Brazilian Rare Earths Limited: Ultra-High Rare Earth Grades at Sulista Project

06.06.2024 | ABN Newswire

Sydney, Australia - Brazilian Rare Earths Ltd. (ASX:BRE) confirms the discovery of ultra-high grade REE-Nb-Sc-U mineralisation with diamond drilling at the Sulista project, located ~80km southwest of the Monte Alto project.

- Ultra-high grade rare earth mineralisation discovered at the Sulista project, located ~80km southwest of the Monte Alto project, with rare earth grades of up to 22.4% TREO1

- Exceptional REE-Nb-Sc-U grades of up to 39,770 ppm NdPr, 1,579ppm DyTb, 4,821ppm niobium, 241ppm scandium and 2,422ppm uranium

- Angled diamond drill hole JITDD0001 intersected 12.3m at 12.5% TREO at ~40m below surface with 22,175ppm NdPr, 906ppm DyTb, 200ppm Sc2O3, 2,547ppm Nb2O5 and 1,309ppm U3O8

- Grab samples from numerous hard rock outcrops across the Sulista project returned grades of up to 18.9% TREO, 37,345ppm NdPr, 2,634ppm DyTb, 5,458ppm Nb2O5 and 1,486ppm U3O8

- The first phase diamond drill program and outcrop sampling at the Sulista project confirms that high grade REE-Nb-Sc-U mineralisation repeats along the strike of the Brazilian Rare Earths province

- Additionally, the re-assay program of historical auger drill holes at the Sulista project confirmed large areas of shallow and high-grade monazite sand mineralisation with grades of up to 8.5% TREO

- The potential scale of the monazite sand mineralisation at just the Sulista Eastern Zone is comparable in scale to the Monte Alto deposit, and the combined scale of all monazite sand exploration targets at Sulista is over 10x larger than the Monte Alto project area

Brazilian Rare Earths' MD and CEO, Bernardo da Veiga commented:

"This new discovery of ultra-high grade REE-Nb-Sc hard rock mineralisation at the Sulista project confirms that we have an exceptional province scale exploration opportunity. The Sulista discovery is located nearly 80km southwest of Monte Alto, near the southern end of the mineralised Volta do Rio Plutonic Suite trendline that runs down the extensive 180km spine of BRE's rare earth province."

Sulista is a district-scale exploration project with a total tenement package over 10x the size of the Monte Alto project and a total exploration area of ~10km by ~5km. The first phase of BRE's exploration program recorded a wide range of outstanding exploration results, including ultra-high grade rare earth grades from diamond drilling, high-grade REE-Nb-Sc-U hard rock outcrops, intense geophysical anomalies and high-grade shallow monazite sand mineralisation.

The high-grade rare earth mineralisation at Sulista is contained within the stratigraphy of the Volta do Rio Plutonic Suite (VRPS), a provincial scale magmatic system that also covers the Monte Alto, Velhinhas and Pele projects.

The new exploration results indicate that the mineralised stratigraphy repeats across extensive zones over a SSW trend magnetic anomaly that runs through the Sulista project area.

The Sulista project was previously drilled for rare earth mineralisation by the vendors that conducted an extensive, but shallow, auger drilling program (average drill holes ~10m deep), and a series of diamond drill holes in the Northern Zone of the project area.

Since acquiring the Sulista project in February 2024, BRE has completed an initial confirmatory diamond drilling program in the Northern Zone, twinned to the historical drill holes, and a re-assay program over a significant series of the historical shallow auger drill holes.

Sulista Northern Zone

At the Sulista Northern Zone, a highly prospective exploration corridor of ~1km has been defined using a

range of exploration pathfinders, including geophysics, new diamond drilling and the re-assay of shallow historical auger drill holes.

The historical diamond drill holes at the Sulista Northern Zone were drilled at shallow angles and these were 'twinned' with two new BRE diamond drill holes, JITDD0001 and JITDD0002 (see Figure 2*). The new drill holes intersected REE-Nb-Sc-U mineralisation at ~40 and ~75 metres below the surface respectively. From surface, these drill intersections define a significant panel of potential mineralisation with a projected down dip extent of ~100m.

