

## **KANGANKUNDE RARE EARTHS PROJECT MAJOR DRILL PROGRAM TO COMMENCE**

### **Highlights**

- Mobilisation of earth moving equipment has commenced to site for road clearing and drill pad preparation
- Planning significantly progressed for first phase of definition drilling and project development works to commence next month; contract signed for rig to drill 10,000 metres of RC drill and 2,500 metre of core drilling with final meterage wet season dependent
- Mobilisation of drill rig scheduled this month
- Extensive surface mineralisation observed with a potential drill target surface expression of about 650 metres long and 400 metres wide
- Initial grab sample of mineralisation returned 21% Neodymium and Praseodymium content and low radioactivity levels at just 30ppm combined Uranium and Thorium

Lindian Resources Limited (ASX: LIN) (Lindian or the Company) is pleased to provide this operational update to shareholders with respect to a comprehensive 12,500 metre drilling program commencing next month.

**Lindian's Chief Executive Officer**, Mr Alistair Stephens commented; *"The Lindian team has completed a substantial amount of the initial planning for the upcoming drill program. Kangankunde is the worlds' best undeveloped rare earths project, and this program is instrumental in the assessment of the extent and potential of rare earth mineralisation with respect to its grade and tonnage."*

*"Recent conversion of options into fully paid ordinary shares, coupled with our existing cash balance, means we are sufficiently funded to commence this drill program. As previously flagged, interest in Kangankunde from financiers, end-users and other industry participants is considerable and we are assessing longer-term funding opportunities with them. I consider that we are on the cusp of defining the World's most significant rare earth deposit."*

## Mobilisation of Earthmoving Equipment

The Company has commenced the mobilisation to site of earth moving equipment for grading of roads, clearing of work areas, re-instatement of roads to the hilltop and preparation of drill pads.

## Drill Contract

The Company has signed a drilling contract for 10,000 metres of RC drilling and 2,500 metres of core drilling with Thompson Drilling who have extensive working experience in Malawi. The completion of the entire meterage will be dependent on the commencement of the wet season that will limit the safe access to some areas of the project. It is possible that drills may continue to operate from some locations during the wet season. This will be assessed on an ongoing risk minimal basis. Drilling from the top of the Kangankunde hill is initially limited to a relatively small area of 400m by 150m due to the topography.

## Geological Mapping

Geological mapping has determined the perimeter of the carbonatite intrusive contact with country rock. The estimated extent of the carbonatite is 650 metres long and 400 metres wide and consists of mixed carbonate breccia with visible monazite mineralisation. A zone of mixed carbonatite mineralisation and altered host rock mineralisation has been also identified and in places is up to 100 metre wide and envelopes the carbonatite core.

## Preliminary and Initial Grab Sample Assay

The company has received a preliminary mineralogical and assay assessment of mineralisation sourced from a single isolated grab samples of mineralised rock from Kangankunde. Previous estimates by previous explores defined a resource containing 107,000 tonne REO from 2.5 million tonne grading 4.2%<sup>1</sup>. The mineralogy consists of;

Dolomite (magnesium calcium carbonate)	62.3%
Strontianite (strontium carbonate)	17.5%
Fluorapatite (calcium fluorophosphate)	14.7%
Monazite (rare earth phosphate)	5.6%
Total Rare Earth Oxide (TREO) Content (%) of monazite	2.6%
Percentage Neodymium and Praseodymium (Nd+Pr) of monazite	21%

<sup>1</sup> **Qualifying Statement:** "Refer ASX:LIN announcement dated 01 August 2022. The information in this announcement that relates to previous exploration results for the Kangankunde Project are reported in the Company's web site at [www.lindianresources.com.au](http://www.lindianresources.com.au). The Company confirms it is not aware of any new information or data that materially affects the information in previous releases unless expressly stated."

