NI 43-101 TECHNICAL REPORT - JIAMA PHASE 2 EXPANSION PROJECT

MINERAL RESOURCES & RESERVES

For

CHINA GOLD INTERNATIONAL

THIS DOCUMENT IS NOT BE USED FOR ANY PURPOSE OTHER THAN TO ASSESS THE CURRENT STATUS OF WORK ON THE PROJECT REPORT BY MINING ONE

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FINAL REPORT

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TABLE OF CONTENTS

TABLE INDEX

FIGURE INDEX

1 EXECUTIVE SUMMARY

The Jiama Project is a large polymetallic deposit containing Copper, Molybdenum, Gold, Silver, Lead and Zinc. Phase I of the Jiama Project commenced commercial production in September 2010 and included the development of the Tongqianshan and Niumatang open cut pits. These pits currently produce 1.8 Mtpa of ROM feed. The ore from these mines is processed via two processing plants with current processing capacity of 6,600 tonnes of ore per day.

This technical report incorporates all Resources for the Jiama Project. The Reserve Estimate considers the Phase II expansion areas which incorporates the Jiaoyan and South Pit open pit mines as well as the Phase II underground mine. Conventional mining methods have been proposed for the open pit and underground operations.

This report has been prepared based on the “Feasibility Study for the Phase II Expansion Project” (The Study), prepared by the Changchun Gold Design Institute (CGDI) in conjunction with China Gold International (China Gold).

1.1 Property Description and Location

The Jiama Copper-Polymetallic Project (Jiama) is located in Metrokongka County, Tibet Autonomous Region, the Peoples’ Republic of China. The mine lies approximately 68 km east-northeast of Lhasa, the capital city of Tibet Autonomous Region.

Huatailong hold two mining licences and two larger adjacent exploration licences in the area. The Niumatang (73.5 ha) and Jiama (216 ha) mining licences are set in the centre of the Jiama exploration licence while the Bayi Ranch licence located southwest of the current mining activities.

Phase II of the Jiama Expansion Project is expected to commence in 2014 and rump up to full production by the end of 2016 at which time it will be producing 16.5Mtpa of ore. This is an increase of 250% on current production levels. The expansion will include the development of two additional open pits (Jiaoyan and South pits) as well as a large underground development. The Mineral Resource estimate as of April, 2013 is 1,486 million tonnes of metal at > 0.40% Cu.

1.2 Geology and Mineralisation

The Jiama project is located within the Gangdese Yanshanian epi-continental arc on the central southern portion of the Gangdese-Nianqing Tanggula Terrain. At the tenement scale, rock types are typically passive epi-continental clastics and carbonates. The stratigraphy is dominated by marbles and limestones of the Upper Jurassic Duodigou Formation and sandstones, slates and hornfels belonging to the Lower Cretaceous Linbuzong Formation. Although some mafic and intermediate to felsic dykes have been mapped in outcrop and drill core, the intrusive granitic body responsible for the wide spread contact metamorphism and copper-polymetallic mineralisation is yet to be identified. A number of thrust faults and shears concentrated between major geological contacts and a large detachment fault (Gliding Nappe Fault) have also been observed. Locally bedrock units are overlain by unconsolidated Quaternary colluvium and alluvium.

Three types of Copper-polymetallic mineralisation are recognised in the project area, these include skarn, hornfels and porphyry hosted deposits.

The Jiama deposit is a structurally controlled stratiform skarn-type copper-polymetallic system. The majority of high grade mineralisation is associated with shear zone contacts between the Duodigou and Linbuzong formations and shear related folding. The zone of mineralisation within fault hosted skarn alteration measures kilometres in both strike and dip and remains open at depth to the northeast.

Mineralisation is also associated with granite porphyry dykes intruding the 'Duodigou Marble' and observed within the overlying hornfels of the Linbuzong formation. Although both deposit types are of lower grade than that of the skarn, the hornfels mineralisation may potentially be of further economic value in the future.

1.3 Mineral Processing and Metallurgical Testing

Sufficient testing has been carried out for plant design and construction to proceed. In the meantime, process optimization could continue as research and development (R&D), and as part of a Continuous Improvement Program. This is normal in any plant after commissioning and could include items described below.

Further metallurgical testing should be carried out on both skarn and hornfels ores to improve the molybdenum and precious metal recoveries, especially in lower grade ore. Take Skarn samples from the deeper parts of the orebody underground to confirm recoveries. Test Hornfels ore from the Jiaoyan pit, to improve copper-molybdenum separation efficiency. Studies should be made into the molybdenum grade variability in the various ores to optimise the grade and recovery of molybdenum. Carry out more Copper-Molybdenum selective flotation tests to optimise the reagent regime, determine molybdenum cut-off grades to help decide whether to process lower grade molybdenum ores. Set up routine metallurgical testing to optimise process performance, provide information circuit changes and additions.

1.4 Mineral Resources

The Mineral Resource estimate was independently completed by Runge Pincock Minarco (RPM) Global dated 12th November 2012. Mining One Pty Ltd (Mining One) was provided with the block model and all files related to construction of the model. The information contained within this report is based on information provided to Mining One, which has been verified and in some instances refined by Mining One. The Resource estimate is based on three dimensional geological and mineralisation models that were informed by the drill hole data set.

The Resource is based on three main geological domains that represent Skarn, Hornfels and Porphyry lithologies; mineralisation is hosted within each of these domains. Domain boundaries were constructed using a combination of the geology domains and a 0.1% Cu equivalent cut – off for the mineralisation. Standard wireframing procedures were used in relation to extrapolation of polygons half the drill spacing distance past known data points and tapering of zone thickness on the periphery of the domains. Table 1-1 shows the domain statistics.

Table 1-1: Composite Files – Domain Statistics

Statistic	Skarn		Hornfels	
	Cu	Mo	Cu	Mo
Number of samples	10,630	10,770	19,679	19,680
Minimum value	0	0	0	0
Maximum value	4.995	1.090	3.108	1.383
Mean	0.584	0.030	0.225	0.022
Median	0.283	0.012	0.182	0.013
Variance	0.572	0.004	0.023	0.001
Standard Deviation	0.756	0.060	0.152	0.034
Coefficient of variation	1.295	2.025	0.675	1.543

Given the extensive drilling completed at the project over an extended period of time, some areas of the resource have relatively close spaced drilling down to 50 m spacing whilst other areas have a more sparse (>200 m) drill spacing. In general, the resource is classified using the sample spacing of up to 60 m for measured, 60-120 m for indicated and 120-250 m for inferred.

Based on historic mining experience and interrogation of the drill hole database, where there is strong continuity of mineralisation in terms of tonnes and grade, the dominant classification has been extrapolated. The classification is generally based on results from the semi-variograms. Ranges derived from the variograms indicate that the sample pair correlation ranges are between 150m and 200m for copper and between 150 m and 250 m for molybdenum. Mining One therefore assessed the resource classification as being valid and acceptable for this style of mineralisation.

The Resources were estimated by RPM Global with Mining One providing validation and refinement of the project Resources. The Resource estimate is based on information collected up to 12th November 2012. The Mineral Resource has been estimated in accordance with the NI43-101, Standards and Disclosure for Mineral Projects. Mining One deems that the Resource estimate is suitable for reporting and meets the reporting standards of Chapter 18 of the HKEx listing rules. The Mineral Resources were validated by Bin Guo of Mining One and are reported at a 0.3% Copper equivalent grade. The results of the Resource estimate for the project are tabulated in Table 1-2.

The Copper Equivalent basis for the reporting of resources has been compiled on the following basis:

CuEq Resources:

= (Ag Grade * Ag Price + Au Grade * Au Price + Cu Grade * Cu Price + Pb Grade * Pb Price + Zn Grade * Zn Price + Mo Grade * Mo Price) / Copper Price

Table 1-2: Mineral Resource Statement

RESOURCES														
Jiama Copper - Polymetallic Project Resources. Cu, Mo, Pb, Zn, Au & Ag Mineral Resources (Cueq>0.3%) reported as at November 2012														
Rock Type	**Class**	**Quantity Mt**	**Cu %**	**Mo%**	**Pb%**	**Zn%**	**Au g/t**	**Ag g/t**	**Cu Metal Kt**	**Mo Metal Kt**	**Pb Metal kt**	**Zn Metal Kt**	**Au Moz**	**Ag Moz**
Skarn	Measured	42.8	0.66	0.041	0.06	0.04	0.22	13.39	281	17	28	19	0.304	18.429
	Indicated	453.0	0.69	0.040	0.15	0.09	0.27	15.59	3114	183	676	399	3.901	227.094
	M+I	495.8	0.68	0.040	0.14	0.08	0.26	15.40	3395	200	704	417	4.205	245.523
	Inferred	125.5	0.46	0.038	0.20	0.10	0.19	11.90	577	47	248	125	0.750	47.995
Hornfels	Measured	54.9	0.23	0.031	0.03	0.01	0.02	1.32	127	17	15	5	0.041	2.330
	Indicated	852.9	0.28	0.030	0.01	0.01	0.03	1.38	2368	253	69	64	0.909	37.733
	M+I	907.8	0.27	0.030	0.01	0.01	0.03	1.37	2496	270	84	69	0.950	40.063
	Inferred	276.6	0.24	0.026	0.02	0.02	0.06	2.10	660	73	63	49	0.562	18.644
Porphyry	Measured	2.6	0.26	0.049	0.02	0.01	0.06	3.42	7	1	1	0	0.005	0.281
	Indicated	79.9	0.30	0.039	0.01	0.01	0.07	2.93	240	31	6	8	0.174	7.522
	M+I	82.4	0.30	0.040	0.01	0.01	0.07	2.94	247	33	6	8	0.179	7.803
	Inferred	4.0	0.24	0.085	0.01	0.02	0.04	2.25	10	3	0	1	0.006	0.287
Totals	Measured	100.2	0.41	0.035	0.04	0.02	0.11	6.53	415	36	43	24	0.349	21.040
	Indicated	1,385.8	0.41	0.034	0.05	0.03	0.11	6.11	5722	468	751	470	4.985	272.349
	M+I	1,486.0	0.41	0.034	0.05	0.03	0.11	6.14	6138	503	794	495	5.334	293.389
	Inferred	406.0	0.31	0.030	0.08	0.04	0.10	5.13	1247	124	312	174	1.317	66.926

1.5 Mineral Reserve Estimate

The selected mining strategies developed by CGRI (Changchun Gold Design Institute) in conjunction with China Gold considers conventional truck shovel mining for the Jiaoyan and South open pits. Various mining methods have been proposed for the Phase II Expansion Underground Mine with the primary method being Sub Level Stoping with fill (Primary/Secondary/(Tertiary)).

The reserve estimate for the Jiama underground mine is based on a combination of Sub Level Open Stoping with Paste fill, Room and Pillar and Cut and Fill. These mining methods are described in section 16. The mineral reserve estimate is summarised in Table 1-3 which are inclusive of the modifying factors for mining recovery and dilution. A more detailed breakdown of the reserve estimate is shown in Section 15.9.

Table 1-3: Mineral Reserve Estimate

								Metal					
Type	Quantity Mt	Cu %	Mo %	Pb %	Zn %	Au g/t	Ag g/t	Cu kt	Mo kt	Pb kt	Zn kt	Au Moz	Ag Moz
Proven	24.96	0.64	0.04	0.05	0.03	0.19	11.35	160	10	12	8	0.2	9.1
Probable	415.87	0.61	0.03	0.13	0.08	0.19	11.52	2,548	133	551	319	2.5	154.1
Subtotal	440.83	0.61	0.03	0.13	0.07	0.19	11.51	2,708	143	563	327	2.7	163.2

Notes:

1. The Mineral Reserve as of 20th November 2013.
2. All Mineral Reserves have been estimated in accordance with the JORC code and have been reconciled to CIM standards as prescribed by the National Instrument 43-101.
3. Mineral Reserves were estimated using the following mining and economic factors:

   Open Pits:
   a) 5% dilution factor and 95% recovery were applied to the mining method;
   b) overall slope angles of 43 degrees;
   c) a copper price of USD$ 2.9/lbs;
   d) an overall processing recovery of 88 - 90% for copper

   Underground:
   a) 10% dilution added to all Sub-Level Open Stoping;
   b) Stope recovery is 87% for Sub-Level Open Stoping;
   c) An overall processing recovery of 88 – 90% for copper.

4. The cut-off grade for Mineral Reserves has been estimated at copper equivalent grades of 0.3%Cu (NSR) for the open pits and 0.45%Cu (NSR) for the underground mine.
5. Mineral Reserve Estimates were prepared by Anthony R. Cameron who is a sub-consultant to Mining One Pty Ltd. He is a Fellow of the Australasian Institute of Mining and Metallurgy and has over 26 years of relevant engineering experience and is the Qualified Person for Mineral Reserves.

1.6 Pit Optimisation

Pit optimisation for open pit mines using the Lerchs-Grossman algorithm (Whittle-4X) is an industry-standard approach for defining an optimum open pit shape and development of a mining sequence. The processing plant essentially consists of two circuits a Copper Lead (and Zinc) (CuPb) circuit and a Copper Molybdenum (CuMo) circuit. Where the ratio of the contained lead and zinc compared with the contained copper is greater than 0.286 the material is preferentially processed through the CuPb circuit. The logic for the optimisation process was developed from a preliminary Net Smelter Return (NSR) estimate and was further refined for the schedule. A summary of the Whittle Optimisation Parameters used is presented in Table 1-4 below:

Table 1-4: Optimisation Parameters Study

		South Pit		Jiaoyan	
		Ore Circuit			
		CuPb	CuMo	CuPb	CuMo
Mining Parameters	**Units**				
Mining Cost	**$US/t ore**	2.171		2.247	
Mining Dilution Factor	**%**	5%			
Mining Loss Factor	**%**	5%			
Depth Increment Cost	**$/m/t**	0.008		N/A	
Processing Parameters					
Processing Cost	**$US/t ore**	13.524		12.413	
G&A Expense	**$US/t ore**	4.402		1.587	
Transport, Marketing and Resource Tax	**$US/t ore**	4.428		3.421	
Recovery Copper	**%**	88%	90%	85%	
Recovery Moly	**%**	0%	71%	50%	
Recovery Lead	**%**	80%	0%	0%	
Recovery Zinc	**%**	60%	0%	0%	
Recovery Gold	**%**	43%	46%	0%	
Recovery Silver	**%**	56%	66%	0%	
Revenue Parameters					
Cu Price	**US$/lb**	2.90			
Mo Price	**US$/lb**	15.50			
Pb Price	**US$/lb**	0.98			
Zn Price	**US$/lb**	0.95			
Au Price	**US$/oz**	1300.00			
Ag Price	**US$/oz**	20.00			
Royalties					
Royalty (Au)	**%**	2.8%		1%	
Royalty And Vat (Cu, Mo, Pb, Zn & Ag)	**%**	2%		1%	
Geotechnical Parameters					
Overall Slope Angle	**Degrees**	43			
Exchange rates	**RMB/$US**	6.3			

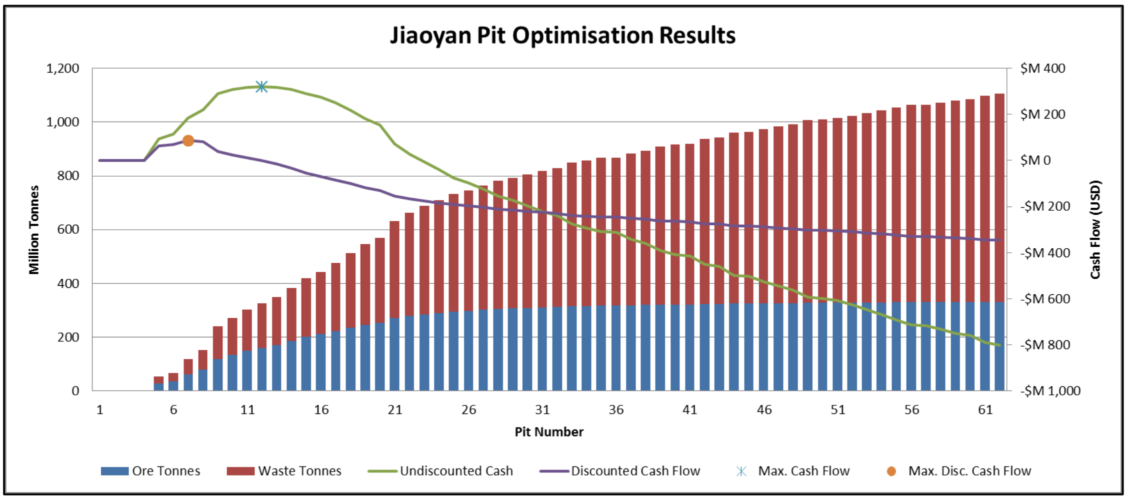


Figure 1-1: Jiaoyan Pit Optimisation Results

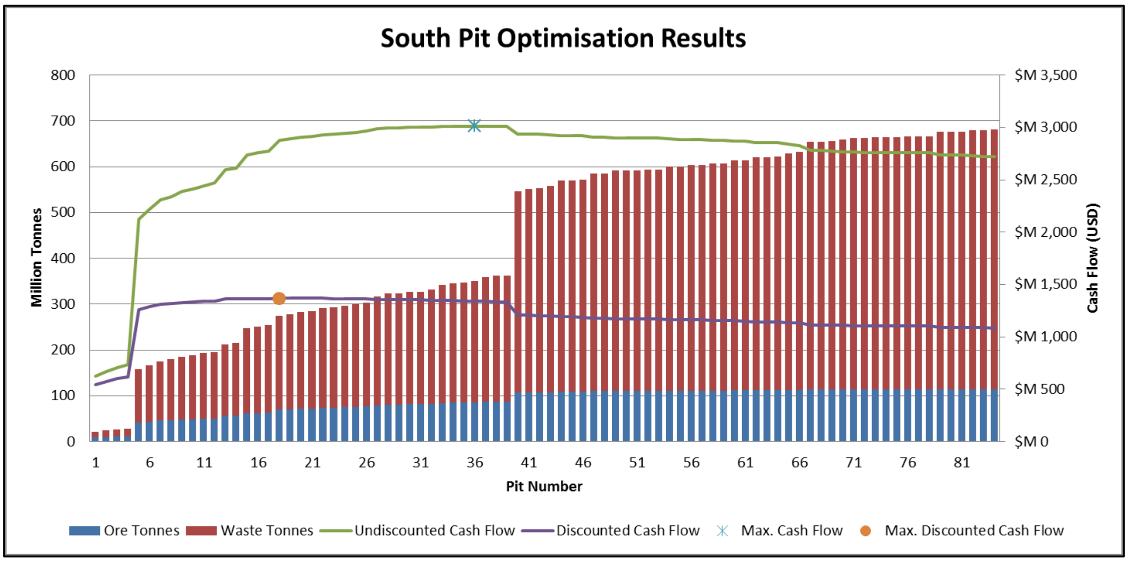


Figure 1-2: South Pit Optimisation Results

Pit designs were prepared using the optimised pit shells as templates. Design software package Vulcan was used to prepare practical pits incorporating haul roads, ramps and geotechnical parameters as outlined in The Study. Optimisation results for the Jiaoyan and South Pits are summarised in Figure 1-1 and Figure 1-2 respectively.

1.7 Underground Mine Shape Optimisation

Datamine's Mine Shape Optimiser (MSO) was used to provide guidance for the underground mine design. Generally, MSO generates multiple potentially mineable underground shapes considering input parameters for stope shapes and a cut-off grade based on the Net Smelter Return (NSR).

A Copper Equivalent (CuEqUg) field based on a NSR estimate specific to underground mining and rock-type was added to the block model. Table 1-5 summarises the copper equivalent mill and smelter recoveries.

Table 1-5: Copper Equivalent Mill and Smelter Recoveries

Element	Price		Mill Recovery %			Smelter Recovery %
	Unit	USD	CuMo Skarn	CuPbZn Skarn*	CuMo Hornfels / Porphyry	
Copper	lbs	$ 2.90	90%	90%	84%	83.8%
Molybdenum	lbs	$ 15.50	71%		48%	68.1%
Gold	ozs	$ 1,300	65%	43%		84.0%
Silver	ozs	$ 20	70%	56%		77.5%
Lead	Tonne	$ 2,150		75%		80.0%
Zinc	Tonne	$ 2,150		65%		65.0%

** Jiaoyan Pit*

Skarn:

CuEqUg
= (Au Grade * Au Price *Au Mill Recovery * Au Smelter Recovery + Ag Grade * Ag Price * Ag Mill Recovery * Ag Smelter Recovery + Mo Grade * Mo Price * Mo Mill Recovery * Mo Smelter Recovery + Cu Grade * Cu Price * Cu Mill Recovery * Cu Smelter Recovery) / Cu Price

Hornfels / Porphyry:

CuEqUg
= (Mo Grade * Mo Price * Mo Mill Recovery * Mo Smelter Recovery + Cu Grade * Cu Price * Cu Mill Recovery * Cu Smelter Recovery) / Cu Price

Table 1-6: Copper Equivalent Cut-off by Underground Mining Method

Cost Parameter	Cemented Tailings Paste Backfill Unit Cost		Tailings Paste backfill Unit Cost		No backfill Unit Cost	
Currency	RMB	USD	RMB	USD	RMB	USD
Mining	¥ 115.98	$ 18.41	¥ 95.98	$ 15.23	¥ 80.86	$ 12.83
Processing	¥ 60.17	$ 9.55	¥ 60.17	$ 9.55	¥ 60.17	$ 9.55
G & A	¥ 5.18	$ 0.82	¥ 5.18	$ 0.82	¥ 5.18	$ 0.82
Sales/Transport	¥ -	$ -	¥ -	$ -	¥ -	$ -
Total	**¥ 181.33**	**$ 28.78**	**¥ 161.33**	**$ 25.61**	**¥ 146.21**	**$ 23.21**
CuEqUg Cut –off*	**0.45%**		**0.40%**		**0.36%**	

** Copper Price = $2.9/lb*

1.8 Geotechnical Review

Mining One conducted a geotechnical review of the The Study covering the proposed open pits and underground expansion for the Jiama Polymetallic Mine in Tibet.

An initial review of the geotechnical studies and analyses were completed by Mining One in June 2013 and subsequently in November 2013. As part of the review, Mining One has considered the provided technical data and documentation and compared it to the Mining One requirements and standards for geotechnical open pit and underground studies.

Several methods of stability analysis were carried out including structural analysis, limited equilibrium and finite element.

Mining of Phase II will commence in two open pits and an extensive underground mine including; Jiaoyan Pit, South Pit and the underground mine respectively. The open pits and underground expansion will be developed simultaneously. The open pits will be separated from the underground operation by a crown pillar that will be maintained between the base of South Pit and the upper underground mine. Stope voids will be progressively backfilled beneath the base of the pit floor to reduce the potential for open pit and underground mine interaction. The two underground mining methods considered in this area are cut & fill mining and sub-level caving. The area under the pit is not planned to be mined in the initial 10 years of operation. The pit should be finished by this time which would make sub-level caving a possible option here.

The underground and open pit mine designs were developed by the Changchun Gold Design Institute (CGDI). The geotechnical studies were undertaken by the Changsha Institute of Mining Research Co Ltd (CIMR) for all mining areas and the waste dumps were designed by CGDI with contribution from the CIMR. The CIMR Feasibility Study reporting for the geotechnical studies are referenced in Section 27, which forms part of The Study.

1.9 Pit Design

The following parameters were used for the pit designs.

Table 1-7: Pit Design Criteria

Parameter	Unit	Jiaoyan	South
Wall Angle	deg.	65	65
Bench Height	m	30	30
Berm Width	m	15	16
Ramp Width (Dual Lane)	m	25	25
Ramp Width (Single Lane)	m	NA	15
Ramp Grade	%	6	11
Stack Height	m	180	180
Stack Berm	m	25	25

Figure 1-3 and Figure 1-4 illustrate the final designs used for the open pit schedule and subsequent Reserve Estimate.

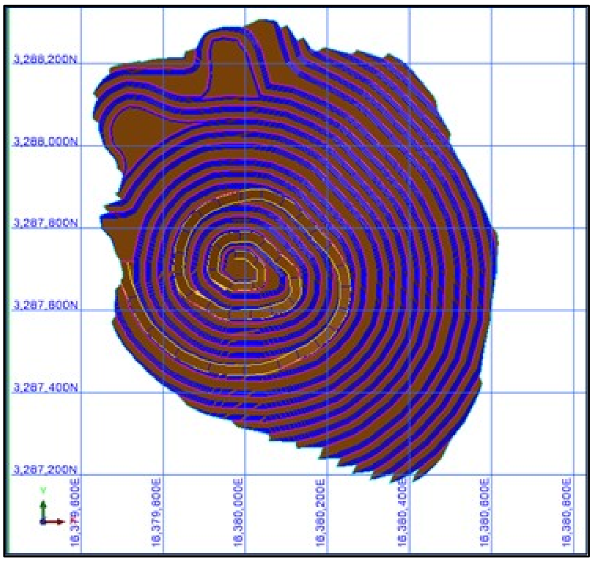


Figure 1-3: Jiaoyan Pit Final Design

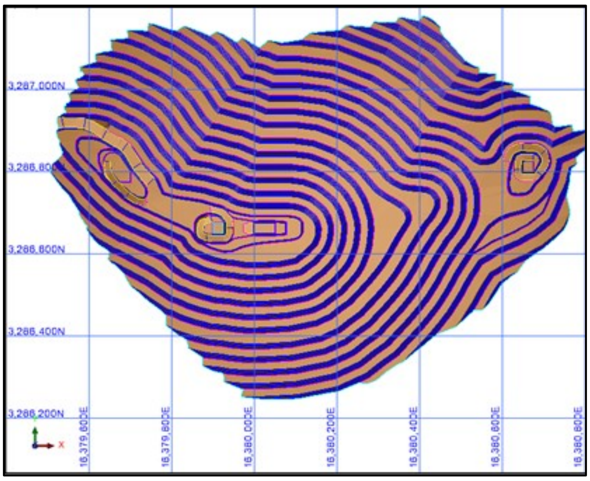


Figure 1-4: South Pit Final Design

1.10 Underground Design

The initial ten years of the Phase II underground operation have been designed considering; development, ventilation, and haulage requirements to support Sub-level Stoping with fill. Ventilation has been modelled using Ventsim 3D Mine Ventilation Software. All designs relating to the initial ten years of Phase II were completed by CGDI. Scheduling of the CGDI mine designs was completed using Enhanced Production Scheduler (EPS) by China Gold. China Gold also completed life of mine reserve shapes which have then been scheduled in Microsoft Excel using development and production factors derived from the EPS schedule.

Phase I of the underground is currently operational, producing approximately 1.8 Mt per annum from hand held shrinkage stoping. Ventilation shafts, haulage shafts and conveyor drives are already in place or are currently being developed. Figure 1-5 illustrates the new Changcun Gold Design Institute stope locations along with the Phase I development as it is already built.

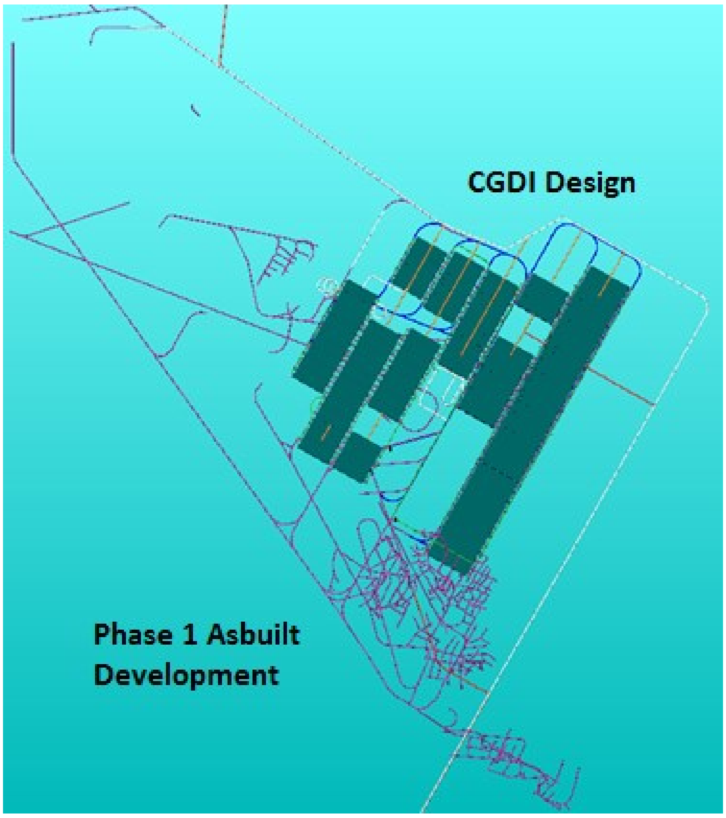


Figure 1-5: CGDI Stopes in Relation to As-built Development

0.23% CuEq for Jiaoyan Pit, 0.29% CuEq for South Pit and 0.45% CuEq for UG - November 2013

Total Pit Reserves-South Pit

Type	Quantity Mt	Cu %	Mo %	Pb %	Zn %	Au g/t	Ag g/t	Cu Metal Kt	Mo Metal Kt	Pb Metal Kt	Zn Metal Kt	Au Moz	Ag Moz
Proven	2.9	0.45	0.03	0.15	0.08	0.05	9.54	13.03	0.85	4.34	2.43	0.00	0.89
Probable	84.3	0.73	0.02	0.60	0.33	0.20	25.20	611.75	13.99	509.85	275.03	0.53	68.31
Subtotal	87.2	0.72	0.017	0.589	0.318	0.19	24.67	624.78	14.84	514.19	277.46	0.54	69.20
Waste	309.6												
Strip Ratio	3.5												

Total Pit Reserves_Jiaoyan

Type	Quantity Mt	Cu %	Mo %	Pb %	Zn %	Au g/t	Ag g/t	Cu Metal Kt	Mo Metal Kt	Pb Metal Kt	Zn Metal Kt	Au Moz	Ag Moz
Proven	5.0	0.38	0.01	0.00	0.01	0.02	0.94	19.25	0.65	0.16	0.29	0.00	0.15
Probable	148.5	0.40	0.02	0.01	0.01	0.03	1.11	593.76	26.83	8.62	8.65	0.15	5.32
Subtotal	153.5	0.40	0.018	0.006	0.006	0.03	1.11	613.00	27.48	8.78	8.94	0.16	5.47
Waste	222.4												
Strip Ratio	1.4												

Total Underground Reserves

Type	Quantity Mt	Cu %	Mo %	Pb %	Zn %	Au g/t	Ag g/t	Cu Metal Kt	Mo Metal Kt	Pb Metal Kt	Zn Metal Kt	Au Moz	Ag Moz
Proven	17.0	0.75	0.049	0.045	0.033	0.27	14.74	127.2	8.42	7.72	5.54	0.15	8.06
Probable	183.1	0.73	0.050	0.018	0.019	0.32	13.66	1,342.9	92.28	32.08	34.87	1.85	80.43
Subtotal	200.08	0.74	0.050	0.020	0.020	0.31	13.76	1,470.18	100.70	39.80	40.40	2.00	88.49

Total Reserves - Open Pit and Underground

Type	Quantity Mt	Cu %	Mo %	Pb %	Zn %	Au g/t	Ag g/t	Cu Metal Kt	Mo Metal Kt	Pb Metal Kt	Zn Metal Kt	Au Moz	Ag Moz
Proven	25.0	0.64	0.04	0.05	0.03	0.19	11.35	159.52	9.92	12.22	8.25	0.15	9.11
Probable	415.9	0.61	0.03	0.13	0.08	0.19	11.52	2,548.44	133.10	550.54	318.55	2.53	154.06
Total	**440.83**	**0.61**	**0.03**	**0.13**	**0.07**	**0.19**	**11.51**	**2,707.96**	**143.02**	**562.76**	**326.81**	**2.69**	**163.17**

Figure 1-6: Reserve Estimate as at November 2013

1.11 Capital Costs

The total estimated cost of bringing the Project into production is USD 716.2 million. A summary of capital costs is shown in Table 1-8 below.

Table 1-8: Estimated Capital Costs

Investment Summary By Majors				
Item	**Description**	**Total Capital Million US$**	**Major (Million US$)**	
			Mining	**Processing**
1	Geology	1.513	*1.513*	*0.000*
2	Mining	141.167	*141.167*	*0.000*
3	Machinery	25.535	*25.535*	*0.000*
4	Processing	110.724	*0.000*	*110.724*
5	Tailing	75.075	*0.000*	*75.075*
6	Civil Engineering	82.381	*21.443*	*60.938*
7	Drainage	38.390	*3.122*	*35.267*
8	HVAC	4.312	*0.745*	*3.567*
9	Power	42.649	*17.543*	*25.106*
10	Meter	13.154	*8.615*	*4.539*
11	General Plan	52.964	*33.030*	*19.934*
12	Environmental	4.098	*4.098*	*0.000*
13	Other Construction Cost	68.792	*68.792*	*0.000*
14	Contingency	25.953	*25.953*	*0.000*
15	Office Appartment	29.508	*29.508*	
Total Construction Capital		716.217	*366.313*	*349.905*

**Source: Jiama Phase 2 Preliminary Design Capital Cost Report*

Operating costs over the life of the open-pits is estimated to be USD 11,264 million. This equates to approximately USD 23.48/ore tonne. A summary of operating cost items is shown in Table 1-9.

Table 1-9: Summary of Operating Costs

Item	**Total Cost (USD)**	**Unit Cost (USD/Oret)**
Mining Costs	$5,167,789,460	$11.50
Processessing Costs	$4,520,043,181	$10.06
Fixed Costs	$149,025,210	$0.33
Overhead Costs	$711,238,404	$1.58
Total OPEX	**$10,548,096,256**	**$23.48**

1.12 Financial Modelling and Economic Analysis

A summary of the economic analysis is shown in Table 1-10.

Table 1-10: Summary Economic Analysis

Project KPI	Unit	Pre-Tax	Post-Tax
Total Cash	USD	7,406,783,715	5,785,209,159
Net Present Value (NPV)	USD	1,873,148,514	1,324,968,062
Internal Rate of Return (IRR)	%	29.7%	24.0%
Payback Period (Undisc. Cash)	Years	5.62	6.72
Payback Period (Disc. Cash)	Years	6.68	7.91
Max. Cash Draw Down (Undisc. Cash)	USD	-($401,548,388)	
Max. Cash Draw Down (Disc. Cash)	USD	-($401,548,388)	
Operating Margin (EBITA / Revenue)	%	38.4%	

The pre and post-tax amounts are estimated using a discount rate of 9%.

The complete open-pit and underground of Jiama Phase II Expansion project is expected to have a post-tax net present value of USD 1.324 billion with an internal rate of return of 24.0%.

Given the discussed capital costs, the project will pay itself off in approximately eight years.

1.13 Recommendations

- The current open pit operation is being mined utilising contractors, based on a thorough examination of the data supplied to Mining One a flat rate of 38.23 RMB/bcm and 36.93 RMB/bcm for Jiaoyan and South Pit respectively has been applied for the excavation and haulage of both waste and ore. While a thorough review of the agreement was not undertaken it is the opinion of the author that Mining loss and dilution could be compromised due to the pricing mechanisms. A flat rate provides minimal incentive for optimising the loss and dilution parameters and provides motivation for bulk earthworks. With this said, the contract was not sighted to validate if other mechanisms have been included in the agreement.
- The underground schedule provides an adequate overview of the mining reserves for the life of mine. It would be recommended that further definition of the underground be carried out to better define the mining methods and the use of bottom up stoping as opposed to the currently scheduled top down method.
- Based on an earlier high level review of the Jiama deposit, it is Mining One's opinion that there is opportunity to increase the size of the current open pit operations:
  - The southern extent of the ore body has not been closed off by the exploration program, therefore there is potential of further mineralisation to the south. It is recommended that further drilling be conducted to understand the true extents of the resource.

  - Current market prices have been applied to the financial modelling. A number of the commodities are believed to be reflective of a soft market and therefore there is opportunity for improvements in the sales revenue if a shift in pricing occurred.
  - The current waste management (waste dumps) present a risk to further extension of the ore body to the south as waste dump #4 is located directly to the south of the South pit. It is recommended that sterilisation drilling be conducted prior to the commencement of this and other waste dumps.
- Mining and exploration licences are current however the rates of mining that have been nominated on these licences is below the production rates anticipated from the Phase II development. It is advisable that these licences be reviewed in line with or above the current production expectations. This has been noted previously and it is Mining One's understanding that new titles will not be issued by the Chinese authorities until the expiry of the current titles.

2 INTRODUCTION

Mining One Consultants (M1), at the request of China Gold International Resources Corp Ltd (China Gold), were commissioned to review data as presented in the "Feasibility Study for the Phase II Expansion Project" (The Study), prepared by the Changchun Gold Design Institute (CGDI) in conjunction with China Gold International Resource Corp Ltd.

The Study is a focus of the Jiama Polymetallic resource located in Metrorkonga Country of Tibet. The scope of this study included the preparation of a Mineral Resource and Reserve Estimate for the Jiama project, specifically related to the Phase II Expansion Project. This document has been prepared in accordance with the Canadian Securities Administrators' National Instrument 43-101 (NI 43-101) in accordance with Form 43-101F1 - Guidelines for the Preparation of Technical Reports.

Mineral Resource and Mineral Reserve estimations have been prepared in accordance with the Canadian Institute of Mining, Metallurgy and Petroleum (CIM) Definition Standards – On Mineral Resources and Mineral Reserves (2011) as incorporated by reference NI 43-101.

This report has been prepared by Mining One for use by China Gold management to provide technical and economic information on the Jiama Phase II Expansion Project. Phase II of the expansion incorporates two open pits and an underground operation. This report considers both the proposed open pit and underground operations. This report is submitted on the understanding that the technical data contained herein has been provided by China Gold and reviewed by technical professionals who have validated the technical data and assumptions contained in the respective bodies of work.

2.1 Terms of Reference

China Gold International Resources Corporation Ltd, is a Canadian based gold and copper producer with two producing mines in China. These mines include the CSH Gold Mine in Inner Mongolia, and the Jiama Copper-Polymetallic Mine in the Tibet Region. China Gold International Resources Corporation Ltd, is the only overseas listing vehicle of the largest gold producer in China and 39% shareholder, China National Gold.

The Jiama project is a large polymetallic deposit containing copper, molybdenum, gold, silver, lead and zinc. Phase 1 of the Jiama Project commenced commercial production in September 2010 and included the development of the Tongqianshan and Niumatang open cut pits. These pits currently produce 1.8 Mtpa of ROM feed. The ore from these mines is processed via two processing plants with a current processing capacity of 6,500 tonnes of ore per day.

This technical report is specific to the Phase II Expansion of the Jiama Project. Phase II includes the addition of two more open pits namely the Jiaoyan and South complimented by an underground operation. Conventional mining methods will be adopted for both the open cut pits which include drill, blast, excavate and haul. Various underground mining methods have been proposed for the Phase II expansion with the primary mining method proposed being Sub-Level Open Stoping with Fill (Primary / Secondary/Tertiary).

The reserve estimate for the Jiama underground mine is based on a combination of Sub-Level Open Stoping with fill, Long Hole Stoping (LHS) with paste fill, Room and Pillar and Cut and Fill. These mining methods are described in section 16.

The purpose of this report is to provide an estimate of the Mineral Resource and Reserve for the Phase II expansion project and provide an estimate of the economic value of the operation considering mining modifying factors, geotechnical constraints, mining methods and metallurgical characteristics of the deposit.

This technical report is a summary of the Phase II Expansion as prepared by Mining One in conjunction with China Gold. The Authors of the report were engaged by China Gold to prepare a technical report in compliance with NI43-101.

Unless otherwise stated, monetary values are in US dollars (USD).

Table 2-1: Abbreviations

Abbreviations	Unit or Term
AAS	Atomic Absorption Spectrometry.
AES	Atomic Emission Spectrometry.
Ag	Silver.
Au	Gold.
bcm	Bank cubic metre
BRIMM	Beijing General Research Institute of Mining and Metallurgy.
CAPEX	Capital Expenditure
CGDI	Changchun Gold Design Institute
China Gold	China Gold International Resources Corp Ltd.
CNAL	Chinese National Accreditation Board for laboratories.
Cu	Copper.
g	Grams.
g/t	Grams per tonne.
HKEx	Hong Kong Stock Exchange.
Huatailong	Tibet Huatailong Mining Development Company Ltd (indirectly wholly owned by China Gold International Resources Corporation).
ICSG	International Copper Study Group.
lb	pound
M1	Mining One Consultants Pty Ltd.
MMC	Minarco Mine Consult (Runge) Consultants who prepared the 2011 pre-feasibililty report.
Mo	Molybdenum.
MSO	Mineable Solid Object.
NI43-101	Canadian Securities Administrators' National Instrument 43-101.
NPV	Net Present Value.
OPEX	Operational Expenditure
oz	ounce
Pb	Lead.

Abbreviations	Unit or Term
RPM	Runge Pincock Minarco (Global).
RMB	Yuan – (¥)
SLC	Sub Level Caving.
Southwest Centre	Southwestern Metallurgic Geology Analytical Centre.
t	tonne
The Study	Feasibility Study for the Phase II Expansion Project
QA	Quality Assurance.
QC	Quality Control.
US	United States.
USD	United States Dollars ($)
Zn	Zinc.

2.2 Author's Qualifications & Responsibilities

The Jiama Phase I project has been operational since September 2010, operations from both the Tongqianshan and Niumatang open cut pits provide a substantial level of confidence in the operational assumptions made in the evaluation of the two new open pit mines as is the case with the existing underground operations. As a result of this confidence, a single site visit was conducted to validate the assumptions made for the development of the Jiaoyan and South pits.

Responsibilities for the preparation of certain sections of this Technical Report have been assigned to individual authors as shown in Table 2-2 of this report and such individual authors are not responsible for sections of this report other than those indicated in this table.

Table 2-2: Technical Reporting Responsibilities

Report Section	Qualified Person	Company
1-14	Bin Guo, BSc Geology, MSc Structural Geology, Ph.D. Exploration Geophysics, AIG, ASEG, MAusIMM	GL Resources
13, 17	Ron Goodman, Principal Metallurgist, HNC (Metallurgy), United Kingdom	Mining One Pty Ltd
1-3, 15-27	Anthony R. Cameron, BE (Mining), GradDipBus, M Comm Law, FAusIMM	CMC Ltd

Bin Guo is a sub-consultant to Mining One Pty Ltd, he has 13 years' of industry and academic experience, with specific expertise in exploration management, 3D integrated geological and geophysical modelling / targeting and fulfils the requirements to be a QP for the purpose of NI 43-101.

Ron Goodman has more than 40 years in the mining and mineral processing industry, his positions have included process research and development, equipment development, project engineering and operations management at senior and executive levels. Ron has extensive experience in feasibility, due diligence and valuation studies.

Anthony R Cameron is a sub-consultant to Mining One Pty Ltd and is classified as an independent author. He is a Fellow of the Australasian Institute of Mining and Metallurgy and has over 26 years of relevant engineering experience and is the Qualified Person for Mineral Reserves.

Bin Guo visited site on the 14th and 15th of July 2013 and Tony Cameron visited the site on the 29th of April 2012. Jeff Zhang a mining engineer employed by Micromine Consulting Services was deputised by Tony Cameron and visited site between the 14th and 17th of July 2013.

2.3 Limitations and Exclusions

This technical report has been prepared by the Authors for China Gold and is based, on a review of The Study prepared by CGRI in conjunction with China Gold for the "Jiama Phase II Expansion Project".

The independent Authors have not performed any sampling or assaying, performed any detailed geological mapping, excavated any trenches, drilled any holes or carried out any independent exploration work.

3 RELIANCE ON OTHER EXPERTS

This report has been prepared by the Authors for China Gold International Resources Corp Ltd and is based on the review, analysis, interpretation and conclusions derived from information that has been made available by China Gold. Additional validation of the data has been augmented through consultation with current employees of China Gold and consultants who have been involved with the Jiama Phase II Project.

The independent authors have not performed any sampling or assaying, performed any detailed geological mapping, excavated any trenches, drilled any holes or carried out any independent exploration or testing of the proposed mining area.

This technical report has been prepared with assistance of a number of China Gold employees who have provided local insight to many sections of this report. Their contribution has been invaluable in defining and validating operational and physical data used for the purpose of this technical study.

3.1 Agreements, Land Tenure, Surface Rights, Access and Permits

In reference to Sections 4.0 and 20.0, the Authors have not researched property ownership information such as tenement ownership or status, joint venture agreements, surface access or mineral rights and, have not independently verified the legal status or ownership of the Property. In relation to all tenement information, the author has relied on the information as provided by China Gold.

3.2 Historical Information

Historical information contained within this document has been provided by China Gold.

3.3 Risks Associated with the Valuation or Pricing

The financial model was constructed by Mining One to ascertain the Net Present Value of the operation. Within this analysis numerous economic and cost assumptions were required in order that a reasonable pricing estimate was used in valuing the project. While the model is built on sound financial principles, the quality and accuracy of the model outputs is a function of the input data. Input cost parameters were provided by China Gold and based on contractual agreements that are already in place at the operation. The following represents a summary of the pricing associated with the valuation contained within this report:-

- At the time of preparing the report the US dollar to RMB exchange rate was 6.1. This has been maintained throughout the analysis however is subject to change, based on global economic conditions.
- Contract mining rates for the open cut operations has been set by an agreed contract rate for each of the mining areas. The Jiaoyan pit has an agreed rate of 38.23 RMB per bcm of material movement including ore while the South pit has a rate of 36.93 per bcm. This equates to a cost of US$6.07 and US$5.86 per bcm respectively. The contract rate is a flat rate for ore and waste.

- Current contracts are based on an agreed rate for the initial 10 years of the project, it is anticipated that mining costs will escalate for the later part of the open pit mining process so an escalation cost of 0.15 RMB per 5m bench has been included into the cost of mining the open pit mines. This cost will only take effect below the 5,120 mRL and 5,000 mRL benches for Jiaoyan and South Pits respectively.

- The mining rates provided appears reasonable based on experience from other operations within the Chinese demographic;

- Contract tables were provided by China Gold and contained a comprehensive list of capital items. Validation of these capital items was not conducted by Mining One; however, the total cost of capital for a project of this size seemed reasonable based on previous studies.

- China Gold supplied a document titled "Jiama Phase II preliminary design capital cost estimate report" and released in November 2013. This document provided a detailed breakdown of the capital estimates required for the construction and commissioning of the Phase II project. This information was referenced for the capital estimate in the NPV analysis, capital spend was scheduled over the first three years based on estimated construction time. Plant processing rates have been scheduled to reflect this ramp up in production.

4 PROPERTY DESCRIPTION AND LOCATION

The Jiama Copper-Polymetallic Project (Jiama) is located in Metrokongka County, Tibet Autonomous Region, the People's Republic of China (Figure 4-1).

The mine lies approximately 68 km east-northeast of Lhasa, the capital of Tibet Autonomous Region. The project was fully acquired by Tibet Huatailong Mining Development Company Ltd (indirectly wholly owned by China Gold International Resources Corporation) on December 1st, 2010 and represents one of China's largest copper-gold mines.

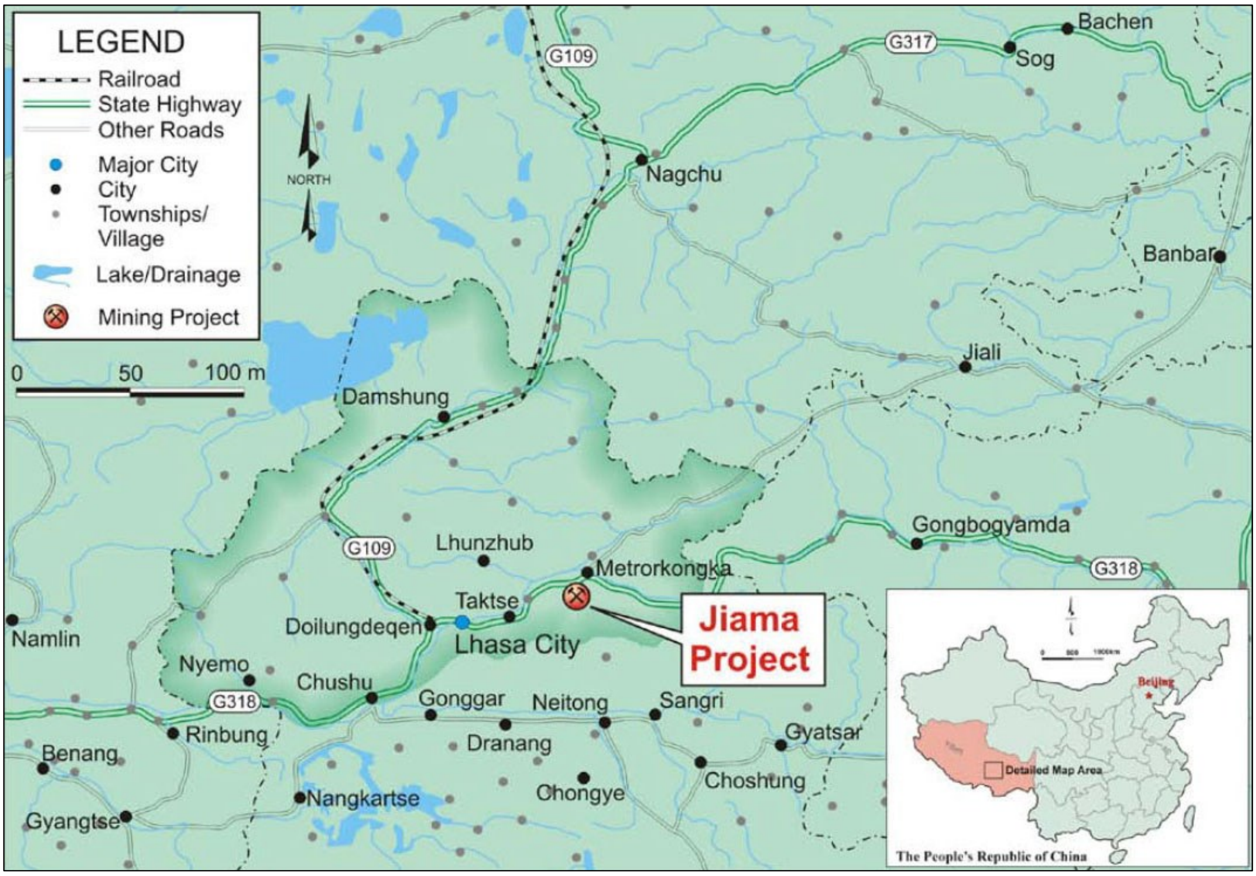


Figure 4-1: Location Map of Jiama Project

Huatailong holds two mining licences and two larger adjacent exploration licences in the area. The Niumatang (73.5 ha) and Jiama (216 ha) mining licences are set in the centre of the Jiama exploration licence while the Bayi Ranch licence is located southwest of the current mining activities, refer to Figure 4-3.

The first phase of the Jiama project commenced in 2010 with the construction of a 1.8 Mtpa ore flotation processing plant and associated tailings storage facilities, as well as the development of two open pits (Tongqianshan and Niumatang pits) which produced 4,563 tonnes of copper in the first half of 2013 (China Gold website). Figure 4-2 provides a gallery of images for the Phase I project.

Tongqianshan Open Pit

Underground Decline Portal at 4,490mRL

Niumatang Open Pit

Contractor's Haul Trucks

Processing Control Room

Power Station

Figure 4-2: Jiama Phase I Pictures

Phase II of the Jiama Expansion Project is expected to commence in 2014 which will see production boosted by 250% to a capacity of 16.5 Mtpa ROM ore by the end of 2016. The expansion will include the development of two additional open pits (Jiaoyan and South pits), along with the development of a large underground operation. The current Mineral Resource estimate as of November 2013 is 6.1 million tonnes of metal at 0.41% Cu.

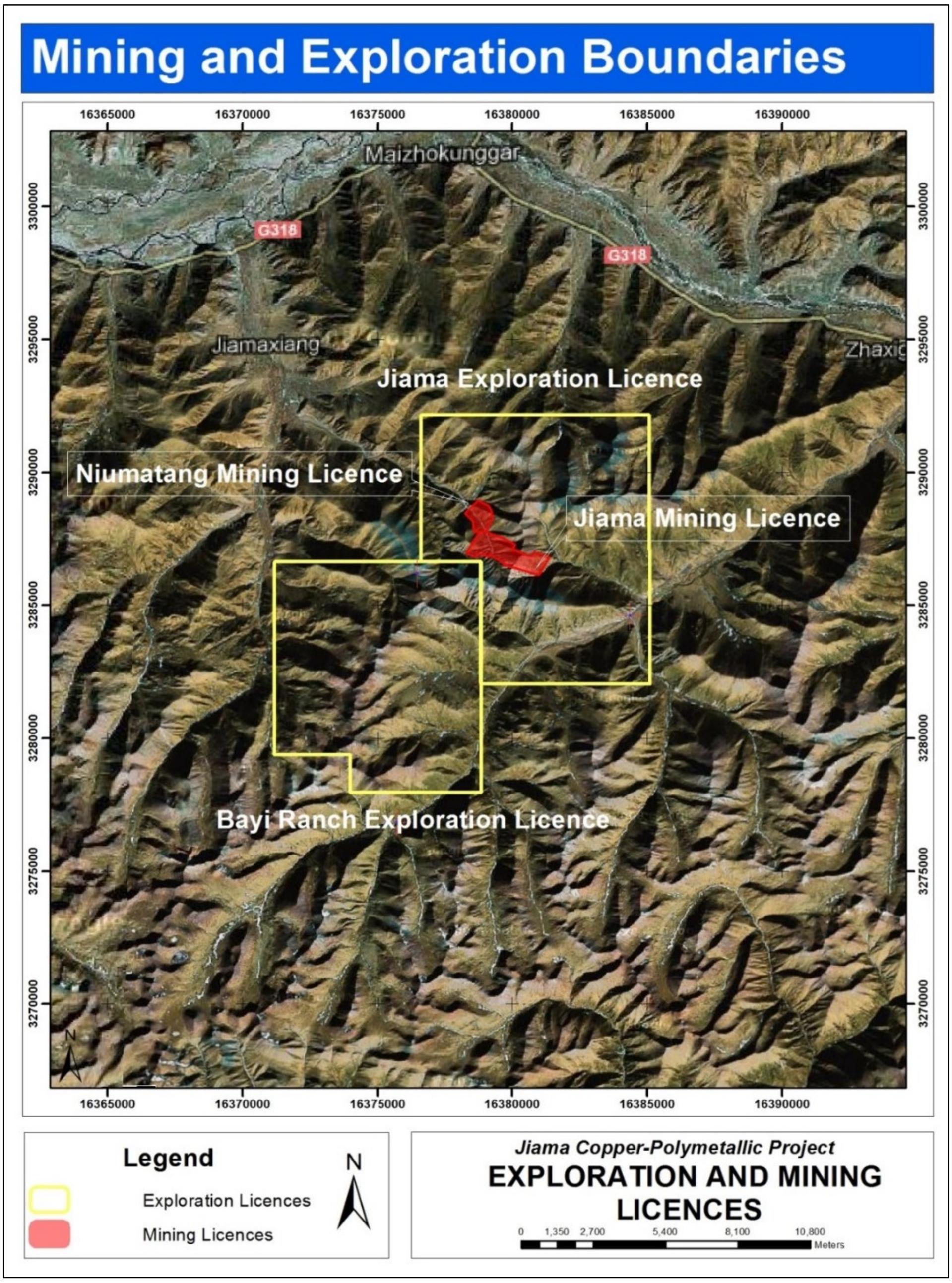


Figure 4-3: Jiama Mining and Mineral Exploration Licences (projected using the 1954 Beijing Coordinate System)

Table 4-1: Jiama Copper Polymetallic Project Mining Licence C5400002010073210070276

Mine/Project	Jiama Copper Polymetallic Mine Niumatang Zone
Name of Certificate	Mining Licence
Certificate No.	C5400002010073210070276
Owner	Tibet Huangtailong Mining Development Company Ltd.
Address	No. 34 Lhasa Jinzhu Middle Road
Mine Name	Jiama Copper Polymetallic Mine Niumatang Zone
Company Type	Limited Liability Company
Metal	Copper, Molybdenum, Lead, Zinc
Mining Type	Open Cut
Scale	0.9 Mt/year
Area	0.7352 sq. km.
Mining Evaluation	From 5,000 m to 4,100 m
Validation	July 15th, 2010 to July 15th, 2015
Issue Date	July 15th, 2010

Source: M1 sighted licence copies

Table 4-2: Jiama Copper Polymetallic Project – Mining Licence C5400002011113220119758

Mine/Project	Jiama Copper Polymetallic Mine 0-16-40-80, 0-15 Zone
Name of Certificate	Mining Licence
Certificate No.	C5400002011113220119758
Owner	Tibet Huangtailong Mining Development Company Ltd.
Address	13F, Foreign Economy & Trade Building, Lhasa Jinzhu West Road 75
Mine Name	Jiama Copper Polymetallic Mine 0-16-40-80, 0-15 Zone
Company Type	Limited Liability Company
Metal	Copper, Lead
Mining Type	Underground
Scale	2.00 Mt/year
Area	2.1589 sq. km.
Mining Evaluation	From 4,350 m to 4,100 m
Validation	November 1st, 2011 to April 1st, 2014
Issue Date	November 1st, 2011

Source: M1 sighted licence copies

Table 4-3: Jiama Copper – Polymetallic Project – Exploration Licence T54520080702010972

Mine/Project	Jiama Periphery Copper Lead Mine General Exploration
Name of Certificate	P.R. China Mineral Resource Exploration Permit
Certificate No.	T54520080702010972
Mine Right Holder	Tibet Huatailong Mining Development Company Ltd.
Location	Metrokongka County, Lhasa, Tibet
Name of Project	Jiama Mine Porphyry Copper Lead Mine General Exploration, Metrokongka, Lhasa, Tibet
Exploration Unit	Institute of Mineral Resources Chinese Academy of Geological Sciences
Exploration Acreage	76.19 sq. km.
Validation	April 23rd, 2013 to April 23rd, 2014
Issue Date	April 23rd, 2013

Source: M1 sighted licence copies

Table 4-4: Jiama Copper – Polymetallic Project – Exploration Licence T54520080702010976

Mine/Project	Jiama Periphery Copper Lead Mine Bayi Ranch Exploration
Name of Certificate	P.R. China Mineral Resource Exploration Permit
Certificate No.	T54520080702010979
Mine Right Holder	Tibet Huatailong Mining Development Company Ltd.
Location	Jiama Town, Metrokongka County, Lhasa, Tibet
Name of Project	Bayi Ranch Exploration, Metrokongka, Lhasa, Tibet
Exploration Unit	Institute of Mineral Resources, Chinese Academy of Geological Sciences
Exploration Acreage	66.41 sq. km.
Validation	April 23rd, 2013 to April 23rd, 2014
Issue Date	April 23rd, 2013

Source: M1 sighted licence copies

Mining One has been provided copies of the mining licences and exploration licences by China Gold International Resources Corp Ltd and considers them valid and typical of mining and exploration licences issued by governing bodies. Details of the exploration licences are summarised in Table 4-1 to Table 4-4. All exploration licenses and mining licences require a minimum fee and a demonstration of expenditure to be maintained. To renew a mining permit, all relevant fees, taxes and compensation must be made to the relevant authorities. At the time of preparing this report, all licences were current as listed.

Mining has continued since 2010 under these licencing arrangements which provide precedence for Mining One's understanding of the local licencing process.

5 ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE AND PHYSIOGRAPHY

Tibet has an average of only 2 people per square kilometre. The Tibet Autonomous Region has the lowest population density among any of the Chinese province-level administrative regions, mostly due to its harsh and rugged terrain. Lhasa, the capital of Tibet Autonomous Region, is located within the Himalayan Mountains and has an elevation of 3,600 m above sea level and a population approximating 250,000. The Jiama mine lies approximately 68 km east-northeast of Lhasa and has an elevation approximating 4,700 m above sea level. Due to its high elevation the climate is a cool semi-arid climate with frosty winters and mild summers.

5.1 Topography

The topography of the Jiama project is mountainous with elevations up to 5,410 m above sea level. The local terrain consists of steep slopes and large changes in relief, making the area technically challenging for the development of the mining assets.

5.2 Climate and Vegetation

The climate in Lhasa consists of cold dry winters with an average temperature of -1.6 degrees Celsius. Summer periods are characterised by a humid but cool climate with an average temperature of 16 degrees Celsius. Climatic conditions at the Jiama project will be slightly cooler due to the additional elevation. The high elevation also impacts on the air quality with thin air likely to affect personnel who have not acclimatised to the local region

The average annual precipitation is 500 mm with rain commonly falling in July, August and September. Nearby Lhasa receives almost 3000 sunlight hours per annum, prompting many locals to name it the ‘sunlit city’.

5.3 Project Access

Access to the project site is via the Sichuan–Tibet Highway (National Road G318) approximately 60 km east of Lhasa. An 8 km paved road connects the mine and camp to the highway. Lhasa is connected to other locations via road, rail (Qingzang Railway) and has daily national and international flights from the Lhasa–Gonggar Airport. The project is considered well located due to its proximity to the Tibetan capital.

The topography within the exploration licences is mountainous with large elevation differences between valleys (4,435 mRL) and the surrounding precipitous slopes and peaks (5,390 mRL). The mine itself sits in the headwaters of one of the many tributaries feeding into the Lhasa River. The landscape is without trees and dominated by skeletal, rocky soils covered with patches of dry perennial grasses and shrubbery. The project area (including exploration licences) contains a small local population, of which most are yak and sheep graziers.

Regional resources regarding labour, supplies and equipment are adequate to support increased mining operations. Skilled personnel have traditionally been sourced from other China Gold operations and from other mining operations in China. Huatailong however has formed a logistics company comprised entirely of local staff and in the past have trained local Tibetans elsewhere in China.

5.4 Power

The mine site has direct access to the Central Tibetan Power Grid. Electricity for Phase I of the Jiama Expansion project is supplied by a recently constructed 110 kV electricity transmission line that runs from the Metrorkongka substation located approximately 20 km to the north of the Jiama Project Area. This facility is adequate to supply power to the Phase I and Phase II mining development. Electricity supply in the central Tibet region has been, in the past, insufficient for mining operations. The Tibet government and Central Government of China are progressing a power-supply development plan whereby the Central Tibet power grid will be connected to the national power grid in China. This work was understood to be ongoing at the time of writing.

5.5 Water

Water is a scarce commodity in the general area of the Jiama project. Fresh water rights have been secured from the Chikang River, for the purpose of human consumption and for the processing operations. The Phase I processing plant currently recycles water through the plant and from the tailings facilities with makeup water being sourced from the Chikang River. For the Phase II installation, a new high-level intake water pool shall be constructed for the water supply system. This will be located on the ore dressing industrial site. The construct of this additional facility is not perceived to be an issue. Water is not therefore considered a risk to the Phase II expansion.

5.6 Local Resources and Infrastructure

The Phase II expansion will require substantial construction to be carried out. Previous studies have indicated that Tibet has a weak industrial base and therefore the supply of construction materials such as sand, stone, cement and steel as required by the mine construction has been a concern for the development. For Phase II of the expansion, many of these obstacles have been overcome during Phase I and therefore Mining One considers there to be minimal risk in the development and construction of the site infrastructure and do not believe construction constraints represent a significant risk to the project.

5.7 Personnel

With the Phase I open cut mines currently operating and scheduled for closure during the early stages of Phase II, a component of the required workforce is already employed at site. The availability of personnel has been achieved with a number of contract agreements being signed for the the supply and accommodation of operational personnel. Both open pit and underground mining operations have been provided for within the contracts. Procession personnel and management staff will be accommodated in the existing facilities which will be expanded to facilitate the needs of the Phase II expansion.

5.8 Accommodation

Accommodation for the workforce will be contained on site as part of the site facility. With Phase I accommodation facilities in place, the expansion to a Phase II facility is not seen as a significant technical challenge. All mining contractors will provide accommodation for their respective workforces. At the time of writing construction of the Phase II camp had commenced for the housing of China Gold personnel.

6 HISTORY

6.1 Pre 2008

Surface trenching exploration and geological works undertaken between 1951 and 1990 identified and delineated a 3.6 km long zone of copper-lead zinc mineralisation, although artisanal mining of lead occurred prior to this. In 1990, following a review of these early results, the Tibetan Geology and Minerals Resource Bureau implemented a much larger field program. Between 1990 and 1999，the No. 6 Geological Brigade (Brigade 6) from the Bureau completed 31 diamond drill holes for a total of 10,091 m on 16 exploration traverses. 407.5 m of underground development and 16,474 m^3 of surface trenching was completed during this time.

As a result of this work，four mining licences within the current Jiama Project mining licence boundary were issued and mining operations commenced shortly after:

1. The Jiama Township Fupin Development Company Limited constructed a 300 tpd concentrating plant and commenced mining in 2004. A total of 14 adits were developed for mining with an estimated 49,000 tonnes of ore being mined to the end of June 2006.
2. Open pit and underground mining practices were carried out on the mining licence by the Lhasa Mining Company. Open pit mining commenced above the MSL elevation of 4,780 m in 1995. Prior to 2006, a total of ten adits were developed between MSL 4,606 m and 4,780 m with total production from the open pit and underground workings approximating 130,000 tonnes.
3. A joint venture between the Tibet Jiama Mining Development Company Limited, and Henan Rongye Trading Company Limited was established. Mining commenced in 2003, with a total of 109,000 tonnes of ore being mined through until the end of June 2006.
4. The Original Tibet Huatailong Mining Development Company Limited commenced mining in 2005. The estimated mine production from three mining adits was 80,000 tonnes to June 20, 2006.

In the period prior to 2006, it is estimated that the total mining production for the four operations at Jiama was 368,000 tonnes. In the absence of any reliable total historical mine production figures, the Resource Institute conducted a systematic survey of the existing underground workings using mined stope volume as a proxy for consumed mineral resources. The Tibetan government stopped all 4 operators from mining in April 2007, and in an agreement with the China National Gold Group Corporation consolidated the mining/exploration licences and awarded it to the newly reorganised Tibet Huatailong Mining Development Company.

6.2 2008-2012

Exploration work has been completed in a number of distinct phases following the consolidation of the licences. 2008 marked the beginning of an extensive exploration program with 105 diamond holes drilled, the development of survey control points and the completion of a 1:200 topographic survey. In 2009, exploration consisted of an in-fill drill programme in the Niumatang Open Pit area and step-out drilling along the northwest margin of the known zone of mineralisation.

Further exploration drilling during 2010 greatly expanded the mineral resource and was followed by in-fill drilling in the area of the proposed Jiama Open Pit throughout 2011. Huatailong commissioned a pre-feasibility study in 2012 and continued in-fill and step-out drilling in the region of the proposed South Pit.

7 GEOLOGICAL SETTING AND MINERALISATION

7.1 Regional Geological Setting

Tibet is composed of an amalgamation of distinct structural terranes formed during episodes of oceanic lithosphere subduction and accretion during the Palaeozoic to Mesozoic (Shundong et al., 2007). The four major terranes, separated from one another by regional scale, semicontinuous east–west sutures, are the Songpan–Ganze, Qiangtang, Lhasa and Tethyan Himalayan terranes (Figure 7-1).

The Lhasa Terrane (in which the Jiama Project is located) is the southernmost crustal fragment that was accreted to the margin of the Eurasia Plate during the Jurassic to Early Cretaceous, prior to the collision of the Indian and Eurasian continental plates. The terrane is thought to overlie older crystalline basement and consists predominantly of Jurassic–Cretaceous fluvial/marginal marine clastic and carbonates and Late Cretaceous intermediate to felsic intrusives (Da-Ren Wen et al., 2008).

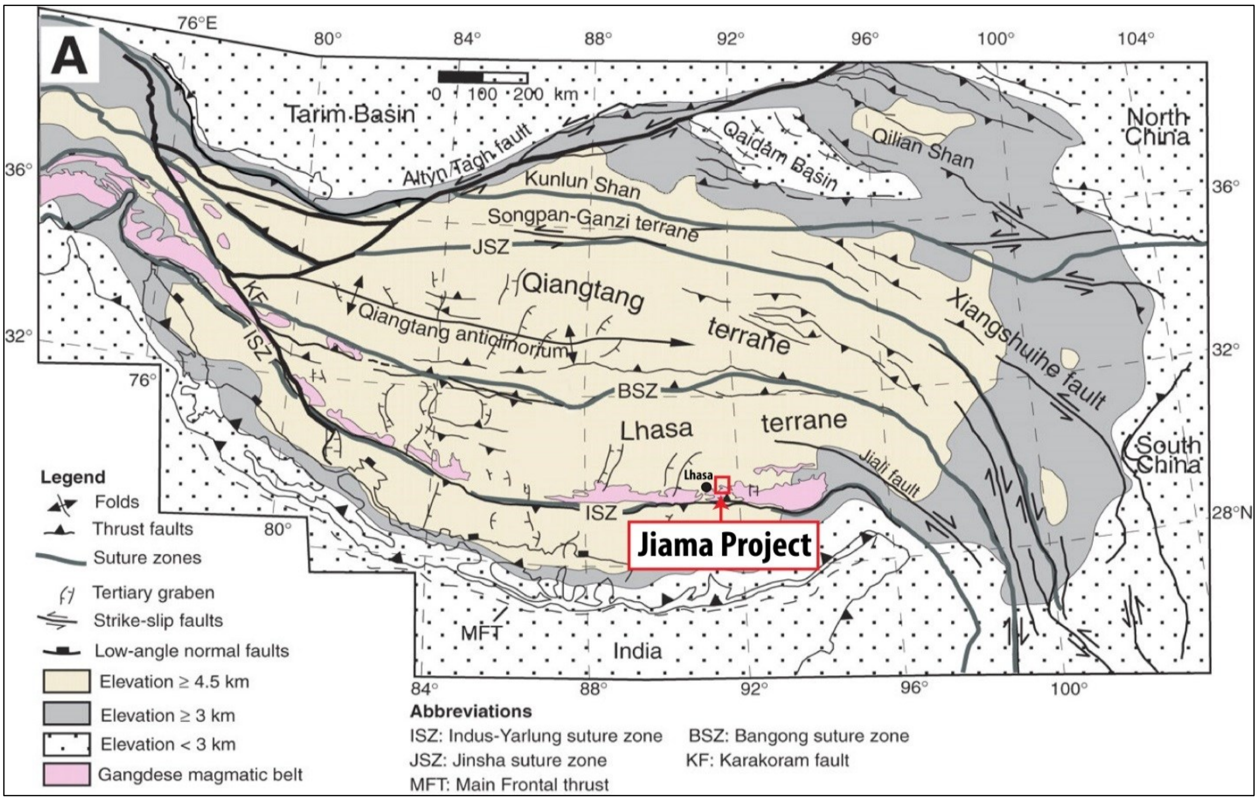


Figure 7-1: Simplified Tectonic Map of Tibet (after Burchfiel & Zhilang, 2012)

7.2 Project Geology

The Jiama project is located within the Gangdese Yanshanian epi-continental arc on the central southern portion of the Gangdese-Nianqing Tanggula Terraine. At the tenement scale (Figure 7-2), rock types are typically passive epi-continental clastics and carbonates. The stratigraphy is dominated by marbles and limestones of the Upper Jurassic Duodigou Formation and sandstones, slates and hornfels belonging to the Lower Cretaceous Linbuzong Formation.

Although some mafic and intermediate to felsic dykes have been mapped in outcrop and drill core, the intrusive granitic body responsible for the wide spread contact metamorphism and copper-polymetallic mineralisation is yet to be identified. A number of thrust faults and shears concentrated between major geological contacts and a large detachment fault (Gliding Nappe Fault) have also been observed. Locally, bedrock units are overlain by unconsolidated Quaternary colluvium and alluvium.

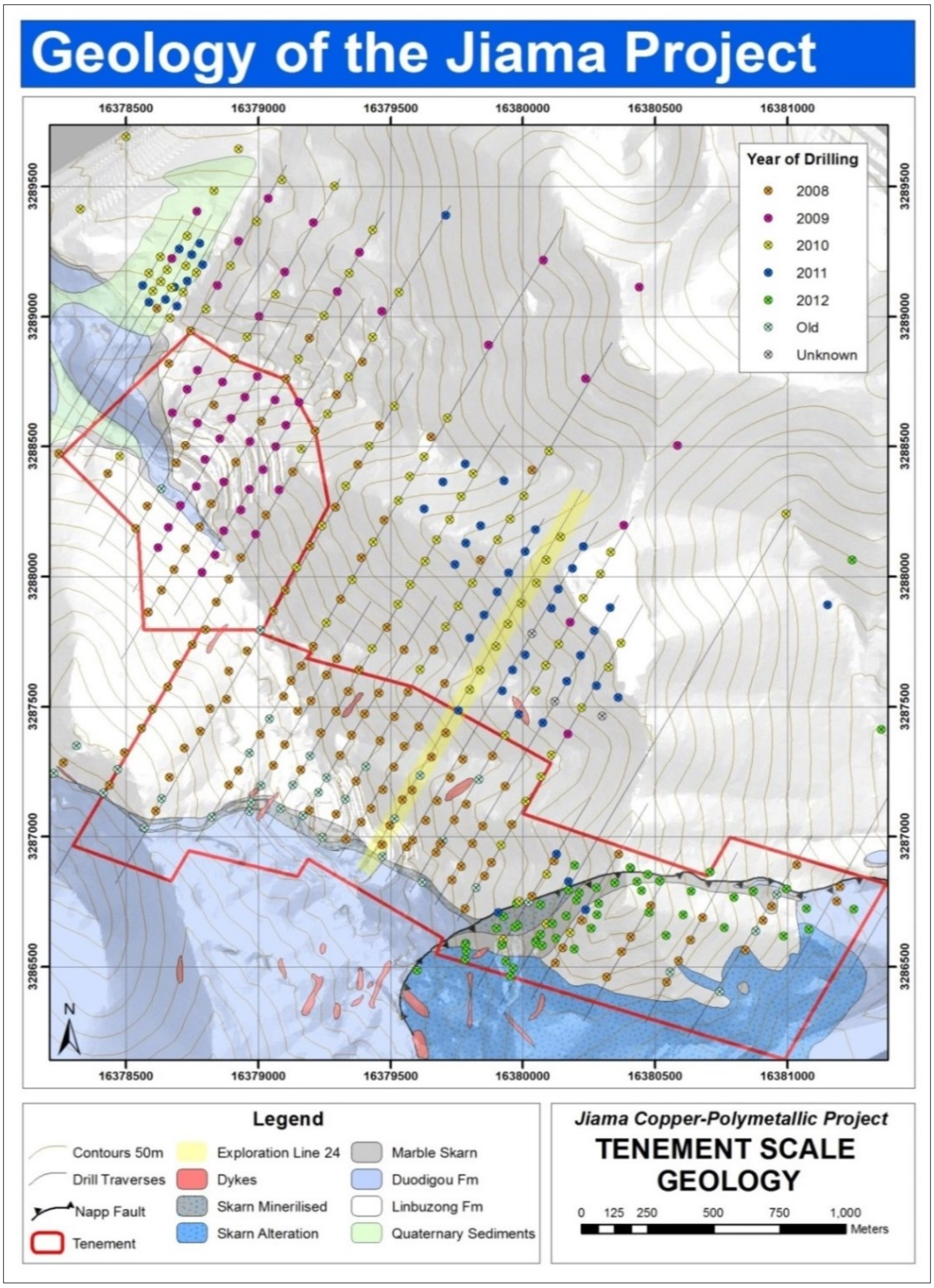


Figure 7-2: Geology of the Jiama Copper – Polymetallic (projected using the 1954 Beijing Coordinate System)

7.3 Mineralisation

Three types of copper-polymetallic mineralisation are recognised in the project area, these include skarn, hornfels and porphyry hosted deposits (Figure 7-2 & Figure 7-3).

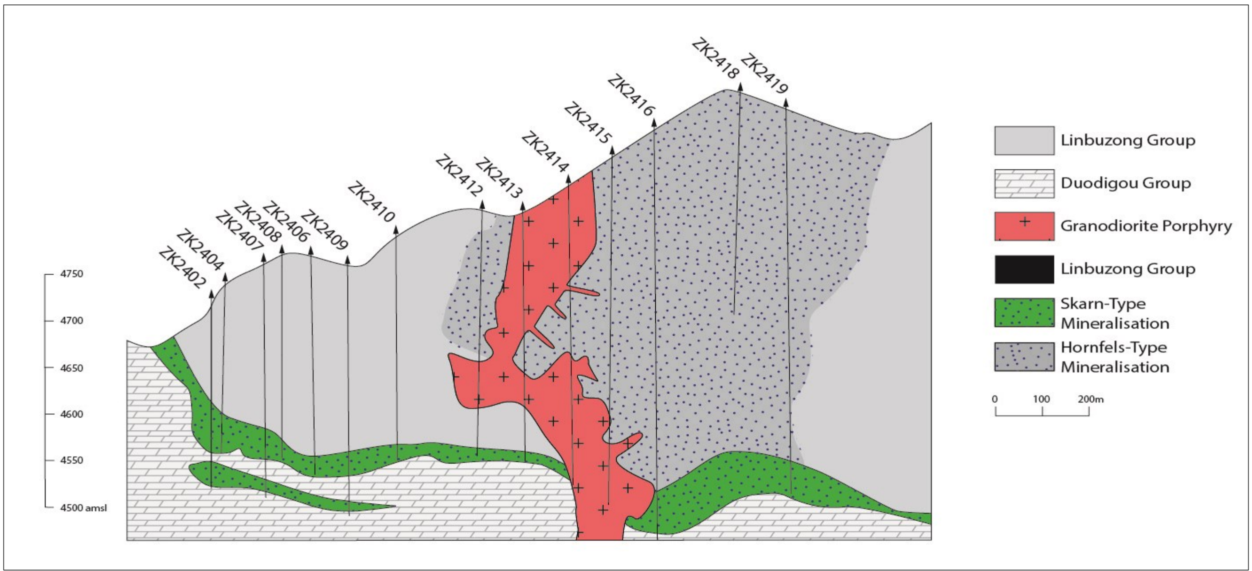


Figure 7-3: Geological Cross-Section along Exploration Line 24

7.4 Skarn-Type Copper-Polymetallic Mineralisation

High grade copper-polymetallic mineralisation is associated with skarn type alteration within shear zone contacts between the Duodigou and Linbuzong formations. This stratiform fault zone is tabular to lenticular in shape, has a variable dip, strikes west-northwest and hosts the primary lode.

