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ASX Announcement

23 October 2023

Globe signs non-binding term sheets with TCM regarding worldwide exclusivity and licence arrangements and metallurgical test work

Globe Metals & Mining Limited (ASX: GBE) (**Globe or Company**) is excited to announce the signing of non-binding term sheets with TCM Research Ltd (**TCM**) which detail the key commercial terms of an agreement for TCM to carry out metallurgical test work at TCM's South African laboratory, together with worldwide exclusivity and licencing arrangements for the use of TCM Principal Technology (defined below) at the proposed Namibia refinery site.

As announced on 27 June 2023, TCM is one of 6 highly experienced vendors to advance our flagship Kanyika Niobium Project (**Project**). TCM's role is to design the refinery process for the Kanyika concentrate after carrying out metallurgical test work on a representative sample of concentrate, and to then construct a pilot plant to demonstrate the extraction and refining of high-grade niobium, tantalum, and other metals from the concentrate using TCM Principal Technology.

The term sheets are non-binding other than confidentiality and include worldwide exclusive use by Globe of the TCM Principal Technology for the processing of primarily niobium-bearing materials (where niobium is the primary concentrate constituent). The parties have agreed to use their best endeavours to sign definitive agreements by 30 November 2023.

The non-binding term sheets with TCM follow 12 months of negotiation and mutual due diligence regarding:

- TCM's suite of Vapour Metallurgy processing technologies for the treatment of a vast range of materials for the recovery of metals, including Iron, Titanium, Vanadium, Tin, Tungsten, Tantalum, Niobium and Rare Earth Elements; and

- Globe's substantial resource of niobium concentrate from the Project in Malawi.

This reflects management's efforts and foresight to adopt a refining process that not only reduces Globe's environmental impact and carbon footprint but is also significantly more cost-effective. The technology will enable Globe to substantially reduce single use chemicals and to recycle the main process reagent (chlorine) leading to positive project economics.

This IP licence agreement will enable Globe to produce high-grade oxides for use in a range of high value products for a diverse and growing range of applications in industries such as aerospace, EVs, medicine, superconductors and so forth.

High-grade niobium oxides will be manufactured using carbochlorination. In this process mineral concentrates, containing metal oxides, are mixed with a carbon source before reaction with chlorine gas. The reactions are exothermic and typically take place between 700°C and 1 000°C. In the reactor, chlorine gas reacts with the feed to produce metal chlorides which leave the reactor as gases. Systematic cooling of the reactor gas then allows groups of metal chlorides to condense as the gas is cooled down, and niobium and other metal chlorides are collected as a crude mixture in one of the condensing stages before being distilled to produce high-grade niobium chloride. The chlorides are reacted with oxygen to produce high purity oxides while regenerating chlorine gas which is recycled to the reactor. Make up chlorine is produced by the electrolysis of salt which is produced in Walvis Bay, some 10km from the proposed refinery site.

A summary of the material terms of the non-binding term sheets are set out below.

Technology licence agreement

- The licence agreement for the use of the TCM Principal Technology is expected to commence within 90 days and will continue for up to 20 years or until the expiry of TCM's licensed patents.
- During the term, Globe must pay TCM a 1% royalty on a quarterly basis in respect of all sales that result from the use of TCM Principal Technology (**Royalty**).
- Globe shall pay an exclusivity fee of USD$15,000 per quarter (**Exclusivity Fee**) commencing from 1 July 2024 and for every quarter thereafter until Globe commences paying the Royalty, whereupon the obligation to pay the Exclusivity Fee shall cease and thereafter the Licensee shall continue to enjoy the worldwide exclusivity licence for a period of 5 years.
- Globe may terminate the licence agreement by giving 12 months' prior written notice. TCM may only terminate the licence agreement if Globe fails to pay the Royalty.

Metallurgical test work agreement

By way of background, TCM has developed a suite of metallurgical processing technologies for the treatment of a vast range of mineralised materials for the recovery of metals including (but not limited to) niobium, tantalum, zirconium, titanium, vanadium, tin, tungsten, rare earth element, iron, nickel, copper, cobalt, gold, and platinum group metals (**TCM Principal Technology**).