Of special note were the low level assay results for radioactive elements. The assays for thorium and uranium are;

Thorium (Th)	28ppm
Uranium (U)	2ppm

This initial result indicates that the Kangankunde mineralisation is potentially low in radioactive elements. Further analysis for radionuclides will be conducted routinely on drilling and processing test work samples. If this is an indicative result of the mineralisation, then this could result in Kangankunde being classified as a general goods material for transportation purposes (as opposed to Class Seven for Radioactive materials) even when processed to a mineral concentrate. Using historic metallurgical test work, and an upgrade factor to a mineral concentrate, results in a predictive estimate of 790 ppm combined uranium and thorium assay in mineral concentrate and logically a general goods classification product.

## **Kangankunde Overview**

### **Location**

The Kangankunde deposit is located in Malawi about 90 kilometres north of the city of Blantyre and 15 kilometres from the regional town of Balaka. The project is located within 3 kilometres of the sealed M1 highway, 4 kilometres from the high voltage trans-Malawian power grid and 25 kilometres from the Shire River that is the only river to drain from the freshwater Lake Malawi.

The project tenure comprises a granted Mining Licence MML0290/22 covering the entire known carbonatite and a surrounding Exploration Licence EL0514/18R. The inset of Figure 3 shows the tenure coverage in relation to the Kangankunde Carbonatite.

