

## LINDIAN COMMENCES STAGE 1 PROCESSING PLANT DEVELOPMENT FOR KANGANKUNDE RARE EARTHS PROJECT



Image 1: Preliminary schematic of plant design from ground level. Existing retaining wall (left), ball mills (centre left), recovery circuit (centre) and tailings thickener (right)

### HIGHLIGHTS

- Significant progress has been made on the process design for the Stage 1 plant
- Stage 1 processing plant is based on mobile screening and crushing operation and a milling circuit with an initial forecast throughput of up to 440,000 tonne per annum to produce monazite concentrate
- Mine design and mine planning being scoped
- Discussions with mining contractors have commenced
- Civil geotechnical survey has been completed
- Ground water survey successfully completed identifying adequate bore water
- Civil works program being defined for design, engineering and construction of processing plant, mine laydown area, water supply and storage, power, weighbridge, 5km access road, workshops, administration building, tailings storage, and planning for future expansion with civil works anticipated to commence in November 2023

- Transport and logistics for delivery of Kangankunde’s monazite concentrate are being reviewed with various transport routes and ports under consideration
- A formal Community Engagement Plan and Area Development Community Sub-Committee has been established to communicate project development activities
- Lindian has been approached by groups seeking interest in offtake agreements for Kangankunde’s non-radioactive monazite concentrate;
- Key milestones for the works program are tabled in this announcement
- Capex and Opex for Stage 1 are expected to be finalized by early 2024
- Plant commissioning into production expected late 2024
- Kangankunde is a fully permitted mining project tenured to Mining License MML0290/22 and permitted to Environmental Certificate ESIA No: 2.10.16

**KEY WORK STREAMS ADVANCING TO SUPPORT STAGE 1 PROCESSING PLANT AND THE PROJECT’S DEVELOPMENT BEYOND THIS STAGE INCLUDE:**

- Reporting Kangankunde’s maiden Mineral Resource Estimate from Phase 1 drill program
- Phase 2 Exploration Target drilling progressing well with the second diamond hole now at more than 500m; Assays from both holes expected progressively from July 2023
- Phase 3 infill drill program to update a portion of the pending Mineral Resource Estimate from Inferred to Indicated category to define a resource for Stage 1 and to support Stage 1 production study metrics
- Current metallurgical programs (bulk sample and drill-hole variability programs) expected to be completed by end August 2023

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**Lindian Resources Limited (ASX:LIN) (“Lindian” or “the Company”)** is pleased to provide shareholders with this comprehensive update on the development of Stage 1 processing plant at the Kangankunde Rare Earths Project in Malawi which is now advancing with multiple work streams underway.

The Stage 1 plant is based on processing an initial throughput of 220,000 tonnes of material per annum to produce a monazite concentrate, expanding to 440,000 tonnes per annum making this first phase development a significant operation in its own right.

Strategic development of a larger Stage 2 operation based on a notional processing throughput of 1.5 million tonnes per annum is expected to commence during 2024.

Following is a more detailed overview of the relevant workstreams with a timeline of key milestones.

## Comments

Executive Chairman Asimwe Kabunga commented: *“We are very encouraged by the progress made in transforming Kangankunde into a producing asset and we will soon communicate the value and financial metrics of this Stage 1 development. When we secured the project, we made a commitment to the Malawian Government and the local community that advancing Kangankunde into production was a key priority. Today’s announcement illustrates that we are delivering on this commitment. As we have previously reported, we have received considerable inquiry from rare earths industry participants, trading houses, and other off-takers interested in securing monazite concentrate from Kangankunde. Technical studies of the Stage 1 plant will allow us to run a formal process to select the customers that bring the best outcome for Lindian. In terms of funding, we also have many options ranging from equity, debt, and pre-payment solutions. We will secure the optimum outcome for shareholders in this regard.”*

