ASX ANNOUNCEMENT
30 April 2024

# QUARTERLY ACTIVITIES REPORT

For the period ending 31st March 2024

## Highlights

- Exceptional metallurgical recoveries, up to 87%, of the in demand rare earth elements neodymium, praseodymium, dysprosium & terbium from the Ema project;
    - 13 metres @ 71% Nd, 62% Pr, 45% Dy and 52% Tb from 5m (TR-071)
    - 5 metres @ 66% Nd, 66% Pr, 52% Dy and 55% Tb from 12m (TR-059)
    - 10 metres @ 65% Nd, 61% Pr, 43% Dy and 50% Tb from 10m (TR-110)
- Recoveries achieved using standard weak ammonium sulphate leaching solution, pH 4, at ambient temperatures over low leach times of only 30 minutes duration
- Leachability response now confirms majority portion of the defined 82km$^2$ of rare earth mineralisation is present as ionic clays leachable at low operating cost
- Results indicate potential for a very large-scale rare earth system at Ema
- ANSTO test work has commenced focusing on REE recovery optimisation
- Maiden Ema Mineral Resource Estimate calculation was released post quarter end
- Appointment of Andrew Reid as Managing Director and Jeremy Robinson as Non-Executive Chairman
- Cash position of $1.1m as of March 31st 2024

Brazilian Critical Minerals Limited (ASX: BCM) ("BCM" or the "Company") is pleased to provide details of its activities during the quarter ended 31 March 2024 in the Apuí region of Brazil (Figure 1).

The Company announced the assay results for the second and third batch of auger holes drilled on 800 metre centres for rare earth elements (REE's) at Ema in the Apuí region of Brazil (Figure 2).


*Figure 1. BCM project location in the Apui region of Brazil.*

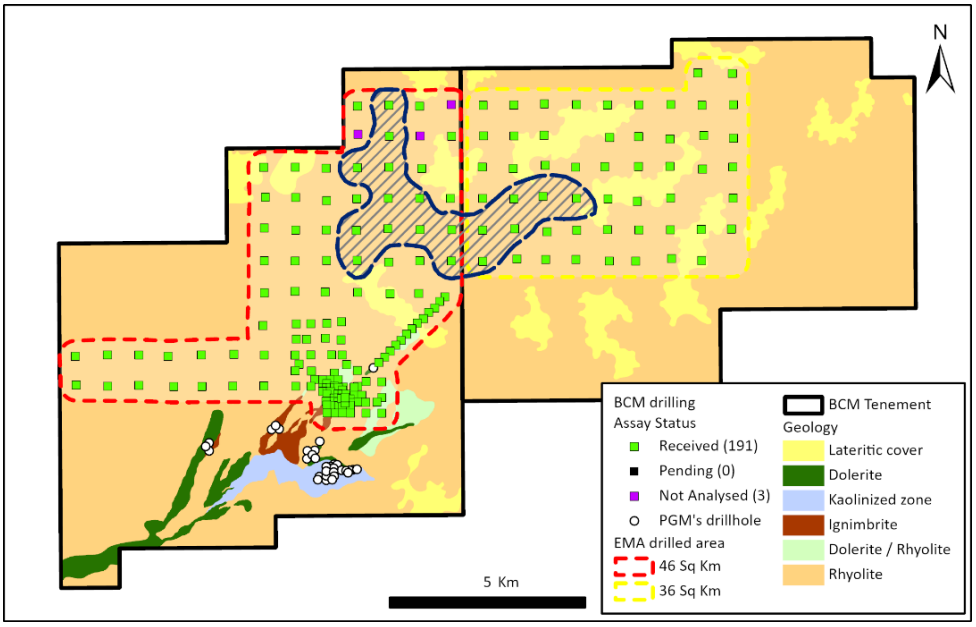



*Figure 2. Ema-Ema East REE project – auger holes on 800m centres and infill drilling status over 82 sq km.*

The Ema-Ema East iREE project comprises 189km$^2$ of felsic volcanic over which 194 auger holes totalling 2,749 metres have been completed to date, covering 82km$^2$. BCM has received and announced the full assay results for 191 holes of the total of 194 holes drilled to date.

A 12km$^2$ zone with outstanding TREO grades and exceptional values for NdPr oxides in the enrichment horizon was defined, one of many high-grade zones within this major and widespread ionic rare earth deposit, which remains open in all directions (Figure 3).