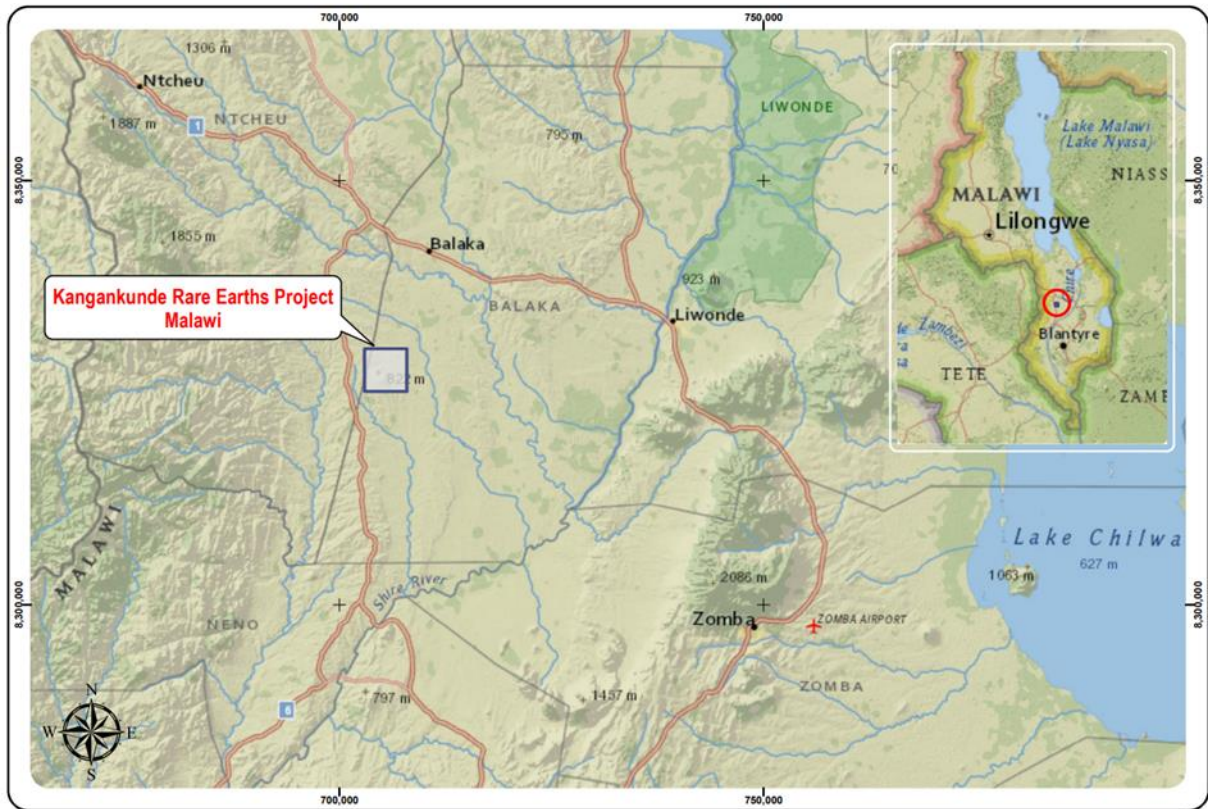


Figure 1: General location map of Kangankunde



Figure 2: Image of the Kangankunde Hill looking east from the M1 highway.

## Geology

The Kangankunde Hill rises to a height of up to 200m above the surrounding plain. The Kangankunde carbonatite occurs as discrete oval shaped feature with a carbonatite and host rock breccia halo Figure 3 shows a simplified interpretation of the main Kangankunde deposit rock type zones. The initial drilling program is planned to gain geological and analytical data on the central carbonatite/carbonatite breccia and the surrounding carbonatite mixed breccia.

The carbonatite is generally fresh at surface with weathering limited to preferential removal of some carbonates and on joint planes.

The main rare earth containing mineral in the deposit is monazite (rare earth phosphate) with minor amounts of bastnaesite (rare earth carbonate) and flourencite (typically a samarium phosphate).

The observable monazite is a distinctive apple green colour, commonly coarse grained with radiating clusters of crystals in excess of 10mm, as clusters of smaller millimetre scale crystals, and as monazite veins.

The monazite is usually associated with strontianite (strontium carbonate), baryte (barium sulphate) and occasional quartz and minor apatite phases.

Figure 4 shows to photographs of mineralised carbonatite with distinctive monazite crystals and associated minerals.

Historic metallurgical test work has demonstrated the mineralisation is amenable to low-cost gravity separation to produce a high-grade concentrate. Lindian will be conducting extensive laboratory and pilot scale test work to determine the optimal processing route and potential product characteristics during 2023.



