

#### **KEFI Minerals Plc**

27-28 Eastcastle Street London W1W 8DH United Kingdom

Tel: +90 232 381 9431 Fax: +90 232 381 9071 Email: info@kefi-minerals.com

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# KEFI Minerals Plc ("KEFI" or the "Company")

# INDEPENDENTLY VERIFIED UPDATED ORE RESERVE REPORTING ON TULU KAPI GOLD DEPOSIT IN ETHIOPIA

KEFI Minerals Plc (AIM: KEFI) the gold exploration and development company with projects in the Kingdom of Saudi Arabia and the Federal Democratic Republic of Ethiopia, is pleased to announce an independently updated Ore Reserve estimated using the guidelines of the JORC Code (2012) as a Probable Ore Reserves of 15.4 Mt at 2.12 g/t Au for 1.05 Moz Au (previously 12.9 Mt at 2.41 g/t Au for 1.002 Moz Au) at its wholly-owned Tulu Kapi project in Ethiopia.

Harry Anagnostaras-Adams, Chairman of KEFI, said: "The independent verification of the updated one million ounce Tulu Kapi Reserve complements our recently published production, cost and valuation estimates and serves to facilitate the completion of the 2015 DFS this quarter as scheduled.

"We are on track for finalizing full development funding in Q3-2015, with a plan for up to approximately \$100M senior-secured finance and the remainder in equity at parent or project from contractors and/or investment institutions. Then development can start in Q4-15 and production in 2017."

#### **Ore Reserve Statement**

Snowden Mining Industry Consultants Pty Ltd ("Snowden") estimated gold Mineral Resources and Ore Reserve estimates for KEFI's Tulu Kapi gold deposit. Snowden identified an updated mining inventory based on the new Mineral Resource estimate from February 2015. Snowden's Ore Reserves at April 2015 are estimated using a 0.9 g/t Au cut-off 0.5 g/t cut-off for low grade stocks as provided below.

# April 2015 Tulu Kapi Ore Reserve estimate reported above a 0.5 to 0.9 g/t Au cut-off

JORC (2012) Reserve category	Cut-off (g/t Au)	Tonnes (Mt)	Au (g/t)	Ounces (Moz)	
Probable - High grade	0.90	12.0	2.52	0.98	
Probable - Low grade	0.50 - 0.90	3.3	0.73	0.08	
Total	Total	15.4	2.12	1.0	

Note: Mineral Resources are inclusive of Ore Reserves

All numbers are reported to three significant figures. Small discrepancies may occur due to the effects of rounding.

The key Modifying Factors used to estimate the Ore Reserve were based on the experience of Snowden and Kefi employees in this type of deposit and style of mineralisation. **Error! Reference source not found.** summarises material aspects of the April 2015 Ore Reserve estimate for consistency with requirements of the Australasian Code for Reporting Exploration Results, Mineral Resources and Ore Reserves, 2012 edition ("JORC Code") Table 1, Section 4, Estimation and Reporting of Ore Reserves