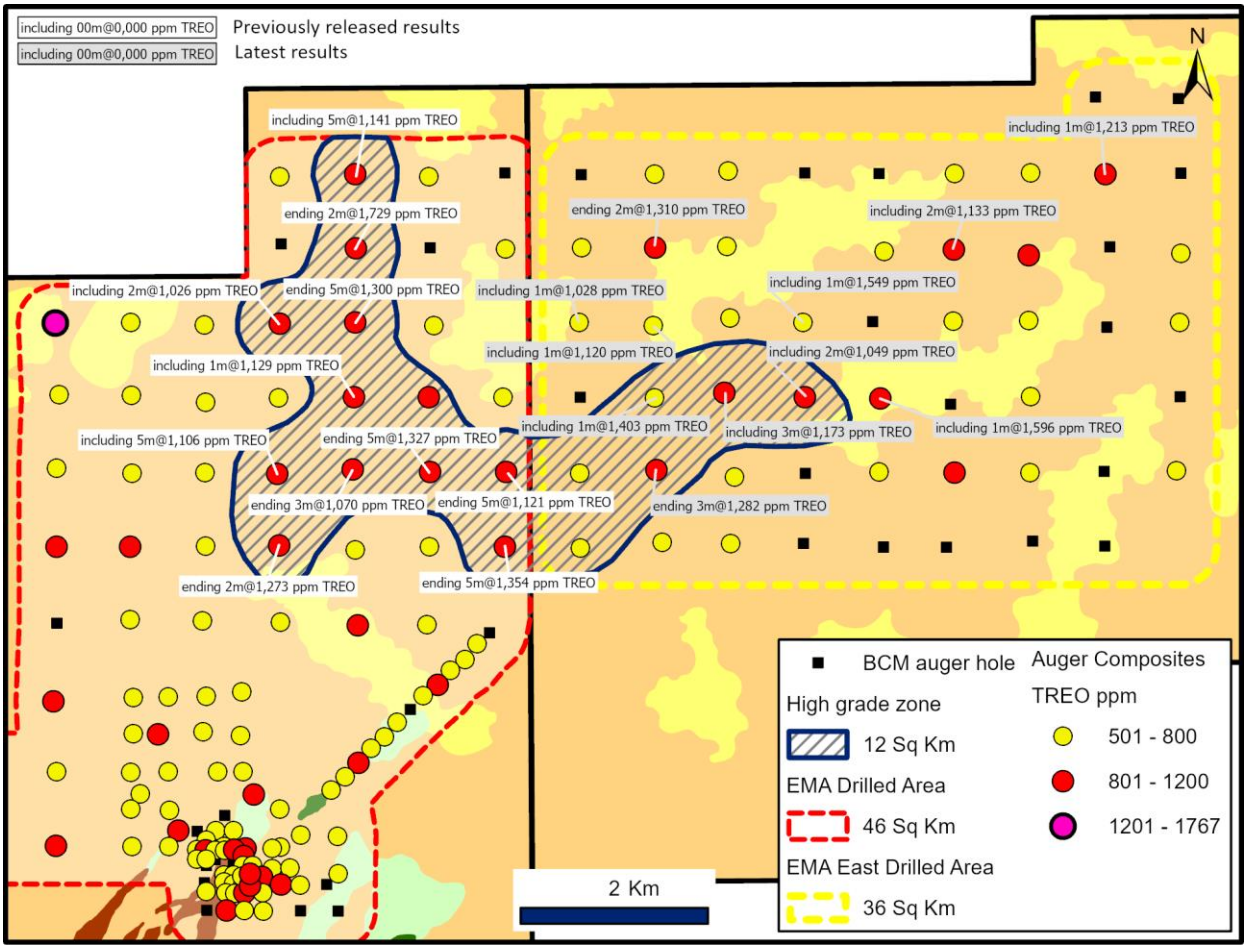



*Figure 3. Ema-Ema East TREO composite grade distribution*

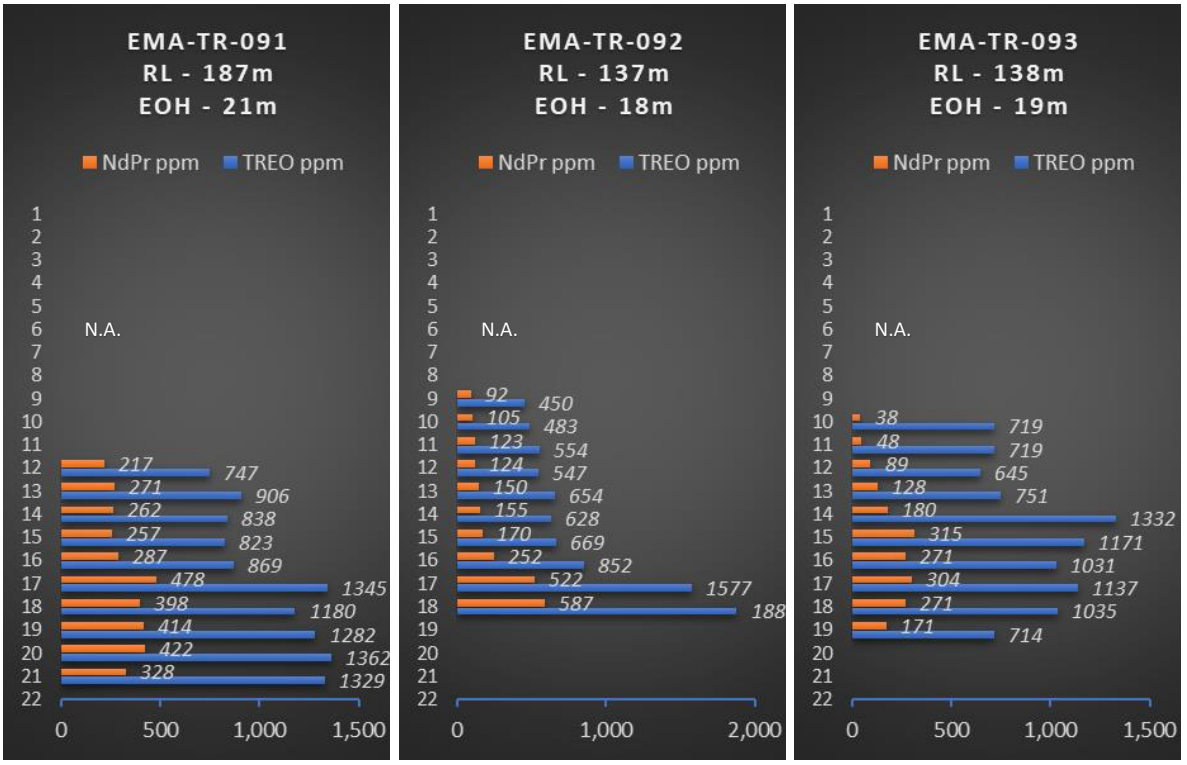
The EMA iREE project (Ema and Ema East leases) is unique amongst Brazilian REE projects in that it shares almost identical characteristics with the iREE deposits developed over felsic volcanic rocks in southwest China, the world´s largest known ionic clay region.

