

# ASX ANNOUNCEMENT

31 January 2025



## QUARTERLY ACTIVITIES REPORT FOR THE PERIOD ENDED 31 DECEMBER 2024

*"The December quarter marked another strong period of execution for Ark, as we continue to transition from exploration to project development at the flagship Sandy Mitchell Rare Earths Project in North Queensland. Key milestones during the period commenced with the delivery of an upgraded Mineral Resource Estimate, which was followed by an expanded Exploration Target which now amounts to 1.3 billion tonnes to 1.5 billion tonnes of monazite equivalent (MzEq) at a higher grade of mineralisation. (refer to AHK announcement 11<sup>th</sup> December 2024). The upgraded MRE was then incorporated into a base-case Scoping Study which demonstrated the project's commercial viability. With the existing MRE representing just 4% of the broader Exploration Target, Ark now has a unique opportunity to significantly expand the commercial scale of Sandy Mitchell. Our 2025 works program will initially target the expansion of the existing Measured resource for MzEq, which will further strengthen the project's economics. Results from additional drilling and metallurgical test work will then be incorporated into a planned Pre-Feasibility Study (PFS) later this year. Ark now heads into 2025 with an opportunity to develop Sandy Mitchell into a significant Australian rare earths asset, and we look forward to updating investors with the next steps in our stated development strategy over the coming months."*

**Roger Jackson, Executive Chairman.**

### EXPLORATION HIGHLIGHTS FOR THE QUARTER

#### Sandy Mitchell Rare Earth Project

##### *Completion of Scoping Study*

- Quarterly operations culminated in the delivery of the Sandy Mitchell Rare Earths Project Scoping Study (SMP-SS-001), which was prepared by Harrier Project Management, Australia.
- The Scoping Study is reported in full as Appendix A to Announcement made on 11 December 2024.
- The Scoping Study report set out compelling project economics, and subsequently the Ark Mines board unanimously recommended to advance the project to the next phase of development, starting with the commencement of a Pre-Feasibility Study.
- Scoping Study supports continued progression of mining and processing methods in line with stated development strategy based on low-cost beneficiation by gravity processing
- Return on investment within 3–4 years, based on declared Measured resource of 71,789,616 dry tonnes grading 1,732ppm Monazite Equivalent. Refer to Table 1 and AHK announcement 11<sup>th</sup> December 2024.
- Monazite equivalent calculation

MzEq = 1.000 x monazite + 1.000 x xenotime + 0.361 x zircon + 0.281 x rutile + 0.165 x hi Ti leucoxene + 0.126 x lo Ti leucoxene + 0.072 x altered ilmenite + 0.065 x ilmenite. The proportions of valuable elements in recoverable economic heavy minerals are ascertained by QEM scan deportment percentages applied to all elements

- The resource includes a basket of high value Heavy Minerals (HM), comprised of the following:
  - Monazite 1,229 ppm
  - Xenotime 115.7 ppm
  - Zircon 663 ppm
  - Ti Minerals: Rutile 105 ppm, High Ti Leucoxene 304 ppm, low Ti Leucoxene 193 ppm, Altered Ilmenite 313.8 ppm and Ilmenite 340 ppm

Refer to Table 1 and AHK announcement 11<sup>th</sup> December 2024

- Importantly, Scoping Study was based on 71.8Mt Measured resource(The resource is all in measured category, with no resource in Indicated or Inferred) – just 4% of the 1.5Btn Exploration Target. Near-term 2025 works program will be focused on converting more of the massive Exploration Target to a JORC 2012-compliant resource

(The potential quantity and grade of the Exploration Target is conceptual in nature; there has been insufficient exploration to estimate a Mineral Resource and it is uncertain if further exploration will result in estimation of a Mineral

Resource). See <https://arkmines.com/asx-annoucement-sandy-mitchell-mine-020724/>

Refer to AHK announcement 11<sup>th</sup> December 2024

- The Ark Mines Scoping Study is a base case report and was undertaken to gain an understanding of the economics and commercial potential of the project.
- While already demonstrating commerciality, the Scoping Study does not reflect the upside from additional project optimisation and resource expansion, which will be incorporated into a planned Pre-Feasibility Study (PFS) in 2025.

