



# **MKANGO RESOURCES LTD.**

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

**For the three months ended 31 March 2023**

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 with the condensed interim consolidated financial statements for the three months ended 31 March 2023 and the audited consolidated financial statements for the year ended 31 December 2022 (the “**Financial Statements**”). The Financial Statements and the accompanying notes have been prepared in accordance with International Financial Reporting Standards (“**IFRS**”) as issued by the International Accounting Standards Board (“**IASB**”) and interpretations issued by the International Financial Reporting Interpretations Committee (“**IFRIC**”) in effect on 1 January 2023 and are prepared in United States dollars unless otherwise stated. This document is dated 29 May 2023.

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). (Please note these websites do not form part of this MD&A and only contain additional information.) 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 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 licence extensions, operating or technical difficulties in connection with development activities; personnel relations, competition from other industry participants, 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. 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.

## MKANGO OVERVIEW

Mkango's corporate strategy is to develop new sustainable primary and secondary sources of neodymium, praseodymium, dysprosium and terbium to supply accelerating demand from electric vehicles, wind turbines and other clean technologies. This integrated '**Mine, Refine, Recycle**' strategy differentiates Mkango from its peers, uniquely positioning the Company in the rare earths sector.

### Mine

Mkango is developing the Songwe Hill rare earths project in the Phalombe district of Malawi ("**Songwe Hill**"), with a Definitive Feasibility Study ("**DFS**") completed in July 2022 and full Environmental, Social, Health Impact Assessment ("**ESHIA**") completed and approved in January 2023. Malawi is known as "The Warm Heart of Africa", a stable democracy with existing road, rail and power infrastructure, and new infrastructure developments underway. Electricity supply in the country is substantially sourced from renewables, primarily hydropower.

Highlights of the DFS include:

- US\$559.0 million post-tax net present value (NPV), using a 10% nominal discount rate, with an internal rate of return (IRR) of 31.5%, payback period of 2.5 years from full production (5 years from start of capital expenditure) and post-tax life-of-operations nominal cash flow of \$2.1 billion.
- Long operating life of 18 years,
- Initial capital expenditure (capex) of US\$277 million (excluding a US\$34 million contingency)
- Songwe Hill is confirmed as one of the very few rare earths projects globally to have reached the DFS stage, with a full ESHIA also completed and approved by the Government of Malawi

Mkango also has an extensive exploration portfolio in Malawi, including the Mchinji rutile prospect ("**Mchinji**"), in addition to the Thambani uranium-tantalum-niobium-zircon prospect ("**Thambani**") and the Chimimbe nickel-cobalt prospect ("**Chimimbe**") as well as potential upside for Songwe Hill at Nkalonje Hill, a rare earths exploration target located near to Songwe Hill ("**Nkalonje Hill**").

### Refine

In parallel, through Mkango's 100% subsidiary, Mkango Polska Sp. Z o.o., in Poland ("**Mkango Polska**"), Mkango is developing a rare earth separation plant at Pulawy in Poland (the "**Pulawy Separation Plant**"), working with Grupa Azoty Zakłady Azotowe Pulawy S.A. ("**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.

### Recycle

Through its 90% ownership of Maginito Limited ("**Maginito**") (www.maginito.com), Mkango is also developing green technology opportunities in the rare earths supply chain in the UK, Germany and United States, encompassing neodymium (NdFeB) magnet recycling as well as innovative rare earth alloy, magnet and separation technologies.

Maginito has agreed to acquire 100% of HyProMag Limited ("**HyProMag**"), which is scaling-up Hydrogen Processing of Magnet Scrap ("**HPMS**") technology, licenced from the University of Birmingham ("**UoB**"), in the UK. HPMS extracts and demagnetises NdFeB (neodymium, iron and boron) magnets embedded in scrap and redundant equipment. Through HyProMag, and on conversion of a convertible loan (the "**German Convertible Loan**") provided by Maginito to HyProMag GmbH ("**HyProMag Germany**"), Maginito will also hold, directly and indirectly, 90% of HyProMag Germany, which is scaling-up HPMS technology in Germany. Maginito also holds 100% of Mkango Rare Earths Limited ("**Mkango UK**"), which is focused on chemical processing of magnet scrap. Initial production from HyProMag in the UK is targeted for Q4 2023 and in Germany during 2024. As part of its agreement with CoTec Holdings Corp ("**CoTec**"), the Company plans to progress the rollout of rare earth recycling technologies in the United States.

## HIGHLIGHTS OF FIRST QUARTER 2023

In the first quarter of 2023, the Company continued to focus on advancing all aspects of its rare earths' Mine, Refine, Recycle strategy.

### Financial

- Cash at 31 March 2023 of \$5,251,495 compared to \$493,703 at 31 December 2022
- Loss after tax for three months ended 31 March 2023 of \$559,988 compared to \$2,231,836 for the three months ended 31 March 2022 (restated), The decrease in the loss can be attributed to the fact that expenditures relating to the completion of the DFS for Songwe Hill finished in Q3 2022.

### Financing Activities

- On 3 February 2023, CoTec invested a further £452,500 (\$545,263), taking its total investment into Mkango to £2,000,000 (\$2,410,000) by way of a convertible loan (the “**Cotec Convertible Loan**”), bearing 5% interest, compounded annually. The CoTec Convertible Loan can be converted into (i) common shares of Mkango (“**Mkango Shares**”) at £0.27 per share or (ii) shares in Maginito (“**Maginito Shares**”), taking CoTec’s position in Maginito to 20.6%.
- On 13 February 2023, Mkango raised gross proceeds of £3.5 million (approximately \$4.2 million) via a placing and subscription totalling 28,000,000 placing shares at a price of 12.5p per share.
- On 16 March 2023, CoTec subscribed for shares in Maginito, equivalent to a post-issuance 10% equity stake, for an investment of £1.5 million (\$1.8 million).