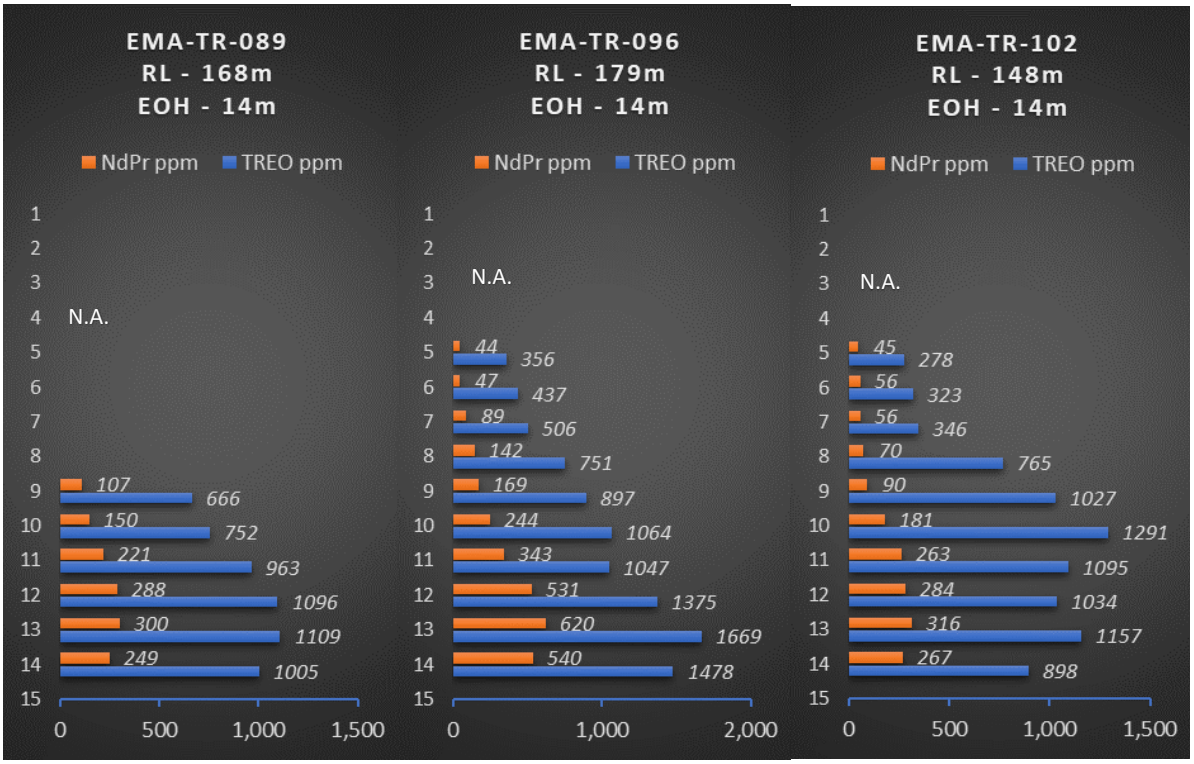
Exploration drilling has been with hand-held auger drills to date, which offer the advantage of low-cost, rapid deployment and mobility. One key constraint of auger drilling is the depth limitation, with the deepest holes, drilled to approximately 20m, generally containing the highest-grade results. In addition, most of the exploration to date has been conducted across the hill slopes, on widely spaced (800m) centres, with limited drilling in the valleys and foothills, potentially facilitating deeper penetration into the higher-grade zones, where preserved upon further drilling.

