

# MKANGO RESOURCES LTD.

# MANAGEMENT'S DISCUSSION AND ANALYSIS

For the three months ended March 31, 2019

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 March 31, 2019 (the "Financial Statements"), the audited consolidated financial statements for the year ended December 31, 2018 and the accompanying Management's Discussion and Analysis for that fiscal year. The Financial Statements and the accompanying notes have been prepared in accordance with International Financial Reporting Standards ("IFRS") and are prepared in United States dollars unless otherwise stated. This document is dated May 30, 2019.

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. The Company is listed on the TSX Venture Exchange (the "TSX-V") and holds an additional listing on the AIM Market of the London Stock Exchange ("AIM") under the symbol MKA.

#### FORWARD LOOKING STATEMENTS

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

## **COMPANY OVERVIEW**

Mkango is an exploration and development company focused on rare earths and associated minerals with properties in the Republic of Malawi, Africa, specifically the Songwe Hill rare earths project ("Songwe Hill") within the Phalombe exploration licence (the "Phalombe Licence"). Mkango is also pursuing mineral exploration opportunities with two additional properties in the Republic of Malawi, Africa, the Thambani exploration licence ("Thambani Licence") and the Chimimbe Hill exploration licence ("Chimimbe Licence").

The Company's core strategy is to advance the Songwe Hill project through the feasibility and development phases whilst in parallel advancing complementary downstream opportunities in the rare earths supply chain through Maginito Limited ("Maginito"), both in partnership with Talaxis Limited ("Talaxis"), a wholly owned subsidiary of Noble Group Limited ("Noble"). The current work programme for Songwe Hill is focused on completing a feasibility study (the "Feasibility Study"), the initial phases of which included a major diamond drilling programme and publication of an updated mineral resource estimate, in addition to metallurgical optimisation and work in relation to the ongoing Environmental Social Health Impact Assessment ("ESHIA") and Corporate Social Responsibility program.

# **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 Phalombe Licence, the Thambani Licence and the Chimimbe Licence are held by Lancaster Exploration Limited ("Lancaster BVI"), a company incorporated under the laws of the British Virgin Islands ("BVI") on August 3, 2007. Lancaster BVI is 51% owned by Mkango and 49% owned by Talaxis. The Thambani Licence and the Chimimbe Licence are held in trust for Mkango.

Lancaster Exploration Limited ("Lancaster Malawi") was incorporated on May 19, 2011, under the laws of Malawi. Lancaster Malawi is a wholly owned subsidiary of Lancaster BVI and as such, includes a non-controlling interest representing 49% of Lancaster Malawi's assets and liabilities that are owned by Talaxis.

MKA Exploration Limited ("MKA Exploration") was incorporated under the laws of BVI on July 25, 2018. MKA Exploration is 100% owned by Mkango. MKA Exploration has no assets or liabilities.

Maginito Limited ("Maginito") was incorporated under the laws of the BVI on January 3, 2018. Maginito is 75.5% owned by Mkango and 24.5% owned by Talaxis. Maginito is focused on downstream opportunities relating to the rare earths supply chain, in particular neodymium alloy powders, magnet and other technologies geared to accelerating growth in the electric vehicle market. This includes the collaboration with Metalysis Limited ("Metalysis") discussed below.

## **Accounting Treatment**

The condensed interim consolidated financial statements include 100% of the assets and liabilities related to Lancaster BVI and include a non-controlling interest representing 49% of Lancaster BVI's assets and liabilities that were owned by Talaxis as at March 31, 2019 (other than the Thambani Licence and the Chimimbe licence, 100% of

which are held in trust for the Company). The condensed interim consolidated financial statements include 100% of the assets and liabilities related to Maginito and include a non-controlling interest representing 24.5% of Maginito's assets and liabilities attributable to Talaxis. Accounting policies are applied consistently throughout all consolidated entities.

## OVERALL PERFORMANCE AND OUTLOOK

The Company is focused on advancing the Songwe Hill project in addition to its other projects in Malawi and on downstream opportunities relating to the rare earth supply chain: Highlights for the three months ended March 31, 2019, include:

- The announcement, on February 4, 2019, of an updated mineral resource estimate for Songwe: 8 Mt grading 1.50% TREO in the Measured category, 12.2 Mt grading 1.35% TREO in the Indicated category and 27.5 Mt grading 1.33% TREO in the Inferred category, applying a base case cut-off grade of 1.0% TREO; and
- The receipt, on March 28, 2019, in accordance with the terms of the Talaxis Agreement, described more fully, below, of £7 million (\$9.2 million) from Talaxis for a further 29% interest in Lancaster BVI, thereby enabling the Company to progress the Songwe Hill project against the backdrop of increasing demand for rare earths used in electric vehicles, direct drive wind turbines and other green technologies.

# **Talaxis Agreement**

In March 2017, Mkango announced a transaction with Talaxis, whereby Talaxis invested £500,000 in Mkango by means of a placing. The placing closed in October 2017, which resulted in Talaxis' ownership of 12.5% in Mkango's outstanding common shares ("Shares"). In addition, Talaxis owns warrants, which could, if exercised, take their ownership to 20.8% of Mkango's Shares. Talaxis has agreed that it will not exercise warrants if this causes Talaxis to own more than 20% of the Company's outstanding Shares. In November of 2017, Mkango announced a further transaction with Talaxis (the "Talaxis Agreement"), whereby Talaxis agreed to make investments totalling £12 million (\$17 million) in Lancaster BVI to fund a Feasibility Study for Songwe Hill, with an option to fund project development, and a further investment totalling £2 million (\$2.8 million) in Maginito (described more fully below) to further advance its downstream strategy, including the collaboration with Metalysis.

On January 28, 2018, in accordance with the terms of the Talaxis Agreement, Talaxis invested an initial £5 million (\$7 million) for a 20% interest in Lancaster BVI and a further £1 million (\$1.4 million) for a 24.5% interest in Maginito.

On May 18, 2018, Mkango signed the Songwe Joint Venture Agreement, the Talaxis Investment Agreement and the Cooperation Deed (the "**Definitive Agreements**") in relation to the Talaxis Agreement.

On March 28, 2019, in accordance with the terms of the Definitive Agreements, Talaxis invested £7 million (\$10 million) for a further 29% interest in Lancaster BVI.

Following completion of the Feasibility Study, Talaxis will have an option to acquire an additional 26% interest in Lancaster BVI, by arranging funding for project development including funding the equity component thereof. If Talaxis exercises its option, Mkango will retain a 25% interest in Lancaster BVI, which will be free carried to production.

## **Metalysis Agreement and Maginito Joint Venture**

In March 2017, Mkango entered into a Memorandum of Understanding ("MOU") with Metalysis to jointly research, develop and commercialise novel rare earth metal alloys for use in permanent magnets. In September 2017, Mkango and Metalysis signed a joint venture principles and exclusivity agreement (the "Metalysis Agreement") for the development of advanced alloys using neodymium or praseodymium with other elements for use in permanent magnets. This includes joint venture principles for a joint venture (the "Metalysis Joint Venture") to commercialise intellectual property rights for the production of neodymium or praseodymium alloy powders. Under the Metalysis Agreement, Maginito will hold an 85% interest in the Metalysis Joint Venture and Metalysis will receive a 15% free carried interest.

The funds invested in Maginito by Talaxis will be used to advance complementary downstream opportunities in the rare earths supply chain, in particular new rare earth alloy, magnet and other technologies geared to accelerating growth in the electric vehicle market, including the Metalysis Joint Venture.

Talaxis will invest the remaining £1 million in Maginito to acquire an additional 24.5% interest in Maginito conditional on successful completion of the second phase of the research and development programme with Metalysis. Upon completion of the investments, Mkango will hold a 51% interest in Maginito.

## **Songwe Hill Feasibility Study**

Following receipt of the third tranche of investment from Talaxis, on March 28, 2019, Mkango is well positioned to advance its Songwe Hill project through the feasibility phase against the backdrop of increasing demand for rare earths used in electric vehicles, direct drive wind turbines and other green technologies. The initial phases of the Feasibility Study for Songwe Hill were undertaken in 2018, including a major diamond-drilling programme completed in September 2018. On March 21, 2019, Mkango filed an updated NI 43-101 Technical Report for the Songwe Hill Rare Earths Project resource update.

#### DISCUSSION OF OPERATIONS

Mkango holds a 51% interest in Lancaster BVI, which holds a 100% interest in three exclusive prospecting licences in southern Malawi, the Phalombe Licence, the Thambani Licence and the Chimimbe Licence - 100% of the Thambani Licence and the Chimimbe Licence are held in trust for Mkango. Pursuant to the Definitive Agreements, Talaxis has agreed to fund the feasibility study for the development of Songwe Hill, the main exploration target within the Phalombe Licence, and has an option to fund the development of the project.

Mkango also holds a 75.5% interest in Maginito, as discussed above.

		For the three months end March 31,			
License	Project	2019	2018		
Phalombe	Songwe Hill project				
	Mineral extraction development	\$75,547	\$43,935		
	Government fees	11,676	11,765		
	ESHIA	61,465	23,912		
	Drilling programme (1)	150,066	170,922		
	Consulting fees	37,287	53,303		
	Malawi office and camp expenses	118,944	48,526		
Total mineral exploration expenditures		454,985	352,363		
Total research and development	Maginito (2)	\$3,517	\$281,372		

<sup>(1)</sup> The Company undertook a major diamond-drilling programme at Songwe Hill, which was completed in 2018.

Exploration and evaluation expenditures are recognized in the condensed interim consolidated statements of comprehensive loss as mineral exploration expenditures pending determination of technical feasibility and commercial viability.

## **SONGWE HILL**

## **Background**

The Phalombe Licence covers an area of 849.1 square kilometers ("sq km") in southeast Malawi, within which Songwe Hill is the main development target and features carbonatite hosted rare earth mineralization. Songwe Hill was subject to historic exploration programs during the late 1980s. Lancaster BVI was awarded the licence by the Malawi Government on January 21, 2010 and subsequently renewed it, with the most recent renewal on January 21, 2019 being for a further 2 years to January 21, 2021.

<sup>(2)</sup> Expenditures relating to the "Joint Ventures Binding Principles and Exclusivity Agreement" with Metalysis to advance the joint research and development programme.

The geological units of significance with respect to rare earth mineralization in the Phalombe Licence are intrusions and lavas of the Jurassic/Cretaceous Chilwa Alkaline Province, in which carbonatites are widely present. In addition to the large carbonatitic intrusion at Songwe Hill, numerous smaller carbonatites occur throughout the Province and include dykes, sheets, and volcanic systems such as Nkalonje, which also occurs within the Phalombe Licence area.

# **Exploration**

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

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

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

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

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

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

## **Feasibility Study**

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

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

In five press releases between August 21, 2018 and December 3, 2018 (<a href="www.sedar.com">www.sedar.com</a>), 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 (<a href="www.mkango.ca">www.mkango.ca</a>).

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

Approximately 30% of the Phase 3 drill holes were step-out holes, aimed at expanding the known Mineral Resource by identifying or better delineating mineralization that is outside the volume of the previously defined Mineral Resource. Most of these holes contained mineralized intersections although not all reached their targeted depths.

These holes have resulted in expansion of the estimated Mineral Resources by identifying new areas of mineralized carbonatite beyond the limits of the previous exploration programs.

