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21/11/2023

BARKLY INITIAL INFERRED MINERAL RESOURCE
40 Mt @ 2,100 ppm TREO

Key Highlights

- **Initial Barkly Inferred Mineral Resource of 40 Mt at 2,100 ppm Total Rare Earth Oxide (TREO), including 690 ppm NdPr.**
- **Mineral Resource contains 82,000 t TREO at an exceptional 33% NdPr ratio.**
- **Additional combined Inferred Mineral Resource of 200 Mt at 0.12% V_2O_5 estimated for the regolith overlying the rare earth deposit, augmenting Transition's multi-commodity critical minerals project.**
- **Reasonable prospects for eventual economic extraction have been demonstrated by metallurgical test work, and by establishing preliminary optimised pit shells at Vanadis, Benmara South, and Benmara North.**
- **Metallurgical testing has identified a potential beneficiation pathway for the rare earth minerals through a traditional flotation system.**
- **Mineralisation remains open in all directions and Exploration Targets have been disclosed for drilling in the 2024 field programme.**

Commenting on this Mineral Resource, Transition Minerals' Managing Director Toby Foster said:

"Having made the discovery 12 months ago, this initial high-grade, shallow rare-earths Mineral Resource at Barkly is a significant achievement. The outstanding grade of the deposit, which commands a world-leading, regolith-hosted 690-ppm NdPr, validates the strategy that the company has pursued these past twelve months. The combined TREO and V_2O_5 Mineral Resources are robustly reported within preliminary optimised pit shells and are supported by metallurgical and economic investigations, which identify Barkly as a likely economically extractable deposit. As mineralisation remains open in all directions, the scope for possible expansion of the Mineral Resources is enormous, as reflected in the Exploration Targets."

Initial Mineral Resource Estimate

Transition Minerals Limited (Transition or the Company) is pleased to report an initial rare-earth-element (REE) Inferred Mineral Resource of 40 Mt @ 2,100 ppm TREO for the 100%-owned Barkly Project in Northern Territory, Australia (Table 1). The REE Mineral Resource comprises an exceptional 33% NdPr ratio and contains 27,000 t of NdPr. The resource estimation has been undertaken by global consultancy RSC.

Table 1: Barkly Rare Earth Inferred Mineral Resources.

Prospect	Tonnage (Mt)	TREO (ppm)	NdPr (ppm)	MREO (ppm)	HREO (ppm)	U (ppm)	Th (ppm)	Contained TREO (t)
Vanadis	25	1,700	600	620	130	3	6	42,000
Benmara North	15	2,700	820	840	140	3	9	40,000
Total	**40**	**2,100**	**690**	**700**	**130**	**3**	**7**	**82,000**

Notes:

1. TREO = La_2O_3 + CeO_2 + Pr_6O_{11} + Nd_2O_3 + Sm_2O3 + Eu_2O_3 + Gd_2O_3 + Tb_4O_7 + Dy_2O_3 + Ho_2O_3 + Er_2O_3 + Tm_2O_3 + Yb_2O_3 + Lu_2O_3 + Y_2O_3
   Individual REO grades are reported in Table 2.
   NdPr = Nd_2O_3 + Pr_6O_{11}
   HREO = Gd_2O_3 + Tb_4O_7 + Dy_2O_3 + Ho_2O_3 + Er_2O_3 + Tm_2O_3 + Yb_2O_3 + Lu_2O_3 + Y_2O_3
   MREO = Pr_6O_{11} + Nd_2O_3 + Tb_4O_7 + Dy_2O_3
2. Reported above a 430-ppm NdPr cut-off and within a preliminary optimised pit shell.
3. Mineral Resources are classified and reported in accordance with the JORC Code (2012).
4. Estimates are rounded to reflect the level of confidence in the Inferred Mineral Resources at the time of reporting. Differences may occur in totals due to rounding.

Table 2: Barkly Inferred Mineral Resource individual REO grades.

Prospect	Nd_2O_3 (ppm)	Pr_6O_{11} (ppm)	Dy_2O_3 (ppm)	Tb_4O_7 (ppm)	Gd_2O_3 (ppm)	Ho_2O_3 (ppm)	Er_2O_3 (ppm)	Tm_2O_3 (ppm)	Yb_2O_3 (ppm)	Lu_2O_3 (ppm)	Y_2O_3 (ppm)	Sm_2O_3 (ppm)	Eu_2O_3 (ppm)	CeO_2 (ppm)	La_2O_3 (ppm)
Vanadis	500	110	20	6	60	2	3	2	0.3	0.2	40	100	20	710	200
Benmara North	660	160	20	7	70	2	4	2	0.4	0.4	40	130	30	1,200	300
Total	**560**	**130**	**20**	**6**	**60**	**2**	**3**	**2**	**0.4**	**0.3**	**40**	**110**	**20**	**900**	**200**

Notes:

1. Reported above a 430-ppm NdPr cut-off and within a preliminary optimised pit shell.
2. Estimates are rounded to reflect the level of confidence in the Inferred Mineral Resources at the time of reporting. Differences may occur in totals due to rounding.

In addition, a combined initial vanadium Inferred Mineral Resource of 200 Mt @ 0.12% V_2O_5 and 30 ppm Ga, is reported above a 0.10% V_2O_5 cut-off (Table 3, Figure 1).

The Mineral Resources are reported within preliminary optimised pit shells which extend laterally 850–1,100 m from the drilling (Figure 1). The Benmara South Mineral Resource does not contain a REE contribution and is reported within a more shallow, preliminary pit shell (Figure 1, Figure 2). The pit shells have average depths of 8 m, 3 m and 13 m, and maximum depths of 30 m, 5 m and 30 m for Vanadis, Benmara South, and Benmara North respectively. From the limited drilling and preliminary pit optimisation undertaken, there is insufficient evidence to establish reasonable prospects for economic extraction for the REE mineralisation at Benmara South; however, additional exploration of the REE mineralisation at Benmara South is warranted.

Table 3: Barkly Vanadium Inferred Mineral Resources.

Prospect	Tonnage (Mt)	V_2O_5 (%)	Ga (ppm)	Contained V_2O_5 (t)	Contained Ga (t)
Vanadis	40	0.13	25	55,000	1,100
Benmara North	100	0.12	30	120,000	3,200
Benmara South	60	0.12	40	65,000	2,100
Total	**200**	**0.12**	**30**	**240,000**	**6,300**

Notes:

1. Reported above a 0.1% V_2O_5 cut-off and within a preliminary optimised pit shell.
2. Mineral Resource is classified and reported in accordance with the JORC Code (2012).
3. Estimates are rounded to reflect the level of confidence in the Inferred Mineral Resources at the time of reporting. Differences may occur in totals due to rounding.

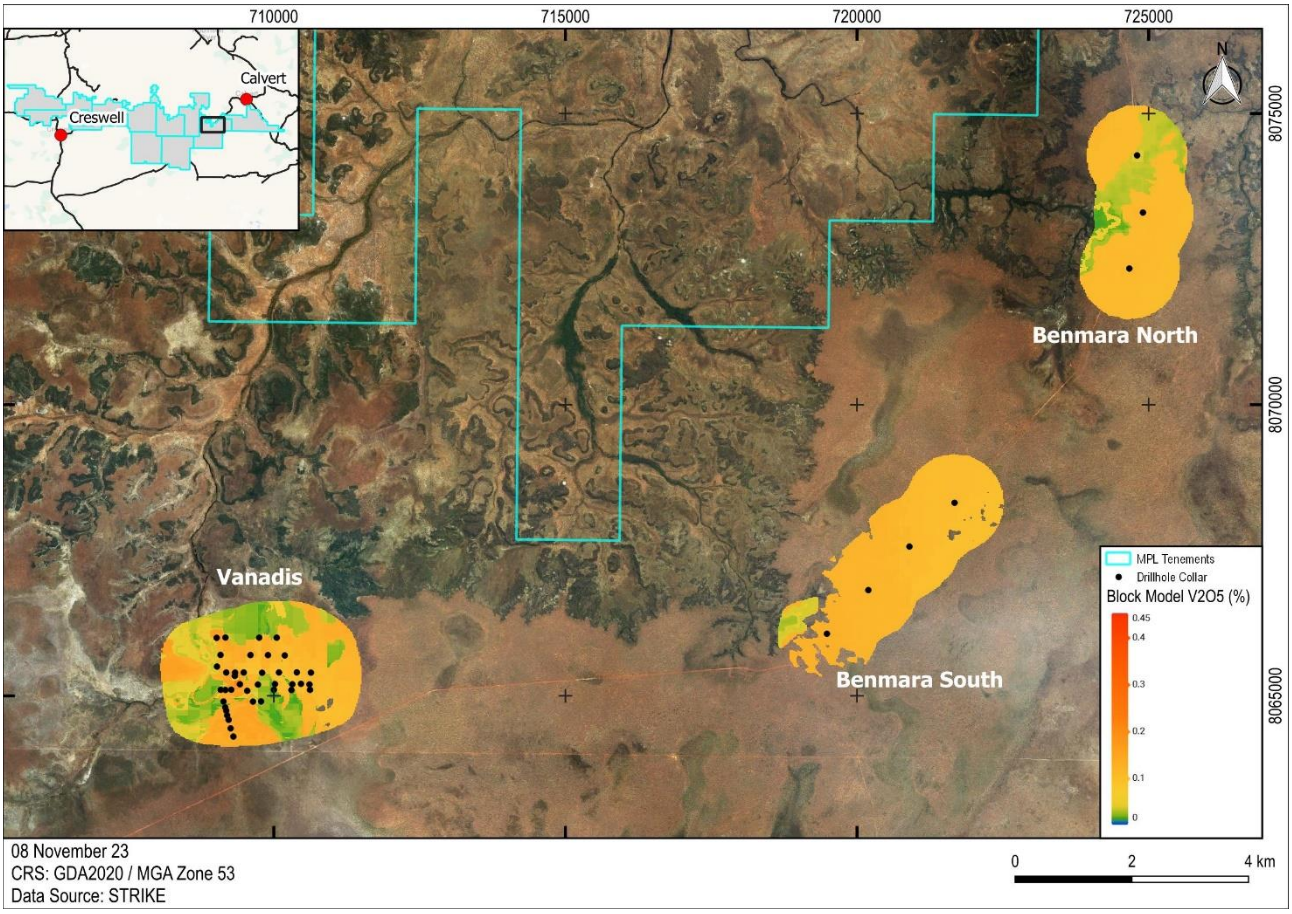

Figure 1. Plan map of Vanadis, Benmara North, and Benmara South vanadium block model within preliminary optimised pit shells.

REE mineralisation is stratabound within Cretaceous marine sandstones and siltstones at depths of ~3–30 m below surface (Figure 3). Vanadium mineralisation is present at surface and in sub-horizontal sedimentary strata which lie above the 1–2 m thick, sub-horizontal REE deposit (Figure 4). Gallium (Ga) by-product was estimated since a geochemical association has been identified between Ga and V at Barkly. Concurrently, Ga has been identified as a critical mineral and, pending future metallurgical test work, may be able to be extracted with the vanadium from the host rocks. Furthermore, low concentrations of deleterious elements uranium (U) and thorium (Th) have been considered for the REE Mineral Resource.

The Mineral Resources were prepared based on 755 m of aircore drilling at Vanadis and Benmara. All holes are vertically oriented, with an average depth of 16 m and a maximum depth of 36 m. The Vanadis Mineral Resource is drilled out on an irregular ~300-m by ~300-m drillhole spacing. Single drill lines with ~1,000-m hole spacing were completed at Benmara North and Benmara South.

This is the first Mineral Resource reported for Barkly and significant potential for growth exists with REE mineralisation open in all directions.

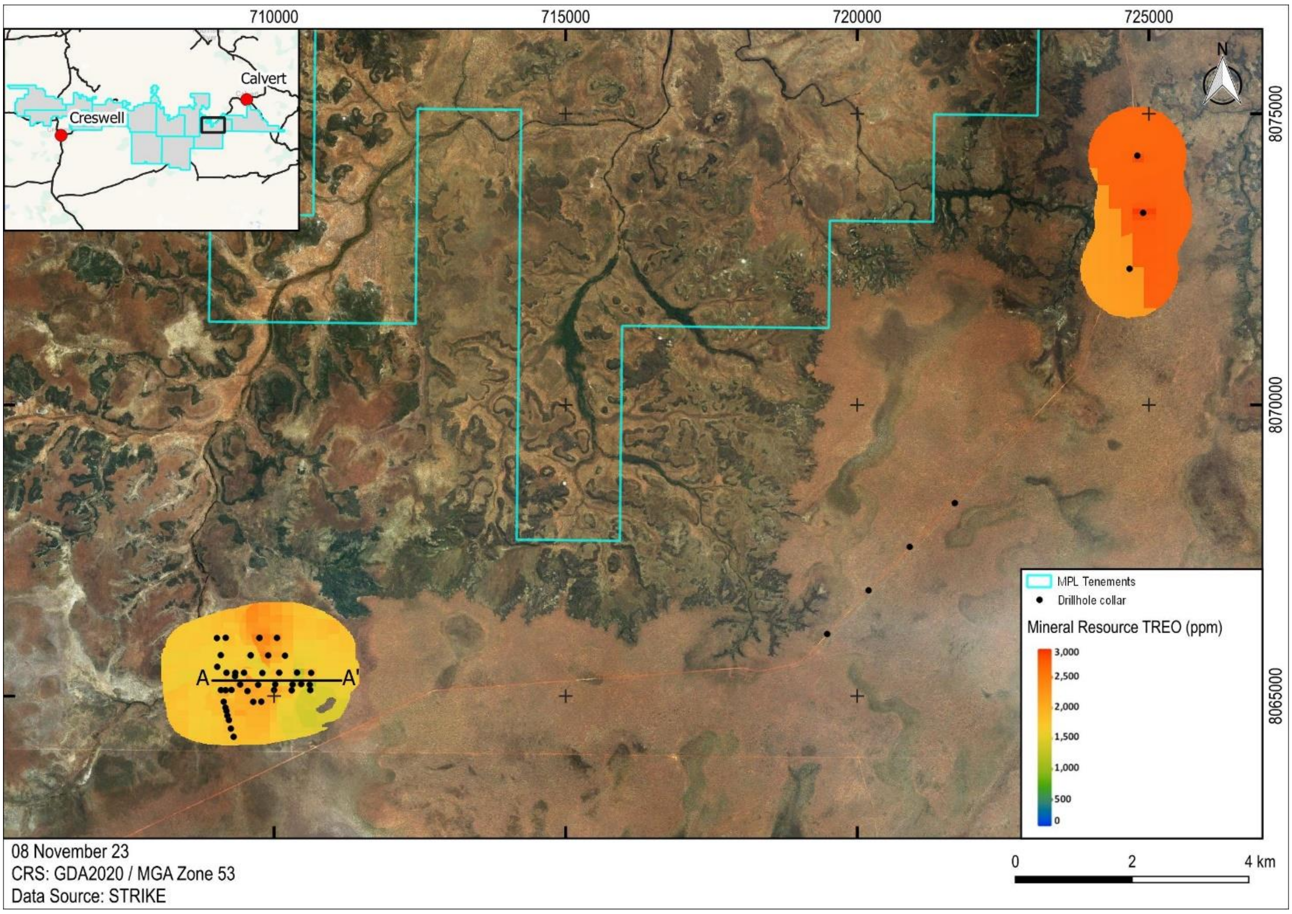

Figure 2. Plan view of Vanadis and Benmara North rare earth Mineral Resource (note REE mineralisation is at depths ~3–30 m below surface).