### Exploration Target Update

- During the quarter, Ark released an Updated Exploration Target Estimated for Sandy Mitchell comprising 1.3 billion tonnes to 1.5 billion tonnes at a higher rate of monazite equivalent (MzEq) of between 1,286 to 1,903 ppm.

- Monazite equivalent calculation

$MzEq = 1.000 \times \text{monazite} + 1.000 \times \text{xenotime} + 0.361 \times \text{zircon} + 0.281 \times \text{rutile} + 0.165 \times \text{hi Ti leucoxene} + 0.126 \times \text{lo Ti leucoxene} + 0.072 \times \text{altered ilmenite} + 0.065 \times \text{ilmenite}$ . The proportions of valuable elements in recoverable economic heavy minerals are ascertained by QEM scan deportment percentages applied to all elements

Refer to Table 1 and AHK announcement 11<sup>th</sup> December 2024

- Results also included a high magnetic REO (Nd, Pr, Dy, Tb) element proportion of 25% of the TREO basket, positioning Sandy Mitchell as one of Australia's most enriched MREO deposits.
- Exploration Target represents an increase in the MzEq grade from the July 2024 estimate (1.3 billion tonnes to 1.5 billion tonnes @ 1,250 to 1,490 ppm MzEq), and places Sandy Mitchell as potentially one of the world's largest surface-expressed terrestrial sand based rare earth deposits<sup>1</sup>.

<sup>1</sup>The potential quantity and grade of the Exploration Target is conceptual in nature; there has been insufficient exploration to estimate a Mineral Resource and it is uncertain if further exploration will result in estimation of a Mineral Resource

Refer ASX Announcement 6<sup>th</sup> November 2024.

- Monazite equivalent calculation

$MzEq = 1.000 \times \text{monazite} + 1.000 \times \text{xenotime} + 0.361 \times \text{zircon} + 0.281 \times \text{rutile} + 0.165 \times \text{hi Ti leucoxene} + 0.126 \times \text{lo Ti leucoxene} + 0.072 \times \text{altered ilmenite} + 0.065 \times \text{ilmenite}$ . The

proportions of valuable elements in recoverable economic heavy minerals are ascertained by QEM scan deportment percentages applied to all elements

Refer to Table 1 and AHK announcement 11<sup>th</sup> December 2024

- Exploration Target builds considerably on the previously announced updated measured Mineral Resource Estimate of 71.8 million tonnes at 1,733 ppm MzEq, calculated at a lower cut-off grade of 700 ppm MzEq. )

Refer to Table 1 and AHK announcement 11<sup>th</sup> December 2024

- The Exploration Target is summarised in Table 1 below:

Exploration Target Range	Exploration Target	MzEq	Monazite	Xenotime	Zircon	Rutile	High Ti Leucoxene	Low Ti Leucoxene	Altered Ilmenite	ilmenite
From Grade ppm		1,285.8	976.0	36.3	520.7	60.6	174.6	111.1	180.7	195.6
<b>From Dry Tonnes</b>	<b>1,316,705,000</b>	<b>1,693,000</b>	<b>1,285,000</b>	<b>48,000</b>	<b>686,000</b>	<b>80,000</b>	<b>230,000</b>	<b>146,000</b>	<b>238,000</b>	<b>258,000</b>
To Grade ppm		1,903.6	1,444.9	53.7	770.9	89.7	258.5	164.5	267.5	289.6
<b>To Dry Tonnes</b>	<b>1,580,046,000</b>	<b>3,008,000</b>	<b>2,283,000</b>	<b>85,000</b>	<b>1,218,000</b>	<b>142,000</b>	<b>408,000</b>	<b>260,000</b>	<b>423,000</b>	<b>458,000</b>
Exploration Target Range	Exploration Target	TREO	TREO+Y	LREO	HREO	CREO	MagREO			
From Grade ppm		315.4	338.1	305.2	10.2	85.1	77.6			
<b>From Dry Tonnes</b>	<b>1,316,705,000</b>	<b>415,000</b>	<b>445,000</b>	<b>402,000</b>	<b>13,000</b>	<b>112,000</b>	<b>102,000</b>			
To Grade ppm		466.9	500.6	451.9	15.1	125.9	114.9			
<b>To Dry Tonnes</b>	<b>1,580,046,000</b>	<b>738,000</b>	<b>791,000</b>	<b>714,000</b>	<b>24,000</b>	<b>199,000</b>	<b>182,000</b>			

