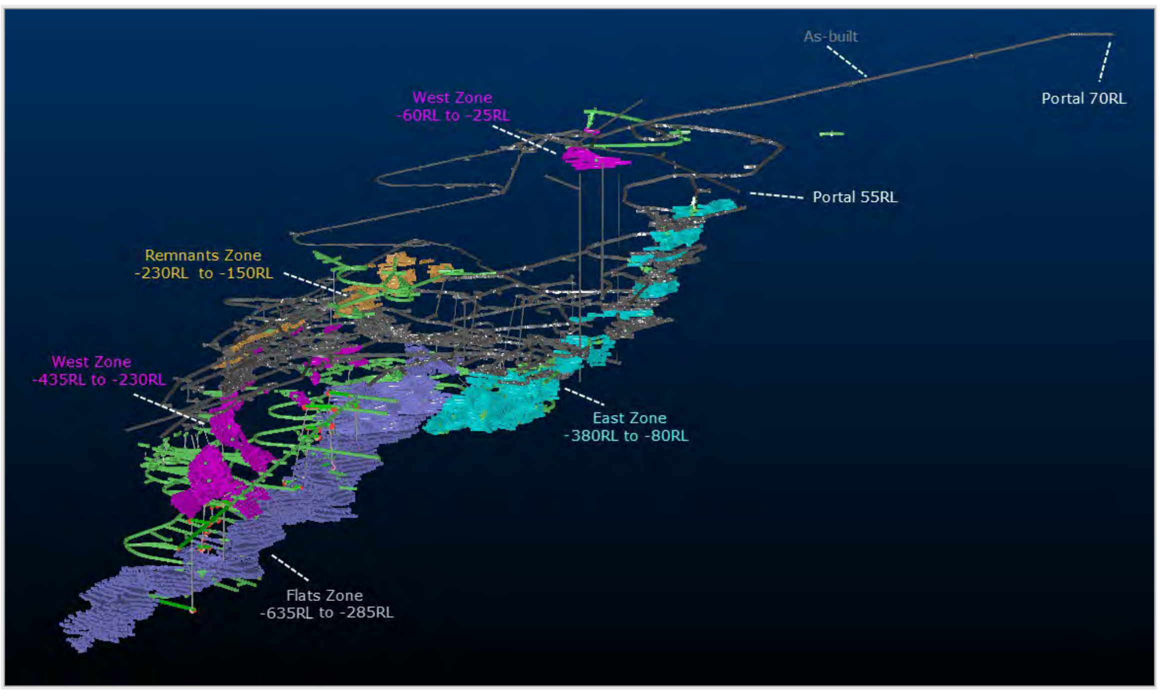


Figure 1-1: Isometric View of Olympias Underground Zones (AMC, 2022)

The rock mass conditions at the Olympias mine are highly variable due to complex geology and presence of fault structures. Ground support classes have been implemented based on a range of Q values for ore and waste rock development. Ground support elements used at Olympias include wire mesh, shotcrete, rebar, split sets, Swellex, self-drilling anchors, and cable bolts of varying lengths. Field observations indicate that underground openings are stable and ground support application is generally adequate, with no unsecured ground being noted and support performance apparently good.

DAF at Olympias commences once the decline reaches the footwall drive or Level access elevation of the orebody, usually midway along its strike length. DAF is an overhand mining method. The stope sequence begins with the lowest 5.0 m high lift. Then each subsequent lift requires the back of the level access to be slashed down (‘take-down-back’ or TDB) to reach the next lift. There are four lifts between levels for a total rise of 20 m from each access.

All stopes are filled with backfill after excavation. Currently a combination of cemented aggregate fill (CAF), paste fill and waste rock fill is used. The paste fill system has been designed to produce 42 m^3/h of paste, which will meet all future backfill requirements at 650 ktpa production with 70% utilization. CAF and waste rock is delivered to stopes by truck and pushed into place with loaders. Paste is delivered with positive displacement pumps via drillholes and pipes.

There are two declines currently in use, one accessing the West Zone that will be extended to the base of the West Zone. The second decline accesses the East Zone that will be extended to the base of the East Zone and will also connect to the upper Flats. There are multiple cross-over drifts between these two declines above the Flats. Both declines are currently being extended to the bottom of the West and East Zones. The third and final main decline will be developed for the Flats from -370 masl to the base of the Flats.

Both ore and waste are hauled to surface utilizing 40-tonne trucks on the existing and expanding declines. This will continue to be the case after the production increase to a steady state value of 650 ktpa.

The total number of personnel currently working at the mine is 347. The mine operates three shifts a day, 21 shifts per week.

There are currently 20 large pieces of mobile mining equipment on site: three jumbos, four bolters, five trucks, eight loaders. In addition, there are sixteen utility vehicles, two transmixers and three shotcrete sprayers. To achieve the production increase to 650 ktpa, additional primary equipment will be added to the fleet, including jumbos, bolters, trucks, and loaders.

The ventilation design is based on an exhausting system configuration with the main fans ultimately located on the surface at the single exhaust raise. At present, fresh air for Olympias is supplied from the +59 Portal, +70 Portal, Shaft, and Fires area. Exhaust is through the main exhaust raise at -173 level. The recently installed ventilation system was upgraded in 2023, with the large surface exhaust fans located at the main exhaust raise collar, ensuring the required airflow for the mine of 420 m^3/s is attained.

Olympias mine currently uses bulk emulsion product for all blasting practices in the underground mine. There is no existing magazine on the property and explosives are delivered to site daily by the supplier. However, bulk emulsion matrix is stored in large bays underground as it is not considered an explosive until it sensitizes inside the mobile emulsion production unit underground – usually done at the face during charging activities. The construction of a new underground magazine is ongoing, with excavations completed and installation of shelving is planned to be completed shortly. By the end of Q2 2024, Olympias plans to commission an underground maintenance workshop that will be able to repair heavy duty machinery right underground saving tramming time of the equipment.

As an operating mine, infrastructure is well developed, with existing process water, compressed air, electrical distribution, and dewatering systems. For the 650 ktpa expansion, a new compressor, dewatering station, and underground shop are being installed. These activities are currently in progress.

1.17 PROCESSING

The Olympias lead-zinc-gold-silver process plant has been developed in phases:

- Phase I involved the recommissioning of the plant after prolonged inactivity and processing of the existing tailings. Phase I commenced in 2013 and was completed on commissioning of Phase II in 2016.
- Phase II was commissioned in mid-2017 and is currently in operation. It included refurbishment and upgrading of all the process facilities to process 400 – 440 ktpa of ore. The Phase II process facility consists of comminution, flotation and filtering to produce three saleable concentrates: lead / silver (lead), zinc, and arsenopyrite / pyrite gold (gold). All concentrates are sold to worldwide markets. Tailings are used for underground backfill via the on-surface paste plant or trucked to the Kokkinolakkas tailings management facility.
- The expansion Project involves upgrading of the existing Olympias process plant to handle a mine feed rate of 650 ktpa of ore, an increase of approximately 25% considering the newly established technical limits of the existing process plant. Capital expenditure for the expansion of the plant is scheduled from 2023 to 2025, and the 650 ktpa throughput is planned to commence in 2026.

The processing facility incorporates the following process unit operations:

- Three-stage crushing.
- Single-stage ball milling in closed circuit with hydrocyclones.
- Nearly all hydrocyclone underflow is fed to flash flotation.
- Lead flotation consists of rougher, scavenger, regrinding, and three stages of cleaning.
- Zinc flotation consists of rougher, scavenger, regrinding, and three stages of cleaning.
- Gold-pyrite flotation utilizes rougher, scavenger, and a single stage of cleaning.
- Concentrate thickening, filtration, and packaging.
- Tailings thickening and filtration.
- Tailings paste backfill - mixing and pumping.
- Reagent mixing, storage, and distribution.
- Water and air services.

1.18 INFRASTRUCTURE

As an operating mine, current infrastructure is robust and complete. The mine has access to the main highway system in Greece via paved roads to the mine site. Local services are provided via the towns of Olympiada and Stratoni, with additional services available through Thessaloniki.

A port facility located at Stratoni, 26 km by paved road from the Olympias process plant, is owned by Hellas Gold. Currently lead, zinc and arsenopyrite concentrates are shipped via the port facility.

Lead and arsenopyrite concentrate may also be bagged at the process plant and shipped by truck to the port at Thessaloniki.

Water is supplied by surface facility contact water run-off and from underground mine dewatering. A series of three settling ponds, with a fourth as a spare, is used to remove suspended solids. This water is pumped to a raw water tank next to the clean water and process water tanks. Excess water from mine dewatering is treated in the surface water treatment plant. Process water is reclaimed from the tailings thickening and filtration circuit and backfill clarifier overflow. A minimum amount of make-up water is supplied from the raw water tank.

Waste from the underground mine is brought to surface and hauled to the Kokkinolakkas Tailings Management Facility (KTMF). Some waste rock is stored temporarily underground and is used to backfill voids underground left from the stope mining, saving on transportation cost as well as cost of paste fill.

Thickened tailings are pumped to the paste plant. If thickened tailings production exceeds the maximum capacity of the paste plant, excess thickened tailings can be pumped to one of two tailings pressure filters located adjacent to the process plant. Filtered tailings are then trucked to the paste plant for additional feed into the plant when required.

Excess thickened tails are pumped to a tailings filter to produce a cake with a moisture content of 13 wt% solids, which is then trucked to the KTMF for dry stacking. This facility is located 8.5 km south of Olympias (23 km by public paved road).

In addition to mine tailings from the Olympias mining operations, tailings from historical mining activities at Olympias are also being hauled to the KTMF. It is designed to safely manage approximately 10.5 Mm^3 of mine waste at an average dry density of 1.6 t/m^3.

Existing surface facilities consist of a surface workshop, administration building, dry, shaft, and fuel storage (60,000 liters capacity). The workshop and fuel storage will be adequate for the production increase. The shaft is used for inspection of a legacy pump station only and there are no plans to rehabilitate the shaft further. Construction of a new geology sample preparation laboratory and technical services building, and expansion to the existing administration building are to be completed as part of the expansion.

Current power to site consists of a 150kV transmission line from the national grid feeding a new 150kV to 20kV, 25MVA substation, which has sufficient rated capacity to meet all anticipated increases in mine load. Backup power consists of 3,700 kW of diesel generation in multiple distributed generators. Market studies and contracts

The Olympias plant produces three concentrates: an arsenopyrite / pyrite concentrate containing gold, a lead concentrate that also contains silver and gold, and a zinc concentrate that also contains gold. Eldorado has negotiated multiple concentrate sales contracts with commodity traders, blenders, and smelters for concentrates from Olympias. Agreements with several customers in various countries are currently in place.

1.19 CONTRACTS

The Olympias Project produces three concentrates:

- arsenopyrite / pyrite concentrate containing gold.
- lead concentrate that also contains silver and gold.
- zinc concentrate that also contains gold.

Eldorado has been selling concentrates from the Olympias operation since 2012 including pre-production, although no formalized market study was completed in respect to concentrate sales. The market for the Project's concentrates is well established with sales to smelters, refineries and market traders in Europe Africa, and Asia. Eldorado has no hedging in place for the sale of gold or any other metals produced. There are a number of contracts in place for the sale of gold concentrate.

Contracts for concentrate sales contain a range of settlement terms, generally based on the grade of metal contained within the concentrate with credit for precious metals, less penalties, for deleterious elements within the concentrate. Sales of gold, lead and zinc along with silver credits are based on spot prices.

All contracts in place are at market rates with terms and charges within industry norms.

1.20 ENVIRONMENTAL

The EIS for the Kassandra Mines mineral deposits project (Kassandra Mines complex) includes an area of 26,400 ha in north-eastern Halkidiki (Macedonia Region). The Kassandra Mines complex includes the Skouries, Olympias and Stratoni sites. No significant impact is expected on the landscape, geological environment, atmosphere, or water resources in the area. The overall impacts to date have been positive to the environment, as legacy tailings and concentrate storage are in the process of being removed to the KTMF, and the associated areas rehabilitated. The Kassandra Mines complex as a whole provides significant economic and social impacts for the Halkidiki Prefecture, including:

- A significant contribution is made to the national economy.
- Significant infrastructure is constructed and equipped by local companies.
- Service industries in the local economy expand.
- Employment of a large skilled workforce.

After the completion of all Kassandra operations, the project areas will be rehabilitated according to appropriate and approved land uses. All structures are to be removed or left in a state that they do not pose a risk to the environment or public. The environment will be returned to a state of a self-sustaining ecosystem and safe and stable biological conditions will be re-created.

1.21 CAPITAL AND OPERATING COSTS

The Project has been on a continuous improvement program in all aspects of the operation to achieve a throughput of 650 ktpa. Capital costs include process plant upgrades and continuing mine development into new zones. Capital is also allocated for infrastructure to support the Project including ancillaries and expanding water management systems, indirects including EPCM costs to support capital projects, owners' costs, continuing exploration, and contingencies; costs are summarized in Table 1-3

Table 1-3: Summary of Capital Costs

Area	Total ($M)
Growth capital	
U/G Development	28.8
Mill Expansion	26.8
Ancillary Facilities (Dry, Warehouse, Lab, Admin Building)	9.0
Other	10.0
Total Growth Capital	**75.0**
Sustaining Capital	
Mine	144.2
Process	59.5
Administration	1.2
Environmental	1.0
Health and safety	0.2
Total Sustaining Capital	**206.1**
Capitalized exploration	2.7
Total Capital Costs	**283.7**
Closure	**59.5**

Direct operating costs at Olympias consist of underground mining costs, processing costs, and general & administrative (G&A) costs. These costs are summarized in Table 1-4 for the entire LOM including the ramp-up period towards a production rate of 650 ktpa. It should be noted that operating costs shown here are exclusive of refining and concentrate transport charges.

Table 1-4: Summary of Direct Operating Costs

Category	LOM ($M)	LOM average ($/t ore processed)
Mining costs	1,041.2	119.01
Processing costs	532.5	60.87
G&A costs	155.0	17.72
Total direct operating cost	**1,728.6**	**197.60**

1.22 ECONOMIC ANALYSIS

Eldorado Gold, being a producing issuer, is not required to include information in this section as this Technical Report does not describe a material expansion of current production. Eldorado has performed an economic analysis related to the Olympias operation using a gold price of $1,700/oz, silver price of $22/oz, lead price of $2,050/t, and zinc price of $2,600/t at the forecasted production rates, metal recoveries, capital costs, and operating costs estimated in this Technical Report. Eldorado confirms that the outcome is a positive cash flow that supports the Mineral Reserve estimate. Sensitivity analysis incorporating changes in metal prices, capital costs, and operating costs indicate robust economics.

1.23 ADJACENT PROPERTIES

There are no other relevant adjacent properties.

1.24 CONCLUSIONS AND RECOMMENDATIONS

Olympias is a mine with a long history that has only been recently put back into production by Eldorado. Commercial production was achieved in December 2017. Project economics are robust. There are sufficient Mineral Reserves for a mine life of 15 years and a steady-state production rate averaging 650 ktpa is planned to be maintained for 11 years of the mine life. The mine has embarked on a series of initiatives to increase both productivity and production rates.

The geological understanding of the deposit is good, and with the aid of an extensive core relogging program, the ore types have been well defined.

The data collection, sampling, sample preparation, security, and analytical procedures adopted by Eldorado for its drilling programs meet accepted industry standards, and the QA/QC results confirm that the assay results may be relied upon for Mineral Resource estimation purposes.

An important measure of performance at any producing mine is reconciliation of the block model to the final mill production figures. The reconciliation is detailed and thorough. It is currently providing a quarterly snapshot and demonstrating that the block model, and thus the Mineral Resources, are valid and robust. This validates the data underpinning the model and is, by association, a good verification of the work done.

Approximately 8.7 Mt of ore is planned to be mined at Olympias using the DAF mining method. The achievement of increased productivity and the steady-state target production rate of 650 ktpa is dependent on the successful implementation of a series of optimization initiatives. These operational improvements will increase the number of hours per day worked at a production face (face time).

All development, including development required to meet the potential alternative production target is included in the Mineral Reserves mine plan. The planned infrastructure supporting the extraction of the Mineral Reserves is also designed to support the requirements of the 650 ktpa target.

The testwork completed to date demonstrated that the ore response to flotation was well understood, and the processing route is deemed appropriate. Processing operations to date have confirmed the testwork findings. Recovery is primarily dependent on feed grade and the relationship is well understood by plant operators, as evidenced by the general on-plan performance for 2023.

Sufficient capital provision has been made for the further development of the Olympias project with respect to mine development, processing, and infrastructure. The ability to increase productivity from the current labour force will be a key factor in realizing operating cost projections.

1.25 RECOMMENDATIONS

Recommendations include continuation of drilling of the Inferred Mineral Resource as well as resource expansion drill further along strike to the south and down plunge where the deposit is open in order to potentially extend mine life.

Mill expansion detailed engineering and construction should proceed as soon as possible to ensure that the schedule is met, and the mine can deliver consistent operating cash flows.

Additional recommendations are as follows:

- Undertake additional drilling in the Inferred Mineral Resource and further along strike to the south and down plunge where the deposit is open to potentially extend mine life.
- Establish asset management programs to increase equipment availability.
- Implement training programs to continuously improve the skills of the workforce and to increase labour utilization.
- Advance key underground infrastructure projects including ventilation and dewatering improvements and the underground workshop.
- Advance bulk emulsion implementation and optimization to increase pull length.
- Evaluate increased DAF stope size.
- Continue to evaluate opportunities to apply long-hole methods in ground where geotechnical conditions allow.
- Continue to undertake QA/QC programs for ground support and backfill strength.
- Trial of longer drift round lengths be undertaken to verify stability for different rock mass conditions in the Flats Zone.
- Noting that ventilation modelling for the life of mine maximum total mine airflow indicates that there will be a number of areas of the declines where velocities exceed 6 m/s and approach 8 m/s, undertake investigations to reduce the overall mine ventilation volume requirements through effective application of ventilation on demand and / or introduction of electric vehicles.
- Current labour productivity is considered low compared to other international operations and industry best practice. A detailed and monitored action plan is recommended to be put in place to support the improvement initiative programs that include increasing productivity from the labour force over the next few years to support increased production rates.
- Optimize gold, sulfur, and arsenic grades of the gold-pyrite concentrate to maximize smelter returns.

- Continue studies into options for extracting more value from the gold concentrate currently being sold directly to smelters and traders worldwide. Technical solutions exist for extraction of much of the contained gold but these need to be able to demonstrate acceptable rates of return and to comply with environmental and safety requirements. If a more viable extraction method is developed, then construction of a new metallurgical facility could follow.
- Maintain a clear focus and progress on the expansion towards 650 ktpa.

The cost to carry out the recommendations for additional work or studies has been accounted for in future cost projections.

SECTION • 2 INTRODUCTION

2.1 GENERAL AND TERMS OF REFERENCE

This Technical Report on the Olympias Project located in Halkidiki Peninsula in northern Greece has been prepared by Eldorado Gold Corporation (Eldorado. It has been prepared to a standard which is in accordance with the requirements of National Instrument 43-101, Standards of Disclosure for Mineral Projects (NI 43-101), of the Canadian Securities Administrators.

The quality of information, conclusions, and estimates contained herein is based on the following:

- Information available at the time of preparation.
- Data supplied by outside sources.
- The assumptions, conditions, and qualifications set forth in this technical report.

This Technical Report is intended for use by Eldorado subject to the relevant securities legislation. Eldorado is permitted to file this Technical Report as a “technical report” with Canadian securities regulatory authorities pursuant to NI 43-101 and with the U.S. securities regulatory authorities pursuant to pursuant to the multi-jurisdictional disclosure system of the United States Securities Exchange Act of 1934, as amended. Except for the purposes legislated under Canadian securities law and U.S. securities law, any other uses of this report by any third party are at that party’s sole risk. The user of this document should ensure that this is the most recent technical report for the property as it is not valid if a new technical report has been issued.

The report, with an effective date of December 31, 2023, is an update to the ‘Technical Report, Olympias Mine, Greece’ prepared by Eldorado Gold Corporation, with an effective date of December 31, 2019 (Eldorado, 2019). The main purpose of this Technical Report is to support the annual statement of the Mineral Resources and Mineral Reserves, and to provide an update on the operation and a discussion of future plans.

The Property is located within the Kassandra Mines complex, located on the Halkidiki Peninsula of Northern Greece. The complex comprises a group of mining and exploration concessions, covering 317 km^2, located approximately 100 km east of Thessaloniki. The Properties within the complex include Olympias which is currently in production, Stratoni (including the Madem Lakkos and Mavres Petres mines) which is currently in care and maintenance, as well as the Skouries copper-gold porphyry deposit under development. This report is specific to the Olympias Property, which is an operating mine (commercial production declared in 2017) producing three concentrates: lead and silver, zinc, and gold.

2.2 THE ISSUER

Eldorado is a gold and base metal producer with mining, development and exploration operations in Türkiye, Canada, and Greece, headquartered in Vancouver, British Columbia. Eldorado, through its 100% owned subsidiary Hellas Gold SA (Hellas Gold), owns one operating mine, one in care and maintenance and an advanced property on the Halkidiki Peninsula as well as the 100% owned

Perama advanced property, also in Greece. Hellas Gold was acquired as part of the acquisition of European Goldfields Limited (EGL) completed in February 2012.

Eldorado is listed on the TSX as “ELD” and the NYSE as “EGO”.

2.3 REPORT AUTHORS

The qualified persons responsible for preparing this technical report as defined in NI 43-101 standards and in accordance with 43-101F1 Technical Report are Peter Lind, P.Eng., Sean McKinley, P.Geo, David Sutherland, P.Eng., and Ertan Uludag, P.Geo., each of these qualified persons is an employee of Eldorado and have visited the Olympias Property, and Victor Vdovin, P.Eng. an employee of Hellas Gold a qualified person who works at the Kassandra Mines complex and is on site regularly.

David Sutherland, Project Manager, was responsible for overall preparation of the technical study and sections related to infrastructure and environment (Sections 1, 2, 3, 4, 5, 6, 18, 20, 26.3 and 27). He most recently visited the Olympias Property on September 21, 2023.

Sean McKinley, Manager, Geology & Advanced Projects, was responsible for the preparation of the sections concerned with geological information, exploration, and drilling (Sections 7, 8, 9, 10, and 23). He most recently visited the Olympias Property on September 12, 2023.

Ertan Uludag, Manager, Resource Geology, was responsible for the mineral resources and the preparation of related sections on sample preparation and analyses, data verification, and mineral resource estimation (Sections 11, 12 and 14). He most recently visited the Olympias Property on June 12 to 16, 2023.

Peter Lind, Vice President, Technical Services, was responsible for the preparation of the sections in this report that dealt with metallurgy and process operations, costs and payability (Sections 13, 17, 19, 21, 22, 24, 26.2). He most recently visited the Olympias Property on September 20 to 21, 2023.

Victor Vdovin, Head of Technical Services for Kassandra, was responsible for the mineral reserves and the preparation of related sections on mineral reserves calculation, mining methods, and costs (Sections 15, 16, 21 22; and 25, 26.1). He works at the Kassandra Mine Complex and is at the Olympias Property regularly.

Notwithstanding the descriptions above, the QPs have undertaken their own review of the technical and scientific information in this technical report. See Section 12 for more information regarding the data verification and inspection activities performed by the QPs.

This document presents a summary of the current and forecast operations at the mine.

2.4 OTHER

An inspection of the property was carried out by all QPs in 2023 on dates as indicated in section 2.3 The geology, mining, and processing aspects of the mine were reviewed in detail, and the underground, mill, and dry stack tailings area were also visited.

The currency used throughout this report is US$, unless stated otherwise. Where applicable, the conversion factor shown in Table 2-1 has been used.

Table 2-1: Exchange Rates

Currency code	Currency name	Exchange rate
C$	Canadian Dollar	C$1.00 = US$0.80
€	Euro	€1.00 = US$1.15

This report has an effective date of December 31, 2023.

SECTION • 3 RELIANCE ON OTHER EXPERTS

The Qualified Persons 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 sections of the Technical Report.

The following disclosure is made in respect of this Expert:

- Public Notary Ioanna V. Gabrieli-Anagnostalakis, on behalf of the Minister of Finance and the Minister of Development of the Government of Greece.

Report, opinion, or statement relied upon:

- Transfer Contract no. 22.138/12-12-2003 between the Greek State and Hellas Gold, specifically Appendix III, which consists of Table 1, list of concessions.

Extent of reliance:

- Full reliance

Portion of Technical Report to which disclaimer applies:

- Section 4.2 Land Tenure

The following disclosure is made in respect of this Expert:

- ENVECO S.A., Environmental Protection, Management and Economy S.A.

Report, opinion, or statement relied upon:

- ENVECO S.A., 2021, Environmental Impact Assessment (EIA) of the New Investment Plan for Kassandra Mines of Company Hellas Gold SA in Halkidiki

Extent of reliance:

- Full reliance

Portion of Report to which disclaimer applies:

- Section 20

SECTION • 4 PROPERTY DESCRIPTION AND LOCATION

4.1 PROPERTY LOCATION

The Property is located within the Kassandra Mines complex, within the Halkidiki Peninsula of the Central Macedonia Province in Northern Greece. The complex is comprised of a group of mining and exploration concessions, covering 317 km^2, located approximately 100 km east of Thessaloniki. The concessions include the Olympias mine, the Madem Lakkos and Mavres Petres mines (collectively known as Stratoni, currently in care and maintenance), and the Skouries copper-gold porphyry deposit, currently under development.

Olympias mine lies 9 km north-northwest of the Stratoni port and loading facility, accessed by 22 km of paved road along the coast. The area is centered on coordinates 474,000 E and 4,488,000 N of the Hellenic Geodetic Reference System HGRS ‘80, Ellipsoid GRS80 (approximately Latitude 40°36’ E and Longitude 23°45’ N). Figure 4-1 shows all the concessions of the Kassandra Mines complex outlined in white, with the Olympias property outlined in green.

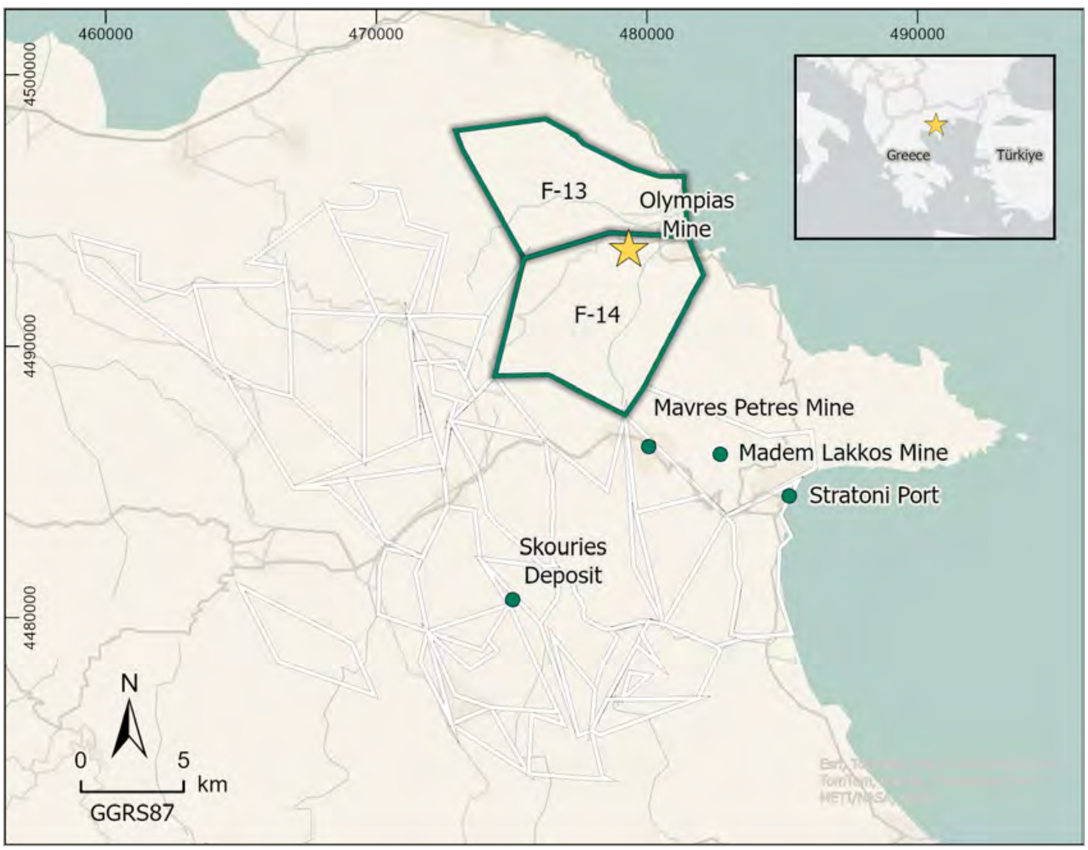


Figure 4-1: Kassandra Mines Concessions and Olympias Property (Eldorado, 2023)

The Property is owned by Hellas Gold, with Eldorado holding a controlling interest of 100% in Hellas Gold.

4.2 LAND TENURE

The Project is located within concession numbers F13 and F14, which have a combined area of 47.27 km^2, see Table 4-1. Hellas Gold has been granted mining rights over these concessions until March 6, 2026. The Investment Agreement signed with the Greek State in 2021 and ratified by law, provides the further renewal for two consecutive periods of 25 years each, Hellas Gold has applied for the first 25-year renewal and the approval is expected. Hellas Gold has ownership of a small portion of private land within the concessions.

Table 4-1: List of Concessions

Concession #	Title holder	Tenement type	Area (km^2)	Expiry date
F13	Hellas Gold	Mining Concession	19.47	March 6, 2026
F14	Hellas Gold	Mining Concession	27.80	March 6, 2026
Total			**47.27**	

4.3 INVESTMENT AGREEMENT

Subsequent to the 2019 Greek Parliamentary elections, Eldorado initiated talks with the newly established government, after which outstanding routine permits were released. In February 2021, the Company announced its wholly-owned subsidiary, Hellas Gold, entered into an Investment Agreement (IA) with the Hellenic Republic to govern the further development, construction and operation of the Kassandra Mines.

The IA amends the 2003 Transfer Agreement, the original contract for the Hellas Gold acquisition of the Kassandra Mines from the Greek state and provides a modernized legal and financial framework to allow for the advancement of Eldorado's investment in the Kassandra Mines. The amendments to the Transfer Agreement in the Investment Agreement became legally effective on March 23, 2021 following ratification by the Hellenic Parliament and publication in the Greek Government Gazette. The IA is governed by Greek law. Its initial term continues to 2051 and may be extended by an additional 25 years subject to certain conditions.

Hellas Gold is required to use commercially reasonable endeavors to implement a revised investment plan that is annexed to the IA, subject to the timely issuance of all relevant required permits. Key terms of the revised investment plan include:

- Completion of construction at Skouries and transition of the project into production.
- Expansion of Olympias to 650 kilotonnes per annum (ktpa).
- Upgrades to the port facilities at Stratoni to allow for bulk shipment of concentrates.
- There are numerous other clauses and provisions, some of which are summarized below:
- Hellas Gold will undertake further studies of on-site gold processing methods.

- The IA includes investor protection mechanisms, similar to other large-scale foreign investment agreements in Greece.
- The IA establishes a contractual regime for Hellas Gold to apply for, and receive, permits and licenses required for the implementation of the investment plan.
- Over the term of the IA, Hellas Gold will establish a corporate social responsibility program to support certain community, cultural, social, environmental, and charitable purposes that benefit the communities in the regions near the Kassandra Mines.

4.4 ROYALTIES AND TAXES

Based on current Greek legislation, royalties are applicable on active mining titles. The royalty is calculated on a sliding scale tied to metal prices and US$/€ exchange rates. At the price index selected for the Project evaluation, Hellas Gold would pay a royalty of approximately 3.30% on Au, 2.75% on Ag, 0.55% on Pb, and 1.65% on Zn revenues.

The corporate income tax rate is set at 22%.

4.5 ENVIRONMENTAL LIABILITIES

The closure and environmental rehabilitation activities for the Kassandra Mines complex including the Property are relate to the following facilities:

- Open pit and underground mine.
- Kokkinolakkas TMF (KTMF), also termed integrated waste management facility (IWMF).
- Process facilities and infrastructure.

To meet the requirements of the reclamation program, decommissioning, closure, and reclamation of the affected areas must be undertaken.

Hellas Gold has provided a €50.0 M Letter of Guarantee to the Ministry of Environment (MOE) as security for the due and proper performance of rehabilitation works in relation to the mining and metallurgical facilities of the Kassandra Mines complex, and the removal, cleaning, and rehabilitation of the previously disturbed areas from the historical mining activity in the wider area of the project. Additionally, a Letter of Guarantee to the MOE, in the amount of €7.5 M, has been provided as security for the due and proper performance of the Kokkinolakkas TMF.

Hellas Gold has also provided insurance coverage in accordance with Presidential Decree 148/2009 (Government Gazette 190/A/29.9.2009) for environmental liability.

To the extent known, there are no other environmental liabilities to which the Project is subject.

4.6 PERMITTING AND OTHER

A permit from the Greek Government to extend the permitted operating life of the current Olympias facility has been granted. Current EIA approval (originally granted in 2011) is valid until 2038 and as provided in Greek environmental legislation (law 4014/2011) is subject to an extension for four years, if Hellas Gold is certified with ISO 14001 or for six years if it is certified with EMAS.

To the extent known, there are no other permits that must be acquired to conduct the work proposed for the Project.

To the extent known, there are no other significant factors and risks that may affect access, title, or the right or ability to perform work on the Project.

Section • 5 Accessibility, Climate, Local Resources, Infrastructure and Physiography

5.1 Location and Accessibility

The Property is located in the Halkidiki peninsula in the Northern Macedonia region, about 100 km by road from Thessaloniki, the second largest city in Greece. Thessaloniki has one of the largest ports in Greece and an international airport.

The Property is readily accessible year-round by the national road network with paved secondary roads within one kilometer of site. The national road network in the area is among the best in northern Greece, and connected to the Europe/E-road via highway E90 which extends east from Thessaloniki to approximately 15 km north of the property (Figure 5-1). Olympias lies 10 km north-northwest of the Stratoni port and loading facility and is accessed by a paved road along the coast and paved mine road to site.

The local and national road network supports commercial transport. Trucking of concentrates to Thessaloniki or the port facility at Stratoni, tailings and waste rock off-site to the KTMF are completed in accordance with transport regulations with required permits.

Figure 5-1: Location of the Olympias Property (Eldorado, 2023)

5.2 INFRASTRUCTURE AND LOCAL RESOURCES

The area is well served by the main 150 kV powerline from the Public Power Corporation (PPC), with power supplied directly to the mine site. Communications are good, and telephone and broadband are available in the area. Hellas Gold has the existing microwave link at Stratoni, giving additional access to broadband data communications.

Process water is reclaimed from the tailings thickening and filtration circuit and backfill clarifier overflow. A minimum amount of make-up water is supplied from the raw water tank. Potable water is produced from a borehole located in the regional aquifer.

Skilled labour is available in the village of Olympiada, which is located about 1 km from the mine. Other nearby villages also have a pool of skilled and semi-skilled labour available. The company owns all the land on which existing and proposed mine infrastructure is located, and this is sufficient to allow for future operation of the mine as designed, without further land acquisition. Workers are bussed to site or drive personal vehicles, there are no camps or accommodations on the Project site.

The mine site comprises mine offices and change rooms, trackless decline, shaft, underground development, and processing facilities consisting of a crushing plant, mill and flotation plant, and paste backfill plant.

Figure 5-2 shows the location of the Olympias operations and the Kokkinolakkas TMF, which is on the Stratoni property. All development rock and tailings that are not deposited as backfill underground are transferred to the Kokkinolakkas TMF in covered dump trucks for deposition, no additional waste rock dumps or tailings facilities are planned.

Figure 5-2: Olympias Site Layout (Eldorado, 2023)

5.3 CLIMATE AND PHYSIOGRAPHY

The Halkidiki Peninsula climate is generally mild with limited rainfall. Over 300 days, or around 3,000 hours, of sunshine are recorded annually. Average temperatures have limited fluctuations during the year. The lowest temperatures occur during December to February, ranging between 3.5°C to 19°C, while the highest temperatures occur during summer months, generally between 23°C and 34°C. Temperatures below 0°C are typically limited to the mountainous areas. Rainfall varies from 19 mm to 40 mm in a month, with October to December the wettest months. Operations can continue all year round.

The terrain is characterized by hills rising to about 600 meters above sea level (masl) with steeply incised valleys.

The area is wooded with oak, beech and pine being the principal species, while inland there are vineyards and farmlands. The main farming products are grapes, honey, and olives.

5.4 SURFACE RIGHTS

Hellas Gold owns the land containing the entire surface infrastructure associated with the Olympias Project. This is sufficient to allow the future operation of the mine without further land acquisition.

SECTION • 6 HISTORY

6.1 INTRODUCTION

There is a long history of mining in the area. Ancient mining reached a peak during the time of Philip II of Macedon and Alexander the Great, in the period 350 to 300 BC. Lead-rich ores from the Madem Lakkos mine at Stratoni were smelted for silver, and the Olympias ores were processed for their high gold content. It has been estimated, from the volume of ancient slags, that about 1.0 Mt of ore were extracted from each locality during this period. It is believed that by 300 BC, the bulk of the ores above the water table at Olympias had been exploited, although the Stratoni mine continued in production through the Roman, Byzantine, and Ottoman periods (Municipality of Aristotle, n.d.).

6.2 OWNERSHIP AND WORK CARRIED OUT

Milestones in the history of the Property are shown in Table 6-1, and these are elaborated on in Sections 6.2.1 – 6.2.4.

Table 6-1: Summary of the History of the Property

Year	Commentary
Historic times	Bulk of ores at Olympias above water table were extracted by 300 BC.
1933	Shaft sunk to 74 m depth with some drifting.
1954	Owners commenced exploration; thin, discontinuous sulphide lenses encountered (and many ancient workings).
1965 - 66	Further drilling intersected 10 m of lead-zinc mineralization 20 m below the 1933 shaft.
1970	Ownership transferred to Hellenic Fertilizer Company; ramp was started, and production commenced in the West Orebody.
1974 - 84	Mine was developed in what is now called the West orebody to mine lead and zinc. Shaft was sunk to the -312 m level; highly profitable mining using sub-level caving; eventual transition to less profitable drift-and-fill mining due to excessive dilution, ground subsidence and water problems.
1991	Hellenic Fertilizer Company went into receivership; mine continued production under subsidy from Greek government.
1995	Ownership transferred to TVX Gold Inc. (TVX); production suspended to allow for drilling to define Mineral Resources.
1998 - 99	TVX completed drilling campaign (760 holes, 91,319 m) and issued a Mineral Resource estimation; initial feasibility study completed.
2004	Aktor acquired mining concessions holding 317 km^2, including the Olympias and Skouries deposits together with Stratoni (the Kassandra Mines) through its subsidiary Hellas Gold. The Hellas Gold acquisition of the Kassandra Mines was ratified by parliament and passed into law in January 2004 (National Law no. 3220/2004).

Year	Commentary
	European Goldfields (EGL) acquired its initial ownership percentage interest in Hellas Gold from Aktor through its wholly owned subsidiary European Goldfields Mining (Netherlands) B.V.
2007	European Goldfields increased share ownership of Hellas Gold to 95% (with 5% held by Aktor).
2011	EIS approved by Greek government.
2012	Eldorado acquired the project via the acquisition of European Goldfields (EGL). Commenced tailings re-treatment and rehabilitation of the underground mine shortly thereafter.
2017	Refurbishment of the Olympias process plant and commencement of processing to produce lead, zinc, and gold-bearing concentrates. Commercial production attained in 2018.
2020	Eldorado increased share ownership of Hellas Gold to 100% with purchase of 5% stake from Aktor.

6.2.1 Work Prior to 1970

In 1933, a shaft was sunk to 74 m depth at Olympias by the then owners, with lateral development to intersect a marble / gneiss contact. The drift encountered ancient workings, which were largely exhausted.

In 1954, previous owners commenced exploration in the Olympias area. Their drilling encountered numerous discontinuous lenses of sulphide mineralization 10 cm to 20 cm in width, and many old workings were intersected. In 1965, further drilling commenced and, in 1966, a 10 m intersection of lead-zinc mineralization was encountered 20 m below the 1933 shaft, which proved to be exploitable.

6.2.2 Hellenic Fertilizer Company 1970 – 1991

By the early 1970s ownership of the mines had transferred to the Hellenic Fertilizer Company (HFC). A ramp was started in 1970 and full production commenced in the West orebody. From 1974 to 1984, the shaft was sunk to 312 m below mean sea level (msl). The first ten years of production proved highly profitable when sub-level caving (SLC) could be used, but excessive dilution, ground subsidence and problems with water influx resulted in a change to more expensive drift and fill (DAF) mining. During this period, lead and zinc concentrates were sold and gold-bearing pyrite-arsenopyrite concentrate was stockpiled. The stockpile of gold bearing pyrite-arsenopyrite concentrate was sold to off-takers by European Goldfields.

HFC carried out extensive programs of surface and underground drilling in order to define orebody dimensions and to explore the surrounding area. Partial logs are available for this work but none of the original cores are available in labelled boxes; none of the holes were surveyed and no assays, certifiable or otherwise, have been found. It is believed that ore was identified solely by visual assessment of the core. Where available, the partial logs of this work were entered by Eldorado into the database but only in order to guide exploration work and for use in the modelling of major geological units.

HFC went into receivership in 1991 and the Greek government subsidized the operation until development and production fell behind schedule. Following three separate international auctions, TVX successfully won the bidding for the Property in 1995.

6.2.3 TVX 1995 – 1999

Shortly after TVX obtained control of the Property, production at the Olympias Project was suspended so that drilling could be conducted to confirm and expand the Mineral Resources.

TVX commenced an intense program of drilling in 1996. An interim Mineral Resource assessment was completed in June 1998. By February 1999, TVX had completed a drill program comprising 760 holes totaling 91,319 m. The Mineral Resource was updated in December 1998 to incorporate all drilling completed to that date. In 1998 and 1999, Kvaerner Metals produced a feasibility study on the Olympias Project. During 1999 - 2000, SNC Lavalin of Toronto was commissioned to conduct a basic engineering study on the Olympias Project. These historical Mineral Resource and Mineral Reserve estimates were based on different processing routes for the gold concentrate and are, therefore, not relevant to this report.

6.2.4 European Goldfields 2004 – 2014

The Property was acquired by European Goldfields (through its 95% owned subsidiary Hellas Gold) in 2004. No exploration was carried out by European Goldfields; however, sufficient reviews of existing data allowed European Goldfields to file the NI 43-101 Technical Report titled 'Technical Report on the Olympias Project Au Pb Zn Ag Deposit, Northern Greece, 2011' with an effective date of July 14, 2011 (2011 European Goldfields Technical Report).

6.3 PRODUCTION

As discussed in Section 6.2.2., HFC commenced underground development in 1970 from the West orebody. From 1976 to 1995, records indicate that 3.64 Mt of ore were mined, though grades are not available. However, between 1987 and 1995, records indicate that 970,150 tonnes of ore were milled with average feed grades of 8.19 g/t Au, 127 g/t Ag, 3.9% Pb, and 5.6% Zn.

SECTION • 7 GEOLOGICAL SETTING AND MINERALIZATION

7.1 REGIONAL GEOLOGY

The Western Tethyan orogenic belt in south-east Europe is subdivided into several major metallogenic provinces including the Serbo-Macedonian Metallogenic Province (SMMP) that hosts the Kassandra mining district in northeast Greece (Janković 1997; Baker 2019). The Western Tethyan orogen comprises a series of magmatic belts encompassing Cretaceous to Paleogene subduction-related arc magmatism through to post-collisional Neogene magmatism (Richards 2015; Moritz and Baker 2019). In northeast Greece, the orogeny developed during the Late Cretaceous to early Eocene as the Serbo-Macedonian Apulian and Pelagonian microcontinents converged on the previously accreted Rhodope continental fragments at the Eurasian margin (Pe-Piper and Piper 2006). The crystalline basement within the Kassandra mining district includes the upper litho-tectonic Serbo-Macedonian Vertiskos unit and the lower litho-tectonic Kerdilion unit exposed within the southern Rhodope metamorphic core complex (Figure 7-1).

The SMMP forms a north-west trending zone of base and precious metal deposits including a large Au-endowment (~25 Moz; Baker 2019) that is associated with Oligocene to Miocene magmatic complexes including porphyry (Skouries, Greece; Illovitza, Bucim, North Macedonia; and Tulare, Serbia) and carbonate replacement deposits (Olympias, Mavres Petres, Madem Lakkos, and Piavitsa in Greece), as well as the Plavica high sulphidation epithermal deposit (North Macedonia). Mineral deposits formed during post-collision extension and emplacement of intermediate to felsic magmas with high-K calc-alkalic to shoshonitic composition and localized ultra-potassic mafic magmas (Borojevic Sostaric et al. 2012; Siron et al. 2016). The heterogeneity of the Cenozoic magmas likely resulted from crystal fractionation, assimilation and mixing of melted depleted mantle metasomatized by Cretaceous subduction processes, and partial melting of lower crustal rocks.

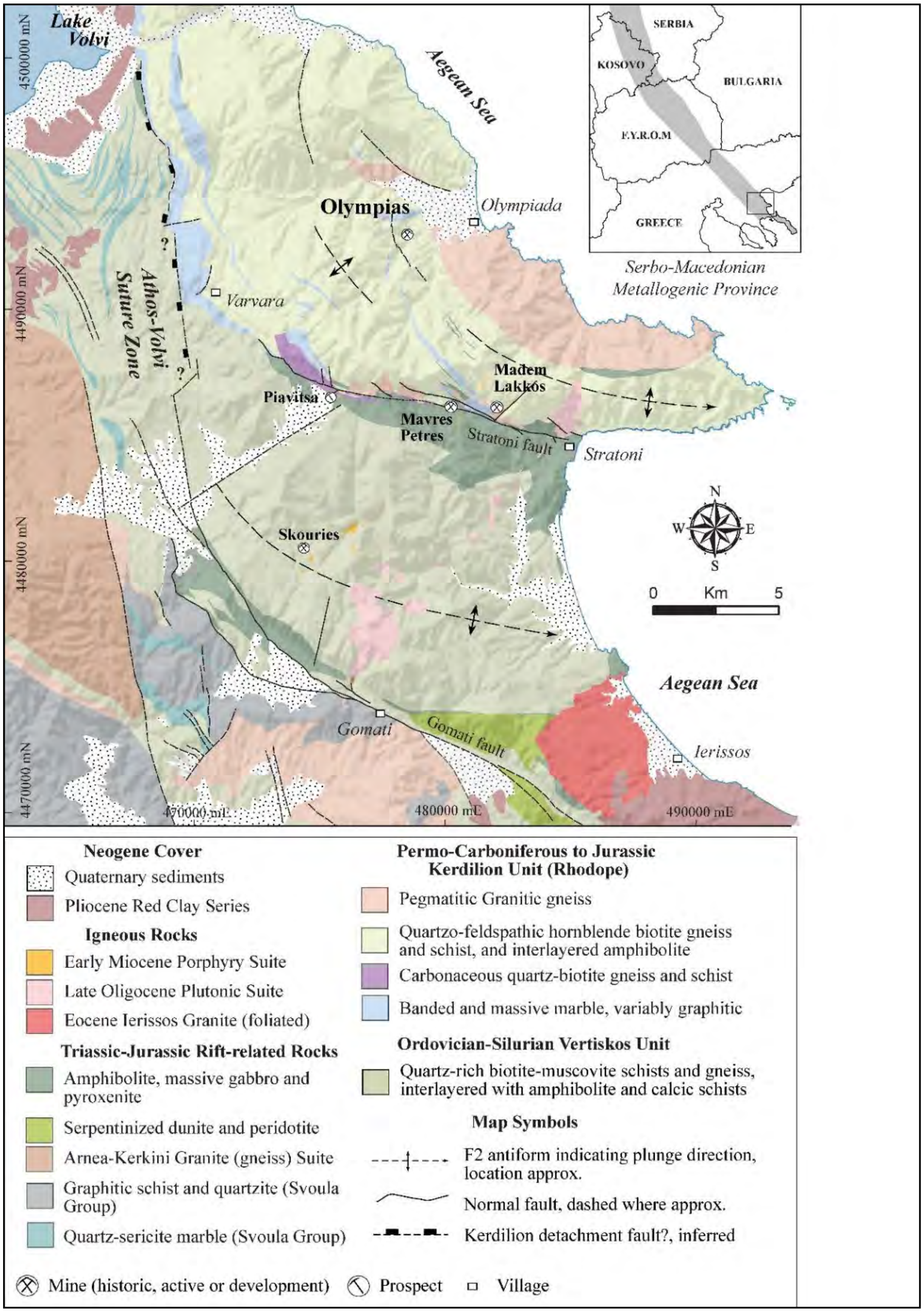


Figure 7-1: Regional Geology of the Kassandra Mining District (modified from Siron et al. 2018)

7.2 LOCAL GEOLOGY

The Kassandra mining district contains a current endowment, net of past mining, of >8.4 Moz of gold in Measured and Indicated Mineral Resources at the Olympias mine (12.4 Mt @ 8.0 g/t Au, 147 g/t Ag, 4.9% Pb, and 6.4% Zn) and the Skouries deposit (240.0 Mt @ 0.65 g/t Au and 0.47% Cu). Additional Measured and Indicated Mineral Resources are reported for the Mavres Petres (Stratoni) Mine (1.4 Mt @ 152 g/t Ag, 6.0% Pb, and 8.4% Zn). All figures were reported by Eldorado in December 2023 and are effective September 30, 2023.

The Stratoni Fault is a major tectonic feature and important mineralizing corridor located in the center of the Kassandra mining district (Siron et al. 2016, 2018; Figure 7-1). The east-west oriented, ductile to brittle fault zone extends >12 km from the coast at Stratoni to the village of Varvara in the west. It is a moderately south-dipping normal fault that separates gneiss and marble of the Kerdilion unit to the north from amphibolite and schist of the Vertiskos unit to the south.

Metamorphic rocks of the Kerdilion unit consist of quartzo-feldspathic hornblende-biotite gneiss, marble, amphibolite, localized bodies of megacrystic plagioclase-microcline orthogneiss, and granite gneiss (Kalogeropoulos et al. 1989; Gilg and Frei 1994). The lithologies have an arcuate geometry, striking in a north-south direction in the north and becoming east-west near the Stratoni fault (Siron et al. 2016). Middle Jurassic to Early Cretaceous zircon U-Pb and Pb-Pb ages from granitic gneisses of the Kerdilion unit range from 164-134 Ma and are interpreted as primary igneous ages (Himmerkus et al. 2011). The host rock sequence, however, is likely Carboniferous to Permian, based on inherited zircon cores derived from the orthogneisses (Himmerkus et al. 2011). Pegmatitic dikes and sills occur throughout the Kerdilion unit and represent anatectic partial melting of the metamorphic rock from about the middle Paleocene to middle Eocene (Wawrzenitz and Krohe 1998; Kalogeropoulos et al. 1989). The pegmatites are largely absent south of the Stratoni fault.

Graphitic garnet-bearing quartz-biotite gneiss and schist are spatially associated with the Stratoni fault zone and amphibolite occurs within the hanging wall with variably serpentinized pyroxenite. The Vertiskos unit occurs south of the Stratoni fault and hosts the Skouries porphyry deposit. The unit is a monotonous sequence of quartz-rich feldspathic to muscovite-biotite-bearing gneiss and schist. Minor calcareous schist, marble, and amphibolite are also thinly interlayered within the metamorphic sequence. Zircon U-Pb ages show that the micaceous schist ranges from Neoproterozoic (686-576 Ma) to Ordovician (464-450 Ma), which is consistent with the age of the Pan-African Pirgadikia and Vertiskos units of the Serbo-Macedonian terrane (Himmerkus et al. 2007).

Cretaceous to mid-Eocene ductile deformation accompanied by lower amphibolite-grade metamorphism and overprinting retrograde greenschist metamorphism affected the Kerdilion and Vertiskos units. A regionally prominent penetrative shallowly dipping S1 foliation is defined by alignment of peak metamorphic minerals (e.g., biotite or amphibole). Subsequent high-strain transposition resulted in tight to isoclinal F2 folds locally accompanied by axial planar S2 cleavage. A later lower-strain deformation event superimposed a spaced steeply dipping S3 foliation on the pre-existing fabrics. This event is associated with km-scale upright and open east-plunging F3 folds evident as district-scale antiforms in the footwall of the Stratoni fault (Siron et al. 2016).

A series of discrete magmatic events are recognized in the region including the Triassic Arnea granite suite (228 ± 5.6 Ma) within the Vertiskos unit, and Late Cretaceous to early Eocene (68 ± 1 Ma to 53 ± 4 Ma) subduction-related calc-alkaline granites at Ierissos, Ouranoupolis, and Grigoriou on the Athos Peninsula. These latter granitic intrusions exhibit a weak tectonic fabric suggesting emplacement during the waning stages of regional deformation.

Post-collision Oligocene-Miocene magmatism coincided with the main mineralizing events in the Kassandra mining district. Late Oligocene magmatism ranges from early monzogabbro to monzodiorite to later-stage granodiorite (Siron et al. 2016). These intrusions typically display medium-grained equigranular textures through to porphyritic phases with crowded textures dominated by feldspar phenocrysts. Most unaltered late Oligocene intrusions are high-K calcalkaline, and the intrusions occur along a north-northeast trend defined by the alignment of igneous centers and orientation of dikes. A suite of early Miocene intrusions, including Skouries (~20 Ma; Hahn et al. 2012), have porphyritic textures and are quartz monzonite to syenite in composition. Phenocrysts are prismatic consisting of plagioclase and megacrystic K-feldspar, fine-grained euhedral biotite, and relict amphibole. Rounded quartz phenocrysts occur in minor abundance and K-feldspar and quartz comprise the groundmass with accessory zircon, magnetite, and pyrite. The quartz monzonite and syenite intrusions belong to the high-K calc-alkaline to weakly shoshonitic magma series, and their emplacement was controlled by pre-existing structures such as fold axial surfaces and faults.

The historically mined Madem Lakkos deposit, the recently mined Mavres Petres deposit, and the undeveloped Piavitsa deposits are hosted predominantly in marble within and adjacent to the Stratoni Fault. The fault zone crosscuts the lower portion of the late Oligocene (25.4 ± 0.2 Ma) Stratoni granodiorite stock but is cut by a Miocene glomerophyric monzonite porphyry dike at Piavitsa (20.62 ± 0.13 Ma) constraining latest major fault movement and related hydrothermal mineralization to the late Oligocene to early Miocene (Siron et al. 2016). The Olympias deposit occurs approximately six km north of the Stratoni fault with sulphide ore occurring within marble layers of the Kerdilion unit adjacent to two major normal faults, the Kassandra fault and the East fault. Crosscutting structural relationships and $^{40}Ar/^{39}Ar$ geochronology on ore-related muscovite alteration (22.6 ± 0.3 Ma) indicate that carbonate replacement mineralization at Olympias also occurred during the latest Oligocene, coincident with the early stage of post-deformation magmatism in the region (Siron et al. 2018).

7.3 DEPOSIT GEOLOGY

The Olympias deposit is located six km north of the Stratoni fault within the Kerdilion unit (Figure 7-2). Replacement-style sulphide orebodies are hosted by marble interlayered within a sequence of quartzo-feldspathic biotite-gneiss, amphibolite, and plagioclase microcline orthogneiss (Kalogeropoulos et al. 1989; Siron et al. 2016; Figure 7-3). The massive sulfide orebodies plunge shallowly to the southeast for over 1.8 km (Figure 7-4), subparallel to the orientation of F2 fold hinges and a locally developed L2 intersection lineation (Siron et al. 2018). The locations of the sulfide lenses, however, are largely controlled by strands of the ductile-brittle Kassandra fault and East fault and sub-horizontal shear zones that occur between the two faults (Figure 7-3).

The sulfide ore bodies are grouped into three major domains: East Zone, West Zone, and Flats Zone (Figure 7-4). Two smaller sub-zones, the Remnants and North Zones, are considered as part of the West Zone for the purpose of resource estimation. The East Zone ore occurs dominantly in the footwall to the steeply northeast-dipping East fault with the sulphide lenses hosted by marble at or below the upper gneiss-marble contact. The stratabound ore lenses dip shallowly to moderately to the northeast and strike for ~1.1 km. Ore lenses typically pinch and swell with thickness up to 10 m and widths up to 130 m. The West Zone ore bodies are controlled by the Kassandra fault and have a steep (~ 60°) NE dip that shallows at depth as it merges into the Flats. The West Zone ore has a strike extent of ~1.2 km and is up to 25 m thick with a down-dip extent up to 200 m. The Flats ore body extends to the east from the West Zone ore and dips shallowly to the northeast; however, in detail it comprises a series of stacked lenses that also extend to the west into the footwall of the Kassandra fault. The Flats ore bodies have a strike extent of over 1 km and are locally up to 15 m thick, although more commonly range from 3 to 10 m thick, and ore lenses are tens of meters wide to up to 100 m in places.

