



ORE RESERVES REPORT
GADIR UNDERGROUND MINE

ANGLO ASIAN MINING PLC

January 2019



# 1. Executive Summary

#### 1.1. Introduction

Anglo Asian Mining PLC. ("AAM"; London Stock Exchange Alternative Investment Market (AIM) ticker "AAZ") are pleased to provide a maiden Ore Reserve estimate for the Gadir Mine, an underground polymetallic (gold-silver-copper-zinc; "Au-Ag-Cu-Zn") mine, located adjacent to the city of Gedabay in the Republic of Azerbaijan. Datamine International Limited ("Datamine") was requested by AAM to carry out the maiden Mineral Resource estimation [1]\* and were subsequently requested to complete Ore Reserves calculations. Datamine completed a number of activities such as underground mine optimisation, mine design, scheduling and an economic assessment. Gadir resources have previously been reported as part of the Gedabek deposit (to Inferred, so not included during Ore Reserve calculation in [2]) but have now been separated.

# 1.2. Requirement and Reporting Standard

This estimation was completed in accordance with the Australian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves ("The JORC Code, 2012 Edition"; [3]). Reporting of mineral intervals has been previously reported by AAM via regulated news service (RNS) announcements on the London Stock Exchange (AIM), on the Company website or at conferences and roadshows. This Gadir Ore Reserves calculation is based on the maiden Mineral Resource Estimate [1] that includes information gathered during mining of the deposit, exploration and grade control drilling.

# 1.3. Project Location

The Gadir polymetallic deposit is located in the Gedabek Ore District of the Lesser Caucasus in northwestern Azerbaijan, adjacent to the city of Gedabay. The 'Contract Area' in which the underground mine is situated is approximately 300 km² in size and is one of six Contract Areas held by AAM (Figure 1.1), as defined in the Production Sharing Agreement (described below; "PSA"). The AAM Contract Areas are located on the Tethyan Tectonic Belt, one of the world's significant Cu-/Au-bearing metallogenic belts.

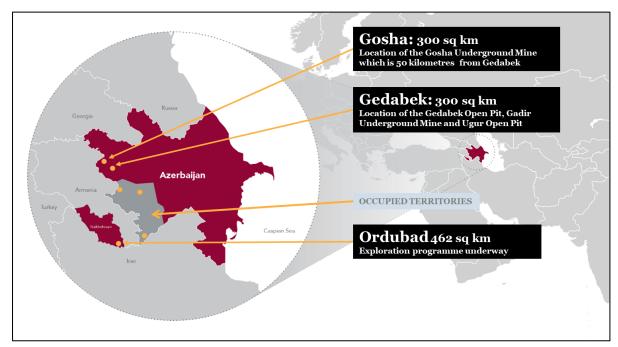
Whilst carrying out geological exploration in 2012, Azerbaijan International Mining Company ("AIMC") geologists discovered an outcrop of subvolcanic rhyolite displaying silica and potassic alteration (showing close similarities with the rhyolites found at the nearby open pit) on the northwest flank of the Gedabek operation. Samples were subsequently taken and assayed – anomalous results were returned, justifying follow-up. Campaigns to develop the resource (including surface drilling, a soil geochemistry study and detailed geological and structural mapping) were completed between 2012 and 2015, with the aim of determining the extent of the potentially economic minerals. The drilling identified a series of vertically stacked, shallow-dipping mineralised lenses within an area of approximately 50 x 100 metres over about 150 m height.

The Gadir underground deposit was thus identified, preliminarily evaluated and deemed economical. A pilot block model was constructed based on the initial drilling, allowing a resource estimate of 797,000 tonnes at 4.08 g/t Au (Inferred) to be calculated by CAE [4]. The

<sup>\*</sup>References can be found at the end of the main report.



Figure 1.1 – Location of the Gedabek Contract Area



surface drilling provided sufficient information to allow for the decision to be made to access the mineralisation by adit tunnel development. This was especially the case when comparing the cost of accessing the mineralisation by tunnel as compared to further deep drilling from surface. The initial objective of this was to carry out bulk sampling and assess the ground conditions for underground extraction potential.

The drilling results and subsequent unclassified internal resource estimate were encouraging and constrained sufficiently to warrant underground mining of the deposit. Work commenced to bring it into production with a 650 m decline access that was developed during March-May 2015. Based on this strategy, underground exploration work was simultaneous with mining, and only short-term planning was possible.

Development of ore drives commenced at Gadir in May 2015 and stope production began in September 2015, adding to the Company's operating asset portfolio. Since start-up, the deposit has been exploited for Au-Ag-Cu. With the development of the mine at depth, zinc content is increasing and studies are currently underway to establish the potential for processing Zn as a concentrate.

The mine is well-established and fully operational to continue mining at a similar capacity to that which it is currently achieving. The Gedabek (open pit) and Ugur (open pit) deposits are other mines in the region, owned by AAM and operated by AIMC within the Gedabek Contract Area.

#### 1.3.1. Mineral Tenement and Land Tenure Status

The Gadir underground project is located within a licence area ("Contract Area") that is governed under a PSA, managed by the Azerbaijan Ministry of Ecology and Natural Resources ("MENR"). The PSA grants AAM a number of 'time periods' to exploit defined Contract Areas, as agreed upon during the initial signing. The period of time allowed for early-stage exploration of the Contract Areas to assess prospectivity can be extended if required.



A 'development and production period' that runs for fifteen years, commences on the date that the Company holding the PSA issues a notice of discovery, with two extensions of five years each at the option of the company. Full management control of mining within the Contract Areas rests with AIMC. The Gedabek Contract Area, incorporating the Gadir underground, Gedabek open pit and Ugur open pit, currently operates under this title.

Under the PSA, AAM is not subject to currency exchange restrictions and all imports and exports are free of tax or other restrictions. In addition, MENR is to use its best endeavours to make available all necessary land, its own facilities and equipment and to assist with infrastructure. At the time of reporting, no known impediments to obtaining a licence to operate in the area exist.

# 1.4. Resources Summary

Independent consultants Datamine carried out the resource estimation of the Gadir deposit in accordance with JORC guidelines [3]. The Gadir Mineral Resource estimation is based on a robust geological model that benefits from information gathered during mining of the deposit, exploration and grade control drilling.

The Gadir Mineral Resources had an applied cut-off grade ("COG") of 0.5 g/t Au and the model depleted for mining development and production until the end of August 2018. The parameters used for classifying the model and subsequent resources have been described in [1].

The Gadir Mineral Resources are summarised in Table 1.1 below.

MINERAL RESOURCES Tonnage Gold Silver Zinc Copper (Cut-off grade 0.5 g/t Au) % % kt g/t koz g/t koz Measured 540 3.70 64.2 17.49 303.6 0.29 1,566 1.01 5,454 Indicated 1,235 2.04 81.0 10.89 432.4 0.14 1,729 0.73 9,016 Measured + Indicated 1,775 2.54 145.2 12.90 736.1 0.21 3,295 0.84 14,470 Inferred 571 1.48 27.2 5.68 104.4 0.10 571 0.52 2,972 Total 2,347 2.29 172.4 11.14 840.4 0.19 3,866 0.78 17,442 Exploration 5 1.37 0.2 5.94 0.9 0.09 2,470 0.60 7,620

Table 1.1 – Gadir Mineral Resources Summary

Note that due to rounding, numbers presented may not add up precisely to totals.

#### 1.4.1. Resource Conclusions

It was concluded that the Gadir Resource Block Model is appropriate to be utilised for Ore Reserve estimation to determine the mineable potential of the deposit. Given that Datamine has been closely associated with the exploration of the deposit and the resources estimation, Datamine carried out the Gadir Ore Reserve Estimate under the supervision of the Competent Person ("CP").

# 1.5. Modifying Factors

An overview of the mining and metallurgical modifying factors that were reviewed and used as part of the Gadir Ore Reserves estimate are described below. These follow the guidelines as set out by the JORC Code [3] and further detail can be found in Section '4. Modifying Factors'.



#### 1.5.1. Cut-Off Parameters

Financial factors included in the COG estimates were mining, process, general and administration ("G&A") and overhead costs, along with mining dilution, payable gold and silver prices and processing recovery.

A break-even COG of 0.93 g/t Au was calculated, taking into consideration all the modifying factors. AIMC then established a return on capital and profit expectation margin of 20%. This profit head break-even including recovery ("hurdle" grade) was calculated to be 1.12 g/t Au. The "strategic" grade was then calculated simply by rounding up the hurdle COG to the nearest single decimal place.

The COGs were verified using a forecasted Au price, costs and metallurgical recoveries from the past financial year.

#### 1.5.2. Mining Parameters

An underground mining method was selected given the deposit geometry and the position relative to topographic surface, continuing with the current means of extraction. Access to the orebody is via a single entrance portal that is connected to the workings by a decline development.

With consideration of the nature of the resource and mining equipment, a minimum mining width of 3.5 metres was used.

In this study, Inferred and Exploration Potential resources were considered to be diluting materials with no valuable grade. Measured and Indicated resources below the applied COG were also regarded as diluting material; however, it was accepted that under certain circumstances it may hold economic potential. As such, these grades were not reset to zero on the understanding that economic evaluation be carried out on a stope-by-stope basis.

Planned dilution is automatically incorporated by Datamine's Mineable Shape Optimiser ("MSO®") software. Unplanned dilution was estimated to be 10% based on previous mining history at Gadir. The mining recovery factor was estimated to be 95% for both the room-and-pillar and overhand stoping methods.

#### 1.5.3. Metallurgical Parameters

The ore from the Gadir underground mine can be processed by four different available processing methods within the Gedabek Contract Area. These are agitation leach ("AGL"), heap leach of crushed material ("HLC"), heap leach of run-of-mine material ("HLROM") and flotation ("FLT"). There also will be two stockpiles, comprising of Gedabek ore generated during the life-of-mine ("LOM"), available for blending.

Copper and precious metal concentrates are also produced via a Sulphidisation-Acidification-Recycle-Thickening (herein "SART"; [5]) plant. All these processing facilities are currently in operation in the Gedabek Contract Area.

AAM will decide how to process these in due course, as it depends on the blending criteria, financial factors and the quality of material from other mines in the Company's portfolio. It should be noted that due to the high-grade nature and physical properties of the material, Gadir ore is typically only processed via the AGL method.



A key difference between the Resource and Reserves estimate is that the Reserve was based on a fixed COG as the material is directed to the most appropriate processing method, according to the economic criteria for the contained metals (Au and Ag) and processing recovery (Table 1.2). The parameters for the various processing methods other than AGL have been included for comparison, in addition to Cu recovery % (all in italics; see 'Glossary of Terms and Abbreviations' for a full-breakdown of terms).

Table 1.2 - Metallurgical recovery factors for each process used for the Gadir underground mine ore

Proceses	Recovery %				
Proceses	Au	Ag	Cu		
AGL	75%	66%	30%		
HLC	60%	7%	30%		
HLROM	40%	7%	20%		
FLT	60%	68%	83%		
SPF	60%	68%	83%		

The final products will be shipped off site for refining, in line with current practices. Tails from each process operation will be transferred via gravity pipeline to the existing tailings management facility ("TMF"). The TMF has enough capacity to manage the projected tails from the Gadir deposit with the designed dam wall lifts.

As the mine has been operating since 2015, metallurgical recoveries of the various ore types are well understood and a geometallurgical classification system has been developed for the Gadir ore. The amount of testwork is considered representative of the processing technology to be employed.

Deleterious elements were not detected in analytical tests or during assaying of samples (utilised in the Mineral Resource) and the Ore Reserves estimation was based on the appropriate mineralogy to meet the specifications required for processing.

#### 1.5.4. Other Parameters

A geotechnical assessment of the Gadir mine focusing on ground stability for tunnelling and stope designwas completed by the environmental engineering company CQA International Limited (herein "CQA") in order to support operations and provide current supplementary information for resource evaluation. The report is presented in Appendix A.

Other modifying factors considered, including market, environmental and social parameters, are discussed in Section '4. Modifying Factors'.

## 1.6. Mine Optimisation

On establishing the modifying factors, the Mineral Reserves were optimised using the industry standard Datamine MSO® software package. The parameters used to create the stope shapes (determined from evaluating the Modifying Factors) are listed below.

• Only material from Measured and Indicated resource categories, calculated from the Gadir Resource [1], were included



- The section interval of each block was set at 5 m, with each stope being a combination of three blocks, resulting in a stope strike length of 15 m
- The level interval (i.e. floor to floor) of each block was also set to 5 m, with each stope being a combination of two blocks, resulting in a stope height of 10 m
- Minimum stope widths were set at 3.5 m
- Minimum waste pillar width between parallel stopes was set at 4 m
- A COG of 1.2 g/t (the "strategic COG") was applied to create initial stope shapes

Additionally, several aspects of dilution were considered, including planned, footwall ("FW") and hangingwall ("HW") dilutions. Planned dilution was included in the MSO® stope shape designs and covered localised variations in dip and strike, as well as minimum mining width.

The dimensional constraints entered into MSO® and applied during the generation of the mining inventory (i.e. 'stopes-as-mineable' shapes) included parameters for both overhand stoping and room-and-pillar extraction. These constraints defined the minimum and maximum 'allowable' stoping shapes and had the effect of incorporating planned dilution.

#### 1.6.1. Exclusion Control

Exclusion control has been used to avoid the creation of stope shapes within adverse rock-mass or processing material zones.

For this study, physical exclusion constraints included:

- Depleted resources within stopes and development areas
- "Non-recoverable" material located in areas that cannot be safely mined due to previous mining activities

It should be noted that "non-recoverable" material may be extracted in the future, dependent upon results of an intensive geological and geotechnical risk assessment.

#### 1.6.2. Optimisation Results

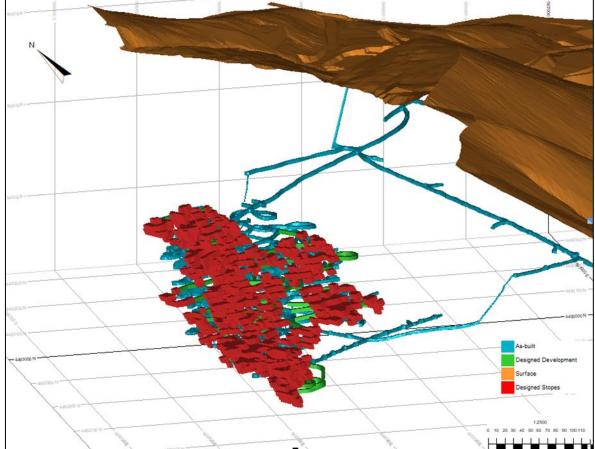
Approximately 3% of all stopes generated by the MSO® process were removed after individual analysis. Excluded stopes have also been included in Figure 1.2 and are coloured red, whilst the definitive ('acceptable, low-risk') mining inventory has been coloured green.

The estimated total tonnes and grades of the final stope inventory is presented in Table 1.3. Tonnages include all sources of planned dilution, as well as having the unplanned dilution (10%) and mining recovery (95%; 5% ore losses) factors applied. The data were split around the 1442 m RL due to historic selective mining of the upper zone (above this level) of the orebody via the overhand method. There are a number of discrete voids around this upper zone due to a level spacing of only 10 m. Whilst this material is not sterilised, in order to mine the ore material remaining a prior geotechnical risk assessment must be undertaken to identify and assess all factors likely to affect the stope stability and safety of proposed/existing extraction methods.



calculation

Figure 1.2 – Mineable stopes ('inventory') and stopes excluded from the final Gadir Ore Reserves



**Table 1.3** – Final stope inventory after exclusion control

Mino DI (m)	Tonnes	Grades		
Mine RL (m)	t	Au (g/t)	Ag (g/t)	Cu (%)
Above RL 1442	413,650	2.58	14.13	0.19
Below RL 1442	383,290	2.88	9.41	0.16
Total	796,940	2.73	11.86	0.17

## 1.7. Mine Design

Based on the final stope inventory, an underground mine layout was prepared for Gadir taking into consideration areas that have already been mined out (waste/ore development and production).

Due to the nature of the Gadir orebody and numerous mine developments that already exist (including production areas since 2015), designed stope shapes appear on multiple levels and across the entire orebody (providing all modifying factors and relevant exclusion control parameters have been met). Some stopes can be mined from existing development, while others require new access to be established prior to production stoping.



Taking into account the current layout of the underground workings at Gadir, new developments were designed accordingly to support the mining of stopes via both overhand and room-and-pillar extraction methods (Figure 1.3). Where possible, Datamine designed development through the orebody to avoid excessive dilution or unnecessary waste extraction.

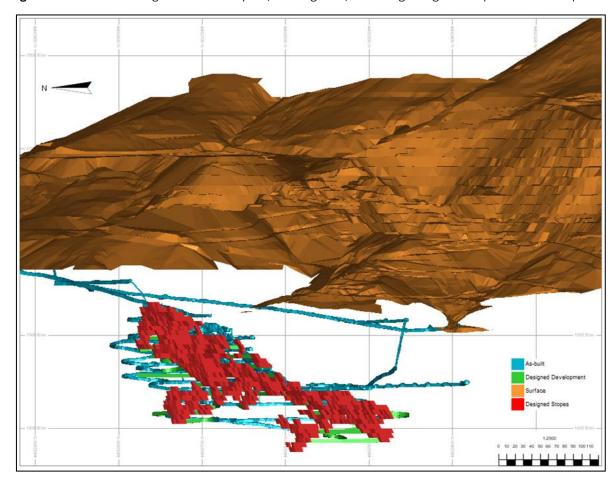


Figure 1.3 – Gadir underground mine layout, looking east, including designed stopes and development

# 1.8. Ore Reserves Summary

This Reserves estimate assumes a direct correlation between Proved and Probable, and Measured and Indicated respectively. It excludes Inferred Resources. The economic portion of the Measured Resource was converted to Proved Reserves and the economic portion of the Indicated Resource was converted to Probable Reserves.

The resulting Ore Reserves estimate is summarised in Table 1.4 below. Note that due to rounding, numbers presented may not add up precisely to totals.

**Table 1.4** – Gadir Ore Reserves Summary

ORE RESERVES	Tonnage	Go	old	Silv	ver	Сор	per
ORE RESERVES	kt	g/t	koz	g/t	koz	%	t
Total Proved	222	2.81	25	14.13	101	0.24	535
Total Probable	575	2.41	45	10.99	203	0.15	852
Proved + Probable	797	2.73	70	11.86	304	0.17	1,387



# 1.9. Underground Mine Schedule

Using the underground mine design, a LOM schedule was created in order to demonstrate that an acceptable mining sequence could be achieved, whilst honouring the various Modifying Factors, parameters and constraints. The mining sequence and production schedule was developed using Datamine's Enhanced Production Scheduler (EPS®) software from 2019 until 2023 (current LOM).

Scheduling for Gadir was based on both overhand stoping and room-and-pillar production mining methods. Only primary mining from stopes was considered for scheduling and no stockpile factor was applied.

The physical targets are as follows:

Production rate: 192 kt/year ore

• Monthly development rate: 120 m/month

It should be noted that an annual production rate of 192 kt ore ties in with the maximum available capacity of the mining equipment to supply ore that can be blended for the processing plant. Whilst constraining the Ore Reserves to this optimum production rate, AAM's minimum target ore production rate for Gadir is currently 144 kt per year. This rate is sufficient to meet the Company's production schedule, so it is important to consider this factor in LOM assessment. The results of the underground mining sequence study are presented in Table 1.5 below.

Table 1.5 — Gadir underground mining schedule

Criteria	2019	2020	2021	2022	2023
Ore (t)	191,697	191,495	191,196	191,890	30,660
Au (g/t)	2.58	3.12	2.85	2.42	2.28
Ag (g/t)	10.08	9.4	13.07	14.68	13.17
Cu (%)	0.14	0.17	0.15	0.24	0.12
Development (m)	756	635	886	939	335
Waste (t)	21,719	16,463	26,875	10,503	5,356
Metal Content	2019	2020	2021	2022	2023
Au (oz)	15,927	19,200	17,521	14,943	2,245
Ag (oz)	62,117	57,894	80,324	90,561	12,986
Cu (t)	275	332	279	462	38

#### 1.10. Conclusions

It was concluded that the Ore Reserves are reported according to the terms and guidelines of the JORC Code [3]. The Mineral Reserves presented in the Report have been estimated by independent consultants and their work has been reviewed and has been accepted by the CP as a true reflection of the Mineral Reserves of the Gadir polymetallic deposit as on the date of this report.



#### 1.11. Recommendations

There is potential to mine ore remaining in previously stoped-out areas in the upper zone (above 1442 level), dependent upon an intensive geological and geotechnical risk assessment.

In order to refine the mining recovery and dilution, it is recommended that the correlation between the geological model and actual production on a stope-by-stope basis continue to be investigated and reconciled during ore production.

Given the structural complexity, a detailed structural geology mapping programme should be implemented to assist in forecasting the projecting of discrete mineralised blocks.

Gadir is one of only two underground mines in Azerbaijan (the other being AAM's Gosha underground operation), and as such mechanical support and spare parts for the underground mining machinery can be problematical. It is recommended to carry out a detailed equipment maintenance plan and liaise with spare parts suppliers to hold consignment stocks. The breakage of a unit of underground equipment directly impacts on development activity schedules.

AIMC, as part of continual improvement and efficiencies, are constantly monitoring the following:

- Optimise the usage of the plants
- Establish cycle times and haul truck requirements
- Optimise the waste dumping strategy

This may result in opportunities to improve the schedule as more production information is gathered.

# 1.12. Competent Person Statement – Gadir Ore Reserve

The CP, Dr. Stephen Westhead is an employee of the Company and as such has been in a consistent position to be fully aware of all stages of the exploration and project development. The CP worked very closely with the independent resource and reserve estimation staff of Datamine, both on site and remotely, to ensure knowledge transfer of the geological situation and to lend geological credibility to the modelling process. The information in this report has been compiled by Dr. Stephen Westhead, who is a full-time employee of Azerbaijan International Mining Company with the position of Director of Geology & Mining. Stephen Westhead has sufficient experience that is relevant to the style of mineralisation and type of deposit under consideration and to the activity being undertaken to qualify as a Competent Person as defined in the 2012 Edition of the 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves' [3] and as defined by the AIM rules. Stephen Westhead has reviewed the reserves included in this report. Dr. Stephen Westhead is a Chartered Geologist (CGeol), a Fellow of the Geological Society (FGS), a Professional Member of the Institute of Materials, Minerals and Mining (MIMMM), a Fellow of the Society of Economic Geologists (FSEG) and Member of the Institute of Directors (MIoD). Stephen Westhead consents to the inclusion in the report of the matters based on his information in the form and context in which it appears.



#### 1.13. About AAM

Anglo Asian Mining PLC (AIM: AAZ) is a gold, copper and silver producer in Central Asia with a broad portfolio of production and exploration assets in Azerbaijan. The Company has a 1,962 km<sup>2</sup> portfolio, assembled from analysis of historic Soviet geological data and held under a PSA modelled on the Azeri oil industry.

The Company's main operating location is the Gedabek Contract Area ("Gedabek") which is a 300 km² area in the Lesser Caucasus mountain range in western Azerbaijan. The Company developed Azerbaijan's first operating Au-Cu-Ag mine at Gedabek which commenced gold production in May 2009. Mining at Gedabek was initially from its main open pit which is an open cast mine with a series of interconnected pits. The Company also operates the high grade Gadir underground mine which is co-located at the Gedabek site. In September 2017, production commenced at the Ugur open pit mine, a recently discovered Au ore deposit at Gedabek. The Company has a second underground mine, Gosha, which is 50 km from Gedabek. Ore mined at Gosha is processed at AAM's Gedabek plant.

The Company produced 83,736 gold equivalent ounces ('GEOs') for the year ended 31 December 2018. Gedabek is a polymetallic ore deposit that has gold together with significant concentrations of Cu in the main open pit mine, and an oxide Au-rich zone at Ugur. The Company therefore employs a series of flexible processing routes to optimise metal recoveries and efficiencies. The Company produces Au doré through agitation and heap leaching operations, Cu concentrate from its Sulphidisation, Acidification, Recycling, and Thickening (SART) plant and also a Cu and precious metal concentrate from its flotation plant. A second dedicated crusher line has been commissioned and is now in operation for the flotation plant to enable it to operate independently of the agitation leaching plant.

Anglo Asian is also actively seeking to exploit its first mover advantage in Azerbaijan to identify additional projects, as well as looking for other properties in order to fulfil its expansion ambitions and become a mid-tier gold and copper metal production company.



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# Glossary of Terms and Abbreviations

	Company and Governmental Details						
AAM	Anglo Asian Mi	ning PLC.; tl	ne AIM-li	sted company with a portfolio of gold,			
	copper and silv	er producti	on and ex	xploration assets in Azerbaijan			
AAZ	Ticker for Anglo	Asian Min	ing PLC, a	as listed on the AIM trading index			
AIMC	Azerbaijan Inte	rnational M	lining Cor	mpany Limited; a subsidiary of AAM, in			
	charge of overs	seeing the n	nining op	erations			
CQA	CQA International Limited; a consultancy tasked with conducting site-related						
	environmental	engineering	B				
Datamine	Datamine Inter	national Lin	nited; the	e contractor tasked with creating and			
	validating the 2018 Gadir Mineral Ore Reserves						
MENR	Azerbaijan Ministry of Ecology and Natural Resources						
PSA	PSA Production Sharing Agreement; the binding legal document with the						
	Azerbaijan government, un			ch AAM operates the Gedabek open pit and			
associated exploration							
		Pro	ocessing I	Methods			
AGL	Agitation	LOM	Life-of-Mine				
	Leach						
FLT	Flotation	ROM	Run-of-	Run-of-Mine			
HL	Heap leach	ROMSP	low-gra	de Au material that could be sent to ROM			
			processing by blending with higher grade material				
HLC	Heap leach	SART	Sulphid	isation-Acidification-Recycle-Thickening			
	crushed						
HLROM	Heap leach of	SPF	Cu stoc	kpile for flotation			
	ROM material						
			Othe	er			
COG c	ut-off grade						
CP C	competent Perso	n; as define	d in [3]				
g/t g	rams per tonne		Ag	chemical symbol for silver			
NSR n	et smelter returr	า	Au	chemical symbol for gold			
Cu c	hemical symbol f	or copper	Zn	chemical symbol for zinc			



# Lead Competent Person and Technical Specialists Declaration

#### **Lead Competent Person**

Name	Job Title	RPO	Qualification	Signed
Stephen	Director of	MIMMM	B.Sc. M.Sc. Ph.D.	0
Westhead	Geology & Mining	Geological	MIMMM, CGeol,	Stur
vvestrieau	deology & Willing	Society	FGS	

Stephen Westhead has a minimum of 5 years relevant experience to the type and style of mineral deposit under consideration and to the activity which is being undertaken to qualify as a Competent Person (herein "CP") as defined in the JORC Code [3]. Stephen Westhead consents to the inclusion in the Report of the matters based on this information in the form and context in which it appears.

I am not aware of any material fact or material change with respect to the subject matter of the Report, which is not reflected in the Report, the omission of which would make the report misleading. At the time this Report was written and signed off, to the best of my knowledge, information and belief, the Report contains all scientific and technical information that is required to be disclosed to make the Report not misleading.

#### **Technical Specialists**

The following Technical Specialists were involved in the preparation of the Ore Reserves and have the appropriate experience in their field of expertise to the activity that they are undertaking and consent to the inclusion in the Report of the matters based on their technical information in the form and context in which it appears. The Ore Reserves presented in this Report have been estimated by independent consultants and their work has been reviewed and has been accepted as a true reflection of the Ore Reserves of the Gadir polymetallic deposit as on the date of this report.