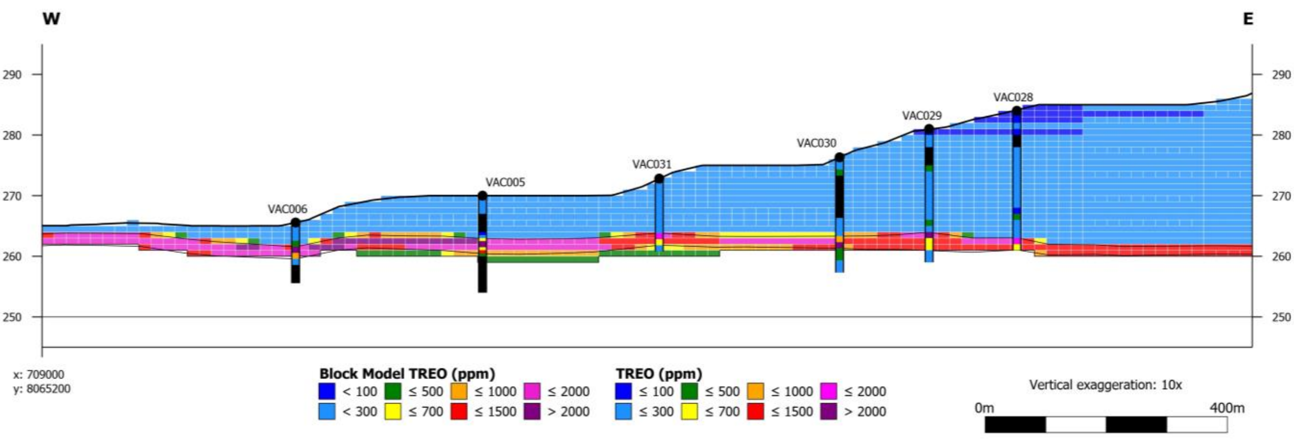

Figure 3: Section A–A' from Figure 2 indicating drillhole assays and TREO block grades (section ~8065200 mN, looking north, 10x vertical exaggeration).

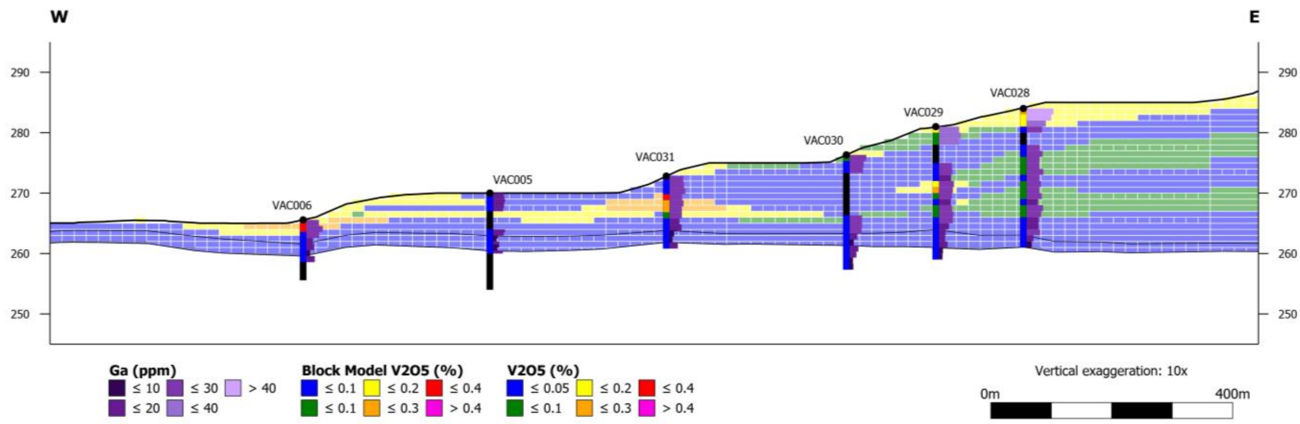

Figure 4: Section A–A' from Figure 2 indicating drillhole assays (V_2O_5, Sc, Ga) and V_2O_5 block grades (section ~8065200 mN, looking north, 10x vertical exaggeration).

Exploration Target

Exploration Targets for REEs and vanadium have also been determined by RSC and represent potential mineralisation extensions, based on the mapped geological continuity of the host sediments.

An Exploration Target of approximately 200–1,000 Mt, at 1,600–1,900 ppm TREO, is reported in accordance with the JORC Code (2012) for the REE target (Table 4). An Exploration Target of approximately 300–1,000 Mt at 0.12–0.14% V_2O_5 is reported in accordance with the JORC Code (2012) for the overlying vanadium target. The potential quantity and grade of the Exploration Targets are conceptual in nature; there has been insufficient exploration to estimate a Mineral Resource and it is uncertain if further exploration will result in the estimation of a Mineral Resource.

The Exploration Targets' volumes and tonnages are based on possible extensions of mineralisation in the mapped laterite and Cretaceous sandstones within the Company's tenements (Figure 5 and Figure 6). The grades used in the Exploration Targets are based on the results from the 2022 drilling programme. The Benmara South prospect is included in the REE Exploration Target as further drilling could demonstrate that the deposit has a higher TREO grade (Figure 5). The remainder of the Exploration Target relates to areas where the presence of a mineral deposit can be suggested on the basis of demonstrated geological continuity but has not been confirmed by drilling.

The Company plans to test the validity of the Exploration Targets through further drilling. Initial testing is likely to include several widely spaced drill lines across the tenements. These are expected to be completed by Q4 2024. A comparison of the Barkly REE Inferred Mineral Resource with other regolith-hosted REE mineral resources illustrates the remarkably high NdPr concentration at Barkly (Figure 7). The Barkly Exploration Target envelope demonstrates the potential for future growth of the NdPr endowment of the Barkly REE deposit.

Table 4: Barkly Exploration Targets.

Category	Million Tonnes	Grade
Rare Earth Target	200–1,000	1,600–1,900 ppm TREO incl. 500–700 ppm NdPr
Vanadium Target	300–1,000	0.12–0.14% V_2O_5

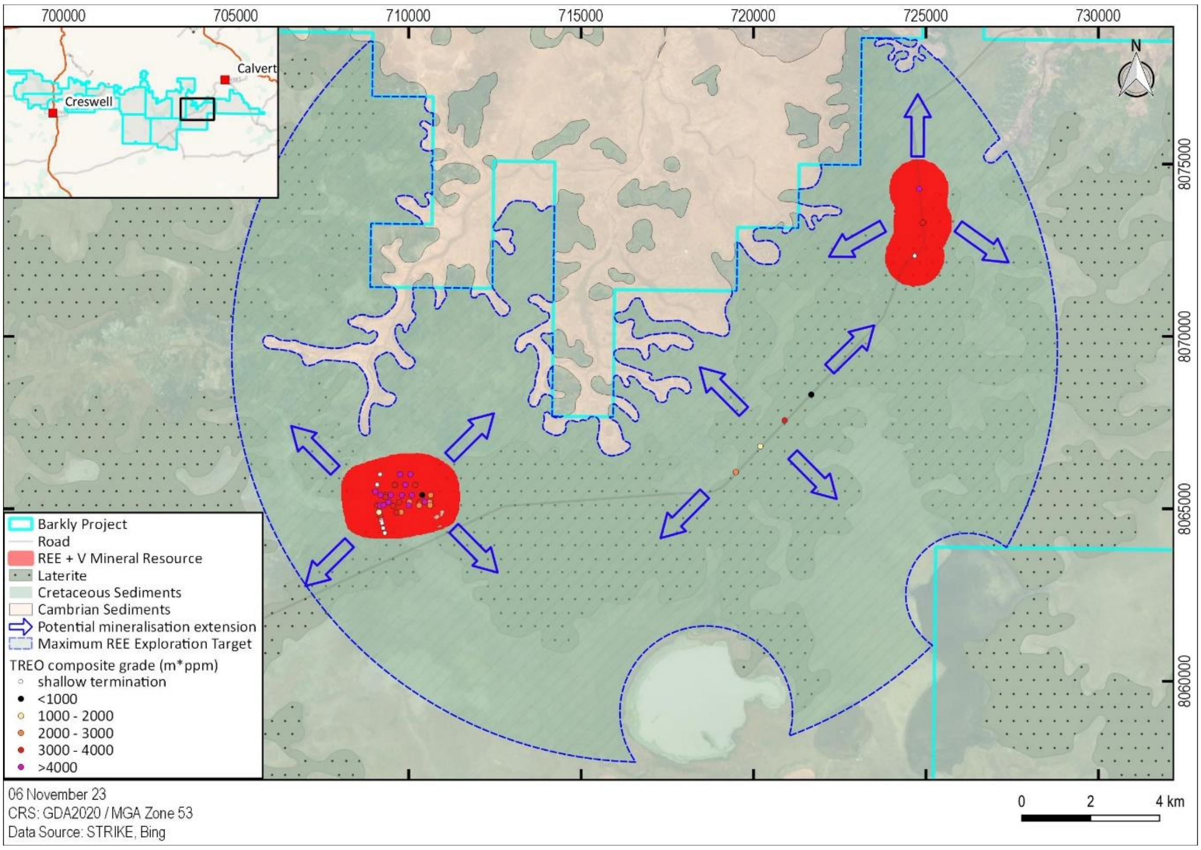

Figure 5: Drilling at Vanadis and Benmara indicates the REE mineralisation is open in all directions and may be continuous in the ~12-km gap between the closest drillholes of each prospect.

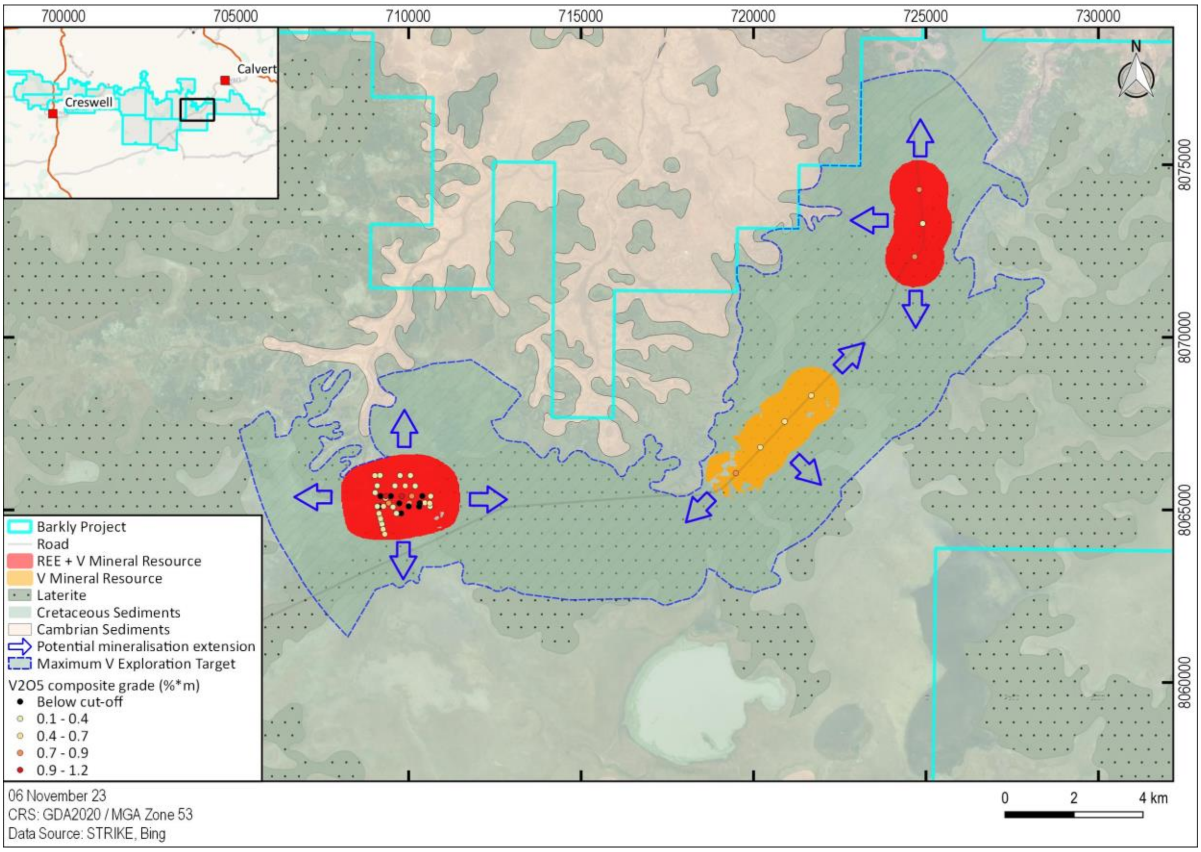

Figure 6: Drilling and mapping at Vanadis and Benmara suggest the V mineralisation, hosted in laterites and the Vanadis unit, is potentially open in all directions and may be continuous between the prospects.

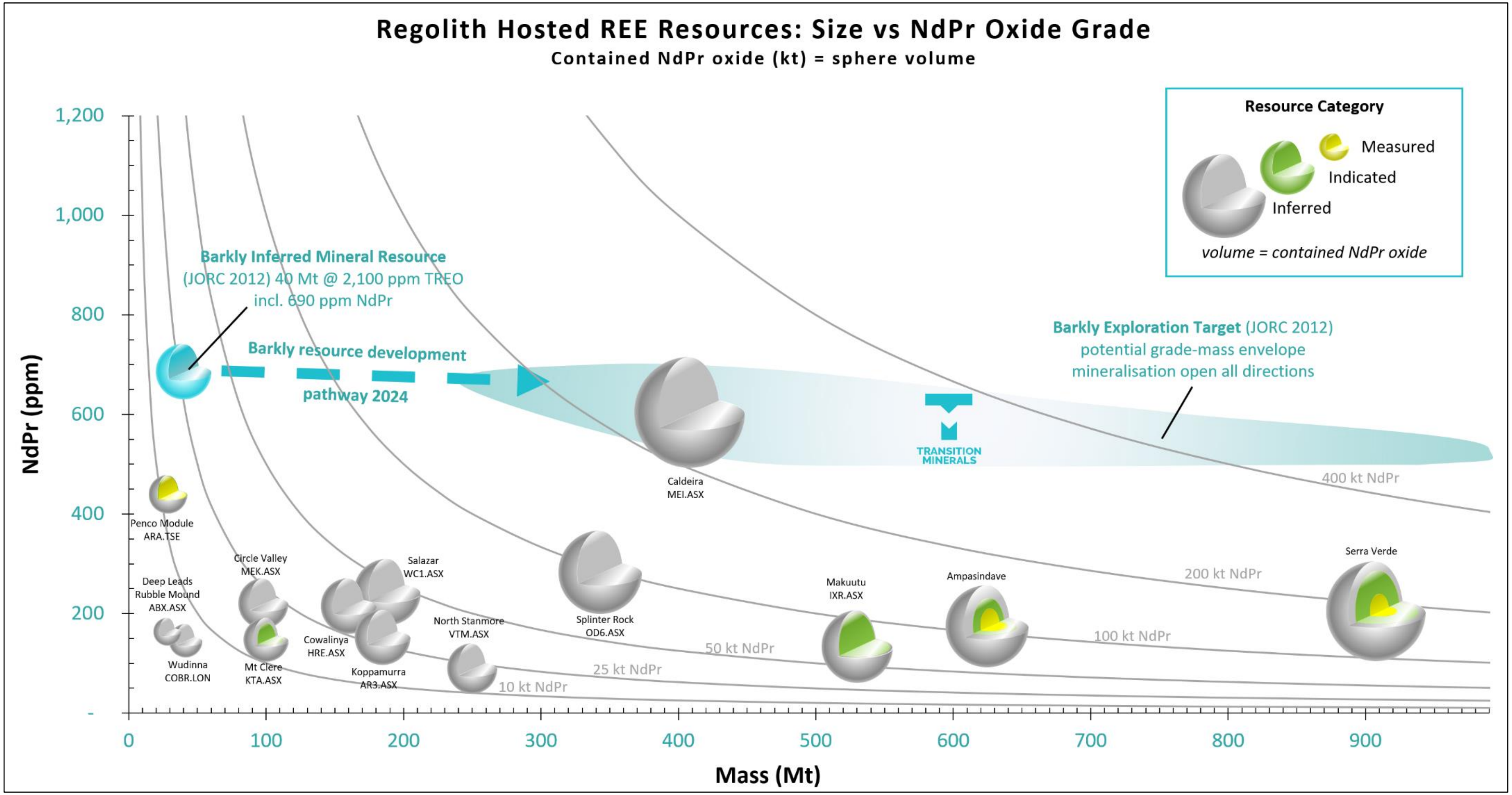

Figure 7: Regolith-hosted REE mineral resources, their published size, and NdPr grade (data sources: Appendix 2). The Barkly Exploration Target envelope demonstrates the potential for future growth of the NdPr endowment of the Barkly REE deposit.

