

12 JANUARY 2024

## MOU FOR OFFTAKE AND PROCESSING OF HEAVY MINERAL SANDS AND RARE EARTHS FROM SANDY MITCHELL

### HIGHLIGHTS

- **Memorandum of Understanding (MOU) with Currumbin Minerals, which sets out a framework for the supply and delivery of Heavy Mineral Sands (HMS) from the Sandy Mitchell Rare Earths and Heavy Minerals Project for processing at CM's licenced treatment plant.**
- **The parties will undertake to negotiate a price for Currumbin Minerals to treat HMS ore and produce HM and Rare Earths critical minerals concentrate, to be sold by Ark Mines at commercial market rates**
- **Currumbin Minerals operates Australia's latest-technology heavy mineral sands gravity, electrostatic and magnetic processing plant based in Queensland; it remains owned and operated by the Neumann Family, who have been involved in heavy mineral sand production for over 70 years**
- **The MOU provides a framework for the parties to move towards a definitive collaboration agreement, where Currumbin Minerals will leverage its extensive industry experience and work directly with Ark Mines to optimise end-to-end logistics**
- **Follows successful completion of Ark Mines' 2,426m Stage 2 Drill Program at Sandy Mitchell, where Rare Earth Elements and Heavy Minerals mineralisation was visible in every drill hole**
- **Assays from the latest drill program are pending, alongside results from further metallurgical test work which collectively will form the basis of a maiden Mineral Resource Estimate**

**Ark Mines Limited (ASX:AHK) ('Ark' or 'the Company')** is pleased to announce that it has entered into a Memorandum of Understanding (MOU) with Currumbin Minerals, a specialist producer of heavy mineral sands (HMS), for the supply and delivery of mineral sands containing Rare Earth Elements and Heavy Minerals from the Company's fully-owned Sandy Mitchell project in North Queensland.

The MOU sets out the framework and timeline for the two parties to work together towards a definitive collaboration agreement (Definitive Agreement) that will facilitate the treatment of HMS Ore transported from Sandy Mitchell at Currumbin Minerals' fully owned and operated licensed treatment facility in South-East Queensland.

The terms of the MOU set out the key roles and responsibilities of both parties in order to establish the Definitive Agreement, which is expected to result in the production of Heavy Minerals and Rare Earth critical minerals concentrate to be sold by Ark at current commercial market rates.

These include the mining, haulage and delivery of HMS Ore from Sandy Mitchell to the Currumbin Minerals facility, and the negotiation of price terms for the treatment of HMS ore. Such terms will take into account key inputs such as transport costs, metallurgical recovery rates and the suitability of the Plant to treat HMS Ore from Sandy Mitchell, for the purpose of producing commercial quantities of HM and REE critical minerals concentrate.

This collaborative approach reflects the commitment by both sides to work towards the Definitive Agreement, which is intended to be negotiated in good faith within 12 calendar months from the date of the signed MOU.

The company expects market conditions for heavy minerals and rare earth elements, which are extracted from HMS placer deposits such as Sandy Mitchell, to remain robust.

In order to meet increased demand, Currumbin Minerals recently completed a 2023 expansion of its HMS processing plant which has been designed with the latest technology available, making this operation the only one of its kind in Australia. The upgrade significantly increased the plant's operating capacity for HMS processing and mineral extraction for up to 100 tons of sand an hour for the supply of critical minerals to domestic and export markets.



**Image 1: Currumbin Minerals' new state-of-the-art processing & separation plant.**

Ark Mines expects to benefit from Currumbin Minerals' extensive industry experience, which will assist with the optimisation of transport and logistics alongside the most efficient treatment and processing solutions.

The proposed agreement was also informed by the direct experience of both parties in the Queensland mining industry. Ark Mines Executive Director Ben Emery also holds the position of Non-Executive Chairman at Franklin Exchange, a Queensland-based mining investment firm which has worked directly with Currumbin Minerals for over 10 years marketing shipping HM and REE concentrates to global markets.