The mineralised body itself has a 60° near surface dip angle which flattens to an average dip of 10° with depth. Thicknesses vary between 2 m to 240 m, averaging 33 m, its strike length is approximately 2,400 m and its length down dip ranges between 150 to 1,900 m. It is primarily divided into two zones of mineralisation; the Niumatang Zone and the Jiama Zone. A number of smaller, lenticular shaped skarn-type mineralised bodies have also been identified below and to the southeast of the primary body, however they are generally discontinuous and of limited strike (<200 m) and thickness.

Copper mineralisation shares associations with chalcopyrite, bornite and chalcocite and is hosted by either thin veinlets, as disseminated sulphide crystals or as massive sulphide zones.

Work undertaken by MMC identified the majority of the mineralisation occurring as disseminated sulphides enveloping thin (<10 cm), high grade vein sets of massive sulphides. Disseminated gold and silver share a similar distribution to that of copper, while molybdenum has a negative correlation. Lead and zinc are enriched near the surface, particularly towards the southwest of the deposit.

7.5 Hornfels Hosted Copper-Polymetallic Mineralisation

Hornfels hosted mineralisation is of lower grade than that of the skarn type deposits and occurs predominantly as disseminated sulphides. Mineralisation is fine grained and consists of copper in association with chalcopyrite, bornite and molybdenum. No massive sulphide zones or veining has been recognised within the texturally massive and highly fractures rock mass. Earlier observations of copper associated with pyrite and pyrrhotite coating fracture planes has been attributed to secondary enrichment.

The mineralised body shows no preferential orientation, it is shallow, tabular shaped and approximately 1,200 m in length, 1,000 m wide and generally 10 to 50 m thick, although a maximum thickness of 826 m was intercepted in drillhole ZK3216. It pinches out in the west-southwest and in general is thinner towards both the west-northwest and east-southeast.

7.6 Porphyry-Type Molybdenum-Copper Polymetallic Mineralisation

Mineralisation in porphyritic granodiorite and monzogranite is characterised by molybdenum with lesser amounts of chalcopyrite and bornite. Sulphides are medium to coarse grained and confined to a thin horizontal pipe shaped body with a maximum known thickness of 476 m. The porphyritic host lies beneath the Duodigou Formation and appears intruded into the sheared contact between the two basement units.

8 DEPOSIT TYPES

The Jiama deposit is a structurally controlled stratiform skarn-type copper-polymetallic system. The majority of high grade mineralisation is associated with shear zone contacts between the Duodigou and Linbuzong formations and shear related folding. The zone of mineralisation within fault hosted skarn alteration measures kilometres in both strike and dip and remains open at depth to the northeast.

Mineralisation is also associated with granite porphyry dykes intruding the 'Duodigou Marble' and observed within the overlying hornfels of the Linbuzong Formation (Figure 8-1).

Although both deposit types are of lower grade than that of the skarn, the hornfels style of mineralisation may potentially be of further economic value in the future.

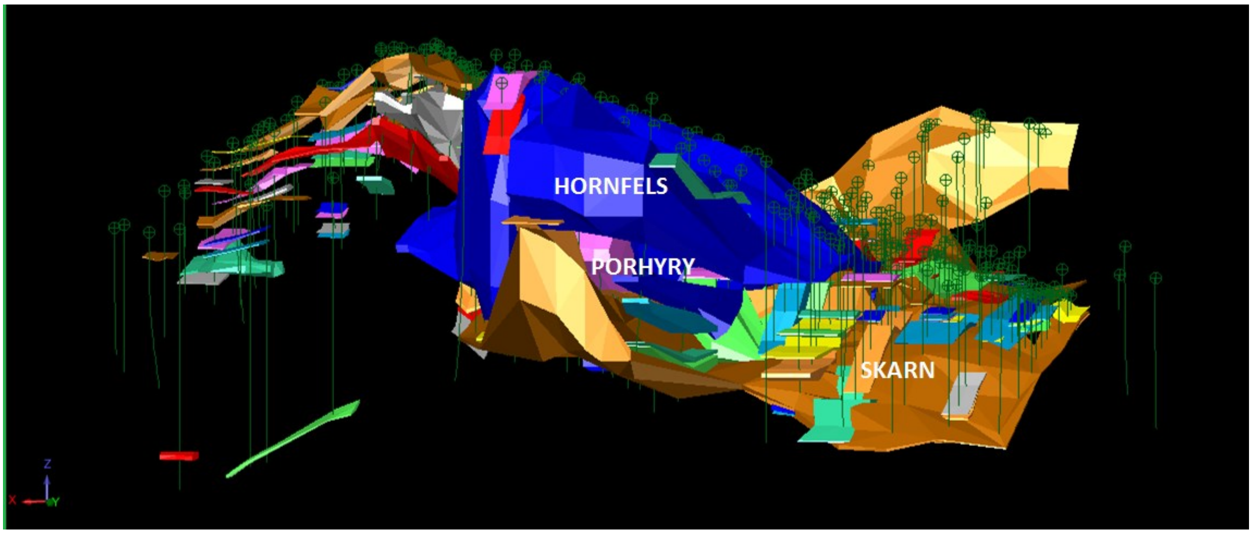


Figure 8-1: Jiama – Modelled Geological Domains

9 EXPLORATION

Exploration drilling has been carried out over the Jiama Resource for a number of years, the history of the exploration works are outlined below. This data has been obtained from various geological data bases that are maintained by China Gold. Unfortunately unless stated otherwise the sampling methodology adopted for the exploration work was not available.

9.1 Pre 1990

Minimal exploration was undertaken prior to the 1990's with only small scale mining occurring prior to the 1950's. Exploration between the 1950's and 1990 consisted predominantly of surface trenching to target the out cropping, no drilling was conducted during this period.

9.2 Years 1990–2000

Exploration work undertaken by Brigade 6 in the 1990's included 1:2,000 and 1:25,000 scale topographic surveys, geological mapping, surface trenching, adit development and diamond drilling. A total of 31 diamond drill holes with a total drilled length of 10,091 m were completed, along with the development of 407.5 m of adits and 16,474 m^3 of surface trenches. Exploration concentrated on the near surface portion of the mineralised zone and was conducted in accordance with Chinese Industry requirements at the time.

9.3 Years 2008-2012

Exploration work has been completed in four distinct phases following the consolidation of the licences.

In 2008 the exploration program included:

- 105 diamond drill holes with a total drill length of 50,616.65 m.
- Establishment of survey control points using differential GPS and based on the 1954 Beijing Coordinate System/1956 Yellow Sea Elevation System.
- A 1:2,000 topographic survey at two metre contour intervals.

In 2009 the exploration program included:

- 47 in-fill and step-out diamond drill holes in the Niumatang area with a total drill length of 18,745 m.

In 2010, the exploration program included:

- 99 Diamond drill holes with a total drill length of 49,613 m
- Jiama Resource Estimate was undertaken using 2008–2009 drilling results and limited historical data as part of a Behre Dolbear independent technical report.

In 2011, the exploration program included:

- 22 in-fill diamond drill holes totalling 10,720 m
- Updated Jiama Resource Estimate undertaken using 2008–2010 drilling results and limited historical data as part of a Behre Dolbear independent technical report.

In 2012 the exploration included:

- 58 certified in-fill diamond drill holes with a total drill length of 26,379 m in the area of the proposed South Pit
- Updated Jiama Resource Estimate undertaken using 2008–2010 drilling results and limited historical data as part of a Behre Dolbear resource update report
- Pre-Feasibility Study undertaken by Minarco-MineConsult (MMC).

10 DRILLING

Huatailong's 2012 drilling program consisted of 58 certified diamond drill holes with a total of 26,379 m drilled. In-fill drilling targeted the mineralised skarn of the Duodigou Formation in the area of the proposed South Pit, increasing drill density to approximately 100 m. All drill holes were drilled at either -90° or -70°.

Drilling and surveying of the 2012 drill holes was conducted in a similar manner as that for the 2011 drill program. Collar locations were surveyed using differential GPS after drilling and down-hole deviation measured using down hole-survey equipment generally at a 100 m interval. Completed drill holes were plugged using cement and marked with a cement post in the centre of the collar. Details of the drilling programs completed prior to 2012 are summarised in section 16 of this report.

Labelled and boxed drill core were transported from the drill pad to core warehouse, where core was logged, photographed and sampled. All remaining non-sampled core was labelled and stored to protect from the region's weather.

11 SAMPLE PREPARATION, ANALYSIS AND SECURITY

Little information regarding sample preparation, analysis and security was provided to Mining One directly other than the drilling database. Therefore the following has been summarised from the Behre Dolbear Asia Incorporated report 'Resource Update Report for the Jiama Copper-Polymetallic Project in Metrorkongka County, Tibet Autonomous Region, Peoples Republic of China', dated March 2012 and the pre-feasibility report undertaken by Minarco-MineConsult (MMC), November 12th, 2012.

11.1 Sampling Methodology

11.1.1 Brigade 6 Sampling (1990's)

The Tibet Central Laboratory of the Ministry of Geology and Mineral Resources of China conducted sample preparation and analysis for the Brigade 6 samples during the 1990's. Core samples were taken by mechanical splitter, with half the core sent for sample preparation and the remaining half retained for records. Sample intervals were generally 1.0 to 2.0 meters. Surface trenches were sampled with the trenches being 5 cm wide and 3 cm deep, orientated as perpendicular as possible to the trend of mineralisation/alteration.

11.1.2 Huatailong Sampling (2008–2011)

Cores were collected and following logging and photography of the core samples, a Geologist selected the zones of interest within the core length. The Geologist would determine the sample intervals for the purpose of assaying. The core was halved using a diamond rock saw with one half sent for sample preparation and the remaining half retained for records. Occasionally, sample lengths varied in relation to the geological characteristics of the core, however, the interval was commonly determined by the type of mineralisation, with intervals of 1.0 m for skarn-type mineralisation and 2.0 m for hornfels hosted mineralisation. The entire zone of mineralisation was sampled continuously and host rock either side of the mineralisation sampled every 2.0 m.

11.1.3 Huatailong Sampling (2012)

The 2012 sampling methodology was conducted in a similar manner as that for 2011, with standard interval sizes at the discretion of the geologist, but more commonly dependant on the style of mineralisation. The entire zone of mineralisation was sampled continuously and host rock either side of the mineralisation sampled every 2.0 m.

11.2 Sample Preparation and Analysis

11.2.1 Bridge Brigade 6 (1990's)

Sample preparation and analysis was conducted by the Tibet Central Laboratory of the Ministry of Geology and Mineral Resources of China, in accordance with regulations of the time. Although no detailed information was available concerning preparation and analysis, Behre Dolbear and MMC believe the assay results to be acceptable based on similar results in samples from subsequent drilling programmes.

11.2.2 Huatailong (2008–2011)

Between 2008 and 2011, sample preparation and analysis for the Huatailong core samples were undertaken by the Southwestern Metallurgic Geology Analytical Center (Southwest Center) in Chengdu, Sichuan Province, which is accredited by the Chinese National Accreditation Board for Laboratories. A two-stage crushing and grinding procedure to achieve a particle size to minus 200 mesh (0.074 mm). Sample splitting was not performed until the particle size was reduced to approximately 1 mm. A ground sample of approximately 400 grams was sent for analysis; a duplicate ground sample of approximately 500 grams as well as the coarse rejects was kept in the core storage warehouse.

Gold grades were determined using an aqua-regia/fluoride digestion, reactivated carbon concentrating and atomic absorption spectrometry procedure (AAS). Copper, lead, zinc molybdenum, and silver grades were determined using an aqua regia/hydrofluoric acid perchloric acid digestion and Inductively Coupled Plasma Atomic Emission Spectrometry (ICP-AES) or Ass procedure. Standard analytical methods adhere to the former Ministry of Geology and Mineral Resources of China's official publication 'The Quality Administration Standards for Analysis in Geological and Mineral Resource Laboratories' (DZ0130-94).

No Huatailong employees, offices, directors or associates were involved in the sample preparation.

11.2.3 Huatailong (2012)

The 2012 sample preparation and analysis was conducted in a similar manner as that for 2011 and again undertaken by the Southwest Metallurgical Geology Analytical Centre (Southwest Centre) in Chengdu, Sichuan Province. The laboratory is accredited by the Chinese National Accreditation Board for laboratories (CNAL).

Gold grades were determined using an aqua-regia/fluoride digestion, reactivated carbon concentrating and atomic absorption spectrometry procedure (AAS). Copper, lead, zinc molybdenum, and silver grades were determined using an aqua regia/hydrofluoric acid perchloric acid digestion and Inductively Coupled Plasma Atomic Emission Spectrometry (ICP-AES) or Ass procedure. Standard analytical methods adhere to the former Ministry of Geology and Mineral Resources of China's official publication 'The Quality Administration Standards for Analysis in Geological and Mineral Resource Laboratories' (DZ0130-94).

No Huatailong employees, offices, directors or associates were involved in the sample preparation. During the June site visit Mining One was able to confirm that appropriate sample and quality control procedures were in place to minimise sample bias.

12 DATA VERIFICATION

12.1 Quality Control Data for Pre-2011 Drilling

Data verification and QA/QC data for the 1990, 2008–2009 and 2010 drilling programs has been previously summarised in the March 2012 Behre Dolbear Asia Incorporated report 'Resource Update Report for the Jiama Copper-Polymetallic Project in Metrorkongka County, Tibet Autonomous Region, People's Republic of China'. Data verification and QA/QC data for the 2011 drilling program has been reviewed in the pre-feasibility report undertaken by Minarco-MineConsult (MMC), November 12th, 2012. Mining One has reviewed the QA/QC results reported for the pre 2012 drilling programs as outlined in the MMC and Behre Dolbear reports and have not identified any issues that would have a material effect on the resource estimation.

12.2 Quality Control Data for 2012 Drilling

Quality Assured and Quality Controlled (QA/QC) data provided to Mining One concerning the 2012 drill program included regular analysis of duplicate samples, standard reference materials and blank samples. The QA/QC data was taken from the Project database dated December 2012.

Samples were sent to the Southwest Centre laboratories, non-sequentially in large batches, therefore consecutive sample numbers do not reflect progression throughout the year and the presence of any annual bias was not detected in the below analysis. No information was provided concerning the practice of internal check assays.

Three analytical standards (two composite standards and a standard for gold) have been used for the 2012 drilling program, however it is unknown if analytical standards GBW07239, GBW07234 and GAu-15 are 'certified reference materials' (See Table 12-1). The Au standard and one of the three composite standards were inserted into the sample series at a rate of 1 in 50.

Table 12-1: Summary of the Analytical Standards used in 2012 (highlighted in green)

Standard Name	Standard Number	$\omega(Au)/10^{-6}$	$\omega(Ag)/10^{-6}$	$\omega(Cu)/10^{-2}$	$\omega(Mo)/10^{-2}$	$\omega(Pb)/10^{-2}$	$\omega(Zn)/10^{-2}$
Gold Ore -1	GAu-13	0.05	/	/	/	/	/
Gold Ore -2	GAu-15	0.30	/	/	/	/	/
Copper Ore-1	GBW07233	-1	3.9	1.15	0.00014	0.00091	0.059
Copper Ore-2	GBW07234	-1	0.7	0.19	0.00024	0.0013	0.013
Molybdenum Ore-1	GBW07238	-1	0.09	0.00936	1.51	0.00187	0.00655
Molybdenum Ore-2	GBW07239	-1	0.12	0.00486	0.11	0.00261	0.012

The reported analytical results for each of the three standards used in 2012 are presented in Figure 12-1 and Figure 12-2. In these figures, the expected set value (green), ±2 standard deviation QC warning limit (red) and ±3 standard deviation QC failure limit (red) are also shown.

Standard material analysis generally produced acceptable results, but with room for improvement, particularly the silver component of standard GBW07294 where average results were significantly higher than expected and 26% of all samples were beyond the limits of failure.

12.2.1 Duplicates

A total of 299 duplicates were sampled in 2012 and were inserted into the sample series at an average rate of 1 per every 50 samples. A review of the scatter plots (Figure 12-3) of the data provided to Mining One demonstrates strong correlations between the original and duplicate samples for all elements tested. Minor variations in the data were observed, although a review of this data, considers this variability natural rather than bias related to sample preparation or analytical technique.

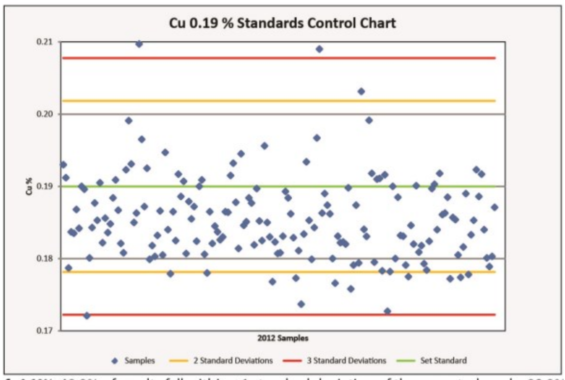
12.2.2 Analytical Blanks

319 blanks were analysed in 2012. When compared with the set standard values, Mining One considers the reported assay values returned for the blank material (Figure 12-4) within acceptable limits.

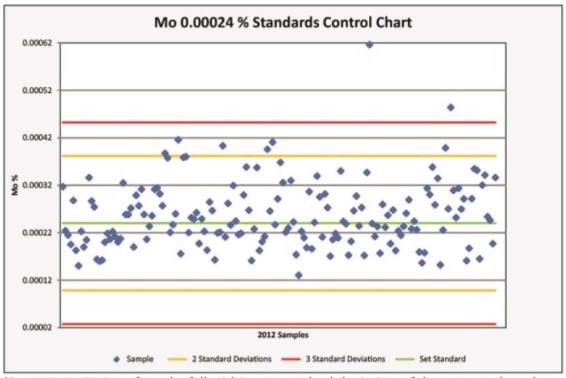
12.2.3 Conclusions

Based on the review of the drilling, sampling, sampling preparation, analysis and QA/QC data, Mining One is of the opinion that the 2012 samples for the Jiama Phase II Project meets industry standards and are suitable for mineral resource estimation.

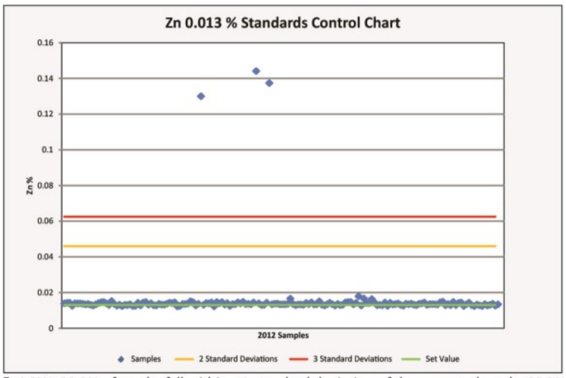
Cu Ore Standard 2 (GBW07234)



Cu 0.19%: 48.8% of results fall within ±1 standard deviation of the expected grade, 89.8% of results fall within ±2 standard deviations of the expected grade and 97.6% of results fall within ±3 standard deviations of the expected grade.

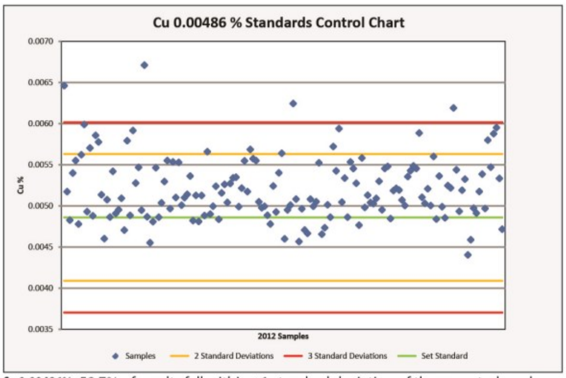


Mo 0.00024%: 72.3% of results fall within ±1 standard deviation of the expected grade, 94.5% of results fall within ±2 standard deviations of the expected grade and 98.8% of results fall within ±3 standard deviations of the expected grade.

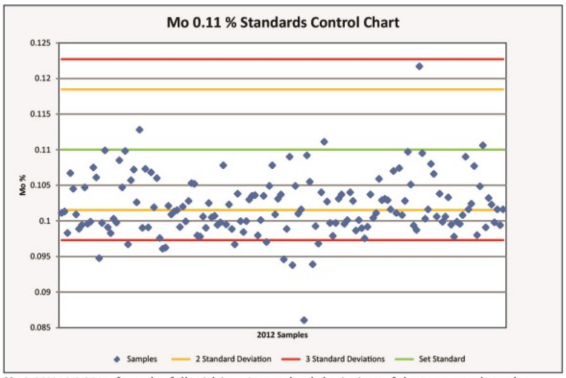


Zn 0.13%: 98.2% of results fall within ±1 standard deviation of the expected grade, 98.2% of results fall within ±2 standard deviations of the expected grade and 98.2% of results fall within ±3 standard deviations of the expected grade.

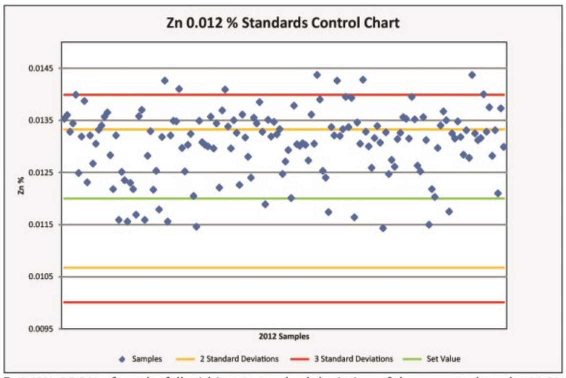
Mo Ore Standard 2 (GBW07239)



Cu 0.00486%: 59.7% of results fall within ±1 standard deviation of the expected grade, 87.7% of results fall within ±2 standard deviations of the expected grade and 97.4% of results fall within ±3 standard deviations of the expected grade.



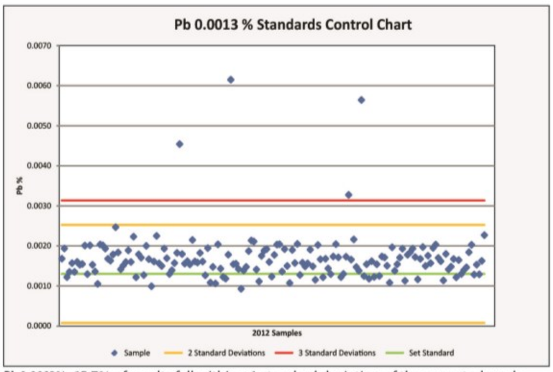
Mo 0.11%: 16.9% of results fall within ±1 standard deviation of the expected grade, 47.4% of results fall within ±2 standard deviations of the expected grade and 92.9% of results fall within ±3 standard deviations of the expected grade.



Zn 0.12%: 25.3% of results fall within ±1 standard deviation of the expected grade, 64.9% of results fall within ±2 standard deviations of the expected grade and 94.2% of results fall within ±3 standard deviations of the expected grade.

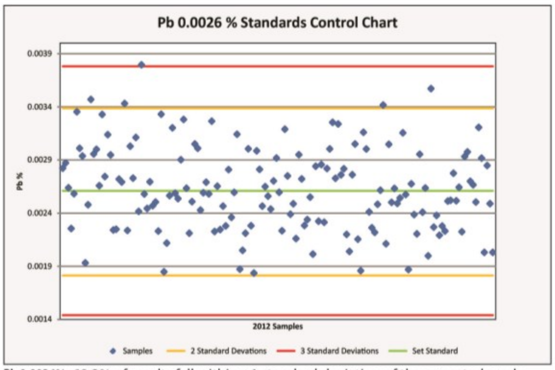
Figure 12-1: Variation of Reported Values for Analytical Standards, 2012

Cu Ore Standard 2 (GBW07234)

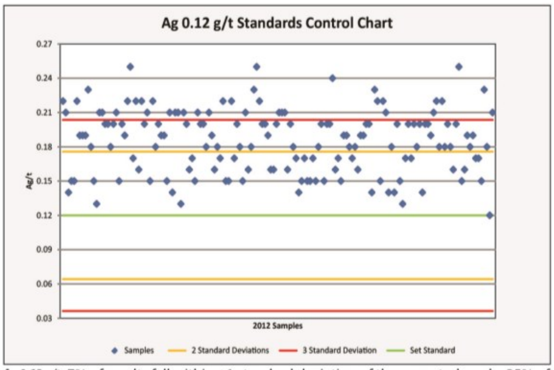


Pb 0.0013%: 65.7% of results fall within ±1 standard deviation of the expected grade, 97.6% of results fall within ±2 standard deviations of the expected grade and 97.6% of results fall within ±3 standard deviations of the expected grade.

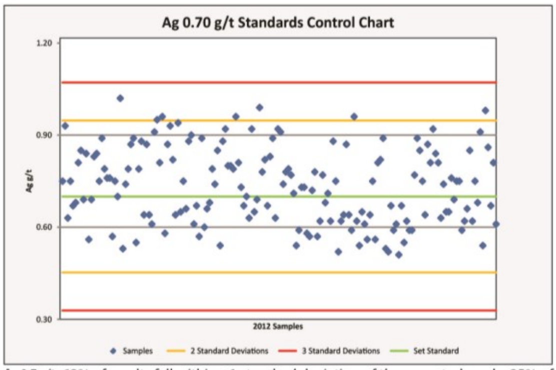
Mo Ore Standard 2 (GBW07239)



Pb 0.0026%: 68.2% of results fall within ±1 standard deviation of the expected grade, 96.7% of results fall within ±2 standard deviations of the expected grade and 99.4% of results fall within ±3 standard deviations of the expected grade

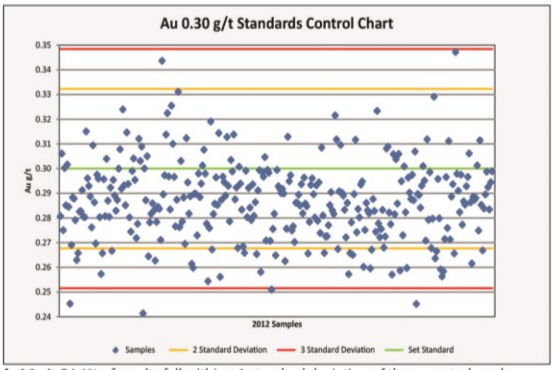


Ag 0.12 g/t: 7% of results fall within ±1 standard deviation of the expected grade, 35% of results fall within ±2 standard deviations of the expected grade and 74% of results fall within ±3 standard deviations of the expected grade.



Ag 0.7 g/t: 63% of results fall within ±1 standard deviation of the expected grade, 95% of results fall within ±2 standard deviations of the expected grade and 100% of results fall within ±3 standard deviations of the expected grade.

Au Ore Standard 2 (GAu-15)



Au 0.3 g/t: 54.4% of results fall within ±1 standard deviation of the expected grade, 86.6% of results fall within ±2 standard deviations of the expected grade and 98.8% of results fall within ±3 standard deviations of the expected grade.

Figure 12-2: Variation of Reported Values for Analytical Standards, 2012 continued

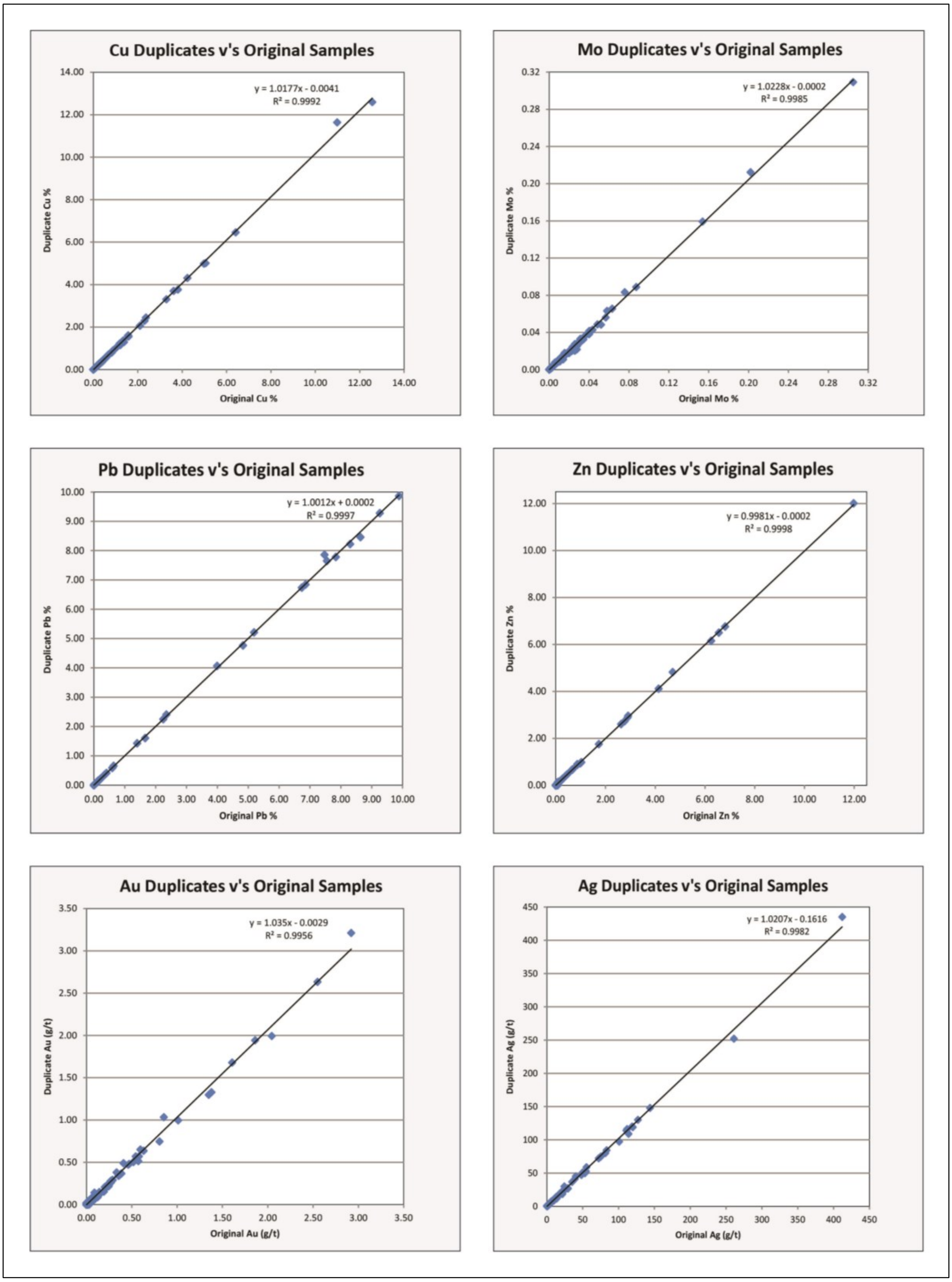


Figure 12-3: Correlation Plots of Analytical Results for 2012 Duplicate Samples

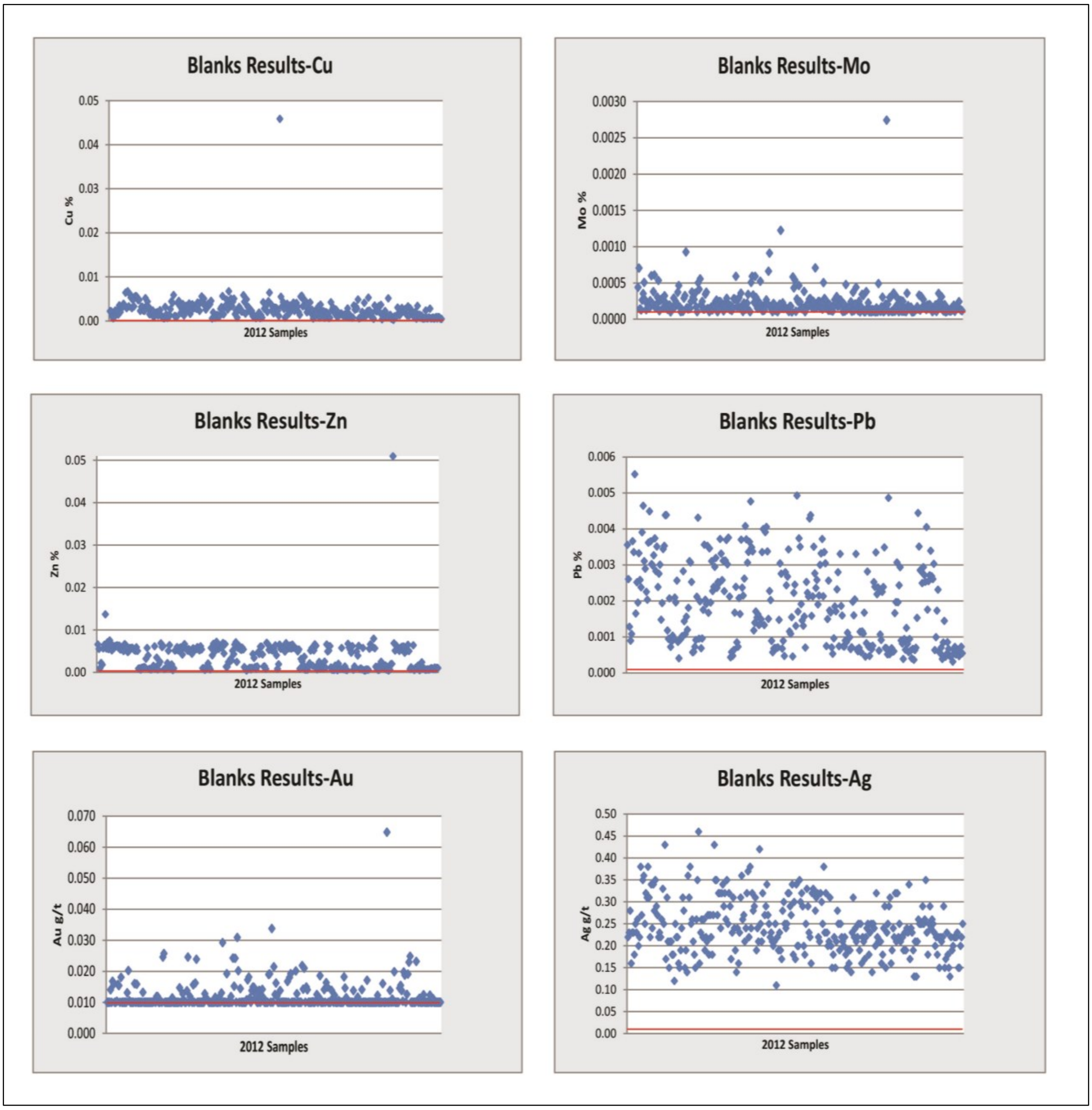


Figure 12-4: Blank Analysis with Detection Limits Marked in Red. Au and Ag Detection Limit 0.01 g/t. Cu, Mo, Zn and Pb Detection Limit 0.0001%

13 MINERAL PROCESSING AND METALLURGICAL TESTING

13.1 Introduction

There are three types of mineralisation found within the Jiama deposit; large scale skarn-type, dominated porphyry copper polymetallic, and developed hornfels. copper, molybdenum, gold, silver, lead and zinc occur in varying quantities in the ore types.

In skarn ore, copper mineralisation is mainly associated with the sulphide minerals chalcopyrite, bornite and chalcocite hosted in sulphide veins, or as disseminated sulphide crystals or massive sulphide zones. The hornfels copper-polymetallic mineralisation is generally lower in grade than the Skarn and, unlike the Skarn mineralisation the majority of the Cu and associated mineralisation occurs as disseminated crystals hosted by the Hornfels with no veining or massive sulphide being observed. Generally, mineralisation occurs in the form of chalcopyrite, bornite, and molybdenite with a fine grain size. The porphyry type mineralisation is dominated by molybdenite with only minor chalcopyrite and bornite observed. The sulphide minerals occur in the main as medium to coarse grains in the host rock.

Molybdenum occurs as medium to coarse grained disseminated molybdenite (MoS_2) predominantly within the porphyry and hornfels.

Copper-lead zinc ore is only 3% of the total Jiama mineralisation and consists of primary sulphides, galena, sphalerite and chalcopyrite. Galena is associated with sphalerite, chalcopyrite, and bornite as well as occurring in the gangue. Sphalerite is mainly associated with galena and is distributed within the gangue as granular and irregular-shaped aggregates with galena, chalcopyrite and pyrite. In skarn blocks, it mainly occurs between mineral particles or in garnet cracks, sometimes micro pyroxene crystals are enclosed. Some chalcopyrite is present as emulsion droplets within the sphalerite.

The main product from the Jiama project will be copper concentrate containing gold and silver which are credited.

Phase I development was completed in 2010 comprising two open pits, a processing plant and an underground ore transportation system, to treat 6,500 tpd (2.15Mtpa) of ore per day. Current activities are focused on the Phase II expansion in which it is planned to increase ore treatment capacity by 43,500 tpd (14.35Mtpa). The new plant will consist of two circuits capable of 21,750 tpd, this design enables the capacity to maintain plant through put when one of the circuits is offline.

The program is scheduled to deliver production of some 80,000 tonnes of copper in concentrate by 2016 - forecast life of mine is 35 years with the last 10 years of operation being underground only. The southern extent of the ore body remains open so there is opportunity to consider an increase in the size of the South Pit so there is opportunity for improved open pit mine life.

In addition to the Phase I Huatailong processing plant (6,500tpd) a second smaller plant with a capacity of 600 tpd (200,000 tpa) exists at Jiama. This smaller plant was built a number of years ago using equipment from an earlier concentrator to treat copper-lead-zinc ores, and has more recently been modified and used for pilot plant testing. The Huatailong plant was designed to recover concentrates of copper, molybdenum, lead, and zinc, with gold and silver credits by bulk flotation, followed by selective flotation. This plant will be maintained on site for the duration of the Phase II project and primarily used for research and development work. This plant could be adapted to provide contingency if required however has not been factored into the evaluation of the project.

The Phase I (6,500tpd) plant may be upgraded to produce separate Pb and Zn concentrates which will also include credits for gold and silver.

13.2 Metallurgical Testing and Process Plant Considerations

Extensive metallurgical testing has been carried out to develop and optimise a process flowsheet on which to base the plant design. The work was carried out in China Gold's own laboratories and in commercial testing organisations.

Test results from work carried out at the General Research Institute, Beijing was used as the main basis for design of the Huatailong No 2 Processing Plant, which included detailed mineralogical investigations, physical tests, comminution, liberation, beneficiation, settling and filtration assessment to provide the technical parameters.

Feed for the processing plant will consist of skarn and hornfels hosted copper-molybdenum ore types. Ore characterisation test work show marked differences; the skarn hosted ore varies greatly in terms of hardness and grade, while the hornfels hosted ore is disseminated with consistently lower copper and molybdenum grades. Beneficiation tests showed differences in amenability between the two types of ores.

Liberation tests showed that grinding to P70=74 microns ahead of copper–molybdenum bulk flotation, roughing, scavenging and cleaning, then regrinding to P90=74 microns, for separation of the molybdenum from the copper through further roughing, scavenging and multi-stage cleaning in column flotation cells.

A range of flotation collectors, activators, dispersants, depressants, pH adjustment, and frothers, were tested at different addition rates and combinations. Conditioning and flotation residence time and kinetics were investigated under a number of flotation conditions and pH. Following establishment of the reagent regime, open cycle flotation tests at the selected primary and re-grind sizes were carried out to determine the best performance. Locked cycle tests were then carried out to establish the effect of circulating loads and reagent build-up on flotation performance.

The locked cycle testing showed that 94 % copper recovery and 73% molybdenum recovery was achievable at a grind size of P70=74 microns, with concentrate grades of 32 % Cu and 47 % Mo.

The major source of revenue for the Jiama Project is the copper, with gold and silver credits. Molybdenum is not credited and must be sold as a molybdenum concentrate and it is important to keep the arsenic content low < 0.25 %. Table 13-1 shows assays of saleable copper and molybdenum concentrates produced in testwork.

The arsenic content of the molybdenum is a little high and reduction of this should be addressed in any future R&D testwork or continuous improvement program as is normally practiced in any operating mineral process plant.

Table 13-1: Assay Concentrates

Concentrate Assays Element	Cu Concentrate (%)	Mo Concentrate (%)
Cu	31.96	3.02
Mo	0.18	45.66
S	23.66	35.43
As	0.07	0.26
Pb	0.44	0.16
Zn	0.64	0.05
Fe	16.64	2.82
CaO	8.23	2.52
MgO	2.87	4.02
SiO2	12.46	5.59
Al2O3	0.98	0.36
Au (g/t)	16.65	
Ag (g/t)	351.70	

13.3 Copper-Lead-Zinc Ore Metallurgical Testing

The copper-lead-zinc ores represent only 3% of the total Jiama ore resources, and should be treated separately. It should not be blended with the copper-molybdenum ores as the copper concentrate will be contaminated and in any event a modified process route is required to achieve best results.

Extensive mineralogical studies coupled with bench scale physical tests, liberation studies and beneficiation testing was carried out in 2010 by Weizuo Assaying and Testing Co Ltd, Lhasa, Beijing General Research Institute of Mining and Metallurgy (BRIMM), and also by the Company engineers in their own laboratories.

In addition, pilot plant testing was undertaken by the Company and BRIMM based on bench scale tests. Pilot beneficiation tests compared bulk flotation with sequential differential flotation, and showed that lead recovery in the bulk flotation option was 90.3% recovery which was significantly higher than the differential flotation recovery of 80.5% recovery.

Further, the silver (Ag) content and recovery to lead (Pb) concentrate were also significantly higher at 990.0 g/t Ag, and 91.51% recovery compared with 749.5 g/t Ag and 64.6% recovery differential flotation result. Consequently the bulk flotation process route has been selected for the Copper-Lead-Zinc Ore.

BRIMM also carried out locked cycle test work at site in 2011 to confirm the process for plant modification, i.e. copper-lead bulk flotation followed by copper-lead separation flotation and zinc flotation. Copper recovery of 87.8%, Lead recovery of 90% and zinc recovery of 70 % at a grind size of P70=74 microns to concentrates with grades of 20.4% Cu, 85.59% Pb and 42.4% Zn was achieved. Using these results modifications to the pilot plant was recommended. The main changes being:

- Tailings from bulk copper–lead flotation are not thickened before zinc flotation.
- No thickening of copper–lead bulk concentrates before selective flotation to produce separate concentrates

Subsequent testing achieved:

- Copper concentrate grading 23.8% Cu, 4.61 g/t Au and 473 g/t Ag,
- Lead concentrate with grading 77% Pb , 0.32 g/t Au and 836 g/t Ag
- Zinc concentrate with grades of 48.7% Zn with recoveries of 88.1% Cu , 77.2% Pb and 83.8% Zn
- Overall gold recovery of 42% of which 36.5% reported to copper concentrate,
- Overall silver recovery of 79% of which 17% reported to the copper concentrate.
- In summary testwork on the copper-lead-zinc ore showed that:
- Copper recoveries in the range 73%-88% at saleable copper grades 22%-25% Cu.

Saleable lead concentrates with recoveries in the 57%-63% range were achieved

Saleable zinc concentrate could not be achieved, this was thought to be due to oxidation and to be addressed in future R&D and continuous process improvement programs.

13.4 Commentary

Sufficient testing has been carried out for plant design and construction to proceed. In the meantime, process optimization could continue as R&D, and as part of a continuous improvement program, normal in any plant after commissioning and could include items described below.

Ongoing metallurgical testing should be carried out on both skarn and hornfels ores to improve the molybdenum and precious metal recoveries thereby improving the potential return on investment, especially in lower grade ore. Take skarn samples from the deeper parts of the orebody underground to confirm recoveries. Test Hornfels ore from the Jiaoyan pit area, to improve copper-molybdenum separation. Studies should be made into the molybdenum grade variability in the various ores to optimise the grade and recovery of molybdenum. Carry out more copper-Molybdenum selective flotation tests to optimise the reagent regime.

In addition to this ongoing monitoring of the cut-off grades should be maintained to ensure the resource is being processed in an optimum manner. Set up routine metallurgical testing to optimise process performance, provide information circuit changes and additions.

14 MINERAL RESOURCE ESTIMATE

The Mineral Resource estimate was independently completed by Runge on November 12th, 2012. Mining One was provided with the block model and all files related to construction of the model. The information contained within this report is based on information provided to Mining One and verified by Mining One. The Resource estimate is based on a three dimensional geological and mineralisation models that were informed by the drill hole data set.

14.1 Source Data

Drillhole information was supplied to Mining One by China Gold International Resource Corp in excel spread sheet format. The drillhole information provided was used to validate the Resource model. The historical data up to November 2012 was received on the 28th April 2013. The 12th of November 2012 was used as a cut-off date for resource validation. Mining One imported the excel spread sheets into a Microsoft Access database to use within Surpac software.

The Access database contains a total of 421 diamond holes for 171,201.92 m of drilling

14.2 Bulk Density Data

A total of 539 bulk density measurements have been recorded in the resource area. These samples were taken from the Skarn, Hornfels and Porphyry domains. Rock types selected ranged from waste domains through to strongly mineralised copper-molybdenum and lead-zinc skarns. Mining One determined that these measurements are representative of the rock types within the Resource area and are sufficient for estimation of in situ tonnages within the model. A summary of the bulk density measurements is shown in Table 14-1 below.

Table 14-1: Bulk Density Measurement Summary

Rock Type	Samples	Average g/cm^3
Skarn – Cu/Mo	304	2.97
Skarn – Pb/Zn	42	3.33
Hornfels	138	2.59
Porphyry	55	2.35

Distributions of these results are contained in Figure 14-1 to Figure 14-4.

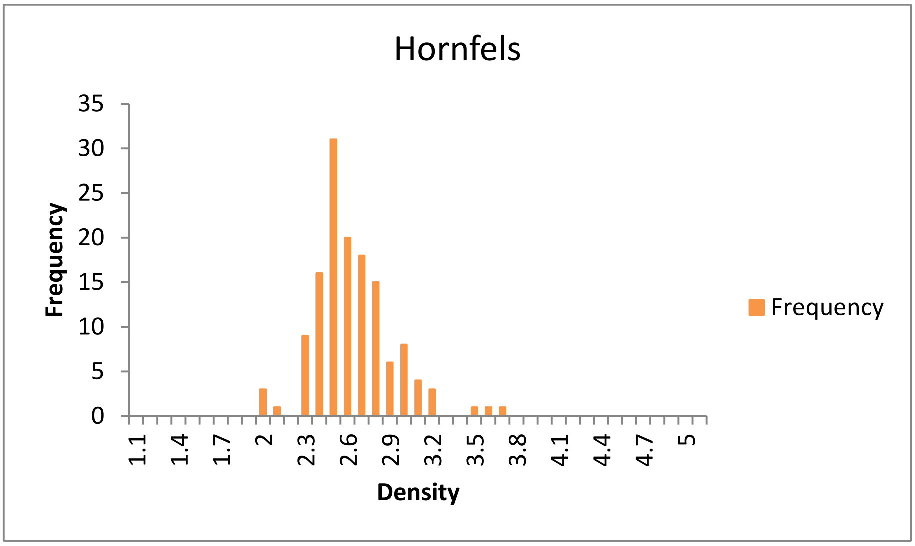


Figure 14-1: Hornfels Density Histogram

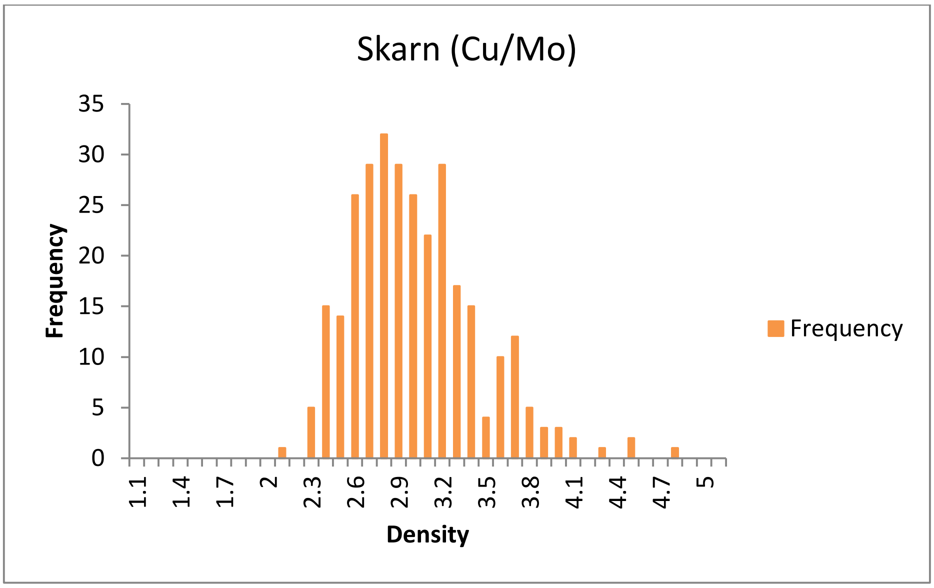


Figure 14-2: Skarn (Cu/Mo) Density Histogram

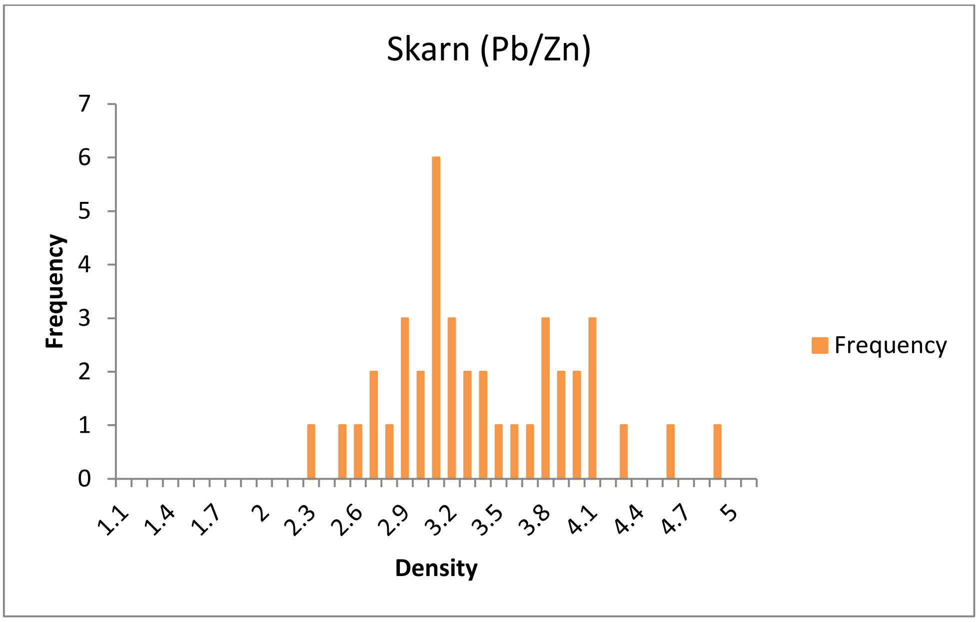


Figure 14-3: Skarn (Pb/Zn) Density Histogram

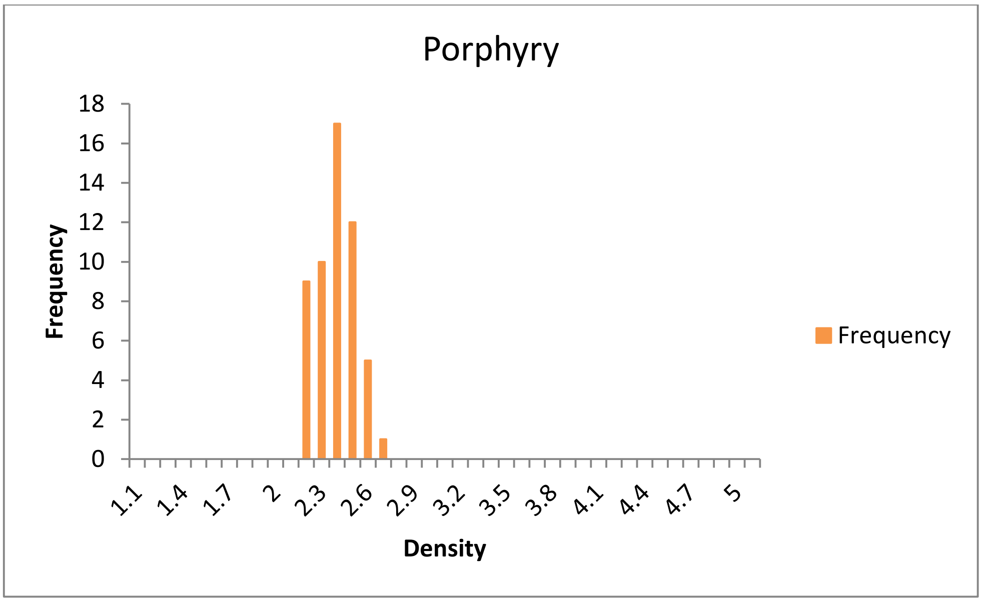


Figure 14-4: Porphyry Density Histogram

14.3 Geological Interpretation

The Resource is based on three main geological domains that represent skarn, hornfels and porphyry lithologies; mineralisation is hosted within each of these domains. Domain boundaries were constructed using a combination of the geology domains and a 0.1% Cu equivalent cut–off for the mineralisation. Standard wire-framing procedures were used in relation to extrapolation of polygons half the drill spacing distance past known data points and tapering of zone thickness on the periphery of the domains.

14.4 Weathering Surfaces

Given the insignificant weathering profile within the resource area no weathering surfaces were constructed. The entire Resource is therefore reported as unweathered and has therefore been assigned a fresh rock density value.

14.5 Three Dimensional Modelling

The interpretation of geology and mineralisation was captured using the creation of sectional polygons for each 100 m section through the deposit. These sectional polygons were then used to build three dimensional wireframes. These wireframes then formed the basis for creation of a drill hole composite file and coding of the block model.

14.6 Drill Sample Statistics

14.6.1 Overview

A total of 421 drill holes are contained within the Resource database, statistics of these holes are shown in Table 14-2 below:

Table 14-2: Drilling Statistics

Description	Metric
Number of Holes	421
Total Length	171,202 m
Average Length	406.6 m
Number of Samples	65,534

14.7 Sample Support

The Resource is primarily based on diamond drilling samples where the average sample length is 2.0 m. Given the Resource is based on holes drilled to a similar procedure in relation to drilling technique and sampling protocols, there are no concerns relating to the support for samples used for the estimation of Resources. The most common sample length within the Resource area is 2.0 m, see Figure 14-5.

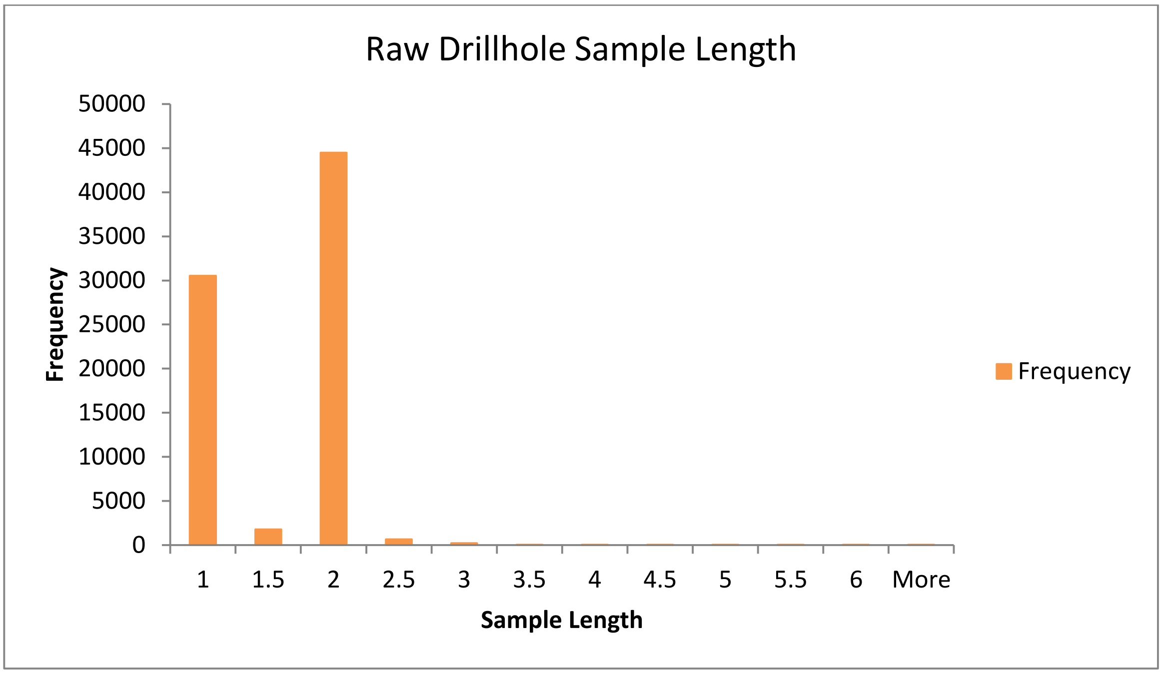


Figure 14-5: Raw Sample Lengths Histogram

14.8 Drill Hole Compositing

To allow for calculation of the datasets spatial parameters a composite file is built. The composite file is created by coding the drilling database with the mineralised domains within the Resource area. A composite length of 2.0 m was selected given it is the most common sample length and is appropriate given the current and proposed mining methods. Histograms and cumulative frequency plots for each domain are shown in Figure 14-6 to Figure 14-11 and a summary of the overall domain statistics is presented in Table 14-3.

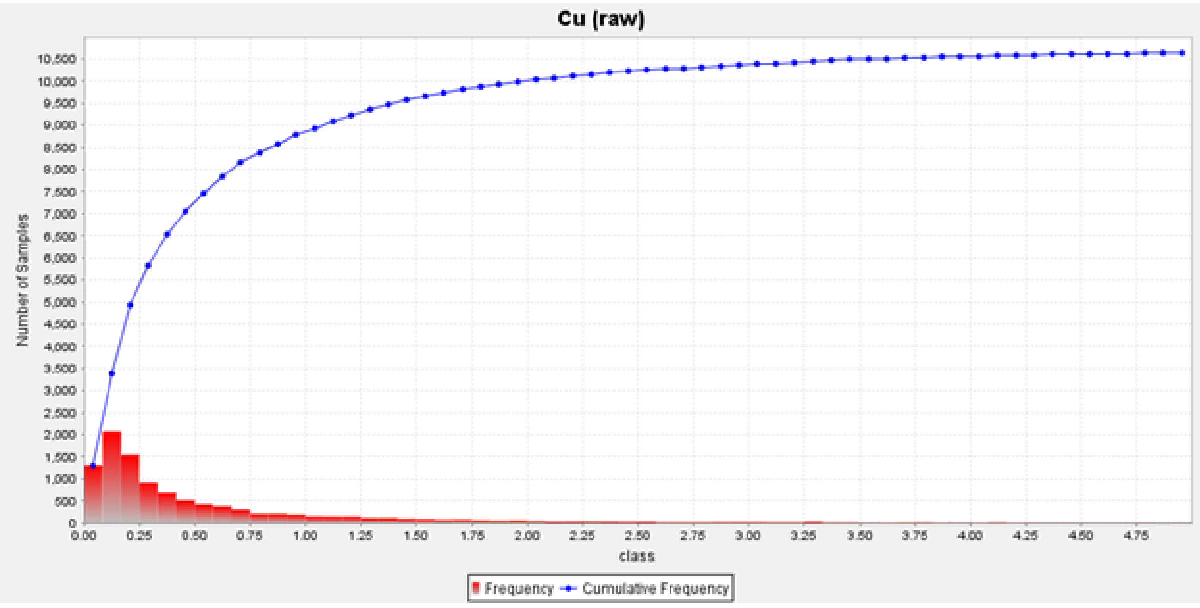


Figure 14-6: Skarn Cu Composite Date - Histogram

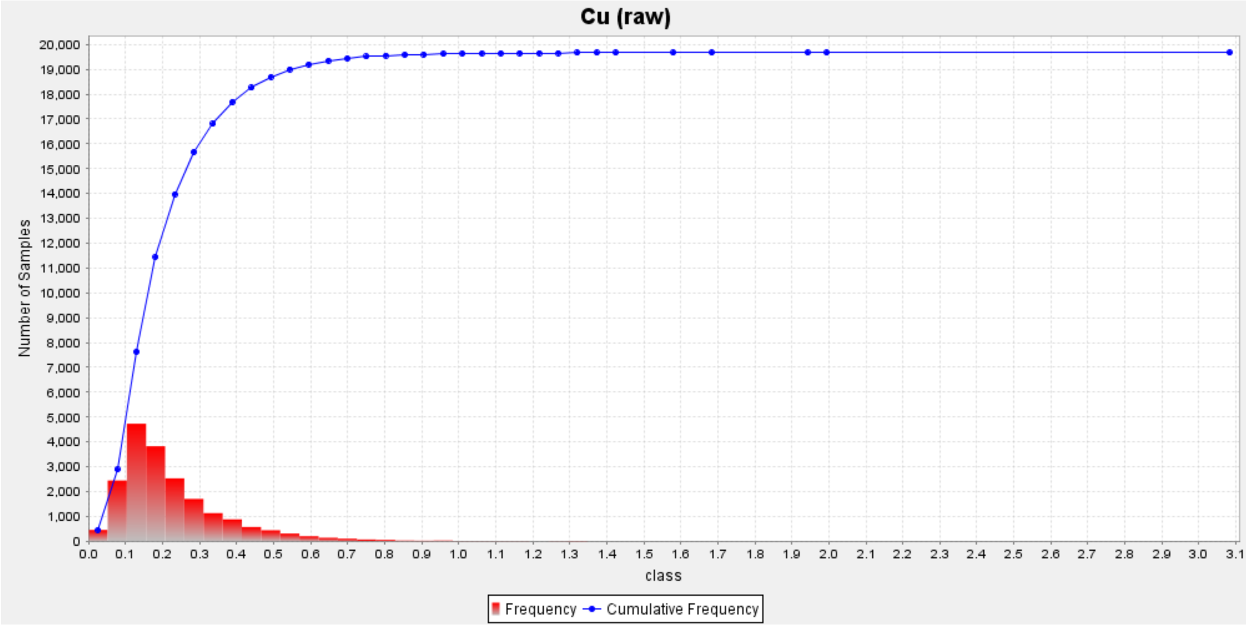


Figure 14-7: Hornfels Cu Composite Data – Histogram

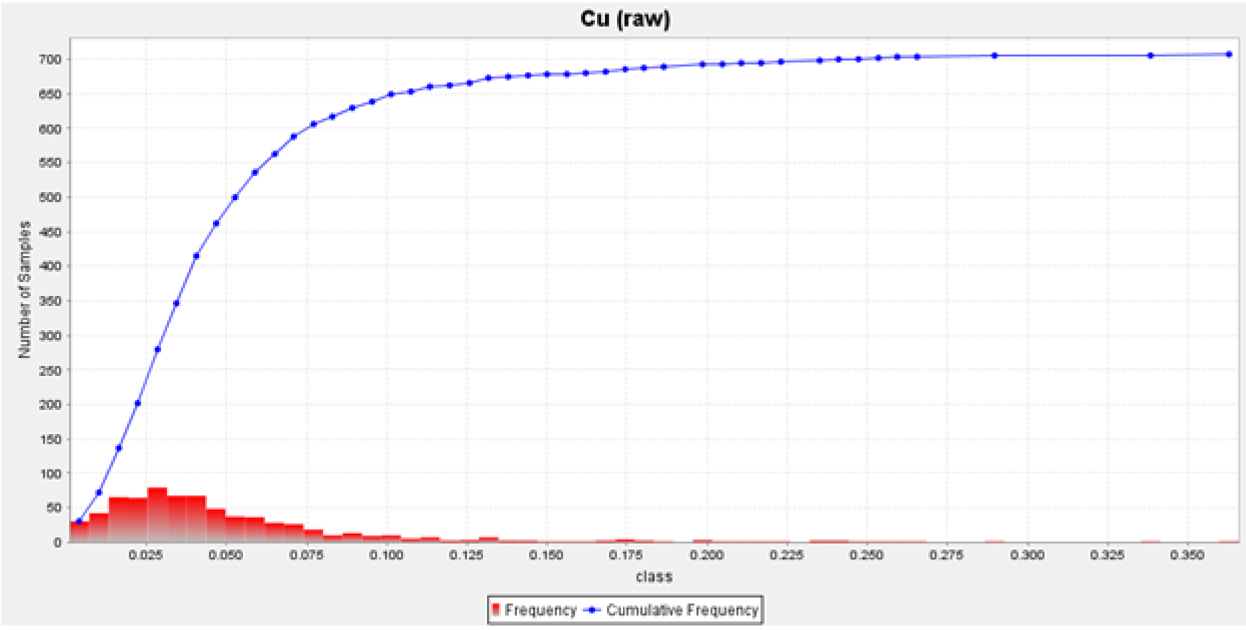


Figure 14-8: Porphyry Cu Composite Data - Histogram

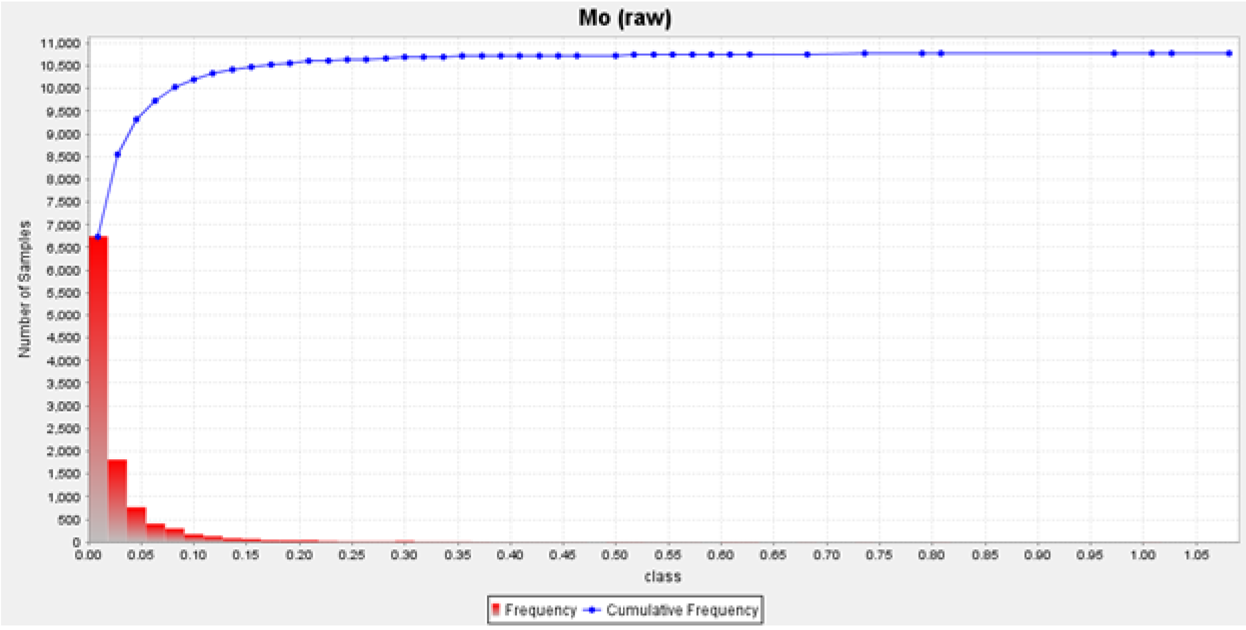


Figure 14-9: Skarn Mo Composite Data – Histogram

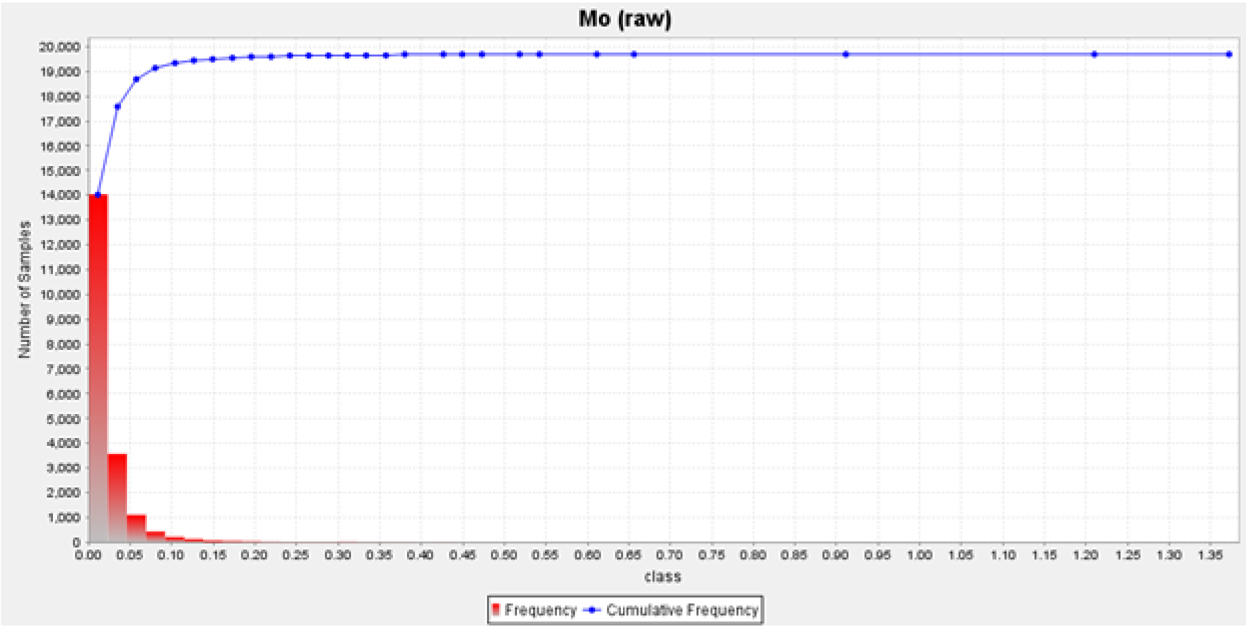


Figure 14-10: Hornfels Mo Composite Data - Histogram

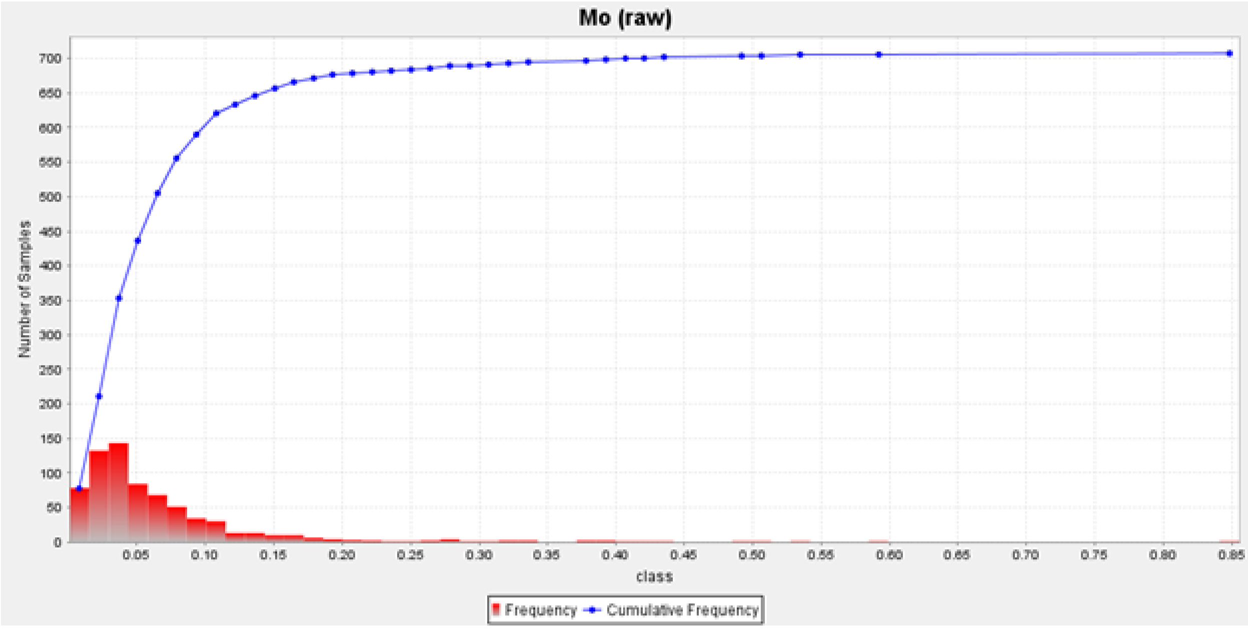


Figure 14-11: Porphyry Mo Composite Data - Histogram

Table 14-3: Composite Files – Domain Statistics

Statistic	Skarn		Hornfels	
	Cu	Mo	Cu	Mo
Number of samples	10,630	10,770	19,679	19,680
Minimum value	0	0	0	0
Maximum value	4.995	1.090	3.108	1.383
Mean	0.584	0.030	0.225	0.022
Median	0.283	0.012	0.183	0.013
Variance	0.572	0.004	0.023	0.001
Standard Deviation	0.756	0.060	0.152	0.034
Coefficient of variation	1.295	2.025	0.675	1.543

14.9 High Grade Capping

The porphyry and hornfels domains show consistent copper and molybdenum grades as seen in the histograms and log probability plots, no top cut is recommended within these domains. Within the mineralised Skarn domain, the sulphide mineralisation is shown to be continuous and reasonably homogenous. However, there are some zones where there are “stringers” of mineralised material that contain high grade mineralisation that is not continuous and represents discrete zones. It is appropriate to therefore apply a top cut to the Skarn zone for both copper and molybdenum. The histogram, log histogram and log probability plot indicate that a top cut of 2.5% is appropriate for copper and a 0.2% top cut is appropriate for molybdenum, see Figure 14-12 to Figure 14-15. Top cuts were also used for the other metals within the Skarn domain as shown in Table 14-4.