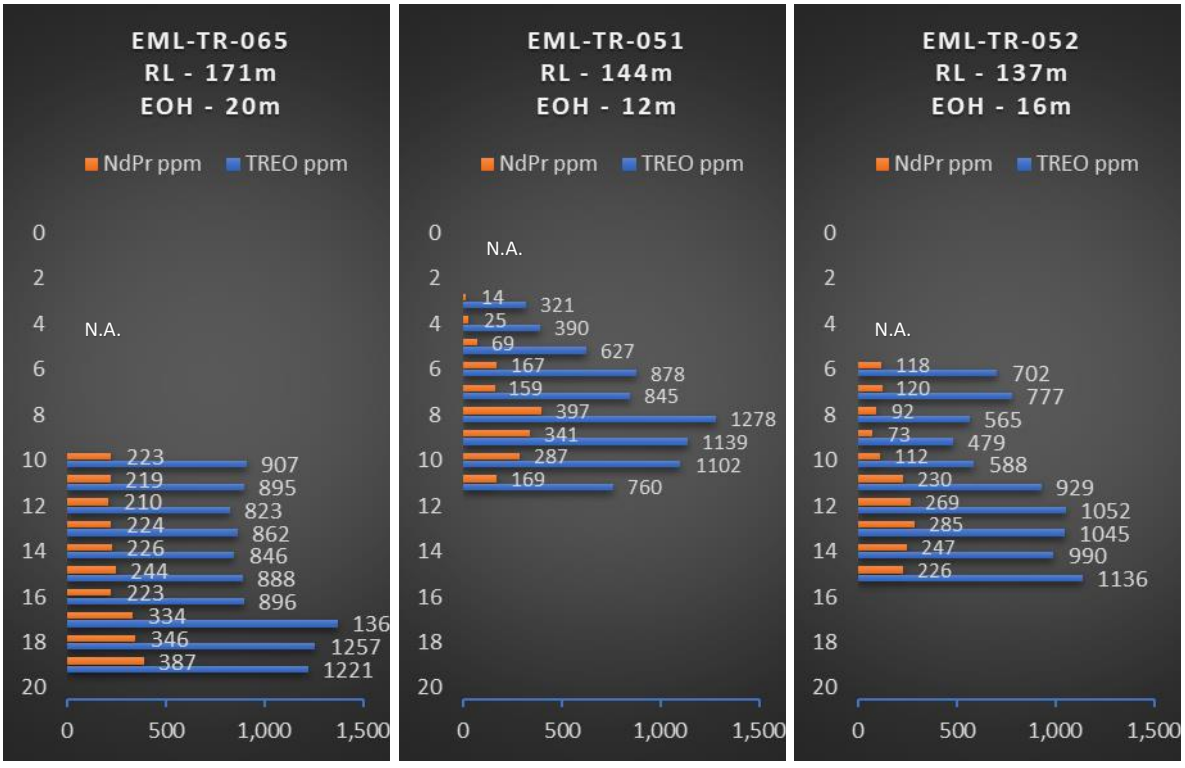
Although the holes were drilled at widely differing collar elevations the typical NdPr enrichment is invariably encountered at approximately the same depth, in the saprolite zone immediately above the fresh rock. The enriched zone is generally 10 metres thick, below which grades begin to fall off (Figure 3). Widespread exceptional results at the base of the driiling, in holes 800m apart strongly suggests the presence of a continuous high grade zone. Over a minimum thickness of 10 metres the TREO grade increases significantly with increasing depth from around 500ppm to up to 1,880ppm.

Importantly, the proportion of valuable heavy rare earth elements also increases to over 31% at the end of hole.

The marked concentration of high-grade zones at the base of the regolith profile highlights the potential to increase the overall average mineralised grade through deeper drilling. The entire enriched zone, as indicated by the latest results where the full profile was drilled in some auger holes, is contained within the 10 metres of regolith sitting above the saprock/fresh rock interface, with a clear increase in grades with depth.




EMA-TR-089
RL - 168m
EOH - 14m
NdPr ppm
TREO ppm
N.A.
107 666
150 752
221 963
288 1096
300 1109
249 1005
EMA-TR-096
RL - 179m
EOH - 14m
NdPr ppm
TREO ppm
N.A.
44 356
47 437
89 506
142 751
169 897
244 1064
343 1047
531 1375
620 1669
540 1478
EMA-TR-102
RL - 148m
EOH - 14m
NdPr ppm
TREO ppm
N.A.
45 278
56 323
56 346
70 765
90 1027
181 1291
263 1095
284 1034
316 1157
267 898


EML-TR-065
RL - 171m
EOH - 20m
NdPr ppm
TREO ppm
N.A.
223 907
219 895
210 823
224 862
226 846
244 888
223 896
334 136
346 1257
387 1221
EML-TR-051
RL - 144m
EOH - 12m
NdPr ppm
TREO ppm
N.A.
14 321
25 390
69 627
167 878
159 845
397 1278
341 1139
287 1102
169 760
EML-TR-052
RL - 137m
EOH - 16m
NdPr ppm
TREO ppm
N.A.
118 702
120 777
92 565
73 479
112 588
230 929
269 1052
285 1045
247 990
226 1136