Item	Comment					
Mineral	Snowden prepared the updated Tulu Kapi Mineral Resource estimate in February 2015. The relevant part of the Mineral Resource estimate is provided below. No planned dilution was applied to these estimates. Mineral Resources are inclusive of Ore Reserves.					
Resource for conversion to Ore Reserve	JORC (2012) Mineral Resource category	Reporting elevation	Cut-off (g/t Au)	Tonnes (Mt)	Au (g/t)	Ounces (M)
	Indicated	above 1,400 RL	0.45	17.7	2.49	1.42
Site visits	No site visit was undertaken by Mr Blanchfield who is one of the CP's for the Ore Reserve estimate; however, Mr Di Giovanni, who is the CP for metallurgy has visited the Tulu Kapi project site as well as Mr John Graindorge a Snowden resource geologist who visited the Tulu Kapi project site for the purposes of Mineral Resource estimation in July 2014. They have reviewed data and photos with Mr Blanchfield to his satisfaction.					
Study status	<ul> <li>A definitive feasibility study (DFS) was completed by the previous owner, Nyota, in 2012.</li> <li>Work was completed by Snowden in August 2014 to update Ore Reserves using an updated Mineral Resource (by Snowden). Snowden considers that most of the 2014 work completed for Ore Reserves estimation was of a prefeasibility (PFS) accuracy however there were some omissions (that did not affect the materiality of the reserve estimate) that prevented Snowden determining the 2014 reporting as a PFS and there was no published PFS for KEFI's Tulu Kapi project.</li> <li>Current Studies</li> <li>The Tulu Kapi feasibility study (FS) is at an advanced stage. Snowden has completed most of the mining studies consistent with the accuracy required for this type of study; however, costings are currently at a prefeasibility level but considered still appropriate for the current April 2015 Ore Reserve. These costings are expected to be validated by fully detailed</li> </ul>					
Cut-off parameters	An elevated cut-off grade of 0.9 g/t Au is used for the first ten years of the project production schedule. Ore at a cut-off of between 0.50 g/t Au and 0.9 g/t Au was stockpiled and then processed in the final three years of the project resulting in a project life of 13 years. The marginal cut-off grade was estimated to be 0.47 g/t Au based on the economic inputs and Modifying Factors outlined in this table. It should be noted that the August 2014 Ore Reserve for Tulu Kapi only reported ore at an elevated cut-off of greater than 0.8 g/t and no low grade ore was included in the 2014 Ore Reserve.					
	To identify the Tulu Kapi Ore Reserve, a process of Whittle pit optimisation, staged pit design production scheduling and mine cost modelling was undertaken by Snowden.					
Mining factors and assumptions	The mining method modelled is conventional open pit drill and blast, load and haul on a 7.5 m high blasting bench, reflecting a semi-selective mining approach using 120 t class backhoe configured excavators. No special infrastructure requirements will be required for this mining method.					
	Three months of overburden pre-stripping will be required where a small amount of ore is to be stockpiled.					
	Planned dilution was applied through modelling a 500mm vertical block					

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dilution. This reduced the feed ounces by approximately 5% and increased the ore tonnage processed by 9%. An unplanned ore loss of 5% was also applied to the ore inventory.

Less than 80 kt or 0.6% of the Mineral Resource inside the pit is classified as Inferred. This Inferred resource was considered as diluting grade, and only influenced the grade adjacent in the Indicated Mineral Resource blocks. It is therefore not incorporated into the Ore Reserve.

The mineralisation modelled and metallurgical testwork available indicate that conventional CIL extraction can be used, to produce gold as doré.

The gold is free milling and all the unit processes included in the plant design are standard and common to many current gold operations.

# The testwork programme included:

- comminution testwork
- flotation testwork
- cyanidation testwork
- oxygen uptake
- gravity recoverable gold testwork
- thickening testwork
- cyanide detoxification.

# Metallurgical factors and assumptions

Variability testwork was conducted on samples from different lithologies and different mineralised zones. Samples were selected mainly to define the differences in ore hardness (or grindability) and gold recovery. Samples were taken from 11 geographically diverse oxide mineralised zones for grindability and extraction testwork, 16 samples from spatially diverse fresh mineralised zones for extraction testwork and five samples from spatially diverse fresh mineralised zones for both comminution variability and extraction testwork. There are no deleterious metals identified.

No bulk sample or pilot scale test work was justified or completed.

The metallurgical factors were developed by SENET and reviewed by Snowden. Metallurgical recoveries were applied to the Snowden optimisation and Snowden production schedule and KEFI's financial model. The algorithms estimate lower recovery at lower ore grade as used for this Ore Reserve estimate include the following:

- Oxide ore: 0.986\*((DilAu-(0.0465\*DilAu+0.0294))/DilAu)
   ranging from 88.2% to 96.0% life of mine (LOM), at an average of 95.6%
- Fresh ore: 0.986\*((DilAu-(0.053\*DilAu+0.0193))/DilAu),
   ranging from 85.3% to 94.7% LOM, at an average of 94.0%
- Fresh hard ore: 0.986\*((DilAu-(0.0916\*DilAu+0.0056))/DilAu),
   ranging from 69.7% to 95.6% LOM, at an average of 89.6%

The overall life of mine (LOM) recovery was estimated to be 91.5%.