High-grade REE-Nb-Sc-U mineralisation was intersected perpendicular to the plane of the mineralised cumulate body, which dips at ~50 degrees to the east-southeast. Reported down hole intercept thickness is interpreted to represent the true thickness.

Drill hole JITDD0001 intersected high-grade REE-Nb-Sc-U mineralisation ~40m below surface:

- 12.3m at 12.5% TREO from 102.5m with 22,175 ppm NdPr, 905ppm DyTb, 199ppm Sc2O3, 2,547ppm Nb2O5 and 1,309ppm U3O8 (JITDD0001)

Drill hole JITDD0002 intersected mineralisation ~75m below surface and assays for this hole are pending. An exploratory drill hole, JITDD0003, was also drilled to the west of the main mineralised trend and returned no significant intercepts. The diamond drillhole information, significant intercepts and full REE-Nb-Sc-U assays are provided in Appendix C*.

Around the diamond drill hole collars, there is a potential ~100m strike of high-grade REE-Nb-Sc-U mineralisation and a series of hard rock outcrops were discovered that returned assay grades up to 18.9% TREO (R874).

- 18.9% TREO: 37,345ppm NdPr, 2,382ppm DyTb, 3,640ppm Nb2O5 and 1,236ppm U3O8 (R874)

High-grade REE-Nb-Sc-U mineralisation is open to the north-northwest, along the potential ~1km mineralised strike, and currently extends to a large REE-Nb-Sc-U mineralised outcrop that returned a sample assay of 10.8% TREO (R875).

- 10.8% TREO: 18,138ppm NdPr, 1,119ppm DyTb, 5,266ppm Nb2O5 and 1,486ppm U3O8 (R875)

It is noteworthy that the airborne geophysical anomaly over the Sulista Northern Zone is moderately weak in comparison to the intense geophysical signature over the Monte Alto project. The Sulista discovery highlights the potential for high-grade REE-Nb-Sc-U mineralisation along the full trendline of the VRPS, and not only limited to areas with strong geophysical signatures, as airborne and ground geophysical surveys are useful down to ~60cm of depth.

This confirmed discovery from initial diamond drilling expands the potential exploration target area for ultra-high grade REE-Nb-Sc-U mineralisation to the full 160km strike of the Rocha da Rocha Rare Earth Province. BRE moved quickly to consolidate this new rare earth province with rapid pegging of vast areas of exploration tenements, and via executing a series of important acquisitions including the Sulista project. BRE now controls a dominant position of over ~4,000km2 of exploration tenements that cover the majority of the VRPS trendline (Figure 1*).

The VRPS is hosted within the Archean age 'Jequie Complex' and is the key exploration target zone for ultrahigh grade REE-Nb-Sc-U mineralisation. The VRPS is distinguished by a bi-modal formation of light coloured granite gneiss and REE-Nb-Sc-U cumulate mineralisation. The high-grade REE-Nb-Sc-U cumulate appears to be layered within the province scale VRPS trendline and most likely formed via the separation process of the parent magma. This layering, and distinct contact boundaries, are visible in diamond drillhole JITDD0001 below*:

The highest grade REE-Nb-Sc-U intercept in drillhole JITDD0001 was from 106m to 107m (~40m below surface). This one metre assay returned an ultra-high grade of 22.4% TREO, with 39,770ppm of NdPr, 1,579ppm of the heavy rare earths DyTb, 4,821ppm of niobium, 241ppm scandium and 2,422ppm uranium.

Sulista Western Zone

As can be seen in Figure 1* (page 1), the high-grade mineralisation across the Sulista Northern Zone may be linked to the far larger and highly prospective Sulista Western Zone. This larger exploration area has wide-spaced historical auger drilling, and many of these shallow auger holes intercepted +1% TREO mineralised zones that are associated with monazite sands. The successful discovery of the Monte Alto project demonstrated that grades of +1% TREO from auger drillholes are an excellent pathfinder for deeper

high-grade REE-Nb-Sc-U hard rock mineralisation.

