# Assays by Ammonium Sulphate Leach Confirm Ionic Adsorbed Clay REE

BBX Minerals Limited (**ASX: BBX**) ("**BBX**" or the "**Company**") is pleased to announce the outcome of an ammonium sulphate leach conducted at SGS Geosol Laboratories in Brazil. Select intervals from the drill holes announced on 22 May were subjected to an assay for Rare Earth Elements (REEs) via an ammonium sulphate leach to determine their ionic adsorption REE content.

**Key highlights:**

- Basic 2% ammonium sulphate leach showed **excellent recoveries of REEs** (Table 1) from drill hole EMD017**.**
- Average recovery of the **light magnetic REEs Pr + Nd was 51%.**
- Average recovery of **heavy magnetic REEs, Tb + Dy was 39%.**
- The results show that excellent REE desorption was achieved using a standard ammonium sulphate solution at pH 4 and confirm the **presence of Ionic Adsorbed REE mineralisation at Ema and Ema East**.
- These results provide the baseline for proposed **metallurgical test work designed to optimise leach conditions and recoveries**.
- **No Thorium or Uranium recovered.**

Table 1: Individual sample recoveries from EMD017

| REO | 12-14m | 14-16m | 16-17.5m | 17.5-19m | AVERAGE |
|---|---|---|---|---|---|
| La2O3 | 39% | 46% | 52% | 35% | **43%** |
| CeO2 | 12% | 9% | 20% | 10% | **13%** |
| Pr6O11 | 45% | 56% | 59% | 40% | **50%** |
| Nd2O3 | 46% | 57% | 59% | 42% | **51%** |
| Sm2O3 | 43% | 52% | 55% | 39% | **47%** |
| Eu2O3 | 18% | 23% | 22% | 16% | **20%** |
| Gd2O3 | 38% | 48% | 49% | 36% | **43%** |
| Tb4O7 | 34% | 46% | 46% | 33% | **40%** |
| Dy2O3 | 32% | 44% | 42% | 29% | **37%** |
| Ho2O3 | 32% | 44% | 43% | 31% | **38%** |
| Er2O3 | 32% | 44% | 44% | 31% | **38%** |
| Tm2O3 | 66% | 88% | 82% | 61% | **74%** |
| Yb2O3 | 34% | 45% | 48% | 33% | **40%** |
| Lu2O3 | 30% | 40% | 42% | 28% | **35%** |
| Y2O3 | 31% | 44% | 41% | 31% | **37%** |

Andre J Douchane, CEO, commented: "*The ammonium sulphate leach results for hole EMD-017 are extremely encouraging and confirm that Ionic Absorption Clay-type REEs are present at Ema. This test is just a simple indicative assay, and these results will assist in guiding the planned metallurgical test work at CETEM aimed at optimising the leach conditions for the entire Ema/Ema East deposit.*

*We have a way to go to define the extent of what we have at Ema, but we are excited by what we are seeing so early on. To expedite things, we will shortly be mobilising a third drill and crew to bring hole completion up to approximately 3 auger holes per day.*

*BBX has made a significant REE discovery and as such Management intends to put the majority of our resources toward defining exactly what we have.*

*Separately, the third bio leach test is proceeding as planned with initial assay results being completed. It's a long test with 480 hours of continuous leaching planned. In the interim additional pilot plant test work is being conducted at the company's Catalão facility which continue to show excellent results. Once confirmed, the results of this additional test work will be released in the next several weeks"*.

The analytical procedure is a simple 2% ammonium sulphate leach performed on a 50g sample to assess its ionic adsorption characteristics and potential baseline recoveries. The resulting solution is then analysed for multiple elements, including REEs. Optimisation of leach parameters such as pH and salinity will require a comprehensive set of metallurgical tests.

The ammonium sulphate leach from the 9.5m REE enriched horizon in EMD017, starting at a depth of 8m, yielded an average recovery of 3.00 g/t silver (Ag). This successful recovery enables the possibility of silver precipitation from the leach solution.

The lower recoveries observed in several drill holes (Appendix 3) will be subjected to further investigation. These intervals initiate at or near the surface, whereas the highest recoveries in EMD017 commence at a depth of 12m below the surface. This indicates that the presence of near-surface oxidation might impede the effectiveness of straightforward ammonium sulphate leaching, unless supplemented with NaCl or pH adjustments.

These results pertain specifically to hole EMD017 and may not be indicative of the overall Ema mineralisation.

This announcement has been authorised for release by the Board of Directors.