**Lindian’s Chief Executive Officer, Alistair Stephens added:** *“Lindian has multiple work streams advancing including engineering development, ongoing drilling and assaying, metallurgical work and now multiple Stage 1 project design and development activities. Having a fully permitted project gives us a major strategic advantage and facilitates rapid development of this project. Stage 1 positions Lindian as a highly and strategically meaningful monazite concentrate producer in its own right, but importantly, it allows us to rapidly establish the necessary infrastructure and supporting logistics that will underpin our much larger Stage 2 operation which we can develop while we are in production during Stage 1. Today’s announcement illustrates that we will have a steady stream of project development updates as well as continued reporting of resources related assay results, an Exploration Target, metallurgy testwork outcomes, and a maiden Mineral Resource Estimate scheduled for early July.”*

*“This next step in project development, which is occurring 8 months since we first commenced works on the ground, will form an important message to both the Government of Malawi and the local community on our commitment to develop this project consistent with the Government’s focus on mining development in the nation. The opportunities that this project will provide are profound, will benefit Malawi’s economic development, improve the welfare of its citizens, improve social economic empowerment of the Malawian people, and assist in the uplift of local community development, while delivering sustainable Lindian shareholder value and managing environmental impacts with leading practice of industry standards.”*

## DETAILED OVERVIEW OF PROJECT DEVELOPMENT ACTIVITIES

### 1. Mine Design and Mine Planning

Mine design works for the initial Stage 1 of production will be undertaken in two stages. The first stage will assess the design of an initial trial mining program. This will consist of the mining of a small parcel of mineralization for plant feed during commissioning and mining infrastructure upgrade.

Kangankunde is a hill elevated about 200 metres above the surrounding plane. Initial mining will commence on the hill top and will utilize an existing and structurally sound haul road to the base of the hill and the ROM pad at the processing plant.

A detailed mine design, plan and schedule will be undertaken in early 2024 using the Mineral Resource Estimate update to Indicated Resources. The Company has commenced discussions with multiple providers with an expectation to invite tenders for the provisions of drill, blast, load, haul and mobile crushing services by early 2024.

## 2. Stage 1 Process Design

Significant progress has been made on the Stage 1 plant process design for, illustrated below.

The ROM stockpile of crushed mineralisation from a mining contractor using mobile crushing and screening plant. A milling circuit with a forecast throughput of approximately 220,000 tonne per annum potentially increased to 440,000 tonne per annum with the addition of secondary integrated circuit following ramp up and optimization.

Classification circuits consist of a vibrating screen and hydrocyclones providing a coarse and fine size fraction for the gravity separation circuits. Recovery of monazite by means of gravity separation using spiral concentrators and Multi-Gravity Separators (MGS).

Concentrate cleaning will be undertaken using a single Low Intensity Magnetic separator (LIMS) and two Wet High Intensity Magnetic Separators (WHIMS). Concentrate dewatering will be undertaken using one filter press, and concentrate will be bagged, stored and packed into sea containers for dispatch.

Tailings dewatering thickener for process water recovery will be installed for tailings disposal and containment into a tailings storage facility (TSF).

A preliminary motor load list for total power draw determination and sizing of power generation requirements have been completed to assess power draw needs.

Engineering group Afengco (Pty) Ltd leads the process design study. Afengco (Pty) Ltd is a South Africa based engineering company that specialize in process engineering, electrical instrumentation, project management, HAZOP studies, project implementation, commissioning, operator training and operational support.

