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Kamoa-Kakula Project

Kamoa-Kakula 2018 Resource Update

March 2018

Job No. 17001



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Title Page

Project Name:	Kamoa-Kakula Project
Title:	Kamoa-Kakula 2018 Resource Update
Location:	Lualaba Province Democratic Republic of the Congo
Effective Date of Technical Report:	23 March 2018
Effective Date of Mineral Resources:	Kamoa: 27 November 2017 Kakula: 23 February 2018
Effective Date of Drilling Database:	Kamoa: 23 November 2015 Kakula: 23 February 2018
Effective Date of Mineral Reserves:	28 November 2017

Qualified Persons:

- Bernard Peters, B. Eng. (Mining), FAusIMM (201743), employed by OreWin as Technical Director - Mining was responsible for: Sections 1.1, 1.3, 1.4, 1.12, 1.13, 1.13.5, 1.14.1 to 1.14.3, 1.14.5, 1.15.1, 1.15.3, 1.16.1; Section 2; Section 3; Section 4, Section 5; Section 10.8, Section 16.3; Section 19; Section 20; Sections 21.1, 21.6 to 21.10; Section 22; Section 23; Sections 24.1 to 24.5, 24.7.8, 24.8; Sections 25.1, 25.3, 25.5; Section 26.1; Section 27.
- Dr. Harry Parker, SME Registered Member (2460450), Technical Director, Amec Foster Wheeler a division of Wood plc was responsible for: Sections 1.2, 1.5 to 1.9, 1.11, 1.15.2, 1.16.2; Section 2; Section 3; Section 6; Section 7; Section 8; Section 9; Sections 10.1 to 10.6, 10.10 to 10.12; Sections 11.1 to 11.3, 11.5 to 11.12; Section 12, Section 14; Section 25.2; Section 26.2; Section 27.
- Gordon Seibel, SME Registered Member (2894840), Principal Geologist, Amec Foster Wheeler a division of Wood plc was responsible for: Sections 1.2, 1.5 to 1.9, 1.11, 1.15.2, 1.16.2; Section 2; Section 3; Section 6; Section 7; Section 8; Section 9; Sections 10.1 to 10.6, 10.10 to 10.12; Sections 11.1 to 11.3, 11.5 to 11.12; Section 12, Section 14; Section 25.2; Section 26.2; Section 27.
- William Joughin, FSAIMM (55634), employed by SRK Consulting (South Africa) (Pty) Ltd as Principal Consultant, was responsible for: Section 2; Section 10.7; Section 16.1.
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- Dean David, FAusIMM(CP) (102351), Technical Director – Process, Amec Foster Wheeler, Mining and Metals, Australia West, was responsible for: Sections 1.10, 1.13.2, 1.13.3, 1.14.4, 1.16.3; Section 2.3 and 2.4; Section 10.9; Section 11.4; Section 13; Section 17; Section 18; Sections 21.3, 21.4, 21.5; Sections 24.6, 24.7; Section 26.4; Section 27.

1.14.1 Kakula 6 Mtpa PEA Results Summary

The Kakula 6 Mtpa PEA represents the initial phase of the Kakula development. The Kakula 2017 PEA evaluates the development of a 6 Mtpa underground mine and surface processing complex at the Kakula Deposit – a discovery announced in early 2016 – as the project's first phase of development. The development scenario of the Kakula Mine on the Kakula Deposit is shown in Figure 1.9.

This PEA analyses the potential development of an initial 6 Mtpa Kakula Mine at the Kakula Deposit in the southerly portion of the Kamo-a-Kakula Project's discovery area. For this option, the PEA envisages an average annual production rate of 284,000 tonnes of copper at a mine site cash cost of US\$0.51/lb copper and total cash cost of US\$1.14/lb copper for the first ten years of operations, and copper annual production of up to 320,000 tonnes by Year 9. The pre-production capital cost of US\$1.2 billion for this option would result in an after-tax net present value at an 8% discount rate (NPV8%) of US\$4.2 billion.

