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ASX Announcements Office
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Australia

KANYIKA NIOBIUM PROJECT: FEASIBILITY STUDY UPDATE

Globe Metals & Mining Limited (ASX: **GBE**, **Globe** or the **Company**) hereby provides an update with respect to the Kanyika Feasibility Study.

Specifically, Globe advises that it has:

1. finalised the revision of all studies and plans, such that the technical programs associated with the mineral resource, mining, metallurgical studies, processing, engineering design and infrastructural support are all done to a technical detail that is satisfactory to engineering classification standards; and
2. obtained updated capital and operating cost estimates through a tender process that was undertaken independent of Globe,

and has updated its financial model for revised capital costs, revenues and operating costs in order to determine key metrics including but not limited to project revenue, profitability, net present value, internal rate of return, and payback.

The Company is not yet in a position to finalise the financial model and release the key outcomes due to:

(a) the current uncertainty associated with the status of the mining law in Malawi (see the commentary on the Mining Act); and
(b) the status of negotiations between the Company and the Government on the Development Agreement.

Project Background

Globe acquired the exploration licence for the Kanyika Niobium Project (**KNP**) in 2006 and subsequently undertook substantial drilling which led to a JORC mineral resource estimate being published during 2010.

The mineral resource estimate was subsequently upgraded in 2013 and revised in 2018 to meet JORC 2012 guidelines.

The 2018 resource revision was undertaken for the purposes of ensuring that the technical parameters underpinning the Mineral Resource Estimate calculated in accordance with the 2004 JORC guidelines continue to apply under the 2012 JORC guidelines; critical in the update of the technical components of the Feasibility Study currently occurring.

The Mineral Resource Estimate calculated in accordance with the 2012 JORC guidelines is as follows:

Table 1: Mineral Resource Estimate for Kanyika using a 1,500 ppm Nb_2O_5 lower cut

Category	Million Tonnes	Nb_2O_5 ppm	Ta_2O_5 ppm
Measured	5.3	3,790	180
Indicated	47.0	2,860	135
Inferred	16.0	2,430	120
Total	**68.3**	**2,830**	**135**

Table 2: Mineral Resource Estimate for Kanyika using a 3,000 ppm Nb_2O_5 lower cut

Category	Million Tonnes	Nb_2O_5 ppm	Ta_2O_5 ppm
Measured	3.4	4,790	220
Indicated	16.6	4,120	190
Inferred	2.8	4,110	190
Total	**22.8**	**4,220**	**190**

In 2012 Globe commenced engineering studies and has since undertaken optimisation programs aimed at assessing options to improve recoveries, and the impact on capital and operating costs.

In 2014, Globe undertook a concentrator pilot plant programme which validated the results of earlier optimisation tests by demonstrating an effective improvement in concentrate grades and recoveries and lead to significant changes to the mining schedule and re-design of the plant.

Feasibility Study Program

In February 2018, Globe announced it had commenced work aimed at updating and finalising the technical components of the engineering program in order to support project funding initiatives and in light of the changing outlook for the mining and resources industry, and in particular for niobium.

To facilitate this, the Company advised it had engaged specialists to revise and update the previous engineering study to incorporate the findings and outcomes of the pilot plant work undertaken and other necessary engineering design changes.

Globe is using the updated engineering studies to update the project financial model inclusive of revised capital costs of construction, operating revenues and operating expenses, refer following.

Engineering Studies Complete

Globe advises it has now completed the re-design of all technical and engineering aspects pertaining to the Feasibility Study.

The site layout has been optimised to minimise civil works and maximise utilisation of natural materials and topography for the main project structures, including:

- Mining operations and waste rock dumps
- Process plant layout
- Tailings storage facility
- Pollution containment structures
- Accommodation and administration facilities
- Water storage facility

The KNP general arrangement drawing is shown overleaf in Figure 1.