# Environment al

Rock characterisation studies were completed by Golders. No acid rock drainage (ARD), or elevated geothermal temperatures were identified.

The Mining Licence was approved and issued in April 2015. The Mining Licence allows provision for onsite tailings impoundment and waste rock land forms.

Final landform waste dumps will be modelled for the DFS.

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# Infrastructure

Detailed discussions were recently held with local power authority (EEPCo) regarding connection to the national electricity grid. Other than utility charges, no other significant operating costs arise for grid connected electrical energy usage. Published tariff data for industrial consumers taking supply at high voltage is used



	as the basis for the operating cost under the	11.0			
	Local labour will be sourced from surrounding communities and a camp will be constructed for 250 persons to house expatriate and non-local personnel.				
	Process costs were developed process plant.     Process costs included the following litem	from first principles by SENET, for a new owing:  US\$/t ore			
	LOM oxide ore processing costs	9.41			
	LOM fresh ore processing costs	7.09			
	LOM fresh hard ore processing costs 10.42				
	LOM average process operating costs	8.17			
	Site G&A	5.38			
	Total	13.55			
Cost and revenue factors	<ul> <li>Prefeasibility mining costs were developed from first principles by Snowden in 2014 for an all up mining cost of US\$2.74 per tonne. This cost was scaled up to US\$3.00 per tonne to allow for the costs of semi- selective mining.</li> </ul>				
	<ul> <li>Mining capital costs were estimated to be US\$23.3M including mobile equipment and fixed mine infrastructure.</li> </ul>				
7401070	Other capital costs include the following:				
	- process capital costs are US\$58.3M				
	- tailings infrastructure costs US\$7.5M				
	<ul> <li>other Infrastructure costs (TSF, Roads, Power, Camp) of US\$21.7M</li> <li>Indirect costs (EPCM and Insurance) US\$12.6M</li> </ul>				
	- Indirect costs (EPCM and Insurance) US\$12.6M - owners costs of US\$8.8M				
	<ul> <li>sustaining costs of US\$43.9M (including Snowden sustaining capital of US\$12M</li> </ul>				
	<ul><li>working capital of US\$5.9M.</li></ul>				
	Closure costs were included and estimated to be \$8.25M.				
	<ul> <li>Refining costs of US\$5.77 per ounce (US\$8.88 per ounce inclusive of transport) were included.</li> </ul>				
	<ul> <li>A royalty of 7% were applied to net revenue from sales of gold produced.</li> <li>All costs were supplied in \$US.</li> </ul>				
	соста поло определения форма				
Revenue factors	<ul> <li>A gold price was supplied by applied real and as a flat forwar</li> </ul>	KEFI at US\$1,250 per ounce. This was d price in the financial model.			
Market	In determining the revenue paramet market studies including discussion w	ters, KEFI conducted comprehensive vith likely refiners.			
assessment	A comprehensive marketing study was also completed as part of the Nyota 2012 DFS concluding the refining of the doré. Gold is free trading.				
	A discount rate of 8% was applied in the KEFI financial model.				
Economic	A financial sensitivity study was undertaken evaluating capital expenditure, operating costs and gold price. The project was seen to be most sensitive to changes in gold price, with a 20% reduction in price resulting in a breakeven NPV position, whilst a 20% increase in price approximately doubled the NPV.				
	Key project metrics (after tax) from following:	the KEFI cash flow model include the			
	All in cash cost inc. royalty, excluding	913.0			

