



# **MKANGO RESOURCES LTD.**

## **MANAGEMENT'S DISCUSSION AND ANALYSIS**

**For the three months ended March 31, 2022**

This Management’s Discussion and Analysis (“**MD&A**”) provides a review of the operational performance of Mkango Resources Ltd. (“**Mkango**”, or the “**Company**”). The report was prepared in accordance with the requirements of National Instrument 51-102 - Continuous Disclosure Obligations, and it should be read in conjunction the condensed interim consolidated financial statements for the three months ended March 31, 2022 (the “**Financial Statements**”) and the audited consolidated financial statements for the year ended December 31, 2021. The Financial Statements and the accompanying notes have been prepared in accordance with International Financial Reporting Standards (“**IFRS**”) and are prepared in United States dollars unless otherwise stated. This document is dated May 30, 2022.

The Board of Directors of the Company have reviewed and approved the information contained in this MD&A and the Financial Statements.

Readers are cautioned that this MD&A contains certain forward-looking statements. Please see the section concerning “Forward Looking Statements” below.

Additional information relating to the Company can be found on the Canadian System for Electronic Document Analysis and Retrieval (“**SEDAR**”) at [www.sedar.com](http://www.sedar.com). The Company is listed on the TSX Venture Exchange (the “**TSX-V**”) and holds an additional listing on the AIM Market of the London Stock Exchange (“**AIM**”) under the symbol MKA.

## **FORWARD LOOKING STATEMENTS**

Certain disclosures set forth in this MD&A may constitute forward-looking statements concerning anticipated development of the Company’s operations in future periods. Any statements contained herein that are not statements of historical fact may be deemed to be forward-looking statements. Forward-looking statements are often, but not always, identified by the use of words such as “anticipate”, “believes”, “budget”, “continue”, “could”, “estimate”, “forecast”, “intends”, “may”, “plan”, “predicts”, “projects”, “should”, “will” and other similar expressions. All estimates and statements that describe the Company’s future, goals, or objectives, including management’s assessment of future plans and operations, including statements regarding exploration results and budgets, mineral resource estimates, work programs, capital expenditures, timelines, strategic plans, market price of commodities or other statements that are not statement of fact may constitute forward-looking information under securities laws. Forward-looking information is based on reasonable assumptions that have been made by the Company as at the date of such information but, by their nature, forward-looking statements are subject to numerous risks and uncertainties, some of which are beyond the Company’s control, including the impact of general economic and political conditions, the impacts, direct and indirect, of the COVID-19 pandemic, industry conditions, volatility of commodity prices, currency fluctuations, accuracy of drilling and other exploration results, realization of mineral resource estimates, environmental risks, changes in environmental, tax and royalty legislation or other government regulation, the speculative nature of strategic metal exploration and development including the risks of contests over title to properties, the risks associated with obtaining necessary licences or permits, including and not limited to approval of any future mining licence applications and exploration licence extensions, operating or technical difficulties in connection with development activities; personnel relations, competition from other industry participants, the lack of availability of qualified personnel or management, availability of drilling equipment and access, stock market volatility and the ability to access sufficient capital from internal and external sources. The estimate of mineral resources may be materially affected by environmental, permitting, legal, title, taxation, socio-political, marketing, or other relevant issues. Readers are cautioned that the assumptions used in the preparation of such information, although considered reasonable at the time of preparation, may prove to be imprecise and, as such, undue reliance should not be placed on forward-looking statements. Forward-looking statements are based on assumptions management believes to be reasonable, including but not limited to the price of rare earth elements (“**REEs**” or “**rare earths**”); the demand for REEs; the ability to carry on exploration and development activities; the timely receipt of any required approvals; the ability to obtain qualified personnel, equipment and services in a timely and cost-efficient manner; the ability to operate in a safe, efficient and effective manner; and the regulatory framework including and not limited to licence approvals, social and environmental matters, and such other assumptions and factors as set out herein. Although the Company has attempted to identify important factors that could cause actual results to differ materially from those contained in forward-looking information, there may be other factors that cause results not to be as anticipated, estimated or intended. Mkango’s actual results, performance or achievement could differ materially from those expressed in, or implied by, these forward-looking statements. Mkango disclaims any intention or obligation to update or revise any forward-looking statements, whether as a result of new information, future events or otherwise, except as required by law.

## OVERALL PERFORMANCE AND OUTLOOK

In the first quarter of 2022, the Company focused on advancing all aspects of its rare earths' Mine, Refine, Recycle strategy. Terms not otherwise defined in this and the following sections of the MD&A are defined in the Corporate Structure Section.

Highlights for the three months ended March 31, 2022, include:

- The Company had cash of \$2,147,897 at March 31, 2022 compared to \$4,446,850 at December 31, 2021 and \$3,658,641 at March 31, 2021.
- The comprehensive loss for the three months ended March 31, 2022 was \$2,775,432 compared to \$1,491,364 for the three months ended March 31, 2021. This increased loss resulted primarily from an increase in share-based payment expenses of \$829,573 as a result of share options and Restricted Share Units issued in the second half of 2021 and an increase of \$190,227 in mineral project expenditures compared to the three months ended March 31, 2021 as work on the Feasibility Study continued.
- The production of neodymium and praseodymium enriched rare earth carbonate from final piloting as the Feasibility Study nears completion. The Company continues to expect the study to be completed in Q2 2022.
- Support from the European Raw Materials Alliance (“ERMA”) with securing finance for the development of a rare earth separation plant to be located in Pulawy, Poland.
- A collaboration with HyProMag, Bowers & Wilkins, European Metal Recycling, GKN Automotive Innovation Centre, Jaguar Landrover and University of Birmingham in the Driving the Electric Revolution at UK Research and Innovation grant funded project, Secure Critical Rare Earth Magnets for UK (“SCREAM”).

## SUBSEQUENT EVENTS

Since the quarter ended March 31, 2022, the Company has announced:

- The completion of initial sampling and ground geophysics at its Nkalonje Rare Earths Project with assays of carbonatite dyke samples returning grades of up to 5.92% TREO (Total Rare Earth oxides) and a median grade of 2.96%, and the identification of primary and secondary drill targets.
- The signing of a non-binding term sheet with CoTec Holdings Corp. (“CoTec”), an ESG-focused company investing in innovative technologies, led by Julian Treger and Braam Jonker, in relation to investments by CoTec into Mkango and Mkango’s subsidiary, Maginito Limited (“**Maginito**”), and collaboration in downstream rare earth technologies (the “**Transactions**”). The Transactions are expected to include the following key components:
  - CoTec will invest £2 million (C\$3.2 million) into Mkango by way of a two-year, unsecured convertible note (“Mkango Note”) with 5% interest, convertible into Mkango shares at 27p each, providing Mkango with additional working capital as it advances financing discussions for the Songwe Hill rare earths project (“**Songwe Hill**”) in Malawi and the Pulawy separation plant project in Poland
  - CoTec will also invest £1.5 million (C\$2.4 million) into Maginito, equating to a 10% equity stake in Maginito for the purposes of strategic investments in downstream rare earth technologies and working capital
  - Restructuring resulting in Mkango’s wholly owned subsidiary, Mkango Rare Earths UK Limited, (“Mkango UK”) becoming a wholly owned subsidiary of Maginito
  - In consideration of a four-month exclusivity period, CoTec will advance £500,000 (C\$805,000), no later than June 20, 2022 (the “Advance”), offsetable against and carrying largely the same terms as the Mkango Note
  - Mkango and CoTec will enter into a co-operation agreement regarding future investments in rare earth processing technology opportunities in the United States
  - The Transactions are subject to various conditions, including definitive documentation, restructuring in relation to Mkango UK and TSX Venture Exchange approval. There can be no certainty that any agreement will be reached nor as to the final terms of the proposed investment

## OVERVIEW OF THE BUSINESS

Mkango is focused on the mining, refining and recycling of rare earths. The Company is listed on the TSX Venture Exchange in Toronto and the Alternative Investment Market in London under the symbol MKA. The Company has developed its integrated ‘**Mine, Refine, Recycle**’ strategy to produce both primary and recycled rare earths, in particular new sustainable sources of neodymium, praseodymium, dysprosium and terbium to supply accelerating demand from electric vehicles, wind turbines and other clean technologies. This strategy differentiates Mkango from its peers, uniquely positioning the Company in the rare earths sector, and is focused on advancing the Songwe Hill project through the feasibility and development phases, whilst in parallel advancing three complementary downstream opportunities in the rare earths supply chain through Maginito Limited and Mkango UK both focused on rare earth magnet recycling, and Mkango Polska, focused on rare earth separation.

## MINE

Mkango has several properties in the Republic of Malawi, Africa (“**Malawi**”), including its flagship Songwe Hill rare earths project (“**Songwe Hill**”) and the Nkalonje Hill exploration target (“**Nkalonje Hill**”) both held within 11 Phalombe retention licences (the “**Phalombe Licences**”). Mkango is also pursuing mineral exploration opportunities with three additional 100% owned properties in Malawi, the Thambani retention licences (“**Thambani Licences**”), the Chimimbe Hill exploration licence (“**Chimimbe Licence**”) and the Mchinji exploration licence (“**Mchinji Licence**”).

### Songwe Hill

Songwe Hill, a carbonatite-hosted rare earth deposit, is the Company’s main development target in Malawi. Historical exploration programmes were originally carried out at Songwe Hill in the late 1980s. After three phases of exploration drilling in 2011, 2012 and 2018, Mkango completed a NI43-101 compliant technical report and upgraded Mineral Resource estimate for Songwe Hill in January 2019, and is currently working on a definitive feasibility study (the “**Feasibility Study**”) which is expected to conclude during the second quarter of 2022.

Songwe Hill is located in south-eastern Malawi, between Lake Chilwa and the Mulanje Massif, approximately 70km from the former capital Zomba and approximately 90km from the commercial centre of Blantyre, which has an international airport and a railhead. Paved roads run from the urban centres to within 12km of Songwe Hill. Secondary gravel and dirt roads provide vehicle access to the exploration camp, with recently upgraded bridges capable of taking 20-tonne trucks.

Highlights of the quarter in relation to the Feasibility Study, which is nearing completion, are as follows:

- All pilot test work has been completed, with the final stage of hydrometallurgical piloting at ANSTO successfully producing rare earth carbonate grading 55% total rare earth oxides (“TREO”) equivalent, enriched in neodymium and praseodymium (“Nd / Pr”) oxides, which together make up 31% of the rare earth oxide content in the carbonate product (i.e. Nd / Pr oxides / TREO = 31%).
- The rare earth carbonate produced at Songwe Hill will feed Mkango’s proposed Pulawy separation plant development in Poland.
- Technical aspects of the Feasibility Study for Songwe Hill are close to completion, with the majority of engineering workstreams 100% complete and the majority of other key workstreams more than 90% complete.
- Negotiations for the Mining Development Agreement (“MDA”) with the Government of Malawi are also well advanced. The MDA was recently highlighted to the Malawi Parliament in a speech by Malawi State President His Excellency Lazarus Chakwera and also during the Malawi 2022/23 Budget by the Minister of Finance Hon Sosten Gwengwe MP, and both Mkango and the Government of Malawi are prioritising its successful completion. The MDA confirms the fiscal and legal terms for project development.
- Mkango will continue to advance ongoing discussions with potential strategic investors and off-takers, and work closely with its brokers, project finance advisors, Terrafranca Capital Partners Ltd and United States strategic advisors, Jones Group International to arrange construction financing, assuming a positive construction decision. Mkango also recently engaged EIT RawMaterials ([www.eitrawmaterials.eu](http://www.eitrawmaterials.eu)) to further support financing

discussions in Malawi and Poland. EIT RawMaterials provides support to Mkango within the framework of the European Raw Materials Alliance.

### Nkalonje Hill

Nkalonje Hill is located 23 km by road (14 km straight line) north-west of Songwe Hill, within the Company's Phalombe Licences. Nkalonje Hill is approximately 95 km by road from the commercial centre of Blantyre, which has an international airport and a railhead. Paved roads run from Blantyre to within 19 km of Nkalonje Hill.

Nkalonje Hill is underlain by an alkali silicate-carbonatite intrusive complex geologically similar to Songwe Hill, comprising two connected hills underlain by fenite, nepheline syenite and breccia. Regional geophysical data from the World Bank funded programme in 2016 demonstrates that Nkalonje Hill is marked by a magnetic low and thorium high. Thorium radiometrics are known as a highly effective tool for rare earths exploration and the Songwe Hill carbonatite is also characterised by a thorium radiometric anomaly, identified through previous geophysical surveys.

The fenites on Nkalonje Hill are intruded by carbonatite veins and dykes that are locally enriched in rare earth elements, suggesting potential for a larger mineralised carbonatite body below surface.

The Company has completed initial sampling and ground geophysics and identified drill targets with encouraging results announced on 7 April 2022. These results include:

- Mapping and geophysics results confirmed that the major geological features of Nkalonje Hill are those of an alkali silicate-carbonatite intrusive complex, similar to Songwe Hill.
- Assays of carbonatite dyke samples in the first of Mkango's targets ("**Target 1**") returned grades of up to 5.92% TREO with a median grade of 2.96%.
- Geophysics has also identified a primary shallow drilling target ("**Target 2**") beneath exposed mineralised dykes and a secondary deeper drilling target.

The similarities between Nkalonje Hill and Songwe Hill, and the high TREO grades from the assay results, demonstrate a strong case for further investigation. In the long term, the close proximity of Nkalonje Hill to Songwe Hill provides a good potential source of additional feedstock for processing at Songwe Hill.

Planned work at Nkalonje Hill consists of continued evaluation of the dykes at Target 1, including new sampling (including channel sampling where possible) in order to trace the grade of the dykes along strike. A soil/auger sampling and trenching programme is planned to ground truth the geophysical anomalies at Target 2.

### Mchinji

The Company has a 100% interest in the Mchinji Licence in respect of an area of 868.69 sq km in the Mchinji District, Malawi. Mkango is evaluating the Mchinji deposit in the context of geophysical data produced by an airborne geophysical survey which was part of a \$25 million World Bank funded nationwide airborne geophysical programme (the "**World Bank Survey**"). Exploration is focusing on rutile, gold, base metals, nickel-cobalt and graphite.

Mkango has completed reconnaissance shallow soil sampling and an auger programme in its Mchinji Licence. The results confirmed the presence of rutile plus anatase (both naturally occurring mineral forms of TiO<sub>2</sub> mineralisation).

### Chimimbe Hill

The Company has a 100% interest in the Chimimbe Licence in respect of an area of 98.48 sq km around Chimimbe Hill, Mchinji district, Malawi. Exploration has identified a number of areas with potential for laterite and saprolite hosted nickel, cobalt, chrome, rutile, gold and base metals and other mineralization.