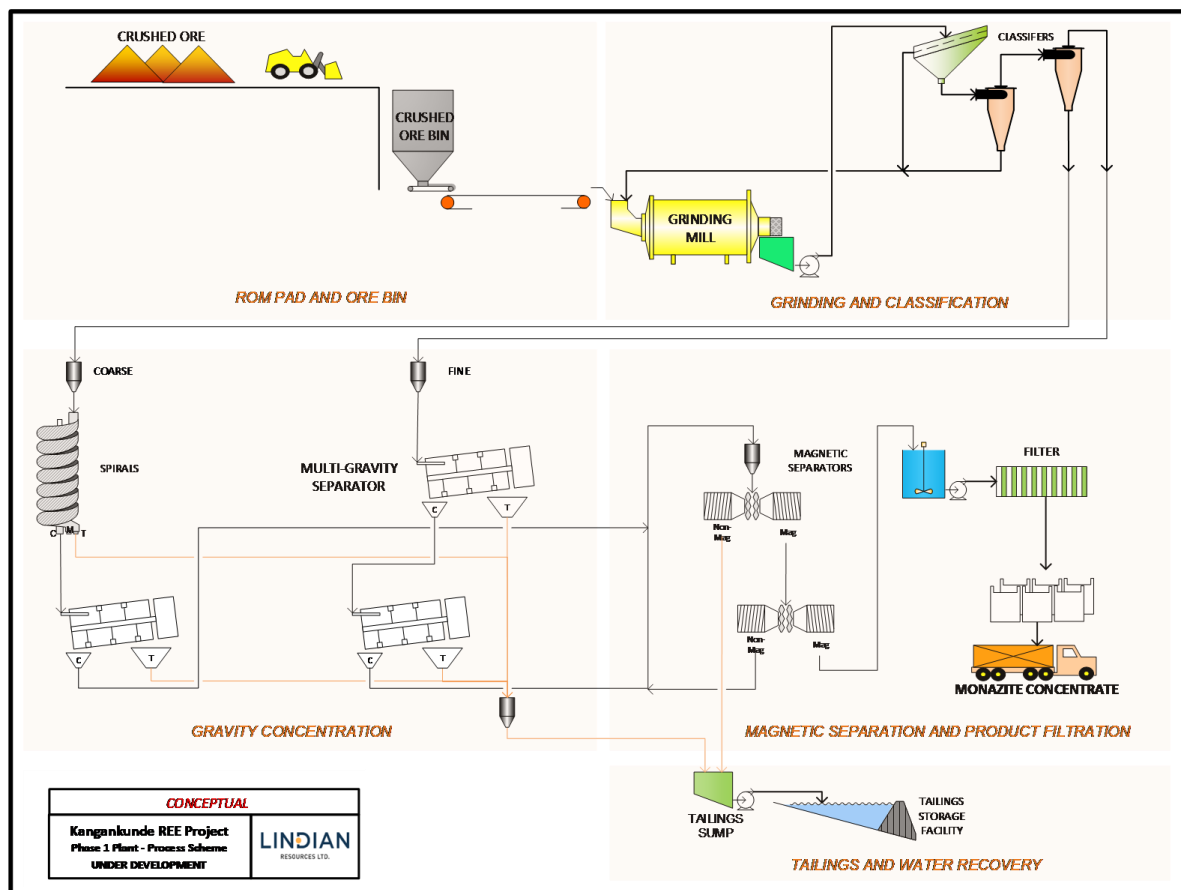


Image 2: Metallurgical flowsheet for the grinding and recovery of Kangankunde non-radioactive monazite concentrate



**Image 3: Elevated view of the recovery circuit and tailings thickener.**



**Image 4: Side view of the recovery circuit and concentrate filter press and packing shed and tails thickener (far right).**

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### 3. Project Infrastructure

Civil infrastructure engineering group Infracon Limited, a Malawian company, leads the civil engineering design team.

Civil works programs consist of:

- Detailed engineering design and upgrade of 5km of access road to the M1,
- Design and construction of a mining laydown area,
- Design and construction of a plant workshop,
- Design and construction of an administration building,
- Design and construction of civil works for the process plant area,
- Design and construction of bore water field pumping and storage,
- Design and construction of potable water supply,
- Location of a weighbridge,
- Design, construction and security of an explosives magazine,
- Design and construction of power plant and capacity (third party provider),
- Design construction and location of a Tailings Storage Facility (TSF),
- Civil geotechnical survey (completed),
- Planning for future expansion area allocation.