In view of the demand outlook and based on the drilling and exploration results received at Sandy Mitchell to-date, the MOU is expected to act as a catalyst for Ark Mines to move rapidly from

exploration into development, offtake sales and revenue generation. The Company expects to provide more updates with respect to its end-to-end development strategy in the near-term.



**Image 2/3: On-site loading operations for high-quality mineral sands products at the Currumbin Minerals facility.**

The MOU follows the successful completion in December of Ark's Stage 2 drill program at Sandy Mitchell, which comprised 2,426m at an average drill depth of 12.9m with Rare Earth Elements and Heavy Minerals mineralisation visible in every hole.

Further assay results from drilling are pending and together with ongoing test work will form the basis of a Maiden Mineral Resource Estimate (MRE).

**Executive Director Ben Emery said:**

*"This MOU marks the next step in our commercialisation strategy for Sandy Mitchell, and reflects the high degree of interest the project has received from development partners and the Queensland mining industry more broadly. Currumbin Minerals are best-in-class for the processing and treatment of mineral sands, and the MOU framework has been established jointly with a high degree of cooperation in a way that leverages the respective strengths of both parties. In that context, Ark Mines is well-placed to benefit from Currumbin's expertise in end-to-end logistics, including the transport of raw materials and the potential export and sale of HM and REE concentrate. Recent drill results reaffirmed the Company's view that Sandy Mitchell has the potential to develop into one of Australia's premier REE projects, highlighted by strong mineralisation with simple extraction through beneficiation by gravity processing. The field team is now executing on its stated strategy to significantly expand exploration in 2024, and we look forward to providing more operational updates in the months ahead, along with our targeted strategy for optimised downstream processing with our commercial development partners."*

**About Currumbin Minerals**

Established in 1948, Currumbin Minerals continues to operate their leading heavy mineral sands processing plant in Queensland, Australia. The Company remains owned and operated by the Neumann Family, who have been involved in heavy mineral sand production for over 70 years. Currumbin specialises in high quality mineral sands products including Zircon, Rutile, Ilmenite and Monazite (Rare Earths), serving a client base of both domestic and overseas customers.

The Company has recently completed construction on a new Gravity Separation plant to ensure high quality concentrate for its state-of-the-art Electrostatic and Magnetic Mineral Separating plant, which was completed and commissioned early in 2023.

Currumbin Minerals' mineral sands processing facility is backed by one of Australia's newest mineral sands testing laboratories, Southern Gold Coast Laboratories. SGCL has been established specifically

to concentrate on providing NATA-accredited results to the mineral sands industry, allowing fledgling mines, processing facilities, investors and customers peace of mind around results and product understanding.

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Or visit our website and social media:  
[www.arkmines.com](http://www.arkmines.com) | [www.twitter.com/arkmineslimited](https://www.twitter.com/arkmineslimited)

## **About Ark Mines Limited**

Ark Mines is an ASX listed Australian mineral exploration company focused on developing its 100% owned projects located in the prolific Mt Garnet and Greenvale mineral fields of Northern Queensland and includes:

### **The Sandy Mitchell Rare Earth and Heavy Mineral Project**

- Ark is rapidly advancing the 147km<sup>2</sup> EPM 28013 'Sandy Mitchell' tenement – an advanced Rare Earths Project in North Queensland with additional 138km<sup>2</sup> of sub blocks under application
- Very high historical TREO grades including high grade pan concentrates of all critical Light Rare Earths including dysprosium (Dy), terbium (Tb), holmium (Ho), erbium (Er), thulium (Tm) ytterbium (Yb), yttrium (Y) and excluding only Lutetium
- Up to 25% of the TREO is Nd and Pr (magnet metals)
- Rare Earths at 'Sandy Mitchell' are amenable to panning a concentrate
- Planned low-cost, fast start up, straightforward beneficiation by gravity processing

Ark's exploration portfolio also consists of three high quality projects covering 200km<sup>2</sup> of tenure that are prospective for copper, iron ore, nickel-cobalt and porphyry gold:

### **Gunnawarra Nickel-Cobalt Project**

- Comprised of 11 sub-blocks covering 36km<sup>2</sup>
- Borders Australian Mines Limited Sconi Project - most advanced Co-Ni-Sc project in Australia
- Potential synergies with local processing facilities with export DSO Nickel/Cobalt partnership options

### **Mt Jesse Copper-Iron Project**

- Project covers a tenure area of 12.4km<sup>2</sup> located ~25km west of Mt Garnet
- Centred on a copper rich magnetite skarn associated with porphyry style mineralization
- Three exposed historic iron formations
- Potential for near term production via toll treat and potential to direct ship

**Pluton Porphyry Gold Project**

- Located ~90km SW of Cairns near Mareeba, QLD covering 18km<sup>2</sup>
- Prospective for gold and associated base metals (Ag, Cu, Mo)
- Porphyry outcrop discovered during initial field inspection coincides with regional scale geophysical interpretation.

**Reliance on historic data**

All sample data reported in this release, as disclosed in the body of the release, in the tables in the Appendix and in the JORC table is based on data compiled by the Competent Person from other sources and quoted in their original context. These sources have been referenced in the text and the original Competent Persons statements may be found with the relevant documents. Some of this information is publicly available but has not been reported in accordance with the provisions of the JORC Code and a completed Table 1 of the JORC Code and Competent Persons statement is attached to this Release. Whilst every effort has been made to validate and check the data, these results should be considered in the context in which they appear and are subject to field verification by the Company.

**Competent Persons Statement**

The Information in this report that relates to exploration results, mineral resources or ore reserves is based on information compiled by Mr Roger Jackson, who is a Fellow of the Australian Institute of Mining and Metallurgy and a Fellow of the Australasian Institute of Geoscientists. Mr Jackson is a shareholder and director of the Company. Mr Jackson has sufficient experience which is relevant to the style of mineralisation and type of deposits under consideration and to the activity that he is undertaking to qualify as a Competent Person as defined in the 2012 edition of the 'Australian Code for Reporting Exploration Results, Mineral Resources and Ore Reserves' (the JORC Code). Mr Jackson consents to the inclusion of this information in the form and context in which it appears in this report. Mr Jackson confirms information in this market announcement is an accurate representation of the available data for the exploration areas being acquired.

**Forward Looking Statements and Important Notice**

This report contains forecasts, projections and forward-looking information. Although the Company believes that its expectations, estimates and forecast outcomes are based on reasonable assumptions it can give no assurance that these will be achieved. Expectations and estimates and projections and information provided by the Company are not a guarantee of future performance and involve unknown risks and uncertainties, many of which are out of Vertex Minerals' control.

Actual results and developments will almost certainly differ materially from those expressed or implied. Ark Mines has not audited or investigated the accuracy or completeness of the information, statements and opinions contained in this announcement. To the maximum extent permitted by applicable laws, Ark Mines makes no representation and can give no assurance, guarantee or warranty, express or implied, as to, and takes no responsibility and assumes no liability for the authenticity, validity, accuracy, suitability or completeness of, or any errors in or omission from, any information, statement or opinion contained in this report and without prejudice, to the generality of the foregoing, the achievement or accuracy of any forecasts, projections or other forward looking information contained or referred to in this report.

Investors should make and rely upon their own enquiries before deciding to acquire or deal in the Company's securities.