Table 14-4: High Grade Top Cuts Applied – Skarn Domain

Metal	Top Cut
Cu	2.5%
Mo	0.2%
Au	20 g/t
Ag	400 g/t
Pb	20%
Zn	10%

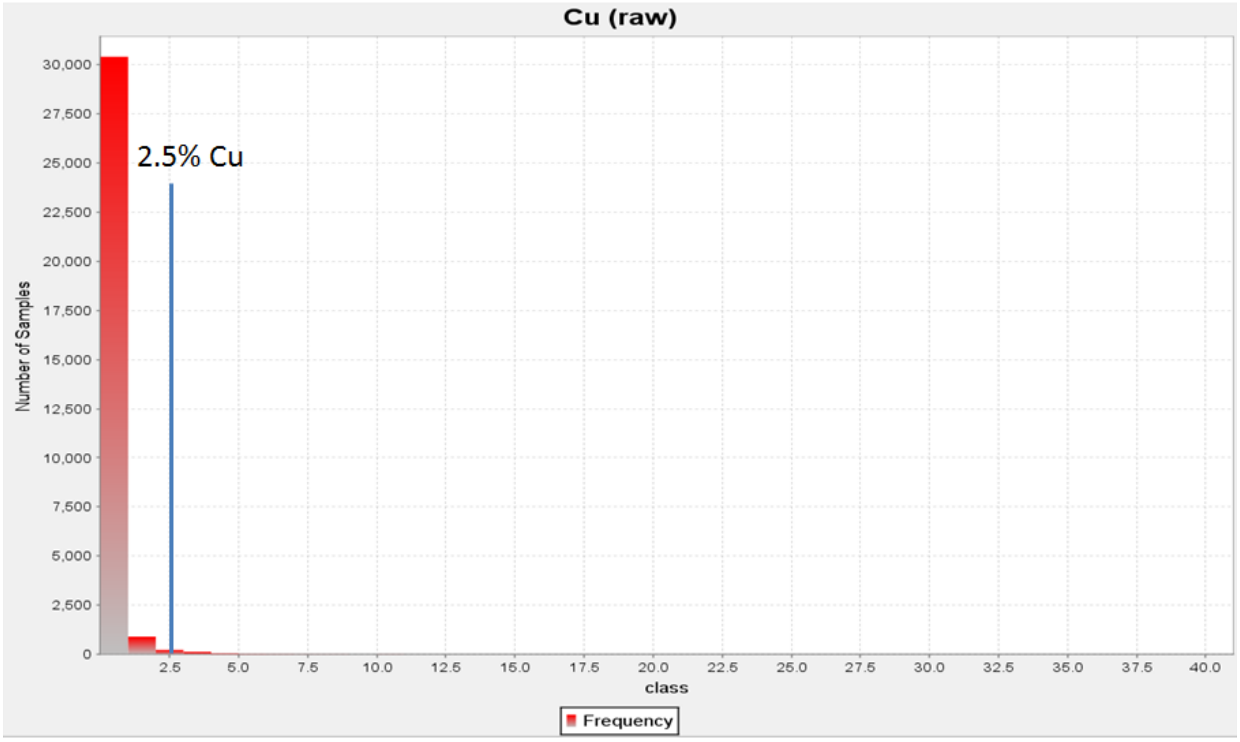


Figure 14-12: Cu% Histogram (All Domains)

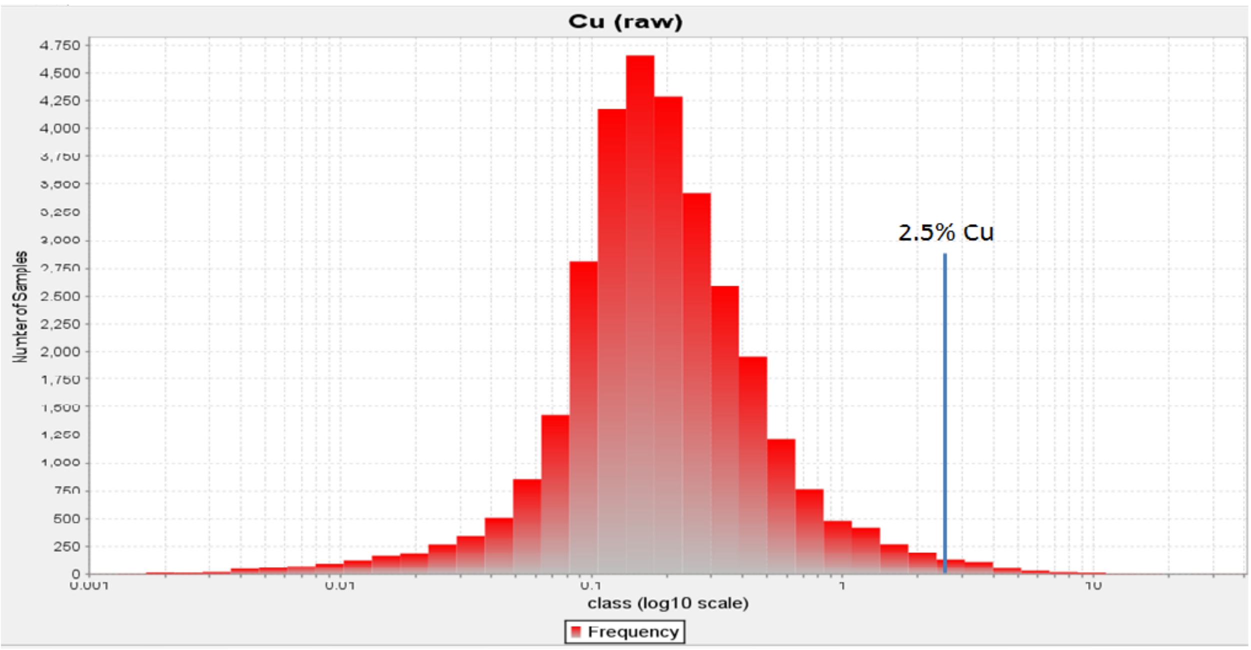


Figure 14-13: Cu% Log Histogram (All Domains)

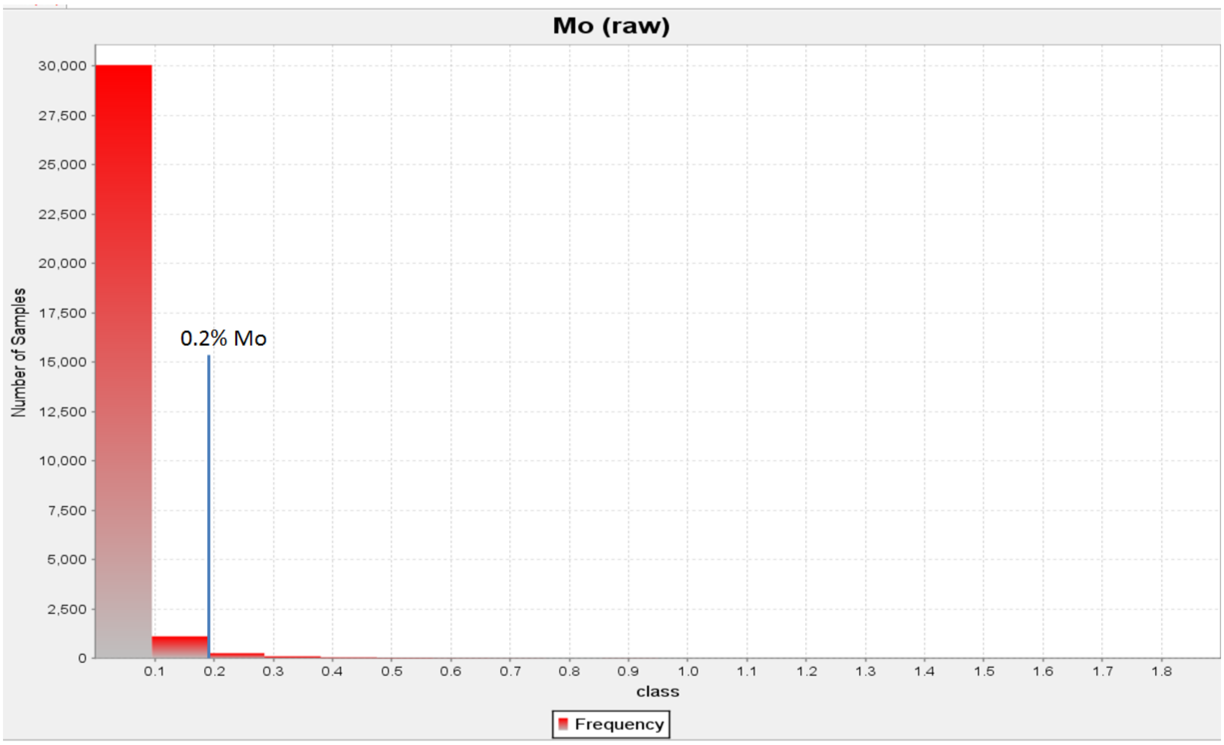


Figure 14-14: Mo% Histogram (All Domains)

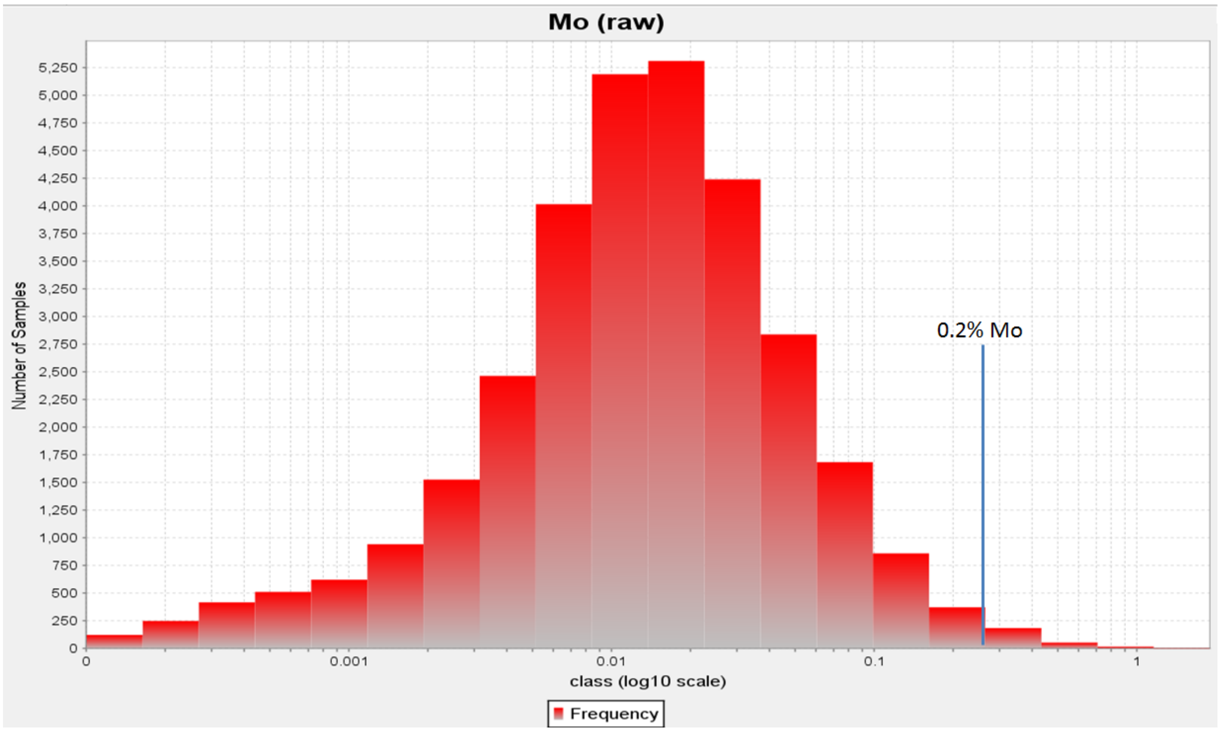


Figure 14-15: Mo% Log Histogram (All Domains)

14.10 Resource Block Model

A Surpac block model was provided to Mining One and it formed the basis of the validation of Resources and reporting of the stated Resource. A summary of the key block model parameters is presented in Table 14-5 with the block model attributes identified in Table 14-6.

Table 14-5: Block Model Summary

Model Summary			
	Y	X	Z
Minimum	3,286,200	16,378,100	4,000
Maximum	3,289,800	16,381,600	5,400
User Block Size	25	25	5
Minimum Block Size	12.5	12.5	2.5
Rotation	0	0	0
Total Blocks	2,902,683		

Table 14-6: Block Model Attributes

Model Attribute	*Type*	*Description*
ag_cut	Real	Silver (g/t) cut grades
au_cut	Real	Gold (g/t) cut grades
bd	Float	Specific Gravity
class	Integer	Resource category
cu_cut	Real	Copper (%) cut grades
cueq	Real	Copper (%) equivalent grades
licence	Character	Mining or Exploration license type
litho	Character	Skarn, Hornfels or Porphyry
mined	Character	Mined out (y) or in situ (n)
mo_cut	Real	Molybdenum (%) cut grades
pb_cut	Real	Lead (%) cut grades
pbzn	Real	Lead (%)+ zinc (%) grades
type	Character	Air, Ore, Waste
zn_cut	Real	Zinc (%) cut grades

14.10.1 Block Size

A parent block size of 25 m (X) by 25 m (Y) by 5 m in the Z-direction was chosen for the Jiama block model. Given the current drill spacing which is down to 50 m spacing in large sections of the Resource, geological continuity and proposed mining methods Mining One deem this block size suitable.

14.10.2 Variography and Estimation

The Jiama deposit is separated into three main geological domains; the Skarn zone, Hornfels Zone and Porphyry zone. The model is based on drill hole composite files created within each of these domains.

Previous work has indicated that continuity of mineralisation is good within the Skarn and Hornfels domain, see Figure 14-16 and Figure 14-17: continuity with the Porphyry domain is poor however. No valid variograms are generated within the Porphyry domain.

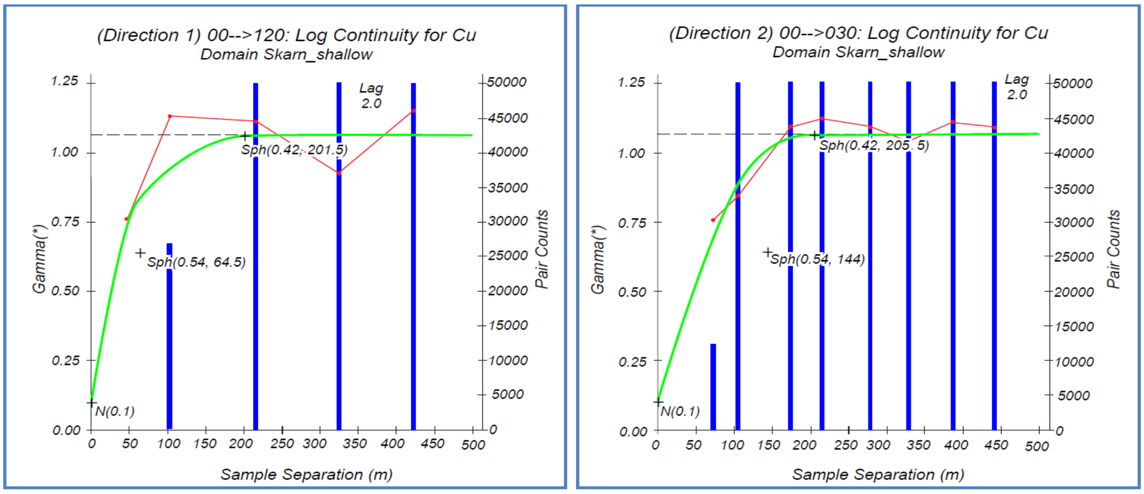


Figure 14-16: Variogram – Copper (MMC Report)

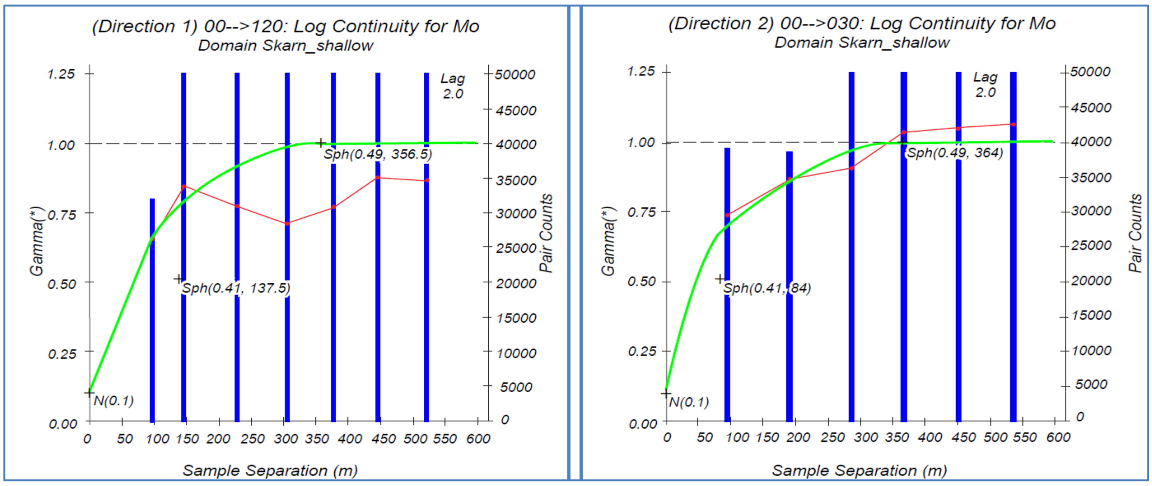


Figure 14-17: Variogram – Molybdenum (MMC Report)

Figure 14-18: Skarn Variogram – Copper Validation Variogram

Table 14-7: Interpreted Skarn Variography Parameters

Rock Type	*Nugget*	*Sill*	*Range*	*Structure 1 Major/Semi*	*Major Minor*	*Sill*	*Range*	*Structure 2 Major/Semi*	*Major Minor*
Skarn Cu	0.2	0.34	175.5	1	10	0.56	205	1	10
Skarn Mo	0.2	0.41	205.8	1	10	0.49	357.5	1	10
Hornfels Cu	0.2	0.48	190	1	10	0.42	290	1	10
Hornfels Mo	0.2	0.44	180	1	10	0.46	390	1	10

The variograms run by Mining One confirm the variogram parameters adopted to estimate the Jiama Resources, see Figure 14-18 and Table 14-7.

For the purposes of the estimation, hard boundaries were used to constrain the interpolation so as to exclude sample data from outside the modelled domains. Given the style and distribution of the mineralisation, Ordinary Kriging was used for the estimation of the copper and molybdenum grades, and the inverse distance method to the power of 2 was used for the gold, silver, lead and zinc grades. Mining One considers the use of Ordinary Kriging appropriate for the estimation of the copper and molybdenum grades and also the Inverse Distance method for the other metals. The overall Block Model search parameters are shown in Table 14-8.

Table 14-8: Block Model Search Parameters

Parameter	Pass 1	Pass 2	Pass 3
Search Type	Anisotropic		
Bearing	120		
Dip	0:		
Plunge	0		
Major-Semi Major Ratio	1		
Major-Minor Ratio	1		
Search Radius	125	250	500
Min Samples	12	12	1
Max Samples	24	24	24

14.10.3 Resource Classification

Given the extensive drilling completed at the project over an extended period of time, some areas of the resource have relatively close spaced drilling down to 50 m spacing whilst other areas have a more sparse (>200 m) drill spacing. The resource is classified using the sample spacing of up to 60 m for measured, 60-120 m for indicated and 120-250 m for inferred. The classification is based on results from the semi-variograms.

Ranges derived from the variograms indicate that for copper sample pair correlation ranges are between 150 m and 200 m and for molybdenum are between 150 m and 250 m. Mining One therefore assess the resource classification as being valid and acceptable for this style of mineralisation.

The resource block model is depicted in Figure 14-19.

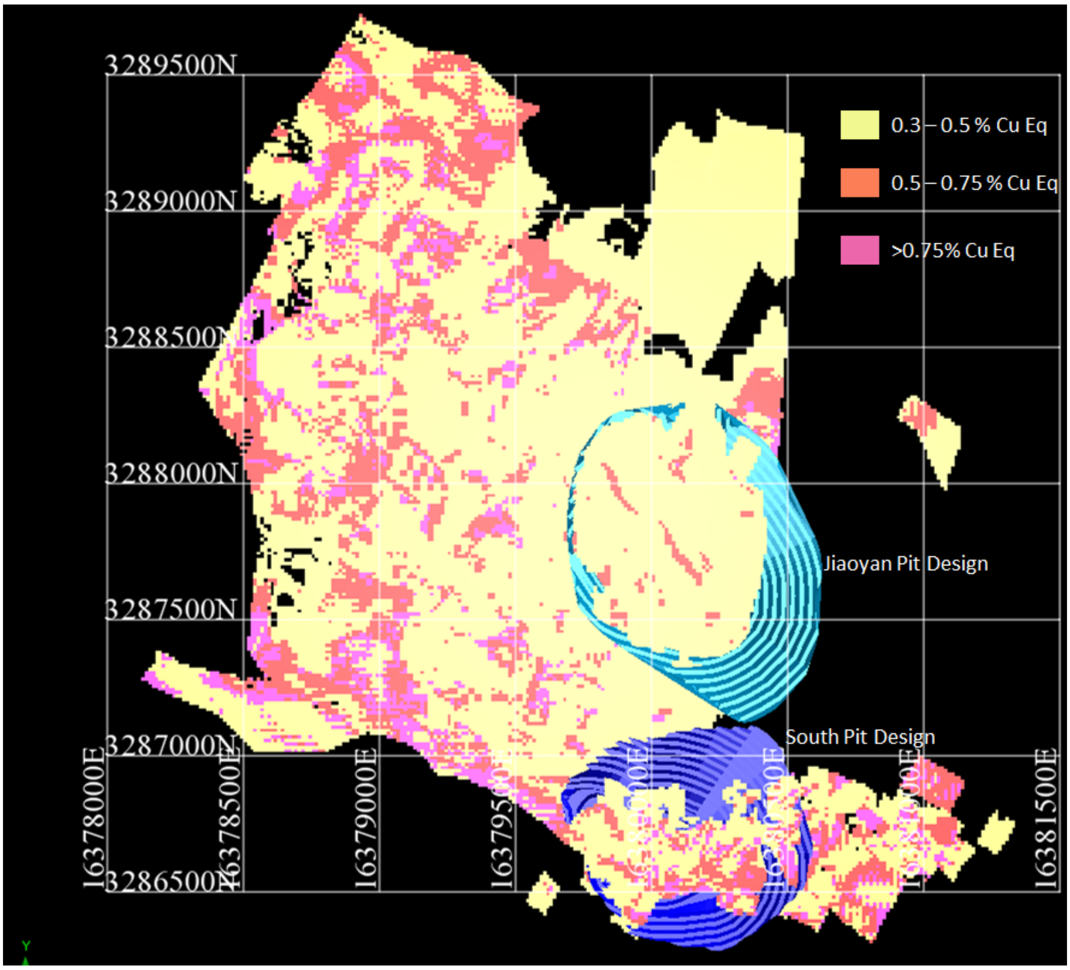


Figure 14-19: Jiama Resource Block Model – Plan View

14.11 Mineral Resource Statement

The Resources were estimated by RPM Global (Runge Pincock Minarco) with Mining One providing validation and refinement of the project Resources. The Resource estimate is based on information collected up to 12th of November 2012. The Mineral Resource has been estimated in accordance with the NI43-101, Standards and Disclosure for Mineral Projects. Mining One deems that the Resource estimate is suitable for reporting and meets the reporting standards of Chapter 18 of the HKEx listing rules. The Mineral Resources were validated by Bin Guo of Mining One and are reported at a 0.3% Copper equivalent grade. The results of the Resource estimate for the project are tabulated in Table 14-9. The Copper Equivalent basis for the reporting of resources has been compiled on the following basis:

CuEq Resources:

= (Ag Grade * Ag Price + Au Grade * Au Price + Cu Grade * Cu Price + Pb Grade * Pb Price + Zn Grade * Zn Price + Mo Grade * Mo Price) / Copper Price

Table 14-9: Mineral Resource Statement

RESOURCES														
Jiama Copper - Polymetallic Project Resources. Cu, Mo, Pb, Zn, Au & Ag Mineral Resources (Cueq>0.3%) reported as at November 2012														
Rock Type	**Class**	**Quantity Mt**	**Cu %**	**Mo%**	**Pb%**	**Zn%**	**Au g/t**	**Ag g/t**	**Cu Metal Kt**	**Mo Metal Kt**	**Pb Metal kt**	**Zn Metal Kt**	**Au Moz**	**Ag Moz**
Skarn	Measured	42.8	0.66	0.041	0.06	0.04	0.22	13.39	281	17	28	19	0.304	18.429
	Indicated	453.0	0.69	0.040	0.15	0.09	0.27	15.59	3114	183	676	399	3.901	227.094
	M+I	495.8	0.68	0.040	0.14	0.08	0.26	15.40	3395	200	704	417	4.205	245.523
	Inferred	125.5	0.46	0.038	0.20	0.10	0.19	11.90	577	47	248	125	0.750	47.995
Hornfels	Measured	54.9	0.23	0.031	0.03	0.01	0.02	1.32	127	17	15	5	0.041	2.330
	Indicated	852.9	0.28	0.030	0.01	0.01	0.03	1.38	2368	253	69	64	0.909	37.733
	M+I	907.8	0.27	0.030	0.01	0.01	0.03	1.37	2496	270	84	69	0.950	40.063
	Inferred	276.6	0.24	0.026	0.02	0.02	0.06	2.10	660	73	63	49	0.562	18.644
Porphyry	Measured	2.6	0.26	0.049	0.02	0.01	0.06	3.42	7	1	1	0	0.005	0.281
	Indicated	79.9	0.30	0.039	0.01	0.01	0.07	2.93	240	31	6	8	0.174	7.522
	M+I	82.4	0.30	0.040	0.01	0.01	0.07	2.94	247	33	6	8	0.179	7.803
	Inferred	4.0	0.24	0.085	0.01	0.02	0.04	2.25	10	3	0	1	0.006	0.287
Totals	Measured	100.2	0.41	0.035	0.04	0.02	0.11	6.53	415	36	43	24	0.349	21.040
	Indicated	1,385.8	0.41	0.034	0.05	0.03	0.11	6.11	5722	468	751	470	4.985	272.349
	M+I	1,486.0	0.41	0.034	0.05	0.03	0.11	6.14	6138	503	794	495	5.334	293.389
	Inferred	406.0	0.31	0.030	0.08	0.04	0.10	5.13	1247	124	312	174	1.317	66.926

15 MINERAL RESERVE ESTIMATE

15.1 Introduction

Section 15 of this report is a review of the Feasibility Study prepared by CGDI in conjunction with China Gold International Resources Corp (China Gold). Mining One Pty Ltd (Mining One) have endeavoured to substantiate assumptions made in the estimation of the mineral reserves for the proposed open pit and underground mining operations at Jiama. This estimate specifically relates to the life of mine (LoM) Reserves estimated as part of The Study and includes the Jiaoyan and South pits and the proposed underground phase II mine expansion.

15.2 Project Strategy

There is an economic case for the development of the Jiama Phase II project; specifically the development of the Jiaoyan and South Pits. The project is the second phase of a growth strategy at Jiama with Phase I already complete and operational including two open pit operations, namely Tonggianshan and Niumatang pits. This existing operation provides a reference for a number of the assumptions made in the estimation of the reserves.

Phase II development will see an increase in the onsite processing capacity with the construction of a new Huatailong processing plant to treat the copper-molybdenum sulphide ores for the Project. It is forecast that an overall rate of 14.35 Mtpa will be achieved from this plant and will complement the existing Phase I capacity of 2.15 Mtpa.

The selected mining strategy has been developed by the CGDI in conjunction with China Gold and is based on conventional truck shovel haulage for the open pit design and Sub-level Open Stoping with fill for the initial underground design.

The following areas were considered by China Gold in the development of the Phase II strategy:

- Open pit and underground mining methodology;
- Mine geology;
- Mine hydrology and hydrogeology;
- Mine geotechnical engineering;
- Material characteristics, geotechnical, and hydrological considerations;
- Selection of a suitable mining and material handling concept;
- Selection of suitable mining method and equipment concept;
- Mining cost;
- Metallurgical recovery and engineering studies;

- Mine design of the selected concept; and
- High level economic analysis of the selected concept.

Meanwhile, factors considered in formulating the strategy include:

- Deposit characteristics;
- Material characteristics;
- Topographic profile;
- Results of previous studies;
- Commodity prices (copper, molybdenum, gold, silver, lead, zinc);
- Pastefill and Waste placement strategy;
- Contract mining scenario;
- Geological interpretation; and
- Potential mine life.

Excavation for the open pit will be carried out by contract workforce with contracts already established for a bulk of the work. Agreements are in place for the open pit mining with underground agreements in final signoff at the time of writing. The scope of all mining contracts is inclusive of all consumables including drilling, blasting, loading hauling, excavation and services. Contract rates incorporate the establishment of accommodation and maintenance facilities for the respective contracts as well as all service equipment associated with the upkeep and maintenance of the contract equipment. China Gold has included provision for technical services to provide design and scheduling services along with all survey and contract management requirements.

Rates quoted by the respective contractors have been adopted as the foundation for the mining costs in this evaluation. Mining One have sighted copies of the contractual rates upon which all costing has been based. It should be noted that the rates are comparable with mining costs at other open pit mines in China. Contingency has been factored in to allow for the upkeep and management of the mining areas by China Gold.

Two separate contractors have been selected to carry out mining in the initial mining areas for the underground mine:

- The 14th Metallurgical Construction Corporation Ltd, Yunnan
- The 14th Metallurgical Construction Corporation Ltd, China

The first seven years of the underground schedule has been designed and scheduled using CAE's Studio 5D Planner. The initial 2 years of operation has been aligned with the site operational plan. Beyond the initial seven year plan, stopes based on MSO shapes have been used to define mineable stopes for subsequent scheduling.

Long Hole Stoping (Primary/Secondary/Tertiary) will dominate the first twenty years of underground mining. Beyond 20 years alternative mining methods such as Sub-Level Caving, Open Stoping with Pillars and Open Stoping with Fill (Traverse) have been selected. The mining costs for these methods will have a minimal impact on the discounted cash flow analysis for this project as a result of the 20 year lead time. For this reason underground mining costs have been based on the contract rates for Long Hole Stoping methods.

This study considers Measured and Indicated Mineral Resources only.

15.3 Mine Planning and Scheduling Process

The life of mine (LoM) plan has been scheduled on an annual basis from Year 1 to the end of mine life. The following parameters and constraints were used by China Gold for the optimisation, design and scheduling of the Jiama Phase II polymetallic project:

- Commodity prices, mining costs, processing costs and royalties;
- Processing parameters based on the mineral processing and metallurgy study conducted by Beijing General Research Institute of Mining and Metallurgy and the Northwest Research Institute of Mining and Metallurgy;
- Geotechnical parameters for the Open Pit operations;
- Spatial constraints for the Open Pit operations;

The following modelling methods were used to optimise the open pit and proposed underground mines:

- Lerchs-Grossman algorithm (Whittle) for open pits;
- Mineable Shape Optimiser (MSO) for underground;

The development and design of the open pits and underground stopes as well as the pioneering works were based on conventional mine design parameters.

An open pit mine schedule was developed based on a practical mining sequence, including mining and milling limits. Figure 15-1 and Figure 15-2 provides a general layout of the location of the existing Tongqianshan and Niumatang open cut pits, the underground portal and the proposed Jiaoyan and South pits.

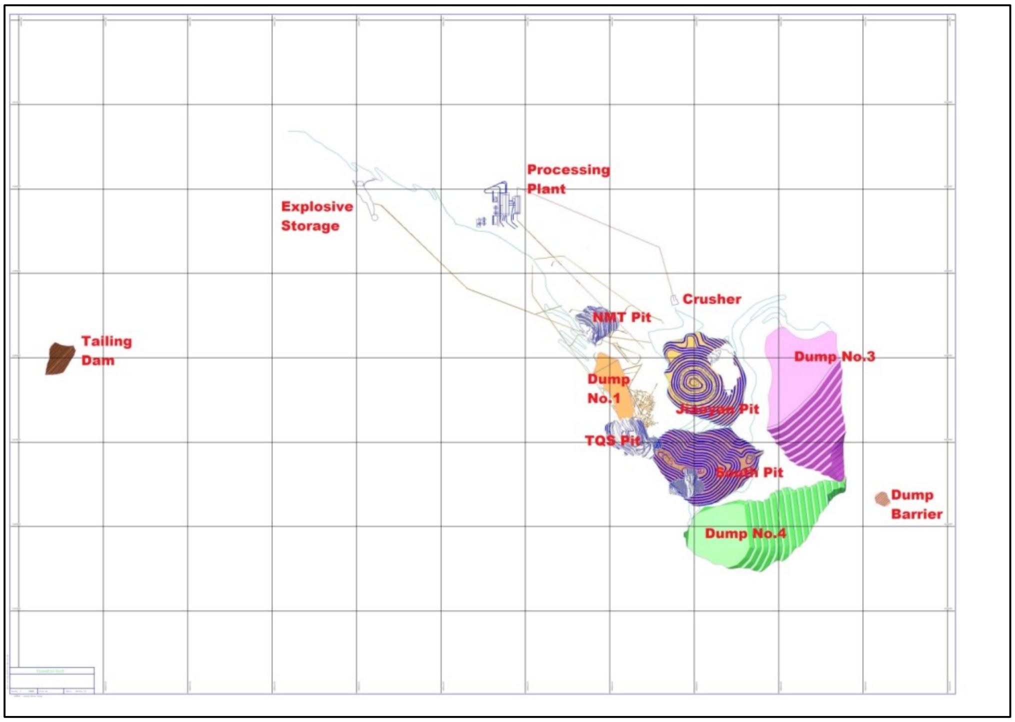


Figure 15-1: Site General Layout

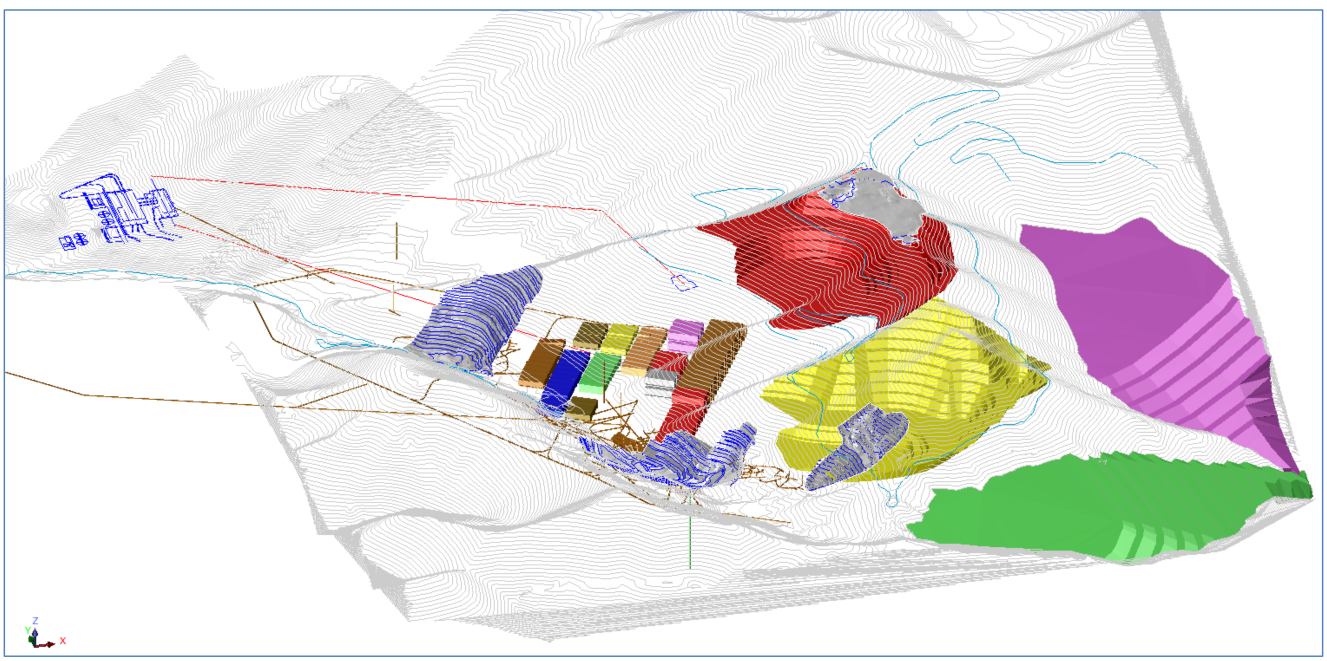


Figure 15-2: Processing Plant in relation to Mining

15.4 Underground Phase II Expansion

The estimations contained within this section are based on mine designs, mining factors, metal prices and cut-off grade assumptions outlined in the study conducted by CGDI.

The mine inventory for the Jiama underground mine is based on a combination of Long Hole Stoping (LHS) with Paste fill, Sub-level Stoping with cemented Paste Fill, approximately 80% of voids will be filled with cemented Paste Fill. These mining methods are described in detail in Section 16. Table 15-1 shows the classification figures which are inclusive of mining recovery (87%) and mining dilution (5%).

Table 15-1: Underground Mineral Reserve Estimate

Classification	Tonnes (Mt)	CuEq %	Cu %	Mo %	Pb %	Zn %	Au g/t	Ag g/t
Proven	17,017,234	0.88	0.748	0.049	0.045	0.033	0.267	14.735
Probable	183,060,358	0.93	0.734	0.05	0.018	0.019	0.315	13.664
Total	200,077,592	0.92	0.735	0.05	0.02	0.02	0.311	13.755

*Discussion of the Copper Equivalent can be found in Section 0.

Notes:

1) The Underground Mineral Reserve Estimate as of November 2013
2) Mine Inventory estimated using the following mining and economic factors:
    a. 10% dilution added to all mining blocks
    b. Stope Recovery of 87% estimated for all stopes
    c. A Copper price of US$2.90/lb
3) The cut-off grade for mine has been estimated at 0.36-0.45% CuEq (NSR Basis) depending on mining methodology.

Table 15-2: Commodity Price Assumptions

Revenue Parameters		
Cu Price	**US$/lb**	2.90
Mo Price	**US$/lb**	15.50
Pb Price	**US$/lb**	0.98
Zn Price	**US$/lb**	0.95
Au Price	**US$/oz**	1300.00
Ag Price	**US$/oz**	20.00

The mining sequence includes the use of a consolidated fill (Paste) in the Sub-level Open Stoping areas to allow high proportion of pillars to be extracted in an attempt to maximise the Reserve Estimate. Paste fill will constitute 80% of the work conducted at Jiama.

The use of Sub-level Caving (SLC) as a stoping option is considered for the upper levels of Jiama mine, underneath the proposed open pits and is applied due to the vertical nature of this section of the ore body. The use of this method would not require backfill and is amenable to relatively higher rates of production. Room and Pillar mining is also considered for some of the thinner flatter lying areas of the ore body. This has been considered only for the Life of Mine designs produced by China Gold, Sub-level stoping is the only method considered by the CGDI for the initial 10 to 20 years of mining.

A total underground mine reserve can be found in Table 15-3.

Table 15-3: Total Underground Mine Reserve

UNDERGROUND MINE RESERVES														
Resource Category	**Class**	**Tonnes**	**Cu**	**Mo**	**Pb**	**Zn**	**Au**	**Ag**	**Cu(t)**	**Mo(t)**	**Pb(t)**	**Zn(t)**	**Zu(oz)**	**Ag(oz)**
EPS Schedule														
Proven	1	1,344,223	0.616	0.104	0.007	0.008	0.203	9.776	8,275	1,395	100	106	8,754	422,531
Probable	2	32,420,833	0.729	0.047	0.008	0.009	0.273	12.315	236,348	15,226	2,533	3,043	284,279	12,838,323
Inferred	*3*	*124,476*	*0.751*	*0.042*	*0.000*	*0.053*	*0.281*	*12.533*	*935*	*53*	*0*	*67*	*1,126*	*50,161*
MSO Schedule														
Proven	1	15,673,011	0.759	0.045	0.049	0.035	0.272	15.161	118,966	7,023	7,616	5,432	137,326	7,640,230
Probable	2	150,639,525	0.735	0.051	0.020	0.021	0.324	13.954	1,106,599	77,055	29,546	31,823	1,568,037	67,591,138
Inferred	*3*	*26,675,565*	*0.570*	*0.047*	*0.219*	*0.079*	*0.279*	*14.263*	*152,167*	*12,528*	*58,413*	*21,161*	*239,540*	*12,234,055*
Proven	1	17,017,234	0.748	0.049	0.045	0.033	0.267	14.735	127,241	8,418	7,716	5,538	146,080	8,062,761
Probable	2	183,060,358	0.734	0.050	0.018	0.019	0.315	13.664	1,342,935	92,281	32,079	34,865	1,852,316	80,429,461
Inferred	*3*	*26,800,041*	*0.571*	*0.047*	*0.218*	*0.079*	*0.279*	*14.255*	*153,102*	*12,580*	*58,413*	*21,228*	*240,665*	*12,284,216*
Total Reserve	**1,2**	**200,077,592**	**0.735**	**0.050**	**0.020**	**0.020**	**0.311**	**13.755**	**1,470,176**	**100,699**	**39,795**	**40,403**	**1,998,396**	**88,492,222**

15.5 Mine Design Underground

15.5.1 Mining Method Description

The initial ten years of the Phase II underground operation have been designed considering; development, ventilation, and haulage requirements to support Sub-level Stoping with fill. Ventilation has been modelled using Ventsim 3D Mine Ventilation Software. All designs relating to the initial ten years of Phase II were completed by CGDI. Scheduling of the CGDI mine designs was completed using Enhanced Production Scheduler (EPS) by China Gold. China Gold also completed life of mine reserve shapes which have then been scheduled in Microsoft Excel using development and production factors derived from the EPS schedule.

Phase 1 of the underground is currently operational, producing approximately 2.1Mt per annum from hand held shrinkage stoping and room and pillar mining in thin orebody areas. Ventilation shafts, haulage shafts and conveyor drives are already in place or are currently being developed. Figure 15-3 illustrates the new CGDI stope locations for the first 10 years of mining, along with the Phase 1 development as it is already built.

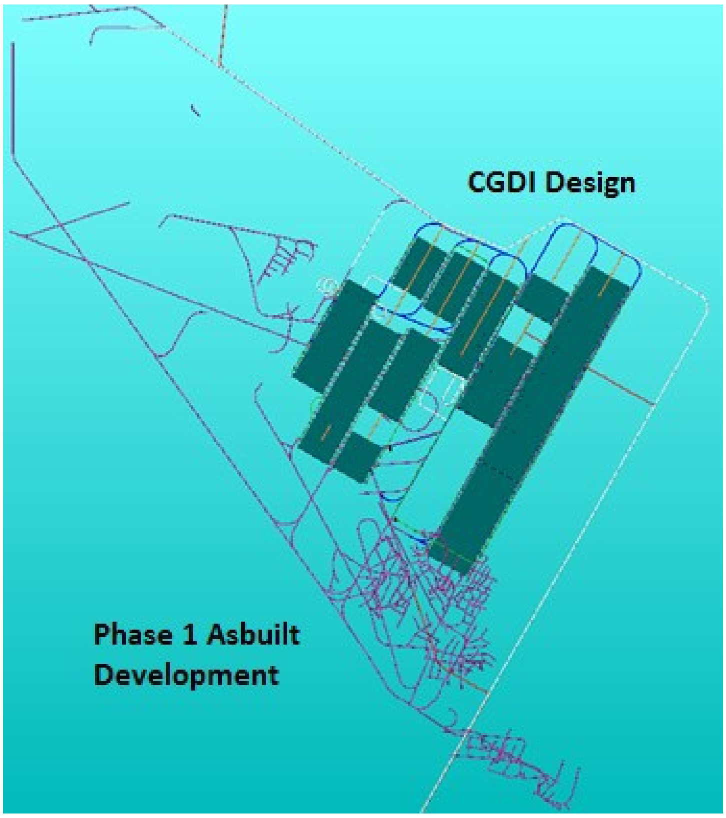


Figure 15-3: CGDI Designed Stopes in Relation to As-built Development

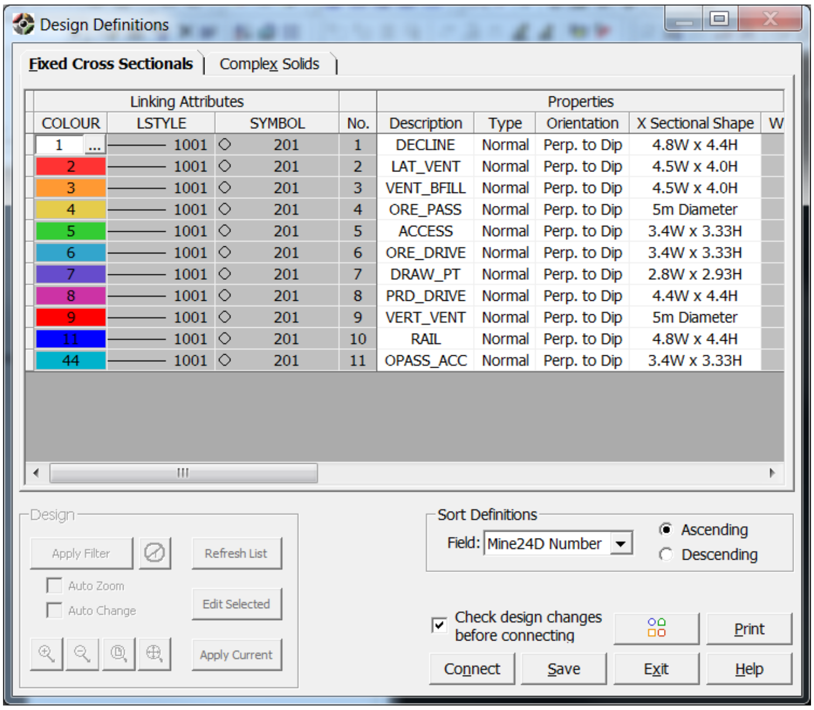
15.5.2 Underground Mining - Initial Ten Years

Specific Sub-level Open Stoping designs were produced by the CGDI and transferred into Mine24D and Enhanced Production Scheduler (EPS) by China Gold. The first 6 - 9 years of the operation is fully designed and scheduled demonstrating the production capacity is achievable. Mining and development factors derived from the EPS schedule were applied to the complete set of stope designs created by China Gold to produce a basic life of mine schedule and mineral reserve estimate.

All designs completed by the CGDI and China Gold are in compliance with the Jiama mine design and safety guidelines (Jiama Mine Phase II Preliminary Design Safety Report) produced the CGDI and approved by the Government in October 2013.

15.5.1.1 Development Dimensions and Strategy

Phase II development has been designed to merge with the Phase I as-built development currently in place. This includes extensions to the declines, inclines, ventilation drives, rail haulage drives and level accesses as well as new level development for grade control drilling and bogging from the large sub-level stopes. Level access points have been designed off the relevant declines and inclines from which bogging and drilling levels have been added. Ventilation and Backfill drives have been designed inside the pillar between the two stopes. Figure 15-4 and Figure 15-5 show the development codes and design for the Phase II detailed schedule.



COLOUR	LSTYLE	SYMBOL	No.	Description	Type	Orientation	X Sectional Shape	W
1	1001	201	1	DECLINE	Normal	Perp. to Dip	4.8W x 4.4H	
2	1001	201	2	LAT_VENT	Normal	Perp. to Dip	4.5W x 4.0H	
3	1001	201	3	VENT_BFILL	Normal	Perp. to Dip	4.5W x 4.0H	
4	1001	201	4	ORE_PASS	Normal	Perp. to Dip	5m Diameter	
5	1001	201	5	ACCESS	Normal	Perp. to Dip	3.4W x 3.33H	
6	1001	201	6	ORE_DRIVE	Normal	Perp. to Dip	3.4W x 3.33H	
7	1001	201	7	DRAW_PT	Normal	Perp. to Dip	2.8W x 2.93H	
8	1001	201	8	PRD_DRIVE	Normal	Perp. to Dip	4.4W x 4.4H	
9	1001	201	9	VERT_VENT	Normal	Perp. to Dip	5m Diameter	
13	1001	201	10	RAIL	Normal	Perp. to Dip	4.8W x 4.4H	
44	1001	201	11	OPASS_ACC	Normal	Perp. to Dip	3.4W x 3.33H	

Figure 15-4: Development Codes for the CGDI Underground Design (Mine 24D)

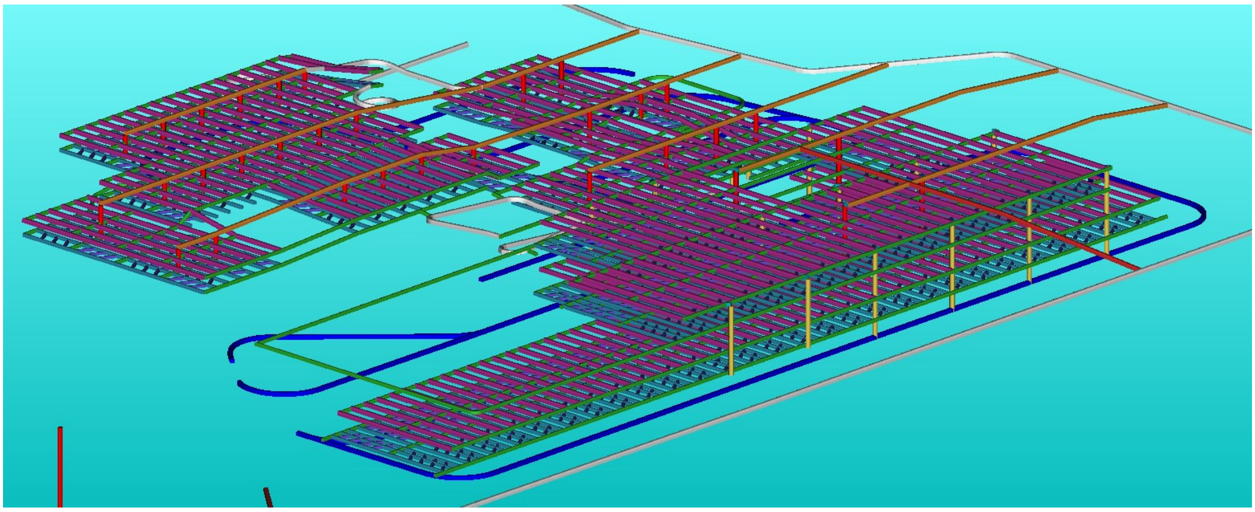


Figure 15-5: GDI Development Design showing Ventilation and Backfill Drives

15.5.1.2 Stope Dimensions and Strategy

Phase II stopes for the initial ten years were designed by the CGDI in accordance with the standards and allowable dimensions outlined in the "Jiama Mine - Phase II Preliminary Design Safety Report" produced by the CGDI and approved by the Government in October 2013.

In the initial mining area, stopes in the narrower Western side of the ore body have been designed to be 105 m long, broken into two 45 m panels with a 15 m pillar separating them. Each stope is 35 m high and 18 m wide. Figure 15-6 and Figure 15-7 provide and illustration of the stope design and their respective dimensions. A ventilation and backfill drive has been designed through this pillar to allow easy placement of pastefill into the open stopes. Stopes will be mined in a primary/secondary sequence with all stopes being paste filled and pillar extraction occurring once the block of stopes has been fully mined.

Stopes in the thicker Eastern side of the orebody have been designed to be 135 m long, broken up into two 55m panels with a 25 m pillar separating them. Stopes will be 45 m high and 18 m wide and will be mined in a top down sequence. The stopes will be mined in a primary/secondary/tertiary sequence as illustrated in Figure 15-8. A ventilation and backfill drive has been designed through this pillar to allow easy placement of pastefill into the open stopes.

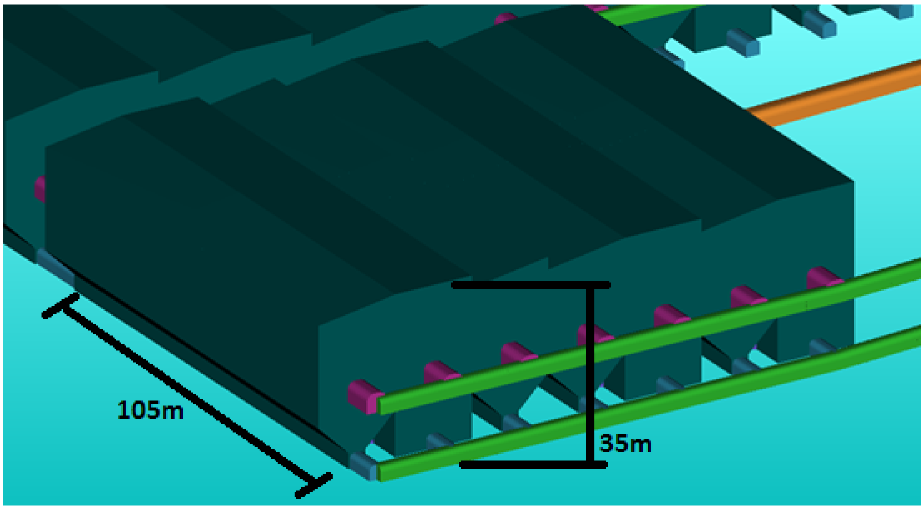


Figure 15-6: CGDI Stope Design Dimensions

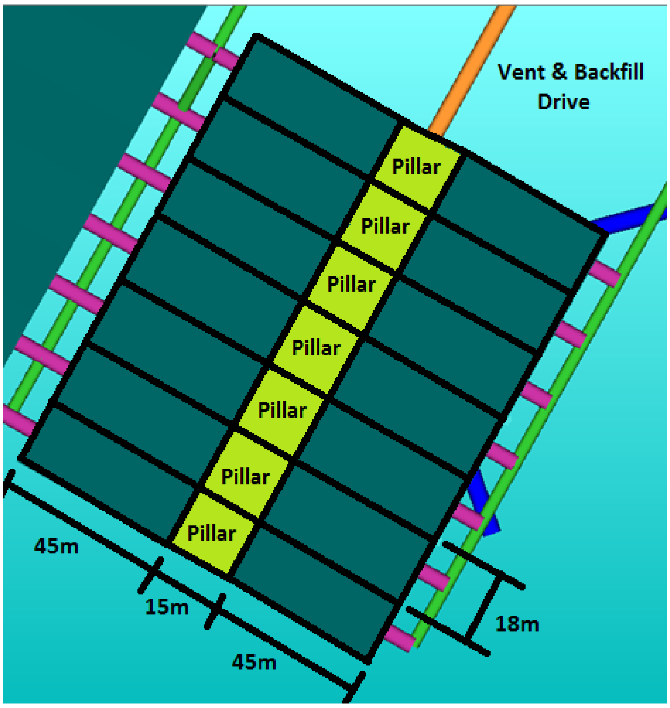


Figure 15-7: CGDI Stope Design Dimensions with Pillar Location

15.5.1.3 Drill and Blast

Production drilling will be completed from both the production drill drive and the undercut. A slot will be fired out at the end of the stope using rings from both levels. These rings will be fired as required based on production demands.

Figure 15-8 and Figure 15-9 show the mining sequences of the stopes. Figure 15-8 illustrates a three stage mining sequence involving Primary, Secondary and Tertiary stopes mined in the order shown. This three stage strategy will be adopted in the thicker eastern regions of the ore body where the dimensions of the stopes enable sustained extraction. In the Eastern zone of the ore body stopes marked ① will be mined first. Stopes marked ② will be mined during the backfill curing period of the primary stope or if necessary can be bought online during the excavation of the Primary stope. Stopes marked ③ will only be mined after backfill curing of both primary and secondary stopes.

Figure 15-9 illustrates a two stage mining sequence involving Primary and Secondary stopes. This method enables faster turnover of the stopes and provides a better production strategy for the Western side of the ore body. In the Western zone of the ore body stopes marked ① will be mined first. Stopes marked ② will be mined after backfill curing period of the primary.

All drilling, blasting, loading, hauling and dumping will be carried out by the site contractors.

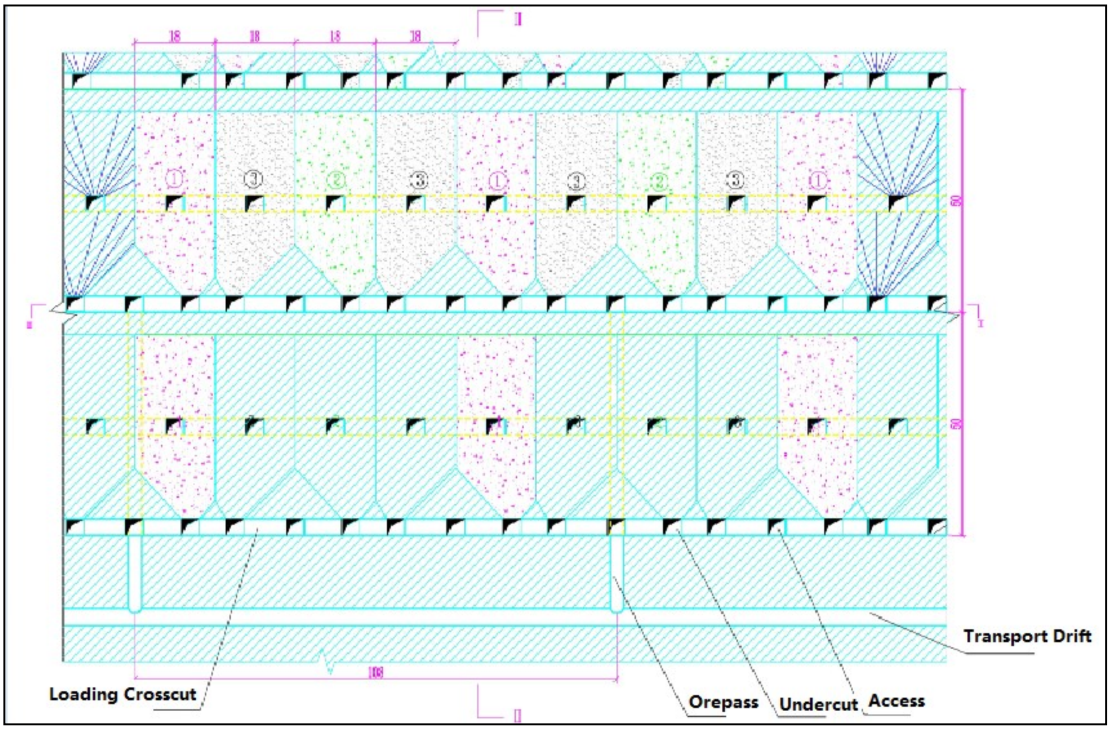


Figure 15-8: CGDI Stoping Cross-section with Mining Sequence

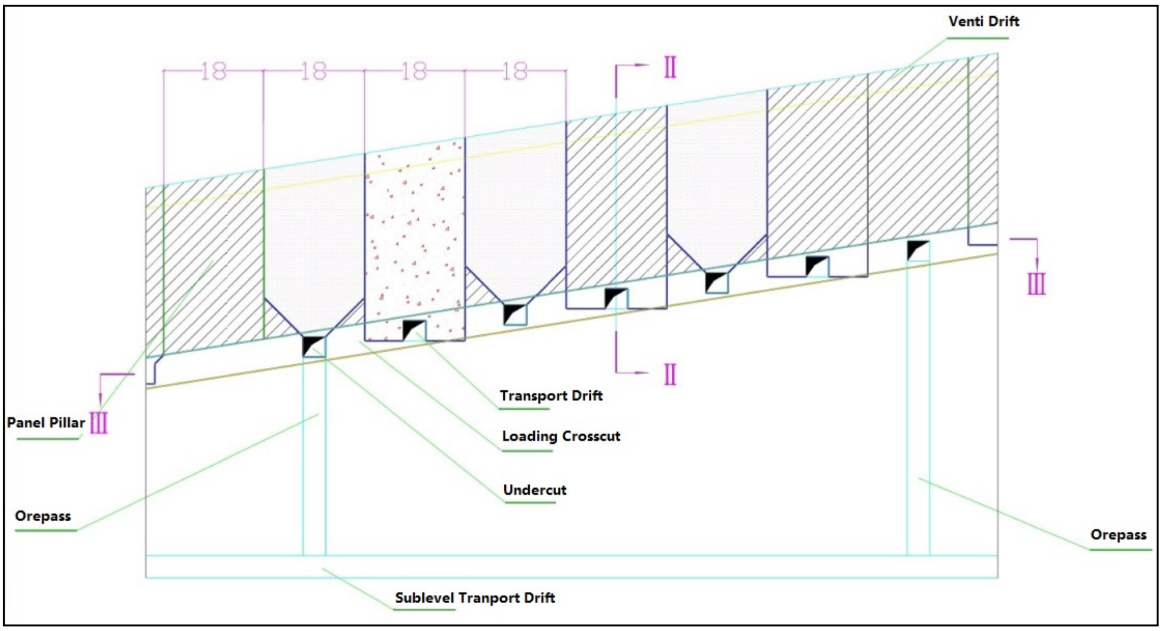


Figure 15-9: CGDI Stoping Cross-section with Mining Sequence for Smaller Western Stopes

15.5.1.4 Haulage

Requirements of the ore haulage system include:

（1）Large production rate to meet 6.6Mt/annum (20000t/day);

（2）Long distance of greater than 2100m;

（3）Long life mine of greater than 30 years.

The primary ore haulage system will be bogging or remote bogging from stopes to ore passes or stockpiles. All ore will be bogged using Toro 1400E (6m^3 bucket) or equivalent based on contractor selection. Stockpiled ore will be trucked (small capacity trucks only) to ore passes where it will be loaded onto the rail system. The rail system will operate on the 4,450 mRL and 4,400 mRL levels which will deliver ore to the underground crusher. Once crushed, ore will be hauled via a conveyor system to the surface then transferred to a surface conveyor and hauled to the processing plant. The specifications for the #1 and #2 conveyors is provided below.

All haulage designs are compliant with the "Metal and nonmetal mines safety regulations" (GB16423-2006), items 6.3.1.5- 6.3.1.10.

#1 Conveyor

- Tonnage per hour: 1,685 t/h
- Length: 1,986.5 m
- Hoist Height: 354 m
- Dip Angle: 9.84 degrees

#2 Protection Conveyor for #1 Conveyor

- Tonnage per hour: 1,685 t/h
- Length: 100m
- Two feeders will serve this conveyor

On the 4,400 mRL and 4,450 mRL levels the ore will be transported by train to major ore-pass #4 and #5. These ore passes will deliver ore to the underground crusher. Once the ore is crushed the ore will then be hauled by conveyor to the surface. Table 15-4 provides an overview of the train system and associated operational assumptions used for the selection of the rail system.

Table 15-4: Equipment Selection for Train System in Level 4450m and 4400m

Item		Unit	Level 4,400 mRL	Level 4,450 mRL
Haulage rate		t/d	16000	3333
Locomotive			CJY20/9GY550P-double	CJY20/9GY550P-double
Inequality coefficient			1.15	1.15
Ore density		t/m^3	3.2	3.2
Loose coefficient			1.6	1.6
Fill factor			0.9	0.9
Mine Car	Type		YDC10-9	YDC10-9
	Weight	kg	5745	5745
	Volume	m^3	10	10
Maximum load		kg	20,000	20,000
Effective load		kg	18,000	18,000
Car number		unit	12	6
Train load		t	216	108
Travel distance		m	2,000	1,500
Speed		m/min	220	200
Turn time		min	0.00	0.00
Dump time		min	3.00	3.00
Load time		min	18.00	9.00
Wait time		min	3.00	3.00
Unexpected delay		min	3.00	3.00
Running time		min	18.18	15.00
Cycle time		min	45.28	33.10
working hours per shift		h	6	5
The times of cycle per shift		Times/shift	8	9
Transport tonnage per shift		ton/shift	6,133	1,278
Cycle times		times	28	12
Train Numbers		unit	4	2

To minimize the waste handling underground the waste material produced from development will be backfilled into the available Tertiary stopes or other voids where it is deemed beneficial. Waste material will be trucked to the waste pass system and then hauled to surface via the waste haulage shaft. Details of the waste haulage shaft are as follows:

- JKMD-2.8*4(I) E hoist with 5.0m3 bottom dump skip;
- Max speed 7.56m/s;
- Hoist height: 445m;
- Rate: 1,650 t/d;
- Satisfies the 'Metal and Non-metal mine Safety regulations' requirements;
- Comprehensive calculation tables of tension, running time, braking distance have been completed by the CGDI.

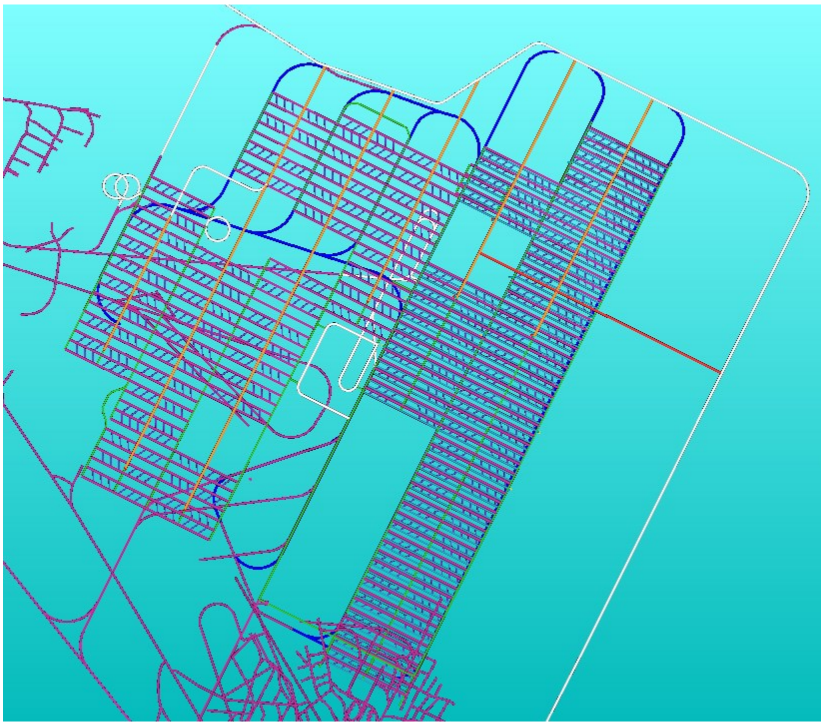


Figure 15-10: CGDI Development Design showing Bogging Levels and Rail System (dark blue)

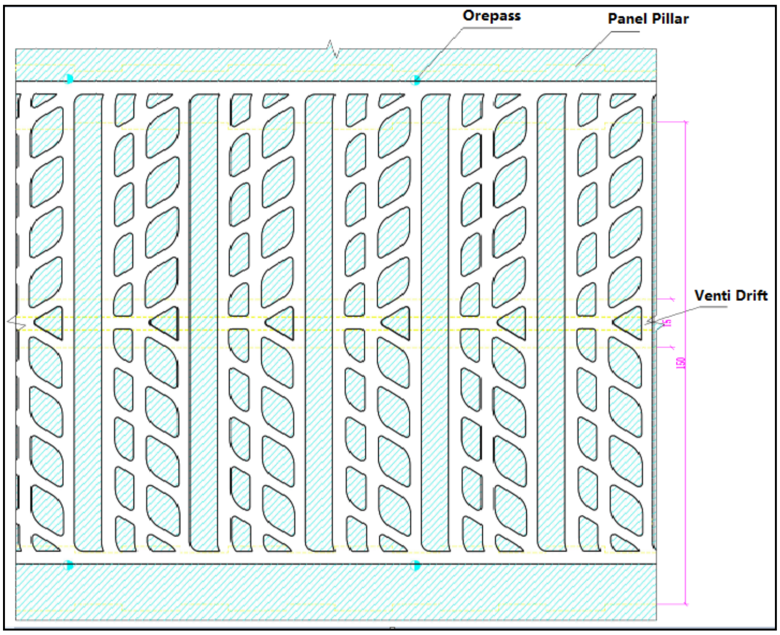


Figure 15-11: CGDI Development Design within Stoping Areas showing Draw Point and Orepass Layouts - Eastern Zone

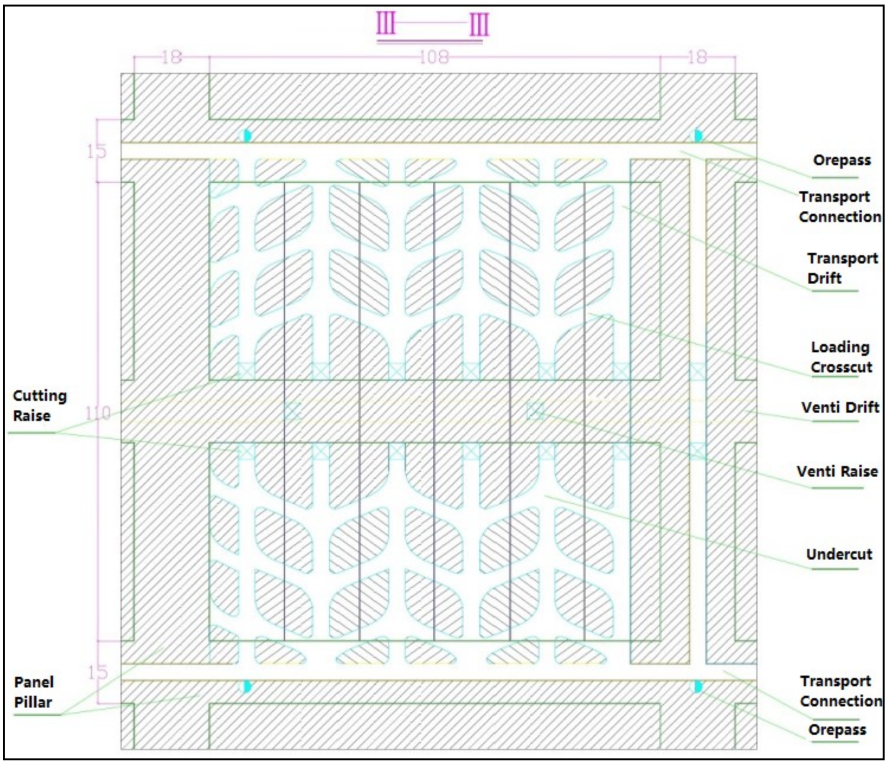


Figure 15-12: CGDI Development Design within Stoping Areas showing Draw Point and Orepass Layout - Western Zone

15.5.1.5 Ventilation

Ventilation design and simulation (using Ventsim) has been completed by the CGDI. A summary of the system is as follows:

- Two central intake airway shafts (main central and auxiliary) and two return airway shafts will be established. One in the north and one in the south;
- Fans #1 & #2 will be located in central intake shaft with fans #3 & #4 placed in the auxiliary shaft. These auxiliary shafts will act fresh air intakes;
- 12 fans (#6 to #17) will be installed in the intake airway drifts connecting to the working faces. These drifts will act as stations for stope ventilation;
- 12 fans (#18 to #29) will be located in return airway drifts and will act as exhausts for the ventilation shafts;
- Fans #30 and #31 will be in north ventilation shaft entrance and #32 and #33 will be in the south ventilation shaft entrance;
- Using the main equipment types in different working faces and their required airflow, the maximum overall required air quantity for the north zone is 594m3/s (equals to 1.1m^3/s per 1,000 t ore). This is adequate when compared with similar mines in China;
- Airflow and resistance in the primary airways is presented in Table 15-5;

Figure 15-13 to Figure 15-15 illustrates the primary ventilation intakes and exhaust.

Table 15-5: Ventsim Results showing Air Flow and Resistance

Direction	Location	Measure	Result
Intake	Central or Main Intake shaft	Quantity (m^3/s)	422
		Resistance(Pa)	1776.74
	Auxiliary Intake shaft	Quantity (m^3/s)	172
		Resistance(Pa)	1281.9
Exhaust	North return shaft	Quantity (m^3/s)	313.5
		Resistance(Pa)	1418.26
	South return shaft	Quantity (m^3/s)	280.5
		Resistance(Pa)	2165.56

A Safety Analysis covering the following items has been completed by the CGDI

- Network;
- Airflow control;
- Local ventilation;
- Station;
- Fan selection;
- Dust control; and

- Heating.

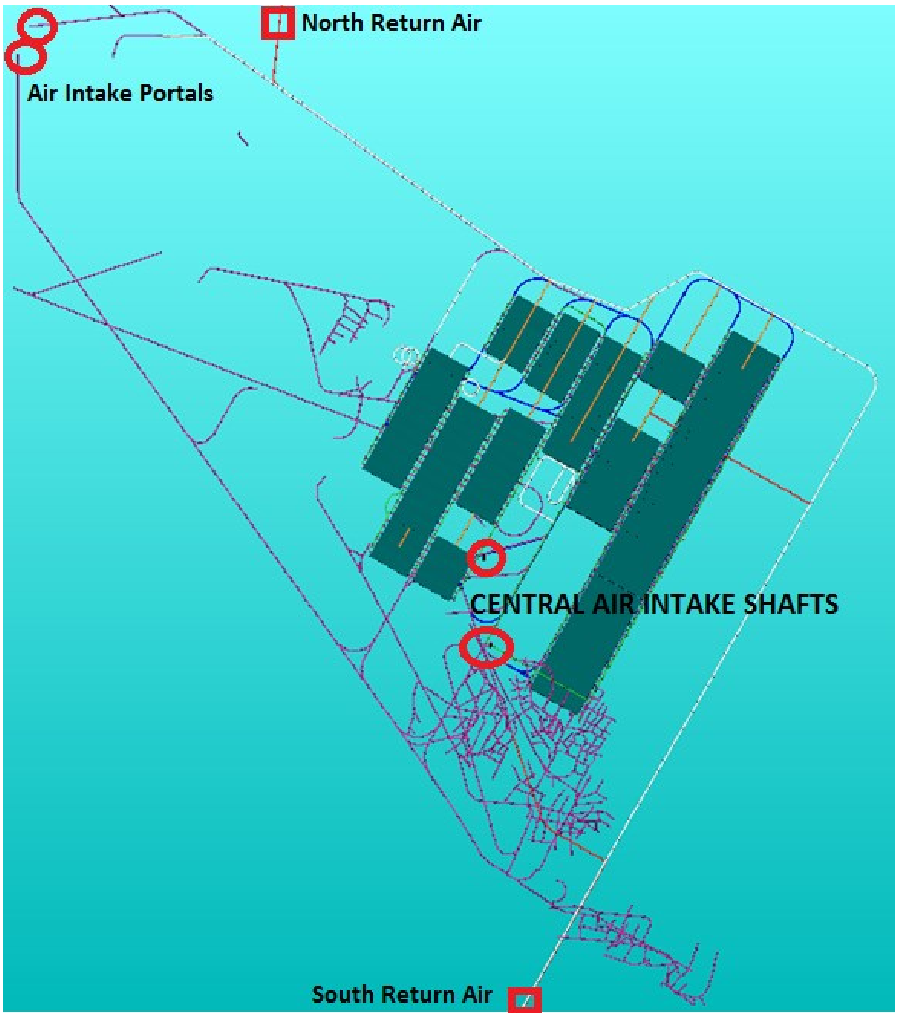


Figure 15-13: Simplified Plan of Current CGDI Ventilation Design

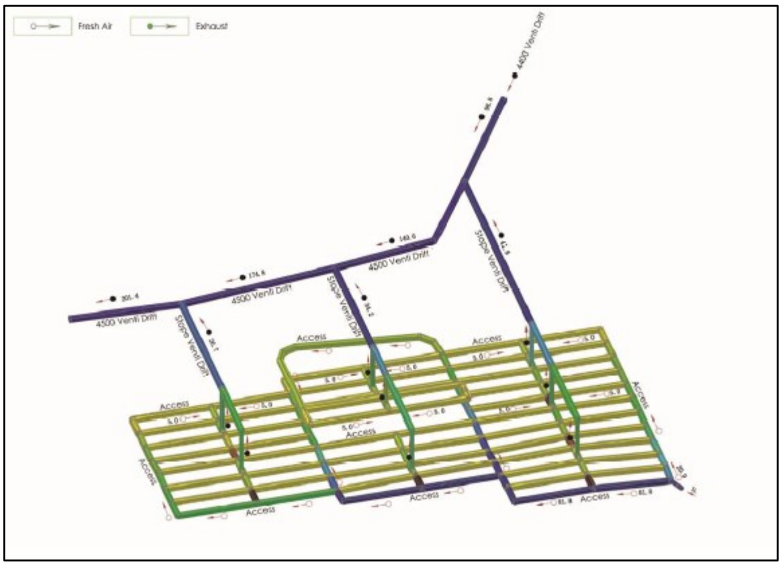


Figure 15-14: Ventilation 4,450 mRL

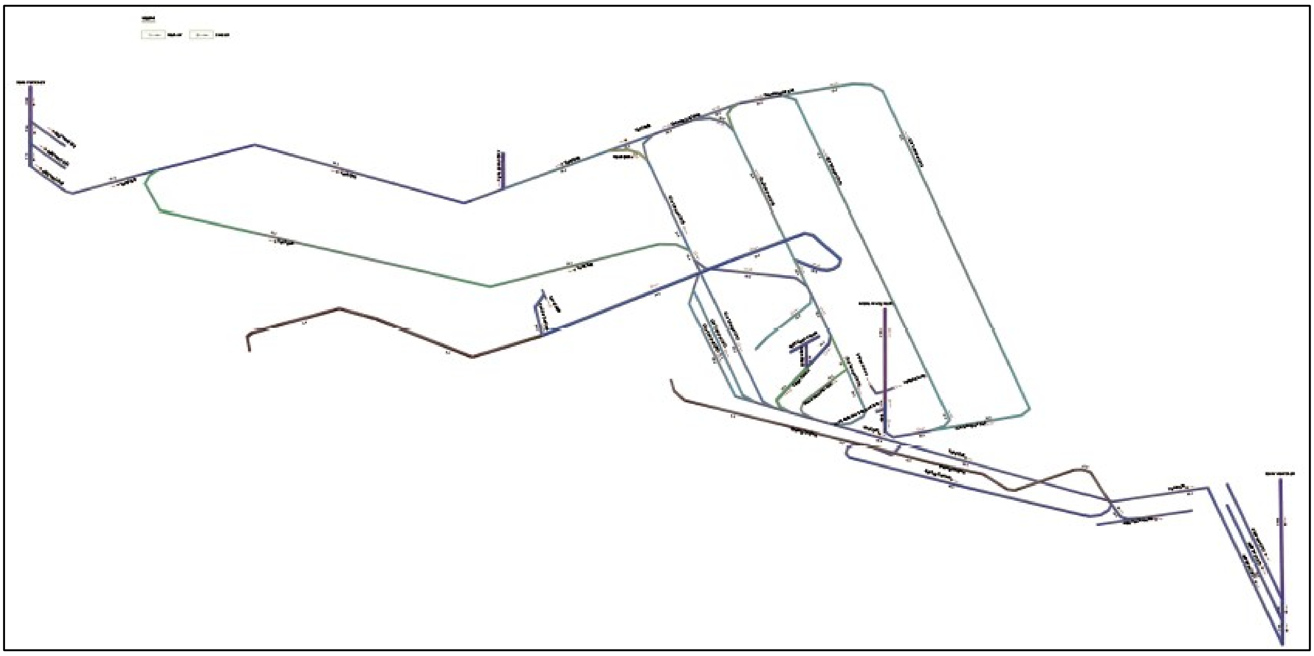


Figure 15-15: Ventilation 4,400 mRL

15.5.1.6 Backfill

To cover the required area, four (4) backfill systems have been selected and designed. Each backfill system will have a 120m^3 per hour capacity and consist of a 190m^3 silo, mixing equipment. The mixed cemented paste will be delivered through a piping system and surface borehole with gravity. A small pumping delivery system will be employed where fill is required to be elevated. Backfill designs have been completed by the CGDI and a daily cement consumption of 492.06 tonnes has been estimated when the mine reaches full production. Total cement consumption has been estimated at 24.6kg per tonne of ore. Ongoing testing and analysis of the backfill will occur once the mine is operational to ensure it provides adequate support for the top down mining strategy that has been planned.