Name	Job Title	Responsibility	Signed
Anar Valiyev	Exploration Manager	Exploration and Exploration Drilling	A. Berear B
Vitaly Khorst	Underground Mine Geology Manager	Geological Modelling	Maps
Aidar Kairbekov	Datamine Consultant	Mineral Reserve Calculation and Compilation	Whang
Rashad Aliyev	Rashad Aliyev QA/QC Supervisor Quality Con		Popol
Andrew Hall	Andrew Hall CQA Director (Azerbaijan) Geotechnical Assessment		(D)
Ahmet Turk	net Turk  Underground Mining  Manager  Mine Planning and Production		And
Homayoun Saeedi	ayoun Saeedi Operations Manager Process Control and Planning		Mig
Katherine Matthews Project Geologist		Report Compilation and Review	Estaune
Stephen Westhead	Director of Geology and Mining	Management	Stur





# 2. Introduction

Datamine was requested by AAM to carry out an estimation of the Ore Reserves of the Gadir mineral deposit, located in the Republic of Azerbaijan. The estimation was completed in accordance with the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves [3]; the accompanying JORC Table 1 is provided in Appendix B.

The Gadir Mineral Reserves Estimation is based on the Gadir maiden Resource Estimate [1]. Gadir resources have previously been reported as part of the Gedabek deposit as Inferred material (so not included during Ore Reserve calculation in [2]) but have now been separated.

The Gadir polymetallic (Au-Ag-Cu-Zn) deposit is located in the Gedabek Ore District of the Lesser Caucasus in northwestern Azerbaijan, adjacent to the city of Gedabay and 48 kilometres west of the city of Ganja. The Gadir underground deposit is located within the locally-defined Gedabek Contract Area. The Gadir deposit was developed into an underground operation by AAM in 2015, adding to the Company's operating asset portfolio. The Gedabek (open pit) and Ugur (open pit) deposits are other mines in the region, owned by AAM and operated by AIMC within the Gedabek Contract Area. The mine is well-established and fully operational to continue mining at a similar capacity to that which it is currently achieving.

A summary of the drillhole type and metres used as part of the Gadir Resource estimation is shown below. Significant exploration activity of the Gadir deposit was carried out during 2018 to establish continuity of mineable material. This work resulted in defining ore, both for the continuation of mining and extending the down-dip footprint of the mineralisation. Additionally, mineralisation was intersected along strike, beyond fault structures originally interpreted to have terminated the mineralisation continuity. These results demonstrate the expansion potential of the Gadir underground deposit.

**Table 2.1** - A summary of the type and metres of drilling used for the Gadir Resource Block Model and estimation

Purpose	<b>Drillhole Type</b>	Number of Holes	Total Length (m)
Surface	DD	60	22,458
Lindorano un d	DD	342	15,512
Underground	СН	-	8,645
TOTAL DRILLING		402	46,615



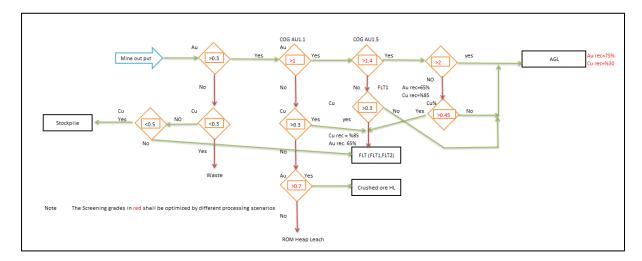


Further details pertaining to the drilling, along with a description of the location of the property and geological setting of the deposit has been provided in [1]. The reader is directed here for further details.

The deposit is currently extracted primarily for Au and Ag, with Cu occurring as a by-product. Zn forms part of the Cu concentrate and is currently not processed separately. The agreed process-flow algorithm, utilised in production scheduling across the operations, is shown below in Figure 2.1. For the purposes of underground optimisation, the minimum COG for Gadir was calculated on the basis of the net smelter return (herein "NSR") approach. During the audit, modifying factors were confirmed between parties to be used for:

- Tonnage and grade estimates
- Process recoveries
- Metal prices
- Mining and processing costs
- Fixed costs

**Figure 2.1** – A simplified flowchart denoting the unit operations and grades for material sourced within the Gedabek Contract Area



A report that was prepared by CQA summarising the findings of a geotechnical assessment of Gadir is presented in Appendix A.

The Proved and Probable Ore Reserves estimate is based on the portion of the Measured and Indicated Mineral Resource of the deposit within the scheduled mine designs that may be economically extracted, considering all modifying factors in accordance with JORC guidelines [3].





This document consists of information relating to modifying factors used as part of the Ore Reserves calculation, underground stope optimisation results and a breakdown of mine scheduling.

#### 2.1. Qualifications of Consultant

Aidar Kairbekov is a mining engineer with more than 25 years' experience in the mining industry in a wide range of disciplines; he has been involved in both operational and technical roles including mine shift supervision through to consultancy to senior level.

Aidar graduated in 1994 with an Honours degree in Industrial Rocks and Minerals from the Kazakh National Technical University. Aidar has knowledge of various commodities, including extensive experience with precious (gold, silver, platinum) and base (copper, lead and zinc).

In the same year, he started his career as a Mine Surveyor, then transitioned Mine Shiftboss, at Kazakhmys Corporation. In 1996, Aidar was promoted to Mine Captain. This role involved supervision of both mining and technical staff as well as carrying out engineering duties (from planning through to production) for both development and production at the mine site.

From 1998 to 2003, Aidar worked at Kazakhmys Technical Services as a Senior Mining Engineer. During this time he was involved with a variety of projects. In 2003, he accepted a position as a Senior System Consultant with Datamine Software International, based in Kazakhstan. Aidar worked on several implementation projects for Datamine International and Datamine South Africa customers, mainly focused around mine planning and optimisation of mining activities.

From 2008–2009 Aidar worked for Barrick Gold Africa as a Regional Mine Planning Engineer. Duties ranged from planning, production through to project management.

Aidar re-joined Datamine in 2010; in his current role at the company he has taken responsibility of various projects and works as a senior mining consultant.

Aidar is registered member with the Southern African Institute of Mining and Metallurgy and member of Project Management Institute (PMI).

# 2.2. Qualifications of Competent Person

Stephen Westhead is a geologist who earned an extractive industries Doctorate (PhD) in "Structural Controls on Mineralisation", a Master degree (MSc) in "Mineral Exploration and





Mining Geology", a European Union Certificate in "Environmental Technology" and an Honours Bachelor degree (BSc) in "Applied Geology".

In 1989, Stephen started his career in the mining sector as a Geologist with Anglesey Mining, working at the Parys Mountain property in Wales. Following completion of a PhD in 1993, he worked in India for five years as a Consultant Geologist focusing on the cement and base metals sectors. During his final year in India Stephen was a founder member of Fluor Daniel India (Pvt) Limited, working in resource analysis for the group mining and metals division, in addition to infrastructure and project development.

In 1997, Stephen moved to work in Central Asia for a period of ten years, gaining experience in Tajikistan, Uzbekistan, Kyrgyzstan and Kazakhstan. The positions held included Project Geologist, Country Chief Geologist, subsidiary mining company Director, Group Chief Geologist and General Director. The focus of this period was gold, silver and base metals projects, including resources and reserves management, project development and production.

In 2006, Stephen worked in Ukraine, Eastern Europe, and Kazakhstan as Group Chief Geologist and Project Manager, again focusing on gold and silver commodities. In 2009, Stephen joined the Polyus Gold Group as Group Project Manager and subsequently as Technical Adviser to the Managing Director of the group's largest business production unit, covering exploration and mining geology, mining, material handling and processing.

In April 2016, Stephen consulted to AIMC and joined the group in May 2016 as Director of Geology. Subsequently in January 2017, he became Director of Geology and Mining (current position).

Stephen has expertise heading project management from exploration stages through to construction and mine production. He has been part of teams that have taken projects through feasibility study, raised finance, constructed mines/plants and brought these into production.

Professional accreditations include being a Chartered Geologist (CGeol), a Fellow of The Geological Society (FGS), a Professional Member of the Institution of Materials, Minerals and Mining (MIMMM), a Fellow of the Society of Economic Geologists (FSEG) and a Member of the Institute of Directors (MIoD). Stephen was recently awarded the Institute of Directors Certificate in Company Direction (August 2017), with awards in 'The Role of the Director and





the Board', 'Finance for Non-Financial Directors', 'The Director's Role in Strategy and Marketing' and 'Leadership for Directors'.

#### 2.3. Site Visits

Datamine consultants developed and audited the Gadir Mineral Resource Block Model and Ore Reserves calculations for the Gadir underground mine. Datamine engineer, Aidar Kairbekov, worked on the reserves and was able to verify work practice and procedure. During this secondment to the reserve estimation, Aidar visited the site on one occasion that comprised of 5 days onsite during October 2018. Whilst onsite he inspected the mines, carried out ground-truthing, reviewed mining activities and reviewed geological and mining engineering procedures.

Datamine consultants have been involved with other mining projects of the company within the same contract area as the Gadir underground mine and as such are familiar with the processing methods available, value chain of the mining and cost structure. The data used as part of the Mineral Resources project was audited, validated and considered robust for Ore Reserves calculations.

Internal company and external reviews of the Mineral Resources yield estimates that are consistent with the Mineral Resource results. The methods used to build the Resource include three-dimensional estimation, utilising the ordinary kriging ("OK") method, as well as verification via inverse power distance ("IPD"). All results showed good correlation and so are deemed appropriate for use with Ore Reserve calculations.

The CP, Dr. Stephen Westhead, is an employee of the company and as such has been in a consistent position to be fully aware of all stages of the exploration and project development. The CP worked very closely with the independent resource and reserve estimation staff of Datamine, both on site and remotely, to ensure knowledge transfer of the geological situation and to lend geological 'credibility' to the modelling process.





# 3. Resource Model used for Calculation of Ore Reserves

The filename of the Resource Model used for this Reserves estimation process was "Gad\_bm\_f1.bm" – this was issued by Datamine on 13<sup>th</sup> October 2018. For further details of the estimation process, the reader is directed to the Mineral Resource Report [1].

The resource was produced based on a COG of  $Au \ge 0.5$  g/t.

Three tables have been prepared highlighting the resources statement (Table 3.1), the contained metals by class (Table 3.2) and the percentage of metals by class (Tables 3.3). The Gadir Resource Block Model was depleted for mining development and production up until August 2018. Whilst the Zn resources were not converted to Ore Reserves with modifying factors applied, values have been left in for reference. Note that for each of these tables that due to rounding, numbers presented may not add up precisely to totals.

**Table 3.1** – Resource Statement for Gadir

MINERAL RESOURCES	Tonnage	Gold	Silver	Copper	Zinc
(Cut-off grade 0.5 g/t Au)	kt	g/t	g/t	%	%
Measured	540	3.70	17.49	0.29	1.01
Indicated	1,235	2.04	10.89	0.14	0.73
Measured + Indicated	1,775	2.54	12.90	0.21	0.84
Inferred	571	1.48	5.68	0.10	0.52
Total	2,347	2.29	11.14	0.19	0.78
Exploration	5	1.37	5.94	0.09	0.60

Table 3.2 – Contained metals by class for Gadir

MINERAL RESOURCES	Gold	Silver	Copper	Zinc
(Cut-off grade 0.5 g/t Au)	koz	koz	t	t
Measured	64.2	303.6	1,566	5,454
Indicated	81.0	432.4	1,729	9,016
Measured + Indicated	145.2	736.1	3,295	14,470
Inferred	27.2	104.4	571	2,972
Total	172.4	840.4	3,866	17,442
Exploration	0.2	0.9	2,470	7,620





Table 3.3 – Percentage of metals by class for Gadir

MINERAL RESOURCES	Gold	Silver	Copper	Zinc
(Cut-off grade 0.5 g/t Au)	% oz	% oz	% t	% t
Measured	37	36	41	31
Indicated	47	51	45	52
Measured + Indicated	84	88	85	83
Inferred	16	12	15	17
Total	100	100	100	100

The relative percentages of contained metal show a very high degree of 'Measured + Indicated' Resource, thus demonstrating the extent of closely spaced geological data collection, allowing for confidence in the mineralisation continuity – this was further used and tested for Ore Reserves estimation.

The Gadir Ore Reserves statement is inclusive of (not additional to) the Gadir Mineral Resource statement. The study undertaken to enable Mineral Resources to be converted to Ore Reserves is considered as being Feasibility level, with appropriately detailed assessments of applicable Modifying Factors, operational factors and detailed financial analysis considered during calculation, that demonstrates continued extraction is economically practicable. Given the operational status of the mine, monthly mine to mill reconciliation and cost accounting, technical feasibility and economic viability have been established.

The reference point at which Reserves are defined, is where the ore is delivered to the processing plant.

A technically achievable mine plan that is economically viable has been designed taking into consideration the Mineral Resources and modifying factors. The ore will continue to be mined and processed utilising the fleet and facilities currently employed onsite. These ores will continue to be blended for processing at the AGL and FLT plants with other ore sources (Ugur and Gedabek mines), plus existing stockpiles. These ores are blended at the newly-constructed Finger Stockpile Management System, where each finger represents either a different ore type, grade or physical property.





# 4. Modifying Factors

The modifying factors that were reviewed and used as part of the Gadir Ore Reserves estimate are described below – these follow the guidelines as set out by the JORC Code [3].

The Gadir underground mine is in its fourth year of operation, thus past production, processing and reconciliation performances have been used, where appropriate, to estimate the modifying factors used to calculate Ore Reserves.

On establishing the modifying factors, the optimum stope designs were generated using Datamine Mineable Shape Optimizer® (herein "MSO®") software. Whilst planned dilution was accounted for when determining the modifying factors, unplanned dilution was considered later in the evaluation process.

After stope shapes were completed by MSO® and evaluated by Datamine, capital and ore drive development for access was designed, followed by scheduling for LOM.

The final mineable material comprised the Ore Reserves, as reported here.

#### 4.1. Cut-Off Parameters

Establishing a robust COG is a critical parameter in underground mine design. Financial factors included in the COG estimates are mining, process and overhead costs, along with mining dilution, payable gold and silver prices and processing recovery.

In 2018, AAM completed an exercise for estimation of various COGs based on agreed economic parameters with the Mine Geology, Engineering and Operations departments. A "strategic" COG of 1.2 g/t Au was applied to the Resource Model during calculation of the Ore Reserves as established by AAM (Table 4.1).

**Table 4.1** – Gadir cut-off grade summary

COG	Minimum Au (g/t)
Break-even COG	0.93
"Hurdle" COG	1.12
"Strategic" COG	1.20





The break-even COG was calculated by dividing the overall processing costs for the combined operations into each mine (for the past financial year). This allowed the processing cost per tonne to be determined (assimilating costs such as 'General and Administration; herein "G&A). This was added to the mining cost per tonne, resulting in a total cost per tonne of ore. Using this value and other parameters (such as mill recovery), a break-even COG of 0.93 g/t Au was calculated.

Despite the estimated break-even COG, AAM established a return on capital and profit expectation margin of 20%. This profit margin grade (including recovery; "hurdle" grade) was calculated to be 1.12 g/t Au. The "strategic" grade was then calculated simply by rounding up the hurdle COG to the nearest single decimal place.

The COG was verified using a forecasted Au price, costs and metallurgical recoveries from the past financial year. A 1.2 g/t Au COG was applied to create initial stope shapes.

While 1.2 g/t Au is considered a robust final COG, Datamine has recommended to AAM that an economic evaluation of each stope and its associated development be carried out. In this regard, specific cut-off grades for each stope should be applied taking into consideration the stope position with regard to the existing developments as incremental costs are not incorporated in cut-off calculations.

#### 4.2. Mining Factors or Assumptions

Extraction via underground means was selected, in-line with the current mining method. Deposit geometry and depth relative to the topographic surface also supported this method selection. Access to the orebody is via a single entrance portal that is connected to the workings by a decline development.

#### 4.2.1. Geotechnical Parameters

A geotechnical assessment of the Gadir mine was completed by CQA in order to support operations and provide current supplementary information for resource evaluation. The report is presented in Appendix A; however, key findings with regards to modifying factors have been extracted and are presented below.



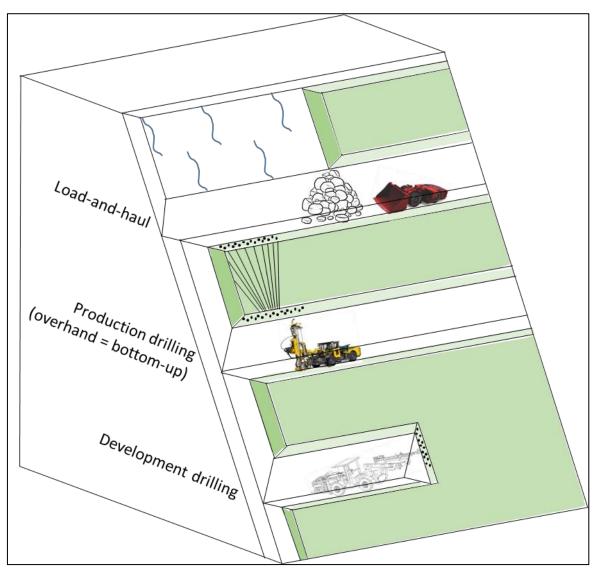


#### 4.2.1.1. Overview

"The Gadir mine currently has a single entrance portal which is connected to the workings by a decline tunnel. This is straight for the first 550 m and is then a spiral in the vicinity of the ore body.

The ore body is being worked using overhand stoping (Figure 4.1) in the upper levels where the dip is steeper and room-and-pillar method (Figure 4.2) in the lower levels, where the dip is shallower. The workings are connected to the spiral decline by drifts. The vertical distance between drifts for both mining methods is 10m.

Figure 4.1 - A schematic of the overhand stoping mining method; adapted from [6]\*

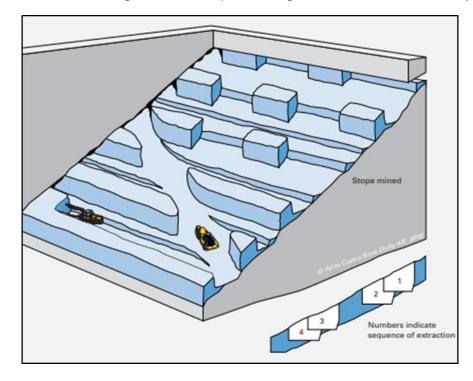


<sup>\*</sup>Machinery images from [7-10]





Figure 4.2 - A schematic showing the room-and-pillar mining method used at Gadir; from [11]



In the upper levels, the stopes have been worked selectively in the different lenses of ore, resulting in a number of discrete voids rather than extensive slots. Each drift was used for both mining and ore extraction. Some stopes have broken through into upper levels but the sub-level stoping method does not appear to have been used. The number of ore lenses in the upper levels resulted in extensive development passages in each drift level in order to provide access for mining and exploration. Some ore has been left in place as stock.

In the lower levels, the room-and-pillar mining is carried out by driving a grid of perpendicular passages into the ore body. These passages are then enlarged vertically and horizontally to the lithological or grade boundaries. Passages dimensions are initially 3-4m (height and width), which is increased to 10m+ as the rooms are excavated. Pillars of unexcavated ore are left in place between the original passages.

Stub tunnels or the entrances to closed drifts are used for logistical purposes such as workshops, stores, vehicle turning and refuges. A series of short shafts have been driven between drifts to provide ventilation and access for services and dewatering pipes.

The mine is currently being worked for both development and production. Development works involve further exploration of the Gadir ore body and a connection tunnel being driven towards





the orebody under the main Gedabek open pit. It is expected that the latter tunnel will finish with a spiral decline from Gedabek Pit 6, providing a second vehicle access point."

Figure 4.3 shows a mine plan of Gadir with geotechnical aspects highlighted; note that the plan was current at the time of the report issue date (14<sup>th</sup> January 2019).

Unsupported passages

Passages with shotcrete cover

Passages with steel supports

Ore extraction

Inclined shafts

Passages with steel supports

Inclined shafts

Figure 1 towards

Passages with steel supports

Area of Pit 4

Figure 4.3 – Geotechnical plan of the Gadir underground mine (current at time of report)

## 4.2.1.2. Mine Development and Ground Support

"The dimensions of access tunnels and drives (4 m width x 4 m height) currently in use appear to be suitable for the characteristics of the rockmass. If necessary, such as for drilling bases or logistical facilities, larger excavations could be formed, with an appropriate increase in ground support.

The rockmass conditions do not place any significant constraints on the orientation of passages.

The rockmass can be classified into just two geotechnical zones:

- Fault zones (Figure 4.4) here, steel arch supports are used and are performing satisfactorily
- Other areas away from fault zones, ground support is currently provided by spot bolting on the basis of inspection after each extension





The walls and roof of main access passages are covered with shotcrete. If shotcrete is required to provide additional support between rock bolts, the use of a thicker layer of fibre-reinforced shotcrete would be recommended (AAM in process of acquiring). If necessary, mesh reinforcement could be used between rock bolts. Subject to inspection, rockmass assessment and trials, this may be an alternative to steel arches in smaller fault zones."

Figure 4.4 – A 3D wireframe model of the Gadir orebody with the fault model included

#### 4.2.1.3. Ore Extraction

"The mining of the upper parts of the ore body by short overhand stopes, with a level spacing of only 10 m, has resulted in an extensive network of drift passages. Sub-level stoping, with a wider drift spacing and dedicated extraction levels may have been more efficient for rock movement. However, the apparent lenticular nature of the ore body would have resulted in greater dilution rates. This method may be considered if future inclined ore bodies are thicker and more continuous.





The rockmass quality is reasonable for current mine dimensions in the hanging wall (in order to span extracted volumes), the ore (in order to act as supporting pillars) and the footwall (to provide foundation for the pillars). There is the potential for future collapse of the existing stopes and rooms, especially if there is later robbing of supporting pillars, which will need to be addressed by ground support if this is undesirable."

## 4.2.1.4. Summary

It was established that the current mining and ore extraction methodologies are appropriate for the geological conditions. The geotechnical constraints are well understood and assessed ahead of development (especially with respect to fault zone intersection) — a summary of current ground support in place by development type in metres is shown in Table 4.2 (note that due to rounding, numbers presented may not add precisely to totals). Over 10 kilometres of tunnelling has been constructed to date. Costings of geotechnical ground support have been established from current contracts. As such, the geotechnical modifying factors have been verified by current underground mining practices.

**Table 4.2** - Summary of ground control measures by passage type

Ground Control	Length of passage (m)				
Ground Control	Drifts	Spiral	Decline	Pit 6	Total
Unsupported Passage	5,207	42	14	16	5,280
Shotcrete Cover	273	1,294	784	734	3,085
Steel Supports	75	198	103	94	470
Workings	1,413	0	0	0	1,413
Total	6,969	1,534	902	844	10,248

# 4.2.2. Mining Recovery and Ore Dilution Parameters

In this study, Inferred and Exploration Potential resources were considered to be diluting materials with no valuable grade. Measured and Indicated resources below the applied COG were also regarded as diluting material; however, it was accepted that under certain circumstances it may hold economic potential. As such, these grades were not reset to zero on the understanding that economic evaluation be carried out on a stope-by-stope basis.





Planned dilution is automatically incorporated by MSO<sup>®</sup>. Unplanned dilution was estimated to be 10% based on previous mining history at Gadir. The mining recovery factor was estimated to be 95% for both the room-and-pillar and overhand stoping methods.

The recovery and dilution factor percentages as applied correlate to current reconciliation data.

# 4.2.3. Minimum Mining Width Parameters

With consideration of the nature of the resource and mining equipment, a minimum mining width of 3.5 metres was used.

# 4.2.4. Inferred Mineral Resource Implications

The underground Ore Reserves contain approximately 0.08% of Inferred Mineral Resources. This material was captured in mining shapes and so had mining modifying factors applied by default. Its inclusion and subsequent impact on economic viability was deemed to be negligible.

#### 4.2.5. Infrastructure Parameters

Infrastructure required for the underground mining method includes haul road access (completed to the mine area), offices for geology/mining department, mining workshop, fuel storage, weighbridge and medical/HSEC facilities — each of these are already in place. Explosives will continue to be transported from a dedicated controlled storage area, as per current procedure.

## 4.3. Metallurgical Factors or Assumptions

The ore from the Gadir underground mine can be processed by four different available processing methods within the Gedabek Contract Area. These are agitation leach ("AGL"), heap leach of crushed material ("HLC"), heap leach of run-of-mine material ("HLROM") and flotation ("FLT"). There also will be two stockpiles, comprising of Gedabek ore generated during the life-of-mine ("LOM"), available for blending.

AAM will decide how to process these in due course, as it depends on the blending criteria, financial factors and the quality of material from other mines in the Company's portfolio. These two types of stockpile material are denoted as "SPF" (Cu stockpile for flotation) and "ROMSP"





(low-grade Au material that could be sent to ROM processing by blending with higher grade material). Copper and precious metal concentrates are also produced via a SART plant [5]. All these processing facilities are currently in operation in the Gedabek Contract Area.

It should be noted that due to its high-grade nature and physical properties for blending with the multi-mine material, Gadir ore is typically only processed via the AGL method, which provides the highest financial return per tonne give the current mineral parameters. Additionally, as Gadir is fresh material (i.e. unoxidised), it is blended with softer ores from the other mines to assist during crushing and grinding.

The proposed metallurgical processes are well-tested, being the processing facilities currently in use in the Contract Area. The processing facilities include conventional methods that comprise comminution, gravity concentration (via Knelson concentrators), thickening, agitation leaching, resin-in-pulp extraction, elution and electrowinning to produce gold doré. For flotation, a concentrate is produced.

The final products will be shipped off site for refining, in line with current practices. Tails from each process operation (except HL) will be transferred via gravity pipeline to the existing tailings management facility ("TMF"). The TMF has enough capacity to manage the projected tails from the Gadir deposit.

Metallurgical testwork has previously been conducted on drill and bulk truck samples in the form of bottle roll and column leach testing. This enabled amenability of the ore to leaching via AGL and static HL processes to be assessed. Additional testwork was carried out using laboratory-scale flotation cells on Cu-bearing ore for the FLT process, so that process parameters are defined should the ore mineralogy change with future mining.

As the mine has been operating since 2015, metallurgical recoveries of the various ore types are well understood and a geometallurgical classification system has been developed for Gadir. The amount of testwork is considered representative of the processing technology to be employed.

Deleterious elements were not detected in analytical tests or during assaying of samples (utilised in the Mineral Resource) and the Ore Reserves estimation has been based on the appropriate mineralogy to meet the specification.





With increasing depth, zinc is becoming more prevalent. Currently the zinc reports to the Cu concentrate but is managed such that resultant grades are below penalty levels; however, zinc will be studied in the future to determine if it can become an economic commodity via the introduction of a zinc FLT processing line.

#### 4.3.1. Process Recovery

The overall process recoveries for each method are shown in Table 4.3 below. No metallurgical factor assumptions were used during the creation of the Gadir Mineral Resource estimation. The parameters for the various processing methods other than AGL have been included for comparison, in addition to Cu recovery % (all in italics; see 'Glossary of Terms and Abbreviations' for a full-breakdown of terms).

Table 4.3 - Metallurgical recovery factors for each process used for the Gadir underground mine ore

Proceses	Recovery %			
Proceses	Au	Ag	Cu	
AGL	75%	66%	30%	
HLC	60%	7%	30%	
HLROM	40%	7%	20%	
FLT	60%	68%	83%	
SPF	60%	68%	83%	

## 4.4. Cost-Based Factors or Assumptions

Project capital costs are minimal given that no additional mining equipment, processing facilities or manpower camps are required. The costs in relations to the facilities already referenced above are based on actual quotations, taking into account capital construction and local operational experience.