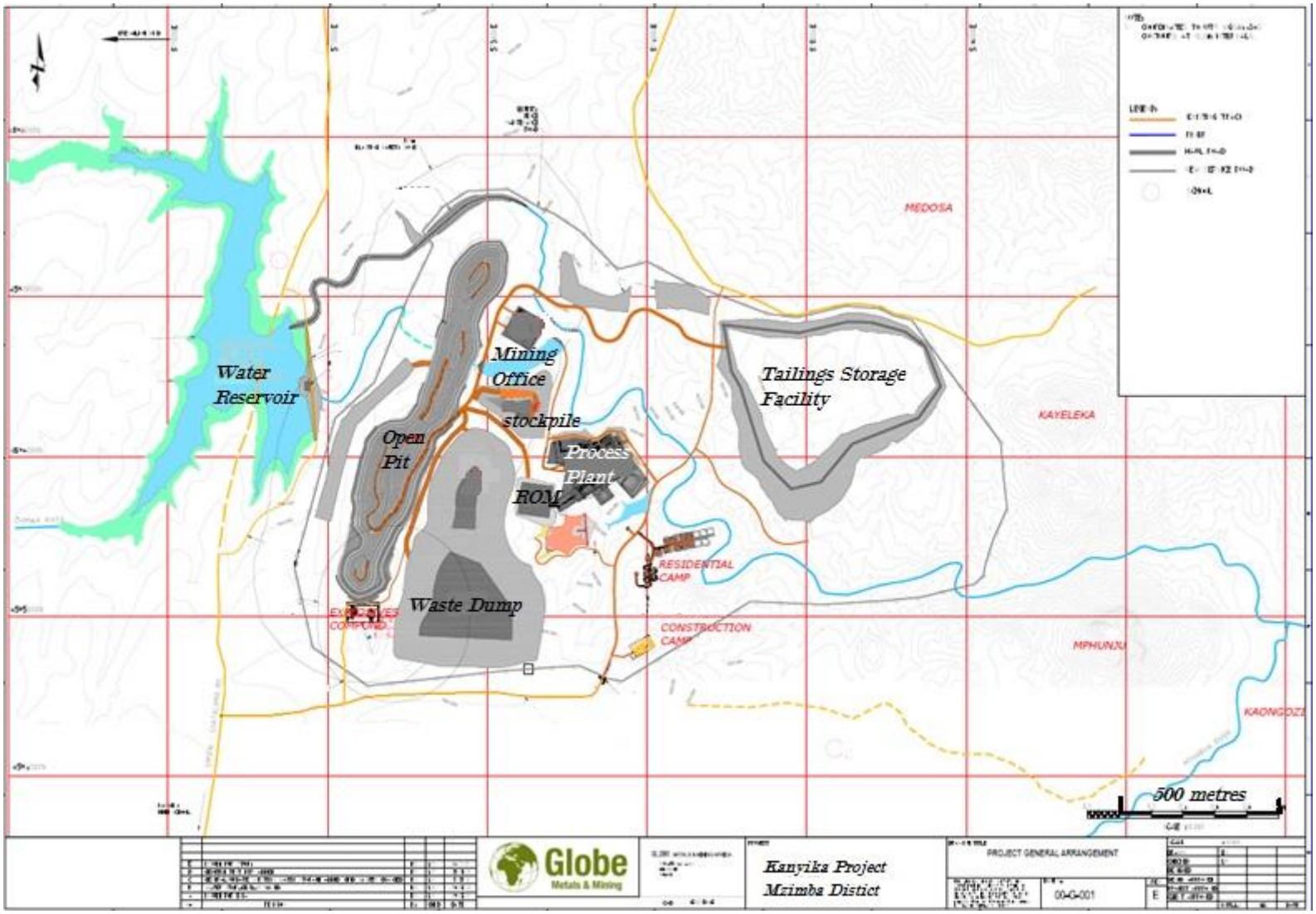


Figure 1: General Arrangement of the Kanyika Niobium Project

Mining Operations

Mining operations have assumed that the mill feed production rate will ramp up from 1.0 Mtpa in the first year to 1.5 Mtpa (million tonne per annum) with the life-of-mine stripping ratio to average 1.54:1 (waste:mill feed). The final open pit dimensions are expected to be in the order of 250 m wide, 2.2 km long (north-south) and average about 130 m deep.