It is envisaged that paste will be transferred via surface drill holes and transported to the required stopes through a series of pipes and drill holes as required. The ventilation drives located within the pillars will serve as backfill drives and will host dual pipes for the purpose of transporting the backfill paste. Figure 15-16 illustrates the location of the pipe network for the backfill system. Once a stope has been mined, a paste hole will be drilled from the ventilation drive into the top of the stope and paste reticulation pipes connected as required to enable the backfill process to occur.

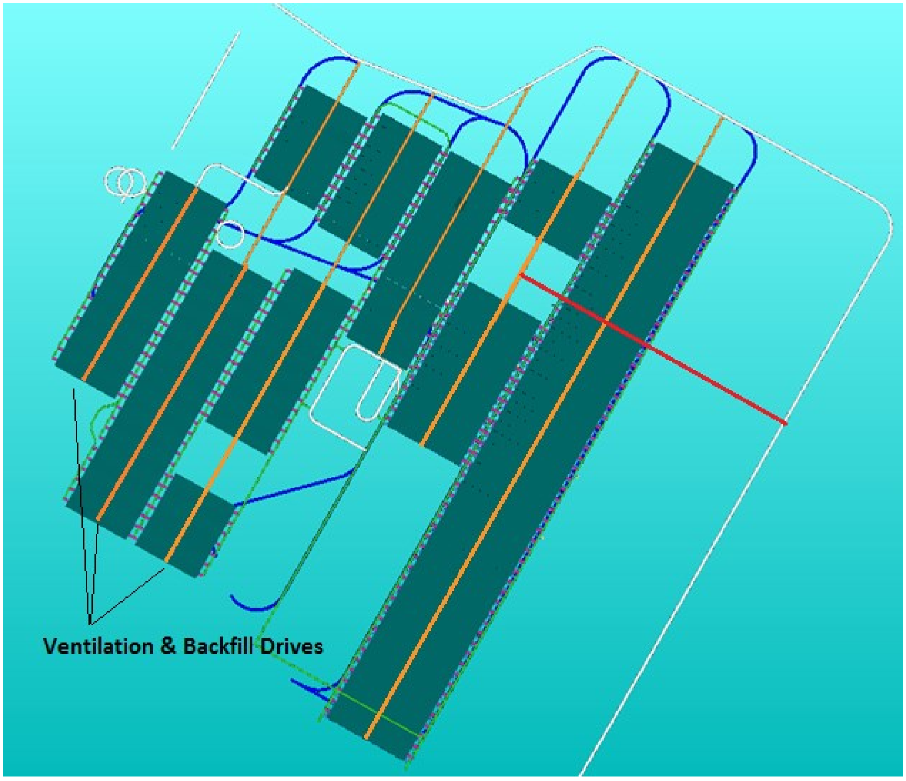


Figure 15-16: Plan View of Current CGDI Backfill Drives (orange)

15.5.3 Underground Mining beyond Ten Years

Minarco Mineconsult conducted a “Prefeasibility Study Technical Report” in November 2012 in which a number of potential mining methods were considered. Methods are appropriate for the criteria specified and the following is a summary of the areas and the mining methods considered. These methods are considered for underground mining beyond the initial 10 years of operation and will be further developed as mining continues and further operational knowledge is gained.

The ore body orientation and thickness are the main determining factors in mining method selection. Table 15-6 provides a summary of the different mining method and the operational dimensions for their selection.

Table 15-6: Underground Mining Methods

Description	Unit	SLOS	Open Stoping w/fill	SLC	Room and Pillar	Stope and Pillar
Width	m	5-30	15-30	>30	5-15	15m Stope/18m Pillar
Dip	°	>30	<30	Low	<30	Low
Panel Height	m	60	110	90	60	100
Panel Length	m	50	50	60	15-20	50
Sub Level Interval	m	15 - 17.5	15-20	20	15	15
Cosscut Spacing	m	-	-	15	-	-

Source: MMC 20130510_ADV-HK-03709 China Gold Tibet Jiama Gold NI 43-101_PFS

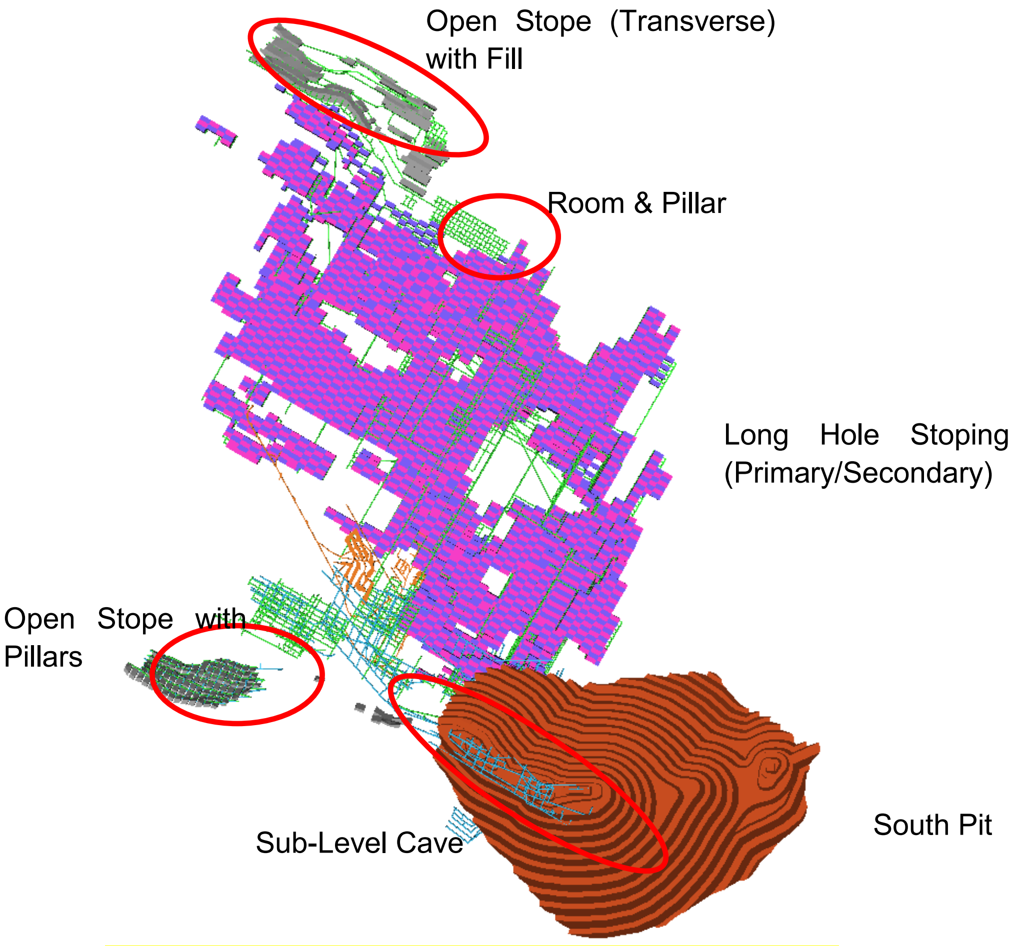


Figure 15-17: Underground Mining Methods in Relation to the South Pit – Plan View

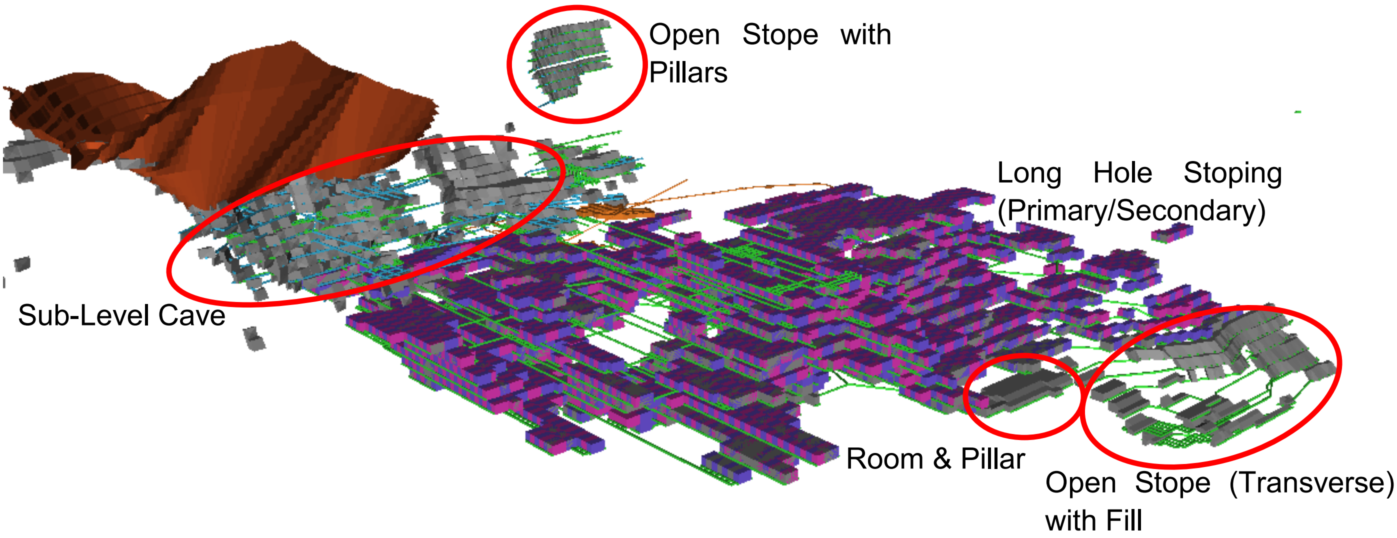


Figure 15-18: Underground Mining Methods in Relation to the South Pit - Oblique View

15.5.4 Sub-Level Open Stoping with Fill (Primary/Secondary/Tertiary)

- This method is considered for the extraction of ore from shallow dipping ore bodies with thicknesses greater than 30 m;
- Mining panels 120 m wide and 100 m long will be established. The length of the mining panel will be divided into 15 m wide primary and 18 m wide secondary stope panels;
- The primary stopes will be backfilled with paste fill using 75% tailings and an average cement to solid ratio of 1:8. The secondary stopes will be filled with 75% tailings and 1.5% cement;
- Pillar recovery will be undertaken by cut and fill mining for any pillars remaining;
- Production using this method is scheduled at 1,000 tpd per stope;
- The estimated dilution will be 10% and the recovery of 87%;
- This method is forecast to be used for the first 10 years of operation, with the post-mining backfill providing additional ground stabilisation of the rock mass, while open pit operations continue.

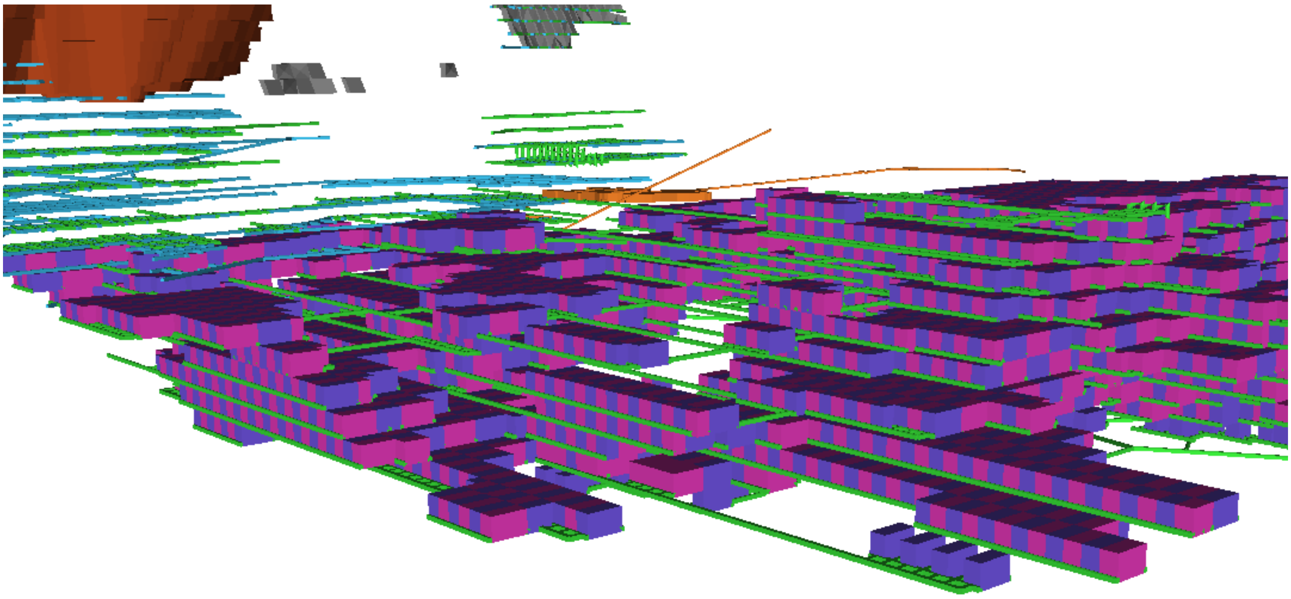


Figure 15-19: Longhole Stoping showing Primary and Secondary Stopes

15.5.5 Sub-Level Caving

- This method is considered where the ore is inclined and greater than 30 m thick;
- The sublevel cave crosscut interval is assumed to be 20m with a sublevel spacing of 25 m;
- Dilution is estimated at 13% and the recovery 80%;
- Production using this method is forecast at approximately 1,500 tpd per stope;
- This method will be used to break through to the bottom of the open pit and will not commence until open pit mining has been completed.

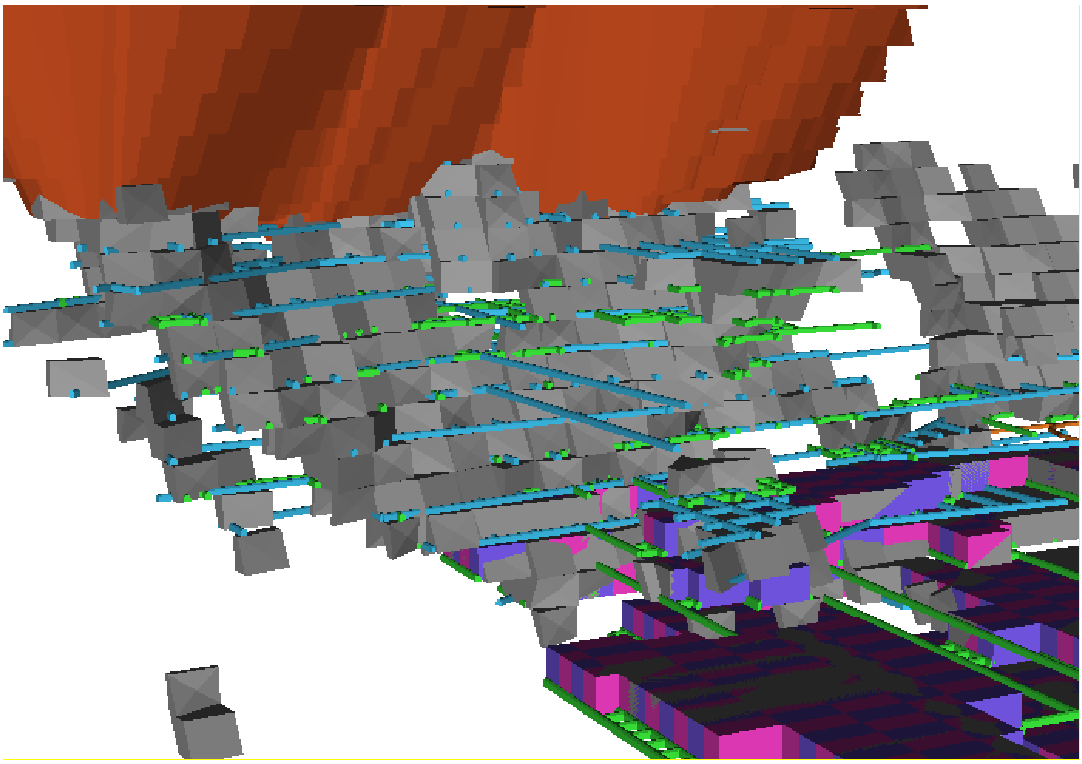


Figure 15-20: Sub-Level Caving Zone below South Pit

15.5.6 Open Stoping with Pillars

- This method will be considered to extract the ore from a steep dipping ore body with a thickness less than 30 m;
- Mining levels approximately 375 m long will be established. 20m long stopes will be mined, retreating back to the level access, with 5m pillars left between stopes;
- The stopes will be left open without back fill in order to reduce the mining cost and increase the rate of mining;
- Production using this method is estimated at 1,000 tpd per stope;
- The estimated dilution will be 10% and the recovery 78%.

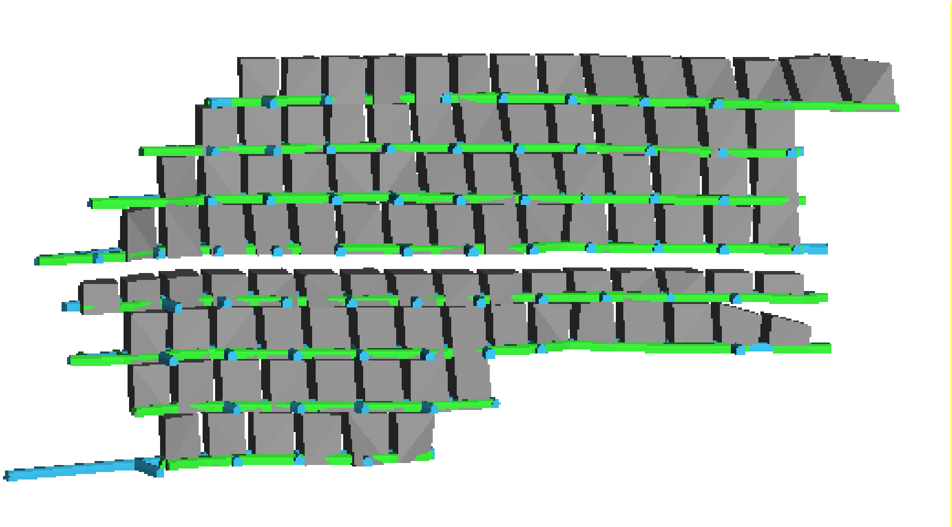


Figure 15-21: Open Stoping with Pillars to the West of South Pit

15.5.7 Open Stoping with Fill (Transverse)

- This method will be considered to extract the ore from shallow dipping ore bodies (<11°) with thicknesses ranging between 15 m to 30 m;
- The panel length is 200m to 300m and is sub-divided into 25m wide primary and secondary stopes;
- This method has a dilution of 10% and recovery 78%;
- Production rate using this method is scheduled at 1,000 tpd per stope.

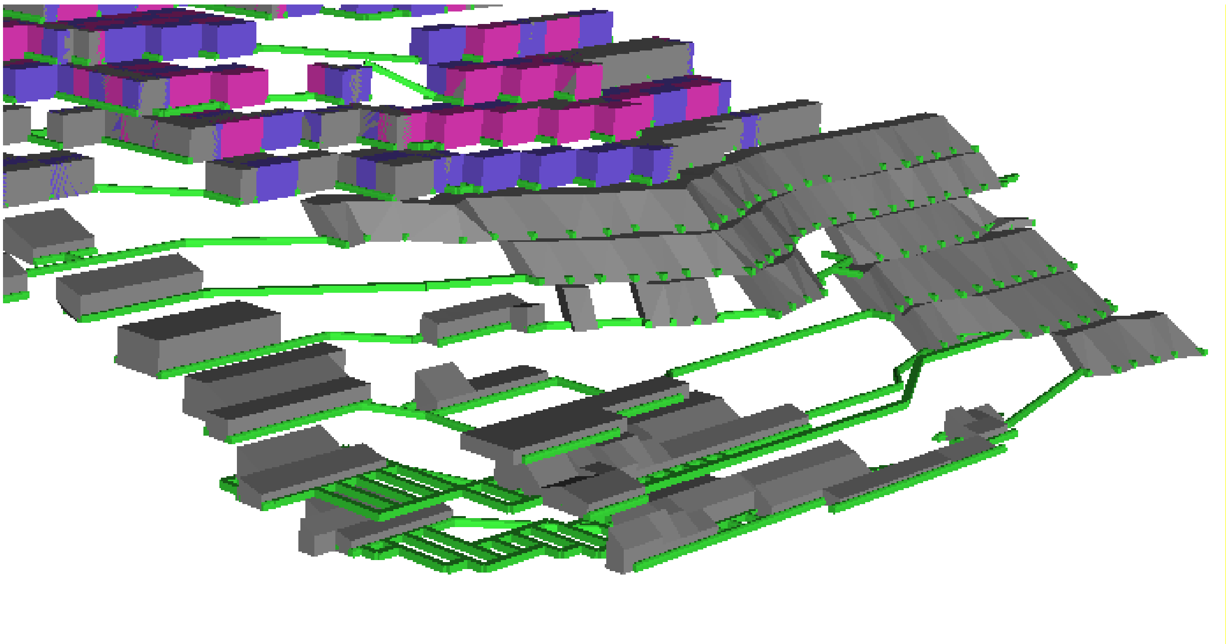


Figure 15-22: Transverse Open Stoping with Fill to the North of the Long Hole Stoping Area

15.5.8 Room and Pillar

- This method will be considered to extract shallow dipping ore bodies (<30°) with thicknesses between 5m and 15m;
- Pillars will be approximately 6 m by 6m to 8m, while the mined rooms will be approximately 12m by 8m;
- The dilution is estimated to be 10% and recovery is estimated to be 78%;
- The production rate using this method is 400 tpd per stope.

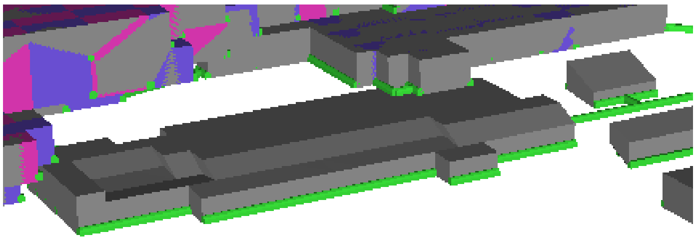


Figure 15-23: Room and Pillar Zone to the North of the Long Hole Stoping Area

15.5.9 Cut-off Grade

The estimations contained within this section are based on information contained within The Study.

A cut-off grade of 0.45% CuEq (NSR) for Sub-level Open Stoping and 0.36% for mining methods not requiring backfill has been estimated in the Study.

An estimation of the Copper Equivalent (CuEq) cut-off grade has been estimated on a Net Smelter Return basis considering operating costs, mill commodity recoveries and prices (Table 15-7). Details of the CuEq cut-off calculations are outlined below with the estimations shown in Table 15-8.

A Copper Equivalent (CuEqUg) field based on a NSR estimate specific to underground mining and rock-type was added to the block model. This cut-off is considered the stope only cut-off and does not consider the development capital required to realise the stope.

Table 15-7: Copper Equivalent Mill and Smelter Recoveries

Element	Price		Mill Recovery %			Smelter Return %
	Unit	USD	CuMo Skarn	CuPb Skarn*	CuMo Other**	
Copper	Lbs	$2.90	90%	90%	84%	83.80%
Molybdenum	Lbs	$15.50	71%		48%	68.10%
Gold	Ozs	$1,300	65%	43%		84.00%
Silver	Ozs	$20	70%	56%		77.50%
Lead	Tonne	$2,150		75%		80.00%
Zinc	Tonne	$2,150		65%		65.00%
** Jiaoyan Pit*	*** Hornfels / Porphyry*					

Skarn:

CuEqUg
= (Au Grade * Au Price *Au Mill Recovery * Au Smelter Return + Ag Grade * Ag Price * Ag Mill Recovery * Ag Smelter Recovery + Mo Grade * Mo Price * Mo Mill Recovery * Mo Smelter Recovery + Cu Grade * Cu Price * Cu Mill Recovery * Cu Smelter Recovery) / Cu Price

Hornfels / Porphyry:

CuEqUg
= (Mo Grade * Mo Price * Mo Mill Recovery * Mo Smelter Recovery + Cu Grade * Cu Price * Cu Mill Recovery * Cu Smelter Recovery) / Cu Price

Table 15-8: Copper Equivalent Cut-off by Underground Mining Method

Cost Parameter	Cemented Tailings Backfill		Tailings Backfill		No backfill	
	RMB	USD	RMB	USD	RMB	USD
Mining	￥115.98	$18.41	￥95.98	$15.23	￥80.86	$12.83
Processing	￥60.17	$9.55	￥60.17	$9.55	￥60.17	$9.55
G & A	￥5.18	$0.82	￥5.18	$0.82	￥5.18	$0.82
Sales/Transport	￥ -	$ -	￥ -	$ -	￥ -	$ -
Total	￥181.33	$28.78	￥161.33	$25.61	￥146.21	$23.21
CuEq U/G cut-off	**0.45%**		**0.40%**		**0.36%**	

15.5.10 Material Handling

All underground ore from development and stoping will be transported (by truck or loader) to the underground crusher and loaded onto the conveyor belt to the surface ROM pad once this installation is completed. Waste not immediately required for backfill will be hauled up through the decline or shaft to surface and tipped into the open pit or waste dump. Due to the nature of the Jiama deposit a substantial amount of development will occur within the orebody itself therefore minimal waste material is anticipated to be excavated from the underground resource.

15.6 Phase II Underground Schedule

A Life of mine schedule for the Jiama Phase II underground was developed to provide an estimate on the life of the mine and to enable financial modelling to be conducted on the mining operation. The targeted production from the Phase II underground is 6.6Mtpa of ore. This ore will be complimented by 9.9Mtpa from the Phase II open pits to provide a combined production total of 16.5Mtpa. The schedule was constructed primarily to establish if the underground operation could sustain the targeted production rates and to establish a development strategy for the underground.

The initial seven years of the operation were scheduled using detailed stope and development designs and then scheduled in the EPS scheduler. This detailed schedule was then used to derive operational assumptions to enable the remaining life of mine to be scheduled. This involved utilising MSO designs to schedule the remaining resource based on a number of mining zones. The resultant life of mine for the Jiama underground is approximately 30 years.

15.6.1 Initial Design Schedule

China Gold used the following assumptions and rates when scheduling the CGDI mine design in EPS:

- Stope Dilution: 10%;
- Stope Recovery: 87%;
- Total Development rate: 60 m/day (1,800 m/month maximum);
- Total Production rate: 547,000 t/month (6.57 Mt/year maximum);
- CuEq Cut-off grade: 0.45%;

The Phase I underground is currently achieving an average development rate of 30 m/day and a production rate of 2.15 Mt/year. These rates are being achieved utilising hand held equipment and therefore the production targets for the Phase II development were considered reasonable as the size and number of headings will increase significantly.

The schedule produced by China Gold has a ramp up period for Phase II of 3 to 4 years to establish capital infrastructure development and to bring enough stopes online to produce the desired output of 6.6Mt per year. This initial ramp up period will be complemented with ore that is currently being mined as part of Phase I and any additional ore development that may come available during this time.

The figures below show screen captures of the schedule in Year 1, 3, 5 and 7.

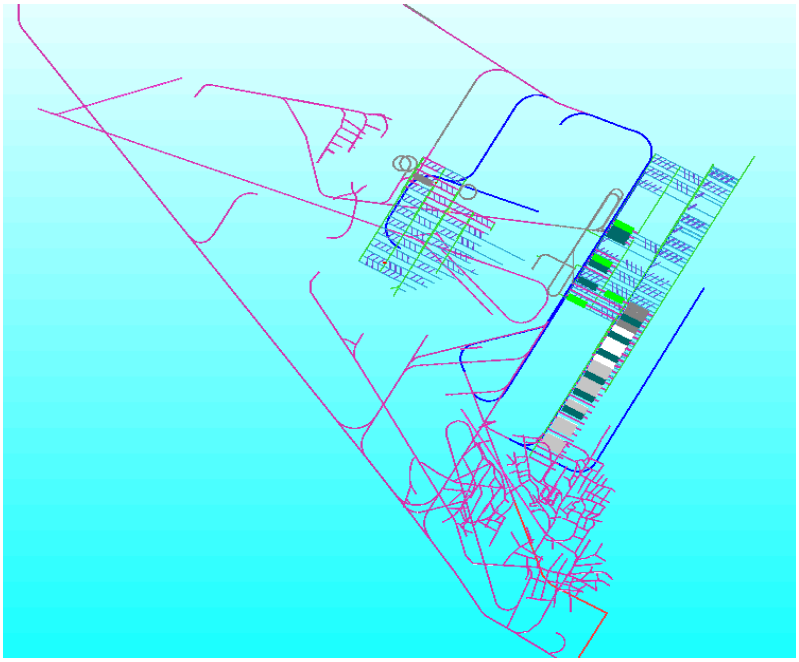


Figure 15-24: CGDI Year 1 Development and Stoping

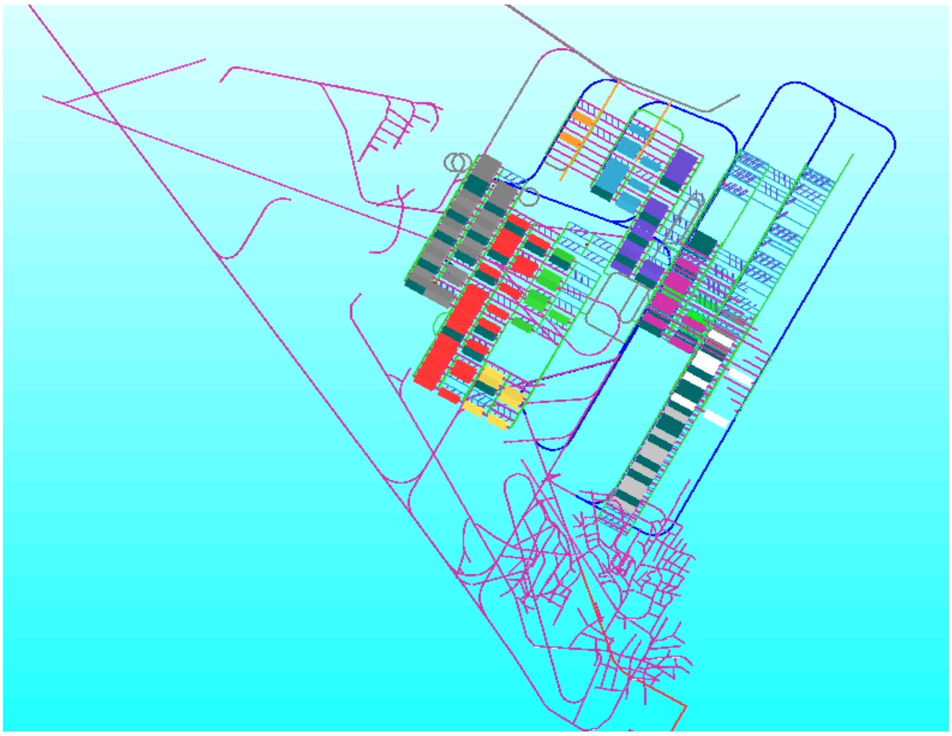


Figure 15-25: CGDI Year 3 Development and Stoping

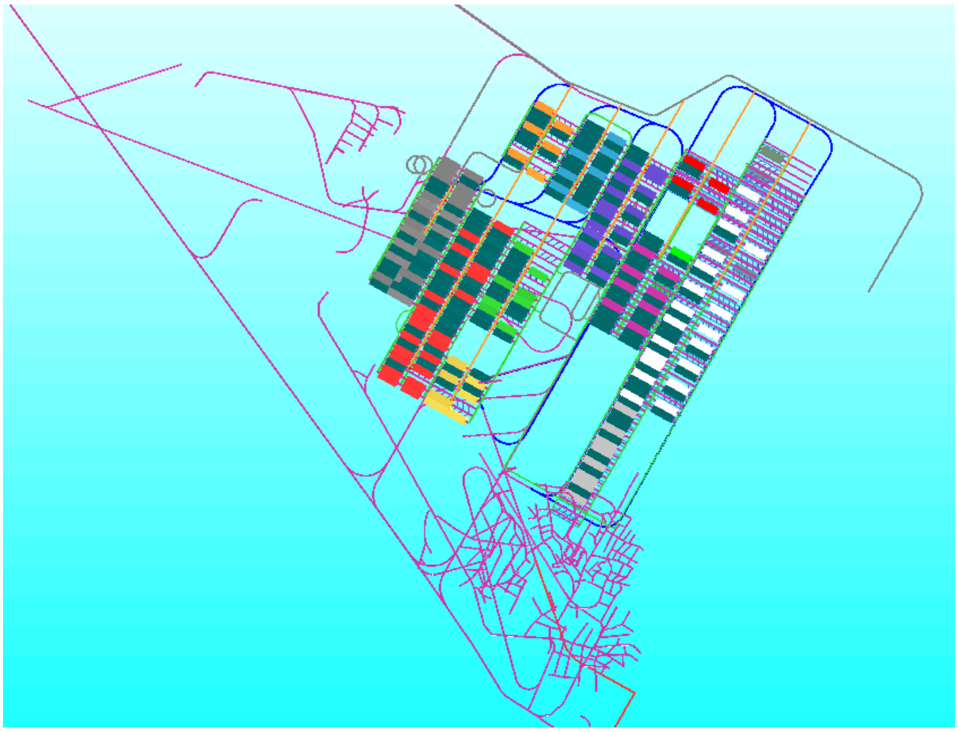


Figure 15-26: CGDI Year 5 Development and Stoping

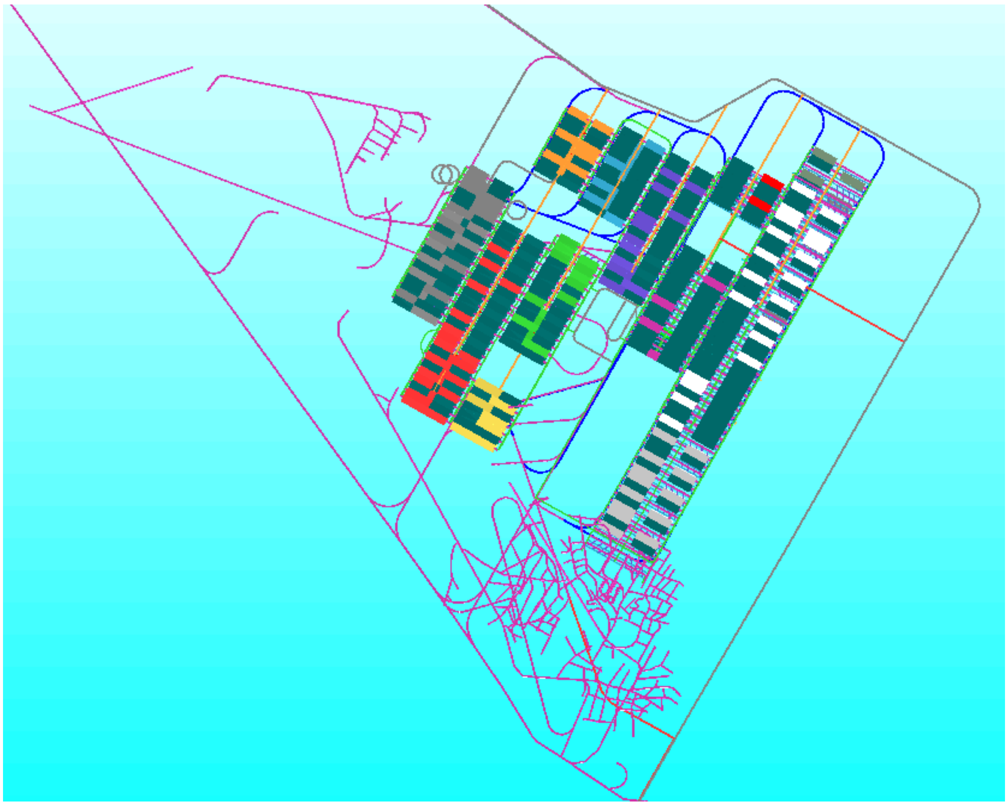


Figure 15-27: CGDI Year 7 Development and Stoping

15.6.2 Underground Life of Mine Design (Completed by China Gold)

The life of mine reserve shapes produced by China Gold were designed based on a Sub-level Stoping (primary/secondary/(tertiary)) mining method with stope dimensions similar to those created by the CGDI and approved by the government. Figure 15-28 provides an overview of the targeted mining areas that are contained in the life of mine schedule. These design were evaluated using Surpac to produce the mine reserves.

A dilution of 10% and recovery of 87% was applied to all shapes.

Inferred material was not included in the mineral reserve or life of mine schedule but is noted in the mine reserve. All stoping material below a copper equivalent cut-off grade of 0.45% was excluded from the mineral reserve, mine inventory and the life of mine schedule.

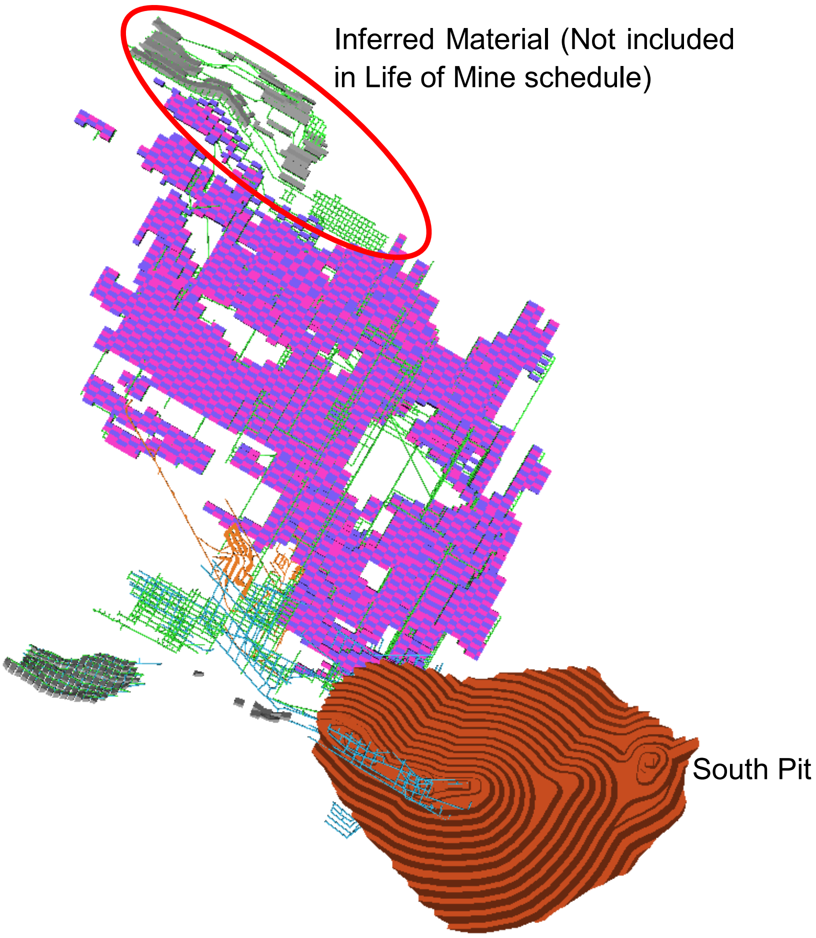


Figure 15-28: China Gold Life of Mine Design for Jiama Phase II Underground

15.6.3 Underground Life of Mine Schedule

The size of the resource was beyond the capacity of mining software to be utilised for the life of mine schedule, therefore a simplified schedule was generated for the life of mine designs. The simplified method required that the ore body be split into multiple zones. Zones A to F are outside of the current CGDI design, while Zone X contains the CGDI design as well as additional stopes around and below the initial CGDI stopes. For zone X the detailed schedule based on the CGDI designs was utilised for the first 10 years of operation as the foundation for the life of mine schedule.

Past this initial schedule individual stopes within each zone were evaluated using Surpac and then grouped together by level and zone in Microsoft Excel. Any inferred material (mainly Zone F) and stopes below the cut-off grade (CuEq <0.45%) were then omitted from further scheduling work. A basic layout of the zones can be seen in Figure 15-29 below.

Figure 15-29: Life of Mine Design for the Jiama Underground showing Schedule Zones

The strategy for scheduling the life of mine shapes was similar to that used in the initial ten years, work top down and retreat the zones from the east to west where possible.

As complete development designs for the life of mines have not yet been completed and a number of assumptions were made when scheduling outside the initial 10 years:

- Development metres were based on the ore tonnage to development metre ratio from the initial ten years of schedule;
- After ten years the total development was also reduced as the capital infrastructure was completed. This capital infrastructure would service the Phase II underground for the life of the operation;
- As all development is completed by contractors at a fixed and relatively low cost and the majority of development is within the ore body, if more development is required than is scheduled, it will not affect the overall cost of the operation by a substantial amount. Contingency has been included in the cost model to cater for additional unforeseen development;
- Development tonnages are based on 41t per metre due to the various sizes of development required;
- Top down mining has been maintained for the life of the operation. This is in line with the mining strategy developed by the CGDI;
- Maximum development rate of 21,000 m/year has been adopted;
- Maximum production rate of 6.6 Mt/year (total ore), and;
- Backfill quantities are based on stope volume.

Table 15-9 and Table 15-10 shows the life of mine schedule for the Jiama Phase II underground.

Table 15-9: Underground Start of Mine Schedule

Underground	Material	units	FY2014	FY2015	FY2016	FY2017	FY2018	FY2019	FY2020	TOTAL
Ore Mined	**CuMo**	t	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
	CuMo_Cu	%	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	CuMo_Mo	%	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	CuMo_Pb	%	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	CuMo_Zn	%	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	CuMo_Au	g/t	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	CuMo_Ag	g/t	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Skarn	**CuMo**	t	**1,243,896**	**1,565,073**	**2,525,332**	**5,311,970**	**6,697,871**	**6,601,492**	**6,653,938**	**30,599,572**
	CuMo_Cu	%	0.2877	0.3466	0.4256	0.5330	0.5653	0.5829	0.5903	0.5349
	CuMo_Mo	%	0.0127	0.0120	0.0221	0.0376	0.0346	0.0324	0.0456	0.0340
	CuMo_Pb	%	0.0030	0.0036	0.0052	0.0061	0.0052	0.0052	0.0061	0.0054
	CuMo_Zn	%	0.0046	0.0057	0.0063	0.0073	0.0070	0.0067	0.0079	0.0070
	CuMo_Au	g/t	0.1512	0.1751	0.1535	0.1380	0.2006	0.2406	0.2550	0.2030
	CuMo_Ag	g/t	6.0979	7.2570	8.4388	8.2272	9.1181	9.6949	9.9172	8.9876
Total Ore		t	**1,243,896**	**1,565,073**	**2,525,332**	**5,311,970**	**6,697,871**	**6,601,492**	**6,653,938**	**30,599,572**
Waste Mined	Waste	t	92,921	92,873	40,865	0	12,830	92,164	85,753	**417,405**
	Strip Ratio	ratio	0.07	0.06	0.02	0.00	0.00	0.01	0.01	0.01
	Total Tonnes	t	1,336,816.94	1,657,945.70	2,566,196.45	5,311,969.95	6,710,701.07	6,693,655.87	6,739,691.33	**31,016,977**
	Stope Tonnes	t	673,381.91	985,630.60	1,817,524.81	4,438,366.46	5,823,238.80	5,773,704.33	5,893,550.19	**25,405,397**
	Development Ore	t	663,435.03	672,315.09	748,671.64	873,603.50	887,462.27	919,951.54	846,141.14	**5,611,580**
	Development bcm	bcm	250,878.41	292,346.45	280,471.95	323,330.13	319,985.06	344,308.17	329,629.68	**2,140,950**
	Backfill	bcm	216,377	712,585	933,949	1,747,322	1,571,752	1,822,183	1,844,826	**8,848,995**

Table 15-10: Underground Life of Mine Schedule

Underground	Material	units	FY2014-20	FY2021-25	FY2026-30	FY2031-35	FY2036-40	FY2041-45	FY2046-49	TOTAL
Ore Mined	**CuPb**	**t**	**0**	**1,675,596**	**914,452**	**2,308,063**	**3,363,093**	**2,199,678**	**445,516**	**10,906,398**
	CuPb_Cu	%	0.0000	0.6832	0.5283	0.6042	0.6134	0.6129	0.9620	0.6292
	CuPb_Mo	%	0.0000	0.0947	0.0724	0.0513	0.0528	0.0728	0.0430	0.0642
	CuPb_Pb	%	0.0000	0.0070	0.0160	0.0322	0.0403	0.0191	0.0070	0.0258
	CuPb_Zn	%	0.0000	0.0090	0.0287	0.0324	0.0325	0.0255	0.0110	0.0263
	CuPb_Au	g/t	0.0000	0.2924	0.1476	0.1683	0.1728	0.1881	0.4770	0.2036
	CuPb_Ag	g/t	0.0000	12.7108	8.7653	9.8629	9.8937	9.3673	22.2910	10.6256
Skarn	**CuMo**	**t**	**30,599,572**	**31,355,336**	**32,135,910**	**30,480,016**	**29,474,006**	**27,647,102**	**15,902,823**	**197,594,765**
	CuMo_Cu	%	0.5349	0.7029	0.6598	0.7232	0.7832	0.7998	0.9190	0.7160
	CuMo_Mo	%	0.0340	0.0496	0.0681	0.0488	0.0311	0.0383	0.0510	0.0458
	CuMo_Pb	%	0.0054	0.0079	0.0122	0.0300	0.0371	0.0180	0.0270	0.0189
	CuMo_Zn	%	0.0070	0.0094	0.0170	0.0294	0.0294	0.0208	0.0260	0.0193
	CuMo_Au	g/t	0.2030	0.2910	0.2412	0.2650	0.3763	0.4243	0.4270	0.3076
	CuMo_Ag	g/t	8.9876	11.8442	11.7297	13.3784	15.0121	15.6833	20.8328	13.3530
Total Ore		**t**	**30,599,572**	**33,030,932**	**33,050,362**	**32,788,079**	**32,837,100**	**29,846,779**	**16,348,339**	**208,501,162**
Waste Mined	Waste	t	417,405	2,137,989	1,419,871	1,655,305	688,864	893,079	565,143	**7,777,656**
	Strip Ratio	ratio	0.01	0.06	0.04	0.05	0.02	0.03	0.03	**0.04**
	Total Tonnes	t	31,016,977	35,168,920	34,470,232	34,443,384	33,525,963	30,739,858	16,913,482	**216,278,818**
	Stope Tonnes	t	25,405,397	31,362,027	32,103,296	31,713,230	31,612,704	29,469,579	16,020,339	**197,686,572**
	Development Ore	t	5,611,580	3,806,894	2,366,936	2,730,154	1,913,260	1,270,279	893,143	**18,592,246**
	Development bcm	bcm	2,140,950	1,512,450	938,590	1,080,332	761,541	507,645	348,544	**7,290,051**
	Backfill	bcm	8,848,995	10,207,541	10,701,099	10,571,077	10,537,568	9,823,193	5,340,113	**66,029,586**

15.7 Pit Optimisation

15.7.1 Pit Optimisation Methodology

The optimisation methodology adopted for the Jiama project used the geological block model provided by China Gold (JM_BM_1301_Undepl.bmf). The block model contained mineable resource codes which were used to generate Whittle specific fields in preparation for the optimisation in Gemcom's Whittle-4X software. Whittle-4X utilises a Lerchs-Grossman algorithm to provide the optimum mining pit shell for a given set of mining, metallurgy and economic parameters.

Pit optimisation for open pit mines using the Lerchs-Grossman algorithm is an industry-standard approach for defining an optimum open pit shape and development of a mining sequence. The methodology relies on the preparation of a 3D block model to represent all parts of the mineralisation and host rock that can reasonably influence the pit shape. A single cash surplus for each block is estimated as the difference between the revenues derived from each block, at a nominated product price, and the costs required to realise the revenue from that block. For mineralised blocks with a grade above the economic cut-off grade, the net cash flow is positive reflecting the profit that can be made by mining and treating the block to recover the product. For all the other blocks, the net cash flow is negative, reflecting the cost of mining the block to access blocks of positive cash flow.

Whittle-4X structure arcs were used to define the precedence of block removal, such that a block cannot be considered for mining unless certain overlying blocks are also mined. This effectively defined the slope geometry for an open pit operation.

The optimisation then consisted of finding the combination of positive and negative cash flow blocks, consistent with the slope precedent rules, which accumulated to a maximum positive cash flow.

Whittle then generated a series of pit optimisation shells which present as concentric pits, each generating the maximum undiscounted cash surplus for the set of economic parameters used to develop the optimised shell. The shells were developed by varying the product price, but once defined are presented as a series of shells analysed against the input price.

These nested shells were used to develop indicative production schedules and hence estimate discounted cash flows. For this purpose, two schedules were developed, a best case and a worst case schedule. The best case schedule assumed the pits mined optimally with each optimisation shell completed before mining of the next shell commenced. The worst case schedule assumed that no staging of pits was possible and that the entire pit area was mined out on each bench before proceeding to the next. In reality, a practical mining schedule would lie between these two schedules, this has been approximated by selecting specific cutbacks within any given mining area and a strategic scheduling that sequences all mining areas and their respective cutbacks.

Only blocks with resource categories of 1 (Measured) and 2 (Indicated) were considered as potential ore blocks in the generation of the optimum pit shell. A process flow of the optimisation logic and reserves estimates is summarised in Table 15-11.

Table 15-11: Whittle Optimisation Process

RECEIVE DATA		Resources Block Model is provided in Datamine (.dm) format.
BLOCK MODEL	**VALIDATION**	The imported Block Model is validated by undertaking several checks which includes:
		- Randomly selected block comparison.
		- Visual check.
		- Resource tonnes and grade comparison.
	PREPARATION	The Block Model is prepared to have sufficient information for Whittle.
		Block Model is exported to *.mod and *.par format.
WHITTLE MODEL PREPARATION		*.mod and *.par files are imported into Whittle.
		Input parameters are developed in Whittle.
		A validation routine is undertaken which includes:
		- Block value check.
		- Mining cost check.
		- Element processing cost check.
		- Undiscounted cash flow check.
PIT OPTIMISATION		Whittle Pit Optimisation is run to determine the ultimate shell at Revenue Factor 1.
PIT DESIGN		The pit design is developed based on the optimum pit shell.
PROJECT EVALUATION AND RESERVES ESTIMATE		Project Financials are evaluated and reserves estimates concluded.

15.7.2 Block Model

The 'Jiama_20130204sd.mdl.BM' received by Mining One was developed by China Gold geologists using Maptek Vulcan software. This was then imported into Datamine Studio 3 for further mine planning works.

Several checks were undertaken to validate the block model to ensure all data was imported correctly:

- The block extents were checked to ensure the block model was adequate for the optimisation, this involved checking maximum and minimum values;
- The model was checked to ensure no null values existed in the model;
- Grade distributions were checked to ensure there were no abnormal values in the model;
- Ore totals were checked and validated against the resource statement;

- Field values were checked to ensure all required fields existed within the model.

Prior to Whittle Pit Optimisation, the block model was modified in Datamine to ensure there was sufficient data for the optimisation.

15.7.1.1 Rock Type

The attribute/data field, 'wtype', was added to the block model as a rock type code to identify ore and waste blocks. An ore block, within this context, simply means that Whittle will treat the block as ore if revenue exceeds or equals the cost of mining the block. The classifications for ore and waste were provided by China Gold, and incorporated material grades and resource categories. There were four different rock type classifications assigned to the block model. The classifications are as follows:

- 'AIR' was assigned to the blocks above the topographic surface. A block that was partly below the topographic surface was classified either as a Waste Block or a Potential Ore Block;
- 'CuPb' and 'CuMo' were calculated within the model based on calculating the Net Smelter Return (NSR) for either copper, lead, zinc recovery circuit or a Copper Molybdenum recovery circuit. Where the NSR of the CuPb was greater than the NSR of the CuMo then the ore would report as CuPb ore and vice versa. This process was only applied to the measured and indicated resource. Table 15-12 and Table 15-13 contain the economic assumptions used to determine the ore designation;
- 'WSTS' was assigned to all other material.

Table 15-12: Processing Costs by Ore Type

Location	Ore Type	RMB/t	$/t
South Pit	CuPb	￥67.17	$11.01
	CuMo	￥60.17	$9.86
Jiaoyan Pit	CuPb	￥67.17	$11.01
	CuMo	￥60.17	$9.86
UG	CuMo	￥60.17	$9.86

Table 15-13: Smelter Returns by Commodity

NSR	Unit	CuMo	CuPb
Cu	USD/t	$4,821.90	$4,714.75
Mo	USD/t	$16,522.32	$0.00
Pb	USD/t	$0.00	$1,382.74
Zn	USD/t	$0.00	$816.81
Au	USD/g	$22.82	$15.10
Ag	USD/g	$0.35	$0.28

This process will be managed through grade control and quality management during the mining of the reserve.

15.7.1.2 Other Modifying Factors

Several others attributes were created during the preparation of the block model as required for the Whittle optimisation process:

- 'gtzone' – code for geotechnical zone;
- 'mcaf' – Mining Cost Adjustment Factor. The factor is to adjust the mining cost based on the depth of mining. MCAF is used in Whittle to represent the mining cost adjustment as mining progresses deeper. MCAF acts as a multiplier on a reference mining cost;
- 'pcaf' – Processing Cost Adjustment Factor. Is Similar to MCAF. The PCAF was assigned to differentiate processing costs based on the bench or pit location. PCAF acts as a multiplier on a reference processing cost.

15.7.3 Whittle Re-blocked Model

The block model imported to Datamine had a block size of 50 m x 50 m x 10 m. To reduce the wall angle variance during the pit optimisation process in Whittle, the blocks were split from a 50 m x 50 m x 10 m dimension to a 25 m x 25 m x 5 m dimension. This improves the resolution of the optimisation enabling a more precise shell to be generated for the optimum pit design.

15.7.4 Whittle Geotechnical Input Parameters

Geotechnical parameters were provided by the Changsha Institute of Mining Research Limited Liability Company. The geotechnical parameters specified an overall slope angle of 43° be applied to the optimisation. This angle incorporates an intra-ramp angle as represented by the maximum wall angle as well as allowance for the haul road.

15.7.5 Whittle Mining Input Parameters

The following whittle input parameters were used by China Gold for their optimisations.

The mining parameters consist of the following:

- Mining Recovery was set at 95%, this was relatively low based on the massive nature of the ore body combined with the adoption of bulk mining methods would inherently consider that practical mining limits would be outside the theoretical ore / waste boundary;
- Mining Dilution of 5% was applied to the resource based on the assumptions that the bulk mining methods adopted would result in smearing at the ore / waste contact;
- Mining Cost and Mining Cost Adjustment Factor (MCAF) – For the Jiaoyan Pit the mining cost adjustment factor was not utilised and a mining cost of $2.247 per tonne was used for the entirety of the pit. For the south pit a base mining cost of $2.171 per tonne was applied and the Mining Cost Adjustment Factor calculated to incorporate a 0.008 $/m/t escalation as the pit was excavated deeper.

Whittle processing parameters included:

- The metallurgical assumptions (recoveries and concentrate Cu and Mo Grade) were based on the metallurgical test work performed by the Beijing General Research Institute of Mining and Metallurgy and Huatailong Mining Development Co. Ltd;

- Processing cost represented milling and G&A costs. The cost was applied to every processed rock type. Whittle processing cost was derived from the following:
  - Milling Cost;
  - G&A Cost; and
  - Transport Cost

As MCAFs were assumed as an average of ore and waste mining cost, PCAF was not assigned to differentiate ore mining cost and waste mining cost.

15.7.6 Whittle Selling Input Parameters

The selling parameters consist of the commodity price being adjusted down by the royalty. Basic formula of price input parameter was as follows:

Effective Price = Price * (1 – royalty)

15.7.7 Whittle Processing Capacity

For initial pit optimisation, the processing limit was set to 6 Mtpa for Jiaoyan pit and 4.5 Mtpa for South pit. These capacities reflected the anticipated maximum capacity from either pit during the life of the respective asset.

15.7.8 Discount Rate

A discount rate of 10% was used for the strategic scheduling process. However, initially a zero discount rate was used. This allowed for the clear identification of significant cash flow increases between adjacent shells which would assist in the formulation of a cut-back strategy.

15.7.9 Mine Extent Limitations

Spatial limitations were assigned to the block model to restrict the size of the optimal pit shells. These limitations were placed due to existing road and infrastructure for which relocation was impractical.

15.7.10 Whittle Optimisation Parameter Summary

A summary of the Whittle Optimisation Parameters used is presented in Table 15-14 below:

Table 15-14: Optimisation Parameters Summary

		South Pit		Jiaoyan	
		Ore Circuit			
		CuPb	CuMo	CuPb	CuMo
Mining Parameters	**Units**				
Mining Cost	$US/t ore	2.171		2.247	
Mining Dilution Factor	%	5%			
Mining Loss Factor	%	5%			
Depth Increment Cost	$/m/t	0.008		N/A	
Processing Parameters					
Processing Cost	$US/t ore	13.524		12.413	
G&A Expense	$US/t ore	4.402		1.587	
Transport, Marketing and Resource Tax	$US/t ore	4.428		3.421	
Recovery Copper	%	88%	90%	85%	
Recovery Moly	%	0%	71%	50%	
Recovery Lead	%	80%	0%	0%	
Recovery Zinc	%	60%	0%	0%	
Recovery Gold	%	43%	46%	0%	
Recovery Silver	%	56%	66%	0%	
Revenue Parameters					
Cu Price	US$/lb	2.9			
Mo Price	US$/lb	15.5			
Pb Price	US$/lb	0.98			
Zn Price	US$/lb	0.95			
Au Price	US$/oz	1300			
Ag Price	US$/oz	20			
Royalties					
Royalty (Au)	**%**	2.80%		1%	
Royalty And Vat (Cu, Mo, Pb, Zn & Ag)	**%**	2%		1%	
Geotechnical Parameters					
Overall Slope Angle	Degrees	43			
Exchange rates	RMB/$US	6.3			

Contract tables were provided to Mining One that represented rates as agreed by the local contractors. These prices were used for the purpose of the analysis. At the time of the Whittle optimisation contract options were being refined and the rates approximated the estimated pricing based on informal contract pricing with limited detail. Mining one benchmarked these costs against contract mining costs for other open pit mines within China. Based on benchmarking the price estimates would be considered to be in the upper range of the sites considered however due to the technical challenges associated with the elevation and terrain these price estimates appear reasonable.

Furthermore, the confidence of the price estimate was further endorsed on the grounds that the contractor has performed duties on the Phase I project and is therefore familiar with the conditions that are likely to be experienced.

15.7.11 Whittle General Conversion Process

The general conversion process from the raw parameter variables to Whittle inputs is presented in Figure 15-30.

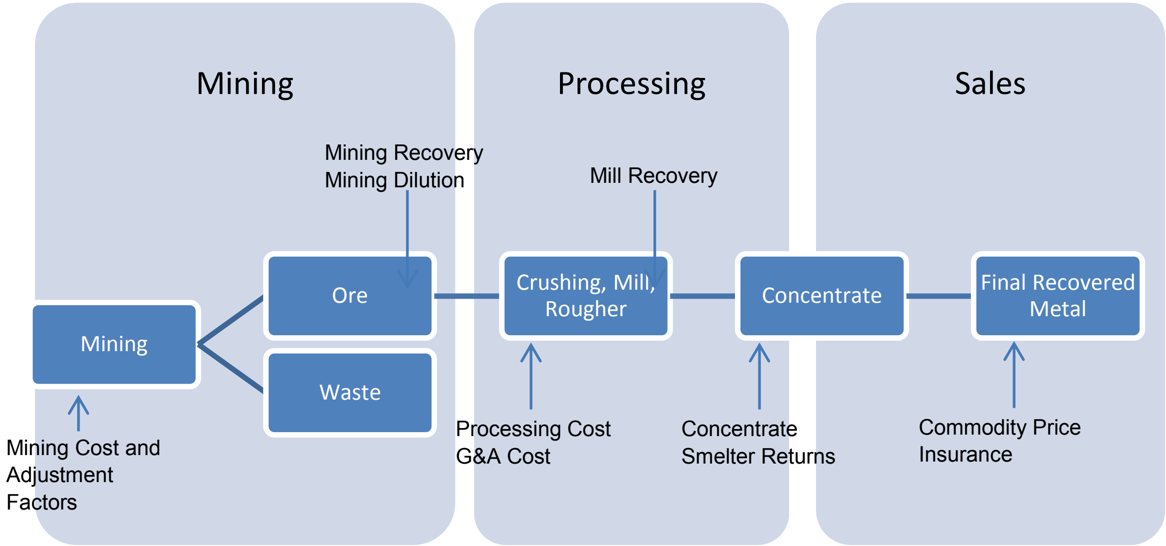


Figure 15-30: Whittle General Conversion Process

15.7.12 Input Parameters Validation Process

A validation process was carried out to check whether:

- The optimisation process used the correct data;
- The optimisation input parameters were correct;
- The formula inputs to Whittle were derived from the base formulas correctly; and
- The Whittle output was correct.

Based on the results from the checks that were carried out to validate the Whittle model, it was concluded that there were no significant flaws in the Whittle model and the model was considered valid for further mine planning.

15.7.13 Pit Optimisation Comparison

Based on the parameters and assumptions described above, Mining One duplicated the ultimate pit shells generated by China Gold using the provided block model and optimisation parameters as outlined above. The ultimate pit shell comparison is presented in Table 15-15 and Table 15-16 below.

Table 15-15: Jiaoyan Pit Optimisation Result Comparison

Jiaoyan Pit	Ore Mt	Waste Mt	Total Mt	Head Grade					
				Cu	Mo	Pb	Zn	Au	Ag
China Gold	156.4	169.6	325.6	0.3907	0.0176	0.0058	0.0059	0.031	1.0985
Mining One	161.0	165.7	326.3	0.3887	0.0181	0.0058	0.0058	0.0306	1.0926
Comparison	-2.96%	2.29%	-0.23%	0.51%	-2.84%	0.00%	1.69%	1.29%	0.54%

Table 15-16: South Pit Optimisation Result Comparison

South Pit	Ore Mt	Waste Mt	Total Mt	Head Grade					
				Cu	Mo	Pb	Zn	Au	Ag
China Gold	86.7	268.0	354.5	0.7143	0.0167	0.5956	0.3213	0.1898	24.7044
Mining One	85.7	264.8	350.4	0.7179	0.0167	0.6024	0.3277	0.1905	24.8316
Comparison	1.08%	1.17%	1.15%	-0.50%	0.00%	-1.14%	-1.99%	-0.37%	-0.51%

The differences between the optimal pit shells generated by China Gold and Mining One can be attributed to the block model importation and the block size reduction in Whittle, and are considered to be within acceptable limits.

15.7.14 Pit Optimisation Result

The pit optimisation was duplicated by Mining One to define the ultimate pit shell at various revenue factors. Each scenario run in Whittle generated a series of pits including a cash flow for each pit. Due to the spatial limitations for the Jiama project, two (2) separate areas were optimised; Jiaoyan and South Pit. The selected pit for each area is the pit shell with the highest undiscounted cash flow.

The cash flow for each 'Whittle Pit' generated and the pit selected for the base case for the Jiaoyan area is illustrated in Figure 15-31.

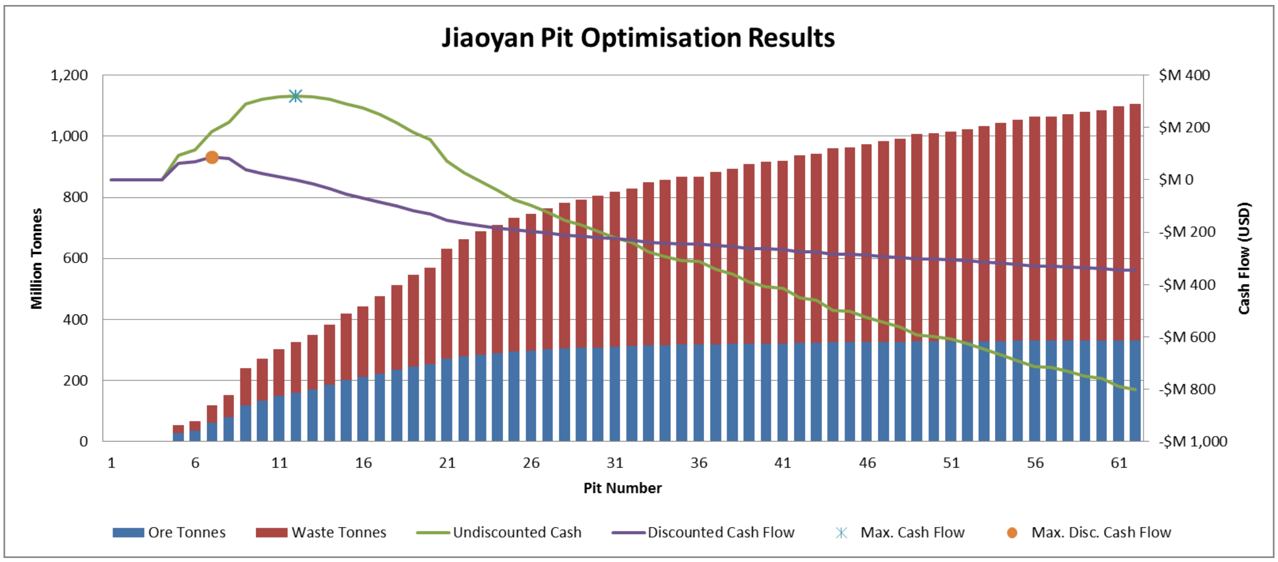


Figure 15-31: Jiaoyan Pit Optimisation Results

The optimal pit shell for the Jiaoyan area is shown in Figure 15-32 and Figure 15-33 below.

Figure 15-32: Jiaoyan Optimal Shell

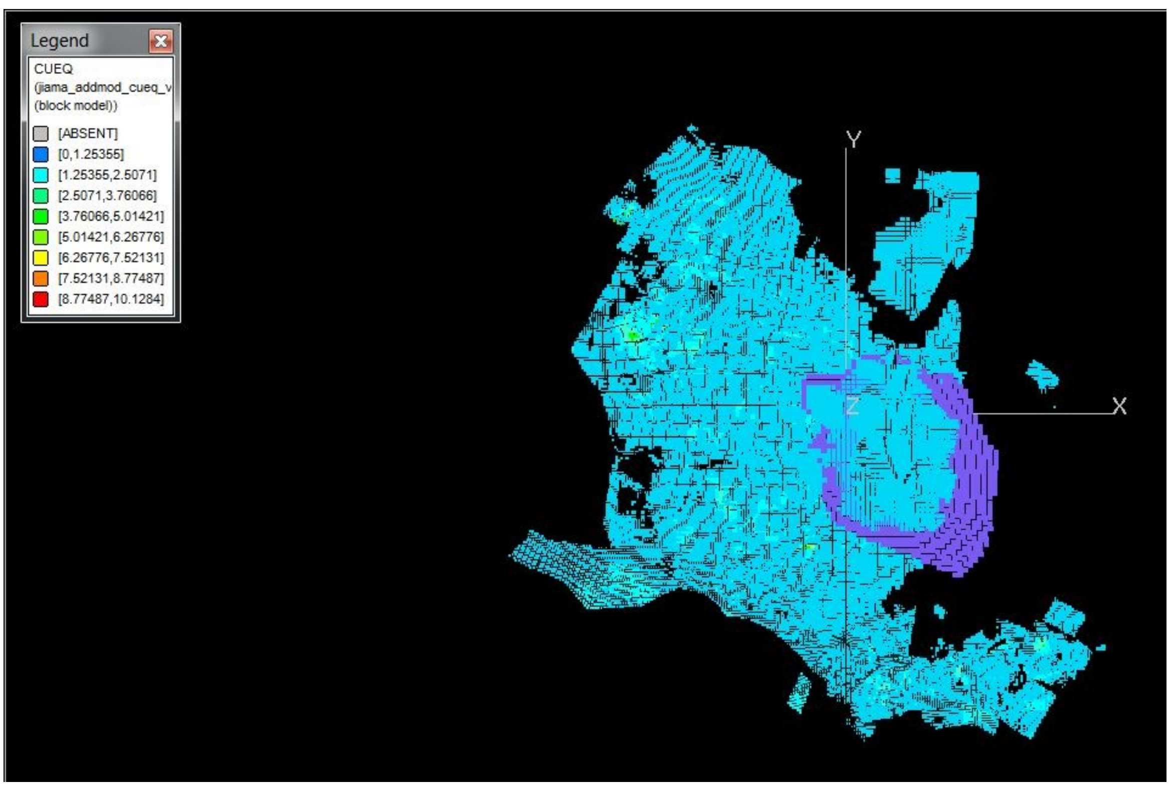


Figure 15-33: Jiaoyan Optimal Shell

Table 15-17 below details the result of the shell for the Jiaoyan area.

Table 15-17: Jiaoyan Pit Shell Quantities

Item	Unit	Jiaoyan
Waste	t	165,685,995
Ore	t	161,031,074
Strip Ratio		1.03
Grade Cu	%	0.3887
Grade Mo	%	0.0181
Grade Pb	%	0.0058
Grade Zn	%	0.0058
Grade Au	g/t	0.0306
Grade Ag	g/t	1.0926
Tonnes Mined (Cu)	t	62,431,163
Tonnes Mined (Mo)	t	2,912,314
Tonnes Mined (Pb)	t	926,213
Tonnes Mined (Zn)	t	934,461
Ounces Mined (Au)	oz.	158,029
Ounces Mined (Ag)	oz.	5,642,720
Total Movement	t	326,717,069
Mining Cost	USD$	-$(733,228,641)
Processing Cost	USD$	-$(2,798,300,000)
Revenue	USD$	3,890,308,868
Total Cash (Undisc.)	USD$	**319,868,265**

The cash flow for each 'Whittle Pit' generated and the pit selected for the base case for the South area is illustrated in Figure 15-34.

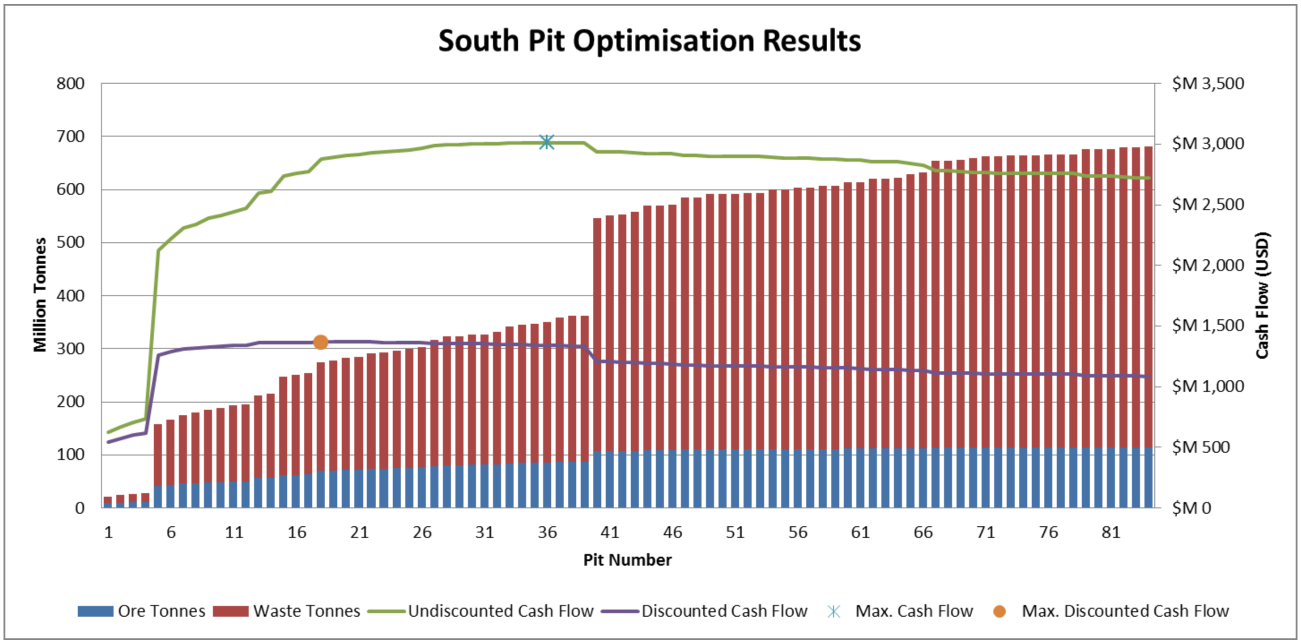


Figure 15-34: South Pit Optimisation Results

The optimal pit shell for the South area is shown in figures Figure 15-35 and Figure 15-36 below.

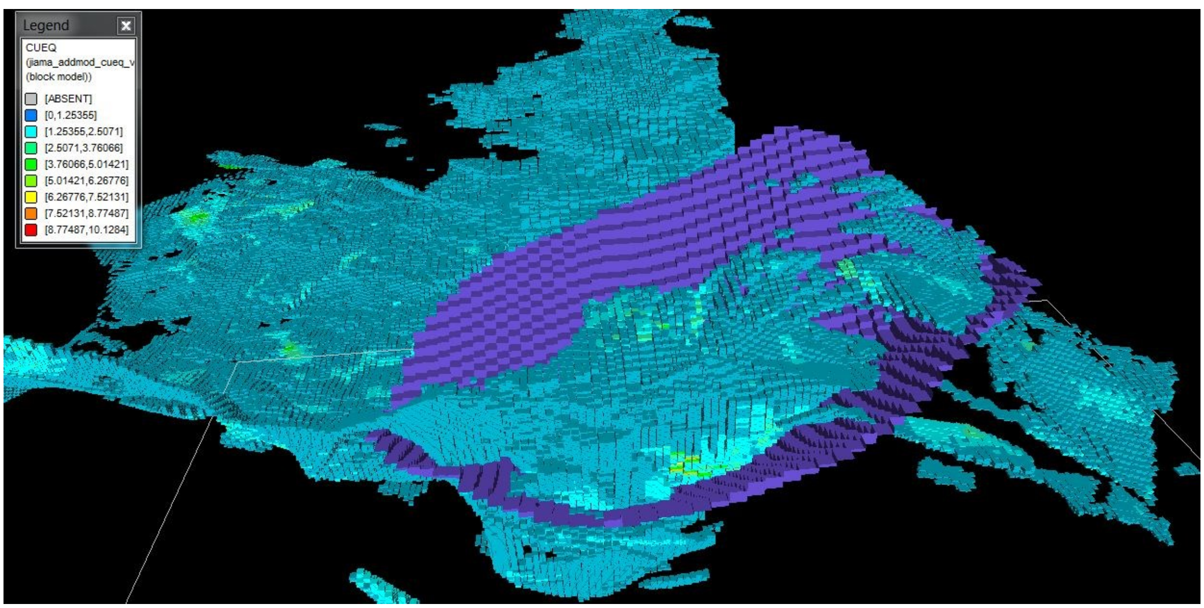


Figure 15-35: South Pit Optimal Shell

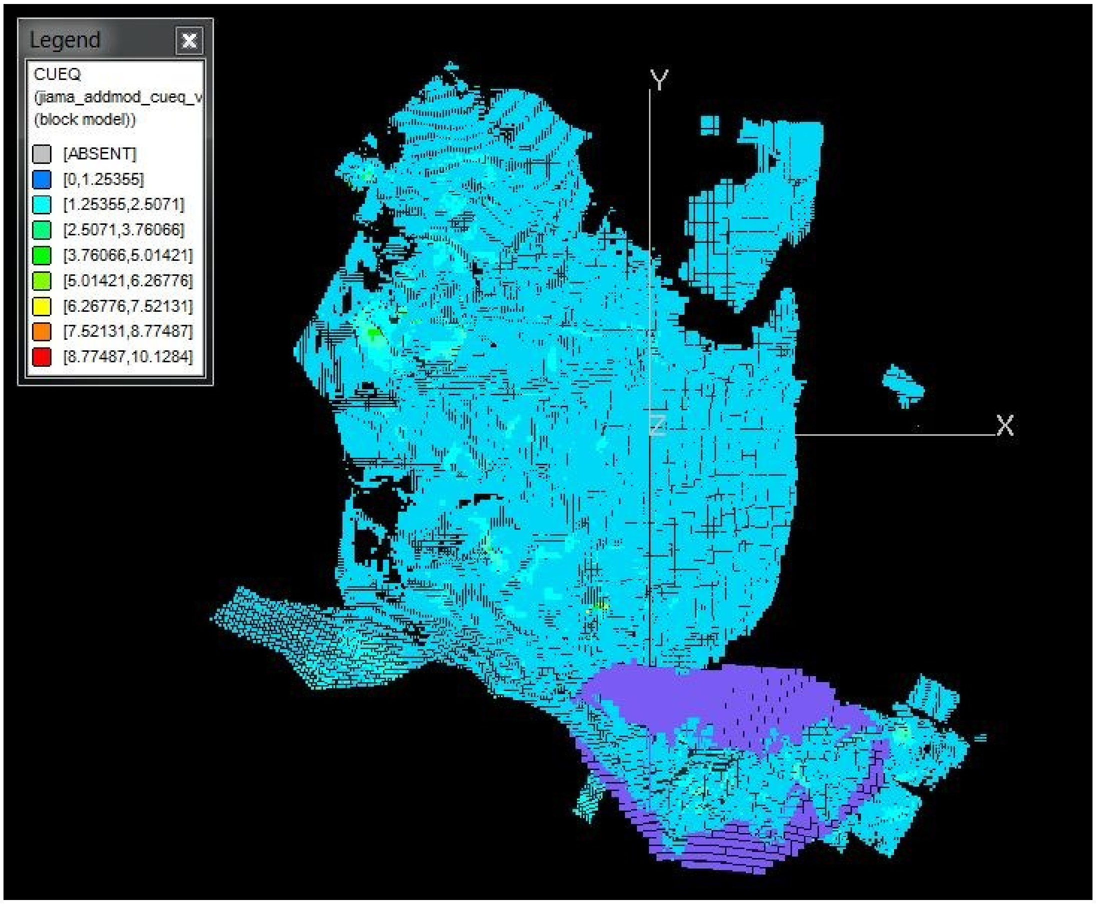


Figure 15-36: South Pit Optimal Shell

Table 15-18 below details the result of the shell for the South area.