Operating costs are estimated based on current mining and processing operations within the Contract Area. This is applicable as ore processing will be carried out at the same plants and mining, contractor and haulage costs are the same as current agreements.

Treatment and refining costs are based on current contracts, as the ore will be treated in the operating processing plants and refined under the current agreements. Penalties are applicable for deleterious elements in FLT concentrate; however, studies of the concentrations





of these elements show that the mined material contains deleterious elements below these penalty levels.

Royalties have been considered as part of the cost structure for the company to operate under the PSA (see Section '4.8. Infrastructure-Related Factors or Assumptions').

The estimated operating costs per tonne used in the Datamine® software are shown in Table 4.4 below and were provided by AAM. Capital and sustaining cost projections were also provided to Datamine and were used to project annual capital expenditure for the LOM. The Gadir mine is a well-established operation so all capital expenditures are recognised and understood.

**Table 4.4** – Operating costs and financials applied to this Ore Reserves estimate

Description	Value	Unit	Notes
Mining (includes development costs, stope mining, load and haul, geology and grade control)	16.56	\$/t	Ore and waste
Services, dewatering and rehabilitation	2.00	\$/t	
Processing	18.50	\$/t	
General and Administration	0.50	\$/t	

# 4.5. Revenue-Based Factors or Assumptions

Revenue was based on the USD \$ Au price, USD \$ Ag price and USD \$ Cu price. Commodity pricing was based on forecasts by reputable market analysts. Local Azeri exchange rates are pegged to the United States Dollar (USD \$). The source of exchange rates used in the study was the Central Bank of the Republic of Azerbaijan.

## 4.6. Economic Factors or Assumptions

Economic parameters used as part of the Gadir Ore Reserve estimation are summarised below.

Prices (USD \$) for Au, Ag and Cu used in EPS® were:

• Gold: \$1250 per troy ounce (\$40.19 per gramme)

• Silver: \$16.50 per troy ounce (\$0.53 per gramme)

• Copper: \$6000.00 per tonne

For Processing Recovery (%) for Au, Ag and Cu, see Table 4.3.





The selling price is deduced from the market price to determine the NSR. The values used are specified by the process route and product shown in Table 4.5 below. Selling costs is 0.05% of revenue of Au, 4% of revenue of Ag and 13.4% of revenue of Cu. Sensitivity analysis has been used at a range of Au and Ag prices. A discount rate of 10.5% was used by Datamine.

#### 4.7. Market Assessment

The market for Au, Ag and Cu is well established. The metal price is fixed externally to the Company; however, AAM has reviewed a number of metal forecast documents from reputable analysts and is comfortable with the market supply and demand situation.

A specific study of customer and competitor analysis has not been completed as part of this project.

Table 4.5 – Selling % payable of products used during Reserve calculations to determine the NSR

	Selling % payable - Net of refining and transportation						
Processes	Doré			Concentrate			
	Au	Ag	Cu	Au	Ag	Cu	
AGL	99.95%	96.00%	86.60%				
HLC	99.95%	96.00%	86.60%				
HLROM	99.95%	96.00%	86.60%				
FLT				97.00%	84.00%	83.00%	
SPF				97.00%	84.00%	83.00%	

Price and volume forecasts have been studied in reports from reputable analysts, based on metal supply and demand, USD \$ forecasts and global economics.

Industrial minerals do not form part of this study.

#### 4.8. Infrastructure-Related Factors or Assumptions

Infrastructure is considered excellent for Gadir. The deposit is located within AAM's Gedabek Contract Area with extraction rights according to the PSA. Ore can be processed at the Company's current facilities, with material being delivered by truck from the mine to the processing plant via the constructed haul road system.





Offices and mechanical workshop buildings are available. Power for the offices, workshop and weighbridge will continue to be via grid electrical power, with diesel generators as backup. Labour is readily available and planned extraction rates are consistent with current capacity. G&A and process labour are part of the existing company compliment of staff. Regarding accommodation, canteen facilities and associated services, the continuing exploitation of the Gadir deposit will be serviced by the current infrastructure.

### 4.9. Environmental Factors or Assumptions

A previous Environmental and Social Impact Assessment ("ESIA") was carried out over the Gedabek Contract Area by Amec Foster Wheeler and TexEkoMarkazMMC, both in 2012 and submitted to the relevant Government authorities. The Gadir deposit is located within the Gedabek Contract Area for which the ESIA is valid. Processing and tailings storage reported in the ESIA has not changed since its publication and will continue to be utilised for material as part of this Ore Reserve update.

CQA have on-site representation and they have carried out both the geotechnical and environmental assessments of the Gadir mine area. Baseline environmental monitoring is carried out via use of receptors downstream of the mine site to observe catchments located in the vicinity of the Gadir mine. Watercourses downstream of stockpiles will continue to be monitored on a routine basis for pH and heavy metal contaminants.

Stockpile areas for waste rock have previously been identified following condemnation drilling. Waste material will continue to be utilised for infrastructure (road) construction at the Gedabek Contract Area where required. The waste rock has a low potential for acid rock drainage due to the absence of sulphide-bearing mineralisation. In total, about 20% of the waste rock is back-filled into stopes underground and is not transported to surface.

The TMF has the capability, with an addition lift, for the extra storage requirements for Gadir process tails. The design and operations of the TMF have been reviewed by CQA along with a visit by MENR. Regular environmental monitoring is carried out at the TMF, along with monitoring of all receptors associated with the TMF. Independent reviews and third-party safety inspections of the TMF is routinely carried out. Tailings water is now returned to the process site water treatment plant (ultra-filtration and reverse osmosis) and reused in ore treatment.





All approvals for conducting the mining fall under the PSA.

### 4.10. Social Factors or Assumptions

To the best of the CP's knowledge, agreements with key stakeholders and matters leading to social licence to operate are valid and in place.

#### 4.11. Other Factors or Assumptions

There are no known material or naturally occurring risks associated with the Ore Reserves.

AAM is currently compliant with all legal, regulatory and marketing arrangements and agreements.

The Gadir underground project is located within a current contract area that is managed under the PSA, as overseen by MENR. Further details pertaining to the PSA can be found in [1] – it should be noted that the PSA is valid for the LOM.

### 4.12. Classification Summary

Measured Mineral Resources were converted to Proven Reserves after applying the Modifying Factors described previously. Additionally, Indicated Mineral Resources were converted to Probable Reserves.

The resultant Ore Reserves are deemed appropriate given the level of understanding of the deposit geology and reflect the CP's view of the deposit. The Inferred material was excluded from the economic model in EPS® and so had no impact on the Total Reserves (except the material captured during stope design – explained in Section '4.2.4. Inferred Mineral Resource Implications). No Probable Ore Reserves were derived from Measured Mineral Resources.

## 4.13. Audits/Reviews

Datamine developed and audited the Mineral Resource and Mineral Reserve block models. Two Datamine engineers worked on the resources and reserves and were able to verify work practices and procedures.

Datamine have been involved with operations inside the Gedabek Contract Area since 2015 and are familiar with the processing methods available, value chain of the mining and cost structure. The data has been audited and considered robust for Ore Reserve estimates.





Internal company and external reviews of the Ore Reserves yield estimates that are consistent with the Ore Reserve results. The amount of waste material calculated as part of planned stope dilution (see Section '4.2.2 Mining Recovery and Ore Dilution Parameters') and capital (e.g. decline) development totals 80,916 t over the LOM.

### 4.14. Discussion of Relative Accuracy/Confidence

The Ore Reserve was completed to Feasibility standard where capital and operating costs are well understood, with continuous data generated since commencement of mining, and with the geological data being generated from a tightly-spaced drilling grid. Confidence in the calculations and results is considered high and economic viability has been established as testified by the mining of the deposit. Extraction of ore from the Gadir mine will continue.

Project capital is well managed and certain infrastructure facilities are available from AAM, thus minimising capital requirements. The Modifying Factors for mining, processing, metallurgical, infrastructure, economic, gold price, legal, environmental, social and governmental factors as referenced above have been applied to the mine design and Ore Reserves calculation on a global scale and data reflects the global assumptions.

Mine production data are available and were utilised in assessing the relative accuracy of the ore types and grade in the Ore Reserves. The recent operating history and performance against budget cost has validated the cost assumptions.





# 5. Mine Optimisation

The underground stope optimisation was run using the industry standard Datamine MSO® software package. The parameters used to create the stope shapes (determined from evaluating the Modifying Factors) are listed below.

- Only material from Measured and Indicated resource categories, calculated from the Gadir Resource [1], were included
- The section interval of each block was set at 5 m, with each stope being a combination of three blocks, resulting in a stope strike length of 15 m
- The level interval (i.e. floor to floor) of each block was also set to 5 m, with each stope being a combination of two blocks, resulting in a stope height of 10 m
- Minimum stope widths were set at 3.5 m
- Minimum waste pillar width between parallel stopes was set at 4 m
- A COG of 1.2 g/t (the "strategic COG") was applied to create initial stope shapes

Additionally, several aspects of dilution were considered, including planned, footwall ("FW") and hangingwall ("HW") dilutions. Planned dilution was included in the MSO® stope shape designs and covered localised variations in dip and strike, as well as minimum mining width. No additional dilution was applied at this stage and was considered later in the evaluation process.

Every stope shape output from MSO® was manually inspected to determine its potential for eventual extraction. Typically, those that were excluded at this stage from consideration during Ore Reserves calculation were located on the periphery of the orebody or were considered to carry a level of geotechnical/operation/sterilisation risk. The stopes that returned marginal economics or lacked certainty in all aspects of the modifying factors were also omitted.

The dimensional constraints entered into MSO® and applied during the generation of the mining inventory (i.e. 'stopes-as-mineable' shapes) are presented in Table 5.1, for both overhand stoping and room-and-pillar extraction. These constraints defined the minimum and maximum 'allowable' stoping shapes and had the effect of incorporating planned dilution.





Table 5.1 – Dimensional parameters for each mining method, as entered into MSO®

Overhand stoping					
Parameter	Minimum	Maximum			
Stope Width	3.5 m	10.0 m			
Stope Length	5.0 m	-			
Stope Height	5.0 m	-			
Pillar Width	4.0 m	-			
Dip Angle	30°	90°			
Room-	and-pillar				
Parameter	Minimum	Maximum			
Stope Width	3.5 m	10.0 m			
Stope Length	5.0 m	-			
Stope Height	5.0 m	-			
Pillar Width	4.0 m	15.0 m			
Dip Angle	40°	90°			

#### 5.1. Exclusion Control

Exclusion control has been used to avoid the creation of stope shapes within adverse rockmass zones.

For this study, physical exclusion constraints included:

- Depleted resources within stopes and development areas
- "Non-recoverable" material located in areas that cannot be safely mined due to previous mining activities

It should be noted that "non-recoverable" material currently excluded may be extracted in the future, dependent upon results of an intensive geological and geotechnical risk assessment to determine the possibility to re-access old stope areas.

AIMC provided Datamine with solid models of depleted areas of Gadir underground. The depleted block model and wireframe surface of the as-built development is shown in Figure 5.1.

A summary of the results from the underground stope optimisation are discussed below.





W — E — 1000 Eas — 100

Figure 5.1 – A section, looking north, of Gadir highlighting depletion and as-built areas

### 5.2. Optimisation Results – Stope Inventory (Mineable Shapes)

MSO® was run at a COG of 1.2 g/t Au and the optimised envelope is shown in Figure 5.2. It was acknowledged by Datamine that not all of the stopes presented at the output were practically feasible to mine. Therefore, all stope shapes were manually inspected, prior to inclusion in the final inventory. Stopes were excluded from the inventory for one or more of the following reasons:

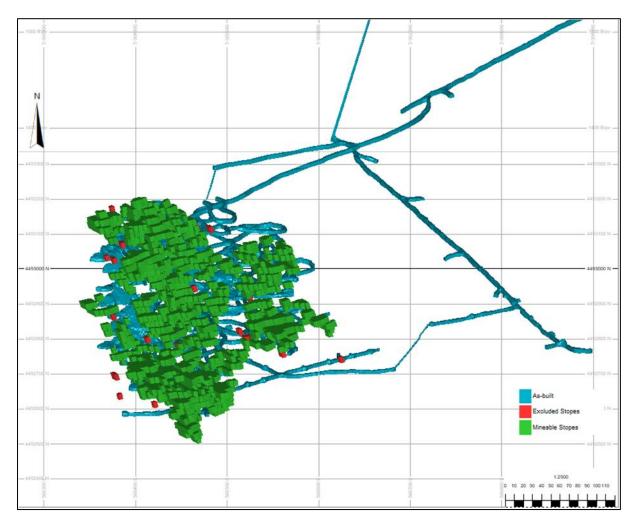
- A high level of geotechnical risk
- A high level of operational risk
- Proximity to as-builts/mined-out areas
- Their location to the periphery of the orebody
- Their proximity to the main orebody (e.g. extraneous satellite stopes)

Approximately 3% of all stopes generated by the MSO® process were removed after individual analysis. Excluded stopes have also been included in Figure 5.2 and are coloured red, whilst the definitive ('acceptable, low-risk') mining inventory has been coloured green.





Figure 5.2 – Mineable stopes ('inventory') and stopes excluded from the final Gadir Ore Reserves calculation



The estimated total tonnes and grades of the final stope inventory are presented in Table 5.2. Tonnages include all sources of planned dilution, as well as having the unplanned dilution (10%) and mining recovery (95%; 5% ore losses) factors applied. The data were split around the 1442 m RL due to historic selective mining of the upper zone (above this level) of the orebody via the overhand method. There are a number of discrete voids around this upper zone due to a level spacing of only 10 m. Whilst this material is not sterilised, in order to mine the ore material remaining a prior geotechnical risk assessment must be undertaken to identify and assess all factors likely to affect the stope stability and safety of proposed/existing extraction methods.

Measured and Indicated resources below the 1.2 g/t Au COG were also considered as dilution material. Au, Ag and Cu grades for the Inferred resources within the mineable underground shell were set to zero. Consequently, such material was deemed to be diluting in addition.





**Table 5.2** – Final stope inventory after exclusion control

Mine RL (m)	Tonnes	Grades			
Willie KL (III)	t	Au (g/t)	Ag (g/t)	Cu (%)	
Above RL 1442	413,650	2.58	14.13	0.19	
Below RL 1442	383,290	2.88	9.41	0.16	
Total	796,940	2.73	11.86	0.17	





# 6. Mine Design

Based on the final stope inventory described in Section 5, an underground mine layout was prepared for Gadir taking into consideration areas that have already been mined out (waste/ore development and production).

Access to the Gadir underground mine is via a single entrance, main decline from surface. This decline also serves as the primary fresh air intake. A single primary ventilation raise, which serves as a return air raise, is in place and operational. The portal is located close to the processing plant. These conditions influenced the Gadir mine layout during design for this study.

## 6.1. Underground Lateral Development Design

Due to the nature of the Gadir orebody and numerous mine developments that already exist (including production areas since 2015), designed stope shapes appear on multiple levels and across the entire orebody (providing all modifying factors and relevant exclusion control parameters have been met). Some stopes can be mined from existing development, while others require new access to be established prior to production stoping.

Taking into account the current layout of the underground workings at Gadir, new developments were designed accordingly to support the mining of stopes via both overhand and room-and-pillar extraction methods. Where possible, Datamine designed development through the orebody to avoid excessive dilution or unnecessary waste extraction.

The lateral development design parameters implemented during mine planning for this study are summarised in Table 6.1 and the layout in Figures 6.1 and 6.2.

**Table 6.1** – Lateral development design parameters for Gadir used during this Ore Reserves calculation

Description	Value
Ramp	4.0 x 4.0 m
Decline	4.0 x 4.0 m
Crosscut	4.0 x 4.0 m
Level Ore Drive	4.0 x 4.0 m
Return Air Raise	Square 1.5 x 1.5 m





Figure 6.1 – Gadir underground mine layout, looking north, including designed stopes and development

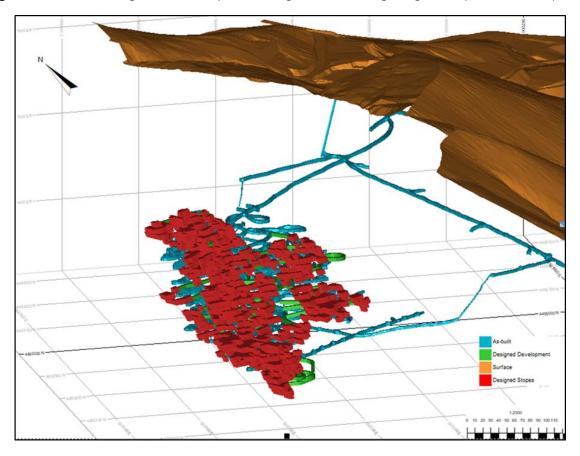
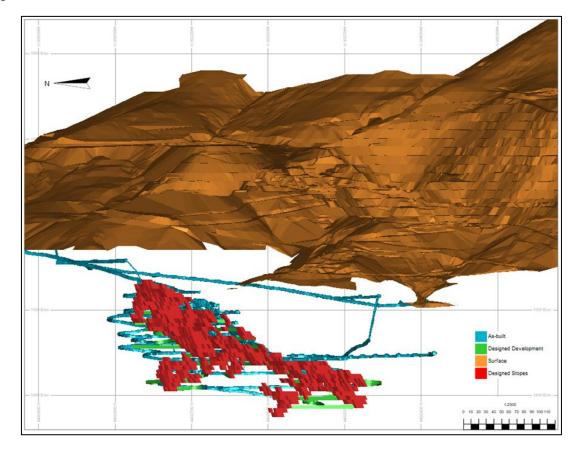


Figure 6.2 – Gadir underground mine layout, looking east, including designed stopes and development







The tonnages and grades within the designed developments are presented in Table 6.2. Development-sourced ore has been included in the Ore Reserve calculation.

**Table 6.2** – Development inventory evaluation

Typo	Tonnes	Grades			
Туре	t	Au (g/t)	Ag (g/t)	Cu (%)	
Au COG≥1.2 g/t	74,355	2.68	13.51	0.22	
Waste	79,440	0.34	2.13	0.03	
Total	153,795	1.47	7.63	0.12	

#### 6.2. Reserves

It is concluded that the Ore Reserve for the Gadir underground mine is 797 kt, with a contained Au content of 70 koz, 304 koz of Ag and 1,387 t of Cu (Table 6.3).

Zn reserves were not reported as part of this Ore Reserve summary.

**Table 6.3** – Gadir Ore Reserves summary

ORE RESERVES	Tonnage	Gold		Silver		Copper	
ORE RESERVES	kt	g/t	koz	g/t	koz	%	t
Total Proved	222	2.81	25	14.13	101	0.24	535
Total Probable	575	2.41	45	10.99	203	0.15	852
Proved + Probable	797	2.73	70	11.86	304	0.17	1,387

Note that due to rounding, numbers presented may not add up precisely to totals.

#### Notes:

- This Ore Reserves estimate considered the conversion of Measured and Indicated Resources only within an economic underground design (including stopes and development), legal and environmental constraints and other modifying factors
- Planned and unplanned dilution and ore losses were considered and included
- This table does not include any metallurgical recovery factors
- The stope optimisation was run at 1.20 g/t Au COG
- All materials classified as Measured Resource were converted into Proved while all Indicated
   Resources were translated to Probable Ore Reserves





# 7. Underground Mine Schedule

Using the underground mine design as described in Section 6, a LOM schedule was created in order to demonstrate that an acceptable mining sequence could be achieved, whilst honouring the various Modifying Factors, parameters and constraints. The mining sequence and production schedule was developed using Datamine's Enhanced Production Scheduler (EPS®) software from 2019 until 2023 (current LOM).

Scheduling for Gadir was based on both overhand stoping and room-and-pillar production mining methods. Only primary mining from stopes was considered for scheduling and no stockpile factor was applied.

The physical targets are as follows:

• Production rate: 192 kt/year ore (16,000 t per month)

• Monthly development rate: 120 m/month

It should be noted that an annual production rate of 192 kt ore ties in with the maximum available capacity of the mining equipment to supply ore that can be blended for the processing plant (assuming 100% availability of mine equipment). Whilst constraining the Ore Reserves to this optimum production rate, AAM's current target ore production rate for Gadir is currently 144 kt per year (12,000 tonnes per month). This rate is sufficient to meet the Company's production schedule, so it is important to consider this factor in LOM assessment. The results of the underground mining sequence study are presented in Table 7.1 below.

**Table 7.1** – Gadir underground mining schedule

Criteria	2019	2020	2021	2022	2023
Ore (t)	191,697	191,495	191,196	191,890	30,660
Au (g/t)	2.58	3.12	2.85	2.42	2.28
Ag (g/t)	10.08	9.4	13.07	14.68	13.17
Cu (%)	0.14	0.17	0.15	0.24	0.12
Development (m)	756	635	886	939	335
Waste (t)	21,719	16,463	26,875	10,503	5,356
Metal Content	2019	2020	2021	2022	2023
Au (oz)	15,927	19,200	17,521	14,943	2,245
Ag (oz)	62,117	57,894	80,324	90,561	12,986
Cu (t)	275	332	279	462	38





# 7.1. Underground Mining Sequence

The year-on-year mining sequence from 1<sup>st</sup> January 2020 has been simulated and annual snapshots are provided below (Figures 7.1-7.8). Yellow wireframes are of development already in place at Gadir. Blue wireframes denote planned development, whilst green wireframes denote planned stopes.

Figure 7.1 – An oblique view (facing NNW) highlighting the mine schedule as of January 2020



Figure 7.2 – A cross-section (facing E) highlighting the mine schedule as of January 2020

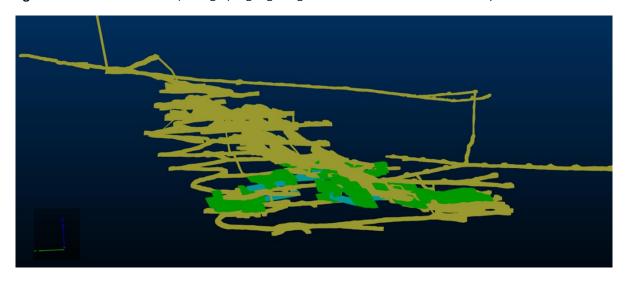






Figure 7.3 – An oblique view (facing NNW) highlighting the mine schedule as of January 2021

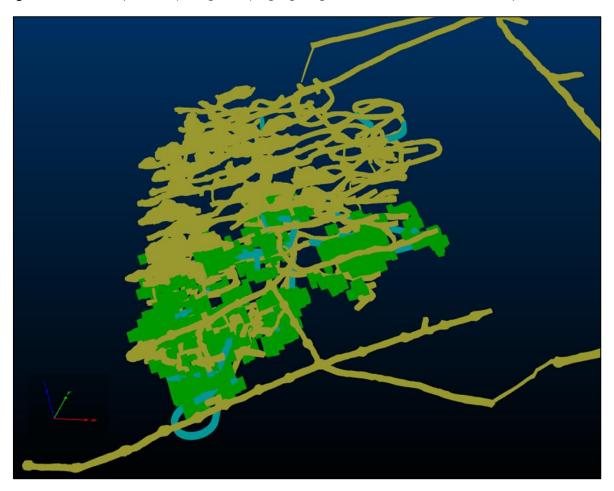


Figure 7.4 – A cross-section (facing E) highlighting the mine schedule as of January 2021

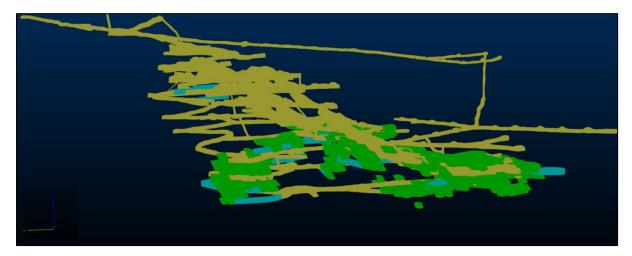






Figure 7.5 – An oblique view (facing NNW) highlighting the mine schedule as of January 2022

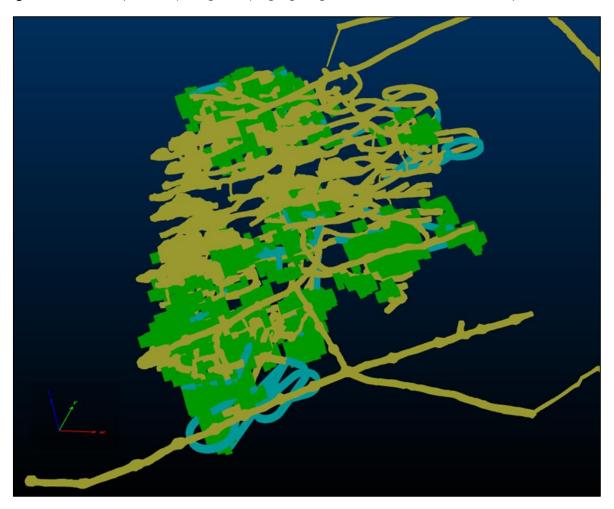


Figure 7.6 – A cross-section (facing E) highlighting the mine schedule as of January 2022

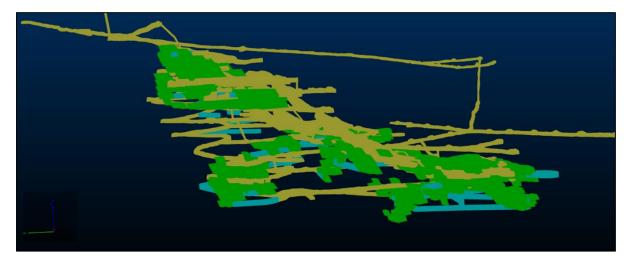






Figure 7.7 – An oblique view (facing NNW) highlighting the mine schedule as of January 2023

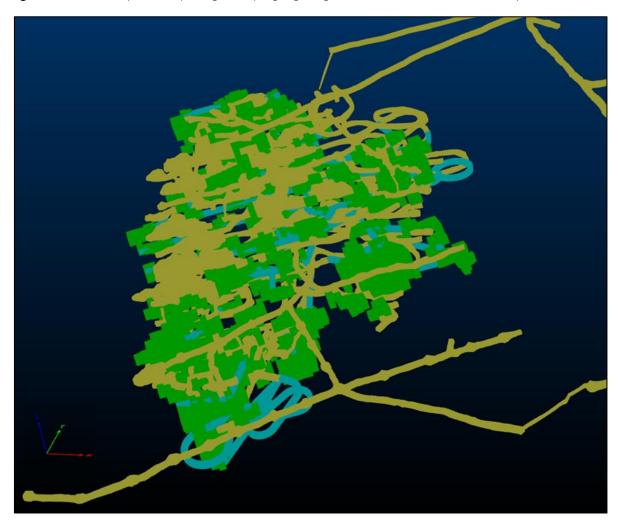
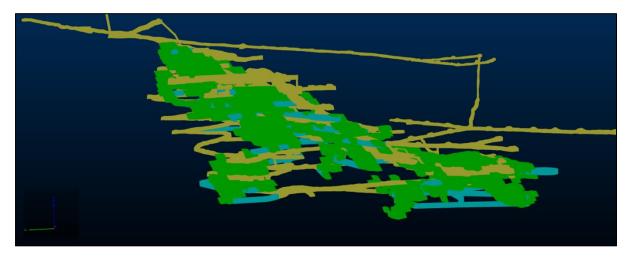


Figure 7.8 – A cross-section (facing E) highlighting the mine schedule as of January 2023







# 7.2. Mining Equipment Utilisation

Mining equipment requirements and demands are already well-understood, as the mine has been in production since 2015. A table summarising the underground fleet is provided below (Table 7.2). It is envisioned that, with continual scheduled servicing of equipment, this machinery will be sufficient to meet production demands for the remainder of LOM, as no changes have been added to the annual production scale.