## Thambani Uranium Licences

The Company has a 100% interest in the Thambani Licence in respect of an area of 136.9 sq km in Thambani, Mwanza District, Malawi. Exploration has identified a number of areas with potential for uranium (“U”), tantalum (“Ta”), niobium (“Nb”), zircon and mineral corundum.

Mkango is currently evaluating strategic options for Mchinji, Chimimbi and Thambani, including opportunities for joint venture and other potential avenues to create value.

## REFINE

### PULAWY SEPARATION PLANT

On June 7, 2021, the Company announced that Mkango and Grupa Azoty Zakłady Azotowe ”Pulawy” S.A. (“Grupa Azoty PULAWY”) have agreed to work together towards development of a rare earth separation plant (the "Plant") in Poland. The Plant will process the purified mixed rare earth carbonate derived from Songwe Hill into separated rare earth oxides.

A new Polish wholly owned subsidiary of Mkango, Mkango Polska, has been established and a highly experienced Country Director for Poland, Dr Jarosław Pączek, has been appointed, together with rare earth separation experts, Carester, and a strong team of technical advisors and engineers.

Grupa Azoty PULAWY (Warsaw Stock Exchange: ZAP) is part of The Grupa Azoty Group, the European Union’s second largest manufacturer of nitrogen and compound fertilizers, and a major chemicals producer. Its products are exported to over 20 countries around the world, including Europe, the Americas and Asia.

The Parties have signed an exclusive lease option agreement for a site adjacent to Grupa Azoty PULAWY’s large scale fertiliser and chemicals complex at Pulawy in Poland, which provides excellent infrastructure, access to reagents and utilities on site, and an attractive operating environment, resulting in a highly competitive operating cost position for the Plant, based on scoping studies to date.

Located within a Polish Special Economic Zone, the site provides excellent access to European and international markets. Production from the Plant will strengthen Europe’s security of supply for rare earths, used in electric vehicles, wind turbines and other green technology and strategic applications, and aligns with European initiatives to create more robust, diversified supply chains.

Development of the Plant is expected to bring significant benefits to the Mkango group:

- Higher value-added products with increased margins – targeting 2,000 tonnes per year of separated neodymium (Nd)/praseodymium (Pr) oxides, and 50 tonnes per year dysprosium (Dy) and terbium (Tb) oxides in a heavy rare earth enriched carbonate
- Greater integration – plant development fully underpinned by sustainably sourced, purified mixed rare earth carbonate from Songwe Hill’s operations, with other synergies being evaluated
- Increased marketing flexibility with a broader range of potential customers – future opportunities to produce and market separated heavy rare earths
- Catalyst for regional growth and the green transition – potential for further downstream developments and related businesses, including renewables, creating additional jobs in the region
- Engagement with financial institutions is underway to accelerate development, and additional strategic partnerships, downstream developments and marketing opportunities are being evaluated.

The Company has received support from ERMA with securing finance for the development of the rare earth separation plant.

Feasibility studies for the Plant are being planned in parallel with the Songwe Hill rare earths project in Malawi.

## RECYCLE

The Company is pursuing downstream opportunities in the rare earths supply chain, with a particular focus on rare earth magnet recycling through its 41.6% interest in HyProMag, a company with a patented process, licenced from the University of Birmingham (“UoB”), to extract and demagnetise NdFeB (neodymium, iron and boron) magnets embedded in scrap and redundant equipment named Hydrogen Processing of Magnet Scrap (“HPMS”), and a 100% interest in Mkango UK, which is focused on chemical processing of magnet scrap. Mkango increased its interest in Maginito (which hold its shares in HyProMag) for 75% to 100%. Maginito increased its interest in HyProMag from 25% to 41.6% in November 2021.

HyProMag is currently developing plants for short loop magnet recycling in the UK and Germany, the latter through its 80% owned German subsidiary, HyProMag Germany, and is uniquely positioned to unlock the supply chain for rare earth magnet recycling.

Mkango UK will develop a pilot plant in the UK to chemically process recycled HPMS NdFeB powder and magnet swarf (i.e. the powder produced from grinding and finishing magnets) from a range of scrap sources including electronic waste, electric motors and wind turbines, complementing the short loop magnet recycling routes being developed by HyProMag.

Mkango UK and HyProMag are also collaborating with Bowers & Wilkins, European Metal Recycling, GKN Automotive Innovation Centre, Jaguar Land Rover and UoB in The Driving the Electric Revolution Challenge at UK Research and Innovation grant funded project, SCREAM project.

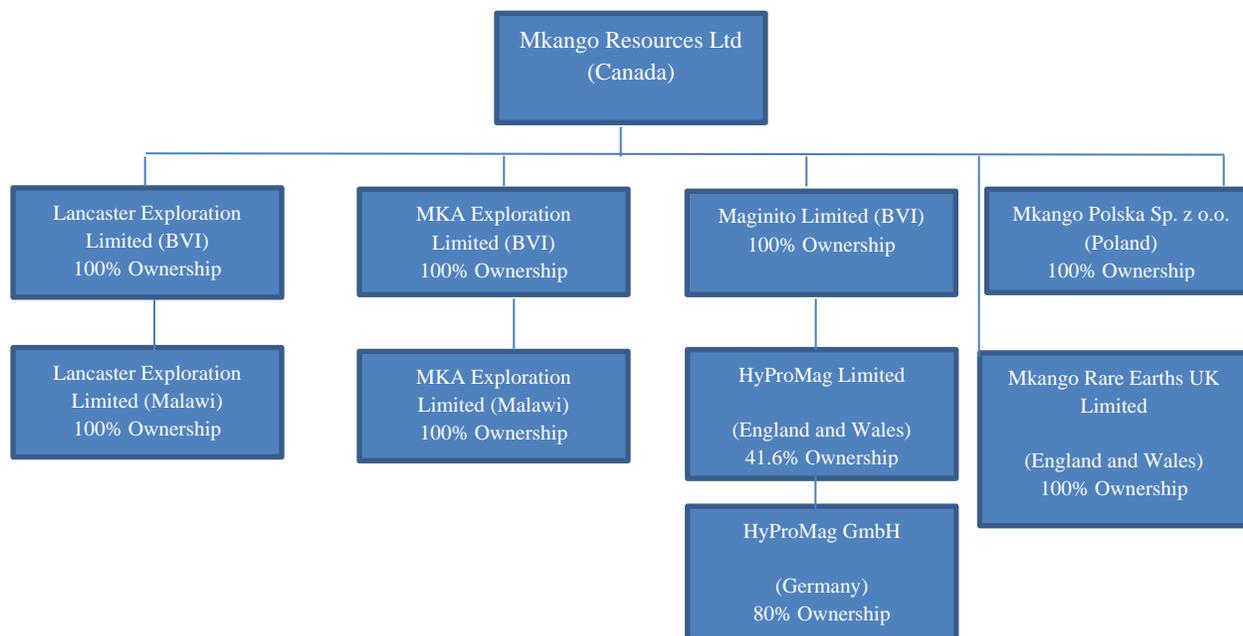
SCREAM will establish a recycled source of rare earth magnets in the UK to provide greater security of supply to UK industry, whilst aiming to achieve a 10% reduction in cost and a significant reduction in environmental impact, with an estimated 88% less energy for short loop (i.e. magnet to magnet) recycled magnets versus primary mining to separation to metal alloy to magnet production.

The Project includes pilot plants for short loop recycling, encompassing scrap pre-processing, HPMS and production of recycled sintered magnets, as well as for complementary recycling routes, namely remelting and strip casting to produce NdFeB alloys as well as chemical processing, the latter being developed by Mkango UK.

HyProMag will work with UoB to develop a new semi continuous version of the HPMS process and to produce short loop recycled sintered magnets at multiple grades to match the requirements for a range of applications.

## CORPORATE STRUCTURE

The Company is incorporated in the province of British Columbia, Canada. The Company’s registered office is Suite 2900, 550 Burrard Street, Vancouver, British Columbia, Canada, V6C 0A3. The Company’s current structure is as follows:



The Phalombe Licence, the Thambani Licence and the Chimimbe Licence are held by Lancaster Exploration Limited (“**Lancaster BVI**”), a company which was incorporated under the laws of the British Virgin Islands (“**BVI**”) on August 3, 2007. Lancaster BVI is 100% owned by Mkango.

Lancaster Exploration Limited (“**Lancaster Malawi**”) was incorporated on May 19, 2011, under the laws of Malawi. Lancaster Malawi is a wholly owned subsidiary of Lancaster BVI.

MKA Exploration Limited (“**MKA Exploration**”) was incorporated under the laws of the BVI on July 25, 2018 and is wholly owned by Mkango. MKA Exploration’s wholly owned subsidiary, MKA Exploration Limited (“**MKA Exploration Malawi**”) was incorporated under the laws of Malawi on May 6, 2019. The Mchinji Licence is held by MKA Exploration.

Maginito Limited (“**Maginito**”) was incorporated under the laws of the BVI on January 3, 2018. Maginito is 100% owned by Mkango. Maginito is focused on developing green technology opportunities in the rare earths supply chain, encompassing neodymium (NdFeB) magnet recycling as well as innovative rare earth alloy, magnet and separation technologies. This includes its investment in HyProMag Limited (“**HyProMag**”) as discussed below.

Mkango Polska Sp. z o.o. (“**Mkango Polska**”) was incorporated under the laws of Poland and 100% ownership was acquired by the Company on March 22, 2021. Mkango Polska is developing a rare earth separation plant at Pulawy in Poland, working with Grupa Azoty PULAWY, Poland’s leading chemicals company and the second largest manufacturer of nitrogen and compound fertilizers in the European Union. The Pulawy Separation Plant is expected to process the purified mixed rare earth carbonate derived from Songwe Hill into separated rare earth oxides.

Mkango Rare Earths UK Limited (“**Mkango UK**”) was incorporated on June 23, 2021 under the laws of England and Wales. Mkango UK is 100% owned by the Company. Mkango UK was established to further develop the Company’s rare earths strategy in the UK.

HyProMag Limited (“**HyProMag**”) was incorporated on 19 July 2018 under the laws of England and Wales. HyProMag is 41.6% owned by Maganito. Maganito has an option to increase its ownership of HyProMag to 49%. The remaining shares of HyProMag are owned by individuals who are original founders of the business (including the estate

of one of the founders who was recently deceased). HypoMag is focused on the extraction and demagnetisation of NdFeB magnets embedded in scrap and redundant equipment using HPMS process.

HyProMag GmbH (“**HyProMag Germany**”) was incorporated on 3 October 2021 under the laws of Germany. HyProMag Germany is 80% owned by HyProMag, with the remaining 20% owned by Professor Carlo Burkhardt of Pforzheim University. HyProMag Germany has sublicensed HPMS from HyProMag for use in Germany.

## DISCUSSION OF OPERATIONS

Mkango holds a 100% interest in Lancaster BVI, which holds a 100% interest in 17 exploration licences, 15 of which are held as 5 year retention exploration licences in southern Malawi, the Phalombe Licences, the Thambani Licence and the Chimimbe Licence. Mkango also holds a 100% interest in MKA Exploration Limited BVI which holds a 100% interest in the Mchinji Licence.

Licence	Project	For the three months ended March 31,	
		2022	2021
Phalombe	<b><i>Songwe Hill project</i></b>		
	Metallurgy expenses	178,909	577,509
	Government fees	1,008	21,797
	ESHIA <sup>(1)</sup>	118,559	23,101
	Technical studies	153,749	108,423
	Consulting fees	166,023	92,671
	Malawi office and camp expenses	22,595	19,632
Phalombe total		640,843	843,133
REE Separation Plant pre-feasibility Study	Consulting fees	446,360	-
Thambani, Chimimbe, Mchinji and Nkalonje	Project expenditures	18,482	72,325
Total mineral project and research and development expenses		\$1,105,685	\$915,458

(1) Environmental Social Health Impact Assessment and Corporate Social Responsibility expenditures.

Exploration and evaluation expenditures are recognized in the consolidated statement of comprehensive loss as mineral project expenditures pending determination of technical feasibility and commercial viability.

## SONGWE HILL

### Background

The Phalombe retention Licences are located in southeast Malawi, within which the Songwe Hill Rare Earth deposit is the main development target and features carbonatite hosted rare earth mineralization. Songwe Hill was subject to historic exploration programs during the late 1980s. Lancaster BVI was awarded the licence by the Malawi government on January 21, 2010 and has subsequently renewed it, with the most recent renewal on the June 1, 2021 when the Phalombe Licence was transferred into 11 retention licences covering a total of 250 sq km. Each retention licence is for a 5 year period from June 1, 2021 and certain licences are expected to be transferred into a mining licence once the Feasibility Study and ESHIA studies have been completed.

### Exploration

Mkango has been exploring and evaluating the Songwe Hill rare earth deposit since January 2010. Following confirmation of the previously investigated enriched zones, exploration focused on identifying the nature and extent of the rare earth mineralized carbonatites and related rocks. Mkango’s early exploration activities consisted of lithochemical sampling, soil sampling, channel sampling, geological mapping, ground magnetic, density and radiometric surveys, and petrographic/mineralogical analyses.

In particular, detailed geological mapping of Songwe Hill was carried out in 2010 and 2011. The mapping demonstrated that carbonatite outcrops existed over a significantly larger area than had previously been recognized. Mapping further achieved a more precise delineation of the distribution of the main rock types. The mapping broadened the surface area of known rare earth mineralization significantly beyond the areas identified in previous exploration and identified new areas of rare earth enriched carbonatite.

The results of these activities confirmed the rare earth enrichment initially identified by historical exploration and suggested that the mineralized carbonatites were more widespread than originally identified. Mkango embarked on diamond drilling campaigns in 2011 (“**Phase 1**”), 2011–2012 (“**Phase 2**”) and 2018 (“**Phase 3**”). Mkango also produced a bulk sample after the Phase 3 drilling in 2018.

The Phase 1 programme was successful in confirming the presence of rare earth mineralization first outlined by historical exploration. Eleven of the 13 holes intersected significant zones of rare earth mineralization. Having confirmed the presence of the mineralization, the Phase 1 drilling was expanded to areas not previously tested and demonstrated the extension of rare earth mineralization both laterally and vertically.

The Phase 2 drilling focused on expanding the area of known mineralization, infilling between existing holes and testing the mineralization at depth. All drill holes intersected rare earth mineralization and the maximum depth at which rare earth mineralization was encountered was 350 metres (“**m**”) below the surface of the hill.