## Appendix A: JORC Code, 2012 Edition – Table 1

### Section 1 Sampling Techniques and Data

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

Criteria	JORC Code explanation	Commentary
<b>Sampling techniques</b>	<ul style="list-style-type: none"> <li>• <i>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.</i></li> <li>• <i>Include reference to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used.</i></li> <li>• <i>Aspects of the determination of mineralisation that are Material to the Public Report.</i></li> <li>• <i>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.</i></li> </ul>	<p>Ark Mines May to June 2023 Sandy Mitchell programme sampling techniques:</p> <ul style="list-style-type: none"> <li>• Samples are rock chips and accompanying bulk fines collected on 1m intervals by air core drill using 100mm bit.</li> <li>• Sample was passed through an 82.5: 12.5 riffle splitter to yield an aliquot of approx. 1.5 kg collected in prenumbered calico bag, and a reject retained in a numbered plastic bag, with recoveries volumetrically estimates.</li> <li>• Historic works by SGS (SGS Oretest Job No: S0580, 2010 for JOGMEC) shows mineralisation to have grainsize &lt; 125µm (very fine sand) and thus the sample mass is adequate for representivity.</li> <li>• Sample for total digest assay was sent to North Australian Laboratories for Assay.</li> <li>• Sample for pan concentration was sub-sampled by spade channel through the reject to a mass of approx. 1kg per metre as determined by digital scales. These were then panned to a concentrate and the subsequent concentrates composited per hole.</li> <li>• Pan Con composite samples were sent to IHC Mining where samples were screened to -1mm, heavy minerals were further separated by heavy liquid separation with yields weighed at each stage.</li> <li>• The final heavy mineral concentrate was subject to Portable XRF analysis for a limited indicative assay.</li> </ul>
<b>Drilling techniques</b>	<ul style="list-style-type: none"> <li>• <i>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).</i></li> </ul>	<p>Ark Mines May to June 2023 Sandy Mitchell programme:</p> <ul style="list-style-type: none"> <li>• Drill was by Comacchio track mounted air core rig using 100mm air core bit.</li> <li>• All holes were vertical and drilled to refusal or 17.5m, whichever came first.</li> </ul>

Criteria	JORC Code explanation	Commentary
<i>Drill sample recovery</i>	<ul style="list-style-type: none"> <li>• <i>Method of recording and assessing core and chip sample recoveries and results assessed.</i></li> <li>• <i>Measures taken to maximise sample recovery and ensure representative nature of the samples.</i></li> <li>• <i>Whether a relationship exists between sample recovery and grade and whether sample bias may have occurred due to preferential loss/gain of fine/coarse material.</i></li> </ul>	<p>Ark Mines May to June 2023 Sandy Mitchell programme:</p> <ul style="list-style-type: none"> <li>• Recovery were assessed by volumetric estimation by the metre based on total sample weights using a digital scale.</li> <li>• Sample was passed through a cyclone with a gated chute to allow fines to fall out of the air stream. The chute was kept closed until the end of each metre had been drilled, then opened to collect sample, and closed prior to recommencement of drilling.</li> <li>• No relationship between recovery and grade has yet been identified.</li> </ul>
<i>Logging</i>	<ul style="list-style-type: none"> <li>• <i>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.</i></li> <li>• <i>Whether logging is qualitative or quantitative in nature. Core (or costean, channel, etc) photography.</i></li> <li>• <i>The total length and percentage of the relevant intersections logged.</i></li> </ul>	<p>Ark Mines May to June 2023 Sandy Mitchell programme:</p> <ul style="list-style-type: none"> <li>• Sample was logged by the metre for all drilling, by the site geology team for both qualitative and quantitative criteria.</li> <li>• Drill logs for 100% of drilling are available with overall length of 1488.3m.</li> <li>• Logging is sufficient to support resource estimation, mining and metallurgical studies.</li> </ul>
<i>Sub-sampling techniques and sample preparation</i>	<ul style="list-style-type: none"> <li>• <i>If core, whether cut or sawn and whether quarter, half or all core taken.</i></li> <li>• <i>If non-core, whether riffled, tube sampled, rotary split, etc and whether sampled wet or dry.</i></li> <li>• <i>For all sample types, the nature, quality and appropriateness of the sample preparation technique.</i></li> <li>• <i>Quality control procedures adopted for all sub-sampling stages to maximise representivity of samples.</i></li> <li>• <i>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.</i></li> <li>• <i>Whether sample sizes are appropriate to the grain size of the material being</i></li> </ul>	<p>Ark Mines May to June 2023 Sandy Mitchell programme:</p> <ul style="list-style-type: none"> <li>• All sample passed through the drill cyclone dry.</li> <li>• Sub-sampling for laboratory assay was by 87.5:12.5 riffle splitter: the bulk sample was passed evenly through the riffles with the assay aliquot collected in a pre-numbered calico bag, and the reject collected in a numbered plastic bag.</li> <li>• Field duplicates were taken at 1:40 by 50:50 riffle splitter.</li> <li>• Historic works by SGS (SGS Oretest Job No: S0580, 2010 for JOGMEC) shows mineralisation to have grainsize &lt; 125µm (very fine sand) and thus the sample mass is representative.</li> <li>• Sample for pan concentration was sub-sampled by spade channel through the reject to a mass of approx. 1kg per metre as determined by digital scales.</li> </ul>