**Table 7.2** – Gadir Underground Mining Equipment

Item	Equipment Type	Manufacture	Model	Location
1	Face drilling rig 1	Atlas Copco	T1D	UG
2	Face drilling rig 2	Atlas Copco	T1D	UG
3	Air leg machine	Atlas Copco	BBC 16W Rockdrills	UG
4	Air leg machine	Atlas Copco	BBC 16W Rockdrills	UG
5	Air leg machine	Atlas Copco	BMT 51 Pusher Legs	UG
6	Air leg machine	Atlas Copco	BMT 51 Pusher Legs	UG
7	Generator	Atlas Copco	QAS500	UG
8	Generator	Atlas Copco	QAS500	UG
9	Compressor	Atlas Copco	GA132	UG
10	Compressor	Atlas Copco	XAMS287	UG
11	Compressor	Atlas Copco	XAMS287	UG
12	Scooptrams	Atlas Copco	ST7	UG
13	Scooptrams	Atlas Copco	ST7	UG
14	Scooptrams	Atlas Copco	ST7	UG
15	Scooptrams	Atlas Copco	ST-2G	UG
16	Minetruck	Atlas Copco	MT2010	UG
17	Minetruck	Atlas Copco	MT2010	UG
18	Minetruck	Atlas Copco	MT2010	UG





#### 8. Ore Reserves Conclusion and Recommendations

It is concluded that the Ore Reserve for the Gadir underground mine is 797 kt, with a contained Au content of 70 koz, 304 koz of Ag and 1,387 t of Cu.

Zn reserves were not reported as part of this Ore Reserve summary.

The Gadir Ore Reserve estimate was subject to an internal Datamine review. The data provided were also reviewed by the CP of AAM and were considered to be reasonable and adequately supported, consistent with accepted industry practice and reported in accordance with the JORC Code [3].

The Ore Reserve is based on a global estimate; the division of material between Proved and Probable is 72:28 respectively.

It was deemed that there was an appropriate level of consideration given to all modifying factors (established and well-understood from an operational perspective) to support the classification and declaration of Ore Reserves.

There is potential to mine ore remaining in previously stoped-out areas in the upper zone (above 1442 level), dependent upon an intensive geological and geotechnical risk assessment.

In order to refine the mining recovery and dilution, it is recommended that the correlation between the geological model and actual production on a stope-by-stope basis continues to be investigated and reconciled during ore production.

Given the structural complexity of the orebody, a detailed structural geology mapping programme should be implemented to assist in forecasting the projecting of discrete mineralised blocks.

Gadir is one of only two underground mines in Azerbaijan (the other being AAM's Gosha underground operation), and as such mechanical support and spare parts for the underground mining machinery can be problematical. It is recommended to carry out a detailed equipment maintenance plan and liaise with spare parts suppliers to hold consignment stocks. The breakage of a unit of underground equipment will directly impact on development activity schedules.





AIMC, as part of continual improvement and efficiencies, are constantly monitoring the following:

- Optimise the usage of the plants
- Establish cycle times and haul truck requirements
- Optimise the waste dumping strategy

The may result in opportunities to improve the schedule as more production information is gathered.





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# 10. Compliance Statement

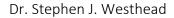
The information in the report that relates to exploration results, minerals resources and ore reserves is based on information compiled by Dr. Stephen Westhead, who is a full-time employee of Azerbaijan International Mining Company with the position of Director of Geology & Mining.

Stephen Westhead is a senior extractive industries professional with over 28 years of experience, who has sufficient experience that is relevant to the style of mineralisation and type of deposit under consideration and to the activity being undertaken to qualify as a Competent Person as defined in the 2012 Edition of the 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves'.

Stephen Westhead has sufficient experience, relevant to the style of mineralisation and type of deposit under consideration and to the activity that he is undertaking, to qualify as a "competent person" as defined by the AIM rules. Stephen Westhead has reviewed the resources included in this report.

The information in this report that relates to Exploration Targets, Exploration Results, Mineral Resources or Ore Reserves is based on information compiled by Dr. Stephen Westhead, a Competent Person who is a Member or Fellow of a 'Recognised Professional Organisation' (RPO) included in a list that is posted on the ASX website from time to time (Chartered Geologist and Fellow of the Geological Society and Professional Member of the Institute of Materials, Minerals and Mining), Fellow of the Society of Economic Geologists (FSEG) and Member of the Institute of Directors (MIoD).

Stephen Westhead consents to the inclusion in the report of the matters based on his information in the form and context in which it appears.



S.J. tumo

**Competent Person** 

Director of Geology and Mining, Azerbaijan International Mining Company (Anglo Asian Mining PLC.)



Appendix A: CQA Gadir Geotechnical Assessment 2019





### **CQA INTERNATIONAL LIMITED**

Gadir Mine, Gedabay

Geotechnical assessment

Report prepared for:

Azerbaijan International Mining Company

Date: 14 January 2019





### CQA INTERNATIONAL LIMITED

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# Quality management data

Name of Project	Gadir Mine, Gedabay
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Authorised to be issued as a formal	Peter Stevens
report from CQA International Ltd by	Managing Director
Signature	Tell

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Gadir Mine, Gedabay Geotechnical assessment CQA Reference 30372 14 January 2019

### **Executive Summary**

The Gadir mine currently comprises 10km of underground passages. Most of these are a decline system and drifts to provide access to the Gadir ore body. The drifts are spaced at 10m vertical intervals. Additional passages include exploration galleries, logistical areas and a tunnel towards the deeper levels of the ore body under the main pit area. The ore extraction passages are located at depths of 200-300m below the local ground level. The tunnel towards the open pits is approximately 150m below the current depth of excavation. A large number of the old Siemens workings occur in this area.

The geology comprises a sequence of volcanic and volcaniclastic strata, which "dip" towards the south. The Gadir ore body occurs on an interface with a rock type described as quartz porphyry but which may also be volcaniclastic in origin. The ore appears to be primary, with no oxidised zone and little weathering. The ore body dips at 30 degrees above a depth of 260m (the 1440 level) and at 10 degrees below this depth. The ore body is thinner and lenticular above this level, and thicker and more continuous below. The upper parts of the ore body are being mined by a series of short overhand stopes between adjacent drifts. The lower parts are mined by room and pillar methods. There are no ore passes: each drift is used as an extraction route for the ore mined at that level.

The rock mass is cut by several dykes and a number of fault zones. The main fault zones occur near the portal, at the northern end of the ore body, near the pit complex and on the current western boundary of the confirmed ore body. There are very few discrete water inflows into the mine: the largest being near the pit complex, where the open pit and network of old passages are likely to create a reservoir of groundwater. Elsewhere the rock mass is generally tight, with very few drips. Dewatering amounts to 150 l/day, which is in the same order as the observed cumulative inflows.

The Gadir mine passages are typically 4m wide by 4m high, approximately square but with an irregular cross-sectional profile. The stopes and rooms range up to 10m in width and height. Away from fault zones, ground support is provided by occasional spot rock bolting. The bolts act to secure particular blocks or tighten areas by increased pressure. There is no use of mesh between rock bolts. The walls and roof of the access tunnels (decline and route towards the pits) are covered with a plain, unreinforced, shotcrete. This is generally in good condition with little evidence of cracking or spalling. The thickness of the shotcrete varies and in many locations the shape of the tunnel wall is visible.





Approximately 12% of the main access tunnels have stronger ground support in the form of yieldable segmented steel arches, with wooden split packing to the walls and roof. The arches bear onto the edge of the passage floor. Only in one location, in the tunnel towards Pit 4, has a concrete foot beam been necessary to prevent movement.

Stability issues were encountered at a fault zone in the initial decline, some 400m from the portal. This was resolved by a diversion and steel arch ground support. Since then, there have apparently been no serious failures. The seismic risk is assessed to be low. Any movement would likely affect fault zones, which will already have string ground support.

For the current geotechnical assessment, fifty-four detailed rock mass assessment measurements were made in strata of the foot wall, hanging wall and ore body. The discontinuity orientations and calculated rock mass quality indices are very similar for each of these zones, which can be treated as a single rockmass. The rock quality in the ore body is beneficial for stability, albeit at the cost of harder excavation. The values of the rockmass measurements and quality assessments correlate well with the geotechnical analyses in the main pit.

The rockmass assessment is on the boundary between fair and good rock. Empirical correlations suggest that the 4m passages will have stand-up times from several days to life-of-mine and that spot or pattern bolting should provide sufficient support. In some cases, no support would be required. The worked-out ore areas, assuming a width of 10m, will have a similar range of stand-up times and support requirements. These predictions match the current experience and practice in the mine.

The structure of the rockmass does not place any significant stability constraints on tunnel orientation. The conditions in the mine are uniform and the only sensible geotechnical zoning is the difference between poor rock in fault zones and all other areas. The ones of poor rock, requiring greater support, are associated with fault zones. The prediction of these zones may be aided by experience as mine development and exploration drilling proceeds.

The current mining and ore extraction methodologies are appropriate for the geological conditions. The efficiency of extraction may be increased by sub-level stoping where the ore body is sufficiently thick and continuous.

If the shotcrete is intended to act as supplementary ground support between rock bolts, the use of a thicker layer of a fibre-reinforced material is recommended. The use of steel mesh and shotcrete may, subject to rockmass assessment, be an alternative to steel arches in smaller fault zone.

There is systematic collection of geological data from the fresh rock after each extension of the passages, including fault and joint orientations. These data could be used to maintain an updated geotechnical model. It would be beneficial if the data collection could also include regular assessments of rock mass quality to provide confirmation of the decisions for ground support.





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# 1. Scope of work

### 1.1 Terms of Reference

Azerbaijan International Mining Company (AIMC) instructed CQA International Ltd (CQA) to prepare a geotechnical assessment of the Gadir Mine in Gedabay. The instructions were issued in an email from Mr Stephen Westhead, dated 12 October 2018. The instructions were issued in acceptance of an offer from CQA contained in its proposal reference 20548, dated 4 October 2018, which referred to previous correspondence and discussions. The geotechnical assessment is required to support operations and to provide supplementary information for resource evaluation.

### 1.2 Approach to the current assessment

CQA's geotechnical assessment of the Gadir mine involved:

Desk study

Fieldwork

Interpretation

The fieldwork was carried out by m experienced international and local personnel who carried out the site inspections and data collection on three occasions, involving:

- Assessment of tunnel morphology and existing ground support
- Evidence of problems and failures (such as over-break, rock falls)
- Measurements of discontinuities, faults and other weak zones (such as alteration)
- Empirical estimation of rock strength
- Estimation of water inflows

The data from the assessment were collated into tables and sketch plans, making use of the existing topographical surveys to provide a reference framework. The assessment is presented below and includes:

- Assessment of discontinuity data
- · Calculation of rock mass assessment scores
- Assessment of potential failure mechanisms
- Estimation of stand-up times for specific tunnel spans
- Recommendations for ground support requirements
- Defining a set of operational ground support rules

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# Desk study

# 2.1 Site location and description

The Gadir Mine comprises a system of underground workings that are located to the north west of the main open cast pit in Gedabay. The mine has been developed over the past four years to exploit a sulphide ore body, located 30-400m from the pit, which was determined to lie between 200-400m below the adjacent ground level. Subsequently, the mine access passage has been extended towards the orebody under the main pit. A location plan of the Gedabay site and the Gadir Mine is included in Figure 1.



Figure 1 Site location plan

### 2.2 Summary of the geology

The geology of the Gedabay area is highly complex in terms of lithology and structure and the following summary is highly abbreviated. The bedrock in the region comprises a range of plutonic, volcanic and volcaniclastic rocks, and some shallow-water sedimentary deposits, that were formed on a destructive tectonic plate boundary, most likely an island arc, on the northern margin of the Tethys Ocean. There are believed to be two subduction zones in the region due to the presence of minor tectonic plates in the collision zone. A number of

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igneous intrusions occur in the area, including a granodiorite pluton around Söyüdlü and a gabbro body near Qaradağ.

Primary mineralisation includes massive, breccia and disseminated sulphide orebodies. Secondary mineralisation includes vein-style ores resulting from widespread metasomatic alteration, possibly part of a porphyry copper system. Subsequent to the secondary mineralisation, the rockmass was subject to emplacement of dykes and the development of faults and fault zones.

The Gadir ore body lies on an interface between volcanic and volcaniclastic strata in the hanging wall and rock described as a quartz porphyry in the foot wall. The ore body does not outcrop and is located sufficiently deep that there is no oxidised zone. The zones of sulphide mineralisation occur in a series of lenses with thicknesses ranging from 3m to 10m and widths along strike up to 100m. The lenses, which have differing grade and mineralogy, align to form an approximately planar ore body, which has a dip in excess of 30 degrees in the upper part of the mine, decreasing to approximately 10 degrees below a level of 1440m. The ore body is wider and thicker in the lower part of the ore body.

Uplift of the area has subjected the bedrock to erosion and weathering in climates ranging from temperate to periglacial. Near-surface ore bodies in the area have oxidised zones. However, the Gadir ore body is deeper and does not have an oxidised zone. Recent sedimentary deposits include decomposed bedrock, glacial till, loess and/or volcanic ash and some alluvium. Fertile black soils have developed, particularly on lower and flatter slopes, by concentration of organic matter from vegetation into loess/ash deposits.

The tectonic plate boundaries are now completely closed and the final deep movements of the subducted plates continue to produce some limited volcanic activity in the region. The closest dormant volcano is 135km to the south west of the site. The late-stage tectonic forces produce occasional seismic activity.

### 2.3 Description of the Gadir Mine workings

The Gadir mine currently has a single entrance portal which is connected to the workings by a decline tunnel. This is straight for the first 550m and is then a spiral in the vicinity of the ore body.

The ore body is being worked using overhand stoping in the upper levels where the dip is steeper and room and pillar workings in the lower levels, where the dip is shallower. The workings are connected to the spiral decline by drifts. The vertical distance between drifts for both mining methods is 10m.

In the upper levels, the stopes have been worked selectively in the different lenses of ore, resulting in a number of discrete voids rather than extensive slots. Each drift was used for both mining and ore extraction. Some stopes have broken through into upper levels but the sub-level stoping method does not appear to have been used. The number of ore lenses in

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the upper levels resulted in extensive development passages in each drift level in order to provide access for mining and exploration. Some ore has been left in place as stock.

In the lower levels, the room-and-pillar mining is carried out by driving a grid of perpendicular passages into the ore body. These passages are then enlarged vertically and horizontally to the lithological or grade boundaries. Passages dimensions are initially 3-4m (height and width), which is increased to 10m+ as the rooms are excavated. Pillars of unexcavated ore are left in place between the original passages.

Stub tunnels or the entrances to closed drifts are used for logistical purposes such as workshops, stores, vehicle turning and refuges. A series of short shafts have been driven between drifts to provide ventilation and access for services and dewatering pipes.

The mine is currently being worked for both development and production. Development works involve further exploration of the Gadir ore body and a connection tunnel being driven towards the orebody under the main open pit. It is expected that the latter tunnel will finish with a spiral decline from Pit 6, providing a second vehicle access point.

A colour coded plan of the mine is presented in Figure 2. The elevations of some key locations and the overlying ground level are shown in Table 1.

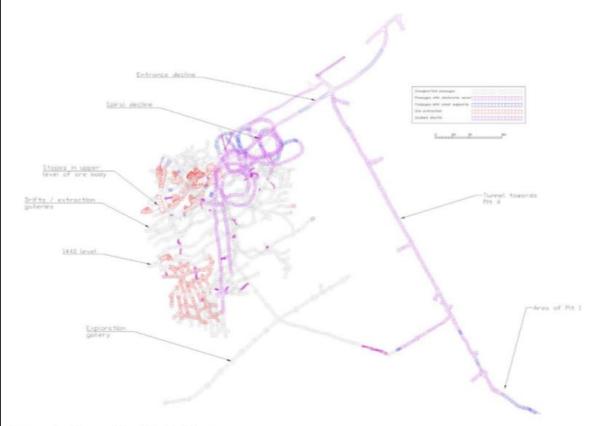


Figure 2 Plan of the Gadir Mine

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Table 1 Elevations of selected locations in the mine						
Location	Mine floor level	Ground level				
Portal	1601	1605				
Top of spiral decline	1528	1727				
Base of spiral decline	1405	1719				
Top of stope workings	1520	1740				
Base of stope workings	1440	1720-1750				
Current base of room and pillar workings	1400	1760				
Deepest part of mine	1396	1729				
Junction with Pit 4 tunnel	1553	1690				
Current end of Pit 4 tunnel	1514	1680				

### Fieldwork

### 3.1 Inspection of mine passages

The inspection involved walking or driving all of the accessible mine passages in order to make a visual assessment of construction methodology and current conditions. CQA was able to observe the following mine areas:

Access tunnel: entrance decline, spiral decline, tunnel to Pit 4

Drifts and workings: 1492, 1452,1427, 1405

Other drift levels were blocked for operational reasons.

The information extracted from the mine plan was verified and adjusted in order to produce a summary of ground support modes for the various tunnels, as shown in Table 2. An isometric view of the mine from the east is shown in Figure 3. This shows the lateral relationship between the spiral decline and the drifts and ore extraction zones. The access route to Pit 4 is also shown.

The walls and roof of the access tunnels are mostly covered by shotcrete, which provided limited the possibilities for inspection of the rockmass. The shotcrete was generally in good condition, with little evidence of cracking, spalling or staining. The purpose of the shotcrete was apparently to reduce the risk of small falling blocks, rather than to provide significant ground support.

Localised ground support as provided in some locations by rock bolts in the roof and walls. These were observed at several locations in the drifts but could not be seen in the access passages.

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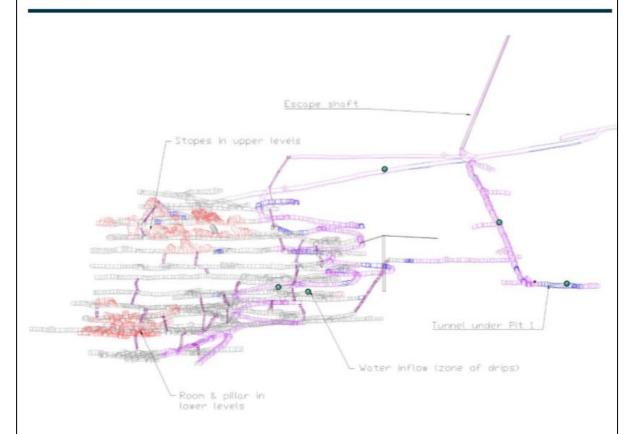


Figure 3 Isometric view of the mine passages from an easterly point

Stronger ground support is provided by "U" section yieldable steel arches, comprising two vertical segments and one curved top segment. In some places, concrete beams have been cast to connect the base of the arches. Support between the steel segments is provided by timber splits, often in multiple layers, which were packed out to fill the space to the roof and walls.

The steel arches are placed in zones of over-break and unstable rock. These zones amount to 12% of the length of the access tunnels. In the decline and spiral, most of the steel supported sections are located towards the northern part of the mine, which may indicate the presence of fault zones in this area. Many of the supported sections in the spiral appear to align with the ore body along strike. This may indicate poorer rock quality on the interface, although this was not recorded elsewhere in the mine. There is no clear relationship between steel support requirements and depth.

In addition to the lengths of passages, there are approximately 600m of shafts. The drifts, workings and shafts were generally unlined, although some sections near the access points were supported with shotcrete lining or occasionally steel arches.

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Table 2 Summary of ground control by passage type					
Ground control	Length of passage in metres				
	Drifts	Spiral	Decline	Pit 4	Total
Unsupported passage	5207	42	14	16	5280
Shotcrete cover	273	1294	784	734	3085
Steel supports	75	198	103	94	470
Workings	1413	0	0	0	1413
Total	6969	1534	902	844	10248

### 3.2 Geological observations

The exposed rock was mid to dark grey, with colour banding, especially in the hanging wall, dipping at an orientation roughly parallel to the ore body. The colour banding was uniform with sharp contact lines and was considered to reflect the volcanic and volcaniclastic lithologies, predominantly lava, shallow intrusive and tuff. The rock mass in the footwall was mid-grey coloured with small pale-grey clasts.

The rock in the ore body lenses was similarly colour banded to the hanging wall and contained variable quantities of sulphide in disseminated pockets, up to several centimetres in size.

All rock types have a moderate discontinuity spacing which gives a blocky appearance. The discontinuities are tightly closed with little evidence of weathering or alteration. The surfaces are flat and intersections are angular, which results in the rockmass being tight and competent. There was little evidence of significant blast damage other than immediately adjacent to shot holes.

There was little evidence of instability, such as fresh rock falls, in the drifts and other unsupported passages. The piles of broken ore in the extraction areas ranged from fine to coarse and were angular. Some manual scaling was undertaken to bring down loosened rock which did not fall after each blast.

The main fault zones were obscured by the zones of steel support. Few faults were noticed in the drifts that were examined. One small igneous dyke was observed in the Pit 4 access tunnel, which had itself been deformed by a low angle fault. The fault zone comprised several discontinuities but was not softened or gouge-filled.

### 3.3 Structural measurements

Nearly 200 measurements of discontinuity orientation were made during the mine inspection. The poles to the measurements are shown a contoured model to aid the selection of the principle orientations. There was a large variation in the measured discontinuity

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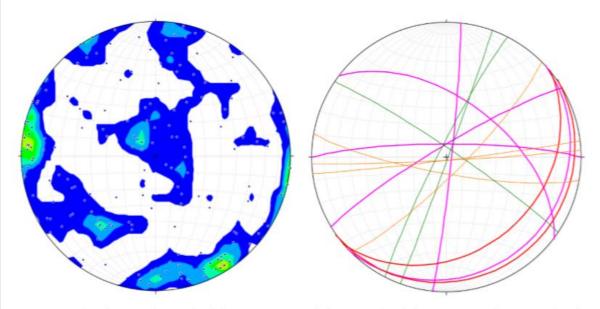




orientations but the contouring produced five main sets, two of which were particularly well represented. One of the main joint sets was found to align with the estimated orientation of the ore body.

Major faults and dykes were recorded during excavation and detailed are digitised on the Surpac software. Extracts of these data were analysed by CQA in AutoCAD in order to measure the main orientations. These also align with the main discontinuity sets measured in the geotechnical assessment.

Examples of the stereonet plots are reproduced in Figure 4. These two examples show the contoured site data and the main joint sets in comparison with other structural features. The good degree of agreement provides validation of the data.



Contoured poles to discontinuities

Pink = main joint sets, red = ore body orientation

Orange = dykes, Green = faults

Figure 4 Stereonet plots of main structural data

#### 3.4 Rockmass Assessment

The rockmass was examined and measurements were taken in areas that were free of shotcrete. In the access tunnels, these points were limited to small areas which were found without shotcrete or stub tunnels which had not been shotcreted. This restriction on inspection and measurement, especially in zones of poor rock with steel support, will introduce a bias into the results. In the drifts and extraction zones, there was a wider choice

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of measurement points and these were selected on a random basis, with a view to obtaining a regular spacing in the mine and also to assessing the footwall, hanging wall and ore body. The proximity of the drifts to the spiral greatly reduces the bias with respect to the biased inspection points due to shotcrete. However, the bias due to inaccessibility of poor rock zones was not addressed.

Rockmass assessments were carried out at fifty-four locations in the mine passages, allowing the footwall, ore body and hanging wall to be evaluated. The assessments were carried out in accordance with the South African and Norwegian CSIR. These allowed values for the parameters RMR and Q to be determined from the respective methods. In addition, estimates for rock quality designation (RQD) were made from measurements of joint spacing and distribution over a fixed length.

The assessments also involved recording the orientation of up to four discontinuity orientations at each location, which have been analysed by stereographic projection.

The results of the rock mass assessments are included in Annex A and the basic statistics of the results are presented in Table 3. These show that both the RMR and Q values were relatively consistent with a standard deviation several times less than the overall spread of results.

Table 3 Rockmass assessment statistics							
	RQD	RMR	Q				
Mean value	62.5	61.0	6.3				
Median value	63.5	62.5	6.4				
Standard deviation	20.6	10.4	2.4				
Minimum value	0.0	33.0	1.0				
Maximum value	100.0	85.0	13.3				

A graphical representation of the RMR results is shown in Figure 5, which is an oblique view from the south. The RMR results are shown as spheres, scaled in proportion to the RMR value. The colour code is the same as used for the main pit stability assessments.

Average values of the rock mass assessments for the three locations (footwall, ore body and hanging wall) are presented in Table 4. The results are very similar for all three locations, clustering closely around the mean value. This demonstrates that there is little difference between the rock quality in the footwall, ore body or hanging wall, irrespective of lithology and mineralisation.

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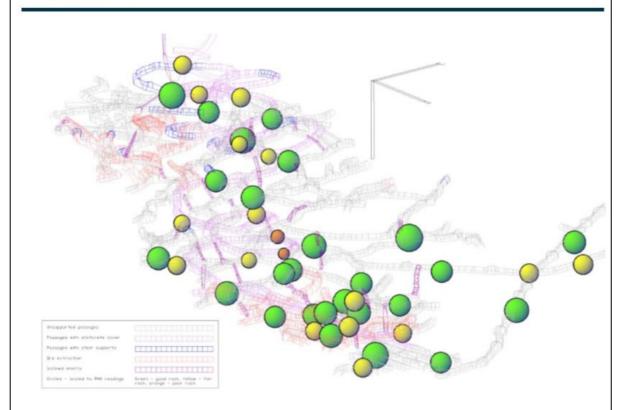


Figure 5 Results of the RMR on an oblique mine view

Table 4 Mean rockmass assessment scores by location										
	Nº of readings	RQD	RMR	Q						
Hanging wall	14	58.4	59.8	6.2						
Ore body / zone	16	59.1	61.5	5.6						
Foot wall	24	67.1	61.5	6.9						
Overall	54	62.5	61.0	6.3						

The close correlation of the rock mass characteristics suggest that the rock type, geological structure and lithological properties are similar in the footwall, ore body and hanging wall. The good rock quality results in the ore body are probably a result of the sulphide mineralisation being primary and disseminated. The rock is not altered, as may be the case with vein mineralisation, or weaker, which may result from massive sulphide bodies.

### 3.5 Hydrogeological observations

Significant water inflow into the mine was observed at only six locations, with estimated rates between 0. 1 and 0.5 litres per second. The highest inflow rates were seen in the access

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tunnel to the pit, from the roof of the steel-supported zone under the base of Pit 4 and from an intersected surface borehole just before this section. The other inflows were zones of drips from the roof in the decline and some drifts. The walls of the lowest level were damp, although this may have been due to condensation because of high humidity in the atmosphere. There may have been other inflows in the drift levels that were not inspected. The locations of the recorded water inflows are shown on Figure 3.

The extensive shotcrete cover may be preventing some drip inflows. In one zone of drips, cracks were observed in the shotcrete with small "drinking straw stalactites", which were not obvious in other parts of the mine. However, such detail may not always have been visible from the vehicle.

The mine passages were generally free of running water, with damp roadways but little mud. Some water ponded near the inflow zones. We understand that water is collected in sumps and pumped from the mine at a constant rate of approximately 150 cubic metres per day. This rate agrees well with the magnitude of the observed inflows.