### Updated Mineral Resource Upgrade

- Prior to the Exploration Target, Ark delivered an upgraded Mineral Resource Estimate (MRE) for Sandy Mitchell which was highlighted by an increase in the JORC-2012 compliant Measured only component of the resource to 71.8 Mt @ 1,732.7 ppm Monazite Equivalent, calculated using a 700ppm MzEq lower cut-off grade

Monazite equivalent calculation

MzEq = 1.000 x monazite + 1.000 x xenotime + 0.361 x zircon + 0.281 x rutile + 0.165 x hi Ti leucoxene + 0.126 x lo Ti leucoxene + 0.072 x altered ilmenite + 0.065 x ilmenite. The proportions of valuable elements in recoverable economic heavy minerals are ascertained by QEM scan deportment percentages applied to all elements

(Detailed in Appendix A to announcement dated 11<sup>th</sup> December 2024 Table 1 Section 2)

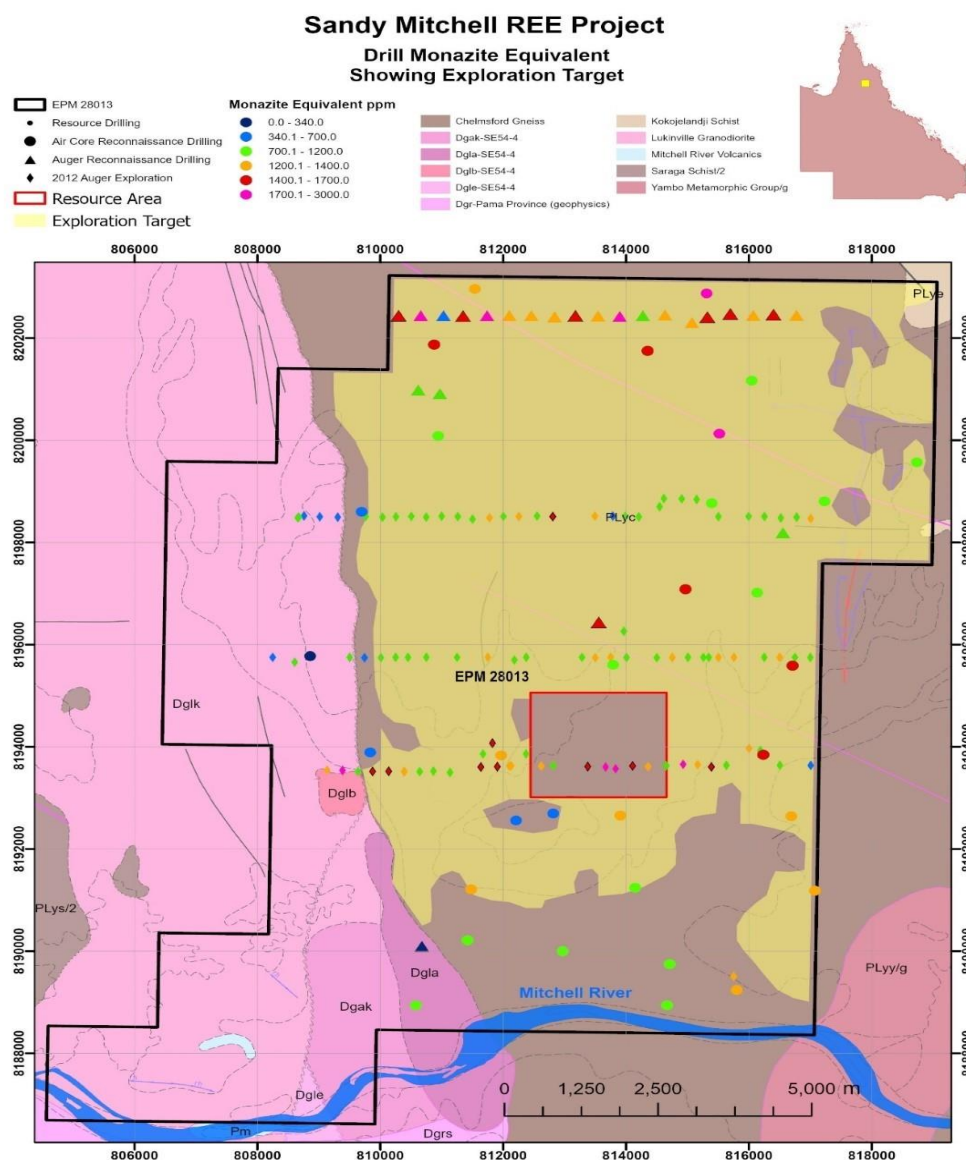
- The mineralisation in the MRE is observed from surface to around 12m, making the project amenable to low-cost open pit mining methods
- The resource includes a basket of high value Heavy Minerals (HM), comprised of the following:
  - Monazite 1,229 ppm
  - Xenotime 115.7 ppm
  - Zircon 663 ppm
  - Ti Minerals: Rutile 105 ppm, High Ti Leucoxene 304 ppm, low Ti Leucoxene 193 ppm, Altered Ilmenite 313.8 ppm and Ilmenite 340 ppm
- Reported MzEq and HM grades are expected to support strong project economics through simple low-cost downstream processing, with reference to current market prices for monazite concentrate
- MRE was developed from only 4.5 % of the available anomaly area at Sandy Mitchell, with 87.04 km<sup>2</sup> still available based on an Exploration Target estimated for Sandy Mitchell of 1.3 billion tonnes to 1.5 billion tonnes at 1,286 to 1,903 ppm monazite equivalent.
- Real and substantial potential for Mineral Resource expansion