The original resource estimate based on the Phase 1 and Phase 2 drilling programs enabled a maiden resource of 13.2 million tonnes (“**Mt**”) grading 1.62% total rare earth oxides (“**TREO**”) in the Indicated Mineral Resource category and 18.6mt grading 1.38% TREO in the Inferred Mineral Resource category which was announced on October 10, 2012. The Indicated Resource estimate formed the basis for a Pre-Feasibility Study completed in 2014, which was subsequently updated in 2015.

## **Feasibility Study**

Following the receipt of £5 million (\$7 million) by Lancaster BVI on January 24, 2018, pursuant to the transaction with Talaxis, Mkango commenced the Feasibility Study, the initial phases of which comprised an extensive diamond drilling programme, metallurgical optimisation and work in relation to the ongoing ESHIA.

On June 4, 2018, Mkango announced commencement of the major Phase 3 diamond drilling programme at Songwe Hill. The programme was completed in early September 2018 and comprised 91 drill holes totalling 10,900 m of infill, step-out and geotechnical drilling, the latter for the purposes of mine design.

In five press releases between August 21, 2018 and December 3, 2018 ([www.sedar.com](http://www.sedar.com)), Mkango announced the results of all 91 drill holes which, together with a schematic geological map illustrating the location of the drill hole collars and estimated drill hole traces, are available on the Company’s website at [www.mkango.ca](http://www.mkango.ca).

Approximately 60% of the Phase 3 drill holes were infill holes aimed at better defining the geology and geometry of the mineralized body, to facilitate a better understanding of the geological characteristics and setting of the mineralization, and to refine the geological model as a prelude to re-defining the Mineral Resource. All infill holes intersected significant widths of mineralized carbonatite and breccia. Modelling of the lithologies based on geochemistry confirms that the core of the deposit is a uniformly mineralized carbonatite intrusive with steep sides.

Approximately 30% of the Phase 3 drill holes were step-out holes, aimed at expanding the known Mineral Resource by identifying or better delineating mineralization that is outside the volume of the previously defined Mineral Resource. Most of these holes contained mineralized intersections although not all reached their targeted depths. These holes have resulted in expansion of the estimated Mineral Resources by identifying new areas of mineralized carbonatite beyond the limits of the previous exploration programs.

Oriented core was recovered from 16 of the holes to provide geotechnical information within the Mineral Resource for future mine design.

Forty-nine of the drill holes intersected significant zones of rare earths mineralisation grading above 1% total TREO which are shown in Table 1 of Appendix A of the MD&A and the full set of the results and breakdown of TREO values are shown in Table 2 of Appendix A of the MD&A.

Laboratory assay data was used to produce a 3D model based on geochemical coding that is reflective of the main mineralization, and that is objective, repeatable, and provides a consistent and meaningful illustration of the distribution of rare earth mineralization in the context of the geological setting.

The principal geochemical discriminators of the lithological variation were found to be aluminium, silicon, potassium, and calcium. Calcium was used as the final indicator, which gave a good separation with the same accuracy and resolution as if all four discriminators had been used.

The geological model constructed from the geochemistry provides a good framework within which to interpret the geology of the deposit. This is a heterogeneous geological environment that is not easily interpreted from lithological observations of drill hole core and outcrop samples alone. The model provides an estimate of the shape and extent of the carbonatite and is considered a useful tool to describe the shape of the main ore body. The model was also applied to validate the indicator approach that was used to estimate the carbonatite proportion in each cell of the resource block model.

On February 4, 2019, Mkango announced an updated Mineral Resource estimate for Songwe Hill: 8 Mt grading 1.50% TREO in the Measured Mineral Resource category, 12.2 Mt grading 1.35% TREO in the Indicated category and 27.5 Mt grading 1.33% TREO in the Inferred Mineral Resource category, applying a base case cut-off grade of 1.0% TREO.

The updated base case Mineral Resource Estimate equates to a 60% increase in the Measured and Indicated Resource tonnage and a 48% increase in the Inferred Resource tonnage versus the base case 2012 Mineral Resource Estimate, which formed the basis for the 2015 Pre-Feasibility study. The Mineral Resource is open at depth. The combined Measured and Indicated Mineral Resource Estimate, totalling 21 Mt grading 1.41% TREO, will form the basis of the updated mine plan for the ongoing Feasibility Study, which will evaluate a bulk tonnage, open pit mining operation focused on broad zones of near surface and outcropping rare earths mineralisation. The updated resource supersedes the 2012 Mineral Resource Estimate, and therefore renders the mining and economic information in the 2015 Pre-Feasibility study obsolete. Updated mining and economic information will be generated as part of the ongoing Feasibility Study based on the new resource.

The Measured Mineral Resource Estimate comprises 42% of the combined Measured and Indicated Mineral Resource Estimate, indicating a substantial increase in geological confidence to support the completion of the Feasibility Study.

The majority of the previously delineated near surface Inferred Mineral Resource Estimate has been upgraded to either the Measured Mineral Resource or Indicated categories, achieving a key objective of the 2018 drill programme. Approximately 95% of the Measured and Indicated Mineral Resource Blocks are at a depth of less than 160 m below the surface of the hill, indicating that the majority will be accessible by open pit mining.

Scientific and technical information in relation to these results and related disclosure, including sampling, analytical, and test data underlying the information, has been approved and verified by Dr. Scott Swinden of Swinden Geoscience Consultants Ltd, who is a "Qualified Person" in accordance with NI43-101.

Sample preparation and analytical work for the drilling and channel sampling programmes are being provided by Intertek-Genalysis Laboratories (Perth, Australia) employing ICP-MS techniques suitable for rare earth analyses and following strict internal Quality Assurance/Quality Control ("QAQC") procedures inserting duplicates, blanks and standards. Internal laboratory QAQC was also completed to include blanks, standards and duplicates.

The ESHIA studies are currently being completed in accordance with World Bank Standards and Equator Principles.

In terms of other aspects of the Feasibility Study, Mkango shipped a 60 tonne bulk sample to Australia for pilot test work. The bulk sample was selected from areas within the previously announced upgraded Measured and Indicated Mineral Resource Estimates, which underpin the ongoing Feasibility Study.

Potential pilot plant facilities were reviewed through a detailed tender process and ALS Metallurgy in Perth, Australia was selected. On February 24, 2021 the Company announced the commencement of flotation pilot test plant work. Following completion of flotation piloting, announced on March 2, 2021, the Company announced results of the flotation pilot plant programme on May 4, 2021:

- The flotation piloting programme demonstrated that the flotation process is robust and straightforward to scale up and the results support a significant increase in both flotation recoveries and concentrate grade for the Feasibility Study versus the design criteria for the 2015 pre-feasibility study for Songwe Hill:

- Significant increase in flotation recovery of total rare earth oxides (“**TREO**”) to 74% from 67%;
- Tripling of flotation concentrate grade to 15% TREO from 4.7% TREO;
- Substantial increase in flotation upgrade, with the optimised flotation regime increasing the run-of-mine ore grade by 10 times versus three times in the pre-feasibility study and a positive impact on downstream integrated hydrometallurgical operations.
- The flotation pilot plant generated over one tonne of flotation concentrate for hydrometallurgical pilot processing at ANSTO, which has been completed.
- The ongoing Feasibility Study for Songwe Hill envisages processing of flotation concentrate via an integrated hydrometallurgical processing plant, located adjacent to the Songwe operations in Malawi, targeting a high grade purified mixed rare earth carbonate grading greater than 50% TREO.
- The flotation and hydrometallurgical pilot plants provide SENET (a DRA Global Group Company) with key design parameters and essential operating data to assist it in the engineering of the Company’s commercial scale operation.

On September 23, 2021 the Company announced that the management team of Mkango, as well as leading Malawian geotechnical engineering firm, Geoconsult Limited, and Zutari Limited, a geotechnical engineering firm which is based in South Africa, were on site at the Songwe Hill project to commence a major geotechnical drilling and pitting program.

The geotechnical test work program obtained samples from approximately 150 five-metre-deep pits and 22 twenty-metre drill holes and is being undertaken to confirm the soil and ground characteristics of the Songwe Hill project area.

The geotechnical samples were tested and investigated in Malawi at the Geoconsult Limited laboratories in Lilongwe and provide the detailed geotechnical information that is required to finalize the detailed engineering design plans, prior to the completion of the Feasibility Study expected in Q2 2022.

On December 14, 2021 the Company announced that it had commenced the final stage of hydrometallurgy piloting at ANSTO in Australia following an extensive phase of flow sheet development and optimization.

On March 7, 2022 the Company announced the production of Neodymium and Praseodymium enriched rare earth carbonate from final piloting as the Feasibility Study nears completion. Highlights include:

- The final stage of hydrometallurgical piloting at ANSTO for Songwe Hill has successfully produced rare earth carbonate grading 55% total rare earth oxides (“**TREO**”) equivalent, enriched in neodymium and praseodymium (“**Nd / Pr**”) oxides, which together make up 31% of the rare earth oxide content in the carbonate product (i.e.  $\text{Nd / Pr oxides / TREO} = 31\%$ ).
- The rare earth carbonate produced at Songwe Hill will feed Mkango’s proposed Pulawy separation plant development in Poland.
- Technical aspects of the feasibility study for Songwe Hill are close to completion, with the majority of engineering workstreams 100% complete and other key workstreams more than 90% complete.
- Negotiations of the MDA with the Government of Malawi are also well advanced. The MDA was recently highlighted to the Malawi Parliament in a speech by Malawi State President His Excellency Lazarus Chakwera and also during the Malawi 2022/23 Budget by the Minister of Finance Hon Sosten Gwengwe MP, and both Mkango and the Government of Malawi are prioritising its successful completion. The MDA confirms the fiscal and legal terms for project development.
- Mkango will continue to advance ongoing discussions with potential strategic investors and off-takers, and work closely with its brokers, project finance advisors, Terrafranca Capital Partners Ltd ([www.terrafranca.co.uk](http://www.terrafranca.co.uk)), and United States strategic advisors, Jones Group International ([www.jonesgroupinternational.com](http://www.jonesgroupinternational.com)). Mkango also recently engaged EIT RawMaterials ([www.eitrawmaterials.eu](http://www.eitrawmaterials.eu)) to further support financing discussions in Malawi and Poland. EIT RawMaterials provides support to Mkango within the framework of the European Raw Materials Alliance.

Scientific and technical information in relation to flotation piloting and metallurgy has been approved and verified by Nicholas Dempers Pr.Eng (RSA) Reg. No 20150196, FSAIMM of SENET (a DRA Global Group Company), who is a "Qualified Person" in accordance with National Instrument 43-101 -- Standards of Disclosure for Mineral Projects.

### **Other targets in the Phalombe Licence**

On August 9, 2016, Mkango announced the results of the portion of the World Bank Survey covering approximately two thirds of the Phalombe Licence. The World Bank Survey highlighted a number of exploration targets within the Phalombe Licence. Songwe Hill was not covered by the World Bank Survey.

Apart from Songwe Hill, there are two other identified hypabyssal systems in the Phalombe Licence, namely Nkalonje and Namangale. In both cases, the World Bank Survey indicates strong thorium radiometric anomalies coincident with the intrusive rocks, which, similar to Songwe Hill, are expressed as steep hills rising above the surrounding plain. Thorium radiometrics are known as a highly effective tool for rare earths exploration and the carbonatite at Songwe Hill is also characterized by a thorium radiometric anomaly, identified through previous geophysical surveys. Unlike Songwe Hill, the Nkalonje Hill and Namangale hypabyssal systems do not feature large areas of outcropping carbonatite, the host rock for rare earths at Songwe Hill. However, both contain outcrops of carbonatite veins and dykes suggesting that there is potential for identifying a carbonatite body below surface. Other prospects within the Phalombe Licence include the Mantrap and Knoll prospects.

A map showing the thorium radiometric anomalies superimposed on a topographic map, indicating local infrastructure, and the locations of Nkalonje and Namangale can be accessed via the following link: [http://www.mkango.ca/i/maps/Results-of-Airborne-Radiometric-Survey-\(Th\)-on-Topo-Aug.jpg](http://www.mkango.ca/i/maps/Results-of-Airborne-Radiometric-Survey-(Th)-on-Topo-Aug.jpg).

In 2016, Songwe Hill and the Nkalonje Hill, Mantrap and Knoll prospects were visited by a large delegation of international and Malawian geology and geophysics experts in connection with the €5.4 million HiTech AlkCarb research programme led by the Camborne School of Mines, the University of Exeter and funded under the European Union's Horizon 2020 Research and Innovation programme in which the Company (through Lancaster BVI) was an industry partner. The scope of the research project encompassed building exploration expertise in hi-tech raw materials as well as improving and developing interpretation of geophysical and down hole data. Of particular relevance to Mkango was the opportunity to better understand the potential for large but unexposed mineralised bodies of carbonatite (the host rock for rare earth mineralisation) on either a prospect or regional scale.

Based on work to date, the highest priority of the targets within the Phalombe Licence is the abovementioned Nkalonje Hill hypabyssal system, where outcrop is largely fenite (altered country rock) with occasional carbonatite but where there may also be potential for underlying and larger zones of mineralised carbonatite.

On April 7, 2022 the Company announced the completion of initial sampling and ground geophysics at its Nkalonje Hill and the identification of drill targets. Highlights included:

- Assays of carbonatite dyke samples return grades of up to 5.92% TREO (Total Rare Earth oxides) (median 2.96%).
- Mapping and geophysics results confirm that the major geological features of Nkalonje Hill are those of an alkali silicate-carbonatite intrusive complex, similar to Songwe Hill.
- Geophysics has identified a primary shallow drilling target beneath exposed mineralised dykes and a secondary deeper drilling target.

Geological mapping and geophysics data for Nkalonje Hill confirms the presence of previously mapped nepheline syenite, breccia and carbonatite.

- The ground geophysics data support the geological interpretation of a ring complex structure, as seen at Songwe Hill, and at other carbonatite vents in Malawi. The overall diameter of this structure is approximately 1.7 km and comprises an outer ring of nepheline syenite and a central vent of breccia.
- The breccia body is approximately 900 m in diameter and comparable in lateral extent to Songwe Hill.
- Mapping to date has identified eight carbonatite dykes reaching 4 m in width and traceable at surface up to 90 m along strike.
- Two different carbonatite types are noted at Nkalonje Hill: (1) calcite carbonatite and (2) a banded ferroan calcite carbonatite.

- Assay results for 12 calcite carbonatite and 17 ferroan calcite carbonatite grab samples returned total rare earth oxide (TREO) grades of up to 5.92%, with a median value of 2.96% in the ferroan calcite carbonatite, suggesting concentration of the REE in the more evolved carbonatite phases.