For more information:

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**About BBX Minerals Ltd**

BBX Minerals Limited 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 BBX believes is vastly underexplored with high potential for the discovery of world class gold and precious metal deposits. BBX's key assets are the Três Estados and Ema Gold Projects. The company has 419.1km² of exploration tenements within the Colider Group, a prospective geological environment for gold, PGM and base metal deposits.

BBX 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. It is expected that such technology will be transferable and relevant to many other PGM projects. BBX 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.

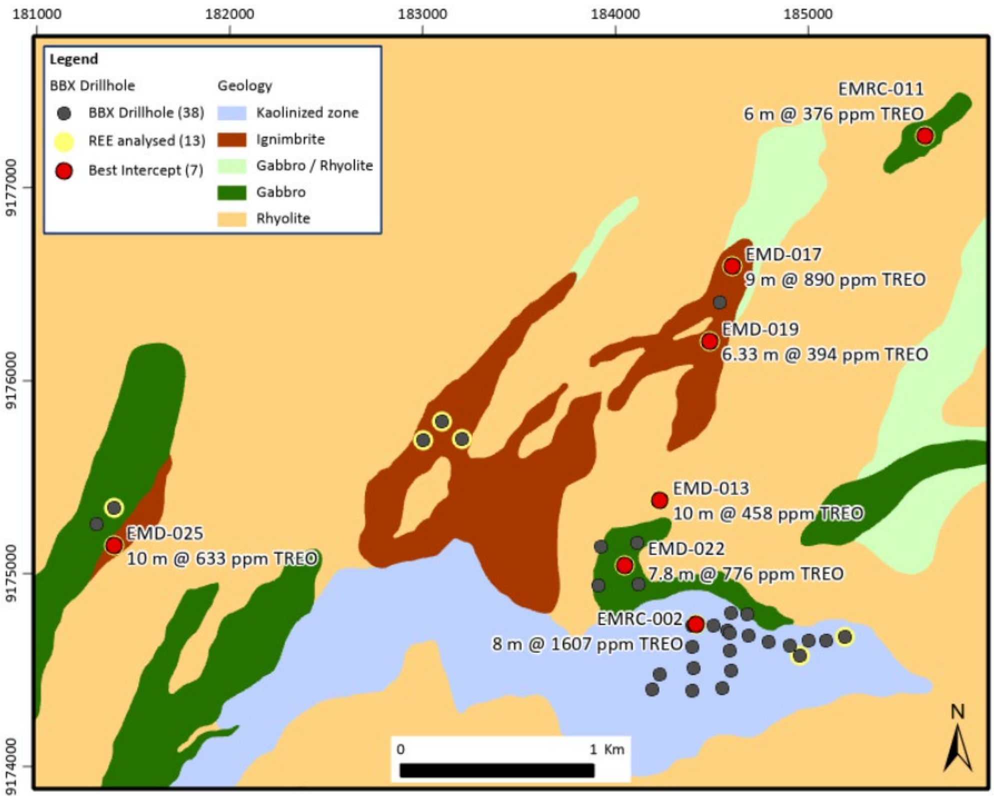
**Competent Person Statement**

The information in this report that relates to exploration results is based on information compiled by Mr. Antonio de Castro, BSc (Hons), MAusIMM, CREA, who acts as BBX´s 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.

CREA/RJ:02526-6D
AusIMM:230624

Appendices

## Appendix 1: Ema drill collar location




High grade intersections:

- EMRC002: 8.0m at 1,607 ppm TREO from surface
  incl. **4.0 m at 2,631 ppm TREO** from 2.0m
- EMD017: 9.0m at 890 ppm TREO from 10.0m

incl. **6.0m at 995 ppm TREO** from 10.0m

- EMD022: 7.8 m at 776 ppm TREO from 4.0m
  incl. **2.0 m at 1,381 ppm TREO** from 2.0m
- EMD025: 10.0m at 633 TREO ppm from 2.0m

## Appendix 2: Drillhole Locations for holes assayed by ammonium sulphate leach

| Hole ID | East | North | RL (m) | Azimuth | DIP | Depth (m) | Tenement | Method |
|---|---|---|---|---|---|---|---|---|
| EMRC002 | 184419.00 | 9174739.00 | 221.00 | 0 | -90 | 42.00 | 880.107/2008 | RC |
| EMRC009 | 185189.00 | 9174674.00 | 261.00 | 0 | -90 | 40.00 | 880.107/2008 | RC |
| EMRC011 | 185605.00 | 9177268.00 | 198.00 | 0 | -90 | 32.00 | 880.107/2008 | RC |
| EMD-013 | 184231.00 | 9175383.00 | 198.00 | 0 | -90 | 51.01 | 880.107/2008 | DD |
| EMD-017 | 184607.00 | 9176595.00 | 154.00 | 0 | -90 | 51.45 | 880.107/2008 | DD |
| EMD-019 | 184487.00 | 9176207.00 | 145.00 | 0 | -90 | 51.09 | 880.107/2008 | DD |
| EMD-022 | 180046.00 | 9175044.00 | 183.00 | 0 | -90 | 70.38 | 880.107/2008 | DD |
| EMD-025 | 181395.00 | 9175129.00 | 156.00 | 0 | -90 | 51.68 | 880.107/2008 | DD |