The MRE was carried out by independent consultants HGS Australia in accordance with the 2012 JORC Code. In addition to the high value economic commodities modelled, the MRE included estimates for Arsenic (As) and Sulphur (S) for environmental considerations. The modelling shows these to be at very low levels; S (dominantly as sulphate in this oxide zone orebody) was estimated to average 143 ppm and As, a common contaminant in monazite, was estimated to average 9 ppm.

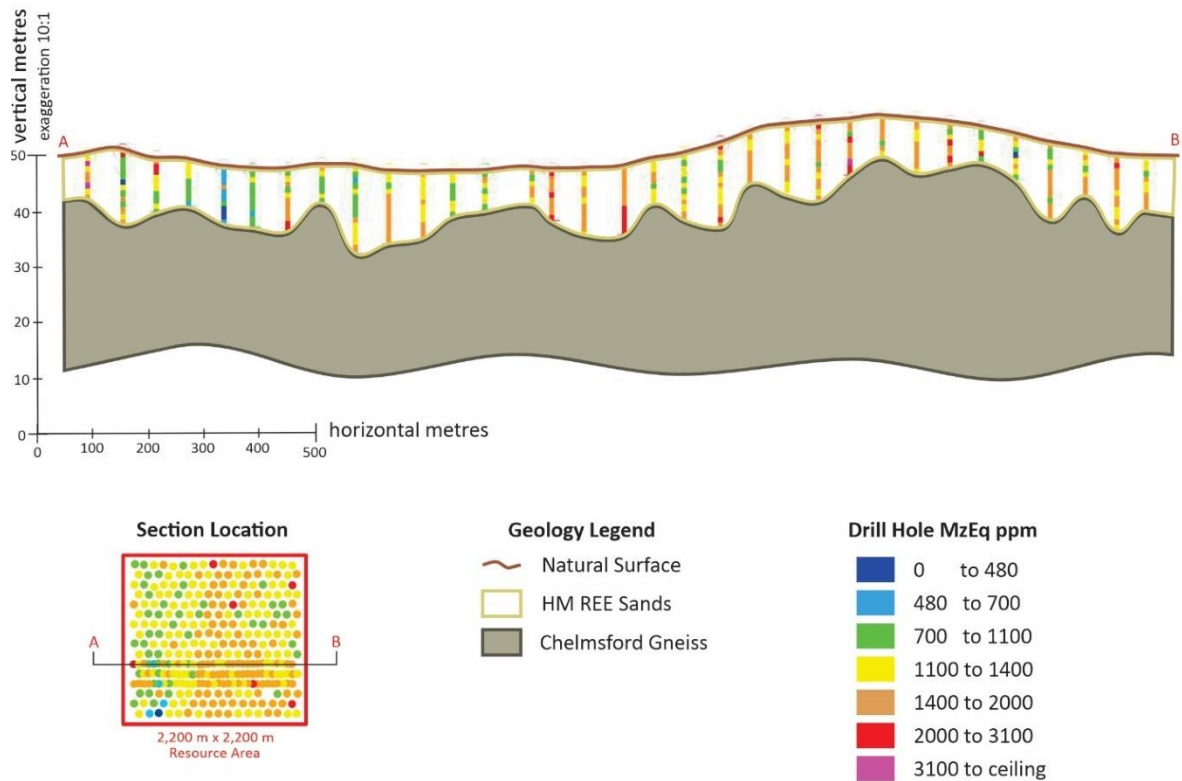
The assays contained mostly La, Ce, Pr and Nd, plus Heavy Rare Earths Dy and Tb, which represent a high value saleable product when incorporated into a basket of minerals as part of a monazite concentrate.