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

Forty-nine of the drill holes intersected significant zones of rare earths mineralisation grading above 1% total TREO. Highlights from the results include the following:

PX056	<b>114.8 m grading 1.6% TREO</b> (60.7 – 175.5 m) including <b>30.0 m grading 2.0% TREO</b> (135.0 – 165.0 m). Inclined hole (60 degrees west).
PX059	<b>63.0</b> m <sup>1</sup> grading 1.7% TREO (6.0 – 69.0 m), including 23.0 m <sup>2</sup> grading 2.3% TREO (7.0 – 30.0 m), and 15.4 m grading 1.6% TREO (128.0 – 143.4 m). Inclined hole (60 degrees west).
PX073	<b>67.1 m grading 1.6% TREO</b> (8.8 – 75.9 m) including <b>25.2 m grading 2.0% TREO</b> (45.0 – 70.2 m). Inclined hole (60 degrees west).
PX076	<b>40.2 m grading 1.8% TREO</b> (60.4 – 100.7 m) including <b>20.0 m grading 2.4% TREO</b> (60.4 – 80.4 m). Inclined hole (60 degrees west).
PX077	<b>51.9 m³ grading 1.7% TREO</b> (26.2 – 78.0 m). Inclined hole (60 degrees west).
PX081	<b>53.3m<sup>4</sup> grading 2.2% TREO</b> (3.7 – 57.0 m) including <b>26.8 m grading 3.1% TREO</b> (3.7 – 30.5 m). Inclined hole (60 degrees east).
PX086	<b>73.3 m grading 1.9% TREO</b> (21.5 – 94.8 m). Inclined hole (60 degrees west).
PX087	<b>74.4 m<sup>5</sup> grading 2.1% TREO</b> (16.2 – 90.6 m). Inclined hole (60 degrees west).
PX090	<b>25.7 m<sup>6</sup> grading 3.9% TREO</b> (39.5 – 65.2 m). Inclined hole (60 degrees west).
PX092	<b>74.9 m grading 1.9% TREO</b> (10.1 – 84.9 m) and <b>51.9 m grading 1.5% TREO</b> (97.6 – 149.5 m EoH). Inclined hole (60 degrees south).
PX093	<b>83.9 m grading 1.9% TREO</b> (1.5 – 85.4 m) including <b>18.0 m grading 3.0% TREO</b> (21.0 – 39.0 m). Inclined hole (60 degrees west).
PX098	<b>65.0</b> m <sup>7</sup> grading 1.7% TREO (1.1 – 66.0 m) and 13.1 m grading 1.2% TREO (115.0 – 128.1 m). Inclined hole (60 degrees south).
PX103	<b>165.2 m grading 1.6% TREO</b> (2.6 – 167.8 m). Inclined hole (60 degrees east).
PX107	<b>91.3 m<sup>8</sup> grading 1.3% TREO</b> (23.0 – 114.2 m) including <b>32.2 m<sup>9</sup> grading 1.9% TREO</b> (82.0 – 114.2 m). Inclined hole (60 degrees east).
PX108	<b>45.8 m grading 1.4% TREO</b> (8.2 – 54.0 m) and <b>57.3 m grading 1.7% TREO</b> (76.9 – 134.2 m). Inclined hole (60 degrees east).
PX109	<b>53.0 m grading 2.1% TREO</b> (22.0 – 75.0 m) including <b>22.0 m grading 3.0% TREO</b> (24.0 – 46.0 m). Inclined hole (60 degrees east).
PX113	<b>51.1</b> m <sup>10</sup> grading <b>2.2%</b> TREO (4.7 – 55.8 m). Inclined hole (50 degrees north).
PX112	<b>100.9 m grading 3.3% TREO</b> (5.9 – 106.8 m EoH) including <b>20.5 m grading 4.2% TREO</b> (5.9 – 26.4 m) and 22.2 m grading 4.1% TREO (36.0 – 58.2 m). Inclined hole (60 degrees south).
PX125	104.5 m grading 1.5% TREO (3.5 – 108.0 m) including 51.5 m grading 1.9% TREO (3.5 – 55.0 m). Inclined hole (60 degrees south).
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Includes two cavities totaling 5.9m not sampled. <sup>2</sup> Includes a 2.5m cavity not sampled. <sup>3</sup> Includes a 2.7m cavity not sampled. <sup>4</sup> Includes a 3.8m cavity not sampled. <sup>5</sup> Includes a 2.7m cavity not sampled. <sup>6</sup> Includes a 6.3m cavity not sampled. Due to the size of the cavity, the significance of this intersection is uncertain. <sup>5</sup> Includes a 2.3m cavity not sampled. <sup>6</sup> Includes two cavities totaling 2.3m not sampled. <sup>7</sup> Includes a 0.9m cavity not sampled. <sup>8</sup> Includes two cavities totaling 10.0m not sampled. <sup>9</sup> Includes a 0.9m cavity not sampled. <sup>10</sup> Includes two cavities totaling 10.0m not sampled. Due to the size of the cavities, the significance of this intersection is uncertain. TREO: total rare earth oxides based on total La<sub>2</sub>O<sub>3</sub>, Ce<sub>2</sub>O<sub>3</sub>, Nd<sub>2</sub>O<sub>3</sub>, Nd<sub>2</sub>O<sub>3</sub>, Eu<sub>2</sub>O<sub>3</sub>, Gd<sub>2</sub>O<sub>3</sub>, Tb<sub>2</sub>O<sub>3</sub>, Dy<sub>2</sub>O<sub>3</sub>, Ho<sub>2</sub>O<sub>3</sub>, Er<sub>2</sub>O<sub>3</sub>, Tm<sub>2</sub>O<sub>3</sub>, Yb<sub>2</sub>O<sub>3</sub>, Lu<sub>2</sub>O<sub>3</sub>, Y<sub>2</sub>O<sub>3</sub>. These intersections are reported as down hole widths and do not necessarily represent true thicknesses and attitude of the mineralized zones, the estimation of which will require further refining of the geological model.

Drill holes PX072, PX073, PX078, PX079, PX080, PX083, PX084, PX085, PX088, PX089, PX090, PX091, PX093, PX094, PX095, PX109, PX114, PX118, PX119, PX120, PX121, PX122, PX123 and PX124 were step-out holes focused on testing north and north-west extensions of the mineralisation. Of these 24 drill holes, 19 intersected broad zones of mineralisation. The mineralised intersection in PX113 indicates the extension of the higher grade carbonatite zone located in the north-east as indicated on the accompanying geological map on the Company's website, to the north under cover. Drill holes PX038, PX039, PX040 and PX041 were step-out drill holes, focused on testing extensions of mineralisation to the south. The intersections in PX039 and PX040 further indicate that mineralisation may extend to the south. The remaining drill holes were focused on infill zones in the previous exploration/resource area defined by drill holes PX001 to PX035. Intersections of broad zones of mineralisation, as opposed to narrow veins or dykes, continue to support the concept of a bulk tonnage, open pit mining operation with low mining costs.

The full set of the above results and breakdown of TREO values are as follows:

Drill Hole   From   To   Interval   LayO   Cey0   Pf.0   My.0   Smy.0   Eu.0   Gd.0   Thy.0   Dy.0   Hy.0   Er.0   Tmy.0   Twy.0   Drill Hole   Er.0   Tmy.0   Twy.0   Drill Hole   Er.0   Tmy.0   Drill Hole   Er.0   Tmy.0   Drill Hole   Er.0   Tmy.0   Drill Hole   Tmy.0   Drill Ho	
PX099 122.9 142.0 19.2 1 4.394 7.467 756 2.432 323 82 188 22 96 15 35 5 29    PX040 28.0 43.0 15.0 5.020 7.081 645 2.006 303 90 239 33 164 28 67 9 47    PX045a 9.8 30.9 21.1 2.006 4.148 495 1.833 309 89 217 27 127 20 47 6 33    PX050 8.0 161.0 153.0 2.790 5.578 643 2.353 344 87 214 26 128 21 51 7 40    Including 96.0 126.0 30.0 4.370 8.097 890 3.132 430 108 267 32 149 24 57 8 53    Including 137.9 161.0 23.2 3.3887 7.162 808 2.899 415 105 254 31 145 24 55 7 42    PX053 25.0 61.0 36.0 3.461 6.442 663 2.300 365 98 236 27 117 18 39 4 22    PX054 23.4 182.0 156.7 2.733 5.233 582 2.097 322 88 72 169 20 95 15 38 5 24    PX055 21.4 47.5 26.2 3.321 6.592 676 2.282 332 85 193 21 492 19 2 15 35 5 28    PX056 60.7 175.5 114.8 3 3.951 7.339 799 2.784 404 105 243 28 124 20 179 14 5 30    PX056 60.7 175.5 114.8 3 3.951 7.339 799 2.784 404 105 243 28 124 20 47 6 32    Including 135.0 165.0 30.0 5.463 9.096 920 3.003 392 101 232 26 116 18 43 5 29    PX057 9.0 38.7 30.7 3.896 6.496 714 2.334 327 82 188 21 993 15 36 4 23    PX058 29.5 71.0 41.6 2.885 5.784 636 2.208 311 83 190 21 97 15 36 4 23    PX058 29.5 71.0 41.6 2.885 5.784 636 2.208 311 83 190 21 97 15 36 4 23    PX058 29.5 71.0 41.6 2.885 5.784 636 2.208 311 83 190 21 97 15 36 4 23    PX058 29.5 71.0 41.6 2.885 5.784 636 2.208 311 83 190 21 97 15 36 4 23    PX058 29.5 71.0 41.6 2.885 5.784 636 2.208 311 83 190 21 97 15 36 4 23    PX058 29.5 71.0 41.6 2.885 5.784 636 2.208 311 83 190 21 97 15 36 4 23    PX058 29.5 71.0 41.6 2.885 5.784 636 2.208 311 83 190 21 97 15 36 4 23    PX058 29.5 71.0 41.6 2.885 5.784 636 2.208 311 83 190 21 97 15 36 4 23    PX058 29.5 71.0 41.6 2.885 5.784 636 2.208 311 83 190 21 97 15 36 4 23    PX058 29.5 71.0 41.6 2.885 5.784 636 2.208 311 83 190 21 97 15 36 4 23    PX058 29.5 71.0 41.6 2.885 5.784 636 2.208 311 83 190 21 97 15 36 4 23    PX058 29.5 71.0 41.6 2.885 5.784 636 2.208 311 83 190 21 97 15 36 4 23    PX059 29.5 71.0 41.6 2.885 5.784 636 2.208 311 83 190 21 97 15 36 4 23    PX058 29.5 71.0 41.6 2.885 5.784 636 2.208 311 83 190 21 97 15	1
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PX045a 9.8 30.9 21.1 2.006 4.148 495 1.833 309 89 217 27 127 20 47 6 33  PX090 8.0 161.0 153.0 2.790 5.578 643 2.353 344 87 214 26 128 21 51 7 40  Including 96.0 126.0 30.0 4.370 8.997 890 3.132 430 108 287 32 149 24 57 8 53  Including 137.9 161.0 23.2 3.687 7.162 808 2.899 415 105 254 31 145 24 55 7 42  PX093 25.0 61.0 36.0 3.461 6.442 683 2.309 365 98 236 27 117 18 39 4 22  T4.4 94.6 20.2 (i) 2.920 5.507 585 1.972 288 72 169 20 96 15 38 5 24  PX094 23.4 182.0 158.7 2.733 5.233 582 2.097 32 28 6 205 24 113 18 44 6 34  Including 45.8 102.3 56.6 3.315 6.337 703 2.489 355 96 226 28 133 22 51 6 36 36  PX095 21.4 47.5 26.2 3.921 6.592 676 2.282 332 86 193 21 92 15 35 5 28  PX095 60.7 175.5 114.8 3.951 7.339 799 2.784 404 105 243 28 124 20 47 6 32  PX095 29.0 39.7 30.7 3.696 6.496 714 2.334 327 82 188 21 93 15 36 4 23  PX095 29.5 71.0 41.6 2.885 5.784 636 2.208 311 83 190 21 97 15 36 4 23	
PX045a 9.8 30.9 21.1 2.006 4.148 495 1.833 309 89 217 27 127 20 47 6 33  PX090 8.0 161.0 153.0 2.790 5.578 643 2.353 344 87 214 26 128 21 51 7 40  Including 96.0 126.0 30.0 4.370 8.097 890 3.132 430 108 287 32 149 24 57 8 53  Including 137.9 161.0 23.2 3.687 7.162 808 2.899 415 105 254 31 145 24 55 7 42  PX053 25.0 61.0 36.0 3.461 6.442 683 2.309 365 98 236 27 117 18 39 4 22  T74.4 94.6 20.2 (i) 2.920 5.507 585 1.972 288 72 169 20 95 15 38 5 24  PX054 23.4 182.0 158.7 2.733 5.233 582 2.097 322 86 205 24 113 18 44 6 34  Including 45.8 102.3 56.6 3.315 6.337 703 2.489 355 96 226 28 133 22 51 6 36 36  PX055 21.4 47.5 26.2 3.921 6.592 676 2.282 332 85 193 21 92 15 35 5 28  PX056 60.7 175.5 114.8 3.951 7.339 799 2.784 404 105 243 28 124 20 47 6 32  PX057 9.0 39.7 30.7 3.696 6.496 714 2.334 327 82 188 21 93 15 36 4 23  PX058 29.5 71.0 41.6 2.885 5.784 636 2.208 311 83 190 21 97 15 36 4 23  PX058 29.5 71.0 41.6 2.885 5.784 636 2.208 311 83 190 21 97 15 36 4 23	
PX045a 9.8 30.9 21.1 2.006 4.148 495 1.833 309 89 217 27 127 20 47 6 33  PX090 8.0 161.0 153.0 2.790 5.578 643 2.353 344 87 214 26 128 21 51 7 40  Including 96.0 126.0 30.0 4.370 8.097 890 3.132 430 108 287 32 149 24 57 8 53  Including 137.9 161.0 23.2 3.687 7.162 808 2.899 415 105 254 31 145 24 55 7 42  PX053 25.0 61.0 36.0 3.461 6.442 683 2.309 365 98 236 27 117 18 39 4 22  T74.4 94.6 20.2 (i) 2.920 5.507 585 1.972 288 72 169 20 95 15 38 5 24  PX054 23.4 182.0 158.7 2.733 5.233 582 2.097 322 86 205 24 113 18 44 6 34  Including 45.8 102.3 56.6 3.315 6.337 703 2.489 355 96 226 28 133 22 51 6 36 36  PX055 21.4 47.5 26.2 3.921 6.592 676 2.282 332 85 193 21 92 15 35 5 28  PX056 60.7 175.5 114.8 3.951 7.339 799 2.784 404 105 243 28 124 20 47 6 32  PX057 9.0 39.7 30.7 3.696 6.496 714 2.334 327 82 188 21 93 15 36 4 23  PX058 29.5 71.0 41.6 2.885 5.784 636 2.208 311 83 190 21 97 15 36 4 23  PX058 29.5 71.0 41.6 2.885 5.784 636 2.208 311 83 190 21 97 15 36 4 23	+
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Including 96.0 126.0 30.0 4.370 8.097 890 3.132 430 108 267 32 149 24 57 8 53 including 137.9 161.0 23.2 3.687 7.162 808 2.899 415 105 254 31 145 24 55 7 42 including 137.9 161.0 36.0 3.461 6.442 683 2.309 365 98 236 27 117 18 39 4 22 including 137.9 161.0 36.0 3.461 6.442 683 2.309 365 98 236 27 117 18 39 4 22 including 137.9 161.0 36.0 3.461 6.442 683 2.309 365 98 236 27 117 18 39 4 22 including 137.9 161.0 36.0 36.0 3.461 6.442 683 2.309 365 98 236 27 117 18 39 4 22 including 14.0 16.0 16.0 16.0 16.0 16.0 16.0 16.0 16	
including 137.9 161.0 23.2 3.687 7,162 808 2,899 415 105 254 31 145 24 55 7 42  PX053 25.0 61.0 36.0 3,461 6,442 683 2,309 365 98 236 27 117 18 39 4 22  74.4 94.6 20.2 (i) 2,920 5,507 585 1,972 288 72 169 20 95 15 38 5 24  (i) Including 45.8 102.3 56.6 3,315 6,337 703 2,489 355 95 226 28 133 22 51 6 36  PX055 21.4 47.5 26.2 3,921 6,592 676 2,282 332 85 193 21 92 15 35 5 28  PX056 60.7 175.5 114.8 3,951 7,339 799 2,784 404 105 243 28 124 20 47 6 32  PX057 9.0 39.7 30.7 3,696 6,496 714 2,334 327 82 188 21 93 15 36 4 23  PX058 29.5 71.0 41.6 2,885 5,784 636 2,208 311 83 190 21 97 15 36 4 23  PX058 29.5 71.0 41.6 2,885 5,784 636 2,208 311 83 190 21 97 15 36 4 23	+
including 137.9 161.0 23.2 3.687 7,162 808 2,899 415 105 254 31 145 24 55 7 42  PX053 25.0 61.0 36.0 3,461 6,442 683 2,309 365 98 236 27 117 18 39 4 22  74.4 94.6 20.2 (i) 2,920 5,507 585 1,972 288 72 169 20 95 15 38 5 24  (i) Including 45.8 102.3 56.6 3,315 6,337 703 2,489 355 95 226 28 133 22 51 6 36  PX055 21.4 47.5 26.2 3,921 6,592 676 2,282 332 85 193 21 92 15 35 5 28  PX056 60.7 175.5 114.8 3,951 7,339 799 2,784 404 105 243 28 124 20 47 6 32  PX057 9.0 39.7 30.7 3,696 6,496 714 2,334 327 82 188 21 93 15 36 4 23  PX058 29.5 71.0 41.6 2,885 5,784 636 2,208 311 83 190 21 97 15 36 4 23  PX058 29.5 71.0 41.6 2,885 5,784 636 2,208 311 83 190 21 97 15 36 4 23	
PX053	ing
74.4 94.6 20.2 (i) 2,920 5,507 585 1,972 288 72 169 20 95 15 38 5 24 (i) Includes 2,1m cavity not sampled.  PX054 23.4 182.0 158.7 2,733 5,233 582 2,097 322 86 205 24 113 18 44 6 34 (including) 45.8 102.3 56.6 3,315 6,337 703 2,489 355 95 226 28 133 22 51 6 36 (including) 45.8 102.3 56.6 3,321 6,592 676 2,282 332 85 193 21 92 15 35 5 28 (including) 45.8 103.2 35.5 2,627 5,470 626 2,288 328 89 214 26 119 19 44 5 30 (including) 45.8 103.2 35.5 14.8 3,951 7,339 799 2,784 404 105 243 28 124 20 47 6 32 (including) 135.0 165.0 30.0 5,463 9,096 920 3,003 392 101 232 26 116 18 43 5 29 (including) 135.0 165.0 30.7 3,696 6,496 714 2,334 327 82 188 21 93 15 36 4 23 (including) 14.6 2,885 5,784 636 2,208 311 83 190 21 97 15 36 4 23 (including) 24.6 14.6 2,885 5,784 636 2,208 311 83 190 21 97 15 36 4 23 (including) 24.6 14.6 2,885 5,784 636 2,208 311 83 190 21 97 15 36 4 23 (including) 24.6 14.6 2,885 5,784 636 2,208 311 83 190 21 97 15 36 4 23 (including) 24.6 14.6 2,885 5,784 636 2,208 311 83 190 21 97 15 36 4 23 (including) 24.6 14.6 2,885 5,784 636 2,208 311 83 190 21 97 15 36 4 23 (including) 24.6 14.6 2,885 5,784 636 2,208 311 83 190 21 97 15 36 4 23 (including) 24.6 14.6 2,885 5,784 636 2,208 311 83 190 21 97 15 36 4 23 (including) 24.6 14.6 2,885 5,784 636 2,208 311 83 190 21 97 15 36 4 23 (including) 24.6 14.6 2,885 5,784 636 2,208 311 83 190 21 97 15 36 4 23 (including) 24.6 14.6 2,885 5,784 636 2,208 311 83 190 21 97 15 36 4 23 (including) 24.6 14.6 2,885 5,784 636 2,208 311 83 190 21 97 15 36 4 23 (including) 24.6 14.6 2,885 5,784 636 2,208 311 83 190 21 97 15 36 4 23 (including) 24.6 14.6 2,885 5,784 636 2,208 311 83 190 21 97 15 36 4 23 (including) 24.6 14.6 2,885 5,784 636 2,208 311 83 190 21 97 15 36 4 23 (including) 24.6 14.6 2,885 5,784 636 2,208 311 83 190 21 97 15 36 4 23 (including) 24.6 14.6 2,885 5,784 636 2,208 311 83 190 21 97 15 36 4 23 (including) 24.6 14.6 2,885 5,784 636 2,208 311 83 190 21 97 15 36 4 23 (including) 24.6 14.6 2.8 2.8 2.8 2.8 2.8 2.8 2.8 2.8 2.8 2.8	ing 1
74.4 94.6 20.2 (i) 2,920 5,507 585 1,972 288 72 169 20 95 15 38 5 24 (i) Includes 2.1m cavity not sampled.  PX054 23.4 182.0 158.7 2,733 5,233 582 2,097 322 86 205 24 113 18 44 6 34 (including) 45.8 102.3 56.6 3,315 6,337 703 2,489 355 95 226 28 133 22 51 6 36 (including) 45.8 102.3 56.6 3,321 6,592 676 2,282 332 85 193 21 92 15 35 5 28 (including) 45.8 103.2 35.5 2,627 5,470 626 2,288 328 89 214 26 119 19 44 5 30 (including) 45.8 103.2 35.5 14.8 3,951 7,339 799 2,784 404 105 243 28 124 20 47 6 32 (including) 135.0 165.0 30.0 5,463 9,096 920 3,003 392 101 232 26 116 18 43 5 29 (including) 135.0 165.0 30.7 3,696 6,496 714 2,334 327 82 188 21 93 15 36 4 23 (including) 14.6 2,885 5,784 636 2,208 311 83 190 21 97 15 36 4 23 (including) 24.6 2,885 5,784 636 2,208 311 83 190 21 97 15 36 4 23 (including) 24.6 2,885 5,784 636 2,208 311 83 190 21 97 15 36 4 23 (including) 24.6 2,885 5,784 636 2,208 311 83 190 21 97 15 36 4 23 (including) 24.6 2,885 5,784 636 2,208 311 83 190 21 97 15 36 4 23 (including) 24.6 2,885 5,784 636 2,208 311 83 190 21 97 15 36 4 23 (including) 24.6 2,885 5,784 636 2,208 311 83 190 21 97 15 36 4 23 (including) 24.6 2,885 5,784 636 2,208 311 83 190 21 97 15 36 4 23 (including) 24.6 2,885 5,784 636 2,208 311 83 190 21 97 15 36 4 23 (including) 24.6 2,885 5,784 636 2,208 311 83 190 21 97 15 36 4 23 (including) 24.6 2,885 5,784 636 2,208 311 83 190 21 97 15 36 4 23 (including) 24.6 2,885 5,784 636 2,208 311 83 190 21 97 15 36 4 23 (including) 24.6 2,885 5,784 636 2,208 311 83 190 21 97 15 36 4 23 (including) 24.6 2,885 5,784 636 2,208 311 83 190 21 97 15 36 4 23 (including) 24.6 2,885 5,784 636 2,208 311 83 190 21 97 15 36 4 23 (including) 24.6 2,885 5,784 636 2,208 311 83 190 21 97 15 36 4 23 (including) 24.6 2,885 5,784 636 2,208 311 83 190 21 97 15 36 4 23 (including) 24.6 2,885 5,784 636 2,208 311 83 190 21 97 15 36 4 23 (including) 24.6 2,885 5,784 636 2,208 311 83 190 21 97 15 36 4 23 (including) 24.6 2,885 5,784 636 2,208 311 83 190 21 97 15 36 4 23 (including) 24.6 2,885 5,784 636 2,208 311	_
(i) Includes 2.1m cavity not sampled. (ii) Includes 2.1m cavity not sampled. (i) Including 45.8 102.3 56.6 3.3,315 6.337 703 2.489 355 95 226 28 133 22 51 6 36  PX055 21.4 47.5 26.2 3.921 6.592 676 2.282 332 85 193 21 92 15 35 5 28  67.7 103.2 35.5 2.627 5.470 626 2.258 328 89 214 26 119 19 44 5 30  PX056 60.7 175.5 114.8 3.951 7.339 799 2.784 404 105 243 28 124 20 47 6 32  Including 135.0 165.0 30.0 5.463 9.096 920 3.003 392 101 232 26 116 18 43 5 29  PX057 9.0 39.7 30.7 3.696 6.496 714 2.334 327 82 188 21 93 15 36 4 23  PX058 29.5 71.0 41.6 2.885 5.784 636 2.208 311 83 190 21 97 15 36 4 23	
(i) Includes 2.1m cavity not sampled.  PX054	
PX054         23.4         182.0         158.7         2,733         5,233         582         2,097         322         86         205         24         113         18         44         6         34           Including         45.8         102.3         56.6         3,315         6,337         703         2,489         355         95         226         28         133         22         51         6         36           PX055         21.4         47.5         26.2         3,921         6,592         676         2,282         332         85         193         21         92         15         35         5         28           FX055         21.4         47.5         26.2         3,921         6,592         676         2,282         332         85         193         21         92         15         35         5         28           FX056         60.7         175.5         114.8         3,951         7,339         799         2,784         404         105         243         28         124         20         47         6         32           Including         135.0         165.0         30.0         5,463         <	
Including   45.8   102.3   56.6   3,315   6,337   703   2,489   355   95   226   28   133   22   51   6   36	
PX055 21.4 47.5 26.2 3,921 6,592 676 2,282 332 85 193 21 92 15 35 5 28   67.7 103.2 35.5 2,627 5,470 626 2,258 328 89 214 26 119 19 44 5 30    PX056 60.7 175.5 114.8 3,951 7,339 799 2,784 404 105 243 28 124 20 47 6 32    Including 135.0 165.0 30.0 5,463 9,096 920 3,003 392 101 232 26 116 18 43 5 29    PX057 9.0 39.7 30.7 3,696 6,496 714 2,334 327 82 188 21 93 15 36 4 23    PX058 29.5 71.0 41.6 2,885 5,784 636 2,208 311 83 190 21 97 15 36 4 23	
67.7         103.2         35.5         2,627         5,470         626         2,258         328         89         214         26         119         19         44         5         30           PX056         60.7         175.5         114.8         3,951         7,339         799         2,784         404         105         243         28         124         20         47         6         32           Including         135.0         165.0         30.0         5,463         9,096         920         3,003         392         101         232         26         116         18         43         5         29           PX057         9.0         39.7         30.7         3,696         6,496         714         2,334         327         82         188         21         93         15         36         4         23           PX058         29.5         71.0         41.6         2,885         5,784         636         2,208         311         83         190         21         97         15         36         4         23	ing
67.7         103.2         35.5         2,627         5,470         626         2,258         328         89         214         26         119         19         44         5         30           PX056         60.7         175.5         114.8         3,951         7,339         799         2,784         404         105         243         28         124         20         47         6         32           Including         135.0         165.0         30.0         5,463         9,096         920         3,003         392         101         232         26         116         18         43         5         29           PX057         9.0         39.7         30.7         3,696         6,496         714         2,334         327         82         188         21         93         15         36         4         23           PX058         29.5         71.0         41.6         2,885         5,784         636         2,208         311         83         190         21         97         15         36         4         23	_
PX056 60.7 175.5 114.8 3,951 7,339 799 2,784 404 105 243 28 124 20 47 6 32 including 135.0 165.0 30.0 5,463 9,096 920 3,003 392 101 232 26 116 18 43 5 29 PX057 9.0 39.7 30.7 3,696 6,496 714 2,334 327 82 188 21 93 15 36 4 23 PX058 29.5 71.0 41.6 2,885 5,784 636 2,208 311 83 190 21 97 15 36 4 23	
PX056 60.7 175.5 114.8 3,951 7,339 799 2,784 404 105 243 28 124 20 47 6 32 including 135.0 165.0 30.0 5,463 9,096 920 3,003 392 101 232 26 116 18 43 5 29 PX057 9.0 39.7 30.7 3,696 6,496 714 2,334 327 82 188 21 93 15 36 4 23 PX058 29.5 71.0 41.6 2,885 5,784 636 2,208 311 83 190 21 97 15 36 4 23	
Including   135.0   165.0   30.0   5,463   9,096   920   3,003   392   101   232   26   116   18   43   5   29	+
Including   135.0   165.0   30.0   5,463   9,096   920   3,003   392   101   232   26   116   18   43   5   29	
PX057 9.0 39.7 30.7 3.696 6.496 714 2.334 327 82 188 21 93 15 36 4 23 PX058 29.5 71.0 41.6 2.885 5.784 636 2.208 311 83 190 21 97 15 36 4 23	+
PX058 29.5 71.0 41.6 2,885 5,784 636 2,208 311 83 190 21 97 15 36 4 23	ing 1
PX058 29.5 71.0 41.6 2,885 5,784 636 2,208 311 83 190 21 97 15 36 4 23	_
PX059         6.0         69.0         63.0         (i)         3,980         7,314         785         2,617         392         112         279         36         173         29         76         10         57	+
including 7.0 30.0 23.0 (ii) 5.890 9.922 1.012 3.237 469 138 358 47 227 38 100 13 76	ina
including         7.0         30.0         23.0         (ii)         5,890         9,922         1,012         3,237         469         138         358         47         227         38         100         13         76	ing
128.0         143.4         15.4         4,122         7,352         778         2,645         370         94         212         25         121         20         49         6         36	1
(i) Includes 5.9m cavity not sampled.	les 5.9m c
(V) inducted a 5th cavity not sampled.	