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

Radionuclides

The Barkly REE Mineral Resource contains very low concentrations of the radionuclides uranium and thorium (Figure 8), which is advantageous from a product handling and processing perspective. The presence of U and Th is often compounded in the processing of rare earth ores and can create considerable downstream cost, management, and environmental issues.

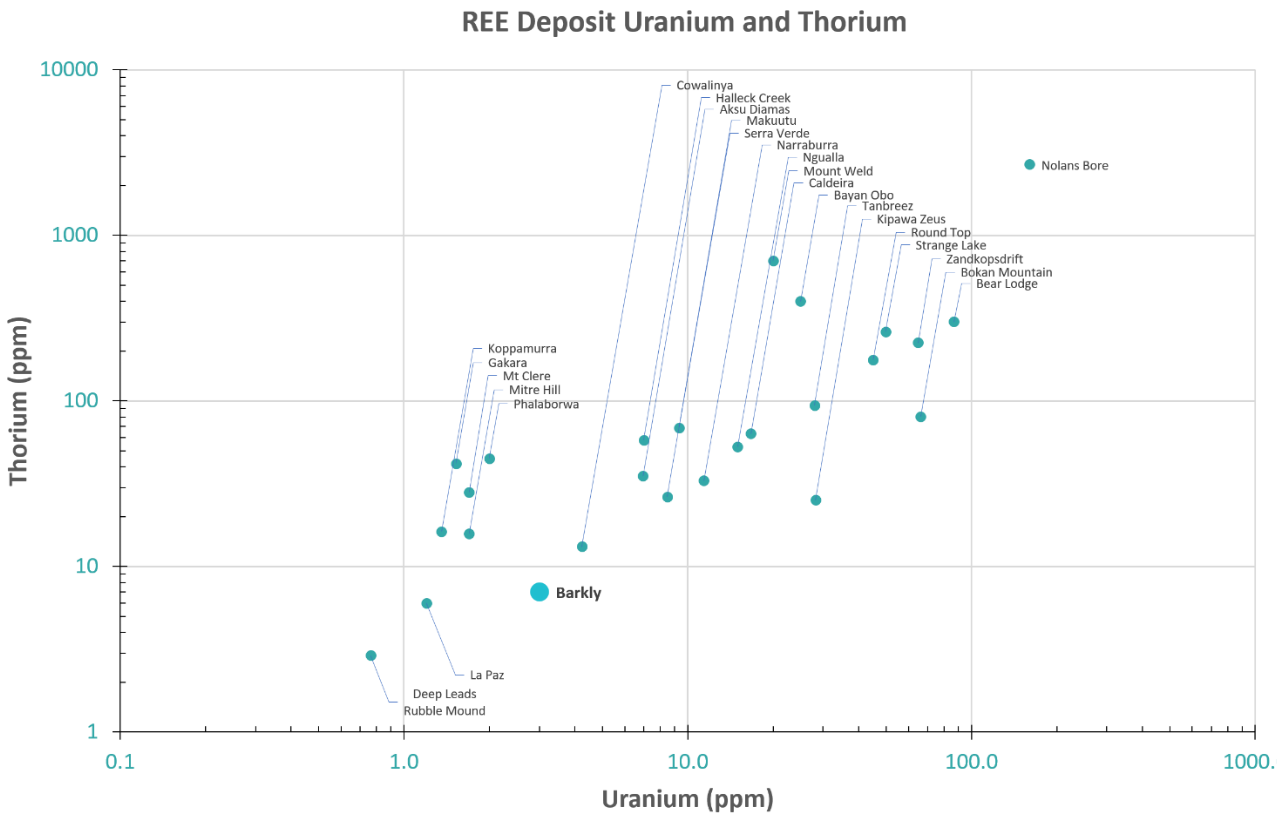

Figure 8: Rare Earth Element deposits and reported concentrations of radionuclides U and Th grade (data sources: Appendix 3).

Barkly Mineral Resources – Summary of Material Information

Geology & Mineralisation: Regional Geology

The Barkly Project overlies sedimentary and volcanic rocks of the McArthur Basin (Tawallah Group) and sedimentary rocks assigned to the Georgina and Carpentaria basins. The latter forms the Cretaceous-age marine sedimentary rocks informally referred to as the Mullaman Beds, which are host to the REE and vanadium mineralisation at Barkly.

The Palaeo-to-Mesoproterozoic McArthur Basin occurs in the northeast portion of the Northern Territory and consists of a 10-km-thick package of weakly deformed sedimentary rocks with minor volcanic rocks. The Georgina Basin is classified as a Neoproterozoic (Cryogenian) to Devonian intracratonic basin and consists of two domains: the Southern Georgina Basin, which represents the basin's main depocenter, and the relatively quiescent Central-Northern Basin. The Carpentaria Basin is one of a series of partially to fully overlapping nested basins spanning the Mesozoic time interval.

Sedimentation of the Carpentaria Basin began in the Middle-to-Late Jurassic and was dominantly fluvial. A Late Jurassic to Early Cretaceous marine transgression advanced from the north and reached a maximum during the Aptian to early Albian (125 Ma to ~113 Ma). This resulted in widespread shallow-marine to marine conditions, with depositional environments gradually shallowing from shallow marine to paralic. By the late Albian (~100 Ma), a marine regression accompanied the seaward migration of the shoreline, which particularly affected the sedimentary accumulation and mineralisation processes within the interpreted large marine embayment over which the Barkly Project is located. As a result of this relative eustatic sea-level fall, large parts of the embayment were potentially sub-aerially exposed and subject to erosion and chemical weathering before further inundation. By end-Cretaceous, extensive saprolitisation and stable geomorphic conditions resulted in significant vertical lowering of the landscape by the continued removal of fine sand clays and solutes. This process of downwasting and etchplanation of the Mullaman Beds resulted in the formation of the vanadiferous laterite carapace.

Geology & Mineralisation: Project Geology & Mineralisation Controls

Most of the Barkly Project is covered by Cenozoic regolith, laterite, and transported material. The vanadium-enriched laterite forms a metalliferous carapace formed by residua related to the downwasting of the Cretaceous marine sediments of the Carpentaria Basin (Mullaman Beds). The latter are thought to be relatively undeformed and have a flat (2–5°) regional dip, reflecting the orientation of original sedimentary bedding. The marine sediments comprising the Mullaman Beds include clayey, micaceous, and ferruginous and glauconitic sandstones, calcareous and sandy siltstones, shales, silty claystones, and claystones. Several of the 2022 drillholes intercepted at their base a relatively coarse-grained, texturally mature, high-porosity marine sandstone, which has since been interpreted as Cambrian Bukalara Sandstone. The Bukalara Sandstone comprises the floor rocks to the Mullaman Beds in the Vanadis–Benmara project area. A lithostratigraphic column of the representative sedimentary units intersected by drilling, is presented in Figure 9.

The Company’s characterisation studies suggest the (early)-diagenetic and authigenic nature of the minerals that host V and REE mineralisation and have ruled out a magmatic source for their formation.

REE Mineralisation

REE mineralisation at Barkly is stratabound within marine sandstones thought to be deposited at the shoreface and the shoreface-to-offshore transitional zone, within an interpreted large Cretaceous marine embayment (Krassay, 1994). The occurrence of medium-to-coarse sandstones that transition to fine-grained sandstones and siltstones to the northeast of the project, is thought to indicate their proximity to the open Carpentaria seaway. The high-grade REE mineralisation is confined to a continuous 1–2 m thick sedimentary unit with relatively sharp grade contacts above and below. At Vanadis, the main REE-mineralised zone corresponds with a porous coarse sandstone (500–750 µm). Seven drillholes intercepted a secondary, low-grade, REE-enriched medium sandstone (250–375 µm) at Vanadis, situated ~2–4 m beneath the high-grade mineralised unit. The REE mineralisation at Benmara is hosted in very fine to fine sandstones (95–187 µm) that immediately overlie (suspected) Bukalara Sandstone footwall and appear to contain a potentially higher tenor of REE mineralisation at Benmara North, indicating that increased sediment granulometry is potentially not an important discriminating criterion for REE mineralisation at Barkly.

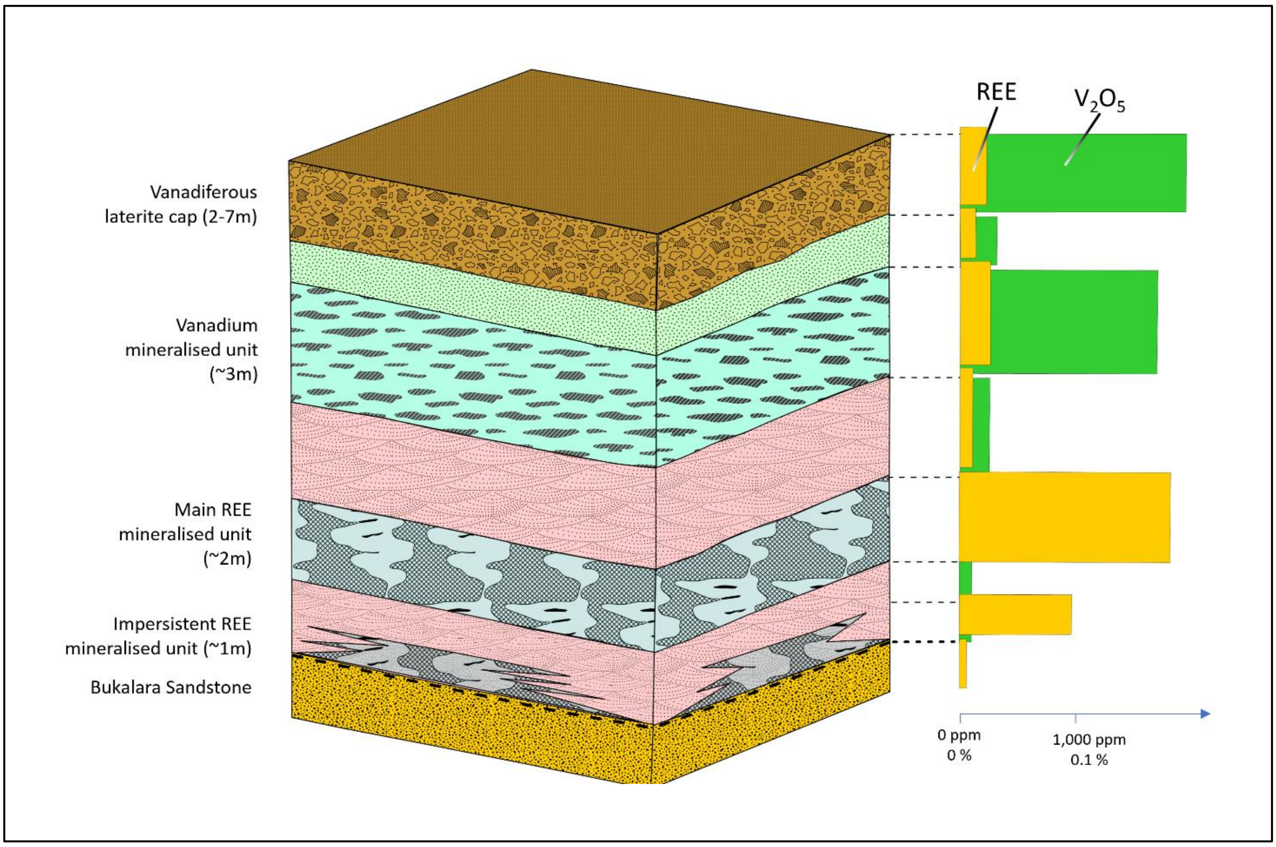

Figure 9. Generalised lithostratigraphic column of representative geological units and corresponding assay results.

Mineral characterisation studies, which include scanning electron microscopy (SEM) and microprobe studies of Vanadis samples, have identified the REEs are hosted within a suite of aluminium-phosphate-sulphate (APS) minerals. APS minerals are reasonably common, and their formation has been attributed to widely varying mechanisms including hydrothermal fluids, diagenesis, sulphate reduction/methanogenesis, and possible supergene enrichment.

The APS minerals at Vanadis are members of the crandallite subgroup and are classed as intermediate solid solutions between gorceixite (Ba), goyazite (Sr) and florencite (REE) — (Ba, Sr, REE)$Al_3(PO_4)_2(OH)_6$**.** Most textures observed by SEM are consistent with formation during early diagenesis, as evidenced by the rhythmic banding of colloform rinds deposited on discrete quartz grains at mineralised sites. The colloform textures are considered to be colloidal in origin.

The broad and shallow continental-shelf sediments of the Barkly area support the diagenetic formation of APS minerals. Diagenetic APS minerals are closely associated with clay minerals that act as the source of Al, which is released shortly after burial during interaction with marine pore water. Seawater contains sufficient Ca, Ba and Sr to form APS minerals and REE and PO_4 can be sourced from ocean-sediment pore water, Fe-Mn oxides and/or organic matter (e.g. bioapatite from fish debris). As the Barkly Project is interpreted to lie within a large palaeo-marine embayment, organic matter introduced by estuarine and deltaic alluvial inputs is also considered a potential additional source, with the interaction of fresh and marine water also thought to facilitate the deposition of oceanic REE-enriched colloids (Rasmussen et al., 1998).

The source of phosphorous (P) and the exact mechanism that led to APS precipitation may vary between Vanadis and Benmara. The delivery of REEs to the sea floor, and subsequent burial and preservation within sediments, can be influenced by sea level, oxidation state, terrestrial organic matter loading, local upwelling, changes in bottom-water circulation, marine productivity, microbial decay and/or sedimentation rates. Given that the mineral suites may change relative to different geographic locations within a large marine embayment, it is possible that mineral speciation will also vary across the project localities.