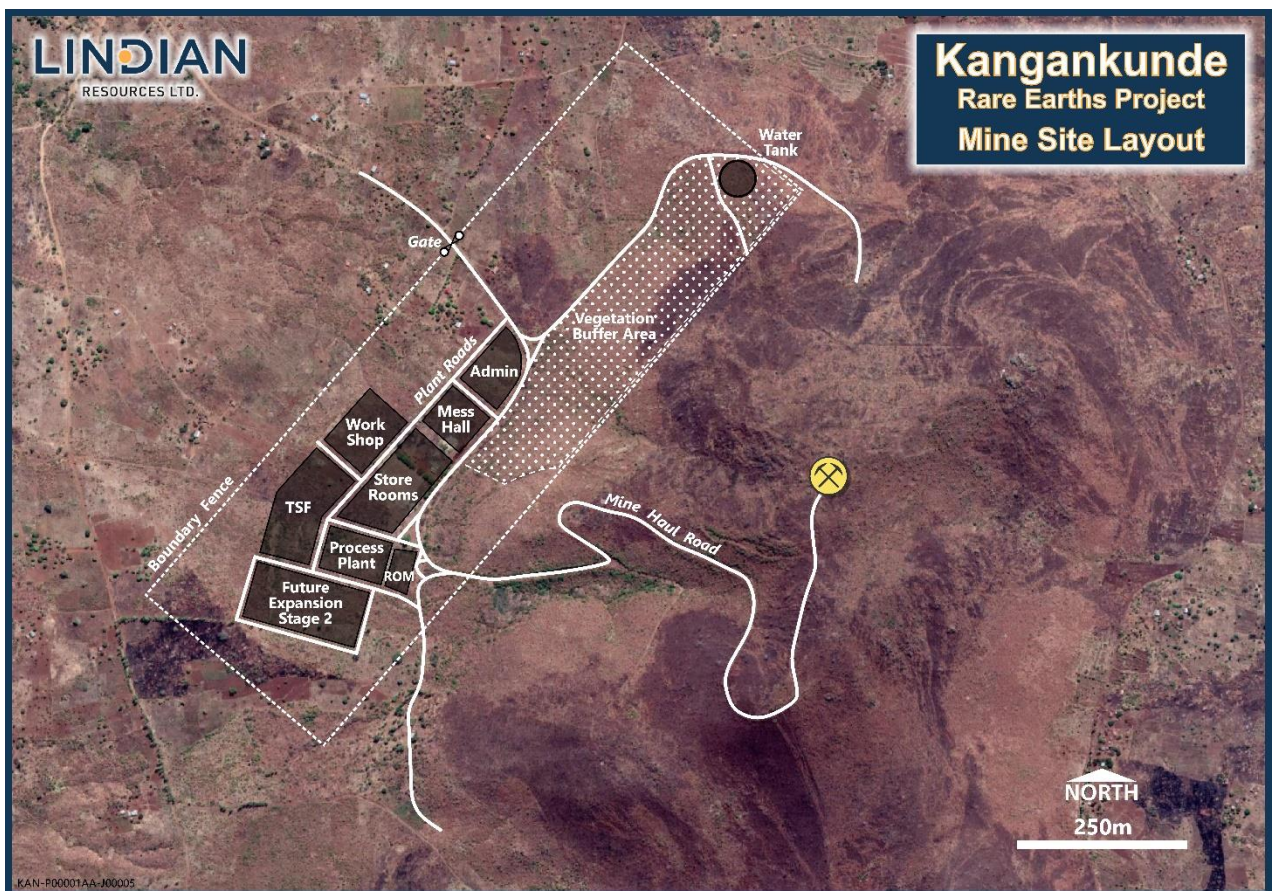


Image 5: Project site layout. From top right to bottom left: administration building, messing, store room and workshop, ROM Pad, process plant and TSF, and future expansion area (bottom left).

### **3.1 Civil Geotechnical Survey**

Infracon has supervised a completed civil geotechnical engineering works program that provides criteria into ground stability conditions that impact the design of foundations needed to support the plant and ancillary operations. Geotechnical consultants Geoconsult, a Malawi's geotechnical consultancy group undertook the survey.

### **3.2 Ground Water Survey**

Hydrogeotec Company, a Malawian company that specializes in hydrogeological services, has successfully completed a ground survey for water in the licence holdings of the project in collaboration with the Malawian Government services for water resources. A drill program has identified productive water bores capable of supplying enough water for operations, that are being used as the basis of a licence to extract, store and discharge water from the licence area. This process is expected to be completed before the end of the current calendar year.

## **4. Metallurgical Programs**

The current metallurgical program is expected to be completed by the end of August 2023.

Phase 1 metallurgy undertaken on a 130 kilogram sample resulted in the qualification of a water based gravity separation process and resulted in a recovery of 70% at a concentrate grade of 60% (refer ASX release dated 11<sup>th</sup> April 2023).