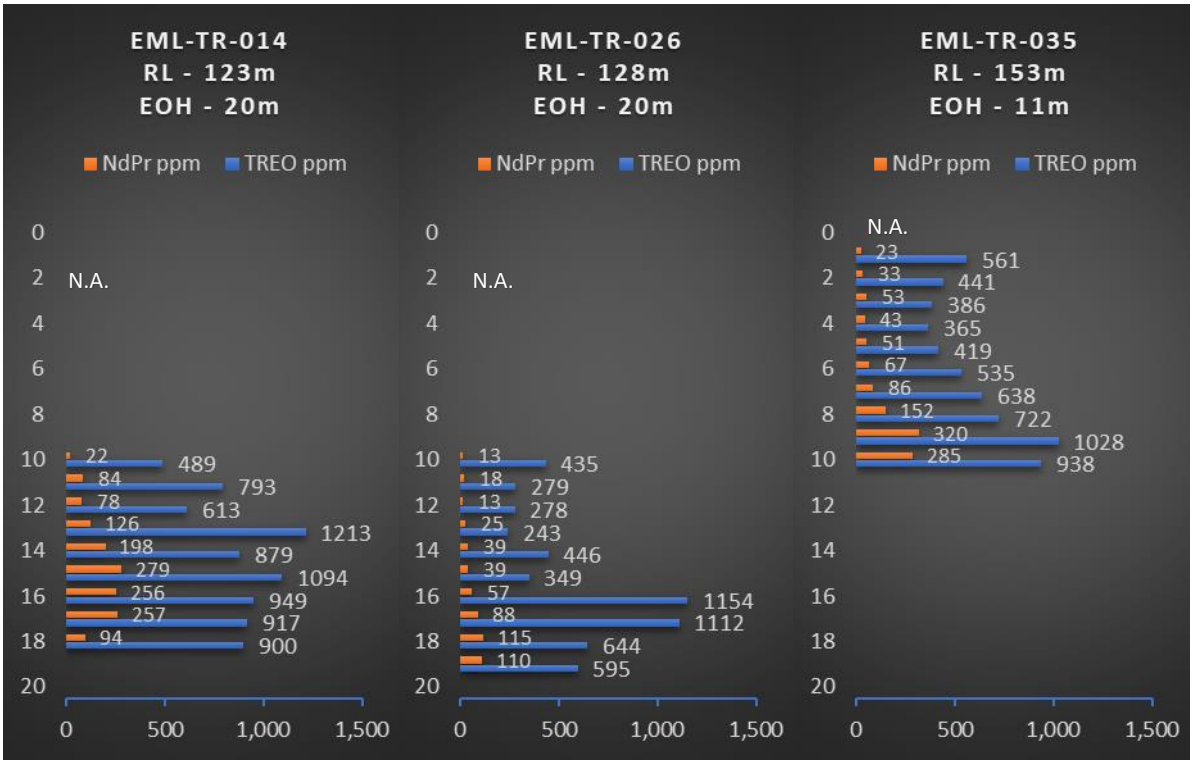



*Figure 4. Drill-hole profiles showing typical enrichment zone with high NdPr grades closer to the fresh rock.*

## Metallurgical test work at the Ema REE Project

The Company announced highly encouraging results from ammonium sulphate leach and carbonate precipitation test work conducted at the Brazilian Government Mineral Research Institute, CETEM. The tests, on a composite sample from a selected 7m interval (12-19m downhole) from drill hole EMD 017[1] were designed to evaluate the effect of varying a number of operational parameters such as solid/liquid ratio, ammonium sulphate and NaCl concentrations, and subsequently to recover the REE´s in the form of carbonates.

Following filtration, the solutions were treated with sodium carbonate at pH 8 to precipitate the REE´s in the form of carbonates. The resulting concentrate showed a high degree of purity, comprising 98-99% REE carbonates and aluminium hydroxide. Assaying of the solution after filtering showed that recovery of REE´s was virtually complete, with solution assays generally below detection limit.

The results clearly show the applicability of ammonium sulphate leaching at relatively low dosages and subsequent REE carbonate precipitation to the Ema mineralisation style.

Test work conducted at CETEM showed that all the rare earths recovered in the ammonium sulphate solution are fully precipitated as a mixed rare earth carbonate, which is easily shippable to downstream customers.

Results of ammonium sulphate extraction assays, conducted at SGS in Brazil for the first and second batches of auger holes at Ema indicate that the Ema mineralisation could be processed through any conventional processing facility designed for ionic clay rare earths. These results also support the further development of the project and a pathway to production with all options to be investigated.

The established industry standard set of recovery conditions was applied to the Ema phase 1 and 2 test work, being the utilisation of a very weak acid, ammonium sulphate for leaching, pH 4, at ambient temperatures with a 30-minute leach duration.

These recoveries, plus the phase 1 recoveries announced previously[1] are confirming that Ema, which currently stretches 82km$^2$ has the potential to become one of the largest ionically clay hosted deposits defined outside of China.

Work has commenced on a composite sample, from the high-grade zone, which has been delivered to the ANSTO facility in Sydney for further optimisation work over the coming months.

The first pass leach test results from standard assays at SGS (ICM655 and ICM694) confirm high yields of the four most important rare earth elements, neodymium, praseodymium, dysprosium and terbium with some individual elements producing recoveries of up to 85% (Table 1,2,3,4,5).