An alternate mineralisation model postulated for the presence of APS minerals at Barkly may be due to supergene process deposition; however, the postulate of a supergene process in relation to the formation of the APS mineral suites, is still under investigation.

Vanadium Mineralisation

Vanadium mineralisation at Barkly is hosted in at least two main units: (i) a surficial, locally metalliferous carapace, comprising up to six identified facies types of mixed detrital (transported) and in-situ laterites (up to 3 m thick at Vanadis and up to 7 m thick at Benmara), and (ii) two subsurface, subjacent, semi-continuous and sub-horizontal ferruginous sandstones units (≤4 m thick), informally referred to as the 'Vanadis Unit'. The Vanadis Unit(s) may represent a zone of secondary ferricrete in the weathering profile where the rise and fall of water tables over time (i.e. supergene processes) resulted in the deposition of multiple ferricrete horizons. As a result, this unit is not necessarily stratabound.

SEM analyses have demonstrated that V mineralisation is enriched within Fe-oxides (goethite-haematite) at Vanadis. Higher V grades correlate with a higher abundance of Fe-oxides. The textures observed support a supergene origin for V-enrichment, related to laterite and ferricrete formation in the regolith profile.

Drilling Techniques

Aircore drilling was undertaken at Vanadis (39 holes) and Benmara (seven holes) by McLeod Drilling between July and August 2022. A 76-mm, mini, face-sampling, RC hammer bit was used and drill cuttings were removed by the injection of compressed air into the hole via the annular area between the inner tube and the drill rod. Rods were 3-m NQ sized.

The Mineral Resource has been prepared based on all 46 shallow (<40 m) vertical drillholes (755 m). The drillhole spacing is highly variable at Vanadis ranging from 150–300 m. Single drill lines with ~1,000-m hole spacing were completed at Benmara North and Benmara South. Several drillholes were terminated above the expected depth of the REE deposit. All drillholes intercepted V mineralisation. Significant intercepts have been reported in previous announcements[1].

[1] Exploration Results were reported in shareholder release entitled "Exploration Target Defined For Transition's Rare Earth Element Discovery" dated 4 January 2023, respectively. Competent Person: Mr René Sterk.

Sampling, Sub-Sampling & Analytical Techniques

Drill samples were collected as either 0.5-m (VAC001–VAC005) or 1-m samples (VAC006–VAC039, BAC001–BAC007). All samples were collected through a cyclone into plastic bags, weighed, individually passed through a riffle splitter for homogenising, and subsequently subsampled to ~2 kg within numbered calico bags.

Samples were initially analysed using a portable X-ray fluorescence (pXRF) instrument (Olympus Vanta) immediately after drilling, with the initial aim of determining the presence of anomalous V (>300 ppm). The pXRF data also revealed the presence of anomalous (>200 ppm) REEs and associated elements (Pr, Nd, La, Ce, Y, P, Sr and Ba,).

A selection of anomalous drill samples was subsequently sent to ALS laboratories in Townsville, Qld, for analysis. A total of 698 samples from Vanadis and Benmara were sent for pulverising (PUL-23) and multi-element analysis via 4-acid digest and ICP-MS (laboratory code ME-MS61r). Drill chip samples were pulverised to 85% passing 75 µm. A prepared sample (0.25 g) is digested with perchloric, nitric, hydrofluoric and hydrochloric acids. The residue is topped up with dilute hydrochloric acid and analysed by ICP-MS.

Four-acid provides near-complete digestion for most minerals; however, Ba, V and REEs may not be fully digested. Following anomalous REE results by four-acid, a subset of 53 samples containing REEs were subsequently analysed at ALS via lithium tetraborate fusion digestion and ICP-MS (laboratory code ME-MS81), which is considered to be a total digestion.

Vanadium and REE analyses were originally reported in elemental form but have been converted to relevant oxide concentrations as per industry standard. Refer to JORC Table 1 for the conversion factors (Appendix 1).

As expected, the flux fusion technique resulted in higher REE and V grades for the 53 samples. Adjustments were required for V_2O_5, Nd_2O_3, Pr_6O_{11}, La_2O_3 and Y_2O_3 to scale the remaining 645 four-acid results equivalent to the flux fusion results. The upward adjustments were calculated using linear regressions between the four-acid and flux fusion results of the 53 samples. Refer to JORC Table 1 for the adjustment factors (Appendix 1). No CeO_2 adjustments were made because a linear regression could not be established due to the upper detection limit in the ME-MS61r (four-acid) results.

Intervals with only pXRF data were not used in the resource estimate, other than to guide geological domaining.

Estimation Methodology

Geological Domains

The interpretation of geological domains is important for providing a first-pass constraint on grade populations and ensuring the geological controls on mineralisation guide the modelling of estimation domains.

Geological domains were interpreted based on downhole lithological logging data from the 2022 drillholes. Available drill chips were relogged, using the Wentworth scale, in August 2023 by Transition to record grainsize variations with more precision than what was recorded during the drilling campaign.

Five sub-horizontal geological domains were implicitly modelled from the lithological data:

- laterite;
- Vanadis Unit 1 (ferricrete);
- Vanadis Unit 2 (ferricrete);
- undifferentiated siltstones and sandstones (which fine to the northeast); and
- marine basal sandstone.

The disconformity of the undifferentiated siltstones and sandstones with the underlying mature marine sandstone is a first-order constraint to REE mineralisation.

Vanadium mineralisation occurs predominantly within the laterite and Vanadis Unit geological domains.

Estimation Domains

Three REE estimation domains were created (Figure 10). The primary REE estimation domain was implicitly modelled based on a threshold of 500 ppm TREO. Wireframes were snapped to drillhole contacts resulting in a ~1–2 m thick wireframe. The primary domain wireframes were extrapolated below more-shallow drillholes and between Vanadis, Benmara South, and Benmara North. A review of the composited TREO grades within the primary REE domain identified a marginally positive skew distribution exhibiting a tail of high-grade values. The high-grade tail samples (TREO grades >2,300 ppm) are predominantly the more-shallow sample in each drillhole and form a relatively contiguous lateral horizon. Sub-domaining of the high-grade portion was not undertaken due to the small sample population within the domain and since the primary estimation domain has a CV of 0.6 for TREO (low variability relative to the mean). The risk of biased estimation was addressed through the estimation strategy.

Two additional REE estimation domains were created to estimate the low-grade TREO in the remainder of the block model. The material above the primary REE horizon was estimated independently of the material below the primary horizon. The 'Below' domain includes the secondary lower grade REE-enriched horizon (typically medium sandstone) that was intercepted in seven drillholes at Vanadis.

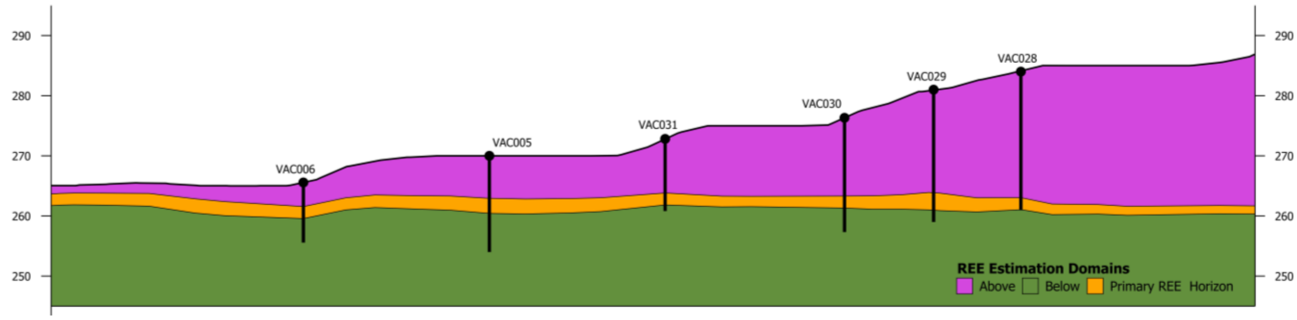

Figure 10: Rare earth estimation domains (section 8065200 mN, looking north, 10 x vertical exaggeration).

Vanadium distributions within the laterite, Vanadis Unit 1 and Vanadis Unit 2 geological domains were reviewed. A histogram of the composited V_2O_5 grades within the Vanadis Unit 2 geological domain indicates bimodality. Sub-domaining above 0.15% was not undertaken due to the small sample population within the domain and since the domain has a CV of 0.8. The laterite and Vanadis Unit 1 grade populations have no major grade trends and have CVs of 0.5 and 0.6, respectively. Hence, four V estimation domains were created: laterite, Vanadis Unit 1, Vanadis Unit 2, and background, which were constrained to the geological domains. The V estimation domains are presented in Figure 11.

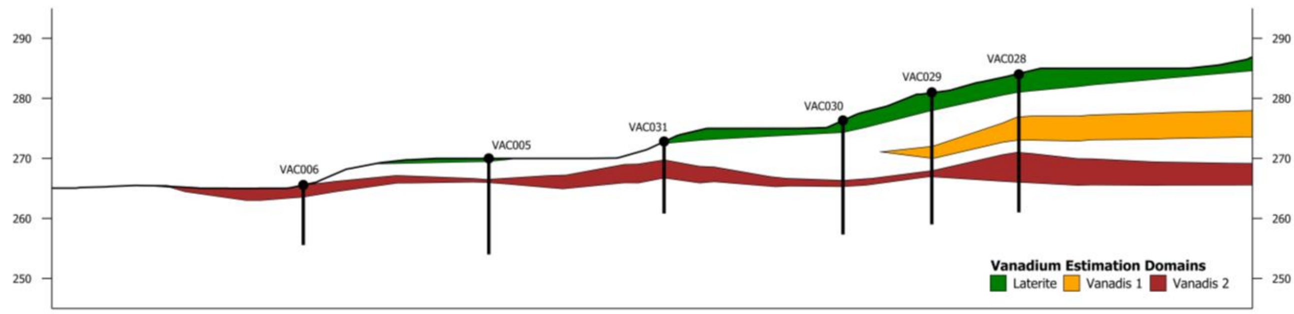

Figure 11: Vanadium estimation domains (section 8065200 mN, looking North, 10 x vertical exaggeration).

Resource Estimation

Assay data were composited downhole to 1-m intervals for estimation, based on the dominant sample length. No residuals were generated. No grade capping was used as there were no extreme outliers.

The Mineral Resource was estimated using ordinary kriging (OK).

In preparation for grade interpolation using OK, weights were generated by modelling variograms for V and TREO. Estimation domains and parameters established for V were also used for Ga. Estimation domains and parameters established for REOs were also used for U and Th. The variograms display satisfactory structure and provide support for an Inferred classification. Hard domain boundaries were used for the estimation of all variables.

A parent block size of 200 m x 100 m x 1 m, sub-blocking to 20 m x 10 m x 1 m (x, y, z) was selected based on the current drill spacing at Vanadis and anticipated mining methodology.

Rare earth (+U+Th) grade estimation was completed in two passes using search neighbourhood parameters supported by kriging neighbourhood analysis (KNA) of TREO. Vanadium and Ga grade estimation was completed in a single pass using search neighbourhood parameters supported by KNA of V. A total of 15 REOs (La_2O_3, CeO_2, Pr_6O_{11}, Nd_2O_3, Sm_2O_3, Eu_2O_3, Gd_2O_3, Tb_4O_7, Dy_2O_3, Ho_2O_3, Er_2O_3, Tm_2O_3, Yb_2O_3, Lu_2O_3, Y_2O_3), two deleterious elements (U and Th), V, and Ga were estimated. Discretisation of 5 x 5 x 1 (x-y-z) was applied.

The Competent Person considers the block model to be appropriately estimated based on the validation of input and estimated grades through visual assessment, domain mean grade comparisons, and a review of swath plots.

Bulk Density

Since only aircore drilling has been undertaken at Barkly, no in-situ bulk density data are available.

An assumed in-situ, dry bulk density of 2.1 g/cm^3 was selected for the REE Mineral Resource, based on a global compilation of Cretaceous sandstones, which range from 1.5–2.6 g/cm^3 and average 2.1 g/cm^3.

An assumed in-situ bulk density of 2.5 g/cm^3 was selected for the vanadium Mineral Resource based on a review of laterite bulk densities. The bulk density of laterite and regolith profiles is highly variable and depends on its mineralogy, porosity, compaction, rock content, and internal drainage. It typically varies widely from 1.0 to 3.6 g/cm^3. The nominal value of 2.5 g/cm^3 was used for both the laterite and ferricrete domains and is considered conservative based on the high Fe content. Future work, intending to increase the resource confidence, will focus on obtaining more representative data for the bulk density, using appropriate means such as down-hole gamma-gamma.

Resource Classification

The Competent Person has classified the Mineral Resources in the Inferred category in accordance with the JORC Code (2012). Geological evidence is sufficient to imply but not verify geological and grade continuity.

Mineralisation remains open in all directions at Barkly. The Competent Person applied a perimeter buffer around the drilled area as a first-pass constraint to the mineral resource model. The applied buffer was 850 m from drillhole traces on average but extends to a maximum of 1,100 m in some areas where drilling was irregularly or widely spaced. This approach was supported by a visual review of the kriging efficiencies and slope of regression for the estimation of TREO. Approximately 40% of the Mineral Resource is based on extrapolated modelling beyond the nominal sample spacing of ~300 m (Figure 12).

The Mineral Resources are based on exploration, sampling, and assaying information gathered through appropriate techniques including aircore drilling. The variable drillhole spacing, limited flux-fusion assay data, number of informing samples, and lack of project-specific density data were key contributors to the Inferred classification.

It is reasonably expected that the majority of Inferred Mineral Resources could be upgraded to Indicated Mineral Resources with continued exploration.