Phase 2 metallurgy works are underway on two ~300 kilogram sample over a broader surface expression of mineralisation. Initial testwork and analysis by ALS Metallurgy has been completed to assist in establishing grinding requirements and power draw estimation. Updates on the progress of results from the program will be made progressively over the next several months.

Phase 3 test work will be undertaken on drill samples located in Perth to test the variability of metallurgical along strike and with depth of mineralisation.

Metallurgical studies have been overseen by Specialised Metallurgical Services Pty Ltd with sections being outsourced to qualified third-party service providers including ALS Metallurgy, Auralia Metallurgy, Nagrom Mineral Processing Laboratory, GeoLabs Global, Multotec and Coremet.

## **5. Logistics Study**

The Company will investigate expressions of interest and quotations for the transportation of mineral concentrate from Malawi to various Ports of loading and destinations. As part of this study, the Company will undertake third party analysis of the concentrate to independently validate the classification of the product as general goods for transport code purposes. The project site has good access to the M1 highway within 5 kilometers of the site and access to rail facilities at Balaka that can rail product east to Port Nacala or South to Port Beira. Malawi has cross border agreements with the Africa countries for the transportation of inbound and outbound goods.

## **6. Community Engagement Plan**

The Company engages with the Government, Balaka District community and local community on a regular basis. The regional Area Development Committee has formed a Community Engagement subcommittee that will be the conduit for an interactive Community Engagement Plan. This committee will communicate and disseminate to the broader community, project development activities, strategic project development initiatives, community development and assistance programs, and also serves as a mechanism for any community grievance or complaints. This process assists communicate information to all the community the opportunities related to area development. This initiative is designed to ensure that the community and the Company work together in a symbiotic relationship where the needs of each party can be discussed in a harmonious forum.

## **7. Marketing Agreements**

The Company has been approached by groups seeking interest in product offtake agreements for Kangankunde monazite concentrate. Once the production profile and timing of the process plant can be finalized, these preliminary interests can progress to a formal process.

## **8. Construction and Operations Management**

The project area is located close to the M1 highway and only 24 kilometers to the town of Balaka. Balaka has a population of about 36,000 people and many services and facilities including shops, a hospital, medical clinics, accommodation providers, mechanical and engineering services, the local council and fuel stations. These will be used for accommodation for construction personnel and, at the appropriate time, for the permanent housing of operational staff.

## **9. Capital Costs Estimations**

CAPEX estimations for Stage 1 processing plant have commenced with budget pricing for most major equipment received from potential Vendors.

Budgets for Stage 1 detailed engineering (civils, infrastructure, processing plant), construction, mining development, mobile crushing and screening are in progress. Capital costs will be determined during the source of the project assessment based on final quotations received from suppliers and contractors. These are anticipated to be available and finalized during the July Quarter 2023 and form part of the Company's engineering study.

## **10. Operating Costs Estimations**

Operating costs will be assessed on the basis of the outcome of the mining contracts, process plant operating costs estimations, administration, supervision and management costs, logistics costs and ancillary program costs.



## 11. Project Study

On completion of the update to the resource statement (to an indicated resource category), firm quotations from contractors for project development, and acceptable quotations for estimations of operating costs (including mining, labour and power, plant operating costs and other imputation costs), the Company intends to then compile a study document that will provide a commercial and economic assessment of the project metrics.

## 12. Project Implementation Schedule and 2023 Milestones

The summarized plan of development is summarized below.

**TABLE 1: KEY WORK STREAMS FOR STAGE 1 PROCESSING PLANT AND DEVELOPMENT**

	2023						2024			
	July	Aug	Sept	Oct	Nov	Dec	Q1	Q2	Q3	Q4
Maiden MRE	█									
Exploration Target			█	█						
Update MRE						█				
Metallurgy	█	█								
Process Design		█								
Project Layout		█								
Civil Engineering Plans		█								
Commence Procurement			█							
Detailed Engineering			█							
Logistics Study				█						
Civil Site Works Commence					█	█				
Plant Construction							█	█	█	█
Commissioning/production										█
Marketing Engagements		█	█	█	█	█	█	█	█	█

### **13. Mineral Resource Estimate**

Phase one mine development drill program is complete with 91 drill holes for 14,163 meters (by Thompson Drilling). The final 2,000 assays (14% of the assay database) have been subject to logistics delays and are now expected to be completed toward the end of June 2023. This will result in a maiden Mineral Resource Estimate due for publication in early July 2023. It is expected that the majority of this resource estimate will be an inferred resource category. A detailed topographic LiDAR survey has been commenced (by Woolpert Africa) and is expected in the near term. This survey will be used for resource estimation and both mining and civil engineering design programs.