Criteria	JORC Code explanation	Commentary
	<i>sampled.</i>	
<b>Quality of assay data and laboratory tests</b>	<ul style="list-style-type: none"> <li>• <i>The nature, quality and appropriateness of the assaying and laboratory procedures used and whether the technique is considered partial or total.</i></li> <li>• <i>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.</i></li> <li>• <i>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.</i></li> </ul>	<p>Ark Mines May to June 2023 Sandy Mitchell programme:</p> <ul style="list-style-type: none"> <li>• Metre samples were sent to North Australian Laboratories (NAL) for total digest assay:</li> <li>• Samples were weighed then kiln dried and re-weighed.</li> <li>• 1 in 5 samples was tested for moisture content.</li> <li>• 1 in 3 samples was tested for dry loose bulk density.</li> <li>• Sample was then pulverization in an LM-5 to 75% passing 90 µm with assay aliquot selected by laboratory splitter.</li> <li>• Al, Ca, Cr, Fe, Mg, P, S, and Ti were assayed by 4 acid digest with ICP-OES finish.</li> <li>• Sc, Y, La, Ce, Pr, Nd, Pm, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb, Lu, Th, U, Zr, Hf, Nb, Ta, Si, Sr, Pb were assayed by peroxide fusion in nickel crucibles with ICP-MS finish.</li> <li>• Field duplicates were taken at 1:40 by 50:50 riffle split of the assay aliquot.</li> <li>• For total digest samples:               <ul style="list-style-type: none"> <li>• Laboratory repeats were requested at no less than 1 in 40.</li> <li>• Standard insertion was carried out by the laboratory at 1 in 12.</li> <li>• Assay of blank quartz flushes was requested at 1 in 40.</li> </ul> </li> <li>• For pan concentrate samples               <ul style="list-style-type: none"> <li>• Laboratory repeats were requested at no less than 1 in 40.</li> <li>• Standard insertion was requested of the laboratory at no less than 1 in 40.</li> <li>• Assay of blank quartz flushes was requested at 1 in 40.</li> </ul> </li> <li>• Total radiometric count was measured on all assay samples using a SAIC Exploranium GR-110G hand held scintillometer, hired from Terra Search Townsville, pre-calibrated.</li> <li>• Reading times were 10 second accumulations, which was the machine maximum, with 100x10 second background accumulations taken per day, per measuring station.</li> <li>• IHC Mining Laboratory procedures for pan concentrate composite samples was:               <ul style="list-style-type: none"> <li>• Creation of duplicates by split at a rate of 1 in 24</li> <li>• Screen to -1mm and weigh</li> <li>• Heavy liquid separation and weigh</li> <li>• Pulverization of the heavy mineral fines by extended grind</li> <li>• Portable XRF analysis of the pulp</li> </ul> </li> <li>• QAQC implemented is believed sufficient to establish accuracy and precision.</li> </ul>
<b>Verification of sampling and assaying</b>	<ul style="list-style-type: none"> <li>• <i>The verification of significant intersections by either independent or alternative company personnel.</i></li> <li>• <i>The use of twinned holes.</i></li> <li>• <i>Documentation of primary data, data entry procedures,</i></li> </ul>	<p>Ark Mines May to June 2023 Sandy Mitchell programme:</p> <ul style="list-style-type: none"> <li>• Significant intersections have not yet been determined.</li> <li>• Hole SMDH 00014b is twinned by SMDH 00014bt for QAQC purposes. Further twinning is in planning.</li> <li>• Data was entered into MS excel then verified against hard copy data, followed by import into Datamine Studio RM for validation.</li> </ul>