**Table: Reported measured oxide resource for Sandy Mitchell at a 700ppm MzEq lower cut off (HGS 2024):**

	Measured Resource	Monazite Equivalent	THM	Monazite	Xenotime	Zircon	Rutile	High Ti Leucoxene	Low Ti Leucoxene	Altered Ilmenite	Ilmenite
Grade ppm		1,732.7	3,263.0	1,229.0	115.7	663.0	105.3	304.0	192.7	313.8	339.7
Tonnes	71,789,616	124,386	234,251	88,228	8,302	47,593	7,557	21,820	13,835	22,530	24,385
	Measured Resource	Treo+Y+Sc	TREO	LREO	HREO	MagREO	CREO				
Grade ppm		457.2	403.5	389.6	13.9	99.4	110.9				
Tonnes	71,789,616	32,821	28,965	27,970	995	7,132	7,960				



**Figure 1: Scale of Exploration Target compared to MRE drilling area (outlined in red)**  
**Ark Mines Ltd, Sandy Mitchell REE Project**  
**Stage 1 Cross Section 8193750 Nth**  
 using 10:1 vertical exaggeration



**Stage 1 Cross Section 8193750 Nth**  
 using no vertical exaggeration



**Figure 2: Sandy Mitchell Project west to east cross section at 8193750 m north through the REE & HM sand, showing drill data from the Stage 1 resource AC drill grid coloured for monazite equivalent.**

### **Submission of Mining Lease Application**

Also during the quarter, Ark successfully submitted its Mining Lease (ML) application covering ~406 hectares of the Sandy Mitchell Rare Earth and Heavy Mineral Deposit. The area under application covers the acreage that forms the basis of the recently reported Measured Resource Estimate (MRE) on 2<sup>nd</sup> October 2024.

The ML ground is substantially drilled-out with some opportunity for the definition of additional resources within the ML boundary. The updated MRE and the ML application leaves Ark Mines well positioned to execute on its stated development strategy for Sandy Mitchell, with low-cost mining of



rare earths and heavy minerals combined with low-cost downstream processing through simple gravity separation

