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INITIAL RARE EARTH ELEMENT MINERAL CHARACTERISATION COMPLETED

Highlights

- **Characterisation by scanning electron microscopy (SEM) of clay-hosted rare earth element (REE) samples from the Barkly drilling programme has been completed.**
- **REE-bearing minerals at Barkly occur as overgrowths on rims of quartz grains. Elemental analyses of these minerals identify Ca, Al, P, Ba, REE, and S, with some variability in composition. This composition does not match that of any known minerals and may indicate the presence of a new and previously unidentified REE-bearing mineral.**
- **SEM images identify the porous nature of the samples and large free-surface area of the REE-bearing mineral, which may allow leaching solutions to efficiently infiltrate and break down the REE minerals.**
- **The high quartz and low clay abundance in these samples could lead to a lower consumption of acid during leaching; it may also limit REE loss during the separation process.**
- **More work is required to confirm these early results, but these findings are encouraging in Transition Minerals' pursuit of an efficient, low-energy, and low-cost hydrometallurgical approach to REE recovery.**

Barkly REE Mineral Characterisation

Transition Minerals (the Company) has completed initial test work for the characterisation of REE-bearing samples to gain early insights into the potential processing and recovery options. The samples selected are presented in Table 1.

High-resolution microcharacterisation by scanning electron microscopy (SEM) was completed on nine samples, containing high concentrations of REEs, obtained from the Vanadis prospect area during the Company's drilling programme in 2022. All information on the drilling, sampling and analytical work is

included in JORC Table 1 within previous announcements by the Company. Some of the SEM images are provided in Figure 1.

*Table 1: Samples selected for SEM analysis. * indicate mounted in an epoxy mount.*

HOLE ID	Sample ID	From	To	Easting	Northing	RL	Comment
VAC001	TM00407	2	2.5	709331	8065343	264.00	REE sample
VAC001	TM00412	4.5	5	709331	8065343	264.00	REE >1000 ppm
VAC001	TM00413	5	5.5	709331	8065343	264.00	REE >1000 ppm
VAC004	TM00459	3	3.5	709485	8065402	267.96	REE sample
VAC005	TM00485	9	9.5	709728	8065194	270.57	REE >1000 ppm
VAC006	TM00491*	4	5	709419	8065200	266.01	Highest REE
VAC030	TM00782*	14	15	710318	8065199	277.61	REE >1000 ppm
VAC035	TM00872	17	18	710188	8065695	275.15	REE >1000 ppm
VAC038	TM00924*	10	11	709750	8066000	271.57	Highest REE

Conclusions of the SEM analysis are as follows.

- The REE-bearing samples are porous and contain a Ca-Al-P-Ba-REE-S mineral and kaolinite clay, which are overgrown on quartz grains, presented in Figure 1.
- The high free-surface area of the REE-bearing material, and the weak physical bond between the porous REE-bearing layers and the non-porous quartz grains (Figure 1a-b), could mean that the REE-bearing minerals are amenable to liberation through beneficiation processes.
- The REE minerals are largely likely to be members of the suite of minerals known as APS (aluminium-phosphate-sulphate) (Figure 1c-f). The density difference between APS minerals, and quartz and kaolinite in the samples, makes gravity separation a potential path for beneficiation, a common technique used for extraction of other REE-bearing minerals.
- The porous nature of the host and large free-surface area of the REE-bearing mineral may allow a leaching solution to infiltrate the mineral (Figure 1g-h), which is likely to promote efficiency in direct leaching.
- The high quartz abundance could result in low acid consumption during direct leaching (Figure 1).
- The low kaolinite abundance could minimise acid consumption during leaching, resulting in cost saving, low waste generation, and limited REE loss during the separation process.
- The REE mineral identified in the SEM analysis is ***not*** the mineral rhabdophane. Rhabdophane is a typical REE-bearing mineral in clay-hosted REE deposits which does not presently have a commercial processing route. The identification of a ***different*** REE-host mineral at Barkly may therefore indicate mineralisation with characteristics that could be amenable to low-energy extraction methods.

Next Steps

The Company is working to identify the REE-bearing mineral and has additional characterisation work planned to understand the distribution of this mineral across the Barkly project area.

Metallurgical experts have been commissioned to design a suitable diagnostic leach test programme to evaluate metallurgical recovery options. This is expected to use a variety of leachates and conditions to evaluate low-energy hydrometallurgical recovery options. Test reagents may include ammonium sulphate (traditionally used in ionic clay-hosted rare earths testing), acid, alkali, and other compounds.