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	<p><i>data verification, data storage (physical and electronic) protocols.</i></p> <ul style="list-style-type: none"> <li>• <i>Discuss any adjustment to assay data.</i></li> </ul>	<ul style="list-style-type: none"> <li>• Primary data is stored as hard copy, electronic tables in CSV format and Datamine format.</li> <li>• Assay data yielding elemental concentrations for rare earths (REE) within the sample are converted to their stoichiometric oxides (REO) in a calculation performed using the conversion factors in the table below.</li> <li>• Rare Earth oxide is the industry accepted form for reporting rare earths. The following calculations have been used for reporting:               <ul style="list-style-type: none"> <li>• <b>TREO</b> = La2O3 + CeO2 + Pr6O11 + Nd2O3 + Sm2O3 + Eu2O3 + Gd2O3 + Tb4O7 + Dy2O3 + Ho2O3 + Er2O3 + Tm2O3 + Yb2O3 + Lu2O3+ Y2O3</li> <li>• <b>CREO</b> = Nd2O3 + Eu2O3 + Tb4O7 + Dy2O3 + Yb2O3</li> <li>• <b>LREO</b> = La2O3 + CeO2 + Pr6O11</li> <li>• <b>HREO</b> = Sm2O3 + Eu2O3 + Gd2O3 + Tb4O7 + Dy2O3 + Ho2O3 + Er2O3 + Tm2O3 + Yb2O3 + Lu2O3+ Y2O3</li> <li>• ND/Pr = Nd2O3 + Pr6O11</li> <li>• TREO – Ce = TREO – CeO2</li> <li>• %NdPr + NdPr/TREO</li> </ul> </li> </ul>																																																									
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left; padding: 2px;">Element Name</th> <th style="text-align: left; padding: 2px;">Element Oxide</th> <th style="text-align: left; padding: 2px;">Oxide Factor</th> </tr> </thead> <tbody> <tr><td>Ce</td><td>CeO2</td><td>1.2284</td></tr> <tr><td>Dy</td><td>Dy2O3</td><td>1.1477</td></tr> <tr><td>Er</td><td>Er2O3</td><td>1.1435</td></tr> <tr><td>Eu</td><td>Eu2O3</td><td>1.1579</td></tr> <tr><td>Gd</td><td>Gd2O3</td><td>1.1526</td></tr> <tr><td>Ho</td><td>Ho2O3</td><td>1.1455</td></tr> <tr><td>La</td><td>La2O3</td><td>1.1728</td></tr> <tr><td>Lu</td><td>Lu2O3</td><td>1.1371</td></tr> <tr><td>Nd</td><td>Nd2O3</td><td>1.1664</td></tr> <tr><td>Pr</td><td>Pr6O11</td><td>1.2081</td></tr> <tr><td>Sc</td><td>Sc2O3</td><td>1.5338</td></tr> <tr><td>Sm</td><td>Sm2O3</td><td>1.1596</td></tr> <tr><td>Tb</td><td>Tb4O7</td><td>1.1762</td></tr> <tr><td>Th</td><td>ThO2</td><td>1.1379</td></tr> <tr><td>Tm</td><td>Tm2O3</td><td>1.1421</td></tr> <tr><td>U</td><td>U3O8</td><td>1.1793</td></tr> <tr><td>Y</td><td>Y2O3</td><td>1.2699</td></tr> <tr><td>Yb</td><td>Yb2O3</td><td>1.1387</td></tr> </tbody> </table>			Element Name	Element Oxide	Oxide Factor	Ce	CeO2	1.2284	Dy	Dy2O3	1.1477	Er	Er2O3	1.1435	Eu	Eu2O3	1.1579	Gd	Gd2O3	1.1526	Ho	Ho2O3	1.1455	La	La2O3	1.1728	Lu	Lu2O3	1.1371	Nd	Nd2O3	1.1664	Pr	Pr6O11	1.2081	Sc	Sc2O3	1.5338	Sm	Sm2O3	1.1596	Tb	Tb4O7	1.1762	Th	ThO2	1.1379	Tm	Tm2O3	1.1421	U	U3O8	1.1793	Y	Y2O3	1.2699	Yb	Yb2O3	1.1387
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<p><i>Location of data points</i></p>	<ul style="list-style-type: none"> <li>• <i>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.</i></li> <li>• <i>Specification of the grid system used.</i></li> <li>• <i>Quality and adequacy of topographic control.</i></li> </ul>	<p>Ark Mines May to June 2023 Sandy Mitchell programme:</p> <ul style="list-style-type: none"> <li>• An initial collar survey by hand held GPS was conducted as a failsafe, with expected accuracy of ±5000mm in x and y, and ±50000mm in z.</li> <li>• Full survey by Twine Surveys was subsequently carried out using RTKdGPS with accuracy of ±20mm in x and y, and ±200mm in z</li> <li>• Twine’s professional RTK survey was implemented between drill collars and used to generate a digital terrain model for high quality topographic control.</li> <li>• All survey data is recorded in MGA 2020 zone 54 and AHD.</li> </ul>																																																									