Drill and Blast

Rock fragmentation will be undertaken by drilling and blasting based on the rock characteristics obtained during geotechnical drilling investigation. Weathered material makes up about 5% of the total material, therefore drill and blast is assumed for all materials. It is anticipated that there will be limited water issues for drilling and blasting activities.

A 500-metre blast exclusion zone will be maintained around the pit, with no permanently occupied residences or facilities within the zone. Approximately 250 tonnes of high-energy fuel (HEF) emulsion or ammonium nitrate (AN) will be stored in silos within a fenced compound along with magazines for packaged explosives, initiation devices and blasting accessories. Secondary movements will also occur with placement of waste rock as engineering fill in the tailing storage facility and for other engineering works.

Load and Haul

Mining will involve the extraction of materials from several open pits from along a single longitudinal strike to sustain a life of mine rate of 1.5 Mtpa mill feed, using conventional open pit methods; drill and blast followed by excavation and load and haul activities. The mining fleet will consist of hydraulic excavators, off highway dump trucks, and standard open pit drilling and auxiliary equipment. All waste will be stockpiled in a dedicated waste dump to the southeast of the pit.

Mill feed and waste will be transported from the pit to either the Run of Mine (ROM) pad for immediate processing, or the low-grade stockpile for later rehandling and processing, and to the waste rock storage dump. During the early years of operation, low grade mill feed will be stockpiled adjacent to the ROM pad to maximise the high-grade feed at the start of operations. A dedicated network of haul roads will be built to separate light vehicles from the haul trucks. The roads will be graded and watered to mitigate dust generation.

Mill feed will be hauled to a single ROM pad located adjacent to the process plant and due east of the pit, with the bulk of the waste dumped to the south east of the main pit. There will be two stockpiling areas. One of the stockpiles will be adjacent to the waste dump and after reclaim and depletion will be re-designated a waste dump. The arrangement of the main features of the mining program is shown in Figure 2.

Pre-Production and Site Establishment

The mining fleet will mobilise to site in the year prior to commencement of production for the pre-production period prior to when the process plant is commissioned.

The mining operations will provide infrastructure including heavy vehicle workshops, explosive magazine, tyre change bay and other services necessary to complete the pre-production scope, establish the haul roads from pit to the ROM pad and waste dumping areas, generate sufficient waste to build any infrastructure items that are required for the operation of the mine, provide waste and low-grade mineralisation for the construction of the ROM pad, and have a stock of mill feed equivalent to about four (4) weeks mill feed ready for commissioning the process plant.

Mine Schedule

The mine production schedule prepared by Orelogy Mining Consultants has been designed to produce 1.5mtpa of mill feed. Higher-grade material is treated initially to improve project economics and low-grade material is stockpiled and rehandled in later years.

The mine production schedule assumes that the KNP resources is mined in a series of stages – refer Figure 3 below.