Sulphides associated with the Olympias deposit include coarse-grained, massive, and banded lenses dominated by variable amounts of sphalerite, galena, pyrite, arsenopyrite, chalcopyrite, and boulangerite. Accessory minerals include pyrrhotite, marcasite, stibnite, mackinawite, enargite, freibergite, bournonite, geocronite, cubanite, bornite and covellite (Nicolaou and Kokonis 1980; Kalogeropoulos and Economou 1987; Kalogeropoulos et al. 1989; Siron et al. 2016). Secondary ion mass spectroscopy studies indicate that Ag and Au primarily occur in solid solution with their respective host minerals; Ag in galena and Au in both arsenopyrite and pyrite.

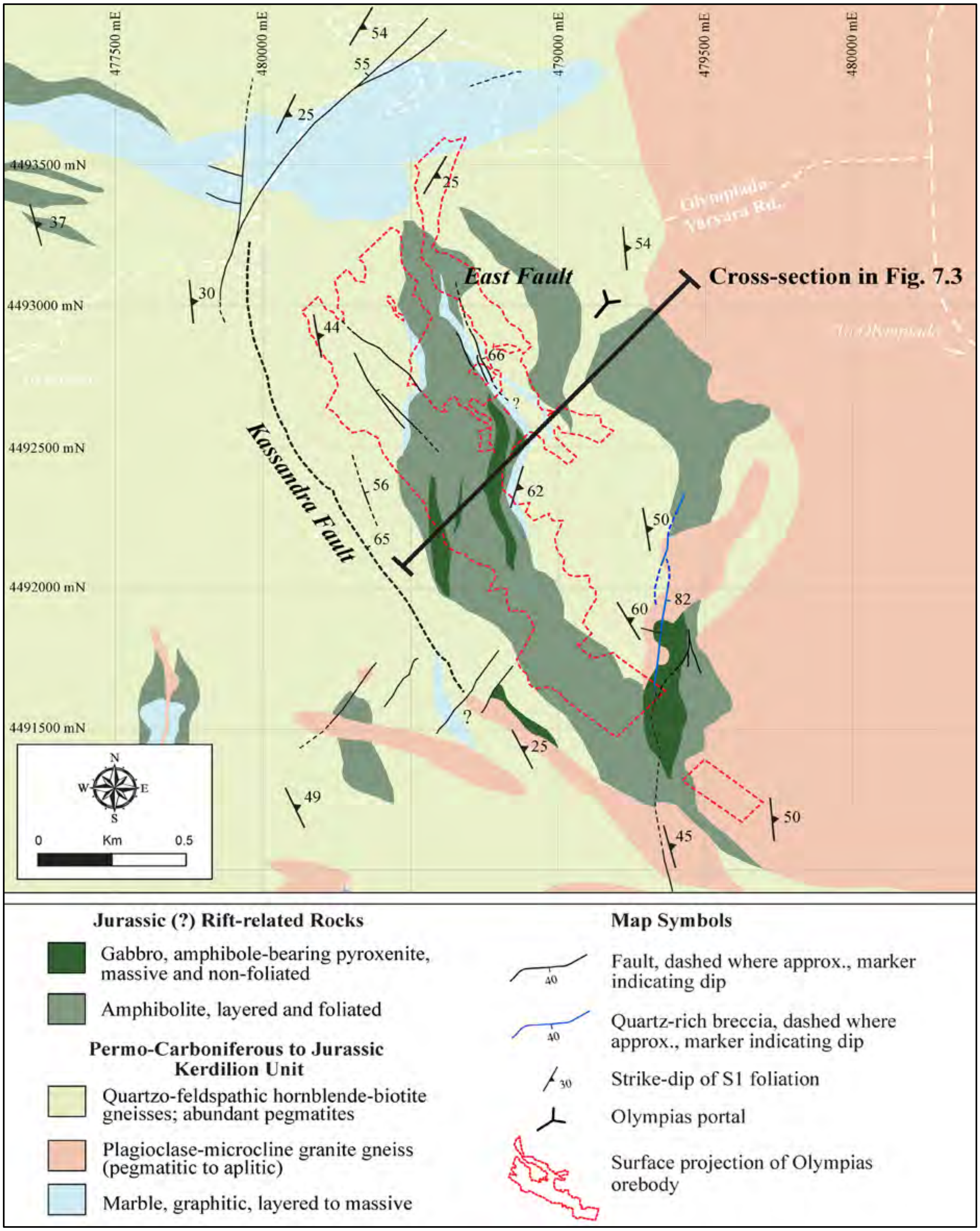


Figure 7-2: Geology of the Olympias Mine Area (Eldorado, 2019)

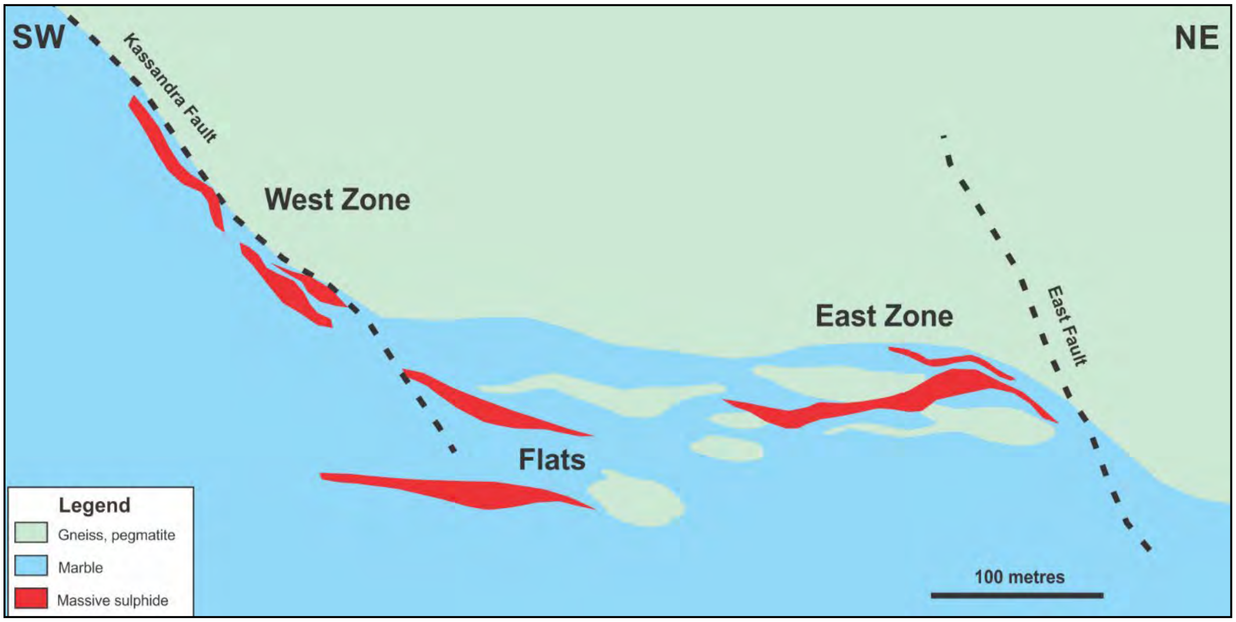


Figure 7-3: Simplified Geological Cross Section Through the Olympias Deposit (Eldorado, 2020)

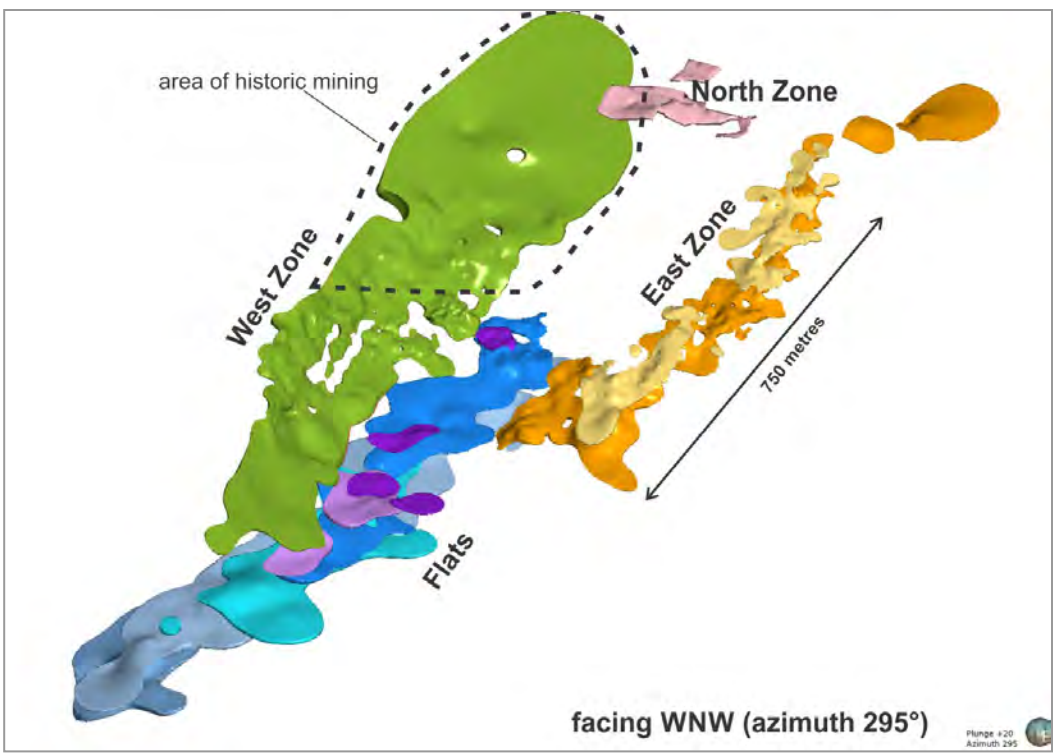


Figure 7-4: Oblique View of the Major Ore Zones in the Olympias Mine (Eldorado, 2020)

SECTION • 8 DEPOSIT TYPES

8.1 DEPOSIT MODEL

Olympias is an example of a polymetallic carbonate-replacement deposit. However, it is somewhat unusual due to its high gold content (cf. Siron et al. 2019). Key characteristics of this class of deposit include carbonate host rocks, massive sulphide mineralization, spatial and temporal relationship with magmatism and zoned metal distribution (Megaw 1998). Geochronological and paragenetic relationships described by Siron et al. (2016, 2018) provide evidence that Olympias formed coeval with late Oligocene (~ 25 – 22 Ma) magmatism in the region although the source intrusion has not been identified. Nonetheless, carbon and oxygen isotopic data support a magmatic fluid source (Siron et al. 2019), and the zonation towards Mn-rich alteration in the upper levels of the deposit (North Zone) are consistent with shallow, distal portions of a magmatically derived carbonate-replacement system.

Similar carbonate-replacement deposits of Oligocene age elsewhere in the West Tethyan belt include the massive sulphide deposits of the Maden-Thermes district of southern Bulgaria and north-eastern Greece, as well as the deposits in the Lavrion district of southern Greece and skarn and replacement sulphide deposits in the Trepca district of Kosovo (Siron et al. 2019 and references therein). However, for the most part these deposits are gold-poor. Global examples of Au-rich polymetallic carbonate replacement deposits include deposits in the Eureka (Nevada), Bingham (Utah), and Leadville (Colorado) districts of the USA.

8.2 OLYMPIAS MINERALIZATION TYPES

Mine nomenclature classifies the mineralization into eight types. Types 1 to 3 are base metal-pyrite dominant, Types 6 and 7 are arsenopyrite-rich and variably silica bearing, Type 8 is manganese-rich and Types 4 and 5 are sub-economic pyritic wall rock alteration with minor to semi-massive sulphides.

Types 1, 2, and 3 are gradational with one another and reflect endmembers of galena-sphalerite dominant (Type 1) to pyrite dominant (Type 2) to transitional mixed galena-sphalerite-pyrite (Type 3). Arsenopyrite is common in all three types but is not the dominant sulphide. These mineralization types typically occur as massive to banded sulphide zones with medium to coarse grained sphalerite-galena-pyrite-arsenopyrite and calcite gangue. Types 1 to 3 are dominant in the Flats.

Type 7 is arsenopyrite-rich and has the highest gold content. The mineralization is typically siliceous with massive to banded sulphide dominated by blocky to acicular arsenopyrite with lesser pyrite, galena, and sphalerite. Type 7 is locally gradational to Type 3, and banded zones commonly comprise intergrown Types 1 to 3 and 7. Type 7 is dominant in the East Zone.

Type 6 is a paragenetically younger quartz-rich sulfide assemblage that locally overprints the early replacement massive sulphide ore horizons. Type 6 can vary from banded siliceous zones to extensive intervals of grey siliceous matrix breccia that contain angular altered wall rock fragments. These quartz-rich sulphide bodies consist of interlocking, euhedral and growth-zoned quartz accompanied by interstitial arsenopyrite and boulangerite with subordinate pyrite, galena, and sphalerite. The breccia cement consists of dark gray chalcedonic quartz with disseminated, euhedral pyrite, fibrous boulangerite and bladed arsenopyrite. In places, Type 6 grades into Type 7, and commonly these quartz-rich ore types are surrounded by lower grade quartz-rhodochrosite alteration of the marble (Type 8). Types 6 and 8 are most commonly developed in the northern and eastern portions of the Olympias deposit, and in and around the Kassandra fault.

SECTION • 9 EXPLORATION

Due to its robust mineral resources, Eldorado has undertaken limited exploration work at Olympias since 2012.

9.1 GEOLOGICAL STUDIES

There have been several geological studies carried out on the deposit, including:

- Surface geological mapping in the area surrounding the mine site.
- A study of the deposit geology and structural controls, and a separate petrographic study were carried out in 2013.
- In 2018, a review of the geological controls of the deposit was carried out. There was also a review of the logging database; this work simplified the logging codes to bring consistency to the process and recommended further studies on the alteration and rock geochemistry.
- Some Terraspec (hyperspectral) SWIR measurements have been carried out on core to measure alteration footprints to assist in future exploration targeting.

9.2 2023 SURFACE GEOCHEMICAL SURVEY

In 2023, Eldorado conducted a soil geochemical sampling program that focused mainly on areas north and west of the surface projection of the known orebodies. A total of 1011 samples were taken (Figure 9-1). Results of the survey identified an area of anomalous Au-Ag-Pb-Zn that is northwest of the surface projection of the known underground deposits and that corresponds to the locations of historic pits.

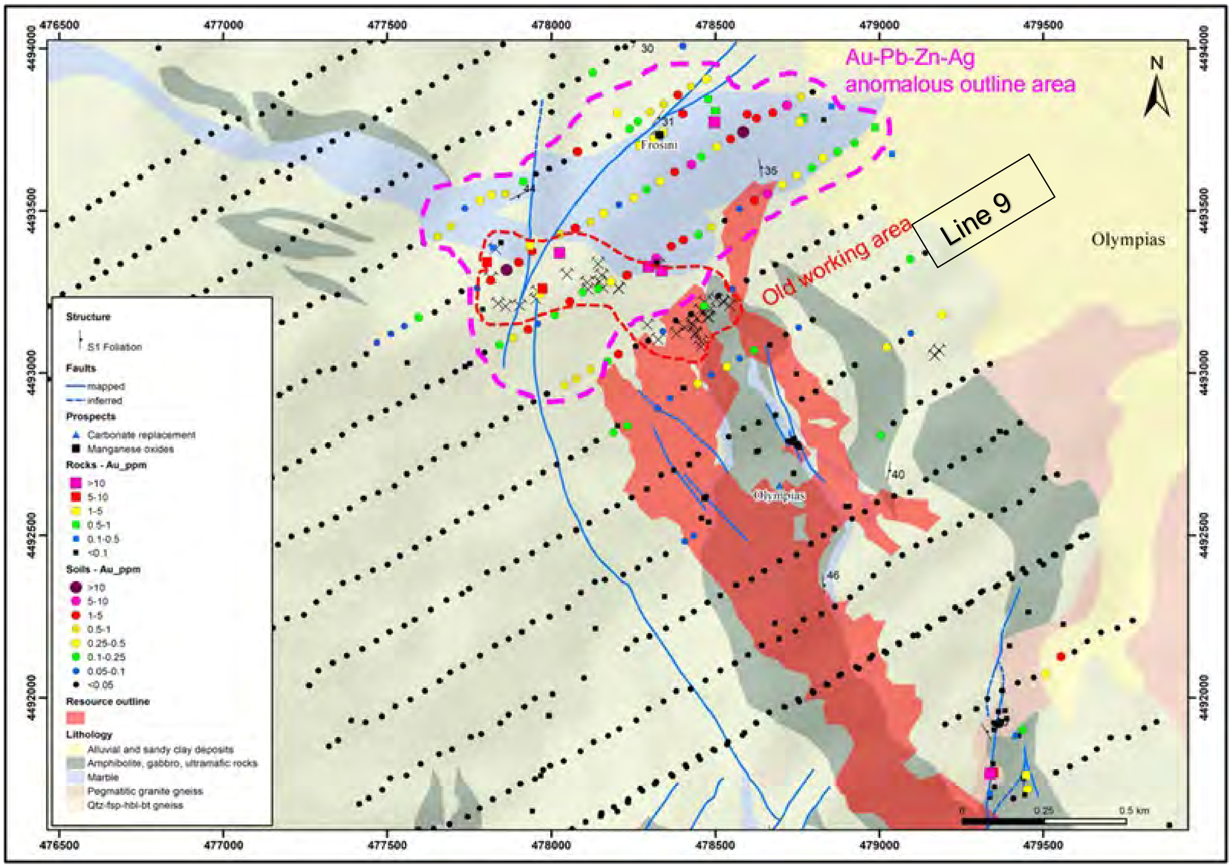


Figure 9-1: Surface Geochemical Survey Area Sample Location and Au Values (Eldorado, 2023)

9.3 2023 INDUCED POLARIZATION (IP) SURVEY

An induced polarization (IP) survey was conducted by Terratec Geophysical Surveys over the surface projection of the Olympias orebodies and surrounding areas. This survey covered an area of 11 km^2 and included a total of 43 line-kilometres of survey along lines spaced at 200-metre intervals. The survey lines were the same as used in the 2023 geochemical survey (Figure 9-1 above). Results of the survey showed good correlation between areas of high chargeability and known subsurface orebodies. Figure 9-2 illustrates this in a sample IP cross-section oriented northeast-southwest showing the approximate location of the known subsurface orebodies (see Line 9 in Figure 9-1 for location). The zone of high chargeability extends to the northwest and underlies the area of anomalous soil geochemistry from the 2023 survey, providing a potential target for future exploration drilling.

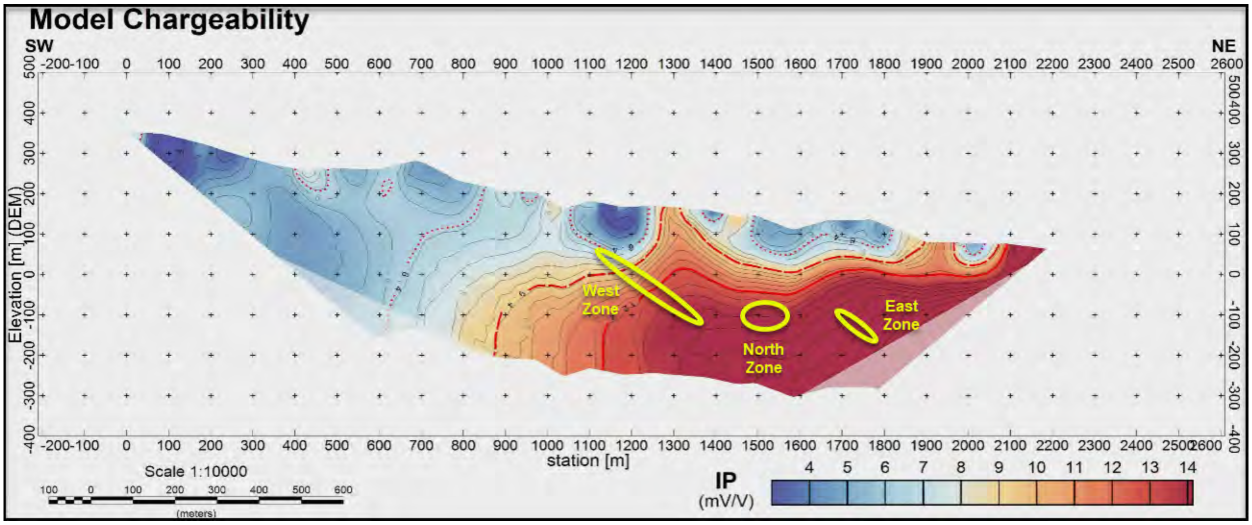


Figure 9-2: Vertical IP Chargeability Cross-Section (Terratec / Eldorado, 2023)

SECTION • 10 DRILLING

10.1 INTRODUCTION

Diamond drillholes are the sole source of subsurface geologic and grade data for the Olympias deposit. There is a large amount of historical drill data in the database. Data generated prior to the drilling by TVX (prior to 1996) was not utilized for Mineral Resource estimation purposes, as there is no means to validate it.

The previous operator, TVX, drilled 764 drillholes for a total of 93,246 m, which included eight geotechnical holes for 1,461 m. Of these, 267 drillholes for 79,861 m are not used in mineral resource estimations or geological models due to lack of locational information or because they have been superseded by Eldorado drillholes that have more readily verifiable data.

Drilling statistics by program type up to December 31, 2023 are shown in Table 10-1.

Table 10-1: Drilling by Program Type (Eldorado)

Program Type	No. Drill holes	Total meters (m)	Avg Depth (m)
Historic (pre-2014)	929	161,812	174
Exploration/Delineation	287	47,402	165
Infill	2,388	233,327	98
Other (e.g. Geotech, mine services)	74	6,221	84
Total	**3,678**	**448,762**	**122**

The core drilled by TVX was located on site in secure containers when Eldorado acquired the property. In 2012 - 13, Eldorado relogged over 70,000 m, representing over 75% of the TVX drill core, to gain an understanding of the deposit geology and to validate the geological model. The relogging effort facilitated the present ore type classification referred to in Section 7.3. Since 2014, delineation drilling has been concentrated on the East and West (Kassandra) Zones, in and around areas of mining. This drilling has been carried out predominantly on a 15 x 15 m grid spacing; local areas have been drilled on a grid spacing of 10 x 10 m where more detail was necessary. Areas covered by this delineation drilling provide the data used in updating the resource model, superseding the older TVX drill information. Use of TVX data remains in areas that are currently undrilled by Eldorado.

Since 2014, drilling has been carried out by Greek and Canadian contractors using HQ size or NQ size core (63.5 mm or 47.6 mm nominal core diameter). The current contractors are Geotest-GAIA JV from Greece, who drill NQ core, and Golden Eagle Drilling (and its predecessor Cabo Drilling) from Canada, who drill both HQ and NQ core. Greek contractors Loukatos and Technochimiki have been responsible for drilling service holes (e.g. dewatering, backfill, etc.). The average hole depth since 2014 has been around 100 m. Fans of drillholes are designed to maximize good intersection angles to the structure and mineralized zones. The mine geology team supervises the rigs and has weekly meetings with the contractors.

10.2 CORE HANDLING AND SAMPLING PROCEDURES

Drillers place the core into sturdy, locally made, wooden core boxes. The driller keeps track of the drilling depth and places wooden marker blocks, later nailed in place, at the end of each run to indicate the depth from the collar. Core boxes are clearly labelled. The underground core is delivered to the core shed west of the offices on the mine site and is logged in a secure area.

The core is logged in detail on tablet computers using the logging software Logchief™ from Maxgeo. Logging data are then uploaded into an acQuire database. Data collected includes lithology, alteration, mineralization (including ore types), rock quality designation (RQD), core recovery, and other geotechnical factors for input into the Q rating system.

Core photos are routinely taken both on wet and dry core, using a camera stand to ensure consistent photographs.

Drillcores are stored at a warehouse at the Olympias mine site. Older and historic drillcores are stored at the Company's exploration compound at the village of Stratoni.

10.3 SURVEYS

Once a drill is in position, a surveyor will pick up the pivot point of the drill. A geologist will adjust the drillhole collars based on the location of this pivot point. The drilling contractor uses an azimuth aligner to set up each individual drillhole. A surveyor confirms the azimuth and dip at the collar location. Downhole surveys are also routinely taken using multishot instruments, either a Devico Devigyro or a Devico Deviflex. Calibration of the instruments is undertaken annually.

10.4 CORE RECOVERY

Core recoveries are recorded in the geotechnical logs for all drillholes. The overall average recovery is 87.7%, which is considered to be reasonable.

10.5 BULK DENSITY DETERMINATIONS

In 2013, Eldorado measured bulk density on over 900 samples of mineralization from historical drillcore using the Archimedes water immersion method (waxed samples) and incorporated the results into the Eldorado database. For a subset of 617 samples, for which there was a complete assay dataset that included Fe, a calculated bulk density was derived as follows:

- All Zn from assay was assigned to sphalerite; the composition of Olympias sphalerite is assumed to be 86% Zn and 14% Fe based on an historical mineralogical study.
- All As from assay was assigned to arsenopyrite (along with a portion of the total Fe).
- All Pb from assay was assigned to galena. While boulangerite is known to be present in Olympias ores, it is not volumetrically significant enough to affect the densities to a great degree and is not included in the density calculation.
- All remaining Fe (after assignments of Fe to sphalerite and arsenopyrite) was assigned to pyrite.

- Mineral percentages for sphalerite, galena, arsenopyrite, and pyrite were derived from the assay data and were added together to yield the total sulphide mineral content. Gangue mineral content was calculated by subtracting the total sulphides from 100%.
- The calculated bulk density was then derived by accumulating the proportion of each of the minerals multiplied by its mineral density (gangue was assigned a density of 2.69 based on measured data from unmineralized samples).

A comparison of the measured versus calculated bulk densities was carried out using a quantile-quantile plot. It was determined that most calculated bulk densities were about 6% higher than measured and that this disparity was most likely due to voids that could not be accounted for in a calculated bulk density. Thus, each block in the resource model has a calculated bulk density (based on the interpolated metal grades for each block) that is then downwardly adjusted by 6% to reflect the typical volume of voids.

SECTION • 11 SAMPLE PREPARATION, ANALYSES AND SECURITY

11.1 INTRODUCTION

A number of the samples used in the current resource estimates originated from the 1996 – 1998 drill campaign carried out by TVX. The procedures for sampling, analysis and security are described in the previous Olympias Technical Report (2011). Eldorado has reviewed the report and data and agreed with that report's conclusions that those drill data are acceptable to be used for mineral resource estimation. The remainder of this section describes the sample preparation and quality assurance / quality control (QA/QC) results of the work carried out by Eldorado, in particular between 2021 and 2023.

11.2 SAMPLE PREPARATION AND ASSAYING

Drill core samples undergo routine analysis at the ALS facility, an independent analytical laboratory located in Gura Rosiei village in Comuna Rosia Montana in Alba County, Romania. Prior to transportation, these samples are carefully packaged in sealed wooden bins and transported to the ALS facility. Upon completion of analysis, sample rejects are returned to the mine site using the same bins. It's noteworthy that ALS holds an ISO/IEC 17025 certificate, ensuring adherence to international standards for testing and calibration laboratories.

Upon delivery to the laboratory, the samples were crushed to 90% passing minus 3 mm and prepared according to the following protocol.

- A 1 kg subsample was riffle split from the crushed minus 3 mm sample and pulverized to 90% passing 75 µm (200 mesh).
- A 200 g subsample was split off by taking multiple scoops from the pulverized 75 µm sample.
- The 200 g subsample was placed in a kraft envelope, sealed with a folded wire or glued top, and prepared for shipping. The rest of the pulverized sample was then stored in plastic bags.
- All equipment was flushed with barren material and blasted with compressed air between each sampling procedure. Regular screen tests were done on the crushed and pulverized material to ensure that sample preparation specifications were being met.

All samples were assayed for gold by 30 g fire assay with an AAS finish, with Au values above 10 ppm determined by a gravimetric finish. Multi-element determination was carried out by Inductively Coupled Plasma Mass Spectrometry (ICP-MS) analysis and / or Inductively Coupled Plasma Emission Spectroscopy (ICP-ES) analysis. (Table 11-1).

11.3 QA/QC PROGRAM

11.3.1 Overview

Assay results were provided to Eldorado in electronic format and as paper certificates. The QA/QC procedure included inserting either a CRM, blank, or duplicate into the samples stream every 10th sample. Upon receipt of assay results, values for CRMs and field blanks were tabulated and compared to the established CRM pass-fail criteria:

- Automatic batch failure if the CRM result is greater than the round-robin limit of three standard deviations.
- Automatic batch failure if two consecutive CRM results are greater than two standard deviations on the same side of the mean.
- Automatic batch failure for each element if the field blank or analytical blanks are over the values given in Table 11-2.

Table 11-1: Summary of Assay Methods

ALS	
Code	**Description**
Au-AA25	Ore grade Au 30 g FA AA finish
Au-GRA21	Ore grade Au 30 g FA AA finish
ME-ICPORE	Oxidizing digestion w/ ICP-AES finish

Table 11-2: Blank Failure Criteria for Au, Ag, Pb, and Zn

Element	Field blank results	Analytical blank results
Au (g/t)	0.2 >	0.01 >
Ag (g/t)	20 >	1 >
Pb %	0.2 >	0.01 >
Zn %	0.2 >	0.01 >

If a batch failed, it was re-assayed until it passed. Override allowances were made for batches that lacked significant mineralized intercepts. Batch pass / failure data were tabulated on an ongoing basis, and charts of individual reference material values with respect to round-robin tolerance limits were maintained.

The number of samples, duplicates, CRMs, and blanks are presented in Table 11-3. Additionally, Table 11-4 displays the corresponding compliance rates, aligning with accepted norms of 5% or above.

Table 11-3: Summary of QA/QC Sampling in 2021 – April 2023

Year	2021	2022	Apr-23
Total assays	4,678	6491	2,341
Gold CRMs	134	179	66
Base metal CRMs	167	235	74
Blanks	334	456	138
Pulp duplicates	161	164	69
Coarse duplicates	161	164	40
Total Number Analyses Loaded in DB	5,635	7,689	2,728

Table 11-4: Summary of Compliance Rates for 2021 – April 2023

Year	2021	2022	Apr-23
Total assays	4,678	6,491	2,341
Total CRMs	6%	6%	6%
Blanks	7%	7%	6%
Total duplicates	6%	6%	5%

11.3.2 CRM results

CRMs used represent all payable metals at Olympias. For each payable metal, there should be three corresponding standards:

- At around the expected cut-off grade of the deposit.
- At the expected average grade of the deposit.
- At a higher grade.

Both the grade range of the CRMs used, and the percentage of CRM samples submitted are deemed as appropriate.

Table 11-5 summarizes the details of the gold CRMs that were inserted by Eldorado from 2021 – April 2023, grouped by period sampled.

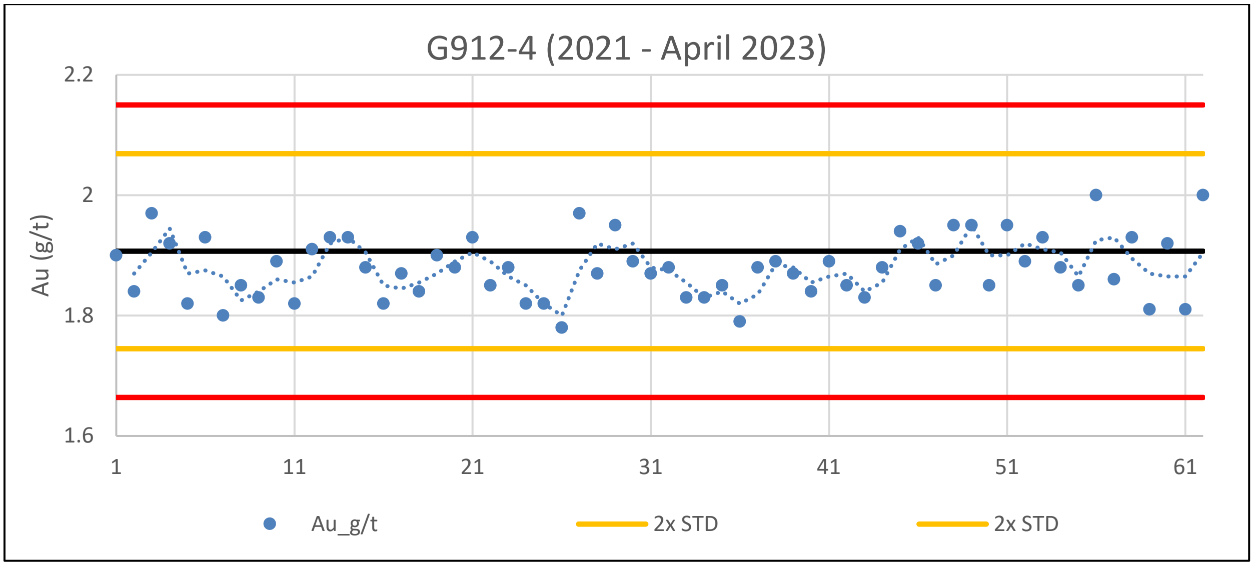
Table 11-5: Summary of Gold CRM Insertions for 2021 – Q1 2023

Standard ID	Au		2021	2022	April 2023
	Expected value (g/t)	SD			
G317-2	12.97	0.41	16	29	10
G317-4	23.97	0.83	19	29	13
G912-4	1.907	0.081	27	26	7
G915-4	9.16	0.35	20	30	12
G915-6	0.674	0.042	25	29	12
G318-10	4.58	0.17	27	36	12
Total			**134**	**179**	**66**

Table 11-6: Summary of Silver and Base Metal CRM Insertions for 2021 – April 2023

Standard ID	Ag		Pb		Zn		2021	2022	April 2023
	Expected value (g/t)	SD	Expected value (%)	SD	Expected value (%)	SD			
GBM310-14	59.6	2.5	8.9465	0.3355	17.9106	0.8084	33	34	15
GBM911-11	10.2	1.1	0.1722	0.0084	0.1422	0.0067	25	35	11
GBM913-11	32.5	2.3	3.5846	0.1541	7.8969	0.2849	28	35	11
OREAS 133a	99.9	2.42	4.9	0.162	10.87	0.354	28	24	0
OREAS 134a	201	7	12.79	0.766	17.27	0.553	25	2	0
Oreas 137	25.9	1.18	0.673	0.02	4.92	0.08	26	28	14
Oreas 139	76.7	3.91	2.21	0.095	13.63	0.305	1	21	4
OREAS 134b	209	9	13.36	0.743	18.03	0.755	1	56	19
Total							**167**	**235**	**74**

Figure 11-1 shows the results for a selection of the gold CRMs for the 2021 – April 2023 samples. They show good performance with variation about the CRM mean values within acceptable ranges. In each CRM figure below, the red line indicates three times the standard deviation, the yellow line indicates two times the standard deviation, the black line represents the expected value, and the blue dots are the results of the assayed samples, which were sorted by assay date.



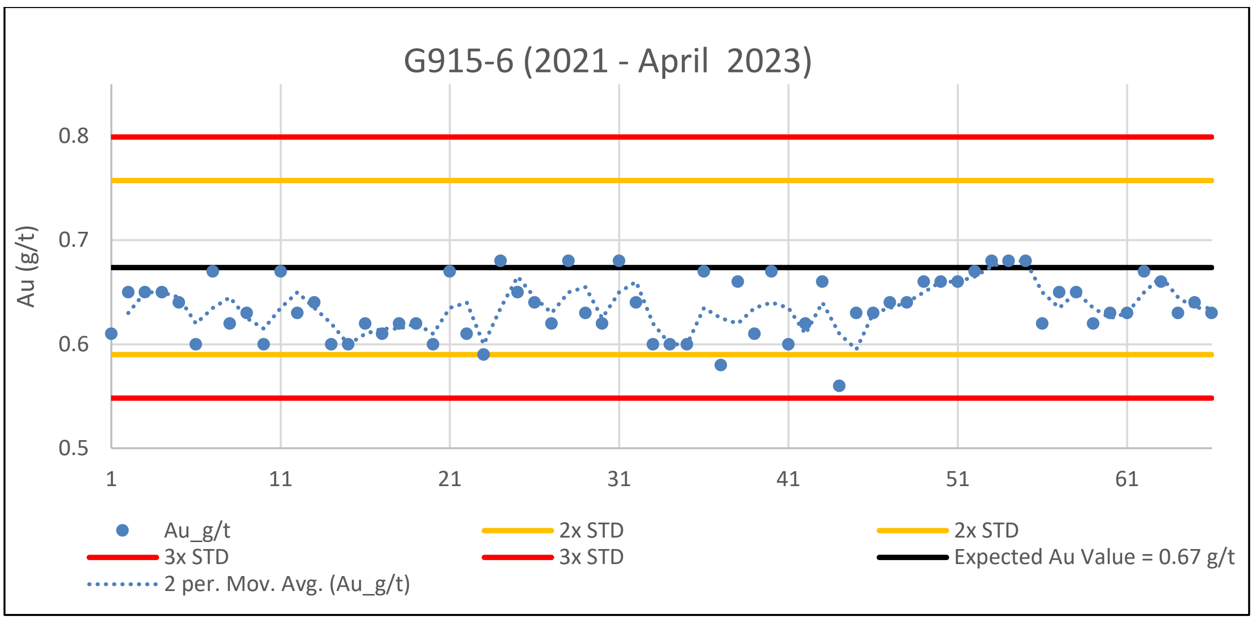


Figure 11-1: Gold CRM Charts, 2021 – April 2023

Figure 11-2 to Figure 11-4 show a selection of plots showing results for the Ag, Pb, and Zn CRMs for the 2021 – April 2023 samples.

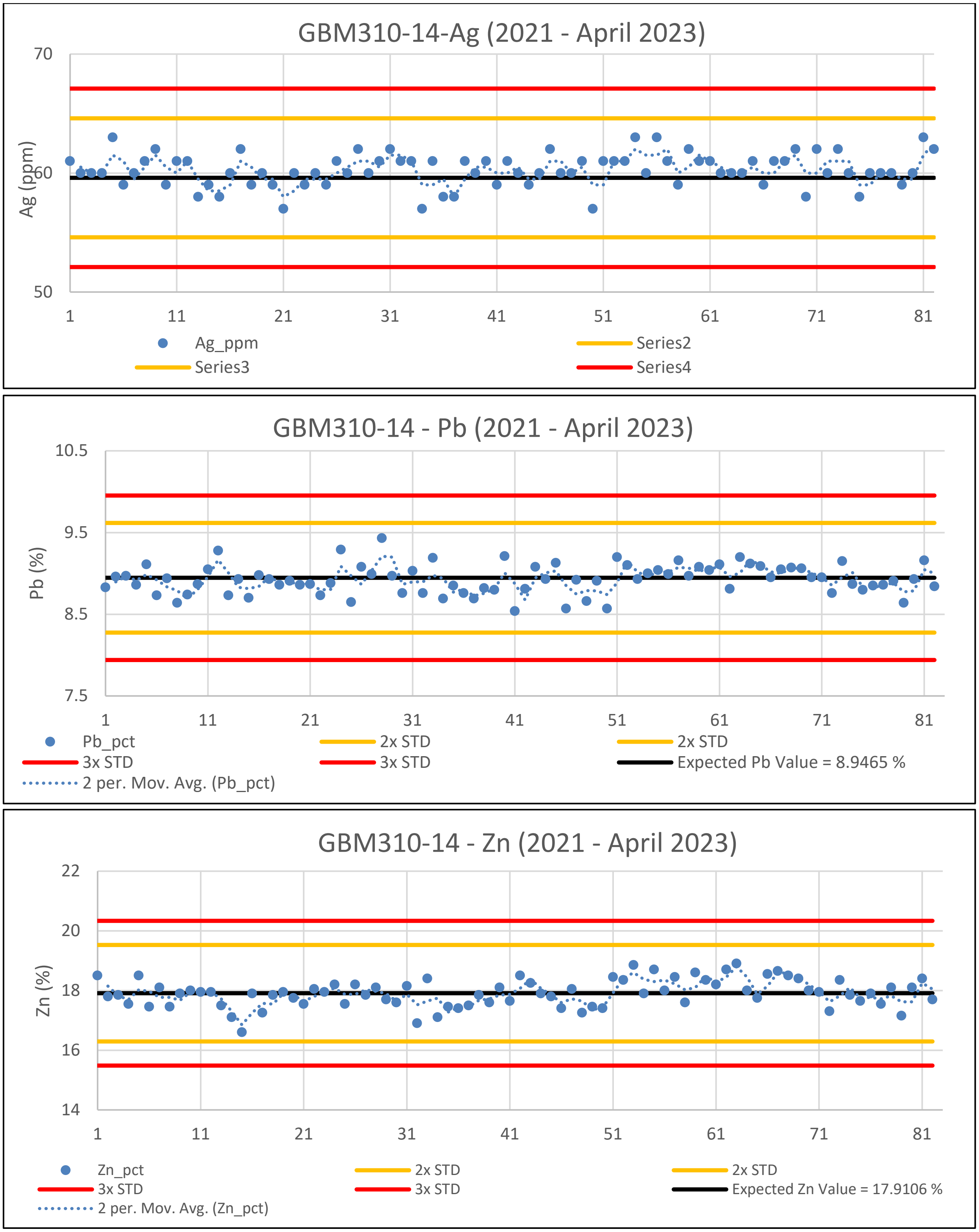
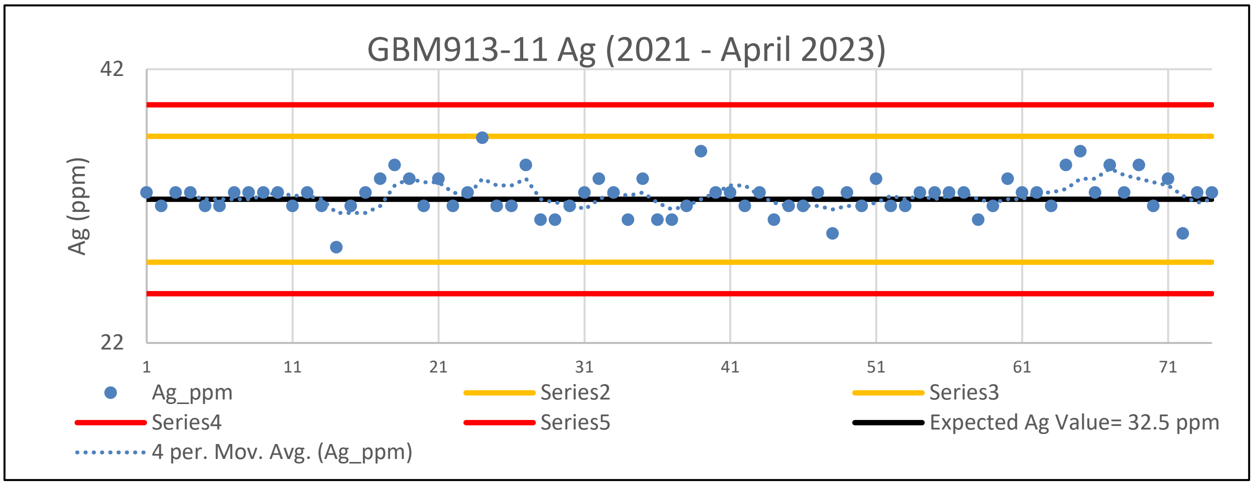
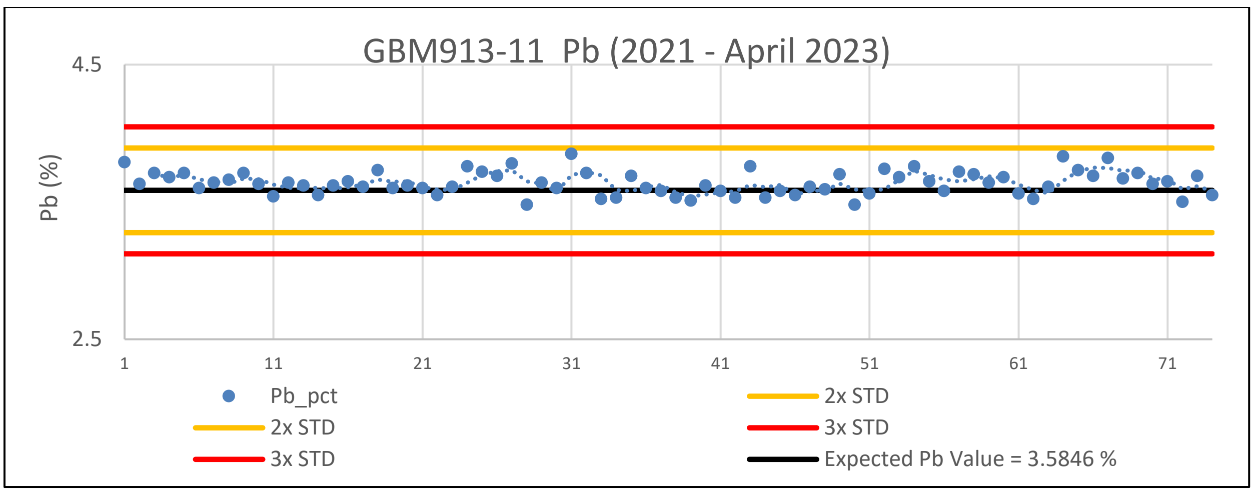


Figure 11-2: Ag, Pb, Zn GBM310-14 Charts, 2021 – April 2023





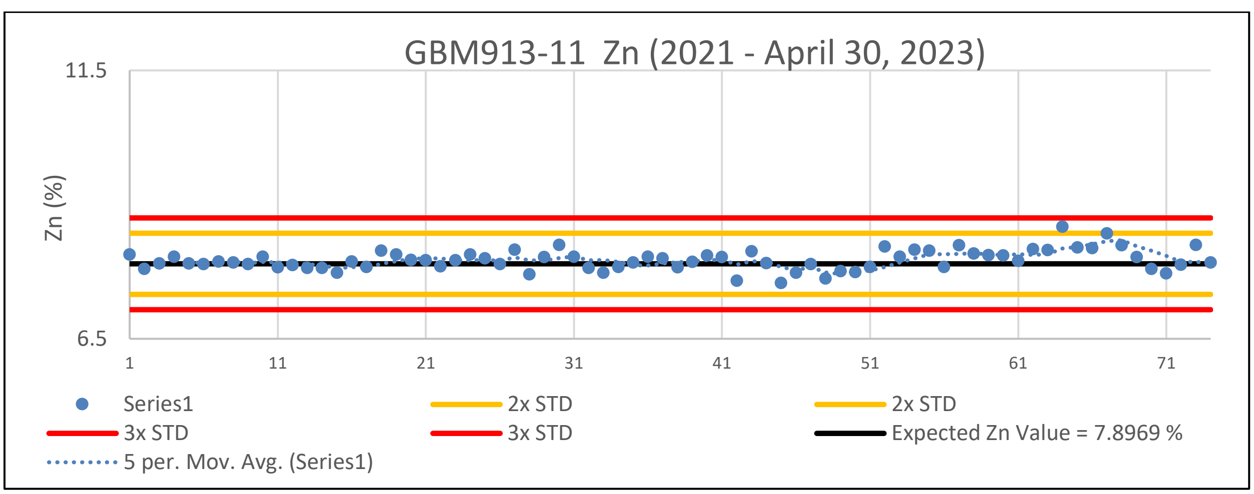
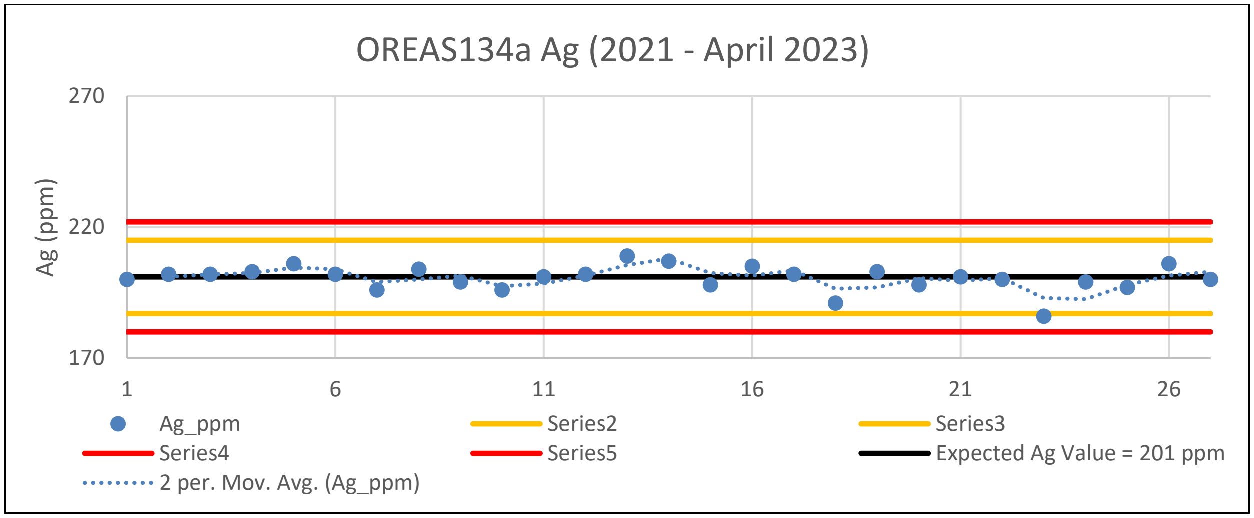
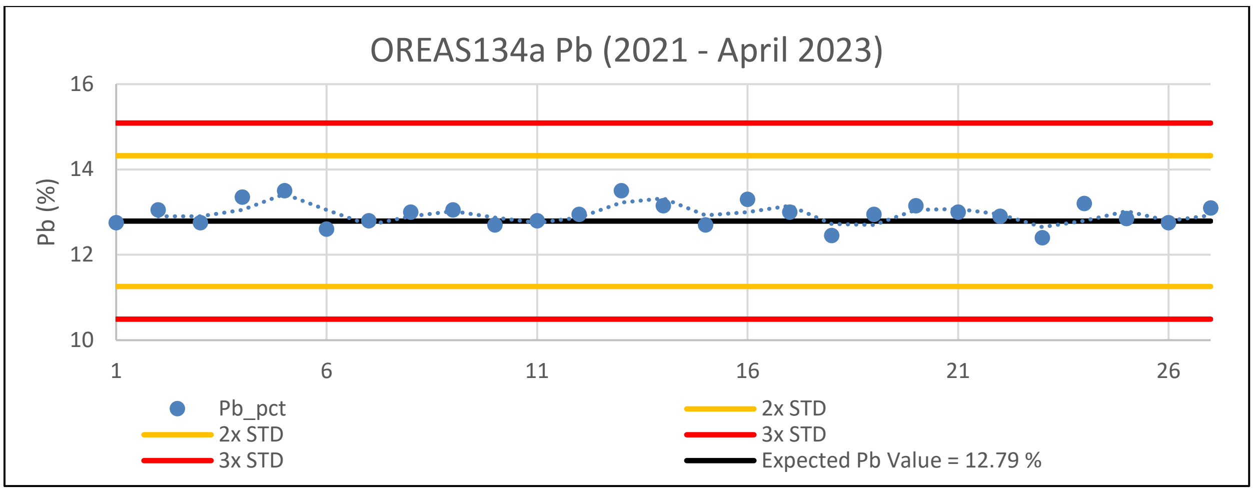


Figure 11-3: Ag, Pb, Zn GBM913-11 Charts, 2021 – April 2023





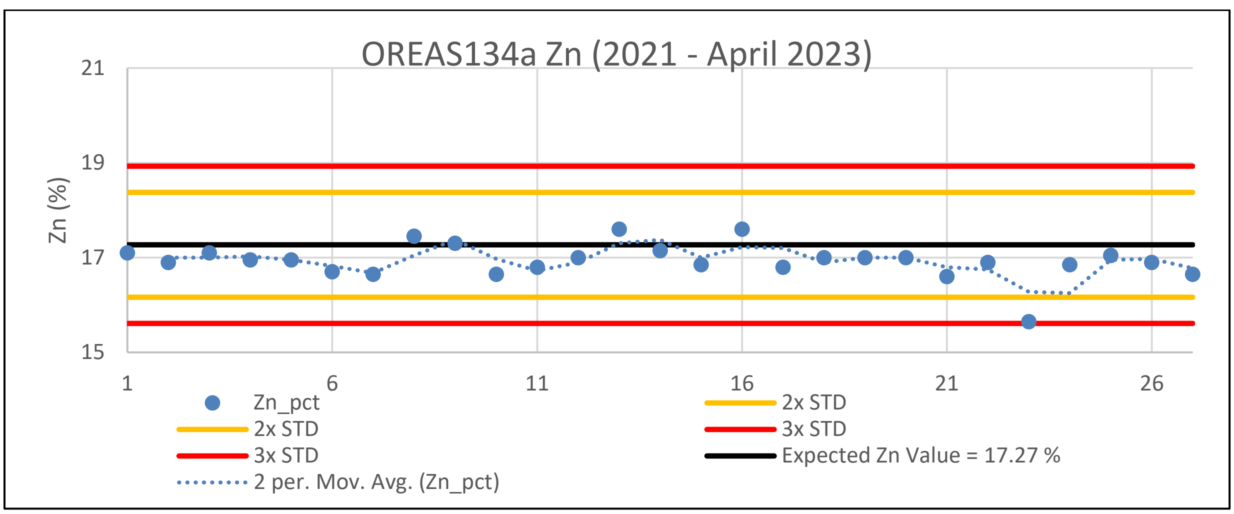


Figure 11-4: Ag, Pb, Zn OREAS134A Chart, 2021 – April 2023

Table 11-7 shows that the performance of the CRMs is acceptable with a very low proportion of failures. The failures related to Oreas137 and GBM911-11 occurred predominantly in the 2021 – 2022 campaign. All failed CRM batches were re-run and subsequently passed. No CRM failures were recorded for the period 2021 – April 2023.

Table 11-7: Summary of CRM Failure Percentage for 2021-April 2023

Standard ID	Au	Ag	Pb	Zn
	% fail	% fail	% fail	% fail
G317-2	0	-	-	-
G317-4	0	-	-	-
G912-4	0	-	-	-
G915-4	0	-	-	-
G915-6	0	-	-	-
G318-10	0	-	-	-
GBM310-14	-	0	0	0
GBM911-11	-	1	0	0
GBM913-11	-	0	0	0
OREAS 133a	-	0	0	0
OREAS 134a	-	0	0	0
Oreas 137	-	0	0	2
Oreas 139	-	0	0	0
OREAS 134b	-	0	0	0

11.3.3 Blank samples

Blank samples monitor for contamination during the sample preparation and assay processes. A total of 928 blank samples were submitted for Au, Ag, Pb, and Zn in 2021 – April 2023. Figure 11-5 shows the results of the blank samples for Au, Ag, Pb, and Zn, respectively. No warnings or failures were identified in the blank samples.

Figure 11-5: Au, Ag, Pb, Zn Blank Performance by Metal for 2021 - April 2023

11.3.4 Duplicate samples

Eldorado implemented a program that monitored data from regularly submitted coarse reject duplicates and pulp duplicates. Coarse, uncrushed duplicate samples monitor sampling variance, including that arising from crushing, analytical variance, and geological variance. The pulp duplicates monitor the assaying procedure. Eldorado's threshold for acceptable coarse duplicate results is greater than 90% of samples with less than a 20% relative paired difference (RPD). For pulp duplicate samples, the RPD threshold is reduced to 10%. Table 11-8 summarizes the gold duplicate RPD data for 2021 – April 2023, and

Table 11-8: Summary of Gold Duplicate Sample Results 2021 – April 2023

Year	2021	2022	Apr-23
Pulp sample pairs (Pairs > 15xLDL)	161 (159)	164 (161)	69 (68)
Pulp sample pairs < 10% RPD	89%	89%	91%
Bias (%)	-0.0128	-0.01485	-0.0032
Coarse sample pairs (Pairs > 15xLDL)	161	164 (161)	40 (39)
Coarse sample pairs < 20% RPD	96%	96%	95%
Bias (%)	-0.03295	0.0152	-0.017

Table 11-9 summarizes the base metal duplicate RPD data over the same duration.

Table 11-9: Summary of Base Metal Duplicate Sample Results 2021 – April 2023

Metal		2021	2022	Apr-23
Ag	Pulp sample pairs (Pairs > 15xLDL)	161 (160)	164 (157)	69 (68)
	Pulp sample pairs < 10% RPD	88%	85%	86%
	Bias (%)	-0.0036	0.0072	1.4584
	Coarse sample pairs (Pairs > 15xLDL)	161 (156)	164 (137)	40 (36)
	Coarse sample pairs < 20% RPD	85%	92%	95%
	Bias (%)	-0.0328	0.0172	0.0207
Pb	Pulp sample pairs (Pairs > 15xLDL)	161 (161)	164 (164)	69 (68)
	Pulp sample pairs < 10% RPD	95%	96%	92%
	Bias (%)	0.0059	0.0115	0.0972
	Coarse sample pairs (Pairs > 15xLDL)	161 (160)	164 (163)	40 (39)
	Coarse sample pairs < 20% RPD	93%	97%	95%
	Bias (%)	-0.0429	0.0014	-0.0065
Zn	Pulp sample pairs (Pairs > 15xLDL)	161 (160)	164 (163)	69 (68)
	Pulp sample pairs < 10% RPD	96%	95%	100%
	Bias (%)	0.0001	0.021	0.0623

Metal		2021	2022	Apr-23
	Coarse sample pairs (Pairs > 15xLDL)	161 (160)	164 (163)	40 (40)
	Coarse sample pairs < 20% RPD	94%	95%	92.00%
	Bias (%)	0.0038	0.0118	-0.0086

The duplicate data for Olympias reproduce well with very low bias between the original and duplicate values. Pulp duplicates for gold fall just below the 90% sample threshold, however the results are considered reasonable. The gold coarse and pulp duplicate RPD plots and the Zn coarse and pulp duplicate RPD plots are shown in Figure 11-6 to Figure 11-9.