Table 15-18: Pit Shell Quantities

Item	Unit	South
Waste	t	264,834,081
Ore	t	85,748,695
Strip Ratio		3.09
Grade Cu	%	0.7179
Grade Mo	%	0.0167
Grade Pb	%	0.6024
Grade Zn	%	0.3277
Grade Au	g/t	0.1905
Grade Ag	g/t	24.8316
Tonnes Mined (Cu)	t	61,405,445
Tonnes Mined (Mo)	t	1,424,811
Tonnes Mined (Pb)	t	51,522,181

Item	Unit	South
Tonnes Mined (Zn)	t	28,031,020
Ounces Mined (Au)	oz.	523,870
Ounces Mined (Ag)	oz.	68,286,598
Total Movement	t	350,582,776
Mining Cost	USD$	-$(943,769,209)
Processing Cost	USD$	-$(1,912,000,000)
Revenue	USD$	5,990,199,541
Total Cash (Undisc.)	USD$	**3,012,164,548**

15.8 Mine Design Guidelines Open Pit

15.8.1 Pit Design Criteria

Pit designs were prepared using the optimized pit shells as templates. The Vulcan design software package was used to prepare practical pits incorporating haul roads, ramps and geotechnical parameters as outlined by the design institute reports.

The parameters used for the pit designs are summarised in Table 15-19 and Figure 15-37.

Table 15-19: Pit Design Criteria

Parameter	Unit	Jiaoyan	South
Wall Angle	deg.	65	65
Bench Height	m	30	30
Berm Width	m	15	16
Ramp Width (Dual Lane)	m	25	25
Ramp Width (Single Lane)	m	NA	15
Ramp Grade	%	6	11
Stack Height	m	180	180
Stack Berm	m	25	25

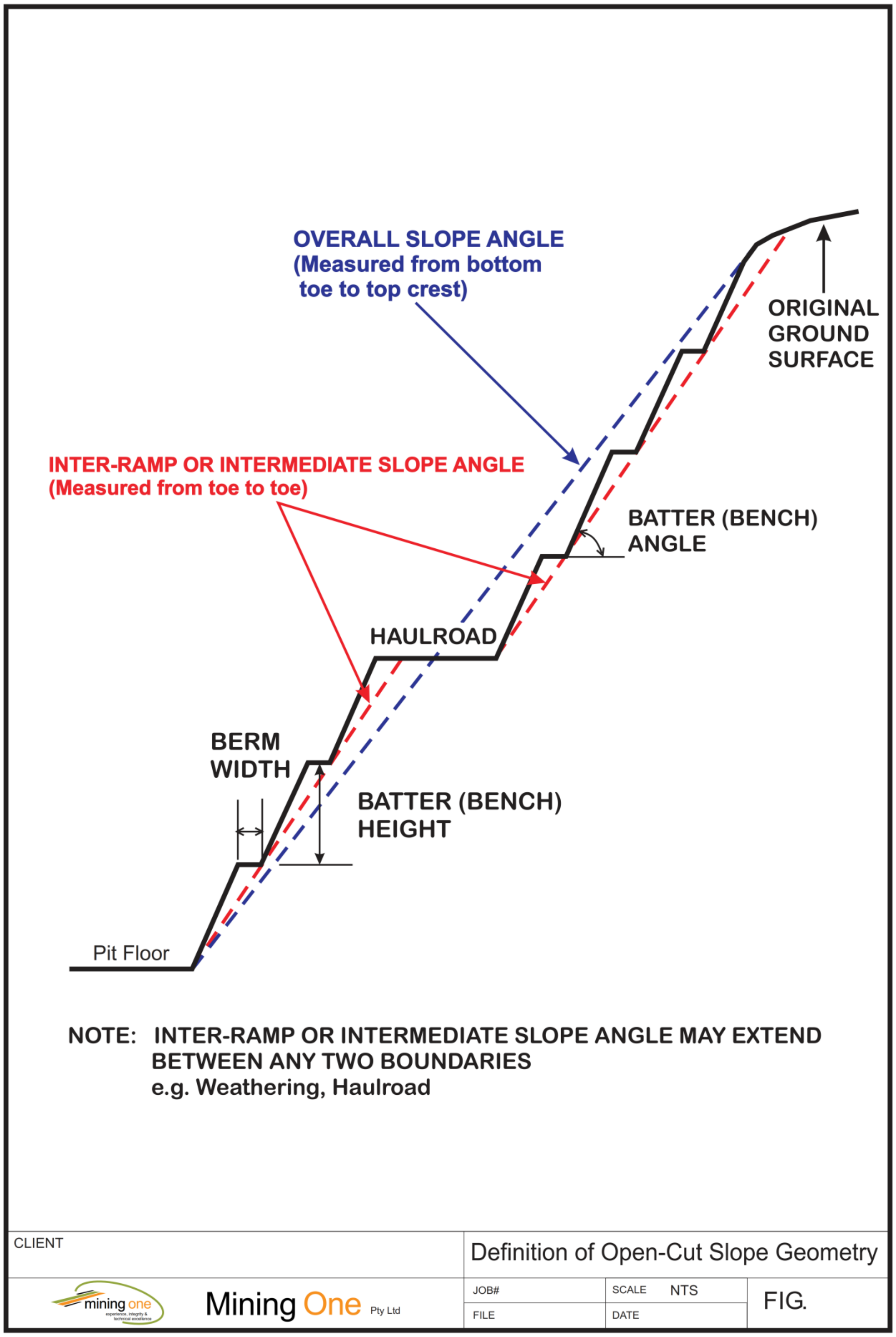


Figure 15-37: Pit Section

15.8.2 Pit Design Open Pit

The Whittle shells generated in section 0 were used as a guide for pit designs. The objective of the pit design was to match as closely as possible to the shell but also consider practical mining operation requirements.

Mining One validated the pit designs provided by China Gold using Whittle evaluation methods. The cutbacks were not included as part of the evaluation but rather a comparison of total pit utilising the whittle inputs evaluations. The whittle evaluations incorporated all costs and commodity prices; using the mineral grade, processing recovery, mining dilution and product revenue to calculate the potential economics of each mining block. The results of this evaluation are presented in Table 15-20 and Table 15-21 below. A comparison between the design and the optimisation has also been provided. All inferred material has been treated as waste - only indicated or measured material may be used for the estimation of Mineral Reserves.

Table 15-20: Jiaoyan Pit – Whittle Evaluation Results

Jiaoyan				
Item	**Unit**	**Optimisation**	**Design**	**Difference**
Waste	t	165,685,995	202,660,549	18%
Ore	t	161,031,074	175,364,203	8%
Strip Ratio		1.03	1.16	11%
Grade Cu	%	0.3887	0.344	-13%
Grade Mo	%	0.0181	0.016	-13%
Grade Pb	%	0.0058	0.007	17%
Grade Zn	%	0.0058	0.007	17%
Grade Au	g/t	0.0306	0.029	-6%
Grade Ag	g/t	1.0926	1.099	1%
Tonnes Mined (Cu)	t	62,431,163	67,495,511	8%
Tonnes Mined (Mo)	t	2,912,314	3,130,515	7%
Tonnes Mined (Pb)	t	926,213	1,022,476	9%
Tonnes Mined (Zn)	t	934,461	1,041,518	10%
Ounces Mined (Au)	oz.	158,029	171,584	8%
Ounces Mined (Ag)	oz.	5,642,720	6,165,837	8%
Total Movement	t	326,717,069	378,024,752	14%
Mining Cost	USD$	-($733,228,641)	-($849,421,616)	14%
Processing Cost	USD$	-($2,798,300,000)	-($3,055,000,000)	8%
Revenue	USD$	$3,890,308,868	$4,202,803,714	7%
Total Cash (Undisc.)	USD$	**$319,868,265**	**$256,334,287**	**-25%**

Table 15-21: South Pit – Whittle Evaluation Results

South				
Item	**Unit**	**Optimisation**	**Design**	**Difference**
Waste	t	264,834,081	313,274,580	18.3%
Ore	t	85,748,695	86,847,055	1.3%
Strip Ratio		3.09	3.61	16.8%
Grade Cu	%	71.8%	53.8%	-25.1%
Grade Mo	%	1.7%	1.6%	-4.2%
Grade Pb	%	60.2%	39.0%	-35.3%
Grade Zn	%	32.8%	21.3%	-35.0%
Grade Au	g/t	19.1%	14.2%	-25.5%
Grade Ag	g/t	2483.2%	1737.4%	-30.0%
Tonnes Mined (Cu)	t	61,405,445	62,496,258	1.8%
Tonnes Mined (Mo)	t	1,424,811	1,457,559	2.3%
Tonnes Mined (Pb)	t	51,522,181	51,700,048	0.3%
Tonnes Mined (Zn)	t	28,031,020	27,877,138	-0.5%
Ounces Mined (Au)	oz.	523,870	533,651	1.9%
Ounces Mined (Ag)	oz.	68,286,598	69,236,646	1.4%
Total Movement	t	350,582,776	400,121,635	14.1%
Mining Cost	USD$	-(943,769,209)	-(972,256,812)	3.0%
Processing Cost	USD$	-(1,912,000,000)	-(1,941,300,000)	1.5%
Revenue	USD$	5,990,199,541	6,076,018,632	1.4%
Total Cash (Undisc.)	USD$	**3,012,164,548**	**3,038,388,427**	**0.9%**

As can be seen in the tables above, practical mining requirements can impact on the amount of material which is mined. The ore and waste comparison between the Whittle and pit designs showed a combined total movement variation of 5.9% and 16.5% respectively. There were some discrepancies between the element grades, ranging from 1% discrepancy to 35.3% discrepancy. Mining One believes this may be due to the overall slope angle used in the initial Whittle optimisation not sufficiently catering for ramps, and that further refinement of both the optimisation and the pit designs is possible.

Each pit will be mined in a number of stages to enable early access to the ore. During the early years of mining additional mining capacity will be introduced to the operation to ensure there are no delays in accessing the ore body when the cutbacks commence. The primary role of the additional capacity will be to commence the waste stripping from the planned cutbacks to smooth the delivery of ore to the plants and prevent ore shortages.

Jiaoyan pit will be mined in two stages, stage one will utilise a cutting on the eastern side of the pit for waste haulage while stage two will exit on the western side and require waste to be hauled around to the eastern side. Figure 15-38 and Figure 15-39 illustrate the two stage designs.

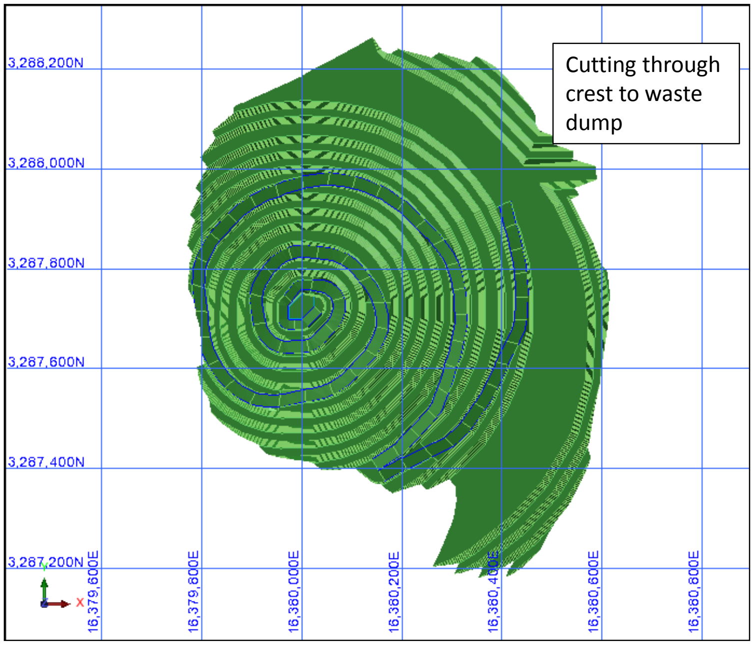


Figure 15-38: Jiaoyan Pit Stage 1

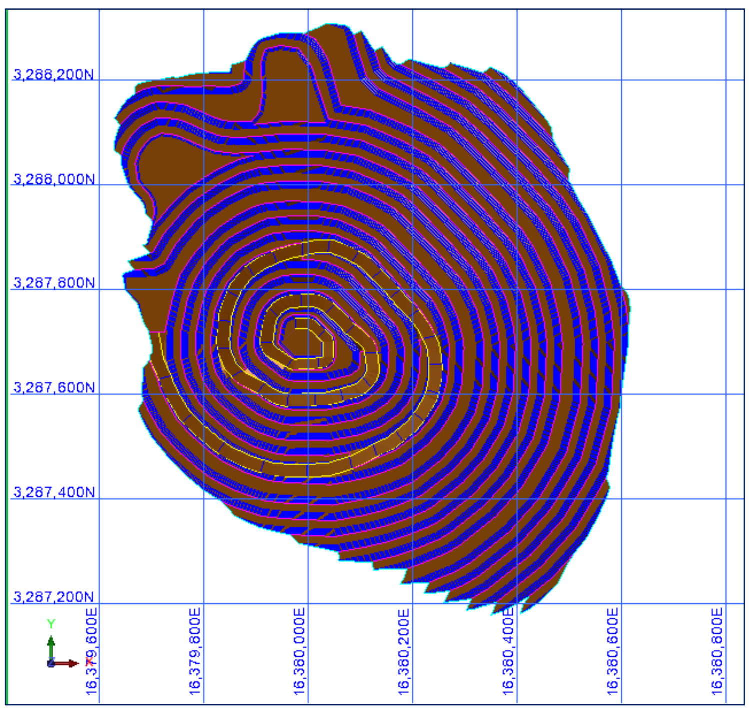


Figure 15-39: Jiaoyan Pit Final Design

Figure 15-40 illustrates an overlay of all the Jiaoyan stages, stage1 will utilise a cutting through the crest of the eastern edge to access the waste dump and a wide bench will be established to create space to accommodate additional stripping capacity during the early stages of mine development.

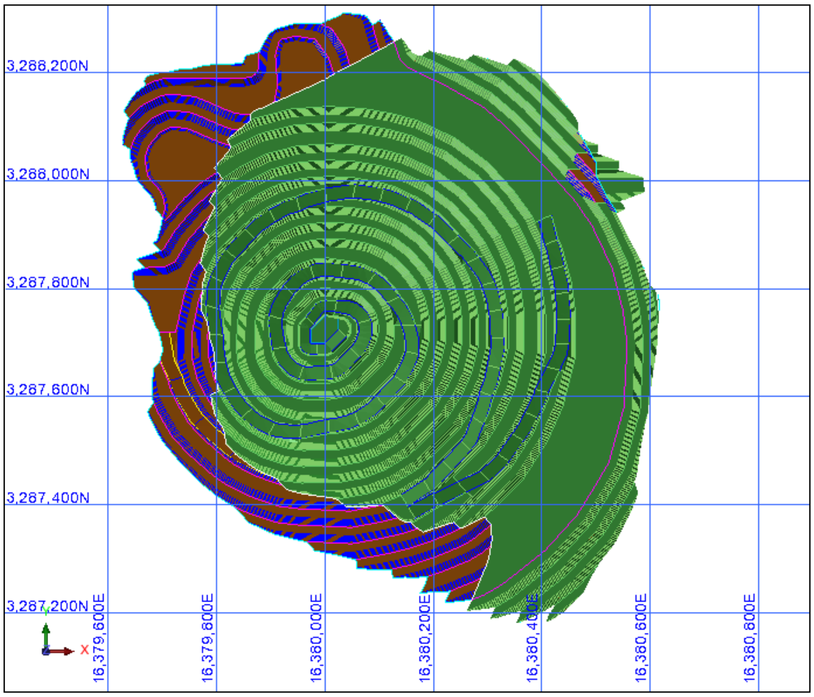


Figure 15-40: Jiaoyan Pit - All Stages

The South Pit will be mined in four stages with the first stage having already been commenced at site to maintain feed to the Phase I project. The inventory from this initial cutting has been removed from all scheduled and reserve statements. Figure 15-41 illustrates the first stage which will involve excavating into the side of the south hill to achieve early ore production. This pit will require the waste to be hauled to the south to the southern waste dump. Stage two of the South Pit development will involve commencing at the crest of the hill establish a cutback on the northern and eastern sides of the first stage and is illustrated in Figure 15-42. A ramp will be established up the eastern face for haulage to the eastern waste dump (Dump #3) this design also enables a number of roads to be established onto the ramp at a number of switchbacks on the southern side of the pit for access to the southern waste dump (Dump #4).

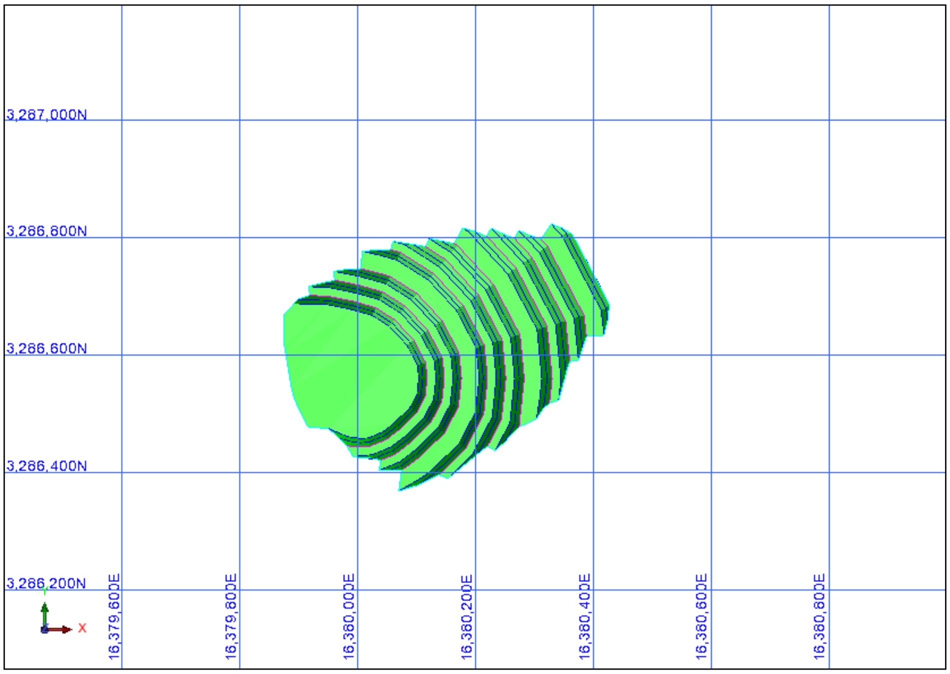


Figure 15-41: South Pit Stage 1 Design

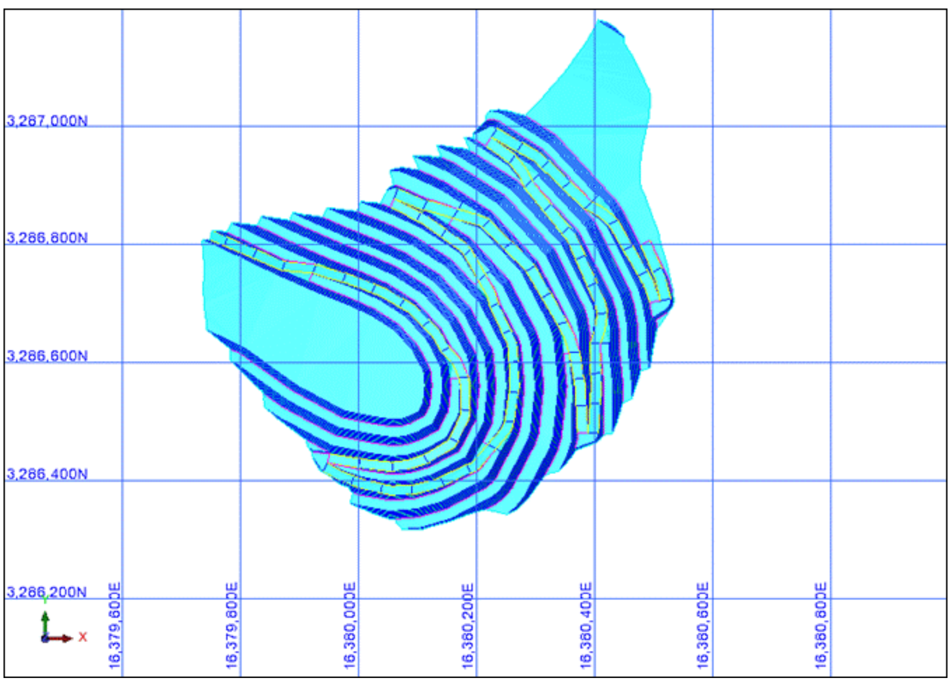


Figure 15-42: South Pit Stage 2 Design

Stage 3 and stage 4 as illustrated in Figure 15-43 and Figure 15-44 shows that the cutback strategy continues with a design strategy that enable access to the eastern and southern dumps being continued in the stage 3 design. The final design will require a majority of the waste material to be hauled to the southern dump to eliminate excessive haul distances during this stage of mining.

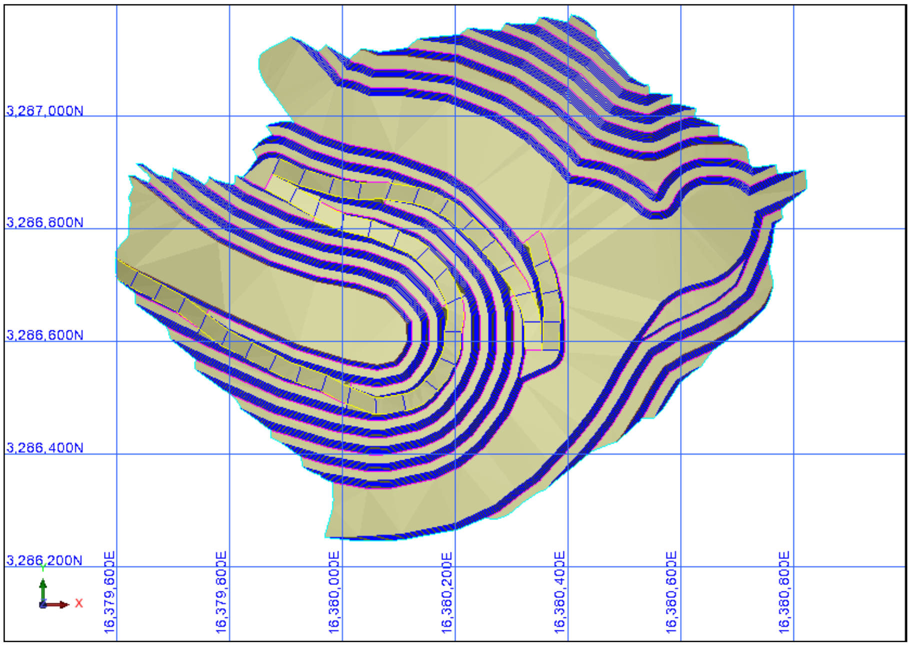


Figure 15-43: South Pit Stage 3 Design

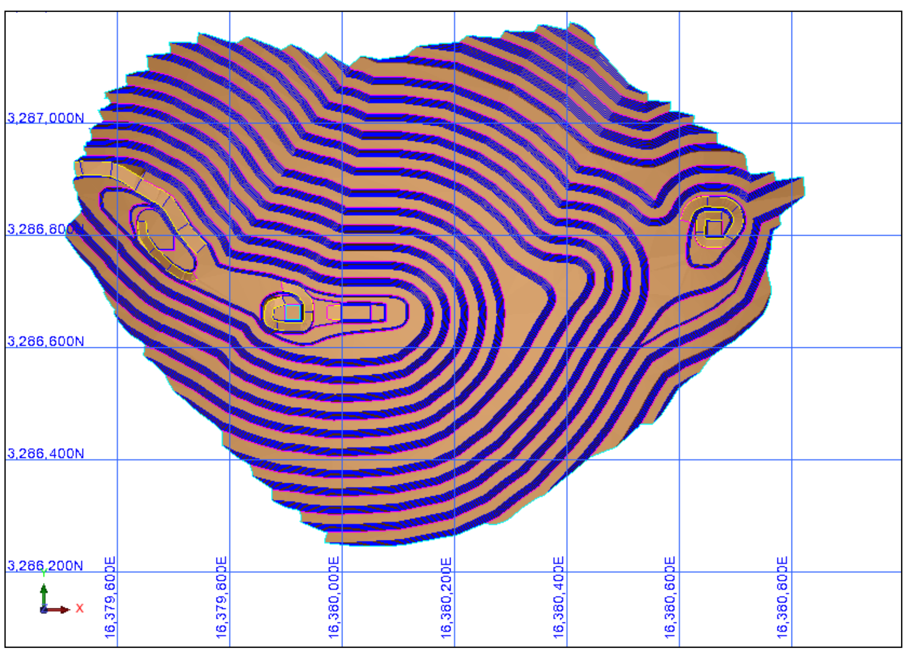


Figure 15-44: South Pit Final Design

Figure 15-45 illustrates all stage plans overlayed on top of each other. It should be noted that further exploration drilling has been costed into the project as the southern extend of the ore body has not been closed off. Further drilling of this region may result in additions to either the open pit or the underground operation. The four stage cutback strategy that has been established for the southern pit provides substantial opportunity for modifying the excavation strategy

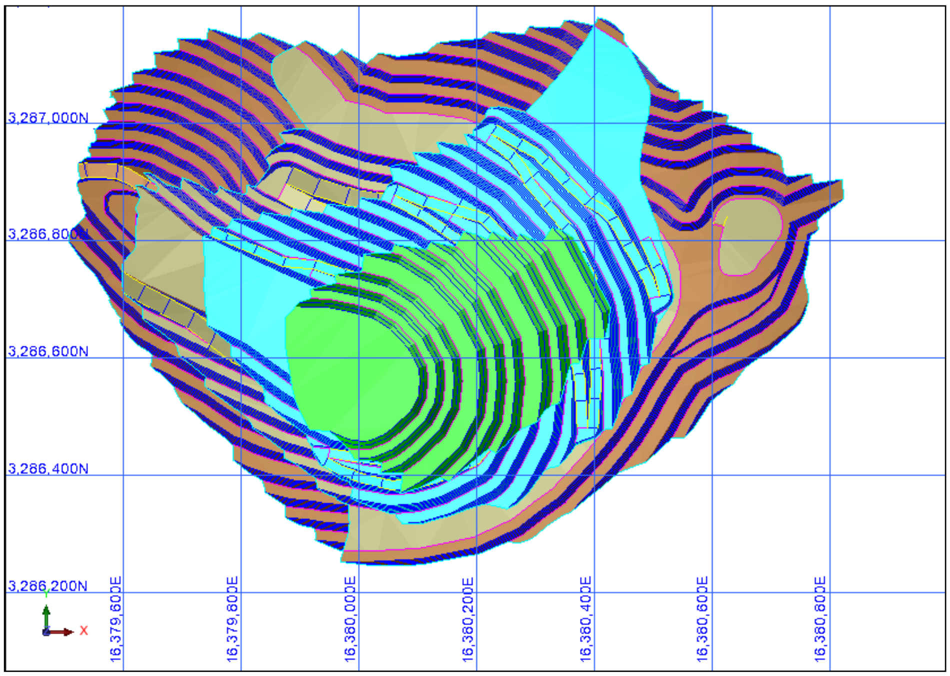


Figure 15-45: South Pit - All Stages

15.8.1.1 Whittle Evaluation vs. China Gold Provided Cutoff

The whittle optimisation determines the waste to ore cut-off by calculating the Net Smelter Return (NSR) and sending any mineralisation that does not generate a profit to waste. During the review the copper equivalent cut-off grades were calculated and these cut-offs were incorporated into the schedule to maximise the recovery of the resource.

To ensure the schedule did not overstate the reserve, a comparison of the Whittle cut-off was compared to the scheduled cut-off as determined by China Gold. A comparison of the Whittle evaluation and the copper equivalent cut off results for the Jiaoyan and South Pits has been provided in Table 15-22 and Table 15-23 respectively.

Table 15-22: Jiaoyan Pit Whittle Evaluation vs Copper Equivalent Comparison

Jiaoyan Pit				
Item	**Unit**	**Whittle**	**0.23 CUEQ Cut**	**Difference**
Waste	t	165,685,995	188,359,711	13.7%
Ore	t	161,031,074	138,320,524	-14.1%
Strip Ratio		1.030	1.362	32.2%
Grade Cu	%	0.389	0.425	9.3%
Grade Mo	%	0.018	0.019	2.8%
Grade Pb	%	0.006	0.006	2.4%
Grade Zn	%	0.006	0.006	5.2%
Grade Au	g/t	0.031	0.034	9.7%
Grade Ag	g/t	1.093	1.170	7.1%
Total Movement	**t**	**325,575,776**	**326,680,235**	**0.3%**

The correlation of the South pit between the Whittle optimisation and the 0.29 CuEq cut off is much closer. This provides substantial confidence in the Copper Equivalent calculations

Table 15-23: South Pit Whittle Evaluation vs Copper Equivalent Comparison

South Pit				
Item	**Unit**	**Whittle**	**0.29 CUEQ Cut**	**Difference**
Waste	t	264,834,081	263,077,719	-0.7%
Ore	t	85,748,695	85,824,284	0.1%
Strip Ratio		3.090	3.065	-0.8%
Grade Cu	%	0.718	0.755	5.2%
Grade Mo	%	0.017	0.018	6.3%
Grade Pb	%	0.602	0.634	5.2%
Grade Zn	%	0.328	0.342	4.3%
Grade Au	g/t	0.191	0.201	5.3%
Grade Ag	g/t	24.832	26.245	5.7%
Total Movement	**t**	**350,582,776**	**348,902,003**	**-0.5%**

The ore / waste distribution varies depending on the applied cut-off grade calculations. The proposed China gold 0.23 and 0.29 for the Jiaoyan and South pit appear to be reasonable based on the comparison and therefore the % Copper equivalent cut-off grade provides a reasonable reserve Estimate.

15.9 Mining Schedule Overview

A mining schedule was prepared incorporating the pit designs and their respective stage plans. Annual ore production from the open pit system was targeted at 9.9Mt of ore per annum. This was to compliment the underground mine schedule (6.6Mtpa) to generate total ROM feed of 16.5Mtpa for the Jiama Phase II complex. The open pit has been designed to utilise 90t mining trucks delivering ore to two waste dump areas as illustrated in Figure 15-46.

A spoil balance was conducted to confirm the capacity of the waste dumps at a swell factor of 0.25%. At the time of this study the Southern waste dump was under review as there is potential to extend the size of the Southern pit as the ore body remains open to the south.

Conventional drill, blast, load, haul and dump mining practices will be used for the mining of both Phase II pits.

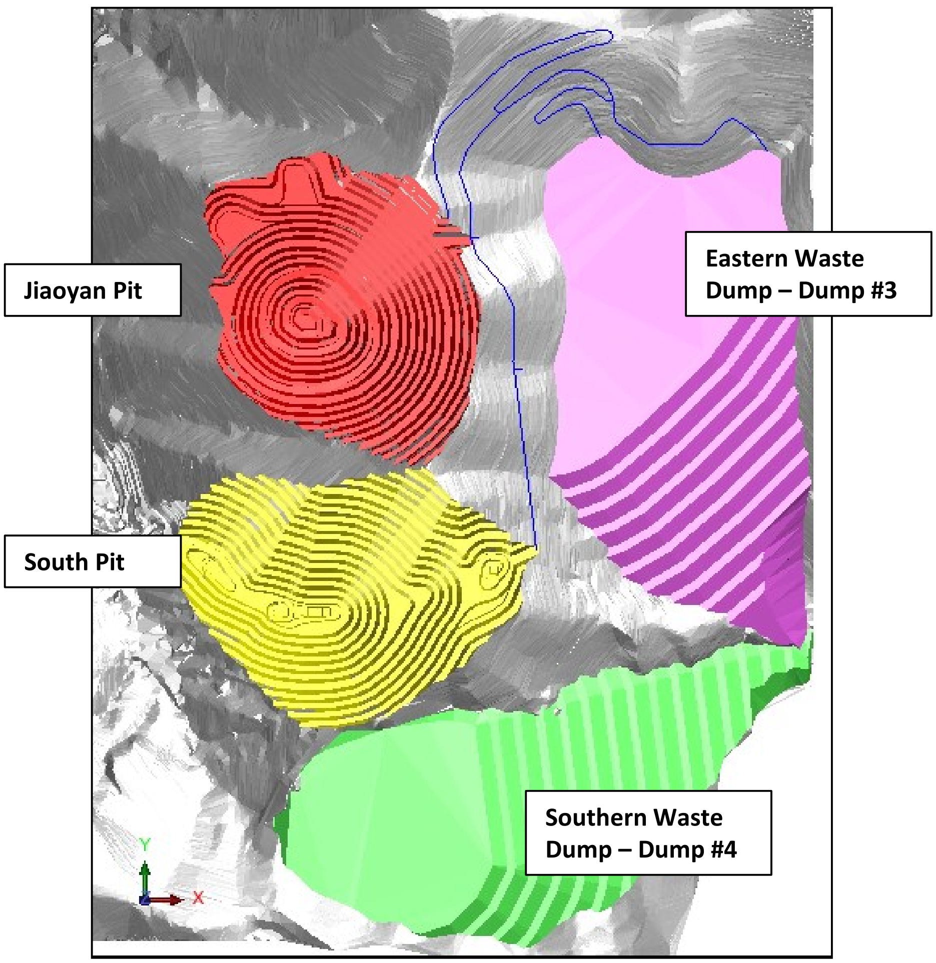


Figure 15-46: Life of Mine Waste Dumps and Pit Designs

Contracts have been signed for the two open pits which includes all services for the open cut operations. Two contractors will be employed to deliver the production capacity required.

The open pit schedule is illustrated in Figure 15-47 and Figure 15-48 which illustrate during commissioning additional waste capacity is required to bring the ore online. Ore feed of 9.9Mtpa is achieved during the second year of operations (FY2015) and remains relatively constant through until the end of the open cut mining operations. The waste schedule is less consistent with the first 10 years of operation achieving a relatively stable operating rate before gradually tapering through until the end of mining.

The South pit is mined for 14 years with the Jiaoyan pit is mined for 25 years through until FY2039.

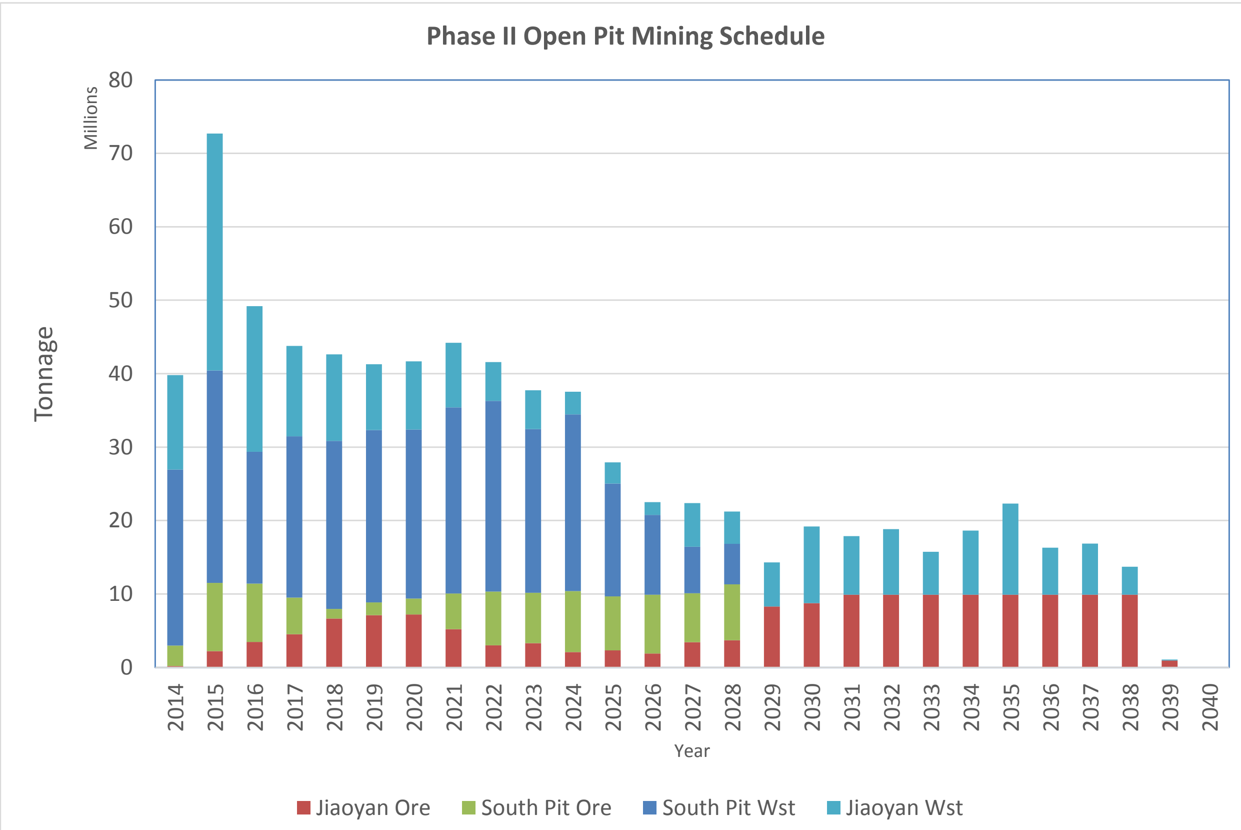


Figure 15-47: Open Pit Schedule - Annual Mining Totals

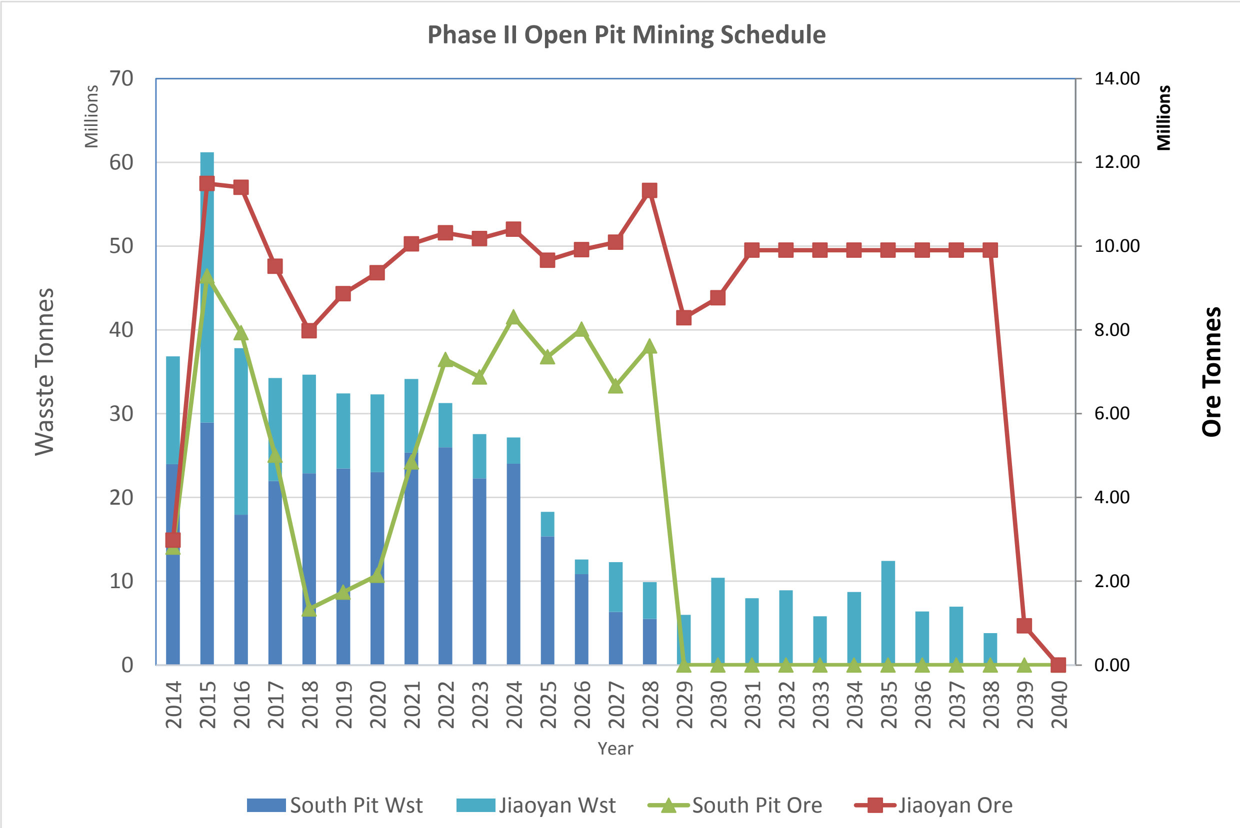


Figure 15-48: Open Cut Mining Schedule – Ore and Waste Totals

The processing plant will consist of two plants the Phase I plant and the Phase II plant. The Phase II plant has been designed to process a Copper Molybdenum ore only while the Phase I plant is able to handle both Copper Molybdenum (CuMo) ores and Copper Lead (CuPb) ores. Once the plants are in full production the daily throughput is targeted to be 50,000tpd ROM feed with the Phase I plant capable of processing 6,500tpd. A total of 330 production days per annum have been targeted from both plants.

The Jiaoyan Pit will not generate any CuPb based ores. The Southern Pit does generate CuPb ores and therefore will need to be serviced by the Phase I plant to enable processing of all its ore. An annual schedule was prepared for each of the pits. A separate processing schedule was also generated to limit the total amount of ore processed each year to 16.5 Mtpa as well as limit the production of CuPb ore to 2.15 Mtpa.

Table 15-24 summarises the Jiaoyan Mining Schedule, a total of 153Mt of ore and 222Mt of waste is mined from the Jiaoyan pit. Table 15-25 and Table 15-26 summarises the South pit mining schedule which delivers a total of 87Mt of ore and 297Mt of waste at a stripping ratio of 3.42.

Table 15-24: Jiaoyan Pit Mining Schedule

Jiaoyan	Material	units	FY2014	FY2015	FY2016	FY2017	FY2018	FY2019	FY2020	TOTAL
	CuMo	t	**170,081**	**2,209,005**	**3,467,844**	**4,510,451**	**6,639,929**	**7,123,539**	**7,221,725**	**31,342,575**
	CuMo_Cu	%	0.3995	0.3812	0.3950	0.4049	0.4355	0.4334	0.3967	0.4132
	CuMo_Mo	%	0.0036	0.0095	0.0085	0.0095	0.0143	0.0184	0.0191	0.0146
	CuMo_Pb	%	0.0027	0.0070	0.0061	0.0058	0.0061	0.0080	0.0047	0.0062
	CuMo_Zn	%	0.0025	0.0051	0.0065	0.0065	0.0059	0.0100	0.0053	0.0068
	CuMo_Au	g/t	0.0369	0.0352	0.0304	0.0359	0.0618	0.0699	0.0335	0.0479
	CuMo_Ag	g/t	1.0115	1.3021	1.2993	1.2585	1.3079	1.2789	1.1563	1.2563
	Total Ore	t	**170,081**	**2,209,005**	**3,467,844**	**4,510,451**	**6,639,929**	**7,123,539**	**7,221,725**	**31,342,575**
Waste	Waste	t	12,869,817	32,257,129	19,857,757	12,302,923	11,791,610	8,966,522	9,268,711	**107,314,469**
	Strip Ratio	ratio	75.67	14.60	5.73	2.73	1.78	1.26	1.28	**3.42**
	Total Tonnes	t	13,039,898	34,466,134	23,325,601	16,813,373	18,431,539	16,090,062	16,490,436	**138,657,043**
	Total Volume	bcm	5,000,000	13,210,000	8,940,000	6,460,000	7,100,000	6,200,000	6,360,000	**53,270,000**

Jiaoyan Pit	Material	units	FY2014-20	FY2021-25	FY2026-30	FY2031-35	FY2036-40	FY2041-45	FY2046-49	TOTAL
	CuMo	t	**31,342,575**	**15,934,810**	**26,094,688**	**49,499,803**	**30,637,063**	**0**	**0**	**153,508,940**
	CuMo_Cu	%	0.4132	0.3863	0.4035	0.4053	0.3787	0.0000	0.0000	**0.3993**
	CuMo_Mo	%	0.0146	0.0153	0.0158	0.0173	0.0253	0.0000	0.0000	**0.0179**
	CuMo_Pb	%	0.0062	0.0063	0.0058	0.0051	0.0058	0.0000	0.0000	**0.0057**
	CuMo_Zn	%	0.0068	0.0056	0.0053	0.0056	0.0058	0.0000	0.0000	**0.0058**
	CuMo_Au	g/t	0.0479	0.0263	0.0282	0.0267	0.0276	0.0000	0.0000	**0.03**
	CuMo_Ag	g/t	1.2563	1.0849	1.1637	1.0565	1.0068	0.0000	0.0000	**1.11**
	Total Ore	t	**31,342,575**	**15,934,810**	**26,094,688**	**49,499,803**	**30,637,063**	**0**	**0**	**153,508,940**
Waste	Waste	t	107,314,469	25,372,359	28,522,272	43,884,132	17,319,711	0	0	**222,412,943**
	Strip Ratio	ratio	3.42	1.59	1.09	0.89	0.57	0.00	0.00	**1.45**
	Total Tonnes	t	138,657,043	41,307,170	54,616,961	93,383,935	47,956,774	0	0	**375,921,883**
	Total Volume	bcm	53,270,000	15,900,000	20,986,500	35,897,707	18,635,621	0	0	**144,689,828**

Table 15-25: South Pit Life of Mine Schedule, Part 1

South Pit	Material	units	FY2014	FY2015	FY2016	FY2017	FY2018	FY2019	FY2020	TOTAL
Ore	**CuPb**	t	**760,467**	**4,531,923**	**3,636,937**	**1,757,355**	**165,315**	**1,073,857**	**1,214,333**	**13,140,188**
	CuPb_Cu	%	0.9330	0.7673	0.6743	0.7292	0.8628	0.9434	1.0602	0.7887
	CuPb_Mo	%	0.0168	0.0127	0.0114	0.0144	0.0060	0.0046	0.0057	0.0114
	CuPb_Pb	%	1.1467	1.8877	1.4734	1.0784	0.4914	1.5262	2.0133	1.5864
	CuPb_Zn	%	0.6207	1.0831	0.9270	0.6479	0.1415	0.7467	1.0119	0.9090
	CuPb_Au	g/t	0.2407	0.1538	0.1573	0.1711	0.0447	0.0876	0.3794	0.1762
	CuPb_Ag	g/t	37.85	32.72	23.13	20.20	15.33	31.88	38.72	28.95
	CuMo	t	**2,051,268**	**4,754,226**	**4,295,635**	**3,248,322**	**1,169,522**	**662,725**	**926,504**	**17,108,201**
	CuMo_Cu	%	0.8454	0.6380	0.6218	0.6797	1.0501	0.7150	0.7872	0.7059
	CuMo_Mo	%	0.0193	0.0136	0.0157	0.0183	0.0109	0.0189	0.0098	0.0155
	CuMo_Pb	%	0.1445	0.0738	0.0561	0.0850	0.0658	0.1232	0.0652	0.0809
	CuMo_Zn	%	0.1148	0.1208	0.1021	0.0817	0.0434	0.0455	0.0730	0.0972
	CuMo_Au	g/t	0.2718	0.1416	0.2232	0.1781	0.0464	0.0612	0.2024	0.1783
	CuMo_Ag	g/t	38.0276	24.2974	19.3628	16.5299	9.9232	10.8618	34.7610	22.2934
	Total Ore	t	**2,811,735**	**9,286,149**	**7,932,572**	**5,005,676**	**1,334,837**	**1,736,582**	**2,140,837**	**30,248,389**
Waste	Waste	t	23,962,901	28,950,853	17,952,563	21,967,640	22,877,679	23,453,267	23,033,379	**162,198,281**
	Strip Ratio	ratio	8.52	3.12	2.26	4.39	17.14	13.51	10.76	**5.36**
	Total Tonnes	t	26,774,636	38,237,002	25,885,136	26,973,317	24,212,516	25,189,849	25,174,216	**192,446,671**
	Total Volume	bcm	10,100,000	13,896,392	9,300,000	9,883,316	9,200,000	9,500,000	9,500,000	**71,379,707**

Table 15-26: South Pit Life of Mine Schedule, Part 2

South Pit	Material	units	FY2014-20	FY2021-25	FY2026-30	FY2031-35	FY2036-40	FY2041-45	FY2046-49	TOTAL
Ore	**CuPb**	t	**13,140,188**	**10,244,537**	**7,419,354**	**0**	**0**	**0**	**0**	**30,804,080**
	CuPb_Cu	%	0.7887	0.6196	0.5199	0.0000	0.0000	0.0000	0.0000	**0.6677**
	CuPb_Mo	%	0.0114	0.0098	0.0127	0.0000	0.0000	0.0000	0.0000	**0.0112**
	CuPb_Pb	%	1.5864	1.6199	1.2826	0.0000	0.0000	0.0000	0.0000	**1.5244**
	CuPb_Zn	%	0.9090	0.8714	0.3855	0.0000	0.0000	0.0000	0.0000	**0.7704**
	CuPb_Au	g/t	0.1762	0.2043	0.1103	0.0000	0.0000	0.0000	0.0000	**0.17**
	CuPb_Ag	g/t	28.9539	28.5815	31.8793	0.0000	0.0000	0.0000	0.0000	**29.53**
	CuMo	t	**17,108,201**	**24,431,712**	**14,873,546**	**0**	**0**	**0**	**0**	**56,413,460**
	CuMo_Cu	%	0.7059	0.8189	0.6601	0.0000	0.0000	0.0000	0.0000	**0.7428**
	CuMo_Mo	%	0.0155	0.0219	0.0228	0.0000	0.0000	0.0000	0.0000	**0.0202**
	CuMo_Pb	%	0.0809	0.0758	0.0824	0.0000	0.0000	0.0000	0.0000	**0.0791**
	CuMo_Zn	%	0.0972	0.0595	0.0604	0.0000	0.0000	0.0000	0.0000	**0.0711**
	CuMo_Au	g/t	0.1783	0.2355	0.1757	0.0000	0.0000	0.0000	0.0000	**0.20**
	CuMo_Ag	g/t	22.2934	24.0734	18.3564	0.0000	0.0000	0.0000	0.0000	**22.03**
	Total Ore	t	**30,248,389**	**34,676,250**	**22,292,901**	**0**	**0**	**0**	**0**	**87,217,540**
Waste	Waste	t	162,198,281	113,024,791	22,676,800	0	0	0	0	**297,899,872**
	Strip Ratio	ratio	5.36	3.26	1.02	0.00	0.00	0.00	0.00	**3.42**
	Total Tonnes	t	192,446,671	147,701,040	44,969,700	0	0	0	0	**385,117,411**
	Total Volume	bcm	71,379,707	53,446,348	15,590,991	0	0	0	0	**140,417,046**

15.10 Stage Plans

Stage plans have been prepared to provide an illustration of the pit progression during the life of the operation. The following figures provide a brief overview of the sequence and magnitude of the Phase II open pit mining operation as the development of the open pits occurs during the life of the open pit operations.

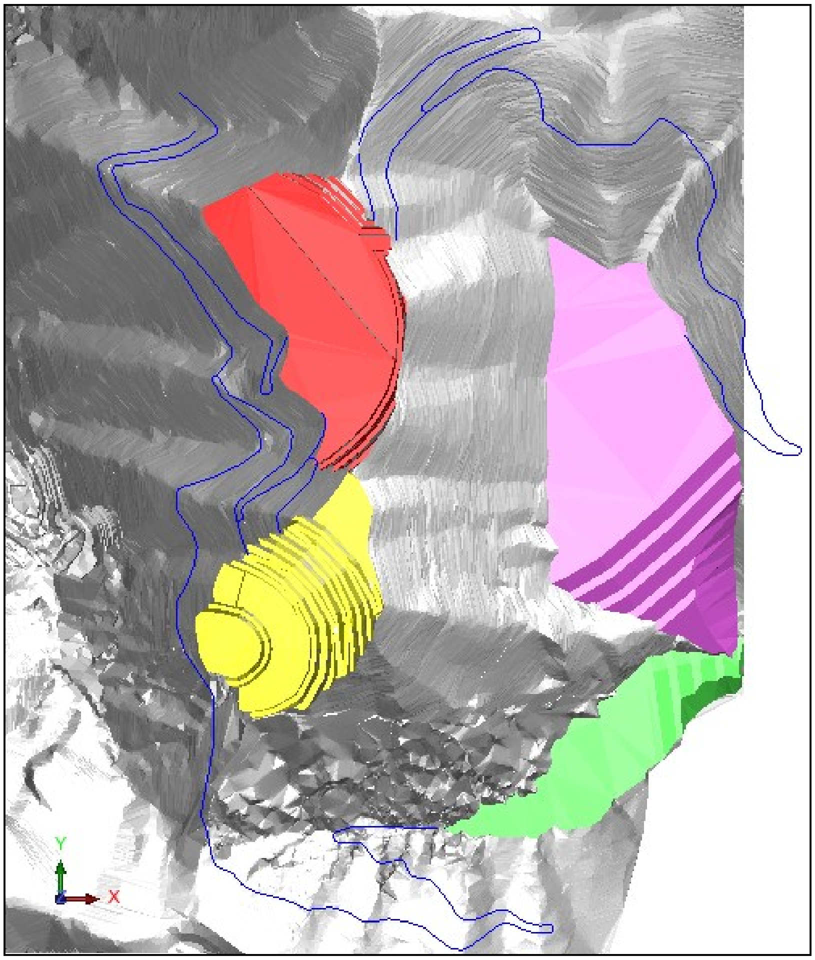


Figure 15-49: Open Cut 2015 (Year 2) Stage Plan

Figure 15-49 shows the status of mining after two years. The first stage of the South Pit has been competed with all waste reporting to the Southern (#4) waste dump. The first stage of Jiaoyan is being mined with all waste reporting to the Eastern (#3) waste dump. A cutting has been established through the eastern wall for the haulage of waste from the Jiaoyan mining area to the Eastern waste dump.

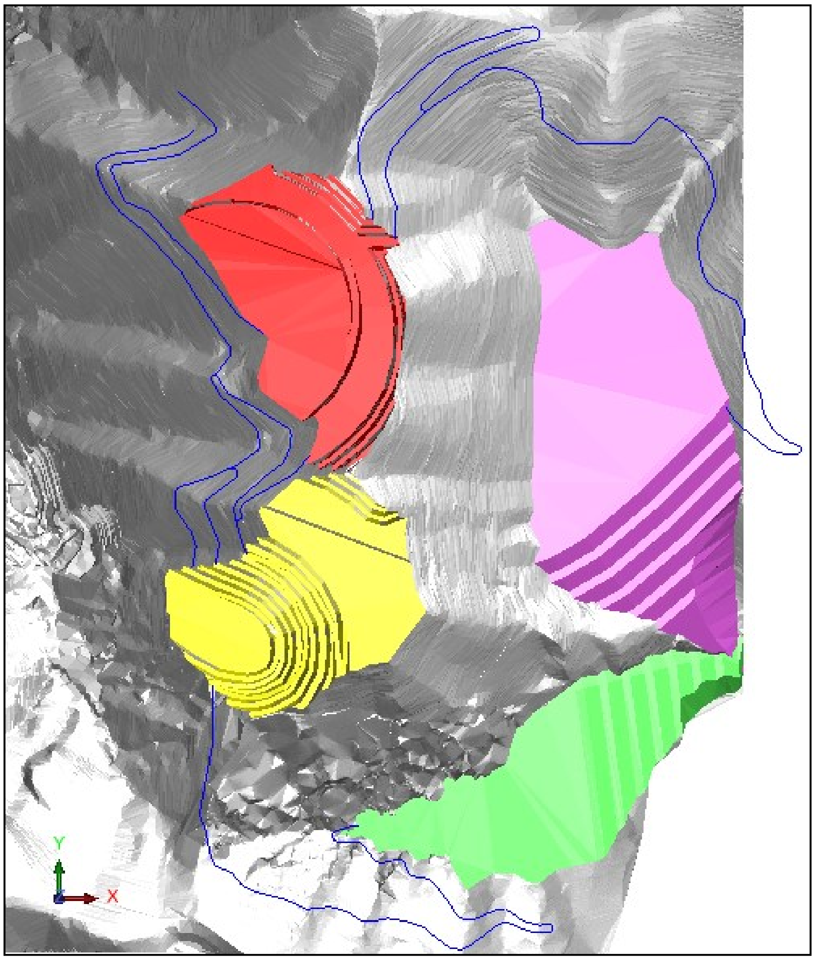


Figure 15-50: Open Cut 2017 (Year 4) Stage Plan

By the 4th year the second stage of the South pit has been completed and a start is made on the third stage (Figure 15-50). Stage 3 provides the option to haul waste to either the Southern or Eastern waste dump. The Jiaoyan Stage 1 pit design continues to be developed during this period.

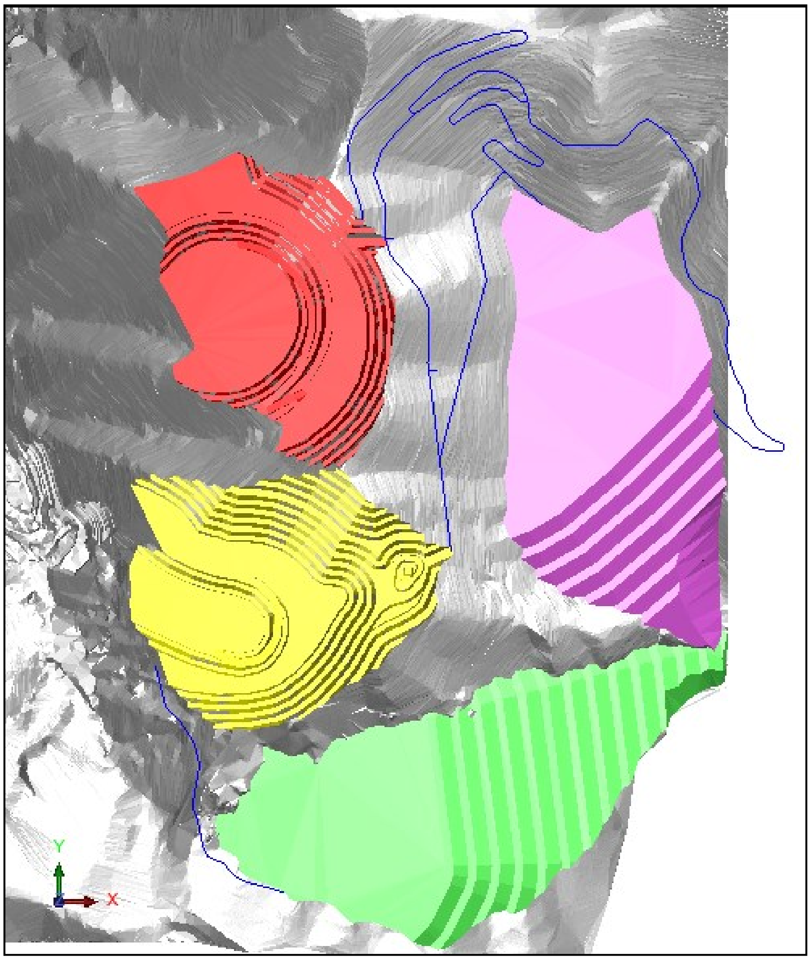


Figure 15-51: Open Cut 2023 (Year 10) Stage Plan

Figure 15-51 shows that by year 10 the final cutback of the South pit has commenced with mining occurring from the lower half of the pit. Stage 1 of the Jiaoyan pit continues to evolve with the base of the pit generating relatively low strip ratios. At this point of the schedule the two pits provide a low stripping ratio as the pits progress towards the final limits of their respective designs. This position provides adequate opportunity to commence the stripping from the Jiaoyan phase II cutback. Demand on the waste removal starts to taper from this point through until the end of mining.

Figure 15-52 illustrates the life of mine dump and pit designs, the pits are completed in FY2039 enabling the underground mining process to commence removal of the ore below the two pits.

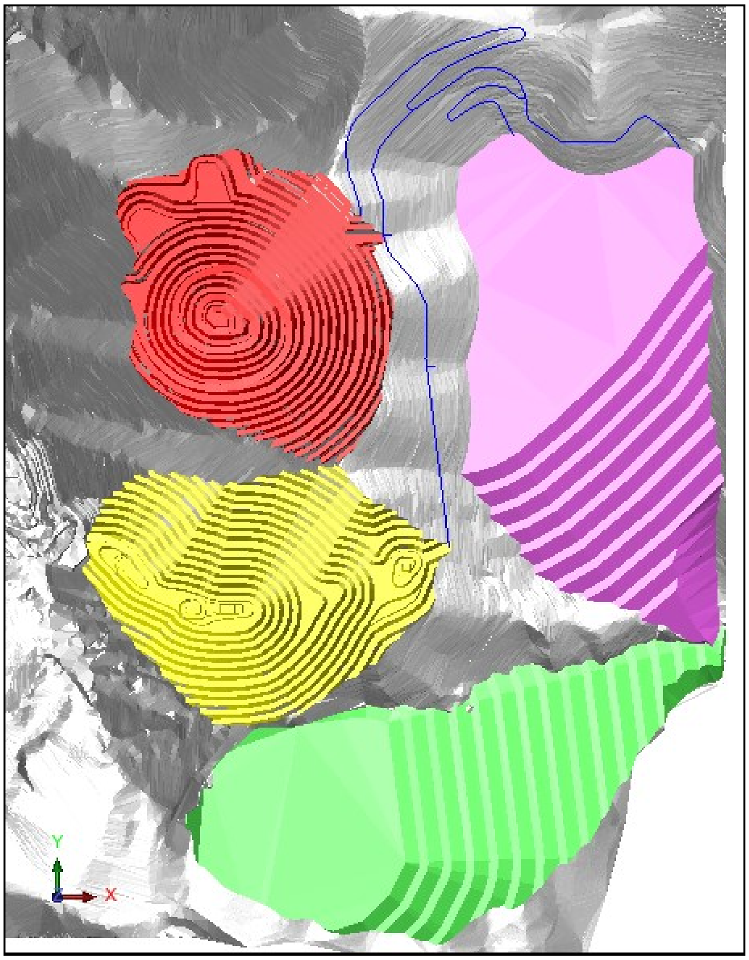


Figure 15-52: Life of Mine Stage Plan

15.11 Interaction between the Underground and Open Pit Operations

The underground and open pit mines will be operated independently during the life of the open pit mines. Once both of the open pit mines have been completed then the underground mine will commence mining the stopes below the pits to optimise the recovery for the project. Figure 15-53 to Figure 15-55 illustrates the interaction between the open pit and the underground Phase II mining operations.

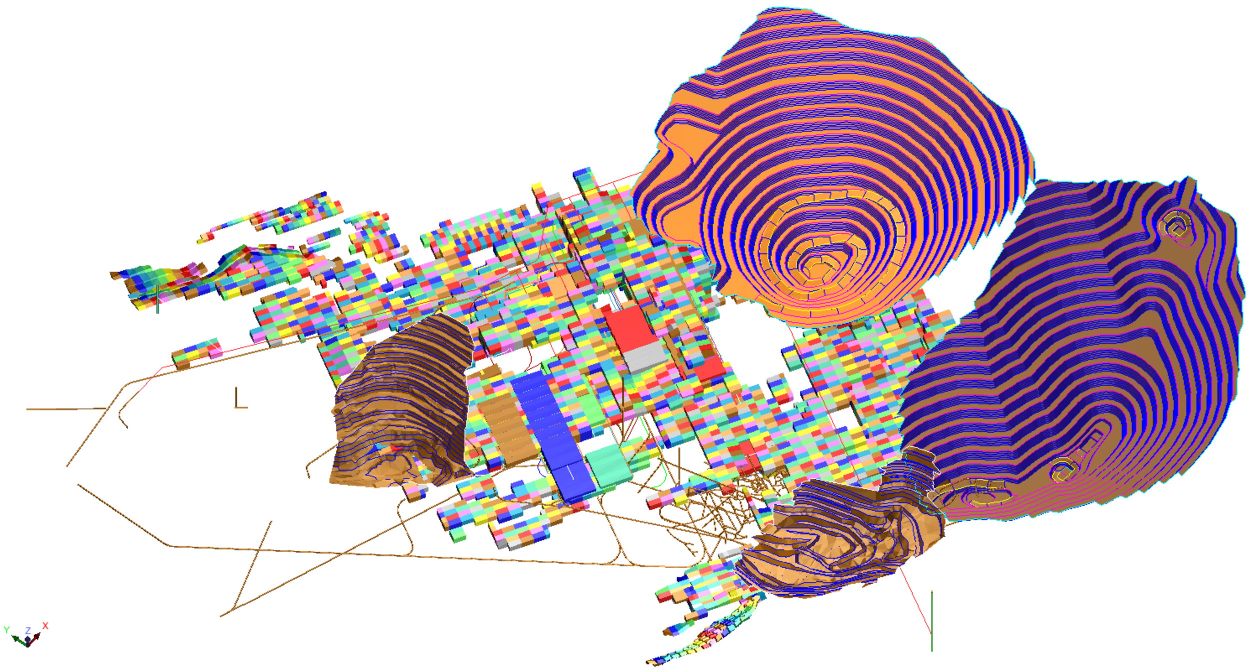


Figure 15-53: Final Design Extents for Phase I and Phase II Mining

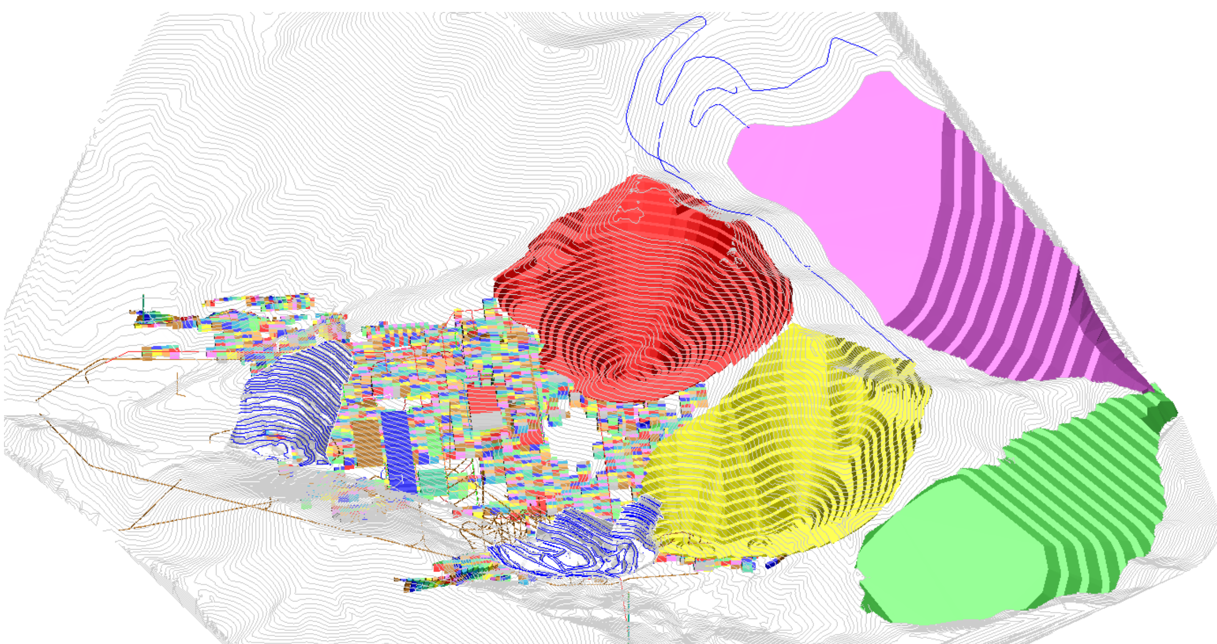


Figure 15-54: Final Design Extents including Dump Designs and Topography

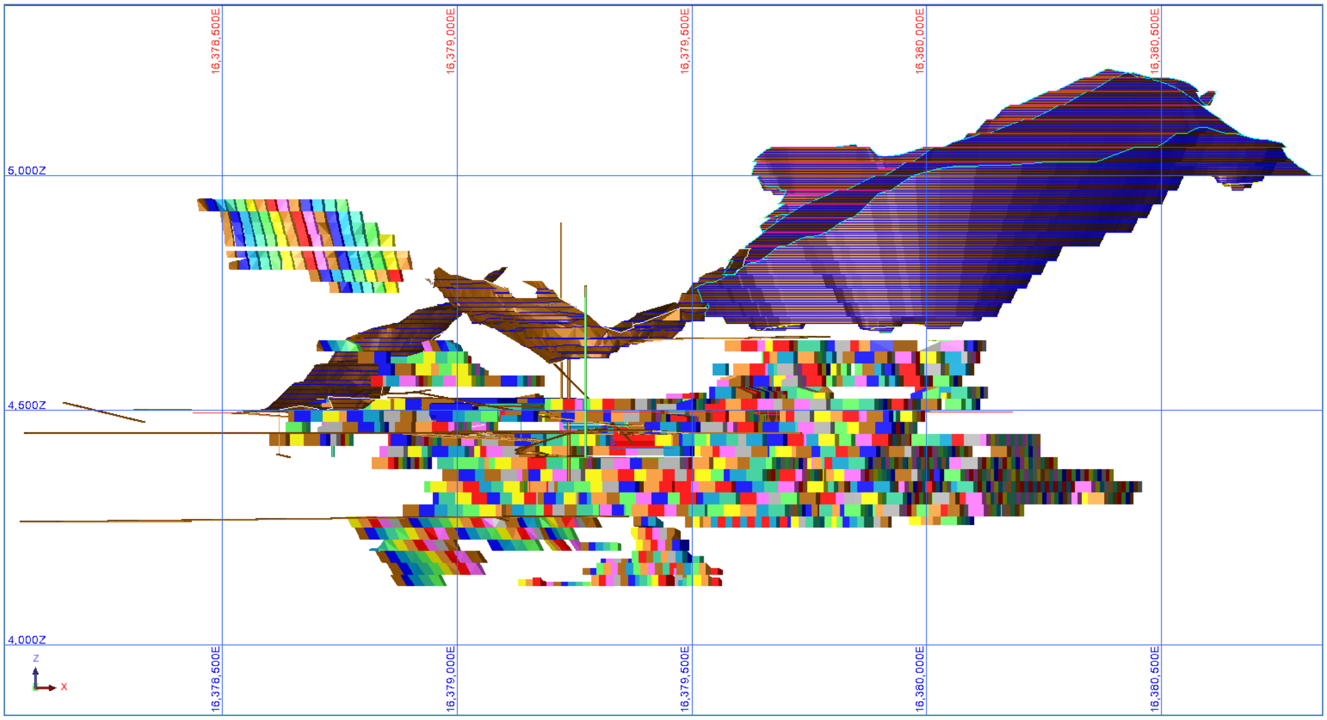


Figure 15-55: Section of Underground and Open Pit showing Small Pillar between Open Pit and Underground Designs

15.12 Open Pit Mineral Reserve Statement

Based on the mine designs and mining schedules presented in this report, a Mineral Reserve has been estimated for both the open pit and underground.

Mineral Reserves, shown in Table 15-27, are estimated based on the ore reported in the open pit mining schedule; whereby proven and probable reserves have been estimated from the measured and indicated resources respectively. Grades have been reported as a head grade from the block model with an assumption that the model inherently considers sufficient internal and external mining dilution.

15.13 Mineral Reserve Statement

Table 15-27: Mineral Reserve Statement

0.23% CuEq for Jiaoyan Pit and 0.29% CuEq for South Pit - November 2013

Total Pit Reserves-South Pit

Type	Quantity Mt	Cu %	Mo %	Pb %	Zn %	Au g/t	Ag g/t	Cu Metal Kt	Mo Metal Kt	Pb Metal Kt	Zn Metal Kt	Au Moz	Ag Moz
Proven	2.9	0.45	0.03	0.15	0.08	0.05	9.54	13.03	0.85	4.34	2.43	0.00	0.89
Probable	84.3	0.73	0.02	0.60	0.33	0.20	25.20	611.75	13.99	509.85	275.03	0.53	68.31
Subtotal	87.2	0.72	0.017	0.589	0.318	0.19	24.67	624.78	14.84	514.19	277.46	0.54	69.20
Waste	309.6												
Strip Ratio	3.5												

Total Pit Reserves_Jiaoyan

Type	Quantity Mt	Cu %	Mo %	Pb %	Zn %	Au g/t	Ag g/t	Cu Metal Kt	Mo Metal Kt	Pb Metal Kt	Zn Metal Kt	Au Moz	Ag Moz
Proven	5.0	0.38	0.01	0.00	0.01	0.02	0.94	19.25	0.65	0.16	0.29	0.00	0.15
Probable	148.5	0.40	0.02	0.01	0.01	0.03	1.11	593.76	26.83	8.62	8.65	0.15	5.32
Subtotal	153.5	0.40	0.018	0.006	0.006	0.03	1.11	613.00	27.48	8.78	8.94	0.16	5.47
Waste	222.4												
Strip Ratio	1.4												

Type	Quantity Mt	Cu %	Mo %	Pb %	Zn %	Au g/t	Ag g/t	Cu Metal Kt	Mo Metal Kt	Pb Metal Kt	Zn Metal Kt	Au Moz	Ag Moz
Proven	7.9	0.41	0.019	0.057	0.034	0.03	4.10	32.3	1.50	4.50	2.72	0.01	1.05
Probable	232.8	0.52	0.018	0.223	0.122	0.09	9.84	1,205.5	40.82	518.47	283.69	0.68	73.63
Subtotal	240.7	0.51	0.018	0.217	0.119	0.09	9.65	1,237.8	42.32	522.97	286.40	0.69	74.68
Waste	532.0												
Strip Ratio	2.2												

Notes:

1) The Mineral Reserve as of November 2013.

2) All Mineral Reserves have been estimated in accordance with the JORC code and have been reconciled to CIM standards as prescribed by the National Instrument 43-101.

3) Mineral Reserves were estimated using the following mining and economic factors:

a. A 5% dilution factor and 95% recovery was applied to the mining method ;

b. Wall angles of 43 degrees;

c. A copper price of USD$ 2.9/lbs;

d. An overall processing recovery of 88 - 90% for copper.

4) The cut-off grade for Mineral Reserves has been estimated at a copper equivalent grade of 0.23% Cueq for Jiaoyan Pit and 0.29% CuEq for South Pit at November 2013.

5) Mineral Reserve Estimates were prepared by Anthony R. Cameron who is a sub-consultant to Mining One Pty Ltd and is classified as an independent author. He is a Fellow of the Australasian Institute of Mining and Metallurgy and has over 26 years of relevant engineering experience and is the Qualified Person for Mineral Reserves.

16 MINING METHODS

16.1 Introduction

Mining One has completed a review of data provided by China Gold, including an analysis of the mine design parameters utilised. This review determined that the mine design parameters were appropriate and suitable for the Phase II expansion project. The designs and estimations contained within this section are based on information supplied by CGDI and China Gold. A review of The Study as well as the MMC Pre-Feasibility Study Technical Report has been completed. Mine designs have been supplied by China Gold.

Mining One has also reviewed the provided data and used it to review the mine designs and plans which were completed by China Gold and are described below.

China Gold currently mine the Jiama deposit as an open pit and underground mine and intend to continue and expand both operations. The Jiama underground workings are currently accessed via declines and adits, with future plans to include a conveyor drive for ore haulage, vertical shaft for waste haulage and decline expansion for improved access. The current mining activity is limited to hand-held air leg mining for both development and stoping.

Table 16-1 provides a high level summary for the timing of each mining area. As can be seen the North area of the underground and the South pit are planned to be mined initially with the Jiaoyan pit and Southern underground being mined later in the project.