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	salvage costs (US\$/oz produced)			
	IRR ungeared (%)	22.7		
	NPV 8% (US\$M)	102.2		
	(US\$ \$/oz produced)*	634.0		
	Initial capital cost** (US\$M)	132.3		
	*excludes royalty and refining costs **excludes working capital and pre-pro	duction funding		
Social	A socio-economic study was prepared by Golder Consultants for Nyota and this is documented in 2012 DFS that was completed by SENET for Nyota. The commentary provides a summary of the socio-economic characteristics of the area at a household level. Nyota conducted a stakeholder engagement program and survey in 2010.			
	Ethiopian consulting firm D government, has facilitated to	community management team and specialist ynamic which, in conjunction with the local the drafting of the selection and allocation of sation amounts and the livelihood restoration		
Classification	Code, corresponding respect	ed as Probable in accordance with the JORC ively to the Mineral Resource classifications of ces are included in the Ore Reserve estimate.		
Audits or reviews		n internal peer review of the Ore Reserve ial model was also reviewed by Endeavour		
	Snowden's opinion of Ore Reserve is that the classification of Probable is reasonable. However lower confidence is attributed to the following Modifying Factors:			
Relative accuracy / confidence	Dilution: The dilution modelled by applying model, representing occur at the boundar typically 2 to 3 m wide outcome and can only	for the proposed selective mining method was y +/- 0.5 m dilution zone to the Mineral Resource the average mixing of ore and waste expected to y by the excavator. As the mineralised lodes are y, the realised grade will be sensitive to achieving this y be confirmed by a production reconciliation process.		
	accuracy; however the accuracy for the conc	ining costs are currently at a prefeasibility level of nese will be upgraded to an appropriate level of lusion of the current feasibility study using OEM and t quotations from contractors.		
	1	Id be undertaken for further validation of the dilution roposed mining method.		

As a result of the study, Snowden identified an updated mining inventory based on the Snowden Mineral Resource estimate from February 2015, "150211 Final AU4448 KEFI Tulu Kapi Resource Update\_Feb2015". Only the Indicated Mineral Resource relating to the open pit portion of the Tulu resource was used as a basis for Ore Reserves estimation and this portion is summarised in Table 1 (see Appendix).

# **Enquiries**

# **KEFI Minerals plc**

Harry Anagnostaras-Adams (Executive Chairman) +357 99457843 Jeff Rayner (Exploration Director) +905 339281913



**SP Angel Corporate Finance LLP (Nominated Adviser)** 

Ewan Leggat, Katy Birkin +44 20 3470 0470

**Brandon Hill Capital Ltd (Broker)** 

Oliver Stansfield, Jonathan Evans +44 20 3463 5000

Luther Pendragon Ltd (Financial PR)

Harry Chathli, Claire Norbury, Oli Hibberd +44 207 618 9100

Further information on KEFI Minerals is available at www.kefi-minerals.com

#### **COMPETENT PERSONS STATEMENTS**

# **Ore Reserves**

The information in this report that relates to Tulu Kapi Ore Reserves is based on information reviewed or work undertaken by Mr Frank Blanchfield, FAusIMM and a full time employee of Snowden Mining Industry Consultants Pty Ltd. Mr Frank Blanchfield has sufficient experience which is relevant to the style of mineralisation and type of deposit under consideration and to the preparation of mining studies to qualify as a competent person as defined by the JORC Code (2012).

The scientific and technical information in this report that relates to process metallurgy is based on information reviewed by Mr Sergio Di Giovanni, who is a full-time employee (Project Development Manager) of KEFI Minerals Plc. Mr Sergio Di Giovanni is a member of the Australasian Institute of Mining and Metallurgy. Mr Sergio Di Giovanni has sufficient experience that is relevant to the style of mineralisation and type of deposit under consideration and to the activity being undertaken to qualify as a Competent Person as defined by the JORC Code (2012).

Mr Sergio Di Giovanni consents to the inclusion in the report of the matters related to the metallurgy, in the form and context in which it appears. Mr Blanchfield consents to the inclusion in this report of the matters based on information provided by Snowden and in the form and context in which it appears.

# **BACKGROUND TO THE ORE RESERVE ESTIMATE**

The resource model was diluted during the reserve study via application of a 500 mm dilution zone around the z (vertical) dimension of the ore blocks. This level of dilution was considered reasonable for this style of deposit and mining technique. The dilution zone was then used to dilute the grade of the ore blocks.

Snowden also assessed the KEFI developed financial model to understand the economic viability of the project. Snowden relied on metal prices provided by KEFI, and understand from KEFI and KEFI's consultants, in documents provided by KEFI, that there are no environmental, approvals, licensing or permitting encumbrances hindering the estimation of Ore Reserves.