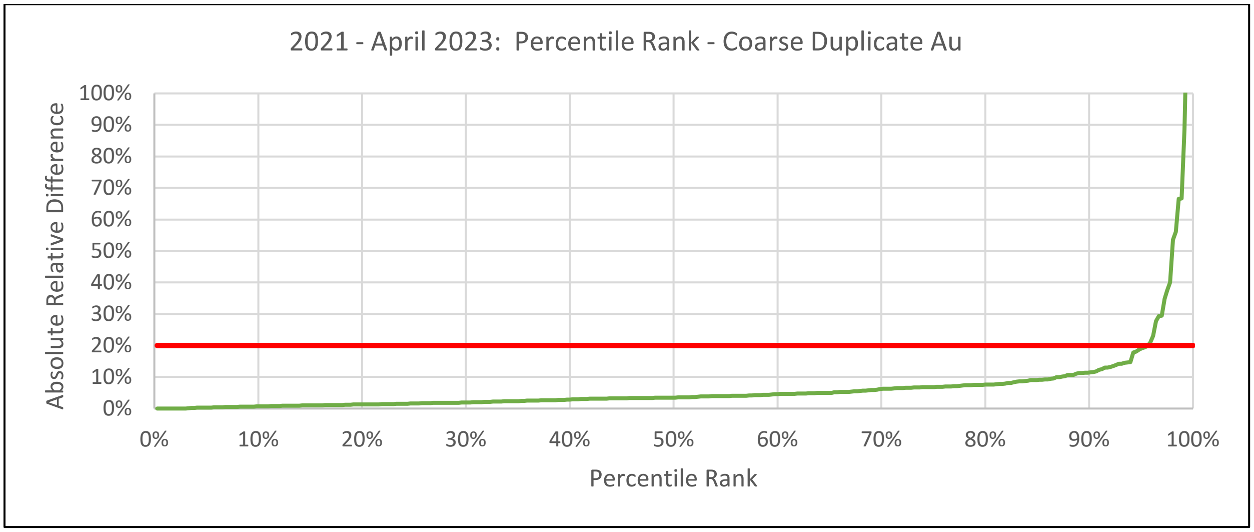


Figure 11-6: RPD Plot for Coarse Duplicates Au 2021 – April 2023

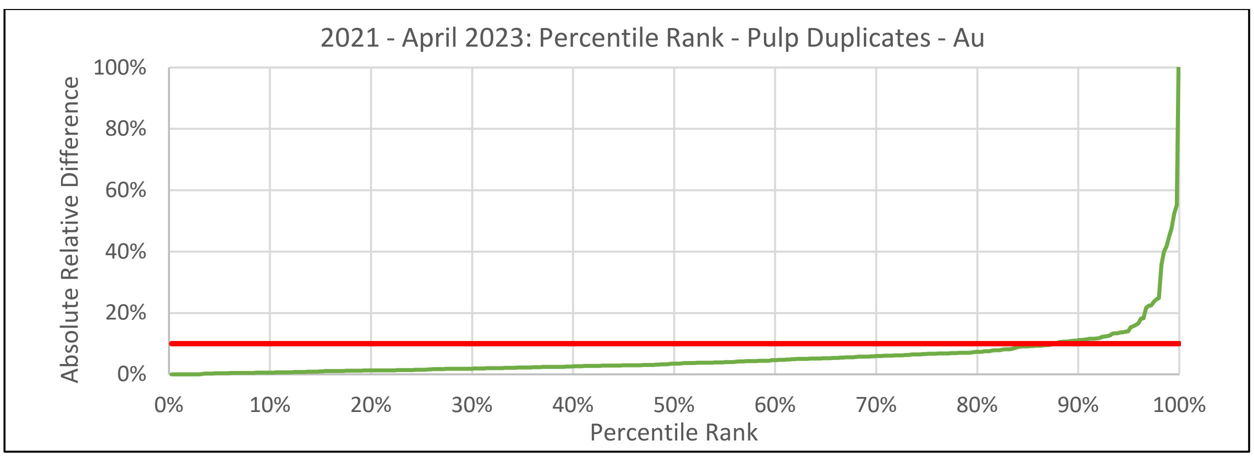


Figure 11-7: RPD Plot for Pulp Duplicates Au, 2021 – April 2023

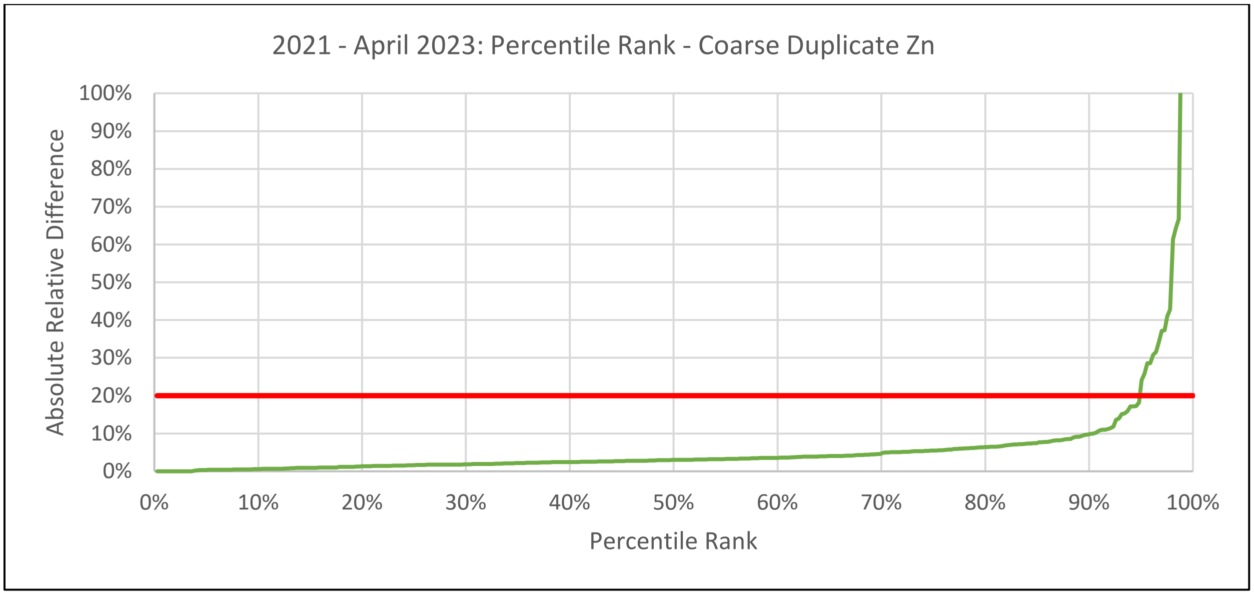


Figure 11-8: RPD Plot for Coarse Duplicates Zn, 2021 – April 2023

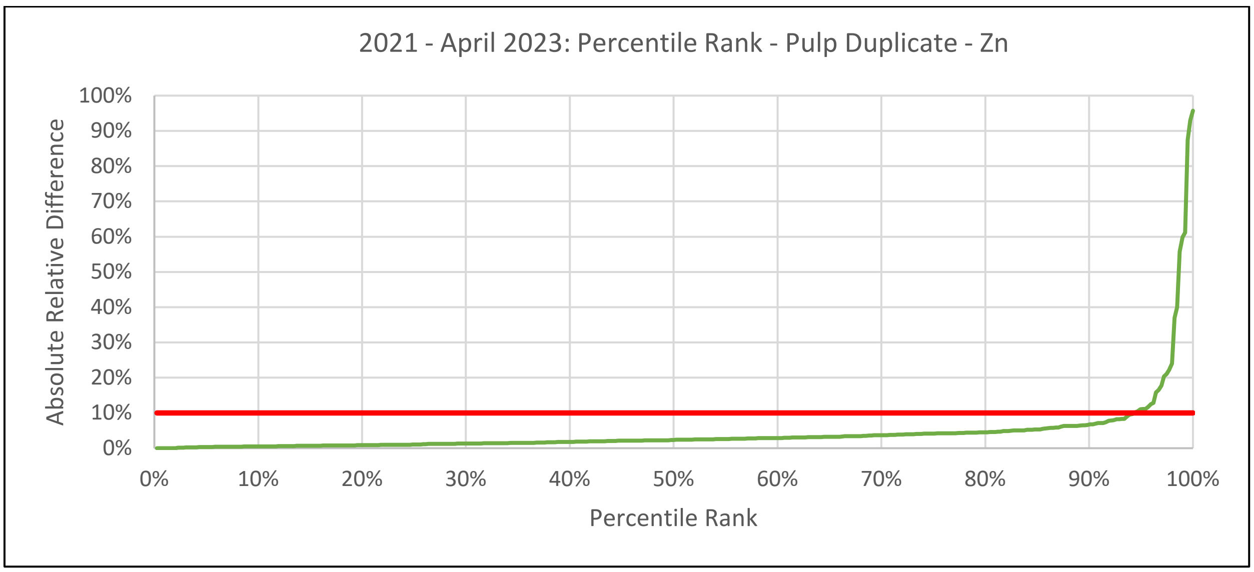


Figure 11-9: RPD Plot for Pulp Duplicates Zn, 2021 – April 2023

11.4 CONCLUDING STATEMENT

In the opinion of the QP, the sampling, sample preparation, security, and analytical procedures, as demonstrated by the QA/QC results, show that the Olympias mine's assay database is adequate for Mineral Resource estimation.

SECTION • 12 DATA VERIFICATION

12.1 DRILL DATA HANDLING AND SECURITY

Data verification was carried out by the QPs, and comprised the following:

- Review of available data.
- Review of QA/QC protocols and QA/QC performance.
- Regular discussions and interviews with Eldorado personnel regarding data collection and database compilation.
- Frequent site visits to the Property.
- Cross checking of assays in the Eldorado sample database with original laboratory certificates.
- Reconciliation of production to the block model estimates.
- The QPs considers that these regular reviews adequately assess the Olympias database.

12.1.1 Core Logging Data

Core logging is data that is captured directly into a digital interface and stored in an acQuire™ database. Built-in checks in this system contribute to data integrity by:

- Requiring geologists to choose geological codes from pick lists.
- Preventing overlapping intervals and intervals that extend beyond the maximum depth of the drillhole.
- Minimizing data handling errors by eliminating the need for manual manipulation of data.

12.1.2 Analytical Data

All assay data are imported into the Olympias mine's database. The data entry system has checks in place that prevent such common errors as overlapping sample intervals, sample intervals that extend beyond the maximum length of the hole, etc. Once data is received from the lab, the following steps are taken to ensure that the data provided to end-users (geologists, resource modelers) are complete and error-free:

- A "quarantine" system is in place to hold information until validated and checked.
- Release can only be made by the database administrator.
- Assay data are imported directly from the laboratory's csv file.
- Drilling data such as collar surveys, down hole surveys, assays and logged lithologies are routinely cross checked against original source files.
- Discrepancies are rare but when observed, immediately corrected.

As a result of these checks and balances, the data supporting the Olympias resource work are sufficiently free of error and adequate for resource estimation.

12.1.3 Database Checks

The QP conducted checks on a subset of original laboratory assay certificates against the estimation database. Eldorado has been overseeing operations at the site since 2014, with a reassessment of historic drill core in 2013.

As of April 2023, when the database closed for this model update, there were a total of 45,052 records sent for analysis by Eldorado. Among these, 5,732 were standards and blanks, constituting 12.7% of the total, and 3,009 were duplicate records, accounting for 6.7%.

The results of these checks affirm that the data supporting the Olympias resource work are sufficiently free of errors and deemed adequate for resource estimation.

12.1.4 Model to Mill Reconciliation

A crucial performance metric in any operational mine is the reconciliation of the block model with the final mill production figures, adjusted for stockpiles as needed.

On-site reconciliation studies are conducted quarterly and independently verified by the QP. A thorough comparison is made between the depleted block model and the mill month-end figures. An adjustment for stockpiles is applied, and the calculation of mine-delivered tonnage takes into consideration dilution from various sources.

For Olympias, dilution is computed based on the difference between the mineralized wireframe and the as-built survey of the mined stope. Subsequently, contributions from paste fill and waste to the ore stream are determined.

The initial period, from April 2017 to June 2018, tracked the commencement of production. Starting in 2019, data represents the first year of regular quarterly reconciliation studies. Table 12-1 provides a summary of these results on a yearly basis.

Table 12-1: Olympias Model Reconciliation

Period		Tonnes	Au g/t	Ag g/t	Pb%	Zn%	Au oz	Ag oz	Pb tonnes	Zn tonnes
April 2017 - June 2018	Mined	313,000	7.76	78	2.4	3.5	78,100	784,900	7,500	11,000
	Mill	312,000	7.83	83	2.7	3.7	78,500	832,600	8,400	11,500
	Mill / Mined	100%	101%	106%	113%	106%	101%	106%	112%	105%
2019	Mined	285,000	7.78	89	2.8	4.1	71,300	813,600	7,900	11,700
	Mill	288,000	7.30	92	2.8	3.7	67,700	854,600	8,200	11,100
	Mill / Mined	101%	94%	104%	102%	94%	95%	105%	103%	95%
2020	Mined	410,507	7.43	92	2.9	3.6	98,031	1,216,408	11,972	14,603
	Mill	415,049	7.42	93	2.9	3.5	99,080	1,241,436	11,861	14,728

Period		Tonnes	Au g/t	Ag g/t	Pb%	Zn%	Au oz	Ag oz	Pb tonnes	Zn tonnes
	Mill / mined	101%	100%	101%	98%	100%	101%	102%	99%	101%
2021	Mined	362,070	7.71	96	3.0	3.8	89,696	1,121,046	11,026	13,723
	Mill	357,294	8.04	105	3.2	4.5	92,391	1.201.860	11,434	15,966
	Mill / mined	99%	104%	109%	105%	118%	103%	107%	104%	116%
2022	Mined	410,686	7.73	100	3.2	3.9	102,109	1,319,427	13,042	15,970
	Mill	388,717	8.07	106	3.3	3.9	100,851	1,326,482	12,810	15,050
	Mill / mined	95%	104%	106%	104%	100%	99%	101%	98%	94%
2023	Mined	457,008	7.74	121	3.9	4.3	113,752	1,777,558	17,733	19,597
	Mill	454,567	8.43	133	4.2	4.7	123,190	1,940,166	19,093	21,553
	Mill / mined	99%	109%	110%	108%	111%	108%	109%	108%	110%

The reconciliation is detailed and thorough. It is currently providing a quarterly snapshot and demonstrating that the block model, and thus Mineral Resources, are valid and robust. This validates the data underpinning the model and is, by association, a good verification of the work done.

12.1.5 Concluding Statement

The data collection by Eldorado is done in a diligent fashion. Validations have been thorough on programs conducted since 2017. There have been no limitations or failure to conduct data verification. The data transfer to the database is by a mix of electronic and manual means, with many internal checks. The production reconciliation that is based on the data is good. In QP's opinion, the data are adequate and verified for the purposes of the Technical Report.

12.2 DATA VERIFICATION BY QUALIFIED PERSONS

12.2.1 Sean McKinley, P.Geo.

Mr. McKinley is an employee of Eldorado Gold and is based in their Vancouver Corporate Office in the role of Manager, Geology & Advanced Projects. He has made frequent visits to the site between 2013 and 2023, the most recent being on Sept. 12, 2023.

While on site, Mr. McKinley usually undertakes the following tasks as part of his verification process:

- Visits drill sites both on surface and underground to verify drilling procedures and core handling,
- Visits the core shack on site to monitor core logging procedures, and
- Discusses geological features observed in drillcores with site geologists.

While in the office, Mr. McKinley completes the following data verification tasks:

- Examines drill collar locations in 3D to assess for spatial errors or offsets away from roads, drill platforms or underground workings,
- Examines drillhole traces in 3D to visually assess possible spurious downhole surveys (e.g. "bends" in drillholes, excessive deviations). Drillholes are not used in any models until the source of such errors are determined and remedied, and
- Examines 3D geological model elements to ensure that they honor the underlying raw data and that they adhere to our understanding of the property geology and structure.

By using these procedures, it is the opinion of the QP that all geological models and their source data are of a high quality and are suitable for use in a mineral resource estimation.

12.2.2 David Sutherland, P.Eng.

Mr. David Sutherland, an employee based at Eldorado Gold's Vancouver Corporate Office, holds the role of Project Manager. With site visits starting in 2015, including his latest visit on September 21st, 2023, Mr. Sutherland reviewed the historic data, consulted with internal experts, and toured the site to assess the status of the infrastructure and recently completed projects. Based on these verifications, it is the opinion of the QP that information and data used to support the technical report at a feasibility level are valid and support the continued operation of the Olympias project.

12.2.3 Victor Vdovin, P.Eng.

Mr. Victor Vdovin, an employee based at Hellas Gold's Kassandra Complex, holds the role of Head of Technical Services for Kassandra. Mr. Vdovin works at the Olympias and Skouries sites and has performed a number of reviews in support of Mineral Reserves that included: underground design parameters (stope optimizer inputs), production scheduling assumptions (productivity rates, mine sequencing), unit cost summary and cutoff value calculation, NSR formulation and application in the resource block model, and re-interrogation of solids with block model for checking material quantities. As a result of the data verification, Mr. Vdovin considers that the Mineral Reserves are supported, and the mine plan is achievable.

12.2.4 Ertan Uludag, P.Geo.

Mr. Ertan Uludag, an employee based at Eldorado Gold's Vancouver Corporate Office, holds the role of Manager, Resource Geology. With frequent visits to the site since 2015, including his latest visit from June 12th to 16th, 2023, Mr. Uludag conducts on-site tasks involving the verification of drilling procedures, close monitoring of core logging, sampling, and collaborative discussions with site geologists. During model updates, Mr. Uludag examines drill collar locations and drillhole traces in 3D, ensuring spatial accuracy and identifying anomalies before incorporating them into models. Additionally, he consistently reviews quality assurance/quality control (QA/QC) data and model reconciliation at quarterly intervals, showcasing a commitment to maintaining accuracy and quality in resource geology management. He confirms that no limitations were encountered during the verification process, and the verification procedures were conducted without any constraints or failures. These verifications and opinions expressed in the report pertain specifically to sections 11, 12, and 14. Additionally, he consistently reviews quality assurance/quality control (QA/QC) data and model reconciliation at quarterly intervals, ensuring maintenance of accuracy and quality in resource geology management.

12.2.5 Peter Lind, P.Eng.

Mr. Peter Lind, an employee based at Eldorado Gold's Vancouver Corporate Office, holds the role of Vice President, Technical Services. With frequent visits to the site since 2021, including his latest visit from September 19th to 21st, 2023, Mr. Lind reviewed processing production details, grinding and flotation surveys, including assay data. Additionally, he reviewed processing costs and sustaining capital costs to support the calculation of cut-off values, and growth capital costs associated with the milling capacity expansion. Based on these verifications, it is the opinion of the QP that the Olympias process plant will be able to continue successfully processing the ores produced from the Olympias mine.

SECTION • 13 MINERAL PROCESSING AND METALLURGICAL TESTING

13.1 HISTORICAL METALLURGICAL TESTING

A number of extensive metallurgical programs were commissioned by previous operators. The testwork confirmed that the ore responds well to flotation, with high recoveries. Other more recent metallurgical testwork and mineralogical investigations have been carried out on additional samples from the Olympias deposit ahead of the re-start of operations in 2017. These are summarized in the following sections.

13.2 MASTER COMPOSITE TESTWORK, 2015

In 2015, SGS Lakefield conducted a metallurgical test program on two samples originating from the Olympias Mine.

The two samples for this test program were originally denoted as Fresh Ore and Old Ore from the Upper West Zone of the Olympias Mine. The objectives of the program were to define the ore characteristics and confirm the process flowsheet for restarting the mining operation. The scope of the testwork program included head characterization, grindability, flotation, solid-liquid separation, and tailings characterization. A key focus of the test program was to evaluate smelter penalty elements, arsenic and antimony, in the lead and zinc concentrates.

13.2.1 Sample Characterization

The head assays of the two ore samples are summarized in Table 13-1.

As expected, the samples contained a significant amount of lead, zinc, and sulfur.

Table 13-1: Head Assays, SGS 2015 Testwork

Sample ID	Pb (%)	Zn (%)	Cu (%)	Fe (%)	Cd (%)	Sb (%)	Au g/t	Ag g/t	As %	S^{2-} %	S_T %
Old Ore	10.2	8.43	0.39	24.5	0.047	0.40	12.4	277	5.9	28.5	29.8
Fresh Ore	5.04	4.49	0.11	27.7	0.020	0.10	22.8	159	10.5	28.2	29.2

13.2.1.1 Mineralogical examination

The samples were stage-pulverized to 80% passing 120 µm, and screened into five size fractions (+106 µm, -106/+75 µm, -75/+45 µm, -45/+10 µm, and -10 µm) and submitted for mineralogical examination using Quantitative Evaluation of Minerals by Scanning Electron Microscopy (QEMSCAN).

Mineralogical modal analyses for the two samples are summarized in Table 13-2 and Table 13-3, respectively. As evident from the head assays, each sample is dominated by sulphide minerals, including pyrite, arsenopyrite, galena, and sphalerite. Calcite is present in low quantities in the samples, and all remaining minerals are present in contents less than 1%.

Table 13-2: Mineral Modals – Fresh Ore Sample

Sample	Fresh Ore										
Fraction	**Combined**	**+106 µm**		**-106/+75 µm**		**-75/+45 µm**		**-45/+10 µm**		**-10 µm**	
Mass size distribution	100	27.5		18.1		21.2		21.8		11.4	
Mineral mass (%)	**Net**	**Net**	**Fraction**	**Net**	**Fraction**	**Net**	**Fraction**	**Net**	**Fraction**	**Net**	**Fraction**
Pyrite / Marcasite	37.3	13.9	50.6	6.29	34.7	7.01	33.0	6.62	30.4	3.48	30.6
Arsenopyrite	23.1	5.47	19.9	4.97	27.4	5.61	26.4	4.75	21.8	2.32	20.4
Sphalerite	6.94	1.06	3.87	1.28	7.05	1.65	7.78	1.94	8.91	1.00	8.82
Galena	6.29	0.76	2.75	0.77	4.26	1.35	6.34	2.16	9.92	1.25	11.0
Chalcopyrite	0.32	0.06	0.22	0.04	0.21	0.05	0.24	0.07	0.34	0.09	0.82
Other-Cu-Sulphides	0.02	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.02	0.00	0.04
Boulangerite	0.11	0.02	0.07	0.02	0.09	0.02	0.11	0.02	0.09	0.03	0.30
Fe-Oxides	0.09	0.01	0.02	0.01	0.04	0.01	0.04	0.02	0.10	0.04	0.38
Quartz	23.3	5.89	21.4	4.44	24.5	5.12	24.1	5.39	24.8	2.50	22.0
Plagioclase / K-Feldspar	0.16	0.03	0.12	0.02	0.12	0.03	0.16	0.04	0.21	0.02	0.21
Micas / Clays	0.68	0.10	0.37	0.06	0.35	0.11	0.52	0.20	0.94	0.20	1.78
Other Silicates	0.06	0.01	0.05	0.01	0.06	0.01	0.05	0.02	0.08	0.01	0.09
Calcite	1.17	0.13	0.47	0.18	0.98	0.21	1.01	0.35	1.59	0.30	2.64
Dolomite	0.30	0.02	0.06	0.03	0.19	0.04	0.17	0.13	0.58	0.09	0.75

Table 13-3: Mineral Modals – Old Ore Sample

Sample	Old Ore										
Fraction	**Combined**	**+106 µm**		**-106/+75 µm**		**-75/+45 µm**		**-45/+10 um**		**-10 µm**	
Mass size distribution	100	28.8		15.8		19.6		22.1		13.8	
Mineral mass (%)	**Net**	**Net**	**Fraction**	**Net**	**Fraction**	**Net**	**Fraction**	**Net**	**Fraction**	**Net**	**Fraction**
Pyrite / Marcasite	36.3	14.7	51.2	5.93	37.6	6.50	33.2	6.23	28.1	2.87	20.9
Arsenopyrite	12.5	3.50	12.2	1.92	12.1	2.63	13.4	2.69	12.1	1.79	13.0
Sphalerite	13.9	2.54	8.83	2.43	15.4	3.29	16.8	3.69	16.6	1.97	14.3
Galena	12.8	1.53	5.32	1.75	11.1	2.58	13.2	4.06	18.3	2.86	20.8
Chalcopyrite	0.53	0.07	0.26	0.06	0.38	0.07	0.34	0.12	0.55	0.21	1.51
Tetrahedrite / tennantite	0.13	0.00	0.02	0.02	0.14	0.04	0.19	0.05	0.22	0.01	0.11
Other-Cu-Sulphides	0.12	0.00	0.01	0.01	0.07	0.02	0.11	0.04	0.20	0.04	0.31
Boulangerite	0.34	0.05	0.19	0.06	0.36	0.06	0.31	0.09	0.41	0.08	0.58
Fe-Oxides	0.19	0.07	0.23	0.01	0.06	0.01	0.07	0.02	0.09	0.08	0.55
Quartz	16.9	5.38	18.7	2.79	17.7	3.22	16.5	3.41	15.4	2.08	15.1
Plagioclase / K-Feldspar	0.23	0.04	0.15	0.03	0.19	0.04	0.19	0.04	0.19	0.08	0.55
Micas / Clays	0.72	0.10	0.33	0.07	0.44	0.11	0.56	0.21	0.95	0.24	1.71
Other Silicates	0.09	0.02	0.08	0.01	0.06	0.01	0.05	0.02	0.07	0.03	0.22
Calcite	4.32	0.59	2.06	0.61	3.87	0.86	4.38	1.25	5.66	1.01	7.31
Dolomite	0.81	0.11	0.37	0.07	0.47	0.11	0.56	0.19	0.87	0.33	2.42

13.2.1.2 Mineral Liberation and Association

The main minerals that are recoverable by flotation are galena, sphalerite, pyrite, and arsenopyrite, to produce lead, zinc, and gold sulphide concentrates. The liberations of these minerals are summarized in the following sections.

Galena Liberation

The liberation of galena (PbS) in the Fresh Ore and Old Ore samples at grind size of 80% passing 120 µm is summarized in Table 13-4 and Table 13-5, respectively.

Table 13-4: Galena Liberation – Fresh Ore Sample (SGS)

Description	Combined	+106µm	-106/+75µm	-75/+45µm	-45/+10µm	-10µm
Locked Galena	4.31	13.7	8.53	4.19	1.65	0.76
Sub Midds Galena	2.87	9.04	4.52	2.71	1.42	0.80
Midds Galena	2.35	5.03	2.55	3.38	1.27	1.35
Lib Galena	2.07	0.00	3.47	2.91	1.73	2.15
Free Galena	88.4	72.2	80.9	86.8	93.9	94.9

Table 13-5: Galena Liberation – Old Ore Sample (SGS)

Description	Combined	+106µm	-106/+75µm	-75/+45µm	-45/+10µm	-10µm
Locked Galena	2.67	10.8	3.06	2.29	1.26	0.48
Sub Midds Galena	1.54	1.63	2.12	1.94	1.36	1.03
Midds Galena	2.10	4.13	1.89	1.33	1.87	2.16
Lib Galena	3.99	0.00	5.00	4.76	4.69	3.81
Free Galena	89.7	83.5	87.9	89.7	90.8	92.5

As the data indicates, both samples are well liberated, with the amount of free and liberated grains being 90.4% and 93.7% for the Fresh Ore and Old Ore samples, respectively. In both cases, the proportion of locked and sub-middling particles reduces considerably in the finer fractions, and this suggests that regrinding would be required to attain high concentrate grades.

For the Fresh Ore sample, galena is mainly associated with pyrite (4.48%) and arsenopyrite (3.34%), with smaller amounts associated with sphalerite (0.90%) and complex particles (0.49%). Galena contained in the Old Ore sample is mainly associated with pyrite (3.00%), but significantly less so with arsenopyrite (0.60%), sphalerite (1.20%), and complex particles (0.62%).

Sphalerite Liberation

The liberation of sphalerite at grind size of 80% passing 120 µm is summarized in Table 13-6 and Table 13-7 for the Fresh Ore and Old Ore samples, respectively.

Table 13-6: Sphalerite Liberation – Fresh Ore Sample (SGS)

Description	Combined	+106µm	-106/+75µm	-75/+45µm	-45/+10µm	-10µm
Locked Sph	1.49	4.03	2.26	1.23	0.41	0.35
Sub Midds Sph	1.38	3.36	2.28	1.06	0.36	0.67
Midds Sph	1.37	2.65	2.02	0.86	0.85	1.02
Lib Sph	4.30	5.45	5.09	4.63	3.96	2.17
Free Sph	91.5	84.5	88.3	92.2	94.4	95.8

Table 13-7: Sphalerite Liberation – Old Ore Sample (SGS)

Description	Combined	+106µm	-106/+75µm	-75/+45µm	-45/+10µm	-10µm
Locked Sph	1.10	3.28	1.03	0.69	0.39	0.37
Sub Midds Sph	1.16	2.68	1.69	0.52	0.56	0.77
Midds Sph	1.49	1.39	1.79	1.25	1.36	1.89
Lib Sph	4.31	3.84	4.65	4.32	4.86	3.45
Free Sph	91.9	88.8	90.8	93.2	92.8	93.5

The charts demonstrate that the degree of sphalerite liberation is higher than galena, with the content of free and liberated grains being 95.8% in the Fresh Ore sample and 96.2% in the Old Ore sample, respectively. The amount of locked and middling particles in the coarser size fractions indicates that regrinding would be required to attain high concentrate grades.

For the Fresh Ore and Old Ore samples, the amount of sphalerite associated with pyrite is 1.51% and 1.60%, respectively, with the association with other minerals being less than 1%.

Pyrite Liberation

The liberation of pyrite is summarized in Table 13-8 and Table 13-9 for the Fresh Ore and Old Ore samples, respectively. The liberation of pyrite is very good, with the proportions being 97% and 96% for the Fresh Ore and Old Ore samples, respectively. As the liberation is consistent across the size fractions, regrinding would not be required.

Table 13-8: Pyrite Liberation – Fresh Ore Sample (SGS)

Description	Combined	+106µm	-106/+75µm	-75/+45µm	-45/+10µm	-10µm
Locked Pyrite	0.57	0.56	0.83	0.69	0.38	0.29
Sub Midds Pyrite	0.50	0.34	0.82	0.67	0.36	0.47
Midds Pyrite	1.75	2.43	1.80	1.28	0.98	1.14
Lib Pyrite	4.52	5.28	6.04	3.82	3.30	2.46
Free Pyrite	92.7	91.4	90.5	93.5	95.0	95.4

Table 13-9: Pyrite Liberation – Old Ore Sample (SGS)

Description	Combined	+106µm	-106/+75µm	-75/+45µm	-45/+10µm	-10µm
Locked Pyrite	0.59	0.66	0.68	0.47	0.49	0.45
Sub Midds Pyrite	0.87	0.97	0.94	0.71	0.77	0.84
Midds Pyrite	2.29	2.87	2.30	1.46	1.78	2.23
Lib Pyrite	7.01	9.88	6.53	5.51	4.11	2.98
Free Pyrite	89.2	85.6	89.6	91.8	92.8	93.5

Arsenopyrite Liberation

The liberation of arsenopyrite is 96% and 92% in the Fresh Ore and Old Ore samples, respectively. The coarsest size fraction (+106 µm) has the lowest degree of liberation, but at 91% and 86% for the Fresh Ore and Old Ore samples, respectively, the liberation is nonetheless quite good.

Electron Microprobe Analysis

Electron microprobe analysis was conducted to determine element deportment in various minerals and mineral identification. The mineral assay determined by microprobe analysis is summarized in Table 13-10. An important objective of this work was to identify minerals that contain arsenic and antimony that can potentially report to the lead and zinc concentrates.

Table 13-10: Electron Microprobe Mineral Assay Summary

Mineral	Sample	%								
		S	As	Zn	Ag	Fe	Pb	Sb	Cu	Total
Pyrite	Fresh Ore	52.1	1.40	0.026	0.0043	46.2	0.0	0.0045	0.019	99.8
	Old Ore	52.3	1.22	0.047	0.0017	46.0	0.0	0.0020	0.010	99.5
Galena	Fresh Ore	13.4	0.010	0.046	0.18	0.072	85.9	0.27	0.0004	99.8
	Old Ore	13.3	0.019	0.057	0.13	0.067	85.4	0.27	0.0100	99.3
Arsenopyrite	Fresh Ore	22.4	41.6	0.021	0.006	35.7	0.0	0.042	0.0009	99.7
	Old Ore	22.4	41.6	0.110	0.004	35.7	0.0	0.069	0.0026	99.8
Sphalerite	Fresh Ore	33.5	0.0042	59.0	0.0098	6.97	0.0	0.0003	0.220	99.7
	Old Ore	33.6	0.0000	57.9	0.0060	8.43	0.0	0.0026	0.052	100.0
Boulangerite / Bournonite	Fresh Ore	18.2	0.24	0.42	0.0130	0.91	56.0	24.1	0.013	99.9
	Old Ore	18.9	0.44	0.13	0.0000	0.15	50.9	24.6	4.27	99.3
Tetrahedrite	Old Ore	25.1	1.01	3.66	1.16	3.76	0.0	27.4	37.2	99.3

The only mineral present that contains appreciable amounts of arsenic is arsenopyrite. Tetrahedrite and pyrite also contain a relatively high amount of arsenic at approximately 1%, but due to the likely small amount of these minerals being present in the concentrate, they are not expected to be problematic. For antimony, galena contains 0.27%. Other minerals containing antimony at significant levels are boulangerite, bournonite, and tetrahedrite. These antimony minerals would be expected to report to the lead concentrate and could cause high levels of antimony contamination.

13.2.2 Grindability Testwork

13.2.2.1 Unconfined Compressive Strength Test

One rock from each sample was used for Unconfined Compressive Strength (UCS) testing (Table 13-11). The compressive strength was measured at 83.5 MPa and 35.6 MPa for the Fresh Ore and Old Ore samples, respectively. Based on these data, the samples are considered soft or very soft.

Table 13-11: UCS Test Results

Sample	Length (cm)	Diameter (cm)	Compressive strength (MPa)	Specific gravity (t/m^3)
Fresh Ore	6.81	3.74	83.5	3.90
Old Ore	9.20	3.76	35.6	4.63

13.2.2.2 Bond Rod Mill Grindability Tests

The test results for Bond Rod Mill Grindability testing are summarized in Table 13-12.

Table 13-12: Bond Rod Mill Grindability Test Results

Sample name	Mesh of grind	Feed F_{80} (mm)	Product P_{80} (mm)	Work index (kWh/t)
Fresh Ore	14	11,294	832	6.8
Old Ore	14	9,320	872	6.7

The Bond Rod Mill grindability tests support a very soft classification of the two samples.

13.2.2.3 Bond Ball Mill Grindability Test

The Bond Ball Mill Grindability Test was conducted at two closing mesh grind sizes, 65 mesh and 80 mesh (212 µm and 180 µm), to attain a product size distribution within the grind target of between 120 µm to 150 µm. The test results are summarized in Table 13-13 .

Table 13-13: Bond Ball Mill Grindability Test Results

Sample name	Mesh of grind	Feed F_{80} (µm)	Product P_{80} (µm)	Work index (kWh/t)
Fresh Ore	65	2,357	168	8.0
	80	2,357	145	8.5
Old Ore	65	2,182	171	8.9
	80	2,182	148	9.2

As with the Bond Rod Mill Grindability tests, the Bond Ball Mill Grindability tests result in a very soft classification for the two Olympias samples.

13.2.2.4 Bond Abrasion Tests

The two samples were also submitted for the Bond Abrasion Index Test. Both samples were considered ‘medium abrasive’ with an abrasion index of 0.274 for the Fresh Ore sample and an abrasion index of 0.244 for the Old Ore sample.

13.2.3 Flotation Testwork

Sub-samples from both of the composite samples were subjected to flotation testwork, with the purpose of producing separate lead, zinc, and gold concentrates.

Testwork included initial flotation tests under conditions from past flotation testwork at primary grind of 80% passing 100 to 120 µm and isopropyl xanthate or Aerophine 3418A as a collector in all three circuits. A series of rougher and open-circuit cleaning tests; and a locked cycle test (LCT) were completed with the Fresh Ore sample. A total of 45 batch flotation tests were completed, using the Fresh Ore sample (40 tests) and the Old Ore sample (5 tests).

13.2.3.1 Fresh Ore sample

Lead Rougher Flotation

A variety of variables were evaluated including the following: collector type (Aerophine 3418A or SIPX) and dosage, $ZnSO_4$ dosage, sodium cyanide dosage, lime dosage, primary grind size, and rougher flotation residence time.

The primary grind size was generally in the order of 80% passing 110 to 158 µm. The effect of various parameters on lead recovery and selectivity against other metals was relatively small. Lead recovery ranged from 91.8% to 94.1%, with an average of 92.9%.

The following conditions provided the best results:

- 12 minutes of rougher flotation time.
- 750 g/t of lime and 50 g/t of NaCN added to the mill.
- pH maintained at 9.5.
- 35 g/t of Aerophine 3418A distributed to the first three rougher concentrates.

Lead Cleaner Flotation

Twenty-three tests were completed that involved lead cleaner flotation, with the purpose of reducing the amount of arsenic reporting to the final lead concentrate.

Based on the results from all rougher and open-circuit cleaner tests, it was concluded that entrainment is the main factor for arsenic reporting to the lead concentrate. Flotation of arsenopyrite associated with galena was also partially responsible. It was estimated that, for arsenic grade in the lead concentrate to reach 0.5%, arsenic head grade in the feed should be lower than 5% and the final concentrate lead grade should be above 80%. When the concentrate lead grade is less than 80%, arsenic content in the concentrate will increase accordingly.

Lead Concentrate Characterization

The size-by-size analysis was completed on two lead concentrate samples. One concentrate was high grade from the initial lead cleaning test, while the second sample was lower grade from the combined lead concentrate. Size-by-size analysis of lead concentrates is provided in Table 13-14.

Table 13-14: Lead Concentrate Size-by-Size Analysis

Size range	Wt. %	Assay %						Distribution %					
		Pb	Cu	Zn	Fe	As	S	Pb	Cu	Zn	Fe	As	S
+53 µm	10.9	36.6	0.38	4.88	15.3	7.80	20.9	6.9	14.1	14.9	17.7	16.2	12.8
38 ~ 53 µm	18.1	49.8	0.29	4.49	12.6	7.33	19.5	15.7	17.8	22.7	24.2	25.2	19.9
25 ~ 38 µm	15.2	55.7	0.25	4.21	10.9	6.52	18.4	14.7	12.9	17.9	17.6	18.9	15.8
14 ~ 25 µm	31.1	64.9	0.21	2.51	7.70	4.97	16.4	35.3	22.3	21.9	25.5	29.5	28.8
-14 µm	24.8	63.4	0.39	3.28	5.64	2.17	16.2	27.4	32.9	22.7	14.9	10.2	22.6
Head (Calc)	100	57.3	0.29	3.57	9.39	5.25	17.7	100	100	100	100	100	100
Head (Direct)	100	56.1	0.28	3.60	9.19	5.44	18.0	NA	NA	NA	NA	NA	NA

These data show that lead grade is lowest in the coarser size fractions, while arsenic grade is highest, indicating that liberation may be an issue. Mineralogical examination indicated that the above lead concentrate contained 65.4% galena, 14.1% arsenopyrite, 9.13% pyrite, 6.36% sphalerite, and 2.93% quartz. Arsenic is present as arsenopyrite, with a minor amount associated with pyrite.

The arsenopyrite is well liberated with 81% of arsenopyrite grains being greater than 90% liberated. Rejection of the liberated arsenopyrite should be possible, while further regrinding might be necessary to liberate the arsenopyrite associated with galena.

Zinc Rougher Flotation

Zinc flotation conditions evaluated included activation using copper sulfate, flotation using a weaker xanthate collector (SIPX) to limit recovery of pyrite and arsenopyrite, and high pH of 11.8. Similar to the lead rougher, a series of variables were investigated, including collector dosage, $CuSO_4{\cdot}5H2O$ (copper sulfate) dosage, slurry pH, and primary grind size.

Unlike the lead flotation, zinc flotation appeared to be more sensitive to flotation variables. Important variables were SIPX dosage, copper sulfate dosage, and lime dosage (pH control).

60 g/t SIPX was seen to be the best compromise between zinc recovery and selectivity. Lime dosage appeared to have limited impact on zinc recovery. However, the selectivity of zinc flotation over pyrite / arsenopyrite was improved considerably at the high lime dosage of 1,800 g/t. The higher dosage of 600 g/t of copper sulfate provided the greatest zinc recovery and selectivity compared to the lower copper sulfate dosages of 300 and 500 g/t.

Coarser grind sizes of 141 and 158 µm resulted in zinc recovery ranging from 81.9% to 84.5%. The zinc recovery increased to 88.6% at the finer grind size.

The following conditions provided the best results for zinc rougher flotation: lime dosage of 1,890 g/t (pH 11.8), copper sulfate dosage of 600 g/t, and SIPX dosage of 60 g/t.

It was found that using soda ash as opposed to lime in the primary grind avoided the formation of an extremely hydrophobic phase following $CuSO_4$ activation. The use of soda ash in the primary grind in two tests demonstrated that the requirement for copper sulfate could be significantly reduced.

Zinc Cleaner Flotation

The best zinc open-circuit cleaner flotation test achieved zinc recovery of 74.2% at concentrate grade of 55.9% zinc. The contents of arsenic and antimony in the zinc concentrate were low at 0.46% and 0.038%, respectively.

Pyrite and Arsenopyrite Flotation

Following the flotation of lead and zinc, the gold is recovered by flotation of remaining sulphide minerals into a bulk sulphide concentrate with a grade of 20 – 25 g/t Au. The main gold bearing minerals are pyrite and arsenopyrite. Flotation is carried out by reducing slurry pH to 6 with sulfuric acid, accompanied by a large dosage of SIPX.

The highest recovery of gold was 90.6%. A single-stage cleaning test resulted in very little upgrading for gold grade from 34.0 to 34.8 g/t. The cleaner stage recovery was quite high at 99.7%.

The preferred conditions of pyrite and arsenopyrite flotation were pH 6.0, 250 g/t SIPX, and MIBC as frother.

Locked Cycle Flotation Test

A locked cycle test was completed with the Fresh Ore sample. 1 kg test charges were used. Target and actual grind sizes are provided in Table 13-15.

Table 13-15: LCT-1 Grind Size Summary

Sample	Target P_{80}, µm	Actual P_{80}, µm
Lead Concentrate	25	26
Zinc Concentrate	25	26
Gold Pyrite / Arsenopyrite Concentrate	109	102
Final Tail	103	106

The flowsheet is summarized in Figure 13-1 and the conditions are summarized in Table 13-16.

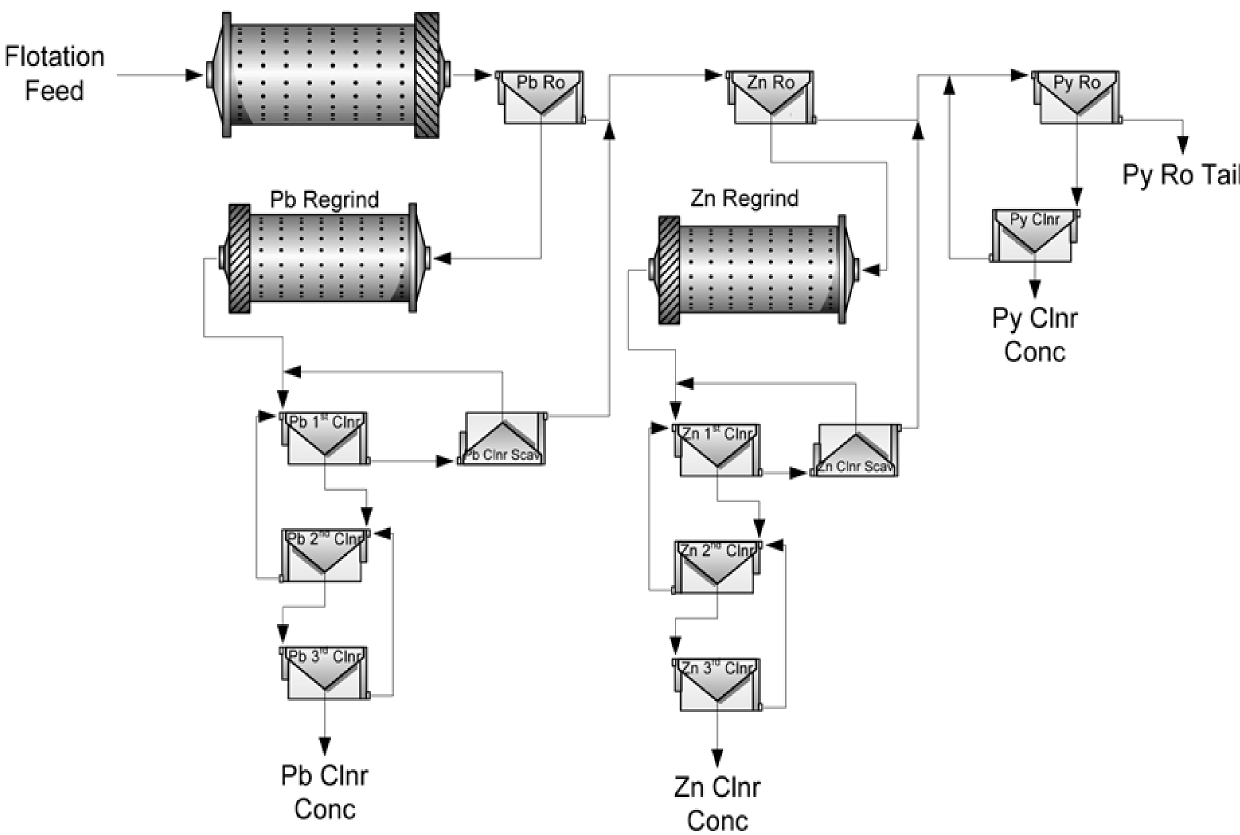


Figure 13-1: Locked Cycle Test Flotation Flowsheet (SGS)

Table 13-16: LCT-1 Flotation Conditions

Stage	Reagents added, g/t							Time, minute			pH
	Lime	NaCN	3418A	MIBC	$CuSO_4$	H_2SO_4	SIPX	Grind	Cond.	Froth	
Lead Rougher	900	50	35	20				7.5	4	6.5	9.5
Lead Regrind	50	20						3			8.2
Lead Cleaner	100	30	5	35					4	7	9.5
Zinc Rougher	1,560			20	600		60		3	6.5	11.8
Zinc Regrind	250				50			3			10.9
Zinc Cleaner	980			25			5		4	7.5	11.8
Py / AsPy Rougher				30		2990	250		3	6.5	6.0
Py / AsPy Cleaner				10		150			2	3.5	6.0

The locked cycle test demonstrated reasonably good stability overall.

The metallurgical performance for the Fresh Ore sample from the locked cycle test is summarized in Table 13-17.

Table 13-17: Locked Cycle Test Metallurgical Projection – Fresh Ore Sample

Product	Wt. %	Assays, %, g/t							% distribution						
		Pb	Zn	Au	Ag	S	As	Sb	Pb	Zn	Au	Ag	S	As	Sb
Pb 3rd Cleaner Conc	5.7	69.5	1.63	7.76	1830	14.5	3.22	0.34	83.6	2.0	1.9	75.8	2.9	1.8	30.1
Zn 3rd Cleaner Conc	7.5	6.64	53.6	1.34	207	31.2	0.49	0.046	10.5	85.9	0.4	11.3	8.3	0.4	5.4
AsPy / Py Cleaner Conc	62.1	0.38	0.72	35.8	26.3	39.6	16.1	0.064	5.0	9.5	96.1	11.9	87.4	96.1	62.0
Final Tail	24.6	0.18	0.49	1.44	6.0	1.56	0.73	0.007	0.9	2.6	1.5	1.1	1.4	1.7	2.5
Head (back calculated)	100	4.75	4.70	23.1	138	28.2	10.4	0.064	100	100	100	100	100	100	100
Head (direct)	100	5.04	4.49	22.8	159	29.2	10.1	0.10	NA	NA	NA	NA	NA	NA	NA

High-grade lead and zinc concentrates were produced containing 69.5% Pb and 53.6% Zn, respectively. Concentrate recoveries were 83.6% for lead and 85.9% for zinc in lead and zinc concentrates, respectively.

The lead concentrate contained 3.22% arsenic and 0.34% antimony. In view of the high level of arsenic in the feed (10.4%), 3.22% arsenic in the lead concentrate is reasonably positive, indicating that significant arsenic rejection has been achieved. For the plant operation, arsenic content in the mill feed is controlled normally to less than 5%. Because arsenic in the lead concentrate is proportional to arsenic in the mill feed, less than 2% arsenic in the lead concentrate is expected if arsenic content in the mill feed is less than 5%.

The zinc concentrate contained 10.5% lead, which is high and suspected to be the result of an elevated level of lead in the lead cleaner scavenger tail reporting to the zinc circuit. Re-routing this stream to the lead rougher circuit is an option to consider for improvement. Due to the lower recovery of zinc in the zinc circuit, a considerable amount of zinc reported to the gold concentrate. Improving zinc recovery by higher collector dosages during the cleaning stage or re-routing the zinc cleaner scavenger tail to the zinc rougher were noted as options to consider for improvement.

The pyrite / arsenopyrite concentrate grade was extremely high containing 39.6% S and 35.8 g/t Au, which represents 96.1% gold recovery.

13.2.3.2 Old ore sample

Flotation testing with the Old Ore sample was limited to five flotation tests. The Old Ore sample had considerably higher grade than the Fresh Ore sample, containing almost twice the amount of lead and zinc than the Fresh Ore sample. However, the Old Ore sample contained approximately half the amount of arsenic compared to the Fresh Ore sample. All flotation tests responded well with 30 ~ 40 g/t Aerophine 3418A and 75 ~ 80 g/t sodium cyanide addition, except for one test (F7) which resulted in excessive arsenic recovery at increased collector and reduced cyanide additions. There is similarity in the zinc and arsenic selectivity, but the mass pull to achieve the same recovery was significantly higher due to the substantially higher grade of lead in the feed.

For zinc rougher flotation, due to the higher feed grade, a higher mass pull would be required to attain the same level of recovery. pH 11.8 was used for activation and resulted in considerably greater selectivity for zinc over arsenic.

The performance of pyrite / arsenopyrite flotation was relatively poor, due to high recovery of gold bearing sulphides in the zinc circuit. Nevertheless, the stage-recovery of gold approached 100% for all tests.

Due to the high head grade of lead and low head grade of arsenic compared to the Fresh Ore sample, the content of arsenic in the lead concentrates was quite low at 0.47 ~ 0.70%. However, the content of antimony in the lead concentrate was quite high at 2.32 ~ 2.64%. Antimony floated strongly together with lead. The overall lead recovery for the Old Ore sample was 74.4%, despite higher lead rougher recovery of 94.4%.

It appears that the addition of lime considerably reduced lead recovery. The low arsenic and high antimony grade in the lead concentrate were due to the lower arsenic head grade and higher antimony head grade in the feed.

13.2.3.3 Large Batch Flotation

Large batch flotation was completed on 300 kg of Fresh Ore sample to produce 90 kg of tailings for backfill testing by a third-party laboratory. The large batch flotation test resulted in lower concentrate grades and recoveries than anticipated. This was attributed to the fairly coarse lead regrind P_{80} of 44 µm compared to the 25 µm used during the smaller-scale laboratory testwork. Solid-liquid separation testwork was conducted on the products from the large batch flotation test, including final tail, gold / pyrite / arsenopyrite cleaner concentrate, zinc cleaner concentrate and lead cleaner concentrate.

13.2.3.4 *Solid-liquid separation testing*

Flocculant scoping and static settling testwork indicated that all samples responded well to BASF Magnafloc 10 flocculant. Static settling tests showed underflow (U/F) densities of 66% w/w for the final tail, and 71 ~ 79% w/w for the concentrates. The results are presented in Table 13-18.

Table 13-18: Static Settling Results Summary

Sample ID	Flocculant Dosage g/t	Diluted Feed %w/w	Ultimate U/F Density %w/w	Critical U/F Solids Density %w/w	Thickener U/F Unit Area $m^2/t/day$	Supernatant visual	TSS mg/L
Final tail	9	10	66	68	0.04	Clear	<10
Gold / pyrite arsenopyrite concentrate	5	15	75	n.d	0.01	Clear	39
Zinc concentrate	9	15	71	74	0.03	Clear	19
Lead concentrate	8	15	79	80	0.02	Clear	18

Dynamic settling tests were conducted on all samples except for the zinc cleaner concentrate due to insufficient mass. Table 13-19 summarizes the optimized dynamic settling operating conditions and results, confirming the U/F densities obtained in the static settling tests.

Table 13-19: Optimized Dynamic Settling Results Summary

Sample ID	Flocculant Dosage g/t	Diluted Feed %w/w	U/F Density %w/w	U/F density after 30 min %w/w	Thickener U/F Unit Area $m^2/t/day$	Solids Loading $t/m^2/h$	Net Hyd. Loading $m^3/m^2/d$	Res. time solid vs U/F, h	TSS mg/L
Final tail	10	10	64.5	72.4	0.10	0.416	3.70	0.84	62
Gold / pyrite / arsenopyrite concentrate	10	15	80.6	87.0	0.07	0.592	3.30	1.1	10
Lead concentrate	12	15	79.1	83.4	0.08	0.520	2.88	1.4	22

Concentric cylinder rotational viscometry (CCRV) rheology was conducted on the final tail, zinc concentrate, and lead concentrate underflow samples, while vane rheology measurements were conducted on the gold / pyrite / arsenopyrite concentrate underflow sample due to its fast-settling nature. Table 13-20 summarizes the critical solids densities (CSD) and corresponding yield stress values.

Table 13-20: Underflow Rheology Results Summary

Sample I.D.	CSD, %w/w solid	Yield stress, Pa Un-sheared
Final tail	67.6	21
Zinc concentrate	74.0	14
Lead concentrate	80.0	10

Vane rheology was conducted at pulp densities from 85.8% to 87.7% w/w solids using a Haake VT550 viscometer. The resulting vane-yield stress values ranged from 222 Pa to 989 Pa at 86.1% to 87.7% w/w solids (see Table 13-21). At 85.8% w/w solids, the sample settled and did not provide a yield point.

The CSD is the solids density at which a small increase of the solid density causes a significant decrease of flowability of the slurry. The CSD value is also predictive of the maximum underflow solids density achievable in a commercial thickener and pumpability achievable in practice.

Table 13-21: Vane Rheological Data Summary – Gold / Pyrite / Arsenopyrite Concentrate

Test No.	Size, P_{80} (µm)	SG (g/cm^3)	Temp (°C)	Solids %	Shear stress Peak (Pa)
1	103	5.10	20.0	87.7	989
2	103	5.10	20.0	86.9	527
3	103	5.10	20.0	86.1	222
4	103	5.10	20.0	85.8	No yield

Results of vacuum filtration tests on the final tail underflow sample are summarized in Table 13-22. Using a Testori 6583 TC filter cloth, a cake moisture of 13.6% w/w was achieved from a 65% w/w pulp density with a dry time of 30 seconds. A qualitative confirmation test at lower filter feed solids (60% w/w) achieved a similar cake moisture of 15% w/w.

Table 13-22: Vacuum Filtration Results Summary of the Final Tail

Operating conditions					Filter throughput[1]		
Feed solids %w/w	Vacuum level, inch Hg	Form time (s)	Dry time (s)	Form / dry ratio	Cake thickness (mm)	Throughput, dry kg/m²h	Cake[2] moisture %w/w
65	23.4	5	5	1.00	20.0	10329	21.5
		4	4	1.06	14.5	9111	19.5
		4	6	0.65	15.0	7016	17.4
		5	15	0.32	15.0	3853	16.3
		4	20	0.21	15.0	3140	14.7
		3	30	0.10	10.5	1594	13.6
		6	2	4.00	20.0	13397	22.3
60	24	6	30	0.20	15.0	2123	15.0

Conditions and results of pressure filtration tests on the concentrate underflows are summarized in Table 13-23.

A qualitative confirmation test at lower filter feed solids was conducted using the best conditions of the pressure filtration test. Cake moistures ranged from 3.8% to 5.1% w/w for the gold / pyrite / arsenopyrite concentrate, from 5.2% to 7.2% w/w for the zinc concentrate, and from 5.0% to 6.0% w/w for the lead concentrate.