PX063	4.4	21.4	17.0		2,951	6,117	698	2,540	359	100	239	32	168	29	71	8	51	7	838	1.4%
	96.4	109.8	13.4	(i)	3,908	8,548	1,000	3,703	558	135	292	29	126	20	46	5	33	5	616	1.9%
(i) Includes 5.	5m cavity no	ot sampled.																		
PX066	61.8	134.2	72.4		3,122	5,703	620	2,110	301	81	196	23	112	18	44	5	33	4	510	1.3%
including	99.0	122.6	23.6		4,147	7,328	776	2,530	337	90	219	26	127	20	50	6	40	5	576	1.6%
PX067	6.0	128.8	122.8		3,237	5,661	598	2,105	312	85	197	22	99	15	37	5	29	4	452	1.3%
including PX070	44.0 5.0	70.8 51.6	26.8 46.6		4,119 5,228	7,791 8,218	858 785	3,039 2,502	429 318	112 83	250 192	27 21	120 93	19 14	46 30	6	39 19	6	564 364	1.7%
	78.4	201.3	123.0		5,186	8,463	824	2,587	305	77	173	19	82	12	27	3	18	2	330	1.8%
including	78.4	122.0	43.7		8,194	12,954	1,212	3,596	350	81	173	17	75	11	25	3	18	2	303	2.7%
PX072	12.6	28.4	15.8		3,364	6,889	773	2,693	405	104	247	28	121	18	41	5	25	3	532	1.5%
	93.9	147.8	53.9		2,358	4,684	525	1,886	301	77	179	20	94	16	39	5	27	4	486	1.1%
PX073	8.8	75.9	67.1		4,024	7,255	790	2,740	401	103	232	25	114	19	43	5	28	4	507	1.6%
including	45.0	70.2	25.2		5,278	8,924	948	3,159	439	110	241	24	106	17	36	4	21	3	438	2.0%
PX076	60.4	100.7	40.2		5,618	8,453	789	2,458	311	80	183	22	98	15	33	4	24	3	404	1.8%
including	60.4	80.4	20.0		7,432	11,021	1,020	3,106	372	93	209	24	108	16	36	4	25	3	434	2.4%
PX077	27.8	78.0	50.2		5,081	7,864	733	2,266	284	75	178	22	99	16	34	4	22	3	415	1.7%
PX078	6.0	28.3	22.3		3,214	5,866	621	2,144	332	86	207	24	117	19	44	5	29	4	517	1.3%
	76.2	144.4	68.3		5,114	8,386	832	2,745	366	90	205	22	103	17	39	5	27	3	482	1.8%
including	125.1	144.4	19.4		9,581	14,066	1,306	4,063	500	119	250	24	98	14	32	4	20	3	403	3.0%
PX080	5.7	109.8	104.1	(i)	3,118	5,426	578	2,018	316	82	189	21	94	15	34	4	25	3	406	1.2%
including	33.6	87.6	54.1	(i)	3,854	6,669	709	2,453	377	96	217	24	102	16	37	5	28	4	438	1.5%
(i) Includes 2. PX081	1m of core lo	oss not sam 57.0	pled. 53.3	(i)	6,530	10,274	979	3,058	377	97	243	29	137	22	52	6	36	4	638	2.2%
including	3.7	30.5	26.8		9,531	14,108	1,290	3,863	440	108	269	32	144	24	56	7	39	5	684	3.1%
(i) Includes 3.	8m cavity no	ot sampled.																		
PX083	31.0	73.2	42.2		2,338	4,551	521	1,961	330	92	228	28	134	21	49	6	31	4	619	1.1%
PX086	21.5	94.8	73.3		4,503	8,452	903	3,098	431	115	272	32	158	26	61	7	43	5	731	1.9%
PX087	16.2	90.6	74.4	(i)	5,731	9,603	981	3,234	410	107	247	30	143	23	53	6	36	4	630	2.1%
(i) Includes 2.	7m cavity no	ot sampled.																		
PX088	47.0	100.7	53.7		1,894	3,988	486	1,919	355	94	225	27	132	22	53	6	35	4	639	1.0%
PX089	54.3	88.5	34.2		2,215	4,270	465	1,694	285	80	195	23	110	18	42	5	29	4	491	1.0%
PX090	39.5	65.2	25.7	(i)	12,424	18,649	1,670	4,792	512	138	324	39	167	25	56	7	41	6	631	3.9%
(i) Includes 6.3															,,,				-01	
(i) includes 6.3	orn cavity no	л sampled. I	ue to size of	cavity	r, me significa	nce or this int	ersection is	uncertain.												ш