The metallurgical test work to be carried out by TCM at the Project envisages the following stages:

- Stage 1 – TCM to undertake test work in order to construct the laboratory-scale pilot plant to demonstrate that the TCM Principal Technology can extract economic metal and/or oxide powder from the concentrate;
- Stage 2 – TCM (either alone or via a joint venture with the Resonant Group Pty Ltd) to undertake feasibility study level process plant design and engineering utilising the test results;

- Stage 3 – TCM (or the joint venture) to undertake engineering, procurement and construction of the process plant, to be determined as an outcome of Stage 2;

- Stage 4 – TCM (or the joint venture) to be involved in the commissioning and operation of Globe's refinery in Namibia and undertake supporting analytical laboratory services, to be determined as an outcome of stages 2 and 3; and

- Stage 5 – TCM (or the joint venture) to provide ongoing technical and engineering support.

Assuming Stage 1 is successful, the Stage 1 work combined with the work in Stage 2 will be utilised by Globe to produce an updated Project feasibility study. Following the finalisation of the updated feasibility study (to be completed after Stage 2), Globe will engage with financiers to obtain funding for the Project and, if successful, will make a 'Decision to Mine'. After Globe has made a Decision to Mine, Stages 3, 4 and 5 will be undertaken.

TCM's deliverables under the test work agreement will include metallurgical test work to confirm process parameters and extraction efficiencies of the selected process, including generating sufficient quantities of the various feeds to determine purity and contaminants, and creation of intermediates and products for quantification via independent (third party) chemical analysis, and generating the required process and engineering data in support of the pilot plant design.

TCM will be paid a fee of A$430,000 for its services under the test work agreement.

Next steps

TCM's Stage 1 laboratory work continues and having produced metal chloride concentrates at lab-scale the next steps will be to collect the mixed chloride condensates and separate them into major components i.e. niobium chloride. The main target at this point is to produce niobium oxide samples for evaluation by potential offtake partners.

The results of this test work will be used to design a laboratory-scale pilot plant. This plant will process concentrate that is currently being generated from a 10-tonne ore bulk sample collected earlier this year. The main purpose of the pilot plant is to obtain design parameters for the large-scale plant. Using these parameters, the large-scale capital and operating costs can be calculated using financial modelling to estimate the financial returns at different large-scale capacities.

Commenting on the non-binding term sheets with TCM, Globe's CEO Grant Hudson said:

"Globe welcomes the conclusion of the non-binding worldwide exclusive agreement with TCM and will now move swiftly to conclude the full-form IP agreement. The innovative use of well-proven technology pioneered by TCM potentially provides us with a number of key advantages over traditional acid-leach and solvent extraction processes that are used for the production of niobium oxides. It does not use aggressive acids and produce toxic process wastes, provides better metal extraction, lower production

costs and the ability to recycle chlorine, which is the main process input. As such, we are eagerly looking forward to the successful conclusion of the test work programme over the next few months ”

Authorisation for Release

This announcement has been authorised for release by the Company's Chief Executive Officer, Grant Hudson.