Table 13-23: Pressure Filtration Results Summary for the Concentrates

Sample identification	Filter cloth	Operating conditions					Filter throughput[1]		
		Feed solids %w/w	Pressure level, PSI	Form time (s)	Dry time (s)	Form / dry ratio	Cake thickness (mm)	Throughput, dry kg/m²h	Cake[2] moisture, % w/w
Gold / pyrite / arsenopyrite concentrate	Micronics 861	85.0	5.5	1.7	92	0.02	31.5	3672	3.8
				1.2	59	0.02	24.5	4461	4.0
				1.1	45	0.02	20.4	4784	3.8
				1.1	31	0.03	14.5	5002	3.8
			6.9	1.7	62	0.03	30.4	5052	4.3
				1.3	50	0.03	25.5	5518	4.2
				1.5	49	0.03	20.0	4293	4.0
				1.0	36	0.03	15.0	4503	4.0
Gold / pyrite / arsenopyrite concentrate		80.0		1.7	33	0.05	21.0	6046	5.1
Zinc concentrate	Micronics 889	74.0	5.5	3.5	85	0.04	32.5	2906	6.1
				2.4	55	0.04	25.0	3489	6.1
				2.1	37	0.06	20.0	4124	6.3
				1.4	27	0.05	14.5	4029	6.0

Sample identification	Filter cloth	Operating conditions					Filter throughput[1]		
		Feed solids %w/w	Pressure level, PSI	Form time (s)	Dry time (s)	Form / dry ratio	Cake thickness (mm)	Throughput, dry kg/m²h	Cake[2] moisture, % w/w
			6.9	2.3	56	0.04	30.5	4113	6.0
				1.8	55	0.03	25.5	3476	5.7
				1.8	56	0.03	20.4	2858	5.2
				1.3	33	0.04	14.0	3364	5.1
Zinc concentrate		64.0		1.9	39	0.05	20.4	3764	7.2
Lead concentrate	Micronics 861	78.0	5.5	3	72	0.04	32.0	4635	5.2
				2	55	0.04	24.5	4724	5.1
				2	42	0.04	20.5	4969	5.0
				1	30	0.04	14.0	5200	5.0
			6.9	2	45	0.05	29.5	6697	5.2
				2	38	0.04	24.3	6671	5.7
				1	26	0.05	19.0	7295	5.9
				1	24	0.04	14.0	6268	6.0
Lead concentrate		68.0		3	40	0.08	19.0	4660	5.7

13.2.3.5 Environmental Characterization

The final tailing sample from the large batch flotation testing was subjected to a basic environmental test program, including elemental analysis (qualitative X-ray diffraction, whole rock, and aqua regia digest analyses), toxicity characteristic and synthetic precipitation leaching procedure (TCLP and SPLP) extractions, modified acid base accounting (ABA), net acid generation (NAG) testing, and NAG liquor analysis.

Elemental analyses indicate that the tailing sample was predominantly comprised of quartz with minor amounts of calcium, iron, and aluminum. Environmentally significant concentrations of arsenic, lead, and zinc were also observed.

Analysis of the TCLP leachate reported arsenic and lead at concentrations expected to be of environmental concern. It should be noted that since the TCLP is a very aggressive extraction procedure, the limits applicable to this test procedure are much higher than those used for the SPLP or NAG liquor analyses. With the exceptions of pH, arsenic, and lead, the SPLP extraction leachate reported all of the typically controlled parameters well within the limits characteristically applied to this test procedure.

Modified ABA testing results show the final tailing sample as uncertain about acid generation potential. Although NAG testing reported no net acidity generated, due to the elevated sulphide content, the single peroxide addition may not have completely oxidized the sulphide present. Sequential NAG tests using multiple peroxide additions were noted as being required to confirm this assumption. Analysis of the NAG liquor reported arsenic at an environmentally significant concentration.

13.2.3.6 Transportable Moisture Level Testing

A portion of the lead, zinc, and gold concentrates produced from the large batch flotation testwork was used for determining the transportable moisture level. Results are summarized in Table 13-24.

Table 13-24: Transportable Moisture Level Test Summary

Sample	P_{80}, µm	Flow moisture, %	Transportable moisture, %
Lead Concentrate	25	11.4	10.3
Zinc Concentrate	23	13.8	12.4
Gold / pyrite / arsenopyrite Concentrate	109	9.2	8.3

13.3 VARIABILITY TESTWORK, 2021

A number of variability samples were gathered for additional testwork in 2019. The samples consisted of Type 1, Type 2, Type 3, Type 7, and Type 8 ores and were sent to SGS Lakefield for a comprehensive testwork program from different areas within the East, West, and Flat zones. Ore types are fully described in Section 8.

13.3.1 Sample, Composite, and Blend Descriptions

A series of twenty composites were prepared based on ore type and spatial location within the mine as summarized in Table 13-25.

Table 13-25: Variability Composites

Composite	Ore Type	Zone	Drill Holes	Mass (kg)
1	Type 1	Upper East	OLDD0338, OLDD0181, OLDD0023	8.1
2	Type 2	Middle East	OLDD0235	1.5
3	Type 1	Lower East	OLDD0319, OLDD0586, OLDD0630, OLDD0716, OLDD0075, OLDD0082, OLDD0091, OLDD0144, OLDD0161	42.6
4	Type 2	Upper East	OLDD0181, OLDD0429, OLDD0435, OLDD0438, OLDD0471, OLDD0749	23.6
5	Type 2	Upper East	OLDD0193, OLDD0203, OLDD0207, OLDD0119	16.6
6	Type 2	Lower East	OLDD0301, OLDD0316, OLDD0630, OLDD0709, OLDD0719, OLDD0756, OLDD0101, OLDD0150, OLDD0535, OLDD0614	46.9
7	Type 3	Upper East	OLDD0322, OLDD0157, OLLDD0181, OLDD0417, OLDD0429, OLDD0452, OLDD0477	29.3
8	Type 3	Middle East	OLDD0122, OLDD0111, OLDD0119, OLDD0122, OLDD0124, OLDD0138, OLDD0176 OLDD0179, OLDD0431	26.9

Composite	Ore Type	Zone	Drill Holes	Mass (kg)
9	Type 3	Lower East	OLDD0296, OLDD0301, OLDD0586, OLDD0601, OLDD0606, OLDD0609, OLDD0610, OLDD0653, OLDD0756, OLDD0761, OLDD0085, OLDD0091, OLDD0097, OLDD0101, OLDD0150, OLDD0153, OLDD0162	114.5
10	Type 7	Upper East	OLDD0034, OLDD0314, OLDD0318, OLDD0322, OLDD0334, OLDD0338, OLDD0713, OLDD0749, OLDD0766	52.7
11	Type 7	Middle East	OLDD0029, OLDD0041, OLDD0121, OLDD0124, OLDD0125, OLDD0190, OLDD0193, OLDD0194, OLDD0196, OLDD0203, OLDD0215, OLDD0235	118.5
12	Type 7	Lower East	OLDD0296, OLDD0319, OLDD0586, OLDD0595, OLDD0601, OLDD0605, OLDD0612, OLDD0617, OLDD0619, OLDD0630, OLDD0661, OLDD0683, OLDD0686, OLDD0702, OLDD0703, OLDD0726, OLDD0730, OLDD0756	74.3
13	Type 1	West	OLDD0239, OLDD0269, OLDD0270, OLDD0271, OLDD0298, OLDD0300, OLDD0302, OLDD0308 OLDD0335, OLDD0339, OLDD0342, OLDD0349, OLDD0422, OLDD0449, OLDD0455, OLDD0527, OLDD0638, OLDD0738, OLDD0779	74.7
14	Type 2	West	OLDD0187, OLDD0259, OLDD0273, OLDD0300, OLDD0335, OLDD0339, OLDD0340, OLDD0342, OLDD0349, OLDD0352, OLDD0357, OLDD0400, OLDD0405, OLDD0413, OLDD0420, OLDD0430, OLDD0433, OLDD0446, OLDD0459, OLDD0463, OLDD0480, OLDD0493, OLDD0509, OLDD0512, OLDD0518, OLDD0521, OLDD0527, OLDD0563, OLDD0644, OLDD0647, OLDD0650, OLDD0738, OLDD0783, OLDD0786	141.8
15	Type 3	West	OLDD0248, OLDD0259, OLDD0286, OLDD0298, OLDD0308, OLDD0349, OLDD0352, OLDD0358, OLDD0371, OLDD0422, OLDD0423, OLDD0427, OLDD0428, OLDD0443, OLDD0446, OLDD0509, OLDD0518, OLDD0563, OLDD0636, OLDD0644, OLDD0745, OLDD0772, OLDD0779, OLDD0786, OLDD0791, OLDD0792, OLDD0832	103.7
16	Type 7	West	OLDD0270, OLDD271, OLDD0286, OLDD0320, OLDD0339, OLDD0340, OLDD0349, OLDD0358, OLDD0394, OLDD0420, OLDD0428, OLDD0433, OLDD0518, OLDD0521, OLDD0641, OLDD0665, OLDD0775 OLDD0789, OLDD0791, OLDD0832	90.4
17	Type 1	Upper Flats	OLD0533, OLDD0548, OLDD0669	8.5
18	Type 2	Upper Flats	OLDD0541, OLDD0543, OLDD0548, OLDD0553, OLDD0562, OLDD0565, OLDD0618, OLDD0620, OLDD0623, OLDD0625, OLDD0651, OLDD0655, OLDD0663, OLDD0666, OLDD0689, OLDD0705, OLDD0708, OLDD0806, OLDD0810, OLDD0815	279.5
19	Type 3	Upper Flats	OLDD0525, OLDD0618, OLDD0620, OLDD0806	20.0

Composite	Ore Type	Zone	Drill Holes	Mass (kg)
20	Type 7	Upper Flats	OLDD0216, OLDD0525, OLDD0541, OLDD0525, OLDD0543, OLDD0562, OLDD0620, OLDD0708, OLDD0806	

Sub-samples from each of the composites were reserved for Bond Work Index testing and flotation with the remaining sample mass used to produce six 80 kg blended samples, as summarized in Table 13-26.

Table 13-26: Blended Composites

Blend	Composite	Ore Type	Zone	Mass (kg)
#1 - East Dominant	1	Type 1	Upper East	0.8
	2		Middle East	0.8
	3		Lower East	0.8
	4	Type 2	Upper East	1.6
	5		Middle East	1.6
	6		Lower East	0.8
	7	Type 3	Upper East	1.6
	8		Middle East	1,6
	9		Lower East	0.8
	10	Type 7	Upper East	8.0
	11		Middle East	8.0
	12		Lower East	8.0
	13	Type 1	West	0.8
	14	Type 2		4.0
	15	Type 3		1.6
	16	Type 7		12.0
	17	Type 1	Upper Flats	4.0
	18	Type 2		15.2
	19	Type 3		4.0
	20	Type 7		4.0
#2 - West Dominant	1	Type 1	Upper East	0.3
	2		Middle East	0.2
	3		Lower East	0.3
	4	Type 2	Upper East	0.6
	5		Middle East	0.6
	6		Lower East	1.0
	7	Type 3	Upper East	0.6
	8		Middle East	0.4

Blend	Composite	Ore Type	Zone	Mass (kg)
	9		Lower East	0.3
	10	Type 7	Upper East	4.8
	11		Middle East	4.0
	12		Lower East	1.3
	13	Type 1	West	3.2
	14	Type 2		9.6
	15	Type 3		6.4
	16	Type 7		16.0
	17	Type 1	Upper Flats	3.2
	18	Type 2		20.7
	19	Type 3		3.2
	20	Type 7		3.2
#3 - Flats Dominant	1	Type 1	Upper East	0.3
	2		Middle East	0.2
	3		Lower East	0.3
	4	Type 2	Upper East	0.6
	5		Middle East	0.6
	6		Lower East	1.0
	7	Type 3	Upper East	0.5
	8		Middle East	0.5
	9		Lower East	0.3
	10	Type 7	Upper East	3.2
	11		Middle East	3.2
	12		Lower East	1.6
	13	Type 1	West	0.8
	14	Type 2		3.2
	15	Type 3		2.4
	16	Type 7		6.4
	17	Type 1	Upper Flats	0.7
	18	Type 2		34.8
	19	Type 3		8.0
	20	Type 7		12.0
#4 – 100% West	13	Type 1	West	4.0
	14	Type 2		32.0
	15	Type 3		4.0
	16	Type 7		40.0
#5 – 100% Flats	18	Type 2	Upper Flats	52.3

Blend	Composite	Ore Type	Zone	Mass (kg)
	19	Type 3		3.7
	20	Type 7		24.0
#6 – 50:50 West:Flats	13	Type 1	West	1.6
	14	Type 2		12.0
	15	Type 3		4.0
	16	Type 7		2.7
	18	Type 2	Upper Flats	55.2
	20	Type 7		4.6

13.3.2 Grindability Testing

Bond Ball Mill Grindability tests (BWi) were carried out on individual samples prior to compositing. Results are summarized in Table 13-27. Testing was carried out with a closing size of 100 mesh. The results are in line with previous results that indicate that the Olympias ores can be classified as soft to very soft.

Table 13-27: Bond Ball Mill Grindability Test Results

Sample / Ore Type	Product P_{100} (µm)	Grams per revolution (Grp)	Product P_{80} (µm)	Feed F_{80} (µm)	BWi (kWh/t)
SP1 – T3	150	3.09	120	1,940	9.0
SP2 – T1	150	2.74	121	2,163	9.8
SP3 – T2	150	2.34	121	1,971	11.3
SP4 – T3	150	2.69	124	2,093	10.1
SP5 – T7	150	2.03	125	2,316	12.6
SP6 – T8	150	2.56	118	2,413	10.0
SP7 – T8	150	1.91	113	2,446	12.3
SP8 – T7	150	2.44	118	2,311	10.5
SP9 – T1	150	2.95	123	1,768	9.6
SP10 – T1	150	3.09	120	1,831	9.0
SP11 – T3	150	2.64	120	1,650	10.5
SP12 – T7	150	2.77	120	1,954	9.8
SP13 – T1	150	4.32	126	1,956	7.0
SP14 – T2	150	2.42	119	1,920	10.9
SP15 – T7	150	3.35	119	2,041	8.3
SP17 – T1	150	3.77	125	1,801	7.9

13.3.3 Chemical Analyses

A summary of the more significant chemical assays for the six Blend samples follows in Table 13-28.

Table 13-28: Head Assays, Composite Blends

Blend	Description	Pb (%)	Zn (%)	Fe (%)	Au (g/t)	Ag (g/t)	As (%)	S (%)	CO_3 (%)	SG
#1	East Dominant	4.79	6.20	22.3	18.1	134	10.6	24.0	4.32	4.11
#2	West Dominant	4.68	6.54	21.9	14.5	126	7.79	25.3	4.81	4.04
#3	Flats Dominant	4.03	5.63	21.5	14.1	450	7.34	24.5	5.68	3.95
#4	100% West	5.10	6.71	25.6	14.1	146	8.91	28.3	3.92	4.22
#5	100% Flats	2.80	4.56	21.7	14.3	56.1	6.28	23.9	5.49	3.83
#6	50:50 West:Flats	3.41	5.10	22.1	11.6	90.1	4.20	26.3	5.07	3.85

13.3.4 Flotation Tests

A number of flotation tests were carried out based on the Olympias flowsheet. A series of sequential rougher tests that produced rougher lead, rougher zinc, and rougher gold (pyrite-arsenopyrite) concentrates are summarized in Table 13-29. Reagents in the grinding step included lime and NaCN; in the lead flotation step lime, 3418A, and MIBC; in the zinc flotation step lime, copper sulfate, SIPX, and MIBC; and in the gold flotation step sulfuric acid, SIPX, and MIBC.

The suite of tests carried out on the Blend #1 (East Dominant) material highlight the importance of the reagent suite for proper recoveries of payable metals to each of the three concentrates. Tests F1 and F4 indicate a relatively high proportion of zinc misplaced to the lead and gold concentrates. Test F7 was a repeat of test F1 with the addition of $ZnSO_4$ to depress sphalerite in the lead flotation test. Test F8 repeated F7 conditions but with a finer grind size. Test F14 was carried out with a higher dosage of 3418A in the primary grind. Test F17 was carried out with more aggressive pulling of the Pb and Zn rougher steps. Test F21 incorporated a higher dosage of SIPX in the zinc circuit so as to increase zinc recovery to the zinc concentrate.

Table 13-29: Sequential Rougher Flotation Tests, Blend #1 (East Dominant)

Test, Grind P_{80}	Conc	Mass (%)	Assays				Distribution			
			Pb (%)	Zn (%)	As (%)	S (%)	Pb (%)	Zn (%)	As (%)	S (%)
F1	Pb Ro	9.1	48.3	6.7	2.3	17.4	74.6	13.4	2.7	6.4
	Zn Ro	5.4	5.3	29.3	3.2	25.0	4.9	35.0	2.2	5.5
115 µm	AsPy/Py Ro	55.7	1.6	4.1	13.0	38.8	15.5	50.4	93.3	87.1
F4	Pb Ro	13.7	35.2	5.6	4.0	18.9	83.2	16.9	6.8	10.4
	Zn Ro	4.9	1.5	50.4	1.0	6.0	9.0	60.7	1.0	6.7
146 µm	AsPy/Py Ro	53.2	1.1	2.7	13.5	38.9	10.4	31.6	90.6	82.7
F7	Pb Ro	14.4	34.7	5.0	4.5	19.6	84.1	15.7	9.0	11.4
	Zn Ro	9.5	2.9	28.4	4.0	25.4	4.6	58.6	4.7	9.8
115 µm	AsPy/Py Ro	50.3	1.0	2.3	13.8	38.5	8.0	24.9	86.6	78.4
F8	Pb Ro	9.7	44.7	2.5	3.2	17.8	76.3	5.2	4.0	7.0
	Zn Ro	12.7	3.1	28.8	3.7	25.5	6.9	80.9	6.0	13.2

Test, Grind P_{80}	Conc	Mass (%)	Assays				Distribution			
			Pb (%)	Zn (%)	As (%)	S (%)	Pb (%)	Zn (%)	As (%)	S (%)
115 µm	AsPy/Py Ro	50.9	1.5	1.2	13.6	38.4	13.3	13.0	89.2	79.4
F14	Pb Ro	9.2	48.7	2.3	3.1	17.6	75.9	4.6	3.6	6.4
	Zn Ro	9.6	4.4	21.9	4.7	23.5	7.2	45.9	5.7	8.9
115 µm	AsPy/Py Ro	52.6	1.3	4.2	13.3	39.5	11.9	48.1	87.6	82.6
F17	Pb Ro	12.6	38.1	3.2	4.3	19.1	83.4	9.0	6.5	9.7
115 µm	Zn Ro	9.5	2.8	22.7	4.7	23.8	27.9	53.2	5.7	10.2
F21	Pb Ro	13.9	35.6	3.2	4.6	20.3	84.0	9.8	8.2	11.3
	Zn Ro	13.4	2.1	26.1	5.4	26.2	4.9	76.9	9.4	14.2
115 µm	AsPy/Py Ro	47.3	1.0	1.2	13.3	38.7	8.1	12.3	81.3	73.7

A series of flotation tests were then carried out on the Blend #2 (West Dominant) material, as summarized in Table 13-30. Results were not sensitive to primary grind between 118 and 160 µm.

Table 13-30: Sequential Rougher Flotation Tests, Blend #2 (West Dominant)

Test, Grind P_{80}	Conc	Mass (%)	Assays				Distribution			
			Pb (%)	Zn (%)	As (%)	S (%)	Pb (%)	Zn (%)	As (%)	S (%)
F2	Pb Ro	7.0	44.9	3.4	2.2	16.2	85.3	6.7	3.1	6.7
	Zn Ro	8.6	1.5	37.8	2.0	27.8	3.5	90.8	3.4	14.1
118 µm	AsPy/Py Ro	33.6	0.9	0.2	13.5	39.2	8.3	1.6	91.4	78.2
F4	Pb Ro	7.8	40.6	3.6	2.2	16.3	84.8	8.0	3.4	7.5
	Zn Ro	9.0	1.4	35.1	2.1	26.9	3.4	89.3	3.8	14.2
160 µm	AsPy/Py Ro	34.7	1.0	0.2	12.9	37.9	9.2	1.8	91.1	77.5

Sequential rougher tests carried out on the Blend #3 (Flats Dominant) material are summarized in Table 13-31. The coarser grind increased the Pb mass pull for Blend #3.

Table 13-31: Sequential Rougher Flotation Tests, Blend #3 (Flats Dominant)

Test, Grind P_{80}	Conc	Mass (%)	Assays				Distribution			
			Pb (%)	Zn (%)	As (%)	S (%)	Pb (%)	Zn (%)	As (%)	S (%)
F3	Pb Ro	9.4	47.3	3.9	2.0	17.0	86.0	6.7	3.4	8.2
	Zn Ro	11.7	1.4	43.2	1.6	29.5	3.2	91.2	3.3	17.6
118 µm	AsPy/Py Ro	36.8	1.2	0.2	14.0	38.9	8.5	1.5	91.7	73.4
F6	Pb Ro	12.1	38.2	5.3	2.5	17.5	89.4	11.8	5.7	10.8
	Zn Ro	10.9	1.1	42.6	1.6	29.7	2.3	85.3	3.2	16.6
163 µm	AsPy/Py Ro	36.8	0.9	0.3	13.0	38.2	6.2	2.2	89.6	71.9

13.3.5 Mineralogical Analysis

QEMSCAN analyses were carried out on flotation concentrates in an attempt to better understand deportment of deleterious elements. Locked cycle flotation tests were carried out on Blend #1, Blend #2, and Blend #5 material to generate lead 3rd cleaner concentrates, upon which extensive mineralogical characterizations were carried out. The analyses show that the amount of antimony present in the lead concentrate was strongly dependent on the proportion of lead hosted withing boulangerite ($Pb_5Sb_4S_{11}$) and bournonite ($PbCuSbS_3$) versus galena (PbS), as summarized in Table 13-32.

Table 13-32: Locked Cycle Test Pb 3rd Cleaner Lead and Antimony Analyses

Test	Blend	Pb (%)	Sb (%)	QEMSCAN – Pb Distribution		
				Pb – Galena	Pb – Boulangerite	Pb - Bournonite
LCT-6	#1 – East Dominant	48.3	3.46	87%	13%	-
LCT-7	#3 – Flats Dominant	50.6	5.89	77%	22%	1%
LCT-8	#5 – 100% Flats	46.1	9.75	58%	48%	-

13.4 CONCLUSIONS AND RECOMMENDATIONS

The results of the testwork described in this report are being relied on for metallurgical performance and recovery estimations. The samples that have been tested from future ore zones display similar characteristics to the zones currently being processed and would be expected to provide similar results when processed in the Olympias mill. Samples used for metallurgical testing are representative of their respective ore zones as described in the report.

13.4.1 Conclusions

- The principal sulfide minerals at Olympias were found to be galena, sphalerite, pyrite, and arsenopyrite. Other than quartz, all other minerals can be considered minor.
- The liberation of all sulphide minerals was excellent at an 80% passing size of 120 µm.
- Flotation of galena, sphalerite and pyrite / arsenopyrite in a sequential flowsheet was found to be effective at producing lead, zinc, and gold concentrates.
- Lead flotation was found to work well with Aerophine 3418A collector, with lime and sodium cyanide as depressants.
- Zinc flotation was found to be optimum at a pH of 11.8 with 600 g/t $CuSO_4{\cdot}5H_2O$ for copper activation and 60 g/t SIPX.
- Flotation of pyrite and arsenopyrite was effective at pH 6.0 and 250 g/t SIPX.
- The rejection of arsenic and antimony from the lead concentrate was found to be challenging in some cases.

- Locked cycle tests indicated a high amount of lead (6.64%) reporting to the zinc concentrate and a high amount of zinc (0.72%) reporting to the gold concentrate.
- All flotation products responded well to BASF Magnafloc 10 flocculant.
- Tests confirmed good thickening characteristics. Thickener overflow was visually clear with total suspended solids (TSS) of 62 mg/L, 10 mg/L, and 22 mg/L for the final tail, gold / pyrite / arsenopyrite concentrate, and lead concentrate, respectively.
- The critical solid density was ~68% for the final tail underflow, ~74% for the zinc concentrate underflow, and ~80% for the lead concentrate underflow. The yield stress for the gold / pyrite / arsenopyrite concentrate ranged from 22 to 989 Pa between 86.1% and 87.7% solids w/w.
- Vacuum filtration of the final tail underflow showed high throughput and low residual cake moisture, which ranged from 13.6% to 22.3%.
- Pressure filtration on all concentrate underflows indicated high throughput and low residual moisture of 3.8 ~ 4.3% for the gold / pyrite / arsenopyrite concentrate, 5.1 ~ 6.3% for the zinc concentrate, and 5.0 ~ 6.0% for the lead concentrate.

The environmental characterization of the final tailing sample indicated the following:

- The final tailings were comprised primarily of quartz with minor amounts of calcium, iron, and aluminum and environmentally significant concentrations of arsenic, lead, and zinc.
- The TCLP leachate reported arsenic and lead at concentrations expected to be of environmental concern.
- The SPLP extraction leachates reported a strongly alkaline pH value and concentrations of arsenic and lead that may be environmentally significant.
- ABA testing indicated uncertain acid generation potential for the final tailing.
- NAG testing of the final tailing reported no net acidity generated.
- Analysis of the NAG liquor reported arsenic at an environmentally significant concentration.

13.4.2 Recommendations from Metallurgical Testwork

- Further study was recommended on replacing the lime addition with soda ash in the primary grind and a lower dosage of copper sulfate to overcome the formation of an extremely dry and flat froth causing low zinc rougher recovery.
- Considering the high pH requirements for selective flotation in the zinc rougher circuit, it is recommended that flotation of pyrite / arsenopyrite at the naturally elevated pH be evaluated in order to reduce sulfuric acid consumption.
- The locked cycle test identified issues with excessive lead and zinc reporting to the zinc and gold concentrates, respectively. Further evaluation of the flowsheet, specifically the cleaner scavenger conditions and retention times, with locked cycle testing, was recommended.
  Further testing with different samples is recommended if arsenic and antimony levels in the lead concentrate are problematic.

SECTION • 14 MINERAL RESOURCE ESTIMATES

14.1 INTRODUCTION

The modeling and estimation for Olympias utilized MineSight 3D software, with LeapFrog software employed for generating mineralization shapes. The project limits, specified in UTM coordinates, extend from 478105 to 479700 East and 4491165 to 4493480 North, with an elevation range of -800 to +60m. The cell size for the project was set at 5 m east x 5 m west x 5 m high. The Mineral Resource estimate encompasses three distinct areas (East, West, and Flats). Grade shells were designed to model these zones above a resource defining value (RDV) exceeding $50.

Block grades for gold, silver, arsenic, lead, zinc and iron were estimated using ordinary kriging (OK). Bulk density and sulfur grades were calculated through a formula based on estimations of the lead, zinc, arsenic, and iron grades.

A summary of the Olympias Mineral Resource, as of September 30, 2023, is documented in Table 14-1. Mineral Resources were constrained by 3D volumes whose design was guided by the reporting cut-off grade of $125 NSR and were contiguous areas of mineralization and mineability. Only material internal to these volumes was eligible for reporting. CIM Definition Standards (2014) were used for reporting the Mineral Resources. Mineral Resources include those Resources converted to Mineral Reserves. Tonnages of mined out blocks and sterilized areas were depleted from the model.

The NSR value is based on a combination of metal price and individual metal recoveries, which are variable throughout the deposit, and smelter considerations. Prices used to define potentially mineable shapes are as follows, gold $1,800/oz, silver $24/oz, zinc $2,800/t, lead $2,200/t.

Table 14-1: Mineral Resources as of September 30, 2023

Category	Tonnes (kt)	Au (g/t)	Au (koz)	Ag (g/t)	Ag (koz)	Pb (%)	Pb (kt)	Zn (%)	Zn (kt)
Measured	3,447	10.59	1,174	152	16,849	4.8	167	5.9	204
Indicated	8,992	7.00	2,024	144	41,770	4.9	441	6.6	593
M&I	**12,439**	**8.00**	**3,198**	**147**	**58,619**	**4.9**	**608**	**6.4**	**797**
Inferred	2,339	7.84	589	179	13,488	6.2	146	6.8	160

The Measured Mineral Resources in Table 14-1 include 2.8 kt of stockpiled ore at the end of September 2023. The estimates are not affected by environmental, permitting, legal, title, taxation, socio-economic, marketing, political, mining, metallurgical infrastructure, or other relevant factors other than those disclosed herein. The main steps of the geological estimation process are discussed below.

14.2 MODELLING MINERALIZED DOMAINS

The historical methodology for delineating mineralized domains at Olympias originally involved establishing limits based on what was perceived as the predominant mineralization style, namely massive sulphide bodies. However, the relogging of pre-existing core samples and the continuous expansion of the database through infill drilling and mapped stopes revealed the oversimplification of this assumption. The sulphide mineralization at Olympias, as detailed in Section 8, exhibits diverse styles that often change abruptly at the mining scale. Consequently, adopting a grade-based discriminant offered a more consistent approach to interpretation.

The challenge lay in formulating this discriminant, given that the Olympias deposit comprises multiple metals contributing to revenue: Au, Ag, Pb, and Zn. Ultimately, a straightforward value formula based on the principles of a NSR, incorporating metal prices and recoveries as weighting factors against each metal, proved to be an excellent surrogate for a comprehensive equivalent grade. Examination of these resource defining values (RDV) revealed that, for the parameters employed, a value of $50 best defined economically mineralized zones.

The mineralized domain wireframes were modeled using Seequent's Leapfrog Geo™ software. The RDV is determined by a combination of metal prices, individual metal recoveries, smelter treatment costs, and variable transportation costs based on the concentrate buyer's terms. The recoveries are derived from testwork and actual data. The metal prices used in the RDV calculation are as follows: Au: $1,250/oz, Ag: $16/oz, Zn: $2,000/t, Pb: $2,000/t.

14.3 MINERALIZED DOMAINS

The Mineral Resource estimation for the deposit involved a systematic division into three primary zones: East, West, and Flats, as illustrated in Figure 14-1. These zones are further detailed in sub-domains, visually represented in Figure 14-2 to Figure 14-4.

The East Zone, approximately 750 m in length, plunges to the southeast (SE), with mineralized layer thicknesses ranging from a few meters to 10-15 meters, gently dipping in a northeast (NE) direction. The East Zone comprises four distinct layers of mineralization.

The Flats, situated between the West and East Zones, consist of seven distinct branches of mineralized layers, extending approximately 1,250 m. Plunging to the SE, the Flats exhibit thickness variations from several meters up to 15 meters, dipping between 15 degrees to horizontal in a NE direction.

The West Zone, approximately 1,500 m in length, plunges to the SE, featuring three branches of mineralized layers with additional massive sulphide mineralization near the surface. Thickness ranges from several meters up to 15 meters, with dips at 30-35 degrees in a NE direction.

Each zone contains distinct layers of mineralization, mostly continuous, coded as ZONE fields (10s for East, 20s for Flats, and 30s for West). These stratigraphically distinct sequences are visually represented in Figure 14-2, Figure 14-3, and Figure 14-4.

The East Zone was modelled using four separate zones for block grade estimation named 10, 11, 12, and 13. Figure 14-2 shows the location of the four modelled zones for the East Zone.

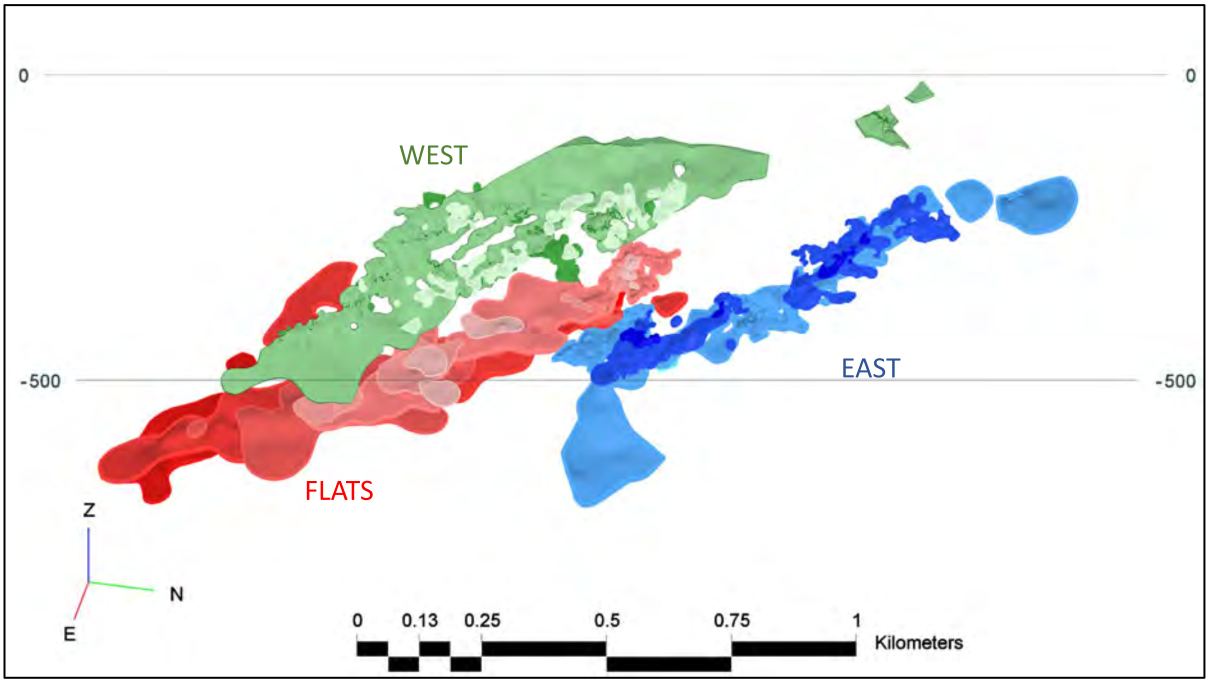


Figure 14-1: Mineralized Domains (Eldorado, 2023)

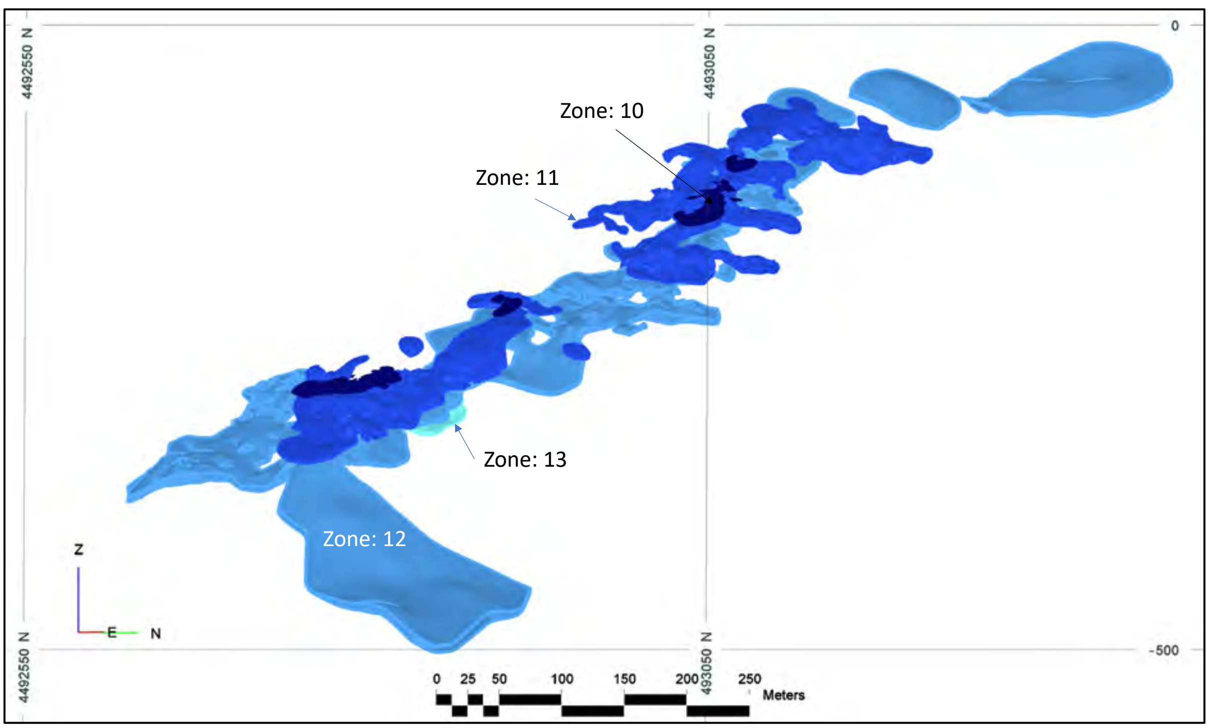


Figure 14-2: East Zone Modelled Zones (Eldorado, 2023)

The Flats Zone was modelled using seven separate zones for block grade estimation named 21, 22, 23, 24, 25, 26, and 27. Figure 14-3 shows the location of the Flats Zone seven modelled zones.

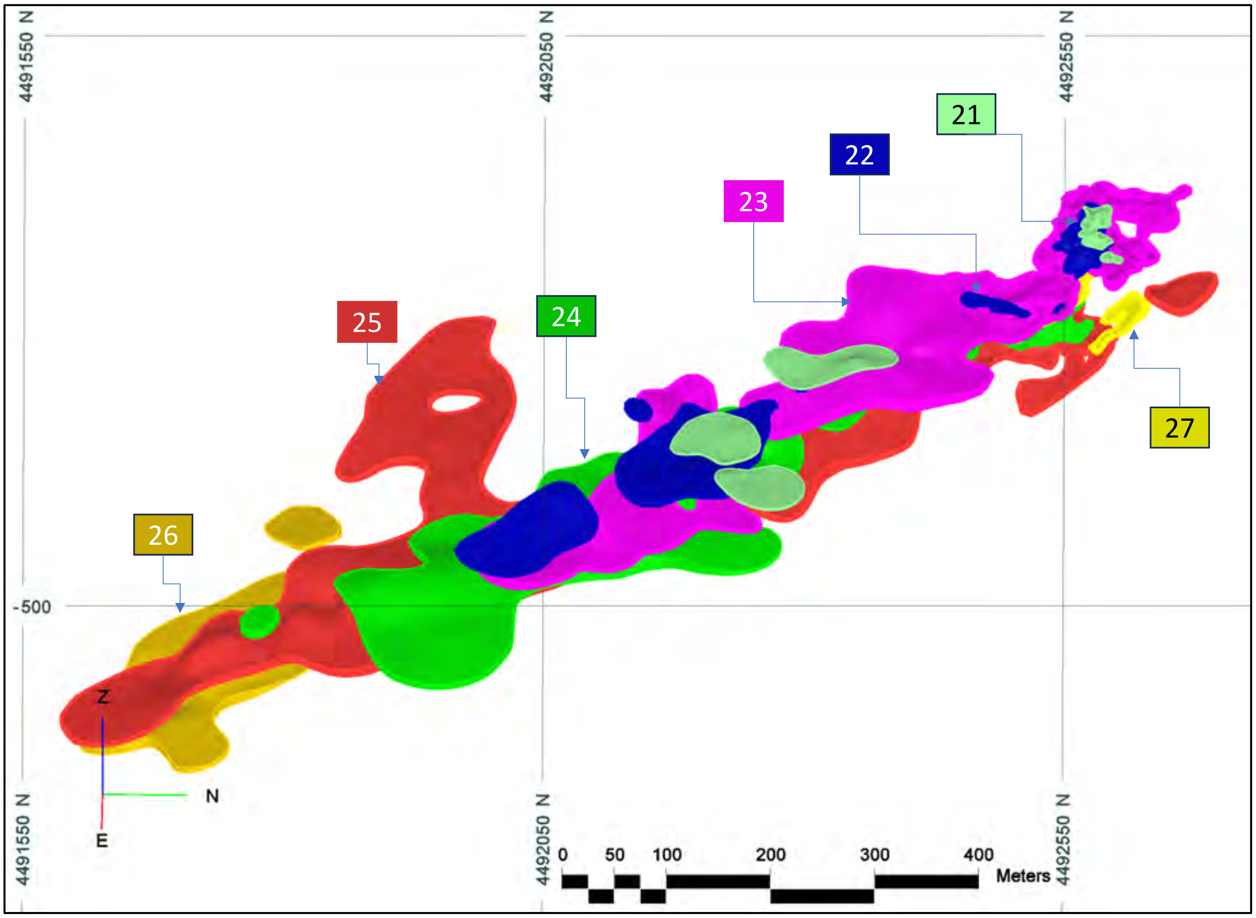


Figure 14-3: Flats Zone Modelled Zones (Eldorado, 2023)

The West Zone was modelled using three separate zones for block grade estimation named 30, 31, and 32. Figure 14.4 shows the location of the three different modelled zones for the West Zone.

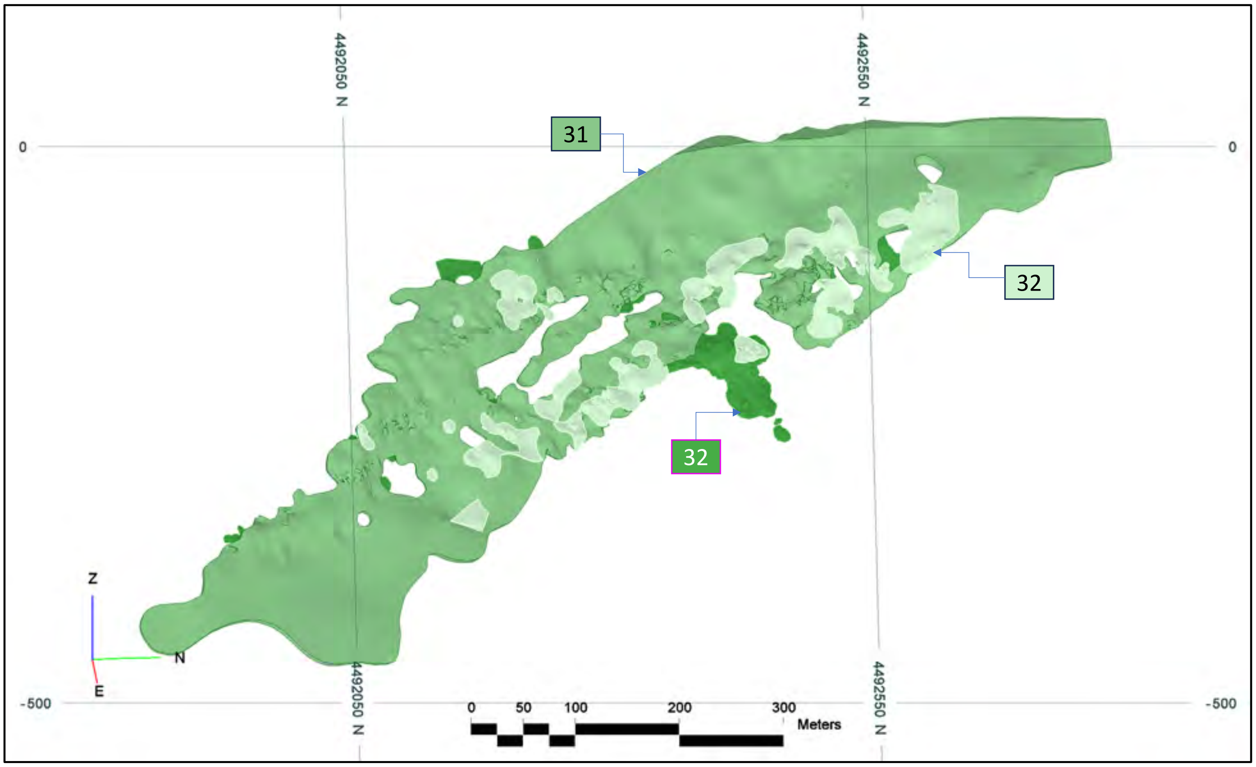


Figure 14-4: West Zone Modelled Zones (Eldorado, 2023)

14.4 BULK DENSITY

Bulk density values used in the Mineral Resource estimate were based on a formula developed by Eldorado. Figure 14-5 shows the formula, which uses the estimated block grades of lead, zinc, arsenic, and iron to calculate the block bulk density. The basis for this is discussed in Section 10.5. That work, which was based on 617 samples showed that most calculated bulk densities were about 6% higher than measured and that this disparity was most likely due to voids that could not be accounted for in a calculated bulk density. Thus, each block in the resource model has a calculated bulk density (based on the interpolated metal grades for each block) that is then downwardly adjusted by 6% to reflect the typical volume of voids.

```
                  AA          BB          CC               DD                    EE
GNGUE = (((100-((PB/0.866)+(ZN/0.584)+(AS/0.46)+((FE-((ZN/0.584*0.083)+(AS/0.46*0.343)))/0.466)))/100)*2.69)+
  +
            AA
GALEN = (((PB/0.866)/100)*7.4)+
  +
            BB
SPHLR = (((ZN/0.584)/100)*4.1)+
  +
            CC
ARSPY = (((AS/0.46)/100)*6.1)+
  +
                   DD                 EE
PYRTE = ((((FE-((ZN/0.584*0.083)+(AS/0.46*0.343)))/0.466)/100)*5)
```

Figure 14-5: Eldorado Gold Bulk Density Formula (Eldorado, 2023)

Block grades were estimated by OK for arsenic, lead, zinc, and iron. The bulk density values of each block were then estimated by applying the equation as shown in Figure 14.5 to give a value for each block.

14.5 DATA ANALYSIS

The dominant assay sample length inside the mineralization shapes is 1 m. This then became the compositing length. Assay samples were composited to 1 m lengths within each mineralization lens. During compositing, samples less than 0.5 m in length were merged with the previous sample.

Assays were also composited to 5 m lengths within each mineralization lens. The 5 m composites are used in the nearest-neighbour estimation for model validation purposes. Statistical properties of uncapped 1 m composite data for gold, silver, lead and zinc, by zone are shown in Table 14-2 to Table 14-5.

Table 14-2: Uncapped Gold Composite Statistics for Each Primary Zone

ZONE	No of Comps	Mean	CV	SD	q25	q50	q75	Maximum
EAST	5,071	15.56	0.96	14.96	4.76	11.45	21.90	188.58
FLAST	4,539	7.97	1.03	8.16	2.35	5.64	11.32	114.85
WEST	7,331	7.95	1.00	7.97	2.90	5.68	10.25	121.24

Table 14-3: Uncapped Silver Composite Statistics for Each Primary Zone

ZONE	No of Comps	Mean	CV	SD	q25	q50	q75	Maximum
EAST	5,071	171.42	1.17	200.45	27.00	101.80	243.38	1500.00
FLAST	4,539	82.03	1.69	138.76	6.00	21.00	97.75	1413.00
WEST	7,331	138.37	1.26	174.96	22.00	75.40	191.25	1500.00

Table 14-4: Uncapped Lead Composite Statistics for Each Primary Zone

ZONE	No of Comps	Mean	CV	SD	q25	q50	q75	Maximum
EAST	5,071	5.25	1.12	5.88	0.88	3.39	7.38	43.00
FLAST	4,539	2.87	1.59	4.55	0.21	0.98	3.60	40.20
WEST	7,322	4.50	1.20	5.39	0.78	2.63	6.38	50.10

Table 14-5: Uncapped Zinc Composite Statistics for Each Primary Zone.

ZONE	No of Comps	Mean	CV	SD	q25	q50	q75	Maximum
EAST	5,071	5.49	1.07	5.84	0.71	3.39	8.61	33.08
FLAST	4,539	4.16	1.23	5.13	0.45	1.99	6.18	37.60
WEST	7,322	5.65	1.08	6.11	0.98	3.54	8.37	41.16

14.5.1 Evaluation of Extreme Grades

Outlier sample grades can cause overestimation in the resource model if left untreated. Extreme grades were examined for gold, silver, lead and zinc by means of cumulative probability plots and histograms for each element. The assays were top-capped, as shown in Table 14-6, based on the total samples prior to compositing.

Table 14-6: Top-Capping Grades

	Au	Ag	Pb	Zn	As	Fe
Cap value (g/t)	50	900	25	25	25	35
No. samples	64,608	64,425	64,564	64,566	64,543	59,186
No. capped	211	312	408	436	432	577
Percent capped	0.33%	0.48%	0.63%	0.68%	0.67%	0.97%

Statistical properties of capped 1 m composite data for gold, silver lead and zinc, by zone, are shown in Table 14-7 to Table 14-10.

Table 14-7: Capped Gold Composite Statistics for Each Primary Zone

ZONE	No of Comps	Mean	CV	SD	q25	q50	q75	Maximum
EAST	5,071	14.89	0.84	12.49	4.75	11.40	21.88	50
FLAST	4,539	7.89	0.97	7.63	2.35	5.63	11.32	50
WEST	7,331	7.88	0.95	7.48	2.90	5.68	10.25	50

Table 14-8: Capped Lead Composite Statistics for Each Primary Zone

ZONE	No of Comps	Mean	CV	SD	q25	q50	q75	Maximum
EAST	5,071	168.11	1.12	187.86	27.00	101.50	243.00	900
FLAST	4,539	81.22	1.65	134.06	6.00	21.00	97.75	900
WEST	7,321	135.92	1.20	162.87	22.00	75.40	191.05	900

Table 14-9 Capped Silver Composite Statistics for Each Primary Zone

ZONE	No of Comps	Mean	CV	SD	q25	q50	q75	Maximum
EAST	5,071	5.13	1.06	5.46	0.88	3.38	7.38	25
FLAST	4,539	2.82	1.52	4.27	0.21	0.98	3.60	25
WEST	7,322	4.39	1.12	4.92	0.78	2.62	6.38	25

Table 14-10: Capped Zinc Composite Statistics for Each Primary Zone

ZONE	No of Comps	Mean	CV	SD	q25	q50	q75	Maximum
EAST	5,071	5.46	1.05	5.75	0.71	3.39	8.61	25
FLAST	4,539	4.13	1.21	4.99	0.45	1.99	6.18	25
WEST	7,322	5.56	1.05	5.82	0.98	3.54	8.36	25

14.6 VARIOGRAPHY

Variography, a component of data analysis, involves studying the spatial variability of an attribute. Instead of traditional variograms, correlograms were utilized for the Olympias data due to their lower sensitivity to outliers and their normalization to the variance of the data for a given lag.

Correlograms were calculated for gold, silver, lead, zinc, arsenic, and iron in the main domains (EAST, FLATS, and WEST). Model parameters and orientation data of rotated correlogram axes are detailed in Table 14-11 and Table 14-12 for gold, silver lead and zinc.

Table 14-11: Correlogram Parameters for the East Zone

	EAST ZONES							
DOMAINS	ZONE 11				ZONE 12 and 13			
ELEMENTS	**Au**	**Ag**	**Pb**	**Zn**	**Au**	**Ag**	**Pb**	**Zn**
Nugget (Co)	0.5	0.156	0.215	0.253	0.488	0.55	0.651	0.45
First Structure (C1) Model	SPH	SPH	SPH	SPH	SPH	SPH	SPH	SPH
Proportion of C1	0.288	0.691	0.57	0.56	0.335	0.24	0.036	0.239
Range of anisotropy X	10	51	8	6	12	8	29	13
Range of anisotropy Y	21	5	5	10	14	13	14	20
Range of anisotropy Z	3	8	30	12	4	10	28	25
Rotation Z	0	55	9	-11	-35	-67	34	-13
Rotation X	-67	102	89	16	-21	42	-5	54
Rotation Y	13	44	-1	26	-114	2	43	-23
Second Structure (C2) Model	SPH	SPH	SPH	SPH	SPH	SPH	SPH	SPH
Proportion ofC2	0.212	0.153	0.215	0.187	0.177	0.21	0.313	0.311
Range of anisotropy X	31	26	29	23	29	542	158	774
Range of anisotropy Y	64	114	489	166	137	253	365	212
Range of anisotropy Z	11	573	66	91	606	28	28	27
Rotation Z	-38	67	-28	54	-119	-81	17	-59
Rotation X	-6	63	1	19	34	23	4	24
Rotation Y	-6	-96	-17	-68	89	9	-21	0

Notes: Models are Spherical. The Anisotropy Rotation is ZXZ RRR hand rule. Positive rotation around the X axis is from Y towards Z, around Y axis is from Z towards X, and around the Z axis is from X toward Y.

Table 14-12: Correlogram Parameters for the Flats and West Zones

	FLATS ZONES				WEST ZONES			
DOMAINS	**ALL ZONES (21,22,23,24,25,26,27)**				**ALL ZONES (30,31,32)**			
ELEMENTS	**Au**	**Ag**	**Pb**	**Zn**	**Au**	**Ag**	**Pb**	**Zn**
Nugget (Co)	0.275	0.468	0.45	0.368	0.448	0.487	0.45	0.6
First Structure (C1) Model	SPH	SPH	SPH	SPH	SPH	SPH	SPH	SPH
Proportion of C1	0.608	0.284	0.305	0.498	0.448	0.37	0.354	0.322
Range of anisotropy X	22	58	6	24	22	11	16	40
Range of anisotropy Y	7	10	19	5	14	25	15	10
Range of anisotropy Z	11	20	10	9	9	38	18	16
Rotation Z	114	-23	-50	53	21	-59	36	-22
Rotation X	48	16	-48	-9	68	19	18	81
Rotation Y	114	6	-22	38	18	57	21	73
Second Structure (C2) Model	SPH	SPH	SPH	SPH	SPH	SPH	SPH	SPH
Proportion ofC2	0.117	0.249	0.245	0.133	0.104	0.143	0.196	0.079

DOMAINS	FLATS ZONES ALL ZONES (21,22,23,24,25,26,27)				WEST ZONES ALL ZONES (30,31,32)			
ELEMENTS	Au	Ag	Pb	Zn	Au	Ag	Pb	Zn
Range of anisotropy X	47	625	562	62	28	42	30	56
Range of anisotropy Y	888	154	57	896	245	528	186	578
Range of anisotropy Z	269	36	32	113	156	74	73	137
Rotation Z	-19	4	-26	54	-13	-53	-39	-30
Rotation X	39	31	25	-5	-1	35	29	34
Rotation Y	27	-19	-6	-88	-111	14	45	42

Notes: Models are Spherical. The Anisotropy Rotation is ZXZ RRR hand rule. Positive rotation around the X axis is from Y towards Z, around Y axis is from Z towards X, and around the Z axis is from X toward Y.

14.7 BLOCK MODEL

The mineral resource was estimated using a block model with limits and sizes as shown in Table 14-13. MineSight software was utilized to model the deposit. The block size was selected based on the minimum unit for drift and fill mining. Ore blocks were coded to have domain percentages to respect the wireframe boundaries, with codes assigned to zones and domain values. This was done to control the hard boundary between mineralization units and to define various search parameters for the interpolation stage.

Table 14-13: Block Model Parameters

	Minimum (m)	Maximum (m)	Block size (m)	Number of blocks
East	478,105	479,700	5	319
North	4,491,165	4,493,480	5	463
Elevation	-800	60	5	172

14.8 GRADE ESTIMATION

Grade estimates for Au, Ag, As, Pb, Zn, and Fe were interpolated using Ordinary Kriging (OK) method. Additionally, nearest–neighbor (NN) grades were interpolated as a declustered distribution to validate the estimation method.

The selection of search orientation and radii was based on drillhole spacing, as well as the orientation and size of each mineralized zone.

A multi-pass approach was employed for interpolation. In the first pass, a grade estimate required composites from a minimum of two holes within the same estimation domain. During the second pass, a single hole was allowed to place a grade estimate in any uninterpolated block from the first pass.

For the East zone, three estimation passes were used to ensure each block had all grades estimated. In the first pass, the search distances used were 60 x 60 x 10 m in X, Y, and Z directions, respectively. Model blocks received a minimum of four composite samples, a maximum of three composites from a single hole, and a total maximum of 12 composites. The second pass, aiming to capture more surrounding samples for local estimation, had smaller search ranges of 30 x 30 x 5 m in X, Y, and Z directions. The maximum number of samples per hole varied between two to five, for different elements, and the total maximum samples varied from 12 to 24 composite samples. The minimum number of samples required varied between three to six samples for different elements. A final large search was employed to place grades for remaining uninterpolated blocks using a 10-sample maximum for interpolation and four-sample maximum per hole.

The Flats zone contains seven separate mineralization lenses. For each lens, a large search radius was used as a first pass to ensure each block had a grade estimated, with a minimum of 4 and a maximum of 18 composites.

The search distances for the second pass consisted of 70X x 70Y x 20Z m and lay in the direction of mineralization. Blocks required a minimum of 5 and a maximum of 16 composite samples for this interpolation, with a maximum of 4 samples allowed from a single hole. In the West zone, the short-range estimation ellipse comprised 70X x 70Y x 15Z m. Blocks required a minimum of 4 and a maximum of 18 composites for this interpolation, with a maximum of 3 samples allowed from a single hole. The longer-ranged pass had a minimum of 4 and a maximum of 12 composites protocol.

In the East and West zones, an outlier restriction was used to control the effects of high-grade composites for gold in local areas of less dense drilling. The restricted distances ranged from 20 to 55 m, with threshold gold grades of 30 g/t (West) and 45 g/t (East).

Bulk density in the block model is function of the estimated Pb, Zn, As and Fe grades. Values for each model block were calculated following the description of the method in Section 10.

14.9 AREAS OF PREVIOUS MINING

Areas of previous mining are in the East and West Zones. Mined out areas were removed from the initial Mineral Resource estimate. Figure 14-6 is a plan view showing the location of the Zones and areas of previous mining.