*Table 1. Hole EMA-TR-071 with total rare earth head grades and recovered magnetic rare earth oxides.*

| | | Head grades ppm | | % REO recovered in the solution (ammonium sulphate leach) | | | | | Leached Total ppm |
|---|---|---|---|---|---|---|---|---|---|
| From | To | TREO | MREO | $Nd_2O_3$ | $Pr_6O_{11}$ | $Dy_2O_3$ | $Tb_4O_7$ | MREO | MREO |
| 5 | 6 | 462 | 91 | **58** | **51** | **13** | **20** | **53** | 48 |
| 6 | 7 | 765 | 194 | **41** | **34** | **13** | **17** | **38** | 73 |
| 7 | 8 | 769 | 220 | **58** | **50** | **24** | **30** | **54** | 119 |
| 8 | 9 | 822 | 232 | **75** | **66** | **40** | **48** | **71** | 165 |
| 9 | 10 | 895 | 298 | **77** | **70** | **46** | **54** | **74** | 221 |
| 10 | 11 | 990 | 336 | **76** | **67** | **48** | **53** | **73** | 244 |
| 11 | 12 | 1018 | 348 | **79** | **68** | **47** | **56** | **75** | 261 |
| 12 | 13 | 943 | 329 | **83** | **74** | **58** | **67** | **79** | 261 |
| 13 | 14 | 913 | 311 | **80** | **72** | **64** | **72** | **78** | 242 |
| 14 | 15 | 935 | 320 | **84** | **74** | **64** | **71** | **80** | 257 |
| 15 | 16 | 991 | 326 | **59** | **52** | **45** | **50** | **56** | 184 |
| 16 | 17 | 1118 | 378 | **84** | **74** | **68** | **74** | **81** | 307 |
| 17 | 18 | 1075 | 357 | **64** | **58** | **54** | **59** | **62** | 223 |

*Table 2. Hole EMA-TR-059 with total rare earth head grades and recovered (%) magnetic rare earth oxides.*

| | | Head grades ppm | | % REO recovered in the solution | | | | | Leached Total ppm |
|---|---|---|---|---|---|---|---|---|---|
| From | To | TREO | MREO | $Nd_2O_3$ | $Pr_6O_{11}$ | $Dy_2O_3$ | $Tb_4O_7$ | MREO | MREO |
| **10** | **11** | 683 | 171 | **33** | **27** | **21** | **25** | **30** | 52 |
| **11** | **12** | 826 | 279 | **52** | **46** | **40** | **43** | **50** | 139 |
| **12** | **13** | 874 | 265 | **65** | **58** | **46** | **46** | **63** | 166 |
| **13** | **14** | 1208 | 426 | **70** | **65** | **51** | **56** | **68** | 289 |
| **14** | **15** | 1414 | 510 | **63** | **64** | **44** | **47** | **62** | 317 |
| **15** | **16** | 1210 | 454 | **70** | **87** | **74** | **79** | **74** | 334 |
| **16** | **17** | 884 | 296 | **60** | **56** | **44** | **48** | **58** | 172 |

*Table 3. Hole EMA-TR-110 with total rare earth head grades and recovered (%) magnetic rare earth oxides.*

| | | Head grades ppm | | % REO recovered in the solution (ammonium sulphate leach) | | | | | Leached Total ppm |
|---|---|---|---|---|---|---|---|---|---|
| From | To | TREO | MREO | $Nd_2O_3$ | $Pr_6O_{11}$ | $Dy_2O_3$ | $Tb_4O_7$ | MREO | MREO |
| 10 | 11 | 839 | 274 | **70** | **66** | **30** | **37** | **68** | 185 |
| 11 | 12 | 953 | 305 | **66** | **63** | **28** | **36** | **64** | 194 |
| 12 | 13 | 903 | 295 | **58** | **54** | **27** | **33** | **55** | 163 |
| 13 | 14 | 934 | 289 | **76** | **71** | **38** | **46** | **73** | 211 |
| 14 | 15 | 1058 | 336 | **58** | **54** | **34** | **41** | **56** | 188 |
| 15 | 16 | 1042 | 327 | **63** | **60** | **39** | **47** | **61** | 200 |
| 16 | 17 | 1303 | 409 | **39** | **36** | **31** | **34** | **38** | 155 |
| 17 | 18 | 1289 | 368 | **85** | **80** | **69** | **77** | **82** | 303 |
| 18 | 19 | 1275 | 327 | **73** | **70** | **69** | **75** | **72** | 236 |
| 19 | 20 | 928 | 217 | **62** | **58** | **64** | **70** | **62** | 134 |

*Table 4. Hole EMA-TR-101 with total rare earth head grades and recovered (%) magnetic rare earth oxides.*

| | | Head Grades ppm | | % REO recovered in the ammonium sulphate solution | | | | | Leached ppm |
|---|---|---|---|---|---|---|---|---|---|
| From | To | TREO | MREO | $Nd_2O_3$ | $Pr_6O_{11}$ | $Dy_2O_3$ | $Tb_4O_7$ | MREO | MREO |
| 10 | 11 | 451 | 112 | 76 | 75 | 25 | 33 | 71 | 80 |
| 11 | 12 | 445 | 115 | 81 | 78 | 29 | 35 | 76 | 87 |
| 12 | 13 | 485 | 141 | 74 | 71 | 32 | 37 | 70 | 99 |
| 13 | 14 | 571 | 169 | 79 | 77 | 39 | 46 | 76 | 128 |
| 14 | 15 | 695 | 219 | 76 | 74 | 45 | 52 | 74 | 161 |
| 15 | 16 | 1050 | 332 | 79 | 81 | 59 | 68 | 78 | 258 |
| 16 | 17 | 1407 | 475 | 83 | 80 | 67 | 74 | 81 | 386 |
| 17 | 18 | 1369 | 429 | 85 | 82 | 69 | 75 | 83 | 355 |
| 18 | 19 | 1370 | 413 | 72 | 68 | 58 | 64 | 70 | 288 |
| 19 | 20 | 1507 | 472 | 57 | 57 | 51 | 55 | 56 | 266 |