### Operations & Corporate Development

- The Malawi Environmental Protection Agency approved the Environmental Social Health Impact Assessment (“**ESHIA**”) for Songwe Hill.
- Discussions regarding the Mine Development Agreement (“**MDA**”) for Songwe Hill are ongoing with the Government of Malawi.
- Maginito agreed to provide the €2.5 million German Convertible Loan to HyProMag Germany which will, if converted, result in Maginito holding (assuming the acquisition of HyProMag discussed below) a direct and indirect interest of 90% in HyProMag Germany.
- HyProMag is targeting first production from the UK in Q4 2023 and Germany in 2024, with parallel technology roll-out into the US.
- Maginito and CoTec have launched the roll-out of HPMS technology into the US with the following activities:
  - Evaluating the development of recycling, chemical processing, alloy and magnet manufacturing
  - Scoping studies and site selection ahead of feasibility studies
  - CoTec and Maginito to form 50/50 joint venture for US developments, with CoTec to fund feasibility study and project development costs
  - Engagement with US Government, potential customers and recycling partners

### Subsequent Events

- Post quarter end, Maginito agreed to increase its ownership in HyProMag to 100% (the “**HyProMag Acquisition**”) for £1 million in cash and £1 million in Mkango Shares, and a further £3 million payable in four tranches of Mkango Shares (or cash at Mkango’s option) subject to certain production milestones in the UK, Germany and the US. The acquisition is expected to be complete in Q3 and remains subject to approval under the UK’s National Security and Investment (NSI) Act and by the TSX-V
- CoTec has announced its intention to convert the CoTec Convertible Loan into 10.6% of the shares of Maginito upon the completion of the HyProMag Acquisition, taking its position in Maginito to 20.6%

- ESG specialist Philipa Varris was appointed as Non-Executive Director and Chair of the new Sustainability Committee.

## SUMMARY OF FIRST QUARTER 2023 PERFORMANCE

### Financial

#### CoTec Convertible Loan

On 3 February 2023, CoTec invested a further £452,500 (\$545,263), taking its total investment in Mkango to £2,000,000 (\$2,410,000) by way of the CoTec Convertible Loan, bearing 5% interest and compounded annually. The CoTec Convertible Loan is secured over the shares held by Mkango in Maginito and the terms supersede all previous convertible notes issued by Mkango to CoTec. The CoTec Convertible Loan is convertible (both principal and interest) by CoTec at any time prior to the maturity, which is 60 days following the earliest of:

- (i) two years following the date of the CoTec Convertible Loan;
- (ii) the execution of definitive documentation providing for the financing of the development of Songwe Hill;
- (iii) the sale of all, or any, material portion of Songwe Hill;
- (iv) the execution of any agreement with a party pursuant to which such party is entitled to acquire greater than 50% of Songwe Hill; or
- (v) the date on which any party acquires greater than 50% of the shares of Mkango.

The principal amount of £2,000,000 (\$2,410,000) may be converted at 27p per share in Mkango Shares with interest to be converted at the higher of 27p per Mkango Share and the market price of a Mkango Share at the time of conversion. The conversion price is subject to customary anti-dilution adjustments.

The CoTec Convertible Loan may also be converted, at CoTec's option, into 10.6% of the Maginito Shares. If Maginito completes the HyProMag Acquisition, CoTec will be required to convert, at its option, into Mkango Shares or shares of Maginito, and the CoTec Convertible Loan will no longer be repayable. Since quarter end, CoTec has announced that upon completion of the HyProMag Acquisition, it will convert the CoTec Convertible Loan into shares of Maginito taking its holding in Maginito to 20.6%.

#### Placing

On 13 February 2023, Mkango raised gross proceeds of approximately \$4.2 million (£3.5 million) via a placing and subscription totalling 28,000,000 Mkango Shares at a price of 12.5p per Mkango Share (the "**Placing**"). The net proceeds of the Placing was approximately \$4 million (£3.3million). The Company intends to use the net proceeds of the Placing to fund (through Maginito) Mkango's share of the German Convertible Loan and covers costs associated with finalising the MDA and Mining Licence for Songwe Hill, as well as working capital requirements.

#### CoTec Investment in Maginito

On 16 March 2023, CoTec subscribed for shares in Maginito, equivalent to a post-issuance 10% equity stake, for an investment of £1.5 million (\$1.8 million).

### Mine

On 26 January 2023, the Malawi Environmental Protection Agency ("**MEPA**") approved the ESHIA for Songwe Hill. The approval of the ESHIA is a significant achievement as it is a key milestone in the MDA approval process and is a precursor requirement for the granting of a mining licence. It is expected to unlock significant stakeholder value and future investment for the development of Songwe Hill.

The Company is currently negotiating an MDA with the Government of Malawi to provide, amongst other things, a stable fiscal regime in which the Company can operate and be attractive to financial partners. In the fourth quarter of

2022, the Malawi Government appointed an independent, international law firm to review and finalise the MDA. Advice has been provided to the government by this law firm and negotiations continue.

### Refine

Discussions are on-going with banks, strategic investors and potential providers of grants to fund completion of a feasibility study for the Pulawy Separation Plant in Poland.

### Recycle

During the fourth quarter of 2022, HyProMag Germany was awarded grants totaling €3.7 million (\$3.95 million) for a new project, entitled “Innovation Centre for Science & Economy Northern Black Forest IZWW” (the “**German Recycling Project**”), comprising a €2.5 million (\$2.67 million) grant from the European Regional Development Fund (ERDF) and a €1.2 million (\$1.28 million) grant from the Ministry of Economic Affairs, Labour and Tourism Baden-Württemberg. The first phase of the German Recycling Project includes development of a production facility in Baden-Württemberg State with a minimum capacity of 100 tpa NdFeB which is targeted for initial production in 2024, comprising recycled rare earth sintered magnets, alloy pellets and powders. The initial production facility would be a similar size to the £4.3 million (\$5.18 million) project being developed by HyProMag and the UoB at Tyseley Energy Park in the UK (the “**UK Recycling Project**”), which is targeting initial production in Q4 2023. The UK Recycling Project is funded by “Driving the Electric Revolution”, an Industrial Strategy Fund challenge delivered by UK Research and Innovation (“**UKRI**”). In connection with the Placing, Maginito entered into the €2.5 million (approximately \$2.67 million) German Convertible Loan with HyProMag Germany which provides HyProMag Germany with a loan facility to be drawn down in accordance with an agreed investment plan. If fully drawn, the German Convertible Loan is convertible into 50% of HyProMag Germany and will, if fully converted and assuming the completion of the HyProMag Acquisition, result in Maginito holding a direct and indirect interest in HyProMag Germany of 90%.