Table 16-1: Timeline of Mining Areas

Phase One	Current Status	Commencement Date	Mining Method
Tongjianshan	Operating	Jun-10	Open Cut
Niumatang	Operating	Apr-11	Open Cut
Phase Two	**Current Status**	**Commencement Date**	**Mining Method**
South Pit	Planned Production	2013	Open Cut
Jiaoyan	Planned Production	2014	Open Cut
Underground	Planned Production	2015	Sublevel Caving, Sublevel Open Stoping, Stope and Pillar, Room and Pillar, Shrinkage

Phase II is forecast to commence in 2014 with a ramp up to a maximum processing production capacity of 16.5 Mtpa ROM ore by the end of 2015. In addition to the Phase I pits, Jiaoyan and the South Pit will be developed. The open cut operations will account for approximately 9.9 Mtpa of ROM ore production, while the underground mine will account for 6.6 Mtpa of ROM ore production for a total of 16.5 Mtpa ROM Ore production from 2016 to 2039. Beyond 2039 the mine will operate as an underground only mine until the ore body is depleted in 2048-2049

Although copper is the primary metal, molybdenum, gold, silver, lead and zinc are also planned to be extracted and form part of the saleable concentrate. Based on the open pit mineral reserve estimate generate by China Gold, the Project currently has a planned mine life approximating 35 years with 241 Mt of ROM ore being extracted from the open cut operations and 203 Mt of ROM ore being extracted from the underground operation.

16.2 Open Cut Mining Methods

16.2.1 Introduction

Conventional selective mining methods using truck and shovel are planned to be employed to extract the mineralised material from the proposed open pits, Figure 16-1. Mining is planned to occur on shallow flitches, typically 3m to 4m high, which will enable better grade control of the mineralised zones. Inter berm bench heights approximate 30m with a typical mining cycle involving:

- Drilling of a blast pattern;
- Sampling of drill hole cuttings for grade control;
- Blasting to fragment rock;
- Marking out mineralised zones based on grade control results; and
- Digging, loading and hauling mineralised material and waste rock to the surface.

Figure 16-1: Picture of Truck and Excavator Operation - Jiama Phase I

The open pits considered in this study are the Jiaoyan and South Pit. The Jiaoyan pit will be mined in two stages and South pit four stages. The cutbacks have been designed to enable early delivery of ore to the processing plant. The pit physicals are described in Table 16-2.

Table 16-2: Open Pit Mining Quantities

Item	Unit	South Pit				Jiaoyan Pit	
		Stage 1	Stage 2	Stage 3	Stage 4	Stage 1	Stage 2
Ore	t	8,863,581	15,240,069	29,539,082	33,596,254	77,376,732	76,132,208
Cu	%	0.8165	0.6480	0.7645	0.6782	0.4102	0.3882
Mo	%	0.0149	0.0153	0.0168	0.0186	0.0166	0.0192
Pb	%	0.9651	0.6077	0.5779	0.4920	0.0058	0.0056
Zn	%	0.5961	0.4006	0.3373	0.1903	0.0059	0.0057
Au	g/t	0.18	0.17	0.21	0.19	0.04	0.03
Ag	g/t	35.14	20.25	24.26	24.29	1.16	1.06
Waste	t	19,673,871	61,291,910	132,867,047	95,771,054	133,196,539	89,216,404
SR	ratio	37.83	1.25	1.22	1.35	1.58	1.85
Total	bcm	279,260,482	27,933,316	59,746,348	46,890,991	81,110,432	63,579,396
	t	744,227,299	76,531,980	162,406,129	129,367,308	210,573,271	165,348,612

16.2.2 Operating Hours

Subject to weather conditions, it is assumed there will be 365 working days per calendar year, operating in 3 x 8 hour shifts per day. Down days have been factored into the utilisation and availability estimates to provide a working year that approximates 330 work days. Contractors have been engaged for the work at site and will work rosters that are amenable to their needs and approved by the China Gold Management. Contract agreements are in place for the open cut operations and at the time of preparing this report the underground contracts were being finalised, however the scope of the contract included:-

- Provision for all drilling and blasting;
- Grade control operations;
- Loading;
- Hauling;
- Supply and maintenance of mining equipment;
- Supply and maintenance of ancillary equipment;
- Supply and maintenance of service equipment such as pumps, lighting towers, signage etc;
- Construction and upkeep of maintenance facility;
- Construction and upkeep of site offices; and
- Construction and upkeep of camp facilities for the workforce.

Engineering and management will be controlled by China Gold.

16.2.3 Drill and Blast

Drilling for stripping operations will be carried out by the site contractors, it is anticipated that 250 mm diameter holes will be drilled and each will achieve a production rate approximating 2.8 Mbcm per year. Ore mining will involve drilling 165 mm diameter holes with a production rate of 1.0 Mbcm per year per drill. Grade control will be carried out from the ore drills. In addition, secondary rock breaking will be conducted by a rock breaker as necessary.

In waste the recommended pattern is a spacing of 8.5 m and burden of 7.5 m with a drill depth of 17.5 m. This equates to the blast volume of 54.6 bcm/m per hole. Given the operating hours, this equates to a productivity rate of 2.48 Mbcm per annum. The number of drills required to meet the production schedule was calculated to be 2 however this will be regulated by the contractor who have an agreed rate for the provision of excavation. Details of the calculations related to the drill required for stripping are shown in Table 16-3.

During the second year of production the total capacity of the drills will peak at 30 Mbcm. After the second year production demand reduces and stabilises to 16Mbcm per year over the initial 10 years. On average this calculates out to approximately 12 Mbcm of waste and 4 Mbcm of ore.

Table 16-3: Drill Calculations for Stripping

Item	Unit	Value
Required Production	bcm/yr	10.5
Working hours	hrs	8,760
Utilisation	%	65%
Availability	%	80%
Effective Utilisation	%	52%
Operating hours per year	hrs	4,555
Density	t/bc	2.75
Blasthole diameter	m	250
Bench height	m	15
Subdrill	m	2.5
Total blasthole length	m	17.5
Spacing	m	8.5
Burden	m	7.5
Blasting Volume/hole	cu.m	956
Volume / Drill metre	bcm/m	55
Penetration rate (Avg)	m/hr	45
Annual production per drill	m	204,984
Redrills	%	5%
Annual drill capacity req'd	m	195,223
Annual drilling productivity per dirll	Mbcm	10.7
Calculated number of rigs	#	0.98
Rounded number of rigs	#	1

For ore mining, to control ore dilution and loss, a smaller drill rig will be employed to drill 165mm diameter holes at an angle of up to 75 degrees. A drill pattern approximating a spacing of 5.5m and a burden of 4.5m has been estimated for all ore blasts, however the drill and blast designs will be refined upon the commencement of mining operations. Total depth of the ore shots will be 17.5m. The calculated blast volume is 21.2 m^3/m.

Given the operating hours, this equates to a productivity rate of 1.25 Mbcm per annum. The number of drills required to meet the production schedule is calculated to be 2. The drill rigs will also be used for presplit blasting, road cutting and any other auxiliary drilling requirements. Details of the calculations related to the 165 mm diameter drill requirements are shown in Table 16-4.

Table 16-4: 165 mm diameter Drill Calculations

Item	Unit	Value
Required Production	bcm/yr	4
Working hours	Hrs	8,760
Utilisation	%	65%
Availability	%	80%
Effective Utilisation	%	52%
Operating hours per year	hrs	4,555
Density	t/bc	2.75
Blasthole diameter	M	165
Bench height	M	15
Subdrill	M	2.5
Total blasthole length	M	17.5
Spacing	M	8.5
Burden	M	4.5
Blasting Volume/hole	cu.m	371
Volume / Drill metre	bcm/m	21
Penetration rate (Avg)	m/hr	35
Presplit	%	15%
Annual production per drill	M	183,347
Redrills	%	5%
Annual drill capacity req'd	M	174,616
Annual drilling productivity per dirll	Mbcm	3.7
Calculated number of rigs	#	1.08
Rounded number of rigs	#	2

It is anticipated that the contractors will utilise conventional Nonel type millisecond timed initiation systems along with a bulk explosive. ANFO (ammonium nitrate and fuel oil) will be used extensively across the open pit operations and will be complimented by emulsion based explosives and packaged explosives as required.

Blasting will target less than 850 mm passing sizes for ore and 1,200 mm for waste. Secondary crushing will be conducted by two rock breakers, however these units will only be used when the blast fails to perform.

The site contractors will be managing all facets of the drill and blast operations within the Jiama Phase II open cut operations. A blast management plan will be developed to ensure surface operations do not interfere with the underground mine.

16.2.4 Load and Haul

An agreed contract is in place for earthmoving based on a fixed RMB/tonne unit cost. This cost has been used to determine the cost of mining. After assessing the production schedule, physical and mechanical properties of the mined material and operating conditions, it is recommended the primary excavator be either an electric shovel or diesel shovel with a 10 m^3

bucket capacity with an annual production rate of 4.5 Mt. Given the high altitude of the Jiama project an electric shovel is likely to be more efficient over the life of the operation. Given the waste movement in the production schedule, up to 4 units will be required for waste stripping.

Ore mining will be conducted with hydraulic backhoe excavators, while the size of the units have not been specified within the contract it is anticipated that excavators with 5 m^3 buckets will be employed. It is estimated that two backhoe excavators will be required to meet production schedules. In addition, front end loader will serve as auxiliary shovels and loaders.

Haulage will be conducted by 91 t dump trucks, the fleet will vary over the life of the operation, however it is estimated that 24 – 30 trucks will be required during the initial 10 years of the mine schedule.

16.2.5 Loss and Dilution

For this study, a mining recovery of 95% (mining loss of 5%) and a dilution of 5% has been assumed. Considering the size and nature of the deposit and the forecasted capacities of the mining equipment, these figures have been deemed acceptable in an operation where the ore body is wide and conducive to bulk mining methods. Improvements to these assumptions could be achieved with high quality grade control systems. At the time of preparing this report the grade control systems had not been finalized so the 5% loss and dilution assumption is considered reasonable in the absence of a control program.

The following strategies will be implemented to reduce dilution and ore loss:

- Continual exploration drilling will be conducted to aid in the delineation of ore body boundaries;
- Conduct blast hole grade control sampling;
- Adhere to reasonable mining sequences and selection of drill and blast parameters; and,
- Strengthen staff skills via training.

16.2.6 Ore Haulage, Crushing, Stockpiling

All ore haulage from the pits is planned to be completed by contractors. As a result of the site topography and to minimise haulage costs, ore is planned to be hauled from the pits to crushing facilities located close to the proposed pit locations. After crushing to 300 mm the ore will be conveyed to passes using belts. The ore passes will feed a conveyor system that will transport ore to stockpiles located adjacent to the processing plants. Table 16-5 describes the ore haulage, crushing and stockpiling plans for the proposed pits, these systems are similar to those employed by the Phase I operation.

Table 16-5: Open Pit – Ore Haulage, Crushing and Stockpiling Summary

Operation	Description
Pit to crusher ore haulage	Truck haulage transport ore from the pit to the crushing system at the edge of Jiaoyan pit (4,880mRL) Distance from pit to crusing station: South Pit 1.1km Jiaoyan 200m
Crushing	Ore crushed to minus 300mm
Crusher to ROM, stockpile ore haulage	Crushed ore is transported via conveyor system located in north - east of Phase1 dump.
Ore stockpile	Ore transported 1.8 km using conveyor haulage system. Delivered to ROM stockpile at Phase 2 processing Plant (4,500mR)

16.2.7 Waste Dumps

Truck haulage will be used to transport waste material to surface dumps. Two dump locations have been identified and preliminary designs prepared (Figure 16-2). Waste from South Pit and Jiaoyan is planned to be dumped in an area to the south and to the East of the pits. There is opportunity to reduce the cost of haulage by backfilling the South pit with waste from the Jiaoyan Pit. This option has not been considered as the South Pit design may be subject to change once the southern extents of the ore-body have been delineated. It is intended that waste from Jiaoyan pit will report to the Eastern Dump while a majority of the waste from the South Pit will be sent to the Southern Dump. The approximate waste haulage distance from each pit to their respective dumps is provided below:

- Jiaoyan to East Dump = 1.2 km;
- South Pit to East Dump = 1.4 km;
- South Pit to South Dump = 1.3 km;
- Jiaoyan to South Pit = 1.1 km.

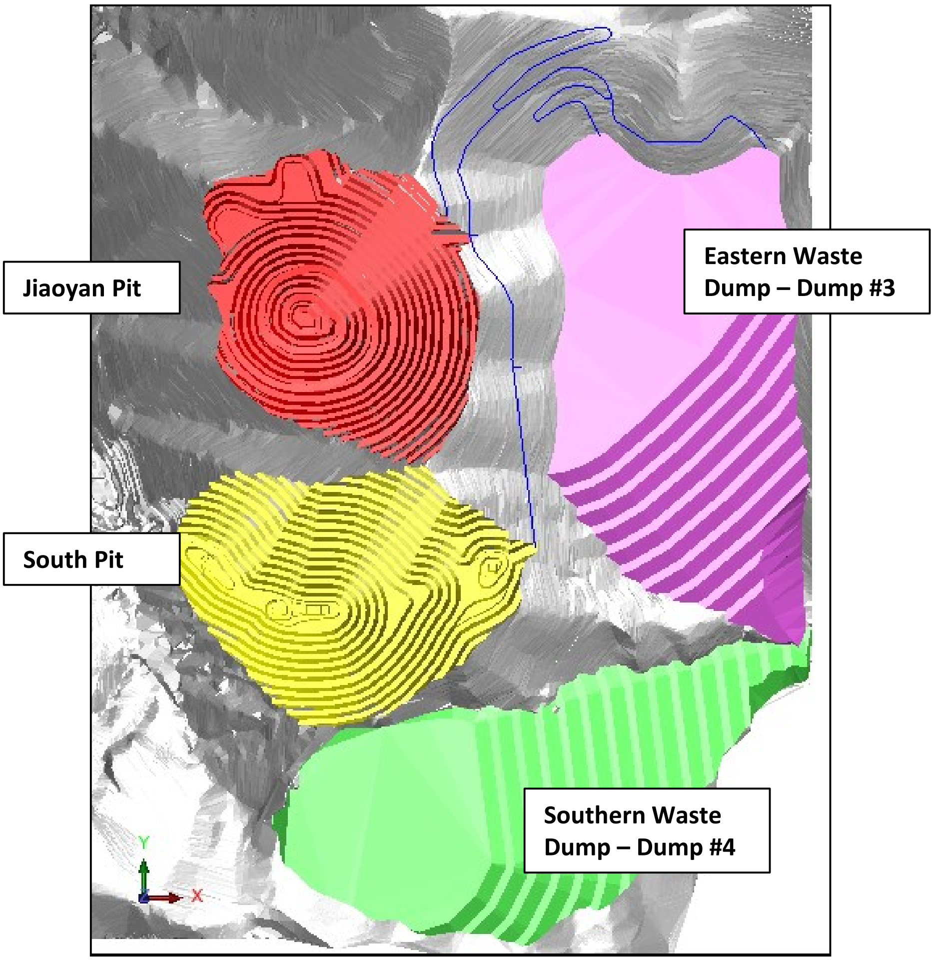


Figure 16-2: Pit and Dump Locations

The land identified for the dump locations is mountainous and geotechnical specification will be required for final design approvals this work was in progress at the time of the report. The local terrain (Figure 16-3) is subject to localised failures throughout the year and requires all waste dumps be constructed to minimise the potential for failure. The dump construction sequence has been incorporated into the dump stage plans as presented in section 15.10 of this report. A bottom up construction sequence enables the foundation of the dump to be established prior to building on this foundation.

Figure 16-3: Image of Local Terrain and Existing Operation

For these areas to be used, China Gold are required to obtain land usage permits in addition to the current exploration licence covering these areas. Table 16-6 provides a summary of the waste generated by the two open pits and the required volume for waste disposal against the respective dump designs. An illustration of the pits and dump locations are identified in Figure 16-2.

Table 16-6: Waste Dump Capacities

Pit Waste					Dump Capacity	
Pit	T	t/cu.m	Swell	cu.m	Number	cu.m
Jiaoyan Pit	222,412,943	2.35	20%	113,572,567	Dump #3	144,612,065
South Pit	297,899,872	2.35	20%	152,119,084	Dump #4	129,395,646
Total	520,312,815			265,691,650		274,007,711

16.2.8 Open Cut Dewatering

Due to the nature of the topography, the pre-production mining and stripping will have natural drainage away from operating areas.

In the 10th year, the development of the pit will reach a point where water will collect inside the area of operations. At this point, a sump will be excavated at the lowest point where pumps will be installed to transport water out of the pit.

16.2.9 Open Pit Mining Fleet

The mining equipment shown in Table 16-7 has been selected based upon the annual mine production schedule and provides an estimate of the equipment requirements for the Jiama Phase II open pit operations. These estimates have been determined by the CGDI and approximate the contract fleet that is expected on site.

Table 16-7: Estimated Open Pit Mining Fleet

Name	Qty.
Rotary Drilling Rig – 250 mm diameter	2
Hydraulic Drilling Rig – 165 mm diameter	2
Rockbreaker	2
Hydraulic Backhoe Shovel – 5 m^3 Bucket Capacity	2
Electric Excavator – 10 m^3 Bucket Capacity	3
Dump Truck – 91 t	28
Bulldozer – 320 HP	3
Water Truck – 21 t	2
Front Loader - ZL90 – 5 m^3	2
Scraper – 120 HP	1
Vibration Roller – 180 HP	1
Dump Truck – 15 t	2
Hydraulic Backhoe Shovel - 1.5 m^3 Bucket Capacity	1
Fuel Truck – 8 t	1

16.3 Labour, Open Pit and Underground

Open-cut mining will be conducted by a contractor; an agreed rate per tonne of material moved has been established with this contractor, however China Gold will be responsible for the mining program, technical management and safety.

It is anticipated there will be a total of 2,220 employees approximately 35% of site personnel will be contractors. In addition, auxiliary staff and mine management will comprise 364 employees. The sources of these labour figures are from The Study and include the proposed underground mining staff requirements.

China Gold will manage all mining contractors both surface and underground who will be responsible for all aspects of the open pit and underground mining operations. China Gold will operate the two site processing plants and provide comprehensive technical support across all facets of the operation.

The Phase II project will require a substantial increase in the management team, China Gold with site numbers approaching 2,300 personnel the site will adopt a management structure to ensure all areas of the operation are managed effectively.

Figure 16-4 illustrates the organisational design that will be employed to manage the site. A site Manager will be supported by a team of managers who will be responsible for the functional areas across the operation.

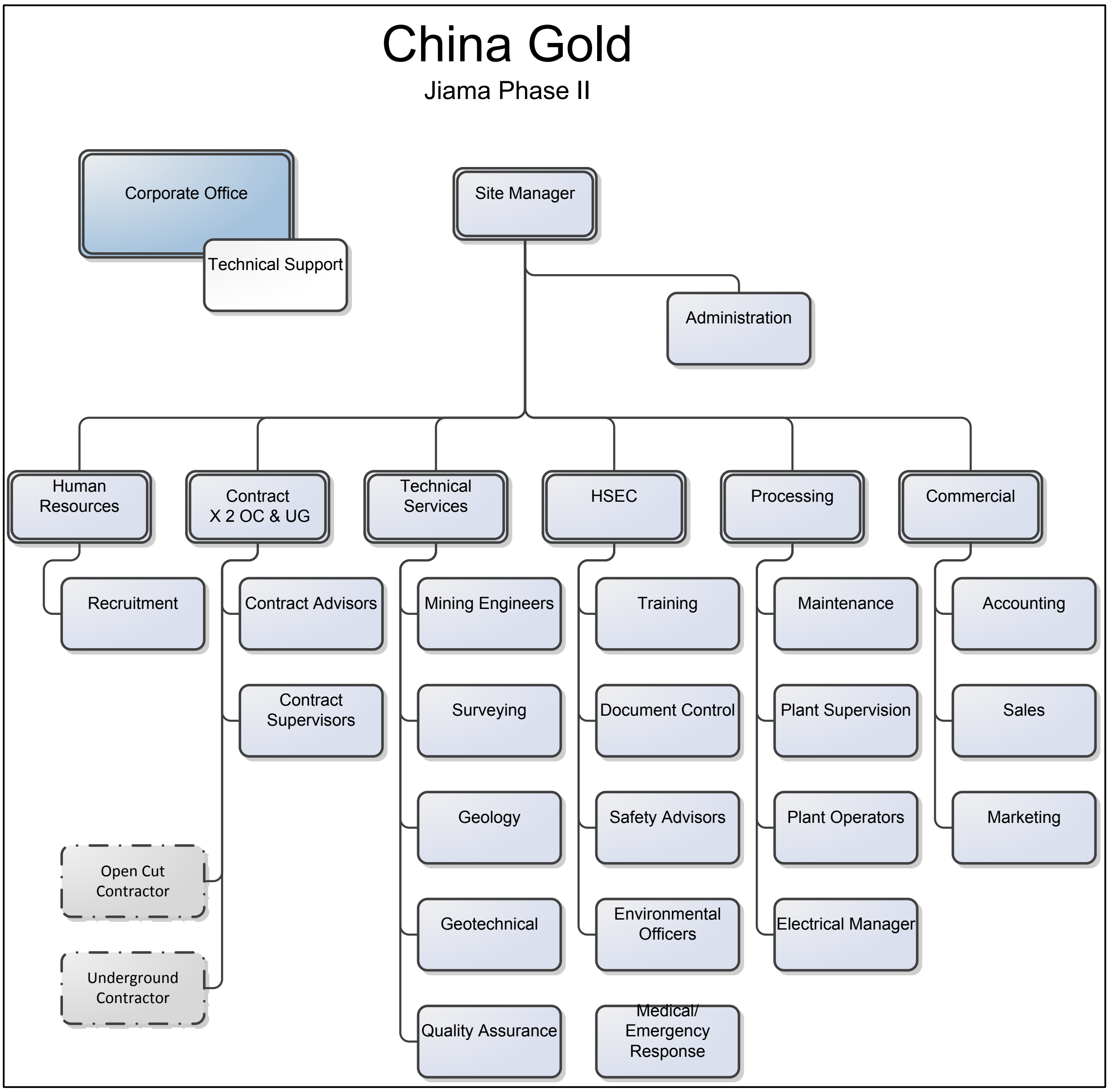


Figure 16-4: Organisational Template

16.4 Geotechnical

A mine plan has been developed to exploit the measured and indicated resources in the proposed Phase II Jiaoyan Pit, South Pit and underground mine areas. The mine plan considers both open pit and underground mining methods.

During the development of Phase 1, two open pits were excavated in the project area, Niumatang Pit and Tongqianshan Pit. Underground mining of Phase 1 is continuing in the project area.

Mining of Phase II will commence in two open pits and an extensive underground mine including; Jiaoyan Pit, South Pit and the underground mine respectively. The open pits and underground expansion will be developed simultaneously. The Open pits will be separated from the underground operation by a crown pillar that will be maintained between the base of South Pit and the upper Underground Mine. Stope voids will be progressively backfilled beneath the base of the pit floor to reduce the potential for open pit and underground mine interaction. The two underground mining methods considered in this area are cut & fill mining and sub-level caving. The area under the pit is not planned to be designed in the initial 10 years of operation. The pit should be finished by this time which would make sub-level caving a possible option here.

The underground and open pit mine designs were developed by the CGDI. The geotechnical studies were undertaken by the Changsha Institute of Mining Research Co Ltd (CIMR) for all mining areas and the waste dumps were designed by the CGDI with contribution from the CIMR. The CIMR Feasibility Study reporting for the geotechnical studies are referenced in Section 27, which forms part of The Study.

16.4.1 Rock Mechanics

Rock mechanics testing was completed by the Rock Mechanics Laboratory at CIMR, and CIMR were responsible for all on-site geotechnical data collection and data collection quality control. The CIMR Study addresses the geotechnical design considerations for the Phase II Jiaoyan Pit, South Pit and Underground Mine in the areas discussed below (Sections 16.4.1.5 and 16.4.1.6). The waste dump geotechnical stability design is addressed in Section 0.

16.4.1.1 Site Investigations and Geotechnical Database

Geotechnical data for the CIMR Feasibility Studies was collected during 2012 and 2013. This included on site geotechnical mapping (in the existing open pits and underground mine), geotechnical drill core logging including collecting oriented structural data from dedicated geotechnical drill holes and back geotechnical logging of stored drill core from previous resource drilling campaigns.

Geotechnical drill core logging was completed on seventy (70) resource drill holes, totalling 30,000 m of geotechnical data collection. A number of geotechnical mapping lines were completed in 2012 and were included in the geotechnical database. 28 separate geotechnical mapping lines collected geotechnical information from the existing batters in Niumatang and Tongqianshan Pit.

At Jiaoyan Pit, ten (10) dedicated geotechnical holes were drilled (approximately 3,500m), with four (4) of these holes selected for acoustic televiewer data collection.

At the South Pit, twenty five (25) dedicated geotechnical holes were drilled (approximately 10,000 m).

For the Underground Mine, to compliment the geotechnical database created for the South Pit (i.e. directly above the Underground Mine), geotechnical mapping lines were mapped in the existing underground workings on various mine levels at the 700mRL drive, 4,645 mRL drive, Shaft 4,450 mRL access, 4,450 mRL access and ore drive, 4,650 mRL main drive and Line16 haulage drive.

The geotechnical data collection system was implemented at the Jiama site by consultant engineers Pells Sullivan Meynink (PSM Sydney, Australia) with a two week geotechnical data collection training package delivered to the site geotechnical data collection team.

At completion of data collection for the CIMR Feasibility Study, approximately 43,500 m of drill core was logged to enable Bieniawski RMR89 and Rock Tunneling Quality Index Q calculations to be conducted. Drill core was photographed for future reference.

16.4.1.2 Geomechanical Laboratory Testing Database

Samples from selected boreholes and differing rock types were collected for laboratory testing. All samples were tested at the CIMR Rock Mechanics Laboratory in Changsha. Laboratory Testing included: uniaxial compression, elasticity modulus, tensile tests, triaxial testing and shear testing on intact rock samples.

A substantial testing database has been created to describe the rock characteristics across the project: 64 UCS and rock modulus tests, 51 tensile tests, 8 shear tests and 49 triaxial tests.

In addition to these tests the database is complimented by testing on an additional 8 samples collected during the underground mapping exercise.

16.4.1.3 Geotechnical Domaining and Rockmass Characterisation

The geotechnical logging database and the rock testing database were assessed as a part of the CIMR Feasibility Study to determine the geotechnical domains for the purposes of mine design. The geotechnical domains were shown to generally align with the geological units in the project area.

The rockmass parameters for each geotechnical domain were characterised using a number of different methods to enable comparison of results by a number of techniques and included the Hoek-Brown failure criterion. The CIMR Feasibility Study derived rockmass parameters for each geotechnical domain used in the geotechnical design process:

- Hornfels Domain is a hard rock (UCS >100MPa) with RQD values which indicate intact rock, however due to structure the Q system indicates a Poor rockmass, mainly due to the influence of structure. The Hornfels Domain is present at the Jiaoyan Pit and in the hanging wall of the Underground Mine;
- Skarn Domain is a hard rock (UCS >100MPa) with RQD values which indicate intact rock, however due to structure the Q system indicates a Fair rockmass. Skarn Domain is found at the South Pit and the Underground Mine and hosts the ore;
- Marble Domain is a hard rock (UCS >80MPa) with RQD values which indicate intact rock, however due to structure the Q system indicates a Fair rockmass. Marble Domain is found generally in the Footwall of the Underground Mine; and
- Porphyry Granite is a hard rock (UCS >150MPa). Porphyry Domain is an intrusion and is found the orebody hangingwall and footwall.

16.4.1.4 Rock Structure

16.4.1.4.1 Major Structures

The potential for major structures (faults) to influence the mine plan were a focus of the CIMR Feasibility Study. Structural mapping and observation of the excavated Niumatang Pit and Tongqianshan Pit indicated that major structures had no noticeable impact on the constructed pit walls. Geotechnical cross sections cut through the open pit mining areas define faulting, however the identified faults are not interpreted to impact on the stability of designed pit walls.

Faults were mapped during the underground geotechnical mapping and three fault types were characterised for assessment during the underground geotechnical design.

16.4.1.4.2 Pervasive Structures

Structural geotechnical logging, acoustic televiewer structural data and geotechnical mapping have contributed to form the project structural database.

In general, there are three to five joint sets interpreted across the geotechnical domains, which describes blocky rockmass conditions.

16.4.1.5 Underground Analysis and Geotechnical Design

The underground ore body is variable in dip and thickness and two mining methods were assessed as part of the CIMR Feasibility Study. An additional consideration during the design process was the crown pillar, which will be formed when the underground mine extends beneath the South Pit. An important geotechnical data input to the assessment was the use of existing underground mine workings to collect geotechnical mapping data, rather than relying only on drill core logging.

16.4.1.5.1 Design Standards

Chinese Government standards for the design and operation of underground mines were considered and taken into account during the CIMR Feasibility Study geotechnical design process. The design criterion was based on achieving a minimum factor of safety of 1.2, and this compares to international minimum factor of safety values.

16.4.1.5.2 Crown Pillar

The crown pillar is formed when the Underground Mine is extended below South Pit. Following characterisation of the rockmass forming the crown pillar, a number of assessment techniques were used to optimise the crown pillar thickness while maintaining a requirement for operations to occur in both the open pit and underground simultaneously. The design assessment included consideration of crown pillar size and thickness at other mining operations, empirical relationships (Carter, among others), and finite element analysis in two dimensions. The design conclusion was that a crown pillar with 24m thickness meets the required Factor of Safety. Recommendations were made to progressively fill the excavated stopes beneath the South Pit to further reduce the chance that the underground and open pit operations could interact unfavorably.

16.4.1.5.3 Stope Design

Stope dimensions were assessed for Room and Pillar and Sub Level Stoping with Fill. The Room and Pillar assessment was based on a tributary area methodology and estimated the design limits for respective room and pillar sizes.

The Sub Level Stoping with Fill design assessment was based on the Mathews Stability Method, which takes into consideration the rockmass quality, the induced stress, structure orientation and failure mechanism at the stope boundary. The results indicate that the dip of the hangingwall will be a significant influence on the achievable stope dimensions.

Other mining methods are under consideration beyond the first 10 years of underground operations. Geotechnical data and performance observations will be collected during the first 10 years of operations and this data will be used in the mine planning and approval process for mine planning beyond 10 years of operations.

16.4.1.5.4 Ground Reinforcement and Support

Ground reinforcement (rock bolts) and support (Fibrecrete liner) were designed for mine areas where ground conditions meet specific criteria in accordance with government regulations. Estimated costs of the ground support per metre of development advance were described and included in the contract rates.

16.4.1.6 Open Pit Analysis and Geotechnical Design

This section summarises the design process that provides the geotechnical parameters and guidelines for the pit slope design.

16.4.1.6.1 Design Standards

Chinese Government standards (Metal and Nonmetal Mines Safety Regulation: GB16423-2006, Geotechnical Investigation Regulation: GB50021-2001, 2009 edition) for the design and operation of open pit mines were considered and taken into account during the geotechnical slope design process.

The CIMR Feasibility Study design criteria were based on achieving a minimum Factor of Safety of 1.25 for static and 1.05 for dynamic conditions. These values were compared to international acceptable minimum Factor of Safety values and were found to fit within the range of design values.

16.4.1.6.2 Previous Slope Performance

The CIMR Feasibility Study documented, assessed and back analysed the slope performance of Niumatang Pit and Tongqianshan Pit. The Niumatang Pit and Tongqianshan Pit were found to be stable on a batter and overall slope scale, with overall slopes at 45°, batters at 70° and batter heights of 10m to 15m. The performance assessment of excavated slopes formed an important part of the slope design process. Figure 16-5 shows the condition of the existing pit walls.

Niumatang Pit

Tongqianshan Pit

Figure 16-5: Photos of Existing Niumatang and Tongquinshan Pits

16.4.1.6.4 Slope Design

The CIMR Feasibility Study for the Jiaoyan and South Pit slopes considered a number of design approaches, including limit equilibrium and finite element methods, bench face angle design, major structures influence on overall slope angle and previous slope performance. Dynamic loadings due to earthquakes were applied during the stability assessment. Pit slope sectors were assigned to separate pit wall areas with similar wall orientations to simplify the design process. Groundwater was not expected to be a factor during the slope stability assessment due to previous experience during mining of Niumatang and Tongqianshan Pits, and it was therefore justified to analyse the pit walls as dry.

The slope design concludes that:

- For Jiaoyan Pit, an overall slope angle was specified depending on the pit wall orientation (sector) and varies between 45° and 50°; and
- At South Pit, an overall slope angle was specified depending on the pit wall orientation (sector) and varies between 42° and 50°.

Operational management of pit slopes was discussed in the CIMR Feasibility Study, with slope monitoring techniques specified.

16.5.1 Hydrogeology / Mine Dewatering Concept

Rainfall in the mine area averages around 551 mm per year and the climate is dry for the majority of the year with a rainy season monsoon between July and August. It was assumed that 100% of the rainfall in the pit catchments would enter the open pit. It is envisaged that any diversions above the pit rim would reduce sump pumping requirements.

The combination of steep terrain and relatively low annual rainfall, within a fractured rock setting required groundwater management for pit and underground mine dewatering to facilitate achieving pit slope stability. Pit wall depressurisation drilling was not completed during the mining of Niumatang or Tongqianshan Pits.

It was proposed that most dewatering was achieved by pumping the collected in-pit rainfall runoff and water infiltration via pit sumps installed at different levels within the pit as the mining operation progresses.

The stability analyses and slope design were based on the assumption that the pit walls would be fully depressurised. The pit wall depressurisation was achieved by diverting surface runoff away from the crest, and continued in pit pumping. The natural landform of the areas around the South Pit and Jioyan Pit is conducive to achieving this runoff strategy as both pits will include mining the peak of respective areas.

A guide for Phase II pumping requirements have been based on an average of 83 litres/sec combined from the Niumatang Pit, Tongqianshan Pit and the Phase I Underground Mine.

16.5.2 Waste Dump Design

The CIMR completed a geotechnical hazard assessment for the Jiama site in 2013. The hazard assessment identified and rated potential landslide and mudslide locations, and actions were recommended to address each identified issue. The CIMR geotechnical hazard assessment applies to some of the Phase II mining areas and demonstrates that a process of geotechnical hazard assessment has been followed.

The CGDI completed design and specification reporting for three (3) Phase II waste dumps. Two (2) dumps are allocated to the Underground Mine and one (1) dump to the Open Pits. These dumps have been designed in accordance with the Chinese Government regulations.

- Dump 1 is located in the valley between Tong mountain and Qian mountain, with a dump volume of ~ 8.5 Million cubic metres;
- Dump 2 is located in the Phase 1 Niumatang Open Pit; below 4,650 mRL with a volume of ~ 9 Million cubic metres;
- Dump 3 is located in the valley to the south east of Phase II Open Pits with a volume of ~ 144.6 Million cubic metres; and
- Dump 4 is located in the valley to the south of the south pit with a volume of 129.3 Million cubic metres.

The CGDI reporting demonstrates that geotechnical parameters were derived and limit equilibrium stability analysis completed for dry, saturated, static and dynamic conditions. The results indicate that stable conditions can be expected for the dumps provided the model inputs are of sufficient accuracy.

To further improve the safety management of the waste dumps relating to operations and overall dump stability, construction requirements which include details regarding building the dumps up from the base in lifts, surface drainage requirements and design specifications for the preparation and installation of dump foundation drains prior to commencement of the first dump lift have been documented. Waste dump foundation drains will report to a waste dump toe sump.

16.5.3 Civil Geotechnical

The Jiama Mine area is an existing mine site, with significant infrastructure constructed previously, including a Tailings Dam and Plant Site. No further major infrastructure is planned as a part of the Phase II mine plan. No civil geotechnical investigations are currently required.

16.5.4 Recommendations

For any mining project, there are always unknown rock mechanics and hydrogeological conditions that cannot be predicted ahead of actual mining. These unknown conditions, such as faulting, zones of weak rock, or zones of unanticipated water inflow, may only be discovered during mining and may require changes to the mining plan. While additional laboratory testing and characterisation work should always be ongoing at every stage of project development to reduce uncertainty, it is never possible to carry out enough drilling/characterisation work ahead of time to identify all of these potential risks. This may in turn have effects on cost, as relates for example to slope angles, dewatering and/or underground development, excavation size, etc.

Full time geotechnical personnel have been included within the organisational design. It is recommended that this group establish an ongoing geotechnical monitoring program to ensure a proactive approach to the management of failure mechanisms is established during the excavation and mining of both the open pits and underground mines.

17 RECOVERY METHODS

17.1 Existing Site Plants

17.1.1 Huatailong No. 1 Plant

The 6,500 tpd Huatailong processing plant commenced operation in 2010, and was designed to treat both Copper-Molybdenum and Copper-Molybdenum-Lead-Zinc ores. For treatment of the copper-molybdenum ores, only the flotation cells installed to separate lead from copper concentrates are not in operation, and if the Mo content is too low to be economic, the copper-molybdenum separation flotation circuit is shutdown.

Currently, Copper-Molybdenum ore from the Tongquianshan and Niumatang open cut mines is being treated. The molybdenum content of these ores is too low to be economic and only copper concentrate containing gold and silver credits is being produced, through a conventional beneficiation circuit suitable for treatment of the skarn ore.

For treatment of Copper-Molybdenum-Lead-Zinc ore, Run-of-Mine is reduced in three-stages of crushing, then delivered to a fine ore storage bin. The bin discharges to parallel Primary Ball Grinding Mills operating in closed circuit with hydro-cyclone classifiers.

The grinding circuit product at p70 of 74 microns reports to a bulk flotation rougher-scavenger circuit, followed by three cleaning stages. The rougher-scavenger tailings feed a zinc flotation circuit to produce a zinc concentrate and final tailings which is dewatered in a press filter press and stockpiled.

The copper-molybdenum-lead concentrate is refloated to separate the lead, and the copper-molybdenum tail is reground in a ball mill closed with hydrocyclones, then refloated to separate molybdenum from the copper. In Column Cells, all concentrates are thickened and filtered in ceramic disc filters and delivered to stockpiles.

Currently, Copper-Molybdenum ore from the Tongquianshan and Niumatang open cut mines is being treated; the molybdenum content of these ores is too low to be economic and only copper concentrate containing gold and silver credits is being produced. The copper-molybenum and copper-lead-zinc circuits are not operating for this ore.

It should be noted that an existing 600 tpd pilot plant, described in 0 below, has enough capacity to treat the small amount of Copper-Lead-Zinc ore shown in the current mine production schedule.

The Huatailong plant is a conventional beneficiation concentrator suitable for treatment of the Jiama skarn ore; it is well instrumented, with automatic control of key circuits. The on-site laboratory is well equipped to provide the assays of geological, mining and process plant shift samples

The fine regrind in the copper molybdenum circuit coupled with the high altitude location results in high moisture content ~ 13% in the copper concentrate, through the ceramic disc filter. A filter press with air blow facility would be necessary to improve this. The Huatailong plant flow-sheet is presented in Figure 17-1.

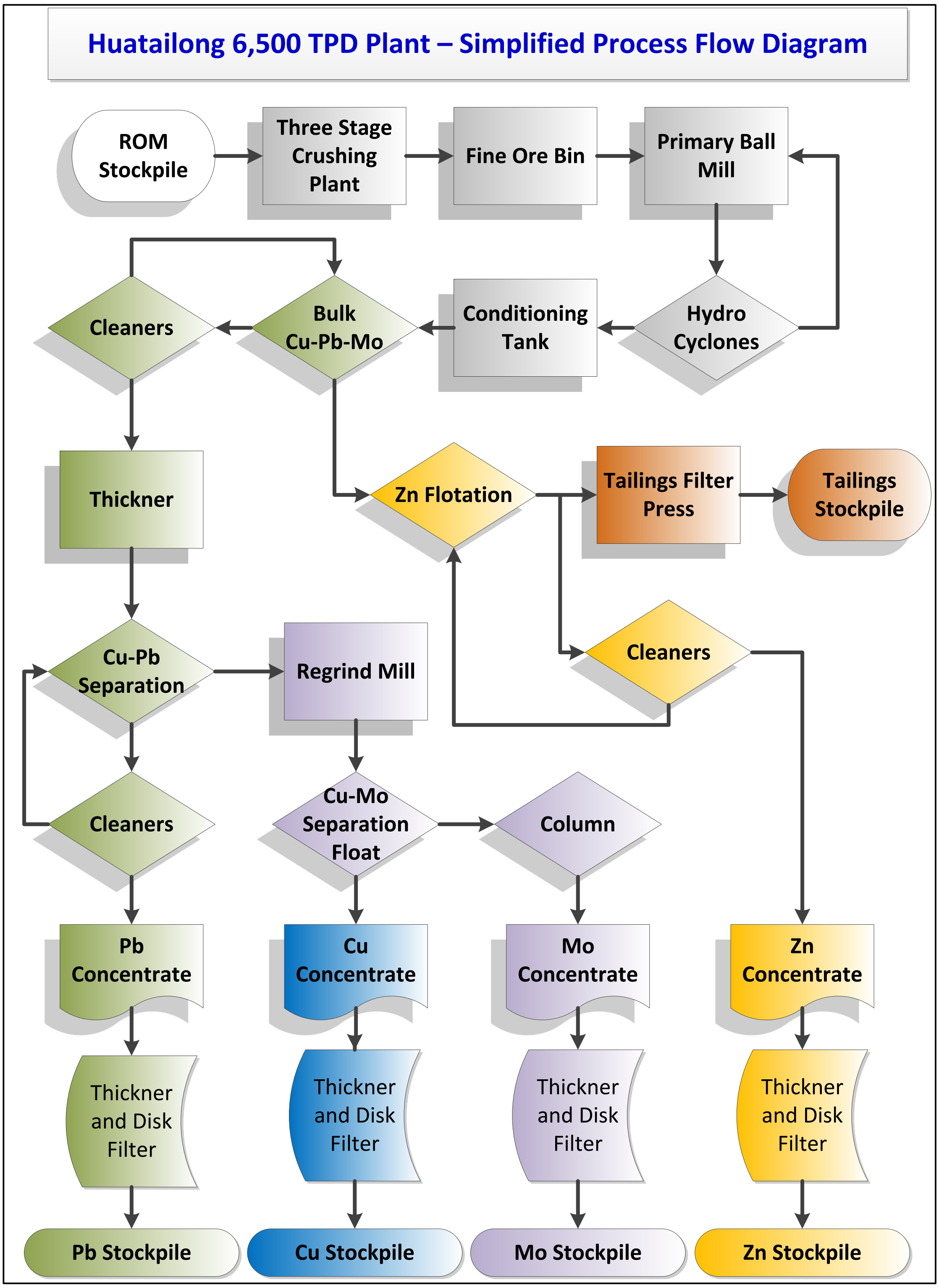


Figure 17-1: Huatailong 6,500 TPD Plant – Process Flow

17.1.2 Pilot Plant

The process plant, rated at 600 tpd, was constructed some years ago using equipment from an earlier processing plant and used for pilot plant testwork. This plant was modified in 2011. The flowchart is presented in Figure 17-2.

The copper-lead-zinc ore represents ~ 3% of the total ore resource and requires a different processing route to produce saleable copper, lead and zinc concentrates.

This plant could be used to treat the copper-lead-zinc ores which are shown in the mine production schedule to be mined at a rate of 200,000 tpa. The flowchart and equipment are amenable to the production of saleable concentrates, comprising conventional three stage crushing, primary ball mill grinding delivered to flotation circuits for sequential copper, lead and zinc separation.

The parallel ball mills are closed with spiral classifiers, the overflow reports to flotation and the sands return to the mill. The flotation feed size is p70 of 74 microns.

Copper, lead and zinc concentrates are thickened and then dewatered in ceramic disc filters. The skarn design criteria are presented in Table 17-1.

Table 17-1: Skarn Copper Lead-Zinc Ore Performance Design Criteria

Skarn copper-lead-zinc ore Performance Design Criteria			
Element	**Head Grade %**	**Concentrate Grade %**	**Recovery %**
Cu	0.564	22	88
Pb	1.451	70	88
Zn	0.807	40	75

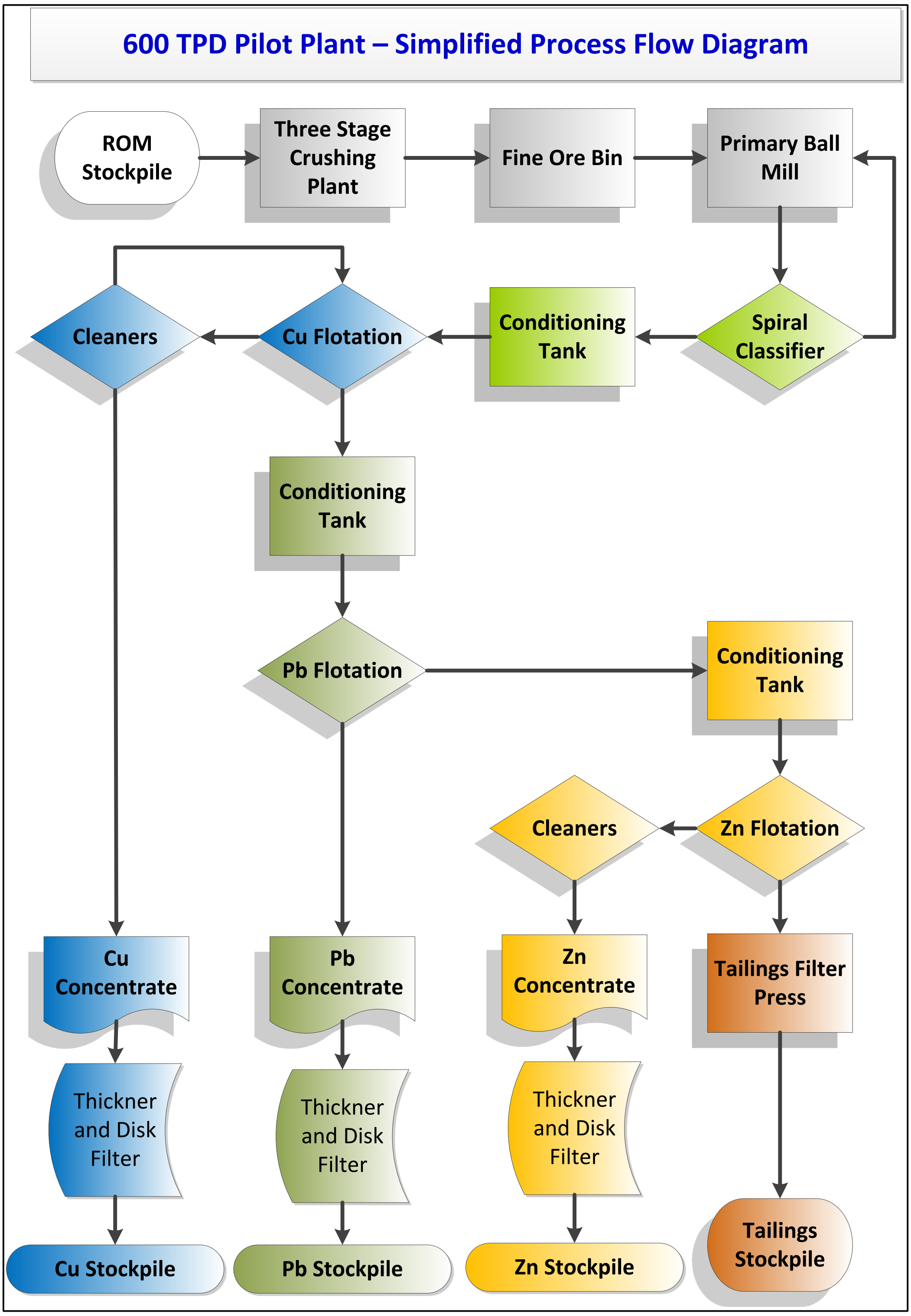


Figure 17-2: TPD Pilot Plant – Simplified Process Flow Diagram

17.1.3 Huatailong No.2 New Mineral Processing Plant

Plans are in place for the design and construction of a second mineral processing plant to treat the skarn and hornfels hosted copper-molybdenum ores. The nameplate capacity will be 43,500 tpd and the design will provide for separate or blended treatment.

The process flowchart was developed from the results of testwork carried out by the General Research Institute Beijing, and operational experience with current plant. The simplified process flow diagram is presented in Figure 17-2.

The plant will be conventional but will differ from the existing plant in that the front end comminution will comprise a Primary Gyratory crusher to prepare feed for parallel SAG Mill-Ball Mill circuits. The SAG Mills circuit will incorporate cone crushers to reduce any critical size pebbles which may build up.

The Primary Ball mills are closed with Hydrocyclones, and produce a grind size of p70 = 74 microns for bulk copper-molybdenum flotation.

The two ore types have different characteristics in terms of mineral assemblage, head grades, and hardness and the parallel circuits will provide flexibility for separate or blended treatment, and flexibility in maintenance scheduling, see Table 17-2 and Table 17-3.

The flotation circuitry and reagent regime is conventional comprising bulk flotation and cleaning of the copper and molybdenum, regrinding of the cleaner concentrate to p90 = 45 microns, followed selective flotation of the molybdenum, from the copper using column flotation cells to achieve the best molybdenum concentrate grades and recovery.

The copper concentrate will be thickened and filtered in a ceramic disc; the molybdenum concentrate will be dewatered in a pressure filter, and dried in a rotary dryer. Flotation tailings will be dewatered in filter presses and delivered to a tailing storage facility. Instrumentation and Auto-control systems will be installed in key circuits to ensure stable and optimum operation.

Table 17-2: SKARN Performance Design Criteria

SKARN Performance Design Criteria			
Element	**Head Grade %**	**Concentrate Grade %**	**Recovery %**
Cu	0.615	22%	88
Au g/t	0.222	4.06 *	45*
Ag g/t	11.781	263.4 *	65*
Mo	0.057	47	70

** In Copper Concentrate*

Table 17-3: Hornfels Performance Design Criteria

Hornfels Performance Design Criteria			
Element	**Head Grade %**	**Concentrate Grade %**	**Recovery %**
Cu	0.411	22	88
Mo	0.019	47	70

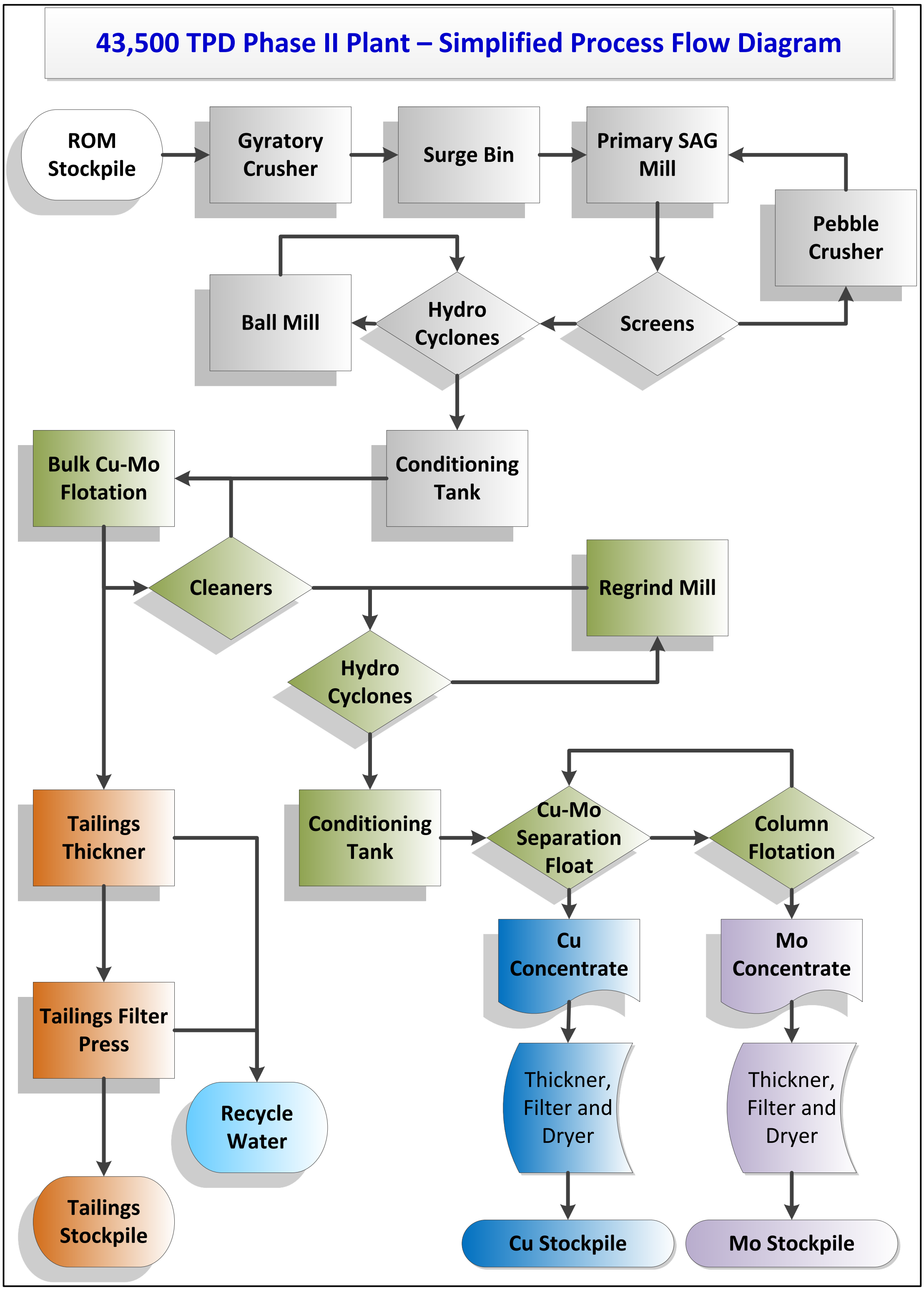


Figure 17-3: 43,500 TPD – Simplified Process Flow Diagram

17.2 CAPEX and OPEX

An estimate has been made for the Capital and Operating Cost of Huatailong No 2 43,500 tpd, which is part of the Phase II expansion program at Jiama. Costs were based on the flow sheet developed from an extensive metallurgical testwork program carried out at a number of laboratories, and from operational experience with the existing Huatailong No 1 plant. The selected treatment rate is based on studies into achievable mining rates from open pits.

17.1.4 OPEX Process Plant

The process operating cost for copper molybdenum ore has been estimated using standard project engineering methodology and has addressed all aspects of the specified process plant.

The main operating costs comprise:-

- Labour;
- Power;
- Reagents;
- Consumables; and
- Maintenance.

Labour: Regarded as sufficient to operate and maintain all unit processes in the specified plant. Manning costs are in-line with current pay rates in China. All unit processes in the plant described above are catered for and provides for shift crews to run the plant on a roster which will allow a 24 hour 7 day week operation. Adequate technical support and assay services are provided for.

Power: Usage estimated is commensurate with requirements for installed power to drive specified process equipment and based on grid power supplied via a new line into the region.

Consumables and Maintenance: Process reagents are in standard use in the industry, and cover all necessary areas for this polymetallic extraction and environmental requirements. Usage is in the same order of consumption as similar plants, and is backed up by the metallurgical test work carried out on ore samples.

Reagents: Butyl Xanthate, Ammonium aero float, Turpentine oil, Kerosene, Engine Oil, Sodium Sulphide, Lime, Flocculants, and Sodium Silicate, Consumables, Operating and Maintenance, Crusher wear parts, SAG and ball mill liners, grinding balls, Screens, and Filter cloths

The reagent usage is based on the metallurgical test work and all reagents required for the process have been provided for.

Crusher liners, SAG Mill and Ball Mill Liners, Grinding Ball Consumption were calculated from the abrasion index and work index determined by physical tests carried on the ore samples using standard Bond Formulae.

Ramp Up: Financial resources should be provided for the first year of operation for extra personnel assistance and modifications which is normal during new plant commissioning.

The estimation of operating cost for copper- molybdenum ore has been carried out using standard methodology and has addressed all aspects of the specified process plant.

An operating cost of 60.17 RMB/tonne ($9.86) post commissioning has been estimated and is regarded as fair and reasonable for this type of process at the nominated treatment rate.

In regard to processing of copper-lead-zinc ore, which will be processed in either the Huatailong No. 1 plant or the Pilot Plant. Operating costs have been estimated to be a further 13 RMB /tonne ($2.13) due to lower throughput, and more reagents (73.17 RMB/t – USD$12.00).

In addition to these variable costs a fixed annual cost of 20,251,494 RMB ($3,319,917) has been allocated for site salaries and organisational expenses as well as a 5,000,000 RMB per year ($819,672) corporate overhead to cover the cost of any abnormal items.

17.1.5 Capital Cost – Process Plant

A standard approach to estimating the capital cost of the plant has been adopted in that multi-vendor budget. Quotes were obtained from suppliers for the major equipment items as shown in the process flow sheet described, and within the Battery Limits below.

Battery Limits

- ROM pad;
- Tailings disposal dam or filtration;
- Concentrate storage at the process plant and delivery to port;
- Power supply to on-site sub-station; and
- Process water from the raw water dam.

Based on the result of vendor inquiries, preliminary designs, material take-offs and standard engineering calculations applied to the major equipment, capital costs were estimated for a complete plant including engineering design, procurement, construction and project management. The procedures used to generate the estimate are well developed in the industry.

It should be noted that capital estimates for the studies have been based on new equipment. However, if appropriate used equipment is already owned or optioned at the project implementation stage, then any method to reduce costs including the use of second hand equipment may be employed.

The life-of-mine Capital Costs for the Phase II Processing Plant was estimated at US $ 221.3 Million, estimated by the Changsha Institute and considered to be fair and reasonable within The Study for this type of process, operating at the nominated treatment rate. This plant has already commenced construction and at the time of this report the processing plant was over 50% complete. This was supported by the "Jiama Phase 2 Preliminary Design C 110apital Cost Report" dated November 2013. Figure 17-4 provides a photo gallery of the progress made on the construction of the site processing facilities. Progress on the project has been significant.

An allocation of $US 110.7 Million has been made to capital for the completion of all capital works associated with the processing plant. In addition to this annual sustaining capital of 5% the total plant capital has been factored in from year 4 through until the end of mining. This was considered a reasonable estimate for ongoing capital upkeep of the plant.


SAG Mill


Concentrate Thickener


Flotation Circuits


Grinding and Milling


Substation


ROM Silo

Figure 17-4: Plant Construction Photos

18 PROJECT INFRASTRUCTURE

18.1 Introduction

Substantial infrastructure has been developed for the Phase I of the Project and includes access roads, power supply and water supply for mining and mineral processing as well as a tailings dam. The Company is in the process of upgrading these facilities to ensure that the forecast production expansion to 16.5 Mtpa ROM ore can be achieved during Phase II. As these upgrades are mostly further expansion of already built infrastructure, it is unlikely that any material risks will be experienced.

The Project assets are generally located at high MSL elevations, ranging from 4,350 mRL to 5,410 mRL on the Tibetan Plateau. The site camp and existing processing facilities are located at an elevation of approximately 4,000 mRL, while the proposed processing plant would be at approximately elevation 4,420 mRL. The Project area has mountainous topography with steep slopes and large differences in elevation. There are some sparsely-populated Tibetan villages within the Project area.

The winter season occurs from October through to March and the Project experiences frequent snow falls and is extremely cold. Only July and August are frost free months. The weather has a typical continental plateau climate, which introduces difficulties to both construction and operation.

18.2 Mining Facilities

The design of the mining facilities has been driven by the need to minimize costs, yet provide substantial support systems for the life of mine. The major buildings have design lives of 50 years. They have also been designed taking into account the local climate.

The main working sites in the mine include the processing plant, tailing, water source, open pit mine and waste dumps.

The following have been catered for in the design of the mining facilities:

- Main facilities for the mines include:
  - Crushing station;
  - Open pit conveyor system;
  - 110 kV substation;
  - Mining ancillary facilities site;
  - Mining water storage;
  - Adits; and
  - Dump sites.
- Major buildings/facilities in the processing plant include:

  - Ore yard, grinding and floating (includes grinding and copper-molybdenum floatation);
  - Copper-molybdenum separation plant;
  - Ore concentrate plant;
  - Concentrate dewatering plant;
  - Tailings concentration plant;
  - Tailings pressurization pump station;
  - Pre-processing plant water reuse pump; and
  - The crushing system is located in the mining area. Crushed ore is transported to the ROM pad through a belt conveyor.

- Auxiliary facilities in the processing plant include:
  - Lime preparation plant;
  - 110 kV substation; and
  - Electric boiler room.
- Auxiliary production facilities include:
  - 110 kV substation;
  - power distribution;
  - water pumping station;
  - booster pump; and
  - Ore storage bin, concentrate pool, conveyor gallery.
- Industrial buildings/constructions include:
  - Back fill plant;
  - Mining vehicle repair workshop;
  - Conveyor gallery; and
  - Drill core storage.
- Auxiliary buildings include:
  - Air compressor plant office;
  - Heat pumping station; and
  - Power distribution room.

18.2.1 Mining Equipment Workshop

Mining machinery and equipment installed have a total weight of 1,326 tonnes, including 1,260 tonnes of mining equipment and machine repair equipment of 66 tonnes. The North-South District contains electric locomotives weighing 512 tonnes and mining vehicles weighing 1,448 tonnes.

18.2.1.1 Electric Locomotive and Mining Vehicle Repair

This workshop is responsible for repair works on electric locomotives, mining vehicles and large/medium tracked vehicles. The workshop is equipped with a BZY300_6 15t/3t double hook crane, a turbine and related welding station. Minor repairs of electric locomotives and mining vehicles are carried out by the underground team. Fourteen staff are required in this workshop.

The building has the following dimensions: (Main span 12 m+ partial cross 4.5 m) × 30 m = 495 m^2

18.2.1.2 Blacksmith, Forging Workshop

This workshop is responsible for the repair works of drill pipe, drill head and grind work. It is also responsible for forging items that are under 15kg. The workshop composes of a blacksmith room of 270m^2 and a forging, soldering room of 27m^2. The workshop consists of a PYZ-50T hydraulic forging machine, a 150kg air hammer and other auxiliary equipment. Eight staff are needed in this workshop.

18.2.1.3 Timber Processing Workshop

This workshop is responsible for processing timber pit prop, panels, etc.

Buildings: 9m × 36m = 324$m^{2,}$ 4.5 m height.

Major equipment includes a circular saw and a wood working planer. Ten staff are required in this workshop.

18.2.1.4 Trackless Mining Equipment Workshop

The mine has more than 50 sets of cars and trackless mining equipment.

Spare parts are not manufactured in this workshop, they are either purchased or processed by mining equipment workshop. This workshop requires 17 staff, which includes 8 fitters, 3 welders, 4 riveters and 2 electricians.

18.2.2 Building area

There is a total of 4 repair stations and a trench. Repairs can be carried out either outdoor or indoor, including workstations and supporting areas.

Repair Room Area: (18m+6m) × 54m = 1296m^2

Outdoor repair site area: 1000m^2.

Major equipment includes:

- 1 x QD double girder crane, Q = 16/3.2 TH = 9/12m LK = 16.5m.
- 3 x AC/DC welding machines.

18.3 Access Roads and Transportation

18.3.1 Road Access

18.3.1.1 Existing

Asphalt concrete road has been constructed connecting the Sichuan-Tibet Highway to the Stage I processing plant. A main road, mudstone covered by gravel, has also been constructed. This main road is 9m wide and connects the Stage I processing plant to the underground mine. The Stage II processing site is close to this main road.

The processing plant is connected to the tailing pressure filtration plant through a 7.5m wide mudstone road overlaid by gravel.

Strengthening work will be carried out on the mud gravel road connecting Stage I processing plant to the mine site. This road is 4,395m long.

18.3.1.2 New Roads

New roads need to be constructed for Stage II. Table 18-1 shows parameters of the gravel roads. Table 18-2 shows parameters of the roads in the processing plant area.

Table 18-1: Gravel Roads

Description	Road width	Road length	Gravel surface structure			Excavation
			Grit wear layer	Mud gravel layer	Gravel formation layer	
4450 m mining area to skip shaft, air shaft to outside of mine	6.0 m	9000 m	6 cm	30 cm	30 cm	400,000 m^3
Open pit and crushing plant connecting road (temporary)	6.0 m	6500 m	6 cm	30 cm	30 cm	150,000 m^3
Open pit to crusher haul road	9.0 m	800 m	6 cm	30 cm	30 cm	50,000 m^3
Access to open pit (permanent)	6.0 m	2900 m	6 cm	30 cm	30 cm	100,000 m^3
4450 mining area to the mill	6.0 m	1050 m	6 cm	30 cm	30 cm	
Processing plant internal main roads (concrete cement)	7.6 m or 6 m					
Processing plant internal minor roads (concrete cement)	4m					

Table 18-2: Roads in Processing Plant Area

Description	Width	Minimum turning radius	Maximum longitudinal slope
Main roads (concrete cement)	7.6 m or 6 m	15 m	7%
Processing plant internal main roads (concrete cement)	6 cm	15 m	7%

18.3.2 Transportation

Transportation offsite is mainly through cars and trains. Huatailong vehicles can be used to transport materials and concentrate from Lhasa Train Station to the mine. Others can be transported through commissioned vehicles.

Ore transportation of ore is by conveyor belt. Slurry is transported through slurry pipelines. Other materials are delivered with vehicles and trains. Local oil and civil explosive companies are responsible for transportation of diesel, oil and explosive materials.

18.4 Waste Dumps

Preliminary waste dumps were designed based on The Study conducted by CGDI which are described as follows:

- There are four dump sites in total. Dump site 1 and 2 are Phase I dumps and will continue to be operated for the purpose of disposing of underground waste. Dumps 3 and 4 are newly designed dumps for the purpose of catering for the waste generated by the Jiaoyan Pit and South Pit. These dumps are presented in Section 15 of this report and are located to the South and East of the Phase II pits;
- Dump site 1 is located in the valley between the Copper Mountain and Yanshan. The bottom of the valley has slopes between 6 ° ~ 10 °, while the mountains have slopes of 30 ° ~ 36 °. The North, East and South sides of the dump reach heights of 4,650mRL. It has a catchment area of 3.8 km^2 and can hold 8.5 million m^3;
- Dump site 2 is effectively the backfilling of Niumatang open pit after mining ceases. Dumping will be at elevations below 4,650 mRL. The North, East and South sides of the dump reach heights of 4,650 mRL. It has a catchment area of 0.5 km^2 and can hold 9 million m^3;
- Dump site 3 is located South-east of the Jiaoyan open pit approximately 500m from the crest of the pit. The dump resides in a valley that has slopes between 10 ° ~ 20 °, while the mountains on both sides are between 30° ~ 40°. The North, East and West sides of the dump reach heights of 5,105 mRL. It has a catchment area of 1.4 km^2 and can hold 144.6 million m^3; and
- Dump site 4 is located to the South of South Pit and will be built to take waste material from the South pit. The dump resides in a valley that has slopes between 10 ° ~ 20 °, while the mountains on both sides are between 30° ~ 40°. The dump capacity approximates 129.3 million m^3.

18.5 Water Supply and Drainage

The water supply and design must satisfy the requirements of the Phase II expansion, which includes the needs of the processing plant, mines and fire brigade.

18.5.1 Water Consumption

Total water consumption of the Phase II extension project is 97,321 m^3/d. The total water consumption and drainage is shown in Table 18-3. A breakdown of the water supply and consumption for processing is shown in Table 18-4.

Table 18-3: Water Consumption

Consumption unit	Water supply (m^3/d)			Water Consumption	Water drainage (m^3/d)	
	Total	Freshwater	Reuse		Waste water	Total
Mining	4,700	4,700		4,700		
Processing	90,944	14,644	76,300	14,642	2	2
Solar heating system	120	120		120		
Subtotal	95,764	19,464	76,300	19,462	2	2
Contingency (8%)	1,557	1,557		1,557		
Total	97,321	21,021	76,300	21,019	2	2

Table 18-4: Breakdown of Waste Consumption in Processing

Breakdown Of Water Consumption In Processing	Water Supply (m3/d)			Water Consumption	Water drainage (m3/d)	
	Total	Freshwater	Reuse		Waste Water	Total
Processing	89,347	13,054		13,052	2	2
Cooling Off Of Mill And Other Equipment	150	150	76,300	150		
Preparation Of Lime And Other Chemicals	1,440	1,440		1,440		
Processing Total	90,944	14,644	76,300	14,642	2	2

18.5.1.1 Water Source

A facility has been constructed adjacent to the Chek Kang River for the Phase I expansion. The aquifer has a thickness of about 25.7 m, with a permeability coefficient, K, of 25~30 m/d and a radius of influence of 120 m. Consequently, water has been extracted through a large open well and seepage channels.

i) Stage I

Existing facility from Phase I caters for freshwater of 3,250 m^3/d. The seepage channel is 300 m long with a diameter of DN700. The pipes are made from reinforced concrete and have a design capacity of 10,320 m^3/d. For monitoring purpose, man holes are spaced at 50 m and also installed at the end and corners.

Water is collected at the Chi Kang river bed through seepage channels and collected at the sump. Water is then pumped to the suction bay at the new booster pump. There are two sets of

200Lb-23.4 pumps, with one operating and the other acting as backup. The pump specifications are Q360 m^3/h, H 23.4m, configured with Y225S-4 motor, P45 kW, pump size of φ6.0 × 13.0m.

ii) Stage II
Phase II expansion has new water consumption of 21,021 m^3/d (includes 4,700 m^3/d for mining). The water supply capacity of Phase I does not satisfy the demand of Phase II and expansion to the water facility has been planned. Four water wells, with 3 m diameter and 7 m depth, will be installed with a design capacity of 10,000 m^3/d. The water wells will be connected by the seepage channel tubes to the sump at the pump station.

The seepage channel is 220 m long with a diameter of DN700. The pipes are made from reinforced concrete and has a design capacity of 17,500 m^3/d. This, together with surplus capacity from Stage I adds up to a total capacity of 22,890 m^3/d. This satisfies the water needs of Phase II. Two 650LB-25.3 pump will be installed, with one in operation and the other acting as backup. The specifications of the pump are Q750 m^3/ h, H25.3 m, P75 kW. The water capacity is 18,000 m^3/d. D426x6 pipes will be used to deliver the water.

iii) Stage II Water Distribution

a. Booster pumps are to be constructed at water source and Phase I 4087 level to the processing plant to deliver fresh water to the Phase II processing plant. At the water source, three ZDS360-40 will be installed, with two in operation and one for backup. The specifications of the pumps are Q360 m^3/h, H400 m, with YKK500-2 motors, P630 kW, voltage level 10 kV. The capacity is 17,280 m^3/d. Two D377 × 8 pipes are installed over a distance of 10.5 km.

b. Water is delivered from Stage I 4,087m level to the processing plant to Stage II processing plant 4,575 m sump. Booster pumps are to be constructed adjacent to the lime preparation facility. Pipes are installed to deliver water from Stage I water storage to Stage II water storage. The Stage II water storage is ø18.75 m × 4.0 m, with an effective volume of 1000 m^3. The pump storage has dimensions of L × B × H = 49.1 m × 14.0 m × 10.0 m. Five units of ZDSS350-150 × 4 are installed, with three in operation and two as backup. The specification of the pumps are Q350 m^3/h, H600 m, P900 kW, with a capacity of 25,200 m^3/d. Two tubes of D478×10 are installed over a distance of 6.5 km.

18.5.1.2 Water Supply

i) Processing Water Supply System
Water requirement for Stage II is 21,021 m^3/d (including mining 4,700 t/d). Water is supplied from an elevation of 4,575 m to each of the processing plant. D530×9 pipes are installed, covering a distance of 1.0 km.

ii) Stope Water Supply System
A water storage facility at 4,600 m elevation is constructed. Mining consumes 4,700 m^3/d (196 m^3/h) of water, with water being drawn from two storage facilities built for Phase II. Two sets of pumps are installed with one in operation and one for backup. D280-65×3 centrifugal pump (Q210 m^3/h, H209 m, P280 kW) are installed. Water is distributed to the mines with D273 × 8 pipes over a distance of 4.5 km.

For the 3,500 m^3 water storage facility next to the stope, two extra pumps are installed, distributing water to storage facilities at 4,785 m elevation and 5,030 m elevation. Water is then distributed to the ore conveyor belt shaft, conveyor gallery and surface crushing station, unloading stations, etc.

Water delivery to the 4,785 mRL water storage facility utilises D25-30×7 multistage centrifugal pump. Two sets of such pumps are installed with one in operation and one as backup. The pumping parameters are Q = 25 m^3/h, H=210 m, P=30 kW.

Water delivery to 5030 mRL water storage facility utilises D25-50×10 multistage centrifugal pump. Two sets of such pumps are installed with one in operation and one as backup. The pumping parameters are Q = 25 m^3/h, H=500 m, P = 75 kW.

The pipes are to be installed underground over a distance of 2 km.

iii) Water Reuse
Water reuse is classified into two types, those before processing plant and those from tailings. Water reuse before processing plant is 68,670 m^3/d (2,861 m^3/h). Tailings reuse includes collection of rainwater and tailings seepage. 39,162 t/d of material is transported to tailings and backfill stations, with concentration of 64%. Total water included is 22,034 m^3/d. Based on tests on tailing moisture, after segregation and sedimentation of the tailings materials, water reuse is estimated at 7,630 m^3/d.

iv) Fire Brigade Water Use
The outdoor fire brigade utilises a high pressure system. The fire brigade and plant district share the same water supply system. The outdoor system has a capacity of 20 L/s while the indoor system has a capacity of 10 L/s.

v) Water Drainage
Water drainage in the processing plant area is mainly required for those from grinding and flotation. It is transported to the thickener then taken to storage before the plant and pumped back for reuse. Water consumption for toilets in the processing plant is 3 m^3/d. Of this, 1 m^3/d is consumed while 2 m^3/d is domestic sewage. After treatment, domestic sewage is recycled or used to water the roads.

18.6 Power

This covers the power requirements of the mines and processing plant. It also takes into account Phase I power system. The distribution voltage is 110/10/0.69 (0.4) kV. The mill and processing plant each requires a 110 kV substation.

18.6.1 Power Supply

Power is connected from the Medro Gongkar 220 kV substation, with double-circuit transmission 110 kV line. After entering the Huatailong mine, it is connected to various locations including the processing plant 110 kV substation and the mining plant 110 kV substation.

The additional load summary for Phase II is presented in Table 18-5 and the electricity load in the mining areas after expansion is depicted in Table 18-6.

Table 18-5: Total Electricity Load – Stage II Additional Load Summary

Item	Value
Equipment capacity	150,198 kW
Working capacity	129,142 kW
Calculated power	94,659 kVA
Apparent power	93,107 kVA
Power factor	0.98
Annual power consumption	12,627x104 kWh

Table 18-6: Electricity Load – Total in Mining Areas after Expansion

Item	Value
Installed capacity	34,384 kW
Working capacity	31,380 kW
Calculated power	20,715 kVA
Apparent power	21,068 kVA
Power factor	0.98
Annual power consumption	11,580x104 kWh

18.7 Heating, Ventilation

18.7.1 Heating

Main heat consumptions are from industrial buildings (grinding and mixing of copper and molybdenum in plant, copper-molybdenum separation plant, concentrate dewatering workshop). According to local meteorological records, winter sunny weather during the day and the outdoor temperature can reach more than 5℃, with this having no effect on plant production. The project mainly considers keeping ore at 5℃ at night, from 20:00 to 8:00 the next day.

Based on HVAC calculations, the maximum heat load required is 4280 kW, with the normal design heating load being 3,960 kW. The workshop uses air cabinet and radiant panel for heating ore. The indoor heating system uses 55℃ / 45℃ for water circulation temperatures.

The project is located in Tibet, which has a shortage of energy. The unique external environment and conditions for the project brings with it a lot of constraints in sourcing heat. Consequently, the design should be carried out keeping in mind local conditions. The following factors should be considered:

1) Lhasa is a pure land, which uses an excessive amount of man-made energy, which causes an adverse impact on the environment.

2) Energy efficiency of buildings is a key national energy strategy measure. Maximum use of renewable energy to reduce the consumption of fossil fuel is China's national policy.

3) Energy shortage in the Lhasa area means energy needs to be transmitted from inland. If problems occur in the transmission process, the project can no longer operate normally, causing a serious impact on the project.

With consideration of the aforementioned factors, a solar collector system has been selected as the main heat source for the processing plant. Heat from the electric boiler acts as a secondary/back up unit. According to thermal equilibrium, the storage facility has capacity for 12 hours of the required energy, water supply temperature is set at 65℃, reuse temperature is set at 50℃. It is heated at the plate heat exchanger 55℃ ~ 45℃ and sent through to the pipe network for use in the solar collector system. The solar collectors convert light energy into heat energy, the working fluid collects heat. The solar collector system pumps fluid into the tank for storage. The solar collector heat storage system collects heat from 8:00 - 18:00. It then runs at night from 20:00-8:00, heat is transferred from the storage tank to the heating plant. Since solar energy is an unstable source of energy, impacted by clouds or snow, an electric boiler is set up as an auxiliary heat source.

18.7.2 Ventilation and Dust

During production, ventilation and dust purification systems are installed at locations with dust concerns and include; the underground conveyor gallery, chemical preparation rooms and administration rooms, etc.

18.7.3 Processing Plant

Dust is generated from the ROM stockpile and secondary crushing workshop during the crushing and subsequent transportation processes. Partial enclosure will be set up at locations where the most dust is generated. This partial enclosure will be complemented by mechanical ventilation.