PX092	10.1	84.9	74.9	<u> </u>	5,133	8,693	859	2,749	374	97	229	26	116	17	39	5	28	4	482	1.9%
	97.6	149.5	51.9		3,376	6,493	708	2,472	375	99	232	26	120	19	49	7	46	6	576	1.5%
DV000	4.5	05.4	00.0		5.070	0.700	000	2.040	204	404	040	20	400	04		7	40	_	500	4.00/
PX093	1.5	85.4	83.9		5,070	8,720	892	2,948	394	104	243	29	132	21	51	7	40	5	592	1.9%
including	21.0	39.0	18.0		8,914	14,033	1,348	4,171	472	115	255	28	118	18	41	5	33	5	474	3.0%
PX094	25.0	100.7	75.7	(i)	3,363	5,652	567	1,876	284	81	204	24	112	18	43	5	32	4	482	1.3%
including	67.0	79.0	12.0		6,336	9,822	928	2,828	385	112	282	33	147	23	52	6	38	5	593	2.2%
(i) Includes 8.5	5m cavity no	ot sampled.																		
PX095	60.0	82.9	22.9	(i)	2,116	4,470	510	1,880	273	73	175	21	108	19	47	6	34	4	539	1.0%
(i) Includes 2.0	Om cavity no	ot sampled.																		
PX098	1.1	66.0	65.0	(i)	3,682	7,400	836	2,942	428	112	278	35	168	29	73	10	55	8	872	1.7%
	115.0	128.1	13.1		3,013	5,409	579	1,974	306	84	213	27	124	20	46	6	29	4	568	1.2%
					-,	-,		.,												
(i) Includes 2.3	3m cavity no	ot sampled.																		$\vdash$
PX100	94.6	100.7	• • •		10,223	17,450	1,815	6,064	765	172	360	35	140	20	45		30	4	C40	3.8%
PX100	94.6	100.7	6.1		10,223	17,450	1,815	6,064	765	1/2	360	35	140	20	45	6	30	4	616	3.8%
PX101	36.6	42.3	5.7		2,981	6,306	746	2,771	493	131	322	36	148	21	43	5	29	4	560	1.5%
PAIUI	30.0	42.3	3.7		2,961	0,300	740	2,771	493	131	322	30	140	21	43	3	29	4	500	1.5%
PX102	8.7	36.0	27.3		2,730	6,487	789	2,869	342	78	163	17	76	11	25	3	14	2	335	1.4%
1 X 102																				
	75.0	110.3	35.3		2,096	5,170	671	2,623	381	96	217	26	130	22	51	6	28	3	658	1.2%
PX103	2.6	167.8	165.2		3,512	6,903	788	2,809	412	111	263	31	144	23	55	7	45	6	658	1.6%
DV404	40	47.0	45.4		0.500	5.000	047	0.070	000		000		400			-			040	1.00/
PX104	1.9	47.0	45.1	(i)	2,562	5,388	617	2,273	338	96	230	28	139	22	52	7	38	5	618	1.2%
	95.6	135.0	39.4		3,122	5,206	527	1,794	277	80	189	21	99	15	35	4	25	4	433	1.2%
(i) Includes 5.0	Om cavity no	ot sampled.																		
PX105	3.8	79.5	75.7		2,711	5,036	550	1,963	312	86	199	24	112	18	43	5	27	4	523	1.2%
PX106	51.9	67.5	15.7		2,579	5,090	562	1,968	294	81	192	23	108	17	40	5	25	3	478	1.1%
	79.7	109.0	29.3		2,036	4,451	527	1,952	317	87	209	25	121	21	51	7	39	5	604	1.0%
PX107	23.0	114.2	91.3	(i)	3,041	5,727	632	2,258	336	95	232	29	140	23	60	8	48	6	700	1.3%
	82.0	114.2	32.2	(ii)	4,624	8,375	911	3,176	457	125	300	37	168	27	70	10	53	7	827	1.9%
(i) Includes 2.3	3m cavity no	ot sampled.		-																$\vdash$
(ii) Includes 0.																				
																				$\vdash\vdash\vdash$
PX108	8.2	54.0	45.8		3,553	6,243	656	2,234	360	106	261	32	149	24	58	7	45	7	705	1.4%
	76.9	134.2	57.3		4,774	7,740	761	2,417	333	90	205	23	102	15	34	4	24	3	418	1.7%
PX109	22.0	75.0	53.0		6,078	9,518	896	2,790	348	88	204	23	97	15	33	4	22	3	391	2.1%
including	24.0	46.0	22.0		8,845	13,770	1,285	3,962	477	121	280	31	130	19	41	5	27	3	512	3.0%
amg	24.0	10.0			5,040	.5,770	.,200	5,502	411	12.	200		100						012	5.073
PX110	9.2	22.4	13.2		6,648	9,822	965	2,852	348	88	204	24	109	18	39	4	22	3	451	2.2%
	85.0	100.7	15.7		4,927	9,588	1,102	3,601	475	117	270	31	148	25	58	7	41	5	676	2.1%

PX111	7.0	42.0	35.0		2,893	6,042	683	2,504	443	128	312	38	169	25	53	6	30	4	657	1.4%
	69.5	115.9	46.4		3,666	6,542	670	2,313	357	97	232	26	111	17	40	5	33	4	476	1.5%
PX112	5.9	106.8	100.9		10,530	15,038	1,357	4,067	455	114	279	32	137	22	49	6	35	4	606	3.3%
including	5.9	26.4	20.5		14,172	19,387	1,698	4,949	518	131	323	37	160	25	58	7	39	5	719	4.2%
including	36.0	58.2	22.2		13,856	19,053	1,655	4,776	495	121	289	31	128	19	41	5	28	4	522	4.1%
PX113	4.7	55.8	51.1	(i)	5,458	9,720	993	3,572	474	124	289	34	165	26	64	8	44	6	772	2.2%
(i) Includes 10																				
(i) iliciddes 10	.om cavity i	lot sampled																		
PX114	56.0	100.7	44.7	(i)	3,762	6,498	663	2,194	319	80	186	21	98	15	34	4	22	3	409	1.4%
(i) Includes tw	o cavities to	taling 9.3m	not sampled.																	
PX115	2.7	17.7	15.0		2,365	4,945	564	2,107	316	84	195	23	107	18	42	5	31	4	522	1.1%
	46.3	61.0	14.8		2,468	5,132	583	2,180	350	96	221	26	116	18	42	5	29	4	493	1.2%
PX116	57.3	66.0	8.7		4,426	9,933	1,205	4,615	752	189	397	40	166	24	52	6	33	5	720	2.3%
PX118	4.4	91.0	86.6		3,236	5,889	595	1,919	304	81	192	23	107	18	42	5	31	4	509	1.3%
including	46.0	91.0	45.0		3,715	6,777	681	2,170	328	86	200	23	108	18	41	5	30	4	497	1.5%
	120.9	151.6	30.7	(i)	2,248	4,667	497	1,842	346	95	228	27	133	22	52	6	33	4	640	1.1%
(i) Includes 2.	2m cavity no	ot sampled.																		
PX119	14.8	64.8	50.0		3,389	6,119	640	2,135	292	76	178	20	95	16	39	5	28	4	422	1.3%
including	14.8	24.6	9.8		8,483	12,932	1,184	3,347	334	84	193	22	98	15	34	4	23	3	380	2.7%
PX120	3.1	42.7	39.6		2,631	5,272	572	2,010	284	75	175	20	90	14	34	4	25	3	380	1.2%
PX121	60.0	95.5	35.5		3,598	6,143	655	2,218	336	89	212	24	113	17	40	5	28	4	487	1.4%
PX122	84.0	106.8	22.8	(i)	3,639	5,899	586	1,934	273	74	172	21	100	16	37	5	27	3	431	1.3%
(i) Includes tw	o cavities to	taling 4.2m	not sampled.	L																
PX123	75.9	100.8	24.9		2,304	4,657	513	1,807	248	61	135	15	67	11	28	4	19	3	331	1.0%
PX124	24.7	58.8	34.1		2,748	5,520	604	2,120	279	73	166	21	107	19	51	7	40	5	556	1.2%
	27.1	30.0	34.1		2,770	0,020	004	2,120	210	,,	100		107	13	31		70	,	300	/6
PX125	3.5	108.0	104.5		4,244	6,599	630	1,989	272	77	187	24	113	18	40	5	26	3	475	1.5%
including	3.5	55.0	51.5		5,416	8,469	807	2,505	313	85	205	27	135	22	51	6	34	4	609	1.9%
Drill holes PX	038, PX041	, PX044, PX	051, PX084.	PX085	and PX091 o	lid not interse	ct significar	nt zones of n	nineralisation	grading ab	ove 1% TR	EO								
		,.,.				. 7.7	7	*					la i o lesa o		1	d. o.f.		. ou alia		00 4/40

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

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

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

The geological model constructed from the geochemistry provides a good framework within which to interpret the geology of the deposit. This is a heterogeneous geological environment that is not easily interpreted from lithological observations of drill hole core and outcrop samples alone. The model provides an estimate of the shape and extent of the carbonatite and is considered a useful tool to describe the shape of the main ore body. The model

was also applied to validate the indicator approach that was used to estimate the carbonatite proportion in each cell of the resource block model.

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

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

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

The majority of the previously delineated near surface Inferred Mineral Resource Estimate has been upgraded to either the Measured 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 National Instrument 43-101, Standards of Disclosure for Mineral Projects.

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

In terms of other aspects of the Feasibility Study, metallurgical optimisation is underway at laboratories in Australia and Canada. The work programme was scaled up following receipt of the Talaxis funding and is focused on flotation, hydrometallurgy and acid regeneration.

The ESHIA is underway and is being completed in accordance with World Bank Standards and Equator Principles.

## Other targets in the Phalombe Licence

On August 9, 2016, Mkango announced the results of an airborne geophysical survey (the "Survey") covering approximately two thirds of the Phalombe Licence. The Survey was part of a \$25 million World Bank funded nationwide airborne geophysical programme. The airborne radiometric survey highlights a number of exploration targets within the Phalombe Licence. Songwe Hill was not covered by the Survey.

Apart from Songwe Hill, there are two other identified hypabyssal systems in the Phalombe Licence, namely Nkalonje and Namangale. In both cases, the 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 and Namangale hypabyssal systems do not feature large areas of outcropping carbonatite, the host rock for rare earths at Songwe Hill. However, both contain outcrops of carbonatite veins and dykes suggesting that there is potential for identifying a carbonatite body below surface. Other prospects within the Phalombe Licence include the Mantrap and Knoll prospects.

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

In 2016, Songwe Hill and the Nkalonje, Mantrap and Knoll prospects were visited by a large delegation of international and Malawian geology and geophysics experts in connection with the €5.4 million HiTech AlkCarb research project led by the Camborne School of Mines, the University of Exeter and funded under the European Union's Horizon 2020 Research and Innovation program in which the Company (through Lancaster BVI) is an industry partner. The scope of the research project encompasses 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 is 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 such targets within the Phalombe Licence is the abovementioned Nkalonje hypabyssal system, where outcrop is largely fenite (altered country rock) with occasional carbonatite but where there may also be potential for underlying and larger zones of mineralised carbonatite.

Mkango retains, through its holding in Lancaster BVI, a 51% interest in the Phalombe Licence.

# THAMBANI, MWANZA DISTRICT

## **Background**

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

The licence was originally issued by the Malawi Government on a three-year basis and was subsequently renewed on September 10, 2015 for an additional two-year term when the Company requested a reduction in the licence area to the current 136.9 sq km. The licence was subsequently renewed for a further 2 years to September 8, 2019, and an extension for a further 2 years has been applied for.

The exploration activities conducted during 2011 and 2012 included acquisition of Landsat7 and ASTER satellite imagery for the 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 occurs on the West Ridge along the western contact of the nepheline syenite body with the eastern biotite-hornblende gneisses.

Initial results from follow up reconnaissance geochemical sampling conducted in 2013 returned locally anomalous uranium values, ranging up to 1,545 ppm  $U_3O_8$ , on both Thambani East Ridge and West Ridge. During the year ended December 31, 2014, the Company continued to progress the geological exploration studies on the Thambani project area, data analysis and geological modeling.

Mkango completed a trenching program across the Thambani Massif primarily focused on two sites of historical uranium exploration, known as the Chikoleka and Little Ngona targets. An initial set of nine trenches, selected on the basis of anomalous ground radiometric results, have been re-examined and geochemically sampled across profiles from soil/overburden into bedrock.

The first set of assay results of 142 soil and rock chip samples returned variably anomalous U, Nb and Ta values in most trenches, ranging up to  $4.70 \% U_3O_88$ ,  $3.25 \% Nb_2O_5$  in soil and up to  $0.42 \% U_3O_8$ ,  $0.78 \% Nb_2O_5$  and 972 ppm  $Ta_2O_5$  in rock chips, notably higher than results from the 2013 reconnaissance surface geochemical sampling program. Results associated with the 10 best  $U_3O_8$  assays are summarized in the table below.

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

Assays from the 10 highest- U3O8 samples from the Thambani trenching program

Trench No.	Profile	Sample No	From (m)	To (m)	Rock type	U308 Ppm	Nb2O5 ppm	Ta2O5 ppm
C3	A	U3622	0.5	1	Soil	47,094	32,462	45
C3	A	U3623	1	1.5	Soil	1,057	735	59
T11	С	U3508	0.5	1	Decomposed Feldspathic	4,231	7,805	743
T11	С	U3509	1	1.5	Decomposed Feldspathic	2,539	6,619	911
T11	В	U3505	0.5	1	Decomposed Feldspathic	2,369	5,424	972
T15	A	U3554	1	1.5	Feldspathic rock	1,657	4,346	67
T15	A	U3553	0.5	1	Feldspathic rock	1,616	3,754	431
T15	Е	U3565	0.5	1	Feldspathic rock	1,553	3,525	41
T14	D	U3549	1.5	2	Feldspathic rock	1,432	3,034	434
T19	C	U3604	1	1.5	Feldspathic rock	1,367	5,525	675

## **Airborne Geophysical Survey**

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

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

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

A map showing the uranium radiometric anomalies superimposed on a topographic map, indicating local infrastructure, and a digital elevation model can be accessed via the following link: http://www.mkango.ca/i/maps/Results of Airborne radiometric survey on topo U July.jpg

The airborne survey also highlighted a number of magnetic anomalies not previously identified, including a 2.3 kilometer ("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 coincident with the abovementioned east—west orientated uranium anomaly and anomalies in a number of other locations. These areas require further investigation to determine the significance of the magnetic anomalies and whether they are related to mineralisation or geological features.