After quarter end, Maginito announced the HyProMag Acquisition to increase its ownership in HyProMag to 100%. The HyProMag Acquisition is set to close in the third quarter of 2023 and is conditional on the approval of the TSX-V and approval pursuant to the UK’s National Security and Investment (NSI) Act. The consideration payable to the selling HyProMag shareholders (the “**Vendors**”) on completion of the HyProMag Acquisition will comprise £1 million in cash and the issue of £1 million in Mkango Shares (9,742,031 Mkango Shares at 10.2648p per share). In addition, up to a further £3 million may be payable by Mkango to the Vendors in four tranches, either in cash or in Mkango Shares (at Mkango’s option), conditional upon the achievement by HyProMag of certain production milestones in the period to 30 June 2026. The Mkango Shares issued on completion will have a one-year lock up and the shares issued on milestones will have a six-month lock up.

### MINE

Mkango has several properties in the Republic of Malawi, including its flagship Songwe Hill rare earths project and the Nkalonje Hill exploration target, 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**”).

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.

The table below splits out the mineral project expenditure into more detail for the three months ending 31 March 2023 and 31 March 2022.

Licence/Capital Project	Project	For the three months ended 31 March	
		2023	2022
Phalombe	Songwe Hill project		
	Metallurgy expenses	60,737	178,909
	Government fees	2,430	1,008
	ESHIA (1)	807	118,559
	Technical studies	-	153,749
	Consulting fees	-	166,023
	Malawi office and camp expenses	-	22,595
Phalombe total		63,974	640,843
Pulway Separation Plant Pre-feasibility Study Thambani, Chimimbe, Mchinji and Nkalonje	Consulting fees	-	446,360
	Mineral project expenditures	40,984	18,482
Total mineral project and research and development expenses		104,958	1,105,685

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

Exploration and evaluation expenditure is recognised in the consolidated statement of comprehensive loss as mineral project expenditures. Following the completion of the DFS for Songwe Hill on 5 July 2022, exploration and evaluation expenditure is being capitalised in accordance with IFRS 6 and the group's accounting policies.

## Songwe Hill

### Background

The Phalombe Licences are located in southeast Malawi, within which the Songwe Hill is the main development target and features carbonatite hosted rare earth mineralisation. Songwe Hill was subject to historical exploration programs during the late 1980s. Lancaster BVI was awarded the licence by the Malawi government on 21 January 2010 and has subsequently renewed it, with the most recent renewal on 1 June 2021 when the Phalombe Licence was transferred into 11 retention licences covering a total of 250 km<sup>2</sup>. Each retention licence is for a 5-year period from 1 June 2021 and certain licences are expected to be transferred into a mining licence following the DFS and ESHIA completion.

### Exploration

Mkango has been exploring and evaluating Songwe Hill 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 litho-geochemical 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 recognised. 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 mineralisation 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 mineralised 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 18.6 Mt grading 1.38% TREO in the Inferred Mineral Resource category which was announced on 10 October 2012. The Indicated Resource estimate formed the basis for a Pre-Feasibility Study completed in 2014, which was subsequently updated in 2015.

### Definitive Feasibility Study

In 2018, Mkango commenced a DFS, the initial phases of which comprised an extensive diamond drilling programme, metallurgical optimisation and work in relation to the ongoing ESHIA.

On 4 June 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 21 August 2018 and 3 December 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 to enhance the definition of 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% TREO - the full set of the results and breakdown of TREO values are shown in the 43-101 Report published on 5 July 2022.

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 4 February 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, has formed the basis of the updated mine plan for the DFS, which has evaluated 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 has been included in the Feasibility Study for the updated resource.

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

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 NI 43-101.

Sample preparation and analytical work for the drilling and channel sampling programmes was 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 has been completed in accordance with World Bank Standards and Equator Principles.

In terms of other aspects of the DFS, 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 DFS.

Potential pilot plant facilities were reviewed through a detailed tender process and ALS Metallurgy in Perth, Australia was selected. On 24 February 2021 the Company announced the commencement of flotation pilot test plant work.

Following completion of flotation piloting, announced on 2 March 2021, the Company announced results of the flotation pilot plant programme on 4 May 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 DFS versus the design criteria for the 2015 pre-feasibility study for Songwe Hill:
- Significant increase in flotation recovery of 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 DFS 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 23 September 2021 Mkango, along with leading Malawian geotechnical engineering firm, Geoconsult Limited, and Zutari Limited, a geotechnical engineering firm which is based in South Africa, commenced 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 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 provided the detailed geotechnical information that was required to finalize the DFS detailed engineering design plans.

On 14 December 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. The program was completed in March 2022 and informed the DFS.

On 5 July 2022 the Company announced the results of the DFS for Songwe Hill.

Highlights of the DFS included the following:

- \$559.0 million post-tax net present value (NPV), using a 10% nominal discount rate, with an internal rate of return (IRR) of 31.5%, payback period of 2.5 years from full production (5 years from start of capital expenditure) and post-tax life-of-operations nominal cash flow of \$2.1 billion.
- The DFS is for 100% of Songwe on a stand-alone basis.
- Songwe is confirmed as one of the very few rare earths projects globally to have reached the DFS stage, with a full ESHIA completed in compliance with IFC Performance Standards and the Global Industry Standard for Tailings Management (2020) ("GISTM") adopted for design and management of the tailings storage facility.
- Long operating life of 18 years, with mining assumed to commence 24 months from securing development financing. Production averages 5,954 tonnes per year TREO for the first five years of full production, including 1,953 tonnes per year of neodymium and praseodymium oxides, and 56 tonnes per year of dysprosium and terbium oxides, in a mixed rare earth carbonate ("MREC") grading 55% TREO, generating nominal EBITDA of \$215 million per year.
- Neodymium, praseodymium, dysprosium and terbium are critical for the low-carbon transition, as they are critical components of permanent magnets for electric vehicles, wind turbines and a wide array of electronic devices.
- Initial capital expenditure (capex) of \$277 million (excluding a \$34 million contingency) is required for the development of mine, mill, flotation and hydrometallurgy plants, tailings storage facility, and related project infrastructure in Malawi.

During the week of 27 June 2022, the Company hosted site visits to Songwe Hill for a number of major commercial and development banks.

On 26 January 2023, the Malawi Environmental Protection Agency ("MEPA") approved the ESHIA for Songwe Hill. The approval of the ESHIA is a significant achievement and an important milestone in the MDA approval process. As the MEPA approval is a precursor requirement for the granting of a mining licence, this achievement is expected to unlock significant stakeholder value and future investment for the development of Songwe Hill.