*Table 5. Hole EML-TR-052 with total rare earth head grades and recovered (%) magnetic rare earth oxides.*

| | | Head Grades ppm | | % REO recovered in the ammonium sulphate solution | | | | | Leached ppm |
|---|---|---|---|---|---|---|---|---|---|
| From | To | TREO | MREO | $Nd_2O_3$ | $Pr_6O_{11}$ | $Dy_2O_3$ | $Tb_4O_7$ | MREO | MREO |
| 10 | 11 | 582 | 124 | 54 | 49 | 40 | 98 | 52 | 65 |
| 11 | 12 | 921 | 251 | 39 | 35 | 37 | 57 | 38 | 96 |
| 12 | 13 | 1042 | 296 | 70 | 64 | 62 | 86 | 69 | 203 |
| 13 | 14 | 1033 | 317 | 81 | 74 | 69 | 92 | 78 | 248 |
| 14 | 15 | 978 | 277 | 77 | 73 | 64 | 84 | 75 | 207 |
| 15 | 16 | 1126 | 254 | 76 | 71 | 61 | 84 | 74 | 187 |

These ammonium sulphate leach results show a clear relationship between recovery and grade, with the highest recoveries obtained from the highest-grade portions of each mineralised intercept. Very high recoveries of Terbium (Tb) and Dysprosium (Dy) have also been recorded with both elements normally having a substantially higher (up to 10 times) combined value compared to critical light rare elements Praseodymium (Pr) and Neodymium (Nd).

The exceptional MREO recovery rates from within the enriched zone of up to 87% highlight the attractiveness of the Ema style of mineralisation, developed over felsic volcanics as extensively seen in China, relative to iREE deposits developed over other rock types.

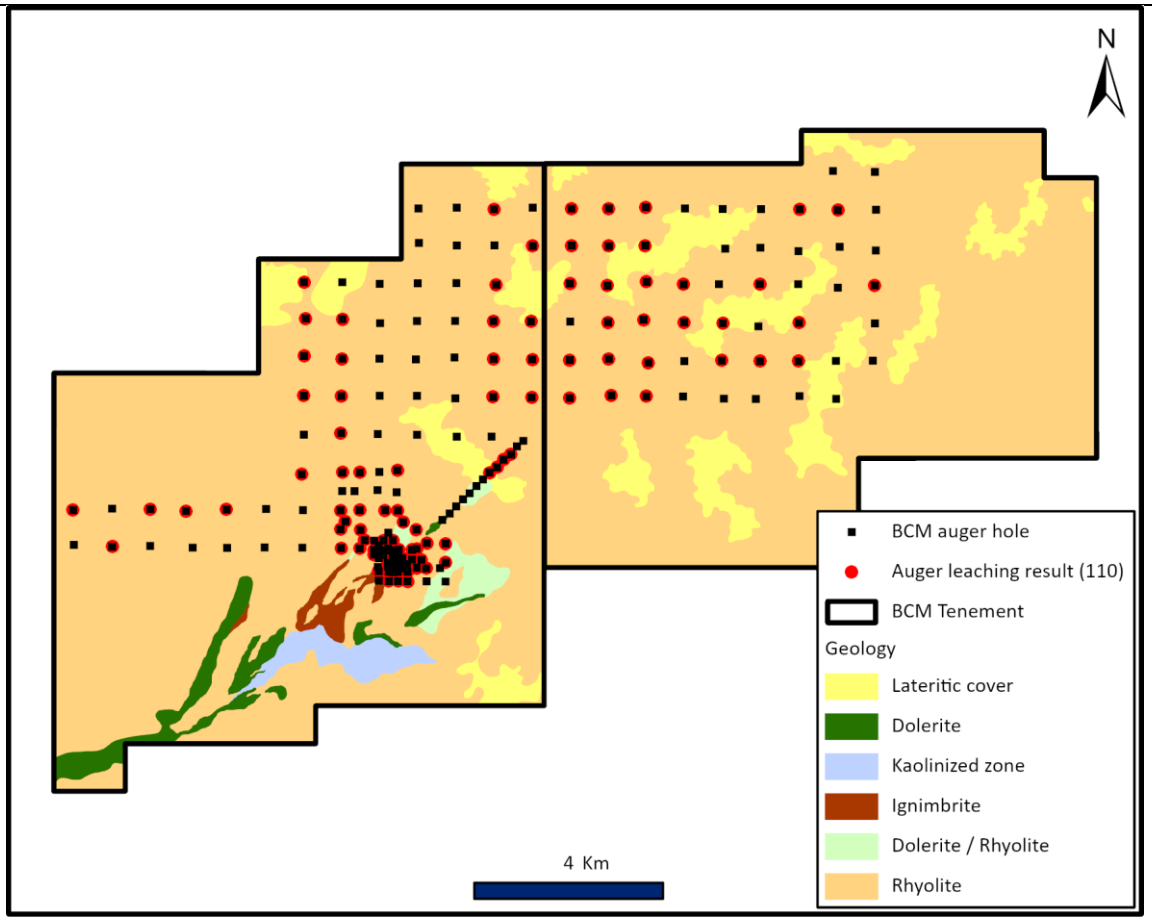



*Figure 4. Ema-Ema East REE project location – Auger holes used in ammonium sulphate leaching tests.*