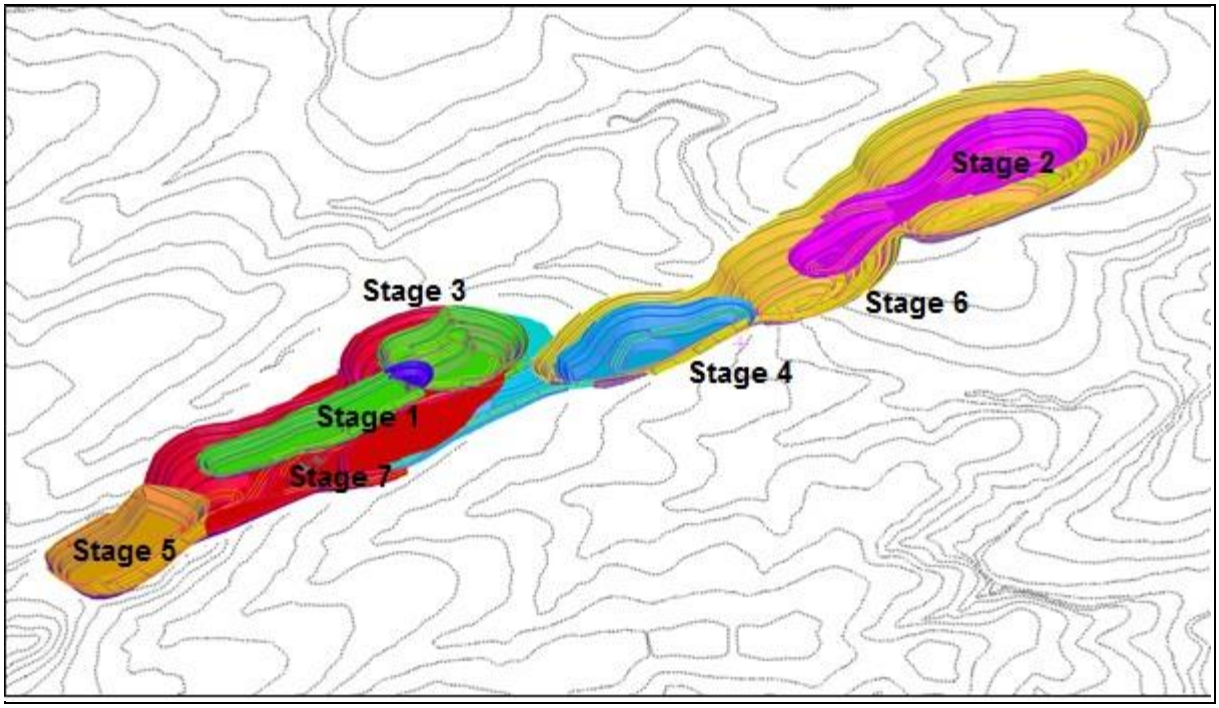


Figure 2: KNP Mine Plan (staged pit development)

Processing

The KNP process flowsheet was developed based on results from the extensive testwork conducted on Kanyika mineralisation evaluating a range of beneficiation strategies. The concentrator incorporates conventional crushing, grinding, desliming and magnetics separation before pre-flotation (to remove calcium minerals and zircon) followed by pyrochlore (oxide mineral) flotation to produce a pyrochlore concentrate grading approximately 30% Nb_2O_5 and 1.0% Ta_2O_5. The reagent scheme gives mass yields of less than 1% for over 75% recovery of pyrochlore. The flotation regime is intricate, and reagents are relatively expensive.