With the release of the DFS, the approval of the ESHIA and in anticipation of concluding the MDA, Mkango continues to advance ongoing discussions with potential strategic investors, development and commercial banks and off-takers.

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 Phalombe Licences

On 9 August 2016, Mkango announced the results of the portion of the World Bank Survey covering approximately two thirds of the Phalombe Licences. The World Bank Survey highlighted a number of exploration targets within the Phalombe Licences. 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 Hill 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 Hill 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). (This link does not form part of this MD&A).

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 (\$5.76 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 above mentioned Nkalonje Hill hypabyssal system, where outcrop is largely fenite (altered country rock) with occasional carbonatite, with the potential for underlying and larger zones of mineralised carbonatite.

### Nkalonje Hill

#### Background

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 Blantyre. 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.

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

- Carbonatite dyke sample assay grades of up to 5.92% TREO (Total Rare Earth oxides) (median 2.96%).
- Mapping and geophysics result confirmation that the major geological features of Nkalonje Hill are those of an alkali silicate-carbonatite intrusive complex, similar to Songwe Hill.
- Identification of a primary shallow drilling target beneath exposed mineralised dykes in addition to 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 0.9 km in diameter and comparable in lateral extent to Songwe Hill.
- Mapping to date has identified eight carbonatite dykes reaching 4 meters in width and traceable at surface up to 90 meters 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. It also includes a central gravity anomaly extending from the surface to approximately 300 meters in 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.

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.

## Exploration

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 was completed on 1 November 2021.

## **Mchinji**

The Company has a 100% interest in the Mchinji Licence in respect of an area of 868.69 km<sup>2</sup> 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 focused on rutile, gold, base metals, nickel-cobalt and graphite.

On 4 July 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 km<sup>2</sup> 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 3 November 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 to follow up the reconnaissance work announced on 15 September 2020.

The Company announced the completion of the drilling programme on 3 December 2020, which was followed by mineral processing test work on the samples. Further desktop studies are now underway over the licence area.

## **Chimimbe Hill**

On 14 November 2017, Lancaster BVI was granted the Chimimbe Licence (100% owned) by the Malawi Minister of Natural Resources, Energy and Environment in respect of an area of 98.48 km<sup>2</sup> 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 mineralisation.

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 was renewed for a period of two years to 10 November 2022 and is currently in the process of being renewed for a further two years.

## Thambani Uranium Licences

### Background

Lancaster BVI was granted the Thambani Licence by the Malawi Minister of Natural Resources, Energy and Environment on 10 September 2010 in respect of an area, which was originally 468 km<sup>2</sup> 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 10 September 2015 for an additional two-year term when the Company requested a reduction in the Thambani Licence area to the current 136.9 km<sup>2</sup>. The Thambani Licence was renewed for a further two years to 10 September 2019 and was subsequently renewed for an additional two years to 10 September 2021. The Company has subsequently been granted four (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 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 31 December 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<sub>3</sub>O<sub>8</sub>, 3.25 % Nb<sub>2</sub>O<sub>5</sub> in soil and up to 0.42 % U<sub>3</sub>O<sub>8</sub>, 0.78 % Nb<sub>2</sub>O<sub>5</sub> and 972 ppm Ta<sub>2</sub>O<sub>5</sub> in rock chips, notably higher than results from the 2013 reconnaissance surface geochemical sampling programme.

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 12 July 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 250 m spacings.

The World Bank Survey confirmed the presence of the previously identified uranium radiometric anomaly, referred to previously, 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, are located to the south of these anomalies and are 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 (This link does not form part of this MD&A):

[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 (This link does not form part of this MD&A):

[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 mineralisation 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 500 ppm  $U_3O_8$ , of which 13 graded above 1,000 ppm  $U_3O_8$ ; 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.

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 10 m long, 1.5 m wide and 2 m 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> (This link does not form part of this MD&A)

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 25 m 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 0.5 m 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 2 m 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.

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.

Mkango retains a 100% interest in the Thambani License and is currently evaluating strategic options, including opportunities for joint ventures and other potential avenues to create value.

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.

## REFINE

On 7 June 2021, the Company announced that Mkango and Grupa Azoty PULAWY had agreed to work together towards development of the Pulawy Separation Plant in Poland. The Pulawy Separation Plant will process the purified mixed rare earth carbonate derived from Songwe Hill into separated rare earth oxides.

Mkango Polska was established and is headed by a highly experienced Country Director for Poland, Dr Jarosław Pączek, 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.

Mkango Polska and Grupa Azoty PULAWY have signed an exclusive lease option agreement for a site adjacent to Grupa Azoty PULAWY’s large scale fertiliser and chemicals complex at Pulawy, 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 Pulawy Separation 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 Pulawy Separation 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 Pulawy Separation Plant is expected to bring significant benefits to the Mkango group, including:

- 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.

Next steps for the Pulawy Separation Plant are to complete a feasibility study and discussions are underway with banks, strategic investors and potential providers of grants to move the project to the development stage.

## RECYCLE

The Company is pursuing downstream opportunities in the rare earths supply chain, with a particular focus on rare earth magnet recycling through its interest in Maginito. Maginito is 90%-owned by Mkango with CoTec owning the remaining 10%. CoTec has the option to convert the CoTec Convertible Loan into Mkango into a further 10.6% of Maginito and has announced it will do so on the completion of the HyProMag Acquisition.

In March 2023, CoTec invested £1.5 million (\$1.81 million) into Maginito, and Maginito and CoTec agreed to collaborate on the commercialisation of downstream rare earth technologies in the United States. Mkango UK was at the same time transferred to become a subsidiary of Maginito. In connection with CoTec's investment, John Singleton, Chief Operating Officer of CoTec, was appointed to the Board of Maginito.

After quarter end, Maginito announced the HyProMag Acquisition to increase its ownership in HyProMag to 100%. The HyProMag Acquisition is set to close in the third quarter of 2023 and is conditional on the approval of the TSX-V and approval pursuant to the UK's National Security and Investment (NSI) Act. The consideration payable to the selling HyProMag shareholders (the "Vendors") on completion of the HyProMag Acquisition will comprise £1 million in cash and the issue of £1 million in Mkango Shares (9,742,031 Mkango Shares at 10.2648p per share). In addition, up to a further £3 million may be payable by Mkango to the Vendors in four tranches, either in cash or in Mkango Shares (at Mkango's option), conditional upon the achievement by HyProMag of certain production milestones in the period to 30 June 2026. The Mkango Shares issued on completion will have a one-year lock up and the shares issued on milestones will have a six-month lock up.