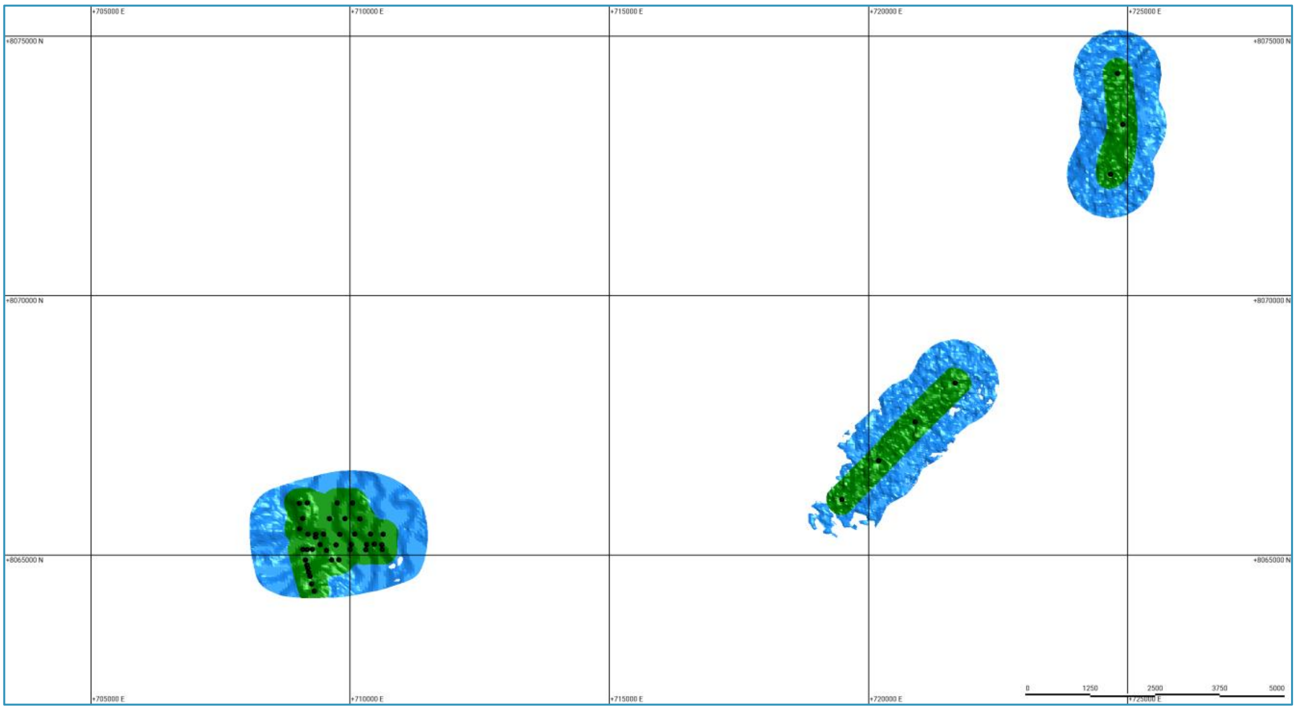

Figure 12: Plan view of Mineral Resources within 300 m of drill lines (green) and extrapolation beyond 300 m (blue).

Portions of the deposit that do not have reasonable prospects for eventual economic extraction are not included in the Mineral Resources. In assessing the reasonable prospects for eventual economic extraction, the Competent Person has evaluated preliminary mining, metallurgical, economic, environmental, social, and geotechnical parameters.

The Mineral Resources reported here are a realistic inventory of mineralisation which, under assumed and justifiable technical, economic, and developmental conditions, may become economically extractable.

Future work will seek to decrease the drill spacing and obtain bulk density data for the project.

Cut-Off Grade

The Barkly project is a combined project and cut-off grades were considered for both V and REEs. The volumes for reasonable prospects for eventual economic extraction were established based on the combined project contributions within 850–1,100 m distance buffers and preliminary optimised pit shells.

A cut-off grade of 430 ppm NdPr was selected for the reporting of the TREO Mineral Resource and a cut-off grade of 0.1% V_2O_5 was selected for the reporting of the V Mineral Resource. These were selected based on the Competent Person's preliminary evaluation of potential mining and processing costs, as well as the expectations in the market of an increase in the price of rare earths, especially that of Nd and Pr, which are the most significant value components in the Barkly deposit. Grade-tonnage curves are presented in

Figure 13 and Figure 14.

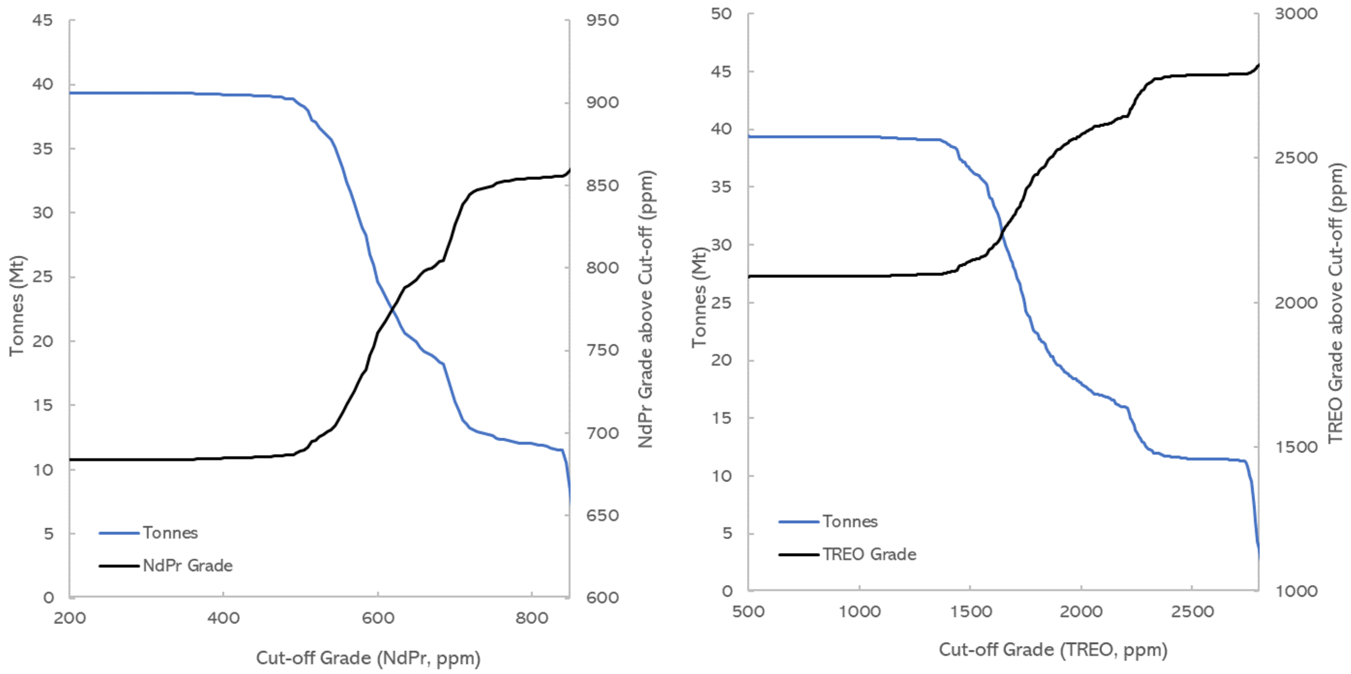

Figure 13. NrPr (left) and TREO (right) grade tonnage curves for the Barkly rare earth Mineral Resource.

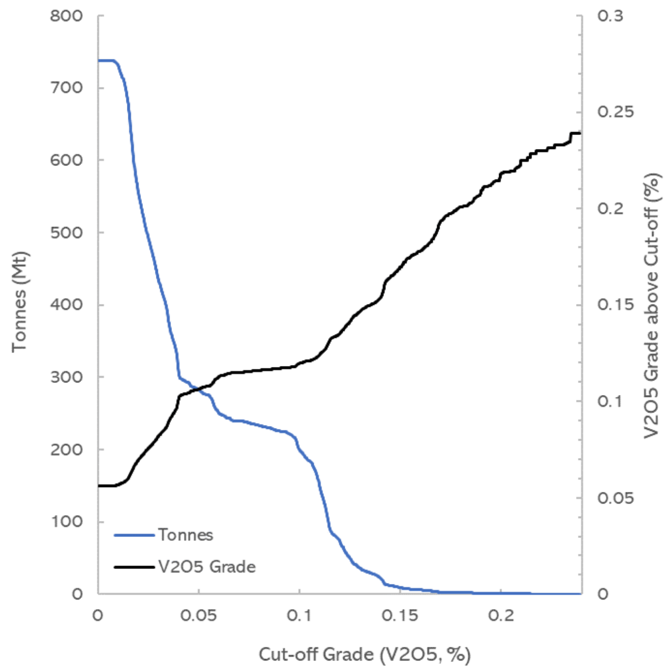

Figure 14. Grade tonnage curve for the Barkly vanadium Mineral Resource.

Mining and Metallurgical Methods & Parameters

The Competent Person has made reasonable assumptions (based on a desktop assessment of processing and recovery options) to inform the determination of the volumes for reasonable prospects for eventual economic extraction, based on an open-pit mining scenario. An initial metallurgical test programme was completed on two samples composited from the Company's 2022 drilling chips. The results demonstrate the potential to beneficiate the REE minerals through a traditional flotation system.

Flotation test work yielded a concentrate of 21,704 ppm TREO equivalent, including 7,529 ppm NdPr, 60 ppm Tb_4O_7, and 203 ppm Dy_2O_3. An extraction rate of 63.4% (676 ppm) of NdPr was achieved within an overall 60.7% extraction of TREO, using a typical acid-bake, followed by water leach of the original sample. A simple hydrochloric acid leach extracted 26.8% (285 ppm) of NdPr equivalent from the original sample. Gallium data indicate that Ga also behaved similarly to the REE in the weak acid digest.

In addition, both samples returned very low concentrations of the radionuclides uranium and thorium, which is advantageous from a product handling and processing perspective. The presence of U and Th is often compounded in the processing of rare earth ores and can create considerable downstream cost, management and environmental issues.

ALS Metallurgy (Perth) was engaged in early 2022 to undertake vanadium recovery test work on bulk material from the Vanadis prospect. Diagnostic leaching of crushed and milled samples, using high acid concentrations, was undertaken over a relatively short period of eight hours at atmospheric pressure and slightly elevated temperature. Vanadium extractions of 90.2% and 94.0% were recorded for hydrochloric acid leaching of the Vanadis material during the initial metallurgical test work.

The test conditions were selected to investigate two properties of the mineralised samples, including the oxidation state of the contained vanadium (3, 4, or 5+), and the mineral phase in which it is bound (iron-based or silicate). The tests may not all produce a high vanadium extraction, but rather indicate which leach conditions are favourable to achieve this. Subsequent testing will include partially optimised conditions to confirm extractions over the deposit variability to focus on vanadium leach kinetic recovery. While the initial optimised extraction figures are likely to be higher than those achieved from an economically feasible bulk leach operation, they compare well against other projects globally at various stages of development. They provide confidence to Transition Minerals in the ability to recover vanadium from mineralisation within its tenements.

It has been assumed based on consideration of potential leaching methods that Ga can be recovered as a by-product from the V mineralised units.

Based on the positive, initial, diagnostic leach outcomes and the potential to upgrade the rare earths by flotation or removal of coarse material, further stages of work are proposed to define optimal leach conditions, including testing reaction kinetics. Additional characterisation of mineralogy, via scanning electron microscopy, X-ray diffraction, or similar, may be undertaken on leached material to better understand the nature of extraction rates observed, and to optimise future test work.

Proximity to Markets & General Product Marketability

Vanadium, REEs, and Ga have numerous applications for a greener society and Australia is positioning itself as a secure, reliable, and ethical supplier of critical minerals.

Barkly's remote location and associated challenges to supply REEs, V, and Ga to major markets have been considered when assessing the Mineral Resources' reasonable prospects of economic extraction.

REEs

Rapid technological advances have resulted in REEs growing in importance in many domestic, medical, industrial, and strategic applications because of their unique catalytic, metallurgical, nuclear, electrical, magnetic, and luminescent properties. Global mine production was estimated by the United States Geological Survey to have increased to 300,000 tonnes of REO equivalent in 2022.

Nd and Pr are used in high-power, permanent, neodymium iron boron magnets, while the addition of smaller quantities of Dy, Sm, Tb, and Ho can contribute to high-temperature resistance and increased magnetism (Geoscience Australia). Permanent magnets are the key technology contributing to electrification and decarbonisation globally. They are responsible for converting electric energy in electric vehicles to mechanical energy and for converting the kinetic energy of rotating wind turbines into electricity (Figure 15).

The current global supply of MREOs is inadequate and global demand is expected to grow rapidly in the coming decades. A significant increase in global mining and refining capacity will be needed to meet that demand. Diversifying and expanding supply is a strategic, economic and environmental objective of Australia and its strategic minerals partners including the USA, Japan, South Korea, India, and Europe.

Figure 15 Rare earth permanent magnets are critical components of electric vehicles and wind turbines.

Vanadium

Vanadium is used as an alloy in high-strength, low-alloy steels, principally used in construction. In the aerospace sector, vanadium alloys provide low density, high strength, and stability at high operating temperatures within engines and airframes, making important contributions to weight reduction and fuel efficiency in future aircraft. A key green application of vanadium is in vanadium redox flow batteries (VRFB) used for grid energy storage.

Supply and demand dynamics point to a structural net deficit for vanadium (Bushveld Minerals). Growing demand for vanadium is underpinned by the higher intensity of use of vanadium in steel, while the energy storage industry offers a significant demand upside (Figure 16).

Figure 16: Vanadium's principal use is in the strengthening of construction steel. Renewable energy-grid connected vanadium redox flow batteries provide a significant new market opportunity.

Ga

As gallium arsenide (GaAs), gallium is used in semiconductor fabrication, as a critical component in multiple steps of the manufacturing process for computer chips and electronic devices, and is a useful and improved silicon substitute for the electronics industry. Gallium arsenide and end applications account for approximately 75% of the gallium market. As gallium nitride (GaN), it has applications in military radar, lasers, and satellites, therefore encouraging its designation as a Critical Mineral by Australia, USA, Japan, Europe and India. Gallium is also used as a dopant in NdFeB permanent magnets (https://strategic-metal.com/products/gallium/gallium-market/).

China dominates the production of gallium, and therefore geopolitical events and export quotas also impact gallium supply and price forecasts. China moved to export controls of gallium to the US, Europe, and Japan in July 2023, resulting in significant price spikes. Pricing for gallium is anticipated to rise due to supply and demand.

The multi-commodity Barkly Mineral Resources provide a leading, contemporary opportunity for emerging and future technologies essential to manufacturing, clean energy production, semiconductor production, and the defence and aerospace industries. The supply and value chains of these critical minerals are small relative to those of major commodities, such as iron ore and coal, and are highly concentrated around China.

The current global supply is inadequate as global demand for these resources is expected to grow rapidly in the coming decades. A significant increase in global mining and refining capacity will be needed to meet that demand. Diversifying and expanding supply is a strategic, economic and environmental objective of Australia and its strategic minerals partners including USA, Japan, South Korea, India and Europe.

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Competent Persons Statement

The information in this shareholder release that relates to Exploration Targets and Mineral Resources is based on information compiled by, and under the supervision of, Mr René Sterk, a Competent Person who is a Fellow of The Australasian Institute of Mining and Metallurgy (FAusIMM), a Chartered Professional Geologist with the AusIMM, a Registered Professional Geologist with the AIG, and holds an ex-officio position on the JORC committee. René has sufficient experience relevant to the activity that he is undertaking 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 2012). Mr Sterk is Chairman of Transition Minerals Limited and he consents to the inclusion in this report of the information in the form and context in which it appears. Mr Sterk indirectly holds shares in Transition Minerals Limited and is the main shareholder and managing director of RSC, the geological service company contracted to undertake the exploration work on behalf of Transition Minerals Limited. Mr Sterk also previously reported an Exploration Target for the Barkly project. The full nature of the relationship between Mr Sterk and Transition Minerals has been disclosed. Mr Sterk consents to the inclusion in the report of the matters based on his information in the form and context in which it appears.

Reference to Previous Reports

Information in this release that relates to Exploration Results (drilling results and metallurgical results) is extracted from the following releases available at https://www.transitionminerals.com/announcements/

- "Significant Upgrade and Extraction of Rare Earth Elements Achieved In Diagnostic Laboratory Tests" dated 15 September 2023, Competent Person: Mr Richard Hall.
- "Initial Rare Earth Element Mineral Characterisation Completed" dated 28 March 2023, Competent Person: Dr Michael Gazley.
- "Updated Exploration Target for Transition's Vanadium Discovery" dated 11 January 2023, Competent Person: Mr René Sterk.
- "Exploration Target Defined for Transition's Rare Earth Element Discovery" dated 4 January 2023, respectively, Competent Person: Mr René Sterk.