Refer to the relevant ASX releases below.

| Date | Title |
|---|---|
| 29 Jan 2024 | CETEM Ammonium Sulphate Leach Adsorbed Clay REE test |
| 30 Jan 2024 | Final Tres Estados Bioleach Report |
| 06 Feb 2024 | Extensive Ionic Rare Earth Mineralisation At Ema Project |
| 22 Feb 2024 | High-Grade Ionic Rare Earth Zone At Ema Expanded By 54% |
| 13 Mar 2024 | World Class REE Recoveries at Ema Project |
| 02 Apr 2024 | World Class Ionic Rare Earths Recoveries Continue at Ema Project |

## Safety

16,484 man-hours were worked in exploration without a lost time accident (table 6).

Table 6. Total man hours worked at Apui

| Field workers operators | Supervisory staff hrs | Total hours worked |
|---|---|---|
| 12,584 | 3,900 | 16,484 |

**Additional Information required under Listing Rule 5.3.3**

| Tenements held at the end of the quarter | Area (Ha) | Percentage ownership |
|---|---|---|
| DNPM Permit Number 880.107/08<br>Location Brazil (Ema) | 9,839.91 | 100%<br>Exploration Licence |
| DNPM Permit 880.184/16<br>Location Brazil (Ema East) | 9,034.00 | 100%<br>Exploration Licence |
| DNPM Permit Number 880.090.08<br>Location Brazil (Três Estados) | 8,172.25 | 100%<br>Exploration Licence |
| DNPM Permit Number 880.025/2023<br>Location Brazil (Apuí iREE) | 2,417.00 | 100%<br>Exploration Licence |
| DNPM Permit Number 880.026/2023<br>Location Brazil (Apuí iREE) | 6,591.90 | 100%<br>Exploration Licence |
| DNPM Permit Number 880.027/2023<br>Location Brazil (Apuí iREE) | 5,856.00 | 100%<br>Exploration Licence |
| DNPM Permit Number 880.259/2020<br>Location Brazil (Apuí iREE) | 9,092.01 | 100%<br>Exploration Licence |
| DNPM Permit Number 880.149/2017<br>Location Brazil (Apuí iREE) | 9,815.15 | 100%<br>Exploration License |
| Application number 880.076/2023<br>Location Brazil (Apuí ENE iREE) | 8,475.30 | 100%<br>Exploration application |
| Application number 880.077/2023<br>Location Brazil (Apuí ENE iREE) | 8,856.84 | 100%<br>Exploration application |

For the purpose of Section 6 of the Appendix 5B, all payments made to related parties have been paid in relation to director fees.

The Activity Report for the March quarter 2024 has been authorised for release by the Board of Directors.

**Enquiries**

For more information contact:

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+61 432 740 975

**References**

[1] Brazilian Critical Minerals (ASX:BCM) ASX Announcement "Ammonium Sulphate Test confirms presence of IAC REE" on 19.07.23

**Competent Person Statement**

The information in this report that relates to exploration results released by the Company to the ASX on 2 October, 18 October, 26 November and 6 December 2023 is based on information compiled by Mr. Antonio de Castro, BSc (Hons), MAusIMM, CREA, who acts as Brazilian Critical Minerals (BCM) Senior Consulting Geologist through the consultancy firm, ADC Geologia Ltda. Mr. de Castro has sufficient experience which is relevant to the type of deposit under consideration and to the reporting of exploration results and analytical and metallurgical test work to qualify as a competent person as defined in the 2012 Edition of the Joint Ore Reserves Committee (JORC) "Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves". Mr. Castro consents to the report being issued in the form and context in which it appears. The Company confirms that is not aware of any new information or data that materially affects the information included in the above-mentioned releases.

**About Brazilian Critical Minerals Ltd**

Brazilian Critical Minerals is a unique mineral exploration and mineral processing technology company listed on the Australian Securities Exchange.

Its major exploration focus is Brazil, mainly in the southern Amazon, a region BCM believes is vastly underexplored with high potential for the discovery of world class gold-PGM, base metals and Ionic Adsorbed Clay (IAC) Rare Earth Elements deposits. BCM's key assets are the Três Estados and Ema REE Projects at Apui. The Company has 781 km² of exploration tenements within the Colider Group and adjacent sediments, a prospective geological environment for gold, PGM, base metal and rare earth deposits.

BCM is also developing an environment compatible and sustainable beneficiation process that extracts precious metals using a unique bio leach process. This leading-edge process, that extracts precious metals naturally, is being developed initially for the primary purpose of economically extracting Platinum Group metals from the Tres Estados mineral deposit. BCM believes that this processing technology is critical in the environmentally timely PGM space and supports a societal need to move toward a carbon neutral economy.