Upon the completion of the HyProMag Acquisition Maginito will hold (i) a 100% interest in HyProMag; and (ii) a 100% interest in Mkango UK. If the HyProMag Acquisition is completed, and the German Convertible Loan is converted, Maginito will, directly and indirectly, also hold 90% of HyProMag Germany.

The UK Recycling 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 with Mkango UK developing the latter. HyProMag estimates 88% less energy will be used for short loop (i.e., magnet to magnet) recycled magnets versus primary mining to separation to metal alloy to magnet production.

### HyProMag Limited

HyProMag was founded in 2018 by the late Professor Emeritus Rex Harris, former Head of The Magnetic Materials Group ("MMG") within the School of Metallurgy and Materials at UoB, Professor Allan Walton, current Head of the MMG, and two Honorary Fellows, Dr John Speight and Mr David Kennedy, leading world experts in the field of rare earth magnetic materials, alloys and hydrogen technology, with significant industry experience. The HPMS process for extracting and demagnetising NdFeB alloy powders from magnets embedded in scrap and redundant equipment was originally developed within the MMG and subsequently licenced to HyProMag. The MMG has been active in the field of rare earth alloys and processing of permanent magnets using hydrogen for over 40 years. Originated by Professor Rex Harris, the hydrogen decrepitation method, which is used to reduce NdFeB alloys to a powder, is now ubiquitously employed in worldwide magnet processing.

HyProMag is establishing short loop recycling facilities for NdFeB magnets at Tyseley Energy Park in Birmingham, UK and other locations using the patented **HPMS** process to provide a sustainable solution for the supply of NdFeB magnets and alloys for a wide range of markets including, for example, automotive and electronics. Short loop magnet recycling is expected to have a significant environmental benefit, requiring an estimated 88% less energy versus primary mining to separation to metal alloy to magnet production. The plant at Tyseley Energy Park is being developed together with UoB, with a minimum capacity of 100tpa NdFeB (neodymium, iron, boron). This £4.3 million (\$5.18million) project is being funded by "Driving the Electric Revolution", an Industrial Strategy Fund challenge delivered by UK Research and Innovation. HyProMag will be the primary industrial user and operator of the plant.

First production is targeted for Q4 2023, which follows successful piloting at UoB in 2022 as featured on BBC Midlands News: <https://youtube/9P-dsNCffWw>. (This link does not form part of this MD&A.)

HyProMag is participating in a number of government grant funded projects.

On 28 May 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 was £2.6 million (\$3.12 million), of which Innovate UK funded £1.9 million (\$2.28 million), with RaRE partners funding the £0.7 million (\$0.84 million) balance. HyProMag’s contribution was fully funded from the £300,000 (\$361,740) investment made by Maginito in January 2020.

On 30 November 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 30 September 2021, the Company announced the successful completion of the project.

On 14 March 2022, the Company announced that HyProMag and Mkango UK will collaborate with 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 aims to 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.

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.

Mkango UK is also a participant in the SCREAM Project..

### **Mkango Rare Earths UK Limited**

Mkango UK is establishing a pilot plant at Tyseley Energy Park 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 by HyProMag. The pilot plant is being developed as part of SCREAM project.

### **HyProMag Germany**

In November 2021, HyProMag established an 80%-owned subsidiary in Germany, HyProMag Germany, to rollout commercialisation of HPMS technology into Germany and Europe. HyProMag GmbH is 20% owned (10% following conversion of the German Convertible Loan) by Professor Carlo Burkhardt of Pforzheim University, co-ordinator of the €14 million (\$14.95 million) SusMagPro ([www.susmagpro.eu](http://www.susmagpro.eu)) and €13 million (\$13.88 million) REEsilience ([www.reesilience.eu](http://www.reesilience.eu)) EU funded recycling projects, with approximately 40 partners across the European supply chain.

On 23 November 2022, the Company announced that HyProMag Germany had been awarded grants totalling €3.7 million (\$3.95 million) for a new project, entitled “Innovation Centre for Science & Economy Northern Black Forest IZWW”, comprising a €2.5 million (\$2.67 million) grant from the European Regional Development Fund (ERDF) and a €1.2 million (\$1.28 million) grant from the Ministry of Economic Affairs, Labour and Tourism Baden-Württemberg.

The total cost of the German Recycling Project is expected to be €6.1 million (\$6.51 million), of which approximately 60% will be funded by the grants, on the basis that for each €1 spent on the project by HyProMag Germany, a further

€1.50 contribution can be claimed from the grants. The first phase of the project includes development of a production facility in Baden-Württemberg State with a minimum capacity of 100tpa NdFeB comprising recycled rare earth sintered magnets, alloy pellets and powders. This will be the first in Germany using the patented HPMS process, with first production targeted for 2024, and a similar size to the £4.3 million (\$5.18 million) UK Recycling Project being developed by HyProMag and UoB at Tyseley Energy Park in the UK, which is targeting initial production in Q4 2023.

Maginito has entered into the German Convertible Loan with HyProMag Germany, to acquire up to a 50% interest. Under the terms of the German Convertible Loan, Maginito has granted HyProMag Germany a loan facility for €2.5 million (approximately \$2.67 million) available to be drawn down in accordance with an agreed investment plan and convertible into a 50% interest in HyProMag Germany. This investment by Maginito into HyProMag Germany will contribute to the match funding requirements to unlock the abovementioned grant.