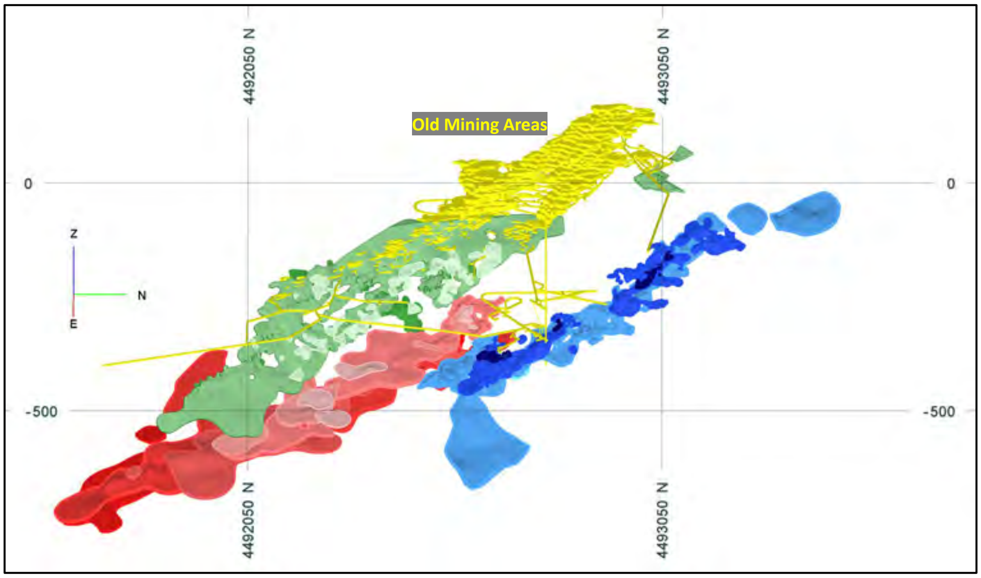


Figure 14-6: Location of Areas of Previous Historic Mining (Eldorado, 2023)

14.10 BLOCK MODEL VALIDATION

14.10.1 Model Check for bias

The block model estimates were checked for global bias by comparing the average metal grades (with no cutoff) from the model with mean grades from NN estimates. (The NN estimator declusters the data and produces a theoretically unbiased estimate of the average value when no cutoff grade is imposed and is a good basis for checking the performance of different estimation methods). The results, summarized in the Table 14-14 and Table 14-15 , show no problems with global bias in the estimates.

Table 14-14: Gold and Silver Global Comparison

ZONE	Au gpt	Au gpt (NN)	*Au/Au (NN)*
10	19.71	19.22	*-2.6%*
11	16.43	16.38	*-0.3%*
12	11.90	11.81	*-0.8%*
21	3.95	3.98	*0.8%*
22	4.43	4.35	*-1.7%*
23	6.97	6.81	*-2.3%*
24	7.04	6.97	*-0.9%*
25	6.73	6.53	*-3.1%*
26	6.06	6.04	*-0.3%*
27	9.76	9.70	*-0.6%*
30	6.18	6.17	*-0.3%*
31	8.56	8.28	*-3.4%*
32	5.22	5.44	*4.1%*

ZONE	Ag g/t	Ag gpt (NN)	*Ag/Ag (NN)*
10	213	210	*-1.3%*
11	119	123	*2.8%*
12	153	147	*-4.5%*
21	314	314	*0.2%*
22	136	136	*-0.2%*
23	135	139	*3.1%*
24	134	135	*0.6%*
25	149	150	*0.5%*
26	120	120	*-0.1%*
27	56	59	*5.9%*
30	99	95	*-3.8%*
31	146	142	*-2.8%*
32	216	219	*1.6%*

Table 14-15: Lead and Zinc Global Comparison

ZONE	Pb %	Pb % (NN)	*Pb/Pb (NN)*
10	6.3	5.8	*-7.2%*
11	3.6	3.6	*-0.4%*
12	4.8	4.7	*-1.1%*
21	9.8	9.7	*-1.0%*
22	4.6	4.5	*-3.3%*
23	4.9	4.7	*-2.7%*
24	4.6	4.7	*3.8%*
25	5.2	5.1	*-0.7%*
26	4.2	4.3	*2.6%*
27	1.8	1.9	*3.6%*
30	2.9	2.9	*2.0%*
31	4.5	4.5	*0.1%*
32	6.9	6.8	*-1.2%*

ZONE	Zn %	Zn % (NN)	*Zn/Zn (NN)*
10	5.8	6.5	*9.5%*
11	3.7	3.7	*0.4%*
12	5.1	5.0	*-1.6%*
21	7.1	7.3	*3.7%*
22	6.0	6.0	*-1.4%*
23	6.8	6.7	*-1.8%*
24	5.9	6.1	*3.2%*
25	6.6	6.6	*0.9%*
26	6.6	6.7	*1.8%*
27	2.9	2.8	*-2.5%*
30	3.7	3.8	*3.7%*
31	5.8	5.8	*0.8%*
32	8.2	8.1	*-2.3%*

14.10.2 Visual inspection and statistical comparison

Models were checked for proper coding of drill hole intervals and block model cells in sections and in 3D. Coding was found to be properly done. Grade interpolation was examined relative to drill hole composite values by inspecting sections and plans. The checks showed good agreement between drill hole composite values and model cell values. The hard boundaries between grade shells appear to have constrained grades to their respective estimation domains. The addition of the outlier restriction values succeeded in minimizing grade smearing in regions of sparse data. Examples of representative views containing block model grades and point view drill hole composites are shown on the following screen captures at Figure 14-7, Figure 14-8, and Figure 14-9.

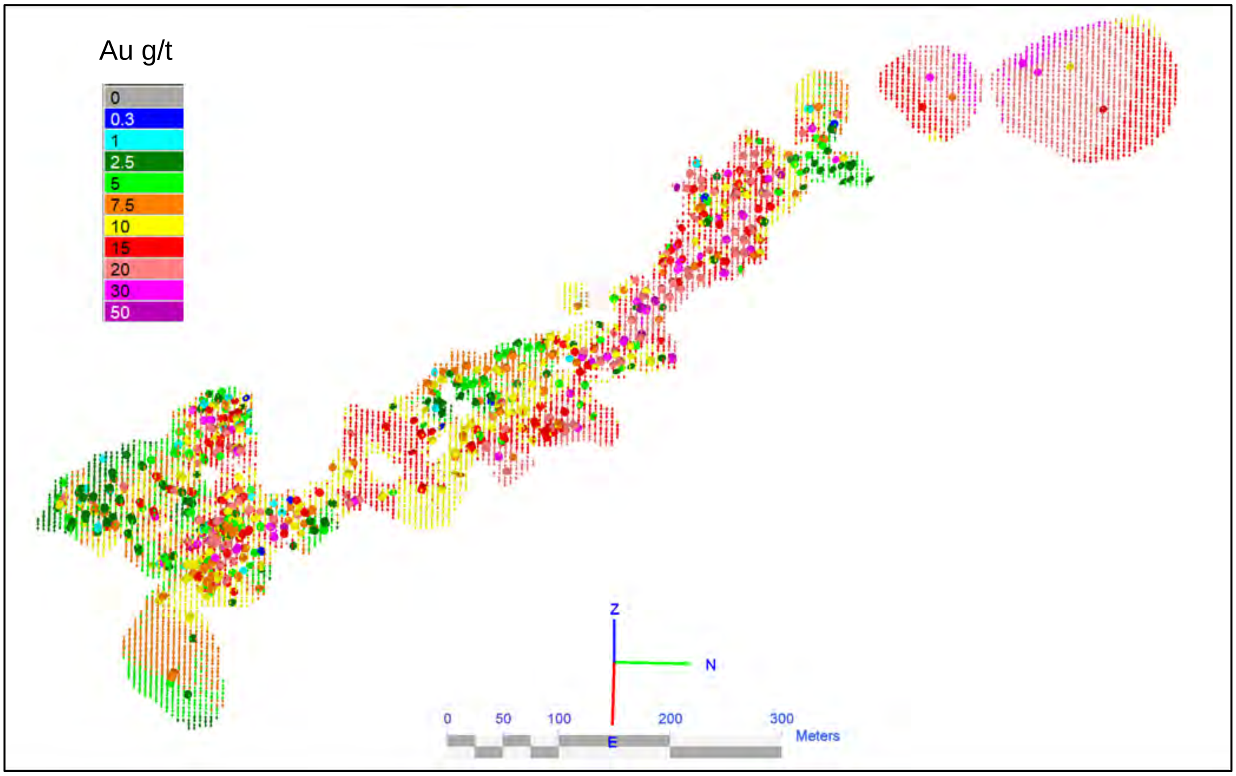


Figure 14-7: Visual Validation on 3D for Gold on East Zone (Eldorado, 2023)

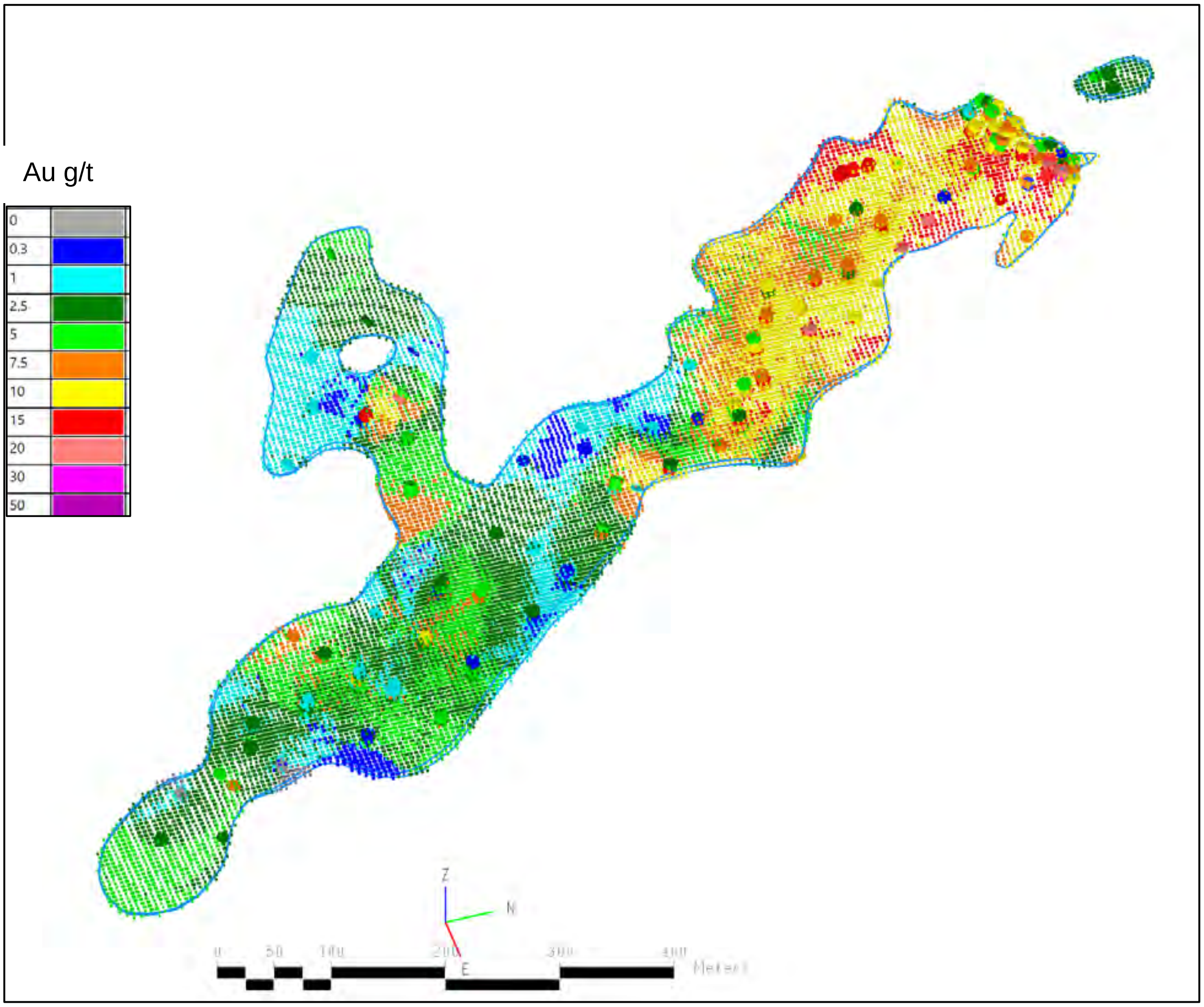


Figure 14-8: Visual Validation on 3D Zone 25 for Gold (Eldorado, 2023)

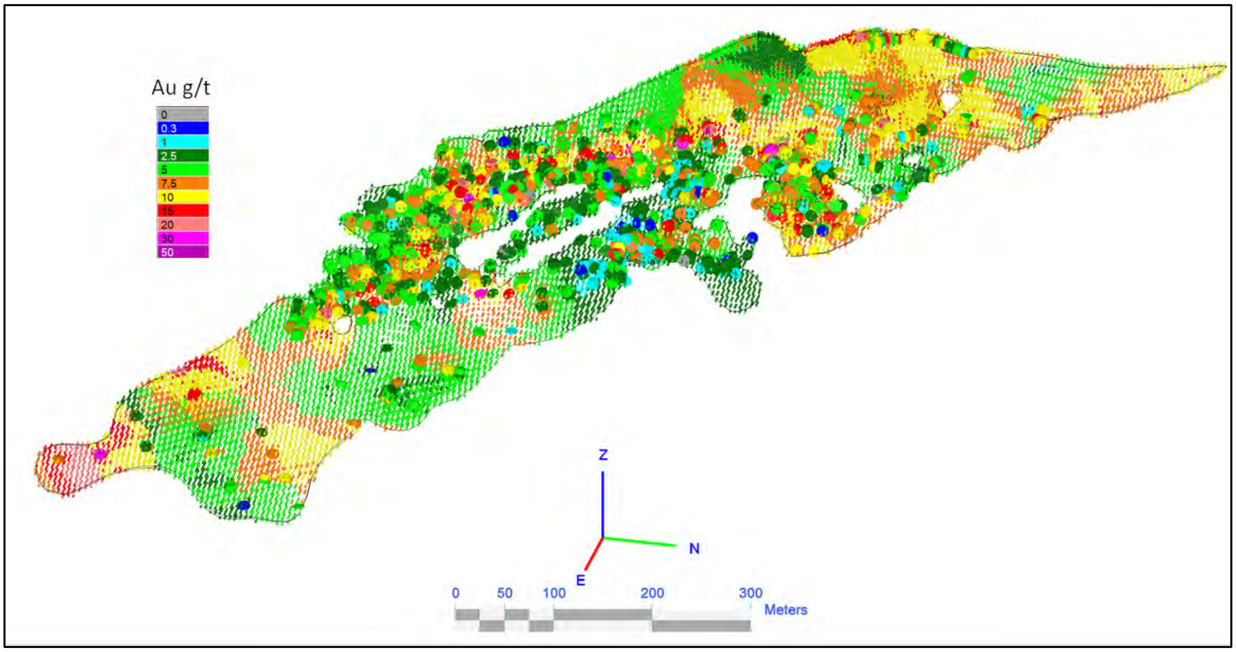


Figure 14-9: Visual Validation on 3D West Zone for Gold (Eldorado, 2023)

14.10.3 Swath Plots

The model was also checked for local trends in the grade estimates by grade slice or swath checks. This was done by plotting the mean values from the NN estimate against the kriged results for benches, easting and northing in 5 m swaths. The kriged estimate should be smoother than the NN estimate, which should therefore fluctuate around the kriged estimate on the plots. The observed trends behave as predicted, showing no significant trends in the estimates in the model. (Figure 14-10 to Figure 14-15)

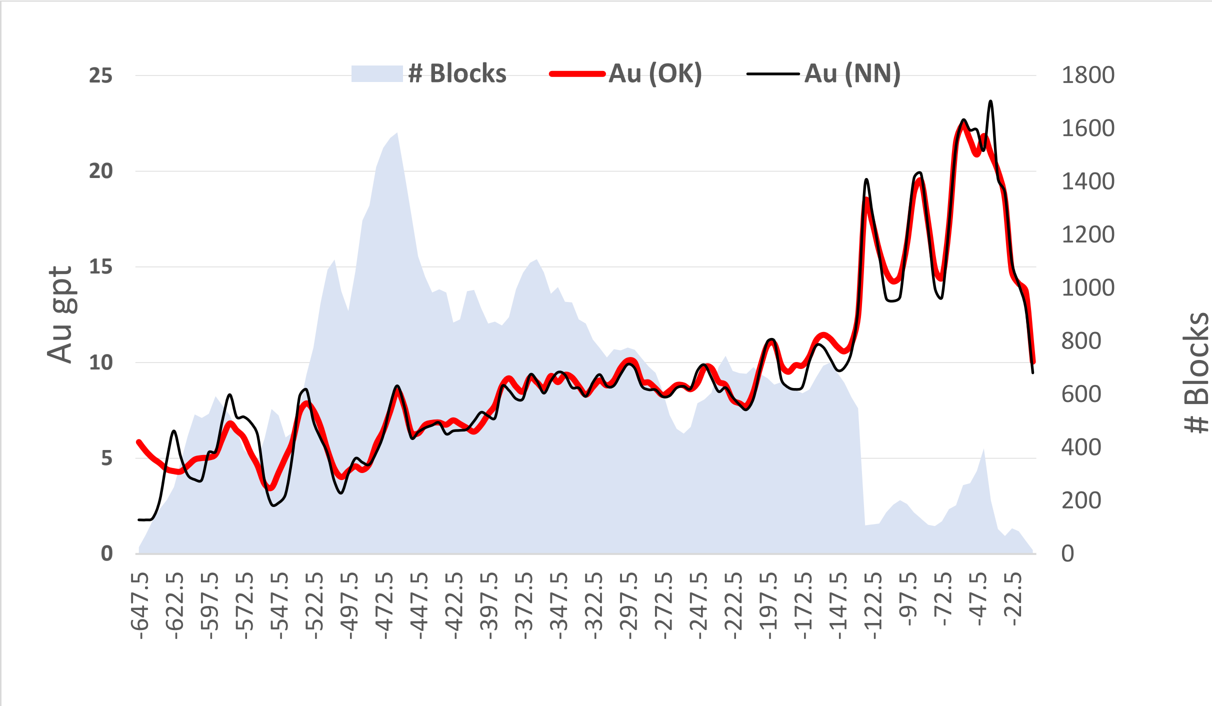


Figure 14-10: Au SWATH plot – Elevation (Eldorado, 2023)

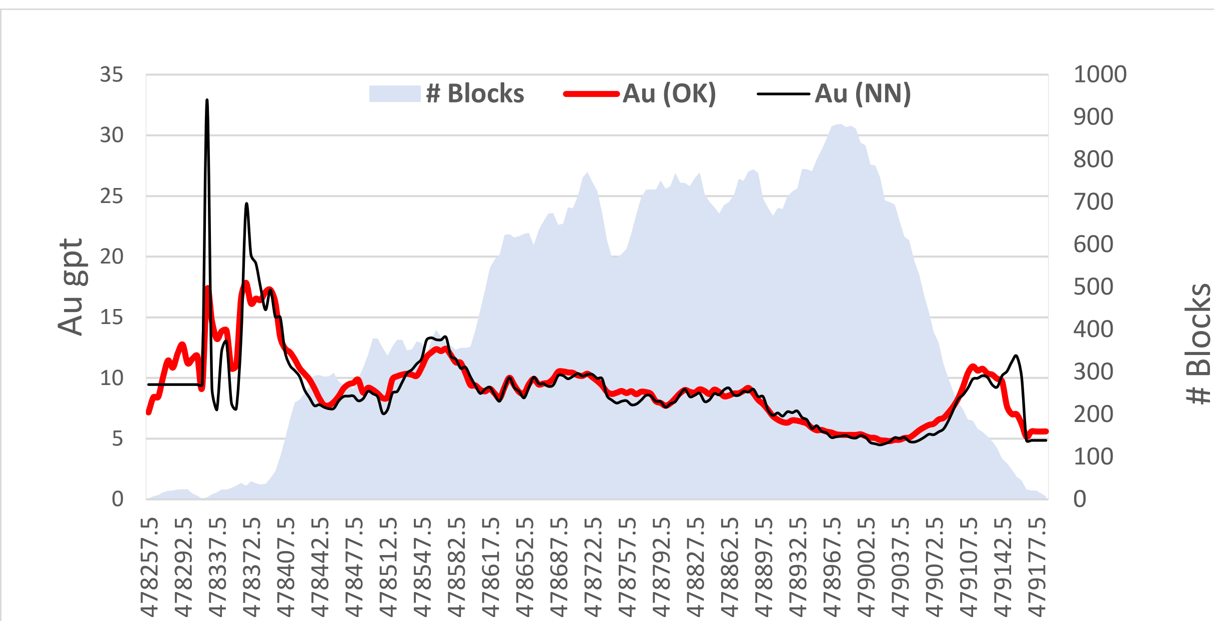


Figure 14-11: Au SWATH plot – Easting (Eldorado, 2023)

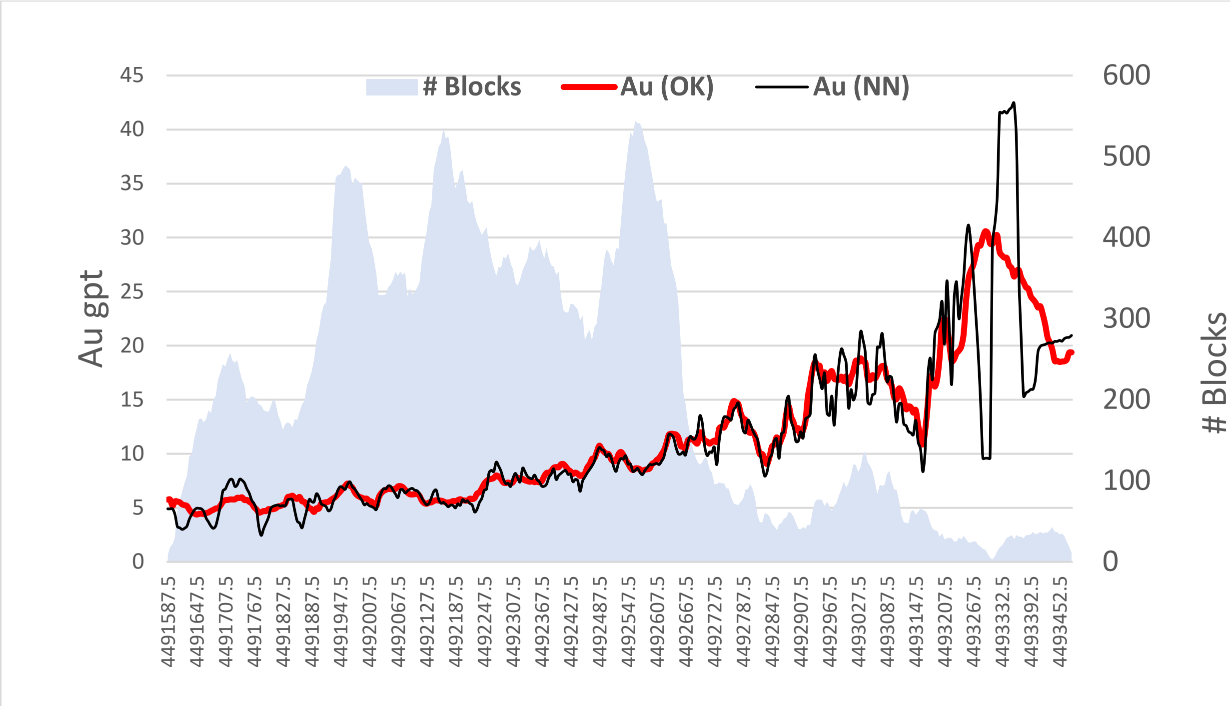


Figure 14-12: Au SWATH plot – Northing (Eldorado, 2023)

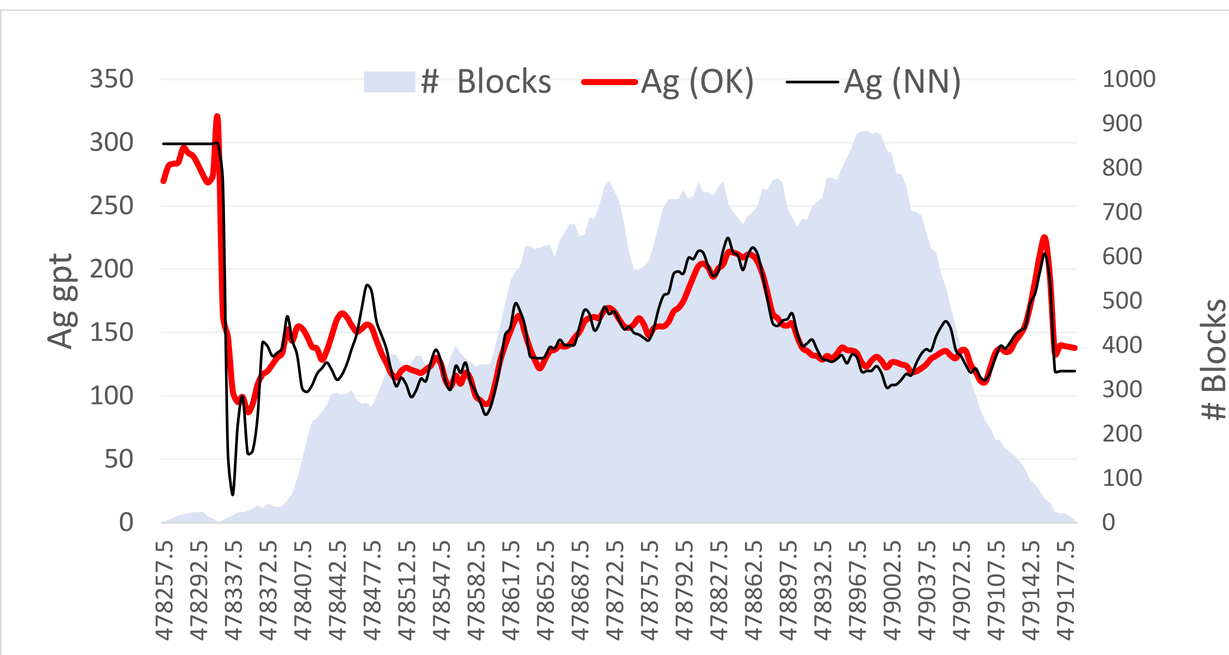


Figure 14-13: Ag SWATH plot – Easting (Eldorado, 2023)

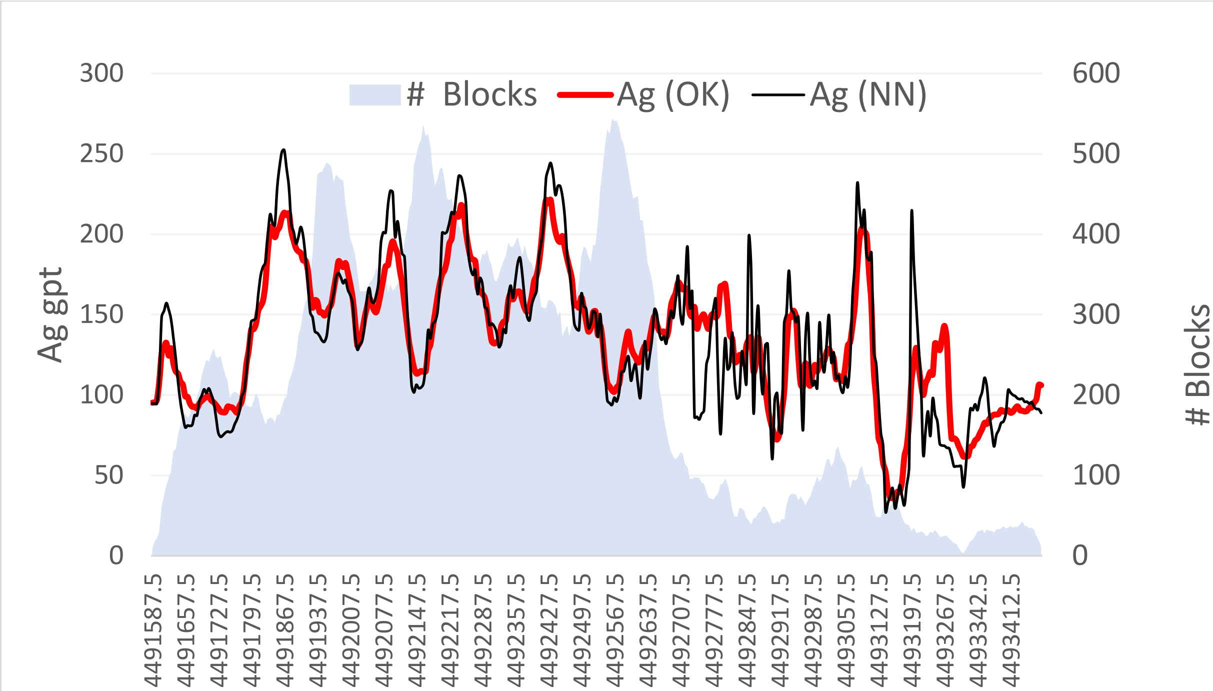


Figure 14-14: Ag SWATH plot – Northing (Eldorado, 2023)

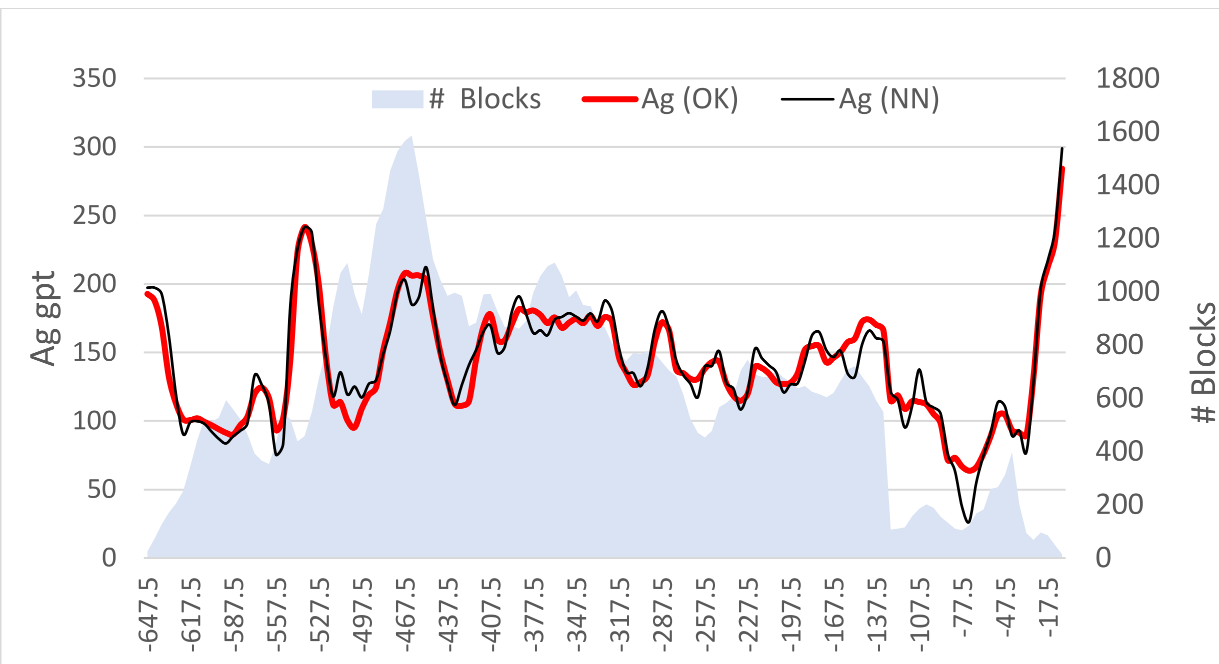


Figure 14-15: Ag SWATH plot – Elevation (Eldorado, 2023)

14.11 MINERAL RESOURCE CLASSIFICATION

The Mineral Resource was classified as Measured, Indicated, and Inferred using logic consistent with the CIM Definition Standards (2014) referred to in NI 43-101. The Mineral Resource was classified as Measured, Indicated, or Inferred based on:

- Location and number of drillholes.
- Location of blocks close to areas that were previously mined.

The Measured Mineral Resource was generally located near areas of active mining, tested by infill drilling and within approximately 15 m from at least three drillholes. The Indicated Mineral Resource was generally located within approximately 45 m from two drillholes. Blocks that honoured these conditions for Measured and Indicated Mineral Resources were examined in longitudinal section by QP. Polygons were digitally drawn around contiguous areas of appropriately tagged blocks for each class type, resolving outliers. These shapes were subsequently used to formally classify the model blocks as Measured or Indicated Mineral Resources. All the remaining blocks containing a gold grade were classified as Inferred Mineral Resources.

Figure 14-16, Figure 14-17 and Figure 14-18 show the location in plan of the Measured, Indicated, and Inferred Mineral Resources in relation to the location of the drillholes for the East Zone, West Zone, and Flats, respectively.

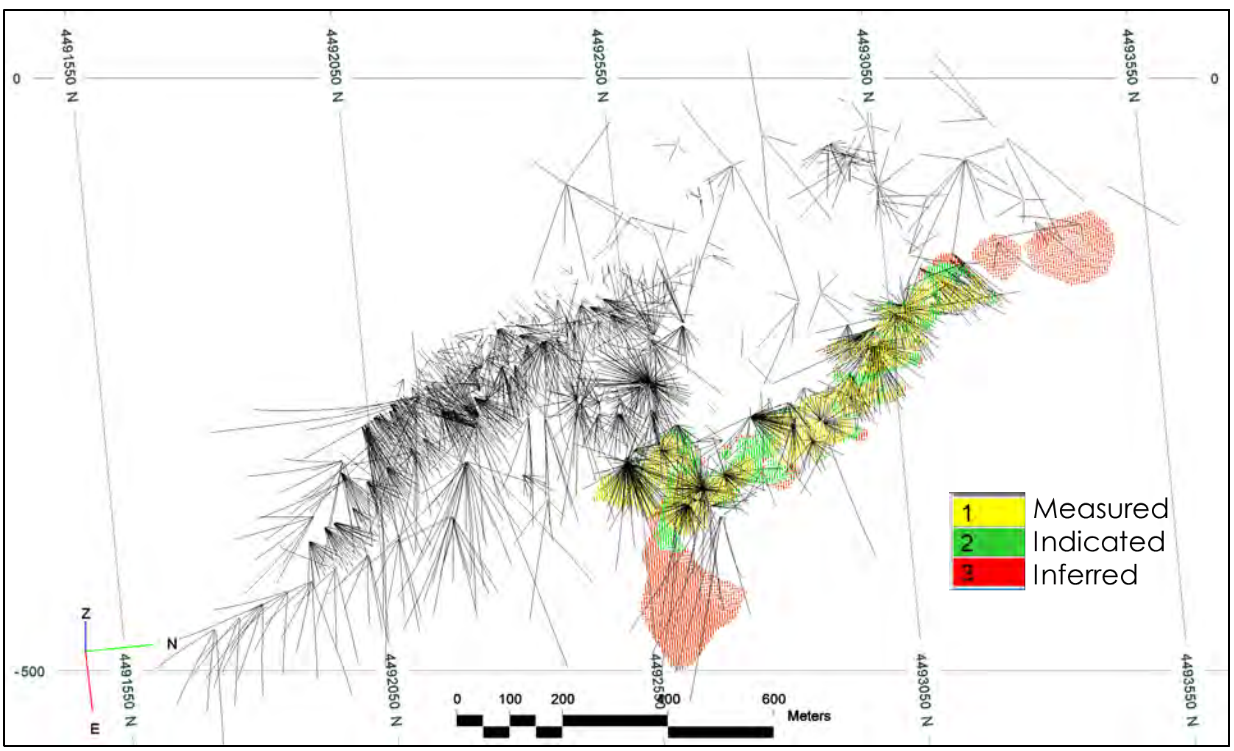


Figure 14-16: East Zone Mineral Resource Classification (Eldorado, 2023)

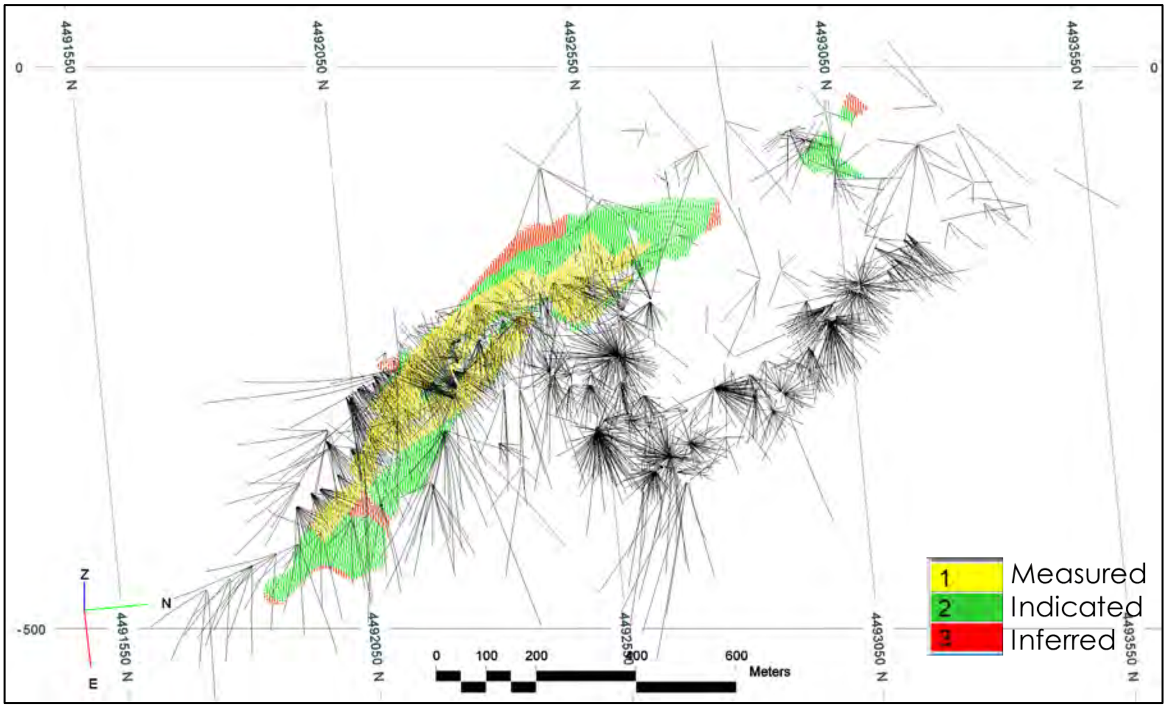


Figure 14-17: West Zone Mineral Resource Classification (Eldorado, 2023)

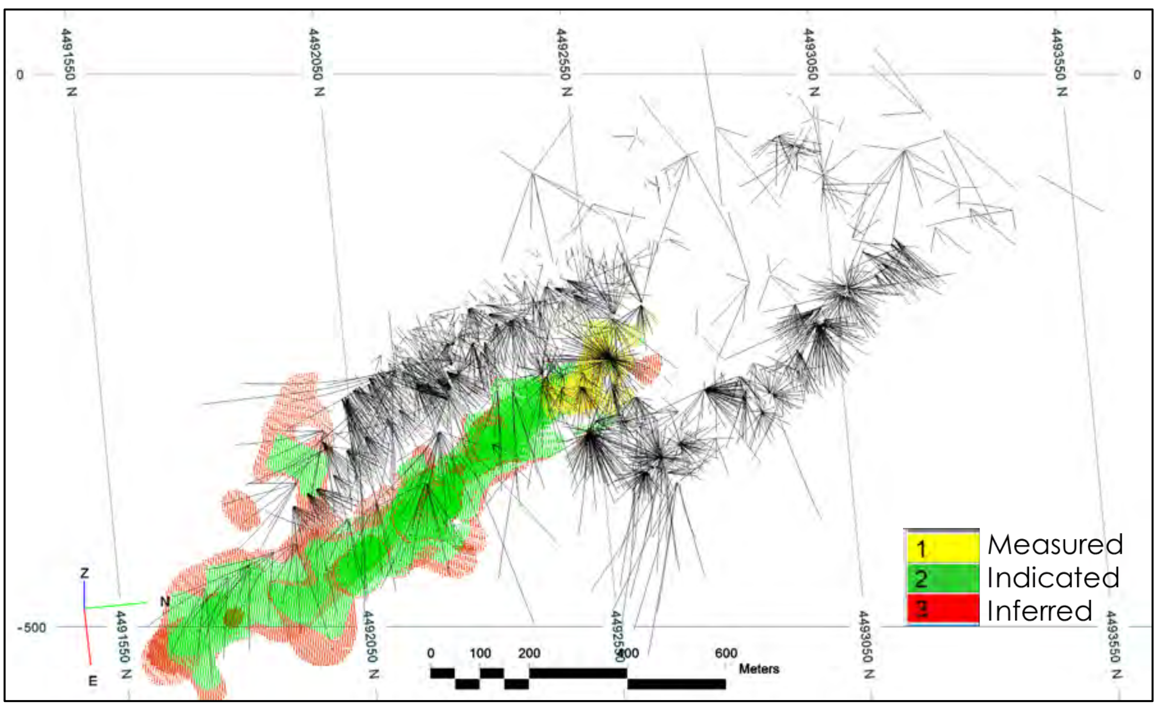


Figure 14-18: Flats Mineral Resource Classification (Eldorado, 2023)

14.12 MINERAL RESOURCE ESTIMATE

The Mineral Resource estimate has been constrained within potentially mineable shapes that were manually drawn based on a $125 NSR threshold. The metal prices used were $1,800/oz gold, $24/oz silver, $2,800/t zinc, and $2,200/t lead. Costs and recoveries were used in the Mineral Reserve estimation and are addressed in Section 15.

The Mineral Resources based on the potentially mineable shapes as of September 30, 2023 are shown by Zone in Table 14-16.

There are no foreseen environmental, permitting, legal, title, taxation, socio-economic, marketing, political, or other relevant factors that could materially affect the Mineral Resource estimates.

Table 14-16: Mineral Resources by Zone as of September 30, 2023

Zone	Class	Tonnes (kt)	Au (g/t)	Au (koz)	Ag (g/t)	Ag (koz)	Pb (%)	Pb (kt)	Zn (%)	Zn (kt)
East	Measured	910	13.20	386	207	6,072	6.5	59	7.3	66
	Indicated	171	13.64	75	139	768	4.4	8	4.7	8
	M&I	***1,082***	***13.27***	***462***	***197***	***6,840***	***6.2***	***67***	***6.9***	***75***
	Inferred	512	11.39	188	84	1,382	2.7	14	2.3	12
Flats	Measured	934	11.44	343	111	3,328	3.5	32	4.7	43
	Indicated	7,716	6.53	1,619	144	35,663	5.0	384	6.9	530
	M&I	***8,650***	***7.06***	***1,963***	***140***	***38,991***	***4.8***	***417***	***6.6***	***573***
	Inferred	1,506	6.71	325	198	9,612	7.2	108	7.8	118
West	Measured	1,600	8.64	443	143	7,426	4.6	75	5.8	94
	Indicated	1,105	9.11	330	150	5,339	4.4	49	5.0	55
	M&I	***2,705***	***8.83***	***773***	***146***	***12,766***	***4.6***	***124***	***5.5***	***149***
	Inferred	320	7.57	77	237	2,494	7.2	23	9.0	30
Stockpile		3	9.10	1	238	21	9.0	0.3	8.0	0.2
Total	Measured	3,447	10.59	1,174	152	16,849	4.8	167	5.9	204
	Indicated	8,992	7.00	2,024	144	41,770	4.9	441	6.6	593
	M&I	***12,439***	***8.00***	***3,198***	***147***	***58,619***	***4.9***	***608***	***6.4***	***797***
	Inferred	2,339	7.84	589	179	13,488	6.2	146	6.8	160

Notes:

- CIM Definition Standards (2014) were used for reporting the Mineral Resources.
- Mineral Resources include those Resources converted to Mineral Reserves.
- Tonnages of mined out blocks and sterilized areas were depleted from the model.
- Mineral Resources were constrained by 3D volumes whose design was guided by the reporting cut-off grade of $125 NSR, contiguous areas of mineralization and mineability. Only material internal to these volumes was eligible for reporting.
- The NSR value is based on a combination of metal price and individual metal recoveries, which are variable throughout the deposit.
- Prices used are as follows, Au: $1,800/oz, Ag: $24/oz, Zn: $2,800/t, Pb: $2,200/t.
- The drillhole data base was closed at end of March 2023.
- The numbers may not compute exactly due to rounding.
- Mineral Resources are reported on a 100% ownership basis; Eldorado owns 100% of Hellas Gold.
- Measured Mineral Resources in this table include 2.8 kt of stockpiled ore at the end of September 2023.

SECTION • 15 MINERAL RESERVE ESTIMATES

The Mineral Reserve estimates conform to CIM Definition Standards referred to in NI 43-101. All design and scheduling have been completed using the Mineral Resource model and estimate described in Section 14. The Mineral Reserves are as of September 30, 2023. They were updated by Eldorado using production data from the Olympias mine up to September 30, 2023. The Qualified Person who takes responsibility for the Mineral Reserves is Victor Vdovin, P.Eng. Head of Technical Services for Kassandra, Hellas Gold (Eldorado).

Only Measured and Indicated Mineral Resources have been used for Mineral Reserves estimation. The estimation assumes that the mining method employed at the mine will be drift and fill (DAF). The Mineral Reserves are included in Measured and Indicated Mineral Resources and are based on a planning cut-off value of $217/t for DAF. Average mining dilution and mining recovery factors of 15% and 95%, respectively, for DAF are assumed.

The cut-off value (COV) is based on a gold metal price of $1,400/oz, silver metal price of $19/oz, zinc metal price of $2,500/t, and lead metal price of $2,000/t. Metallurgical recoveries are based on feed grade and metallurgical algorithms.

The estimated Proven and Probable underground Mineral Reserves for the Olympias deposit are summarized in Table 15-1. Fourth-quarter 2023 production totalled 18 koz of gold production from 115 kt of ore at an average feed grade of 8.7 g/t summarized in Table 15-2.

The Mineral Reserve estimates are not materially affected by mining, metallurgical, infrastructure, permitting and other relevant factors. There are no known legal, political, environmental, or other risks that could materially affect the potential development of the Mineral Reserves.

Table 15-1: Mineral Reserves as of September 30, 2023

Class	Tonnes (kt)	Au (g/t)	Au (koz)	Ag (g/t)	Ag (koz)	Pb (%)	Pb (kt)	Zn (%)	Zn (kt)
Proven	2,353	8.9	672	126.5	9,568	4.0	94	4.7	111
Probable	6,502	5.9	1,235	125.5	26,242	4.3	280	5.5	357
Total	**8,855**	**6.7**	**1,907**	**125.8**	**35,811**	**4.2**	**374**	**5.3**	**468**

Table 15-2: Olympias Q4 2023 Gold Production

	Tonnes Milled (kt)	Head Grade				Produced			
		Au (g/t)	Ag (g/t)	Pb (%)	Zn (%)	Au (koz)	Ag (koz)	Pb (t)	Zn (t)
Q4 2023	115	8.7	124	3.99	4.58	18	320	3,083	3,493

15.1 CUT-OFF VALUE

The cut-off values supporting the estimation of underground Mineral Reserves were developed in 2023 from forecast 2023 costs and future projected operating and sustaining capital costs at a steady-state target production rate of 650 ktpa. The cost assessment indicated that NSR values of $217/t for DAF mining would adequately cover all site operating and sustaining capital costs. The DAF costs were used to create potentially mineable stope shapes from the NSR block model. The NSR field in the block model was created by Eldorado and is based on experience of actual metallurgical recovery, historical sales and includes transport and refining costs. The 2023 NSR calculation is based on regression formulae derived from process plant data. The formulae include upper and lower limits for the recoveries and considers the input tonnes (dmt) to ensure an improved NSR estimation.

It is recognized that the Olympias mine is currently in a ramp-up phase and has not yet achieved the proposed production rate and mining cost targets. Table 15-3 contains target costs over the peak production phase (2025 – 2035) when Olympias is planned to reach a steady-state throughput of approximately 650 ktpa.

Table 15-3: Steady-State (650 ktpa) Operating Costs

Category	Target
Mining cost (DAF)	111.78
Process cost	57.17
G&A cost	16.64
Sustaining capital	32.04
Total	**217.63**

For achievement of the target 650 ktpa production rate, the operational improvement plan includes the elements described in Table 15-4.

Table 15-4: Improvement Initiatives for Achieving 650 ktpa

Initiative	Status
Increased equipment availability.	On-going (improvement from 57% Q1 to 63% Q4, 2023 for jumbo drill rigs)
Upskilling and multiskilling workforce.	On-going with consultants (laserline), training center, increased number of specialties (HR)
Increase in labour utilization.	Multiskilling is on-going, contractor demobilized from site, and useful tonnes (ore and development waste)
Key infrastructure projects: ventilation, dewatering, UG workshop.	Ventilation upgrade and key raise infrastructure is completed, dewatering scheduled for H1 2024 and UG workshop completion in Q1 2024.
Bulk emulsion implementation and drilling quality to increase pull length.	Expected completion with redundancy in H1 2024.

Initiative	Status
Increase in DAF stope size to improve productivity.	Completed in Flats Zone (6mW x 6mH) and on-going in West Zone (5mW x 6mH)
Mult-pass DAF stope mining using primary/ secondary/ tertiary mining method.	Implemented in Flats Zone.

Eldorado considers the plans for operational improvements to be achievable. The QP supports this consideration. The impact of operational improvements is closely monitored and further gains are expected in 2024 and later years. The results of the operational improvement plan are evidenced by the 19% increase in ore tonnes from 2022 to 2023. Mitigation strategies and plans are in place to ensure compliance to the required strategy. Failure to achieve the target production and cost performance by 2026 would potentially reduce Mineral Reserves and shorten the mine life.

15.1.1 Equipment and Labour

The QP has reviewed the equipment and labour numbers and, taking into account the Management initiatives, considers the projected increase in equipment and productivity to be reasonable and supports the selected cut-off value to meet the steady-state target production of 650 ktpa. In addition to the current fleet only prime movers (loaders and trucks) are planned to be added as the mine gets deeper to ensure there is sufficient hauling capacity. In addition, sustaining capital to access the Mineral Reserves through development as well as equipment maintenance and rebuilds have been considered, and the provision is considered to be reasonable for the targeted production rate.

15.2 MINING SHAPES

DAF stope shapes were generated by Eldorado using the software mineable shape optimizer (MSO), optimizing on the NSR field and using the head grade cutoff function at $217/t, minimum stope width of 4m, and variable heights of 5m and 6m depending on the zone. The DAF stope shapes in the Flats Zone were 6 m in height compared to the other zones where the stope height was 5 m, which was done to increase productivity in the Flats Zone. The FW and HW angles were kept at 90° to recreate the actual mining, which is based on vertical drift walls (the OLM design does not shanty the backs to reduce internal dilution).

Evaluating the extents of the orebody and including outlying stope shapes, material deemed uneconomic was not included in the mine plan or the Mineral Reserve estimate. Capital and operating development cost estimates were used in determining economic viability for these areas.

15.3 DILUTION AND RECOVERY FACTORS

In the evaluation of underground Mineral Reserves, modifying factors were applied to the tonnages and grades of all mining shapes to account for dilution and ore losses. In the DAF stopes, a mining dilution factor of 15% and a mining recovery of 95% were used to estimate Mineral Reserves. The main source of dilution is mining overbreak due to blasting and the overbreak created from previous stopes. The overbreak for Olympias mine as a final target is 15%; this is deemed achievable based on experience at other operating mines for similar rock conditions and through continuous improvement efforts focused on minimizing overbreak via drilling and blasting optimization.

Ore losses (mining recovery factors) are related to the practicalities of extracting ore under varying conditions, including difficult mining geometry, problematic rock conditions, losses of ore into backfill, and blasting issues. Mining recovery has been estimated to be 95%. Figure 15-1 and Figure 15-2 show the history overbreak and underbreak at Olympias mine.

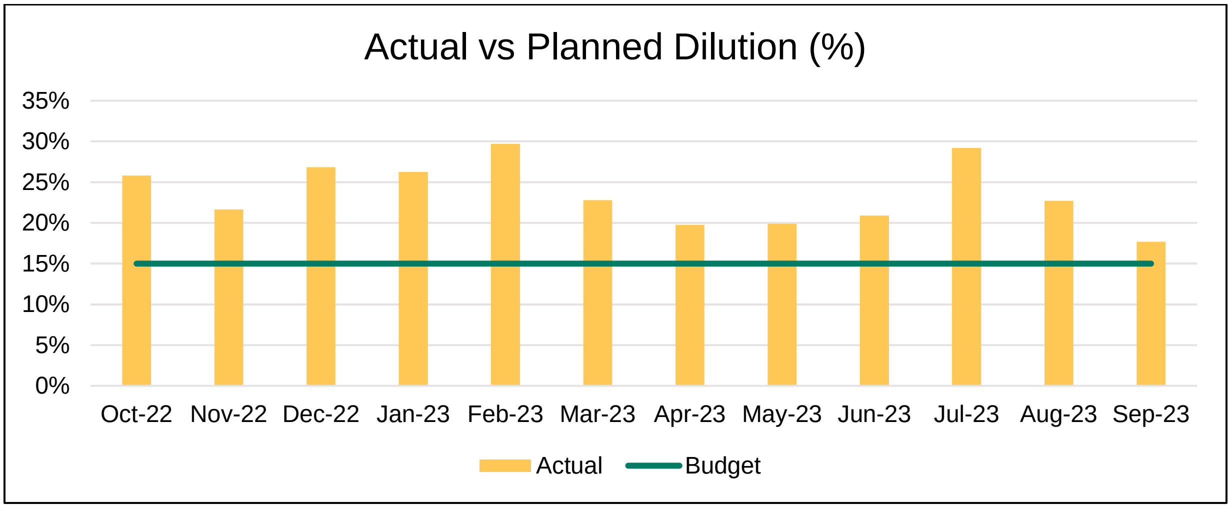


Figure 15-1: Actual vs Planned Dilution (Overbreak %)

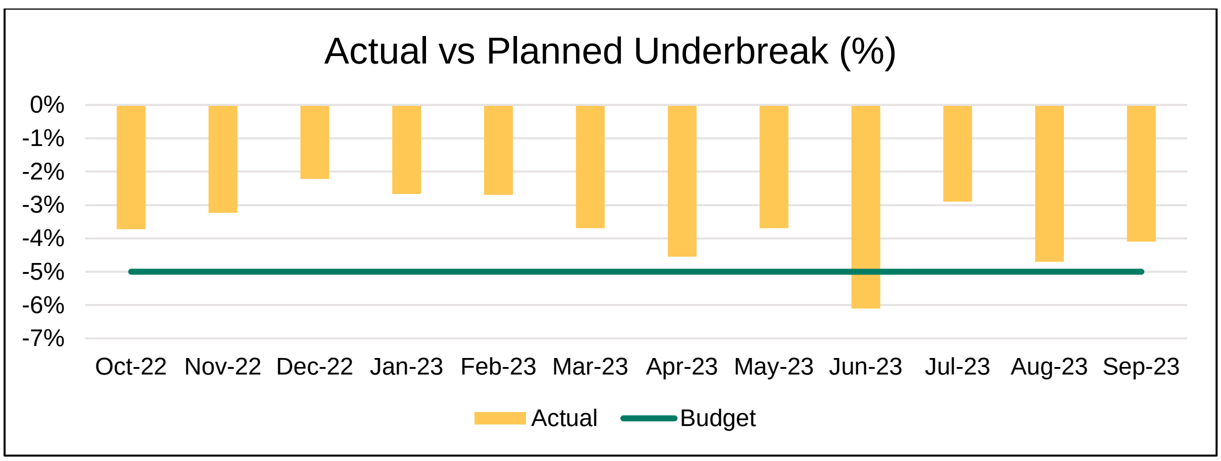


Figure 15-2: Actual vs Planned Losses (Underbreak %)

SECTION • 16 MINING METHODS

16.1 INTRODUCTION

The Olympias mine is an underground mining operation extracting ore from three main Zones: East, West and Flats; the Remnants are a sub-zone of the West Zone. These are shown in Table 16-1 as an isometric view of the Olympias underground zones looking north-west. All the zones are mined using the drift and fill (DAF) mining method.