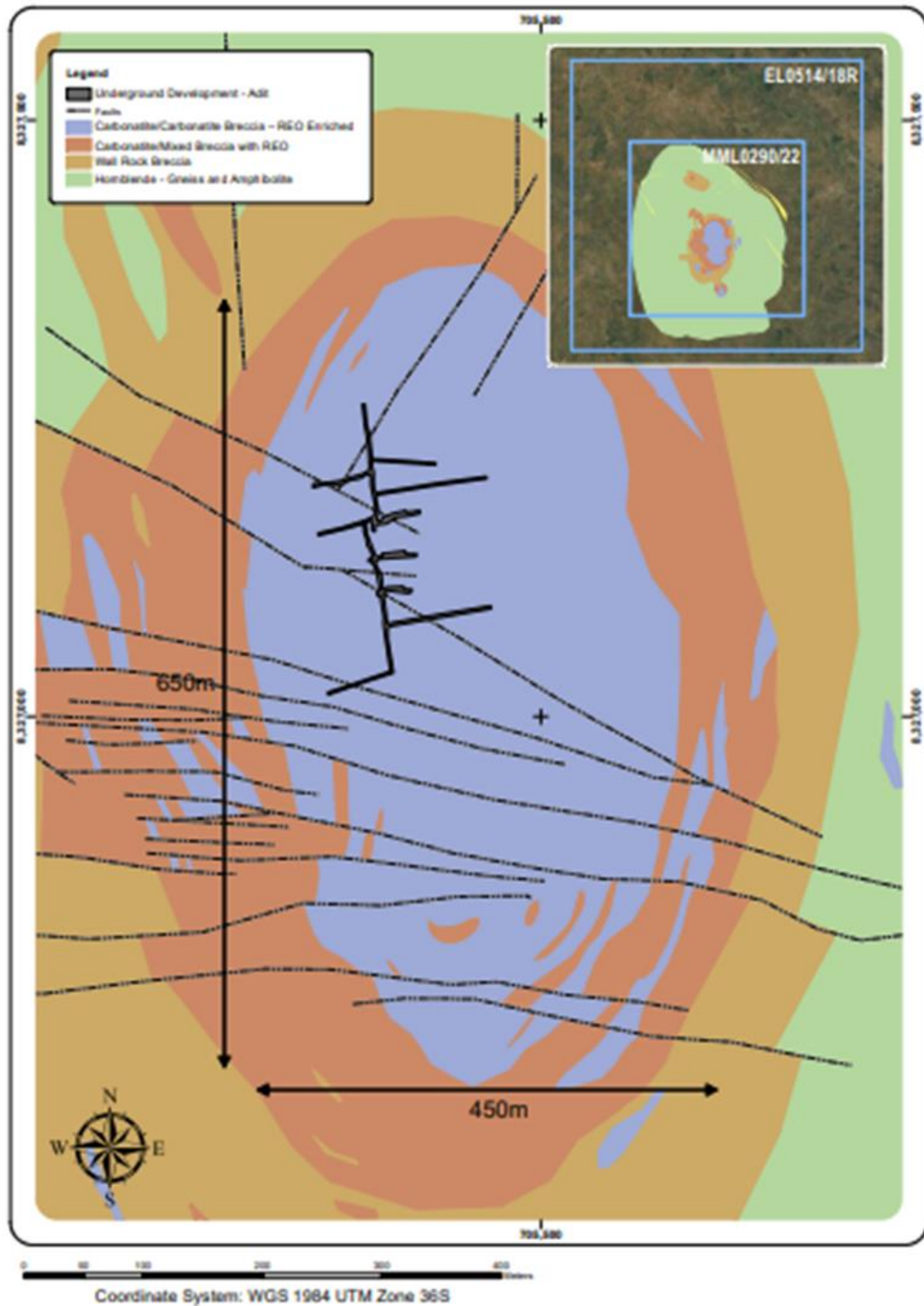


Figure 3 Interpreted geology Kangankunde carbonatite

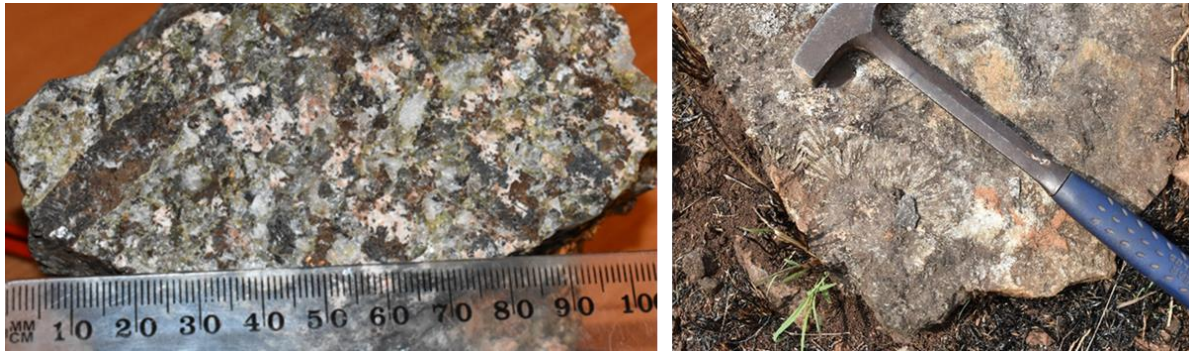


Figure 4: Left; Large crystals of green monazite with associated ankerite (iron carbonate) (brown) and strontianite (pink) in carbonatite, Right Coarse radiating monazite crystals, hammer as scale (42cm long).