The inspection was carried out in autumn and early winter, several months after the wettest period of the year. This is not considered to have influenced the observations because the mine is mostly below the long-term phreatic level and the time taken for groundwater to infiltrate several hundred metres underground would obscure any seasonal effects at the ground surface.

The low inflow rates are indicative of low permeability strata, further indicating that discontinuities are generally tightly closed with little infilling. The lack of significant inflows in many of the poor rock zones suggests that these areas do not generally have high permeability and that the storage and transmission of groundwater from the more intact bedrock is slow. The fastest inflows appeared to the related to Pit 4, which represents a reservoir of available water.

The phreatic surface is predicted to be relatively close to the ground surface under the hillside because the small streams that rise and flow northwards tend to have a constant baseflow throughout the year, which is augmented by surface runoff in wet periods. The streams were observed to be running during the site visits and so the mine has not dewatered the adjacent strata to cause any significant effects.

The lowest levels of the mine are lower than ground level for at least three kilometres around the mine. Predicting the regional groundwater movement would be controlled by the geology, which is complex, but potential outflow zones from the mine levels would be considerably more distant. Groundwater at this level is likely to move very slowly and migration times are likely to be very long. This would greatly reduce the impact of any deterioration in water quality. However, no evidence of contamination was noticed by sight or smell. Subject to a more extensive hydrogeological assessment, the lower levels of the mine may be a suitable location for future waste disposal, such as paste tails.

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## 4. Interpretation

#### 4.1 Geotechnical domains

The decisions concerning ground support during mine development may be based on either or both of two approaches:

Assessment and reaction to actual conditions

A set of rules

The assessment approach is based on the conditions after each blast, taking into account factors such as over-break, unstable ground and water inflows.

Set rules are typically based on a geotechnical zonation, which classifies similar areas on the basis of factors such as geological strata and structure, groundwater inflows; together with adjustments for the type of passage and its orientation.

The similarity of the geological observations and the rock mass assessment readings suggests that a simple geotechnical zonation based on rockmass properties can be used for the Gadir mine:

Zone 1 – Fault zones, plus mineral veins or old workings, if present

Zone 2 – All other areas

The installation of ground support in the Gadir Mine seems to use both approaches. The occasional rock bolts and sections with steel arch supports are reactive installations, on the basis of poor ground encountered during excavation. The general usage of shotcrete in the access tunnels, but not in drifts and some stub passages, seems to be based on general ground support rules.

### 4.2 Passage stability

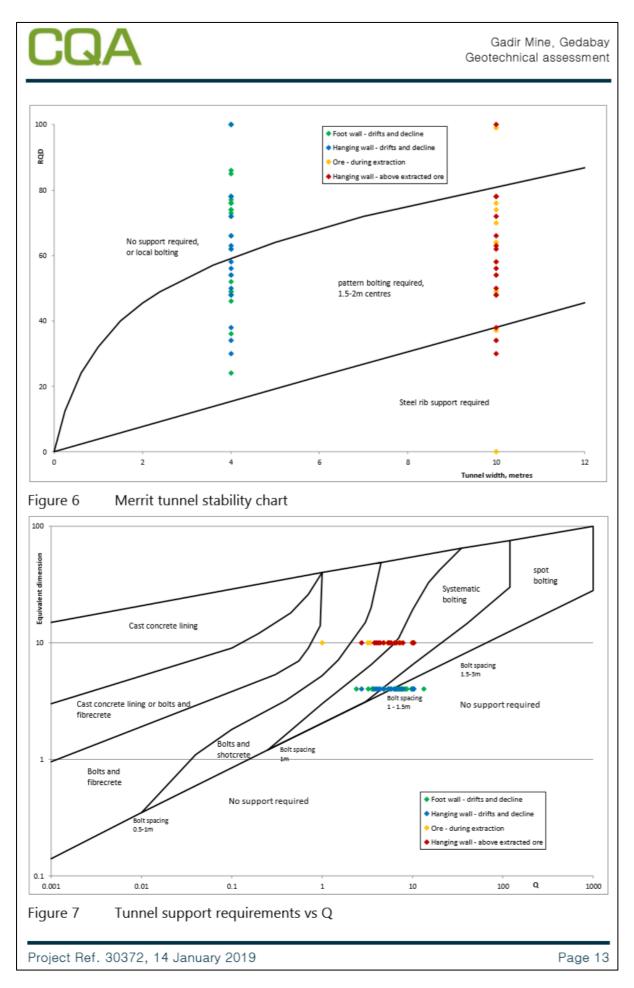
The rock mass assessment results yield similar conclusions when compared to commonlyused interpretation methods. It is stressed that none of the results or interpretations consider the zones of poor-quality rock, for which data were not available as a result of concealment behind steel arch support systems.

Merrit's nomogram of tunnel support, based on RQD values and tunnel width is shown in Figure 6. Barton and Grimstad's nomogram, based on the Norwegian Q rating, is shown in Figure 7.

The analysis using Merrit's nomogram indicate that 4m wide openings will be stable with no support or light support in the form of pattern bolting. Most openings up to 10m wide, i.e. during and after mineral excavation, in the ore and hanging wall, are predicted to require pattern bolting to ensure stability.

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The analysis using Barton and Grimstad's nomogram gives a very similar prediction to Merrit's method, in that 4m wide openings will be stable with no support or light support in the form of spot or pattern bolting. Most openings up to 10m wide, i.e. during and after mineral excavation, in the ore and hanging wall, are predicted to require systematic bolting and possibly shotcrete to ensure stability. It is notable that shotcrete is not predicted as being necessary for the 4m tunnels.

A predictive nomogram based on the South African RMR by Bieniawski is shown in Figure 8. This method also provides an estimate of stand-up time as well as support requirements for different spans. Previous experience on various sites in the Gedabay mine suggest that this method is reliable. The predictions are similar to the previous two methods, suggesting that the 4m passages will have stand-up times from several days to life-of-mine and that spot or pattern bolting should provide sufficient support. In some cases, no support would be required. The worked-out ore areas, assuming a width of 10m, will have a similar range of stand-up times and support requirements.

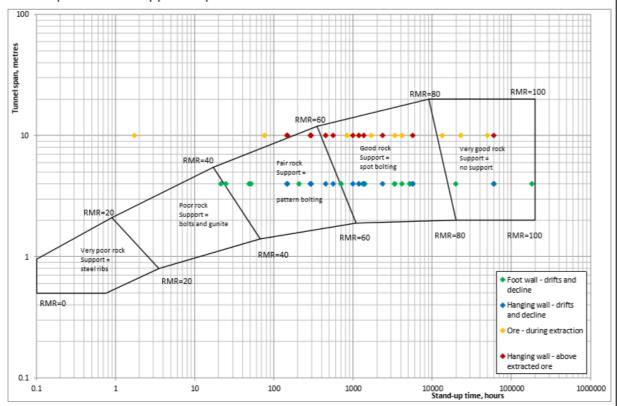


Figure 8 Tunnel span, stand-up time and RMR

This method also provides an estimate of stand-up time as well as support requirements for different spans. Previous experience on various sites in the Gedabay mine suggest that this method is reliable. The predictions are similar to the previous two methods, suggesting that

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the 4m passages will have stand-up times from several days to life-of-mine and that spot or pattern bolting should provide sufficient support. In some cases, no support would be required. The worked-out ore areas, assuming a width of 10m, will have a similar range of stand-up times and support requirements.

The development of the mine passages has utilised some rock bolting, as predicted. Whilst the quantity and layout of rock bolting is not visible in the access tunnels, inspection of the drifts and other unlined openings suggests that less rock bolting had been undertaken than predicted by these three interpretation methods. Most of the passages have been open a reasonable length of time and this discrepancy may be due to the rock mass characteristics being generally better than predicted from the site measurements. It is possible that blasting and excavation has affected the rock surface more than anticipated.

The performance of the main access tunnels will also have been enhanced by support provided by the shotcrete layer.

#### 4.3 Seismic conditions

Gedabay is located in an active tectonic belt. The seismo-tectonic probability map for the region indicates a peak ground acceleration of 0.2g at the ground surface. The map is reproduced in Figure 9.

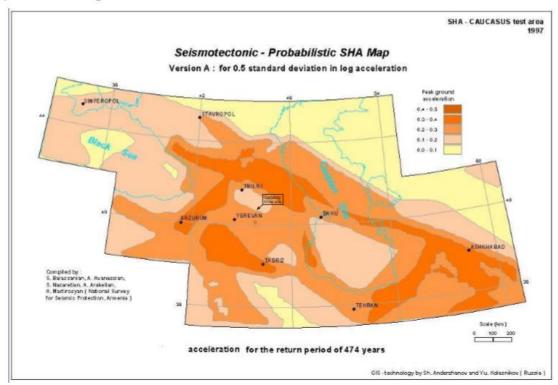


Figure 9 Seismic probability map

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According to the USGS earthquake database more than 700 earthquakes greater than magnitude 3.0 have occurred within 300km of the mine site since 1973 the closest to the mine site being a Magnitude 4.0 event located 8km SW of the site. These records show six earthquakes with magnitudes between 3.1 and 4.6 occurring within 50km of Gedabay during the last 20 years. During this period, an earthquake with magnitude 6.3 occurred near Baku, at a distance of approximately 450km from the mine. The largest magnitude earthquakes in the region were 7.0 and 7.3 magnitude at 140 km and 260 km respectively from the site.

It is widely accepted that the impact of seismic forces on underground workings is considerably less than felt on the surface. Case studies to support this perception are few, possibly because earthquakes have rarely caused extensive damage to mines.

Seismic energy dissipation is greatest at the free-surface, where the stresses involved exceed the in-situ stress regime and the lack of confinement allows strains (movement) to occur, with resulting damage. Underground, the seismic energy passes as body waves. Beyond a certain depth, the in-situ stresses around the mine opening are likely to exceed the transient stress from the seismic waves. Furthermore, the mine passages are generally small and able to support transient small strains.

Large excavations are more likely to be affected especially if support is lower. This is more likely to affect stopes or other extraction openings than small, uniform, well-supported access roadways. If an earthquake occurs close to the mine, in terms of epicentre depth and distance, it is possible that deformations may occur on existing fault planes. There is no evidence to suggest that the faults encountered in the Gadir mine are seismically active. The use of strong support systems in fault zones will increase the robustness of the mine.

In general, the seismic risk is considered to be low and to be managed by the existing ground support systems. It would be impractical to support the areas with highest risk (i.e. the ore extraction areas). In these cases, the design should include supported loading areas, such as pillars, and safe routes from these areas to refuges.

#### 4.4 Pre-mining rock mass assessment

CQA made a preliminary geotechnical assessment of the mine area during the planning and design stage on the basis of five cored boreholes drilled between the portal and ore body. These boreholes were in addition to the exploration boreholes. The work was supplemented by inspection of the nearby rock exposures, including the main pit, and comparison with the geological model of the site. The results suggested that rock mass would primarily comprise volcanic and volcaniclastic deposits with extensive faulted, mineralised and weathered zones. The general rock mass classification determined from the borehole core samples was "poor". Several large fault zones and area of hydrothermal alteration in the mine area produced localised rock mass classification of "very poor". Some poor rock was also encountered towards the portal area. Significant water ingress was considered to be likely in the portal area and decline.

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The general ground support requirements were predicted to be pattern rock bolting with shotcrete and possibly steel ribs in particularly weak areas. Stronger support measures would be required in zones of "very poor" rock quality.

CQA made an inspection of the mine walls and roof during construction of the portal and initial decline. In this area, the geological conditions encountered in the passages were complex, with numerous fault zones, similar to predictions. Ground support measures were in line with the initial assessment, and comprised rock bolts and shotcrete, with steel arches and splits in zones of very poor rock. At the time of this inspection, progress on opening the decline had been interrupted by an area of unstable ground and works were underway to drive a diversion around this area.

## 4.5 Groundwater and hydrogeological assessment

The hydrogeological assessment is that the rockmass generally has low permeability, which greatly attenuate groundwater flows at depth. Most precipitation is expected to runoff at the ground surface. Numerical modelling at the tailings dam suggested ... The deep rockmass in the vicinity of the mine is likely to be saturated. However, the observations suggest that flow rates are very slow as a result of the low permeability and long pathways to potential outflow zones.

The low permeability of the rockmass is suggested by the presence of water ponds in the open pits, despite an extensive network of old mine passages at depth.

Any water that does infiltrate is most likely contributes to the shallow groundwater regime in superficial deposits and weathered bedrock. The preferential flow in the shallow groundwater will follow the topography to seepages zones in the valleys that support the permanent baseflow in the nearby streams. There would be much greater resistance to vertical flow into low-permeable saturated strata, with low groundwater flows.

Mines with considerable groundwater inflow can influence the local hydrogeology by creating new discharge points for groundwater and thereby affecting the pressure distribution and resulting flow directions. In some rocks, mining methods may enhance the permeability by increasing discontinuities; and sustained flows can further increase permeability by washing out infilling material. This does not appear to be occurring in the Gadir mine, although such effects may be possible if highly permeable fault zones or mineralised zones are encountered, with high inflows.

The hydrogeological conditions are expected to vary as the mine tunnel is extended under the pit complex. The rockmass in this area may have higher permeability due to deeper weathering and stress relief from previous mining. Furthermore, the pit base and many old underground workings will act as reservoirs for groundwater and pathways for flow, which could increase inflows even if these are not actually intercepted. Intercepting old workings may cause greater inflows, and associated stability issues.

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## Conclusions and recommendations

## 5.1 Tunnel excavation and ground support

The dimensions of access tunnels and drifts currently in use appear to be suitable for the characteristics of the rockmass. If necessary, such as for drilling bases or logistical facilities, larger excavations could be formed, with an appropriate increase in ground support.

The rockmass conditions do not place any significant constraints on the orientation of passages.

The rockmass can be classified into just two geotechnical zones: (1) fault zones and (2) other areas. In Zone (2) ground support is currently provided by spot bolting on the basis of inspection after each extension. The suitability of this method is confirmed by the rockmass assessments. In Zone (1) steel arch supports are used and are performing satisfactorily. These

The walls and roof of main access passages are covered with shotcrete. The main purpose is probably to protect the exposed rock to deterioration. It is unclear if this is providing any additional benefit, as shown by the condition and stability of the drift tunnels, which are not shotcreted. If shotcrete is required to provide additional support between rock bolts, the use of a thicker layer of fibre-reinforced shotcrete would be recommended. If necessary, mesh reinforcement could be used between rock bolts. Subject to inspection, rockmass assessment and trials, this may be an alternative to steel arches in smaller fault zones.

#### 5.2 Ore extraction

The mining of the upper parts of the ore body by short overhand stopes, with a level spacing of only 10m, has resulted in an extensive network of drift passages. Sub-level stoping, with a wider drift spacing and dedicated extraction levels may have been more efficient for rock movement. However, the apparent lenticular nature of the orebody would have resulted in greater dilution rates. This method may be considered if future inclined ore bodies are thicker and more continuous.

The rockmass quality is reasonable for current mine dimensions in the hanging wall (in order to span extracted volumes), the ore (in order to act as supporting pillars) and the footwall (to provide foundation for the pillars). There is the potential for future collapse of some existing stopes and rooms, especially if there is later robbing of supporting pillars, which will need to be addressed by ground support if this is undesirable.

#### 5.3 Data collection

Each extension of the mine passages is comprehensively inspected by the mine engineer to decide on ground support requirements and by exploration geologists in order to collect lithological and structural data.

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The latter involves measurements of fault and joint orientations, which are plotted onto the master plan of the mine.

We suggest that, in addition, regular rock mass assessments are carried out in the new section of passage, before the rockmass is covered by shotcrete. CQA would be pleased to assist with this process and train AIMC's geologists to collect the additional data.

The database of discontinuities and rock mass assessments could be used to maintain and updated geotechnical model of the mine, which will provide confirmation of current ground support decisions and also allow more accurate predictions of future requirements.

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## Annex A Summary of geotechnical data collection

No.	Easting	Northing	Elevation	Location	RQD	RMR	Q	Joint se	et 1	Joint se	t 2	Joint se	et 3	Joint s	et 4
				(Note 1)				Az.	Dip	Az.	Dip	Az.	Dip	Az.	Dip
1	566740.59	4492963.06	1573.19	Н	34	53	2.72	060	47	098	88	192	88	210	38
2	566643.31	4492855.59	1554.38	Н	66	55	6.60	345	45	172	78	093	85		
3	566695.44	4492746.48	1539.17	Н	63	62	4.16	314	72	198	85	022	44		
4	566754.91	4492624.32	1527.86	Н	100	80	10.00	348	78	194	80	133	18		
5	566797.87	4492543.62	1516.48	Н	50	63	4.40	255	88	182	45	152	90		
6	566870.81	4492429.85	1504.42	Н	48	56	6.40	246	44	328	80	100	85		
7	566481.67	4492751.69	1528.48	Н	30	53	4.00	141	27	262	65	055	66		
8	566471.75	4492749.57	1511.78	0	100	77	6.60	220	90	178	17	104	90		
9	566496.65	4492754.61	1505.58	0	34	50	3.40	034	51	088	81	221	15		
10	566506.28	4492757.66	1491.54	F	73	63	9.73	185	75	332	33	093	72		
11	566553.11	4492785.59	1483.47	F	62	55	8.27	313	36	218	46	103	84		
12	566551.11	4492752.71	1478.92	F	74	60	7.40	251	88	039	11	150	77		
13	566504.98	4492726.16	1479.64	F	49	47	3.23	032	51	122	56	114	90		
14	566533.31	4492758.81	1467.44	F	100	75	13.33	314	46	035	83	194	54		
15	566544.73	4492728.78	1459.58	F	76	64	7.60	124	68	355	75	265	49		
16	566542.34	4492745.16	1458.83	F	36	45	3.60	005	32	055	64	330	85		
17	566506.72	4492715.49	1448.18	F	77	69	7.70	121	84	253	18	053	76		
18	566510.02	4492755.52	1447.44	F	85	64	8.50	099	72	205	56	112	32		
19	566459.27	4492724.54	1439.54	F	54	48	3.56	140	79	347	64	152	67		
20	566489.53	4492669.63	1439.12	F	24	40	2.40	111	49	177	68	025	78		
21	566472.04	4492641.44	1439.49	0	0	33	1.00	358	78	307	12	044	35		
22	566448.24	4492611.02	1440.03	F	74	63	7.40	069	54	327	78	132	42		
23	566495.53	4492641.99	1439.25	F	78	72	6.24	077	70	272	18	318	75	085	85
24	566547.34	4492614.82	1440.51	0	99	80	9.90	326	28	095	84	297	16		
25	566473.08	4492567.41	1439.93	0	76	64	7.60	115	86	324	23	184	85		
26	566447.96	4492542.34	1440.74	Н	58	59	5.80	307	85	189	80	310	80		
27	566414.28	4492505.03	1441.49	0	64	58	6.40	158	79	059	80	155	52		

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No.	Easting	Northing	Elevation	Location	RQD	RMR	Q	Joint se	et 1	Joint se	t 2	Joint se	et 3	Joint s	et 4
				(Note 1)				Az.	Dip	Az.	Dip	Az.	Dip	Az.	Dip
28	566521.36	4492550.14	1441.79	Н	54	63	5.40	084	90	218	82	228	17		
29	566507.11	4492459.22	1444.34	Н	78	72	7.80	145	78	075	57	296	65		
30	566587.42	4492496.06	1446.47	Н	56	58	5.50	345	85	018	25	066	72		
31	566558.73	4492512.33	1442.78	Н	72	55	7.20	204	20	035	55	060	82		
32	566612.81	4492536.72	1444.41	Н	78	67	10.40	081	88	348	72	168	30		
33	566513.75	4492720.99	1434.29	F	48	53	4.80	162	88	265	72	069	56		
34	566474.44	4492678.52	1424.96	F	49	45	4.90	007	82	114	86	164	55		
35	566432.39	4492695.62	1426.17	F	46	53	3.68	002	74	214	55	018	48	058	52
36	566430.75	4492711.38	1426.88	F	76	67	10.13	039	55	202	30	105	90		
37	566484.63	4492650.86	1423.87	F	72	68	5.76	054	86	089	80	225	30	335	68
38	566470.89	4492580.48	1425.48	F	86	72	8.60	105	88	329	78	115	09		
39	566463.79	4492558.21	1425.81	F	78	69	6.86	003	85	287	87	117	36		
40	566489.98	4492551.39	1426.67	F	66	63	6.60	302	88	236	52	250	82		
41	566506.74	4492590.81	1426.75	F	100	85	10.00	325	85	094	82	288	62		
42	566443.69	4492565.18	1428.02	0	58	68	5.80	039	56	314	70	174	32		
43	566410.72	4492572.48	1430.75	0	49	63	4.90	095	85	189	66	035	64		
44	566419.72	4492545.76	1426.81	0	37	53	3.20	225	68	348	82	136	12		
45	566421.83	4492532.21	1427.01	0	74	69	7.40	202	71	008	78	072	85		
46	566457.78	4492679.12	1407.33	F	76	69	7.60	332	84	042	53	195	59		
47	566472.11	4492612.61	1407.93	F	52	66	6.93	313	85	258	56	095	64		
48	566490.62	4492549.63	1409.07	0	48	53	3.84	338	86	079	62	019	45	233	60
49	566452.19	4492527.55	1409.19	0	70	77	7.00	333	78	275	90	110	15		
50	566431.63	4492513.77	1409.38	0	54	55	5.40	337	80	100	85	133	15		
51	566473.75	4492491.09	1409.67	0	64	61	6.40	325	78	125	88	167	08		
52	566662.63	4492476.76	1458.07	Н	62	55	10.23	049	53	146	90	298	22		
53	566728.73	4492455.46	1514.65	Н	48	53	4.80	092	90	328	85	166	22		
54	566776.65	4492483.79	1513.25	Н	38	53	3.80	352	68	183	58	282	90		

Note 1:H = Hanging Wall, O = Ore body, F = Foot Wall

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# Appendix B: JORC Code, 2012 Edition – Table 1

## Section 1 Sampling Techniques and Data

(Criteria in this section apply to all succeeding sections.)

Criteria	JORC Code explanation	Commentary
Sampling techniques	<ul> <li>Nature and quality of sampling (eg cut channels, random chips, or specific specialised industry standard measurement tools appropriate to the minerals under investigation, such as down hole gamma sondes, or handheld XRF instruments, etc). These examples should not be taken as limiting the broad meaning of sampling.</li> <li>Include reference to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used.</li> <li>Aspects of the determination of mineralisation that are Material to the Public Report.</li> <li>In cases where 'industry standard' work has been done this would be relatively simple (eg 'reverse circulation drilling was used to obtain 1 m samples from which 3 kg was pulverised to produce a 30 g charge for fire assay'). In other cases more explanation may be required, such as where there is coarse gold that has inherent sampling problems. Unusual commodities or mineralisation types (eg submarine nodules) may warrant disclosure of detailed information.</li> </ul>	<ul> <li>The majority of the geological information for Gadir was obtained from diamond core drilling (DD). Both surface (60 drillholes) and underground (342 drillholes) drilling has been completed, for a drilling total of 37,970 m.</li> <li>In addition, 8,786 channel samples (CH) have been analysed, with a total length of 8,645 m. Channel sample length is typically 1 m, with a width of 10 cm and a depth of 5 cm. Samples are obtained with use of a grinding machine.</li> <li>Chip sampling is undertaken for grade control purposes but is not captured in the drillhole database nor databases planned for resource estimation.</li> <li>Full core was split (HQ and NQ only) longitudinally 50% using a rock diamond saw and half-core samples were taken at typically 1 metre intervals or to rock contacts if present in the core run for both mineralisation and wall rock. The drill core was rotated prior to cutting to maximise structure to core axis of the cut core. BQ material is whole-core sampled.</li> <li>To ensure representative sampling, diamond drill core was marked considering mineralisation and alteration intensity, after ensuring correct core run marking with regards to recovery.</li> <li>Sampling of DD and CH material was systematic and unbiased.</li> <li>Diamond drill sample target weight is 2-3.5 kg prior to laboratory processing. Fire Assay (FA) analysis is carried out at the onsite laboratory by Atomic Absorption Spectroscopy (AAS) – 25 g charges are used for Au analysis whilst 10 g charges are used for Ag, Cu and Zn analysis for underground core. Exploration (i.e. surface) DD core used 50 g charges.</li> <li>Channel samples typically weigh between 10-20 kg prior to laboratory processing.</li> </ul>





Criteria	JORC Code explanation	Commentary
		<ul> <li>Charges for Au assaying weigh 25 g whilst 10 g charges are used for Ag, Cu and Zn analysis.</li> <li>Handheld XRF (model THERMO Niton XL3t) was used to assist with mineral identification during field mapping and core logging procedures.</li> </ul>
Drilling techniques	Drill type (eg core, reverse circulation, open-hole hammer, rotary air blast, auger, Bangka, sonic, etc) and details (eg core diameter, triple or standard tube, depth of diamond tails, face-sampling bit or other type, whether core is oriented and if so, by what method, etc).	<ul> <li>DD accounts for 80% of the material drilling used within the Gadir resource and comprises of HQ, NQ and BQ core. During the exploration and development phases, DD was completed from both surface and underground. Infill DD was then completed from underground locations.</li> <li>The majority of the core drilled from the surface was either HQ (63.5 mm) or NQ (47.6 mm) in diameter. Underground drilling was completed using NQ or BQ (36.5 mm diameter) standard tubes.</li> <li>Drillcore was not orientated due to technological limitations in-country.</li> </ul>
Drill sample recovery	<ul> <li>Method of recording and assessing core and chip sample recoveries and results assessed.</li> <li>Measures taken to maximise sample recovery and ensure representative nature of the samples.</li> <li>Whether a relationship exists between sample recovery and grade and whether sample bias may have occurred due to preferential loss/gain of fine/coarse material.</li> </ul>	<ul> <li>Core recovery was recorded at site, verified at the core yard and subsequently entered into the database. Recovery for mineralised sections was generally very good (in excess of 95%) and over the length of the hole was typically &gt; 90%. Recovery measurements were poorer in fractured and faulted rocks, weathered zones or dyke contacts – in these zones average recovery was 85%.</li> <li>From visual inspection of the data, the consultant deemed the core recovery to be good and not have introduced bias into the subsequent sampling.</li> <li>Work to date has not identified a relationship between grade and sample or core recovery. However, in core drilling, losses of fines is believed to result in lower gold grades due to washout in fracture zones. This is likely to result in an underestimation of grade, which will be checked during production.</li> </ul>
Logging	Whether core and chip samples have been geologically and geotechnically logged to a level of detail to support appropriate Mineral Resource estimation, mining studies and metallurgical studies.	<ul> <li>All historic and current drill core was logged in detail for lithology, alteration, mineralisation, geological structure and oxidation state by AIMC geologists, utilising logging codes and data sheets as supervised by the Competent Person ("CP"). Data was captured on paper and manually entered into the database.</li> </ul>