The historical widely spaced exploration auger drill program at Sulista was limited by shallow drill holes to ~10 metres depth. In many instances, these historical drill holes were too shallow to penetrate the depleted rare earth mottled zone that has deep weathering. The mineralised auger drill intercepts are typically open at depth and the next phase of priority exploration at Sulista will extend the drilling horizon into the potentially highly prospective regolith zone. A complete list of historical auger drillholes is provided in Appendix D*.

Significant historical auger drill intercepts across the Western and Northern Zones include:

- 3m at 1.6% TREO from 9m, with 2,094ppm NdPr and 141ppm DyTb, within:
12m at 0.6% TREO from surface, with 622ppm NdPr and 41ppm DyTb (JITAUG00071, open at depth)

- 1m at 1.3% TREO from 11m, with 4,772ppm NdPr and 301ppm DyTb, within:
12m at 0.3% TREO from surface, with 906ppm NdPr and 46ppm DyTb (JITAUG00089, open at depth)

- 1m at 1.1% TREO from 8m, with 3,419ppm NdPr and 365ppm DyTb, within:
10m at 0.3% TREO from surface, with 853ppm NdPr and 71ppm DyTb (JEQ_CA_AUG00251, open at depth)

Sulista Eastern Zone

The Sulista Eastern Zone is a high priority exploration area for high-grade monazite sand that currently has a ~ 800m by ~350m target area with +1% TREO mineralisation. This exploration area is comparable in scale to the current size of Monte Alto surface deposit which, at this point, has a shallow high-grade monazite sand mineral resource estimate of 25.2 Mt at 1.0% TREO. As with the Monte Alto project, this exploration area has high potential for ultra-high grade REE-Nb-Sc-U hard rock mineralisation below the monazite sand mineralisation near surface.

Most of the historical auger drill holes across the Sulista Eastern Zone were limited to ~10 metres depth and mineralisation remains open at depth. A panned concentrate was produced from auger drill hole JEQ_CA_AUG00007 and contained coarse grained monazite sand.

Importantly, the Sulista Eastern Zone has extensive high-grade REE-Nb-Sc-U hard rock outcrops and boulders across the priority exploration target area. These hard rock outcrops are analogous with the Monte Alto project and ground reconnaissance secured 30 grab samples of weathered mineralisation (Figure 6*) which returned significant rare earth assays of up to 16.5% TREO, including:

- 16.5% TREO, 32,087ppm NdPr, 2,264ppm DyTb, 179ppm Nb_2O_5 and 441ppm U_3O_8 (R872)

- 15.3% TREO, 30,758ppm NdPr, 2,634ppm DyTb, 144ppm Nb_2O_5 and 706ppm U_3O_8 (R845)

- 12.8% TREO, 24,229ppm NdPr, 1,899ppm DyTb, 135ppm Nb_2O_5 and 469ppm U_3O_8 (R859)

- 11.2% TREO, 21,210ppm NdPr, 2,024ppm DyTb, 14ppm Nb_2O_5 and 365ppm U_3O_8 (R858)

- 10.8% TREO, 18,138ppm NdPr, 1,119ppm DyTb, 5,266ppm Nb_2O_5 and 1,486ppm U_3O_8 (R875)

- 9.3% TREO, 18,039ppm NdPr, 732ppm DyTb, 19ppm Nb_2O_5 and 104ppm U_3O_8 (R870)

- 8.7% TREO, 16,397ppm NdPr, 1,591ppm DyTb, 9ppm Nb_2O_5 and 356ppm U_3O_8 (R860)

- 8.2% TREO, 16,296ppm NdPr, 1,133ppm DyTb, 6ppm Nb_2O_5 and 236ppm U_3O_8 (R856)

- 8.0% TREO, 15,274ppm NdPr, 1,055ppm DyTb, 10ppm Nb_2O_5 and 302ppm U_3O_8 (R855)

The high-grade monazite sand at the Sulista Eastern Zone is defined by historical auger holes containing significant intercepts of +1% TREO mineralisation and intense airborne and surface radiometric anomalies occurring along an ~800m long northeast-oriented corridor (Figure 7*).