		La <sub>2</sub> O <sub>3</sub>	Ce <sub>2</sub> O <sub>3</sub>	Pr <sub>6</sub> O <sub>11</sub>	Nd <sub>2</sub> O <sub>3</sub>	Sm <sub>2</sub> O <sub>3</sub>	Eu <sub>2</sub> O <sub>3</sub>	Gd <sub>2</sub> O <sub>3</sub>	Tb <sub>4</sub> O <sub>7</sub>	Dy <sub>2</sub> O <sub>3</sub>	Ho <sub>2</sub> O <sub>3</sub>	Er <sub>2</sub> O <sub>3</sub>	Tm <sub>2</sub> O <sub>3</sub>	Yb <sub>2</sub> O <sub>3</sub>	Lu <sub>2</sub> O <sub>3</sub>	Y <sub>2</sub> O <sub>3</sub>	TREO
Ferroan calcite carbonatite n=17	Median	7643	14134	1243	3224	240	57	120	17	102	22	69	11	72	10	762	2.96
	Max	17197	29706	2767	7300	551	123	254	36	277	65	185	23	129	16	2101	5.92
	Min	4076	7571	695	1879	157	41	85	11	59	11	30	4	27	4	320	1.53
Calcite carbonatite n=12	Median	3343	5662	529	1557	150	35	82	12	56	10	28	4	23	4	275	1.20
	Max	5474	8811	781	2172	204	50	109	15	75	14	36	5	31	4	423	1.80
	Min	1089	1874	169	480	55	16	40	6	32	6	19	3	16	2	191	0.40

**Table 1:** Assay results for grab samples from Nkalonje Hill. Grades for individual rare earth oxides reported in parts per million (ppm), TREO in weight percent.

- The geophysical characteristics of the central breccia vent include a low magnetic response, low density and high conductivity. However, it also includes a central gravity anomaly extending from the surface to approximately 300 m depth. This feature is tentatively interpreted as a shallow body of carbonatite, which fits the observed lithologies present at Nkalonje Hill, and the conceptual structure of the hill.

### Exploration targets at Nkalonje Hill

Based on interpretation of the recent data, the Company has identified two drilling targets at Nkalonje Hill.

- Target 1 is centred on known mineralisation around the carbonatite dykes. Further mineralisation at depth is interpreted from Induced Polarity (IP) and Natural Source Audio Magneto-Telluric (NSAMT) geophysical anomalies which present a series of potential shallow drill targets extending down-dip of the exposed dykes.
- Target 2 is a conceptual target based on geophysical anomalies which consist of a surface radiometric anomaly (high Th), a gravity high and magnetitic low, with an IP anomaly at depth. The target is in a relatively eroded, poorly exposed part of the hill. These geophysical and geomorphological features fit with a conceptual model of a central carbonatite body, common to other carbonatite complexes, which the surface dykes suggest may potentially contain REE mineralisation.

### Work plan

Planned work at Nkalonje Hill consists of continued evaluation of the dykes at Target 1, including new sampling (including channel sampling where possible) in order to trace the grade of the dykes along strike. A soil/auger sampling and trenching programme is planned to ground truth the geophysical anomalies at Target 2.

Mkango retains, through its holding in Lancaster BVI, a 100% interest in the Phalombe Licence following the restructuring of Talaxis' interests to acquire the remaining 49% interest in the Phalombe licence which completed on November 1, 2021.

## MCHINJI, MCHINJI DISTRICT

On July 4, 2019, MKA Exploration BVI was granted the Mchinji Licence by the Malawi Minister of Natural Resources, Energy and Environment in respect of an area of 868.69 sq km in the Mchinji district, Malawi, which is adjacent to licences with known mineral potential including the Chimimbe Hill licence, a nickel-cobalt licence to the south.

The Mchinji Licence runs for a three-year term, after which it can be renewed twice for a further two-year period with a 50% reduction in the Mchinji Licence area required with each renewal. Exploration is focusing on rutile, gold, base metals, nickel-cobalt and graphite.

Mkango has completed reconnaissance shallow soil sampling and an auger programme in the Mchinji Licence with results announced in September 2020. The results confirmed the presence of rutile plus anatase (both naturally

occurring mineral forms of TiO<sub>2</sub> mineralisation. Early-stage results show geological similarities to saprolite-hosted rutile mineralisation recently discovered on the adjoining Sovereign Metals licence to the east.

On November 3, 2020, the Company announced the commencement of an extensive hand-auger drilling and soil sampling programme to identify rutile prospects within the Mchinji licence.

The drill programme was following up on the reconnaissance work announced on September 15, 2020.

The Company announced the completion of the programme on December 3, 2020, which was followed by mineral processing testwork on the samples, and now carrying out further desktop studies over the licence area.

Mkango retains a 100% interest in the Mchinji Licence.

## **CHIMIMBE HILL, MCHINJI DISTRICT**

On November 14, 2017, Lancaster BVI was granted the Chimimbe Licence by the Malawi Minister of Natural Resources, Energy and Environment in respect of an area of 98.48 sq km around Chimimbe Hill, Mchinji district, Malawi. Exploration has identified a number of areas with potential for laterite and saprolite hosted nickel, cobalt, chrome, rutile, gold and base metals and other mineralization.

The Chimimbe Licence runs for a period of three years and is renewable for further periods of two years thereafter if the terms and conditions of the licence have been met. The licence has been renewed for a period of two years to November 10, 2022.

Mkango retains a 100% interest in the Chimimbe Licence.

## **THAMBANI, MWANZA DISTRICT**

### **Background**

Lancaster BVI was granted the Thambani Licence by the Malawi Minister of Natural Resources, Energy and Environment on September 10, 2010 in respect of an area, which was originally 468 sq km in Thambani, Mwanza District, Malawi. Exploration has identified a number of areas with potential for uranium (“U”), tantalum (“Ta”), niobium (“Nb”), zircon and mineral corundum.

The licence was originally issued by the Malawi government on a three-year basis and was subsequently renewed on September 10, 2015 for an additional two-year term when the Company requested a reduction in the Thambani Licence area to the current 136.9 sq km. The Thambani Licence was renewed for a further 2 years to September 10, 2019 and was subsequently renewed for an additional 2 years to September 10, 2021. The Company has subsequently been granted 4 retention licences for a period of five years to 19 October 2026.

The exploration activities conducted during 2011 and 2012 included acquisition of Landsat7 and ASTER satellite imagery for the Thambani Licence area, systematic ground radiometric surveys to confirm and detail previously-known airborne anomalies, reconnaissance geological mapping and litho-geochemical sampling programs. The work has identified a number of potential uranium targets over the Thambani Massif, which is mainly composed of nepheline syenite gneiss, forming two prominent ridges known as Thambani East Ridge and West Ridge. Historical airborne radiometric surveys and ground radiometric survey programs carried out by Mkango have revealed two distinct uranium anomalies occurring along the two ridges. A strong uranium anomaly, measuring approximately 3 kilometres (“km”) by 1.5 km, occurs along the length of the Thambani East Ridge with a north-south trend and a second uranium anomaly, measuring approximately 1.5 km by 0.4 km along the western foot of the West Ridge possibly coincident with the contact between the nepheline syenite body and the biotite-hornblende gneisses to the west.

Initial results from follow up reconnaissance geochemical sampling conducted in 2013 returned locally anomalous uranium values, ranging up to 1,545 ppm U<sub>3</sub>O<sub>8</sub>, on both Thambani East Ridge and West Ridge. During the year ended December 31, 2014, the Company continued to progress the geological exploration studies on the Thambani project area, data analysis and geological modeling.

Mkango completed a trenching programme across the Thambani Massif primarily focused on two sites of historical uranium exploration, known as the Chikoleka and Little Ngona targets. An initial set of nine trenches, selected on the

basis of anomalous ground radiometric results, have been re-examined and geochemically sampled across profiles from soil/overburden into bedrock.

The first set of assay results of 142 soil and rock chip samples returned variably anomalous U, Nb and Ta values in most trenches, ranging up to 4.70 %  $U_3O_8$ , 3.25 %  $Nb_2O_5$  in soil and up to 0.42 %  $U_3O_8$ , 0.78 %  $Nb_2O_5$  and 972 ppm  $Ta_2O_5$  in rock chips, notably higher than results from the 2013 reconnaissance surface geochemical sampling programme. Results associated with the 10 best  $U_3O_8$  assays are summarized in Table 1 of Appendix C of the MD&A.

Preliminary mineralogical studies carried out on six rock samples from the Little Ngona River and Chikoleka targets, using Scanning Electron Microscopy at the Natural History Museum London, indicate that pyrochlore group minerals, mainly betafite, are the principal carriers of U, Nb and Ta for these samples.

### **Airborne Geophysical Survey**

On July 12, 2016, Mkango announced results of the airborne geophysical survey covering approximately two thirds of its Thambani Licence. As with the Phalombe Licence, this survey was part of a \$25 million World Bank funded nationwide airborne geophysical programme flown at 250m spacings.

The World Bank Survey confirms the presence of the previously identified uranium radiometric anomaly referred to above along the western flank of the Thambani East Ridge. The Little Ngona prospect, which previously yielded very encouraging uranium, niobium and tantalum values from geochemical sampling, is located at the northern end of this anomaly.

Further discrete uranium anomalies orientated approximately east-west, is located to the south of these anomalies and has yet to be investigated in detail. The previously identified uranium radiometric anomalies on the West Ridge and Chikoleka prospect in the north-west of the Thambani Licence area, which also yielded very encouraging results from previous geochemical sampling, were not covered by the World Bank Survey.

A map showing the uranium radiometric anomalies superimposed on a topographic map, indicating local infrastructure, and a digital elevation model can be accessed via the following link:

[http://www.mkango.ca/i/maps/Results\\_of\\_Airborne\\_radiometric\\_survey\\_on\\_topo\\_U\\_July.jpg](http://www.mkango.ca/i/maps/Results_of_Airborne_radiometric_survey_on_topo_U_July.jpg)

The airborne survey also highlighted a number of magnetic anomalies not previously identified, including a 2.3 km linear magnetic high anomaly along the Thambani East Ridge, a further 1 km by 0.5 km magnetic high anomaly located to the north along the Thambani East Ridge, a magnetic low anomaly approximately co-incident with the abovementioned east-west orientated uranium anomaly and anomalies in a number of other locations. These areas require further investigation to determine the significance of the magnetic anomalies and whether they are related to mineralisation or geological features.

A map showing the magnetic anomalies superimposed on a topographic map, indicating local infrastructure, and a digital elevation model can be accessed via the following link:

[http://www.mkango.ca/i/maps/Results\\_of\\_Airborne\\_magnetic\\_survey\\_on\\_topo\\_July\\_2016.jpg](http://www.mkango.ca/i/maps/Results_of_Airborne_magnetic_survey_on_topo_July_2016.jpg)

During 2019, Mkango commenced a subsequent exploration programme focused on further definition of uranium, tantalum and niobium mineralization in the licence area. Results were as follows:

Assay results from 128 rock samples collected during the 2019 exploration programme returned uranium, tantalum and niobium values ranging up to 0.74%  $U_3O_8$ , 0.41%  $Ta_2O_5$  and 3.24%  $Nb_2O_5$ . Of the total, 43 graded above 500ppm  $U_3O_8$ , of which 13 graded above 1,000ppm  $U_3O_8$ ; all but one of these 43 samples were in-situ rock samples. Results associated with the ten best  $U_3O_8$  assays are summarised in the table below, nine of which are grab samples from outcrop (prefixed G-) and one a hand-auger sample of highly weathered rock in a trench (prefixed T-).

The objective of the programme was to identify new areas of outcropping mineralisation through further geological reconnaissance and sampling, guided by handheld spectrometer. Sampling was focussed on the uranium anomalies identified by previous airborne and ground radiometric surveys, including areas where previous sampling gave encouraging results. The aims of the sampling were to better delineate the mineralised zones and to localise future drill sites to test the down-dip extension of surface mineralisation. Field observations and sampling results suggest that mineralisation occurs in zones that are conformable with gneissic banding.

Assays from the 10 highest grade U3O8 samples from the 2019 Thambani sampling programme are described in Table 2 of Appendix C of the MD&A.

The 2019 sampling programme was focused on radiometric uranium anomalies associated with the Thambani Massif, a body of nepheline-bearing syenite gneiss which dominates the north-eastern part of the licence. Previous work has shown the uranium anomalies to be associated with niobium and tantalum mineralisation.

Two suites of samples were collected: 1) in-situ grab samples from outcrop; and 2) extremely friable, highly weathered rock from trenches that were manually excavated to approximately 10m long, 1.5m wide and 2m deep, and oriented west to east across the regional strike of the gneissic foliation. Grab samples are selective and are not necessarily representative of the mineralisation on the property.

A location map and sampling maps can be found at <https://mkango.ca/projects/thambani>

A total of 58 surface grab samples were collected, 54 of which were from outcrop associated with the prominent radiometric anomaly along the western slope of the Thambani East Ridge, and four from outcrop in the Supe River.

Ten trenches were excavated by hand over radiometric anomalies. Three of these (the Western Trenches) were spaced 25m apart, immediately adjacent to a pit where the highest grades were encountered in 2017. The seven other trenches were excavated over radiometric anomalies at widely separated locations on the lower slope of the Thambani East Ridge. In all of the trenches, highly weathered nepheline syenite gneiss was encountered below a bouldery soil horizon approximately 0.5m thick. The westward dip of the banded gneiss observed in outcrop on the ridges was recognisable in the trenches despite strong weathering.

In the Western Trenches, 70 samples were collected, 61 of which were horizontal channel samples of 2m length collected along each wall in all of the three trenches. Five similar samples were collected in one trench at the foot of the Thambani East Ridge.

Assays summarised in the table below show that grades in the fresh rock tended to be higher, suggesting extensive secondary remobilisation of the elements of interest.

Summary of assay results (grades in ppm) from the 2019 Thambani sampling programme are described in Table 3 of Appendix C of the MD&A.

This programme provides new information on the nature, disposition and grade ranges of mineralisation in the Thambani Massif. Sampling of mainly fresh samples on the Thambani East Ridge indicates that the U-Ta-Nb mineralisation occurs within the gneissic bands, and surface observations indicate that it may occur in conformable zones. This provides a target for shallow drilling on the down-dip extension of the surface showings.

Scientific and technical information contained in this section has been approved and verified by Dr. Scott Swinden of Swinden Geoscience Consultants Ltd, who is a “Qualified Person” in accordance with NI 43-101.

Mkango is currently evaluating strategic options for Thambani, including opportunities for joint venture and other potential avenues to create value.

Mkango currently retains a 100% interest in the Thambani Licence.