The company confirms that it is not aware of any new information or data that materially affect the Exploration Results included in the original market announcements. The company confirms that the form and context in which the Competent Persons' findings (Exploration Results) are presented have not been materially modified from the original market announcements.

Bibliography

Krassay, A. (1994). The Cretaceous Stratigraphy and Palaeogeology of the Western and Southwestern Margins of the Gulf of Carpentaria, Northern Territory. D. Phil. Thesis, University of Adelaide, 480 p.

Rasmussen, B., Buick, R., Taylor, W.R. (1998). Removal of oceanic REE by authigenic precipitation of phosphatic minerals. Earth and Planetary Science Letters 164 (1998), pp. 135–149.

Appendix 1 JORC Table 1

JORC 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.*	The Barkly Mineral Resources were estimated based on grade data from 46 aircore holes drilled by Transition in 2022. • All drill samples were collected through a cyclone into plastic bags at 0.5-m intervals (holes VAC001 – VAC005) or 1-m intervals (VAC006 – VAC039, BAC001 – BAC007). All samples were weighed before being individually passed through a 50:50 riffle splitter for homogenising, then subsampled into ~2-kg samples within numbered calico bags. • Sample representativity was ensured through the application of SOPs that specified processes to optimise recovery and prevent contamination and sampling errors. • A >2-mm sieve fraction was collected for each sample interval, washed and stored in chip trays for geological logging purposes. • The <2-mm fraction of each sieved sample was collected in a container and transferred into a custom cup for use in a portable XRF unit for preliminary analysis.
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).*	• The contractor, McLeod Drilling, used a Reverse Circulation Aircore drill rig mounted on a 6-wheel drive Toyota Landcruiser. • Aircore drilling used a 76-mm, mini, face-sampling, RC hammer bit where the sample is collected at the face and returned inside the inner tube. The drill cuttings were removed by the injection of compressed air into the hole via the annular area between the inner tube and the drill rod. • Aircore drill rods are 3-m NQ rods. • All aircore drillholes were between 9 m and 35 m in length and drilled

Criteria	JORC Code explanation	Commentary
		vertically.
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.*	• Assessment of recovery was undertaken by weighing each sample and monitoring these against theoretical maximum values. • McLead Drilling actively worked to optimise sample recovery and quality. Drilling was slowed in tough ground and holes redrilled if poor recoveries were encountered. SOPs were in place to ensure consistency. • No relationship exists between sample recovery and grade, and it is considered unlikely that grades are either upgraded or downgraded due to recovery issues.
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.*	• All samples were geologically logged to include details such as colour, grain size, indicative moisture content and lithology. Relogging was completed in August 2023 on available stored chips to review grainsize variation in further detail. The Competent Person considers the logging procedures to be carried out to an appropriate detail to support a mineral resource estimate. • The holes were logged in both a qualitative and quantitative (pXRF) manner and chip trays were photographed. • All intervals were logged.
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.*	• All samples were collected through a cyclone into plastic bags at 0.5-m intervals (holes VAC001 – VAC005) or 1-m intervals (VAC006 – VAC039, BAC001 – BAC007). All samples were then individually passed dry through a 50:50 riffle splitter for homogenising, then subsampled into ~2-kg samples within numbered calico bags. • Selected samples were subsequently sent to ALS Laboratories for further preparation, including an industry-standard approach of drying, and pulverising/splitting (pulverising to 85% passing 75 µm). • These techniques are all standard and considered appropriate. • Duplicates were collected both from the cyclone ('1st-split duplicates') and at the laboratory when splitting after pulverising. A total of 40 1st-split duplicates were sent for initial laboratory analysis (ME-MS61r – see following section). First-split duplicates demonstrate that the splitting process was mostly consistently executed. • The sample sizes are considered appropriate considering the grain size

Criteria	JORC Code explanation	Commentary
		of the material sampled.
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.*	• A total of 698 samples were analysed at ALS Laboratories in Townsville for multi-element analysis via 4-acid digest (laboratory code ME-MS61r). A selection of 2-kg split sample intervals for submission to ALS laboratories for geochemical analysis was conducted over intervals assessed as potentially mineralised using pXRF pre-screening. • A prepared sample (0.25g) was digested with perchloric, nitric, hydrofluoric and hydrochloric acids. The residue was topped up with dilute hydrochloric acid and analysed by inductively coupled plasma-mass spectrometry (ICP-MS). The digestion of REEs and V is not considered complete; hence, a subset of 53 samples was analysed at ALS Laboratories via Li-Borate Fusion followed by acid digest and analysed by ICP-MS (laboratory code ME-MS81), which is a complete digestion. • Laboratory blank results confirm no contamination during analyses. • CRMs were inserted into laboratory sample submissions every 20th sample and monitored for consistency. No special-cause variation was identified in the four-acid results and acceptable levels of precision and accuracy were established. Insufficient CRM data are available to statistically assess the quality of the flux-fusion data. The Competent Person has considered this when classifying the Mineral Resources.
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 new drilling intersections are reported in this announcement. Significant intersections have been verified by alternative company personnel. • Twin holes have not been completed at this stage of the project. • Data were logged into customised and script-controlled Excel spreadsheets and stored in an MS Access database. Transcription errors were limited due to validation-controlled spreadsheet entries. • Vanadium and REE analyses were originally reported in elemental form and were subsequently converted to relevant oxide concentrations as per industry standard conversions: La:1.1728, Ce:1.2284, Pr:1.2082, Nd:1.1664, Sm:1.1596, Eu:1.1579, Gd:1.1526, Tb:1.1762, Dy:1.1477, Ho:1.1455, Er:1.1435, Tm:1.1421, Yb:1.1387, Lu:1.1371, V:1.7852 and Y:1.2699.

Criteria	JORC Code explanation	Commentary
		• Grade adjustments were required for V_2O_5, Nd_2O_3, Pr_6O_{11}, La_2O_3 and Y_2O_3 to make the four-acid (incomplete digestion) results equivalent to the flux fusion results. The upward adjustments were calculated using linear regressions between the four-acid and flux fusion results. The La_2O_3 adjustment was only applied to four-acid results >120 ppm La_2O_3. No CeO_2 adjustments were made because a linear regression could not be established due to the upper detection limit in the ME-MS61r (four-acid) Ce results. Adjustment factors applied to the four-acid results are provided below: V_2O_5(adj)=1.17*V_2O_5(4-acid), Nd_2O_3(adj)=1.075*Nd_2O_3(4-acid), Pr_6O_{11}(adj)=1.024*Pr_6O_{11}(4-acid), La_2O_3(adj)= 1.22*La_2O_3(4-acid)+6.2 and Y_2O_3(adj)=Y_2O_3(4-acid)+5.3
Location of data points	• *Accuracy and quality of surveys used to locate drillholes (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.*	• The locations of drillhole collars were determined by RSC staff using a hand-held GPS with an accuracy of +/- 5 m during the drilling programme. All holes were drilled vertically and were not downhole surveyed due to their short nature (maximum 36-m depth). • The grid system used is UTM MGA94 Zone 53. • A digital terrain model (DTM) was generated using 2-m contours from the 30-m resolution Shuttle Radar Topography Mission (SRTM) digital elevation model (DEM) (http://www.jpl.nasa.gov/srtm/). • Drillhole collar elevations were draped onto the DTM in the block model. • The topographic model is considered adequate for reporting an Inferred Mineral Resource.
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.*	• Vanadis drill lines were spaced between 150 m and 300 m apart. Vanadis drillholes were spaced between 150 m and 300 m. Benmara drillholes were drilled in single drill lines following a local road at ~1,000-m hole spacing. • Data spacing and distribution are sufficient to imply but not verify geological and grade continuity. Higher density drilling at Vanadis provides support for implying continuity between wider-spaced drillholes at Benmara North and South. • No sample compositing was applied.

Criteria	JORC Code explanation	Commentary
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.*	• All holes were drilled vertically, which is approximately perpendicular to the sub-horizontal mineralised strata; hence, sampling is considered unbiased with respect to the sampling orientation.
Sample security	• *The measures taken to ensure sample security.*	• All samples have been in the custody of Transition Minerals or its consultants at all times and hand-over procedures were in place for shipment to the laboratory.
Audits or reviews	• *The results of any audits or reviews of sampling techniques and data.*	• No audits or reviews of sampling techniques and data have been undertaken at this stage.

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 Barkly Mineral Resource is located within Exploration Licence (EL32473/4), granted pursuant to the NT Mineral Titles Act. It was granted 21/5/2021 and its expiry date is 20/5/2027. • The Barkly licences are located in the northern Barkly region of NT on pastoral land. • Transition Minerals holds the Barkly tenements 100% through direct grant of tenure. There are no overriding royalty arrangements or any other overriding obligation on Transition Minerals. • Transition has executed an earn-in agreement with DevEx Resources Limited (ASX:DEV) for the exploration for uranium minerals on its Barkly tenements, including those to which the resource statements within this announcement refer. The earn-in agreement allows DevEx to earn 75% of the uranium rights. Transition retains 100% of the rights to all non-uranium minerals, including vanadium and rare earth elements. • 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. Several generations of exploration work, starting in the 1960s, can be grouped according to commodity. 1. 1956–1960: predominantly U exploration. 2. 1965–1971: mainly U with another focus on Cu. 3. 1978 to present: U, Au, diamonds and base metals. A list of modern (post-2000) exploration activities, obtained from STRIKE (NT Government Tenure and Geoscience information), is summarised here. • De Beers: (Diamonds; EL23041; 2004) 12 samples collected at Lancewood in Walhallow. • N T J Paspaley: (Diamonds, Base Metals; EL24348; 2006) one soil sample from Calvert Hills.

Criteria	JORC Code explanation	Commentary
		• Bondi Mining: (U, Base Metals; EL25710; 2008) 12 RAB holes and two diamond holes drilled. • Hartz Range Mines Pty Ltd: (U, Diamonds, Base Metals; EL25579; 2008) seven stream samples from Wollogorang in Calvert Hills. • North Australian Diamonds Ltd: (Diamonds; EL24737; 2008) one rock-chip sample from Surprise Creek in Calvert Hills area. • Bondi Mining: (U, Base Metals; EL24841; 2008–2009) 77 soil samples, three stream samples, 115 drillholes (including four diamond) in Walhallow. • Bondi Mining: (U, Base Metals; EL24694; 2008–2009) 17 RAB, two diamond, one RC pre-collar holes. • Jacaranda Minerals Pty Ltd & Minerals Australia Pty Ltd: (Base Metals; EL25917; 2008–2009) 26 whole-rock samples, 62 soil samples from Kilgour and Bloodwood Creek in Walhallow. • North Australian Diamonds Ltd: (Diamonds; EL24737; 2008) one rock-chip sample from Surprise Creek in Calvert Hills area. • Southern Uranium Ltd/Uranium West/Investigator Resources JV: (U, Au, V, Base Metals; EL24837; 2009–2011) 67 rock-chip samples, 31 soil samples, four diamond holes from Coanjula (near Kiana) and Surprise Creek (near Vanadis) in Calvert Hills drilled. • Hartz Range Mines Pty Ltd: (U, Diamonds, Base Metals; EL24358; 2010) seven soil samples from Wollogorang in Calvert Hills. • Jacaranda Minerals Pty Ltd: (Base Metals; EL26948; 2010) 16 soil samples from Kilgour in Walhallow. • Southern Uranium Ltd/Uranium West/Investigator Resources JV: (U, Au, V, Base Metals; EL24838; 2010) two rock-chip samples taken from Surprise Creek (Vanadis). • North Australian Diamonds Ltd: (Diamonds; EL26181; 2010–2012) 382 soil samples from Surprise Creek and Puzzle in Calvert Hills. • Redbank Copper Ltd: (Base Metals, Diamonds; EL26999; 2011) 431 soil samples from Benmara; V2O5 anomalies were picked up in the area. • Redbank Copper Ltd: (Base Metals, Diamonds; EL27737; 2011) 18 stream samples from Calvert Hills, seven stream samples from Wollogorang. • Lagoon Creek Resources Pty Ltd: (U, Au; EL24654; 2012) four RC holes drilled, combined depth 684.3 m.
Geology	• *Deposit type, geological setting and style of*	• The Barkly project is within the Greater McArthur Basin and overlies sedimentary and volcanic rocks of the McArthur Basin and sedimentary rocks of the Georgina and

Criteria	JORC Code explanation	Commentary
	mineralisation.	Carpentaria basins. • Most of the project is covered by Cenozoic regolith, laterite, and transported material. The vanadiferous laterite forms a metalliferous carapace formed by residua related to the downwasting of the Cretaceous marine sediments of the Carpentaria Basin. The marine sediments include clayey, micaceous, ferruginous and glauconitic sandstones, calcareous and sandy siltstones, shales, silty claystones, and claystones broadly classified as the Mullaman Beds. These overlie a mature marine sandstone which has been interpreted as Cambrian Bukalara Sandstone. • REE mineralisation at Barkly is stratabound within sub-marine sandstones thought to be deposited at the shoreface and the shoreface-to-offshore transitional zone, within a large Cretaceous marine embayment. The REEs are hosted within aluminium-phosphate-sulphate (APS) minerals that are likely diagenetic; however, they may have also been subject to supergene weathering processes. • Vanadium mineralisation at Barkly is hosted in at least two main units: a surficial, locally metalliferous carapace at surface, comprising up to six identified facies types, and two subsurface, semi-continuous and sub-horizontal ferruginous sandstones units informally referred to as the 'Vanadis Unit'. Vanadium mineralisation is enriched within Fe-oxides (goethite-haematite). Higher V grades correlate with a higher abundance of Fe-oxides. The textures observed support a supergene origin for V-enrichment, related to laterite and ferricrete formation in the regolith profile.
Drillhole Information	• *A summary of all information material to the understanding of the exploration results including a tabulation of the following information for all Material drillholes:* ○ *easting and northing of the drillhole collar* ○ *elevation or RL (Reduced Level – elevation above sea level in metres) of the drillhole 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*	• Vanadium and REE Exploration Results have been released in previous announcements by the Company. These are available online at www.transitionminerals.com/announcements.

Criteria	JORC Code explanation	Commentary
	from the understanding of the report, the Competent Person should clearly explain why this is the case.	
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 new drilling results are reported here. In previous reporting, V_2O_5 and REE analysis intervals were aggregated using downhole, sample length-weighted averages with a lower cut-off of 200 ppm V and 325 ppm TREO-CeO_2, with no upper limits applied. • Aggregated drill intersection linear grades are presented in Figure 5 and Figure 6. Only the best result is presented for each drillhole. Linear grades represent weighted average adjusted V_2O_5 or TREO grades multiplied by the intercept length. TREO intercepts were established using a lower cut-off of 500 ppm TREO and a maximum of 1-m internal dilution. Vanadium intercepts were established using a lower cut-off of 0.1% V_2O_5 and a maximum of 2-m consecutive dilution.
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 drillhole 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').*	• All holes intersect the mineralisation at 90 degrees and represent true widths. All intercepts previously reported are downhole lengths.
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 plan view of drillhole collar locations and appropriate sectional views.*	• Appropriate maps and sections of drillhole data and the Mineral Resource are presented in this release.