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Competent Person Statement

The information in this report that relates to Exploration Results is based on information compiled by Dr Michael Gazley, a Competent Person who is a Member of The Australasian Institute of Mining and Metallurgy (AusIMM) and a Member of the Australian Institute of Geoscientists (AIG). Dr Gazley is a consultant to Transition Minerals Limited and indirectly holds shares in Transition Minerals Limited. The full nature of the relationship between Dr Gazley and Transition Minerals Limited, including any issue that could be perceived by investors as a conflict of interest, has been disclosed. Dr Gazley 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'. Dr Gazley consents to the inclusion in this report of the matters based on his information in the form and context in which it appears.

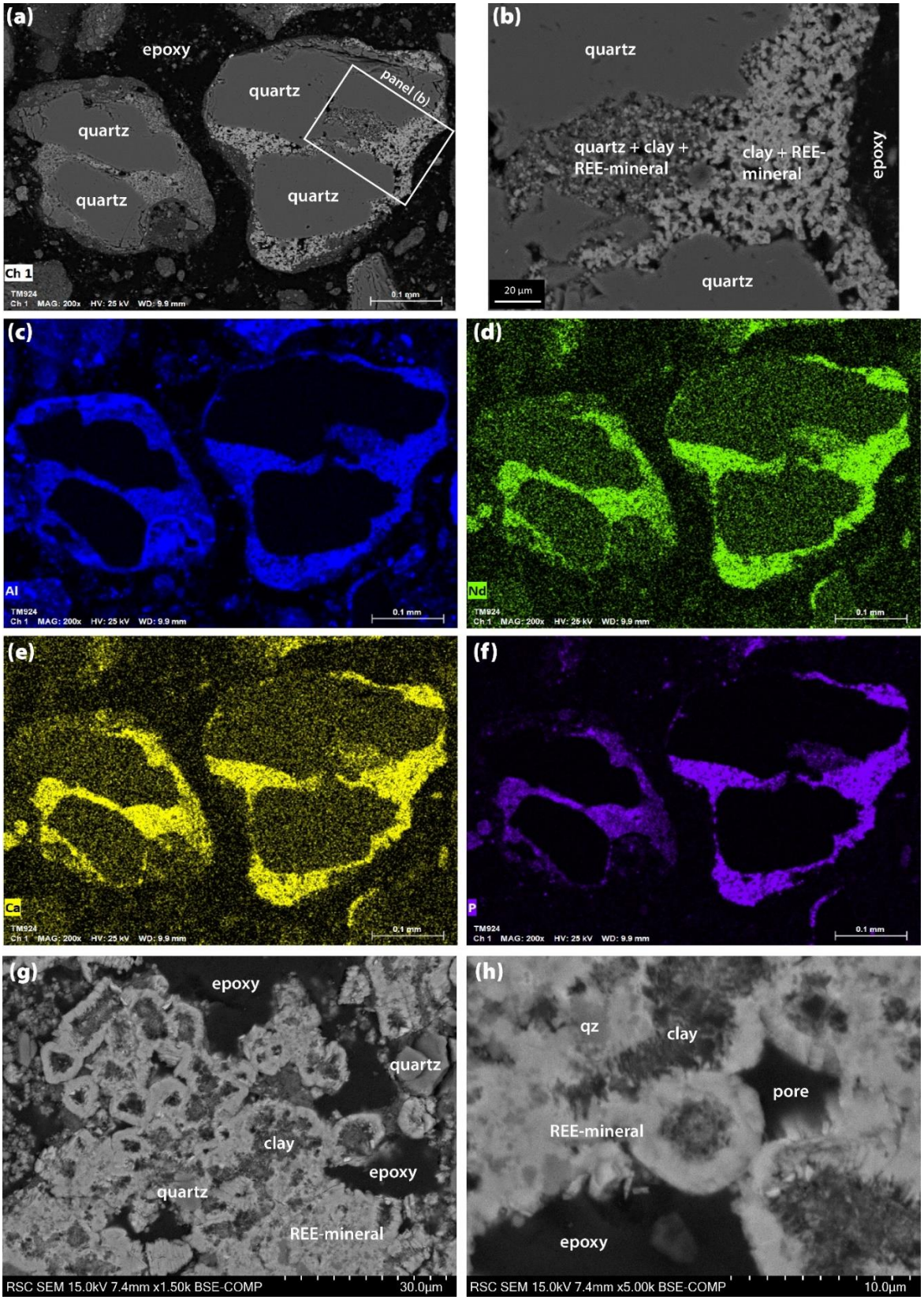

Figure 1: (a) *Back-scatter electron (BSE) image of REE-mineral around quartz in sample TM00924;* **(b)** *BSE image of area indicated in (a) of REE-mineral around quartz grains, intergrown with clay and quartz;* **(c)** *energy dispersive spectroscopy (EDS) map of Al concentrations for panel (a);* ***(d)*** *EDS map of Nd concentrations for panel (a);* ***(e)*** *EDS map of Ca concentrations for panel (a)— taken together with the previous three panels these EDS maps indicate the presence of Al, Nd, Ca, and P almost exclusively in the REE-mineral;* ***(f)*** *EDS map of Nd concentrations for panel (a);* ***(g)*** *BSE image of REE-mineral surrounding clusters of clay grains; and* ***(g)*** *high-resolution BSE image of REE-mineral surrounding clusters of clay grains with adjacent pore space and minor quartz.*

Appendix 1 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
Sampling techniques	• *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.* • *Include reference to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used.* • *Aspects of the determination of mineralisation that are Material to the Public Report.* • *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.*	• No sampling or drilling are reported in this announcement. Sub-samples were collected from existing drill samples and prepared for SEM analyses. High-resolution microcharacterisation by SEM was completed on nine random drill samples known to contain high concentrations of clay-hosted REEs (as reported in analytical results in previous announcements). • All information on previous sampling and drilling results are included in the Table 1 as included in previous announcements.
Drilling techniques	• *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).*	• No sampling or drilling are reported in this announcement. Sub-samples were collected from existing drill samples and prepared for SEM analyses. • All information on previous sampling and drilling results are included in the Table 1 as included in previous announcements.