### **14. Mineral Resource Estimate Update**

An infill drill program for resource definition is currently in planning. This drill program is designed to increase resource confidence on a portion of the maiden MRE from an inferred to an indicated resource category for Stage 1 production and for the project assessment. It is expected that this drill program will commence in July 2023. The design and meterage will be assessed during June 2023 once geostatistical evaluation of the existing data, to be conducted during the maiden MRE estimation, has determined the optimum drill pattern design for indicated resource confidence. The subsequent resource update is expected to be published in late 2023. Works will be designed and supervised by GJ Exploration Pty Ltd, assayed by ALS Laboratories (South Africa and Perth), and the mineral resource estimate is expected to be undertaken by Cube Consulting Pty Ltd.

### **15. Exploration Target Drilling**

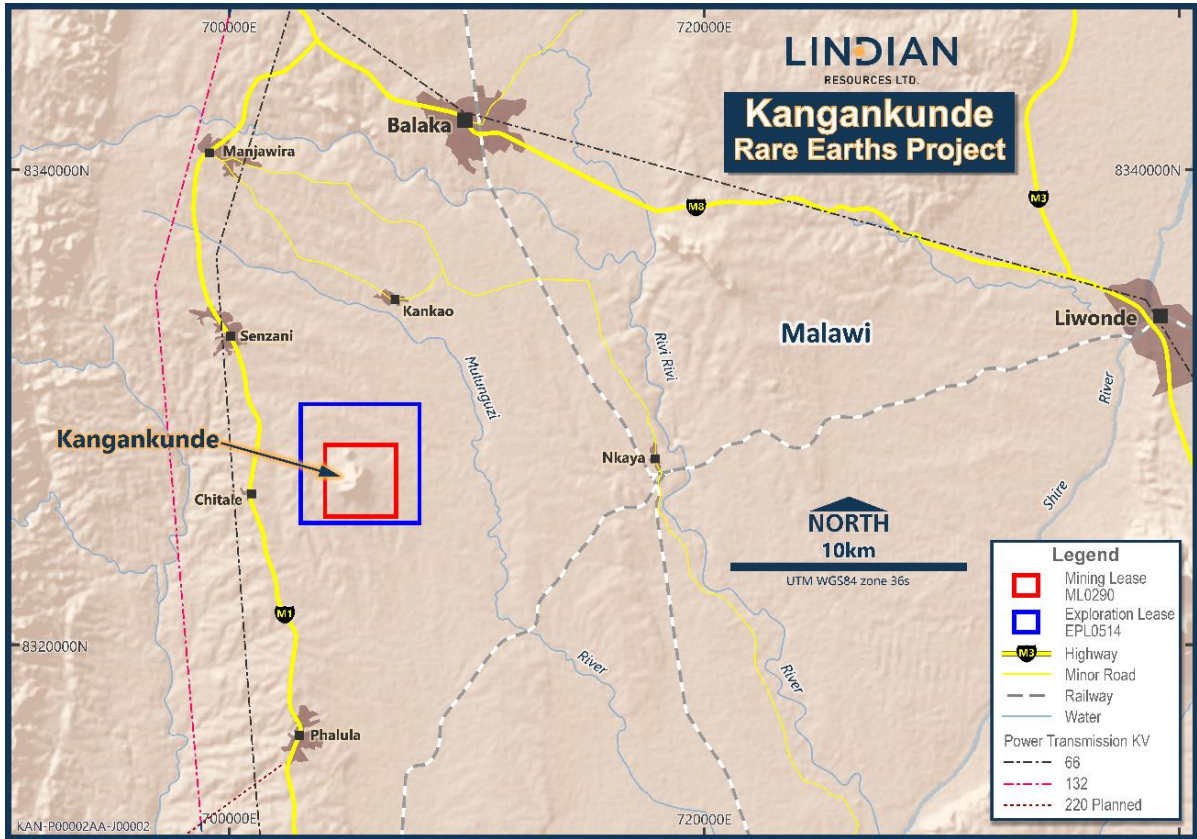
Two deep core holes have been designed to test the geometry and tenor of mineralisation at depth below the MRE drilling area. The first drill hole (KGKRCDD074) drilled from the west to the east across the short axis of the deposit has been completed to a depth of 980.5 metres (refer ASX:LIN release dated 24 May 2023). The first half of the hole has been sampled and dispatched for assay with the remaining core currently being sampled prior to dispatch for assay during June.