## **RECYCLE**

Mkango’s recycling interests are held via 100% owned subsidiaries, Maginito and Mkango UK. Maginito is focused on developing green technology opportunities in the rare earths supply chain, encompassing short loop NdFeB magnet recycling, via its interest in HyProMag, as well as innovative rare earth alloy, magnet, and separation technologies. Mkango UK was established to further develop the Company’s rare earths strategy in the UK and is focused on chemical processing of NdFeB magnet scrap.

## **HyProMag Limited**

On September 23, 2019, the Company announced that Maginito had signed an investment term sheet and one year exclusivity agreement with HyProMag, a private company focused on rare earth magnet recycling. Consistent with Maginito's strategy, the rationale for the transaction includes potential synergies, such as blending of primary production originating from Songwe Hill with recycled production from HyProMag, as well as enhanced marketing flexibility and access to downstream markets for rare earth permanent magnets, which are critical materials for electric vehicles, wind turbines, consumer electronics and other technology applications.

HyProMag has licenced a patented process for extracting and demagnetising NdFeB alloy powders from magnets embedded in scrap and redundant equipment named Hydrogen Processing of Magnet Scrap. This technology was originally developed within the Magnetic Materials Group (“MMG”) at the UoB. The founding directors of HyProMag, comprising Professor Emeritus Rex Harris, former head of the MMG, Professor Allan Walton, current head of the MMG, and two honorary fellows, Dr John Speight and Mr David Kennedy, are leading world experts in the field of rare earth magnetic materials, alloys and hydrogen technology, and have significant industry experience.

On January 9, 2020 the Company announced that Maginito had completed the acquisition of an initial 25% interest in HyProMag. Maginito has invested an initial £300,000 for a 25% interest in HyProMag, with an option to invest a further £1 million to increase its interest up to 49% and the first right to supply any primary rare earth raw materials for blending with recycled materials, if required, as well as product offtake and marketing rights.

On May 1, 2020 the Company advanced \$261,106 (£200,000) to HyProMag under the Convertible Loan dated January 9, 2020 to take its interest to 41.6%. The Convertible Loan has a maturity date of April 30, 2023, carries interest at 5% per annum and is unsecured.

On May 28, 2020, the Company announced the launch and provided further details of the Innovate UK grant funded project, “Rare-Earth Recycling for E-Machines” (“**RaRE**”) in which HyProMag is a partner. RaRE will for the first time establish an end to end supply chain to incorporate recycled rare earth magnets into electric vehicles, whereby recycled magnets will be built into an ancillary electric motor to ultimately support the development of a commercial ancillary motor suite. In addition to HyProMag and UoB, RaRE features a strong set of partners with complementary expertise, comprising Advanced Electric Machines Research Limited, Bentley Motors Limited, Intelligent Lifecycle Solutions Limited and Unipart Powertrain Applications Limited. The total budget for RaRE is £2.6 million, of which Innovate UK funded £1.9 million, with RaRE partners funding the £0.7 million balance. HyProMag’s contribution was fully funded from the £300,000 investment made by Maginito in January 2020.

On November 30, 2020 the Company announced that HyProMag and partners, European Metal Recycling Limited (“EMR”) and UoB were awarded a grant from the Industrial Strategy Challenge Fund, delivered by UK Research and Innovation, for a new ground breaking project entitled “Rare-Earth Extraction from Audio Products”, which investigated ways of recycling rare earth magnets from speakers used in automotive and consumer electronics applications, which account for approximately 20% of the current market for rare earth magnets, according to Adamas Intelligence, and therefore represent a significant opportunity for rare earth magnet recycling. On September 30, 2021, the Company announced the successful completion of the project.

On August 5, 2021 the Company announced the restructuring of Talaxis’ interests to acquire the remaining 24.5% interest in Maginito which it did not own. The transaction was completed on November 1, 2021 and Mkango now owns 100% of Maginito.

On November 11, 2021 the Company announced that HyProMag had established a subsidiary in Germany to roll out commercialisation of HPMS technology in Europe and to further support government initiatives to strengthen European rare earth supply chains and accelerate the green transition.

## **Mkango Rare Earths UK Limited**

On March 14, 2022, the Company announced that Mkango UK will collaborate with HyProMag, Bowers & Wilkins (“B&W Group”), EMR, GKN Automotive Innovation Centre (“GKN Automotive”), Jaguar Land Rover and UoB in the Driving the Electric Revolution challenge at UK Research and Innovation grant funded project, SCREAM.

SCREAM will establish a recycled source of rare earth magnets in the UK to provide greater security of supply to UK industry, whilst aiming to achieve a 10% reduction in cost and a significant reduction in environmental impact, with an estimated 88% less energy for short loop (i.e. magnet to magnet) recycled magnets versus primary mining to separation to metal alloy to magnet production.

The Project includes pilot plants for short loop recycling, encompassing scrap pre-processing, HPMS and production of recycled sintered magnets, as well as for complementary recycling routes, namely remelting and strip casting to produce NdFeB alloys as well as chemical processing.

Mkango UK’s role in SCREAM is to establish a pilot plant in the UK to chemically process recycled HPMS NdFeB powder and magnet swarf (i.e. the powder produced from grinding and finishing magnets) from a range of scrap sources including electronic waste, electric motors and wind turbines, complementing the short loop magnet recycling routes being developed in parallel.

HyProMag will work with UoB to develop a new semi continuous version of the HPMS process and to produce short loop recycled sintered magnets at multiple grades to match the requirements for a range of applications.

The Company is continuing to evaluate new downstream opportunities relating to the rare earths supply chain.

## SELECTED CONSOLIDATED FINANCIAL INFORMATION

Information discussed herein reflects the Company as a consolidated entity.

### Financial Position

The following financial data is derived from the Company’s consolidated statements of financial position as at December 31, 2021, 2020 and 2019:

As at December 31,	2021	2020	2019
Total assets	5,263,167	5,779,388	9,830,234
Shareholders’ equity of parent	4,004,595	10,213,006	12,225,788

#### Total assets

Total assets were \$5,263,167 as at December 31, 2021 as compared to \$5,779,388 as at December 31, 2020. Total assets decreased by \$516,221 as a result of the loss for the year offset by equity finance received during the year.

Total assets were \$5,779,388 as at December 31, 2020 as compared to \$9,830,234 as at December 31, 2019. Total assets decreased by \$4,050,846 as a result of the loss for the year.

At January 1, 2021, the Company had an opening cash position of \$4,924,567. Cash received during the year ended December 31, 2021 was \$6,757,867 from the issue of shares, net of expenses, and \$94,589 from the exercise of share options. Cash used in operations was \$7,135,038 and cash of \$7,585 was spent on computer equipment. The effect of exchange rate changes on cash was a decrease of \$187,550 during the year for a closing cash position of \$4,446,850.

At January 1, 2020, the Company had an opening cash position of \$9,530,017. Cash received during the year ended December 31, 2020 was \$106,897 from the exercise of warrants. Cash used in operations was \$4,213,208 and cash of \$641,930 was used for the investment in HyProMag. The effect of exchange rate changes on cash was an increase of \$142,791 during the year for a closing cash position of \$4,924,567.

#### Total shareholders’ equity (deficit) of parent

Total shareholders' equity was \$4,004,595 as at December 31, 2021 compared to \$10,213,006 as at December 31, 2020. The decrease of \$6,208,411 is due to the loss attributable to common shareholders of \$6,781,562 and the loss on acquisition of the Talaxis non-controlling interest in Lancaster BVI and Maginito of \$7,651,934, offset by proceeds from the issue of shares and exercise of share options of \$6,852,456 and share-based payments of \$1,371,148.

Total shareholders' equity was \$10,213,006 as at December 31, 2020 compared to \$12,225,788 as at December 31, 2019. The decrease of \$2,012,782 is due to the loss attributable to common shareholders of \$2,253,628 offset by proceeds from the exercise of warrants of \$106,897.

## RESULTS OF OPERATIONS

### Summary Results of Operations

The following financial data is derived from the Company's consolidated financial statements as at December 31, 2021, 2020 and 2019:

	Year ended December 31,		
	2021	2020	2019
Mineral project and research and development expenditures	6,013,085	2,372,416	1,747,499
Other expenditures*	3,516,064	1,747,493	1,992,205
Other items**	177,924	(52,223)	(700,468)
Total net loss	9,707,073	4,067,786	3,039,236
Total net loss attributable to non-controlling interest	2,925,511	1,814,158	1,370,584
Total net loss attributable to the common shareholders	6,781,562	2,253,628	1,668,652
Basic and diluted loss per share	\$ (0.044)	\$ (0.017)	\$ (0.013)
Weighted average number of common shares (basic and diluted)	153,119,372	133,000,721	124,173,150
Distributions or Dividends	\$ Nil	\$ Nil	\$ Nil

\* Other expenditures represent all other expenditures, other than mineral project and research and development expenditure, disclosed in the statement of comprehensive loss and includes non-cash items.

\*\* Other items are share of associated company losses, gains on the revaluation of warrants and options and interest income.

The net loss for the year ended December 31, 2021 was \$9,707,073 compared to the net loss reported for the year ended December 31, 2020 of \$4,067,786. The net loss increased by \$5,639,287 for the comparable periods. The significant items contributing to the change include:

- Increased mineral project expenditure of \$3,640,669 as a result of ongoing work on the Feasibility Study.
- General and administrative expenses, excluding share-based payments increased by \$515,577 as a result of increased directors and officer salaries, consulting fees and shareholder compliance costs.
- Increased share-based payment expenses of \$1,252,894 and foreign exchange losses increased by \$297,726.

The net loss for the year ended December 31, 2020 was \$4,067,786 compared to the net loss reported for the year ended December 31, 2019 of \$3,039,236. The net loss increased by \$1,028,550 for the comparable periods. The significant items contributing to the change include:

- Increased mineral project expenditure of \$650,667 as a result of ongoing work on the Feasibility Study.
- The result for 2019 included a credit of \$700,369 from the revaluation of warrants which expired or were exercised during 2019
- Share of losses and fair value adjustments in respect of the investment in HyProMag of \$89,822.
- Reduced Share based payment expenses of \$146,833 and foreign exchange gains increased by £220,813

The net loss for the year ended December 31, 2019 was \$3,039,236 compared to the net loss reported for the year ended December 31, 2018 of \$7,176,128. The net loss decreased by \$4,136,892 for the comparable periods. The significant items contributing to the change include:

- The Maginito research and development expenses decreased by \$384,423 as no significant payments were required during the period to advance the collaborative research programme with Metalysis, which has been discontinued,
- A \$378,927 decrease in warrant revaluation expense for the year ended December 31, 2019 because all outstanding non-broker warrants expired or were exercised during the year.
- A \$415,627 decrease in foreign exchange loss, which resulted from the revaluation of cash balances held in currencies other than the US dollar at the end of the period.
- A \$2,817,310 decrease in exploration expenses resulting from the significant costs incurred during the year ended December 31, 2018 when the Songwe Hill project drilling programme was underway. The Company incurred \$546,732 in expenses for the certain technical studies during the year ended December 31, 2019
- General and administrative expenses decreased by \$247,209 for the year ended December 31, 2019 mainly as a result of lower legal costs related to the Talaxis investment agreement signed in 2018 and a reduction in Director and Officer compensation as no retirement payments were made in 2019.

The selected period information and summary of financial results below is derived from and should be read in conjunction with the Financial Statements.

## SUMMARY OF QUARTERLY FINANCIAL RESULTS

The following is selected financial data from the company's quarterly financial statements for the last eight quarters ending with the most recently completed quarter, being the quarter ended December 31, 2021:

Total Operations Attributable to common shareholders	2022	2021				2020		
	Q1	Q4	Q3	Q2	Q1	Q4	Q3	Q2
Expenses	2,659,858	2,149,088	1,207,784	1,135,769	739,742	568,752	505,742	596,350
Other items	115,574	1,169,709	263,405	5,030	111,037	(137,136)	(108,894)	(54,189)
Net loss for period	(2,775,432)	(3,318,797)	(1,471,189)	(1,140,799)	(850,779)	(431,616)	(396,848)	(542,161)
Loss per share - basic and diluted	\$(0.013)	\$(0.019)	\$(0.010)	\$(0.009)	\$(0.006)	\$(0.003)	\$(0.003)	\$(0.004)

The financial data for the eight periods reported have been prepared in accordance with International Financial Reporting Standards as issued by the International Accounting Standards Board and interpretations issued by the International Financial Reporting Interpretations Committee, in effect on March 31, 2022. The financial data does not include the non-controlling interest share of net loss for the period. The Company's principal activities require expenditures which include both exploration and general and administrative expenses.

Expenses rose steadily quarter on quarter through 2021 as the Company continued with work on the Feasibility Study. Other items increased in Q4 2021 and Q1 2022 as a result of increased share-based payment charges on share options and restricted stock units issued during the period.

Quarterly expenses remained consistent throughout 2020 with the loss fluctuating quarterly due mainly to unrealized exchange losses on cash balances in foreign currencies other than the US Dollar.

## RELATED PARTY TRANSACTIONS AND BALANCES

- Leo Mining Exploration Ltd. ("Leo Mining") is considered related by virtue of common directors and officers who have an ownership in, and exercise significant influence over, both companies. The Company and Leo Mining have formalized their relationship with respect to services provided by Leo Mining. A written agreement sets out the types of services, which may be provided, and the costs associated with such services. The Company repays the disbursements made by Leo Mining on its behalf. During the three months ended March 31, 2022, the Company had incurred costs of \$8,391 (March 31, 2021 - \$10,539) for reimbursed exploration and administrative expenses. As of March 31, 2022, the Company has an outstanding advance to Leo Mining in the amount of \$7,407 (March 31, 2021 – advance - \$4,019). The amount is unsecured and due on demand.

- b) The Company incurred costs of \$1,028,049 (March 31, 2021 – \$149,933) for key management fees and director fees for the three months ended March 31, 2022.