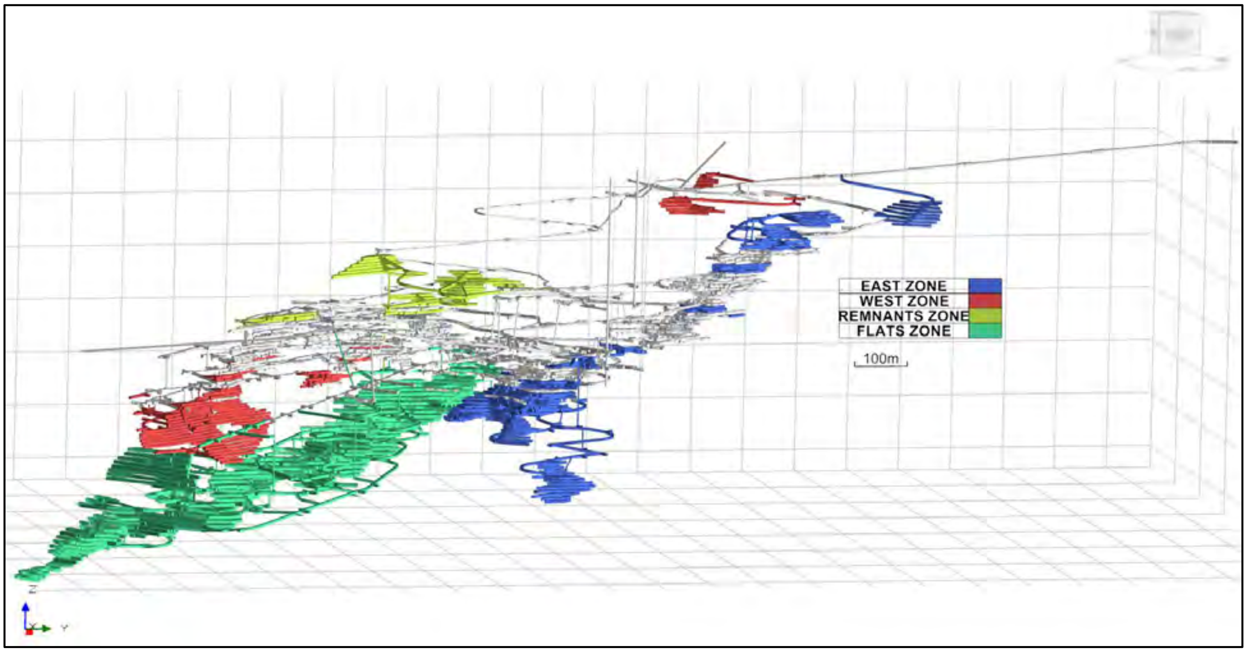


Figure 16-1: Isometric view of Olympias Mining Areas (Eldorado, 2023)

The East Zone is one of the three current active mining areas at the Olympias mine. It extends approximately 750 m horizontally and has a vertical height of approximately 310 m (-390 masl to -80 masl). The zone dips from 20° to 25°. Existing development in the East Zone is established at 20 m to 25 m sublevels. The zone has potential for expansion at depth to the southeast as new inferred mineralization is discovered and drilled.

The West Zone is the second active mining area at Olympias. The lower portion of the West Zone dips between 45° to 65° and has a horizontal extent of approximately 800 m and a vertical rise of approximately 205 m (-435 masl to -230 masl). Existing development between -230 masl and -345 masl accesses the West Zone DAF stopes. Active decline development is advancing to levels -320 masl to -420 masl for future mining.

The upper portion of the West Zone (also referred to as the Tops Zone) is situated between -60 masl and -25 masl. The zone dips at 15° to 25° and has a horizontal extent of 100 m. This area has no existing development.

The third active mining area is the Flats Zone. This zone dips from 15° to 20°, has a horizontal extent of approximately 1,100 m and elevation difference of approximately 350 m (-285 masl to -635 masl). The current mining area in the Flats is at -340 masl. The Flats currently has limited existing development. The Flats Zone comprises the largest portion of the mineral reserve of approximately 6.7M tonnes (75%).

The majority (~95%) of the Mineral Reserve tonnes will be extracted from these three zones (East, West, and Flats). The remaining ore will be mined from the Remnants sub-zone, which is further described below.

The Remnants sub-zone (part of the overall West Zone that was mined historically) has a dip of 30° to 50° and is situated on the west side of the Olympias orebody between elevations -230 masl and -150 masl. The zone includes the remaining areas of previously mined DAF stopes, as well as unmined areas that will be mined using the DAF mining method. Mining in the remnants is currently on-going on the -230 masl level.

Main access to underground is through the existing portal to the north at 70 masl, as well as a portal to the east at 55 masl. An existing shaft (previously utilized for hoisting) extends from surface down to -315 masl. This shaft is not, nor is planned to be, used to transport ore / waste to surface. It is planned to be utilized for ventilation throughout the life-of-mine (LOM). The existing underground development plus an increased emphasis on future development is planned to allow the mine to increase the annual production rate from the current 470,000 tpa up to 650 ktpa. As development progresses, additional stope mining levels will be accessed from lower parts of the mine, in the East, West, and Flats, to achieve the target production increase to 650 ktpa.

Mine life is projected to be 15 years for the Mineral Reserves of 8.9 Mt; this includes the estimated production of 124 kt at 8.2 g/t Au, 121.5 g/t Ag, 3.9% Pb, and 4.3% Zn that was planned to be mined in the final quarter of 2023.

16.2 GEOTECHNICAL CONSIDERATIONS

16.2.1 General Description

The geology of the Olympias mine is complex, varying primarily between marble, biotite gneiss and pegmatite at mining horizons. Pegmatite and other rock units can be altered to varying intensities and are locally weak zones within the orebody and at the hanging wall (HW) contact, particularly in the West Zone. The Kassandra fault follows the West Zone and extends lower into the Flats. The occurrence of ground water inflow along the fault zone creates hazards such as water pressure build up and reduction of cohesion of rock joints. As such, rock mass conditions at the Olympias mine vary considerably depending on the mineralogy of the orebody, the presence of significant faults, and the position of the excavations.

The rock mass quality in the East Zone is the most competent of all three major mining zones. Ground conditions in the West Zone vary considerably. Most of the poor ground is within the orebody or at the HW contacts due to the presence of the Kassandra fault and strong to intense clay alteration. The fault and weak rock mass strength tends to cause instability or HW overbreak / sloughing. In 2021, the rock mass quality in the Flats was re-assessed (Golder, 2021) based on three 2019 geotechnical drillholes (GTBH01 to GTBH03) and historical drillhole data that fall within 15 m of the Flats Zone orebody wireframes. Table 16-1 and Table 16-2 summarize Q' (modified Q values) from these drillholes.

Table 16-1: Q' Summary for Different Lithological Units from 2019 GTBH

Lithology	25th percentile	50th percentile	75th percentile Q
Gneiss	11	24	37
Marble	13	22	33
Mineralized Zone	15	23	64
Pegmatite	1	4	18

Source: Q2 and Q3 2021 Geotechnical Support Summary (Golder 2021).

Table 16-2: Q' Summary for Different Lithological Units from 2019 GTBH and Historical Drillholes

Lithology	25th percentile	50th percentile	75th percentile Q
Gneiss	2	4	6
Marble	4	6	11
Mineralized Zone	3	7	11

Source: Q2 and Q3 2021 Geotechnical Support Summary (Golder 2021).

16.2.2 Mining Method and Mine Design Considerations

Given the high variability of rock mass conditions in the Olympias Mine, the DAF mining method is used throughout, with varying cut length and drift size depending upon local ground conditions and design considerations. In the East Zone and in the Remnants area the dip and the orebody geometry dictate the preferred method rather than ground conditions.

Based on the most recent rock mass condition assessment from the 2019 and historical drillhole data, about 70% of the drilling length intersecting the Flats Zone indicates fair or good ground conditions (Q' > 4). Taking into account the uncertainties and geotechnical risks associated with the variable ground condition, a decision was made to increase the drift size for the Flats Zone from 5mW x 5mH to 6mW x 6mH. This would improve productivity in the zone by increasing the tonnes/linear meter and increasing backfill volumes. Generally, the good ground conditions justified the change to increase the size of the production drifts. In areas of poor ground conditions, the design would revert to 5mW x 5mH. Future assessments of the zone include longhole open stoping options as the geotechnical conditions and orebody geometry support this.

The maximum allowable span for DAF open excavations was assessed based upon self-stand-up time after blasting and before ground support installation (Golder, 2021). The guidance is provided as below:

- Design spans between 4 - 7 m are potentially achievable in the Flats Zone when Q' > 25th percentile.

  - o Increased spans beyond 7 m are likely not practicable as a result of minimal stand-up time.
  - o Drifting spans greater than 5 m will likely required good blasting practice, ground control application and trial.
- Expedited shotcrete and / or ground support may be required at greater mining depths for increased spans and poorer rock mass conditions.

The maximum allowable span for mining under backfill (cemented aggregate fill (CAF) and paste fill) was assessed using an empirical database for underhand mining spans. Table 16-3 provides the estimated critical span for the underhand mining method at achieved backfill strengths shown as universal compressive strength (UCS).

Table 16-3: Estimated Critical Span for Underhand Mining Method

Percentile backfill strength achieved	CAF		Paste Fill	
	Achieved UCS (MPa)	Span (m)	Achieved UCS (MPa)	Span (m)
5th	4.3	8.3	0.9	4.3
10th	5.2	8.9	1.1	4.8
25th	6.7	9.9	1.6	5.6
50th	9.2	11.2	2.3	6.4
75th	11.7	12.3	3.0	7.1

Source: Q2 and Q3 2021 Geotechnical Support Summary (Golder 2021).

The achievable drift and fill round lengths were estimated for each support class by benchmarking face mapping data (2018 - 2021) against empirical evidence, as shown in Table 16-4. This table shows round length for different ground support categories based on 90% confidence of stability. The round length limitations are already in place and detailed planning is based on the constraints outlined.

Table 16-4: Round Length for Different Ground Support Categories

Q range	Round length (m)
(Q > 4) Ast	3.6
(1 < Q < 4) Bst	3.0
(0.4 < Q < 1) Cst Lower	2.5
(0.1 < Q < 0.4) Cst Upper	2.0
(Q < 0.1) Dst	1.5

16.2.3 Ground Support

Different ground support classes have been implemented for ore and waste rock development at Olympias mine based on the ranges of Q values. Ground support elements include resin rebar, Splitsets, Swellex, self-drilling anchor, twin strand cable bolts, Orso straps, wire mesh (screen), rebar reinforced shotcrete arches, and fiber reinforced shotcrete. Field observations indicate that ground support application has generally been adequate, with no unsecured ground being noted and support performance apparently good.

Ground support guidance for the Flats Zone was developed based on a range of ground conditions and assumed design inputs (Golder 2021). Kinematic review of ground support standards was conducted to evaluate the wedge potentials for 5 – 7 m drift span based on existing structural orientation data, which resulted in the following recommendations for ore drift development.

Q range of greater than 4

- Reduce bolt spacing to 1.2 m x 1.2 m to achieve Factor of Safety (FOS) 1.2 to 1.3 for typical 5 m span drift with trends being 350 to 020 degree.
- Implement longer bolts for 6 m to 7 m span when support spacing is greater than 1.2 m x 1.2 m.

Q range of between 1 and 4

- Ground support to achieve a FOS of 1.3 for most wedge combinations with span ranging from 5 m – 7 m except for drift trends of approximately 40, 120, 220, and 310 degrees, respectively. Ground support may be modified based on structural data in the field.

The secondary support (cable bolt or self-drilling anchor) for large intersections was reviewed for a range of ground conditions and assumptions of depth loosening ground using the paraboloid method. To achieve a minimum FOS of 1.5, guidance on secondary support patterns and lengths was developed for intersection spans ranging from 8 m to 12 m.

Regular QA/QC (rock bolt pull testing and shotcrete compressive testing) is conducted to ensure quality installation of the ground support and the effectiveness of the support system. Pull testing on 1% of installed bolts is carried out and the overall bond performance of Swellex and Splitset bolts in poor ground is satisfactory, which implies that the poorer quality of rock mass is of limited width and extent. In particular, it appears that any clay alteration is not extensive, and the frictional bolts (used only in short-term excavations) have a good bond strength at the interface with competent rock. Therefore, the integrated ground support (shotcrete and frictional bolts) is seen to be effective in the observed weak ground and mixed ground conditions.

16.2.4 Seismicity

Seismicity is experienced in mines; this comes from both regional seismicity related to earthquakes as well as to local seismic events relating to the mining process. There was a major seismic event along the Stratoni fault in September 1932. The fault extends under the sea following the northern shore of the Stratoni Bay. The 1932 event was deep-seated and, because of the relatively small amount of mining and the use of backfill to fill the voids, the future mining at Olympias is not considered a likely trigger for further seismicity on this structure.

There are several factors indicating that Olympias mine is at low risk for seismicity. The general region is classified as a low seismically active area, seismic activity is not seen in the underground workings (both at Olympias mine and Maddem Lakkos mine), the depth of mining is relatively shallow, and the rock mass is not strong (high MPa) with the brittle characteristics necessary for rock bursting conditions.

16.3 MINING METHODS

The mining method planned for Olympias mine is DAF in all mining areas (East, West, Flats, and Remnants) The overall geometry of the Olympias orebody and the planned locations of the DAF mining areas are shown in Figure 16-1 as an isometric view of the Olympias underground looking north-west.

16.3.1 Drift and Fill (DAF)

DAF at Olympias commences once the decline reaches the footwall (FW) drive or Level access elevation of the orebody, usually midway along its strike length (see representative sketch as Figure 16-2). DAF is an overhand mining method. The stope sequence begins with the lowest lift. Then each subsequent lift requires the back of the Level access to be slashed down (‘take-down-back’ or TDB) to reach the next lift. There are four lifts between levels for a total rise of 20 to 24 m, depending on the mine zone, from each access.

Future DAF mining is expected to be either in single or multiple passes depending on orebody geometry; this is further described in the following sections.

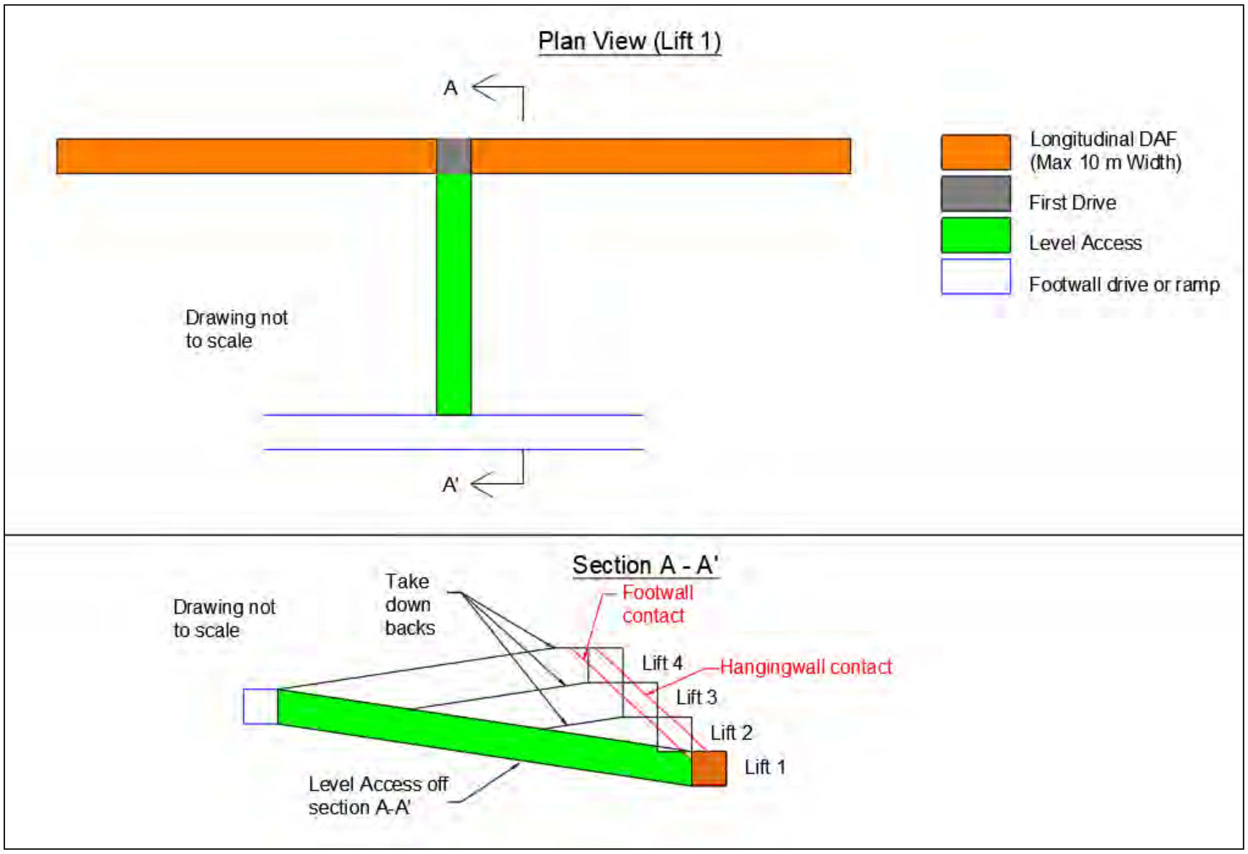


Figure 16-2: Longitudinal Single Drift DAF (AMC, 2022)

16.3.1.1 Longitudinal Single Drift DAF

Generally, for FW to HW thickness of 7.5 m or less, the stope will be developed as longitudinal DAF. The mining begins by driving the Level access to the FW contact of Lift 1 and then the drive is extended flat (zero gradient) to the HW contact of the ore. Next, the ore is mined longitudinally in a single pass along strike in both directions to the limits of the orebody. Any remaining ore on the FW side will be slashed out on retreat and then the drift will be backfilled with paste fill or cemented aggregate fill (CAF). After the fill has cured, the Level access will be slashed down to provide access for the next lift, and the process will be repeated for subsequent lifts.

16.3.1.2 Longitudinal Multi-pass DAF

Multi-pass DAF is generally for orebody widths greater than 8 m from FW to HW. The mining begins by driving the Level access to the HW contact of Lift 1 (Figure 16-3). Then the drift is extended to the HW contact of the orebody. The Primary drift will be mined on the HW contact to the limits of the orebody. The drift will then be filled, mainly with paste fill. After the fill has cured, the Secondary drift will be developed parallel to the Primary drift, with fill on one side and ore on the other side of the drift. After filling and curing is complete for the Secondary, a Tertiary drift is driven beside the Secondary drift, followed by filling and curing. This process is repeated until the FW is reached, which is the Quaternary drift in Figure 16-3. Once the fill has cured for the Quaternary drift, the Level access will be slashed down to reach the next lift and the process will be repeated for the remaining lifts of multi-pass DAF.

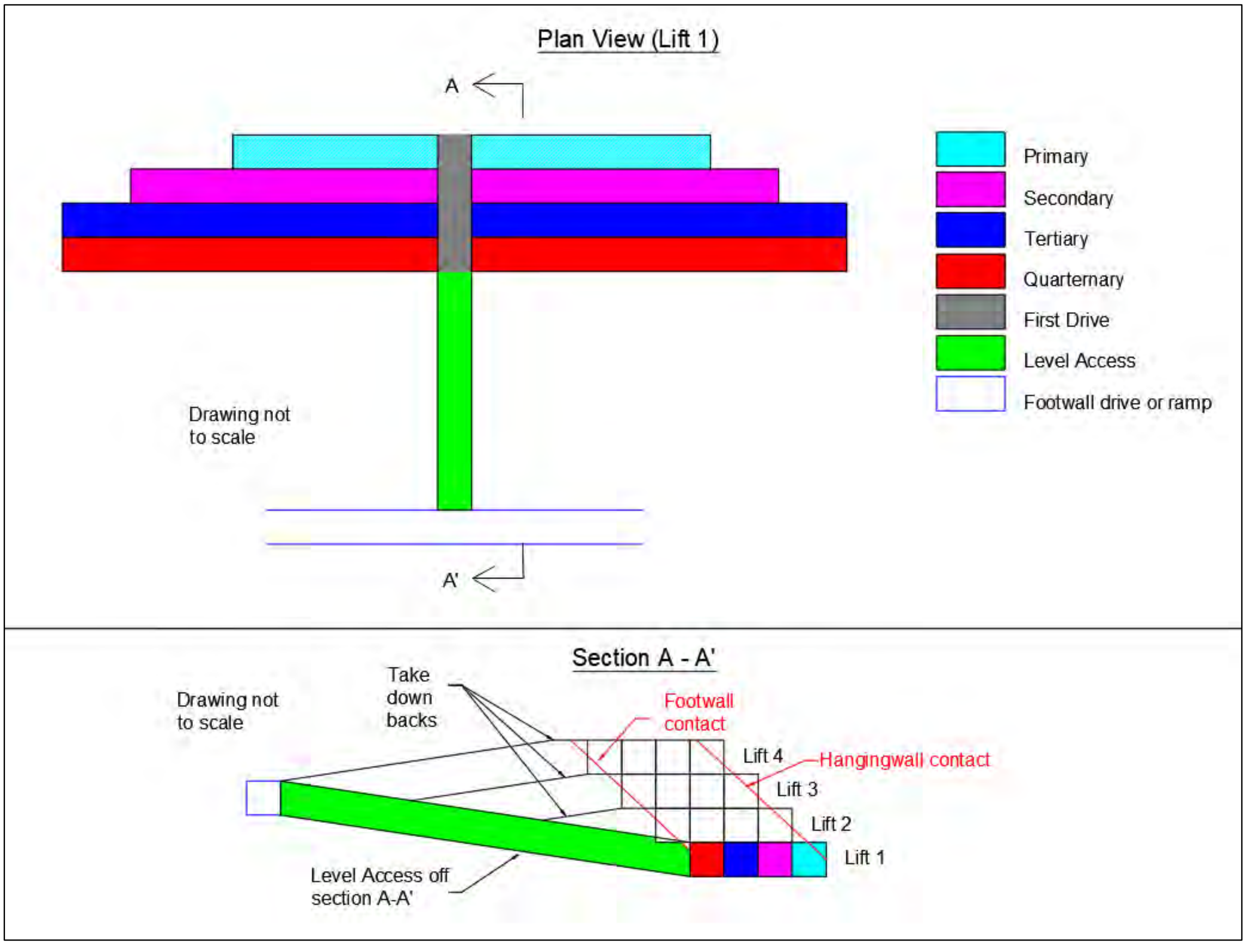


Figure 16-3: Multi-Pass DAF Stope (AMC, 2022)

In the Flats Zone, where the general ground conditions are better and the orebody wider an optimized primary-secondary multi-pass DAF mining method is used, as illustrated in Figure 16-4. It shows a representative stope that is mined in an ‘optimized’ fashion. The optimized multi-pass DAF stope will begin by mining the first drive to the HW contact. A first Primary drift will be collared on the HW contact and mined under geology control that maintains a 10 m pillar laterally between drifts. A second Primary drift will be driven entirely in ore utilizing survey control. The HW contact Primary (on Geology control) must lead the survey-controlled Primary by three to five rounds or be fully completed before the second primary is started. The minimum spacing between primaries is two drifts width: 10 m in 5 m wide drifts and 12 m in 6 m wide drifts.

Once the HW Primary reaches the limits of the orebody the backfill process will begin; the same will be the case for the second Primary. Engineered fill fences will be installed at the intersections of the

Primary drifts and the first drive. Paste fill will then proceed until the Primary drifts are tight filled. After the paste fill has cured, the Secondary drifts will be collared and mined to the extremities of the orebody, followed by the same backfill process. This process will follow for the Tertiary drifts, which will be mined between two paste filled drifts. Finally, when all the ore drifts are mined out and backfilled, the first drive will also be backfilled, with the fill fence installed at the Level access (when required). After the fill has cured, the Level access will be slashed down to allow access to the next lift to be reached. The process will be repeated for the remaining lifts of the stope sequence.

The optimized multi-pass DAF mining method provides more concurrent ore faces. Specifically, there are two faces generally available in the current method (see Figure 16-3) versus the potential for up to four faces in the optimized multi-pass DAF (see Figure 16-4). The optimized multi-pass DAF will be utilized where multi-pass primary-secondary drifts are possible geologically (i.e., the ore is wide enough from FW to HW contact) and are geotechnically permissible (i.e., the ground conditions are appropriate).

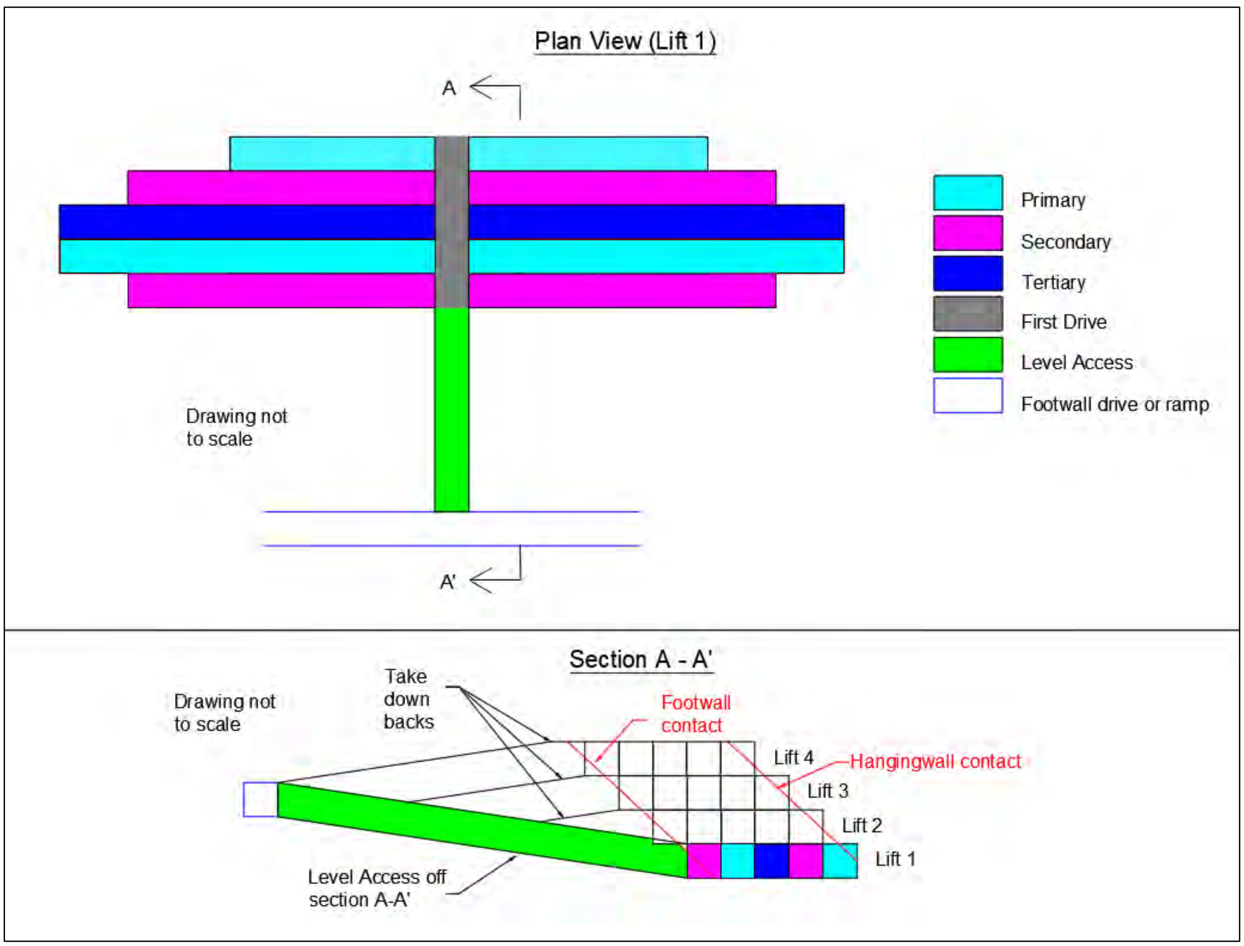


Figure 16-4: Optimized Multi-Pass (Primary-Secondary) DAF Stope (AMC, 2022)

16.4 BACKFILL

Olympias is currently using CAF, paste fill, and rockfill for underground backfill operations. The paste fill system is intended to provide most of the future backfill for the mine.

The CAF is prepared in a batch plant adjacent to the portal. Aggregate and sand are combined with 8% binder to produce CAF with a 7-day strength of 1 MPa and 28-day strength of 4.0 MPa. The CAF is backhauled in 40 t trucks and tipped at the entrance to the DAF production area. The CAF is then placed with a loader and, using a pusher arm attachment, tight filled to the back of the drift. Currently, the use of CAF has been eliminated from production except in certain specific instances where it is the only viable option.

The paste fill system has been designed to meet future backfill requirements up to the 650 ktpa production rate and operating at up to 70% utilization. Paste fill will be used in DAF stopes, with certain stopes being filled with unconsolidated rockfill when possible, to reduce costs. Using dewatered flotation tailings and cement, the plant can produce 42 m^3/h of paste fill. When backfill is not required, dewatered tailings are stockpiled and reclaimed with a front-end loader during the next fill run. Paste can be placed in continuous runs of up to 2,500 m^3. Numerous adjustments and modifications were made in 2021 to 2023 to address some of the operational issues that had been encountered with the paste plant.

Paste fill is delivered by positive displacement pump via drillholes and pipelines to the stopes. For control purposes, pressure is monitored in the pipelines by instrumentation. Paste fill is retained in stopes using shotcreted barricades. Tight filling is achieved by managing delivery via in-stope pipelines or drillholes, and location of barricades.

An updated technical (engineering) study dictating the backfill requirements at Olympias was submitted to the Ministry of Environment and Energy in 2023. This technical study reflected the work completed optimizing the paste fill performance; the minimum strength requirements for sidewall and working floor exposure were reduced from 4 MPa to 0.5 MPa. While the roof exposure requirement was reduced from 4 MPa to 1.5 Mpa. These reductions in strength requirement include a factor of safety of 3.0.

The technical (engineering) study update is based on 2021 work reviewing the Olympias backfill plans. The conclusions were essentially the same as those from previous evaluations undertaken. The conclusions are as follows:

- In the DAF mining method, the minimum allowable strength of the backfill material is calculated to equal 1.5 MPa for the underhand back and 0.5 MPa for the sidewalls. The above values are aligned with reported cases from worldwide mines in similar conditions.
- It is recommended that an average target value of 0.7 MPa is adopted for sidewalls and floor in both DAF and LH mining methods, according to the best available practices worldwide. The recommended 40% increase in the minimum allowable strength of the backfill material will provide a safety buffer for potential day-to-day variabilities in the backfill production. The minimum strength of the backfill material that will be produced will be 0.5 MPa.

- For possible LH mining, the minimum allowable strength of the backfill material is calculated to equal 0.5 MPa for the sidewalls or the working floor in both variants of the method (pillarless retreat and primary / secondary sequence). The calculated minimum value is in line with reported worldwide experience from mines in similar conditions.
- The design target strength for the underhand backs in the DAF method is recommended to remain 1.5 MPa. The production of backfill material with higher strength is easily achievable.
- In the last drift that mines out the top sub-level in the DAF method, the backfill ensures filling of the opening and will not be exposed either as side wall, back or working platform. Taking into account the results of analyses undertaken and international practice, it is estimated that a minimum backfill strength value of 0.2 MPa will be adequate for the self-support and confinement of the backfill material.
- Ground support beyond what is currently planned for DAF operations should not generally be required; however, local ground conditions may require the use of rock bolts and / or shotcrete.
- The relevant provisions of the minimum allowable backfill strength are not totally time dependent, i.e., they are not correlated to a specific curing time that should theoretically occur for the mining works to proceed. The time required for the backfill material to develop the minimum allowable strength is controlled also by the cement / binder content that is used in the backfill mix.

16.5 MINE DESIGN

16.5.1 Underground Access

A footwall decline from the surface Portal at +70 m down to -340 masl connects with the West decline that will eventually be extended to the base of the West Zone at -420 masl. The West decline extension that is currently being developed is used as a main haulage route for the West Zone.

A second main decline is currently being driven from -330 masl for the East Zone and will be extended to the base of the East Zone at -380 masl. This main decline will connect with the western Flats Zone ramp, which will be driven to -638 masl. This East decline will be used as a haulage ramp for the East Zone and the western portion of the Flats Zone.

The third main decline will be developed for the Flats Zone from -270 Service Drive to the base at -26 masl, which will support the mining in the eastern portion of the Flats Zone (and the upper lens). The Flats decline will be used as a haulage ramp for the Flats Zone and begun in early 2023. Development is on-going to bring forward production from the Flats Zone.

The existing development above the Flats Zone has twin declines and cross-over drifts for personnel and equipment to provide alternative haulage routes and secondary egress. Similarly, the undeveloped East and West declines will also have cross-over drifts down to the -370 masl to provide alternative haulage routes and secondary egress from this elevation of the mine to surface.

The planned Flats Zone decline below -370 masl is the only main haulage route, and secondary egress will be provided by escapeways in ventilation raises to the bottom of the Flats Zone at -635 masl.

16.5.2 Material Handling

Currently all ore and waste are hauled via 40 tonne trucks to surface. A material handling trade-off study was completed in 2018 and determined that, for the 650 ktpa target, this continues to be the most cost-effective solution for handling ore and waste.

16.5.3 Personnel

The mine currently operates 24 hours per day, seven days per week on three shifts per day. The mine does not operate currently on statutory holidays. Support staff at the mine work a single shift per day.

The operation currently has a full complement of 367 workers, and additional underground personnel will be required (approximately 50) to operate at the proposed 650 ktpa production rate.

16.5.4 Underground Mining Fleet

The current mobile equipment list for underground mining is shown in Table 16-5. For the production increase to 650 ktpa, additional equipment will be required, including jumbo, bolters, trucks, and loaders. These are also listed in Table 16-5.

Table 16-5: Olympias Mine Equipment List

Equipment	Type	Current Units	650 ktpa
Shotcrete sprayer	PUTZMEISTER WETKRET 4	3	4
SCALER	LIEBHERR A900C ZW LITRONIC	3	3
SCALER	CAT 308	1	1
EXCAVATOR	JCB 2CX	1	1
PERSONNEL TRANSPORTATION	PAUS MINCA 18A	4	4
LIFTER	ATLAS COPCO LIFTEC UV2	3	3
LIFTER	GETMAN A64 EXC 2-500L	1	1
LIFTER	DIECE PEGASUS 60.16	1	1
LIFTER	NORMET UTILFT MF450	1	1
LIFTER / CLARK	MANITOU MRT 1440 EASY 75P ST4 S1	1	1
TRANSMIXER	NORMET VARIOMEC LF700	2	2
UNDERGROUND DRILL RIG	SANDVIK DD321-40C	2	2
UNDERGROUND DRILL RIG	EPIROC L2C	1	1
UNDERGROUND DRILL RIG	ATLAS COPCO M2D	1	1
UNDERGROUND DRILL RIG	EPIROC BOOMER S2	1	1
BOLTER	TAMROK DS311-C	1	1

Equipment	Type	Current Units	650 ktpa
BOLTER	SANDVIK DS421	1	1
BOLTER	ATLAS COPCO BOLTEC MC	1	1
BOLTER	EPIROC BOLTEC MC	1	1
BOLTER	EPIROC BOLTEC S	1	1
HAUL TRUCK	SANDVIK TH540	4	7
HAUL TRUCK	ATLAS COPCO MT42	1	1
GRADER	VEEKSMAS FG 5C	1	1
LOADER	SANDVIK LH514	4	5
LOADER	CATERPILLAR R1700	1	1
LOADER	EPIROC ST 14 SCOOPTRAM	1	1

16.6 VENTILATION

16.6.1 Ventilation Strategy

The ventilation design is based on an exhausting system configuration with the main fans ultimately located on the surface at the single exhaust raise. In 2023, Olympias underwent a major ventilation upgrade designed to be able to supply the final required volume of air for the LOM. The six 132 kW fans located at -173 level were replaced by two main 950 kW surface exhaust fans. The exhaust fans located at the main exhaust raise collar, will ensure the required airflow for the mine of 420 m^3/s will be attained.

Fresh air is generally distributed through the mine via the ramps. Return air is exhausted from the mine through internal raises adjacent to each ore block before feeding the -173 level for exhausting into the primary exhaust raise.

See Figure 16-5 for a representation of the ventilation design for the Olympias mine to meet a production rate of 650 ktpa.

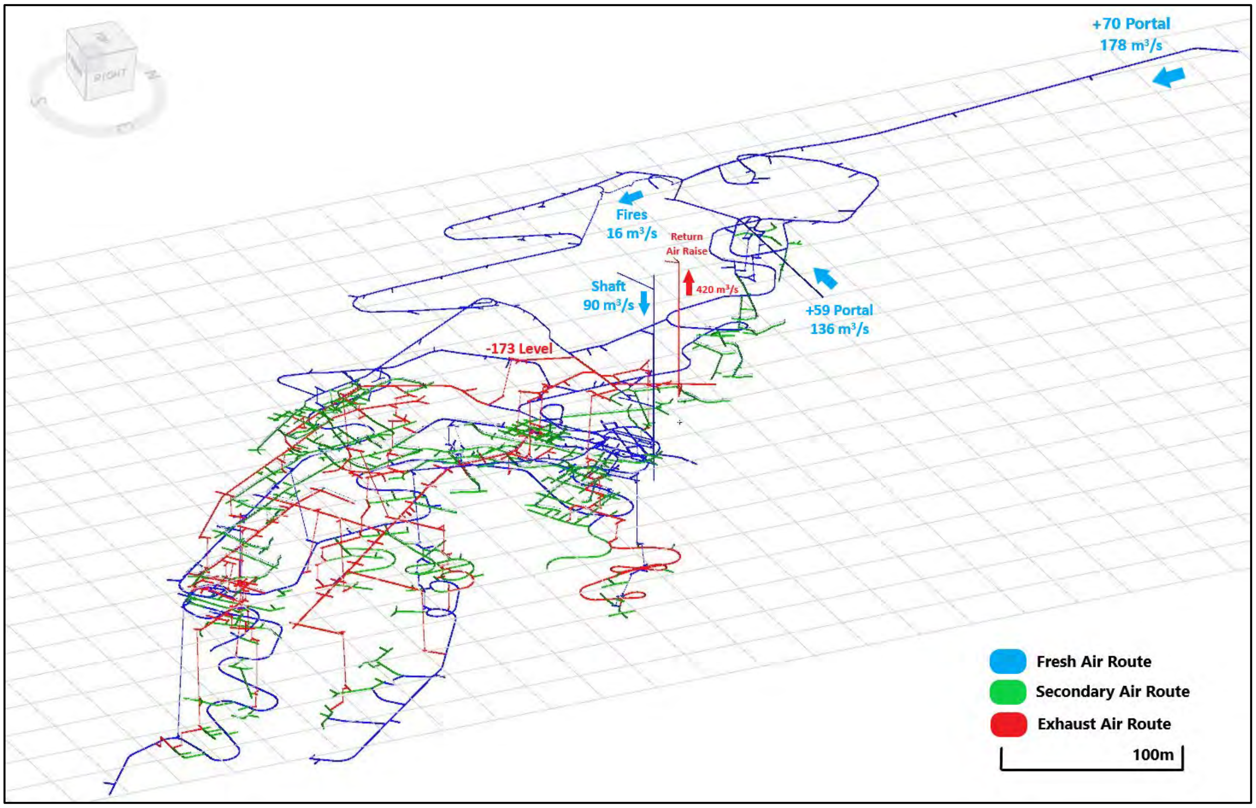


Figure 16-5: LOM Ventilation Strategy (Eldorado, 2023)

Ventilation for each production level is designed such that fresh air will be sourced from level accesses and FW drives. Delivery of fresh air to work areas will be via auxiliary fan and duct, with contaminated air from development and production level activities returning to an internal return air raise.

Two means of egress are provided for each production area of the mine. The primary means of egress is via the ramp system. Secondary emergency egress is provided in internal raises by means of installed ladderways, and via crossover drifts.

16.6.2 Mine Airflow

In terms of the quantity of air to be supplied for the mine, Part 3, Article 75 of the Greek Mining Regulations states that, "The volume of clean air at all the workplaces must be at least 5.66 m^3 for every first minute and worker, and 2.3 m^3 for every first minute and internal combustion engine power unit (0.051 $m^3/s/kW$), regardless the difference in operating time of machinery". The diesel engine ratings are based on technical specifications for major equipment. In consideration of these requirements and the planned LOM equipment list, a total of 420 m^3/s has been defined as requisite for the LOM ventilation airflow.

16.6.3 Emergency Preparedness

In development of the ventilation strategy for Olympias, consideration has been given to the potential for mine emergencies. As such, the following criteria have been established:

- In general, ramps will be in fresh air once developed.
- On almost all levels, escape can be either to a ramp or to the escape ladderway in the internal raises.
- In each ramp, escape may either be up the ramp or down the ramp to a safe area.
- Portable refuge chambers are installed for flexibility of location at the most appropriate points in the mine.
- Whilst the primary means of communication will be by radio, a stench system will be in place for introduction of ethyl mercaptan into the portal air stream in the event of fire.

16.7 DRILL AND BLAST

The Olympias mine is implementing the full use of bulk emulsion as the primary explosive product on site, and it is anticipated by H1 2024 full implementation will be completed. Packaged explosive products for blasting practices in the underground mine may be used from time to time in special circumstances when bulk emulsion is unavailable or not fit-for-purpose. An explosives magazine is expected to be commissioned in 2024, however, currently explosives are delivered to site daily by the supplier. The following sections discuss the opportunity to implement best international practices for: drill and blast designs and logistics and explosives management at the Olympias mine.

16.7.1 Detonators

Non-electric detonators are the most basic detonation system and are suggested for lateral development and DAF stoping. They are widely available, relatively simple to use, and are less expensive than electronic detonators.

Another viable blast initiation system is electric detonators (or electronic detonators), which have significant advantages over non-electric detonators; these include:

- Electric detonators are a single product (where the delay is programmable). This reduces the required site stock and increases stock turnover.
- The detonator delay is programmable. This allows increased blast size, precision blasting and better fragmentation.
- The delay scatter (prevalent in non-electric detonators) is eliminated.
- The complexity of the charge process for operators is reduced.
- The sensitivity of detonators to handling during the charge process is significantly reduced.
- Multiple security features make them virtually immune to interference, unauthorized use, or unplanned detonation.

Two commonly available electric detonator systems include Orica's IKON system and Dyno Nobel's SMARTSHOT system. All electric detonator systems are more complex than non-electric systems and require both operator and engineer training to be used safely and effectively. Training is provided by the system suppliers.

Electric detonators (or electronic detonators) are the highest quality detonating system available but are four to five times more expensive than non-electric systems.

The Olympias mine is currently using non-electric detonators but is planning to convert to electronic detonators for initiation over the next two years.

16.7.2 Lateral Development Blast Design

Figure 16-6 shows the drill layout for a typical lateral development round measuring 5.0 m (H) x 5.0 m (W) x 3.9 m deep.

The overall powder factor for the lateral development design shown is 1.07 kg/t. The powder factor range for all lateral development is from 0.95 to 1.20 kg/t, including DAF stopes.

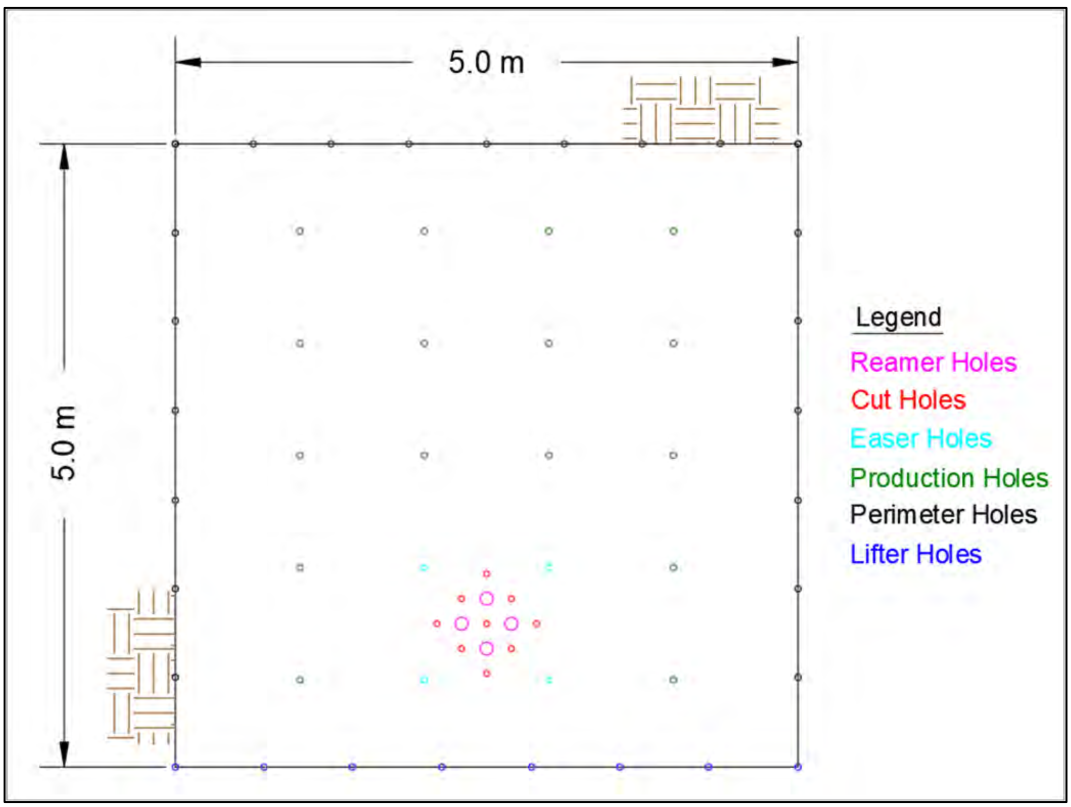


Figure 16-6: Typical Lateral Development Drill Pattern (AMC, 2022)

16.7.3 Explosives Consumption

At steady-state production of 650 ktpa and peak total advance of 24 m/day, the monthly mine explosives consumption will be approximately 68 tonnes of bulk emulsion.

16.8 UNDERGROUND INFRASTRUCTURE

16.8.1 Service Water

Service water for underground mining is supplied from underground inflows captured in clean-water dams. It is distributed underground via DN100 HDPE lines with pressure regulators installed as required to maintain a pressure below 5.5 bar.

16.8.2 Stockpiles

Ore from the underground mine is transported by truck to the surface crushing plant via the haulage portal, where it is placed into one of four ore sorting bins, depending on its gold grade and point of origin (East versus West/Flats ore zones).

16.8.3 Underground Workshop

An area for a new underground workshop has been excavated at the -248 level. Once equipped, this workshop will be used to maintain any equipment that is captive or rarely leaves the mine. The new shop will be equipped with three heavy equipment maintenance bays as well as a light vehicle service bay, areas for parts storage, office space, hose fitting, machine shop, wash bay, lube bay, tire repair station, first aid station, and restrooms (Figure 16-7).

Ventilation will be flow-through with a vent raise at the back corner of the shop. As mining progresses, a second workshop (satellite shop or service bay) may be required.

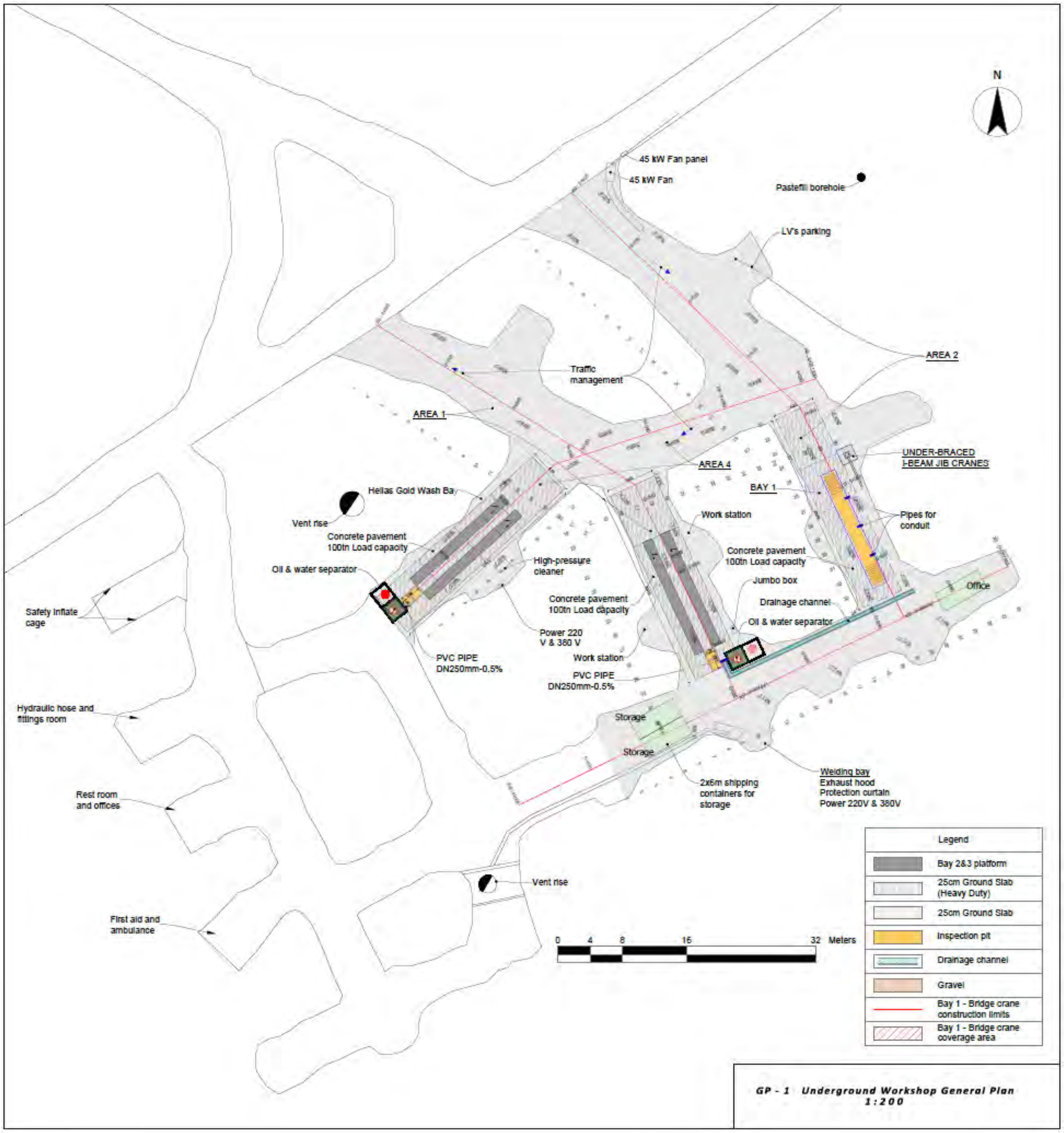


Figure 16-7: Underground Heavy Equipment Workshop (Eldorado, 2023)

16.8.4 Explosives / Cap Magazines

An explosives magazine was constructed at -240 OLW and will be commissioned in H1 of 2024. The packaged explosives and detonators will be stored in the explosives magazine under the supervision of responsible persons, as there is strict regulation for the storage and handling of explosives. The bulk emulsion storage will remain separate as the bulk emulsion is not considered to be an explosive until sensitized and pumped into the blast-holes.

16.8.5 Fuel Storage

There is currently no underground fuel storage at the mine. Two fuel trucks are currently used for underground refueling.

16.8.6 Compressed Air

Compressed air demand in the mine is typical for a mine this size. Blasthole loading equipment and shotcrete sprayers have on-board compressors; all other mobile and fixed equipment is dependent on the compressed air reticulation system.

An Atlas Copco GA 110 air compressor at the -254 level is used to supply the compressed air needs of the mine. This system is sufficient for the production increase to 650 ktpa. The Atlas Copco GA 110 air compressor has a capacity of 23.5 m^3/min max at 14 bar; however, mine pressure is maintained below 8 bar. The compressed air is distributed throughout the mine via a network of DN63 HDPE pipes.

A smaller diesel compressor is also available for emergency situations or power outages.

16.8.7 Electrical Power

There are two feeds from the high voltage substation (150kV), one feed for the mine and one for the plant. There are three underground 20 kV feeds for power underground, one feed for the surface fans, one for the pump station at -95 and one running down the West Ramp. There is a redundant power feed down the east ramp from the plant side (+70). All of these feeds are interconnected underground such that the loss of a single cable can be bypassed via a second route.

There are a total of 11 main substations located at levels +46, -85, -173, and -284 in the East ramp and -194, -248, -235, -254, -260, and -300 in the West ramp. There are three interconnections throughout the mine located at -235/-248, -254 and -300.

In addition to the main substations, portable 630 kVA and 1000 kVA substations with 20 kV to 690 V transformers are located where required for mining. All underground power for mobile equipment, fans and pumps is 690 V.

To simplify the network distribution a new 20 kV feed will be installed from +85 directly to -284 through a borehole, so there will be two feeds to the underground. This is planned for Q2 of 2024.

16.8.8 Mine Dewatering

Water inflow has been projected to increase to a maximum of 650 m^3/h. Greek regulations require that the pumping capacity must be 2x maximum anticipated flow + standby of rated maximum flow. This means a capacity of 1,300 m^3/h and standby pumping capability of 650 m^3/h.

The mine dewatering system is rated to meet this requirement and will be expanded to accommodate increased pumping at depth.

There are currently two pumping systems to dewater the mine. The first system is located in the upper East ramp starting at -254 masl and consists of a series of staged pump stations nominally spaced at 30 m vertical intervals. These stations consist of two submersible 37 kW pumps installed in parallel; they discharge into a 100 mm diameter pipe at the lower levels, increasing to 125 mm diameter pipe at higher elevations. The future plans to eliminate the staged pumping system will be to consider drilling boreholes holes from -220 masl to -284 pump station. This will enable dewatering from the -284 main pump station to surface.

The second pumping system is a pumping station at the -284 Level that has been excavated with pumps installed at the -286 Level. The pump station was commissioned in Q3 of 2022. This replaced the second system and all water from the East, West, and service drive ramps report to the new pump station, where the water is then pumped via two DN300 steel lines encased in a drillhole (bypassing the existing in-shaft pump station) to the water treatment plant. In the future, another pump station may be installed similar to the proposed main sump layout at a location near the bottom of the ramps. Any water from below this location would be pumped up the ramp via submersible pumps to the station.

16.9 MINING SCHEDULE

16.9.1 Stope Cycle Time and Mine Production Rate

The Olympias mine is projected to increase its annual production rate from the current 470 ktpa in 2023 up to 650 ktpa by 2025. To facilitate this production ramp-up, the mine has increased mobile equipment, increased power, and increased the labour force.

The operational improvement plan includes the following elements:

- Increased equipment availability.
- Upskilling and multiskilling the workforce.
- Increase in manpower utilization.
- Advanced communications and dispatch systems to enhance productivity.
- Improved blast design and engineering.
- Cost saving initiatives in electrical supply and distribution.
- Infrastructure projects to increase underground mining efficiency:
    - Underground workshop.
    - Improved water management.
    - Introduction of remote operations and central control system.

These operational improvements will increase the number of hours per day worked at a production face (face time). There are three eight-hour shifts per day and the total face time for all three shifts is indicated as 13.5 hours per day in 2022, or 4.5 hours of face time per shift. Through improved personnel transport, increase in available active headings and time management improvements, the face time has increased to 5.5 in 2023, and further improvements and initiatives are anticipated for implementation in 2024 and 2025. This increase in face time will result in higher stope production rates for DAF and development. Moreover, there are initiatives aimed at increasing actual shift times.

A further key initiative to assist the annual production ramp-up is the optimization of DAF mining. This will be accomplished by initiatives that include the introduction of multi-pass mining as shown in Figure 16-4 with primary, secondary, and tertiary sequences. The result will be an increase in the number of concurrently available faces in a DAF stope. The increase in the number of stopes with multiple faces will increase the production rate for individual DAF stopes, in addition to facilitating increased miner face time.

16.9.2 Lateral and Vertical Development Schedule

The projected LOM development schedule is shown in Table 16-6. Approximately 30.6 km of lateral development that is not DAF ore development, and 2.5 km of vertical development are required to establish and deplete the Mineral Reserves over a 15-year mine life. All development is included in the Mineral Reserves mine plan.

Table 16-6: Olympias Mine Development Schedule by Year

Year	Waste lateral development (m)	Vertical development (m)	Ore lateral development (m)	Total development (m)
2024	3,726	371	4,819	8,545
2025	3,466	346	5,752	9,218
2026	3,022	169	6,176	9,198
2027	3,214	117	5,805	9,019
2028	2,361	301	5,514	7,874
2029	3,240	197	4,886	8,126
2030	3,929	451	4,960	8,890
2031	3,093	333	4,925	8,019
2032	1,500	73	4,911	6,411
2033	748	26	5,033	5,781
2034	760	82	4,972	5,732
2035	626	-	5,060	5,686
2036	503	-	4,808	5,311
2037	301	-	3,150	3,451
2038	71	-	1,036	1,107
Total	**30,559**	**2,467**	**71,807**	**102,367**

Note: Totals may not compute exactly due to rounding.