The second core hole (KGKDD009) drilled from the north to the south along the long axis of the mineralisation is currently drilled to a depth of more than 500 metres. A significant mechanical breakdown (now repaired) has slowed the progress of the drilling. It is expected that the drill hole will be completed in June 2023 and progressively cut and sampled with results expected during the July - September Quarter 2023.

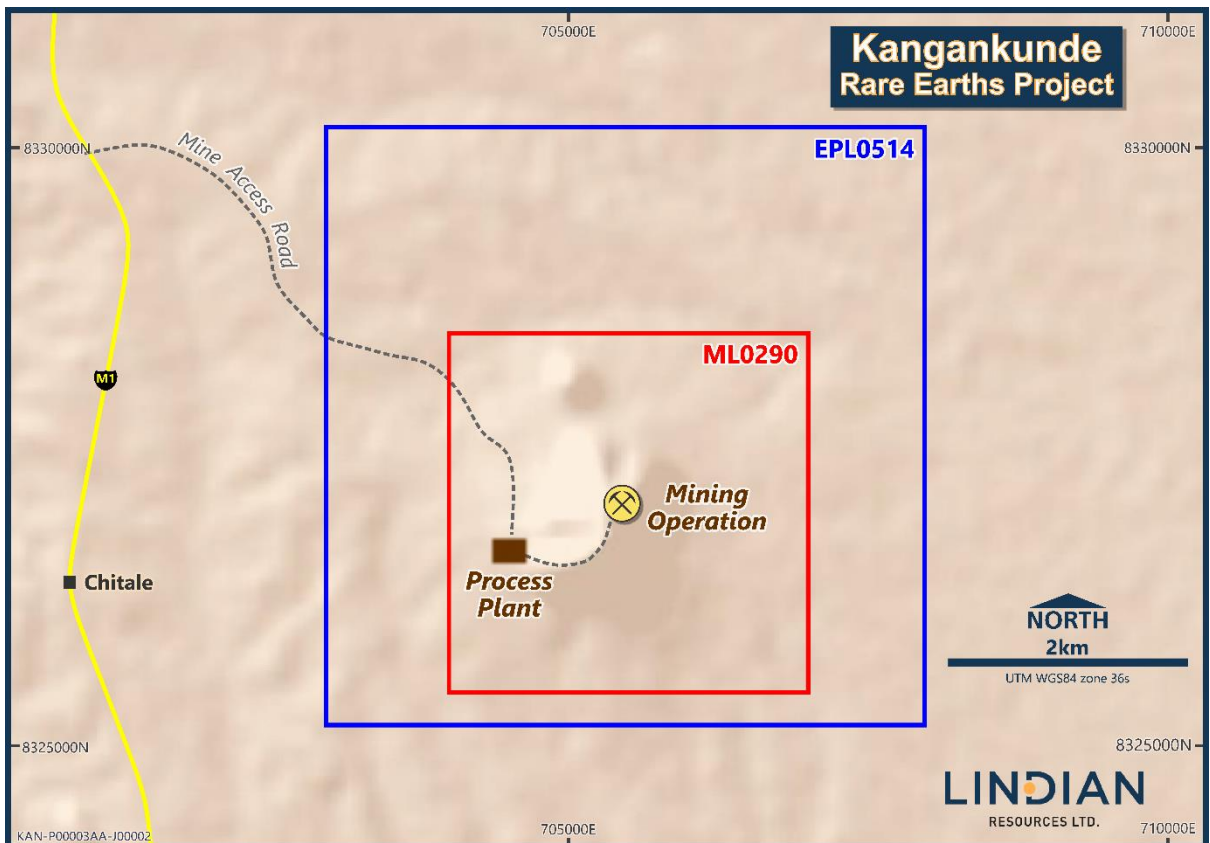
An Exploration Target estimate (based on deep drilling and assaying) below the MRE is intended to be compiled and released late in the July - September Quarter 2023.