Criteria	JORC Code explanation	Commentary
	<ul> <li>Whether logging is qualitative or quantitative in nature. Core (or costean, channel, etc) photography.</li> <li>The total length and percentage of the relevant intersections logged.</li> </ul>	<ul> <li>Logging was considered sufficient to support Mineral Resource estimation, mining studies and metallurgical studies.</li> <li>Rock Quality Designation (RQD) data was recorded for all core drilling for geotechnical purposes. Fracture intensity, style, fracture-fill and fragmentation proportion data was also collected for geotechnical analysis.</li> <li>An independent geotechnical assessment was completed by the environmental engineering company CQA International Limited to support operations and to provide supplementary information for this resource evaluation.</li> <li>DD and CH logging was both quantitative and qualitative in nature.</li> <li>All core was photographed in the core boxes to show the core box number, core run markers and a scale. All channel samples/faces were sketched prior to cutting.</li> <li>The entire length of each drillhole (DD &amp; CH) was logged in full, so 100% of the relevant intersections were logged.</li> </ul>
Sub-sampling techniques and sample preparation	<ul> <li>If core, whether cut or sawn and whether quarter, half or all core taken.</li> <li>If non-core, whether riffled, tube sampled, rotary split, etc and whether sampled wet or dry.</li> <li>For all sample types, the nature, quality and appropriateness of the sample preparation technique.</li> <li>Quality control procedures adopted for all subsampling stages to maximise representivity of samples.</li> <li>Measures taken to ensure that the sampling is representative of the in situ material collected, including for instance results for field duplicate/second-half sampling.</li> <li>Whether sample sizes are appropriate to the grain size of the material being sampled.</li> </ul>	<ul> <li>HQ and NQ full core was split longitudinally in half by using a diamond-blade core saw. The core saw is a 'CM501' manufactured by Norton Clipper and the blades from the 'GSW' series manufactured by Lissmac.</li> <li>Full core of BQ size was sampled and as such, only coarse reject and pulp rejects were retained.</li> <li>Samples of one half of the HQ/NQ core were taken, typically at 1 metre intervals, whilst the other half was retained as reference core in the tray prior to storage. If geological features or contacts warranted adjustment of the interval, then the intersection sampled was reduced to confine these features. The drill core was rotated prior to cutting to maximise structure to axis of the cut core — cut lines were drawn on during metre-marking.</li> <li>All underground faces are marked-up by the supervising underground geologist, constrained within geological and mineralised boundaries. Subsequent CH sample acquisition was carried out with a rock hammer (either hand-held or Bosch power tool) and grinding machines. Samples are collected in calico bags as per AIMC's</li> </ul>





Criteria	JORC Code explanation	Commentary
		face sampling procedure. Typical sample masses range between 10-20 kg.  The procedure involves cutting a linear channel across the vein or orebody in order to obtain the most representative sample possible for the designated interval. CH samples are collected from the floors of the underground workings. When chip channel sampling is conducted along a rock face, of plastic sheeting is laid out for the material to fall on so as to avoid contamination. Sample intervals are 1-1.5 m, 10 cm in width and 5 cm deep. A face sheet with sketch, sample width, sample number(s) and locality are generated for each sampled face.  Samples are bagged with pre-numbered sample tickets and submitted with a sample submission form to the onsite laboratory. Underground CH samples have been used in the Mineral Resource estimate. Chip samples have not been used in the Mineral Resource estimate and are primarily used to provide guidance for mine-mill reconciliations  No sub-sampling of CH material needs to be carried out as the samples are deemed 'laboratory-ready' at the channel face. Samples were sent to the on-site laboratory for preparation and pulverised ready for routine AAS and check FA.  Both DD and CH samples were prepared according best practice, with initial geological control of the half core or CH samples, followed by crushing and grinding at the laboratory sample preparation facility that is routinely managed for contamination and cleanliness control.  Sampling practice is considered as appropriate for Mineral Resource Estimation.  Sample preparation at the laboratory is subject to the following procedure.  After receiving samples at the laboratory from the geology department, all samples are cross referenced with the sample order list. Any errors/omissions are to be followed-up and rectified.
		volatiles. Samples then head to crushing.  O Crushing - first stage - to -25mm size





Criteria	JORC Code explanation	Commentary
		<ul> <li>Crushing - second stage - to -10mm size</li> <li>Crushing - third stage - to -3mm size</li> <li>After crushing the samples are split and 150-250 g of material is taken for assay preparation (depending upon the drillhole type). The remainder is retained for reference.</li> <li>The material to be assayed is first pulverised to -75 μm prior to delivery to the assaying facility.</li> <li>The performance of the laboratory is monitored daily and at the end of the month when grade control samples are reconciled with mill production.</li> <li>Overall, the sampling practice was deemed by Datamine to be appropriate for Mineral Resource estimation purposes.</li> <li>Quality control procedures were used for all sub-sampling preparation. This included geological control over the core cutting, and sampling to ensure representativeness of the geological interval.</li> <li>Petrographic studies have identified the average Au particle size as being in the order of 5 μm. Sample sizes are therefore deemed appropriate.</li> </ul>
Quality of assay data and laboratory tests	<ul> <li>The nature, quality and appropriateness of the assaying and laboratory procedures used and whether the technique is considered partial or total.</li> <li>For geophysical tools, spectrometers, handheld XRF instruments, etc, the parameters used in determining the analysis including instrument make and model, reading times, calibrations factors applied and their derivation, etc.</li> <li>Nature of quality control procedures adopted (eg standards, blanks, duplicates, external laboratory checks) and whether acceptable levels of accuracy (ie lack of bias) and precision have been established.</li> </ul>	<ul> <li>Laboratory procedures, QA/QC assaying and analysis methods employed are industry standard. They are enforced and supervised by a dedicated laboratory team. AAS and FA techniques were utilised and as such, both partial and total analytical techniques were conducted.</li> <li>Handheld XRF (model THERMO Niton XL3t) was used to assist with mineral identified during field mapping and core logging procedures.</li> <li>The onsite laboratory has QA/QC protocols in place and uses an external control laboratory. Calibration of the analytical equipment in the laboratory is considered to represent best practice.</li> <li>Comparing the grade control results and mill performance is a qualitative index of performance - there was good overall quarterly reconciliation between grade control results and the mill for Gadir material.</li> </ul>





Criteria	JORC Code explanation	Commentary						
		Material drillh impacted on samples were mine-mill reco was considere by Datamine.  • QA/QC proced certified stand Research & Exlaboratory co replicate samp accuracy of as:  • A total of 101 duplicates were	d to these drillings a coles include only those the interpretation of not considered mat not considered mat not considered mat not at the appropriate of the dures included the unlards or certified references. This QA/QC systems are assayed for CH sames as assigned to the coles.	se completed the overall gerial as these for resource as of field due ence mater say Standards dipulp dupling allowed for eposit.  assayed at value and 86 for pulps and 86 for the complete say standards and 86 for pulps and 86 for pulps and 86 for pulps and 86 for the complex and 86 for the comple	by DD or CH geometry of the were predothe QA/QC cand reserve established and reserve established estab	methods as these he resource. Chip minantly used for rried out for Gadir timation purposes C samples, blanks, from OREAS ("Ore in addition to the e duplicates, and ng of precision and anges. Fifteen pulp		
			Ore Grade	Au (from)	Au (to)			
			Designation	g/t	g/t			
			Very Low (VL)	0.00	0.30			
			Low	0.30	1.00			
			Medium (MED)	1.00	2.00			
			High	2.00	5.00			
			Very High (V HIGH)	5.00	+			
		Summary results from the pulp duplicates are presented in the accompandation of the following services are presented in the accompandation of the following services are presented in the accompandation of the following services are presented in the accompandation of the following services are presented in the accompandation of the following services are presented in the accompandation of the following services are presented in the accompandation of the following services are presented in the accompandation of the following services are presented in the accompandation of the following services are presented in the accompandation of the following services are presented in the accompandation of the following services are presented in the accompandation of the following services are presented in the accompandation of the following services are presented in the following services are presented as a service services are presented as a service services are presented as a service service services are presented as a service service services are presented as a service services are presented as a service service services are presented as a service service services are presented as a service service service service services are presented as a service service service service services are presented as a service service service services are presented as a service service service services are presented as a service service service service services are presented as a service service service services are presented as a service service service service services are presented as a service service service service services are presented as a service service service service service service services are presented as a service service service service service service services are presented as a service ser						





Criteria	JORC Code explanation	Commentary										
			<ul> <li>The following CRMs were used for QA/QC control purposes as part of resource run:</li> </ul>									
			CRI	M Descriptio	n and target g	grade(s)						
		Ore Grade Designation	Nama	Au	Ag	Cu	Zn					
		2 30.8	Name	g/t	g/t	%	%					
		Very Low	CRM 22_OREAS 501	0.21	0.44	0.28	0.01					
		Very Low	CRM 30_OREAS 600	0.19	24.31	0.05	0.06					
			CRM 32_OREAS 905	0.40	0.52	0.16	0.01					
		Low	CRM 23_OREAS 502c	0.48	0.80	0.78	0.01					
		LOW	CRM 17_OREAS 502b	0.49	2.01	0.76	0.01					
			CRM 20_OREAS 620	0.67	38.40	0.18	3.12					





Criteria	JORC Code explanation	Commentary					
			CRM 2_OREAS 503b	0.69	1.46	0.52	0.01
			CRM 31_OREAS 601	0.77	49.41	0.10	0.13
			CRM 16_OREAS 623	0.80	20.40	1.72	1.01
			CRM 12_OREAS 59d	0.80	-	1.47	-
			CRM 15_OREAS 701	1.07	1.11	0.48	0.03
		Medium	CRM 27_OREAS 253	1.22	0.25	0.01	-
		Wicarani	CRM 19_OREAS 621	1.23	68.00	0.37	5.17
			CRM 13_OREAS 604	1.43	492.00	2.16	0.25





Criteria	JORC Code explanation	Commentary					
			CRM 7_OREAS 504b	1.56	2.98	1.10	0.01
			CRM 3_OREAS 16a	1.81	-	-	-
			CRM 11_OREAS 602	1.95	114.88	0.52	0.41
			CRM 24_OREAS 60d	2.43	4.45	0.01	0.00
			CRM 4_OREAS 60c	2.45	4.81	0.01	0.01
		High	CRM 28_OREAS 2.50 254	0.40	0.01	-	
			CRM 9_OREAS 214	2.92	-	-	-
			CRM 10_OREAS 17c	3.04	-	-	-
			CRM 6_OREAS 61e	4.51	5.37	0.01	0.00





Criteria	JORC Code explanation	Commentary	Commentary					
			CRM 25_OREAS 61f	4.53	3.61	0.00	-	
			CRM 14_OREAS 603	5.08	292.92	1.01	0.91	
		Very High	CRM 5_OREAS 62c	9.37	9.86	-	-	
			CRM 29_OREAS 257	13.96	2.17	0.01	-	
		CRMs (see underestima bias fell just  The same e results can k  Production have been u	of average Au grade Report) showed a ating the grade, nota outside of 0.1 g/t and xercise was also con be viewed in the Reso reconciliations betwee sed as an additional of the QA/QC was	general bi bly for 'Very d so is reason ducted for a burce Report een mined g resource to	as towards t High' material nable. Ag, Cu and Zr rades and ass validate metal	he onsite l; however, n CRM assa ays correla content.	laboratory overall the ays and the te well and	
Verification of sampling and assaying	<ul> <li>The verification of significant intersections by either independent or alternative company personnel.</li> <li>The use of twinned holes.</li> <li>Documentation of primary data, data entry procedures, data verification, data storage</li> </ul>	personnel w Mining Dep	ntersections were rithin the manageme artments of AIMC. Ir	nt structure ntersections	of the Exploration of the Explor	tion and Ur by the ged	nderground plogists and	





Criteria	JORC Code explanation	Commentary
	(physical and electronic) protocols.  • Discuss any adjustment to assay data.	<ul> <li>independent verification was carried out as part of the due diligence for resource estimation by Datamine personnel. Assay intersections were cross-validated with visual drillcore intersections (i.e. photographs).</li> <li>No twinning of drillholes was carried out at Gadir however extensive underground development has confirmed the overall grade and geological interpretation based on the drillholes.</li> <li>Data entry is supervised by a data manager. Verification and checking procedures are in place. The format of the data is appropriate for direct import into Datamine® software. All data is stored in electronic databases within the geology department and backed up to the secure company electronic server that has restricted access.</li> <li>Four main files are created per hole, relating to its 'collar' details, 'survey' data, 'assay' results and logged 'geology'. Laboratory data is loaded electronically by the laboratory department and validated by the geology department. Any outliers or anomalous assays are resubmitted.</li> <li>Prior to commencement of mining at Gadir, all samples from the surface exploration campaign that intersected mineralisation was sent for external assay at ALS-OMAC in Ireland. This laboratory is currently the preferred company to carry out external assaying for AIMC.</li> <li>Independent validation of the database was carried out as part of the resource model generation process where all data was checked for errors, missing data, misspelling, interval validation and management of zero versus 'no data' entries.</li> <li>All databases were considered accurate for the Mineral Resource Estimate.</li> <li>No adjustments were made to the assay data. The quality of the QA/QC is considered adequate for resource estimation purposes.</li> </ul>
Location of data points	<ul> <li>Accuracy and quality of surveys used to locate drill holes (collar and down-hole surveys), trenches, mine workings and other locations used in Mineral Resource estimation.</li> <li>Specification of the grid system used.</li> </ul>	• The surface mine area was recently (2017) surveyed by a high-resolution drone survey. Five topographic base stations were installed and accurately surveyed using high precision GPS that was subsequently tied into the local mine grid using ground-based total station surveying (utilising the LEICA TS02) equipment. All





Criteria	JORC Code explanation	Commentary
	Quality and adequacy of topographic control.	<ul> <li>drillhole collars were then surveyed using the Leica apparatus.</li> <li>In 2018, new survey equipment was purchased to be used for precision surveying of drill holes, trenches and workings. This apparatus comprises two Trimble R10s, Model 60 and accessories.</li> <li>Equipment used for underground surveying comprises a Leica TCR407 7" Total Station and a GeoSLAM GS-610090.</li> <li>Downhole surveying was carried out on HQ and NQ drillholes utilising a Reflex EZ-TRAC magnetic and gravimetric multi-shot instrument, at a downhole interval of 9 m (after an initial collar shot at 3 m). Downhole surveying was not carried out on BQ holes.</li> <li>The grid system used for the site is Universal Transverse Mercator 84 WGS Zone 38T (Azerbaijan)</li> <li>The level of topographic and survey control was deemed adequate for the purposes of resource modelling by Datamine.</li> </ul>
Data spacing and distribution	<ul> <li>Data spacing for reporting of Exploration Results.</li> <li>Whether the data spacing and distribution is sufficient to establish the degree of geological and grade continuity appropriate for the Mineral Resource and Ore Reserve estimation procedure(s) and classifications applied.</li> <li>Whether sample compositing has been applied.</li> </ul>	<ul> <li>On surface and underground, collar spacing averaged 20 m over the main mineralised zone and 50 m on the periphery of the resource. Fan-drilling was also carried out around some underground collar sites to test mineralisation at depth.</li> <li>The data spacing and distribution (20 x 20 metre grid) over the mineralised zones was deemed to be sufficient to establish the degree of geological and grade continuity appropriate for the Mineral Resource and Ore Reserve estimation procedures and classifications applied. The depth and spacing was considered appropriate for defining geological and grade continuity as required for a JORC Mineral Resource estimate.</li> <li>Extensive underground development has tested and confirmed the existing drillhole data and spacing was sufficient to establish grade and geological continuity. The available drill data spacing represents industry best-practice.</li> <li>Compositing to 1 metre intervals was applied. Residual intervals (&lt; 0.5 m) were</li> </ul>





Criteria	JORC Code explanation	Commentary
		appended to the previous composite interval.
Orientation of data in relation to geological structure	<ul> <li>Whether the orientation of sampling achieves unbiased sampling of possible structures and the extent to which this is known, considering the deposit type.</li> <li>If the relationship between the drilling orientation and the orientation of key mineralised structures is considered to have introduced a sampling bias, this should be assessed and reported if material.</li> </ul>	<ul> <li>Detailed surface mapping, subsequent drilling and underground development enabled the deposit characteristics to be understood.</li> <li>CH samples were obtained where mineralisation was intersected. Orientation of the channels was dependent upon the orientation of the drive and face being sampled.</li> <li>Overall, orientation of drilling and sampling was as perpendicular to mineralisation as was practicable.</li> <li>Given the geological understanding and the application of the drilling grid orientation, grid spacing and vertical drilling, no orientation-based sample bias was identified in the data that resulted in unbiased sampling of structures considering the deposit type.</li> </ul>
Sample security	The measures taken to ensure sample security.	<ul> <li>Regarding drill core: each drill site was supervised by an experienced geologist. The drill core was placed into wooden or plastic core boxes (sized specifically for the core diameter) at the drill site. Once a box was filled, a wooden/plastic lid was fixed to the box to ensure there was no spillage. Core box number, drillhole I.D. and from/to metres were written on both the box and the lid. The core was then transported to the core storage area and logging facility, where it was received and logged into a data sheet. Core logging, cutting and sampling took place at the secure core management area. The core samples were bagged with labels both in and on the bag, and data recorded on a sample sheet. The samples were transferred to the laboratory, where they were registered as received, for laboratory sample preparation works and assaying. Hence, a chain of custody procedure was followed from core collection to assaying and storage of reference material.</li> <li>All samples received at the core facility were logged in and registered with the completion of an "act". The act was signed by the drilling team supervisor and core facility supervisor (responsible person). All core is photographed, subjected to</li> </ul>





Criteria	JORC Code explanation	Commentary
		<ul> <li>geotechnical logging, geological logging, samples interval determinations, bulk density, core cutting, and sample preparation (each size of fragments 3-5 cm).</li> <li>CH and DD samples were weighed, and a Laboratory Order prepared after cutting was complete (CH samples were prepared underground at the face). This was signed by the core facility supervisor prior to release to the laboratory. On receipt at the laboratory, the responsible person countersigned the order acknowledging full delivery of the samples.</li> <li>After assaying all reject duplicate samples were received from laboratory to core facility (again recorded on the act). All reject samples were placed into boxes referencing the sample identities and stored in the core facility.</li> <li>In the event of external assaying, AIMC utilised ALS-OMAC in Ireland. Samples selected for external assay were recorded on a data sheet and sealed in appropriate boxes for shipping by air freight. Communication between the geological department of AIMC and ALS occurs to monitor the shipment from despatch, through customs clearance, and upon receipt of samples. Results were sent electronically by ALS and loaded to the Company database for study.</li> </ul>
Audits or reviews	The results of any audits or reviews of sampling techniques and data.	<ul> <li>Reviews on sampling and assaying techniques were conducted for all data internally and externally (by Datamine) as part of the resource and reserve estimation validation procedure. No concerns were raised as to the procedures or the data results. All procedures were considered industry standard and well conducted. Datamine identified no material issues that would prevent Gadir from reporting Measured, Indicated and Inferred Mineral Resources.</li> </ul>





# Section 2 Reporting of Exploration Results

(Criteria listed in the preceding section also apply to this section.)

Criteria	JORC Code explanation	Commentary
Mineral tenement and land tenure status	<ul> <li>Type, reference name/number, location and ownership including agreements or material issues with third parties such as joint ventures, partnerships, overriding royalties, native title interests, historical sites, wilderness or national park and environmental settings.</li> <li>The security of the tenure held at the time of reporting along with any known impediments to obtaining a licence to operate in the area.</li> </ul>	<ul> <li>The Gedabek open pit project is located within a licence area ("Contract Area") that is governed under a Production Sharing Agreement ("PSA"), as managed by the Azerbaijan Ministry of Ecology and Natural Resources ("MENR").</li> <li>The PSA grants the Company a number of 'time periods' to exploit defined Contract Areas, as agreed upon during the initial signing. The period of time allowed for early-stage exploration of the Contract Areas to assess prospectivity can be extended if required.</li> <li>A 'development and production period' commences on the date that the Company issues a notice of discovery, which runs for 15 years with two extensions of five years each at the option of the Company. Full management control of mining in the Contract Areas rests with AIMC.</li> <li>The Gedabek Contract Area, incorporating the Gadir underground mine, currently operates under this title.</li> <li>Under the PSA, AAM is not subject to currency exchange restrictions and all imports and exports are free of tax or other restriction. In addition, MENR is to use its best endeavours to make available all necessary land, its own facilities and equipment and to assist with infrastructure.</li> <li>The deposit is not located in any national park.</li> <li>At the time of reporting no known impediments to obtaining a licence to operate in the area exist and the Contract Area agreement is in good standing.</li> </ul>
Exploration done by other parties	<ul> <li>Acknowledgment and appraisal of exploration by other parties.</li> </ul>	<ul> <li>The Gadir deposit was discovered in 2012 by AIMC geologists. As such, previous exploration has not been carried out by other parties specific to this deposit.</li> <li>During 2012, exploration carried out by AIMC uncovered an outcrop of rhyolite displaying intense silica and potassic alteration on the northwestern flank of the</li> </ul>





Criteria	JORC Code explanation	Commentary
		<ul> <li>Gedabek operation (about 400 m from the Gedabek open pit). Samples were assayed and returned grade and so they were followed-up with an exploration drillhole.</li> <li>A downhole intersection grading 24m at 2.9 g/t Au was returned for this hole, justifying further exploration and project development.</li> <li>The following work was further completed to define Gadir:         <ul> <li>Detailed geological and structural mapping (1:5,000 and 1:1,000 scale; 2012-2015)</li> <li>Rock chip sampling (650 samples)</li> <li>Trenching (5 trenches totalling 200 m length and 160 samples)</li> <li>Soil geochemistry study (1,473 samples; 2014)</li> <li>Various HQ &amp; NQ surface drill campaigns (2013 - present day)</li> <li>Underground NQ &amp; BQ drill campaigns (2015 - present day)</li> </ul> </li> </ul>
Geology	Deposit type, geological setting and style of mineralisation.	<ul> <li>The Gadir Au-Ag-Cu-Zn deposit is located in the Gedabek Ore District of the Lesser Caucasus in NW Azerbaijan, adjacent to the city of Gedabay and 48 km west of the city of Ganja. Gadir is characterised as a low-sulphidation (LS) epithermal system.</li> <li>The portal to Gadir was independently located on Google Earth at latitude 40°58'59.21"N and longitude 45°79'03.54"E and tunnelled into the flanks of Yogundag Mountain.</li> <li>The Gadir ore deposit is located within the large Gedabek-Garadag volcanic-plutonic system. This system is characterised by a complex internal structure indicative of repeated tectonic movement and multi-cyclic activity. Yogundag Mountain is a porphyry-epithermal zone, with known deposits in the area (e.g. Gadir, Gedabek, Umid and Zefer) believed to represent the upper portion of the mineralising system.</li> <li>The Gadir orebody has a complicated geological structure and hosts intrusive rocks of different ages and compositions. Three sets of regional fault zones controlling mineralisation have been identified and are characterised on the basis of strike</li> </ul>





Criteria	JORC Code explanation	Comm	entary				
		<ul> <li>The lens</li> <li>Var alte the</li> <li>Mir con</li> </ul>	NE-trending fa Gadir ore-control Local transverse drilling identified ses within an area ious forms of hyderation (+ chlorite/ eration (+ clay mineration or units as well volcanic units as well deralisation primar taining base met	faults (e.g. Gedaults (e.g. Gedaults) e faults a series of verof approximate rothermal alterate epidote) is observals) is found in vell as the centrally exploited at als of Cu and	eristics: Tabek-Bittibulag Decapes Fault, Tically stacked, show the served in the andes of the wall rocks and al part of the deposite Au-Ag fro Zn. The main oresite and trace galer	Gerger-Arykhda allow-dipping m over about 150 occur at Gadir. sitic tuff formatic silicification is co sit. m a polymetallic e minerals are s	ineralised m height. Propylitic on. Argillic ommon in
Drill hole Information	A summary of all information material to the understanding of the exploration results including a tabulation of the following information for all				drilling completed endix B in the Res		. Material
	Material drill holes:		Purpose	<b>Drillhole Type</b>	Number of Holes	Total Length (m	1)
	o easting and northing of the drill hole collar		Surface	DD	60	22,458	
	<ul> <li>elevation or RL (Reduced Level – elevation above sea level in metres) of the drill hole collar</li> </ul>		Un de noncessa d	DD	342	15,512	
	o dip and azimuth of the hole		Underground	CH	-	8,645	
<ul> <li>down hole length and interception depth</li> </ul>		TOTAL DRILLING		402	46,615		
	<ul> <li>hole length.</li> <li>If the exclusion of this information is justified on the basis that the information is not Material and this exclusion does not detract from the understanding of the report, the Competent Person should clearly explain why this is the case.</li> </ul>	pur	poses and have no database contain	ot been included	rovide guidance fo l as part of this Mir elated to geological	neral Resource es	stimation.





Criteria	JORC Code explanation	Commentary
Data aggregation methods	<ul> <li>In reporting Exploration Results, weighting averaging techniques, maximum and/or minimum grade truncations (eg cutting of high grades) and cut-off grades are usually Material and should be stated.</li> <li>Where aggregate intercepts incorporate short lengths of high grade results and longer lengths of low grade results, the procedure used for such aggregation should be stated and some typical examples of such aggregations should be shown in detail.</li> <li>The assumptions used for any reporting of metal equivalent values should be clearly stated.</li> </ul>	<ul> <li>Drilling results were reported using intersection intervals based on an Au grade &gt; 0.3 g/t and internal waste ≥ 1 m thickness. Grades of both Au and Ag within the intersections were stated and the results presented to 2 decimal places.</li> <li>No data aggregation methods have been applied to the drillhole data for reporting of exploration results.</li> <li>No metal equivalent values have been reported.</li> </ul>
Relationship between mineralisation widths and intercept lengths	<ul> <li>These relationships are particularly important in the reporting of Exploration Results.</li> <li>If the geometry of the mineralisation with respect to the drill hole angle is known, its nature should be reported.</li> <li>If it is not known and only the down hole lengths are reported, there should be a clear statement to this effect (eg 'down hole length, true width not known').</li> </ul>	<ul> <li>Overall orientation of drilling and sampling is as perpendicular to the orebody as is practicable. The geometry of the Gadir orebody has been deemed to be suitably tested and confirmed with surface and underground drilling, as well as underground development.</li> <li>A good correlation exists between the mineralisation widths, intercept lengths and orebody modelling and this has been tested and proven through development intersections</li> <li>Given the geological understanding and the application of the drilling grid orientation and grid spacing, along with underground development, no orientation-based sample bias has been identified in the data that resulted in unbiased sampling of structures considering the deposit type.</li> <li>All intercepts are reported as down-hole lengths.</li> <li>Grade control drilling is balanced with exploratory and target-testing programmes.</li> </ul>
Diagrams	Appropriate maps and sections (with scales) and tabulations of intercepts should be included for any significant discovery being reported. These should include, but not be limited to a plan view of drill hole collar locations and appropriate sectional views.	<ul> <li>Appropriate diagrams and sections have been included in the Mineral Resources report.</li> <li>Plans and sections are updated regularly onsite to reflect the latest information (e.g. underground development, geological interpretations). The AIMC Survey</li> </ul>





Criteria	JORC Code explanation	Commentary
		Department update working headings on a monthly basis in Surpac®.
Balanced reporting	Where comprehensive reporting of all Exploration Results is not practicable, representative reporting of both low and high grades and/or widths should be practiced to avoid misleading reporting of Exploration Results.	<ul> <li>Representative reporting of mineralisation styles and intervals has been previously reported by AAM via regulated news service (RNS) announcements on the London Stock Exchange (AIM), on the Company website or at conferences and roadshows.</li> <li>The report has been deemed balanced and reflects the views of both Datamine and the CP.</li> </ul>
Other substantive exploration data	Other exploration data, if meaningful and material, should be reported including (but not limited to): geological observations; geophysical survey results; geochemical survey results; bulk samples – size and method of treatment; metallurgical test results; bulk density, groundwater, geotechnical and rock characteristics; potential deleterious or contaminating substances.	<ul> <li>Additional information including photographs of the Gadir area can be viewed on the Anglo Asian Mining website: www.angloasianmining.com</li> <li>An independent geotechnical assessment was completed by CQA to support operations and to provide supplementary information for this resource evaluation. This assessment of Gadir involved carrying out a desk study, completion of fieldwork (e.g. assessing tunnel morphology and existing ground support, estimating water inflows) and then interpretation of the data. The results of this study and a copy of the report can be found in the Gadir Ore Reserves report.</li> </ul>
Further work	<ul> <li>The nature and scale of planned further work (eg tests for lateral extensions or depth extensions or large-scale step-out drilling).</li> <li>Diagrams clearly highlighting the areas of possible extensions, including the main geological interpretations and future drilling areas, provided this information is not commercially sensitive.</li> </ul>	<ul> <li>Further exploration and grade control drilling is planned at the Gadir deposit. The targets for this drilling include:         <ul> <li>Down-dip extension of the mineralisation</li> <li>Additional drilling chasing mineralisation along-strike</li> <li>Exploration drilling between Gadir and Gedabek</li> </ul> </li> <li>No diagrams to show future planned works are presented in this report as the information is commercially sensitive.</li> </ul>





## Section 3 Estimation and Reporting of Mineral Resources

(Criteria listed in section 1, and where relevant in section 2, also apply to this section.)