A map showing the magnetic anomalies superimposed on a topographic map, indicating local infrastructure, and a digital elevation model can be accessed via the following link: http://www.mkango.ca/i/maps/Results of Airborne magnetic survey on topo July 2016.jpg

In May 2017, Mkango announced the results of the latest work program on the Thambani Licence. Assay results from 85 rock grab samples returned high grade uranium, tantalum and niobium values, ranging up to 3.3 %  $U_3O_8$ , 1.9 %  $Ta_2O_5$  and 6.0 %  $Nb_2O_5$ . 35 of the samples graded above 500ppm  $U_3O_8$  and 24 graded above 1,000ppm  $U_3O_8$ . Results associated with the twenty best  $U_3O_8$  assays are summarised in the table below. Grab samples are selective samples and are not necessarily representative of the mineralization hosted on the property.

Assays from the 20 highest grade U<sub>3</sub>O<sub>8</sub> samples from the 2017 Thambani sampling programme

Sample no.	U <sub>3</sub> O <sub>8</sub> ppm	U <sub>3</sub> O <sub>8</sub> %	Ta <sub>2</sub> O <sub>5</sub> ppm	Ta <sub>2</sub> O <sub>5</sub> %	Nb <sub>2</sub> O <sub>5</sub> ppm	Nb <sub>2</sub> O <sub>5</sub> %
U3141	32590	3.26	19029	1.9	59200	5.92
U3183	31812	3.18	15224	1.52	60055	6.01
U3136	10131	1.01	4845	0.48	32478	3.25
U3111	8826	0.88	4191	0.42	14871	1.49
U3127	5468	0.55	3084	0.31	15138	1.51
U3135	5265	0.53	2747	0.27	13183	1.32
U3122	5250	0.52	2431	0.24	10820	1.08
U3125	4518	0.45	2028	0.2	8461	0.85
U3115	4352	0.44	2221	0.22	9789	0.98
U3121	4191	0.42	2390	0.24	13585	1.36
U3137	3988	0.4	1896	0.19	8707	0.87
U3124	3952	0.4	2100	0.21	9600	0.96
U3168	3664	0.37	2022	0.2	7137	0.71
U3129	3562	0.36	1625	0.16	6469	0.65
U3176	3264	0.33	1905	0.19	5864	0.59
U3131	2768	0.28	1293	0.13	5314	0.53
U3133	2231	0.22	1235	0.12	5971	0.6
U3118	2163	0.22	1330	0.13	3838	0.38
U3172	1749	0.17	1351	0.14	3924	0.39
U3119	1741	0.17	916	0.09	4592	0.46

The main objectives of the programme were to confirm previously identified high-grade mineralisation at the Little Ngona target, ground-truth new geophysical targets and complete further reconnaissance sampling along the East and West Ridges. New areas of high-grade uranium, tantalum and niobium mineralisation were identified at the foot of the West Ridge and on the East Ridge. Most significantly, a radiometric high at the foot of the West Ridge yielded two of four highest grade samples of this phase of exploration. The average grades for the 85 samples were 1,892 ppm  $U_3O_8$ , 1,029 ppm  $Ta_2O_5$  and 4,562 ppm  $Nb_2O_5$ . The median grades for the 85 samples were 343 ppm  $U_3O_8$ , 222 ppm  $Ta_2O_5$  and 958 ppm  $Nb_2O_5$ . The ranges of grades for the 85 samples were 1 - 32,590 ppm  $U_3O_8$ , 2 - 19,029 ppm  $Ta_2O_5$  and 0 - 60,055 ppm  $Nb_2O_5$ .

On April 29, 2019, the Company announced that it has entered into a non-binding heads of terms agreement ("Heads Agreement") with MetalNRG PLC, whereby MetalNRG will earn up to a 75% interest in the Thambani license by spending up to \$2 million on exploration. The terms of the Heads Agreement outline that the parties will enter into a binding definitive agreement on or before June 30, 2019 and that MetalNRG's participation in the Thambani license is limited to exploration for uranium. The definitive agreement will include the following elements:

- MetalNRG will spend \$500,000 on exploration within the Thambani license within 12 months of the date of the definitive agreement to earn a 25% interest in the Thambani license.
- MetalNRG will have the option to spend a further \$700,000 over the second 12-month period to earn an additional 24% interest for a total 49% interest in the Thambani license.
- MetalNRG will have the option to spend a further \$800,000 over the second 12-month period to earn an additional 26% interest for a total 75% economic interest in the Thambani license.
- Mkango will have a right of first refusal on 100% offtake of the Uranium and other minerals.

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

# CHIMIMBE HILLS, MCHINJI DISTRICT

On November 14, 2017, Lancaster BVI was granted the Chimimbe Licence by the Malawi Minister of Natural Resources, Energy and Environment in respect of an area of 98.48 km2 in Chimimbe Hills, Mchinji district, Malawi. Exploration has identified a number of areas with potential for laterite and saprolite hosted nickel, cobalt, chrome and other mineralization.

The Chimimbe Licence runs for a period of three years and is renewable for further periods of two years thereafter if the terms and conditions of the licence have been met.

Mkango will re-evaluate the Chimimbe Hill deposit in the context of geophysical data produced by the recent World Bank airborne geophysical survey of Malawi, recent infrastructure developments in the region, potential synergies with Songwe Hill and the Thambani uranium-tantalum-niobium project, options relating to sulphuric acid and/or alternative reagents supply and potential by-products, as well as opportunities to produce nickel and cobalt products for the battery electric vehicle market.

Mkango retains a 100% interest in the Chimimbe Licence.

## **MAGINITO**

Maginito is a new venture, incorporated on January 3, 2018 in the BVI, which is focused on downstream opportunities in the rare earths supply chain, in particular rare earth alloy, magnet and other technologies geared to accelerating growth in the electric vehicle market, including the Metalysis Joint Venture. On January 28, 2018, Talaxis invested £1 million (\$1.4 million) for a 24.5% interest in Maginito. Permanent magnets are critical components for most electric vehicles, direct drive wind turbines and many other high growth applications. The research and development programme with Metalysis is underway focused on the development of advanced alloys using neodymium or praseodymium with other elements for use in permanent magnets. Neodymium is a key rare earth component at Songwe Hill.

Mkango holds a 75.5% ownership in Maginito.

## SELECTED CONSOLIDATED FINANCIAL INFORMATION

During the three months ended March 31, 2019, the Company was focused on advancing the Songwe Hill project in addition to its other projects in Malawi and downstream opportunities relating to the rare earth supply chain. 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 March 31, 2019, 2018 and 2017:

As at March 31,	2019	2018	2017
Total assets	11,255,876	8,722,523	710,664
Total non-current liabilities	-	1,371,341	1,470,542
Shareholders' equity (deficit) of parent	19,805,879	9,365,424	(880,288)

## Total assets

Total assets were \$11,255,876 as at March 31, 2019 as compared to \$8,722,523 as at March 31, 2018. Total assets increased by \$2,533,353, primarily due to a \$2,502,524 increase in the amount of cash held:

At January 1, 2019, the Company had an opening cash position of \$2,400,702. Cash received during the three months ended March 31, 2019 was \$9,430,932. This was comprised from three sources. First, on March 28, 2019, \$9,255,853 was received from Talaxis representing the third tranche of investment in Lancaster BVI. Secondly, \$99,267 was received when warrants of the Company were exercised. Thirdly, \$75,812 was received when stock options were exercised. Operational consumption of cash was \$687,631 and the effect of exchange rate changes on cash was a reduction of \$85,405 during the period for a closing cash position of \$11,058,598.

In comparison, at January 1, 2018, the Company had an opening cash position of \$691,276. Cash received during the three months ended March 31, 2018 was \$8,813,998. This was comprised from two sources. First, during

January 2018, \$8,284,027 was received from Talaxis for its investments in Lancaster BVI and Maginito. Secondly, \$504,887 was received when warrants of the Company were exercised. Operational consumption of cash was \$921,381, use of funds to purchase assets was \$3,897 and the effect of exchange rate changes on cash was a reduction of \$23,922 during the period for a closing cash position of \$8,556,074.

Total assets were \$8,722,523 as at March 31, 2018 as compared to \$710,664 as at March 31, 2017. Total assets increased by \$8,011,859, primarily due to a \$7,884,985 increase in the amount of cash held:

At January 1, 2018, the Company had an opening cash position of \$691,276. Cash received during the three months ended March 31, 2018 was \$8,813,998. This was comprised from two sources. First, during January 2018, \$8,284,027 was received from Talaxis for its investments in Lancaster BVI and Maginito. Secondly, \$504,887 was received when warrants of the Company were exercised. Operational consumption of cash was \$921,381, use of funds to purchase assets was \$3,897 and the effect of exchange rate changes on cash was a reduction of \$23,922 during the period for a closing cash position of \$8,556,074.

In comparison, at January 1, 2017, the Company had an opening cash position of \$388,678. Cash received during the three months ended March 31, 2017 was \$535,315 for a Share placement, which closed on December 30, 2016. Operational consumption of cash was \$282,820 and the effect of exchange rate changes on cash was an increase of \$29,916 during the period for a closing cash position of \$671,089.

#### Total non-current liabilities

Total non-current liabilities were nil as at March 31, 2019 as compared to \$1,371,341 as at March 31, 2018. The change was due to the reclassification of the warrant valuation from non-current to current liabilities.

Total non-current liabilities were \$1,371,341 as at March 31, 2018 as compared to \$1,470,542 as at March 31, 2017. Total non-current liabilities decreased by \$99,201. The change was due to the reclassification of deferred management salaries and a change in the warrant valuation. The reclassification of deferred management salaries from non-current to current liabilities resulted in a \$287,976 reduction. The remaining variance was due to an increase of \$188,775 for the difference in the warrant valuation between the two periods.

# Total shareholders' equity (deficit) of parent

Total shareholders' equity was \$19,805,879 as at March 31, 2019 compared to \$9,365,424 as at March 31, 2018. The \$10,440,455 increase is due to the accounting treatment of the Talaxis investments. Cash investments of \$9,255,853 and \$8,284,027 were received during the quarters ended March 31, 2019 and March 31, 2018, respectively. A non-controlling interest balance was established at the date of each investment. The opening balance was based on the investor's proportionate share of the net assets held by the investee just prior to the date of the investment. Funds in excess of the net asset valuation were used to reduce the retained earnings of the parent company, which created a shareholders' surplus.

Total shareholders' surplus was \$9,365,424 as at March 31, 2018 compared to a deficit of \$880,288 as at March 31, 2017. The \$10,245,712 increase as at March 31, 2018, is primarily due to the accounting treatment of the Talaxis investment received January 24, 2018, for its investments in Lancaster BVI and Maginito. Mkango's deficit was reduced to create a shareholders' surplus, as a result of the investment received from Talaxis. A non-controlling interest balance was established at the date of the investment, January 24, 2018. The opening balance was based on the investor's proportionate share of the net assets held by the investee just prior to the date of the investment. Funds in excess of the net asset valuation were used to reduce the deficit of the parent company, which created a shareholders' surplus.

## **Summary Results of Operations**

The following financial data is derived from the Company's condensed interim consolidated financial statements as at March 31, 2019, 2018 and 2017:

		Thre	e mo	nths ended	Mar	ch 31,
		2019		2018		2017
Revenue	\$	85	\$	766	\$	2
Mineral exploration		458,502		633,735		100,408
Other expenditures*		239,162		520,681		468,508
Total net loss		697,579	1	,153,650		568,914
Total net loss attributable to non-controlling interest		190,640		256,545		-
Basic and diluted loss per share	\$	(0.006)	\$	(0.010)	\$	(0.010)
Weighted average number of common shares (basic and diluted)	113	3,058,077	108	3,650,055	83	3,912,472
Distributions or Dividends	\$	Nil	\$	Nil	\$	Nil

<sup>\*</sup> Other expenditures represents all other expenditures, other than Mineral exploration expenditures, disclosed in the statements of comprehensive loss and includes non-cash items.