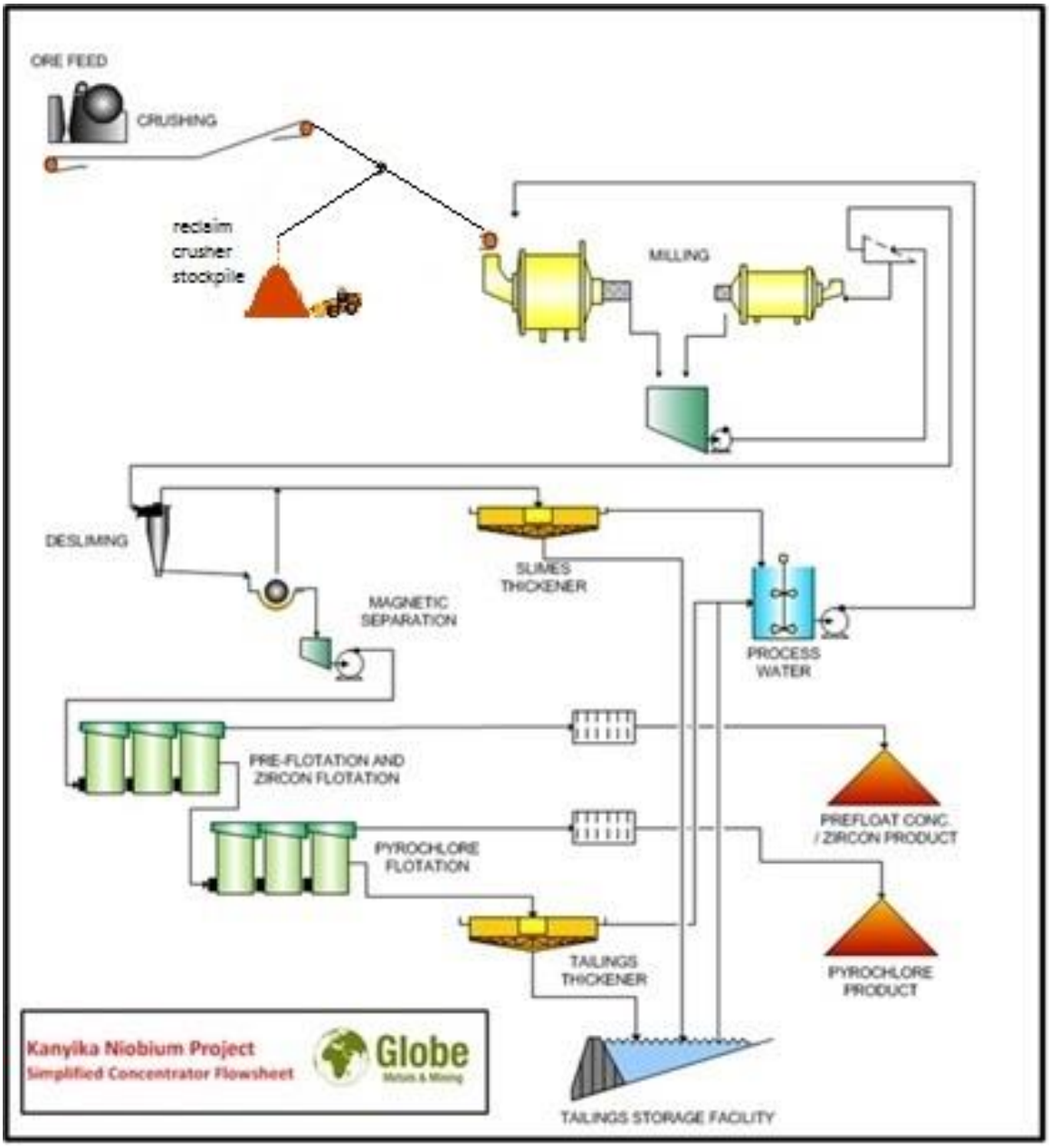


Figure 3: KNP Concentrator Flowsheet Schematic

The KNP flotation concentrator is relatively conventional for a moderately complex oxide flotation scheme similar to other oxide flotation operations. The flowsheet includes the following unit operations:

- primary crushing to -150mm in a conventional jaw crusher crushing to a covered stockpile with integrated reclaimers;
- the crushed mill feed will be reclaimed and fed to a SABC (semi-autogenous and ball mill) milling circuit operating in closed circuit with derrick screens. The mill circuit will target a P_{80} of 106 µm while minimising fines generation and maintaining a tight particle size distribution for optimum pre-conditioning;
- the mill product will be de-slimed through a two-stage cycloning before low intensity magnetic separation (LIMS) to remove magnetite and thickening before flotation conditioners; and
- the process plant will incorporate two flotation circuits; a single-stage pre-flotation circuit of the ground feed to remove calcium minerals and zircon followed by the pyrochlore circuit to recover pyrochlore mineralisation. The flotation concentrate will be thickened before transport. The (inert) flotation residue will be pumped to the tailings storage facility (TSF).
- Final product will be prepared in packaging for transportation in sea containers and exported and sold as concentrate.