March 31,	2022	2021
Consulting fees	110,624	113,997
Director fees	35,966	24,200
Share-based payments	881,459	11,736
<b>Total key management compensation</b>	<b>1,028,049</b>	<b>149,933</b>

As of December 31, 2021, the Company had an outstanding payable due to directors and officers of \$13,648 (December 31, 2020 – \$35,063). The current liabilities due to key management and directors are unsecured, due on demand and non-interest bearing, were as follows:

March 31,	2022	2021
Due to related parties with common directors	12,403	381
Due to key management and directors	37,092	55,197
<b>Total due to related parties</b>	<b>49,495</b>	<b>55,578</b>

## EXPENDITURES

	For the three months ended		
	March 31, 2022	December 31, 2021	March 31, 2021
<b>Total expenses attributable to common shareholders and non-controlling interest</b>			
<i>General and administrative</i>			
Audit and tax management	26,629	42,026	21,025
Legal fees	32,837	107,055	62,146
Director and Officer salaries	191,195	278,195	156,531
Salaries and consulting fees	179,502	149,073	43,023
Rent, storage, telephone and insurance	51,234	63,062	43,020
Travel	31,726	14,771	4,264
AIM listing expense	24,162	25,597	25,043
Share-based payments	938,136	1,177,321	108,563
Depreciation	7,993	8,147	7,762
Investor relations and marketing	70,759	46,173	85,978
<b>Sub total - General and administrative</b>	<b>1,554,173</b>	<b>1,911,420</b>	<b>557,355</b>
<i>Mineral project expenditures</i>			
<i>Songwe Hill Project</i>			
Metallurgy expenses	178,909	732,851	577,509
Government fees	1,008	1,409	21,797
ESHIA	118,559	32,775	23,101
Grant refund accrued	-	-	-
Technical studies	153,749	767,168	-
Consulting fees	166,023	96,727	108,423
Malawi office and camp expenses	22,595	22,410	92,671
REE Separation Plant Pre-feasibility Study	446,360	26,327	19,632
Thambani, Mchinji and Chimimbe projects	18,482	88,325	72,325
<b>Sub total - Mineral projects</b>	<b>1,105,685</b>	<b>1,767,992</b>	<b>915,458</b>
Interest income	(11)	(625)	(3,443)
Share of associated company's losses	25,929	22,970	4,490
Fair value adjustment	6,900	(8,438)	13,428
Foreign exchange (gain) loss	82,756	(21,964)	4,076
<b>Sub total</b>	<b>115,574</b>	<b>(8,057)</b>	<b>18,551</b>
<b>Total Expenses net of interest income</b>	<b>\$2,775,432</b>	<b>\$3,671,355</b>	<b>\$1,491,364</b>

### Three months ended March 31, 2022 compared to the three months ended March 31, 2021

Total expenses net of interest income include those attributable to both the common shareholders and to the non-controlling interest. Total expenses increased by \$1,284,068 from \$1,491,364 for the three months ended March 31, 2022 to \$2,775,432 for the three months ended March 31, 2021, as a result of the following:

- a) General and administrative: General and administrative expenses were \$996,818 higher for the three months ended March 31, 2022 compared to the three months ended March 31, 2021. The share-based payment charge was \$829,573 higher as a result of charges arising from share options and restricted stock units issued during the second half of 2021. Director and Officer Salaries were \$34,664 higher due to pay rises for Directors.
- b) Mineral Projects: Mineral project expenses were \$190,227 higher for the three months ended March 31, 2022 compared to the three months ended March 31, 2021. REE Separation Plant pre-feasibility costs were \$426,728 higher as work on the Study continued. Metallurgy costs were \$398,600 lower as the work on flotation and hydrometallurgy neared completion.
- c) Foreign Exchange Gain: The foreign exchange loss for the three months ended March 31, 2022 was \$78,680 higher than the loss recognized for the three months ended March 31, 2021. The exchange loss in the three months ended March 31, 2022 arose from funds held in GBP.

### Three months ended March 31, 2022 compared to the three months ended December 31, 2021

Total expenses reduced by \$895,923 from \$3,671,355 for the three months ended December 31, 2021 to \$2,775,432 for the three months ended March 31, 2022, as a result of the following:

- a) General and administrative: General and administrative expenses were \$357,247 lower for the three months ended March 31, 2022 compared to the three months ended December 31, 2021. Director and Officer Salaries were \$87,000 lower due to an ex-gratia payment to a former director paid in the three months ended December 31, 2021. Legal fees were \$74,218 lower due to work carried out on employment and updating the share option schemes in the three months ended December 31, 2021. Share-based payment charges were \$239,185 lower as a result of charges arising from share options and restricted stock units issued during the second half of 2021.
- b) Mineral Projects: Mineral project expenses for the three months ended March 31, 2022 were \$662,307 lower than the three months ended December 31, 2021. Metallurgy costs were \$553,942 lower as the work on flotation and hydrometallurgy neared completion. Technical studies were \$613,419 lower as the Feasibility Study nears completion. Work on a REE Separation Plant Pre-feasibility Study increased by \$420,033 during the three months ended March 31, 2022 as the Pre-feasibility Study neared completion.
- c) Foreign Exchange Gain: The foreign exchange loss for the three months ended March 31, 2022 was \$104,720 higher than the gain arising in the three months ended December 31, 2021. The exchange gain in the three months ended March 31, 2022 arose from funds held in GBP.

## DISCLOSURE CONTROLS AND PROCEDURES

In connection with National Instrument 52-109 (Certificate of Disclosure in Issuer's Annual and Interim Filings) ("NI 52-109"), the chief executive officer and chief financial officer of the Company have filed Form 52-109FV1 – *Certificate of Annual Filings - Venture Issuer Basic Certificate* with respect to the financial information contained in the Financial Statements for the three months ended March 31, 2022 and this accompanying MD&A (together, the "Interim Filings").

In contrast to the full certificate under NI 52-109, the Venture Issuer Basic Certificate does not include representations relating to the establishment and maintenance of disclosure controls and procedures and internal control over financial reporting, as defined in NI 52-109. For further information the reader should refer to the Venture Issuer Basic Certificate filed by the Company with the Annual Filings on SEDAR at [www.sedar.com](http://www.sedar.com).

## COMMITMENTS

The Company holds three exploration licences and eleven retention licences in Malawi with commitments to pay annual licensing fees and to meet spending commitments for exploration expenses throughout the life of the licences. As of the date of this report, all licences were in good standing with the Malawi government.

The Company is continuing to meet the terms and conditions of its four exploration licences and provides updates to Malawi's Ministry of Mining on a regular quarterly basis regarding progress of all its work programs.

## ISSUED AND OUTSTANDING SHARE INFORMATION

As at the date of this report, the Company has 215,206,548 Shares, 385,098 broker warrants, 15,730,000 stock options and 4,000,000 restricted share units in issue.

## OFF BALANCE SHEET ARRANGEMENTS

The Company is not party to any off balance sheet arrangements or transactions.

## ACCOUNTING POLICIES AND ESTIMATES

Management is required to make judgments, assumptions and estimates in the application of IFRS that have a significant impact on the financial results of the Company. Details outlining Mkango's accounting policies are contained in the notes to the Financial Statements.

## RISK FACTORS

### **Environmental Risk**

The Company is subject to substantial environmental requirements. The current and anticipated future operations and exploration activities of the Company in Malawi require permits from various governmental authorities and such operations and exploration activities are and will be governed by local laws and regulations governing various elements of the mining industry including, without limitation, land use, the protection of the environment, prospecting, development, production, exports, taxes, labour standards, occupational health, waste disposal, toxic substances, and other matters. Globally, environmental legislation is evolving towards stricter standards and enforcement, more stringent environmental impact assessments of new mining projects and increasing liability exposure for companies and their directors and officers. There is no assurance that future environmental regulations will not adversely affect the Company's operations.

### **Exploration and Commercial Viability Risk**

The Company does not currently produce rare earth elements from Songwe Hill where it is currently engaged in a Feasibility Study. While the Company has produced a pre-feasibility study, there is no assurance that the Feasibility Study will demonstrate the commercial viability of the project. Some of the factors that affect the financial viability of a given mineral deposit include its size, grade and proximity to infrastructure and the realizable value of the minerals extracted. These factors include, but are not limited to, government approval for mining licences and exploration licence extensions applications, government regulations, taxes, royalties, land tenure, land use, environmental protection and reclamation and closure obligations. All or some of these factors may have an impact on the economic viability of Songwe Hill.

### **Macroeconomic Risk**

From a macroeconomic perspective, ongoing global market uncertainty has led to a significant reduction in risk appetite with respect to funding investment into mining companies. The ability for mining companies to access capital through traditional means may be significantly diminished, with the possible long-term result that projects may take longer to develop or may not be developed at all.

### **Foreign Countries and Political Policy Risk**

The Company has interests in properties that are located in the developing country of Malawi. The Company's mineral exploration may be affected in varying degrees by political instability and government regulations relating to foreign investment and the mining industry. Changes, if any, in mining or investment policies or shifts in political attitude in Malawi may adversely affect the Company's operations. Operations may be affected in varying degrees by government regulations with respect to, but not limited to, restrictions on production, price controls, export controls,

currency remittance, direct and indirect taxes, tax assessments, royalties, expropriation of property, foreign investment, maintenance of claims, environmental legislation, land use, land claims of local people, water use and mine safety. Failure to comply with applicable laws, regulations, and permitting requirements may result in enforcement actions thereunder, including orders issued by regulatory or judicial authorities causing operations to cease or be curtailed, and may include corrective measures requiring capital expenditures, installation of additional equipment, or remedial actions.

### **Resource and Reserve Risk**

Estimates of reserves and resources are inherently uncertain. There is a degree of uncertainty attributable to the calculation of reserves, resources and corresponding grades being mined or dedicated to future production. Until reserves or resources are actually mined and processed, the quantity of reserves or resources and grades must be considered as estimates only. In addition, the quantity of reserves or resources may vary depending on rare earth prices, operating costs and mining efficiency. Any material change in the quantity of reserves, resources or grade may affect the economic viability of Songwe Hill.

### **Mining Risks**

The mining industry has been subject to considerable price volatility, over which companies have little control, and a material decline in the price of rare earth elements could result in a significant decrease in the Company's future anticipated revenues. The mining industry has inherent business risks and there is no assurance that products can continue to be produced at economical rates or that produced reserves will be replaced.

### **Coronavirus Risk**

The global outbreak of COVID-19 (coronavirus) has had a significant impact on businesses through the restrictions put in place by the governments of countries in which the Company operates regarding travel, business operations and isolation/quarantine orders.

The Company is proactively managing the potential impact of COVID-19 with the health and safety of our employees, contractors, local communities and other stakeholders being the highest priority. The Company is continuously reviewing the situation and actively amending operations to comply with Malawi government guidelines and restrictions ensuring the health and safety of all members.

The Definitive Feasibility Study is nearing completion and the Company believes that the remaining work streams will not be seriously impacted. The Company is targeting completion of the Definitive Feasibility Study in the second quarter of 2022. We note, however, that further COVID-19 outbreaks may impact this timing.

### **Conflict in Ukraine**

The Directors do not consider the current conflict in Ukraine will have a significant impact on the Company at its current stage of development.

Readers are cautioned that the foregoing is a summary only of certain risk factors and is not exhaustive and is qualified in its entirety by reference to, and must be read in conjunction with the additional information on these and other factors that could affect Mkango's operations and financial results that are included in reports on file with Canadian securities regulatory authorities and may be accessed through on SEDAR at [www.sedar.com](http://www.sedar.com).

## **FINANCIAL INSTRUMENTS AND RISK MANAGEMENT**

### **Determination of fair values**

Financial assets and liabilities have been classified into the following categories: (i) fair value through profit or loss and, (ii) amortized costs. Each category has a defined basis of measurement. If a category is measured at fair value, any changes in fair value is recognized in the consolidated financial statements of comprehensive loss.

In establishing fair value, the Company uses a fair value hierarchy based on levels defined below:

Level 1 - quoted prices in active markets for identical assets or liabilities;

Level 2 - inputs other than quoted prices included in Level 1 that are observable for the asset or liability, either directly or indirectly; and

Level 3 - inputs for the asset or liability that are not based on observable market data.

The option to acquire shares in the associate is measured at level 3. The fair value of this financial instrument was determined using binomial pricing models for American style options. The key input to this model is the volatility rate which was 78% which is an estimate based on volatility rates of comparable companies to Mkango Resources Limited. A 10% increase in the volatility rate would result in an additional credit to the income statement of \$10,136 and a 10% decrease would result in a charge to the income statement of \$8,980. The carrying value of cash, restricted cash, government and other receivables, accounts payable and accrued liabilities, and amounts due to related parties, approximates the fair value due to their short-term nature and maturity.

### Financial risk management

The Company's management monitors and manages the financial risks relating to the operations of the Company. These include foreign currency, interest rate, liquidity and credit risks.

### Foreign currency risk

The functional and presentation currency of the Company is the US dollar. The Company enters into transactions denominated in the CAD, the US dollar, the Euro, the GBP, the Australian dollar, the South African Rand and Malawian Kwacha. The Company raises its equity in the CAD, and the GBP, and then purchases the US dollar, the Australian dollar, the South African Rand, the Euro and the Malawian Kwacha to settle liabilities. The Company minimizes exposure to foreign exchange loss by converting funds to the appropriate currencies upon receipt of funding based on the expected use of the various foreign currencies. The Company's exposure to foreign currency risk as at March 31, 2022 and December 31, 2021, is most significantly influenced by the following cash amounts held in foreign currencies (amounts shown in US dollars):

	<b>March 31, 2021</b>	December 31, 2021
Cash:		
Canadian Dollar	<b>37,441</b>	87,763
United States Dollar	<b>107,437</b>	82,950
Pound Sterling	<b>1,839,475</b>	4,229,086
Euro	<b>15,988</b>	16,914
Malawian Kwacha	<b>982</b>	23,972
Australian Dollar	<b>146,574</b>	6,165
	<b>2,147,897</b>	4,446,850

A 5% reduction in the value of the CAD, Euro, GBP and Australian Dollar in comparison to the US Dollar would cause a change in net loss of approximately \$102,000 (December 31, 2021: \$217,000).

### Interest rate risk

The Company's exposure to interest rate risk relates primarily to its cash at bank. However, the interest rate risk is expected to be minimal. The Company does not presently hedge against interest rate movements.

### Liquidity risk

Liquidity risk includes the risk that, as a result of the Company's operational liquidity requirements:

- a) The Company will not have sufficient funds to settle a transaction on the due date;
- b) The Company will be forced to dispose of financial assets at a value which is less than the fair value; or,
- c) The Company may be unable to settle or recover a financial asset at all.

The Company's operating cash requirements including amounts projected to complete the Company's existing capital expenditure program are continuously monitored and adjusted as input variables change. As these variables change, liquidity risks may require the Company to conduct equity issuances or obtain other forms of financing. The Company manages its liquidity risk by maintaining adequate cash and is actively seeking additional funding to improve its exposure to liquidity risk. The Company continually monitors its actual and forecast cash flows to ensure that there are adequate reserves to meet the maturing profiles of its financial liabilities.