Snowden has drawn a realistic outcome for the Tulu Kapi project based on the current feasibility study mine planning that has been done for the Ore Reserve estimate. The Probable outcome for Ore Reserves reflects the accuracy of the data used as the basis for the estimate and the data accuracy may be able to be improved in future studies. For future mine planning and Ore Reserve studies Snowden makes some recommendations:

The degree of selectivity will need to be better quantified for further Ore Reserve estimates and to consider Proved Ore reserves, subject to Measured Mineral Resource identification. There may be a requirement to isolate ore by:

- Dozer ripping if the excavatability study reveals this is possible
- Variable blast heights to leave behind contaminated material



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- Dozer pushing of blasted material
- Identification of any free dig in the saprolite
- Visual grade control that is because of the different gold bearing vein color
- A volumetrically denser grade control drilling pattern
- Detailed blasting timing /dynamics study to control movement and delivered from a specialist consultancy.

The costs associated with these activities may need to be developed in the cost modelling studies.

A second hand mining fleet or contract mining may reduce the mining costs and these should be investigated. However if ownership mining is pursued then comprehensive costings should be received from original equipment manufacturer, vendors and non-binding quotes.

For this Ore Reserve estimate, geological interpretation was advanced to wireframes and these were used to develop the vertical ore body thickness histograms to assess the relative risk of narrow ore lenses as against the lode style material.

Snowden will review both capital and operating costs in detail in the DFS phase of the project for metallurgy and process assumptions to ensure that the estimates meet typical DFS requirements.

Based on the design reports and information provided, Snowden used 2015 updated recommendations for pit slope stability design parameters and other geo-technical considerations including waste dump design.

# **NOTES TO EDITOR**

# **KEFI Minerals plc**

KEFI is the operator of two advanced gold development projects within the highly prospective Arabian-Nubian Shield, with an attributable 2Moz (95% of Tulu Kapi's 1.9Moz and 40% of Jibal Qutman's 0.6Moz) Au Mineral Resources (JORC 2012) plus significant resource growth potential. KEFI is targeting for production at these projects to generate cash flows for further exploration and expansion as warranted, recoupment of development costs and, when appropriate, dividends to shareholders.

Expected milestones for the remainder of 2015 at Tulu Kapi include:

- Independently verified update to Ore Reserves
- Independently updated Definitive Feasibility Study for banking purposes
- Formalisation of bank syndicate, agreement of final terms for project finance
- Full development funding and commencement of construction

In addition, during 2015 KEFI anticipates submitting a Mining Licence Application for Jibal Qutman in Saudi Arabia through its joint venture company, Gold & Minerals Ltd ("G&M").

# **KEFI** in Ethiopia

KEFI has 95% ownership of the Tulu Kapi Mining Licence in western Ethiopia and is at an advanced stage in refining the development plan for the project, aimed at reducing the previously planned capital and operating expenditure. Detailed research has yielded encouraging results and has been summarised in recent Company announcements.

At the end of 2013, the Ethiopian Government improved the fiscal regime applying to the gold sector, and Tulu Kapi in particular. This included lowering the income tax rate for mining (to 25% from 35%); settling of repayment schedule for inherited VAT liability (over three years rather than up-front); the removal of VAT on future exploration drilling expenditure; lowering royalty on gold mining (to 7% from 8%); accelerating the depreciation of historical and future capital expenditure (over four years); and clarifying the



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workings of the Government's 5% free-carried interest so that it does not impede conventional project financing terms.

#### KEFI in the Kingdom of Saudi Arabia

In 2009, KEFI formed G&M in Saudi Arabia with local Saudi partner Abdul Rahman Saad Al-Rashid & Sons Company Limited ("ARTAR"), to explore for gold and associated metals in the Arabian Shield. KEFI has a 40% interest in the G&M and is the operating partner. To date, the G&M has conducted preliminary regional reconnaissance and has had five Exploration Licences ("EL") granted, including Jibal Qutman and the recently granted Hawiah Exploration Licence that contains over 5km<sup>2</sup> of outcropping gossans developed on VMS altered and mineralised rocks.

G&M holds 24 Exploration Licence Applications that cover an area of approximately 1,484km<sup>2</sup>. ELs are renewable for up to three years and bestow the exclusive right to explore and to obtain a 30-year exploitation (mining) lease within the area.