The net loss for the three months ended March 31, 2019 was \$697,579 compared to the net loss reported for the three months ended March 31, 2018 of \$1,153,650. Net loss decreased by \$456,071 for the comparable periods. The significant items contributing to the decrease include the Maginito research and development expenses, which decreased by \$277,855 as no payments were required during the period to advance the collaborative research programme with Metalysis and a \$409,701 decrease in warrant revaluation expense for the three months ended March 31, 2019. The decrease in expenses was offset by a \$102,622 increase in mineral exploration, a \$9,142 increase in general and administrative expenses and a \$132,361 increase in unrealized foreign exchange expense.

The net loss for the three months ended March 31, 2018 was \$1,153,650 compared to the net loss reported for the three months ended March 31, 2017 of \$568,914. Net loss increased by \$584,736 for the comparable periods. General and administrative expenses were \$169,316 higher for the three months ended March 31, 2018 as a result of an increase to salaries and activities related to preparing the Talaxis definitive agreements. Mineral exploration expenditures were \$251,955 higher for the three months ended March 31, 2018 as the Company prepared for a drilling program which was undertaken later in the year.

## RESULTS OF OPERATIONS

The selected period information and summary of financial results below is derived from and should be read in conjunction with the Company's condensed interim consolidated financial statements for the three months ended March 31, 2019.

## SUMMARY OF QUARTERLY FINANCIAL RESULTS

The following is selected financial data from the company's quarterly financial statements for the last eight quarters ending with the most recently completed quarter, being the quarter ended March 31, 2019:

<b>Total Operations</b>	2019		20	18		2017			
Attributable to common shareholders	Q1	Q4	Q3	Q2	Q1	Q4	Q3	Q2	
Interest income	\$85	\$(126)	\$106	\$64	\$766	\$(105)	\$225	\$(113)	
Expenses	614,176	1,447,454	2,159,919	1,159,075	750,756	556,759	254,373	264,783	
Other items	163,294	(197,969)	79,217	635,496	7,860	315,206	(61,723)	(120,327)	
Warrant fair value loss (gain)	(270,446)	(452,955)	13,395	(21,137)	139,255	769,745	(136,752)	118,324	
Net loss for period	(506,939)	(796,655)	(2,252,425)	(1,773,370)	(897,105)	(1,641,815)	(55,673)	(262,894)	
Loss per share - basic and diluted	\$(0.006)	\$(0.021)	\$(0.022)	\$(0.015)	\$(0.008)	\$(0.018)	\$(0.003)	\$(0.003)	

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The financial data for the eight periods reported 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 March 31, 2019. The financial data does not include the non controlling interest ("NCI") share of net loss for the period. The financial data is presented in US dollars.

The Company's principal activities require expenditures which include both exploration and general and administrative expenses.

#### FIRST OUARTER 2019 COMPARED TO FIRST OUARTER 2018

The Company recognized a net loss attributable to common shareholders of \$506,939 and \$897,105 for the three months ended March 31, 2019 and 2018, respectively. The decrease of \$390,166 in net loss attributable to common shareholders for the three months ended March 31, 2019 compared to the same period in 2018 is comprised of a \$409,701 decrease in warrant revaluation expense, a \$277,855 decrease in the Maginito research and development expense, offset by an increase of \$132,361 in foreign exchange loss and an increase of \$102,622 in mineral exploration expenses. The decrease in the warrant revaluation expense is a result of the following: 1,136,363 warrants were exercised, 5,420,867 warrants expired and the time to expiry decreased. The remaining warrants held by common shareholders are scheduled to expire on June 15, 2019. The Maginito research and development expense is significantly lower for the three months ended March 31, 2019 because no additional funding was required to advance the collaborative research work with Metalysis. The increase in mineral exploration expenses is due to activities underway in Malawi to complete the ESHIA and the bankable feasibility study for the three months ended March 31, 2019. In comparison, very little exploration activity was undertaken during for the three months ended March 31, 2018. The increase in unrealized foreign exchange loss was due to the Company's holdings of foreign denominated currencies in bank accounts, which were revalued for reporting purposes as at March 31, 2019.

## RELATED PARTY TRANSACTIONS AND BALANCES

- a) Leo Mining Exploration Ltd. ("Leo Mining") is considered related by virtue of common directors and officers who have an ownership in, and exercise significant influence over, both companies. The Company and Leo Mining have formalized their relationship with respect to services provided by Leo Mining. A written agreement sets out the types of services, which may be provided, and the costs associated with such services. The Company repays the disbursements made by Leo Mining on its behalf. During the three months ended March 31, 2019, the Company had incurred costs of \$13,630 (March 31, 2018 \$31,980) for administrative services. As of March 31, 2019, the Company has an outstanding payable to Leo Mining in the amount of \$7,739 (March 31, 2018 \$14,880). The amount is unsecured and due on demand.
- b) Talaxis is considered an insider as it holds more than 10% of the shares of the Company. Transactions and balances with Talaxis are disclosed throughout the condensed interim consolidated financial statements.
- c) Zenith is considered a related party because a Director of the Company is a principal of Zenith. Transactions and balances with Zenith are disclosed throughout the condensed interim consolidated financial statements.
- d) The Company incurred costs of \$117,670 (March 31, 2018 \$136,930) for key management fees and director expenses for the three months ended March 31, 2019. The non- executive Directors of the Company are each entitled to a fee of \$16,000 per year and the Chairman of the Board is entitled to a fee of \$40,000 per year. As of March 31, 2019, the Company has an outstanding payable due to directors and officers of \$38,035 (March 31, 2018 \$53,068). The current liabilities due to related parties are unsecured, due on demand and non-interest bearing.

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The Company recorded a gain on deferral of related party consulting fees at the time of the initial deferral and upon deferral of each monthly amount. Accretion is recorded at an effective interest rate of 20% of the consulting fees payable. On February 12, 2019 £40,000 (\$51,559) was paid to the Executive Directors. The following table provides a reconciliation of amounts reflected in the condensed interim consolidated financial statements for the three months ended March 31, 2019 and 2018:

March 31,		2019	2018
Balance, beginning of period		\$ 235,616	\$ 448,380
Consulting fees paid during the period	(d)	(51,559)	(244,969)
Loss on deferral of consulting fees		1,675	-
Accretion		4,033	19,363
Foreign exchange (gain) loss		(10,100)	12,842
Balance, end of period		\$ 179,665	\$ 235,616
Due to related parties with common directors	(a)	7,739	14,880
Due to key management and directors	(d)	38,035	53,068
Total due to related parties		\$ 225,439	\$ 303,564

## **EXPENDITURES**

	For the three n			
Total expenses attributable to common	March			
shareholders and NCI	2019	2018	Change	
General and administrative				
Audit and tax management	\$ 2,549	\$ -	\$ 2,549	
Legal fees	82,639	35,361	47,278	
Director and Officer salaries	141,825	129,891	11,934	
Salaries and consulting fees	29,837	21,195	8,642	
Office	38,536	26,094	12,442	
Travel	19,708	79,227	(59,519)	
Shareholder compliance	24,941	39,124	(14,183)	
Sub total - General and administrative	340,034	330,892	9,142	
Mineral exploration expenditures				
Songwe Hill Project				
Mineral extraction development	75,547	43,935	31,612	
Government fees	11,676	11,765	(89)	
ESHIA	61,465	23,912	37,553	
Drilling programme	35,907	170,922	(135,015)	
Technical studies	114,159	-	114,159	
Consulting fees	37,287	53,303	(16,016)	
Malawi office and camp expenses	118,944	48,526	70,418	
Sub total - Mineral exploration	454,985	352,363	102,622	
Research and development				
Maginito research and development	3,517	281,372	(277,855)	
Sub total - Research and development	3,517	281,372	(277,855)	
Other Expenses				
Share-based payments	29,664	39,723	(10,059)	
Accretion	4,033	19,363	(15,330)	
Depreciation	6,280	2,951	3,329	
AIM listing expense	24,036	16,972	7,064	
Gain on deferral of salaries	1,675	-	1,675	
Foreign exchange (gain) loss	103,886	(28,475)	132,361	
Warrant revaluation	(270,446)	139,255	(409,701)	
Total Expenses	\$ 697,664	\$1,154,416	\$(456,752)	

# Three months ended March 31, 2019 compared to the three months ended March 31, 2018

Total expenses include those attributable to both the common shareholders and to the NCI. Total expenses decreased by \$456,752 from \$1,154,416 for the three months ended March 31, 2018 to \$697,664 for the three months ended March 31, 2019, as a result of the following:

- a) General and administrative: General and administrative expenses were \$9,142 higher for the three months ended March 31, 2019 compared to the three months ended March 31, 2018. Legal fees were \$47,278 higher for the three months ended March 31, 2019. The increase in expenses was offset by lower travel costs \$59,519.
- b) Mineral Exploration: Mineral exploration expenses were \$102,622 higher for the three months ended March 31, 2019 compared to the three months ended March 31, 2018. Expenses to advance two key components of the bankable feasibility study were higher for the three months ended March 31, 2019. The metallurgical extraction-process research expenses were \$31,612 higher. The ESHIA expenses were \$37,553 higher. The technical studies expenses were \$114,159 higher and the Malawi office and camp

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expenses were \$70,418 higher, compared to the three months ended March 31, 2018. These expenses were offset by a \$135,015 decrease in drilling programme expenses and a \$16,016 decrease in project consulting fees for the three months ended March 31, 2019. Operational activity was higher during the three months ended March 31, 2019 due to the decommissioning of drilling equipment and continuation of the bankable feasibility study and ESHIA project work. In comparison, the Company was in the planning stages for the 2018 drilling program, hence there was less operational activity at the project site for the three months ended March 31, 2018.

- c) Research and Development: Research and development expenses were \$277,855 lower for the three months ended March 31, 2019 compared to the three months ended March 31, 2018. The expenses were lower because no additional payments were required during the period to advance the collaborative research programme with Metalysis.
- d) Warrant Revaluation: The warrant revaluation expense decreased by \$409,701 for the three months ended March 31, 2019 compared to the three months ended March 31, 2018. The value of the warrants decreased for the following reasons: 1,136,363 warrants were exercised, 5,420,867 warrants expired and the time to expiry decreased. The remaining warrants held by common shareholders are scheduled to expire June 15, 2019.
- e) <u>Foreign Exchange Loss</u>: The foreign exchange loss for the three months ended March 31, 2019 was \$132,361 higher than the expense recognized for the three months ended March 31, 2017 due to an increase in cash held by the Company in foreign currencies, which were revalued at March 31, 2019 for reporting purposes.

# 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 a Venture Issuer Basic Certificate with respect to the financial information contained in the condensed interim consolidated financial statements for the three months ended March 31, 2019 and this accompanying MD&A (together, the "Interim Filings").

In contrast to the full certificate under NI 52-109, the Venture Issuer Basic Certificate does not include representations relating to the establishment and maintenance of disclosure controls and procedures and internal control over financial reporting, as defined in NI 52-109. For further information the reader should refer to the Venture Issuer Basic Certificates filed by the Company with the Interim Filings on SEDAR at <a href="www.sedar.com">www.sedar.com</a>.

## **COMMITMENTS**

The Company holds three licenses in Malawi with commitments to pay annual licensing fees and to meet spending commitments for exploration expenses every two years. As of the date of this report, all licenses were in good standing with the Malawi government.

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

# ISSUED AND OUTSTANDING SHARE INFORMATION

As at the date of this report, the Company has 114,570,702 Common Shares and 32,334,564 warrants issued. The Company has 11,125,000 stock options issued.

## **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 consolidated audited financial statements for the year ended December 31, 2018.