Criteria	JORC Code explanation	Commentary
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.*	• The project area has been subject to broad-scale exploration for uranium, base metals, diamonds, and vanadium. • REE characterisation of Vanadis samples was reported by the Company on 28 March 2023. • Initial REE metallurgical test work on drill chips was reported by the Company on 15 September 2023. The results demonstrate positive initial diagnostic leach outcomes and the potential to beneficiate the REE minerals through a traditional flotation system. • Initial vanadium metallurgical test work (leaching) was undertaken on a bulk sample from Vanadis in early 2022. Diagnostic leaching of crushed and milled samples using high acid concentrations was undertaken at ALS Perth. Vanadium extraction of 94.0% was recorded for hydrochloric acid leaching of the Vanadis material during this initial metallurgical test work. The test conditions were selected to investigate two properties of the mineralised samples, including the oxidation state of the contained vanadium (3, 4, or 5+), and the mineral phase in which it is bound (iron-based or silicate). • 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.*	• Further exploration drilling is planned for 2024, including step-out drilling and in-fill drilling to confirm the continuity between Vanadis, Benmara North, and Benmara South and extensions in all directions. • Further metallurgical testing and SEM analyses of samples from Benmara are planned.

Section 3 Estimation and Reporting of Mineral Resources

(Criteria listed in section 1, and where relevant in section 2, also apply to this section.)

Criteria	JORC Code explanation	Commentary
Database integrity	• *Measures taken to ensure that data has not been corrupted by, for example, transcription or keying errors, between its initial collection and its use for Mineral Resource estimation purposes.* • *Data validation procedures used.*	• Data from the 2022 drilling programme are stored in a Microsoft Access database maintained by RSC. Validation scripts were used when importing data. Digital data were validated against hard-copy data and photos. Additional automatic error identification and visual data checks also occurred when the drilling data were imported into Leapfrog Geo.
Site visits	• *Comment on any site visits undertaken by the Competent Person and the outcome of those visits.* • *If no site visits have been undertaken indicate why this is the case.*	• The Mineral Resource Competent Person has not undertaken a site visit and has relied on site visits carried out by his senior colleagues. Jim Kerr, RSC's Senior Exploration Geologist ran the drilling programme on site, and ensured all processes conformed to standard operating procedures (SOPs) and industry standards, and checked chip trays against the logging sheets. The procedures were appropriate and followed industry standard and, in most cases, good practice.
Geological interpretation	• *Confidence in (or conversely, the uncertainty of) the geological interpretation of the mineral deposit.* • *Nature of the data used and of any assumptions made.* • *The effect, if any, of alternative interpretations on Mineral Resource estimation.* • *The use of geology in guiding and controlling Mineral Resource estimation.* • *The factors affecting continuity both of grade and geology.*	• There is a moderate-to-high degree of confidence in the geological interpretation of the deposit given the flat-lying and reasonably consistent nature of the drilled sedimentary rocks. The Vanadis deposit has a higher degree of confidence than the Benmara area due to the higher drill density. Confidence in the Benmara continuity has been assumed based on the higher-density drilling at Vanadis. • Geological interpretations were made based on downhole lithological logging of drill chips (particularly colour & grainsize) and geochemical data from the 2022 drilling campaign. SEM images and microprobe analysis provided further understanding of the mineralisation controls. • Assumptions are not considered to have major implications on the overall geometries of the various geological domains. Geological continuity is relatively simple to establish from hole to hole at Vanadis and the deposit is not structurally complex. In the Competent Person's opinion, alternative interpretations of the geology are unlikely to deviate much from the current model and will have a limited impact on the Mineral Resource estimate. • Geological domains were created using implicit 3-D modelling software based on downhole lithological logging. Five sub-horizontal geological domains interpreted from the lithological data: laterite, Vanadis Unit 1 (ferricrete), Vanadis Unit 2 (ferricrete), undifferentiated siltstone and sandstone, and marine basal sandstone. The undifferentiated siltstone and sandstone domain lies between the laterite and Vanadis

Criteria	JORC Code explanation	Commentary
		Unit 1, between Vanadis Units 1 and 2, and between Vanadis Unit 2 and the marine basal sandstone. • The laterite and ferricrete domains were used to guide vanadium estimation. The REE estimation domain was established from assay data based on a nominal 500-ppm TREO cut-off within the undifferentiated siltstone and sandstone domain (above the marine basal sandstone). • Changes in lithology at a local scale and between Vanadis and Benmara may influence the grade and geological continuity. Geological continuity is primarily influenced by onlap and offlap associated with marine transgression and regression and variability in terrestrial and marine inputs. Ferricrete geological continuity is dependent on the cementation front and water table. As such, the Vanadis unit V mineralisation may not necessarily be strictly stratabound (sub-horizontal). REE grade continuity is influenced by several factors; sea level, oxidation state, terrestrial organic matter loading, local upwelling, changes in bottom-water circulation, marine productivity, microbial decay, and/or sedimentation rates. The source of P and the exact mechanism that led to APS precipitation (REE mineralisation) could vary between Vanadis and Benmara. The Competent Person has considered this risk by assigning a lower confidence resource classification (Inferred).
Dimensions	• *The extent and variability of the Mineral Resource expressed as length (along strike or otherwise), plan width, and depth below surface to the upper and lower limits of the Mineral Resource.*	• The combined Mineral Resource at Vanadis spans ~2,450 m (N–S) x ~3,460 m (E–W) x ~36 m (z). The V Mineral Resource is at surface and in deeper strata, with a maximum depth of ~15 m (includes low V/waste horizons – refer to sectional images). The upper and lower limits of the REO Mineral Resource are typically 260 mRL and 262 m RL; however, there is some variation in the model (257–264 mRL). • The V Mineral Resource at Benmara South spans ~4,760 m (SW–NE) x ~1,500 m (NW–SE). The V Mineral Resource is at surface and extends to a maximum depth of ~5 m. • The combined Mineral Resource at Benmara North spans ~3,620 m (N–S) x ~1,650m (E–W) x ~30 m (z). The V Mineral Resource is at surface and extends to a maximum depth of ~18 m (thickness includes low V/waste horizons). The upper and lower limits of the TREO Mineral Resource are typically 260 mRL and 262 m RL; however, there is some variation (255–262 mRL). • The Mineral Resources are constrained within preliminary optimised pits.
Estimation and modelling techniques	• *The nature and appropriateness of the estimation technique(s) applied and key assumptions, including treatment of extreme grade values, domaining, interpolation parameters and maximum distance of*	• The Mineral Resource was estimated using ordinary kriging (OK) of 1-m composites in Leapfrog Edge software. • Three REE estimation domains (Primary, Above, Below) and four V estimation domains (Laterite, Vanadis 1, Vanadis 2 and Background) were created based on the modelled geological domains and grade data.

Criteria	JORC Code explanation	Commentary
	extrapolation from data points. If a computer assisted estimation method was chosen include a description of computer software and parameters used. • *The availability of check estimates, previous estimates and/or mine production records and whether the Mineral Resource estimate takes appropriate account of such data.* • *The assumptions made regarding recovery of by-products.* • *Estimation of deleterious elements or other non-grade variables of economic significance (eg sulphur for acid mine drainage characterisation).* • *In the case of block model interpolation, the block size in relation to the average sample spacing and the search employed.* • *Any assumptions behind modelling of selective mining units.* • *Any assumptions about correlation between variables.* • *Description of how the geological interpretation was used to control the resource estimates.* • *Discussion of basis for using or not using grade cutting or capping.* • *The process of validation, the checking process used, the comparison of model data to drillhole data, and use of reconciliation data if available.*	• The disconformity with the underlying mature basal marine sandstone is a first-order constraint to REE mineralisation. The primary REE estimation domain was created implicitly from TREO grade data. The wireframe was created using an interval selection guided snapped to mineralised intervals above a nominal 500-ppm TREO cut-off. A review of the composited TREO grades within the primary REE domain identified a marginally positive skew distribution exhibiting a tail of high-grade values. Sub-domaining of the high-grade portion was not undertaken due to the small sample population within the domain and since the primary estimation domain has a CV of 0.6 for TREO. The risk of biased estimation was addressed through the estimation strategy. • The REE estimation domain was extended beneath drillholes that ceased too shallow to intercept the REE horizon and between Vanadis, Benmara South, and Benmara North. REE mineralisation remains open in all lateral directions. • Four V estimation domains were created: laterite, Vanadis Unit 1, Vanadis Unit 2, and Background, which were constrained to the geological domains. A histogram of the composited V_2O_5 grades within the Vanadis Unit 2 geological domain demonstrates some bimodality. Sub-domaining was not undertaken due to the small sample population within the domain and since the primary estimation domain has a CV of 0.8. • The degree of extrapolation in the Mineral Resources was limited by applying a perimeter constraint around the drilled areas, which resulted in the three discrete areas reported. The applied buffer was ~850 m from drillhole traces on average but extends to a maximum of ~1,100 m in some areas. The extrapolation was supported by a visual review of the kriging efficiencies and slope of regression for the estimate of TREO. Approximately 40% of the Mineral Resource is based on extrapolated modelling beyond the nominal sample spacing of ~300 m. This is presented in the plan view in Figure 12. • A 3D block model consisting of 200 m x 100 m x 1 m (x-y-z) parent blocks and sub-blocked to 20 m x 10 m x 1 m was used based on the average drill spacing at Vanadis (~150–300 m) and dominant sample length (1 m), and discretisation of 5 x 5 x 1 (x-y-z) was applied. • All grades were composited to 1-m intervals. No top caps were used. • Variograms were modelled on raw data. • A total of 15 REOs (La_2O_3, CeO_2, Pr_6O_{11}, Nd_2O_3, Sm_2O_3, Eu_2O_3, Gd_2O_3, Tb_4O_7, Dy_2O_3, Ho_2O_3, Er_2O_3, Tm_2O_3, Yb_2O_3, Lu_2O_3, Y_2O_3), two deleterious elements (U and Th), V_2O_5 and Ga were estimated. Grade interpolation used 1-m downhole composites based on the dominant sample length. All domain boundaries were treated as hard boundaries. Estimation parameters were derived using geostatistics, variography and KNA. A first-pass search neighbourhood of 7,500 m 3,750 m x 10 m was applied for the REOs (+U+Th) using a minimum of four and a maximum of 27 samples. All of the Vanadis deposit was estimated

Criteria	JORC Code explanation	Commentary
		within the first pass. The minimum number was reduced to three to complete the REO (+U+Th) estimation at Benmara. The TREO grade of each block was calculated as the sum of the 15 estimated REOs. The interpolation of V_2O_5 and Ga used a single pass search neighbourhood of 7,500 m x 7,500 m x 25 m and applied a minimum of four and a maximum of 16 samples. • This is an initial Mineral Resource estimate for Barkly. No production data nor previous resource estimates are available as check estimates. • It has been assumed, based on consideration of potential leaching methods, that Ga can be recovered as a by-product from the mineralised unit. • Uranium and Th are typically associated with REEs. Correlations between the elements were reviewed to support estimation of U and Th, using the REE estimation domains and parameters. Ga weakly correlates with V. V domains and estimation parameters were used for the estimation of this by-product. • The geological model provided the foundation for the determination of the estimation domains as discussed above. Grade estimation was validated visually and a section-by-section basis. Statistical comparison of input drillhole data against estimated grade and by swath plots of northing, easting and RL was also completed.
Moisture	• *Whether the tonnages are estimated on a dry basis or with natural moisture, and the method of determination of the moisture content.*	• Tonnages were estimated on an in-situ dry weight basis and moisture was not considered.
Cut-off parameters	• *The basis of the adopted cut-off grade(s) or quality parameters applied.*	• Selection of the cut-offs (430 ppm NdPr and 0.1% V_2O_5) considered metallurgical recoveries and costs based on a preliminary pit optimisation using assumed operating costs for a multi-commodity conventional open-pit mining operation. V_2O_5 and Ga recoveries were assumed from existing operations and REE recoveries were assumed from the Company's preliminary metallurgical testing.
Mining factors or assumptions	• *Assumptions made regarding possible mining methods, minimum mining dimensions and internal (or, if applicable, external) mining dilution. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider potential mining methods, but the assumptions made regarding mining methods and parameters when estimating Mineral Resources may not always be*	• The deposit may be mined via a conventional open-pit method assuming free digging. • RSC completed a preliminary pit optimisation study on the mineral resource estimate. The pit optimisation was completed using GEOVIA Whittle® and applied assumptions derived from desktop analysis. The applied assumptions are a combination of conservative inputs and generally optimistic but reasonably justifiable inputs (for future market conditions in particular). • No designs have been prepared. Reasonable prospects for economic extraction are based upon the outcomes of the open-pit optimisation shells only. • Barkly's remote location and associated challenges to supply REEs, V and Ga to major

Criteria	JORC Code explanation	Commentary
	rigorous. Where this is the case, this should be reported with an explanation of the basis of the mining assumptions made.	markets have been considered when assessing the reasonable prospects of economic extraction.
Metallurgical factors or assumptions	• *The basis for assumptions or predictions regarding metallurgical amenability. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider potential metallurgical methods, but the assumptions regarding metallurgical treatment processes and parameters made when reporting Mineral Resources may not always be rigorous. Where this is the case, this should be reported with an explanation of the basis of the metallurgical assumptions made.*	• Conservative assumptions were made when considering the metallurgical recovery within the preliminary pit optimisation. • Assumptions regarding metallurgical amenability of REEs were based on recent metallurgical test work on drill chips, reported by the Company on 15 September 2023. The results demonstrate positive initial diagnostic leach outcomes and the potential to beneficiate the REE minerals through a traditional flotation system. • Assumptions regarding metallurgical amenability of vanadium were based on the results from leaching a bulk sample from Vanadis in early 2022. Diagnostic leaching of crushed and milled samples using high acid concentrations was undertaken at ALS Perth. Vanadium extraction of 94.0% was recorded for hydrochloric acid leaching of the Vanadis material during this initial metallurgical test work. • Assumptions for metallurgical amenability Ga were based on typical industry values.
Environmental factors or assumptions	• *Assumptions made regarding possible waste and process residue disposal options. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider the potential environmental impacts of the mining and processing operation. While at this stage the determination of potential environmental impacts, particularly for a greenfields project, may not always be well advanced, the status of early consideration of these potential environmental impacts should be reported. Where these aspects have not been considered this should be reported with an explanation of the environmental assumptions made.*	• It is anticipated that, if mining were to occur, areas that are subject to mining would be systematically backfilled and rehabilitated as mining progresses. The rehabilitated areas would reflect the pre-mining condition of the project area. • Initial metallurgical results returned very low concentrations of the radionuclides U and Th, which is advantageous from an environmental issues perspective. • The Competent Person is not aware of any environmental constraints that would negatively impact the potential for economic extraction.
Bulk density	• *Whether assumed or determined. If assumed, the basis for the assumptions. If determined, the method used, whether wet or dry, the frequency of the measurements,*	• The bulk density was applied via direct assignment to the block model based on geological unit. An assumed in-situ, dry bulk density of 2.1 g/cm^3 was applied for the REE Mineral Resource based on a global compilation of Cretaceous sandstones bulk densities, which range from 1.5–2.6 g/cm^3 and average 2.1 g/cm^3.