16.9.3 Underground Mining Production Plan

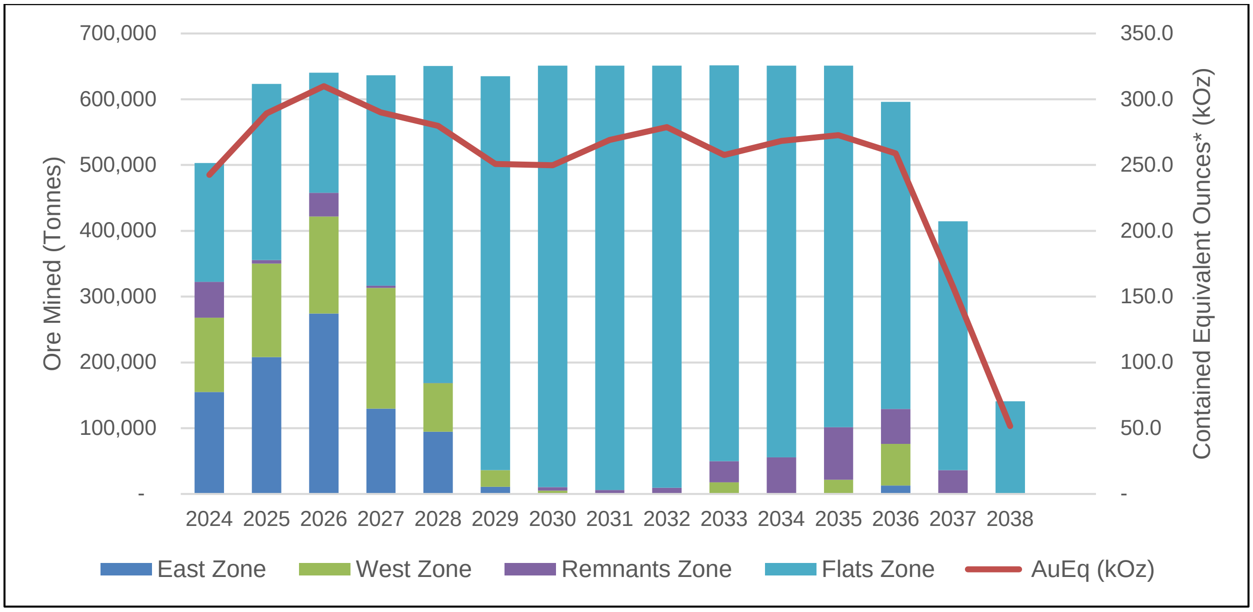
Table 16-7 shows the scheduled production tonnes and grade for the full Olympias mine life. Recovery and dilution factors have been discussed in Section 15. The total projected LOM production is 8.7 Mt from 2024 till the end of the mine life.

Table 16-7: Olympias LOM Mineral Reserves Ore Production Schedule

Year	Total tonnes (kt)	Au (g/t)	Ag (g/t)	Pb (%)	Zn (%)
2024	502.9	9.0	127.4	4.1	4.5
2025	623.5	7.9	129.6	4.2	5.1
2026	640.6	8.0	143.9	4.7	5.4
2027	636.4	7.7	130.6	4.2	4.5
2028	650.6	7.7	113.9	3.7	4.4
2029	634.9	6.6	120.1	4.0	5.1
2030	650.9	6.1	117.8	3.9	4.8
2031	651.3	6.3	130.3	4.5	5.4
2032	651.2	6.5	135.3	4.7	5.5
2033	651.4	5.2	130.0	4.5	5.5
2034	651.2	5.8	131.0	4.6	5.8
2035	650.9	6.0	125.2	4.2	5.7
2036	596.0	6.6	114.7	4.0	5.6
2037	414.3	4.9	110.9	3.9	6.4
2038	140.9	4.8	94.9	3.5	6.5
Total	**8,746.8**	6.7	125.7	4.2	5.3

Note: Totals may not compute exactly due to rounding.

Figure 16-8 shows the LOM ore production profile from each Zone.



*Long-term pricing of 1,400 USD/Oz Au, 19 USD/Oz Ag, 2,000 USD/t Pb, and 2,500 USD/t Zn

Figure 16-8: LOM Production Profile by Zone

SECTION • 17 RECOVERY METHODS

17.1 INTRODUCTION

Run-of-mine (ROM) ore is transferred to a covered ROM stockpile adjacent to the three-stage crushing plant. The ROM stockpile is divided into areas according to ore type and grades to facilitate blending. Ore is reclaimed from the ROM stockpile by a front-end loader and fed into the primary crusher feed hopper. Tertiary crushed product is transferred to the fine ore bin (FOB) and subsequently reclaimed to feed the ball mill.

A simplified process flow diagram of the current circuit is provided in Figure 17-1. The comminution circuit consists of a ball mill operated in closed circuit with hydrocyclones, and a flash flotation cell. The entire ball mill discharge is typically treated in a flash cell to recover the fast-floating liberated lead. Overflow from the hydrocyclones is sent to the sequential selective flotation circuit. The sequential selective flotation circuit consists of three flotation circuits used to recover lead and silver, zinc and gold-arsenopyrite-pyrite. The lead flotation circuit consists of rougher, scavenger, and three stages of cleaner. A lead regrind circuit provides size reduction of the rougher, scavenger, flash flotation, and cleaner scavenger concentrates to improve mineral liberation and to clean particle surfaces. The zinc flotation circuit consists of rougher, scavenger and three stages of cleaner. A zinc regrind circuit provides particle size reduction of the rougher, scavenger and cleaner scavenger concentrates to improve mineral liberation and clean particle surfaces. The gold-arsenopyrite-pyrite flotation circuit consists of rougher, scavenger, and a single stage of cleaner. Concentrates from each flotation circuit are sent to dedicated thickening and filtration systems. Lead and gold-arsenopyrite-pyrite concentrates can be loaded into bulk bags for shipping or sent in bulk by trucks to the Stratoni port for bulk overseas shipment. Zinc concentrate is transported in bulk by trucks to the Stratoni port for bulk overseas shipment (refer to Section 5).

Tailings from the flotation circuit are directed to a tailing thickener. Thickener underflow is filtered to obtain a moisture of approximately 15%-20%. The majority of filtered tailings is used in the paste backfill plant to backfill the mine. The remainder of the filtered tailings is transported via truck to the KTMF for dry stacking 8.5 km southeast of the Olympias mine.

The current flotation plant was built and commissioned in May 2017 to process fresh ore from the underground mine at a throughput of approximately 400 ktpa. Since then, the flotation plant has been continuously improved to an annual throughput of 455 ktpa. Three concentrates are produced, namely, lead / silver concentrate, zinc concentrate, and gold / pyrite / arsenopyrite concentrate. Lead / silver (lead) and gold / pyrite / arsenopyrite (gold) concentrates are sold through both the Thessaloniki port and the Stratoni port and zinc concentrate is sold through the Stratoni port. A portion of flotation tailings is used for underground backfill. Any surplus of flotation tailings is filtered and then trucked to KTMF.

Expansion and upgrades will take place to the underground mine, Olympias process plant and Stratoni port to provide a production rate of 650 ktpa of ore.

17.2 PROCESS PERFORMANCE

A summary of performance data of the process is presented in in Table 17-1, using data from 2023. The original design values are also included for comparison. The current annual throughput is more than 14% higher than the original design value.

Table 17-1: Major Process Design Criteria for Phase II

	Unit	Design	Actual Operation (2023)	Expansion (2025+)
Annual nominal ore throughput	dry tpa	400,000	454,122	650,000
Daily (calendar) ore throughput	dry tpd	1,100	1,244	1,781
Plant availability	%	90.0	95.6	92.0
Plant utilization	%	-	86.2	-
Grinding and flotation processing rate	dry tpoh	53.0	61.4	85.0
Lead recovery	%	85.0	80.5	81.5
Silver recovered to lead	%	78.0	79.8	81.8
Lead concentrate grade	% Pb	63%	57.3	58.5
Zinc recovery	%	91.0	77.1	84.1
Zinc concentrate grade	% Zn	52.0	47.2	48.9
Gold recovery to gold-arsenopyrite-pyrite concentrate	%	86.0	83.8	82.5
Gold-arsenopyrite-pyrite concentrate grade	g/t Au	27.3	22.1	20.0

A simplified process flowsheet is shown in Figure 17-1.

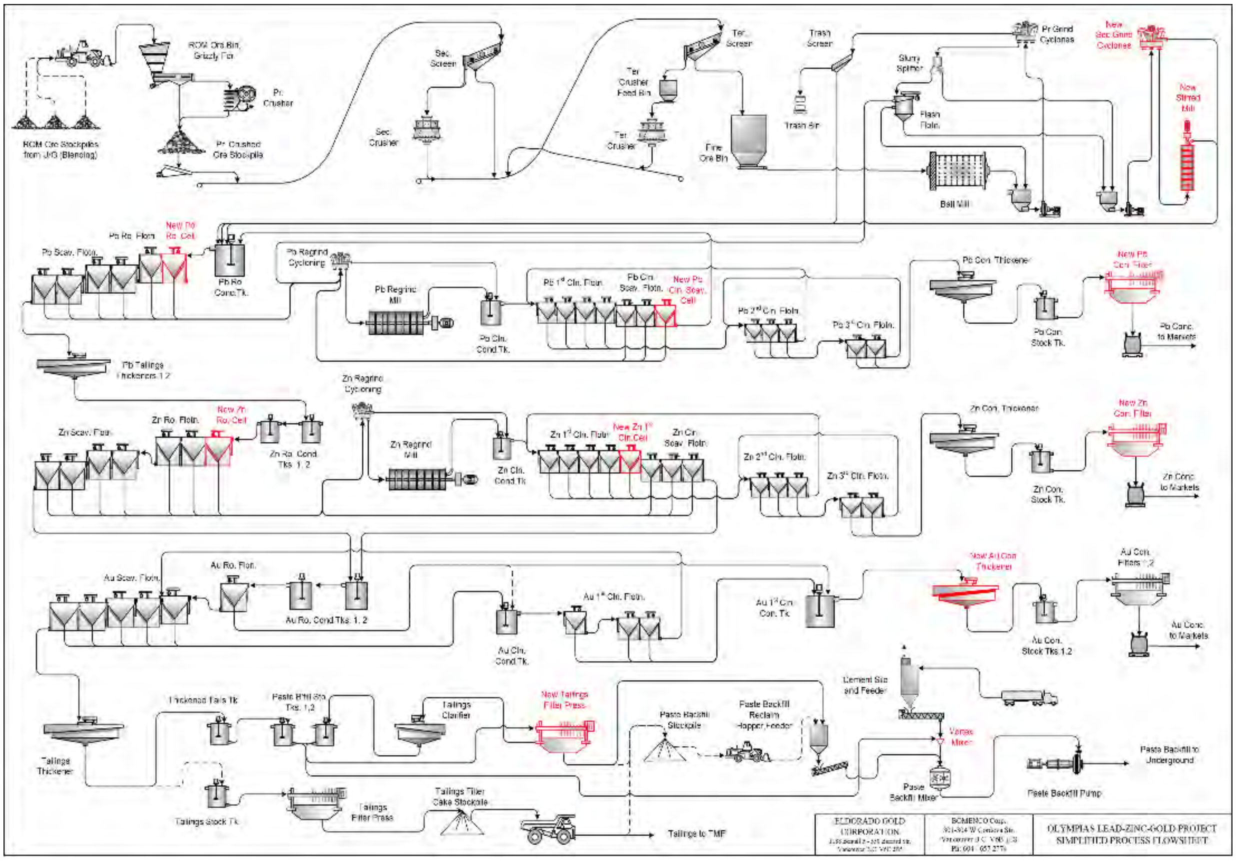


Figure 17-1: Simplified Olympias Process Flowsheet (Bomenco, 2023 Update for Expansion)

17.3 PROCESS PLANT DESCRIPTION

The current process plant is nominally able to treat 520 ktpa at established production rates of 65 tpoh. Key circuits comprising the plant flowsheet are as follows:

- Three-stage crushing.
- Single-stage ball milling in closed circuit with hydrocyclones.
- Hydrocyclone underflow (a split) is fed to lead flash flotation.
- Lead flotation consists of rougher, scavenger, regrinding, three stages of cleaning.
- Zinc flotation consists of rougher, scavenger, regrinding, three stages of cleaning.
- Gold-pyrite flotation utilizes rougher, scavenger, and single stage of cleaning.
- Concentrate thickening, filtration, and packaging.
- Tailings thickening and filtration.
- Tailings paste backfill - mixing and pumping.
- Reagent mixing, storage, and distribution.
- Water and air services.

The following sections describe the above processes in detail as well as the circuit modifications planned to increase throughput to 650 ktpa (85 tpoh).

17.3.1 Crushing, Ore Storage, and Reclaim

A covered run of mine (ROM) ore stockpile is situated adjacent to the primary crusher feed bin. The ROM stockpile is divided into areas according to ore type and grades to facilitate blending. Ore is reclaimed from the ROM stockpile by a front-end loader.

The crushing plant is operated 350 days per year, 16 hours per day at a crushing rate of 155 tph.

The crushing product size is 100% passing 19 mm and 80% passing 11 mm.

A 600 mm x 800 mm inclined static grizzly is fitted to the primary crusher feed hopper for protection from oversize rocks. The oversize rocks are periodically broken to less than 600 mm with a mobile rock breaker. The primary crusher feed hopper is equipped with dust suppression sprays.

The primary crusher is fed by a vibrating grizzly feeder that scalps the rocks greater than 75 mm ahead of crushing. The undersize material is directed onto the crusher discharge conveyor. Grizzly feeder oversize feeds a jaw crusher (Sandvik CJ411) at closed side setting (CSS) of 75 mm.

The jaw crusher product (100% passing 180 mm and 80% passing 90 mm) reports to the crusher discharge conveyor and is delivered, along with the fines from the vibrating grizzly feeder to the primary crushed coarse ore stockpile feed conveyor. The coarse ore stockpile feed conveyor discharges onto the coarse ore stockpile with a live capacity of about 79 tonnes. A cross-belt tramp metal magnet is positioned over the coarse ore stockpile feed conveyor. Tramp metal is discharged via a chute into a tramp metal bin located at ground level.

Primary crushed ore is withdrawn from the coarse ore stockpile by a vibrating feeder and transported to the secondary crusher feed screen conveyor. A metal detector is installed on the secondary crusher feed screen conveyor to ensure all tramp metal is removed.

The primary crushed ore then reports to a double-deck scalping screen with 50 mm aperture for the top deck and 20 mm aperture for the bottom deck. The oversize material from both decks is directed to the secondary crusher (Sandvik CH430 with CSS at 28 mm) whilst the screen undersize and the secondary crusher product are deposited onto the secondary crusher discharge conveyor, which in turn discharges onto the tertiary crusher feed screen conveyor.

Ore on the secondary crusher discharge conveyor transfers onto the tertiary crusher feed screen conveyor, and then to the tertiary product screen. A metal detector is installed on the tertiary feed screen conveyor to ensure all tramp metal is removed for protection of the tertiary crusher. When the presence of metal is detected by the metal detector, the crushing circuit automatically stops to allow the operator to pick the metal from the belt at a pre-determined location. The product screen is a single deck vibrating screen with an aperture of 19 mm. The screen oversize returns to the tertiary crusher.

The tertiary crusher feed hopper is fitted with a belt feeder. The tertiary crusher (Sandvik CH430 at CSS of 13 mm) is a short-head cone crusher that operates in closed circuit with the product screen.

The crusher discharges directly onto the tertiary crusher discharge conveyor, which in turn discharges onto the secondary crusher discharge conveyor (thus operating in closed circuit with the product screen).

The final crusher product after screening has a P_{80} of 11 mm and is deposited onto the tertiary screen undersize conveyor, which in turn discharges onto the fine ore bin feed conveyor. The fine ore bin feed conveyor transfers the final crusher product to the FOB. The crushing rate is monitored by a weightometer located on the fine ore bin feed conveyor. The FOB has a theoretical live capacity of 1,155 tonnes to provide 21.8 hours of mill feed.

Mill feed is withdrawn from the FOB via five variable speed belt feeders. A weightometer indicates the instantaneous and total mill feed tonnage for control of belt feeder speed. Mill feed from the FOB is transported to the grinding circuit by the ball mill feed conveyor.

The crushing plant will require higher utilization to be able to produce sufficient fine ore to feed the mill. A slight coarsening of the crusher product may also be considered if required to match the milling operation at 85 tpoh.

17.3.2 Grinding, Classification, and Flash Flotation

The grinding circuit consists of a single-stage overflow ball mill that operates in closed circuit with hydro-cyclones to produce a ground product slurry with P_{80} of 180 - 200 µm and with a flash flotation cell for recovery of galena from the cyclone underflow.

Mill feed enters the grinding circuit through the mill feed chute, where process water is added. The ball mill is 3.65 m diameter by 4.00 m effective grinding length and powered by a 900-kW-variable-speed drive. Normal operation requires 820 kW power draw. The ball mill is fitted with a trommel screen. Trommel screen undersize slurry reports to the cyclone feed hopper.

Reagents are added to the cyclone feed hopper for depression of sphalerite, arsenopyrite and pyrite.

Cyclone overflow flows by gravity to the trash screen feed box. A single horizontal vibrating trash screen (0.8 mm x 12 mm slotted aperture) removes trash from the flotation feed. Oversize trash gravitates directly to a trash bin. Screen undersize gravitates to the lead rougher flotation conditioning tank.

Cyclone underflow gravitates to the underflow distribution box where the flow is split. Up to 100% of the cyclone underflow stream can be directed to the flash flotation circuit to recover fast-floating galena. Dilution water and flotation reagents are added. Concentrate flows by gravity to the flash flotation concentrate transfer pump before being pumped to the inline stream analyzer (ISA) for analysis and then regrinding. The flash flotation coarse tailings flow by gravity to the ball mill for further grinding. The fine tailings from the top outlet flow to the cyclone feed hopper or to a surge tank and then to a conditioning tank ahead of lead rougher flotation.

The milling circuit will be expanded to include a secondary mill and classification circuit to facilitate the grinding at the expansion rate. The existing cyclone cluster will be modified to produce an increased cut size to manage circulating loads in the primary grinding circuit. A new secondary cyclone cluster will scalp final product from the stream ahead of the new vertical regrind mill fitted with a 700-kW drive operating in open circuit. The new mill and classification circuit will be located outside of the existing concentrator building adjacent to the FOB.

17.3.3 Lead Flotation and Regrind

The lead flotation circuit consists of rougher, scavenger, and three stages of cleaner. A regrind circuit provides size reduction of the rougher, scavenger, flash flotation, and cleaner scavenger concentrates to improve mineral liberation and to clean particle surfaces.

Reagents are added to the lead flotation conditioning tank, lead rougher, and first lead scavenger. Slurry flows by gravity from the conditioning tank to the first lead rougher flotation cell. Flotation feed (cyclone overflow) is automatically sampled for analysis by the ISA to provide a flotation feed assay and feed slurry density.

The lead rougher / scavenger flotation circuit consists of one 10 m^3 rougher tank cell followed by four 10 m^3 capacity scavenger flotation tank cells.

The rougher concentrate flows by gravity to the lead rougher concentrate pump and the scavenger concentrate is directed to the lead scavenger concentrate pump. The lead scavenger flotation tail discharges via a dart valve to the lead scavenger tail hopper. The hopper is serviced by duty and standby variable speed pumps that pump lead scavenger flotation tail to the lead tails thickeners. An automatic sampler on the lead scavenger tail provides a sample to the ISA.

The flash flotation, lead rougher, and lead scavenger concentrates are pumped separately to the lead regrind cyclone feed hopper, where they are combined with the lead cleaner scavenger concentrate and reagents for sphalerite, arsenopyrite and pyrite depression. The combined concentrate streams are classified in the regrind cyclone cluster consisting of three 150 mm cyclones (two operating and one standby). The regrind cyclones are fed at a pulp density of approximately 18% solids. The cyclone overflow flows by gravity to the lead cleaner conditioning tank.

The cyclone underflow gravitates to the lead regrind mill feed hopper and is diluted to a density of 50% solids before being pumped to the lead regrind mill (IsaMill M500). Media addition is based on mill motor power draw. The regrind mill is configured in open circuit. Pulp discharge from the lead regrind mill joins the cyclone overflow in the lead cleaner conditioning tank. The regrind mill circuit can also be configured to enable a portion of the regrind mill discharge to be recycled to the feed hopper to assist in maintaining a constant volumetric flow rate. The lead cleaner conditioning tank has an effective volume of 12.6 m^3. Reagents are added to the conditioning tank and various points in the lead cleaner circuit.

Four 4.25 m^3 Outotec OK-3HG-U flotation cells operate as a single bank for the 1st cleaner. The lead 1st cleaner tail flows by gravity via a dart valve to the lead cleaner scavenger cells (two 4.25 m^3). Concentrate from the lead cleaner scavenger cells is pumped to the lead regrind mill cyclone feed hopper. The lead cleaner scavenger tail discharges via a dart valve to the lead cleaner scavenger tail hopper and is then pumped to the lead flotation tailing thickeners.

Concentrate from the lead 1st cleaner cells is pumped to the lead 2nd cleaner cells. Three 4.25 m^3 capacity Outotec OK-3HG-U flotation cells are arranged in a single bank. Concentrate from the lead 2nd cleaner cells is pumped to the lead 3rd cleaner cell feed box. Two 4.25 m^3 capacity Outotec OK-3HG-U flotation cells operate as a single bank. The lead 3rd cleaner tail is combined with the lead 1st cleaner concentrate and reports to the lead 2nd cleaner circuit. The lead 3rd cleaner concentrate is final concentrate and reports to the lead concentrate thickener.

An ISA is installed in the plant to provide analysis of five key process streams in the plant. These are:

- Flash flotation concentrate
- Cyclone overflow
- Lead scavenger tail
- Lead cleaner scavenger tail
- Lead final concentrate

Reagent addition rates are controlled including frother (MIBC), collector (Aerophine 3418A), and depressants (sodium cyanide, zinc sulfate, and lime).

The lead flotation circuit will be augmented with the addition of a 20 m^3 lead rougher flotation cell and a 10 m^3 lead cleaner scavenger cell. These cells will provide the added residence time required within the lead circuit to manage the increased throughput and higher base metal feed grades. Pumping systems will be upgraded as required to match the increased flow rates.

The increase in base metals feed grade and plant throughput may necessitate the installation of additional lead concentrate regrind capacity.

17.3.4 Lead Flotation Tails Thickening

Currently, the operation has been configured so that the lead scavenger tails and lead cleaner scavenger tails are pumped to a distribution box and then to the zinc flotation conditioning tanks. This was done to shift the gold concentrate thickener to duty as a second water treatment plant clarifier and using the two lead tails thickeners for gold concentrate thickening.

The expansion will include the installation of a new gold concentrate thickener along with new feed tanks and feedwells on the existing two 8 m diameter lead tailings thickeners. Lead scavenger tails and lead cleaner scavenger tails will be pumped to the new thickener feed tanks. The lead tails are thickened to 60% solids, then pumped to the zinc flotation conditioning tank 1. Flocculant is added to the lead tailings thickener feed stream to assist in the solids settling and thickening process. Lead tailings thickener overflow reports to the lead thickener overflow tank and is reused as process water in the grinding and lead flotation circuits.

17.3.5 Zinc Flotation and Regrind

The zinc flotation circuit consists of rougher, scavenger and three stages of cleaners. A regrind circuit provides particle size reduction of the rougher, scavenger and cleaner scavenger concentrates to improve mineral liberation and clean particle surfaces.

The thickened lead tailings are diluted to 35% solids by the addition of process water in the first conditioning tank.

The two agitated zinc flotation conditioning tanks have a total effective volume of 57 m^3. Reagents are added to the first and second conditioning tanks, first rougher and scavenger cell feed boxes.

The zinc rougher / scavenger flotation circuit consists of two 10 m^3 rougher tank cells followed by four 10 m^3 scavenger tank cells.

The rougher concentrate flows by gravity to the zinc rougher concentrate pump and the scavenger concentrate is directed to the zinc scavenger concentrate pump. The zinc scavenger flotation tail discharges via a dart valve to the zinc scavenger tail hopper and is pumped to the first gold-pyrite flotation feed conditioning tank. A sampler on the zinc scavenger tail stream provides a sample to the ISA.

The zinc rougher and scavenger concentrates are pumped separately to the zinc regrind cyclone feed hopper, where they are combined with the zinc cleaner scavenger concentrate and reagents for sphalerite activation and depression of arsenopyrite and pyrite. The combined concentrate streams are classified in a cyclone cluster consisting of four 150 mm cyclones (three operating and one standby). The regrind cyclones are fed at a pulp density of approximately 20% solids. The cyclone overflow flows by gravity to the zinc cleaner conditioning tank.

The cyclone underflow gravitates to the zinc regrind mill feed hopper and is diluted to a density of 50% solids before being reground. The zinc regrind mill is an IsaMill M500 fitted with a 200-kW motor. Media addition is based on mill motor power draw. The regrind mill is configured in open circuit. Pulp discharge from the regrind mill joins the overflow from the regrind cyclone overflow in the zinc cleaner conditioning tank. The regrind mill circuit can also be configured to enable a portion of the regrind mill discharge to be recycled to the feed hopper to assist in maintaining a constant volumetric flow rate.

The zinc cleaner conditioning tank has an effective volume of 10 m^3. Reagents are added to the conditioning tank and to various points in the zinc cleaner circuit.

Four 4.25 m^3 Outotec OK-3HG-U flotation cells operate as a single bank in the 1st cleaner.

The 1st cleaner tail gravitates via a dart valve to the zinc cleaner scavenger cells (three 4.25 m^3 Outotec OK-3HG-U flotation cells). Concentrate from the cleaner scavenger cells is pumped back to the zinc regrind cyclone feed hopper. The zinc cleaner scavenger tail discharges via a dart valve to the zinc cleaner scavenger tail hopper and is then pumped to the first gold-pyrite flotation conditioning tank. A sampler on the tail provides a sample to the ISA.

Concentrate from the 1st cleaner cells is pumped to the 2nd bank of cleaner cells (three 4.25 m^3 Outotec OK-3HG-U cells).

Concentrate from the 2nd cleaner cells is pumped to the 3rd cleaner cells (two 4.25 m^3 Outotec OK-3HG-U cells). The 3rd cleaner tail stream is combined with the 1st cleaner concentrate as the 2nd cleaner feed. The zinc 3rd cleaner concentrate as final concentrate reports to the zinc concentrate thickener feed hopper.

The ISA provides analysis of three key process streams in the plant:

- Zinc scavenger tail
- Zinc cleaner scavenger tail
- Zinc final concentrate

Reagent addition rates are controlled, including frother (MIBC), collector (sodium isopropyl xanthate), activator (copper sulfate), and depressant (lime).

The zinc flotation circuit will be augmented with the addition of a 20 m^3 zinc rougher flotation cell and a 10 m^3 zinc 1st cleaner cell. These cells will provide the added residence time required within the zinc circuit to manage the increased throughput and higher base metal feed grades. Pumping systems will be upgraded as required to match the increased flow rates.

17.3.6 Gold-Arsenopyrite-Pyrite Flotation

The gold-arsenopyrite-pyrite flotation circuit consists of rougher, scavenger, and a single cleaner stage. The cleaner tail is recirculated to the scavenger feed. The scavenger tail reports as the final tail, and the cleaner concentrate joins the rougher concentrate as final concentrate.

The two agitated gold flotation conditioning tanks have a total effective volume of 56 m^3. Slurry gravitates from the first conditioning tank to the second conditioning tank. Reagents are added to the first and second conditioning tanks and to the first gold rougher and scavenger cell feed boxes.

The gold rougher / scavenger flotation circuit consists of one 20 m^3 rougher tank cell followed by five 20 m^3 capacity scavenger tank cells arranged to produce separate concentrates.

The first rougher and the first and second gold scavenger cells are each equipped with a feed box. The gold flotation tail discharges via a dart valve to the gold flotation tail hopper and is then pumped to the tailings thickener. A sampler on the discharge side of the gold flotation tail pump provides a sample to the ISA.

Concentrate from the gold rougher flotation cells is pumped directly to the final gold concentrate thickener or alternatively to the gold cleaner cells. The concentrate produced from the gold scavenger flotation cells is pumped to the gold cleaner conditioning tank.

The gold cleaner flotation conditioning tank has an effective volume of 12.6 m^3. Reagents are added to the conditioning tank and to the first gold cleaner cell feed box.

The 1st cleaner flotation circuit consists of a single 10 m^3 tank cell followed by a bank of two 10 m^3 tank flotation cells.

The 1st cleaner tail discharges via a dart valve to the gold 1st cleaner flotation tail hopper and is then pumped to the scavenger bank, where it is combined with the rougher flotation tail.

The 1st cleaner concentrate gravitates to the final gold concentrate hopper, where it combines with the rougher concentrate, and is then pumped to the gold concentrate thickener. A sampler on the discharge side of the gold concentrate transfer pump provides a sample to the ISA.

The ISA provides analysis of two key process streams in the plant:

- Gold scavenger tail
- Gold final concentrate

Reagent addition rates are controlled, including frother (MIBC), collector (sodium isopropyl xanthate), and activator (sulfuric acid).

No additional gold flotation residence time is required with the increase in throughput and forecast feed grades of the expansion. The pumping infrastructure will be upgraded as required to manage the increased flows.

17.3.7 Lead Concentrate Thickening and Filtration

Concentrate from the lead flotation circuit is pumped to the lead concentrate thickener feed hopper, and then to a deaerator, from where it flows by gravity to the feedwell of an 8 m diameter concentrate thickener. Overflow from the deaerator gravitates back to the lead concentrate thickener feed hopper with the level allowed to vary between a high and a low limit to maintain the deaerator operating pressure set-point.

An auto-dilution system on the feedwell of the thickener increases the settling rate. Flocculant is added to the feedwell. The design thickener underflow density is 65% solids.

A bed level measuring device is installed to monitor the thickener bed depth. The addition rate of flocculant is controlled according to the bed depth. The thickener is equipped with two variable speed peristaltic underflow pumps arranged in a duty / standby configuration, which are controlled to maintain thickener bed pressure. A nuclear density gauge measures the density of the thickened slurry to the lead concentrate filter storage tank.

Thickener torque is automatically maintained in pre-set ranges via the thickener local control panel, which raises and lowers the thickener rakes according to torque readings. Torque readings and rake status (i.e., running / stopped / fault) are displayed on the control system. Lead concentrate thickener overflow gravitates to the lead thickener overflow tank. Combined lead concentrate thickener overflow and lead tailings thickener overflow is reused in the grinding and lead flotation circuits.

The lead concentrate filtration section consists of an agitated lead concentrate filter feed storage tank, dual filter feed pumps and a horizontal plate / frame pressure filter. The lead concentrate tank has a working volume of 49 m^3, equivalent to 23 hours of concentrate production.

The thickened concentrate slurry is pumped from the lead concentrate tank to a pressure filter (26 m^2 filtration area) for dewatering. The pressure filter produces a filter cake containing 9 – 10% moisture.

The filter cake discharges onto the lead filter cake conveyor, which in turn transfers it to a bagging station. Bagged lead concentrate is weighed and loaded onto haulage trucks.

A filtrate air separator is used to remove air from the filtrate before it reports to the filtrate hopper. During normal operation, the filtrate is collected in the lead filter filtrate tank. Filtrate is then pumped to the concentrate thickener to remove fine solids prior to re-use in the plant. The filter has a local control panel that controls the operation of the filter and associated valves and pumps, including the feed pumps and the cloth wash water pump.

The existing lead concentrate thickener will have a new feed tank added ahead of it to manage surge and help with deaeration prior to feeding the thickener. The thickener feedwell will be upgraded to improve performance. Minor changes to the pumping network will be made.

The increase in lead grade as mining moves into the Flats as well as the increased throughput will increase the lead concentrate production. The existing lead concentrate filter will shift over to water treatment plant sludge duty. The existing zinc concentrate filter will be repurposed as the lead concentrate filter. Minor changes to the pumping network and control system are all that is required.

17.3.8 Zinc Concentrate Thickening and Filtration

Concentrate from the zinc flotation circuit is pumped to the zinc concentrate thickener feed hopper and then to a deaerator, from where it gravitates to the feedwell of an 8 m diameter concentrate thickener. The deaerator feed pump speed is controlled automatically to maintain a set pressure in the deaerator. Overflow from the deaerator gravitates back to the zinc concentrate thickener feed hopper, with the level allowed to vary between a high and a low limit while maintaining the deaerator operating pressure set-point.

An auto-dilution system on the feedwell of the thickener increases the settling rate, and flocculant is added to the feedwell. The design thickener underflow density is 65% solids.

A bed level measuring device is installed to monitor the thickener bed depth. The addition rate of flocculant is controlled according to the bed depth. The thickener is equipped with two variable speed peristaltic underflow pumps arranged in a duty / standby configuration, which are controlled to maintain thickener bed pressure. A nuclear density gauge measures the density of the thickened slurry to the zinc concentrate filter storage tank.

Thickener torque is automatically maintained in pre-set ranges via the thickener local control panel, which raises and lowers the thickener rakes according to torque readings. Torque readings and rake status (i.e., running / stopped / fault) are displayed on the control system. Zinc concentrate thickener overflow gravitates to the water collection sump before being pumped directly to the process water tank.

The zinc concentrate filtration section consists of a zinc concentrate filter storage tank, dual filter feed pumps and a horizontal plate / frame pressure filter. The zinc concentrate tank has a working volume of 91 m^3, equivalent to 22 hours of concentrate production. The tank has an ultrasonic level device to monitor levels.

The thickened concentrate slurry is pumped from the zinc concentrate tank to a pressure filter (48 m^2 filtration area) for dewatering. The pressure filter produces a filter cake containing 12% moisture.

The filter cake discharges onto the zinc filter cake conveyor, which in turn transfers the filtered concentrate to a bagging station. Bagged zinc concentrate is weighed and loaded onto haulage trucks.

A filtrate air separator is used to remove air from the filtrate produced during the core blow cycle, and the filtrate is collected in the zinc filter filtrate tank before being pumped to the zinc concentrate thickener.

The filter has a local control panel that controls the operation of the filter and associated valves and pumps, including the feed pumps and the cloth wash water pump.

The existing zinc concentrate thickener will have a new feed tank added ahead of it to manage surge and help with deaeration prior to feeding the thickener. The thickener feedwell will be upgraded to improve performance. Minor changes to the pumping network will be made.

The increase in zinc grade as mining moves into the Flats as well as the increased throughput will increase the zinc concentrate production. The existing zinc concentrate filter will shift over to lead concentrate duty. A new pressure with a filtration area of 129 m^2 will be installed complete with a discharge feeder to deliver the filtered concentrate to either a new bagging system or trucks for bulk transport. New feed and filtrate tanks complete with pumping systems will also be installed.

17.3.9 Gold Concentrate Thickening and Filtration

The gold concentrate thickener has been transferred to water treatment plant duty. Gold concentrate is currently being thickened in the two – 8 m diameter lead flotation tailings thickeners. Concentrate from the gold-pyrite flotation circuit is pumped to the two – 8 m diameter thickeners.

An auto-dilution system on the feedwell of the thickeners increases the settling rate, and flocculant is added to the feedwells. The design thickener underflow density is 50% solids.

A bed level measuring device is installed to monitor the thickener bed depth. The addition rate of flocculant is controlled according to the bed depth. Each thickener is equipped with two variable speed peristaltic underflow pumps arranged in a duty / standby configuration, which are controlled to maintain thickener bed pressure. A nuclear density gauge measures the density of the thickened slurry.

Thickener torque is automatically maintained in pre-set ranges via the thickener local control panel, which raises and lowers the thickener rakes according to torque readings. Torque readings and rake status (i.e., running / stopped / fault) are displayed on the control system. Gold concentrate thickener overflow flows by gravity to the process water tank.

The gold concentrate filtration section consists of two storage tanks, two sets of dual filter feed pumps and two horizontal plate / frame pressure filters. The gold concentrate tanks have a working volume of 119 m^3, equivalent to 19.7 hours of concentrate production.

The thickened concentrate slurry is pumped to two pressure filters in parallel. Total filtration area is 1,240 m^2. The filter cake contains 10% moisture.

The filter cake discharges onto dedicated conveyors. Filter press No. 2 discharge conveyor can transfer filter cake to either a truck for bulk transfer or onto another conveyor which feed a dedicated bagging station. Filter press No.1 discharge conveyor feeds another conveyor, which in turn transfers the filter cake to a bagging station. Bagged gold concentrate is weighed and loaded onto haulage trucks.

A filtrate air separator is used to remove air from the filtrate before it reports to the filtrate tank. During normal operation, the filtrate from both filters is collected in the gold filter filtrate tank before being pumped to the gold concentrate thickener.

A new gold thickener will be installed. Concentrate from the gold-pyrite flotation circuit will be pumped to the new thickener feed tank ahead of the new 14 m diameter gold concentrate thickener.

An auto-dilution system on the feedwell of the thickener increases the settling rate, and flocculant is added to the feedwell. The design thickener underflow density is 50% solids. Thickener underflow will transfer to the existing gold concentrate storage tanks. Thickener overflow will gravity to a new tank which in turn will be pumped to the process water tank.

Two conveyors will be added to filter press No.1 material handling circuit to facilitate the bulk loadout of concentrate into trucks as well as retain the ability to bag gold concentrate.

17.3.10 Tailings Thickening and Filtration

Flotation tailings from the gold scavenger flotation are pumped to the 10 m diameter high-rate thickener. Flocculant is added to increase the settling rate and underflow density to approximately 60% solids w/w. Tailings thickener overflow gravitates directly to the zinc thickener overflow tank for re-use in the grinding and flotation circuits.

A bed level measuring device is installed to monitor the thickener bed depth. The addition rate of flocculant is controlled according to the bed depth. The thickener is equipped with two variable speed peristaltic underflow pumps arranged in a duty / standby configuration, which are controlled to maintain thickener bed pressure.

Thickener torque is automatically maintained in pre-set ranges via the thickener local control panel, which raises and lowers the thickener rakes according to torque readings. Torque readings and rake status (i.e., running / stopped / fault) are displayed on the control system.

Tailings thickener underflow flows by gravity to the thickened tailings hopper and is then pumped to the tailings filtration or paste backfill plant. Tailings pumped to the paste backfill plant are diluted to 40% solids to ahead of the transfer pumps due to limitations within the pumping system.

The tailings filtration section consists of an agitated tailings holding tank, filter feed pumps and two horizontal plate / frame pressure filters. The tailings storage tank has a working volume of 137 m^3, equivalent to 5.3 hours of tailings production.

Thickened tailings are pumped from the tailings holding tank to both of the horizontal plate / frame pressure filters for dewatering. Total filtration area is 2 x 620 = 1240 m^2. The pressure filter produces a filter cake containing 15% to 18% moisture. Filtrate gravitates directly to the tails filter filtrate tank before being pumped back to the tailings thickener. The filter cake discharges onto a stockpile, where it is reclaimed by a loader. The filtered tails are either transported and stored off site or fed to the paste backfill plant.

The tailings pumping system feeding the paste backfill plant will be upgraded with new pumps and piping to enable the transfer of tailings at the maximum density the thickener can achieve, 60% solids.

17.3.11 Tailings Paste Backfill Plant

There are four Eimco 51 m^2 (2.7 m diameter x 5 disc) filters, three operating and one standby. Three vacuum pumps are provided, two operating, one standby.

In paste backfill mode, thickened flotation tailings are pumped to two 137 m^3 storage tanks, which provide approximately 11.8 hours of storage at the design processing rate. Slurry is then pumped to the disc filters by dedicated centrifugal pumps. The level in each filter bath is controlled by a pinch valve.

Each vacuum pump is supplied with filtrate receivers. The vacuum pump sealing water system consists of a closed-circuit system with a chiller to remove heat build-up from the vacuum pump operation. Make-up sealing water is supplied from a filtered water system. The disc filters produce a filter cake containing 20% moisture.

Each filter discharges directly onto the paste backfill filter discharge conveyor, which in turn transfers the filtered tailings to the paste backfill cross conveyor. This conveyor is reversible and can discharge either onto a stockpile or the paste backfill mixer feed conveyor. There is a facility to reclaim stacked tails via the paste backfill feeder conveyor, which discharges onto the mixer feed conveyor.

Filtrate flows by gravity directly to the paste backfill clarifier, where it is mixed with flocculant solution to increase clarifier performance. The clarifier produces an overflow, which is pumped to the paste backfill mixer and paste plant clean water tank via a filter. Underflow from the clarifier is pumped back to the paste backfill storage tanks, with a bleed to the clarifier feedwell to provide seed material. Excess filtrate is sand filtered to provide clean water.

The paste backfill mixer feed conveyor transfers the filtered tailings to the paste mixing plant. Paste components are directed to the feed chute of the paste mixer along with cement dosed at a proportion of the measured dry weight of feed. Cement is transported to site via bulk tankers and pneumatically conveyed via a truck-mounted pneumatic conveyor to the storage silo at the paste backfill plant site. A 65-tonne capacity storage silo is installed. The silo discharges via a screw feeder to the paste backfill mixer. The measured components are added to a dual-shaft continuous mixer. Mixed paste is pumped to the underground reticulation system.

Assessments are underway to consider replacement of the four existing vacuum disc filters with a new horizontal plate and frame pressure filter. The new filter would utilize the existing filter infrastructure including filter stock tanks, filtrate tanks and filtrate clarifier. Filter cake could then be directed to either stockpile of directly to the paste backfill mixer feed conveyor.

A vortex mixer will be added ahead of the paste mixer to maximize the use of thickened tails in the paste mixing process. The current cement day tank will be replaced with a larger unit to improve operational performance and controls of the system. A new paste pump hydraulic power pack will be installed to facilitate the increased paste production requirements.

17.4 REAGENTS MIXING, STORAGE, AND DISTRIBUTION

The following process reagents are necessary to operate the processing facilities:

- Hydrated lime
- Sodium cyanide
- Zinc sulfate
- Frother: methyl isobutyl carbinol (MIBC)
- Collector: Aerophine 3418A
- Collector: sodium isopropyl xanthate (SIPX)
- Copper sulfate
- Sulfuric acid
- Flocculant
- Caustic soda
- Antiscalant
- Sodium hypochlorite
- Ferric sulfate

Packaged reagents are delivered to site and placed in the reagent compound. A forklift is used to transfer the drums or pallets to the preparation area.

17.4.1 Hydrated lime

Lime slurry is used as the pH modifier in the flotation process. Hydrated lime is delivered to site as a powder in 20-tonne bulk tankers (containers). Hydrated lime is off-loaded from the tanker with a dedicated blower into a 25-tonne capacity silo. Hydrated lime is then automatically mixed with raw water on a batch basis to generate a 20% w/v slurry. The lime slurry is periodically transferred from the mixing tank to the holding tank. Both the mixing and holding tanks are agitated. Centrifugal slurry pumps distribute the slurry throughout the flotation circuits via a ring main. The pH of the circuit is measured in various places and lime dosage adjusted accordingly. Individual addition points are controlled by an automatic valve and a pH probe.

Lime slurry is dosed to the following locations:

- Ball mill feed chute
- Lead regrind mill cyclone feed hopper
- Lead 2nd cleaner feed
- Lead 3rd cleaner feed
- Zinc conditioning tank 1

- Zinc regrind mill cyclone feed hopper
- Zinc cleaner scavenger feed, Zinc 1st cleaner feed, and Zinc 2nd cleaner feed

17.4.2 Sodium cyanide

Sodium cyanide is used as a sphalerite and arsenopyrite / pyrite depressant during lead flotation. Sodium cyanide is supplied as solid briquettes in 50 kg drums.

Sodium cyanide mixing is completed manually by the operator. Sodium cyanide is added to the mixing tank using a drum tipping device. Raw water is added into the sodium cyanide mixing tank to dissolve crystalline cyanide and the solution is then transferred to the 16 m^3 holding tank. A small amount of caustic soda is also added into the mixing tank to provide protective alkalinity. The hood over the mixing tank is ducted to a ventilation scrubber, which removes, scrubs, and vents any gases released during the mixing process. A sodium cyanide ring main system with dedicated dosing pumps enables the required additions to the following locations:

- Ball mill feed
- Lead cleaner conditioning tank
- Lead 2nd and 3rd cleaner feed

17.4.3 Zinc Sulfate

Zinc sulfate is used as a sphalerite depressant during lead flotation. Zinc sulfate is supplied in powder form in bags.

Zinc sulfate mixing is completed manually by the operator. The mixing facility comprises a dust enclosure with bag splitter and an agitated 10 m^3 capacity mixing tank. The bags are split, and zinc sulfate is then mixed with raw water to generate a 20% w/v solution. After mixing, the zinc sulfate solution is pumped to a header tank for distribution to the lead flotation circuit. Zinc sulfate addition is via dedicated dosing pumps running off a ring main.

The zinc sulfate is dosed to the following locations:

- Primary ball mill cyclone feed hopper.
- Lead regrind mill feed pump box.

17.4.4 Frother

The frother used in the flotation process is MIBC. The frother is supplied as a 100% concentrated solution in 1,000 litre bulk boxes or 200 litre drums. Frother is pumped undiluted to a head tank for distribution through the flotation circuits. The frother addition is via dedicated dosing pumps running off a ring main.

The frother is dosed to the following locations:

- Flash flotation feed
- Lead rougher feed
- Lead scavenger feed

- Lead 1st cleaner feed
- Lead cleaner scavenger feed
- Zinc rougher feed
- Zinc scavenger feed
- Zinc 1st cleaner feed
- Zinc 2nd cleaner feed
- Zinc cleaner scavenger feed
- Gold rougher feed
- Gold scavenger feed

17.4.5 Lead Cleaner Collector (Aerophine 3418A)

Aerophine 3418A is the collector in the lead flotation circuit. It is supplied as a 100% concentrated solution in 1,000 litre bulk boxes or 200 litre drums. The collector is pumped to a head tank for distribution through the lead flotation circuit. The lead collector addition is via dedicated dosing pumps running off a ring main.

The lead collector is dosed to the following locations:

- Flash flotation feed
- Lead conditioning tank
- Lead scavenger feed
- Lead cleaner conditioning tank
- Lead cleaner scavenger feed

17.4.6 Collector (SIPX)

SIPX is the collector in the zinc and gold-pyrite flotation circuits. SIPX is supplied as solid pellets in 120 kg drums.

SIPX mixing is completed manually by the operator. SIPX is added to the mixing tank using a drum tipping device and then mixed with raw water to generate a 10% w/v solution. The hood over the mixing tank is ducted to the ventilation scrubber, which removes, scrubs, and vents any gases released during the mixing process. After mixing, the SIPX solution is pumped from the mixing tank to a header tank for distribution to the zinc and gold-pyrite flotation circuits. The SIPX solution addition is via dedicated dosing pumps running off a ring main.

The SIPX is dosed to the following locations:

- Zinc conditioning tank 2 launder
- Zinc scavenger feed
- Zinc cleaner conditioning tank
- Zinc cleaner scavenger feed
- Gold flotation conditioning tank 2
- Gold scavenger feed

17.4.7 Copper Sulfate

Copper sulfate ($CuSO_4$) is the zinc and arsenopyrite / pyrite activator in the flotation process. Copper sulfate is supplied in powder form in 25 kg bags.

Copper sulfate mixing is completed manually by the operator. The bags are loaded manually to the mixing tank via a bag breaker and the powder is then mixed with raw water to generate a 15% w/v solution. The hood over the mixing tank is ducted to the ventilation scrubber, which removes, scrubs, and vents any gases released during the mixing process. After mixing, the copper sulfate solution is pumped to a header tank for distribution to the zinc flotation circuit and gold flotation circuit. Copper sulfate addition is via dedicated dosing pumps running off a ring main.

- Zinc conditioning tank 2
- Zinc regrind cyclone feed hopper
- Gold flotation conditioning tank 2

17.4.8 Sulfuric Acid

Sulfuric acid is the pyrite / arsenopyrite activator in the gold flotation circuit. Sulfuric acid is delivered to site in liquid form at 95% w/v. Acid is stored in a 140 m^3 capacity tank and dosing is performed using duty and standby variable speed pumps. The sulfuric acid is dosed to the gold flotation conditioning tank 1.

17.4.9 Flocculant

Flocculants are long chain molecules that aid solids settling by causing individual particles to stick together, thereby forming larger, heavier particles. Flocculant is supplied in powder form in 25 kg bags.

There is a dedicated flocculant mixing system and flocculant holding tank for the concentrate thickeners, tailings thickener and paste backfill clarifier (three systems in total). The flocculant mixing systems consist of a bag breaker and dry flocculant storage hopper, screw feeder and a 2.5 m^3 mixing tank with agitator. Mixed solution gravitates to an agitated 5 m^3 holding tank. Flocculant is mixed automatically with raw water on a batch basis to generate a 0.2% w/v solution. After a suitable hydration period, the flocculant is discharged into the flocculant holding tank, from where it is pumped by a positive displacement pump to the thickener.

17.4.10 Caustic Soda

Caustic soda is delivered to site in 25 kg bags of pellets. Caustic soda mixing is completed manually by the operator. The bags are loaded manually to the mixing tank via a bag breaker and the pellets are then mixed with raw water to generate a 20% w/v solution. The mixed solution gravitates to a 2.5 m^3 holding tank. Caustic addition to the ventilation scrubber and the cyanide mixing tank is via dedicated lines running off a ring main.

17.4.11 Antiscalant

Antiscalant is added to the discharge of both process water pumps to inhibit the formation of gypsum ($CaSO_4.2H_2O$) inside the pipes in the flotation circuit. The antiscalant is supplied as a solution in 1,000 litre bulk boxes or 200 litre drums.

Antiscalant is distributed to the discharge of the process water pumps via a variable speed dosing pump.

17.4.12 Sodium Hypochlorite

Sodium hypochlorite is added to the water treatment plant to oxidize trivalent arsenic (As^{3+}) present in the mine dewatering waters to pentavalent form (As^{5+})

17.4.13 Ferric Sulfate

Ferric sulfate is added to the water treatment plant to aid in co-precipitation and removal of metal contaminants to achieve required effluent quality.

17.5 SERVICES, WATER, AND AIR DISTRIBUTION

Services and utilities for the plant include process water, water well management, fresh water, low and high pressure compressed air, and instrument air.

The plant is serviced by a maintenance shop providing mechanical, electrical, and instrumentation facilities. An assay lab provides daily and shift quality monitoring information on solids and water samples for the safe and efficient operation of the plant.

New water entering the circuit is limited and the site water management strategy focuses on recirculation and reuse of water already in the system. The majority of the requirement for clean water (gland water, cooling water, etc.) is met by filtering recycled thickener and clarifier overflow. High-quality fresh water from the underground aquifer is abstracted by borehole and utilized for reagent mixing, potable water reticulation and other minor uses where high purity is essential.

A seasonally variable quantity of water (up to 650 m^3/h) is pumped from the underground mine and treated in a water treatment facility. The water first reports to the lime reactors for pH adjustment and precipitation of metals. Subsequent to the lime reactors total suspended solids (TSS) are reduced in a clarifier followed by three settling ponds. Once it meets discharge criteria, the water is released into the nearby Mavrolakkas stream.

Make-up water for the plant is sourced from the water treatment plant as required.

17.5.1 Raw Water

Raw water sourced from the mine is directed to the raw water tank.

Raw water is stored in a 9 m^3 water tank adjacent to the clean water and process water tanks. The raw water tank gravity feeds raw water to the following:

- Process water make-up (minimal)
- Reagent mixing
- Flocculant mixing

17.5.2 Clean Water

Clean water is used for:

- Filtration.
- Regrind mill flushing and seal water.
- Paste backfill vacuum pump cooling and seal water make-up.
- Gland service requirements.

Clean water is supplied by a sand-filtering paste plant clarifier, gold tailings thickener overflow, and zinc and gold concentrate thickener overflows.

17.5.3 Fire Water

The lower portion of the raw water tank provides a dedicated fire water reservoir for the fire water system. The fire water system includes an electric-driven “jockey” pump and a diesel-driven fire water pump to ensure a continuous supply of water to the fire system in the event of a power failure.

Fire hydrants and hose reels are placed throughout the process plant, fuel storage and plant offices at intervals that ensure coverage in areas where flammable materials are present.

17.5.4 Process Water

Process water is stored in a 181 m^3 tank. Duty and standby process water pumps provide process water to the following:

- Crushing area dust suppression.
- Grinding area dilution water.
- Trash screen sprays.
- Flotation and regrind areas dilution and knock-down water.
- Deaerator dilution water.
- General purpose hose-down points.

Process water is recycled from the zinc and gold / pyrite / arsenopyrite concentrate and tailings thickener overflows, concentrate and tailings filtrates, and paste backfill clarifier overflow.

17.5.5 Lead Flotation Process Water

Reclaimed water from the lead concentrate and tailings thickeners is stored in a 100 m^3 tank and reused in the grinding and lead flotation circuits. This minimizes the return of zinc flotation reagents to the lead flotation circuit.

17.5.6 Potable Water

Potable water is supplied in drinking bottles to the general workforce.

Well water is produced from a bore located in the regional aquifer and pumped to a water tank for storage. This water flows by gravity from the water tank to service the administration complex, plant offices, control room, site laboratory, washing facilities, and safety shower network. This water is not used as drinking water.

17.6 AIR SERVICES

A single screw compressor supplies plant and instrument air to the plant air receiver (via a refrigerated air dryer) and to the crushing area air receiver.

Two dedicated air compressors supply high pressure air to separate lead, zinc, and gold concentrate filter air receivers for drying purposes.

Two additional air compressors provide air services to the tailings and paste backfill disk filters, as high-pressure air, to assist with cake discharge. There are separate receivers at the filter building for each duty.

Low-pressure air for flotation cells is provided by five blowers, four operating and one standby.

17.6.1 Recent Plant Performance

17.6.1.1 Plant Throughput

Plant throughput was 454,122 tpa in 2023 versus the plan of 491,185 tpa. Average feed rate was 61.4 tpoh in 2023 versus the planned rate of 63 tpoh. The plant has demonstrated the ability to operate above the designed rate when feed stock is available, as in October 2023, the average feed rate was 66 tph.

Overall utilization of time averaged 86% in 2023, which has increased significantly since 2019 when it was 74%.

17.6.1.2 Lead Circuit

Lead recovery averaged 80.5% in 2023 versus the planned recovery of 85.3%. Recovery is primarily dependent on feed grade and the relationship is well understood by plant operators, as evidenced by the on-plan performance. The lower lead recoveries are due to a lower lead feed grade of 4.16% compared to the planned grade of 4.56% Pb.

Similarly, silver recovery in 2023 was 79.8% versus the planned recovery of 85.6%. Silver recovery is strongly correlated to lead recovery, so the lower lead feed grade also provides for an expected reduction in silver recovery.

Concentrate grades were essentially on plan at 57.3% in 2023 compared to the planned grade of 59.4%.

17.6.1.3 Zinc Circuit

Zinc recovery averaged 77.2% in 2023, compared to a planned recovery of 82.5%. Based on the current configuration of the plant, zinc flotation is carried out at a lower pulp density than designed, which results in reduced residence time. Upon completion of the new Au concentrate thickener, and the re-establishment of the Pb tails thickeners, zinc recovery should increase.

Concentrate grades were slightly below plan at 47.2% in 2023 versus the plan of 50.2% Zn.

17.6.1.4 Gold Circuit

Gold recovery averaged 84.0% in 2023 compared to the planned recovery of 83.7%. Concentrate gold grades exceeded plan of >20 g/t Au with the 2023 average of 22.1 g/t Au.

17.6.2 Planned Plant Performance

Planned plant throughput in the 2024 life-of-mine plan is shown in Figure 17-2. Plant upgrades will be required to achieve the 650 ktpa rate planned from 2026. Addition of a second mill in the grinding circuit and debottlenecking of a number of components of the flowsheet to meet increased rates are planned for the period from 2024 to 2025. Capital costs are planned for 2024 and 2025 with the overall cost estimated to be $27 M for the plant expansion.

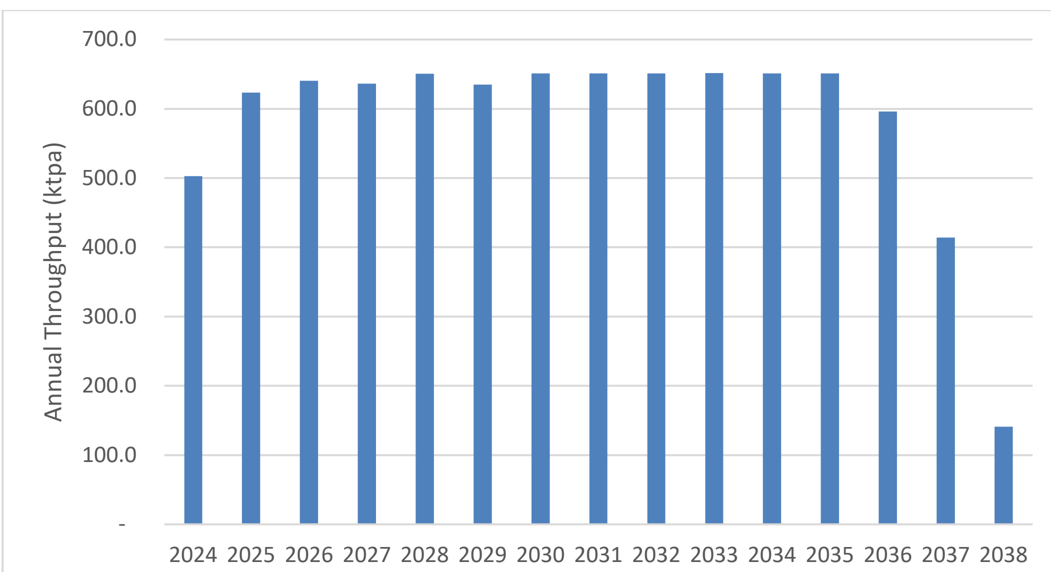


Figure 17-2: Planned Annual LOM Throughput (Eldorado, 2023)

SECTION • 18 PROJECT INFRASTRUCTURE

18.1 SITE ACCESS

The Olympias mine is located approximately 2 km west of Olympiada, in the Halkidiki peninsula, Northern Greece. It is situated 8 km north of the Stratoni mine, also owned by Eldorado.

The Olympias mine lies about 100 km by road from Thessaloniki and is readily accessible by car and bus. Site roads are fully developed as paved roads.