The following table outlines the maturities of the Company's financial liabilities as at March 31, 2022:

	Contractual Cash Flows	Less than 1 Year	Greater than 1 Year
Accounts payable and accrued liabilities	682,841	682,841	-
Due to related parties	49,495	49,495	-

The following table outlines the maturities of the Company's financial liabilities as at December 31, 2021:

	Contractual Cash Flows	Less than 1 Year	Greater than 1 Year
Accounts payable and accrued liabilities	1,244,438	1,244,438	-
Due to related parties	14,134	14,134	-

### Credit risk

The Company's principal financial assets are cash. The credit risk on cash is limited because the majority are deposited with banks with high credit ratings assigned by international credit-rating agencies.

## LIQUIDITY AND CAPITAL RESOURCES

As of March 31, 2022, the Company had a working capital surplus of \$1,483,646 (March 31, 2021 – \$3,658,641) and retained earnings deficit attributable to the shareholders of the Company of \$41,089,487 (March 31, 2021 - \$7,164,588).

The Company's total capital consists of Mkango's shareholders' equity of \$2,149,207, as at March 31, 2022 (March 31, 2021 –\$4,113,298). The operations of the Company for the next 12 months will be funded by funding alternatives currently being reviewed for ongoing and new projects.

## DIRECTORS AND OFFICERS

William Dawes, Director and Chief Executive Officer

Alexander Lemon, Director and President

Derek Linfield, Non-Executive Chairman of the Board of Directors

Shaun Treacy, Non-Executive Director (Audit Committee Chairman, Remuneration Committee)

Susan Muir, Non-Executive Director (Audit Committee, Remuneration Committee Chairman and Corporate Secretary)

Stephen Motteram, Non-Executive Director (Audit Committee, Remuneration Committee)

Tim Slater, Interim Chief Financial Officer

## APPENDIX A

**Table 1 - Selected Drill Results**

Forty-nine of the drill holes intersected significant zones of rare earths mineralisation grading above 1% total TREO.

<b>PX056</b>	<b>114.8 m grading 1.6% TREO</b> (60.7 – 175.5 m) including <b>30.0 m grading 2.0% TREO</b> (135.0 – 165.0 m). Inclined hole (60 degrees west).
<b>PX059</b>	<b>63.0 m<sup>1</sup> grading 1.7% TREO</b> (6.0 – 69.0 m), including <b>23.0 m<sup>2</sup> grading 2.3% TREO</b> (7.0 – 30.0 m), and <b>15.4 m grading 1.6% TREO</b> (128.0 – 143.4 m). Inclined hole (60 degrees west).
<b>PX073</b>	<b>67.1 m grading 1.6% TREO</b> (8.8 – 75.9 m) including <b>25.2 m grading 2.0% TREO</b> (45.0 – 70.2 m). Inclined hole (60 degrees west).
<b>PX076</b>	<b>40.2 m grading 1.8% TREO</b> (60.4 – 100.7 m) including <b>20.0 m grading 2.4% TREO</b> (60.4 – 80.4 m). Inclined hole (60 degrees west).
<b>PX077</b>	<b>51.9 m<sup>3</sup> grading 1.7% TREO</b> (26.2 – 78.0 m). Inclined hole (60 degrees west).
<b>PX081</b>	<b>53.3m<sup>4</sup> grading 2.2% TREO</b> (3.7 – 57.0 m) including <b>26.8 m grading 3.1% TREO</b> (3.7 – 30.5 m). Inclined hole (60 degrees east).
<b>PX086</b>	<b>73.3 m grading 1.9% TREO</b> (21.5 – 94.8 m). Inclined hole (60 degrees west).
<b>PX087</b>	<b>74.4 m<sup>5</sup> grading 2.1% TREO</b> (16.2 – 90.6 m). Inclined hole (60 degrees west).
<b>PX090</b>	<b>25.7 m<sup>6</sup> grading 3.9% TREO</b> (39.5 – 65.2 m). Inclined hole (60 degrees west).
<b>PX092</b>	<b>74.9 m grading 1.9% TREO</b> (10.1 – 84.9 m) and <b>51.9 m grading 1.5% TREO</b> (97.6 – 149.5 m EoH). Inclined hole (60 degrees south).
<b>PX093</b>	<b>83.9 m grading 1.9% TREO</b> (1.5 – 85.4 m) including <b>18.0 m grading 3.0% TREO</b> (21.0 – 39.0 m). Inclined hole (60 degrees west).
<b>PX098</b>	<b>65.0 m<sup>7</sup> grading 1.7% TREO</b> (1.1 – 66.0 m) and <b>13.1 m grading 1.2% TREO</b> (115.0 – 128.1 m). Inclined hole (60 degrees south).
<b>PX103</b>	<b>165.2 m grading 1.6% TREO</b> (2.6 – 167.8 m). Inclined hole (60 degrees east).
<b>PX107</b>	<b>91.3 m<sup>8</sup> grading 1.3% TREO</b> (23.0 – 114.2 m) including <b>32.2 m<sup>9</sup> grading 1.9% TREO</b> (82.0 – 114.2 m). Inclined hole (60 degrees east).
<b>PX108</b>	<b>45.8 m grading 1.4% TREO</b> (8.2 – 54.0 m) and <b>57.3 m grading 1.7% TREO</b> (76.9 – 134.2 m). Inclined hole (60 degrees east).
<b>PX109</b>	<b>53.0 m grading 2.1% TREO</b> (22.0 – 75.0 m) including <b>22.0 m grading 3.0% TREO</b> (24.0 – 46.0 m). Inclined hole (60 degrees east).
<b>PX113</b>	<b>51.1 m<sup>10</sup> grading 2.2% TREO</b> (4.7 – 55.8 m). Inclined hole (50 degrees north).
<b>PX112</b>	<b>100.9 m grading 3.3% TREO</b> (5.9 – 106.8 m EoH) including <b>20.5 m grading 4.2% TREO</b> (5.9 – 26.4 m) and <b>22.2 m grading 4.1% TREO</b> (36.0 – 58.2 m). Inclined hole (60 degrees south).
<b>PX125</b>	<b>104.5 m grading 1.5% TREO</b> (3.5 – 108.0 m) including <b>51.5 m grading 1.9% TREO</b> (3.5 – 55.0 m). Inclined hole (60 degrees south).

<sup>1</sup> Includes two cavities totaling 5.9m not sampled. <sup>2</sup> Includes a 2.5m cavity not sampled. <sup>3</sup> Includes a 2.7m cavity not sampled. <sup>4</sup> Includes a 3.8m cavity not sampled. <sup>5</sup> Includes a 2.7m cavity not sampled. <sup>6</sup> Includes a 6.3m cavity not sampled. Due to the size of the cavity, the significance of this intersection is uncertain. <sup>7</sup> Includes a 2.3m cavity not sampled. <sup>8</sup> Includes two cavities totaling 2.3m not sampled. <sup>9</sup> Includes a 0.9m cavity not sampled. <sup>10</sup> Includes two cavities totaling 10.0m not sampled. Due to the size of the cavities, the significance of this intersection is uncertain. TREO: total rare earth oxides based on total La<sub>2</sub>O<sub>3</sub>, Ce<sub>2</sub>O<sub>3</sub>, Pr<sub>2</sub>O<sub>3</sub>, Nd<sub>2</sub>O<sub>3</sub>, Sm<sub>2</sub>O<sub>3</sub>, Eu<sub>2</sub>O<sub>3</sub>, Gd<sub>2</sub>O<sub>3</sub>, Tb<sub>2</sub>O<sub>3</sub>, Dy<sub>2</sub>O<sub>3</sub>, Ho<sub>2</sub>O<sub>3</sub>, Er<sub>2</sub>O<sub>3</sub>, Tm<sub>2</sub>O<sub>3</sub>, Yb<sub>2</sub>O<sub>3</sub>, Lu<sub>2</sub>O<sub>3</sub>, Y<sub>2</sub>O<sub>3</sub>. These intersections are reported as down hole widths and do not necessarily represent true thicknesses and attitude of the mineralized zones, the estimation of which will require further refining of the geological model.

Drill holes PX072, PX073, PX078, PX079, PX080, PX083, PX084, PX085, PX088, PX089, PX090, PX091, PX093, PX094, PX095, PX109, PX114, PX118, PX119, PX120, PX121, PX122, PX123 and PX124 were step-out holes focused on testing north and north-west extensions of the mineralisation. Of these 24 drill holes, 19 intersected broad

zones of mineralisation. The mineralised intersection in PX113 indicates the extension of the higher grade carbonatite zone located in the north-east as indicated on the accompanying geological map on the Company's website, to the north under cover. Drill holes PX038, PX039, PX040 and PX041 were step-out drill holes, focused on testing extensions of mineralisation to the south. The intersections in PX039 and PX040 further indicate that mineralisation may extend to the south. The remaining drill holes were focused on infill zones in the previous exploration/resource area defined by drill holes PX001 to PX035. Intersections of broad zones of mineralisation, as opposed to narrow veins or dykes, continue to support the concept of a bulk tonnage, open pit mining operation with low mining costs.

**Table 2 - Full set of TREO results for the Songwe Hill exploration programme**

Drill Hole	From m	To m	Interval m	La <sub>2</sub> O <sub>3</sub> ppm	Ce <sub>2</sub> O <sub>3</sub> ppm	Pr <sub>2</sub> O <sub>3</sub> ppm	Nd <sub>2</sub> O <sub>3</sub> ppm	Sm <sub>2</sub> O <sub>3</sub> ppm	Eu <sub>2</sub> O <sub>3</sub> ppm	Gd <sub>2</sub> O <sub>3</sub> ppm	Tb <sub>2</sub> O <sub>3</sub> ppm	Dy <sub>2</sub> O <sub>3</sub> ppm	Ho <sub>2</sub> O <sub>3</sub> ppm	Er <sub>2</sub> O <sub>3</sub> ppm	Tm <sub>2</sub> O <sub>3</sub> ppm	Yb <sub>2</sub> O <sub>3</sub> ppm	Lu <sub>2</sub> O <sub>3</sub> ppm	Y <sub>2</sub> O <sub>3</sub> ppm	TREO %
PX039	122.9	142.0	19.2	4,394	7,467	756	2,432	323	82	188	22	96	15	35	5	29	5	440	1.6%
PX040	28.0	43.0	15.0	5,020	7,061	645	2,006	303	90	239	33	164	28	67	9	47	6	844	1.7%
PX045a	9.8	30.9	21.1	2,006	4,148	495	1,833	309	89	217	27	127	20	47	6	33	5	547	1.0%
PX050	8.0	161.0	153.0	2,790	5,578	643	2,353	344	87	214	26	128	21	51	7	40	5	607	1.3%
including	96.0	126.0	30.0	4,370	8,097	890	3,132	430	108	267	32	149	24	57	8	53	7	654	1.8%
including	137.9	161.0	23.2	3,687	7,162	808	2,899	415	105	254	31	145	24	55	7	42	5	651	1.6%
PX053	25.0	61.0	36.0	3,461	6,442	683	2,309	365	98	236	27	117	18	39	4	22	3	492	1.4%
	74.4	94.6	20.2 (i)	2,920	5,507	585	1,972	288	72	169	20	95	15	38	5	24	3	469	1.2%
(i) Includes 2.1m cavity not sampled.																			
PX054	23.4	182.0	158.7	2,733	5,233	582	2,097	322	86	205	24	113	18	44	6	34	5	521	1.2%
including	45.8	102.3	56.6	3,315	6,337	703	2,489	355	95	226	28	133	22	51	6	36	5	611	1.4%
PX055	21.4	47.5	26.2	3,921	6,592	676	2,282	332	85	193	21	92	15	35	5	28	4	425	1.5%
	67.7	103.2	35.5	2,627	5,470	626	2,258	328	89	214	26	119	19	44	5	30	4	520	1.2%
PX056	60.7	175.5	114.8	3,951	7,339	799	2,784	404	105	243	28	124	20	47	6	32	4	570	1.6%
including	135.0	165.0	30.0	5,463	9,096	920	3,003	392	101	232	26	116	18	43	5	29	4	516	2.0%
PX057	9.0	39.7	30.7	3,696	6,496	714	2,334	327	82	188	21	93	15	36	4	23	3	407	1.4%
PX058	29.5	71.0	41.6	2,885	5,784	636	2,208	311	83	190	21	97	15	36	4	23	3	421	1.3%
PX059	6.0	69.0	63.0 (i)	3,980	7,314	785	2,617	392	112	279	36	173	29	76	10	57	8	879	1.7%
including	7.0	30.0	23.0 (ii)	5,890	9,922	1,012	3,237	469	138	358	47	227	38	100	13	76	10	1,171	2.3%
	128.0	143.4	15.4	4,122	7,352	778	2,645	370	94	212	25	121	20	49	6	36	5	604	1.6%
(i) Includes 5.9m cavity not sampled.																			
(ii) Includes 2.5m cavity not sampled.																			
PX063	4.4	21.4	17.0	2,951	6,117	698	2,540	359	100	239	32	168	29	71	8	51	7	838	1.4%
	96.4	109.8	13.4 (i)	3,908	8,548	1,000	3,703	558	135	292	29	126	20	46	5	33	5	616	1.9%
(i) Includes 5.5m cavity not sampled.																			
PX066	61.8	134.2	72.4	3,122	5,703	620	2,110	301	81	196	23	112	18	44	5	33	4	510	1.3%
including	99.0	122.6	23.6	4,147	7,328	776	2,530	337	90	219	26	127	20	50	6	40	5	576	1.6%
PX067	6.0	128.8	122.8	3,237	5,661	598	2,105	312	85	197	22	99	15	37	5	29	4	452	1.3%
including	44.0	70.8	26.8	4,119	7,791	858	3,039	429	112	250	27	120	19	46	6	39	6	564	1.7%