## History

The Kangankunde carbonatite has been the subject of studies from early mapping and sampling in the 1950's followed by drilling, surface trenching, underground adit development and pilot plant test work in the 1970's with further drilling and feasibility study activities in the 1980's. The majority of the historic data has either been lost or is limited to hardcopy form. No significant work has been undertaken on the project since 1990.

## Historic Underground Adit

Previous explorers (1970's) excavated an adit approximately 100 metres beneath the crest of the Kangankunde hill, extending approximately 300 metres south within the mineralised carbonatite. The adit was used for bulk sampling and as a platform for underground based drill rigs.

Lindian has only inspected the entrance of the adit at this stage. Consideration is being given in the work program to re-accessing the adit for bulk sampling and as a potential drill platform to test the lateral extents of the carbonatite where surface access is limited.



Figure 5: Entrance to historic adit



## Site Mine Processing Area

The historic pilot plant crusher wall infrastructure remains in good condition and potentially an area suitable for a plant location. Lindian will clear this area during the upcoming site clearing and fully inspect the infrastructure to determine the suitability to re-use it.



Figure 6: Retaining wall of historic pilot plant crusher

## Planned Site Activities

Lindian is planning to commence the following work in Q4 2022:

- Drilling program of 12,500 metres combined RC and core drilling. Limitation on wet season conditions.
- Commencement of metallurgical test works
- Hydrogeology studies
- Surface topographic survey conducted by drone survey technology

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

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### **Competent Persons Statement**

The work has been compiled and has been reviewed by Mr. Alistair Stephens who is the Chief Executive Officer of the Company. Mr. Stephens is a **Fellow** of the **Australasian Institute of Mining and Metallurgy (AUSIMM)** and has sufficient experience that is 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.

## JORC Code, 2012 Edition – Table 1 report template

### Section 1 Sampling Techniques and Data

(Criteria in this section apply to all succeeding sections.)

Criteria	JORC Code explanation	Commentary
Sampling techniques	<ul style="list-style-type: none"> <li>Nature and quality of sampling (eg cut channels, random chips, or specific specialised industry standard measurement tools appropriate to the minerals under investigation, such as down hole gamma sondes, or handheld XRF instruments, etc). These examples should not be taken as limiting the broad meaning of sampling.</li> <li>Include reference to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used.</li> <li>Aspects of the determination of mineralisation that are Material to the Public Report.</li> <li>In cases where 'industry standard' work has been done this would be relatively simple (eg 'reverse circulation drilling was used to obtain 1 m samples from which 3 kg was pulverised to produce a 30 g charge for fire assay'). In other cases more explanation may be required, such as where there is coarse gold that has inherent sampling problems. Unusual commodities or mineralisation types (eg submarine nodules) may warrant disclosure of detailed information.</li> </ul>	Grab sample of mineralised material. Representativity not known.
Drilling techniques	<ul style="list-style-type: none"> <li>Drill type (eg core, reverse circulation, open-hole hammer, rotary air blast, auger, Bangka, sonic, etc) and details (eg core diameter, triple or standard tube, depth of diamond tails, face-sampling bit or other type, whether core is oriented and if so, by what method, etc).</li> </ul>	Not applicable-single grab sample
Drill sample recovery	<ul style="list-style-type: none"> <li>Method of recording and assessing core and chip sample recoveries and results assessed.</li> <li>Measures taken to maximise sample recovery and ensure representative nature of the samples.</li> <li>Whether a relationship exists between sample recovery and grade and whether sample bias may have occurred due to</li> </ul>	Not applicable-single grab sample