The Kingdom of Saudi Arabia has instituted policies to encourage minerals exploration and development, and KEFI Minerals supports this priority by serving as the technical partner within G&M. ARTAR also serves this government policy as the major partner in G&M, which is one of the early movers in the modern resurgence of the Kingdom's minerals sector.

# **DEFINITIONS OF EXPLORATION RESULTS, RESOURCES & RESERVES**

#### **EXTRACTED FROM THE JORC CODE: (December 2012) (www.jorc.org)**

A 'Mineral Resource' is a concentration or occurrence of material of intrinsic economic interest in or on the Earth's crust in such form, quality and quantity that there are reasonable prospects for eventual economic extraction. The location, quantity, grade, geological characteristics and continuity of a Mineral Resource are known, estimated or interpreted from specific geological evidence and knowledge. Mineral Resources are sub-divided, in order of increasing geological confidence, into Inferred, Indicated and Measured categories.

An 'Inferred Mineral Resource' is that part of a Mineral Resource for which quantity and grade (or quality) are estimated on the basis of limited geological evidence and sampling. Geological evidence is sufficient to imply but not verify geological and grade (or quality) continuity. It is based on exploration, sampling and testing information gathered through appropriate techniques from locations such as outcrops, trenches, pits, workings and drill holes. An Inferred Mineral Resource has a lower level of confidence than that applying to an Indicated Mineral Resource and must not be converted to an Ore Reserve. It is reasonably expected that the majority of Inferred Mineral Resources could be upgraded to Indicated Mineral Resources with continued exploration.

An 'Indicated Mineral Resource' is that part of a Mineral Resource for which quantity, grade (or quality), densities, shape and physical characteristics are estimated with sufficient confidence to allow the application of Modifying Factors in sufficient detail to support mine planning and evaluation of the economic viability of the deposit. Geological evidence is derived from adequately detailed and reliable exploration, sampling and testing gathered through appropriate techniques from locations such as outcrops, trenches, pits, workings and drill holes, and is sufficient to assume geological and grade (or quality) continuity between points of observation where data and samples are gathered. An Indicated Mineral Resource has a lower level of confidence than that applying to a Measured Mineral Resource and may only be converted to a Probable Ore Reserve.

A 'Measured Mineral Resource' is that part of a Mineral Resource for which quantity, grade (or quality), densities, shape, and physical characteristics are estimated with confidence sufficient to allow the application of Modifying Factors to support detailed mine planning and final evaluation of the economic viability of the deposit. Geological evidence is derived from detailed and reliable exploration, sampling and testing gathered through appropriate techniques from locations such as outcrops, trenches, pits, workings



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and drill holes, and is sufficient to confirm geological and grade (or quality) continuity between points of observation where data and samples are gathered. A Measured Mineral Resource has a higher level of confidence than that applying to either an Indicated Mineral Resource or an Inferred Mineral Resource. It may be converted to a Proved Ore Reserve or under certain circumstances to a Probable Ore Reserve.

An 'Ore Reserve' is the economically mineable part of a Measured and/or Indicated Mineral Resource. It includes diluting materials and allowances for losses, which may occur when the material is mined or extracted and is defined by studies at Pre-Feasibility or Feasibility level as appropriate that include application of Modifying Factors. Such studies demonstrate that, at the time of reporting, extraction could reasonably be justified. The reference point at which Reserves are defined, usually the point where the ore is delivered to the processing plant, must be stated. It is important that, in all situations where the reference point is different, such as for a saleable product, a clarifying statement is included to ensure that the reader is fully informed as to what is being reported.

#### **APPENDIX**

Summary of the status of material aspects of the December 2012 Ore Reserve estimate in the context of the Australasian Code for Reporting Exploration Results, Mineral Resources and Ore Reserves, 2012 edition ("JORC Code") Table 1, Section 4, Check List of Assessment and Reporting Criteria.

Table 1 Mineral Resource estimate basis for the Ore Reserve

JORC (2012) Resource category	Reporting elevation	Cut-off (g/t Au)	Tonnes (Mt)	Au (g/t)	Ounces (M)
Indicated	Above 1400 RL	0.45	17.7	2.49	1.42



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