Figure 1.9 Kakula 2017 PEA 6 Mtpa Development Scenario

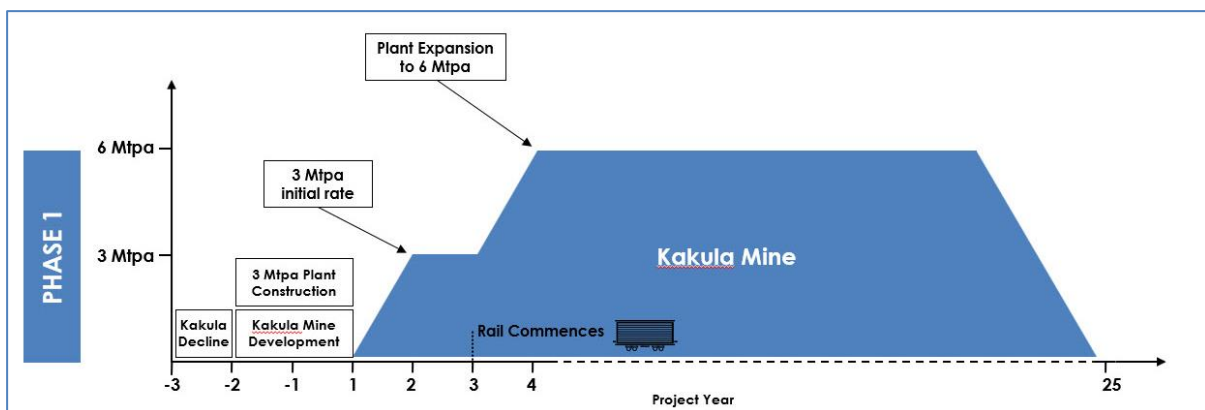


Figure by OreWin, 2017.

A summary of the key results for the Kakula 6 Mtpa PEA scenario are:

- Very-high-grade initial phase of production is projected to have a grade of 7.3% copper in Year Four and an average grade of 6.4% copper over the initial 10 years of operations, resulting in estimated average annual copper production of 284,000 tonnes.
- Annual copper production is estimated at 385,000 tonnes in Year Four.
- Initial capital cost, including contingency, is estimated at US\$1.2 billion.
- Average total cash cost of US\$1.14/lb of copper during the first 10 years.
- After-tax NPV, at an 8% discount rate, of US\$4.2 billion.
- After-tax internal rate of return (IRR) of 36.2%, and a payback period of 3.1 years.
- Kakula is expected to produce a very-high-grade copper concentrate in excess of 50% copper, with extremely low arsenic levels.

The 6 Mtpa PEA assesses the potential development of the Kakula Deposit as a 6 Mtpa mining and processing complex. The Kakula mill would be constructed in two smaller phases of 3 Mtpa each as the mining operations ramp-up to full production of 6 Mtpa. The life-of-mine production scenario provides for 108.4 million tonnes to be mined at an average grade of 5.48% copper, producing 9.4 million tonnes of high-grade copper concentrate, containing approximately 11.4 billion pounds of copper.

The economic analysis uses a long-term price assumption of US\$3.00/lb of copper and returns an after-tax NPV at an 8% discount rate of US\$4.2 billion. It has an after-tax IRR of 36.2% and a payback period of 3.1 years.

The estimated initial capital cost, including contingency, is US\$1.2 billion. The capital expenditure for off-site power, which is included in the initial capital cost, includes a US\$71 million advance payment to the DRC state-owned electricity company, SNEL, to upgrade two hydropower plants (Koni and Mwadingusha) to provide the Kamo-Kakula Project with access to clean electricity for its planned operations. Mwadingusha is being upgraded first. The work is being led by Stucky Ltd., of Switzerland; the advance payment will be recovered through a reduction in the power tariff.

The Kakula 2017 PEA is preliminary in nature and includes an economic analysis that is based, in part, on Inferred Mineral Resources. Inferred Mineral Resources are considered too speculative geologically for the application of economic considerations that would allow them to be categorised as Mineral Reserves – and there is no certainty that the results will be realised. Mineral Resources do not have demonstrated economic viability and are not Mineral Reserves.