Criteria	JORC Code explanation	Commentary
<i>Data spacing and distribution</i>	<ul style="list-style-type: none"> <li>• <i>Data spacing for reporting of Exploration Results.</i></li> <li>• <i>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.</i></li> <li>• <i>Whether sample compositing has been applied.</i></li> </ul>	<p>Ark Mines May to June 2023 Sandy Mitchell programme:</p> <ul style="list-style-type: none"> <li>• Data spacing for the northern 3 lines of drilling is 60m x 120m.</li> <li>• Data spacing for the southern 3 lines is 120m x 120m</li> <li>• No compositing has been applied to 1m samples for total digest assay.</li> <li>• Pan concentrates were composited per drill hole.</li> </ul>
<i>Orientation of data in relation to geological structure</i>	<ul style="list-style-type: none"> <li>• <i>Whether the orientation of sampling achieves unbiased sampling of possible structures and the extent to which this is known, considering the deposit type.</i></li> <li>• <i>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.</i></li> </ul>	<p>Ark Mines May to June 2023 Sandy Mitchell programme:</p> <ul style="list-style-type: none"> <li>• Deposit type is fluvial channel placer with channels believed oriented north to north-east and meso scale structure oriented sub-horizontal arcuate. The applied vertical sampling is the optimal orientation for the deposit type.</li> <li>• No bias by orientation or spatial relationships has been identified.</li> </ul>
<i>Sample security</i>	<ul style="list-style-type: none"> <li>• <i>The measures taken to ensure sample security.</i></li> </ul>	<p>Ark Mines May to June 2023 Sandy Mitchell programme:</p> <ul style="list-style-type: none"> <li>• Samples were collected after logging and transported at the end of each day to the company locked storage in Chillagoe.</li> <li>• Samples were boxed in closed pumpkin crates, wrapped in plastic for shipping by courier to the laboratory in Pine Creek, NT.</li> </ul>
<i>Audits or reviews</i>	<ul style="list-style-type: none"> <li>• <i>The results of any audits or reviews of sampling techniques and data.</i></li> </ul>	<p>Ark Mines May to June 2023 Sandy Mitchell programme:</p> <ul style="list-style-type: none"> <li>• Full audit of sampling techniques and data available to date was carried out by geological consultants, Empirical Earth Science.</li> <li>• EES notes that the composited concentrate samples results in assay representing diluted material with no internal separation possible.</li> <li>• EES noted that the hand panning process of such fine material is prone to heavy mineral loss, with the possibility that concentrates underrepresent the total heavy mineral fraction.</li> <li>• ESS noted that the pXRF technique used in initial concentrate assays is not suited to yield full REE data, but that the results can inform approximate proxy calculations for the full REE suite.</li> <li>• EES noted that none of these factors apply to the representative metre samples and total digest assays, which meet best practice.</li> </ul>