Drill sample recovery	• *Method of recording and assessing core and chip sample recoveries and results assessed.* • *Measures taken to maximise sample recovery and ensure representative nature of the samples.* • *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.*	• No sampling or drilling are reported in this announcement. Sub-samples were collected from existing drill samples and prepared for SEM analyses. • All information on previous sampling and drilling results are included in the Table 1 as included in previous announcements.

Criteria	JORC Code explanation	Commentary
Logging	• *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.* • *Whether logging is qualitative or quantitative in nature. Core (or costean, channel, etc) photography.* • *The total length and percentage of the relevant intersections logged.*	• No sampling or drilling are reported in this announcement. Sub-samples were collected from existing drill samples and prepared for SEM analyses. • All information on previous sampling and drilling results are included in the Table 1 as included in previous announcements.
Sub-sampling techniques and sample preparation	• *If core, whether cut or sawn and whether quarter, half or all core taken.* • *If non-core, whether riffled, tube sampled, rotary split, etc and whether sampled wet or dry.* • *For all sample types, the nature, quality and appropriateness of the sample preparation technique.* • *Quality control procedures adopted for all sub-sampling stages to maximise representivity of samples.* • *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.* • *Whether sample sizes are appropriate to the grain size of the material being sampled.*	• The purpose of the SEM work was to gain a representative understanding of the REE mineralogy. Hence, nine randomly selected sub-samples were composited. Then, a thin layer of clay material was smeared onto 6 × 20 mm carbon tape and outgassed for 48 hours in the vacuum chamber of a Quorum Q 150TE plus carbon coater prior to carbon coating. • Three randomly selected clay samples were mounted in 30 mm epoxy rounds and polished surfaces were carbon coated.
Quality of assay data and laboratory tests	• *The nature, quality and appropriateness of the assaying and laboratory procedures used and whether the technique is considered partial or total.* • *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.* • *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.*	• Samples were analysed using a Hitachi SU3900 with two Bruker XFlash 6160 energy-dispersive spectroscopy (EDS) detectors.
Verification of sampling and assaying	• *The verification of significant intersections by either independent or alternative company personnel.* • *The use of twinned holes.* • *Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols.* • *Discuss any adjustment to assay data.*	• No sampling or drilling are reported in this announcement. Sub-samples were collected from existing drill samples and prepared for SEM analyses. • All information on previous sampling and drilling results are included in the Table 1 as included in previous announcements.