Key results of the Kakula 2017 PEA for a single 6 Mtpa mine are summarised in Table 1.9.

The Kamo-Kakula 2018 Resource Update includes economic analysis that is based, in part, on Inferred Mineral Resources. Inferred Mineral Resources are considered too speculative geologically to have the economic considerations applied to them that would allow them to be categorised as Mineral Reserves, and there is no certainty that the results will be realised. Mineral Resources are not Mineral Reserves as they do not have demonstrated economic viability. The results of the Kamo-Kakula 2018 Resource Update represent forward looking information. The forward-looking information includes metal price assumptions, cash flow forecasts, projected capital and operating costs, metal recoveries, mine life and production rates, and other assumptions used in the Kamo-Kakula 2018 Resource Update. Readers are cautioned that actual results may vary from those presented. The factors and assumptions used to develop the forward-looking information, and the risks that could cause the actual results to differ materially are presented in the body of this report under each relevant section.

Table 1.9 Kakula Mine Results Summary for 6 Mtpa Production

Item	Unit	Total
Total Processed		
Quantity Milled	kt	108,422
Copper Feed Grade	%	5.48
Total Concentrate Produced		
Copper Concentrate Produced	kt (dry)	9,400
Copper Recovery	%	86.86
Copper Concentrate Grade	%	54.94
Contained Metal in Concentrate	Mlb	11,385
Contained Metal in Concentrate	kt	5,164
Peak Annual Contained Metal in Concentrate	kt	385
10-Year Average		
Copper Concentrate Produced	kt (dry)	517
Contained Metal in Concentrate	kt	284
Mine-Site Cash Cost	US\$/lb	0.51
Total Cash Cost	US\$/lb	1.14
5-Year Average		
Copper Concentrate Produced	kt (dry)	448
Contained Metal in Concentrate	kt	246
Mine-Site Cash Cost	US\$/lb	0.45
Total Cash Cost	US\$/lb	1.08
Key Financial Results		
Peak Funding	US\$M	1,135
Initial Capital Cost	US\$M	1,231
Expansion Capital Cost	US\$M	318
Sustaining Capital Cost	US\$M	1,443
LOM Average Mine Site Cash Cost	US\$/lb Cu	0.60
LOM Average Total Cash Cost	US\$/lb Cu	1.23
Site Operating Cost	US\$/t Milled	61.49
After-Tax NPV8%	US\$M	4,243
After-Tax IRR	%	36.2
Project Payback Period	Years	3.1
Initial Project Life	Years	24

Table 1.10 summarizes the financial results. The mining production statistics are shown in Table 1.11. The Kakula 2017 PEA 6 Mtpa mill feed and copper grade profile for the first 20 years are shown in Figure 1.10 and the concentrate and metal production for the first 20 years are shown in Figure 1.11.

Table 1.10 Kakula 6 Mtpa PEA Financial Results

Net Present Value (US\$M)	Discount Rate	Before Taxation	After Taxation
	Undiscounted	16,607	11,700
	4.0%	9,940	6,919
	6.0%	7,816	5,398
	8.0%	6,200	4,243
	10.0%	4,955	3,353
	12.0%	3,984	2,660
Internal Rate of Return	–	43.0%	36.2%
Project Payback Period (Years)	–	2.9	3.1

Table 1.11 Kakula 6 Mtpa PEA Production and Processing

Item	Unit	Years 1-5	Years 1-10	LOM Average
Total Processed				
Quantity Milled	kt	4,135	5,073	4,518
Copper Feed Grade	%	6.80	6.42	5.48
Annual Concentrate Produced				
Copper Concentrate Produced	kt (dry)	448	517	392
Copper Recovery	%	87.46	87.29	86.86
Copper Concentrate Grade	%	54.94	54.94	54.94
Annual Contained Metal in Concentrate				
Copper	Mlb	543	627	474
Copper	kt	246	284	215
Annual Payable Metal				
Copper	Mlb	530	612	463
Copper	kt	240	277	210