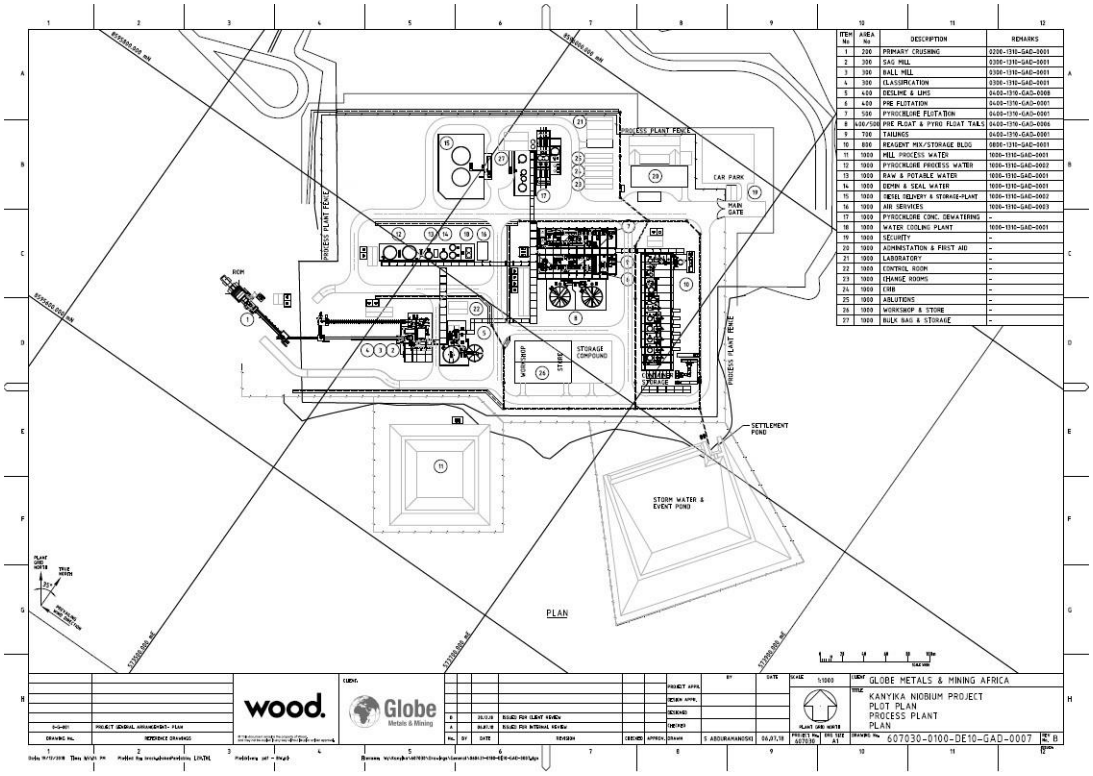


Figure 4: Process Plant Engineering Design

Mining Act

Malawi's mining law - Mines and Minerals Act (Cap. 61:01) has been in place since 1981. This legislation has been the foundation for Globe's investment into the KNP.

On 14 December 2018, the National Parliament of Malawi passed a new bill – Mines and Minerals Bill 2018 (New Act) which legislation is intended to replace the current legislation. For the New Act to come into force it must receive Presidential assent, but to date this has not yet occurred.

The Company believes the New Act will have an economic impact on the KNP pending assent, as such the Company is not in a position to finalise its financial modelling of the KNP and as a result of this, it is not in a position to complete the Feasibility Study.