At the centre of this exploration area, historical auger hole JEQ_CA_AUG00007 intersected monazite in saprolite mineralisation with 2m at 8.5% TREO from 6m of depth. This mineralisation is interpreted to be a weathered expression of a potential deeper high-grade REE-Nb-Sc-U cumulate mineralisation that outcrops ~30m to the east. Hard rock outcrop and boulder samples recorded assay grades that averaged 7.5% TREO and are located along a north-south-oriented trendline that is open along strike (Figure 7*).

The discovery of high-grade rare earth mineralisation from outcrops and historical auger drilling provides a

well-defined REE-Nb-Sc-U target horizon for high priority diamond drilling (Figure 8*). As at Monte Alto, the presence of monazite sand across a broad ~350m wide exploration corridor, with multiple intense surface gamma anomalies, suggests that more than one target horizon is present.

Significant auger drill intercepts at the Sulista Eastern Zone include:

- 2m at 8.5% TREO from 8m, with 15,400ppm NdPr and 1,342ppm of DyTb, within 4m at 6.0% TREO from 6m, with 11,222ppm NdPr and 990ppm DyTb, within: 10m at 2.7% TREO from surface, with 5,011ppm NdPr and 441ppm DyTb (JEQ_CA_AUG00007 - open at depth)

- 2m at 2.7% TREO from 14m, with 5,002ppm NdPr and 220ppm DyTb, within: 20m at 0.5% TREO from surface, with 870ppm NdPr and 41ppm DyTb (JEQ_CA_AUG00008 - open at depth)

- 1m at 2.3% TREO from 5m, with 3,954ppm NdPr and 218ppm DyTb, within: 10m at 0.4% TREO from surface, with 653ppm NdPr and 38ppm DyTb (JEQ_CA_AUG00017 - open at depth)

- 1m at 1.2% TREO from 8m, with 5,265ppm NdPr and 212ppm DyTb, within: 10m at 0.5% TREO from surface, with 1,335ppm NdPr and 64ppm DyTb (JEQ_CA_AUG00151 - open at depth)

- 1m at 4.3% TREO from 5m, with 6,558ppm NdPr and 207ppm DyTb, within: 10m at 0.6% TREO from surface, with 916ppm NdPr and 31ppm DyTb (JEQ_CA_AUG00209 - open at depth)

Sulista Southern Zone

The Sulista Southern Zone is a large scale, extensively mineralised area with a current exploration target area that is approximately 5km long and up to 0.5km in width. The Southern Zone is covered by a moderate-tointense geophysical anomaly that runs along a NNE-orientated trendline. As a comparison of the relative size of the Sulista Southern exploration area, the Monte Alto project has a target area of approximately 1km by 0.4km.

BRE exploration field teams completed a range of surface prospecting activities including mapping and outcrop sampling at the very southern end of the Southern Zone project area, where REE-Nb-Sc-U mineralisation was discovered in large-scale bedrock that was outcropping along a road cutting (Figure 9*). Four mineralised grab samples collected from this large outcrop area returned significant assay grades of:

- 8.6% TREO, 14,258ppm NdPr, 951ppm DyTb, 5,458ppm Nb2O5 and 1,479ppm U3O8 (R876)

- 4.6% TREO, 8,465ppm NdPr, 585ppm DyTb, 1,339ppm Nb2O5 and 501ppm U3O8 (R569)

- 3.1% TREO, 6,634ppm NdPr, 463ppm DyTb, 2,245ppm Nb2O5 and 468ppm U3O8 (R877)

- 2.9% TREO, 5,234ppm NdPr, 367ppm DyTb, 3,281ppm Nb2O5 and 859ppm U3O8 (R878)

The REE-Nb-Sc-U mineralisation is characterised by intercalated bands of rare earth minerals within a quartzrich granite gneiss, and this type of mineralisation is distinct from the darker coloured ultra-high grade REE-NbSc-U discovered in Sulista drillhole JITDD0001, the ultra-high grade Monte Alto diamond drill intercepts, and in other locations across BRE's rare earth province. That said, the similar profile of rare earth and critical minerals present suggests this REE-Nb-Sc-U accumulation is a component of the same provincial scale mineral system.