### **16. Project Location**

The Kangankunde Project is located in the central southern region of Malawi. The project is tenured to Mining Licence MML0290 (red box), surrounded by Exploration Licence 0514 (blue box). The project has an Environmental and Social Impact Assessment Certificate (ESIA) No:2.10.16 that covers both MML 0290 and EL0514 that grants to holder the right to development, mining, processing and shipping a mineral concentrate.



Images 6 and 7: Project Location maps above and below



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## 17. Tenure and Licences

Lindian Resources Limited will progressively acquire 100% of Malawian registered Rift Valley Resource Developments Limited and its 100% owned title to Exploration Licence EPL0514/18R and Mining Licence MML0290/22 (refer ASX announcement ASX:LIN dated 1 August 2022) issued under the Malawi Mines and Minerals Act 2018. The Exploration and Mining Licences have an Environmental and Social Impact Assessment Licence No.2:10:16 issued under the Malawi Environmental Management Act No. 19 of 2017.



## 18. About Malawi

The Republic of Malawi is situated in southern-central Africa. It is flanked by Mozambique in the south-east and south-west, the United Republic of Tanzania in the north-east and Zambia in the west. Malawi covers an area of about 118,500 km<sup>2</sup> of which Lake Malawi, Africa's third largest lake that occupies an area of 24,240 km<sup>2</sup>. About 80 per cent of Malawi's estimated 18 million people live in the rural areas, and over 60 per cent live below the poverty line.

Since independence in 1964, Malawi has remained a member of the British Commonwealth and maintains a system of Westminster style election of parliament representatives and a derivative of British Law. It has emphasized the need to maintain macroeconomic stability and promote mining, agriculture and tourism as the main elements of its development strategy.

Malawi recognizes the urgent need to restructure the economy so as to respond to the challenges of globalization and reap the benefits from trade liberalization under the evolving multilateral trading system. They have implemented a comprehensive policy framework that provides an enabling environment for both domestic and foreign investment, accelerating public sector reforms, maintaining macroeconomic stability, strengthening transport and communications networks, promoting domestic savings and fostering entrepreneurship and private sector development, among others.

-ENDS-

This ASX announcement was authorised for release by the Lindian Board.

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## Forward Looking Statements

This announcement may include forward-looking statements, based on Lindian's expectations and beliefs concerning future events. Forward-looking statements are necessarily subject to risks, uncertainties and other factors, many of which are outside the control of Lindian, which could cause actual results to differ materially from such statements. Lindian makes no undertaking to subsequently update or revise the forward-looking statements made in this announcement, to reflect the circumstances or events after the date of the announcement.

## Competent Persons Statements

The information in this Report that relates to the Kangankunde Project is based on information compiled by Mr. Alistair Stephens, who is a Fellow of the Australian Institute of Mining and Metallurgy (AusIMM). Mr. Stephens is the Chief Executive Officer of Lindian Resources Limited. Mr. Stephens has sufficient experience relevant to the style of mineralisation and type of deposit under consideration and to the activity being undertaken to qualify as a Competent Person as defined in the 2012 Edition of the 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves' (JORC Code).

Mr. Stephens consents to the inclusion in this report of the matters based on the information in the form and context in which it appears.

Unless otherwise stated, where reference is made to previous releases of exploration results in this announcement, the Company conforms that it is not aware of any new information or data that materially affects the information included in those announcements and all material assumptions and technical parameters underpinning the exploration results included in those announcements continue to apply and have not materially changed.

The information in this report that relates to previous Exploration Results was prepared and first disclosed under the JORC Code 2012 and has been properly and extensively cross-referenced in the text to the date of the original announcement to the ASX.