Development Agreement

The Company has made significant progress in negotiating a Development Agreement for the KNP with the Government of Malawi. The Company has accepted that the Government will be issued equity in the entity which holds the KNP. Again, the New Act has certain requirements which would need to be reflected in the Development Agreement and so the assent of the President to the New Act is relevant to the outcome of these negotiations.

Finalisation of the Development Agreement also requires a shareholder's agreement to be drafted prior to the Development Agreement becoming operative, amongst other conditions.

Financial Model

The Company is not yet in a position to finalise and release the key outcomes of the financial model due to:

(a) the current uncertainty associated with the status of the mining law in Malawi (see the commentary on the Mining Act above); and

(b) the status of negotiations between the Company and the Government on the Development Agreement,

each of which may cause material change to the financial model when they are resolved/finalised.

Timing

The Company cannot place a timeframe upon when the New Act will be assented to, or when the Development Agreement will be settled, and therefore when the Company can finalise the Feasibility Study for presentation.

Despite the fact that the assent of the new Mining Act and by extension the finalisation of the Development Agreement are matters beyond the control of the Company, the Company assures its shareholders that it has and continues to do everything within its capabilities to bring about finalisation of the Development Agreement, in order to allow the Company to advance the project to funding and ultimately production.

For further information please contact:

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Competent person: 'The information in the report to which this statement is attached that relates to Exploration Targets, Exploration Results, and Mineral Resources is based on information compiled by Mr Alistair Stephens, a Competent Person who is a Fellow of 'The Australasian Institute of Mining and Metallurgy' included in a list posted on the ASX website from time to time. Mr Stephens is a full-time employee of Globe Metals and Mining Limited. Mr Stephens has sufficient experience that is relevant to the style of mineralisation and type of deposit under consideration and to the activity being undertaken to qualify as a Competent Person as defined in the 2012 Edition of the 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves'. Mr Stephens consents to the inclusion in this report of the matters based on his information in the form and context in which it appears.

Forward looking statements

Information included in this release constitutes forward-looking statements. Often, but not always, forward looking statements can generally be identified by the use of forward looking words such as "may", "will", "expect", "intend", "plan", "estimate", "anticipate", "continue", and "guidance", or other similar words and may include, without limitation, statements regarding plans, strategies and objectives of management, anticipated production or construction commencement dates and expected costs or production outputs.

Forward looking statements inherently involve known and unknown risks, uncertainties and other factors that may cause the Company's actual results, performance and achievements to differ materially from any future results, performance or achievements. Relevant factors may include, but are not limited to, changes in commodity prices, foreign exchange fluctuations and general economic conditions, increased costs and demand for production inputs, the speculative nature of exploration and project development, including the risks of obtaining necessary licences and permits and diminishing quantities or grades of reserves, political and social risks, changes to the regulatory framework within which the company operates or may in the future operate, environmental conditions including extreme weather conditions, recruitment and retention of personnel, industrial relations issues and litigation.

Forward looking statements are based on the Company and its management's good faith assumptions relating to the financial, market, regulatory and other relevant environments that will exist and affect the Company's business and operations in the future. The Company does not give any assurance that the assumptions on which forward looking statements are based will prove to be correct, or that the Company's business or operations will not be affected in any material manner by these or other factors not foreseen or foreseeable by the Company or management or beyond the Company's control.

Although the Company attempts and has attempted to identify factors that would cause actual actions, events or results to differ materially from those disclosed in forward looking statements, there may be other factors that could cause actual results, performance, achievements or events not to be as anticipated, estimated or intended, and many events are beyond the reasonable control of the Company. Accordingly, readers are cautioned not to place undue reliance on forward looking statements. Forward looking statements in these materials speak only at the date of issue. Subject to any continuing obligations under applicable law or any relevant stock exchange listing rules, in providing this information the company does not undertake any obligation to publicly update or revise any of the forward-looking statements or to advise of any change in events, conditions or circumstances on which any such statement is based.