As seen below in Figure 9*, the large horizon of mineralisation is visibly more weathered than the fresh rock samples of REE-Nb-Sc-U and potentially more lateritic in nature.

The Sulista Southern Zone was extensively drilled by the vendor with shallow auger drill holes at wide spacing along a ~5km mineralised trendline. As with the auger drilling at the Sulista Western Zone (and the Rio Tinto auger drilling across the vast Pele project area), this widely spaced auger drill program was limited by the shallow drill hole depth which averages ~10 metres in depth. This drill hole depth is unlikely to penetrate the depleted rare earth mottled zone that has experienced deeper weathering. The mineralised drill intercepts at the Sulista Southern Zone are frequently open at depth and the next phase of priority exploration will focus on testing the highly prospective deeper regolith zone.

Significant auger intercepts at the Sulista Southern Zone include:

- 3m at 1.6% TREO from 12m, with 3,372ppm NdPr and 232ppm, within 15m at 0.5% TREO from surface, with 899ppm NdPr and 64ppm DyTb (JITAUG00283 - open at depth)

- 1m at 1.1% TREO from 3m, with 2,230ppm NdPr and 203ppm DyTb, within 4.5m at 0.4% TREO from 3m,

with 611ppm NdPr and 56ppm DyTb (JITAUG00323)

- 1m at 1.6% TREO from 12m, with 2,590ppm NdPr and 155ppm DyTb, within 8m at 0.4% TREO from 7m, with 559ppm NdPr and 35ppm DyTb (JITAUG00362 - open at depth)

Acquired Project Database - Sulista

The previous operators completed ~5,000 metres of auger drilling across 499 holes and ~1,000 metres of diamond drilling.

All auger holes were drilled vertically using the same drilling equipment used by BRE. Holes were drilled on a regular grid at ~200m spacings, covering the more intense airborne geophysical anomalies, with local infill drilling to a diamond-style pattern at ~150m spacings. Auger holes averaged ~10m in depth, with ~70% ~15m or shallower and the deepest hole reaching 28m. Most auger holes remained within the saprolite zone, and ~69% returned significant mineralised intercepts defined as >200ppm TREO-CeO2 over more than 3m downhole. Many drill holes (35) contained drilling intervals +0.5% TREO.

More importantly for future exploration was the identification of 11 drill holes containing +1% TREO grades that are typically associated with monazite sand, and a proven exploration pathfinder for high-grade REE-Nb-Sc-U hard rock mineralisation at depth. All holes ended in significant rare earth mineralisation, and 4 holes ended in +1% TREO mineralisation and open at depth.

All auger drill holes warrant priority exploration with deeper and infill drilling to delineate high grade monazite sand mineralisation in saprolite. At the Monte Alto project, ~80% of the high-grade monazite sand resource contained at a depth greater than 10m, highlighting that the historical shallow auger drill holes at Sulista have yet to fully explore the important saprolite horizon.

The vendors also drilled 8 diamond drill holes scattered across the large Sulista project area. An inspection of historical drill core with handheld gamma spectrometry identified a significant ~15m intercept of rare earth mineralisation in hole ZMC-2S with exceptionally high gamma 'CPS' counts. To obtain a verified measure of grade and thickness, BRE drilled a twin of this hole (JITDD0001). The remaining historical drill hole assays did not return significant mineralisation.

Verification

Key personnel involved in the vendors' historical exploration program are now employees of BRE's exploration team, facilitating effective transfer of information and data verification. The location of auger drill sites was recorded using handheld GPS. The location of significant auger drill holes, including hole JEQ_CA_AUG00007, has been verified in the field.

Auger and drill samples obtained by the vendors were assayed by SGS Geosol in Vespasiano, Minas Gerais, Brazil, the same assay laboratory used by BRE. Samples were prepared and analysed for REE and major oxides using the same techniques as BRE, except for the over-limit assays which were not undertaken by the vendor.

For auger drill holes, the pulp and coarse reject material returned from the laboratory were archived in a secure compound and are available to BRE in the town of Jita na. To verify potential monazite-sand intercepts, BRE submitted all samples greater than 0.7% TREO for repeat analysis at SGS Geosol using the same suite of analysis as used for BRE's assays. For the 23 repeat analysis pairs, repeatability was good with low variability and no significant bias.