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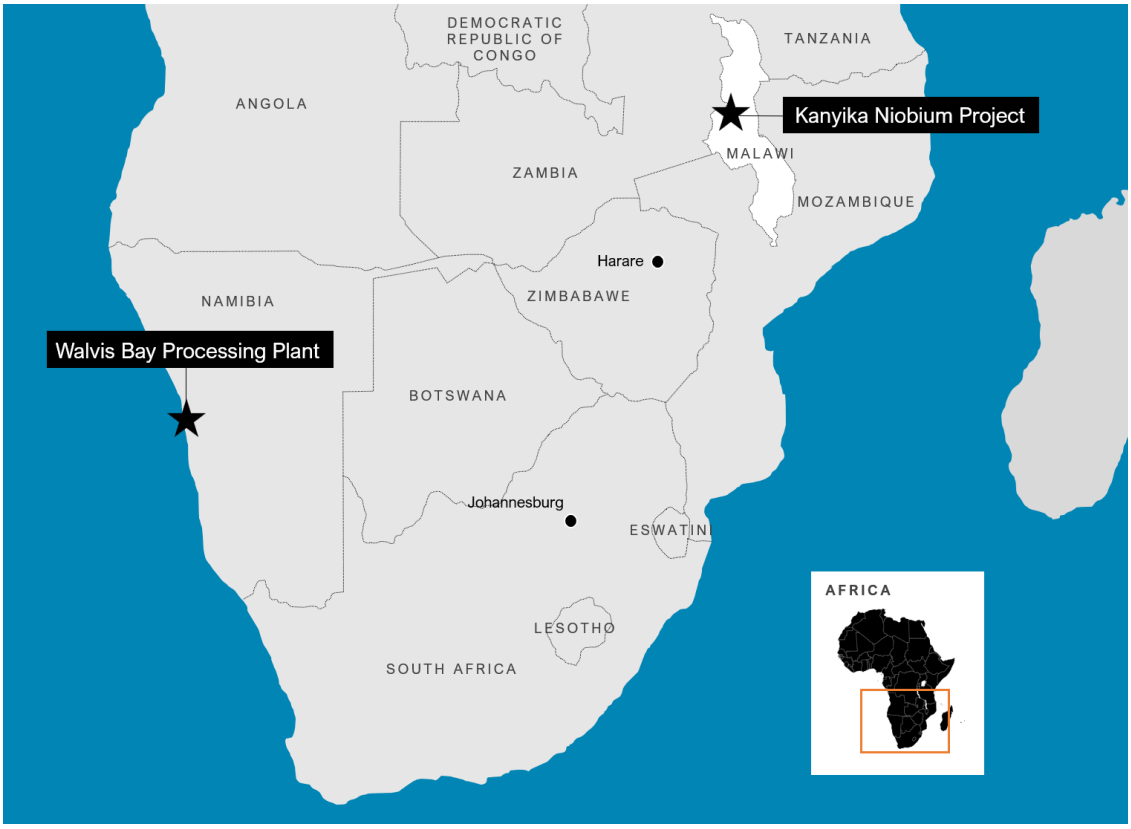
About the Kanyika Niobium Project

The Kanyika Niobium Project is located in central Malawi, approximately 55km northeast of the regional centre of Kasangu and is secured by Large-Scale Mining Licence No. LML0216/21 which grants the Company security of tenure and the right to mine niobium, tantalum, and deleterious uranium.

Drilling programs totalling 33.8 kilometres of percussion and core drilling have defined the extent of mineralisation. Structured and progressive engineering studies have resulted in the current (JORC 2012) Mineral Resource Estimate (refer below) and given rise to significant improvements and simplifications in the process flowsheet, from that first imagined.

In addition, Globe has undertaken substantial metallurgical optimisation work and commissioned a pilot plant to demonstrate and further optimise metallurgical processes. Metallurgical optimisations studies have improved recoveries from 62% in 2012 to 75% today, through simple novel patented metallurgical processes.



The Kanyika operations will produce a pyrochlore mineral concentrate that contains both niobium and tantalum in commercially valuable volumes to be shipped to a refinery for advanced processing into high purity materials.

A Mineral Resource Estimate for the Kanyika Niobium Project under the 2012 JORC guidelines was reported to ASX on 11 July 2018 as follows:

Table 1: MRE for KNP 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: MRE for KNP using a 3,000 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**

Mineral Resource Estimates

The information in this report that relates to Mineral Resources is extracted from the report titled "Kanyika Niobium Project – Updated JORC Resource Estimate" released to the Australian Securities Exchange (ASX) on 11 July 2018 and available to view at www.globemm.com and for which Competent Persons' consents were obtained. Each Competent Person's consent remains in place for subsequent releases by the Company of the same information in the same form and context, until the consent is withdrawn or replaced by a subsequent report and accompanying consent.

The Company confirms that is not aware of any new information or data that materially affects the information included in the original ASX announcement released on 11 July 2018 and, in the case of estimates of Mineral Resources, that all material assumptions and technical parameters underpinning the estimates in the original ASX announcement continue to apply and

have not materially changed. The Company confirms that the form and context in which the Competent Persons' findings are presented have not been materially modified from the original ASX announcement.

Full details are contained in the ASX announcement released on 11 July 2018 titled "Kanyika Niobium Project – Updated JORC Resource Estimate" available to view at www.globemm.com.