Criteria	JORC Code explanation	Commentary
Database integrity	<ul> <li>Measures taken to ensure that data has not been corrupted by, for example, transcription or keying errors, between its initial collection and its use for Mineral Resource estimation purposes.</li> <li>Data validation procedures used.</li> </ul>	<ul> <li>The Gadir database is stored in Access® software. The data used for the Gadir resource was compiled from two different databases:         <ul> <li>the 'Exploration Database' – surface DD holes</li> <li>the 'UG database' – underground CH samples and DD holes</li> </ul> </li> <li>A dedicated database manager has been assigned to monitor all databases. Tasks include checking the data entered against the laboratory report and survey data.</li> <li>Geological data is entered by a geologist to ensure there is no confusion over terminology whilst laboratory assay data is entered by the data entry staff.</li> <li>A variety of manual and data checks are in place to check against human error of data entry.</li> <li>All original geological logs, survey data and laboratory results sheets are retained in a secure location in hard and soft copy format.</li> <li>It was noted by Datamine that the supplied Gadir database was not subjected to a full independent database audit prior to estimation as it was understood that the data were audited during upload.</li> <li>All data were imported to Datamine Studio RM® software and further validation processes completed. At this stage, any errors found were corrected.</li> <li>The validation procedures used include:         <ul> <li>Drillhole depths for the geology, survey and assay logs do not exceed the recorded drilled depth</li> <li>Dates are in the correct format and are correct</li> <li>Set limits (e.g. for northing, easting, assay values) are not exceeded</li> <li>Valid geology codes (e.g. lithology, alteration etc.) have been used</li> <li>Sampling intervals are checked for gaps and overlaps</li> </ul> </li> <li>After the data have been loaded into the database, the following checks are</li> </ul>





Criteria	JORC Code explanation	Commentary
		<ul> <li>carried out:         <ul> <li>Visual checks that collar locations are correct and compared with existing information (e.g. development wireframes)</li> <li>Visual checks of drillhole traces for unusual traces and comparing the actual drillhole strings against the planned strings</li> </ul> </li> <li>Hence there are several levels of control. This final point was also checked by Datamine prior to modelling.</li> </ul>
Site visits	<ul> <li>Comment on any site visits undertaken by the Competent Person and the outcome of those visits.</li> <li>If no site visits have been undertaken indicate why this is the case.</li> </ul>	<ul> <li>Datamine consultants developed and audited the Gadir Mineral Resource Block Model for the Gadir underground mine. Two Datamine engineers worked on the resources and reserves (one assigned to each project) and were able to verify work practice and procedures.</li> <li>Yerzhan Uzakbayev (Senior Resource Geologist; Datamine) visited Gadir for 9 days in August 2018 and worked on the Mineral Resources estimation.</li> <li>Aidar Kairbekov (Senior Mining Consultant; Datamine) visited Gadir for 5 days in October 2018 and worked on the Ore Reserves calculation.</li> <li>The CP is an employee of the company and as such has been actively in a position to be fully aware of all stages of the exploration and project development. The CP has worked very closely with the independent resource and reserve estimation staff of Datamine, both on site and remotely, to ensure knowledge transfer of the geological situation, to allow geological "credibility" to the modelling process.</li> </ul>
Geological interpretation	<ul> <li>Confidence in (or conversely, the uncertainty of) the geological interpretation of the mineral deposit.</li> <li>Nature of the data used and of any assumptions made.</li> <li>The effect, if any, of alternative interpretations on Mineral Resource estimation.</li> <li>The use of geology in guiding and controlling Mineral Resource estimation.</li> <li>The factors affecting continuity both of grade and</li> </ul>	<ul> <li>There is confidence in the overall interpretation of the Gadir mineral deposit. There is some geology and grade distribution uncertainty on the local scale however this is mitigated by close-spaced fan drilling at 15 m collar spacing as well as underground development information.</li> <li>The geological interpretation is considered robust. Geological data collection has included surface mapping, outcrop sampling, core drilling (surface and underground) and geotechnical assessment. This has amassed a significant amount of information for the deposit. Various software has been used to model</li> </ul>





Criteria	JORC Code explanation	Commentary
	geology.	<ul> <li>the deposit, including Leapfrog®, Surpac® and Datamine® packages.</li> <li>The geological team have worked in the licence area for many years and the understanding and confidence of the geological interpretation is considered high. Vitaly Khorst (Senior Underground Geologist; AIMC) was involved with geological interpretation and modelling of Gadir with Yerzhan Uzakbayev (Senior Resource Geologist; Datamine).</li> <li>No alternative geological interpretation of the mineral deposit exists at this time and so the Mineral Resources estimate is unaffected.</li> <li>The geology has guided the resource estimation, especially the structural control where, for example, faulting has defined "hard" boundaries to mineralisation. This deposit-scale structural orientation was used to control the drilling grid and resource estimation search ellipse orientations.</li> <li>Grade and geological continuity have been established by the extensive 3D data collection. Gadir has dimensions of about 500 metres by 400 metres and the continuity is well understood, especially in relation to structural effects.</li> <li>A geological interpretation of the Gadir orebody was completed utilising geological sections typically at spacing of about 5-10 metres. These interpretations were used to form a wireframe solid in Datamine Studio RM® that was subsequently used as the main domain/mineralised zone for resource estimation.</li> </ul>
Dimensions	The extent and variability of the Mineral Resource expressed as length (along strike or otherwise), plan width, and depth below surface to the upper and lower limits of the Mineral Resource.	<ul> <li>The footprint of the whole mineralisation zone is about 500 metres by 400 metres, with about 200 m overall thickness.</li> <li>The average surface elevation around Gadir is 1717.39 m RL. The maximum local RL is 1799.24 m and the minimum local RL is 1654.24 m.</li> <li>The elevation of the centre of the block model (within mineralisation) is 1436.89 m RL. The upper elevation of the block model (within mineralisation) is 1537.25 m RL and the lowest elevation is 1316.50 m RL. All measurements taken from the centre of the block.</li> <li>The elevation of the centre of the block model (including waste) is 1446.72 m RL.</li> </ul>





Criteria	JORC Code explanation	Commentary
		<ul> <li>The upper elevation of the block model (including waste) is 1796.50 m RL and the lowest elevation is 1202.75 m RL. All measurements taken from the centre of the block.</li> <li>The initial search orientations applied to the model related to the geometry of the orebody. A bearing of -35° and dip of -30° was applied.</li> </ul>
Estimation and modelling techniques	<ul> <li>The nature and appropriateness of the estimation technique(s) applied and key assumptions, including treatment of extreme grade values, domaining, interpolation parameters and maximum distance of extrapolation from data points. If a computer assisted estimation method was chosen include a description of computer software and parameters used.</li> <li>The availability of check estimates, previous estimates and/or mine production records and whether the Mineral Resource estimate takes appropriate account of such data.</li> <li>The assumptions made regarding recovery of byproducts.</li> <li>Estimation of deleterious elements or other nongrade variables of economic significance (eg sulphur for acid mine drainage characterisation).</li> <li>In the case of block model interpolation, the block size in relation to the average sample spacing and the search employed.</li> <li>Any assumptions behind modelling of selective mining units.</li> <li>Any assumptions about correlation between variables.</li> <li>Description of how the geological interpretation was used to control the resource estimates.</li> <li>Discussion of basis for using or not using grade cutting or capping.</li> </ul>	Gadir Resource Model is a sub-celled block model controlled by the geological domains. In addition, both hard boundaries and top-capping was used for all variables.





Criteria	JORC Code explanation	Commentary
	The process of validation, the checking process used, the comparison of model data to drill hole data, and use of reconciliation data if available.  The process of validation, the checking process used, the comparison of model data to drill hole data, and use of reconciliation data if available.	<ul> <li>Pass 1 – 16 minimum; 32 maximum</li> <li>Pass 2 – 10 minimum; 32 maximum</li> <li>Pass 3 – 3 minimum; 20 maximum</li> <li>The search was orientated along the plane of mineralisation. This correlated with the average orientation of the Au, Ag, Cu and Zn variography.</li> <li>The Mineral Resources Estimate was subsequently depleted for mining to the end of August 2018.</li> <li>No assumptions regarding the recovery of by-products were applied.</li> <li>No assumptions relating to deleterious elements or other non-grade variables of economic significance were applied.</li> <li>The parent cell size of the block model is 5 mX x 5 mY x 5 mZ. This cell size was derived from the extensive underground ore development, infill and grade control drilling, kriging efficiency and slope of regression analysis. A parent cell height of 5 m was deemed optimal for underground planning purposes.</li> <li>Waste blocking was also set to 5 x 5 x 5 m sizing.</li> <li>No selective mining unit assumptions were made.</li> <li>Available testwork indicated possible correlation between grade variables and bulk density data. The grade variables were modelled independently based on the Au domaining (the main revenue for the operation).</li> <li>Local knowledge of the mining area and the typical structures from exposures provided the bases for interpretation. This was used to create 3D solids. These solids were used to define hard boundaries during estimation, as observed and verified during mining operations.</li> <li>As part of the mining process, grade control drilling, truck sampling and process reconciliation forms part of the daily management of the operations. As such, extensive production data is available for comparison. The relative accuracy of the estimated resource compares well to the production data and the confidence in the estimate, given the amount of geological data, is considered high.</li> </ul>





Criteria	JORC Code explanation	Commentary
Moisture	Whether the tonnages are estimated on a dry basis	<ul> <li>The OK and IPD estimations were validated by:         <ul> <li>Visual comparison of sections and plans with block estimates and composite intervals.</li> <li>Statistical comparison of grade distributions for block estimates and declustered composites.</li> <li>Swath plots were created of block model estimates and declustered composites in x,y,z orientations for Au, Ag, Cu and Zn mineralisation.</li> </ul> </li> <li>These validations confirmed that there was a good correlation between declustered composites and declustered block model estimates. Instances of overestimation was not encountered during analysis.</li> <li>The estimation method is considered appropriate for the style of mineralisation and geometry of the mineralised zone.</li> <li>Tonnage was estimated on a dry basis.</li> </ul>
Cut-off parameters	<ul> <li>or with natural moisture, and the method of determination of the moisture content.</li> <li>The basis of the adopted cut-off grade(s) or quality parameters applied.</li> </ul>	<ul> <li>Grade continuity was assessed at a range of cut-offs between 0.1 g/t and 3.0 g/t Au in 0.1 g/t increments. A tonnage-grade table and graph were prepared based on these variable cut-off grades. Following interrogation of this data, a 0.5 g/t Au cut-off grade was applied for the Gadir deposit.</li> </ul>
Mining factors or assumptions	Assumptions made regarding possible mining methods, minimum mining dimensions and internal (or, if applicable, external) mining dilution. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider potential mining methods, but the assumptions made regarding mining methods and parameters when estimating Mineral Resources may not always be rigorous. Where this is the case, this should be reported with an explanation of the basis of the mining	<ul> <li>This resource estimation was carried out on mineralisation that is currently being mined via underground methods.</li> <li>The ore body is being worked using overhand stoping in the upper levels where the dip is steeper and room and pillar workings in the lower levels, where the dip is shallower.</li> <li>The workings are connected to the spiral decline by drifts. Ore intersections along these drives are sampled for grade evaluation. The vertical distance between drifts for both mining methods is 10 m.</li> <li>Mining dilution and mining dimensions are referenced in Section 4 (Estimation and</li> </ul>





Criteria	JORC Code explanation	Commentary
	assumptions made.	<ul> <li>Reporting of Ore reserves).</li> <li>The current mining and ore extraction methodologies are appropriate for the geological conditions. The efficiency of extraction may be increased by sub-level stopping where the ore body is sufficiently thick and continuous.</li> <li>Other mining factors are not applied at this stage.</li> <li>Mineral Resources are developed by ore drives which are sampled and thereafter the appropriate mining method confirmed.</li> </ul>
Metallurgical factors or assumptions	The basis for assumptions or predictions regarding metallurgical amenability. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider potential metallurgical methods, but the assumptions regarding metallurgical treatment processes and parameters made when reporting Mineral Resources may not always be rigorous. Where this is the case, this should be reported with an explanation of the basis of the metallurgical assumptions made.	heap leach pad and a run-of-mine dump leach facility.  Ore is blended with material from other AIMC operations to meet mill production targets. These targets therefore dictate the processing route the material follows.
Environmental factors or assumptions	Assumptions made regarding possible waste and process residue disposal options. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider the potential environmental impacts of the mining and processing operation. While at this stage the determination of potential environmental impacts, particularly for a greenfields project, may not always be well advanced, the status of early consideration of these potential environmental impacts should be	<ul> <li>The Gadir underground deposit is located in the Gedabek Contract Area where AIMC currently operates two other mines (both open pit).</li> <li>Approximately 20% of mine rock waste remains underground to be used primarily as stope-backfill material. The remainder is trucked to the surface waste dump.</li> <li>As part of the initial start-up, environmental studies and impacts were assessed and reported for Gedabek. This included the nature of process waste as managed in the tailings management facility ("TMF"). Other waste products are fully managed under the AIMC HSEC team, including disposal of mine equipment waste such as lubricants and oils).</li> </ul>





Criteria	JORC Code explanation	Commentary
	reported. Where these aspects have not been considered this should be reported with an explanation of the environmental assumptions made.	<ul> <li>CQA has carried out a study of production waste management, in addition to designing and supervising the construction of the TMF and its recent expansion. CQA have permanent representation at Gadir and conduct monitoring of their baseline environmental systems (e.g. in local waterways).</li> <li>No environmental assumptions were used during this estimation however they are discussed in Section 4 (Estimation and Reporting of Ore Reserves).</li> </ul>
Bulk density	<ul> <li>Whether assumed or determined. If assumed, the basis for the assumptions. If determined, the method used, whether wet or dry, the frequency of the measurements, the nature, size and representativeness of the samples.</li> <li>The bulk density for bulk material must have been measured by methods that adequately account for void spaces (vugs, porosity, etc), moisture and differences between rock and alteration zones within the deposit.</li> <li>Discuss assumptions for bulk density estimates used in the evaluation process of the different materials.</li> </ul>	<ul> <li>tested by AIMC from selected core samples, which comprised both mineralisation and waste rocks. The density was tested by rock type, extent of alteration and depth. The method used was hydrostatic weighing.</li> <li>Of the 1,818 samples, 292 density measurement samples were used to calculate the average density of the ore.</li> <li>The samples within the ore material had an average density of 2.8 t/m³ and the waste rock were assigned a density of 2.5 t/m³. These densities have been used for resource calculation.</li> </ul>
Classification	<ul> <li>The basis for the classification of the Mineral Resources into varying confidence categories.</li> <li>Whether appropriate account has been taken of all relevant factors (ie relative confidence in tonnage/grade estimations, reliability of input data, confidence in continuity of geology and metal values, quality, quantity and distribution of the data).</li> <li>Whether the result appropriately reflects the Competent Person's view of the deposit.</li> </ul>	<ul> <li>The Mineral Resource has been classified on the basis of confidence in the following criteria:         <ul> <li>AIMC have been involved with the development of the project, from exploration, construction, production and through to processing, since its discovery in 2012</li> <li>The nature and associated confidence in the interpretation of the mineralisation</li> <li>Proximity to existing underground workings</li> <li>DD and CH spacing and density</li> </ul> </li> </ul>





Criteria	JORC Code explanation	Commentary
		<ul> <li>DD and CH sampling density and average distance between samples informing the estimate</li> <li>The degree of interpolation versus extrapolation, as identified by the estimation pass</li> <li>The kriging efficiency and slope of regression of the final estimate</li> <li>The overall extents of the Gadir orebody – for example, areas supported by less than two drillholes (e.g. at the periphery) were reclassified as 'Exploration Potential'</li> <li>Depending on the estimation parameters (described above), the Gadir resources were classified as Measured, Indicated or Inferred Mineral Resources, as defined by the parameters below. Additional 'Exploration Potential', that fall outside Inferred parameters, have also been considered.</li> <li>Measured: Blocks estimated in search volume 1 with a minimum 16 samples (maximum of 32) and maximum of 5 per drillhole within 25 m of workings.</li> <li>Indicated: Blocks estimated in search volume 2 with a minimum 10 samples (maximum of 32) and maximum of 5 per drillhole outside of 25 m of workings or blocks estimated in search volume 2 with a minimum 15 samples (maximum of 32) and maximum of 5 per drillhole outside of 25 m of workings.</li> <li>Exploration Potential: Blocks estimated in search volume 3 with a minimum 5 samples (maximum of 20) and all the blocks estimated less than 5 samples or all other material not classified within the Resource Categories and parameters above.</li> <li>It is anticipated that material classified as 'Inferred' or 'Exploration Potential' may be upgraded with further drilling and sampling.</li> <li>The results reflect the CP's view of the deposit.</li> </ul>





Criteria	JORC Code explanation	Commentary
Audits or reviews	The results of any audits or reviews of Mineral Resource estimates.	<ul> <li>Datamine consultants have been involved with other mining projects owned by the Company within the same contract area as the Gadir underground mine and as such are familiar with the processing methods available, value chain of the mining and cost structure.</li> <li>The data used as part of this project were audited, validated and considered adequate for Mineral Resource estimates - all aspects of the data collection and management were observed and evaluated.</li> <li>Internal company and external reviews of the Mineral Resources yield estimates that are consistent with the Mineral Resource results.</li> </ul>
Discussion of relative accuracy/confidence	<ul> <li>Where appropriate a statement of the relative accuracy and confidence level in the Mineral Resource estimate using an approach or procedure deemed appropriate by the Competent Person. For example, the application of statistical or geostatistical procedures to quantify the relative accuracy of the resource within stated confidence limits, or, if such an approach is not deemed appropriate, a qualitative discussion of the factors that could affect the relative accuracy and confidence of the estimate.</li> <li>The statement should specify whether it relates to global or local estimates, and, if local, state the relevant tonnages, which should be relevant to technical and economic evaluation. Documentation should include assumptions made and the procedures used.</li> <li>These statements of relative accuracy and confidence of the estimate should be compared with production data, where available.</li> </ul>	<ul> <li>The relative accuracy of the Gadir Mineral Resource estimate is reflected in the applied Mineral Resource classification as per the JORC Code, 2012 Edition.</li> <li>Confidence is high due to successful development and production of the deposit since 2015. There is good reconciliation between mine and mill production grades.</li> <li>The August 2018 Gadir Mineral Resources classified as Measured and Indicated are considered local estimates of tonnage and grade. Areas classified as Inferred are considered to be a global estimate of tonnage and grade.</li> <li>Regions classified as Exploration Potential contain material that is not considered sufficiently well-defined, at this point in time, to allow mining operations to develop to these areas to extract the material without considerable risk. However, they are considered to be areas for future investigation – further drilling to increase geological confidence and sample/assay density will be able to confirm potential mineralisation.</li> <li>The Gadir Mineral Resources table (for Au only) is presented below, with an Au cut-off of 0.5 g/t and depleted for mining development and production up until August 2018:</li> </ul>





Criteria	JORC Code explanation	Commentar	Commentary				
			MINERAL RESOURCES	Tonnage	Go	old	
			(Cut-off grade 0.5 g/t Au)	kt	g/t	koz	
			Measured	540	3.70	64.2	
			Indicated	1,235	2.04	81.0	
			Measured + Indicated	1,775	2.54	145.2	
			Inferred	571	1.48	27.2	
			Total	2,347	2.29	172.4	
			Exploration	5	1.37	0.2	
		<ul> <li>Resource</li> <li>Production the estimate of miner compare</li> <li>The Miner factors, Infactors, Infactors</li> </ul>	es for Ag, Cu and Zn are proposed for Ag, Cu and Zn are proposed for block and the compares well to the given the amount of geological station, grade control as with the Resource model eral Resource Estimate (Au CP's opinion that the clastical knowledge of the orest commencement of explosions.	esented in the ck model com he production ogical data is conditional mining data.  I gust 2018) is consification has ebody and wear	main bod parison. T data, and onsidered ita will co onsidered taken int	y of the re he relative the confi high. Futu ontinue to appropria o account	eport. e accuracy of idence in the are extraction be used to attempt the CP. the all relevant





## **Section 4 Estimation and Reporting of Ore Reserves**

(Criteria listed in section 1, and where relevant in sections 2 and 3, also apply to this section.)

Criteria	JORC Code explanation	Comme	ntary					
Mineral Resource estimate for conversion to Ore Reserves	<ul> <li>Description of the Mineral Resource estimate used as a basis for the conversion to an Ore Reserve.</li> <li>Clear statement as to whether the Mineral Resources are reported additional to, or inclusive of, the Ore Reserves.</li> </ul>	<ul> <li>Refer to Section 3 (Estimation and Reporting of Mineral Resources) for more detailed information regarding the Gadir Mineral Resource estimate.</li> <li>The Ore Reserves calculation for Gadir was derived from the Gadir Mineral Resource estimate, dated 13<sup>th</sup> October 2018. The Model had a cut-off grade of 0.5 g/t Au applied and was depleted for mining development and production up until August 2018.</li> <li>The Resource Model assigns material to either Measured, Indicated or Inferred categories dependent upon variables discussed in Section 3 (Estimation and Reporting of Mineral Resources). The 'Exploration Potential' category includes mineralised material that falls outside of Inferred parameters.</li> <li>Four tables have been prepared for each estimated commodity showing tonnes &amp; grade, the contained metal by class and the percentage of metal by class. The resources from each model are presented below:</li> </ul>						
			MINERAL RESOURCES	Tonnage		Gold		
			(Cut-off grade 0.5 g/t Au)	kt	g/t	koz	% koz	
			Measured	540	3.70	64.2	37%	
			Indicated	1,235	2.04	81.0	47%	
			Measured + Indicated	1,775	2.54	145.2	84%	
			Inferred	571	1.48	27.2	16%	
			Total	2,347	2.29	172.4	100%	
			Exploration	5	1.37	0.2	-	





Criteria	JORC Code explanation	Comme	Commentary				
			MINERAL RESOURCES	Tonnage	Tonnage Silver		
				kt	g/t	koz	% koz
			Measured	540	17.49	303.6	36%
			Indicated	1,235	10.89	432.4	51%
			Measured + Indicated	1,775	12.90	736.1	88%
			Inferred	571	5.68	104.4	12%
			Total	2,347	11.14	840.4	100%
			Exploration	5	5.94	0.9	-
			MINERAL RESOURCES	Tonnage	Copper		
				kt	%	t	% t
			Measured	540	0.29	1,566	41%
			Indicated	1,235	0.14	1,729	45%
			Measured + Indicated	1,775	0.21	3,295	85%
			Inferred	571	0.10	571	15%
			Total	2,347	0.19	3,866	100%
			Exploration	5	0.09	2,470	-





Criteria	JORC Code explanation	Commentary						
		MINERAL RESOURCES		Tonnage		Zinc		
			WIINERAL RESOURCES	kt	%	t	% t	
			Measured	540	1.01	5,454	31%	
			Indicated	1,235	0.73	9,016	52%	
			Measured + Indicated	1,775	0.84	14,470	83%	
			Inferred	571	0.52	2,972	17%	
			Total	2,347	0.78	17,442	100%	
			Exploration	5	0.60	7,620	-	
	<ul><li>Only Reser</li></ul>	t due to rounding, number Resources defined to Nove Twe calculation to Proved Ore Reserve statement Twent.	Лeasured a and Probal	ind Indica ole for Gad	ted were o	, considered	l for Ore	
Site visits	<ul> <li>Comment on any site visits undertaken by the Competent Person and the outcome of those visits.</li> <li>If no site visits have been undertaken indicate why this is the case.</li> </ul>	Gadir underground mine. Two Datamine engineers worked on the resources			a position at The CP stimation fer of the			





Criteria	JORC Code explanation	Commentary
Study status	<ul> <li>The type and level of study undertaken to enable Mineral Resources to be converted to Ore Reserves.</li> <li>The Code requires that a study to at least Pre-Feasibility Study level has been undertaken to convert Mineral Resources to Ore Reserves. Such studies will have been carried out and will have determined a mine plan that is technically achievable and economically viable, and that material Modifying Factors have been considered.</li> </ul>	<ul> <li>Study undertaken to enable Mineral Resources to be converted to Ore Reserves was completed to Feasibility standard. As the mine has been operating for nearly four years, operating costs are well understood, with continuous data generated since commencement of mining, and with the geological data being generated from a tightly-spaced drilling grid. Extraction is reasonably justified and calculated to be economically mineable as of the modifying conditions reported.</li> <li>The ore will continue to be mined utilising the current mining fleet and will be processed in the current processing facilities of the Company which operates two other mines in the same Contract Area.</li> <li>The modifying factors used in conversion of Mineral Resources to Ore Reserves were based on reconciliation and observation of past mining and processing performance.</li> <li>A technically achievable mine plan that is economically viable has been designed taking into consideration the JORC resources and modifying factors.</li> <li>Confidence in the calculations and results is considered high.</li> <li>Extraction of ore from the Gadir mine will continue.</li> </ul>
Cut-off parameters	The basis of the cut-off grade(s) or quality parameters applied.	<ul> <li>Financial factors included in the COG estimates are mining, process and overhead costs, along with mining dilution, payable gold and silver prices and processing recovery.</li> <li>In 2018, AAM completed an exercise for estimation of various COGs based on agreed economic parameters with the Technical Services team. A "strategic" COG of 1.2 g/t Au was applied to the Resource Model during calculation of the Ore Reserves as established by AAM (break-even cut-off, "BECOG", plus a return on capital and margin).</li> <li>BECOG was calculated at 0.93 g/t Au.</li> <li>The COG was verified using a forecasted Au price, costs and metallurgical recoveries from the past financial year. A 1.2 g/t Au COG was applied to create</li> </ul>





Criteria	JORC Code explanation	Commentary
		initial stope shapes.
Mining factors or assumptions	<ul> <li>The method and assumptions used as reported in the Pre-Feasibility or Feasibility Study to convert the Mineral Resource to an Ore Reserve (i.e. either by application of appropriate factors by optimisation or by preliminary or detailed design).</li> <li>The choice, nature and appropriateness of the selected mining method(s) and other mining parameters including associated design issues such as pre-strip, access, etc.</li> <li>The assumptions made regarding geotechnical parameters (eg pit slopes, stope sizes, etc.), grade control and pre-production drilling.</li> <li>The major assumptions made and Mineral Resource model used for pit and stope optimisation (if appropriate).</li> <li>The mining dilution factors used.</li> <li>The mining recovery factors used.</li> <li>Any minimum mining widths used.</li> <li>The manner in which Inferred Mineral Resources are utilised in mining studies and the sensitivity of the outcome to their inclusion.</li> <li>The infrastructure requirements of the selected mining methods.</li> </ul>	<ul> <li>The 2018 Gadir Mineral Resources Block Model was used as the basis for stope and development design. No modifications were made to this model for mine design purposes.</li> <li>The modifying factors and assumptions used in the conversion of Mineral Resources to Ore Reserves were based on reconciliation and observation of past mining and processing performance, as Gadir has been in production since 2015.</li> <li>Ore Reserves were calculated by generating mineable shapes for all areas that contained Measured or Indicated Resources. Ore drive development for access was also considered.</li> <li>The underground stope optimisation was run using the industry standard Datamine MSO® software package. Every stope shape output from MSO® was manually inspected to determine its potential for eventual extraction. Exclusion control has been used to avoid the creation of stope shapes within adverse rockmass or processing material zones.</li> <li>For this study, physical exclusion constraints included:</li> <li>Depleted resources within stopes and development areas</li> <li>"Non-recoverable" material located in areas that cannot be safely mined due to previous mining activities</li> <li>The final mineable material comprised the Ore Reserves.</li> <li>Access to the orebody is via a single entrance portal that is connected to the workings by a decline development.</li> <li>The mining methods currently employed at Gadir are overhand stoping in the 'Upper Zone' (above 1442 mRL). Here, the orebody dip is steeper. Below the 1442 mRL, room-and-pillar extraction is used as the orebody has a shallower dip.</li> <li>Access drives were used for both development and stoping. Pillars of the ore are left in place to provide support. No backfill procedure is in place; however, about 20% of the waste rock produced remains underground and is used to backfill</li> </ul>





Criteria	JORC Code explanation	Commentary			
		<ul> <li>Geotechnical geotechnical i account geolo</li> <li>It was establis appropriate for understood ar zone intersect</li> <li>Lateral develo</li> </ul>	se-by-case basis.  parameters were de nvestigation carried out gical structure, rock type hed that the current mir or the geological condition assessed ahead of dev ion). pment design paramete summarised below:	by CQA International Lir and design orientation c ning and ore extraction m ons. The geotechnical co relopment (especially wit	mited, taking into onstraints. nethodologies are nstraints are well the respect to fault
			Description	Value	
			Ramp	4.0 x 4.0 m	
			Decline	4.0 x 4.0 m	
			Crosscut	4.0 x 4.0 m	
			Level Ore Drive	4.0 x 4.0 m	
			Return Air Raise	Square 1.5 x 1.5 m	
		Stope design summarised b	parameters implemented	d during mine planning	for this study are





Criteria	JORC Code explanation	Commentary				
			Overha	nd stoping		
			Parameter	Minimum	Maximum	
			Stope Width	3.5 m	10.0 m	
			Stope Length	5.0 m	-	
			Stope Height	5.0 m	-	
			Pillar Width	4.0 m	-	
			Dip Angle	30°	90°	
			Room-	and-pillar		
			Parameter	Minimum	Maximum	
			Stope Width	3.5 m	10.0 m	
			Stope Length	5.0 m	-	
			Stope Height	5.0 m	-	
			Pillar Width	4.0 m	15.0 m	
			Dip Angle	40°	90°	
		mining practices.  • Planned stope dilu	, -	ed and desi	·	current underground be mining shapes and
		on historic produc	, •	applied af	•	ned to be 10% based odel interrogation to
		_	ery factor was estim oing methods and v			n the room-and-pillar econciliation data.