Criteria	JORC Code explanation	Commentary
	<i>preferential loss/gain of fine/coarse material.</i>	
Logging	<ul style="list-style-type: none"> <li>Whether core and chip samples have been geologically and geotechnically logged to a level of detail to support appropriate Mineral Resource estimation, mining studies and metallurgical studies.</li> <li>Whether logging is qualitative or quantitative in nature. Core (or costean, channel, etc) photography.</li> <li>The total length and percentage of the relevant intersections logged.</li> </ul>	Not applicable-single grab sample.
Sub-sampling techniques and sample preparation	<ul style="list-style-type: none"> <li>If core, whether cut or sawn and whether quarter, half or all core taken.</li> <li>If non-core, whether riffled, tube sampled, rotary split, etc and whether sampled wet or dry.</li> <li>For all sample types, the nature, quality and appropriateness of the sample preparation technique.</li> <li>Quality control procedures adopted for all sub-sampling stages to maximise representivity of samples.</li> <li>Measures taken to ensure that the sampling is representative of the in situ material collected, including for instance results for field duplicate/second-half sampling.</li> <li>Whether sample sizes are appropriate to the grain size of the material being sampled.</li> </ul>	Grab sample, representivity not known
Quality of assay data and laboratory tests	<ul style="list-style-type: none"> <li>The nature, quality and appropriateness of the assaying and laboratory procedures used and whether the technique is considered partial or total.</li> <li>For geophysical tools, spectrometers, handheld XRF instruments, etc, the parameters used in determining the analysis including instrument make and model, reading times, calibrations factors applied and their derivation, etc.</li> <li>Nature of quality control procedures adopted (eg standards, blanks, duplicates, external laboratory checks) and whether acceptable levels of accuracy (ie lack of bias) and precision have been established.</li> </ul>	Certified laboratory for mineral analysis by lithium borate fusion total digest technique by a combination of ICP-OES and ICP-MS
Verification of sampling and assaying	<ul style="list-style-type: none"> <li>The verification of significant intersections by either independent or alternative company personnel.</li> <li>The use of twinned holes.</li> <li>Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols.</li> <li>Discuss any adjustment to assay data.</li> </ul>	Not applicable-single grab sample Na

Criteria	JORC Code explanation	Commentary
Location of data points	<ul style="list-style-type: none"> <li>Accuracy and quality of surveys used to locate drill holes (collar and down-hole surveys), trenches, mine workings and other locations used in Mineral Resource estimation.</li> <li>Specification of the grid system used.</li> <li>Quality and adequacy of topographic control.</li> </ul>	Sample selected from outcrop on Kangankunde Hill within ML0290
Data spacing and distribution	<ul style="list-style-type: none"> <li>Data spacing for reporting of Exploration Results.</li> <li>Whether the data spacing and distribution is sufficient to establish the degree of geological and grade continuity appropriate for the Mineral Resource and Ore Reserve estimation procedure(s) and classifications applied.</li> <li>Whether sample compositing has been applied.</li> </ul>	Grab sample from outcrop. Insufficient to establish representivity and spatial associations
Orientation of data in relation to geological structure	<ul style="list-style-type: none"> <li>Whether the orientation of sampling achieves unbiased sampling of possible structures and the extent to which this is known, considering the deposit type.</li> <li>If the relationship between the drilling orientation and the orientation of key mineralised structures is considered to have introduced a sampling bias, this should be assessed and reported if material.</li> </ul>	Grab sample representivity not known
Sample security	<ul style="list-style-type: none"> <li>The measures taken to ensure sample security.</li> </ul>	Sample was shipped by airfreight courier to accredited laboratory.
Audits or reviews	<ul style="list-style-type: none"> <li>The results of any audits or reviews of sampling techniques and data.</li> </ul>	Non undertaken – single grab sample

## Section 2 Reporting of Exploration Results

(Criteria listed in the preceding section also apply to this section.)

Criteria	JORC Code explanation	Commentary
Mineral tenement and land tenure status	<p>Type, reference name/number, location and ownership including agreements or material issues with third parties such as joint ventures, partnerships, overriding royalties, native title interests, historical sites, wilderness or national park and environmental settings.</p> <p>The security of the tenure held at the time of reporting along with any known impediments to obtaining a licence to operate in the area.</p>	ML020 and EL0514 both owned by Rift Valley Resource Developments Limited (RVRD) a Malawian registered company. Lindian Resources has a Court consent order for the binding purchase agreement in place to acquire 100% of RVR.
Exploration done by other parties	Acknowledgment and appraisal of exploration by other parties.	1952-1958: Eight trenches excavated. No data records known to exist.