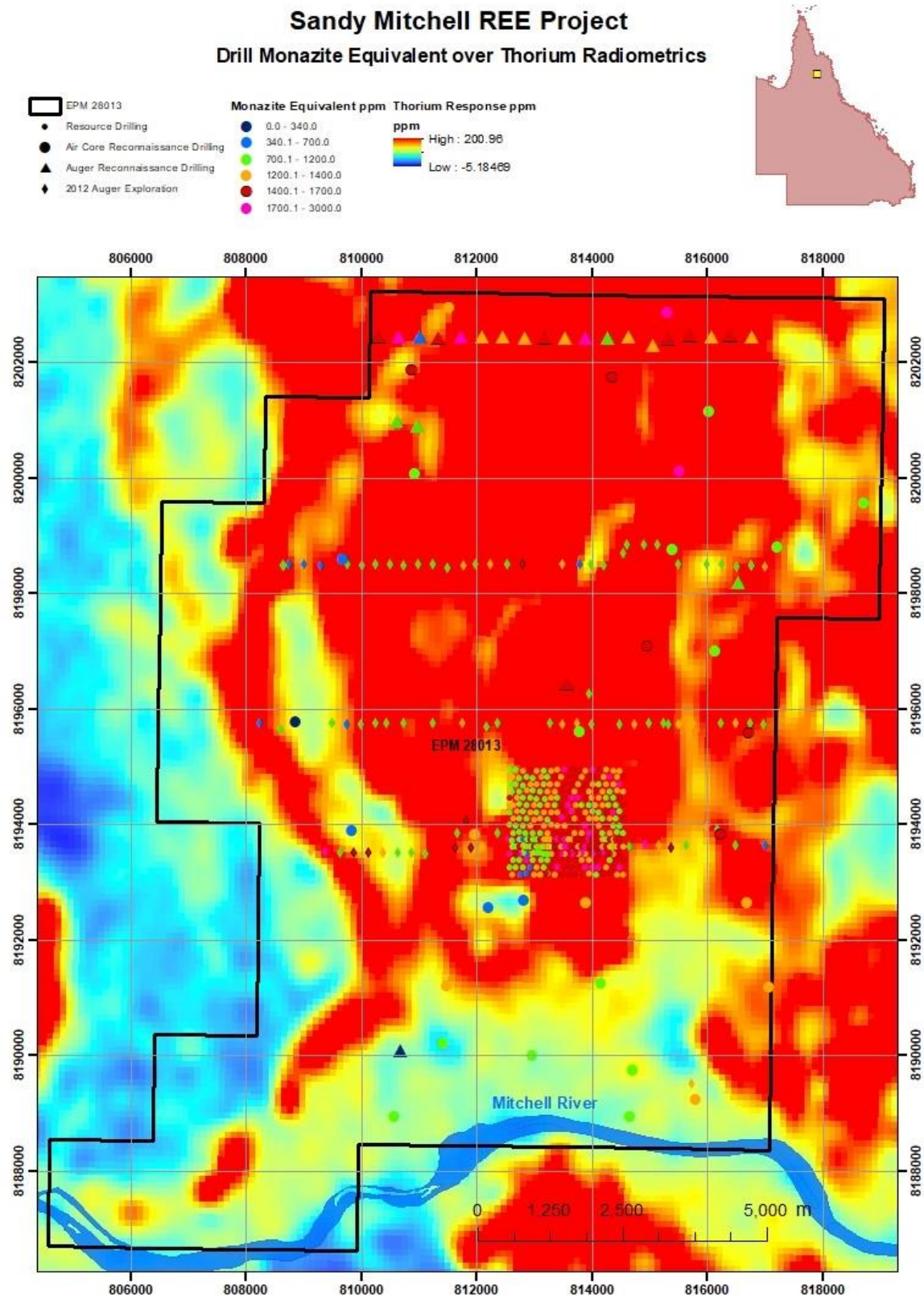


Figure 3: Sandy Mitchell reconnaissance and resource drilling results, recorded against the thorium radiometric response data. Historic auger reconnaissance is also shown. The high range radiometric thorium band anomaly, associated with REE mineralisation, covers an area of 100.7km<sup>2</sup> within the tenement. The stage 1 and 2 resource area is approximately 2.8% of the tenement area.

## SANDY MITCHELL DEVELOPMENT STRATEGY – KEY NEAR-TERM MILESTONES

- Following the release of the Scoping Study, Ark is in the planning phase for a follow-up drill program which will target the conversion of the existing Exploration Target into an expanded Measured resource of Monazite Equivalent
- Additional resource upgrades have the potential to significantly improve the commercial potential of the project, over and above the base-case commercial forecasts set out in the Scoping Study
- Along its follow-up drill program, Ark will continue to advance metallurgical and processing optimisation test work in the first half of 2025 to further inform its project development strategy
- Follow-up drill results and metallurgical test work, along with continued environmental studies will be incorporated into a planned Pre-Feasibility Study (PFS) for Sandy Mitchell which is scheduled for completion in 2025

No work was undertaken this quarter on Gunnawarra, Mt Jesse or Pluton.