Criteria	JORC Code explanation	Commentary
		<ul> <li>A minimum mining width of 3.5 m was used based on the nature of the deposit and equipment fleet in operation.</li> <li>The Ore Reserves contain approximately 0.08% of Inferred Resources. This material was captured in mining shapes therefore has modifying factors applied. Its inclusion and subsequent impact on economic viability is negligible.</li> <li>Gadir is an established, operating mine and all infrastructure required to service the demands is already in place.</li> </ul>
Metallurgical factors or assumptions	<ul> <li>The metallurgical process proposed and the appropriateness of that process to the style of mineralisation.</li> <li>Whether the metallurgical process is well-tested technology or novel in nature.</li> <li>The nature, amount and representativeness of metallurgical test work undertaken, the nature of the metallurgical domaining applied and the corresponding metallurgical recovery factors applied.</li> <li>Any assumptions or allowances made for deleterious elements.</li> <li>The existence of any bulk sample or pilot scale test work and the degree to which such samples are considered representative of the orebody as a whole.</li> <li>For minerals that are defined by a specification, has the ore reserve estimation been based on the appropriate mineralogy to meet the specifications?</li> </ul>	<ul> <li>The ore extracted from Gadir is treated at the Gedabek processing facilities. The plants process all ore sourced from the Gedabek Contract Area.</li> <li>The ore from the Gadir underground mine can be processed by four different available processing methods within the Gedabek Contract Area. These are agitation leach ("AGL"), heap leach of crushed material ("HLC"), heap leach of runof-mine material ("HLROM") and flotation ("FLT"). There also will be two stockpiles, comprising of Gedabek ore generated during the life-of-mine ("LOM"), available for blending.</li> <li>AAM will decide how to process these in due course, as it depends on the blending criteria, financial factors and the quality of material from other mines in the Company's portfolio. These two types of stockpile material are denoted as "SPF" (Cu stockpile for flotation) and "ROMSP" (low-grade Au material that could be sent to ROM processing by blending with higher grade material). Copper and precious metal concentrates are also produced via a SART plant. All these processing facilities are currently in operation in the Gedabek Contract Area.</li> <li>It should be noted that due to the high-grade nature and physical properties of the material, Gadir ore is typically only processed via the AGL method. Additionally, as Gadir is fresh material (i.e. unoxidised), it is blended with other softer ores to assist during crushing.</li> <li>The proposed metallurgical processes are well-tested, being processing facilities for current mining operations in the Contract Area. The processing facilities</li> </ul>





Criteria	JORC Code explanation	Commentary
		<ul> <li>include conventional methods that comprise comminution, gravity concentration (via Knelson concentrators), thickening, agitation leaching, resin-in-pulp extraction, elution and electrowinning to produce gold doré. For flotation, a concentrate is produced. The final products will be shipped off site for refining, in line with current practices.</li> <li>Tails from each process operation will be transferred via gravity pipeline to the existing tailings management facility ("TMF"). The TMF has enough capacity to manage the projected tails from the Gadir deposit.</li> <li>Metallurgical testwork has previously been conducted on drill and bulk truck samples in the form of bottle roll and column leach testing. This enabled amenability of the ore to leaching via AGL and static HL processes to be assessed.</li> <li>As the mine has been operating since 2015, metallurgical recoveries of the various ore types are well understood and a geometallurgical classification system has been developed for Gadir. The amount of testwork is considered representative of the processing technology to be employed.</li> <li>Deleterious elements were not detected in analytical tests or during assaying of samples (utilised in the Mineral Resource) and the Ore Reserves estimation has been based on the appropriate mineralogy to meet the specification.</li> </ul>
Environmental	The status of studies of potential environmental impacts of the mining and processing operation. Details of waste rock characterisation and the consideration of potential sites, status of design options considered and, where applicable, the status of approvals for process residue storage and waste dumps should be reported.	<ul> <li>A previous Environmental and Social Impact Assessment ("ESIA") was carried out over the Gedabek Contract Area by Amec Foster Wheeler and TexEkoMarkazMMC, both in 2012 and submitted to the relevant Government authorities. The Gadir deposit is located within the Gedabek Contract Area for which the ESIA is valid. Processing and tailings storage reported in the ESIA has not changed since its publication and will continue to be utilised for material as part of this Ore Reserve update.</li> <li>CQA have on-site representation and they have carried out both the geotechnical and environmental assessments of the Gadir mine area. Baseline environmental monitoring is carried out via use of receptors downstream of the mine site to</li> </ul>





Criteria	JORC Code explanation	Commentary
		<ul> <li>observe catchments located in the vicinity of the Gadir mine. Watercourses downstream of stockpiles will continue to be monitored on a routine basis for pH and heavy metal contaminants.</li> <li>Stockpile areas for waste rock have previously been identified following condemnation drilling. Waste material will continue to be utilised for infrastructure (road) construction at the Gedabek Contract Area where required. The waste rock has a low potential for acid rock drainage due to the absence of sulphide-bearing mineralisation. In total, about 20% of the waste rock is back-filled into stopes underground and is not transported to surface.</li> <li>The TMF has the capability, with an addition lift, for the extra storage requirements for Gadir process waste. The design and operations of the TMF have been reviewed by CQA along with a visit by MENR. Regular environmental monitoring is carried out at the TMF, along with monitoring of all receptors associated with the TMF. Independent reviews and third-party safety inspections of the TMF is routinely carried out. Tailings water is now returned to the process site water treatment plant (ultra-filtration and reverse osmosis) and reused in ore treatment.</li> <li>All approvals for conducting mining fall under the PSA.</li> </ul>
Infrastructure	The existence of appropriate infrastructure: availability of land for plant development, power, water, transportation (particularly for bulk commodities), labour, accommodation; or the ease with which the infrastructure can be provided or accessed.	<ul> <li>Infrastructure is considered excellent for Gadir. The deposit is located within AAM's Gedabek Contract Area with extraction rights according to the PSA. Ore can be processed at the Company's current facilities, with material being delivered by truck from the mine to processing via the constructed haul road system.</li> <li>Offices and mechanical workshop buildings are available. Power for the offices, workshop and weighbridge will continue to be via grid electrical power, with diesel generators as backup. Labour is readily available and planned extraction rates are consistent with current capacity. G&amp;A and process labour are part of the existing company compliment of staff. Regarding accommodation, canteen facilities and associated services, the continuing exploitation of the Gadir deposit will be</li> </ul>





Criteria	JORC Code explanation	Commentary
		serviced by the current infrastructure.
Costs	<ul> <li>The derivation of, or assumptions made, regarding projected capital costs in the study.</li> <li>The methodology used to estimate operating costs.</li> <li>Allowances made for the content of deleterious elements.</li> <li>The derivation of assumptions made of metal or commodity price(s), for the principal minerals and co-products.</li> <li>The source of exchange rates used in the study.</li> <li>Derivation of transportation charges.</li> <li>The basis for forecasting or source of treatment and refining charges, penalties for failure to meet specification, etc.</li> <li>The allowances made for royalties payable, both Government and private.</li> </ul>	<ul> <li>Project capital costs are minimal given that no additional processing facilities or manpower camps are required. The costs in relation to the facilities already referenced above are based on actual quotations, considering capital construction and local operational experience.</li> <li>Operating costs are estimated based on current mining and processing operations within the Contract Area. This is applicable as ore processing will be carried out at the same plants and mining, contractor and haulage costs are the same as current agreements.</li> <li>Treatment and refining costs are based on current contracts, as the ore will be treated in the operating processing plants and refined under the current agreements (including transport). Penalties are applicable for deleterious elements in FLT concentrate; however, studies of the concentrations of these elements show that the mined material contains deleterious elements below these penalty levels.</li> <li>Revenue was based on the USD \$ Au price, USD \$ Ag price and USD \$ Cu price. Commodity pricing was based on forecasts by reputable market analysts. Local Azeri exchange rates are pegged to the United States Dollar (USD \$). The source of exchange rates used in the study was the Central Bank of the Republic of Azerbaijan.</li> <li>Prices (USD \$) for Au, Ag and Cu used in EPS® were:         <ul> <li>Gold: \$1250 per troy ounce (\$40.19 per gramme)</li> <li>Silver: \$16.50 per troy ounce (\$0.53 per gramme)</li> <li>Copper: \$6000.00 per tonne</li> </ul> </li> <li>Royalties have been considered as part of the cost structure for the company to operate under the PSA.</li> </ul>
Revenue factors	The derivation of, or assumptions made regarding revenue factors including head grade, metal or	<ul> <li>Prices (USD \$) for Au, Ag and Cu used in EPS® were:</li> <li>Gold: \$1250 per troy ounce (\$40.19 per gramme)</li> </ul>





Criteria	JORC Code explanation	Co	mmentary						
	commodity price(s) exchange rates, transportation and treatment charges, penalties, net smelter returns, etc.  • The derivation of assumptions made of metal or commodity price(s), for the principal metals, minerals and co-products.	<ul> <li>Silver: \$16.50 per troy ounce (\$0.53 per gramme)</li> <li>Copper: \$6000.00 per tonne</li> <li>The selling price of each commodity is deduced from the respective market product shown in the table below. Sensitivity analysis has been used at a range Au and Ag prices.</li> </ul>				ess route and			
				Sellin	g % payab	le - Net of	refining ar	d transpor	tation
			Processes		Doré		(	Concentrat	e
				Au	Ag	Cu	Au	Ag	Cu
			AGL	99.95%	96.00%	86.60%			
			HLC	99.95%	96.00%	86.60%			
			HLROM	99.95%	96.00%	86.60%			
			FLT				97.00%	84.00%	83.00%
			SPF				97.00%	84.00%	83.00%
Market assessment	<ul> <li>The demand, supply and stock situation for the particular commodity, consumption trends and factors likely to affect supply and demand into the future.</li> <li>A customer and competitor analysis along with the identification of likely market windows for the product.</li> <li>Price and volume forecasts and the basis for these forecasts.</li> <li>For industrial minerals the customer specification, testing and acceptance requirements prior to a supply contract.</li> </ul>	•	The market for to the Compa documents fro and demand s A specific stud part of this pro Price and volude based on meta Industrial mine	any however om reputal ituation. y of custor oject. me forecas al supply ar	ver AAM ole analyst mer and co	has reviews and is competitor and en studied I, USD \$ for	wed a nur omfortable analysis ha in reports recasts and	mber of r with the s not been from repu	netal forecast market supply completed as table analysts,





Criteria	JORC Code explanation	Commentary	Commentary				
Economic	<ul> <li>The inputs to the economic analysis to produce the net present value (NPV) in the study, the source and confidence of these economic inputs including estimated inflation, discount rate, etc.</li> <li>NPV ranges and sensitivity to variations in the significant assumptions and inputs.</li> </ul>	<ul> <li>Prices (USD \$) for Au, Ag and Cu used in EPS® were:         <ul> <li>Gold: \$1250 per troy ounce (\$40.19 per gramme)</li> <li>Silver: \$16.50 per troy ounce (\$0.53 per gramme)</li> <li>Copper: \$6000.00 per tonne</li> </ul> </li> <li>Processing Recovery parameters for the various processing methods other than AGL have been included for comparison, in addition to Cu recovery % (all in italics):</li> </ul>					
			Proceses		Recovery %	6	
			Fioceses	Au	Ag	Cu	
			AGL	75%	66%	30%	
			HLC	60%	7%	30%	
			HLROM	40%	7%	20%	
			FLT	60%	68%	83%	
			SPF	60%	68%	83%	
		have the larges has a negative economics. AAI	ysis has been use t positive impac impact on proj M routinely con es and sensitivi ensitive.	ed at a rang t on NPV is fect NPV; v trols its op ty will not	ge of Au, Ag the Au pri when thes erating cos	ce. Converse increase	ices. Variables that sely, the OPEX cost it impacts project the information is
Social	The status of agreements with key stakeholders and matters leading to social licence to operate.		he CP's knowled al licence to ope				olders and matters
Other	To the extent relevant, the impact of the following on the project and/or on the estimation and classification of the Ore Reserves:	There are no ki Reserves.	nown material c	or naturally	occurring	risks assoc	iated with the Ore





Criteria	JORC Code explanation	Commentary
	<ul> <li>Any identified material naturally occurring risks.</li> <li>The status of material legal agreements and marketing arrangements.</li> <li>The status of governmental agreements and approvals critical to the viability of the project, such as mineral tenement status, and government and statutory approvals. There must be reasonable grounds to expect that all necessary Government approvals will be received within the timeframes anticipated in the Pre-Feasibility or Feasibility study. Highlight and discuss the materiality of any unresolved matter that is dependent on a third party on which extraction of the reserve is contingent.</li> </ul>	<ul> <li>AAM is currently compliant with all legal, regulatory and marketing arrangements and agreements.</li> <li>The Gadir underground project is located within a licence area ("Contract Area") that is governed under a PSA, managed by the Azerbaijan Ministry of Ecology and Natural Resources ("MENR").</li> <li>The PSA grants AAM a number of 'time periods' to exploit defined Contract Areas, as agreed upon during the initial signing. The period of time allowed for early-stage exploration of the Contract Areas to assess prospectivity can be extended if required.</li> <li>A 'development and production period' that runs for fifteen years, commences on the date that the Company holding the PSA issues a notice of discovery, with two extensions of five years each at the option of the company. Full management control of mining within the Contract Areas rests with AIMC. The Gedabek Contract Area, incorporating the Gadir underground, Gedabek open pit and Ugur open pit, currently operates under this title.</li> <li>Under the PSA, AAM is not subject to currency exchange restrictions and all imports and exports are free of tax or other restrictions. In addition, MENR is to use its best endeavours to make available all necessary land, its own facilities and equipment and to assist with infrastructure.</li> <li>At the time of reporting, no known impediments to obtaining a licence to operate in the area exist.</li> <li>The PSA is valid for the forecast LOM.</li> </ul>
Classification	<ul> <li>The basis for the classification of the Ore Reserves into varying confidence categories.</li> <li>Whether the result appropriately reflects the Competent Person's view of the deposit.</li> <li>The proportion of Probable Ore Reserves that have been derived from Measured Mineral Resources (if any).</li> </ul>	<ul> <li>Measured Mineral Resources were converted to Proved Reserves after applying the modifying factors.</li> <li>Indicated Mineral Resources were converted to Probable Ore Reserves after applying the modifying factors.</li> <li>Internal dilution (&lt; 4.3% of the Ore Reserve by mass) is considered to have the same level of confidence as the reported Mineral Resource.</li> </ul>





Criteria	JORC Code explanation	Commentary
		<ul> <li>The Ore Reserve is based on a global estimate; the division of material between Proved and Probable is 72:28 respectively.</li> <li>The underground Ore Reserves contain approximately 0.08% of Inferred Mineral Resources. This near-zero value demonstrates that the Gadir deposit is understood and well-defined through exploration and grade control drilling, as well as mining development.</li> <li>The resultant Ore Reserves are appropriate given the level of understanding of the deposit geology and reflects the CP's view of the deposit.</li> <li>No Probable Ore Reserves were derived from Measured Mineral Resources.</li> </ul>
Audits or reviews	The results of any audits or reviews of Ore Reserve estimates.	<ul> <li>Datamine developed and audited the Mineral Resource and Ore Reserve models and estimations. Two Datamine engineers worked on the resources and reserves and were able to verify work practice and procedures.</li> <li>Datamine consultants have been involved with other mining projects of the company within the same contract area as the Gadir underground mine and as such are familiar with the processing methods available, value chain of the mining and cost structure.</li> <li>The data used as part of the Mineral Resources project was audited, validated and considered robust for Ore Reserves calculations.</li> <li>The Gadir Ore Reserve estimate was reviewed by the CP and was considered to be reasonable and adequately supported, consistent with industry practice for reporting Ore Reserves in accordance with the JORC Code [3].</li> <li>Internal company and external reviews of the Ore Reserves yield estimates that are consistent with the Ore Reserve results. The amount of waste material calculated as part of dilution and capital development totals 80,916 t over the LOM.</li> </ul>
Discussion of relative	Where appropriate a statement of the relative accuracy and confidence level in the Ore Reserve estimate using an approach or procedure deemed	The Ore Reserve has been completed to feasibility standard with the data being generated from a tightly spaced drilling grid, thus confidence in the resultant





Criteria	JORC Code explanation	Commentary
accuracy/ confidence	appropriate by the Competent Person. For example, the application of statistical or geostatistical procedures to quantify the relative accuracy of the reserve within stated confidence limits, or, if such an approach is not deemed appropriate, a qualitative discussion of the factors which could affect the relative accuracy and confidence of the estimate.  The statement should specify whether it relates to global or local estimates, and, if local, state the relevant tonnages, which should be relevant to technical and economic evaluation. Documentation should include assumptions made and the procedures used.  Accuracy and confidence discussions should extend to specific discussions of any applied Modifying Factors that may have a material impact on Ore Reserve viability, or for which there are remaining areas of uncertainty at the current study stage.  It is recognised that this may not be possible or appropriate in all circumstances. These statements of relative accuracy and confidence of the estimate should be compared with production data, where available.	<ul> <li>figures is considered high.</li> <li>Extraction of ore from the Gadir underground mine will continue.</li> <li>Mining costs and haulage costs will be as per the current contracts in place being utilised at Gadir operation and other mines in the Contract Area.</li> <li>Project capital is well-managed, and certain infrastructure facilities are already available within AIMC/AAM, thus minimising capital requirements.</li> <li>The Modifying Factors for mining, processing, metallurgical, infrastructure, economic, gold price, legal, environmental, social and governmental factors as referenced above have been applied to the underground mine design.</li> <li>Ore Reserves calculation relates to a global scale and data reflects the global assumptions.</li> <li>An appropriate level of consideration was given to all Modifying Factors, which were established from actual operation data from Gadir, to support the declaration and classification of Ore Reserves.</li> <li>No statistical or geostatistical procedures were carried out to quantify the accuracy of the Ore Reserve. Factors which could affect the relative accuracy and confidence of the estimate have been fully assessed as part of the modifying factor derivation. Geological variability between sample points, for example very high-grade narrow zones, may impact on the Reserve statement.</li> <li>It is concluded that the Ore Reserve for the Gadir underground mine is 797 kt, with a contained Au content of 90 koz, 304koz of Ag and 1,387 t of Cu (see Table below). Note that due to rounding, numbers presented may not add up precisely to totals.</li> <li>Zn reserves were not reported as part of the Ore Reserves summary.</li> </ul>





Criteria	JORC Code explanation	Commentary							
		ORE RESERVES	Tonnage Gold		Silver		Copper		
			kt	g/t	koz	g/t	koz	%	t
		Total Proved	222	2.81	25	14.13	101	0.24	535
		Total Probable	575	2.41	45	10.99	203	0.15	852
		Proved + Probable	797	2.73	70	11.86	304	0.17	1,387
		Mine product accuracy of the grades were different orest	e ore type understo type. Thus	es and gra od in ord s, there is	de in the ( ler to det a direct r	Ore Reser termine t elationshi	ves. The a he proces p betwee	verage pross algorith n the kno	ocess feed nm of the





## Section 5 Estimation and Reporting of Diamonds and Other Gemstones

(Criteria listed in other relevant sections also apply to this section. Additional guidelines are available in the 'Guidelines for the Reporting of Diamond Exploration Results' issued by the Diamond Exploration Best Practices Committee established by the Canadian Institute of Mining, Metallurgy and Petroleum.)

Estimation and Reporting of Diamonds and Other Gemstones is not applicable to this Statement of Resources

## **GLOSSARY AND OTHER INFORMATION**

1. GLOSSARY OF JORC CODE TERMS (as extracted from the JORC Code, 2012 Edition)

Cut-off grade	The lowest grade, or quality, of mineralised material that qualifies as economically mineable and available in a given deposit. May be defined on the basis of economic evaluation, or on physical or chemical attributes that define an acceptable product specification.
Indicated Mineral Resource	An 'Indicated Mineral Resource' is that part of a Mineral Resource for which quantity, grade (or quality), densities, shape and physical characteristics are estimated with sufficient confidence to allow the application of Modifying Factors in sufficient detail to support mine planning and evaluation of the economic viability of the deposit.  Geological evidence is derived from adequately detailed and reliable exploration, sampling and testing gathered through appropriate techniques from locations such as outcrops, trenches, pits, workings and drill holes, and is sufficient to assume geological and grade (or quality) continuity between points of observation where data and samples are gathered. An Indicated Mineral Resource has a lower level of confidence than that applying to a Measured Mineral Resource and may only be converted to a Probable Ore Reserve.
Inferred Mineral Resource	An 'Inferred Mineral Resource' is that part of a Mineral Resource for which quantity and grade (or quality) are estimated on the basis of limited geological evidence and sampling. Geological evidence is sufficient to imply but not verify geological and grade (or quality) continuity. It is based on exploration, sampling and testing information gathered through appropriate techniques from locations such as outcrops, trenches, pits, workings and drill holes. An Inferred Mineral Resource has a lower level of confidence than that applying to an Indicated Mineral Resource and must not be





	converted to an Ore Reserve. It is reasonably expected that
	the majority of Inferred Mineral Resources could be
	upgraded to Indicated Mineral Resources with continued
	exploration.
JORC	JORC stands for Australasian Joint Ore Reserves Committee
	(JORC). The Code for Reporting of Exploration Results,
	Mineral Resources and Ore Reserves (the JORC Code) is
	widely accepted as the definitive standard for the reporting
	of a company's resources and reserves. The latest JORC Code
	is the 2012 Edition.
Measured Mineral	A 'Measured Mineral Resource' is that part of a Mineral
Resource	Resource for which quantity, grade (or quality), densities,
	shape, and physical characteristics are estimated with
	confidence sufficient to allow the application of Modifying
	Factors to support detailed mine planning and final
	evaluation of the economic viability of the deposit.
	Geological evidence is derived from detailed and reliable
	exploration, sampling and testing gathered through
	appropriate techniques from locations such as outcrops,
	trenches, pits, workings and drill holes, and is sufficient to
	confirm geological and grade (or quality) continuity between
	points of observation where data and samples are gathered.
	A Measured Mineral Resource has a higher level of
	confidence than that applying to either an Indicated Mineral
	Resource or an Inferred Mineral Resource. It may be
	converted to a Proved Ore Reserve or under certain
	circumstances to a Probable Ore Reserve
Mineral Reserves or Ore	An 'Ore Reserve' is the economically mineable part of a
Reserves	Measured and/or Indicated Mineral Resource. It includes
	diluting materials and allowances for losses, which may
	occur when the material is mined or extracted and is defined
	by studies at Pre-Feasibility or Feasibility level as appropriate
	that include application of Modifying Factors. Such studies
	demonstrate that, at the time of reporting, extraction could
	reasonably be justified.
Mineral Resource	A 'Mineral Resource' is a concentration or occurrence of
	solid material of economic interest in or on the Earth's crust
	in such form, grade (or quality), and quantity that there are
	reasonable prospects for eventual economic extraction. The
	location, quantity, grade (or quality), continuity and other
	geological characteristics of a Mineral Resource are known,
	estimated or interpreted from specific geological evidence
	and knowledge, including sampling. Mineral Resources are





	sub-divided, in order of increasing geological confidence,
	into Inferred, Indicated and Measured categories.
Modifying Factors	'Modifying Factors' are considerations used to convert
	Mineral Resources to Ore Reserves. These include, but are
	not restricted to, mining, processing, metallurgical,
	infrastructure, economic, marketing, legal, environmental,
	social and governmental factors.
Probable Ore Reserve	A 'Probable Ore Reserve' is the economically mineable part
	of an Indicated, and in some circumstances, a Measured
	Mineral Resource. The confidence in the Modifying Factors
	applying to a Probable Ore Reserve is lower than that
	applying to a Proved Ore Reserve.
Proved Ore Reserve	A 'Proved Ore Reserve' is the economically mineable part of
	a Measured Mineral Resource. A Proved Ore Reserve implies
	a high degree of confidence in the Modifying Factors.

## 2. SOFTWARE USED IN THE MINERAL RESOURCE AND RESERVES ESTIMATE

**Datamine "Studio RM®**" and "**EPS®**" and "**MSO®**" software was used in the estimation of Mineral Resources and Ore Reserves.



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