Diamond Drilling

Since the acquisition of the Sulista project in February 2024, BRE has confirmed the discovery of high-grade REE-Nb-Sc-U mineralisation targets at multiple locations.

At the Sulista Western Zone, an initial confirmatory diamond drill hole program has intersected REE-Nb-Sc-U mineralisation to surface. Mineralisation is open to the south-southwest and north-northwest, along a 1km strike, that ends with a large hard rock outcrop of mineralisation at a road cutting with 'CPS' reading close to the maximum limit of detection. These compelling initial exploration results warrant a priority, far more extensive diamond drilling program, with targeted step-out holes to test for high-grade rare earth mineralisation along the ~1km outcrop trend.

At the Sulista Eastern Zone, the discovery of 30 hard rock outcrops and boulders with an average grade of 7.5% TREO, and broad monazite-rich regolith with rare earth grades up to 8% TREO, indicate high potential for ultrahigh grade hard rock REE-Nb-Sc-U mineralisation at depth. These priority areas will be explored with

a comprehensive near-term sonic and diamond drilling program.

Auger Drilling

The vendor completed an extensive program of shallow auger drill holes, mostly to ~10 metres depth, over most of the geophysical anomalies. It is likely that these historical drill holes were too shallow to penetrate below the REE depleted zones of deep weathering. BRE will now prioritise new auger drilling to extend the drilling horizon into the regolith mineralisation.

At the Sulista Eastern Zone, a monazite-sand exploration target area of ~800 metres by ~350 metres can be defined by historical auger drill intercepts +1% TREO. All holes across this exploration area warrant immediate follow-up with deeper auger infill drilling to target higher grade monazite sand mineralisation in saprolite, and to support the targeting of deeper sonic and diamond core holes. The BRE exploration team is currently finalising a detailed auger drilling program for the Sulista Eastern and Southern Zones, and the exploration drilling program is scheduled to commence during the third quarter 2024.

Geophysics

Rare earth mineralisation at the Sulista exploration zones, and across the larger BRE province, is highly correlated with high gamma particle counts ('CPS') using handheld gamma spectrometer surveys. Handheld gamma line surveys are a valuable ground reconnaissance tool that typically provide more granular readings than airborne geophysical and magnetic surveys.

BRE will expedite additional ground reconnaissance and gamma line surveys across the Sulista project. At Sulista Eastern Zone, the exploration field teams have already completed ~3km of a planned 20km gamma line survey at line spacings of ~50m. The gamma line survey is designed to identify regolith targets for auger and diamond drilling, and to discover REE-Sc-Nb-U mineralised outcrops and boulders. The ground reconnaissance and gamma line surveys has already defined an intense NE orientated trendline within the core of the ~800m by 350m monazite sand target area at the Eastern Zone.

End Notes

The information contained in this announcement relating to BRE's previously reported JORC mineral resource estimate is extracted from, or was set out in The Prospectus dated 13 November 2023 (refer ASX announcement dated 19 December 2023) which is available to view at BRE's website at www.brazilianrareearths.com.

BRE confirms all material assumptions and technical parameters underpinning the estimates in the Original ASX Announcement continue to apply and have not materially changed.

*To view tables and figures, please visit:
https://abnnewswire.net/lnk/03TEQVDK

About Brazilian Rare Earths Limited:

Brazilian Rare Earths Ltd. (ASX:BRE) is an Australian company, rapidly advancing its Tier 1 rare earth project in Northeast Brazil.

Company exploration to date has discovered and delineated a globally significant, district-scale mineral province containing large volumes of both heavy and light rare earths critical to advanced industries and applications that will deliver a green energy transition.

The Company is led by a team of experienced mining executives and geologists with hundreds of years of cumulative experience in finding, developing, and operating mineral assets to generate value across a wide variety of jurisdictions, and commodities throughout the globe.

Source:
Brazilian Rare Earths Ltd.

Contact:

Bernardo da Veiga MD and CEO Brazilian Rare Earths bdv@brazilianrareearths.com