### United States

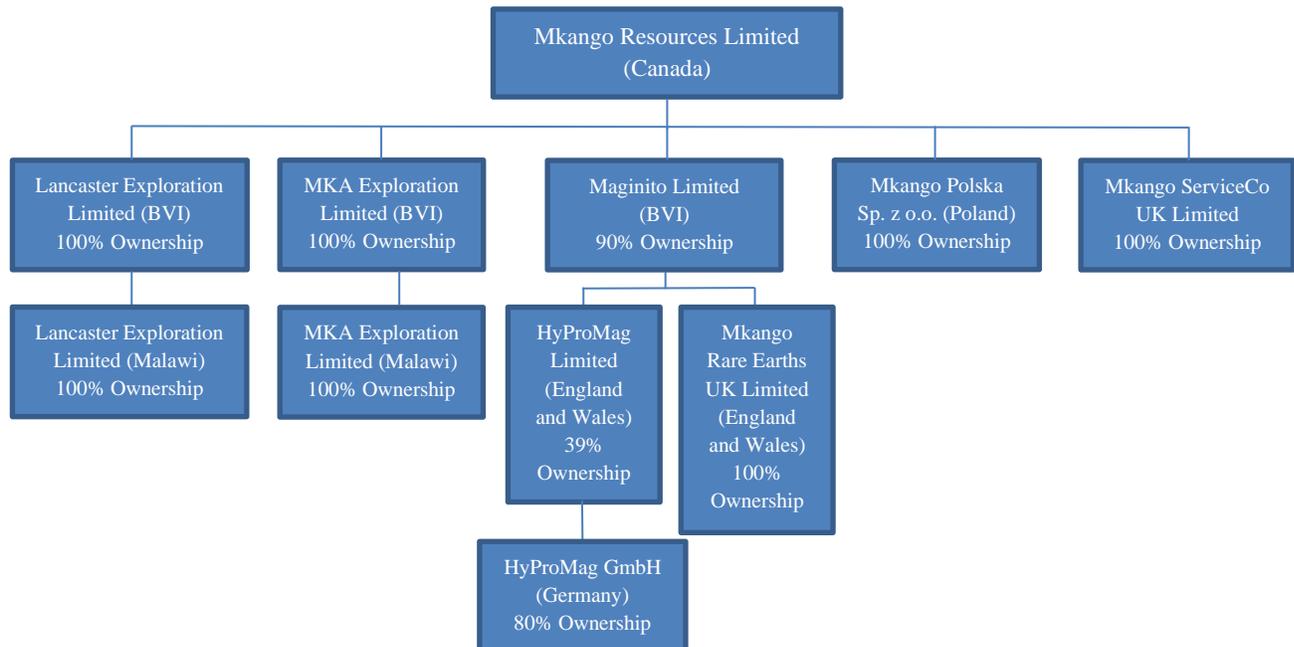
Mkango and CoTec have entered into a co-operation agreement regarding future investments in rare earth processing technology opportunities in the United States and have launched the roll-out of HPMS into the US. The companies are currently:

- evaluating the development of recycling, chemical processing, alloy and magnet manufacturing
- undertaking scoping studies and site selection ahead of feasibility studies;
- undertaking ongoing discussions with US Government, potential customers and recycling partners; and,
- intending to form a 50/50 joint venture for US developments, with CoTec to fund feasibility study and project development costs..

The scoping studies will determine optimal sites in the US and evaluate the scope of potential rare earth developments, which may include recycling, chemical processing and the production of alloys and magnets. Maginito is continuing to evaluate new downstream opportunities relating to the rare earths supply chain.

### 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 3 August 2007. Lancaster BVI is 100% owned by Mkango.

Lancaster Exploration Limited (“**Lancaster Malawi**”) was incorporated on 19 May 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 25 July 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 6 May 2019. The Mchinji Licence is held by MKA Exploration.

Maginito was incorporated under the laws of the BVI on 3 January 2018 and is 90% owned by Mkango (to decrease to 79.4% on the announced conversion of the CoTec Convertible Loan). 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 as discussed below. The remaining 10% (increasing to 20.6%) of Maginito is owned by CoTec.

Mkango Polska was incorporated under the laws of Poland and 100% ownership was acquired by the Company on 22 March 2021. Mkango Polska is developing the Pulawy Separation Plant in Poland, working with Grupa Azoty PULAWY. The Pulawy Separation Plant is expected to process the purified mixed rare earth carbonate derived from Songwe Hill into separated rare earth oxides.

Mkango UK was incorporated on 23 June 2021 under the laws of England and Wales. Mkango UK is 100% owned by Maginito and was established to further develop the Company’s rare earths strategy in the UK.

HyProMag was incorporated on 19 July 2018 under the laws of England and Wales. HyProMag is 39% owned by Maginito (to increase to 100% upon completion of the HyProMag Acquisition). HyProMag is focused on the extraction and demagnetisation of NdFeB magnets embedded in scrap and redundant equipment using the HPMS process.

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. Maginito, pursuant to the German Convertible Loan, has the right to acquire 50% of HyProMag Germany.

Mkango ServiceCo UK Limited (“**Mkango ServiceCo**”) was incorporated on 9 December 2022 under the laws of England and Wales. Mkango ServiceCo was set up to house corporate costs in London.

## 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 31 December 2022, 2021(restated) and 2020:

As at 31 December	2022	2021 (restated)	2020
Total assets	1,526,901	5,263,167	5,779,388
Total equity	(1,166,116)	4,004,595	10,213,006

#### Total assets

Total assets were \$1,526,901 as at 31 December 2022 as compared to \$5,263,167 as at 31 December 2021. Total assets decreased by \$3,736,266 as a result of the loss for the year, which was primarily driven by expenditures relating to completion of the Songwe Hill DFS.

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

As at 1 January 2022, the Company had an opening cash position of \$4,446,850. Cash received during the year ended 31 December 2022 was \$1,826,219 from the proceeds relating to the CoTec investment into Mkango. Cash used in operations was \$5,138,521 and cash of \$196,367 was spent on exploration and evaluation intangible assets and computer equipment. The effect of exchange rate changes on cash was a decrease of \$837,212 during the year for a closing cash position of \$493,703.

As at 1 January 2021, the Company had an opening cash position of \$4,924,567. Cash received during the year ended 31 December 2021 was \$6,852,456 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.

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

Total shareholders' equity was (\$1,166,116) as at 31 December 2022 compared to \$4,004,595 as at 31 December 2021. The decrease of \$5,170,711 is largely due to the loss attributable to common shareholders of \$5,985,963 which is made up of expenditure on the Songwe Hill DFS and general corporate costs.

Total shareholders' equity was \$4,004,595 as at 31 December 2021 compared to \$10,213,006 as at 31 December 2020. The decrease of \$6,208,411 is due to the loss (restated) attributable to common shareholders of \$6,401,477 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 \$991,063 (restated).