### SAFETY AND ENVIRONMENT FOR THE QUARTER

• Reportable Incidents	Nil
• Medical Treatments	Nil
• LTIs	Nil
• Environmental incidents	Nil
• Landholder Issues	Nil

### EXPLORATION EXPENDITURE SUMMARY FOR THE QUARTER

**Table 5: Ark Expenditure Summary for the Quarter**

	Current Quarter \$A'(000)	Year to Date (6-months) \$A'(000)
Compilation activities	7	56
Geophysical surveys and remote	0	4
Surface exploration	0	26
Drilling	0	48
Other laboratory work	1	12
Advanced prospect testing / resource estimation	80	307
Administration	0	0
Other	5	12
<b>Total</b>	<b>93</b>	<b>465</b>

## TENEMENT SUMMARY

Table 6: Ark Tenements

Permit	Transferee Holder	Project	Ownership	Location (refer to Figure 1)
EPM 26464	Mt Jesse Pty Ltd	Mt Jesse	100%	North of Mt Garnet North Queensland
EPM 26560	Gunnawarra Pty Ltd	Gunnawarra	100%	South Of Mount Garnet North Queensland
EPM 26883	Mt Pluton Base Pty Ltd	Mt Pluton	100%	East Of Dimbulah North Queensland
EPM 28013	Ark Mines Ltd	Sandy Mitchell	100%	120km North West of Chillagoe North Queensland

The Group did not acquire or dispose of any tenements during the quarter.

The Group has not entered into any farm-in agreements

## CORPORATE

Pursuant to ASX Listing Rule 5.3.5, payments of A\$163,000 were made to related parties during the Quarter. These payments were made for consulting fees to executive Directors for work done to advance the Company's exploration tenements and Board fees to all Directors to act as directors of the Company is at commercial rates in the normal course of business. The total of these amounts is shown in Section 6 of the Quarterly Cashflow Report.

## SUBSEQUENT EVENTS

Post quarter-end, Ark announced that its Ordinary Shares have been approved to trade on the OTCQB Venture Market ("OTCQB") in the United States and will commence trading under the ticker AHKMF.

The listing follows a recent US investor roadshow by the Ark management team. Ark's directors continued to observe strong interest among US investors for critical minerals and magnet metals, aligning with the stated policy priority of the United States to secure supply chains for Rare Earth Elements and other strategic metals.

The listing of the Company's shares on the OTCQB will provide AHK investors with potential access to new sources of capital and increased liquidity to support the ongoing development of its flagship Sandy Mitchell Rare Earths project in North Queensland.

## PREVIOUSLY REPORTED INFORMATION

The information in this announcement references previously reported announcements. The announcements are available to view on the Company's website ([www.arkmines.com.au](http://www.arkmines.com.au)) and on the ASX website ([www.asx.com.au](http://www.asx.com.au)). The Company confirms that it is not aware of any new information or data that materially affects the information included in the previous announcements and that all material assumptions and technical parameters underpinning the exploration results continue to apply and have not materially changed.



## **AUTHORITY FOR RELEASE**

This announcement has been approved by the Board of Ark Mines Ltd.



**Roger Jackson**  
Executive Chairman  
31 January 2025

### **Further Information:**

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## **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.

## **MINERAL RESOURCE STATEMENT**

The resource estimates are classified in accordance with the Australasian Code for Reporting of Identified Mineral Resources and Ore Reserves (JORC, 2012). The Resource estimate was completed by Andrew Hawker of HGS Australia. Mr Hawker 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'. Mr Hawker consents to the inclusion in the report of the matters based on his information in the form and context in which it appears.

The resource is classified as Indicated. The classification was considered appropriate based on drill hole spacing, sample intervals, geological interpretation and representativeness of all available assay and density data. The classification reflects the low confidence in short range grade estimations in the model.

## **EXPLORATION TARGET STATEMENT**

The Exploration Target classified in accordance with the Australasian Code for Reporting of Identified Mineral Resources and Ore Reserves (JORC, 2012). The Exploration Target was completed by Daemon de Chaeney of Empirical Earth Science. Mr de Chaeney 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'. Mr de Chaeney consents to the inclusion in the report of the matters based on his information in the form and context in which it appears.

## **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 Ark Mines' 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 security.