Dusted air will be purified through pulse bag dust precipitator and discharged through an exhaust fan. The size of the particulate matter is lower than the emission standard of 80mg/m3. The filter cleaning system uses 0.8 MPa compressed air, supplied by the copper-molybdenum separation air compressor station, see Table 18-7 which shows the structure and emission of the dust collection system.

Table 18-7: Dust Collection System

Workshop	System and No.	Discharge Location	System Design Flow (m^3/h)	Exhaust Height (m)	Discharge	
					Concentration (mg/m^3)	Rate (kg/h)
ROM Stockpile	Ventilation and Dust Collection System (Pc-1)	6 blanking points of the heavy plate feeder (42,000)	56000	≥20	<80	4.48
		2 blanking points of the conveyance belt (14,000)				
Secondary Crushing	Ventilation and Dust Collection System (Pc-2)	2 spots on top of the cone crusher (8,000)	46000	≥20	<80	3.65
		2 spots below the cone crusher (16 000)				
		Blanking point of the high angle belt conveyer (8,000)				
		2 blanking points of the belt transport system (14,000)				

18.7.4 Mining Workshop

Toxic dust is generated from the crushing and transportation of ore; a hydraulic dust extractor is designed to be used with mechanical dust collector.

There are two underground crushing stations below Jiaoyan pit and South pit. The dust collection design is as follows:

- A mechanical dust collector is placed at the feeding and discharging points. The dust from the unloading area above the crushing station is controlled by a mist system. The equipment used is: DMC-144，10,000 m^3/h with a power rating of 22 kW. There will be a total of two dust collectors with one being placed at each ore crushing station;
- Hydraulic dust control systems will be used at other dust generating points, at 5% of ore plus water.

18.7.1.1 Communication

Mine area communication systems will utilise existing infrastructure, with subsystems constructed in different mining areas. A telephone system is already installed in the underground mining area, vehicle yards, major mechanical and electrical chambers, underground substations, pumping stations, fan chambers, escape and evacuation chamber and other important areas. Telephones are also installed at 100 m intervals in the main underground roadways. An alert broadcast system is also installed in the underground chamber and other important areas.

18.8 Tailing Storage Facility

The tailings storage facility is located approximately 5.3 km southwest of the processing plant. The site is 75 hectares and is located on low lying land within an undulating region. The tailings facility will be updated for the Phase II production which will involve lifting the dam wall. As part of the dam upgrade a new water reuse pond is to be constructed downstream of the tailings pond to collect rain run-off and dam seepage. The water will be recycled from the reuse pond back to the processing plant where it will be re-used.

The dry tailing covers an area of 38 km^2. A four-stage filter dam has been constructed, with the first stage being 37.5m high and the second, third and fourth stage being 15.0m high. The tailing pressure filtration plant is located upstream of the dry tailings, at an elevation of 4,380 mRL. The filter cake is delivered to the dry tailing dump through a conveyor from an elevation of 4,372 mRL.

The tailings dam will store tailings from the 43,500 tonnes per day Phase II processing plant. The 6,500has a capacity of 40000 tonnes per day to accommodate tailings from the 6,500 tonnes per day Phase I plant will continue to be processed at the Phase I tailings facility. The dam will operate for 330 days per year in line with the processing plant. It is anticipated that 97.9% of plant feed will report to the tailings dam with the tailing size being 70% passing 200 micron.

Size (Micron)	+74	74 - +53	53 - +44	44 - +30	30 - +20	20 - +10	-10	Total
% Passing	30.89	14.63	5.96	11.11	18.97	10.57	7.87	100

The dry density of the tailings has been determined at 1.65 tonnes per cubic meter, this material will be used for the backfilling of the underground stopes. 80 percent of underground stopes will be backfilled with cemented tailings. This will alleviate the demand on the tailings dam volume during the life of the Phase II project.

The location of the dam has been selected after a thorough geotechnical investigation was carried out (Geotechnical Investigation Report of Jiama Mine Tailing Dam Area) this was conducted by the Wuhan Surveying-Geotechnical Research Institute.

18.9 Site Selection

A total of six potential sites were investigated for the dam location. An assessment of each location was carried out during the evaluation to evaluate critical factors:

- Catchment Area;
- Surface disturbance;
- Dam height and volume;
- Tailings return for cement filling of stopes; and
- Dewatering tunnel length and flow rate.

Guolanggou was selected to be the optimal location for the construction of the Phase II dam. It was believed that this location would minimise the impact on the community while minimising conveying distances. In addition the nature of the terrain would make it easier to maintain over the life of the operation. The tailings dam is a significant capital investment for the project.

18.10 Dam Design

The dam will be constructed in a number of lifts during the life of the mining operation. It is envisioned that the dam wall will be lifted every 5 years to increase the capacity of the dam. Figure 18-1 provides an illustration of the first stage of construction which will be located in a valley which forms the limits of the dam.

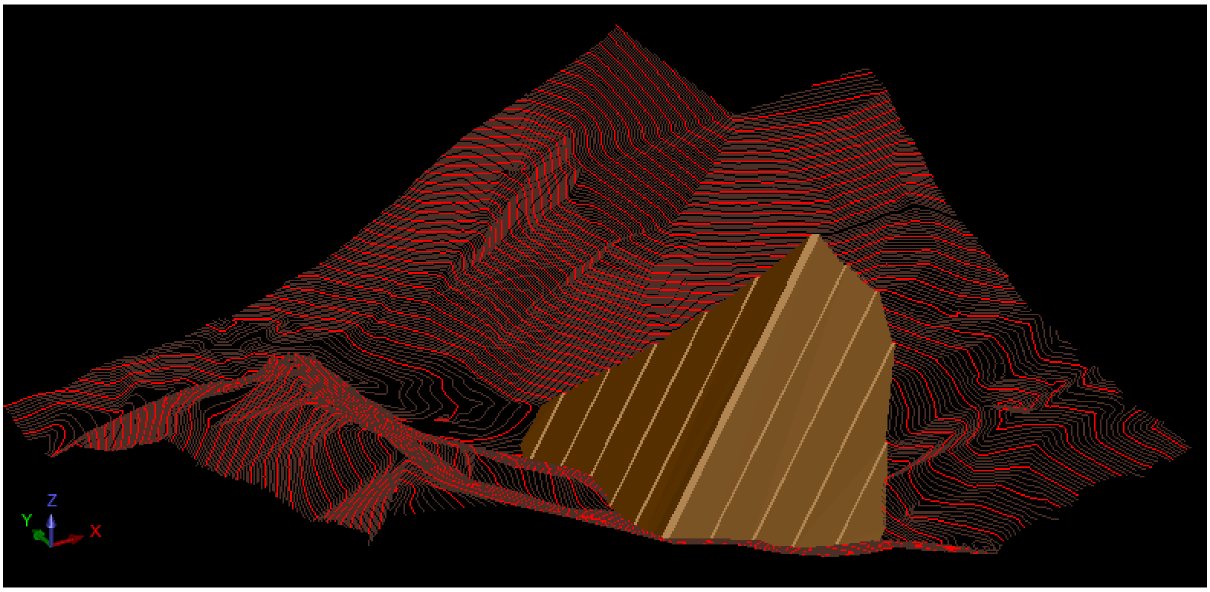


Figure 18-1: Stage 1 Dam Design

The dam will be a compacted dam, 478 metres in length with a 5m wide running surface along the length of the dam. The dam will be 85m in height and be built between the 4,180mRL and 4265mRL. Figure 18-2 provides an overview of the tailings wall design.

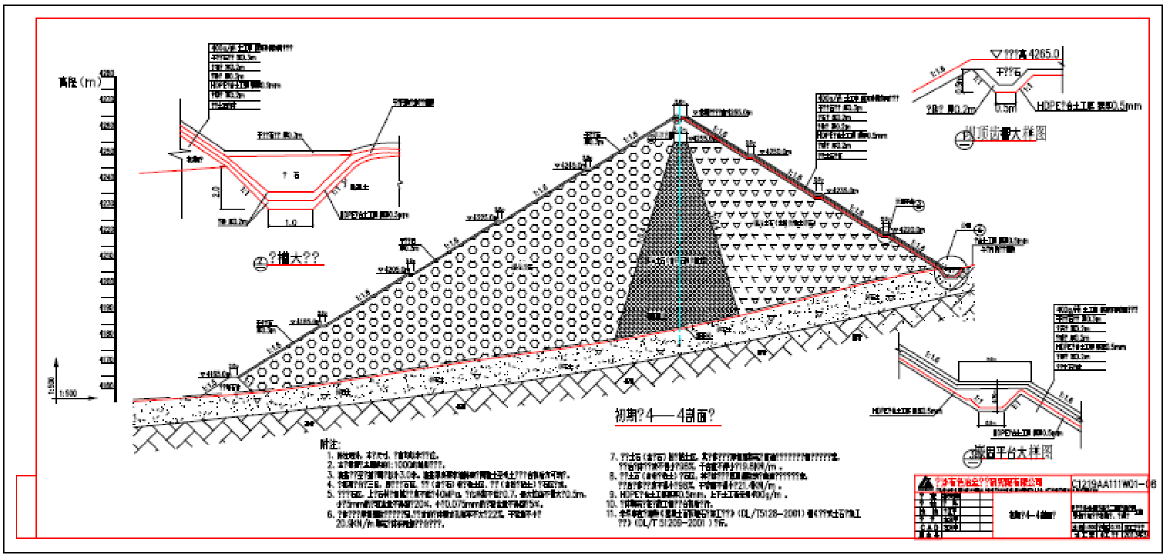


Figure 18-2: Tailings Dam Design Overview

18.11 Dam Stability Analysis

The tailings dam was assessed using the "Tailing Dam of Processing Plant Construction Regulation (ZBJ1-90)". The dam was assessed for its suitability in normal operating conditions as well as flood and special environmental events. The results of the assessment are outlined below.

Table 18-8: Results of Taillings Dam Assessment

Item	**Minimum Safety Factor**		
Situation	**Normal**	**Flood**	**Special Situation**
First Stage Dam（4265m）	1.400	1.400	1.160
Second Stage（4440m）not consider Saturation line	1.443	1.221	1.150
Second Stage（4440m） Saturation line depth 45m	1.363	1.200	1.117
Regulation Requires	1.30	1.20	1.10

It was concluded from the tailings dam assessment that the dam satisfied all safety requirements. It was recommended that an ongoing monitoring program be implemented to ensure the stability of the dam during its operating life. The formation of a tailings dam management department will be used to manage the construction and upkeep of the dam.

19 MARKET STUDIES AND CONTRACTS

19.1 Introduction

Previous market studies provided by China Gold has been updated. These previous studies were conducted by the CGDI and Minarco-MineConsult. The following reports were used as a base case and updated with the current market conditions:

- Changchun Gold Design Institute – Preliminary Design Report (December 2012) – "the CGDI Report (2011) – "the CGDI Report (2012)";
- Minarco MineConsult – Jiama Copper-Polymetalic Project – Pre-Feasibility Study Technical Report (November 2012) – "the MMC Report (2012)";
- Changchun Gold Design Institute - Feasibility Study for the Phase II Expansion Project (2011) – "the CGDI Report (2011).

19.2 Copper

Copper is used in many industries such as power, mechanical manufacturing, construction and defence. It is only preceded by aluminium in the consumption of non-ferrous materials in China.

Copper consumption is the greatest in the electrical and electronics industry - accounting for over half of the total consumption. It is used in the manufacturing of cables, wires, motors, transformers, switches and printed circuit boards. Copper has numerous applications in a number of industries including:

- In machinery and transport vehicle manufacturing, copper is used for industrial valves and fittings, instrumentations, plain journal bearings, moulds, heat exchangers and pumps, etc;
- In the chemical industry, copper is widely used in the production of items such as vacuum apparatus, column boilers and brew kettles;
- In the defence industry, copper is used to manufacture items such as bullets, cannon balls, firearm parts; and
- In the building industry, copper is used to produce a variety of channels, pipe fittings, decorative devices.

19.2.1 Forecast of Copper Supply and Demand

19.2.1.1 Analysis of Supply-Demand Relationship in International Market

In recent decades, the global output of copper has been constantly increasing. Global copper production in 2012 was 16,700 kt, an increase of 3.9% compared with the previous year (International Copper Study Group, 2013b)

Based on the International Copper Study Group (ICSG) projections, copper productions will increase gradually in 2013 and 2014 due to production from new operations and expansions of existing facilities. It has been predicted that world mine production will grow by 5.5% per annum, leading to an output of 17.6 Mt and 18.5 Mt in 2013 and 2014 respectively (International Copper Study Group, 2013a).

The output of mined copper and secondary copper has been increasing consistently. The global output of refined copper in 2012 was 20,114 kt, an increase of 2.6% from the previous year. Global refined copper production is mainly concentrated in countries rich in copper resources such as Chile, Russia and the United States, and countries with high demand for copper such as China and Japan.

As copper smelting and production are shifting to low-cost regions, the refined copper output in the United States, Japan and other developed countries is likely to remain stagnant or decrease gradually.

The amount of global copper consumption has increased steadily since the 1990s. In fact, refined copper consumption increased from 10,780 ktpa. in 1990 to 20,512 ktpa. in 2012. In 2012, America and Asia were the top two consumers of copper, accounting for about ¾ of the global consumption.

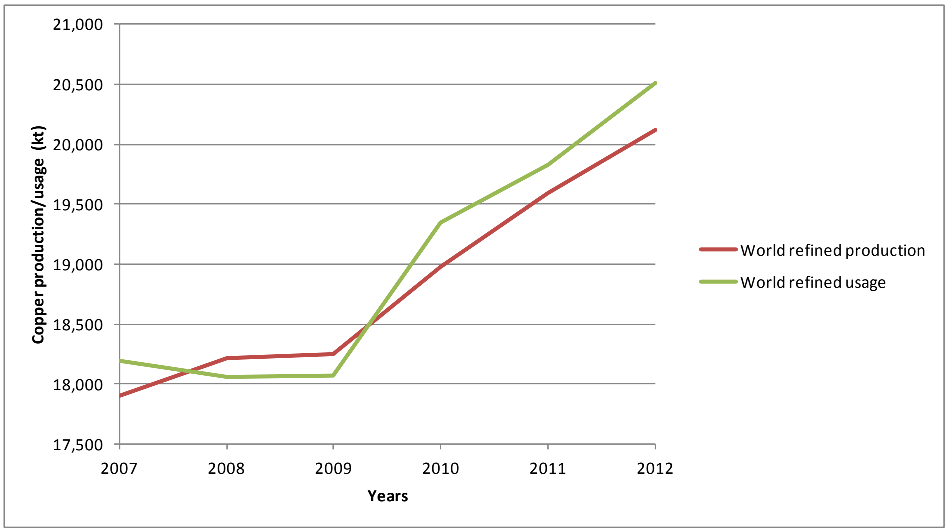


Figure 19-1: World Copper Production/Usage for 2007-2012

As shown in Figure 19-1 there was an excessive supply of copper during the global financial crisis (GFC) in 2008 and 2009. Since then, the demand has exceeded supply. While a production surplus of over 400 kt relative to demand has occurred in 2013, the world economy is expected to improve in 2014 and copper usage is expected to exhibit higher growth rates (International Copper Study Group, 2013a).

19.2.1.2 Analysis of China's Domestic Copper Market

The industrialisation of China in recent years has raised its demand for copper. In fact, it is now the biggest consumer of copper, accounting for about 40% of global demand. Between 2001 and 2011, China's copper consumption increased by 215% (International Copper Study Group, 2011). In recent years, China's domestic production of copper only satisfies 20% of its demand.

The apparent copper demand for China includes reported data from production, net trade and SHFE stock changes. This excludes unreported stocks, which include State Reserve Bureau, producer, consumer and merchant/trader. Although apparent demand in China showed significant growth in 2012, the industrial use of copper was much lower. The unreported inventory increase was estimated to be about 600 kt.

China's industrial demand for copper is expected to increase by about 5% in 2013, while its apparent demand is expected to decrease due to lower net refined imports (International Copper Study Group, 2013a).

Due to the imbalance in domestic supply and demand, China's heavy reliance on imported copper will likely continue. With the sustained growth of China's economy expected, the demand for copper should continue to increase.

19.2.2 Copper Price

The copper price went through a downward trend from 1995 to 2002 shown in Figure 19-2.

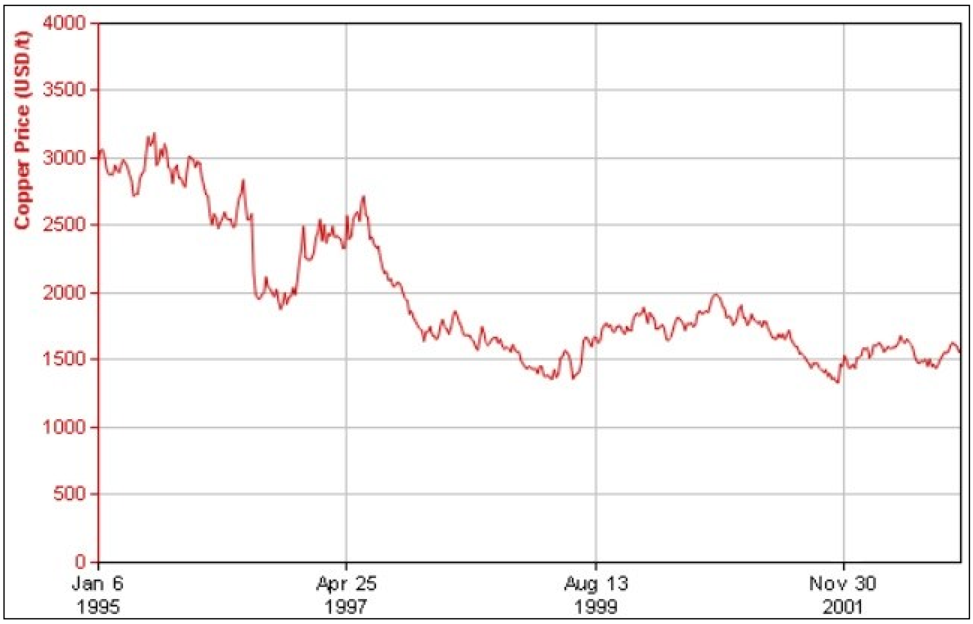


Figure 19-2: Historical Copper Price 1995-2002

In 2003, the copper price rebounded and the recovery continued until the global financial crisis (GFC) began to unravel in 2008, shown in Figure 19-3.

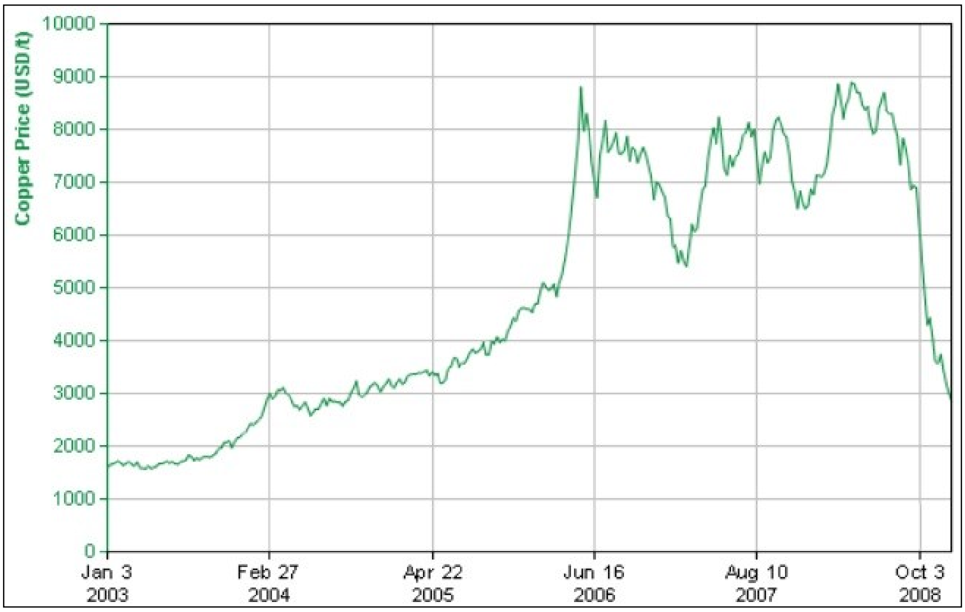


Figure 19-3: Historical Copper Price 2003-2008

The price of copper since 2008 is shown in Figure 19-4. It can be seen that copper price started declining in 2008 and that continued until early 2009. Price started rising steadily in 2009 until mid-2011. The copper price then took a sudden drop to mostly range between USD 9000/t and USD 7000/t since.

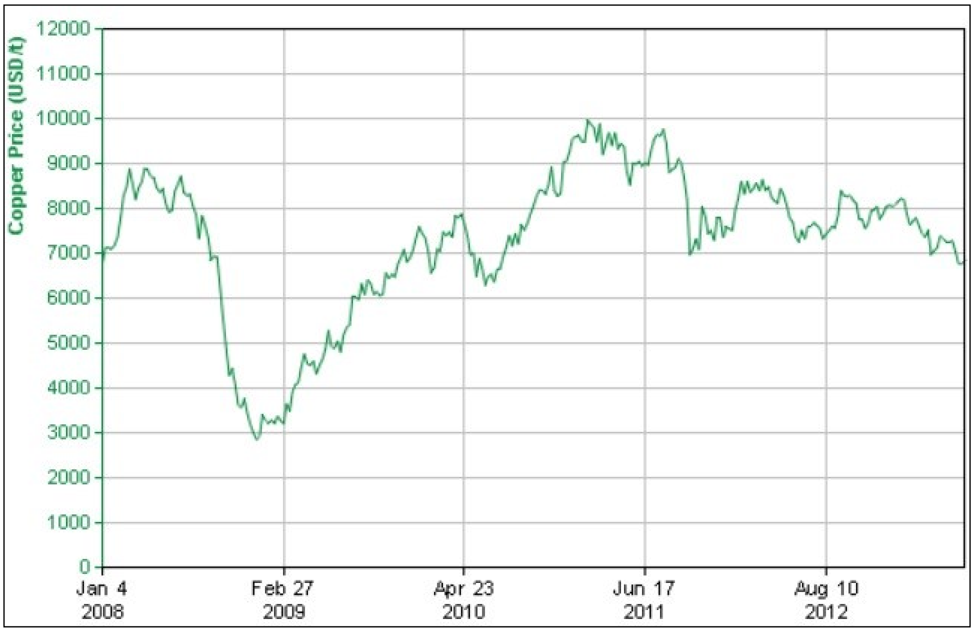


Figure 19-4: Historical Copper Price Since 2008

The ICSG has predicted that restoration of production constrained in 2012 and increased production in Africa and China will lead to higher copper output world-wide. On the other hand, demand for copper is expected to grow at a lower rate.

The production of refined copper is expected to exceed demand by 0.4 kt in 2013, with a higher surplus expected in 2014 (International Copper Study Group, 2013a). Consequently, the copper price is unlikely to increase dramatically in the near future. However, there is potential for higher copper price with improved global growth rates expected in 2014. With this in mind, the long-term forecast copper price of USD 6,393.40/t is deemed reasonable. This value will continue to be used in the economic analysis in this report.

19.3 Molybdenum

19.3.1 Usage of Molybdenum

Molybdenum has very high melting temperature, high thermal conductivity and low thermal expansion compared with other engineering materials. When added to steel and cast iron, molybdenum improves their strength, hardenability, weld-ability, toughness and corrosion resistance (International Molybdenum Association, 2013). Molybdenum is widely used in steel, chemicals, military equipment, electronics, biomedicine and agriculture. Molybdenum can also be applied as an additive in refining alloy steel, stainless steel, heat-resistant steel, chisel tool steel, cast iron, mill roll, super alloy and non-ferrous metals, etc. It assists in improving heat resistance, abrasion resistance and impact resistance of metal.

In addition to this, molybdenum compounds, such as molybdenum trioxide, sodium molybdate dehydrate, ammonium molybdate and alkyl ammonium molybdate can be used as catalysts in the chemical industry. Some molybdenum compounds can be applied to pigments, dyes and paints, and additives for fertilizer and vitamin.

Pure molybdenum disulphide, a premium lubricant, is used for lubricating automotive, turbine and other heavy machinery.

19.3.2 Supply-Demand Situation in Molybdenum Market

19.3.1.1 International Molybdenum Supply-Demand Situation

Molybdenum is mainly sourced from single molybdenum and molybdenum concentrate, which is a by-product of copper ore. Most of the world’s molybdenum is mined from the three countries with the largest molybdenum reserves: China, the United States and Chile. Top 10 molybdenum producers account for about 2/3 of the world’s output. The U.S. Freeport was the largest molybdenum producer in 2012, followed by Chile’s Codelco and GMexico (International Molybdenum Association, 2013).

From 1999 to 2003, global molybdenum output maintained at about 130 kt. Since 2003, strong demand in steel and rising molybdenum metal price caused large increase in global molybdenum output. The ultimate production was 143 kt in 2002, rising to 229 kt in 2012, which equates to an average annual growth rate of 4.8%.

The world's largest regional consumers of molybdenum are China, Europe, the United States and Japan. The increased demand in molybdenum from 2002 to 2007 led to a supply shortage in the molybdenum market. Figure 19-5 classifies molybdenum production by region in more recent years. It can be seen that production was affected by the GFC and dipped in 2009; however, it has recovered steadily since then. Although production from North America and South America has dropped off slightly in 2012, it has been offset by a substantial increase in Chinese production. Figure 19-6 shows molybdenum demand of the major consuming countries/regions in the years 2008-2012. With the exception of China, consumption in all major countries reduced in 2009. From 2009 to 2011, the consumption of molybdenum has increased steadily for all regions. In 2012, consumption eased off a little in the United States and Europe, while demand in China and Japan still improved slightly compared to the previous year.

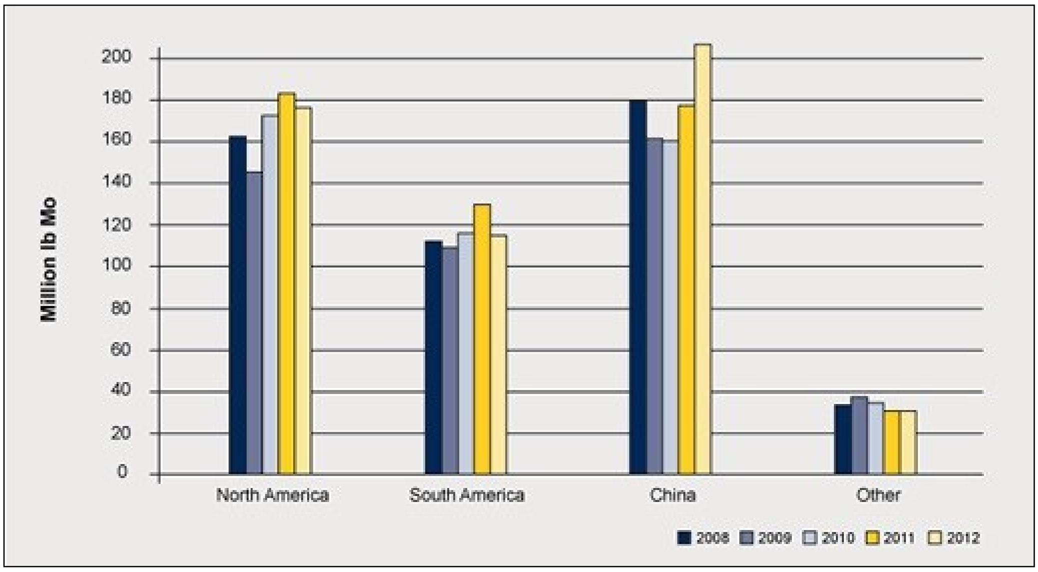


Figure 19-5: Molybdenum Production by Region (International Molybdenum Association, 2013)

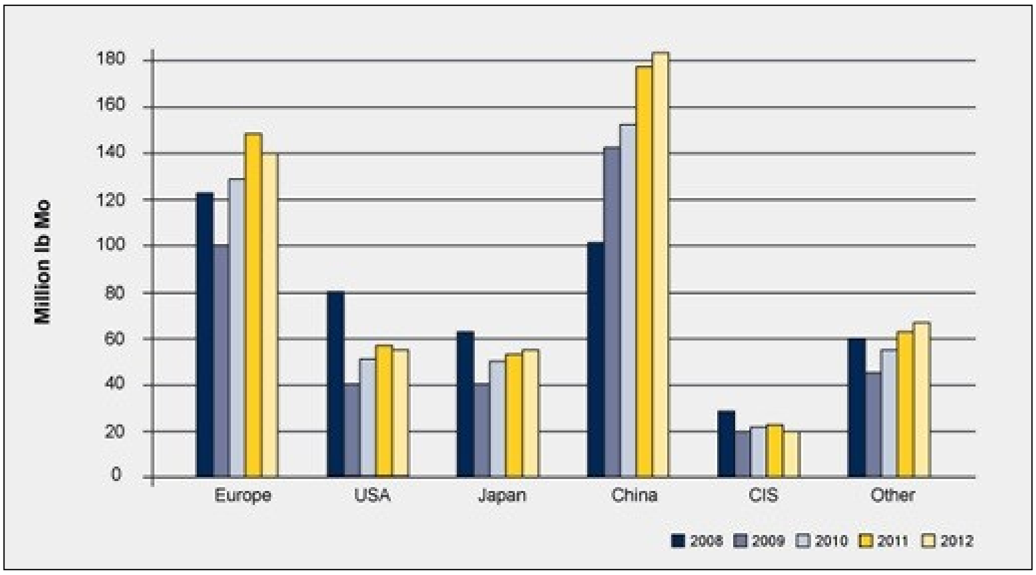


Figure 19-6: Molybdenum Demand of Major Consuming Countries/Regions (International Molybdenum Association, 2013)

19.3.1.2 Supply and Demand of Molybdenum in China

Molybdenum concentrate output from China was 683 t in 1950, and the molybdenum concentrate was mainly produced from Liaoning, accounting for 99% of the total production. The production of molybdenum broke through 10,000 t in 1959 and production levels ranged between 10,000 t and 20,000 t until 1985. Since the mid-1990s, China's mining and processing of molybdenum has developed rapidly and is now the world's largest producer.

China's molybdenum output has increased substantially from 29 kt in 2000 to 92 kt in 2012. It is currently the world's largest molybdenum producer, accounting for over 40% of worldwide production. Most of the producers are located in areas rich in molybdenum reserves such as Henan, Shaanxi and Liaoning. In 2012, China consumed 85 kt of molybdenum, which is just under 40% of worldwide consumption.

Figure 19-7 shows the China's molybdenum output, consumption and demand gap for 2005-2011. It can be seen that the output dipped in 2009 but it has been slowly recovering since then. On the other hand, the consumption level has increased continuously. Overall, the supply exceeds demand in the domestic market, with the demand peaking in 2008 and continuously reducing since then.

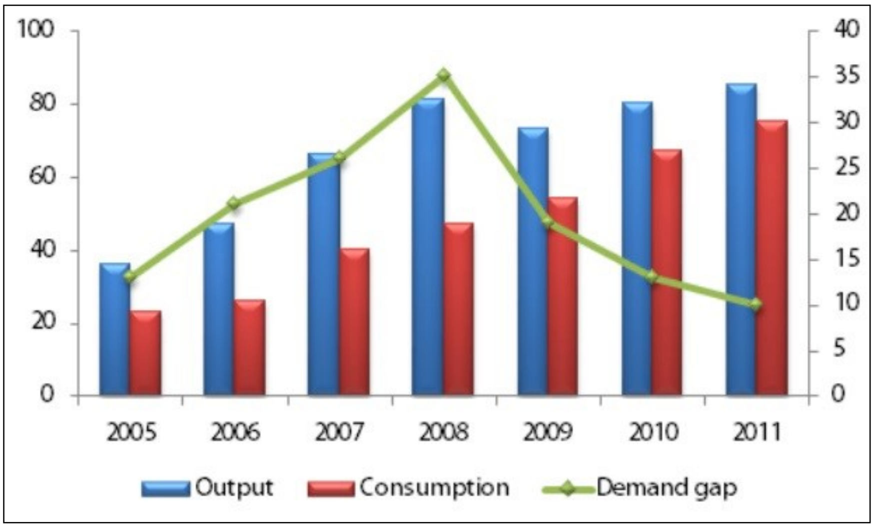


Figure 19-7: China's Molybdenum Output, Consumption and Demand Gap (kt) 2005-2011 (Research in China, 2012)

19.3.1.3 Molybdenum Price

As shown in Figure 19-8 molybdenum price remained relatively low in the late 1990s. China's rapid development in recent years increased the demand for steel and this led to a price jump in molybdenum, with prices peaking in the mid-2000s to above USD 45/lb. The GFC had an adverse effect on the demand of molybdenum with prices mostly ranging between USD 10/lb and USD 20/lb since 2009.

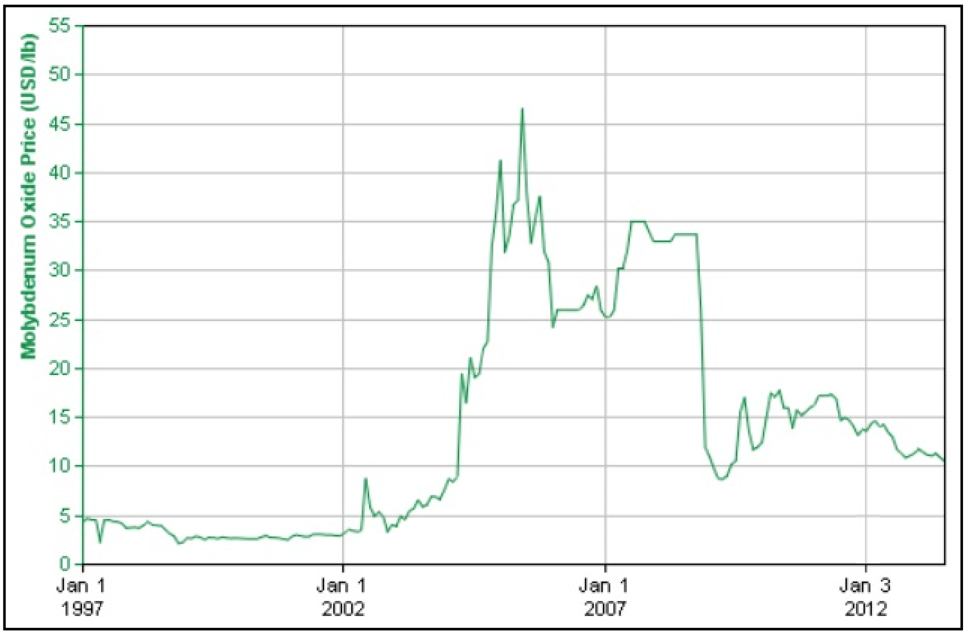


Figure 19-8: Historical Molybdenum Price Since 1997

The increasing demand for molybdenum will be mainly driven by consumption through power, process and desalination plants, oil and gas industry and car manufacturing sector. As shown in Figure 19-9, supply is likely to exceed demand in the next 2-3 years. In the longer term, however, the molybdenum market is expected to grow and molybdenum price is unlikely to drop substantially. The long-term forecast molybdenum price of USD 18/lb from The MMC Report Report (2012) is deemed reasonable and this value will be used in the economic analysis in this report.

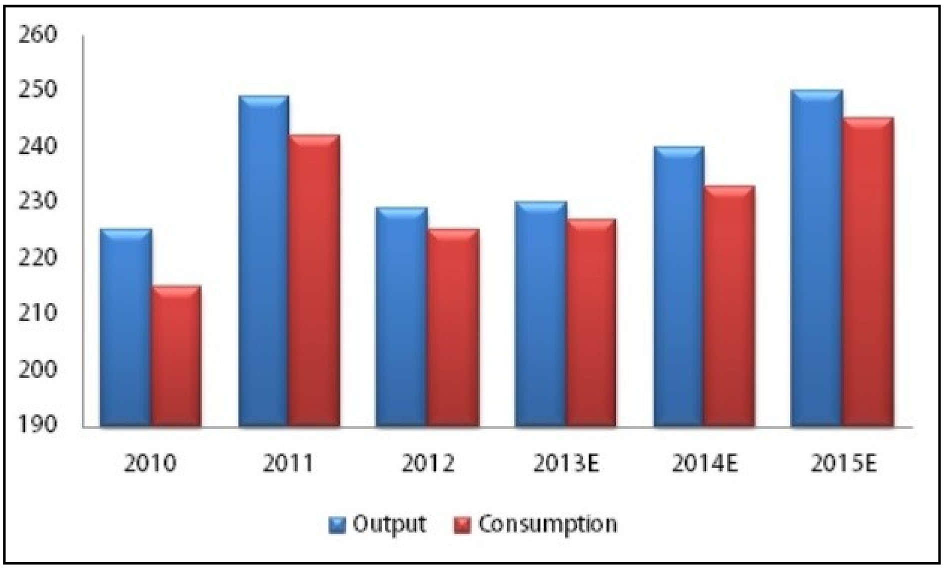


Figure 19-9: Historical and Predicted Molybdenum Output and Consumption 2010-2015 (Research in China, 2013)

19.4 Analysis on the Prices of Gold, Silver, Lead and Zinc

19.4.1 Gold Price

As shown in Figure 19-10, gold price has increased substantially in the last decade until the end of 2012, when it underwent a period of high volatility. With the added complication of gold being a popular investment commodity and the uncertainty in global economic conditions, it is challenging to forecast the long-term gold price. The long-term forecast gold price of USD 1,380/oz from The MMC Report (2012) is deemed reasonable and this value will be used in the economic analysis in this report.

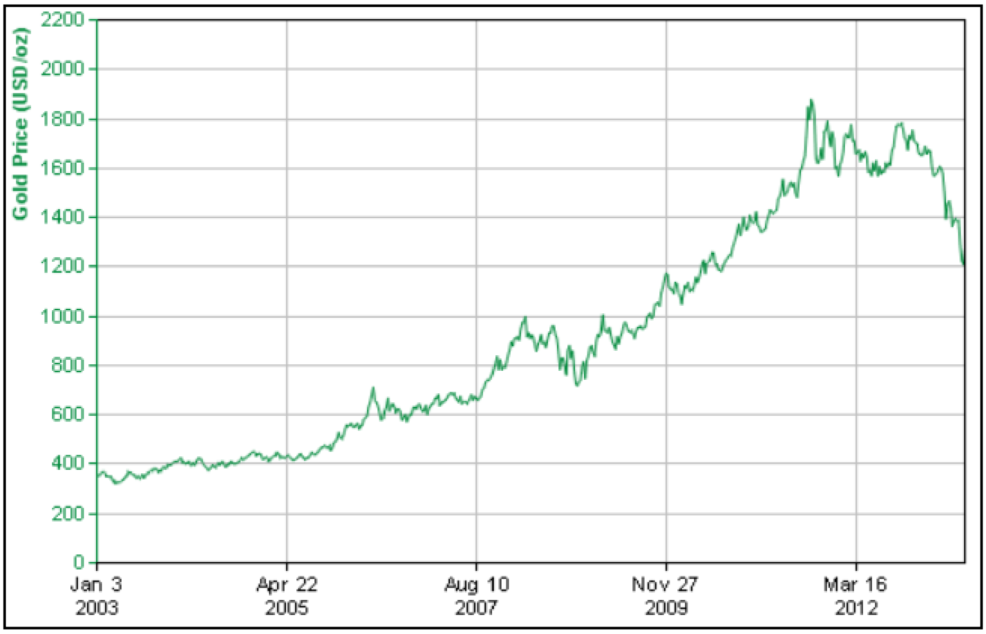


Figure 19-10: Historical Gold Price Since 2003

19.4.2 Silver Price

A comparison of the historical price since 2003 for gold in Figure 19-10 and silver in Figure 19-11 shows that the two commodities have historically been closely related. However, since silver has lower market liquidity compared to gold, silver price often exhibits higher volatility. The uncertainty facing future gold price is likely to impact on the future silver price. The long-term forecast silver price of USD 16.50/oz from The MMC Report (2012) is deemed reasonable and this value will be used in the economic analysis in this report.

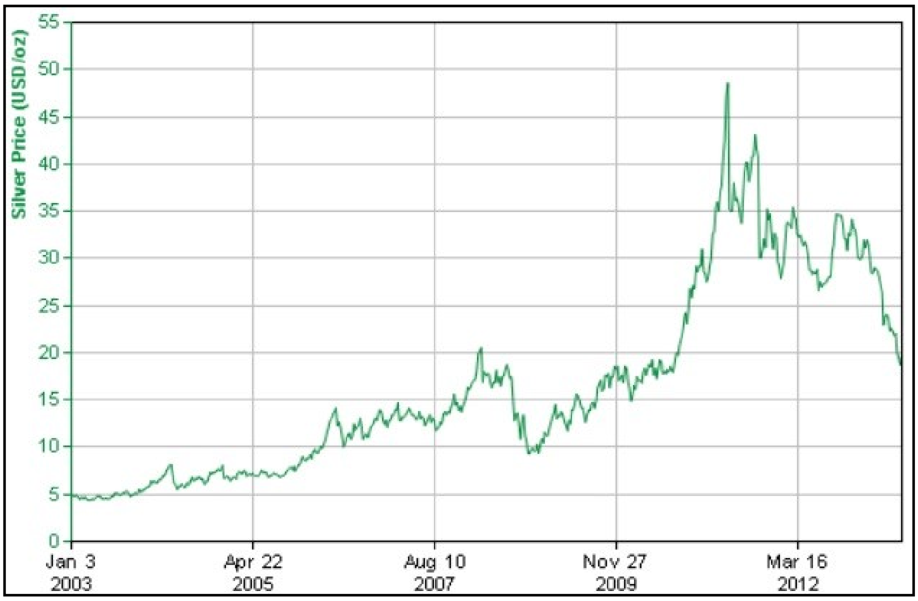


Figure 19-11: Historical Silver Price

19.4.3 Lead Price

Lead is commonly used for car batteries, gun ammunition and the construction industry. Lead went through a price hike in the mid-2000s, jumping from about US$500/t in 2003 to over USD 3500/t in 2007. As shown in Figure 19-12 the GFC caused lead price to decrease sharply and it briefly dropped below USD 1000/t in late 2008. Lead price has recovered since then and has mostly stayed between USD 2000/t and USD 3000/t. The long-term forecast lead price of USD 2000/t from the MMC Report (2012) is deemed reasonable and this value will be used in the economic analysis in this report.

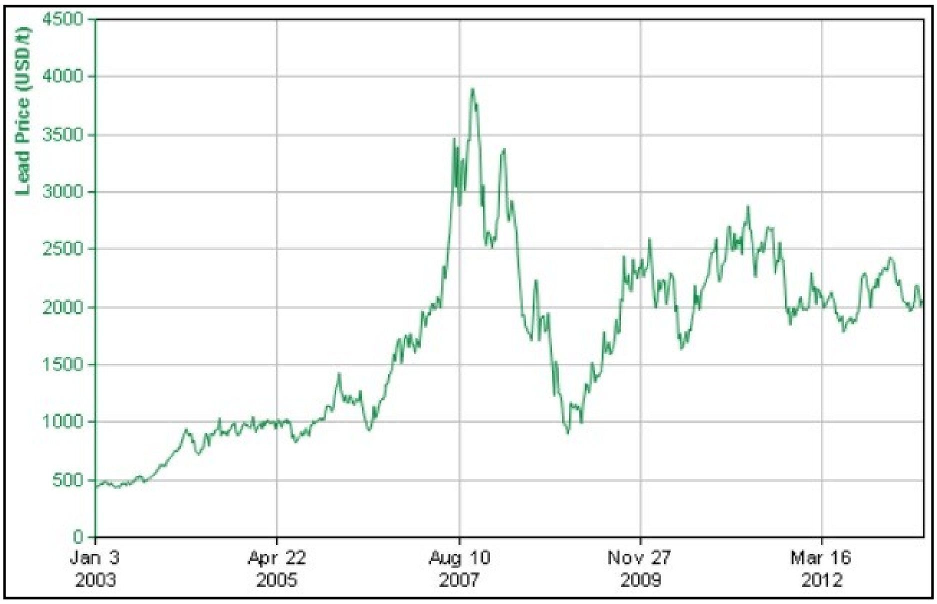


Figure 19-12: Historical Lead Price Since 2003

19.4.4 Zinc Price

Zinc is commonly used for galvanisation or to form part of an alloy. The historical price of zinc since 2003 is shown in Figure 19-13. It can be seen that Zinc went through a price hike in mid 2000s, rising from around US$1,500/t in 2005 to over US$4,000/t in 2007. However, unlike many other commodities, zinc peaked in early-mid 2007 and oversupply caused prices to drop before the GFC took shape. Zinc continued its price retreat as the GFC hit. The price has since recovered, mostly ranging between US$1,800/t and US$2500/t. The long-term forecast zinc price of US$2000/t from The MMC Report (2012) is deemed reasonable and this value will be used in the economic analysis in this report.

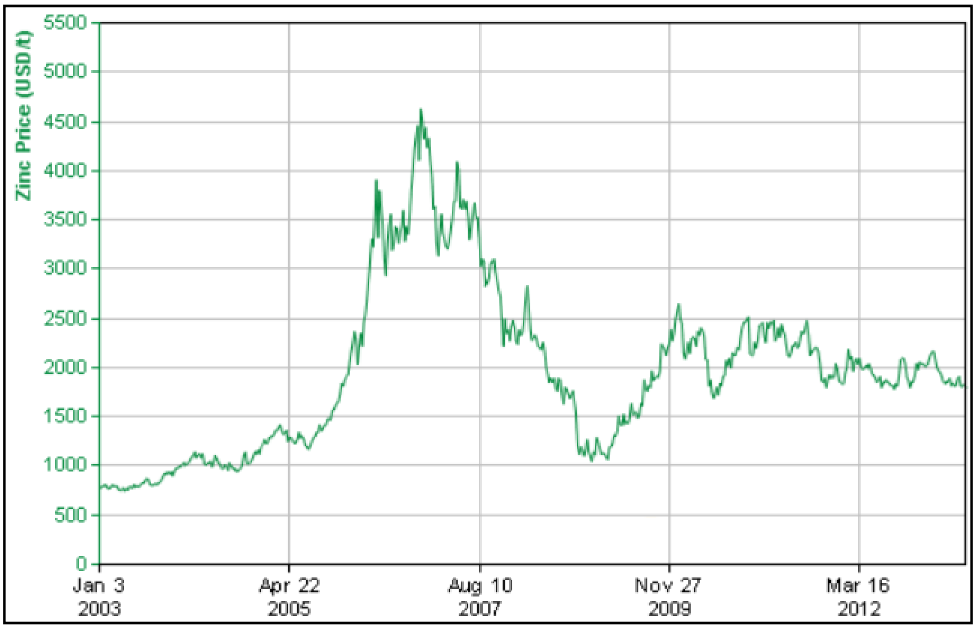


Figure 19-13: Historical Zinc Price Since 2003

20 ENVIRONMENTAL STUDIES, PERMITTING, AND SOCIAL OR COMMUNITY IMPACT

Environmental legislation and regulation for the mining sector in China is provided at a national level by the Ministry of Environmental Protection (MEP), formerly the State Environmental Protection Administration (SEPA). The MEP's responsibilities include the implementation of environmental policies and enforcement of environmental laws and regulations. At a regional and provincial level within the Tibet Autonomous Region, Environmental Protection Bureaus (EPB) and Environmental Protection Offices (EPO) are established to implement state environmental policy and administer environmental approvals for activities such as mining operations. A number of approvals have been established for the mine at the local, Prefectural-level, through district EPBs which administer the permitting functions for mining activities.

The two local authorities responsible for the mine are the Zhu Ka Kong Environmental Protection Bureau and the Lhasa Environmental Protection Bureau.

Internal to the company, China Gold have a number of corporate environmental and social responsibility policies, these form the foundation for Jiama's environmental responsibilities. These internal documents include:

- Corporate Environmental Management System;
- Corporate Environmental Management Guidance;
- Corporate Environment Activities;
- Tibet Huatailong Social Responsibility Report.

China Gold has complied with the Chinese requirements to achieve a responsible standard of environmental protection for the development of Jiama Phase I; these environmental protection measures are summarised from the 2011 MMC report:

- **Water Management:** The site is being developed as a zero discharge operation, with an expectation of recycling all used process and Tailings Storage Facility drainage water. A recycling rate of at least 84% is expected. China Gold holds a water permit for the extraction of 7,300 m^3/day for top up and domestic water. This is sourced from the nearby Chikang River, which also receives any surplus waste water from the site following treatment in accordance with Chinese national standards. Waste water treatment includes sewage treatment and its reuse in the replanting program;
- **Solid Waste**: Waste rock from the open pits will initially be used to construct infrastructure foundations, particularly roads. Surplus waste material will be placed on constructed waste dumps for which design work is progressing. Waste from the underground operation will be used to backfill underground excavations and mined out voids so minimal waste discharge is expected from the underground workings. Tailings will be mixed with cement for use as stope fill, while the Tailing storage facilities will be constructed in adjacent valleys to store the remaining tailings material;
- **Dust and Air Quality Mitigation**: Boiler house incinerators, crushing and screening plant will be fitted with dust collectors (cyclones) and baghouses. Treated flue gas from these sources will be vented via stacks. Other mitigation measures include the use of water

sprays, including water trucks in the mining circuit. The construction of paved or watered roads to reduce dust generated from transport activities, and enclosure of dusty activities where possible. Personal protection devices will be issued to workers to provide personal protection from dust and air quality exposures;

- **Noise Control:** Includes the use of silencers, noise and vibration dampening on mobile equipment, enclosure of noisy equipment, use of insulation, and regular equipment maintenance. Company policy requires PPE use, such as ear muffs or ear plugs, for noise-affected workers;
- **Environmental Monitoring:** A comprehensive air, water and a climatic monitoring plan is to be implemented, with analytical results complying with Chinese National Standards;
- **Rehabilitation:** China Gold has advised that a mine closure plan has been produced and approved as part of the Soil and Water Conservation Plan. The plan will be updated as the operation evolves;

20.1 Environmental Approvals

The Tibet Autonomous Region Environmental Protection Bureau (EPB) and the two prefectural EPBs (Zhu Ka Kong and Lhasa) have jointly issued a number of approvals for mining activities. These approvals contain a number of conditions that must be adhered to during the operation of the mine and include a specification to deliver environmental targets and objectives, these documents are task specific. Over the past two years China Gold has had to obtain a significant number of approvals for work on the Phase I expansion. Examples of recent approvals completed during 2011/12 include:

- Approval for Environmental Impact Report on Dangerous Goods Warehouse;
- Approval for Environmental Impact Report on Niumatang Open Pit Mining;
- Approval for Environmental Impact Report on the periphery of Jiama Mine Site Detailed Environmental Investigation;
- Approval for Environmental Impact Report on Industrial Laboratory Plant;
- Approval for Environmental Impact Review Report on the completion of Niumatang Open Pit Section; and
- Approval for Environmental Impact Review Report on the completion of the Industrial Laboratory Plant.

Conditions within the approvals relate to various requirements which include the completion of additional reports and studies, specific actions and improvements, and duties to be completed by the mine environmental department.

It is likely that many more approvals, permits and licences exist, however the details of which have not been made available for review. Documentation demonstrating the level of compliance with the conditions contained in such approvals and measuring the effectiveness of actions required by the authorities was not sighted however the framework is in place.

20.2 Corporate Policy

China Gold's corporate environmental policy documents have the over-arching objective of ensuring the protection of the environment and to enhancing the corporate culture of environmental protection. This includes instruction to strictly obey the environmental laws and regulations, implement Health, Safety and Environment systems, create an energy saving environment for China Gold companies and achieve sustainable development.

Evidence demonstrating how the successful implementation of corporate environmental and social policies are monitored, and targets met has not been provided for in this study. It is likely that other intermediate documents within the mine environmental management department exist which have not been provided. The Mine Environmental Management Plan (EMP) is the key document that was requested however was not provided. It must be noted that China presents a very different landscape to other mining countries with respect to environmental and corporate policies. It should be noted that Jiama Phase I has been operating for three years without environmental driven intervention providing some indication that the environmental practices at site are meeting local regulatory requirements.

The Corporate Environmental Management System (EMS) serves to strengthen the environmental protection system, environmental management and monitoring activities. The principals of the EMS are:

- To strictly obey the environmental laws and regulations;
- Implement the Health, Safety and Environment system;
- Create an energy saving environment for China Gold companies and achieve sustainable development.

In the long term, environmental protection is to be incorporated as part of the corporate culture. Short, medium and long term environmental protection plans are required to be made. A number of requirements have been identified to achieve the delivery of the corporate EMS objectives which include:

- Implementation of a reduction in polluted discharge as part of the yearly plan;
- Establishment of an environmental protection responsibility system and include it as criteria for quality assessment;
- Establishment of a comprehensive environmental protection structure and internal environmental management system;
- Establishment of an environmental monitoring system with professional personnel and monitoring equipment along with a system for the collection of accurate environmental information;
- Management to be familiar with all environmental regulations and standards and personnel trained in environmental protection activities;
- Establishment of contingency plans to prevent pollution incidents;
- Ensure targets for discharging waste water and emissions to atmosphere are met;

- Sources of pollution must be identified and pollution treatment process plans devised with assigned responsibilities.

The EMS also contains the following instructions for all companies to:

- Implement the environmental management and responsibility system;
- Establish an internal management system, including accounts, database and other related information;
- Each project must include environmental control and include environmental evaluation as a key criterion, to achieve sustainable development;
- Implement environmental training for its personnel. The training will also assist personnel improve their environmental awareness and skills in controlling and preventing pollution;
- Environmental risk control must be implemented at tailing storages, waste dumps, cyanide storage, etc, with regular maintenance and inspections to prevent any environmental accidents;
- Emergency drills must be practiced regularly.

Documents such as Mine Environmental Reviews and Audits demonstrating how the mine responds to these requirements were not sighted.

20.3 Corporate Guidance

China Gold Corporate Environmental Management Guidance contains guidance on environmental management for subsidiary companies. This guidance reiterates the principles of the EMS, sets out objectives and details specific actions required.

Objectives set out in the guidance include:

- Environmental management organisation system and responsibilities;
- Studies to be carried out for specific environmental problems;
- Inspections to be carried out regarding pollution and management;
- Establishment of monitoring systems and collection of data regarding the environment;
- Submission of monitoring reports;
- Ensuring the function of equipment intended to prevent pollution;
- Inclusion of environmental criteria in personnel award systems;
- Establishment of a comprehensive set of management standards, including:
  - Corporate environmental planning;
  - Company pollution reduction plan;

- Corporate environmental standards, including detailed responsibilities, reporting standards, environmental monitoring standards, tailing dam management standards, hazard management and environmental training standards;
- Equipment management and maintenance systems;
- Supervision standards including equipment operation and inspection standards;
- Contingency plans including risk management, contingency plan reporting and emergency drills;
- Personnel standards.

➢ Establishment of a comprehensive records and information database to include:

- Environmental impact documents and approvals;
- Responsibility and management standards;
- Pollution treatment design, construction logs and approvals;
- Corporate environmental quality assurance;
- Pollution discharge totals and approval application forms;
- Daily logs and monitoring records;
- Waste water discharge monitoring equipment maintenance logs;
- Monitoring equipment analysis data and maintenance logs;
- Pollution discharge agreements and disposal of dangerous goods agreements;
- Company noise pollution, noise level and monitoring data;
- Contingency plans and emergency drill logs;
- Summary of environmental accidents;
- Safety maintenance and fire equipment maintenance log;
- Training record;
- Relevant laws, regulations and policies;
- Monitoring record prescribed under EIA; and
- Waste water network, waste water discharge plan and gas pollution plan;

➢ Management and supervision responsibilities:

- Responsible persons including mine manager, managers and vice managers;
- Monitoring and guidance, including reports and database;
- Plans for pollution reduction;

- Setting up management standards;
- Set up organisational contingency plans regarding environmental disasters;
- Environmental budgets, environmental reviews, pollution treatment deadlines, etc;
- Establishing a responsibilities chart; and
- Technical responsibilities.

➢ Within the guidance the following principal media are recognised:

- Polluted air;
- Waste water;
- Solid waste;
- Noise; and
- Eco system and soil erosion.

➢ The guidance contains objectives for the improvement of environmental awareness including:

- Incorporating environmental protection as part of technical training;
- Training for environment supervisors;
- Relevant knowledge for management, environment managers and technical management.

Regular monitoring of the aforementioned principal media on site is evident in previous years and this is expected to continue in the future.

20.4 Corporate Environmental Activities

The China Gold Corporate Environment Activities document outlines a set of Environmental Protection Tasks. The China Gold Group companies recognise the development of resources for environmental protection work. In the "Eleventh Five-Year Period" the following emphases have been established:

➢ Industrial wastewater COD levels;

➢ Industrial air SO2 emissions;

➢ Increase the value of energy consumption.

Main areas of work across all China Gold Group companies are identified as:

➢ Implementation of the "Safety and Environmental Protection Greening and Beautifying Project";

➢ Construction of "safe and harmonious environment-friendly green mines";

- Creation of a new situation of safety and environmental protection;
- Dynamic risk management to ensure safe operation of the tailings facilities;
- Improvement of the emergency response system and environmental emergency management;
- Strengthening the safety management of construction projects;
- Implementing environmental organisation systems and monitoring systems;
- Energy conservation;
- Green landscaping; and
- Land reclamation.

Several key projects are singled out for action including:

- Gold industry heavy metal pollution emergency management pilot;
- HSE management for the gold mining industry - heavy metal environmental emergency management training; and
- Safety and environmental protection cases at specific mines including the "Jiama Project Green".

20.5 Environmental Protection

It is stated in the Pre-Feasibility Study that "The Company complies with Chinese requirements to achieve a responsible standard of environmental protection". No environmental reviews have been provided to this feasibility study to enable this statement to be verified.

The environmental protection measures for the Jiama mine site taken from the PFS, which have not been verified here, include the following:

- Water management. The mine operates to a target of zero discharge operation, with the recycling of all used process and TSF drainage water. A recycling rate of at least 84% is expected. Surplus treated waste water from the site is reused in the replanting program or discharged to the Chikang River;
- Water use. The Company holds a water permit for the extraction of 7,300 m3/day for top up and domestic water, which is taken from the nearby Chikang River;
- Solid waste. Waste rock is used to construct infrastructure foundations, particularly roads with the surplus material placed on constructed waste dumps. Underground waste will be mainly left underground or dumped into previously mine out voids;
- Tailings management. Processed tailings are used as stope fill and surplus material stored in adjacent valleys;
- Air quality. Dusty activities are enclosed where possible with cyclone dust collectors and baghouses operate in the boiler houses, incinerator, the crushing and screening plant, and fine ore bin. Treated flue gas is vented via stacks. Dust mitigation measures

elsewhere include the use of water sprays and water trucks on paved roads to reduce dust generated from mining and truck transport activities. Personal protection devices are issued to workers to provide additional personal protection from dust; and

- Noise. Silencers, noise and vibration dampening are used to reduce noise on mobile equipment. Company policy requires appropriate PPE use for noise-affected workers.

The PFS also provides statements on the monitoring program and mine closure plan which again are not verified here. These include:

- A comprehensive air, water, and climatic monitoring plan is in place with data used to build up an environmental baseline and contribute to the monitoring database. Analytical results comply with Chinese national standards; and

- A mine closure and rehabilitation plan has been produced and approved as part of the Soil and Water Conservation Plan. The plan will be updated as the operation progresses and expands.

20.6 Community and Social

Prior to the establishment of mining operations the area was used for low-intensity grazing of yak and sheep with occasional scattered temporary shelters used by nomadic herdsmen and subsistence farmers. The company has a policy of social responsibility towards the local community, with a focus on providing assistance and contributing towards social and economic development. This is achieved through financially supporting local business development, education, employment, training initiatives, local transport, communications, drinking water supply, and other initiatives.

Land was acquired for the mine site and associated infrastructure corridors in compliance with PRC laws through both short-term and long-term leasing agreements, signed and approved by local government authorities. Compensation for land and land use rights was paid under these lease agreements in line with standard PRC guidelines. The community has, in general, welcomed the opportunity for employment in the area and has participated in ongoing dialogue with both the Company and the local government through the “Project Coordination and Development Management Committee” concerning the development and operation of the mine, potential environmental impacts and their management, and the scope and nature of community benefits to be generated by the development.

20.6.1 Policies and Agreements

An agreement between the Tibet Huatailong Mining Development Co., Ltd. and the People's Government of the Tibet Autonomous Region has been established to implement strategic cooperation and co-ordinate resources for key projects aimed at fulfilling social responsibility obligations. These projects cover areas that include:

- Integration of tenements;
- Geological exploration;
- Production management;
- Safety and environmental protection;

- Green landscaping;
- Building a harmonious enterprise culture; and
- Effective promotion and stable development of the Jiama Mine.

The mine's efforts to promote the fulfilment of its social responsibility includes the recognition and support of all levels of government, the local people and the Ministry of Land and Resources with an emphasis on harmonious labour relations, development of model business enterprise, promotion of national ethnic unity and progression of activities to create a business model. The mine aims to establish a good social image for the mining operations and to build a harmonious mine that promotes the realisation of the enterprise model and sustainable development.

To provide a good foundation for benefiting people's livelihood, village based task forces have been elected. These organisations work to improve the life of farmers and herdsmen through practical projects to promote a harmonious co-existence with the mining operations.

The Jiama Industry and Trade Company was established in 2009 to develop the local economy and co-ordinate investment in the village farming sector in areas such as engineering, environmental protection and transportation. Examples of individual projects include the establishment of greenhouses and the cultivation of vegetables, fruits and flowers,

The mine has established the construction of water control projects to reduce contamination from acidic heavy metal rich waters and environmental management demonstration projects. Practical projects include water treatment plants and sewage treatment facilities which benefit downstream water quality objectives for crop irrigation.

To maintain the policy of promoting local labour employment the mine has training initiatives for local young people and promotes the hiring of Tibetan college students.

The mine encourages educational activities that promote Tibetan culture and folk customs. A comprehensive and in-depth understanding of the customs and habits of the Tibetan people in all aspects of production, life, religion, is encouraged when dealing with local people so that all employees respect local customs.

A culture of safe and civilised production management is strictly enforced with periodic safety inspections and the implementation of a reward and punishment system. Staff safety management concepts are backed up by safety training provided by international experts.

The mine has implemented a zero emission target for waste water through treatment and reuse. This target plays a crucial role in the protection of Tibet's water resources, the reduction of water costs and reducing the impact of wastewater on groundwater.

The implementation of an afforestation project together with irrigation, water recycling and solar heating initiatives are part of the overall beautification project for the construction of green mines promoted by the company.

Other initiatives aimed at reducing poverty and benefiting the local population include:

- Building of bridges and roads;
- Donations to schools;

- Gifts of school uniforms and bags;
- Food donations to poor households;
- Assistance with medical fees to combat disease and illness;
- Construction of safe drinking water projects; and
- Employment initiatives for farmers and herdsmen.

The company promotes the maintenance of stability and security that ensures the development of the mine. This includes preventing any destabilising actions taken by domestic and foreign organisations such as the creation of disturbances or acts of sabotage.

There is some information outlining the operation's social contribution to the local community, which are consistent with the corporate management objectives. However, national requirements to implement Social Management/Impact Plans and Community Action Plans or any reporting against statutory and corporate requirements were not sighted.

21 CAPITAL AND OPERATING COSTS

21.1 Introduction

The aim of the capital and operating cost estimates is to provide costs to an accuracy level of ± 15% that can be utilised to evaluate the economics of the Jiama Copper - Polymetallic Project. All costs are presented in United States Dollars (USD) – this includes items such as wages which are normally paid in RMB but are converted to USD for consistency using an exchange rate of USD/RMB 6.10. An exchange rate of 6.3 USD/RMB was applied in the pre-feasibility study however due to an improvement in Chinas economic position this has been reduced to 6.1 USD/RMB to reflect the exchange rate that was current at the time of preparing this report.

The costs detailed in this section have been sourced from China Gold, the CGDI Feasibility Report (2011), Minarco MineConsult (MMC) NI 43-101 (November 2012), the CGDI Preliminary Design Report (December 2012). Mining One has reviewed the cost estimates used and has deemed them to be reasonable based on comparable mining operations in China.

21.2 Scope of Estimate

The capital and operating cost estimates were developed for an open pit operation, two floatation process plants and support infrastructure for an operation capable of treating up to 16.5 million tonnes of ore per annum.

21.3 Estimate Accuracy

The estimation accuracy is dependent on the China Gold's estimates of capital and operating expenditure. Mining One has not verified the costs on a first principles basis. However, the estimates seem to be within reasonable limits and in the case of mining are supported by agreed contract rates. In some instances costs were observed to be higher than operations of a similar size and nature currently operating within China. Based on these observations there is reasonable confidence in the accuracy of the financial estimates.

21.4 Capital Cost Estimate

The total estimated cost of bringing the Project into production is USD 716.2 Million. The following sections outline capital costs for mining, processing and other capital costs including land leasing. These costs are summarised in Table 21-1.

As a mining contractor will be utilised, the mining equipment has been included as an operating cost. Additional information relating to mining infrastructure can be found in Section 18. These mining capital costs have been provided by China Gold and appear reasonable when compared to other operations within China.

Table 21-1: Mining Capital Costs

Investment Summary By Majors				
Item	**Description**	**Total Capital Million US$**	**Major (Million US$) Mining**	**Processing**
1	Geology	1.513	*1.513*	*0.000*
2	Mining	141.167	*141.167*	*0.000*
3	Machinery	25.535	*25.535*	*0.000*
4	Processing	110.724	*0.000*	*110.724*
5	Tailing	75.075	*0.000*	*75.075*
6	Civil Engineering	82.381	*21.443*	*60.938*
7	Drainage	38.390	*3.122*	*35.267*
8	HVAC	4.312	*0.745*	*3.567*
9	Power	42.649	*17.543*	*25.106*
10	Meter	13.154	*8.615*	*4.539*
11	General Plan	52.964	*33.030*	*19.934*
12	Environmental	4.098	*4.098*	*0.000*
13	Other Construction Cost	68.792	*68.792*	*0.000*
14	Contingency	25.953	*25.953*	*0.000*
15	Office Appartment	29.508	*29.508*	
Total Construction Capital		716.217	*366.313*	*349.905*

** Source: Jiama Phase II Preliminary Design Capital Cost Report*

Data pertaining to the Phase II capital schedule was comprehensive in terms of addressing construction and commissioning capital. Commentary was made regarding the ongoing maintenance of the capital however no reference was made to the cost of ongoing upkeep. Sustaining capital estimates were determined based on a percentage of the capital outlay and is summarised in Table 21-2.

Table 21-2: Sustaining Capital

Sustaining Capital			
Item	**Description**	**Start**	**Frequency**
Machinery	10% of total Capital	2015	Yearly
Processing	10% of total Capital	2017	Yearly
Tailing	30 % of Capital	2020	Every 5 years
Civil Engineering	5% of Capital	2017	Yearly
Contingency	1% of Other Capital	2017	Yearly

21.5 Operating Cost Estimate

21.5.1 Open Pit Mining

Mining will be conducted by an external contractor, two contract companies have committed to 10 year service agreements for the Phase II open cut mines a summary of the contract companies and their rates is summarise in Table 21-3. The mining cost for Jiaoyan pit will be 38.23 RMB/bcm and South Pit will be 36.93 RMB/bcm.

An additional 3.05 RMB/bcm is included to cover open cut service overheads such as grade control, power, ancillary fuel, dewatering, management and contingency. The unit cost of open cut mining for the Phase II open cut project is outlined in Table 21-4. At an exchange rate of 6.10 RMB/USD the cost of mining is US$6.77 and US$6.55 per cubic metre for Jiaoyan and South pit respectively.

Table 21-3: Open Cut Contractors and Mining Rates

Contractor	Pit	Rate
		RMB/bcm
CTMG (China Tenth Metallurgy Group Limited Corporation)	Jiaoyan Pit	**¥38.23**
CRCC (The 2nd Engineering Co. LTD of China Railway 17 Bureau Group Corpration	South Pit	**¥36.93**
CTMG (China Tenth Metallurgy Group Limited Corporation)	South Pit	**¥36.93**

Table 21-4: Total Mining Cost per Cubic Metre

Pit	Rate		
	RMB/cu.m	O/Head	$US/cu.m
Jiaoyan Pit	**¥38.23**	¥3.05	$6.77
South Pit	**¥36.93**	¥3.05	$6.55
South Pit	**¥36.93**		

Contract agreements are in place for the initial 10 years of operation and therefore the application of these rates without further estimates is considered reasonable. It was noted that beyond this initial contract phase the mining depths will require that material is elevated from the bottom of the pit to the waste dump. For this reason Mining One deemed it appropriate to apply an additional cost to all material that is excavated below the depth of the cutting located on the eastern edge of each pit.

A rate of 0.15 RMB/m^3 per 5m of vertical advance was considered an appropriate contingency. This was applied at the 5,120 mRL and 5,000 mRL respectively for the Jiaoyan and South Pit. Table 21-5 provides an overview of all variable costs associated with the open pit mines.

Table 21-5: Variable Open Pit Mining Costs Including Incremental Mining Factors

Pit	Rate		Bench Increment per bench		
	RMB/cu.m	$US/cu.m	RMB/cu.m	$US/cu.m	Start RL
Jiaoyan Pit Stage 1	¥38.23	$6.77	¥0.15	$0.02	5,120
Jiaoyan Pit Stage 2	¥38.23	$6.77	¥0.15	$0.02	5,120
South Pit Stage 1	¥36.93	$6.55	¥0.15	$0.02	5,000
South Pit Stage 2	¥36.93	$6.55	¥0.15	$0.02	5,000
South Pit Stage 3	¥36.93	$6.55	¥0.15	$0.02	5,000
South Pit Stage 4	¥36.93	$6.55	¥0.15	$0.02	5,000

The estimated operating costs associated with open pit mining operations are estimated to be USD $7.12/bcm over the life of the open-pit operations. A breakdown for each pit and stage is summarised in Table 21-6 below.

Table 21-6: Open Pit Mining Cost Summary

Pit	Total Cost (USD)	bcm	Unit Cost (USD/bcm)
South Pit - Stage 1	-($44,967,053)	$6,846,392	$6.57
Sputh Pit - Stage 2	-($179,200,708)	$26,933,316	$6.65
South Pit - Stage 3	-($401,514,287)	$59,746,348	$6.72
South Pit - Stage 4	-($342,114,291)	$46,890,991	$7.30
Jiaoyan - Stage 1	-($574,594,793)	$81,110,432	$7.08
Jiaoyan - Stage 2	-($487,259,053)	$63,579,396	$7.66

Figure 21-1 below illustrates the mining physicals and the variance of the cost per tonne over the life of mine. The costs are presented as cost per tonne of ore and include all costs except interest and taxes.

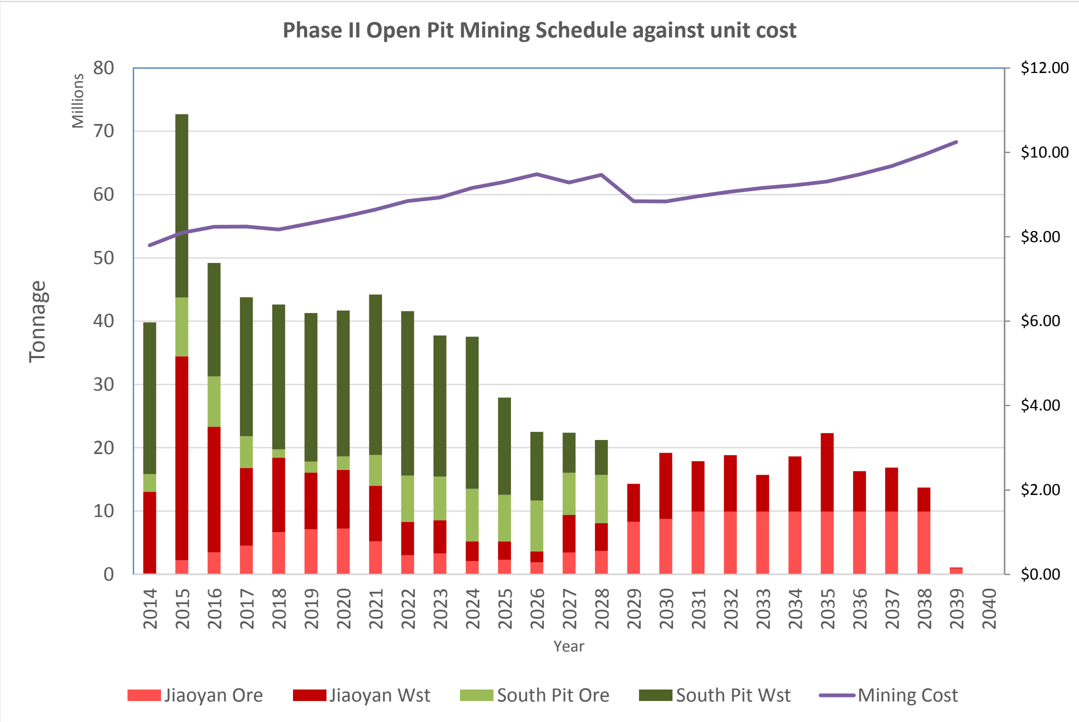


Figure 21-1: Open-Pit Material Movement and Unit Cost

21.5.2 Underground Mining

Underground Mining is scheduled to operate for approximately 35 years, it is intended that contract mining will be used to provide all development and mining services for the underground operation. At the time of writing underground contracts had been drawn up and were being finalised, all mining rates quoted in these final drafts have been used for the estimate of underground mining costs. These contracts are also based on a 10 year term.

All underground infrastructure capital including primary ventilation, rail and conveyancing systems will be purchased by China Gold and is incorporated in the engineering component of the capital estimate. The mining cost for the phase II underground has been determined based on an average of two underground contracts that are in the process of being awarded. A breakdown of the underground cost build up is presented in Table 21-7. The table illustrates the two contractors who are being awarded the underground mining contracts. The two rates are slightly different however a weighted average of the contract was applied for the purpose of determining a single excavation cost. Costs are broken down into mining which represents the stope volume and development which is for all drives and ore passes.

In addition to the contract rates, allowances have been made for the provision of services (9.45 RMB/t of ore) and the upkeep and operation of the hoists/conveyors (2.2 RMB/t of ore).

Table 21-7: Underground Mining and Development unit rates

Contractor	Total Contract	Mining Cost	Development	Development
	MRMB	RMB/t	RMB/cu.m	RMB/t
The 14th Metallurgical Construction Corporation I	¥707.71	¥49.71	¥445.43	¥0.00
The 14th Metallurgical Construction Corporation I	¥1,230.27	¥46.05	¥429.60	¥0.00
China Design Institute - Hoisting		¥2.20	¥0.00	¥2.20
China Design Institute - Services		¥9.45	¥0.00	¥9.45
China Design Institute - UG Department		¥0.00		¥0.00
Underground Mining Cost		¥59.04	¥435.38	¥11.65
		USD/t	USD/cu.m	USD/cu.m
Underground Mining Cost		**$9.68**	**$71.37**	**$1.91**
Backfill Cost		$4.61	$0.00	$0.00
Total Underground Operating Cost		$14.28	$71.37	$1.91

In addition to the cost of mining the stopes will be backfill with a cemented paste. This will involve using the tailings from the processing plant, mixing it with cement and then pumping it back into the mined out stopes. Substantial infrastructure and preparation are required for this and China Gold have calculated the cost of backfill at 35.12 RMB/t for a fully cemented backfill. It is estimated that 80% of the mined stopes will be backfilled at a density of 2.2 the cost of Backfill is calculated at US$10.13 per cubic meter.

Table 21-8: Underground Backfill Cost Estimate

	Backfill Cost		Proportion	Weighted Cost		
	RMB/t	USD/t	%	USD/t	Density	USD/BCM
Cemented Fill	¥35.12	$5.76	80%			
Tailings	¥15.12	$2.48	0%	$4.61	2.20	$10.13
No Backfill	¥0.00	$0.00	20%			

The overall unit cost for each tonne of ore equates to US$16.19 per tonne of ore from the underground. Table 21-9 provides a breakdown of the unit mining cost from the underground complex. This excludes capital and reflects the OPEX cost of extracting the ore.

Table 21-9: Underground Unit Cost per Tonne of Ore

Process	Unit	Total
Stopes	t	197,686,572
Development	t	18,592,246
Development	bcm	7,290,051
Backfill	bcm	66,029,586
Total Cost	USD	-(3,138,139,274)
Total U/G Ore	t	208,501,162
Unit Cost	USD/t ore	$15.05

21.5.3 Cost of Mining Ore

In general the cost of mining each tonne of ore from open pits will reduce as the mine approaches the end of the mine life. Figure 21-2 illustrates the comparison between open pit and underground in terms of the unit cost to win each tonne of ore. As can be seen the open pit operations become cheaper to mine with respect to the cost of mining ore as the pits approach the end of mining. The chart also illustrates a relatively consistent cost for the mining of the underground ore throughout the life of the mine.