Epar.Od. Stavrou-Neas Chalkidikis, a provincial road is 1.2 km east of the project, connects to the national highway system: Highway 16 to the south at Stratoni, and both Highway 2 and the E90 to the north at Stavros.

18.2 LOCAL SERVICES

Thessaloniki, the second largest city in Greece, is a 92 km by road west of the Project and provides both supplies and services. The Project can also get basic supplies from Olympiada 1.5 km east of the Project and the towns of Stavros and Stratoni are both within 20 km of the mine site. The location of the mine relative to local services is shown in Figure 18-1.

Figure 18-1: Location of Olympias Mine, Port, and TMF (Eldorado, 2023)

Mine infrastructure, including ancillary facilities and services, has been fully developed to support the existing mine production and requires modest capital investment for expansion to 650 ktpa. Surface ancillary facilities are close to the decline and primary crusher. The ancillary facilities include the production services building, the surface workshop and warehouse, process plant, paste plant and surface fuel storage. The Olympias mine site layout is shown in Figure 18-2. The Olympias process plant is shown in Figure 18-3. Located near the process plant are the ore storage bins, water treatment plant, and a nursery.

Figure 18-2: Olympias Site Layout (Eldorado, 2023)

Figure 18-3: Olympias Process Plant (Eldorado, 2023)

18.3 PORT FACILITIES

A port facility at Stratoni, 26 km by paved road from the Olympias process plant, is owned by Hellas Gold. Currently lead, zinc and arsenopyrite concentrates are shipped via the port facility. Lead and arsenopyrite concentrates may also be bagged at the process plant and shipped by truck to the port at Thessaloniki.

The port facility has been improved so that its capability can be fully utilized. The improvements include rehabilitation and encapsulation of the conveyors. These improvements will allow Hellas Gold to ship all the concentrates in bulk from the port facility. Shipment of concentrates is by trucks which have International Carriage of Dangerous Goods by Road (ADR) certification. Bulk shipment will eliminate the requirement to bag lead and arsenopyrite concentrates. This will decrease logistics and transportation costs and provide more options in terms of markets for the concentrates, but also reduce the volume of container trucks that must drive through the local villages. The upgrades to the port facility to facilitate the shipping of concentrates is ongoing.

Further upgrades of the facility include the replacement of the concentrate storage shed and the material handling equipment. This is not currently scheduled and is not necessary to support the bulk shipment of all concentrates. Upgrades completed to date allow for the bulk shipment of all concentrates through Stratoni, realizing a substantial savings on costs compared with transportation in bulk bags and containers through the Thessaloniki port.

18.4 COMMUNICATION SYSTEM

Primary means of underground communication is by radio, using a leaky feeder cable system that advances with ramp and level development. This system provides radio communications throughout the mine. New fiber-optic cable will be installed between the various electrical substations for rapid communications.

18.5 WATER SUPPLY

Water is supplied by surface facility contact water run-off and from underground mine dewatering. A series of three settling ponds, with a fourth as a spare, is used to remove suspended solids. This water is pumped to a raw water tank next to the clean water and process water tanks.

Excess water from mine dewatering is treated in the surface water treatment plant. The water treatment plant consists of a multi-step process incorporating sodium hypochlorite oxidation, ferric sulfate co-precipitation, and neutralization followed by a clarifier and three settling ponds. Treated water that is not required is then discharged into the Mavrolakkas stream. The system's total capacity of 1,000 m^3/h is currently sufficient under normal circumstances. Treatment of the anticipated maximum discharge from the underground of 650 m^3/h as mining progresses to lower elevations, combined with surface contact water collection, can be managed within the water management infrastructure and treated with the water treatment plant. Water testing is completed to ensure discharge water is within quality limits. Water quality results are reported to the Ministry of Environment at regular intervals as required in the permits.

Process water is reclaimed from the tailings thickening and filtration circuit and backfill clarifier overflow. A minimum amount of make-up water is supplied from the raw water tank. The lower portion of the raw water tank provides a dedicated fire water reservoir for the fire water system. The fire water system includes an electrically driven “jockey” pump and a diesel-driven fire water pump to ensure a continuous supply of water to the fire system in the event of a power failure.

Potable water is produced from a borehole located in the regional aquifer and pumped to the potable water tank for storage. Potable water is piped from the potable water tank to service the administration complex, plant offices, control room, site laboratory, ablution facilities, and the safety shower network.

18.6 MINE DEWATERING SYSTEM

Details for the underground dewatering system are provided in Section 16 of this report.

18.7 MINE WASTE MANAGEMENT

Waste from the underground mine is brought to surface, where it is recycled underground as backfill or hauled to the KTMF.

Thickened tailings are pumped to the paste plant. If thickened tailings production exceeds the maximum capacity of the paste plant, excess thickened tailings can be pumped to one of two tailings pressure filters located adjacent to the process plant. Filtered tailings are then trucked to the paste plant for additional feed into the plant when required.

Excess thickened tails are pumped to a tailings filter to produce a cake with a moisture content of 13% by weight of solids, which is then trucked to the KTMF for dry stacking. This facility is located 8.5 km south of Olympias (23 km by public paved road).

In addition to mine tailings from the Olympias mining operations, tailings from historic mining activities at Olympias are also being hauled to the KTMF. It is designed to safely manage approximately 10.5 Mm^3 of mine waste at an average dry density of 1.6 t/m^3. An overview photograph of the facility in operation is provided in Figure 18-4.

Figure 18-4: Kokkinolakkas TMF (facing West) (Eldorado, 2023)

The KTMF consists of upstream and downstream rockfill embankments, which act as tailings dams. The upstream embankment is designed to serve two purposes: as a water-retaining dam to prevent contaminated seepage leaving the facility, and to provide flood containment control. It is designed with a central clay core and associated filter and transition zones located upstream and downstream of the core. The downstream embankment is designed as a water retaining rockfill dam, with a steeper concrete face instead of geosynthetic bedding layers.

A liner system to minimize seepage from the facilities has been engineered that consists of a geosynthetic clay liner (GCL) overlain by a textured HDPE geomembrane and protected by a non-woven heavy-duty geotextile. A sandy gravel layer overlays the membrane to collect any seepage or drainage; it is also protected by a non-woven geotextile.

18.8 SURFACE WORKSHOP

There is an existing surface maintenance workshop with two bays located near the East decline portal, with a nearby parts warehouse attached to it. Equipment that regularly exits the mine, such as the haulage fleet and light vehicles, can be serviced at the surface shop, whilst equipment such as production scoop trams, jumbos, and production drills, will generally be serviced in the underground workshop, once completed.

18.8.1 Explosives / Cap Magazines

Packaged explosives products for blasting practices in the underground mine may be used from time to time in special circumstances when bulk emulsion is unavailable or not fit-for-purpose. An explosives magazine is expected to be commissioned in 2024, currently, explosives are delivered to site daily by a licensed supplier.

18.8.2 Fuel Storage

There is currently storage capacity for 60,000 L of diesel fuel on site, with two fuel trucks available for underground fueling.

18.9 SHAFT

There is an existing headframe, Koepe hoist and shaft located near the mine shop area. Currently the hoist is operational and is used for inspection of the in-shaft pumping station only. The old underground crusher and loading pocket facility is in disrepair. A high-level trade-off study was completed, and it was determined that rehabilitation of the shaft for ore haulage was not economically preferable to other material handling options.

18.10 ELECTRICAL POWER

Currently power is brought to site via a 10 mVA 20 kV overhead line from the local Public Power Company (PPC) grid. Power is distributed via overhead line to the various facilities throughout the site and to underground at 20 kV. Underground distribution is described further in Section 16.

To supply the required electrical power for the production increase, a new 150 kV overhead line and 25 MVA Main Substation at +85 Level was installed and commissioned in 2023. As part of this capacity increase, new fiber- optic cable was also installed between the various substations for rapid communications.

Currently there is 3,680 kVA of back-up diesel power generation capacity available at site. Back-up power is not centrally located, rather it is distributed at the various local substations, which should reduce the risk of power loss due to a failed overhead line.

SECTION • 19 CONTRACTS

19.1 MARKETING

19.1.1 Market Sales

The Olympias Project produces three concentrates:

- arsenopyrite / pyrite concentrate containing gold
- lead concentrate that also contains silver and gold, and
- zinc concentrate that also contains gold

Eldorado has been selling concentrates from the Olympias operation since 2012 including pre-production, although no formalized market study was completed in respect to concentrate sales. The market for the Project's concentrates is well established with sales to smelters, refineries and market traders in Europe Africa, and Asia.

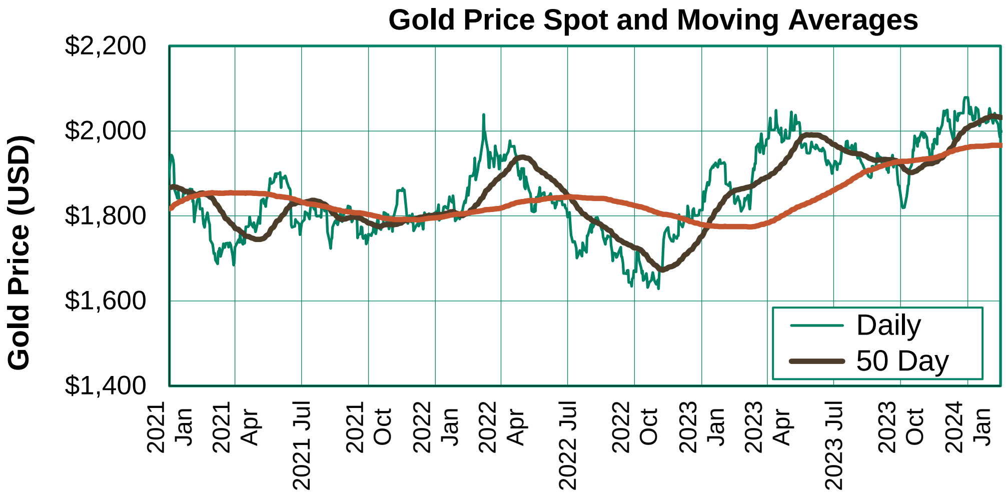
19.1.2 Market Studies

No formalized market study was completed in respect to concentrate sales. The Reserve metal prices are based on analysis of price projections from industry peers, investment banks, and analysts.

19.2 PRICE

The price of gold is the largest single factor in determining profitability and cash flow from operations. The financial performance of the project has been, and will continue to be, closely linked to the price of gold. Reserves have been determined at a gold price of $1,400 per troy ounce, silver price of $19 per troy ounce, zinc metal price of $2,500 per tonne, and lead metal price of $2,00 per tonne.

Figure 19-1 shows the price of gold over the last three years.



London Bullion Market Association daily closing price

Figure 19-1: Gold Price

19.3 CONCENTRATE SALES

Eldorado has no hedging in place for the sale of gold or any other metals produced. There are a number of written contracts in place for the sale of gold concentrate.

Contracts for concentrate sales contain a range of settlement terms, generally based on the grade of metal contained within the concentrate with credit for precious metals, less penalties, for deleterious within the concentrate. Sales of gold, lead and zinc along with silver credits are based on spot prices.

All contracts in place are at market rates with terms and conditions within industry norms.

19.3.1 Gold Concentrate

Contracts for sales of gold concentrate contain a range of settlement terms generally based on the gold grade contained in concentrate:

- Average gold payability ranges from 50 to 70%:
- No treatment or refining charges.
- Smelter penalties applied for arsenic.

19.3.2 Zinc Concentrate

Contracts for sales of zinc concentrate contain a range of settlement terms, with a summary as follows:

- Treatment charges range from $80 to of $275/dmt
- Zinc payability is fixed at 85%.

- Gold is payable at 70%, with a deduction of 1.0 g/t.
- No payablility on silver.

19.3.3 Lead Concentrate

Contracts for sales of lead concentrate contain a range of settlement terms, with a summary as follows:

- Treatment charge of $150 to $300/dmt
- Lead payability is fixed at 95%.
- Silver and gold are paid at 95%.
- A gold grade deduction of 1.0 g/t is applied.
- A silver refining charge of US$0.78/oz is applied.

19.4 CONTRACTS

Typical contracts will be awarded for expansion construction, equipment, and mine development if required. All contracts required to develop the Project are expected to follow standard industry practice. There are no existing of future material contracts required for development of the Property.

SECTION • 20 ENVIRONMENTAL STUDIES, PERMITTING AND SOCIAL OR COMMUNITY IMPACT

20.1 PERMITTING AND CERTIFICATIONS

The Olympias project has received and maintained all the necessary permits to operate from Greek regulators.

The mine site monitors and reports on environmental conditions at intervals outlined in the EIA as amended by the Ministry of Environment. The last EIA update was approved in 2023. Environmental monitoring for water quality and other environmental conditions conducted during operations will continue post closure.

20.2 ENVIRONMENTAL IMPACT STUDY

The EIS for the Kassandra Mines complex includes an area of 26,400 ha, in north-eastern Halkidiki (Macedonia Region). The Kassandra Mines complex includes the Skouries, Olympias, and Stratoni sites. The Olympias mine and facilities comprise an area of 529 ha of the Property which is 4,727 ha.

The EIS considers the potential impact on the local and regional environment as it relates to:

- Open pit and underground workings.
- Tailings impoundment.
- Process plant.
- Infrastructure necessary for the Project operation.

ENVECO S.A. (Environmental Protection, Management and Economy consultants) under Hellas Gold management, authored the full EIS. The EIS was submitted in August 2010 and approved in July 2011. The EIS covers all environmental issues for the Project.

An updated EIA was authored by ENVECO S.A., submitted 2021 and approved in April 2023.

20.3 EIS SUMMARY FINDINGS

For the preparation of the EIS, legislation, standards and directives required by the national and European Community legislation in force were used.

The following assessments have been made on the Olympias Project's environmental impact.

20.3.1 Landscape

Impact on the landscape of the property is of low significance, of local character and much will be non-permanent and partially reversible. All measures to minimize the anticipated impact will be taken.

The Olympias Project will benefit the Olympias area by allowing the rehabilitation of the Olympias valley at the end of the mine life.

20.3.2 Geological Environment

The mining method primarily used for the Olympias Project is DAF. The mined areas are backfilled with material comprised of inert tailings and cement. This prevents surface subsidence and ameliorates the acidity of underground water quality due to the alkalinity of the backfill.

20.3.3 Ground – Land Use

The impact will be localized to the areas of the disposal facilities but, with careful replanting at closure, will be minimized. No significant impact is anticipated on the rest of the Olympias Project areas. After the completion of operations, the Olympias Project areas will be rehabilitated according to appropriate and approved land uses.

20.3.4 Water Resources

No significant impact is expected either quantitatively or qualitatively on the water in the immediate mining and processing areas, or those areas within the immediate regional water system. The Olympias Project has been designed such that any leakage can be managed and controlled. The overall impacts have actually been assessed as moderately positive, due to the rehabilitation of the old tailings ponds and permanent restoration of the valley site when operations are complete.

20.3.5 Atmospheric Environment

Mining activities (mines, surface plants, disposal areas, etc.) are not assessed as causing any significant impact on the atmospheric environment, since all the necessary precautions have been taken for impact minimization. All potential impacts can be considered as moderate, temporary and reversible.

The Olympias Project's impact on the atmospheric quality of the area will be limited in the direct area of influence and will be mainly related to the local and restricted increase of dust and gas values. There will be no impact at all on the quality of the atmospheric environment of the nearby populated areas.

20.3.6 Sound Environment

Aggravation of the sound environment is not seen as an issue in the direct and broader area of the operation. Accumulative impact on the sound environment is only anticipated in the area where the waste disposal facility is situated near to the process plant. The rest of the infrastructure elements are located sufficiently apart to avoid any significant accumulating impact on the sound environment of the Property.

20.3.7 Ecosystems – Flora – Fauna

All the areas used are outside of, but adjoin, Natura 2000 (an EU designated nature reserve); however, this places no restrictions on activities of Hellas Gold providing the terms of the EIS are adhered to.

Rehabilitation will prove positive for the return of certain species of mammals. The impacts are therefore estimated to be minor, permanent and partially reversible. On some occasions, impacts are positive.

20.3.8 Social and Financial Environment

The positive consequences of the Olympias Project are very important for the Halkidiki Prefecture and for the National Economy. The general financial and social consequences deriving from the Olympias Project are the following:

- A significant contribution is made to the National Economy.
- Significant infrastructure is constructed and equipped by local companies.
- Service industries in the local economy expand.
- Employment of a large skilled workforce

20.4 CLOSURE PLAN

A closure plan was submitted with the EIA and subsequent revision. Rehabilitation of the historic tailings facility in the Olympias valley has been ongoing since production began in 2014. The old tailings are being transferred to the KTMF directly or after re-processing in the plant with approximately 75% completed. The historic waste rock facilities have been fully excavated and transferred to KTMF.

The fundamental criteria for Project closure and environmental rehabilitation include the following:

- The Project site must be handed back in a state that will not give rise to risks to the health and safety of people, the flora and fauna in the area and to environmental safety in general.
- All remaining structures, including interventions, in the natural terrain of the Project site, must not generate any risk to public health, safety, or the environment in terms of geotechnical stability.
- All remaining materials must not generate a risk to public health or the environment for future users of the area.
- Environmental rehabilitation must lead towards a self-sustaining ecosystem typical of the area. The purpose of the rehabilitation program must be to meet future land needs in the area, and rehabilitation must seek to re-create safe and stable biological conditions that encourage natural regeneration and the development of biodiversity.

:

Eldorado has undertaken to ensure that rehabilitation is in line with goals for safety, health and the environment. Surface facilities at the Olympias site will be decommissioned, and subsequently rehabilitated, once operations are completed.

Voids created from the extraction process will be hydraulically filled with a mixture of tailings and cement. When exploitation of the mineral reserves is complete, the only pending arrangements for full underground closure are the removal of mining and mechanical equipment from the workings, backfilling access works where appropriate, and the rehabilitation of the area around the entrances of the main access tunnels.

20.5 ENVIRONMENTAL COSTS AND GUARANTEES

Hellas Gold has provided a €50.0 M ($57.5 M) Letter of Guarantee to the MOE as security for the due and proper performance of rehabilitation works in relation to the mining and metallurgical facilities of the Kassandra Mines project and the removal, cleaning and rehabilitation of the old, disturbed areas from the historic mining activity in the wider area of the project. Additionally, a Letter of Guarantee to the MOE, in the amount of €7.5 M ($8.6 M), has been provided as security for the due and proper performance of the Kokkinolakkas TMF (total €57.5 M).

Five years after completion of the rehabilitation works and the change in land use of each individual facility in line with the master plan, the effectiveness of the guarantee will be examined by the External Auditing Committee, which will make a recommendation on any adjustment to the letter of guarantee that is needed.

20.6 PERMITTING

In February 2021, Eldorado entered into an Agreement with the Hellenic Republic, providing a mutually beneficial and modernized legal and financial framework to allow for investment in the Skouries project and the Olympias and Stratoni mines. The Investment Plan includes an expansion of Olympias to 650,000 tonnes of ore per annum, from the current 470,000 tpa, as well as additional benefits to the region, including more jobs, increased fiscal revenues and community development. A new EIA was submitted in 2021 in accordance with the new Business Plan.

The Agreement became legally effective on 23 March 2021 following ratification by the Hellenic Parliament and publication in the Greek Government Gazette. The Agreement is governed by Greek law. Its initial term continues to 2051 and may be extended by an additional 25 years subject to certain conditions.

Key permits are summarized in Table 20-1.

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Table 20-1: Summary of Key Permits

Description	Authority	Issue Date
Preliminary Environmental Impact Study No. 144824/24.9.2009	Special Environmental Service of the Ministry of Environment, Energy & Climate	September 9, 2009
Exploration Permit - Approval of Environmental Terms for Exploration in the wider Kassandra Mines Area 4767/26.5.2010	Central Macedonia District	May 26, 2010
Approval of Environmental Terms and Conditions for the projects a) Mining - Metallurgical Facilities at Kassandra Mines, and b) Removal, Cleaning and Rehabilitation of Olympias Old Mining Tailings area belonging to the company Hellas Gold S.A. in the Prefecture of Halkidiki 201745/26.7.2011	Joint Ministerial Decision	July 26, 2011
Approval of the Technical Study (Engineering Design) of Olympias Mining Installations Δ8-Α/Φ.7.49.13/30258ΠΕ/5159ΠΕ/ 10.02.2012	Ministry Of Environment, Energy & Climate Change	February 10, 2012
Decision Δ8-Α/Φ.7.49.13/30258ΠΕ/5159ΠΕ/ 10.02.2012 for the Approval of the Technical Study of Olympias Mining Installations Subproject of Kassandra Mines Mining – Metallurgical Facilities Project belonging to the company HELLAS GOLD S.A. in the Municipality of Aristotle in Prefecture of Halkidiki	Ministry of Environment, Energy & Climate Change	February 10, 2012
Installation Permit for the Electromechanical Equipment Olympias Flotation Plant Δ8/Γ/Φ.12.7/18826/3682/24.9.12	Ministry Of Environment, Energy & Climate Change	September 24, 2012
Operation Permit for the Electromechanical Equipment Δ8/Γ/Φ.12.7/24293/4698/19.12.12	Ministry Of Environment, Energy & Climate Change	September 12, 2012
Approval of Appendix 4: "KOKKINOLAKKAS' DISPOSAL AREA TECHNICAL STUDY" of the Technical Study of the Olympias Mining Installations Subproject of Kassandra Mines Mining – Metallurgical Facilities Project belonging to the company HELLAS GOLD S.A. in the Municipality of Aristotle in Prefecture of Halkidiki. Δ8-Α/Φ.7.49.13/22849/4170/20.12.2013)	Ministry of Environment, Energy & Climate Change	December 20, 2013
Decision No.: ΔΜΕΒΟ/Α/Φ.10.ΤΜ.6/181057/3146/15-9-2017 [ΑΔΑ: Ω4Υ64653Π8-Ψ7Ω] for the approval of the "Technical study for the closure of the old Olympias Mine".	Ministry of Environment, Energy & Climate Change	September 15, 2017
ΥΠΕΝ/ΔΙΠΑ/21746/1420 24-03-21 Decision confirming application of Article 1(8)(a) of Law 4014/2011, as amended and in force, in relation to the validity of Joint Ministerial Decision No. 201745/26-07-2011 ("JMD") approving the environmental terms and conditions	Joint Ministerial Decision	March 24, 2021
Decision for the Approval of the Supplemental Report for Olympias Technical Study & UG equipment economo-technical study update regarding the "Olympias mining facilities" subproject of the Kassandra Mines Mining – Metallurgical Facilities Project in the Municipality of Aristotle in the Halkidiki Prefecture based on the Olympias EIA modification folder (2022) ΔΜΕΒΟ /98124 /939/06.10.2022) [ΑΔΑ: 6ΟΦΩ4653Π8-ΩΒΠ].	Ministry of Environment, Energy & Climate Change	October 6, 2022
Decision for the Approval of the Supplemental Report for Olympias Technical Study & UG equipment economo-technical study update regarding the "Olympias mining facilities" subproject of the Kassandra Mines Mining – Metallurgical Facilities Project in the Municipality of Aristotle in the Halkidiki Prefecture based on the Olympias EIA modification folder (2022) (ΥΠΕΝ/ΔΜΕΒΟ/31995 /369/30.03.2023) [ΑΔΑ: ΨΞΨ54653Π8-ΕΞ].	Ministry of Environment, Energy & Climate Change	March 30, 2023
A new EIA, based on the new investment agreement between Hellas Gold SA & Greek State that was ratified by the Law. 4785/2021, was issued with the YPEN/DIPA/45799/3126/27.04.23 ministerial decision.	Joint Ministerial Decision	April 27, 2023
Supplemented and modified technical study: initially approved by the Δ8-Α/Φ.7.49.13/30258ΠΕ/5159ΠΕ/ 10.02.2012 ministerial decision, supplemented by the Δ8-Α/Φ.7.49.13/22849/4170/20.12.2013 regarding the Kokkinolakkas TMF and the ΔΜΕΒΟ/Α/Φ.10.ΤΜ.6/181057/3146/15-	Ministry of Environment, Energy & Climate Change	

Description	Authority	Issue Date
9-2017 regarding the backfilling of the old part of Olympias mine, and modified by the ∆MEBO /77458/ 1072/03-09-2019, ΥΠΕΝ/ΔΜΕΒΟ/61816/980/04.08.2020, ∆MEBO /31133/319/31-03-2022, ∆MEBO /98124 /939/06.10.2022, ΔΜΕΒΟ/31995 /369/30.03.2023 modification ministerial decisions.		
Main operating permits: • With the ΔΜΕΒΟ/Α/Φ.10.ΕΓΚ.6/180753/3079/13-9-2017 was granted the operation permit for the electromechanical equipment at Olympias Flotation Plant of mixed sulfides ores that was modified by the 1172606-06.08.2020 business notification. • With the 1091177 -28.12.2018 business notification was received for the Operation of the Kokkinolakkas TMF • With the 1268705 /21-11-2022 business notification was received for the operation for the Electromechanical Equipment of the Olympias UG Mine facilities that was modified by the 1302634 /23-06-2023 business notification.		

The Olympias Project has received and maintained all permits required to operate within Greece. Discussions are regularly held with the local communities and there are no ongoing negotiations which would materially affect the Project of operations. There are no known environmental impacts that would limit the ability to extract the Mineral Resources or Mineral Reserves.

SECTION • 21 CAPITAL AND OPERATING COSTS

All costs are presented in US Dollars (US$) based on the exchange rates shown in Table 21-1.

Table 21-1: Exchange Rates

Currency code	Currency name	Exchange rate
C$	Canadian Dollar	C$1.00 = US$0.80
€	Euro	€1.00 = US$1.15

21.1 CAPITAL COSTS

The total capital cost estimate includes the expansion to 650 ktpa in the process plant, as well as capital development of the underground mine and sustaining capital, which is primarily for development, mine and processing infrastructure and maintenance. Expansion capital specifically includes process plant upgrades, water management facilities, related indirect costs, EPCM, owner's and contingency costs. The majority of the expansion capital is spent in the early years of operation through 2025. Sustaining capital costs are spread out over the LOM (to 2037). Capital cost estimates are summarized in Table 21-2. Sunk costs to the end of 2023 are excluded from the capital cost estimate.

Table 21-2: Summary of Capital Costs

Area	Total ($M)
Growth capital	
U/G Development	28.8
Mill Expansion	26.8
Ancillary Facilities (Dry, Warehouse, Lab, Admin Building)	9.0
Other	10.4
Total Growth Capital	**75.0**
Sustaining Capital	
Mine	144.2
Process	59.5
Administration	1.2
Environmental	1.0
Health and safety	0.2
Total Sustaining Capital	**206.1**
Capitalized exploration	2.7
Total Capital Costs	**283.7**
Closure	**59.5**

Direct cost estimates were developed from a combination of firm or budget quotes, material take-offs, existing contracts, project specific references, and historical benchmarks.

Contingency was applied to each cost item in the estimate, based on the level of engineering definition and reliability of unit rates.

Labour rates were derived from existing contracts for work carried out at Olympias as well as for recent construction works at Skouries. The all-in crew labour rates include all direct and indirect costs associated with contractors.

Quantities were generally based on detailed material take-offs and equipment lists, with some allowances for minor items.

Indirect costs were factored from direct costs and based on historical experience.

Owner's costs include labour and general and administrative costs for the owner's team during the period of active construction.

21.2 OPERATING COSTS

Direct operation costs at Olympias consist of underground mining costs, processing costs, and general & administrative (G&A) costs. These costs are summarized in Table 21-3 for the entire LOM, including the ramp-up period towards 650 ktpa. It should be noted that operating costs shown here are exclusive of refining and concentrate transport charges; these charges are excluded from the cut-off grade operating costs estimate as they are included as part of the calculation of the NSR.

Table 21-3: Summary of Direct Operating Costs

Category	LOM ($M)	LOM average ($/t ore)
Mining costs	1,041.2	119.01
Processing costs	532.5	60.87
G&A costs	155.0	17.72
Total direct operating cost	**1,728.6**	**197.60**

The underground mine direct operating costs include all consumables (ground support, explosives, services, cement, aggregates, and fuel) and equipment required to meet the development and production schedule objectives. The operating unit costs for mobile equipment and fuel consumption rates were largely obtained from manufacturers and validated with the current operating costs. Labour requirements were developed to support the operation and maintenance of the equipment fleet and for the general operation of the underground mine.

Underground mine operating costs were based on the LOM production schedule, equipment operating costs from manufacturers, quotations on bulk items from primarily Greek suppliers, the staffing plan, and consumables as per the 2023 budgetary estimates.

Process operating costs were based on estimated annual consumption of process reagents, major wear parts, and utilities. Budget quotations were obtained for supply of all significant consumables and utilities. Power consumption was calculated based on electrical load lists.

Operating costs for the water management facility are based on operation and maintenance requirements of pumps, pipelines, and mobile equipment. Labour requirements for operation of mobile equipment and supervision were calculated based on fleet sizing.

The process operating costs were based on consumption inputs from the design criteria, load lists, updated quotations of consumables, and the staffing plan.

Zinc concentrate will be shipped out from the Stratoni port; lead concentrate and gold concentrate will be shipped out from the Stratoni port and from Thessaloniki. Transportation cost estimates based on current costs.

General and Administrative (G&A) costs were estimated based on recent actuals and include allocations of costs from the Kassandra general and administrative centre and from the Athens office with overseas permitting and other related responsibilities. As Olympias throughput ramps up and Skouries begins production, Olympias G&A costs will reduce on a cost per tonne basis based on allocation of some shared support costs to Skouries. G&A costs were estimated based on a projected personnel list with salaries indicative of local standards and annual allowances for general supplies.

Salaries and wage estimates were provided as full-burden rates by Hellas Gold and are based on detailed personnel lists. Energy costs for diesel and power supply, and consumables and maintenance costs have been obtained from supplier quotations, relevant in-house data, or were factored.

Current labour productivity is considered low when compared to other international operations. Eldorado believes that the envisaged improvement initiatives are reasonable and achievable and has allowed for effective work hours per shift to gradually increase. This will be assisted by the increase in number of available faces for DAF mining through design and sequence changes. All of these initiatives are planned to be in place as part of steady-state operations.

The QP has reviewed the Olympias cost estimates, considers them reasonable, and takes responsibility for them.

SECTION • 22 ECONOMIC ANALYSIS

Eldorado Gold, being a producing issuer, is not required to include information in this section as this Technical Report does not describe a material expansion of current production. Eldorado has performed an economic analysis related to the Olympias operation using a gold price of $1,700/oz, silver price of $22/oz, lead price of $2,050/t, and zinc price of $2,600/t at the forecasted production rates, metal recoveries, capital costs, and operating costs estimated in this Technical Report. Eldorado confirms that the outcome is a positive cash flow that supports the Mineral Reserve estimate. Sensitivity analysis incorporating changes in metal prices, capital costs, and operating costs indicate robust economics.

The LOM plan shows that Olympias has a production life of 15 years and can sustain an average production above 640 ktpa through to 2036, based on the current Mineral Reserves.

The mine has the potential to extend this mine life through conversion of identified Inferred Resources, and through resource expansion with ongoing exploration activities.

SECTION • 23 ADJACENT PROPERTIES

The Property is located within the Kassandra Mines complex which is comprised of a group of Hellas Gold mining and exploration concessions, covering 317 km^2. The other properties within the complex include Stratoni, which is currently on care and maintenance, and the Skouries copper gold porphyry deposit that is under development.

There are no other relevant adjacent properties.

SECTION • 24 OTHER RELEVANT DATA AND INFORMATION

24.1 LIFE OF ASSET STRATEGY

In February 2021, Eldorado entered into an Agreement with the Hellenic Republic, providing a mutually beneficial and modernized legal and financial framework to allow for investment in the Skouries project and the Olympias and Stratoni mines. The Investment Plan includes an expansion of Olympias to 650 ktpa of ore (from the current 470 ktpa). The Agreement became legally effective on March 23, 2021 following ratification by the Hellenic Parliament and publication in the Greek Government Gazette.

The expansion to 650 ktpa is now an integral part of the current Mineral Reserves estimation. The current case is based on proven and probable reserves only, however, there is upside potential with the conversion of Inferred Resources to M&I Resources. Additional funds are included in the LOM budget for exploration drilling aimed at converting Inferred Mineral Resources to Measured and Indicated.

24.1.1 Mining Methods

The mining methods planned for future operations at Olympias mine only include DAF (the current method). As for the Mineral Reserves plan, DAF is envisaged to be used in all mining areas (East, West, Flats, and Remnants).

24.1.2 Cut-off Value

The cut-off values supporting the estimation of underground Mineral Reserves were developed in 2023 from forecast 2023 costs and based on future projected operating costs at a steady-state production rate of 650 ktpa. The NSR values of $217/t for DAF mining would adequately cover all site operating costs and sustaining capital costs on a breakeven basis. The DAF value was used to create potentially mineable stope shapes from the NSR block model.

It is recognized that the Olympias mine is currently in a ramp-up phase and has not yet achieved the proposed production rate and mining cost targets. Planned production increases have been reflected in the schedule for Mineral Reserves extraction (see Section 14) shown in Section 16.

It is anticipated that the production increases will be achieved through improvements to the operational plan as discussed in Section 16.

24.1.3 Equipment and Labour

The equipment and labor requirements included in the plan are sufficient to achieve the plan and comparable to other operations of similar size. The QP believes productivity assumptions, equipment availability and capital costs are reasonable.

In the evaluation of potential underground mining production inventories for the mine plan, modifying factors were applied to the tonnages and grades of all mining shapes to account for dilution and mineralization losses. In the DAF stopes, a base mining dilution factor of 15% and a mining recovery of 95% were estimated. These are the same assumptions as for Mineral Reserves and are based on actual data captured for dilution on site.

24.1.4 Underground Infrastructure

The planned infrastructure supporting the extraction of the Mineral Reserves is also designed to support the current plan and future expansion of the Reserve through infill drilling.

24.1.5 Mining Schedule

The Olympias mine is projected to increase its annual production rate from the current 470 ktpa in 2023 up to approximately 650 ktpa in 2025. The development schedule is unchanged from the Mineral Reserves plan (Table 16-6).

Table 24-1: Base Case Production Schedule

Year	Total tonnes (kt)	Au (g/t)	Ag (g/t)	Pb (%)	Zn (%)
2024	502.9	9.0	127.4	4.1	4.5
2025	623.5	7.9	129.6	4.2	5.1
2026	640.6	8.0	143.9	4.7	5.4
2027	636.4	7.7	130.6	4.2	4.5
2028	650.6	7.7	113.9	3.7	4.4
2029	634.9	6.6	120.1	4.0	5.1
2030	650.9	6.1	117.8	3.9	4.8
2031	651.3	6.3	130.3	4.5	5.4
2032	651.2	6.5	135.3	4.7	5.5
2033	651.4	5.2	130.0	4.5	5.5
2034	651.2	5.8	131.0	4.6	5.8
2035	650.9	6.0	125.2	4.2	5.7
2036	596.0	6.6	114.7	4.0	5.6
2037	414.3	4.9	110.9	3.9	6.4
2038	140.9	4.8	94.9	3.5	6.5
Total	**8,746.8**	**6.7**	**125.7**	**4.2**	**5.3**

Note: Totals may not compute exactly due to rounding.

24.2 REFRACTORY TREATMENT

As part of the 2021 Investment Agreement, the Company prepared a Metallurgy Proposal that summarised potential processing options that could be implemented to further process the gold-bearing pyrite-arsenopyrite concentrate produced from Olympias. The Metallurgy Proposal considered technical, environmental, financial, legal, and other aspects associated with eight possible options and recommended a short-list of options.

A Metallurgy Committee was established in line with 2021 Investment Agreement with three representatives of the Hellenic State and three representatives of the Company. The Committee is studying the Metallurgy Proposal during the Evaluation Period, which was still underway at the effective date of this report.

SECTION • 25 INTERPRETATION AND CONCLUSIONS

25.1 INTRODUCTION

Olympias is a mine with a long history that was returned into production in recent years. Commercial production was achieved in December 2017. Olympias is a gold-rich polymetallic carbonate replacement deposit hosted in an interlayered sequence of feldspar-biotite gneiss and marble. The orebody has variable geometry, with mining operations planned in three main Zones: East, West and Flats; the Remnants are a sub-zone of the West Zone. There are sufficient Mineral Reserves for a mine life of 15 years and steady-state production rate of 650 ktpa is planned to be maintained for 11 years of the mine life. The mine has embarked on a series of initiatives to increase both productivity and production rates; these initiatives are accepted as reasonable by the QPs.

25.2 GEOLOGY AND MINERAL RESOURCES

The geological understanding of the deposit is good, and with the aid of an extensive core relogging program and ongoing exploration drilling the ore types have been well characterized.

The data collection, sampling, sample preparation, security, and analytical procedures adopted by Eldorado for its drilling programs meet accepted industry standards, and the QA/QC results confirm that the assay results may be relied upon for Mineral Resource estimation purposes.

An important measure of performance at any producing mine is reconciliation of the block model to the final mill production figures. The reconciliation is detailed and thorough, examining the amount of ore tonnes mined by zone versus the process plant results. The reconciliation process methodology, described in Parker (2012), provides a quarterly snapshot and demonstrates that the block model and the underlying Mineral Resources are valid and robust.

Modelling and estimation are carried out in a diligent fashion and the reconciliation mentioned above has provided corroboration of the reasonableness of the Mineral Resource estimates. The Mineral Resource was classified as Measured, Indicated, and Inferred using logic in accordance with the CIM Definition Standards (2014) incorporated by reference into NI 43-101.

25.3 MINING AND MINERAL RESERVES

Approximately 8.9 Mt of ore is planned to be mined at Olympias using the DAF mining method over a 15-year mine life. DAF stope shapes were generated by Eldorado using MSO software to produce stope shapes based on the NSR cut-off value of $217/t and a variable stope height of 5 to 6 m, depending on the ore zone and ground conditions.

In the evaluation of underground Mineral Reserves, modifying factors were applied to the tonnages and grades of all mining shapes to account for dilution and ore losses. In the DAF stopes, a mining dilution factor of 15% and a mining recovery of 95% were used to estimate Mineral Reserves.

The achievement of increased productivity and the steady-state target production rate of 650 ktpa is dependent on the successful implementation of a series of optimization initiatives. These operational improvements will increase the number of hours per day worked at a production face (face time), in addition to the tonnes mined per hour of work or linear meter.

The planned infrastructure supporting the extraction of the Mineral Reserves is also designed to support the requirements of the 650 ktpa target.

The paste fill system has been designed to meet future backfill requirements up to 650 ktpa ore production rate and operating at up to 70% utilization. Backfill optimization study work is on-going to ensure that the future targets can be achieved. Successful implementation of best practice backfill design could reduce the regulated cement requirements and considerably reduce operating costs.

25.4 METALLURGY AND PROCESSING

EGC embarked on a three-phase execution of the Olympias Project:

- Phase I involved the recommissioning of the flotation circuit and processing of the existing tailings.
- Phase II (currently in operation) was commissioned in December 2017 and included upgrading of the process facilities to process 400 to 440 ktpa of ore from the underground mine. Lead / silver (lead) and arsenopyrite / pyrite gold (gold) concentrates are shipped through the Port of Thessaloniki and zinc concentrates are shipped through the Stratoni port. Tailings are used for underground backfill or filtered and trucked from the Olympias processing facility to the Kokkinolakkas TMF.
- Phase III involves upgrading of the existing Olympias process plant and port facilities at Stratoni to complement the production rate of 650 ktpa.

The testwork completed to date demonstrated that the ore response to flotation was well understood, and the processing route is deemed appropriate.

25.5 INFRASTRUCTURE

Mine infrastructure, including ancillary facilities and services, has been fully developed to support the existing mine production and requires minimal capital for expansion to 650 ktpa. Surface ancillary facilities are close to the decline and primary crusher. The ancillary facilities include the production services building, the surface workshop and warehouse, process plant, paste plant and surface fuel storage.

Currently power is brought to site via the 150kV substation that was constructed at the mine. After transforming the voltage to 20kV, power cables connect to the distribution station at +85 and then is distributed to the various site facilities and to underground. Power cables from the 150kV substation also connect to the 20 kV overhead line and towards the paste and flotation plants. There are currently two pumping systems to dewater the mine. The first system is located in the upper East ramp starting at -254 masl and consists of a series of staged pump stations nominally spaced at 30 m vertical intervals. The second system consists of is the pumping station at -284 masl which pumps water reporting from the service drive, lower east, and west ramps.

25.6 COSTS AND FINANCIAL PERFORMANCE

Sufficient provision has been made for the further development of the Olympias project with respect to mine development, processing, and infrastructure. The ability to increase productivity from the current labour force will be a key factor in realizing operating cost projections.

The after-tax cash flow analysis indicates that Olympias is a robust project once the project reaches a steady-state level of production. An economic sensitivity analysis also shows that the Olympias economics are robust when evaluated using lower metal price assumptions, or higher operating and capital costs. Olympias is most sensitive to metal prices, followed by operating costs and then capital costs.

25.7 CLOSURE

To ensure that rehabilitation of the Olympias mine is in line with goals for safety, health and environment, surface facilities at Olympias will be decommissioned and the site rehabilitated once operations are completed. Voids created from the extraction process will be hydraulically filled. When mining ceases, equipment will be removed from the workings and the area around the portals rehabilitated. The estimated costs for closure are $60M.

25.8 RISKS AND OPPORTUNITIES

Risks and opportunities are evaluated on an ongoing basis as part of business planning for the Project. As the Project is mature with significant data available for the site and ongoing operations, most of the risks and opportunities are around the ore body geochemistry, geotechnical conditions, and hydrogeological characteristics. The surface infrastructure is in operation with minimal changes required for future operations.

25.8.1 Risks

As with most mining projects, there are risk that could affect the economic viability of the Project. Many of these risks are based on a lack of detailed knowledge and can be managed with additional sampling, testing, design, and as engineering is conducted at higher levels of study.

Table 25-1 identifies whare currently deemed to be the most significant internal project risks, potential impacts, and possible mitigation approaches that could affect the technical feasibility and economic outcome of the Project.

Table 25-1: Summary of Project Risks

Category	Description	Initial Risk	Future Controls	Residual Risk
Geology	Lower than expected reserves (grade, tonnage) in ore body	Medium	Further delineation drilling	Low
Mining	Development and production does not meet forecast	Medium	Further mine planning and evaluation of equipment and labour requirements	Low
Geotechnical	Ground conditions are worse than expected	High	Continue geotechnical studies along with drilling program	Medium
Water Management	Increased water ingress as orebody extends and deepens	Medium	Conduct further hydrogeology modelling	Low
Mine Infrastructure	Ore zones at increasing distance limits paste capacity.	Medium	Evaluate equipment sizing, paste recipe, and pumping configuration	Low
Processing	Complex ore body challenges processing, recovery lower than forecasted, deleterious elements in concentrate	Medium	Continue sampling and testing to verify recovery, adjustments to mine plans for blending	Low
Mining	Seismicity	Low	Seismic monitors, ground control plan updates	Low
Expansion program	Challenges in development of mine and process plant to high throughputs	Medium	Ensure resources are available, continue mine planning and engineering studies to support	Low
Environment	Water chemistry and discharge	Low	Continue testing and ensure water treatment and management systems are adequate	Low

External risks are, to a certain extent, uncontrollable and difficult to anticipate and mitigate, although, in many instances, some risk reduction can be achieved. External risks are things such as the political situation in the Project's region, metal prices, exchange rates and government legislation. These external risks are generally applicable to all mining projects. Negative variance to these items from the assumptions made in the economic model would reduce the profitability of the mine and the mineral resource estimates.

The project economics are most sensitive to an increase in operating costs. Changes in metal prices, changes in operating costs, and changes in capital costs were tested with a sensitivity of +/-20% and the project economics remain positive.

25.8.2 Project Opportunities

Opportunities that could improve the economics are largely based on future conversion of inferred resources, zone extensions at depth and along vein strikes, or new discoveries in untested areas. The major opportunities that have been identified at this time are summarized in Table 25-2. Further information and assessments are needed before these opportunities should be included in the Project economics.

Table 25-2: Summary of Project Opportunities

Category	Description	Outcome	Opportunity Level
Geology	Orebodies resources continue at depth and laterally in the Flat Zone	Additional mine life and ounce production	Moderate
Geology	Conversion of Inferred Resources to Reserves	Additional mine life and ounce production	High
Geology	Discovery of new economic resources within project area	Additional mine life and ounce production	Moderate
Processing	Development of a refractory treatment process	Additional gold recovery, mine life and ounce production	Moderate

25.9 CONCLUDING STATEMENT

The economics of the Olympias operation have improved along with a ramp-up in production. Continued increases in productivity and investments to increase processing capacity will contribute to more robust economic results.

SECTION • 26 RECOMMENDATIONS

The cost to carry out the recommendations for additional work or studies has been accounted for in future cost projections.

26.1 MINING AND MINERAL RESERVES

- Continue to undertake additional diamond drilling in the Inferred Mineral Resource areas and further along strike and along plunge where the deposit is open in order to assess the potential to extend mine life.
- Continue to evaluate opportunities to apply LH methods, benching methods, and larger DAF drifts in good ground conditions.
- Continue to undertake QA/QC program for ground support and backfill strength.
- Trial of drift round lengths to be undertaken to verify stability for different rock mass conditions in the Flats Zone.
- Noting that ventilation modelling for the life of mine maximum total mine airflow indicates that there will be a number of areas of the declines where velocities exceed 6 m/s and approach 8 m/s, continue to reduce the overall mine ventilation volume requirements through effective application of ventilation on demand and / or introduction of electric vehicles.
- Current labour productivities are considered low compared to other international operations and industry best practice. A detailed and monitored action plan is recommended to be put in place to support the improvement initiative programs that include increasing productivity from the labour force over the next few years to support increased production rates.

26.2 METALLURGY AND PROCESSING

- Optimize gold, sulfur, and arsenic grades of the gold-pyrite concentrate to maximize smelter returns.
- Continue studies into options for extracting more value from the gold concentrate currently being sold directly to smelters and traders worldwide. Technical solutions exist for extraction of much of the contained gold but these need to be able to demonstrate acceptable rates of return and to comply with environmental and safety requirements. If a more viable extraction method is developed, then construction of a new metallurgical facility could follow.

26.3 INFRASTRUCTURE AND OTHER

- Maintain a clear focus and progress on the expansion to 650 ktpa.
- Continue efforts with the expansion of the power supply and water treatment facilities to match the new production targets.

- Hellas Gold to continue to satisfy itself, as per best industry practice, that all fundamental aspects of the TMF design, construction and operation have been and continue to be satisfactorily addressed.

26.4 CLOSURE PLANNING

- Update closure plans to reflect planned changes to the Project.

26.5 BUDGET

Below is a description of the work programs recommended for the continued advancement of the operation. Table 26-1 summarizes each item and its estimated cost. Costs are budgeted and included in capital cost evaluations.

Table 26-1: Base Case Production Schedule

	Item	LOM Cost (US$)
26.1	Mining and Mineral Reserves – Conversion Drilling	$35.5 M
26.2	Metallurgical and Processing Improvement Studies	$0.2 M
26.3	Infrastructure and Other – includes process expansion studies	$1.2 M
26.4	Closure study updates	$0.3 M
	Total	**$37.2 M**

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SECTION • 28 DATE AND SIGNATURE PAGE

The effective date of this report entitled "Technical Report, Olympias Mine, Greece" is December 31, 2023. It has been prepared for Eldorado Gold Corporation by David Sutherland, P. Eng., Victor Vdovin, P.Eng, Peter Lind, P.Eng., Ertan Uludag, P.Geo. and Sean McKinley P.Geo., each of whom are qualified persons as defined by NI 43-101.

Signed the 27th day of March 2024.

"Signed and Sealed"
David Sutherland

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David Sutherland, P. Eng.

"Signed and Sealed"
Victor Vdovin

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Victor Vdovin, P. Eng.

"Signed and Sealed"
Peter Lind

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Peter Lind, P.Eng.

"Signed and Sealed"
Ertan Uludag

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Ertan Uludag P. Geo.

"Signed and Sealed"
Sean McKinley

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Sean McKinley, P. Geo.

CERTIFICATE OF QUALIFIED PERSON

David Sutherland, P. Eng.
1188 Bentall 5, 550 Burrard St.
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I, David Sutherland, am a Professional Engineer, employed as Senior Manager, Projects and Technical Studies of Eldorado Gold Corporation located at 1188 Bentall 5, 550 Burrard St., Vancouver in the Province of British Columbia.

This certificate applies to the technical report entitled *Technical Report, Olympias Mine, Greece*, with an effective date of December 31, 2023.

I am a member of the Engineers & Geoscientists of British Columbia. I graduated from the Lakehead University with a Bachelor of Science (Physics) in 2003 and a Bachelor of Engineering (Mechanical) in 2005.

I have practiced my profession continuously since 2005. Since receiving my profession designation, I have worked exclusively on the design of mineral processing plants, assisted on numerous National Instrument 43-101 studies and have directed engineering and procurement on three mineral processing projects through construction. For 30 years I have been working in heavy industry including operations, maintenance and construction. During this time, I have led the design and construction of major greenfield and brownfield construction projects in Canada, Turkey, and Greece.

As a result of my experience and qualifications, I am a Qualified Person as defined in National Instrument 43-101.

I have visited the Olympias Mine on numerous occasions with my most recent visit occurring on September 21, 2023 (1 day).

I was responsible for the overall preparation of the technical study and sections related to infrastructure and environment of the technical report. I am responsible for the preparation or supervising the preparation of items 1, 2, 3, 4, 5, 6, 18, 20 26.3 and 27 in the technical report.

I have had continual prior involvement with the property that is the subject of the technical report.

I am not independent of Eldorado Gold Corporation in accordance with the application of Section 1.5 of National Instrument 43-101.

I have read National Instrument 43-101 and Form 43-101FI and the items for which I am responsible in the technical report entitled *Technical Report, Olympias Mine, Greece*, with an effective date of December 31, 2023, have been prepared in compliance with same.

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

Dated at Vancouver, British Columbia, this 27th day of March, 2024.

“Signed and Sealed”

David Sutherland

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David Sutherland, P. Eng.

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I, Victor Vdovin, am a Professional Engineer, employed as Head of Technical Services of Hellas Gold SA, a subsidiary of Eldorado Gold Corporation, located at 1188 Bentall 5, 550 Burrard St., Vancouver in the Province of British Columbia.

This certificate applies to the technical report entitled *Technical Report, Olympias Mine, Greece*, with an effective date of December 31, 2023.

I am a Professional Engineer of Ontario, PEO. I have an experience in mine engineering, geotechnics, mine planning, Reserve and Resource estimation. I worked in the Corporate technical Services functions, as well as mine site based Technical Services management positions in several mines. I have spent 3 years working for Hellas Gold's Olympias mine in a function of Director, Mining, responsible for both operational and technical aspects of this mine. I was involved in detailed reconciliation, planning, optimization of the mine activities in the past.

As a result of my experience and qualifications, I am a Qualified Person as defined in National Instrument 43-101.

I have worked at the Olympias Mine full time until July 2023 and continued with my engagement with the mine team till today. My most recent visit occurring on March 20, 2024.

I was responsible for the mineral reserves and the preparation of related sections on mineral reserves calculation, mining methods, and costs of the technical report. I am responsible for the preparation or supervising the preparation of items 15, 16, 21, 22, 25 and 26.1 in the technical report.

I have had continual prior involvement with the property that is the subject of the technical report.

I am not independent of Eldorado Gold Corporation in accordance with the application of Section 1.5 of National Instrument 43-101.

I have read National Instrument 43-101 and Form 43-101FI and the items for which I am responsible in the technical report entitled *Technical Report, Olympias Mine, Greece*, with an effective date of December 31, 2023, has have been prepared in compliance with same.

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

Dated at Vancouver, British Columbia, this 27th day of March, 2024.

"Signed and Sealed"

Victor Vdovin

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Victor Vdovin, P. Eng.

CERTIFICATE OF QUALIFIED PERSON

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I, Peter Lind, am a Professional Engineer, employed as Vice President, Technical Services of Eldorado Gold Corporation and reside at 999 West 38th Ave, Vancouver in the Province of British Columbia.

This certificate applies to the technical report entitled *Technical Report, Olympias Mine, Greece*, with an effective date of December 31, 2023.

I am a member of the Ordre des ingénieurs du Québec and Engineers & Geoscientists British Columbia. I graduated from Laurentian University with a Bachelor of Engineering in Extractive Metallurgy in 2002, a Bachelor of Commerce from the University of Windsor in 2006, and an MBA from Simon Fraser University in 2017.

I have practiced my profession continuously since 2002 and have been involved with mineral processing and metallurgical operations and development projects in Canada, the United States, Mexico, Chile, Peru, Argentina, Tanzania, Greece, and Türkiye.

As a result of my experience and qualifications, I am a Qualified Person as defined in National Instrument 43-101.

I have visited the Olympias Mine on numerous occasions with my most recent visit occurring on September 21 and September 22, 2023 (2 days).

I was responsible for the preparation of the sections in the technical report that dealt with metallurgy and process operations, costs and payability. I am responsible for the preparation or supervising the preparation of items 13, 17, 19, 21, 22, 24 and 26.2 in the technical report.

I have had continual prior involvement with the property that is the subject of the technical report.

I am not independent of Eldorado Gold Corporation in accordance with the application of Section 1.5 of National Instrument 43-101.

I have read National Instrument 43-101 and Form 43-101FI and the items for which I am responsible in the technical report entitled *Technical Report, Olympias Mine, Greece*, with an effective date of December 31, 2023, has have been prepared in compliance with same.

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

Dated at Vancouver, British Columbia, this 27th day of March, 2024.

"Signed and Sealed"

Peter Lind

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Peter Lind, P. Eng.

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I, Sean McKinley, am a Professional Geoscientist, employed as Manager, Geology & Advanced Projects of Eldorado Gold Corporation and reside at 2231 Bellevue Ave, Coquitlam in the Province of British Columbia.

This certificate applies to the technical report entitled *Technical Report, Olympias Mine, Greece*, with an effective date of December 31, 2023.

I am a member of the Engineers & Geoscientists British Columbia (formerly the Association of Professional Engineers and Geoscientists of British Columbia). I graduated from Queen's University in Kingston, Ontario with a Bachelor of Science (Honours) degree in geology in 1992 and subsequently obtained a Master of Science degree in geology from the University of British Columbia.

I have practiced my profession continuously since 1996 and have been involved in: mineral exploration (both greenfields and brownfields), mine geology (underground and open pit settings) and geological modelling on gold, copper, lead, zinc and silver projects in Canada, Ireland, Sweden, China, Mexico, Romania, Greece and Turkey.

As a result of my experience and qualifications, I am a Qualified Person as defined in National Instrument 43-101.

I have visited the Olympias Mine on numerous occasions with my most recent visit occurring on September 12, 2023 (1 day).

I was responsible for the preparation of the sections in the technical report concerned with geological information, exploration, and drilling. I am responsible for the preparation or supervising the preparation of items 7, 8, 9, 10 and 23 in the technical report.

I have had continual prior involvement with the property that is the subject of the technical report.

I am not independent of Eldorado Gold Corporation in accordance with the application of Section 1.5 of National Instrument 43-101.

I have read National Instrument 43-101 and Form 43-101FI and the items for which I am responsible in the technical report entitled *Technical Report, Olympias Mine, Greece*, with an effective date of December 31, 2023, have been prepared in compliance with same.

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

Dated at Vancouver, British Columbia, this 27th day of March, 2024.

"Signed and Sealed"

Sean McKinley

Sean McKinley, P.Geo.

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I, Ertan Uludag, am a Professional Geoscientist, employed as Manager, Resource Geology of Eldorado Gold Corporation and reside at 6779 Kitchener Street V5B2J8 Burnaby in the Province of British Columbia.

This certificate applies to the technical report entitled *Technical Report, Olympias Mine, Greece*, with an effective date of December 31, 2023.

I am a member of the Engineers & Geoscientists British Columbia (formerly the Association of Professional Engineers and Geoscientists of British Columbia). I graduated from Middle East Technical University in Ankara Turkey with Bachelor of Science in Geological Engineering in July 1994.

I have practiced my profession continuously since 1996. I have been involved in ore control, mine geology and resource modelling work on gold, copper, zinc, lead and silver underground and open pit properties in Turkey, China, Greece, Canada and Romania, and rock mechanics work in South Africa.

As a result of my experience and qualifications, I am a Qualified Person as defined in National Instrument 43-101.

I have visited the Olympias Mine on numerous occasions with my most recent visit occurring on June 12 to June 16, 2023 (5 days).

I was responsible for the mineral resources and the preparation of related sections on sample preparation and analyses, data verification, and mineral resource estimation for the technical report. I am responsible for the preparation or supervising the preparation of items 11, 12 and 14 in the technical report.

I have had continual prior involvement with the property that is the subject of the technical report.

I am not independent of Eldorado Gold Corporation in accordance with the application of Section 1.5 of National Instrument 43-101.

I have read National Instrument 43-101 and Form 43-101FI and the items for which I am responsible in the technical report entitled *Technical Report, Olympias Mine, Greece*, with an effective date of December 31, 2023, have been prepared in compliance with same.

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

Dated at Vancouver, British Columbia, this 27th day of March, 2024.

"Signed and Sealed"

Ertan Uludag

Ertan Uludag, P.Geo.