## RISK FACTORS

#### Environmental Risk

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

# Exploration and Commercial Viability Risk

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

## Macroeconomic Risk

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

## Foreign Countries and Political Policy Risk

The Company has interests in properties that are located in the developing country of Malawi. The Company's mineral exploration may be affected in varying degrees by political instability and government regulations relating to foreign investment and the mining industry. Changes, if any, in mining or investment policies or shifts in political attitude in Malawi may adversely affect the Company's operations. Operations may be affected in varying degrees by government regulations with respect to, but not limited to, restrictions on production, price controls, export controls, currency remittance, direct and indirect taxes, tax assessments, royalties, expropriation of property, foreign investment, maintenance of claims, environmental legislation, land use, land claims of local people, water use and mine safety. Failure to comply with applicable laws, regulations, and permitting requirements may result in enforcement actions thereunder, including orders issued by regulatory of 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.

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 the SEDAR website (<a href="www.sedar.com">www.sedar.com</a>).

#### FINANCIAL INSTRUMENTS AND RISK MANAGEMENT

All financial instruments are initially recognized at fair value on initial recognition of the instrument. Measurement in subsequent periods depends on whether the financial instrument has been classified as fair value through profit or loss ("FVTPL"), held for trading, loans and receivables, financial assets available-for-sale, financial assets held-to-maturity, and other financial liabilities.

Financial assets and financial liabilities classified as FVTPL are measured at fair value with changes in fair value recognized in net earnings or loss. Financial assets, available-for-sale, are measured at fair value, with changes in fair value recognized in other comprehensive income. Financial assets held-to-maturity, loans and receivables and other financial liabilities are measured at amortized cost using the effective interest method of amortization.

Cash are designated as FVTPL and are measured at carrying value, which approximates fair value due to the short-term nature of these instruments. Accounts receivable are designated as loans and receivables. Accounts payable and accrued liabilities and due to related parties are designated as other financial liabilities.

The fair value of cash, accounts receivable, accounts payable and amounts due to related party approximates the carrying value. Financial instruments and share-based payment transactions are measured at fair value. The main financial risks affecting the Company are discussed below:

#### Fair values

Financial assets and liabilities have been classified into categories that determine their basis of measurement and for items measured at fair value, whether changes in fair value are recognized in the consolidated statement of comprehensive loss. Those categories are fair value through profit or loss; loans and receivables; and, for most liabilities, other financial liabilities.

In establishing fair value, the Company used 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.

Cash are measured at level 1; warrant derivative financial instruments are measured at level 2.

The carrying value of accounts receivable, subscriptions receivable, accounts payable and accrued liabilities and current liabilities due to related parties, approximates the fair value due to their short-term nature and maturity. Warrants with an exercise price in a currency other than the functional currency are recorded as a derivative liability and carried at fair value.

The Company has issued share purchase warrants to common shareholders, exercisable for common shares. The exercise price of the share purchase warrants is fixed in British Pounds Sterling and the functional currency of the Company is the US dollar. Therefore, warrants are considered a derivative, as a variable amount of cash in the Company's functional currency will be received on exercise. The category "Warrants issued" below does not include warrants issued to brokers and agents since they fall under the scope of IFRS 2, share-based payments.

The value of the warrants outstanding to common shareholders decreased for the three months ended March 31, 2019 for the following reasons: For the three months ended March 31, 2019, 1,136,363 warrants were exercised, 5,420,867 warrants expired and the time to expiry decreased. The remaining warrants held by common shareholders are scheduled to expire on June 15, 2019.

	Weighted Average Exercise Price (GBP)		Weighted Average Years Remaining	Number of Warrants	Amount
Balance at December 31, 2017	£	0.066	1.27	41,775,799	\$ 1,698,267
Warrants exercised		0.066	1.05	(7,555,679)	(521,458)
Warrants expired		-	-	(5,864,758)	-
Foreign exchange effect		-	-	-	(63,246)
Realized fair value change at December 31, 2018		-	-	-	166,032
Unrealized fair value change at December 31, 2018		-	-	_	(487,474)
Balance at December 31, 2018	£	0.066	0.40	28,355,362	\$ 792,121
Warrants exercised		0.066	0.21	(1,136,363)	(35,648)
Warrants expired		-	-	(5,420,867)	-
Foreign exchange effect		-	-	-	(7,620)
Unrealized fair value change at March 31, 2019		_	=	-	(135,531)
Realized fair value change at March 31, 2019					(134,915)
Balance at March 31, 2019	£	0.066	0.21	21,798,132	\$ 478,407

The fair value of each warrant issued is determined at each reporting period using the Black-Scholes pricing model. In order to determine the fair value of the Company's outstanding warrants assumptions are made with regards to the future value of the risk free interest rate, the Company's share price volatility, the Company's share price and the foreign exchange rate. Therefore, the fair value of the outstanding warrants is an estimate.

Non-current and current liabilities due to related parties that constitute a deferred payment are initially recorded at fair value, which is determined by discounting the liability using an applicable market rate.

## Credit risk

Credit risk is the risk of loss associated with counterparty's inability to fulfill its payment obligations. The Company's credit risk is primarily attributable to cash, receivables and the receipt of the second tranche of financing from Talaxis under the Agreement and the receipt of the remainder of the grant funding from the University of Exeter.

## Concentration risk

The majority of the Company's cash is held by one major international bank. Deposits held with this bank may exceed the amount of insurance provided on such deposits. Generally these deposits may be redeemed upon demand and bear minimal risk.

## Foreign currency rate risk

The functional and reporting currency of the Company is the United States dollar. The Company enters into transactions denominated in Canadian dollars, the United States dollar, the British sterling, the Australian dollar, South African rand and Malawian kwacha. The Company raises its equity in British sterling and Canadian dollars and then purchases Canadian dollars, Euros, British sterling, United States dollars, South African Rand and Malawi Kwacha funds to settle liabilities, as required.

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As at March 31, 2019 and 2018, the following cash balances were held by the Company. The value of cash held by the Company has been adjusted for the valuations of derivative financial instruments and amounts due to related parties:

	Ma	March 31, 2019		March 31, 2018		
Cash:						
Canadian dollars	\$	181,410	\$	41,073		
United States dollars		3,885		5,866		
British Sterling		10,861,683		8,505,453		
Euro		878		896		
Malawi Kwacha		10,742		2,785		
Warrants – derivative financial instruments		(478,407)		(1,371,341)		
Due to related parties		(225,439)		(303,564)		
	\$	10,354,752		\$ 6,881,168		

A 5% reduction in the value of the Canadian dollar, Euro and British sterling in comparison to the United States dollar would cause a net loss of approximately \$522,199. A 5% change in the value of the Malawian Kwacha in relationship to the United States dollar would not cause a material change in net loss.

# Liquidity Risk

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

- The Company will not have sufficient funds to settle a transaction on the due date;
- The Company will be forced to sell financial assets at a value which is less than what they are worth; or
- 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 and the Feasibility Study are continuously monitored and adjusted as input variables change. As these variables change, liquidity risks may necessitate the Company to conduct equity issues or obtain project debt financing.

The Company has in the past relied on equity financings to fund its activities. However, given the Definitive Agreements, the Company does not anticipate the need to raise additional equity capital in the short term. Should it, however, need to raise additional funds and while it has been successful in raising funds in the past, there is no guarantee that adequate funds will be available in the future.

The following table outlines the maturities of the Company's liabilities as at March 31, 2019:

	G 14	3 1 FI	T .	1 1 37	Greater	
	Contractual (	Jash Flows	Less 1	than 1 Year		Year
Accounts payable and accrued liabilities	\$	530,009	\$	530,009	\$	-
Due to related parties	\$	225,439	\$	225,439	\$	-

#### Capital Risk

The Company's objective when managing capital is to maintain a flexible capital structure which will allow it to execute its capital expenditure program, which includes expenditures in mining activities which may or may not be successful. The Company has no externally imposed capital requirements. Prior to the Talaxis transaction, the Company depended on equity placements to remain solvent. Should it need to do so again in the future, cash from these placements may or may not be available depending on market or other conditions.

# LIQUIDITY AND CAPITAL RESOURCES

As of March 31, 2019, the Company had a working capital surplus of \$9,889,080 (March 31, 2018 – \$8,221,989) and retained earnings surplus attributable to the shareholders of the Company of \$5,073,180 (March 31, 2018 deficit - \$4,696,779).

The operations of the Company are currently being funded by cash received as a result of the following transactions:

- 1. \$8,139,497 (£6 million) of net investment proceeds received from Talaxis by two subsidiaries Lancaster BVI and Maginito, during January 2018.
- 2. \$9,130,800 (£7 million) of investment proceeds received from Talaxis by Lancaster BVI, on March 28,
- 3. Proceeds received upon the exercise of 7,555,679 warrants and 864,285 advisory warrants during the year ended December 31, 2018 for total cash consideration of \$919,366.
- 4. The exercise of 1,620,000 stock options during January 2019 for total cash consideration of \$75,168 (C\$100,800).
- 5. Proceeds received upon the exercise of 1,136,363 warrants on March 20, 2019, for total cash consideration of \$98,978 (£75,000).
- 6. Proceeds received upon the exercise of 515,151 warrants on April 11, 2019, for total cash consideration of \$44,449 (£34,000).

The Company has outstanding warrants (other than those held by Talaxis and Zenith) as set out in this table:

	Weighted Average Exercise Price		W	eighted		
			Average Exercise Price		Weighted	
					Average	
					Years	Number of
	(C	CAD)		(GBP)	Remaining	Warrants
Warrants at December 31, 2017	\$	0.39	£	0.066	1.27	41,775,799
Warrants exercised		0.15		0.066	1.05	(7,555,679)
Warrants expired		0.15		-	-	(5,864,758)
Warrants at December 31, 2018	\$	0.39	£	0.066	0.40	28,355,362
Warrants exercised		0.09		0.066	0.45	(1,136,363)
Warrants expired		0.09		_	_	(5,420,867)
Warrants at March 31, 2019	\$	0.09	£	0.066	0.40	21,798,132

In addition to the 21,798,132 outstanding warrants above, there are an additional 13,200,000 warrants which were issued to Talaxis and Zenith for ongoing advice for a total of 34,998,132 warrants outstanding as at March 31, 2019. On April 3, 2019, 2,148,417 warrants expired. On April 11, 2019, 515,151 warrants were exercised. Therefore, there are 32,334,564 warrants outstanding as at the date of this report.

In addition, the Company received  $\epsilon$ 49,589 on February 6, 2018 from the University of Exeter to advance the HiTech AlkCarb project. In combination with the previously received funds, the Company has received  $\epsilon$ 92,200, as of the date of this report. The Company expects to receive up to a total of  $\epsilon$ 150,000. Expenses associated with building exploration expertise in hi-tech raw materials, improving and developing interpretation of geophysical and down-hole data will qualify for use of the grant funding.

While investments by Talaxis are in subsidiaries of Mkango, the Company has agreed with Talaxis that certain expenses of Mkango will be reimbursed by funds held by Lancaster BVI and Maginito in return for Mkango's management of the subsidiaries.

Therefore, the Company expects that funding received from Talaxis, as well as funds received from the exercise of warrants and from the University of Exeter grant, will be sufficient to fund Mkango's operations in the near term.

The Company's consolidated cash balance at March 31, 2019 was \$11,058,598 (March 31, 2018 - \$8,556,074).

Other than as disclosed herein, the Company is not aware of any trends, uncertainties, demands, commitments or events, which are reasonably likely to have a material effect on the Company's business, financial condition or results of operations.

# **DIRECTORS AND OFFICERS**

William Dawes, Director and Chief Executive Officer
Alexander Lemon, Director and President
Derek Linfield, Chairman of the Board of Directors
Shaun Treacy, Director (Audit Committee Chairman and Remuneration Committee)
Sandra du Toit, Director (Audit Committee, Remuneration Committee)
Susan Muir, Director (Audit Committee, Corporate Secretary and Remuneration Committee Chairman)
Adrian Reynolds, Director (Remuneration Committee)
Sandra Evans, Chief Financial Officer