## RESULTS OF OPERATIONS

### Summary Results of Operations

The following financial data is derived from the Company's consolidated financial statements as at December 31, 2022, 2021 (restated) and 2020:

	Year ended 31 December		
	2022	2021 (restated)	2020
Mineral project and research and development expenditures	(2,402,070)	(6,013,085)	(2,372,416)
Other expenditures* (restated in FY2021)	(3,470,482)	(3,135,979)	(1,747,493)
Other items**	(113,411)	(177,924)	52,223
<b>Total net loss</b>	<b>(5,985,963)</b>	<b>(9,326,988)</b>	<b>(4,067,786)</b>
Total net loss attributable to non-controlling interest	-	(2,925,511)	(1,814,158)
<b>Total net loss attributable to the common shareholders</b>	<b>(5,985,963)</b>	<b>(6,401,477)</b>	<b>(2,253,628)</b>
Basic and diluted loss per share	\$ (0.028)	\$ (0.042)	\$ (0.017)
Weighted average number of common shares (basic and diluted)	215,088,397	153,119,372	133,000,721
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 options and interest income.

The net loss for the year ended 31 December 2022 was \$5,985,963 compared to the restated net loss reported for the year ended 31 December 2021 of \$9,326,988. The net loss decreased by \$3,341,025 for the comparable periods. The significant items contributing to the change include:

- Decreased mineral project expenditure of \$3,611,015 as a result of the DFS being completed during the year.
- General and administrative expenses, including share-based payments, increased by \$334,503.

The restated net loss for the year ended 31 December 2021 was \$9,326,988 compared to the net loss reported for the year ended 31 December 2020 of \$4,067,786. The net loss increased by \$5,259,202 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 DFS.
- 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 \$805,230.
- Foreign exchange losses increased by \$297,726.

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 nine quarters ending with the most recently completed quarter, being the quarter ended 31 March 2023.

On 29 October 2021, 4,000,000 Restricted Share Units were granted to Alex Lemon and Will Dawes. The vesting period was originally determined as 244 days. As such, the share option charge relating to this grant was fully expensed in Q4 2021, Q1 2022 and Q2 2022. During Q4 2022, management identified that the vesting period was incorrect and should have been ten years. Please refer to Note 3 in the financial statements which details the impact of this prior period adjustment. The previously reported quarterly information in the table below has been updated to reflect for the adjustment which impacts 2021 Q4, 2022 Q1, 2022 Q2 and 2022 Q3:

Total Operations Attributable to common shareholders	2023	2022				2021			
	Q1	Q4	Q3	Q2	Q1	Q4	Q3	Q2	Q1
Expenses	(913,793)	(848,345)	(1,040,544)	(1,867,403)	(2,116,262)	(1,769,003)	(1,207,784)	(1,135,769)	(739,742)
Other items	353,804	185,256	(72,910)	(110,184)	(115,574)	(1,169,709)	(263,405)	(5,030)	(111,037)
Net loss for period	(559,988)	(663,089)	(1,113,454)	(1,977,587)	(2,231,836)	(2,938,712)	(1,471,189)	(1,140,799)	(850,779)

The financial data for the nine 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. The Company's principal activities require expenditures which include both exploration and general and administrative expenses.

Expenses increased slightly in Q1 2023 compared to Q4 2022 as a result of the year end audit fees. Expenses decreased slightly in Q1 2023 compared to Q1, Q2, Q3 2022 as the Company had largely completed the DFS for Songwe Hill at the end of Q2 2022. Furthermore, mineral project expenditures incurred post the publication of the DFS are now being capitalised to exploration and evaluation intangible assets.

Expenses increased in Q1 2022 over Q4 2021 primarily due to increased activity on the DFS.

Expenses rose steadily quarter on quarter through 2021 as the Company continued with work on the DFS, with an increase in Q4 related mainly to higher share-based payment charges.

## RELATED PARTY TRANSACTIONS AND BALANCES

Leo Mining and Exploration Ltd. ("Leo Mining") is considered related by virtue of common directors and officers, namely William Dawes, Alexander Lemon and Shaun Treacy. Leo Mining pays certain costs such as rental on behalf of Mkango. Mkango reimburses Leo Mining for these costs.

As of 31 March 2023, the Company owed Leo Mining an amount of \$10,179 (31 December 2022: (\$4,646)). The amount is unsecured and due on demand.

The amounts due to related parties were as follows:

	31 March 2023	31 December 2022
Due to key management and directors	31,359	186,426
Due to related parties with common directors (Leo Mining)	10,179	-
Total due to related parties	<u>41,538</u>	<u>186,426</u>

The amounts due from related parties were as follows:

	31 March 2023	31 December 2022
Due from related parties with common directors (Leo Mining)	<u>-</u>	<u>4,646</u>

## EXPENDITURES

			Quarter	Quarter	Quarter
			ended 31 March 2023	ended 31 December 2022	Ended 31 March 2022 (restated)
<b>Total expenses attributable to common shareholders and non-controlling interest</b>					
<b>General and administrative</b>					
Audit and tax management			15,690	7,642	26,629
Legal fees			146,260	197,416	32,837
Director and Officer salaries			203,389	125,581	191,195
Salaries and consulting fees			122,363	67,192	179,502
Rent, storage, telephone and insurance			128,972	90,258	51,234
Travel			17,452	24,803	31,726
AIM listing expense			27,807	24,626	24,162
Share-based payments (restated)			86,870	86,655	394,540
Depreciation			2,177	12,415	7,993
Investor relations and marketing			57,855	33,786	70,759
<b>Sub total - General and administrative</b>			<b>808,835</b>	<b>670,374</b>	<b>1,010,577</b>
<b>Mineral project expenditures</b>					
<b>Songwe Hill Project</b>					
Metallurgy expenses			60,737	111,154	178,909
Government fees			2,430	2,088	1,008
ESHIA			806	-	118,559
Technical studies			-	12,666	153,749
Consulting fees			-	304	166,023
Malawi office and camp expenses			-	36,788	22,595
REE Separation Plant Pre-feasibility Study			-	-	446,360
Thambani, Mchinji and Chimimbe projects			40,985	14,971	18,482
<b>Sub total - Mineral projects</b>			<b>104,958</b>	<b>177,971</b>	<b>1,105,685</b>
Interest income			(4)	-	(11)
Share of associated company's losses			68,214	14,623	25,929
Fair value losses			862	5,248	6,900
Fair value adjustment – embedded derivative			(318,420)	(122,784)	-
Foreign exchange (gain) loss			(104,457)	(82,343)	82,756
<b>Sub total</b>			<b>(353,805)</b>	<b>(185,256)</b>	<b>115,574</b>
<b>Total Expenses net of interest income</b>			<b>559,988</b>	<b>663,089</b>	<b>2,231,836</b>