Criteria	JORC Code explanation	Commentary
		<p>1959: Geological mapping, ten trenches excavated, seven drill holes drilled below main trenches. Data not sighted</p> <p>1972-1981: Trench mapping and sampling, adit driven 300 metres north to south with several crosscuts. Diamond drilling from crosscuts. Pilot plant operated producing strontianite and monazite concentrate. Limited data available in hard copy only.</p> <p>1987- 1990: Feasibility study activities including surface core drilling, processing studies, geotechnical and groundwater studies, estimation of “geological reserves” (Not JORC compliant) . Limited data available in hard copy reports.</p>
Geology	<i>Deposit type, geological setting and style of mineralisation.</i>	Monazite bearing intrusive Carbonatite
Drillhole information	<p><i>A summary of all information material to the understanding of the exploration results including a tabulation of the following information for all Material drillholes:</i></p> <ul style="list-style-type: none"> <li><i>easting and northing of the drillhole collar</i></li> <li><i>elevation or RL (Reduced Level – elevation above sea level in metres) of the drillhole collar</i></li> <li><i>dip and azimuth of the hole</i></li> <li><i>downhole length and interception depth</i></li> <li><i>hole length.</i></li> </ul> <p><i>If the exclusion of this information is justified on the basis that the information is not Material and this exclusion does not detract from the understanding of the report, the Competent Person should clearly explain why this is the case.</i></p>	na
Data aggregation methods	<p><i>In reporting Exploration Results, weighting averaging techniques, maximum and/or minimum grade truncations (e.g. cutting of high grades) and cut-off grades are usually Material and should be stated.</i></p> <p><i>Where aggregate intercepts incorporate short lengths of high-grade results and longer lengths of low-grade results, the procedure used for such aggregation should be stated and some typical examples of such aggregations should be shown in detail.</i></p> <p><i>The assumptions used for any reporting of metal equivalent values should be clearly stated.</i></p>	Single point sample only
Relationship between mineralisation widths and intercept lengths	<p><i>These relationships are particularly important in the reporting of Exploration Results.</i></p> <p><i>If the geometry of the mineralisation with respect to the drillhole angle is known, its nature should be reported.</i></p> <p><i>If it is not known and only the downhole lengths are reported, there should be a clear statement to this effect (e.g. ‘downhole length, true width not known’).</i></p>	Grab sample from outcrop. Relationship not known

Criteria	JORC Code explanation	Commentary
Diagrams	<i>Appropriate maps and sections (with scales) and tabulations of intercepts should be included for any significant discovery being reported These should include, but not be limited to a plan view of drillhole collar locations and appropriate sectional views.</i>	Maps in document show coordinates at datum WGS84 Zone 36 South
Balanced reporting	<i>Where comprehensive reporting of all Exploration Results is not practicable, representative reporting of both low and high grades and/or widths should be practiced to avoid misleading reporting of Exploration Results.</i>	Single sample representivity not known.
Other substantive exploration data	<i>Other exploration data, if meaningful and material, should be reported including (but not limited to): geological observations; geophysical survey results; geochemical survey results; bulk samples – size and method of treatment; metallurgical test results; bulk density, groundwater, geotechnical and rock characteristics; potential deleterious or contaminating substances.</i>	Nil – old historic data cannot be verified by audit and is not reported.
Further work	<i>The nature and scale of planned further work (e.g. tests for lateral extensions or depth extensions or large-scale step-out drilling). Diagrams clearly highlighting the areas of possible extensions, including the main geological interpretations and future drilling areas, provided this information is not commercially sensitive.</i>	Immediate programs are drilling programs, processing testwork, surface topographic survey.