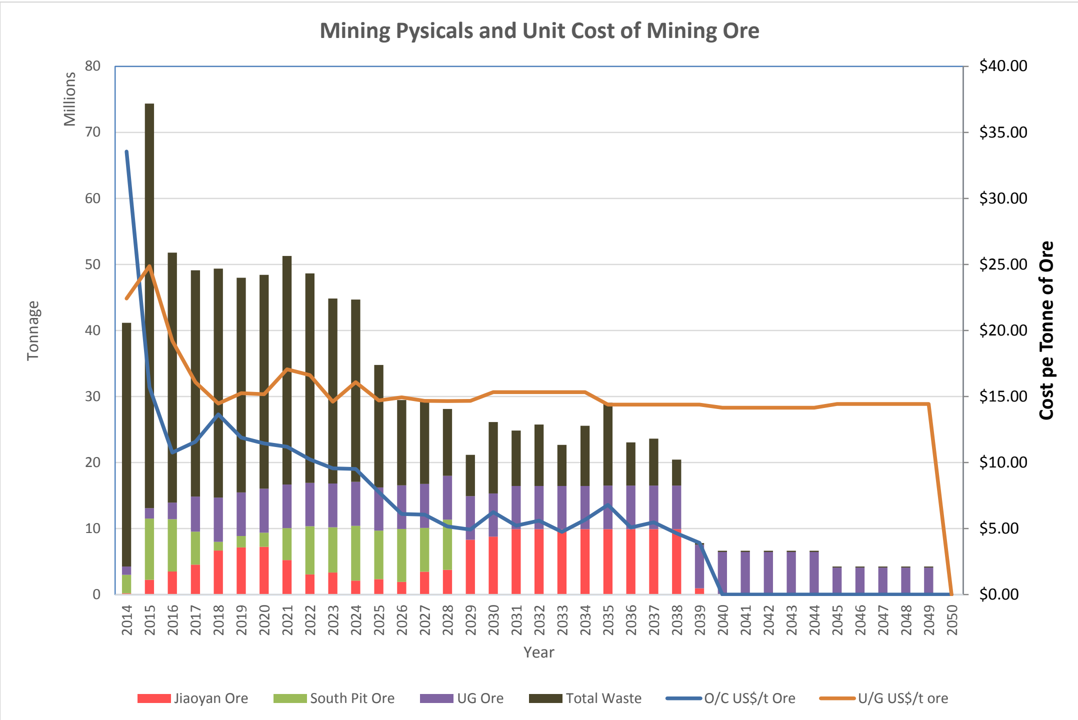


Figure 21-2: Open Pit and Underground Unit Cost of Mining Ore

21.5.4 Labour

Open pit and underground mining will be conducted by external contractors. Mining production planning, technical services and safety management personnel will be the responsibility of China Gold and have been budgeted in the G&A and mining overhead costs.

The total labour force is estimated to be 2,220 personnel (including contractors). This includes:

- Open pit management staff (21);
- Open pit mining contractors (235);
- Mining plant operators (1263);
- Ore processing operators (249);
- Ore processing management (27); and
- Auxiliary production and mining management department (363).

The annual wage of general technicians, production and auxiliary labourers are 13,333 USD. Average yearly wage of mid-level and senior administrators (mine management) is 23,810 USD. These rates are inclusive of base salary, welfare expenses, insurance, union payments and training expenses.

21.6 Processing Plant Operating Costs

The total operating cost for processing of open-pit ore is USD 4,421,541,281. This equates to USD0.94 / Ore t as illustrated in Table 21-10.

Table 21-10: Processing Physicals and Unit Cost

Processing Item	Unit	Value
Total CuPb Ore	t	41,710,478
Total CuMo Ore	t	407,517,164
Total Ore	t	449,227,642
Processing Costs	USD	- (4,520,043,181)
Unit Cost	USD/t ore	$10.06

The processing costs were provided by China Gold. Mining One has assumed these costs reflect the true cost of processing for the Jiama Phase II Expansion Project. A breakdown of the processing costs are summarised in Table 21-11 which show the cost of processing by ore type

Table 21-11: Processing Unit Costs

Pit	Ore Type	RMB/Ore t	USD/Ore t
South Pit	CuPb	¥73.17	$12.00
South Pit	CuMo	¥60.17	$9.86
Jiaoyan	CuPb	¥73.17	$12.00
Jiaoyan	CuMo	¥60.17	$9.86
Underground	Other	¥73.17	$12.00
Underground	Skarn	¥60.17	$9.86

21.7 Overheads and Fixed Costs

The administration expense for the life of the operation is estimated to be USD 1.432 Billion over the life of the mine. This equates to a G&A cost of US$1.58/ore tonne. A breakdown of these overhead costs is summarised in Table 21-12. Fixed costs are outlined in Table 21-13 these costs include an estimate of non-production related salaries and organisational expenses such as site maintenance and upkeep. A corporate component has been added representing shared costs.

Table 21-12: Overheads

Cost	RMB/Ore t	USD/Ore t
Processing G&A	¥9.66	$1.58

Table 21-13: Fixed Costs

Ore Type	RMB/year	USD/Year
Salaries & Organisational	¥20,251,494	$3,319,917
Corporate	¥5,000,000	$819,672
Total	¥25,251,494	$4,139,589

21.8 Summary of Operating Costs

Total mining cost for the life of the Phase II expansion project is 23.48 US$/ore tonne. This includes a mining cost of 11.50 US$/ore tonne, processing costs including fixed costs of 10.39 US$/ore tonne and overhead costs of 1.58 US$/ore tonne. Total operating costs per ore tonne is summarised in Table 21-14.

Table 21-14: Summary of Operating Costs

Item	Total Cost (USD)	Unit Cost (USD/Oret)
Mining Costs	$5,167,789,460	$11.50
Processessing Costs	$4,520,043,181	$10.06
Fixed Costs	$149,025,210	$0.33
Overhead Costs	$711,238,404	$1.58
Total OPEX	**$10,548,096,256**	**$23.48**

21.9 Conclusion of Capital and Operating Costs

During the review it was evident that China Gold has spent a substantial amount of time and effort generating studies and investigations into the construction of the Jiama mining complex. In addition to the reports and studies there were a number of contracts that indicated the mining costs that had been agreed. Based on the data provided by China Gold, the costs appear to be reasonable when compared with other mining operations. There was insufficient transparency of the technical data available to conduct a first principles comparison:

- A comprehensive list of capital costs were provided to Mining One for inclusion in the cost model; and
- China Gold have already commenced construction of Phase II infrastructure and the costs spent to date have been considered to be sunk costs.

22 ECONOMIC ANALYSIS

22.1 Introduction

An economic evaluation was conducted on the open cut portion of the Jiama Phase II Expansion Project. The project is forecast to generate a post-tax net present value of USD 1.324 billion with an internal rate of return of 24.0%.

A summary of the key economic indicators are outlined in Table 22-1.

A sensitivity analysis was also conducted which revealed the project was most sensitive to changes in revenue of metal sales of which metal prices would be the significant contributing factor, however a variation of -20% would be required before a negative NPV was returned.

Table 22-1: Summary of Economic Analysis

Project KPI	Unit	Pre-Tax	Post-Tax
Total Cash	USD	7,406,783,715	5,785,209,159
Net Present Value (NPV)	USD	1,873,148,514	1,324,968,062
Internal Rate of Return (IRR)	%	29.7%	24.0%
Payback Period (Undisc. Cash)	Years	5.62	6.72
Payback Period (Disc. Cash)	Years	6.68	7.91
Max. Cash Draw Down (Undisc. Cash)	USD	-($401,548,388)	
Max. Cash Draw Down (Disc. Cash)	USD	-($401,548,388)	
Operating Margin (EBITA / Revenue)	%	38.4%	

22.2 Parameters

22.2.1 Discount Rate

A discount rate of 9% was used. It is assumed this is the cost of capital applicable to China Gold and is representative of a discount rate used by other projects of this nature. Table 22-2 provides an overview of the general parameters used in the financial analysis

Table 22-2: General Parameters

Parameter	Unit	Value
Discount Rate	%p.a	9%
Start Period	Yr	2014
End Period	Yr	2049
Kilogram	lb	2.20
Troy Ounce	g	31.10

22.2.2 Metal Price

Table 22-3 below presents the metal prices used for this economic study. Discussion of how these metal prices were determined can be found in Section 19.

Table 22-3: Metal Prices

Metal Price	Unit	Price
Cu	USD/lb	$2.90
Mo	USD/lb	$15.50
Pb	USD/lb	$0.98
Zn	USD/lb	$0.95
Au	USD/oz.	$1,300.00
Ag	USD/oz.	$20.00

21.2.3 Taxes and Royalties

The following taxes, duties and fees have been used in this study:

- All Copper, Molybdenum, Zinc and Lead sold are subject to a royalty of 2% and all Gold and Silver sold are subject to a royalty of 2.8%;
  - Jiaoyan is subject to the 50% discount of royalties
- A resource tax:
  - South Pit: 5 RMB/Ore t;
  - Jiaoyan: 2.50 RMB/Ore t;
  - Underground: 5.00 RMB/Ore t.
- Copper, molybdenum, lead and zinc produced from the mine are subject to a VAT of 17%;
- Additionally, this Project is also subject to a construction tax of 5% of VAT;
- Education tax of 5%;
- Company income tax is 15%. A rebate is available from the Tibetan government that equates to a 30% rebate;
- All input costs include a VAT component however not all items incur the 17% VAT, the CGDI presented detailed calculations that indicated that approximately 10.6% of all OPEX represents VAT which is recoverable at the point of sale.

22.3 Metal Production and Revenues

From the life of mine underground and open pit schedules annual metal production was calculated based on a number of input fields:-

- Mining recoveries of 95% and 87% for open pit and underground respectively were factored into all ore and waste calculations;
- Dilution of 5% and 10% for open pit and underground respectively were factored into all ore and waste calculations;
- Commissioning schedules were supplied by China Gold and provided plant constraints during the first 3 years of operation:-

- 2014 – 2.145 Mtpa;
- 2015 – 6.495 Mtpa;
- 2016 – 13.737 Mtpa;
- 2017 onwards – 16.500 Mtpa.

➢ Metalurgical test work supplied by China Gold was used as the foundation for all recovery assumptions and is contained in Table 22-4

Table 22-4: Metallurgical Recoveries by Pit and Ore Type

		South Pit		Jiaoyan	
Processing Recovery	**Unit**	**CuMo**	**CuPb**	**CuMo**	**CuPb**
Cu	%	90.0%	88.0%	85.0%	85.0%
Mo	%	71.0%	0.0%	50.0%	50.0%
Pb	%	0.0%	80.0%	0.0%	0.0%
Zn	%	0.0%	60.0%	0.0%	0.0%
Au	%	46.0%	43.0%	0.0%	0.0%
Ag	%	66.0%	56.0%	0.0%	0.0%

		Underground		Stockpile	
Processing Recovery	**Unit**	**CuMo Skarn**	**Cu Other**	**CuMo**	**CuPb**
Cu	%	90.0%	85.0%	88.3%	88.0%
Mo	%	70.0%	50.0%	63.7%	0.0%
Pb	%	0.0%	0.0%	25.0%	80.0%
Zn	%	0.0%	0.0%	21.7%	60.0%
Au	%	65.0%	0.0%	37.0%	43.0%
Ag	%	70.0%	0.0%	45.3%	56.0%

Close to US$ 23.5 Billion of sales revenue is generated during the life off the Phase II project. Table 22-5 provides a life of asset summary showing the total quantity of a commodity and its respective sales revenue. A weighted percent recovery has also been presented with the data.

Table 22-5: Metal Production and Revenues

Recovered Metal					
Ore Type	Commodity	Weighted Recovery	Unit	Recovered Metal	Sales Revenue
CuOther	Copper	Rec@ 87%	t	239,445	$1,530,870,260
CuOther	Molybdenum	Rec@ 31%	t	3,227	$110,272,282
CuOther	Lead	Rec@ 80%	t	375,687	$811,681,356
CuOther	Zinc	Rec@ 59%	t	142,428	$298,299,121
CuOther	Gold	Rec@ 31%	g	2,318,360	$96,898,105
CuOther	Silver	Rec@ 50%	g	513,538,937	$330,213,205
CuMo	Copper	Rec@ 89%	t	2,170,913	$13,879,510,324
CuMo	Molybdenum	Rec@ 66%	t	84,061	$2,872,493,125
CuMo	Lead	Rec@ 0%	t	0	$0
CuMo	Zinc	Rec@ 0%	t	0	$0
CuMo	Gold	Rec@ 58%	g	44,565,738	$1,862,668,261
CuMo	Silver	Rec@ 65%	g	2,638,389,240	$1,696,523,676
			TOTAL REVENUE		**$23,489,429,714**

**Note – CuOther Includes CuPb from open pit operations and all ore that is not Skarn from the underground*

22.4 Taxes & Royalties

The implication of taxes and royalties are worthy of discussion. It is shown in the analysis that these taxes are a significant factor in the economic outcome of the project. A significant number of taxes are borne by the company with each tax applied differently. It is also worth some commentary regarding the handling of taxes in China as this is different to elsewhere. The following provides a brief overview of the taxes that are applied and how they have been calculated within the financial analysis. Table 22-7 to Table 22-10 provides a year by year summary of the cash flow, all taxes are itemised in this summary.

- **Royalties** – The royalty is presented as a % and represents a direct percentage of the sales revenue prior to any discounts. The royalty varies between location and commodity and is subject to negotiation with the relevant authority. Table 22-6 provides a summary of the royalties applied in the financial analysis.

Table 22-6: Jiama Phase II Royalties

Royalties	Unit	South Pit	Jiaoyan	Underground	Stockpile
Cu	%	2.0%	1.0%	2.0%	**1.7%**
Mo	%	2.0%	1.0%	2.0%	**1.7%**
Pb	%	2.0%	1.0%	2.0%	**1.7%**
Zn	%	2.0%	1.0%	2.0%	**1.7%**
Au	%	2.8%	1.4%	2.8%	**2.3%**
Ag	%	2.8%	1.0%	2.8%	**2.2%**

- A VAT of 17% is applicable to the purchase of a range of goods and services. All contract rates and charges have been quoted inclusive of VAT and therefore a rebate is applicable within the cost model. This VAT recovery has been estimated at 10.6% of total operating costs:

- A construction tax of 5% is applicable to the 17% VAT which is calculated from the sales revenue;
- An education tax of 5% is applicable to the 17% VAT which is calculated from the sales revenue;

➢ A resource tax is applicable to every tonne of ore that is delivered to the ROM. This is charged at 5RMB per ROM tonne with the exception of Jiaoyan pit which incurs a resource tax of 2.5RMB per ROM tonne;

➢ A company tax rate of 15% tax is payable on all after tax earnings, China gold receive a 30% rebate on this tax from the Tibetan Government.

22.5 Cashflows

The following tables, Table 22-7 to Table 22-10 provide a summary overview of the cashflow model. This illustrates that the Jiama Phase II project is profitable.

Table 22-7: Cashflow Summary 2014 - 2023

Operating Cashflows	Unit	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Revenue	**USD**	**$150,450,066**	**$401,431,482**	**$634,270,264**	**$757,241,654**	**$787,193,034**	**$780,996,197**	**$814,933,478**	**$997,890,361**	**$953,295,069**	**$947,660,659**
VAT	USE	$15,940,974	$30,477,656	$32,914,147	$38,377,738	$39,450,992	$39,482,121	$39,585,521	$41,495,932	$40,461,547	$38,209,771
Royalties	USD	-($3,270,393)	-($8,330,538)	-($12,561,476)	-($14,605,573)	-($14,096,567)	-($14,172,618)	-($15,339,341)	-($20,117,038)	-($19,512,904)	-($19,513,161)
Smelter Returns	USD	-($28,459,089)	-($78,387,033)	-($119,296,653)	-($142,989,221)	-($149,572,599)	-($148,680,918)	-($157,522,272)	-($196,225,528)	-($184,286,140)	-($178,253,857)
Net Revenue	**USD**	**$134,661,557**	**$345,191,566**	**$535,326,282**	**$638,024,597**	**$662,974,860**	**$657,624,782**	**$681,657,386**	**$823,043,726**	**$789,957,572**	**$788,103,413**
Operating Expenses											
Mining, Load and Haul	USD	-($127,912,022)	-($219,469,251)	-($171,059,514)	-($195,460,468)	-($205,605,992)	-($205,900,253)	-($207,922,556)	-($224,936,909)	-($215,158,817)	-($193,872,667)
Processing	USD	-($22,778,807)	-($68,637,566)	-($140,079,577)	-($167,326,230)	-($167,326,230)	-($167,326,230)	-($166,281,372)	-($167,326,230)	-($167,326,230)	-($167,326,230)
Fixed Costs	USD	-($4,139,589)	-($4,139,589)	-($4,139,589)	-($4,139,589)	-($4,139,589)	-($4,139,589)	-($4,139,589)	-($4,139,589)	-($4,139,589)	-($4,139,589)
Overheads	USD	-($3,396,065)	-($10,283,191)	-($21,750,254)	-($26,123,579)	-($26,123,579)	-($26,123,579)	-($26,123,579)	-($26,123,579)	-($26,123,579)	-($26,123,579)
Total Operating Expenses	**USD**	**-($158,226,484)**	**-($302,529,596)**	**-($337,028,934)**	**-($393,049,866)**	**-($403,195,389)**	**-($403,489,650)**	**-($404,467,096)**	**-($422,526,307)**	**-($412,748,214)**	**-($391,462,064)**
Ore Mined	t	4,225,713	13,060,227	13,925,748	14,828,097	14,672,637	15,461,614	16,016,501	16,649,436	16,912,803	16,800,383
Cost to Mine	$/t	37.44	23.16	24.20	26.51	27.48	26.10	25.25	25.38	24.40	23.30
Net Operating Surplus	**USD**	**-($23,564,926)**	**$42,661,970**	**$198,297,348**	**$244,974,731**	**$259,779,471**	**$254,135,132**	**$277,190,290**	**$400,517,420**	**$377,209,357**	**$396,641,349**
Capital	USD	-($355,997,395)	-($235,353,282)	-($124,866,617)	$0	$0	$0	$0	$0	$0	$0
Sustaining Capital	USD	$0	-($2,553,486)	-($2,553,486)	-($21,954,860)	-($21,954,860)	-($21,954,860)	-($44,477,429)	-($21,954,860)	-($21,954,860)	-($21,954,860)
Total Capital	**USD**	**-($355,997,395)**	**-($237,906,768)**	**-($127,420,102)**	**-($21,954,860)**	**-($21,954,860)**	**-($21,954,860)**	**-($44,477,429)**	**-($21,954,860)**	**-($21,954,860)**	**-($21,954,860)**
Total Loan Value	USD	$355,997,395	$591,350,677	$716,217,293	$716,217,293	$716,217,293	$716,217,293	$716,217,293	$716,217,293	$716,217,293	$716,217,293
Nominal Cash	USD	-($379,562,321)	-($195,244,798)	$70,877,245	$223,019,871	$237,824,611	$232,180,272	$232,712,861	$378,562,560	$355,254,497	$374,686,489
Free Cashflow	USD	$0	$0	$70,877,245	$223,019,871	$237,824,611	$232,180,272	$232,712,861	$378,562,560	$355,254,497	$374,686,489
Loan Balance	USD	$355,997,395	$591,350,677	$645,340,048	$422,320,177	$184,495,566	$0	$0	$0	$0	$0
Loan Repayment	USD	$0	$0	-($70,877,245)	-($223,019,871)	-($237,824,611)	-($184,495,566)	$0	$0	$0	$0
Loan Interest payment	**USD**	**-($16,197,881)**	**-($26,906,456)**	**-($29,362,972)**	**-($19,215,568)**	**-($8,394,548)**	**$0**	**$0**	**$0**	**$0**	**$0**
Resource Tax	USD	-($3,393,994)	-($9,799,774)	-($9,993,300)	-($10,305,632)	-($9,305,469)	-($9,753,970)	-($10,168,556)	-($11,512,691)	-($12,624,315)	-($12,415,786)
Construction Tax	USD	-($1,197,096)	-($3,273,384)	-($5,067,439)	-($6,091,907)	-($6,327,348)	-($6,226,192)	-($6,422,765)	-($7,805,821)	-($7,525,707)	-($7,390,590)
Education Tax	USD	-($1,197,096)	-($3,273,384)	-($5,067,439)	-($6,091,907)	-($6,327,348)	-($6,226,192)	-($6,422,765)	-($7,805,821)	-($7,525,707)	-($7,390,590)

Post Tax

Post Tax	Unit	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Net Cash Flow	**USD**	**-($401,548,388)**	**-($238,497,795)**	**$21,386,095**	**$181,314,857**	**$207,469,897**	**$209,973,917**	**$209,698,776**	**$351,438,226**	**$327,578,768**	**$347,489,522**
Depreciation	USD	$0	$21,966,136	$35,674,890	$41,918,221	$41,918,221	$41,918,221	$41,918,221	$41,918,221	$41,918,221	$41,918,221
Taxable Income	USD	-($45,550,993)	$48,281,564	$213,844,059	$264,403,506	$279,737,526	$273,846,998	$296,094,425	$415,311,307	$391,451,849	$411,362,603
Carry Forward Losses	USD	$0	-($45,550,993)	$0	$0	$0	$0	$0	$0	$0	$0
Taxable Income	USD	-($45,550,993)	$2,730,571	$213,844,059	$264,403,506	$279,737,526	$273,846,998	$296,094,425	$415,311,307	$391,451,849	$411,362,603
Tax Rate	%	10.5%	10.5%	10.5%	10.5%	10.5%	10.5%	10.5%	10.5%	10.5%	10.5%
Tax Paid	USD	$0	-($286,710)	-($22,453,626)	-($27,762,368)	-($29,372,440)	-($28,753,935)	-($31,089,915)	-($43,607,687)	-($41,102,444)	-($43,193,073)
Nominal Cashflow	**USD**	**-($401,548,388)**	**-($238,784,505)**	**-($1,067,531)**	**$153,552,489**	**$178,097,457**	**$181,219,983**	**$178,608,861**	**$307,830,539**	**$286,476,324**	**$304,296,449**
Discount Rate		9.0%	9.0%	9.0%	9.0%	9.0%	9.0%	9.0%	9.0%	9.0%	9.0%
Discount Factor		1.00	0.92	0.84	0.77	0.71	0.65	0.60	0.55	0.50	0.46
Discounted Cashflow	**USD**	**-($401,548,388)**	**-($219,068,354)**	**-($898,520)**	**$118,570,695**	**$126,168,728**	**$117,780,555**	**$106,498,628**	**$168,393,847**	**$143,772,807**	**$140,106,538**
Cumilative Nominal Cashflow		-($401,548,388)	-($640,332,893)	-($641,400,425)	-($487,847,936)	-($309,750,479)	-($128,530,497)	$50,078,364	$357,908,903	$644,385,227	$948,681,676
Cumulative Discounted Cashflow		-($401,548,388)	-($620,616,742)	-($621,515,262)	-($502,944,566)	-($376,775,838)	-($258,995,283)	-($152,496,655)	$15,897,191	$159,669,998	$299,776,536
Undiscounted Payback		1.00	1.00	1.00	1.00	1.00	1.00	0.72	0.00	0.00	0.00
Discounted Payback		1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.00	0.00

Pre Tax

Pre Tax	Unit	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Net Cash Flow	**USD**	**-($395,760,202)**	**-($222,151,254)**	**$41,514,273**	**$203,804,303**	**$229,430,063**	**$232,180,272**	**$232,712,861**	**$378,562,560**	**$355,254,497**	**$374,686,489**
Depreciation	USD	$0	$21,966,136	$35,674,890	$41,918,221	$41,918,221	$41,918,221	$41,918,221	$41,918,221	$41,918,221	$41,918,221
Taxable Income	USD	-($447,099,379)	$70,247,703	$249,518,952	$306,321,729	$321,655,749	$315,765,221	$338,012,648	$457,229,529	$433,370,070	$453,280,824
Carry Forward Losses	USD	$0	-($447,099,379)	-($376,851,677)	-($127,332,725)	$0	$0	$0	$0	$0	$0
Taxable Income	USD	-($447,099,379)	-($376,851,677)	-($127,332,725)	$178,989,004	$321,655,749	$315,765,221	$338,012,648	$457,229,529	$433,370,070	$453,280,824
Tax Rate	%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Tax Paid	USD	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Nominal Cashflow	**USD**	**-($395,760,202)**	**-($222,151,254)**	**$41,514,273**	**$203,804,303**	**$229,430,063**	**$232,180,272**	**$232,712,861**	**$378,562,560**	**$355,254,497**	**$374,686,489**
Discount Rate		9.0%	9.0%	9.0%	9.0%	9.0%	9.0%	9.0%	9.0%	9.0%	9.0%
Discount Factor		1.00	0.92	0.84	0.77	0.71	0.65	0.60	0.55	0.50	0.46
Discounted Cashflow	**USD**	**-($395,760,202)**	**-($203,808,490)**	**$34,941,733**	**$157,374,316**	**$162,534,041**	**$150,901,246**	**$138,759,075**	**$207,086,684**	**$178,290,253**	**$172,516,068**
Cumilative Nominal Cashflow		-($395,760,202)	-($617,911,456)	-($576,397,183)	-($372,592,880)	-($143,162,817)	$89,017,455	$321,730,316	$700,292,875	$1,055,547,373	$1,430,233,861
Cumulative Discounted Cashflow		-($395,760,202)	-($599,568,692)	-($564,626,959)	-($407,252,643)	-($244,718,602)	-($93,817,356)	$44,941,719	$252,028,403	$430,318,656	$602,834,724
Undiscounted Payback		1.00	1.00	1.00	1.00	1.00	0.62	0.00	0.00	0.00	0.00
Discounted Payback		1.00	1.00	1.00	1.00	1.00	1.00	0.68	0.00	0.00	0.00

Table 22-8: Cashflow Summary 2024 - 2033

Operating Cashflows	Unit	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Revenue	**USD**	**$1,006,766,955**	**$1,034,626,647**	**$1,020,546,587**	**$904,379,526**	**$842,836,381**	**$748,083,429**	**$700,679,451**	**$662,188,205**	**$667,661,198**	**$671,904,159**
VAT	USE	$39,491,187	$35,836,122	$34,525,942	$34,459,429	$34,169,348	$32,266,760	$33,823,925	$33,390,310	$33,778,386	$32,890,744
Royalties	USD	-($21,289,817)	-($21,419,580)	-($21,466,898)	-($18,487,673)	-($17,069,266)	-($13,149,004)	-($12,333,003)	-($11,466,518)	-($11,521,195)	-($11,563,624)
Smelter Returns	USD	-($188,379,642)	-($200,437,877)	-($199,593,304)	-($177,977,307)	-($167,783,206)	-($149,935,193)	-($133,694,620)	-($127,380,506)	-($127,779,587)	-($128,568,540)
Net Revenue	**USD**	**$836,588,683**	**$848,605,312**	**$834,012,327**	**$742,373,976**	**$692,153,257**	**$617,265,992**	**$588,475,753**	**$556,731,491**	**$562,138,803**	**$564,662,738**
Operating Expenses											
Mining, Load and Haul	USD	-($205,985,950)	-($171,434,440)	-($159,049,242)	-($158,420,495)	-($155,678,341)	-($137,693,079)	-($154,962,017)	-($152,034,075)	-($155,702,579)	-($147,311,652)
Processing	USD	-($167,326,230)	-($167,326,230)	-($167,326,230)	-($167,326,230)	-($167,326,230)	-($167,326,230)	-($164,777,248)	-($163,606,209)	-($163,606,209)	-($163,606,209)
Fixed Costs	USD	-($4,139,589)	-($4,139,589)	-($4,139,589)	-($4,139,589)	-($4,139,589)	-($4,139,589)	-($4,139,589)	-($4,139,589)	-($4,139,589)	-($4,139,589)
Overheads	USD	-($26,123,579)	-($26,123,579)	-($26,123,579)	-($26,123,579)	-($26,123,579)	-($26,123,579)	-($26,123,579)	-($26,123,579)	-($26,123,579)	-($26,123,579)
Total Operating Expenses	**USD**	**-($403,575,348)**	**-($369,023,838)**	**-($356,638,639)**	**-($356,009,892)**	**-($353,267,738)**	**-($335,282,477)**	**-($350,002,433)**	**-($345,903,452)**	**-($349,571,957)**	**-($341,181,030)**
Ore Mined	t	17,060,817	16,218,552	16,516,066	16,743,468	17,970,093	14,895,671	15,312,654	16,447,016	16,447,187	16,447,190
Cost to Mine	$/t	23.66	22.75	21.59	21.26	19.66	22.51	22.86	21.03	21.25	20.74
Net Operating Surplus	**USD**	**$433,013,335**	**$479,581,474**	**$477,373,688**	**$386,364,083**	**$338,885,519**	**$281,983,515**	**$238,473,319**	**$210,828,039**	**$212,566,846**	**$223,481,709**
Capital	USD	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Sustaining Capital	USD	-($21,954,860)	-($44,477,429)	-($21,954,860)	-($21,954,860)	-($21,954,860)	-($21,954,860)	-($44,477,429)	-($21,954,860)	-($21,954,860)	-($21,954,860)
Total Capital	**USD**	**-($21,954,860)**	**-($44,477,429)**	**-($21,954,860)**	**-($21,954,860)**	**-($21,954,860)**	**-($21,954,860)**	**-($44,477,429)**	**-($21,954,860)**	**-($21,954,860)**	**-($21,954,860)**
Total Loan Value	USD	$716,217,293	$716,217,293	$716,217,293	$716,217,293	$716,217,293	$716,217,293	$716,217,293	$716,217,293	$716,217,293	$716,217,293
Nominal Cash	USD	$411,058,475	$435,104,046	$455,418,828	$364,409,223	$316,930,659	$260,028,655	$193,995,891	$188,873,179	$190,611,986	$201,526,849
Free Cashflow	USD	$411,058,475	$435,104,046	$455,418,828	$364,409,223	$316,930,659	$260,028,655	$193,995,891	$188,873,179	$190,611,986	$201,526,849
Loan Balance	USD	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Loan Repayment	USD	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Loan Interest payment	**USD**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**
Resource Tax	USD	-($13,125,669)	-($12,349,888)	-($12,759,629)	-($12,317,429)	-($13,207,992)	-($8,813,870)	-($8,958,955)	-($9,423,858)	-($9,423,928)	-($9,423,929)
Construction Tax	USD	-($7,812,000)	-($8,137,684)	-($8,039,280)	-($7,127,280)	-($6,687,645)	-($6,024,151)	-($5,585,205)	-($5,284,979)	-($5,331,504)	-($5,367,569)
Education Tax	USD	-($7,812,000)	-($8,137,684)	-($8,039,280)	-($7,127,280)	-($6,687,645)	-($6,024,151)	-($5,585,205)	-($5,284,979)	-($5,331,504)	-($5,367,569)
Post Tax											
Net Cash Flow	**USD**	**$382,308,806**	**$406,478,790**	**$426,580,639**	**$337,837,235**	**$290,347,379**	**$239,166,483**	**$173,866,526**	**$168,879,363**	**$170,525,051**	**$181,367,783**
Depreciation	USD	$41,918,221	$41,918,221	$41,918,221	$31,502,555	$26,649,830	$26,649,830	$26,649,830	$26,649,830	$26,649,830	$26,649,830
Taxable Income	USD	$446,181,887	$492,874,440	$490,453,720	$391,294,650	$338,952,069	$287,771,173	$244,993,785	$217,484,053	$219,129,741	$229,972,473
Carry Forward Losses	USD	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Taxable Income	USD	$446,181,887	$492,874,440	$490,453,720	$391,294,650	$338,952,069	$287,771,173	$244,993,785	$217,484,053	$219,129,741	$229,972,473
Tax Rate	%	10.5%	10.5%	10.5%	10.5%	10.5%	10.5%	10.5%	10.5%	10.5%	10.5%
Tax Paid	USD	-($46,849,098)	-($51,751,816)	-($51,497,641)	-($41,085,938)	-($35,589,967)	-($30,215,973)	-($25,724,347)	-($22,835,826)	-($23,008,623)	-($24,147,110)
Nominal Cashflow	**USD**	**$335,459,708**	**$354,726,974**	**$375,082,999**	**$296,751,297**	**$254,757,411**	**$208,950,510**	**$148,142,178**	**$146,043,537**	**$147,516,428**	**$157,220,673**
Discount Rate		9.0%	9.0%	9.0%	9.0%	9.0%	9.0%	9.0%	9.0%	9.0%	9.0%
Discount Factor		0.42	0.39	0.36	0.33	0.30	0.27	0.25	0.23	0.21	0.19
Discounted Cashflow	**USD**	**$141,701,806**	**$137,468,355**	**$133,355,031**	**$96,793,936**	**$76,235,255**	**$57,364,864**	**$37,312,535**	**$33,746,744**	**$31,272,559**	**$30,577,797**
Cumilative Nominal Cashflow		$1,284,141,384	$1,638,868,358	$2,013,951,356	$2,310,702,653	$2,565,460,064	$2,774,410,574	$2,922,552,753	$3,068,596,290	$3,216,112,719	$3,373,333,391
Cumulative Discounted Cashflow		$441,478,342	$578,946,697	$712,301,728	$809,095,665	$885,330,919	$942,695,783	$980,008,319	$1,013,755,063	$1,045,027,622	$1,075,605,419
Undiscounted Payback		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Discounted Payback		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pre Tax											
Net Cash Flow	**USD**	**$411,058,475**	**$435,104,046**	**$455,418,828**	**$364,409,223**	**$316,930,659**	**$260,028,655**	**$193,995,891**	**$188,873,179**	**$190,611,986**	**$201,526,849**
Depreciation	USD	$41,918,221	$41,918,221	$41,918,221	$31,502,555	$26,649,830	$26,649,830	$26,649,830	$26,649,830	$26,649,830	$26,649,830
Taxable Income	USD	$488,100,108	$534,792,661	$532,371,941	$422,797,204	$365,601,899	$314,421,004	$271,643,615	$244,133,883	$245,779,572	$256,622,303
Carry Forward Losses	USD	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Taxable Income	USD	$488,100,108	$534,792,661	$532,371,941	$422,797,204	$365,601,899	$314,421,004	$271,643,615	$244,133,883	$245,779,572	$256,622,303
Tax Rate	%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Tax Paid	USD	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Nominal Cashflow	**USD**	**$411,058,475**	**$435,104,046**	**$455,418,828**	**$364,409,223**	**$316,930,659**	**$260,028,655**	**$193,995,891**	**$188,873,179**	**$190,611,986**	**$201,526,849**
Discount Rate		9.0%	9.0%	9.0%	9.0%	9.0%	9.0%	9.0%	9.0%	9.0%	9.0%
Discount Factor		0.42	0.39	0.36	0.33	0.30	0.27	0.25	0.23	0.21	0.19
Discounted Cashflow	**USD**	**$173,635,542**	**$168,617,111**	**$161,917,208**	**$118,862,507**	**$94,840,379**	**$71,387,758**	**$48,861,699**	**$43,643,525**	**$40,408,548**	**$39,194,890**
Cumilative Nominal Cashflow		$1,841,292,337	$2,276,396,382	$2,731,815,211	$3,096,224,434	$3,413,155,093	$3,673,183,748	$3,867,179,639	$4,056,052,818	$4,246,664,804	$4,448,191,652
Cumulative Discounted Cashflow		$776,470,266	$945,087,377	$1,107,004,585	$1,225,867,093	$1,320,707,472	$1,392,095,230	$1,440,956,929	$1,484,600,454	$1,525,009,002	$1,564,203,892
Undiscounted Payback		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Discounted Payback		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Table 22-9: Cashflow Summary 2034 – 2033

Operating Cashflows	Unit	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043
Revenue	**USD**	**$671,939,696**	**$694,811,374**	**$683,764,687**	**$677,474,731**	**$684,638,216**	**$608,976,813**	**$447,776,691**	**$447,776,691**	**$447,776,691**	**$447,776,691**
VAT	USE	$33,842,537	$34,516,055	$32,735,579	$33,146,834	$32,273,684	$22,288,919	$16,476,541	$16,476,541	$16,476,541	$16,476,541
Royalties	USD	-($11,563,977)	-($12,090,579)	-($11,980,112)	-($11,917,213)	-($11,988,847)	-($12,376,627)	-($9,816,439)	-($9,816,439)	-($9,816,439)	-($9,816,439)
Smelter Returns	USD	-($128,461,388)	-($126,693,768)	-($126,823,007)	-($126,567,648)	-($127,046,991)	-($111,173,600)	-($83,958,969)	-($83,958,969)	-($83,958,969)	-($83,958,969)
Net Revenue	**USD**	**$565,756,867**	**$590,543,082**	**$577,697,147**	**$572,136,704**	**$577,876,063**	**$507,715,506**	**$370,477,824**	**$370,477,824**	**$370,477,824**	**$370,477,824**
Operating Expenses											
Mining, Load and Haul	USD	-($156,308,996)	-($162,013,437)	-($145,182,501)	-($149,070,119)	-($140,816,192)	-($98,562,078)	-($91,117,970)	-($91,117,970)	-($91,117,970)	-($91,117,970)
Processing	USD	-($163,606,209)	-($164,268,576)	-($164,268,576)	-($164,268,576)	-($164,268,576)	-($112,136,197)	-($64,635,602)	-($64,635,602)	-($64,635,602)	-($64,635,602)
Fixed Costs	USD	-($4,139,589)	-($4,139,589)	-($4,139,589)	-($4,139,589)	-($4,139,589)	-($4,139,589)	-($4,139,589)	-($4,139,589)	-($4,139,589)	-($4,139,589)
Overheads	USD	-($26,123,579)	-($26,123,579)	-($26,123,579)	-($26,123,579)	-($26,123,579)	-($17,755,879)	-($10,195,991)	-($10,195,991)	-($10,195,991)	-($10,195,991)
Total Operating Expenses	**USD**	**-($350,178,374)**	**-($356,545,180)**	**-($339,714,245)**	**-($343,601,863)**	**-($335,347,935)**	**-($232,593,744)**	**-($170,089,153)**	**-($170,089,153)**	**-($170,089,153)**	**-($170,089,153)**
Ore Mined	t	16,447,195	16,499,293	16,499,294	16,499,292	16,499,293	7,536,360	6,439,924	6,439,924	6,439,924	6,439,924
Cost to Mine	$/t	21.29	21.61	20.59	20.83	20.32	30.86	26.41	26.41	26.41	26.41
Net Operating Surplus	**USD**	**$215,578,493**	**$233,997,902**	**$237,982,902**	**$228,534,841**	**$242,528,127**	**$275,121,762**	**$200,388,671**	**$200,388,671**	**$200,388,671**	**$200,388,671**
Capital	USD	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Sustaining Capital	USD	-($21,954,860)	-($44,477,429)	-($21,954,860)	-($21,954,860)	-($21,954,860)	-($21,954,860)	-($44,477,429)	-($21,954,860)	-($21,954,860)	-($21,954,860)
Total Capital	**USD**	**-($21,954,860)**	**-($44,477,429)**	**-($21,954,860)**	**-($21,954,860)**	**-($21,954,860)**	**-($21,954,860)**	**-($44,477,429)**	**-($21,954,860)**	**-($21,954,860)**	**-($21,954,860)**
Total Loan Value	USD	$716,217,293	$716,217,293	$716,217,293	$716,217,293	$716,217,293	$716,217,293	$716,217,293	$716,217,293	$716,217,293	$716,217,293
Nominal Cash	USD	$193,623,633	$189,520,473	$216,028,042	$206,579,981	$220,573,267	$253,166,902	$155,911,242	$178,433,811	$178,433,811	$178,433,811
Free Cashflow	USD	$193,623,633	$189,520,473	$216,028,042	$206,579,981	$220,573,267	$253,166,902	$155,911,242	$178,433,811	$178,433,811	$178,433,811
Loan Balance	USD	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Loan Repayment	USD	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Loan Interest payment	**USD**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**
Resource Tax	USD	-($9,423,931)	-($9,466,634)	-($9,466,634)	-($9,466,634)	-($9,466,634)	-($5,793,301)	-($5,278,626)	-($5,278,626)	-($5,278,626)	-($5,278,626)
Construction Tax	USD	-($5,367,871)	-($5,410,368)	-($5,316,471)	-($5,263,007)	-($5,323,896)	-($4,599,222)	-($3,226,898)	-($3,226,898)	-($3,226,898)	-($3,226,898)
Education Tax	USD	-($5,367,871)	-($5,410,368)	-($5,316,471)	-($5,263,007)	-($5,323,896)	-($4,599,222)	-($3,226,898)	-($3,226,898)	-($3,226,898)	-($3,226,898)
Post Tax											
Net Cash Flow	**USD**	**$173,463,961**	**$169,233,103**	**$195,928,465**	**$186,587,334**	**$200,458,840**	**$238,175,157**	**$144,178,820**	**$166,701,388**	**$166,701,388**	**$166,701,388**
Depreciation	USD	$26,649,830	$15,099,360	$6,243,331	$0	$0	$0	$0	$0	$0	$0
Taxable Income	USD	$222,068,651	$228,809,892	$224,126,655	$208,542,194	$222,413,700	$260,130,017	$188,656,248	$188,656,248	$188,656,248	$188,656,248
Carry Forward Losses	USD	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Taxable Income	USD	$222,068,651	$228,809,892	$224,126,655	$208,542,194	$222,413,700	$260,130,017	$188,656,248	$188,656,248	$188,656,248	$188,656,248
Tax Rate	%	10.5%	10.5%	10.5%	10.5%	10.5%	10.5%	10.5%	10.5%	10.5%	10.5%
Tax Paid	USD	-($23,317,208)	-($24,025,039)	-($23,533,299)	-($21,896,930)	-($23,353,439)	-($27,313,652)	-($19,808,906)	-($19,808,906)	-($19,808,906)	-($19,808,906)
Nominal Cashflow	**USD**	**$150,146,752**	**$145,208,064**	**$172,395,166**	**$164,690,404**	**$177,105,402**	**$210,861,505**	**$124,369,913**	**$146,892,482**	**$146,892,482**	**$146,892,482**
Discount Rate		9.0%	9.0%	9.0%	9.0%	9.0%	9.0%	9.0%	9.0%	9.0%	9.0%
Discount Factor		0.18	0.16	0.15	0.14	0.13	0.12	0.11	0.10	0.09	0.08
Discounted Cashflow	**USD**	**$26,790,819**	**$23,770,279**	**$25,890,601**	**$22,691,272**	**$22,386,998**	**$24,453,152**	**$13,232,027**	**$14,337,853**	**$13,153,994**	**$12,067,884**
Cumilative Nominal Cashflow		$3,523,480,144	$3,668,688,208	$3,841,083,374	$4,005,773,777	$4,182,879,179	$4,393,740,684	$4,518,110,598	$4,665,003,080	$4,811,895,562	$4,958,788,045
Cumulative Discounted Cashflow		$1,102,396,237	$1,126,166,516	$1,152,057,117	$1,174,748,389	$1,197,135,387	$1,221,588,539	$1,234,820,567	$1,249,158,420	$1,262,312,413	$1,274,380,297
Undiscounted Payback		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Discounted Payback		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pre Tax											
Net Cash Flow	**USD**	**$193,623,633**	**$189,520,473**	**$216,028,042**	**$206,579,981**	**$220,573,267**	**$253,166,902**	**$155,911,242**	**$178,433,811**	**$178,433,811**	**$178,433,811**
Depreciation	USD	$26,649,830	$15,099,360	$6,243,331	$0	$0	$0	$0	$0	$0	$0
Taxable Income	USD	$248,718,481	$243,909,252	$230,369,986	$208,542,194	$222,413,700	$260,130,017	$188,656,248	$188,656,248	$188,656,248	$188,656,248
Carry Forward Losses	USD	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Taxable Income	USD	$248,718,481	$243,909,252	$230,369,986	$208,542,194	$222,413,700	$260,130,017	$188,656,248	$188,656,248	$188,656,248	$188,656,248
Tax Rate	%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Tax Paid	USD	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Nominal Cashflow	**USD**	**$193,623,633**	**$189,520,473**	**$216,028,042**	**$206,579,981**	**$220,573,267**	**$253,166,902**	**$155,911,242**	**$178,433,811**	**$178,433,811**	**$178,433,811**
Discount Rate		9.0%	9.0%	9.0%	9.0%	9.0%	9.0%	9.0%	9.0%	9.0%	9.0%
Discount Factor		0.18	0.16	0.15	0.14	0.13	0.12	0.11	0.10	0.09	0.08
Discounted Cashflow	**USD**	**$34,548,437**	**$31,024,135**	**$32,443,461**	**$28,462,876**	**$27,881,551**	**$29,359,218**	**$16,587,788**	**$17,416,533**	**$15,978,471**	**$14,659,147**
Cumilative Nominal Cashflow		$4,641,815,286	$4,831,335,759	$5,047,363,801	$5,253,943,782	$5,474,517,050	$5,727,683,951	$5,883,595,193	$6,062,029,004	$6,240,462,815	$6,418,896,626
Cumulative Discounted Cashflow		$1,598,752,329	$1,629,776,464	$1,662,219,925	$1,690,682,801	$1,718,564,352	$1,747,923,569	$1,764,511,357	$1,781,927,890	$1,797,906,361	$1,812,565,508
Undiscounted Payback		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Discounted Payback		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Table 22-10: Cashflow Summary 2044 - 2049 - End of Mine

Operating Cashflows	Unit	2044	2045	2046	2047	2048	2049	2050
Revenue	**USD**	**$447,776,691**	**$348,781,187**	**$348,781,187**	**$348,781,187**	**$348,781,187**	**$348,781,187**	**$23,489,429,714**
VAT	USE	$16,476,541	$10,524,359	$10,524,359	$10,524,359	$10,524,359	$10,524,359	**$1,024,836,657**
Royalties	USD	-($9,816,439)	-($7,642,853)	-($7,642,853)	-($7,642,853)	-($7,642,853)	-($7,642,853)	**-($460,500,004)**
Smelter Returns	USD	-($83,958,969)	-($66,501,372)	-($66,501,372)	-($66,501,372)	-($66,501,372)	-($66,501,372)	**-($4,484,271,200)**
Net Revenue	**USD**	**$370,477,824**	**$285,161,321**	**$285,161,321**	**$285,161,321**	**$285,161,321**	**$285,161,321**	**$19,569,495,167**
Operating Expenses								
Mining, Load and Haul	USD	-($91,117,970)	-($58,935,193)	-($58,935,193)	-($58,935,193)	-($58,935,193)	-($58,935,193)	**-($5,167,789,460)**
Processing	USD	-($64,635,602)	-($40,552,102)	-($40,552,102)	-($40,552,102)	-($40,552,102)	-($40,552,102)	**-($4,520,043,181)**
Fixed Costs	USD	-($4,139,589)	-($4,139,589)	-($4,139,589)	-($4,139,589)	-($4,139,589)	-($4,139,589)	**-($149,025,210)**
Overheads	USD	-($10,195,991)	-($6,470,866)	-($6,470,866)	-($6,470,866)	-($6,470,866)	-($6,470,866)	**-($711,238,404)**
Total Operating Expenses	**USD**	**-($170,089,153)**	**-($110,097,749)**	**-($110,097,749)**	**-($110,097,749)**	**-($110,097,749)**	**-($110,097,749)**	**-($10,548,096,256)**
Ore Mined	t	6,439,924	4,087,085	4,087,085	4,087,085	4,087,085	4,087,085	449,227,642
Cost to Mine	$/t	26.41	26.94	26.94	26.94	26.94	26.94	23.48
Net Operating Surplus	**USD**	**$200,388,671**	**$175,063,572**	**$175,063,572**	**$175,063,572**	**$175,063,572**	**$175,063,572**	**$9,021,398,911**
Capital	USD	$0	$0	$0	$0	$0	$0	**-($716,217,293)**
Sustaining Capital	USD	-($21,954,860)	-($21,954,860)	-($21,954,860)	-($21,954,860)	$0	$0	**-($798,320,477)**
Total Capital	**USD**	**-($21,954,860)**	**-($21,954,860)**	**-($21,954,860)**	**-($21,954,860)**	**$0**	**$0**	**-($1,514,537,770)**
Total Loan Value	USD	$716,217,293	$716,217,293	$716,217,293	$716,217,293	$716,217,293	$716,217,293	
Nominal Cash	USD	$178,433,811	$153,108,712	$153,108,712	$153,108,712	$175,063,572	$175,063,572	**$7,506,861,141**
Free Cashflow	USD	$178,433,811	$153,108,712	$153,108,712	$153,108,712	$175,063,572	$175,063,572	**$8,081,668,260**
Loan Balance	USD	$0	$0	$0	$0	$0	$0	**$2,199,503,862**
Loan Repayment	USD	$0	$0	$0	$0	$0	$0	**-($716,217,293)**
Loan Interest payment	**USD**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**-($100,077,426)**
Resource Tax	USD	-($5,278,626)	-($3,350,070)	-($3,350,070)	-($3,350,070)	-($3,350,070)	-($3,350,070)	**-($305,305,878)**
Construction Tax	USD	-($3,226,898)	-($2,572,593)	-($2,572,593)	-($2,572,593)	-($2,572,593)	-($2,572,593)	**-($183,003,838)**
Education Tax	USD	-($3,226,898)	-($2,572,593)	-($2,572,593)	-($2,572,593)	-($2,572,593)	-($2,572,593)	**-($183,003,838)**
Post Tax								
Net Cash Flow	**USD**	**$166,701,388**	**$144,613,456**	**$144,613,456**	**$144,613,456**	**$166,568,316**	**$166,568,316**	**$6,735,470,160**
Depreciation	USD	$0	$0	$0	$0	$0	$0	**$716,217,293**
Taxable Income	USD	$188,656,248	$166,568,316	$166,568,316	$166,568,316	$166,568,316	$166,568,316	**$9,050,104,768**
Carry Forward Losses	USD	$0	$0	$0	$0	$0	$0	**-($45,550,993)**
Taxable Income	USD	$188,656,248	$166,568,316	$166,568,316	$166,568,316	$166,568,316	$166,568,316	**$9,004,553,774**
Tax Rate	%	10.5%	10.5%	10.5%	10.5%	10.5%	10.5%	
Tax Paid	USD	-($19,808,906)	-($17,489,673)	-($17,489,673)	-($17,489,673)	-($17,489,673)	-($17,489,673)	**-($950,261,001)**
								0
Nominal Cashflow	**USD**	**$146,892,482**	**$127,123,782**	**$127,123,782**	**$127,123,782**	**$149,078,642**	**$149,078,642**	**$5,785,209,159**
Discount Rate		9.0%	9.0%	9.0%	9.0%	9.0%	9.0%	
Discount Factor		0.08	0.07	0.06	0.06	0.05	0.05	
Discounted Cashflow	**USD**	**$11,071,453**	**$8,790,334**	**$8,064,526**	**$7,398,648**	**$7,960,026**	**$7,302,776**	**$1,324,968,062**
Cumilative Nominal Cashflow		$5,105,680,527	$5,232,804,309	$5,359,928,092	$5,487,051,874	$5,636,130,517	$5,785,209,159	**$5,785,209,159**
Cumulative Discounted Cashflow		$1,285,451,751	$1,294,242,084	$1,302,306,611	$1,309,705,259	$1,317,665,285	$1,324,968,062	**$1,324,968,062**
Undiscounted Payback		0.00	0.00	0.00	0.00	0.00	0.00	**6.72**
Discounted Payback		0.00	0.00	0.00	0.00	0.00	0.00	**7.91**
Pre Tax								
Net Cash Flow	**USD**	**$178,433,811**	**$153,108,712**	**$153,108,712**	**$153,108,712**	**$175,063,572**	**$175,063,572**	**$7,406,783,715**
Depreciation	USD	$0	$0	$0	$0	$0	$0	**$716,217,293**
Taxable Income	USD	$188,656,248	$166,568,316	$166,568,316	$166,568,316	$166,568,316	$166,568,316	**$9,364,773,688**
Carry Forward Losses	USD	$0	$0	$0	$0	$0	$0	**-($951,283,781)**
Taxable Income	USD	$188,656,248	$166,568,316	$166,568,316	$166,568,316	$166,568,316	$166,568,316	**$8,413,489,907**
Tax Rate	%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
Tax Paid	USD	$0	$0	$0	$0	$0	$0	**$0**
								$0
Nominal Cashflow	**USD**	**$178,433,811**	**$153,108,712**	**$153,108,712**	**$153,108,712**	**$175,063,572**	**$175,063,572**	**$7,406,783,715**
Discount Rate		9.0%	9.0%	9.0%	9.0%	9.0%	9.0%	
Discount Factor		0.08	0.07	0.06	0.06	0.05	0.05	
Discounted Cashflow	**USD**	**$13,448,759**	**$10,587,135**	**$9,712,968**	**$8,910,980**	**$9,347,487**	**$8,575,676**	**$1,873,148,514**
Cumilative Nominal Cashflow		$6,597,330,437	$6,750,439,149	$6,903,547,860	$7,056,656,572	$7,231,720,144	$7,406,783,715	**$7,406,783,715**
Cumulative Discounted Cashflow		$1,826,014,268	$1,836,601,403	$1,846,314,371	$1,855,225,351	$1,864,572,838	$1,873,148,514	**$1,873,148,514**
Undiscounted Payback		0.00	0.00	0.00	0.00	0.00	0.00	**5.62**
Discounted Payback		0.00	0.00	0.00	0.00	0.00	0.00	**6.68**

22.6 Summary

A summary of the economic analysis is shown in Table 22-11 for the pre and post-tax amounts at the discount rate of 9%.

The Open Pits of the Jiama Phase II Expansion project are expected to have a combined post-tax net present value of USD 1.324 billion with an internal rate of return of 24.0%.

Given the discussed capital costs, the project will pay itself off in approximately 8 years.

Table 22-11: Economic Analysis Results

Project KPI	Unit	Pre-Tax	Post-Tax
Total Cash	USD	7,406,783,715	5,785,209,159
Net Present Value (NPV)	USD	1,873,148,514	1,324,968,062
Internal Rate of Return (IRR)	%	29.7%	24.0%
Payback Period (Undisc. Cash)	Years	5.62	6.72
Payback Period (Disc. Cash)	Years	6.68	7.91
Max. Cash Draw Down (Undisc. Cash)	USD	-($401,548,388)	
Max. Cash Draw Down (Disc. Cash)	USD	-($401,548,388)	
Operating Margin (EBITA / Revenue)	%	38.4%	

Figure 22-1 shows the pre-tax cumulative discounted cash flow at 9% to be equal to USD 1.873 Billion. The graph shows that the project has negative cash flows in the first three years. This is due to large initial capital expenditures which includes stripping and development and processing plant upgrade. In addition, low metal production revenue relative to costs in these initial years contribute to negative cash flows. However, the cumulative cash flow becomes positive in Year 6 as metal production ramps up.

Mining One estimates that the post-tax payback period of this project is equal to approximately 8 years. Figure 22-1 and Figure 22-2 show the cumulative discounted and undiscounted pre-tax cash flows and NPV of the project.

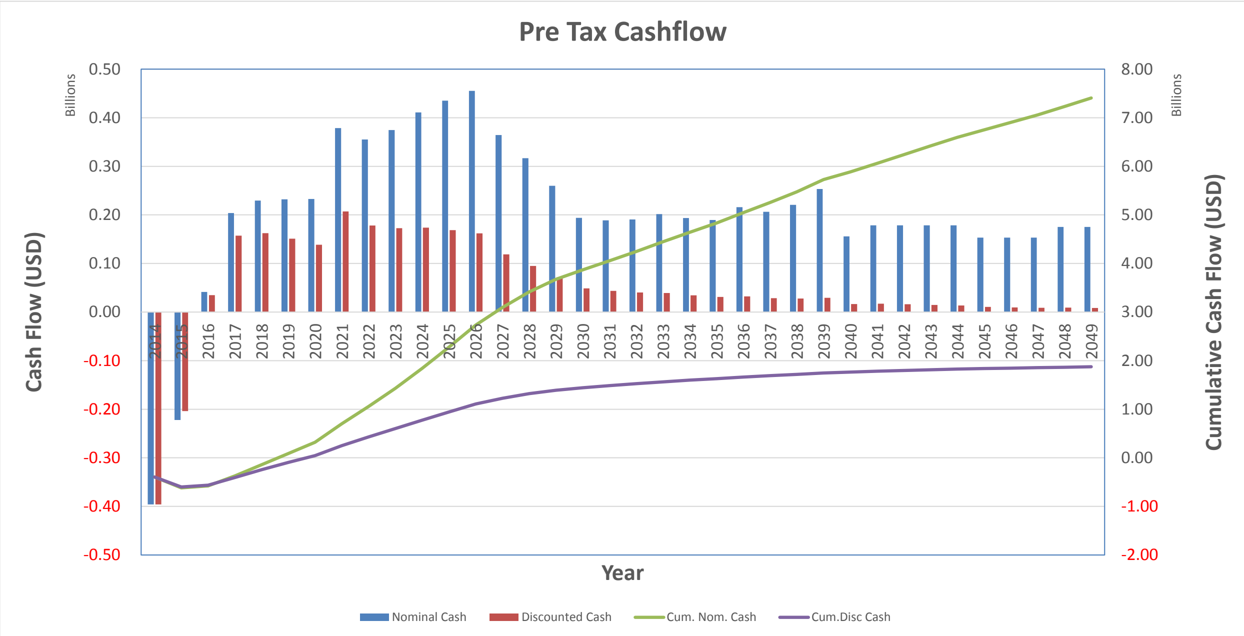


Figure 22-1: Pre-Tax Cash Flow and Cumulative Cash Flow

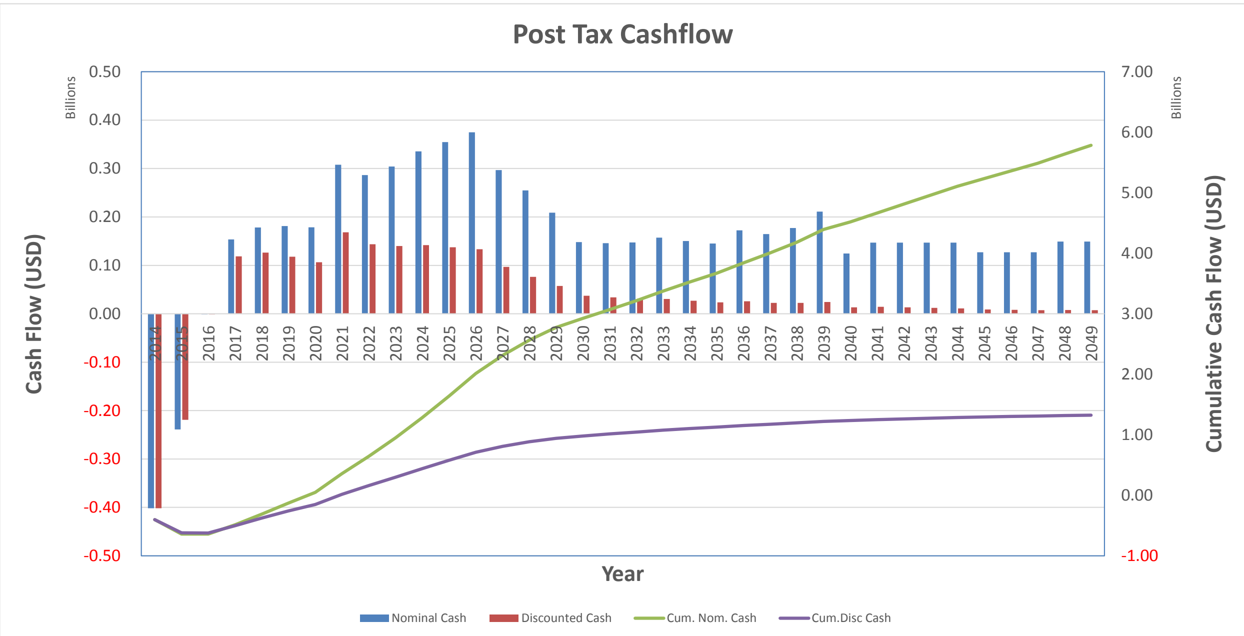


Figure 22-2: Post-Tax Cash Flow and Cumulative Cash Flow

22.7 Sensitivities

The projects greatest risk/sensitivities are in relation to the revenue generated from the project. This includes commodity price, grades and recoveries. In particular, the sensitivity analysis shows the project profitability is particularly sensitivity to metal prices which affects revenues.

Economic model sensitivity analysis was completed on the metal prices, as well as capital cost estimates and operating cost estimates. The results are shown in Figure 22-3 below. These NPVs are based on a discount factor of 9%. The results indicate that the Project is most sensitive to variations in metal price, operating costs, mill operating cost and capital costs in that order. Figure 22-3 presents a graphical representation of these findings.

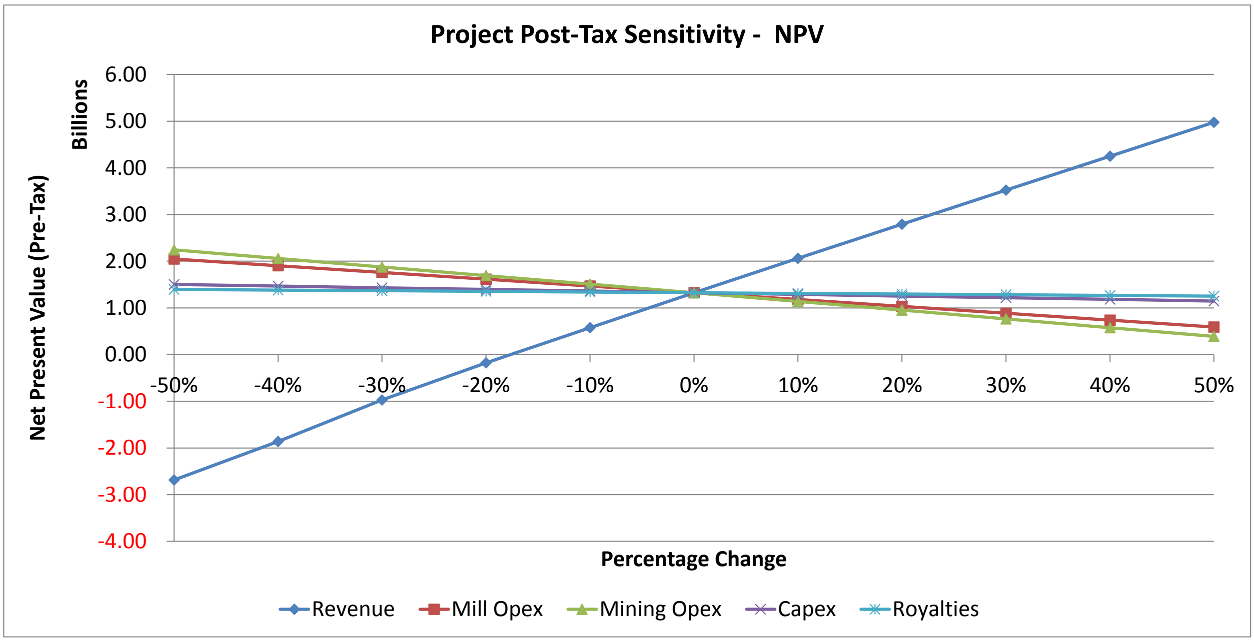


Figure 22-3: Post-Tax NPV Sensitivity

Table 22-12: NPV Sensitivity

Sensitivity	% Chg.	NPV ($M)
Revenue	-50%	-1,732,513,223
	-40%	-1,007,256,026
	-30%	-383,528,871
	-20%	202,579,709
	-10%	778,422,470
	0%	1,348,199,474
	10%	1,912,688,728
	20%	2,477,045,574
	30%	3,037,548,526
	40%	3,597,179,693
	50%	4,156,810,860
Mill Opex	-50%	1,962,132,788
	-40%	1,839,366,563
	-30%	1,716,600,338
	-20%	1,593,834,112
	-10%	1,471,067,887
	0%	1,348,199,474
	10%	1,225,323,465
	20%	1,101,308,364
	30%	976,976,696
	40%	852,645,027
	50%	728,313,359
Mining Opex	-50%	2,269,457,305
	-40%	2,085,309,820
	-30%	1,901,162,336
	-20%	1,716,997,414
	-10%	1,532,649,537
	0%	1,348,199,474
	10%	1,163,049,891
	20%	976,128,081
	30%	789,206,270
	40%	602,270,799
	50%	413,001,945
Capex	-50%	1,526,198,172
	-40%	1,490,598,432
	-30%	1,454,998,693
	-20%	1,419,398,953
	-10%	1,383,799,214
	0%	1,348,199,474
	10%	1,312,599,735
	20%	1,276,999,995
	30%	1,241,400,256
	40%	1,205,800,516
	50%	1,170,200,777
Royalties	-50%	1,349,765,524
	-40%	1,349,452,314
	-30%	1,349,139,104
	-20%	1,348,825,894
	-10%	1,348,512,684
	0%	1,348,199,474
	10%	1,347,886,264
	20%	1,347,573,054
	30%	1,347,259,844
	40%	1,346,946,635
	50%	1,346,633,425

23 ADJACENT PROPERTIES

Mining One are not aware of any adjacent properties in the immediate vicinity of the mine that could potential materially impacts the Resource and Reserve Estimate.

24 OTHER RELEVANT DATA AND INFORMATION

Mining One personnel have reviewed a significant amount of material and identified the pertinent material that materially impacts the Resource and Reserve estimate. There is significantly more supportive data contained within various prefeasibility and feasibility studies that provides the foundation for much of the data contained within this report but was not specifically reviewed.

25 INTERPRETATION AND CONCLUSIONS

Mining one has undertaken a review of the data provided by China Gold and is of the opinion that the economic status of the Jiama Open Pit Reserve Estimate presents as a positive Net Present Value. The Open Pit Reserve Estimate is planned to generate a pre-tax NPV in the order of USD 1,324million considering a discount rate of 9%, a copper price of USD 2.90/lb and a molybdenum price of USD 15.5/lb.

The Jiama Resource Estimate is as follows:

Table 25-1: Jiama Project Resource Estimate

RESOURCES														
Jiama Copper - Polymetallic Project Resources. Cu, Mo, Pb, Zn, Au & Ag Mineral Resources (Cueq>0.3%) reported as at November 2013														
Rock Type	Class	Quantity Mt	Cu %	Mo%	Pb%	Zn%	Au g/t	Ag g/t	Cu Metal Kt	Mo Metal Kt	Pb Metal kt	Zn Metal Kt	Au Moz	Ag Moz
Skarn	Measured	42.8	0.66	0.041	0.06	0.04	0.22	13.39	281	17	28	19	0.304	18.429
	Indicated	453.0	0.69	0.040	0.15	0.09	0.27	15.59	3114	183	676	399	3.901	227.094
	M+I	495.8	0.68	0.040	0.14	0.08	0.26	15.40	3395	200	704	417	4.205	245.523
	Inferred	125.5	0.46	0.038	0.20	0.10	0.19	11.90	577	47	248	125	0.750	47.995
Hornfels	Measured	54.9	0.23	0.031	0.03	0.01	0.02	1.32	127	17	15	5	0.041	2.330
	Indicated	852.9	0.28	0.030	0.01	0.01	0.03	1.38	2368	253	69	64	0.909	37.733
	M+I	907.8	0.27	0.030	0.01	0.01	0.03	1.37	2496	270	84	69	0.950	40.063
	Inferred	276.6	0.24	0.026	0.02	0.02	0.06	2.10	660	73	63	49	0.562	18.644
Porphyry	Measured	2.6	0.26	0.049	0.02	0.01	0.06	3.42	7	1	1	0	0.005	0.281
	Indicated	79.9	0.30	0.039	0.01	0.01	0.07	2.93	240	31	6	8	0.174	7.522
	M+I	82.4	0.30	0.040	0.01	0.01	0.07	2.94	247	33	6	8	0.179	7.803
	Inferred	4.0	0.24	0.085	0.01	0.02	0.04	2.25	10	3	0	1	0.006	0.287
Totals	Measured	100.2	0.41	0.035	0.04	0.02	0.11	6.53	415	36	43	24	0.349	21.040
	Indicated	1,385.8	0.41	0.034	0.05	0.03	0.11	6.11	5722	468	751	470	4.985	272.349
	M+I	1,486.0	0.41	0.034	0.05	0.03	0.11	6.14	6138	503	794	495	5.334	293.389
	Inferred	406.0	0.31	0.030	0.08	0.04	0.10	5.13	1247	124	312	174	1.317	66.926

The Open Pit Reserve Estimate is 240.7 Mt and the underground Reserve Estimate is 200.1 for a combined total of 440.8 Mt of Ore. Table 25-2 Provides a summary of the Reserve.

Table 25-2: Jiama Project Reserve Estimate

0.23% CuEq for Jiaoyan Pit, 0.29% CuEq for South Pit and 0.45% CuEq for UG - November 2013

Total Pit Reserves-South Pit

Type	Quantity Mt	Cu %	Mo %	Pb %	Zn %	Au g/t	Ag g/t	Cu Metal Kt	Mo Metal Kt	Pb Metal Kt
Proven	2.9	0.45	0.03	0.15	0.08	0.05	9.54	13.03	0.85	4.34
Probable	84.3	0.73	0.02	0.60	0.33	0.20	25.20	611.75	13.99	509.85
Subtotal	87.2	0.72	0.017	0.589	0.318	0.19	24.67	624.78	14.84	514.19
Waste	309.6									
Strip Ratio	3.5									

Total Pit Reserves_Jiaoyan

Type	Quantity Mt	Cu %	Mo %	Pb %	Zn %	Au g/t	Ag g/t	Cu Metal Kt	Mo Metal Kt	Pb Metal Kt
Proven	5.0	0.38	0.01	0.00	0.01	0.02	0.94	19.25	0.65	0.16
Probable	148.5	0.40	0.02	0.01	0.01	0.03	1.11	593.76	26.83	8.62
Subtotal	153.5	0.40	0.018	0.006	0.006	0.03	1.11	613.00	27.48	8.78
Waste	222.4									
Strip Ratio	1.4									

Total Underground Reserves

Type	Quantity Mt	Cu %	Mo %	Pb %	Zn %	Au g/t	Ag g/t	Cu Metal Kt	Mo Metal Kt	Pb Metal Kt
Proven	17.0	0.75	0.049	0.045	0.033	0.27	14.74	127.2	8.42	7.72
Probable	183.1	0.73	0.050	0.018	0.019	0.32	13.66	1,342.9	92.28	32.08
Subtotal	200.08	0.74	0.050	0.020	0.020	0.31	13.76	1,470.18	100.70	39.80

Total Reserves - Open Pit and Underground

Type	Quantity Mt	Cu %	Mo %	Pb %	Zn %	Au g/t	Ag g/t	Cu Metal Kt	Mo Metal Kt	Pb Metal Kt
Proven	25.0	0.64	0.04	0.05	0.03	0.19	11.35	159.52	9.92	12.22
Probable	415.9	0.61	0.03	0.13	0.08	0.19	11.52	2,548.44	133.10	550.54
Total	**440.83**	**0.61**	**0.03**	**0.13**	**0.07**	**0.19**	**11.51**	**2,707.96**	**143.02**	**562.76**

26 RECOMMENDATIONS

- The current open pit operation is being mined utilising contractors, based on a thorough examination of the data supplied to Mining One a flat rate of 38.23 RMB/bcm and 36.93 RMB/bcm for Jiaoyan and South Pit respectively has been applied for the excavation and haulage of both waste and ore. While a thorough review of the agreement was not undertaken it is the opinion of the author that Mining loss and dilution could be compromised due to the pricing mechanisms. A flat rate provides minimal incentive for optimising the loss and dilution parameters and provides motivation for bulk earthworks. With this said, the contract was not sighted to validate if other mechanisms have been included in the agreement.

- The underground schedule provides an adequate overview of the mining reserves for the life of mine. It would be recommended that further definition of the underground be carried out to better define the mining methods and the use of bottom up stoping as opposed to the currently scheduled top down method.

- Based on an earlier high level review of the Jiama deposit, it is Mining One's opinion that there is opportunity to increase the size of the current open pit operations:

  - The southern extent of the ore body has not been closed off by the exploration program, therefore there is potential of further mineralisation to the south. It is recommended that further drilling be conducted to understand the true extents of the resource.

  - Current market prices have been applied to the financial modelling. A number of the commodities are believed to be reflective of a soft market and therefore there is opportunity for improvements in the sales revenue if a shift in pricing occurred.

  - The current waste management (waste dumps) present a risk to further extension of the ore body to the south as waste dump #4 is located directly to the south of the South pit. It is recommended that sterilisation drilling be conducted prior to the commencement of this and other waste dumps.

- Mining and exploration licences are current however the rates of mining that have been nominated on these licences is below the production rates anticipated from the Phase II development. It is advisable that these licences be reviewed in line with or above the current production expectations. This has been noted previously and it is Mining One's understanding that new titles will not be issued by the Chinese authorities until the expiry of the current titles.

27 REFERENCES

1. Beher Dolbear – Resource update Report on the Jiama Copper-Polymetallic Project in Metrorkongak Country, Tibet Autonomous Region, Peoples Republic of China', dated March 2012.
2. Changchun Gold Design Institute – Jiama Phase 2 Preliminary Design Capital Cost Report (November 2013).
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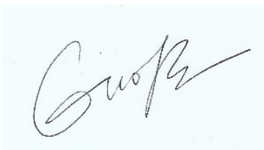
28 SIGNATURE PAGE

CERTIFICATE OF QUALIFIED PERSON

I, Bin Guo, do hereby certify that:

1. I am a Geologist. My address is 93 Kent Road, North Ryde, NSW, Australia. My current occupation is director of GL resources Pty Ltd.
2. I am an author of the Technical Report entitled Jiama Phase II Expansion Project Mineral Resources and Reserves – with an effective date of 20th of December 2013 (the “Technical Report”) prepared for China Gold International
3. I am a graduate of Jilin University, Changchun, China with a Bachelor of Science (Geology), graduating in 1992. I am a Member in good standing of the Australian Institute of Geoscientists AIG, membership number 4201. I have over 13 years’ experience in the exploration, development and mining of mineral properties in Australia and China and am familiar with and have visited a variety of styles of mineral deposits worldwide including estimating and reporting of Mineral Resources for copper projects to NI43-101 standards
4. I have read the definition of “qualified person’ set out in National Instrument 43-101 (“NI 43-101) and certify by reason of my education, affiliation with a professional association (as defined in NI 43-101) and experience, I am a “Qualified Person” for purposes of NI 43-101.
5. I have visited the Property that is the subject of this Technical Report on behalf of China Gold International on the 14th to 16th of July 2013.
6. I am responsible for Sections 1 – 14 of this Technical Report titled “NI 43-101 Technical Report Jiama Phase 2 Expansion Project, Mineral Resources and Reserves for China Gold International” dated September, 2013 (“Technical Report”).
7. I am independent of China Gold International as defined by Section 1.5 of NI 43-101.
8. I have had no prior association or involvement with the property that is subject of this Technical Report.
9. I have read National Instrument 43-101 and Form 43-101F1, and this Technical Report has been prepared in compliance with that instrument and form.
10. As of the date of this certificate, to the best of my knowledge, information and belief, this Technical Report contains all scientific and technical information that is required to be disclosed to make the technical report not misleading.

Dated this 20th Day of December 2013



Bin Guo, BSc Geology Ph.D. Geophysics, MAIG, MAusIMM

Director
GL Resources Pty Ltd.

CERTIFICATE OF QUALIFIED PERSON

I Anthony R. Cameron do hereby certify that:

1. I am a Mining Engineer. My address is 20/F Central Tower, 28 Queen's Road, Central, Hong Kong. My current occupation is Director and Principal Mining Engineer.
2. I am an author of the Technical Report entitled Jiama Phase II Expansion Project Mineral Resources and Reserves – with an effective date of 20th of December 2013 (the "Technical Report") prepared for China Gold International
3. I am a graduate of the University of Queensland, B.E. (Mining), graduating in 1988. I am a Fellow in good standing of the AUSIMM, membership number 108264. In addition I was awarded a Graduate Diploma in Business by Curtin University in Western Australia in 2000, and a Masters in Commercial Law by the University of Melbourne in 2004. I have worked as a mining engineer for 26 years, 13 of those years being directly involved in Mineral Reserve estimation, and 11 of those years being directly involved in estimating and reporting Mineral Reserves for copper projects to NI 43-101 standards.
4. I have read the definition of "qualified person' set out in National Instrument 43-101 ("NI 43-101) and certify by reason of my education, affiliation with a professional association (as defined in NI 43-101) and experience, I am a "Qualified Person" for purposes of NI 43-101.
5. I have visited the Property that is the subject of this Technical Report on behalf of China Gold International in May 2012. On the 14th to 17th of July 2013, I deputised Mr Jeff Zhang, a mining engineer employed by Micromine Consulting Services, to carry out a site visit on my behalf and under my instructions.
6. I am responsible for Sections 1 – 3 and 15 – 27 of this Technical Report titled "NI 43-101 Technical Report Jiama Phase 2 Expansion Project, Mineral Resources and Reserves for China Gold International" dated September, 2013 ("Technical Report").
7. I am independent of China Gold International as defined by Section 1.5 of NI 43-101.
8. I have had no prior association or involvement with the property that is subject of this Technical Report.
9. I have read National Instrument 43-101 and Form 43-101F1, and this Technical Report has been prepared in compliance with that instrument and form.
10. As of the date of this certificate, to the best of my knowledge, information and belief, this Technical Report contains all scientific and technical information that is required to be disclosed to make the technical report not misleading.

Dated this 20th Day of December 2013

Anthony R. Cameron , BE(Mining), Grad Dip Bus, M Comm Law, FAusIMM.

Director and Principal Mining Engineer

CMC Ltd

DOCUMENT INFORMATION

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