### Three months ended 31 March 2023 compared to the three months ended 31 December 2022

Total expenses reduced by \$103,101 from \$663,089 for the three months ended 31 December 2022 to \$559,988 for the three months ended 31 March 2023, as a result of the following:

- General and administrative:** General and administrative expenses were \$138,461 higher for the three months ended 31 March 2023 compared to the three months ended 31 December 2022.
- Mineral Projects:** Mineral project expenses for the three months ended 31 March 2023 were \$70,013 lower than for the three months ended 31 December 2022.
- Foreign Exchange:** The foreign exchange gain for the three months ended 31 March 2023 was \$104,457. The foreign exchange gain for the three months ended 31 December 2022 was \$82,343.
- The fair value adjustment (gain) relating to the embedded derivative during the three months ended 31 March 2023 was \$318,420. The fair value adjustment (gain) relating to the embedded derivative during the three months ended 31 December 2022 was \$318,420.

### Three months ended 31 March 2023 compared to the three months ended 31 March 2022 (restated)

Total expenses net of interest income decreased by \$1,671,848 from \$2,231,836 (restated) for the three months ended 31 March 2022 to \$559,988 for the three months ended 31 March 2023, as a result of the following:

- a) General and administrative: General and administrative expenses were \$201,742 lower for the three months ended 31 March 2023 compared to the three months ended 31 March 2022.
- b) Mineral Projects: Mineral project expenses were \$1,000,727 lower for the three months ended 31 March 2023 compared to the three months ended 31 March 2022 as a result of the Definitive Feasibility Study being completed at the end of June 2022.
- c) Foreign Exchange Loss: The foreign exchange gain for the three months ended 31 March 2023 was \$104,457. The foreign exchange loss for the three months ended 31 March 2022 was \$82,756.

## 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 31 March 2023 and this accompanying MD&A (together, the "Annual 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 four 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.

Maginito has committed to fund the German Convertible Loan.

## ISSUED AND OUTSTANDING SHARE INFORMATION

As at 31 March 2023, the Company had 243,206,548 common shares, 1,400,000 broker warrants, 16,200,000 stock options and 4,000,000 restricted share units in issue.

As at the date of this report, the Company has 243,430,865 Shares, 1,400,000 broker warrants, 16,200,000 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. Climate change poses transitional and physical risks to global society. There is no assurance that future environmental regulations will not adversely affect the Company's operations.

### **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.

### **Commercial Viability Risk**

The Company does not currently produce rare earth elements from Songwe Hill. 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.

### **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.

### 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) amortised costs. Each category has a defined basis of measurement. If a category is measured at fair value, any changes in fair value is recognised 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 financial assets and liabilities that are measured and recognised in the consolidated statements of financial position at fair value on a recurring basis were categorised into the fair-value hierarchy levels as follows:

	Level 1	Level 2	Level 3
Equity option*	-	-	4,705
Derivative liability (convertible note) (Note 12)	-	-	103,688
Balance 31 March 2023	-	-	108,393
	Level 1	Level 2	Level 3
Equity option*	-	-	8,723
Derivative liability (convertible note) (Note 12)	-	-	129,650
Balance 31 December 2022	-	-	138,373

\* The option to acquire shares in the associate is measured at level 3. The fair value of this financial instrument was determined using the Black Scholes model. The key input to this model is the volatility rate of 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 \$3,727 (31 December 2022: \$6,045) and a 10% decrease would result in a charge to the income statement of \$2,434 (31 December 2022: \$4,420).

The carrying value of 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 31 March 2023 and 31 December 2022, is most significantly influenced by the following cash amounts held in foreign currencies (amounts shown in US dollars):

	31 March 2023	31 December 2022
Cash:		
Canadian Dollar	142	465
United States Dollar	29,580	937
Pound Sterling	5,081,325	391,040
Euro	98,022	96,989
Malawian Kwacha	42,347	3,966
Australian Dollar	79	306
	<u>5,251,495</u>	<u>493,703</u>

A 5% reduction in the value of the CAD, Euro, GBP, MWK and AUD in comparison to the USD would cause a change in net loss of approximately \$261,096 (31 December 2022: \$24,638).

### 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.

The Company's principal financial liability is the debt component of the convertible loan note with CoTec. The interest rate exposure on the debt component is limited as the interest rate is limited given the coupon rate linked to the convertible loan is fixed at 5%.

### Liquidity risk

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

- a) T  
he Company will not have sufficient funds to settle a transaction on the due date;
- b) T  
he 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 31 March 2023:

	Contractual Cash Flows	Less than 1 Year	Greater than 1 Year
Accounts payable and accrued liabilities	292,152	292,152	-
Due to related parties	41,538	41,538	-

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

	Contractual Cash Flows	Less than 1 Year	Greater than 1 Year
Accounts payable and accrued liabilities	773,245	773,245	-
Due to related parties	186,426	186,426	-

### 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.

### Financial instruments by category

Financial Assets	Fair value through profit or loss		Amortised cost	
	31 March 2023	31 December 2022	31 March 2023	31 December 2022
Cash	-	-	5,251,495	493,703
Receivables	-	-	11,122	28,803
Total financial assets	-	-	5,262,617	522,506
Financial liabilities				
Trade and other payables	-	-	333,690	959,671
Loans and borrowings	-	-	1,828,257	1,603,696
Derivatives	103,688	129,650	-	-
Total financial liabilities	103,688	129,650	2,161,947	2,563,367

## LIQUIDITY AND CAPITAL RESOURCES

As of 31 March 2023, the Company had working capital of \$5,042,871 (31 December 2022 – negative working capital of \$279,289) and retained earnings deficit attributable to the shareholders of the Company of \$43,388,577 (31 December 2022 - \$44,639,933).

## DIRECTORS AND OFFICERS

William Dawes, Director and Chief Executive Officer

Alexander Lemon, Director and President (Sustainability Committee)

Derek Linfield, Non-Executive Chairman of the Board of Directors (Remuneration Committee)

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

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

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

Philipa Varris, Non-Executive Director (Sustainability Committee Chair)

Rob Sewell, Chief Financial Officer