PX070	5.0	51.6	46.6		5,228	8,218	785	2,502	318	83	192	21	93	14	30	3	19	3	364	1.8%
	78.4	201.3	123.0		5,186	8,463	824	2,587	305	77	173	19	82	12	27	3	18	2	330	1.8%
including	78.4	122.0	43.7		8,194	12,954	1,212	3,596	350	81	173	17	75	11	25	3	18	2	303	2.7%
PX072	12.6	28.4	15.8		3,364	6,889	773	2,693	405	104	247	28	121	18	41	5	25	3	532	1.5%
	93.9	147.8	53.9		2,358	4,684	525	1,886	301	77	179	20	94	16	39	5	27	4	486	1.1%
PX073	8.8	75.9	67.1		4,024	7,255	790	2,740	401	103	232	25	114	19	43	5	28	4	507	1.6%
including	45.0	70.2	25.2		5,278	8,924	948	3,159	439	110	241	24	106	17	36	4	21	3	438	2.0%
PX076	60.4	100.7	40.2		5,618	8,453	789	2,458	311	80	183	22	98	15	33	4	24	3	404	1.8%
including	60.4	80.4	20.0		7,432	11,021	1,020	3,106	372	93	209	24	108	16	36	4	25	3	434	2.4%
PX077	27.8	78.0	50.2		5,081	7,864	733	2,266	284	75	178	22	99	16	34	4	22	3	415	1.7%
PX078	6.0	28.3	22.3		3,214	5,866	621	2,144	332	86	207	24	117	19	44	5	29	4	517	1.3%
	76.2	144.4	68.3		5,114	8,386	832	2,745	366	90	205	22	103	17	39	5	27	3	482	1.8%
including	125.1	144.4	19.4		9,581	14,066	1,306	4,063	500	119	250	24	98	14	32	4	20	3	403	3.0%
PX080	5.7	109.8	104.1	(i)	3,118	5,426	578	2,018	316	82	189	21	94	15	34	4	25	3	406	1.2%
including	33.6	87.6	54.1	(i)	3,854	6,669	709	2,453	377	96	217	24	102	16	37	5	28	4	438	1.5%
(i) Includes 2.1m of core loss not sampled.																				
PX081	3.7	57.0	53.3	(i)	6,530	10,274	979	3,058	377	97	243	29	137	22	52	6	36	4	638	2.2%
including	3.7	30.5	26.8		9,531	14,108	1,290	3,863	440	108	269	32	144	24	56	7	39	5	684	3.1%
(i) Includes 3.8m cavity not sampled.																				
PX083	31.0	73.2	42.2		2,338	4,551	521	1,961	330	92	228	28	134	21	49	6	31	4	619	1.1%
PX086	21.5	94.8	73.3		4,503	8,452	903	3,098	431	115	272	32	158	26	61	7	43	5	731	1.9%
PX087	16.2	90.6	74.4	(i)	5,731	9,603	981	3,234	410	107	247	30	143	23	53	6	36	4	630	2.1%
(i) Includes 2.7m cavity not sampled.																				
PX088	47.0	100.7	53.7		1,894	3,988	486	1,919	355	94	225	27	132	22	53	6	35	4	639	1.0%
PX089	54.3	88.5	34.2		2,215	4,270	465	1,694	285	80	195	23	110	18	42	5	29	4	491	1.0%
PX090	39.5	65.2	25.7	(i)	12,424	18,649	1,670	4,792	512	138	324	39	167	25	56	7	41	6	631	3.9%
(i) Includes 6.3m cavity not sampled. Due to size of cavity, the significance of this intersection is uncertain.																				
PX092	10.1	84.9	74.9		5,133	8,693	859	2,749	374	97	229	26	116	17	39	5	28	4	482	1.9%
	97.6	149.5	51.9		3,376	6,493	708	2,472	375	99	232	26	120	19	49	7	46	6	576	1.5%
PX093	1.5	85.4	83.9		5,070	8,720	892	2,948	394	104	243	29	132	21	51	7	40	5	592	1.9%
including	21.0	39.0	18.0		8,914	14,033	1,348	4,171	472	115	255	28	118	18	41	5	33	5	474	3.0%
PX094	25.0	100.7	75.7	(i)	3,363	5,652	567	1,876	284	81	204	24	112	18	43	5	32	4	482	1.3%
including	67.0	79.0	12.0		6,336	9,822	928	2,828	385	112	282	33	147	23	52	6	38	5	593	2.2%
(i) Includes 8.5m cavity not sampled.																				

<b>PX095</b>	<b>60.0</b>	<b>82.9</b>	<b>22.9</b>	(i)	2,116	4,470	510	1,880	273	73	175	21	108	19	47	6	34	4	539	<b>1.0%</b>
(i) Includes 2.0m cavity not sampled.																				
<b>PX098</b>	<b>1.1</b>	<b>66.0</b>	<b>65.0</b>	(i)	3,682	7,400	836	2,942	428	112	278	35	168	29	73	10	55	8	872	<b>1.7%</b>
	<b>115.0</b>	<b>128.1</b>	<b>13.1</b>		3,013	5,409	579	1,974	306	84	213	27	124	20	46	6	29	4	568	<b>1.2%</b>
(i) Includes 2.3m cavity not sampled.																				
<b>PX100</b>	<b>94.6</b>	<b>100.7</b>	<b>6.1</b>		10,223	17,450	1,815	6,064	765	172	360	35	140	20	45	6	30	4	616	<b>3.8%</b>
<b>PX101</b>	<b>36.6</b>	<b>42.3</b>	<b>5.7</b>		2,981	6,306	746	2,771	493	131	322	36	148	21	43	5	29	4	560	<b>1.5%</b>
<b>PX102</b>	<b>8.7</b>	<b>36.0</b>	<b>27.3</b>		2,730	6,487	789	2,869	342	78	163	17	76	11	25	3	14	2	335	<b>1.4%</b>
	<b>75.0</b>	<b>110.3</b>	<b>35.3</b>		2,096	5,170	671	2,623	381	96	217	26	130	22	51	6	28	3	658	<b>1.2%</b>
<b>PX103</b>	<b>2.6</b>	<b>167.8</b>	<b>165.2</b>		3,512	6,903	788	2,809	412	111	263	31	144	23	55	7	45	6	658	<b>1.6%</b>
<b>PX104</b>	<b>1.9</b>	<b>47.0</b>	<b>45.1</b>	(i)	2,562	5,388	617	2,273	338	96	230	28	139	22	52	7	38	5	618	<b>1.2%</b>
	<b>95.6</b>	<b>135.0</b>	<b>39.4</b>		3,122	5,206	527	1,794	277	80	189	21	99	15	35	4	25	4	433	<b>1.2%</b>
(i) Includes 5.0m cavity not sampled.																				
<b>PX105</b>	<b>3.8</b>	<b>79.5</b>	<b>75.7</b>		2,711	5,036	550	1,963	312	86	199	24	112	18	43	5	27	4	523	<b>1.2%</b>
<b>PX106</b>	<b>51.9</b>	<b>67.5</b>	<b>15.7</b>		2,579	5,090	562	1,988	294	81	192	23	108	17	40	5	25	3	478	<b>1.1%</b>
	<b>79.7</b>	<b>109.0</b>	<b>29.3</b>		2,036	4,451	527	1,952	317	87	209	25	121	21	51	7	39	5	604	<b>1.0%</b>
<b>PX107</b>	<b>23.0</b>	<b>114.2</b>	<b>91.3</b>	(i)	3,041	5,727	632	2,258	336	95	232	29	140	23	60	8	48	6	700	<b>1.3%</b>
	<b>82.0</b>	<b>114.2</b>	<b>32.2</b>	(ii)	4,624	8,375	911	3,176	457	125	300	37	168	27	70	10	53	7	827	<b>1.9%</b>
(i) Includes 2.3m cavity not sampled.																				
(ii) Includes 0.9m cavity not sampled.																				
<b>PX108</b>	<b>8.2</b>	<b>54.0</b>	<b>45.8</b>		3,553	6,243	656	2,234	360	106	261	32	149	24	58	7	45	7	705	<b>1.4%</b>
	<b>76.9</b>	<b>134.2</b>	<b>57.3</b>		4,774	7,740	761	2,417	333	90	205	23	102	15	34	4	24	3	418	<b>1.7%</b>
<b>PX109</b>	<b>22.0</b>	<b>75.0</b>	<b>53.0</b>		6,078	9,518	896	2,790	348	88	204	23	97	15	33	4	22	3	391	<b>2.1%</b>
<b>including</b>	<b>24.0</b>	<b>46.0</b>	<b>22.0</b>		8,845	13,770	1,285	3,962	477	121	280	31	130	19	41	5	27	3	512	<b>3.0%</b>
<b>PX110</b>	<b>9.2</b>	<b>22.4</b>	<b>13.2</b>		6,648	9,822	965	2,852	348	88	204	24	109	18	39	4	22	3	451	<b>2.2%</b>
	<b>85.0</b>	<b>100.7</b>	<b>15.7</b>		4,927	9,588	1,102	3,601	475	117	270	31	148	25	58	7	41	5	676	<b>2.1%</b>
<b>PX111</b>	<b>7.0</b>	<b>42.0</b>	<b>35.0</b>		2,893	6,042	683	2,504	443	128	312	38	169	25	53	6	30	4	657	<b>1.4%</b>
	<b>69.5</b>	<b>115.9</b>	<b>46.4</b>		3,666	6,542	670	2,313	357	97	232	26	111	17	40	5	33	4	476	<b>1.5%</b>
<b>PX112</b>	<b>5.9</b>	<b>106.8</b>	<b>100.9</b>		10,530	15,038	1,357	4,067	455	114	279	32	137	22	49	6	35	4	606	<b>3.3%</b>
<b>including</b>	<b>5.9</b>	<b>26.4</b>	<b>20.5</b>		14,172	19,387	1,698	4,949	518	131	323	37	160	25	58	7	39	5	719	<b>4.2%</b>
<b>including</b>	<b>36.0</b>	<b>58.2</b>	<b>22.2</b>		13,856	19,053	1,655	4,776	495	121	289	31	128	19	41	5	28	4	522	<b>4.1%</b>
<b>PX113</b>	<b>4.7</b>	<b>55.8</b>	<b>51.1</b>	(i)	5,458	9,720	993	3,572	474	124	289	34	165	26	64	8	44	6	772	<b>2.2%</b>
(i) Includes 10.0m cavity not sampled.																				
<b>PX114</b>	<b>56.0</b>	<b>100.7</b>	<b>44.7</b>	(i)	3,762	6,498	663	2,194	319	80	186	21	98	15	34	4	22	3	409	<b>1.4%</b>
(i) Includes two cavities totaling 9.3m not sampled.																				

PX115	2.7	17.7	15.0		2,365	4,945	564	2,107	316	84	195	23	107	18	42	5	31	4	522	1.1%
	46.3	61.0	14.8		2,468	5,132	583	2,180	350	96	221	26	116	18	42	5	29	4	493	1.2%
PX116	57.3	66.0	8.7		4,426	9,933	1,205	4,615	752	189	397	40	166	24	52	6	33	5	720	2.3%
PX118	4.4	91.0	86.6		3,236	5,889	595	1,919	304	81	192	23	107	18	42	5	31	4	509	1.3%
including	46.0	91.0	45.0		3,715	6,777	681	2,170	328	86	200	23	108	18	41	5	30	4	497	1.5%
	120.9	151.6	30.7	(i)	2,248	4,667	497	1,842	346	95	228	27	133	22	52	6	33	4	640	1.1%
(i) Includes 2.2m cavity not sampled.																				
PX119	14.8	64.8	50.0		3,389	6,119	640	2,135	292	76	178	20	95	16	39	5	28	4	422	1.3%
including	14.8	24.6	9.8		8,483	12,932	1,184	3,347	334	84	193	22	98	15	34	4	23	3	380	2.7%
PX120	3.1	42.7	39.6		2,631	5,272	572	2,010	284	75	175	20	90	14	34	4	25	3	380	1.2%
PX121	60.0	95.5	35.5		3,598	6,143	655	2,218	336	89	212	24	113	17	40	5	28	4	487	1.4%
PX122	84.0	106.8	22.8	(i)	3,639	5,899	586	1,934	273	74	172	21	100	16	37	5	27	3	431	1.3%
(i) Includes two cavities totaling 4.2m not sampled.																				
PX123	75.9	100.8	24.9		2,304	4,657	513	1,807	248	61	135	15	67	11	28	4	19	3	331	1.0%
PX124	24.7	58.8	34.1		2,748	5,520	604	2,120	279	73	166	21	107	19	51	7	40	5	556	1.2%
PX125	3.5	108.0	104.5		4,244	6,599	630	1,989	272	77	187	24	113	18	40	5	26	3	475	1.5%
including	3.5	55.0	51.5		5,416	8,469	807	2,505	313	85	205	27	135	22	51	6	34	4	609	1.9%
Drill holes PX038, PX041, PX044, PX051, PX084, PX085 and PX091 did not intersect significant zones of mineralisation grading above 1% TREO																				

*These intervals are reported as down hole widths and do not necessarily represent true thicknesses and attitude of the mineralised zones, the estimation of which requires further refining of the geological model.*

## APPENDIX B

### THAMBANI, MWANZA DISTRICT

**Table 1 - Assays from the 10 highest- U<sub>3</sub>O<sub>8</sub> samples from the Thambani trenching programme**

Trench No.	Profile	Sample No	From (m)	To (m)	Rock type	U <sub>3</sub> O <sub>8</sub> Ppm	Nb <sub>2</sub> O <sub>5</sub> ppm	Ta <sub>2</sub> O <sub>5</sub> ppm
C3	A	U3622	0.5	1	Soil	47,094	32,462	45
C3	A	U3623	1	1.5	Soil	1,057	735	59
T11	C	U3508	0.5	1	Decomposed Feldspathic	4,231	7,805	743
T11	C	U3509	1	1.5	Decomposed Feldspathic	2,539	6,619	911
T11	B	U3505	0.5	1	Decomposed Feldspathic	2,369	5,424	972
T15	A	U3554	1	1.5	Feldspathic rock	1,657	4,346	67
T15	A	U3553	0.5	1	Feldspathic rock	1,616	3,754	431
T15	E	U3565	0.5	1	Feldspathic rock	1,553	3,525	41
T14	D	U3549	1.5	2	Feldspathic rock	1,432	3,034	434
T19	C	U3604	1	1.5	Feldspathic rock	1,367	5,525	675

**Table 2 - Assays from the 10 highest grade U<sub>3</sub>O<sub>8</sub> samples from the 2019 Thambani sampling programme**

Sample ID.	U <sub>3</sub> O <sub>8</sub> ppm	Ta <sub>2</sub> O <sub>5</sub> ppm	Nb <sub>2</sub> O <sub>5</sub> ppm
T0567	7,369	3,849	12,933
G1902	2,755	4,057	32,401
G1951	2,254	2,152	14,713
G1928	2,028	2,450	17,516
G1962	1,880	1,561	8,634
G1938	1,483	29	305
G1903	1,409	2,305	19,451
G1929	1,333	1,886	14,764
G1946	1,275	855	3,126
G1961	1,239	1,698	12,823

**Table 3 - Summary of assay results (grades in ppm) from the 2019 Thambani sampling programme**

	Rock grab samples			Trench samples		
	U <sub>3</sub> O <sub>8</sub>	Ta <sub>2</sub> O <sub>5</sub>	Nb <sub>2</sub> O <sub>5</sub>	U <sub>3</sub> O <sub>8</sub>	Ta <sub>2</sub> O <sub>5</sub>	Nb <sub>2</sub> O <sub>5</sub>
Average	777	761	5,267	221	161	881
Median	659	542	3,340	93	87	654
Minimum	6	7	63	14	15	222
Maximum	2,755	4,057	32,401	7,369	3,849	12,933