Criteria	JORC Code explanation	Commentary
Location of data points	• *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.* • *Specification of the grid system used.* • *Quality and adequacy of topographic control.*	• No sampling or drilling are reported in this announcement. Sub-samples were collected from existing drill samples and prepared for SEM analyses. • All information on previous sampling and drilling results are included in the Table 1 as included in previous announcements
Data spacing and distribution	• *Data spacing for reporting of Exploration Results.* • *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.* • *Whether sample compositing has been applied.*	• No sampling or drilling are reported in this announcement. Sub-samples were collected from existing drill samples and prepared for SEM analyses. • All information on previous sampling and drilling results are included in the Table 1 as included in previous announcements.
Orientation of data in relation to geological structure	• *Whether the orientation of sampling achieves unbiased sampling of possible structures and the extent to which this is known, considering the deposit type.* • *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.*	• No sampling or drilling are reported in this announcement. Sub-samples were collected from existing drill samples and prepared for SEM analyses. • All information on previous sampling and drilling results are included in the Table 1 as included in previous announcements.
Sample security	• *The measures taken to ensure sample security.*	• No sampling or drilling are reported in this announcement. Sub-samples were collected from existing drill samples and prepared for SEM analyses. • All information on previous sampling and drilling results are included in the Table 1 as included in previous announcements.
Audits or reviews	• *The results of any audits or reviews of sampling techniques and data.*	• No sampling or drilling are reported in this announcement. Sub-samples were collected from existing drill samples and prepared for SEM analyses. • All information on previous sampling and drilling results are included in the Table 1 as included in previous announcements.

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	• *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.* • *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.*	• The mineral tenement is an Exploration Licence (EL32473/4) granted pursuant to the Northern Territory Mineral Titles Act on 21 May 2021. The licence expiry date is 20 May 2027. • The licence is located in the northern Barkly region of NT on pastoral land. • Transition Minerals holds these tenements 100% through direct grant of tenure. There are no overriding royalty arrangements or any other overriding obligation on Transition Minerals. • Transition holds no joint ventures or partnerships with respect to these tenements. • Transition Minerals applied for and achieved approval in 2021 for its Mine Management Plan (1101-01) for drilling in this area. The approved MMP disclosed and demonstrated all known historical sites, wilderness sites, national parks and significant environmental sensitivities known for the area. • The approved MMP demonstrates the ability to operate in the area. The tenements are in good standing with no known impediments.
Exploration done by other parties	• *Acknowledgment and appraisal of exploration by other parties.*	• Earlier explorers in the area included Carpentaria and Rio Tinto, and then later CRA, Bondi Mining, North Australian Diamonds, Redbank Copper, and a few other companies, mainly exploring for base metals, U, and diamonds in the licence area. • All information on historical exploration is included in the JORC Table 1 included in previous announcements.
Geology	• *Deposit type, geological setting and style of mineralisation.*	• The deposit is within the Greater McArthur Basin, Northern Territory. • The V and REE mineralisation is not well understood, and further technical work is required to create a sound geological/deposit model; however, current understanding is that the mineralisation is related to lateritic weathering processes on Cretaceous sedimentary rocks (Mullaman Beds).

Criteria	JORC Code explanation	Commentary
Drill hole Information	• *A summary of all information material to the understanding of the exploration results including a tabulation of the following information for all Material drill holes:* ○ *easting and northing of the drill hole collar* ○ *elevation or RL (Reduced Level – elevation above sea level in metres) of the drill hole collar* ○ *dip and azimuth of the hole* ○ *down hole length and interception depth* ○ *hole length.* • *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.*	• No new drillholes are reported in this announcement. Drilling results have been released in previous announcements by the Company. These are available online at www.transitionminerals.com/announcements
Data aggregation methods	• *In reporting Exploration Results, weighting averaging techniques, maximum and/or minimum grade truncations (eg cutting of high grades) and cut-off grades are usually Material and should be stated.* • *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.* • *The assumptions used for any reporting of metal equivalent values should be clearly stated.*	• No sampling or drilling results are reported in this announcement. Sub-samples were collected from existing drill samples and prepared for SEM analyses. • All information on previous sampling and drilling results are included in the Table 1 as included in previous announcements.
Relationship between mineralisation widths and intercept lengths	• *These relationships are particularly important in the reporting of Exploration Results.* • *If the geometry of the mineralisation with respect to the drill hole angle is known, its nature should be reported.* • *If it is not known and only the down hole lengths are reported, there should be a clear statement to this effect (eg 'down hole length, true width not known').*	• No sampling or drilling are reported in this announcement. Sub-samples were collected from existing drill samples and prepared for SEM analyses. • All information on previous sampling and drilling results are included in the Table 1 as included in previous announcements.
Diagrams	• *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*	• Relevant images are included in the body of the report.

Criteria	JORC Code explanation	Commentary
	plan view of drill hole collar locations and appropriate sectional views.	
Balanced reporting	• *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.*	• All relevant data have been reported. • The information reported here is transparent, balanced and includes all relevant information.
Other substantive exploration data	• *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.*	• All relevant exploration data have been included in this report.
Further work	• *The nature and scale of planned further work (eg 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.*	• Samples from the Vanadis prospect area are undergoing mineralogical analysis to facilitate metallurgical test work to determine whether the REEs may be economically extracted.