Criteria	JORC Code explanation	Commentary
	the nature, size and representativeness of the samples. • *The bulk density for bulk material must have been measured by methods that adequately account for void spaces (vugs, porosity, etc), moisture and differences between rock and alteration zones within the deposit.* • *Discuss assumptions for bulk density estimates used in the evaluation process of the different materials.*	• The bulk density of laterite and regolith profiles can be highly variable and depends on its mineralogy, porosity, compaction, rock content and internal drainage. It typically varies widely from 0.9 to 3.6 g/cm^3. An assumed in-situ bulk density of 2.5 g/cm^3 was selected for the laterite and ferricrete domains (vanadium Mineral Resource) based on a review of laterite bulk densities. The nominal value of 2.5 g/cm^3 was used for both the laterite and ferricrete domains and is considered conservative based on the high Fe content. • The Competent Person has considered the risk of assuming bulk densities by assigning a lower confidence resource classification (Inferred).
Classification	• *The basis for the classification of the Mineral Resources into varying confidence categories.* • *Whether appropriate account has been taken of all relevant factors (ie relative confidence in tonnage/grade estimations, reliability of input data, confidence in continuity of geology and metal values, quality, quantity and distribution of the data).* • *Whether the result appropriately reflects the Competent Person's view of the deposit.*	• The Competent Person has classified the Mineral Resources entirely in the Inferred category. No material has been classified in the Indicated or Measured categories. • The Mineral Resources are based on exploration, sampling, and assaying information gathered through appropriate techniques including aircore drilling. Geological evidence is sufficient to imply but not verify geological and grade continuity. • The variable and wide drill spacing (150–300 m at Vanadis and 1,000 m at Benmara), limited samples within the narrow REE-mineralised unit, limited flux-fusion assay data (and therefore implementation of assay adjustments), limited flux-fusion QC data and the lack of representative bulk density data have limited the Mineral Resource from being classified at a higher level of confidence at the time of reporting. • Appropriate account has been taken of all relevant factors in determining the classification. • The classification reflects the Competent Person's view of the deposit. • Portions of the deposit that do not have reasonable prospects for eventual economic extraction are not included in the Mineral Resources. In assessing the reasonable prospects for eventual economic extraction, the Competent Person has evaluated preliminary mining, metallurgical, economic, environmental, social, and geotechnical parameters.
Audits or reviews	• *The results of any audits or reviews of Mineral Resource estimates.*	• No audits or reviews have taken place at this time.
Discussion of relative accuracy/ confidence	• *Where appropriate a statement of the relative accuracy and confidence level in the Mineral Resource estimate using an approach or procedure deemed appropriate*	• The confidence in the Mineral Resources is reflected in the Inferred classification which has been based on the drill spacing, data quality, an assessment of kriging statistics (kriging efficiency and slope of regression), and an assessment of geological and grade continuity.

Criteria	JORC Code explanation	Commentary
	by the Competent Person. For example, the application of statistical or geostatistical procedures to quantify the relative accuracy of the resource within stated confidence limits, or, if such an approach is not deemed appropriate, a qualitative discussion of the factors that could affect the relative accuracy and confidence of the estimate. • *The statement should specify whether it relates to global or local estimates, and, if local, state the relevant tonnages, which should be relevant to technical and economic evaluation. Documentation should include assumptions made and the procedures used.* • *These statements of relative accuracy and confidence of the estimate should be compared with production data, where available.*	• The Competent Person considers the block model to be appropriately estimated based on the validation of input and estimated grades through visual assessment, domain grade-mean comparisons, and a review of swath plots. • The statement relates to global estimates of tonnes and grade for potential open-pit mining scenarios. • No production data are available for comparison.

Appendix 2 Resource comparison data sources (Figure 7)

This appendix and Figure 7 include, in addition to Yangibana, the most recent regolith-hosted mineral resources reported under different reporting codes and by companies at varying stages of exploration and resource development, which have been disclosed, effective 7 September 2023. Where required, mineral resource categories have been combined to provide a combined tonnage and average grade.

Company	Project	Stage	Citation	Details	Code	URL
Aclara Resources Inc. (TSX:ARA)	Penco Module	PEA, advancing EIA	Aclara Resources Inc. TSX News Release 1 December 2022, Table 2	29.2 Mt @ 0.2275 ppm TREO (Measured 21.3 Mt @ 2315 ppm TREO; Indicated 6.2 Mt @ 2212 ppm TREO; Inferred 1.7 Mt @ 1999 ppm TREO). Elemental grades of Table 5 were converted to equivalent oxide grades to derive NdPr%.	NI 43-101	https://www.sedar.com/GetFile.do?lang=EN&docClass=8&issuerNo=00053428&issuerType=03&projectNo=03469247&docId=5326562
Australian Rare Earths Limited (ASX:AR3)	Koppamurra	Resource definition	Australian Rare Earths Limited ASX announcement 19 September 2023	184Mt @ 818 ppm TREO (Measured 0.8 Mt @ 747 ppm TREO incl 155 ppm NdPr; Indicated 95 Mt @ 716 ppm TREO incl 154 ppm NdPr; Inferred 88 Mt @ 709 ppm incl 153 ppm NdPr).	JORC 2012	https://ar3.com.au/19-9-23-84-increase-to-koppamurra-resource/
Abx Group Limited (ASX:ABX)	Deep Leeds and Rubble Mound	Resource definition	Abx Group Limited ASX announcement 20 March 2023	13.9 Mt @ 705 ppm TREO (Indicated 2.7 Mt @ 772 ppm TREO incl. 146 ppm NdPr; Inferred 11.2 Mt @ 689 ppm TREO incl. 141 ppm NdPr).	JORC 2012	https://www.abxgroup.com.au/site/pdf/db1cb4cd-4f2b-4ce5-adc2-70a34a32d8d9/REE-Resource-Triples-at-Deep-Leads-Tasmania.pdf
Cobra Resources (LON:COBR)	Wudinna	Resource definition	Cobra Resources announcement 7 September 2023	Inferred 41.6 Mt @ 699 ppm TREO incl. 146 ppm NdPr.	JORC 2012	https://polaris.brighterir.com/public/cobra_resources/news/rns/story/w0986pw
Heavy Rare Earths Limited (ASX:HRE)	Cowalinya	Resource definition	Heavy Rare Earths Limited ASX announcement 3 October 2023	Inferred 159 Mt @ 870 ppm TREO incl. 214 ppm NdPr.	JORC 2012	https://wcsecure.weblink.com.au/pdf/HRE/02720133.pdf
Ionic Rare Earths Limited (ASX:IXR)	Makuutu	Advancing Ore Reserve	Ionic Rare Earths Limited ASX announcement 3 May 2022, Table 1	532 Mt @ 640 ppm TREO (Indicated 404 Mt @ 670 ppm TREO incl. 140 ppm NdPr; Inferred 127 Mt @ 540 ppm TREO incl. 120 ppm NdPr).	JORC 2012	https://wcsecure.weblink.com.au/pdf/IXR/02517527.pdf
Krakatoa Resources Limited (ASX:KTA)	Mt Clere	Resource definition	Krakatoa Resources Limited ASX announcement 21 November 2022	101 MT@ 840 ppm TREO (Indicated 40 Mt @ 824 ppm TREO; Inferred 61 Mt @ 824 ppm TREO). NdPr ratio was derived from drill hole data, using the average length-weighted values of intercepts which exceeded the resource cut off grade.	JORC 2012	https://wcsecure.weblink.com.au/pdf/KTA/02600437.pdf

Company	Project	Stage	Citation	Details	Code	URL
Meeka Metals (ASX:MEK)	Circle Valley	Resource definition	Meeka Metals Limited ASX announcement 14 June 2023	Inferred 98 Mt @ 890 ppm TREO incl. 220 ppm NdPr.	JORC 2012	https://wcsecure.weblink.com.au/pdf/MEK/02675778.pdf
Meteoric Resources NL (ASX:MEI)	Caldeira	Resource definition	Meteoric Resources NL ASX announcement 1 May 2023, Table 1	Inferred 409 Mt @ 2626 ppm TREO incl. 601 ppm NdPr.	JORC 2012	https://wcsecure.weblink.com.au/pdf/MEI/02660657.pdf
Mineração Serra Verde (Denham Capital)	Serra Verde	Plant construction	Denham Capital presentation, August 2016	911 Mt @ 0.123% TREO (Measured 22 Mt @ 0.21% TREO; Indicated 368 Mt @ 0.15% TREO; Inferred 521 Mt @ 0.10% TREO) including Reserves (Proven 22 Mt @ 0.21%; Probable 329 Mt @ 0.15%). NdPr% was derived from the elemental weight distributions converted to oxide equivalent grades.	NI 43-101	https://clientesinterativa.com.br/bccc-events/uploads/files/2017-03/58c6d7b3e9c66.pdf
OD6 (ASX:OD6)	Splinter Rock	Resource definition	OD6 Metals Limited ASX announcement 18 July 2023	Inferred 344 Mt @ 1308 ppm TREO incl. 283 ppm NdPr.	JORC 2012	https://www.od6metals.com.au/wp-content/uploads/2023/07/61158738.pdf
Reenova Investment Holding Limited	Ampasindave	Resource definition	Tantalus Rare Earths AG Updated NI 43-101 10 June 2016, Table 1-1	627.7 Mt @ 895 ppm TREO (Measured 40.1 Mt @ 975 ppm TREO; Indicated 157.6 Mt @ 878 ppm TREO; Inferred 430 Mt @ 894 ppm TREO). NdPr% was derived from the contained oxide tonnages in Table 1-2.	NI 43-101	https://reenovagroup.listedcompany.com/newsroom/20160722_174543_5EC_LHQ3DXU7H7RN0R9F.2.pdf
Victory Metals (ASX:VTM)	North Stanmore	Resource definition	Victory Metals Limited ASX announcement 2 August 2023	Inferred 250 Mt @ 520 ppm TREO incl. 90 ppm NdPr.	JORC 2012	https://clients3.weblink.com.au/pdf/VTM/02693394.pdf
West Cobar Metals (ASX:WC1)	Salazar	Resource definition	West Cobar Metals Limited ASX announcement 9 August 2023	190 Mt @ 1173 ppm TREO (Indicated 39 Mt @ 1216 ppm TREI incl. 257 ppm NdPr; Inferred 151 Mt @ 1162 ppm TREO incl. 247 ppm NdPr).	JORC 2012	https://www.investi.com.au/api/announcements/wc1/2753b06f-7f2.pdf
Hastings Technology Metals Limited (ASX:HAS)	Yangibana	Updating Ore Reserves	Hastings Technology Metals Ltd ASX announcement 11 October 2022	NdPr% of updated Mineral Resource, Table 2.	JORC 2012	https://www.investi.com.au/api/announcements/has/1bc9611f-31d.pdf

Appendix 3 Resource comparison data sources (Figure 8)

This appendix and Figure 8 include uranium and thorium grades of mineral deposits reported under different reporting codes and by companies at varying stages of exploration and resource development. Where required, U and Th grades from different mineral resource categories have been combined to provide a combined average grade. Metal to oxide conversion factors used are 1.13 UO_2, 1.18 U_3O_8, and 1.14 ThO_2.

Project	U_3O_8	ThO_2	Citation
Aksu Diamas	8	40	16 May 2013 Technical Report https://web.archive.org/web/20150610002049/http://www.amrmineralmetal.com/aksu_diamas_canakli.asp
Bayan Obo	29	455	Friedrichs, P., 2017, Development of a Rare Earth Element Resource Database Management System, Entwicklung eines Datanbankmanagementsystems für Seltene Erdelement Ressourcen, Journal: Rheinisch-Westfälische Technische Hochschule Aachen, 2017, https://d-nb.info/1162498188/34
Bear Lodge	102	342	NI 43-101 Technical Report on the Mineral Reserves and Development of the Bull Hill Mine, April 2012
Bokan Mountain	78	92	Ucore Rare Metals Inc. 10 January 2013 PEA
Caldeira	20	72	Meteoric Resources NL ASX announcement 20 April 2023, Table 1
Cowalinya	5	15	Heavy Rare Earths Prospectus 22/6/2022, p. 354 Table 5.2
Deep Leads Rubble Mound	1	3	ABx Group ASX announcement 18 July 2023
Gakara	2	48	Rainbow Rare Earths presentation 25 March 2022, https://www.rainbowrareearths.com/wp-content/uploads/2022/03/2022-03-Rainbow-Corporate-Presentation_v2.pdf
Halleck Creek	7	59	American Rare Earths Limited ASX announcement, 30 March 2023
Kipawa Zeus	33	29	NI 43-101 Report Feasibility Study for the Kipawa Project Temiscamingue Area, Québec, Canada, 17 October 2013, https://www.dropbox.com/s/tgzcn597zjil9z8/061623.003-FinRep_Matamec-NI43-101-20131017-001-Appen.pdf?dl=0
Koppamurra	2	19	Australian Rare Earths prospectus, 7 May 2021
La Paz	1	7	2020 Technical Report on the Arizona La Paz Rare Earths and Scandium Project, 11 November 2020
Makuutu	10	30	Resource Base Limited ASX announcement, 3 February 2023
Mitre Hill	2	18	Ionic Rare Earths Limited ASX announcement, 24 March 2023
Mount Weld	24	797	Mount Weld Rare Earths Project Public Environmental Review, prepared for Ashton Rare Earths Limited, May 1992https://www.epa.wa.gov.au/sites/default/files/PER_documentation/A0611_R0646_PER.pdf
Mt Clere	2	32	Krakatoa Resources Limited ASX announcement 21 November 2023
Narraburra	13	37	Godolphin Resources Limited ASX announcement 19 April 2023
Ngualla	18	60	Peak Rare Earths Limited ASX announcement 24 October 2022
Nolans Bore	189	3072	https://world-nuclear.org/information-library/nuclear-fuel-cycle/uranium-resources/uranium-from-rare-earths-deposits.aspx
Phalaborwa	2	51	Rainbow Rare Earths presentation 25 March 2022, https://www.rainbowrareearths.com/wp-content/uploads/2022/03/2022-03-Rainbow-Corporate-Presentation_v2.pdf
Round Top	53	201	Ammended NI 43-101 Preliminary Economic Assessment Round Top Project, Sierra Blanca, Texas, 28 April, 2014
Serra Verde	11	78	Denham Capital presentation, August 2016, https://clientesinterativa.com.br/bccc-events/uploads/files/2017-03/58c6d7b3e9c66.pdf

Project	U_3O_8	ThO_2	Citation
Strange Lake	59	298	Quest Rare Metals Limited, 8 March 2017, NI43-101 Technical Report for the Updated Mineral Resource Estimate for the Strange Lake Property, Québec, Canada
Tanbreez	33	107	Friedrichs, P., 2017, Development of a Rare Earth Element Resource Database Management System, Entwicklung eines Datanbankmanagementsystems für Seltene Erdelement Ressourcen, Journal: Rheinisch-Westfälische Technische Hochschule Aachen, 2017, https://d-nb.info/1162498188/34
Zandkopsdrift	77	256	2 June 2015, NI43-101 Independent Technical Report on the Results of a Preliminary Feasibility Study on the Zandkopsdrift Rare Eearth Element and Manganese By-product Project in the Northern Cape Province of South Africa for Frontier Rare Earths Limited