## Appendix 3: REE oxide assay results and Ag

| HOLEID | FROM | TO | Ag ppm | La2O3 ppm | CeO2 ppm | Pr6O11 ppm | Nd2O3 ppm | Sm2O3 ppm | Eu2O3 ppm | Gd2O3 ppm | Tb4O7 ppm | Dy2O3 ppm | Ho2O3 ppm | Er2O3 ppm | Tm2O3 ppm | Yb2O3 ppm | Lu2O3 ppm | Y2O3 ppm | TREO ppm |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| EMD-013 | 1.6 | 3 | 0.06 | 0.6 | 12 | 0.2 | 1.4 | 0.1 | 0 | 0.1 | 0 | 0 | 0 | 0 | 0 | 0.2 | 0 | 0.1 | 15 |
| EMD-013 | 3 | 5 | 0.06 | 1.3 | 18.9 | 0.3 | 1.4 | 0.2 | 0 | 0.1 | 0 | 0.1 | 0 | 0 | 0 | 0.2 | 0 | 0.3 | 23 |
| EMD-013 | 5 | 7 | 0.06 | 3.2 | 26.4 | 0.8 | 1.4 | 0.4 | 0 | 0.2 | 0 | 0.1 | 0 | 0 | 0 | 0.2 | 0 | 0.5 | 33 |
| EMD-013 | 7 | 9 | 0.06 | 5.1 | 27.5 | 1.2 | 3.5 | 0.6 | 0.1 | 0.3 | 0 | 0.1 | 0 | 0.1 | 0 | 0.2 | 0 | 0.5 | 39 |
| EMD-013 | 9 | 11 | 0.06 | 8.3 | 33.4 | 2 | 6.1 | 0.9 | 0.1 | 0.4 | 0 | 0.2 | 0 | 0.1 | 0 | 0.2 | 0 | 0.8 | 53 |
| EMD-013 | 11 | 13 | 0.06 | 23.1 | 45.5 | 5.6 | 18 | 2.3 | 0.2 | 0.9 | 0 | 0.3 | 0.1 | 0.2 | 0 | 0.2 | 0 | 1.6 | 98 |
| EMD-013 | 13 | 15 | 0.06 | 26.2 | 36.7 | 6.2 | 20.1 | 2.6 | 0.2 | 1 | 0 | 0.4 | 0.1 | 0.2 | 0 | 0.2 | 0 | 1.7 | 96 |
| EMD-017 | 4 | 6 | 0.06 | 1.2 | 12 | 0.3 | 1.4 | 0.1 | 0 | 0.1 | 0 | 0.1 | 0 | 0 | 0 | 0.2 | 0 | 0.4 | 16 |
| EMD-017 | 6 | 8 | 0.06 | 1.2 | 13.8 | 0.3 | 1.4 | 0.2 | 0.1 | 0.1 | 0 | 0.1 | 0 | 0.1 | 0 | 0.2 | 0 | 0.5 | 18 |
| EMD-017 | 8 | 10 | 1.37 | 2.4 | 17.1 | 0.6 | 1.4 | 0.3 | 0.1 | 0.2 | 0 | 0.1 | 0 | 0.1 | 0 | 0.2 | 0 | 0.6 | 23 |
| EMD-017 | 10 | 12 | 3.79 | 30.8 | 36.4 | 8.9 | 32 | 4.7 | 0.9 | 2.5 | 0.3 | 1.4 | 0.3 | 0.8 | 0.1 | 0.8 | 0.1 | 8.8 | **129** |
| EMD-017 | 12 | 14 | 4.07 | 89.3 | 25.4 | 27.2 | 101.7 | 15.1 | 3.2 | 8.7 | 1 | 5.4 | 1.1 | 3.2 | 0.5 | 3.1 | 0.5 | 33.3 | **319** |
| EMD-017 | 14 | 16 | 0.42 | 122.3 | 15.8 | 40.3 | 151.9 | 23.2 | 5.5 | 14.4 | 1.7 | 9.2 | 1.9 | 5.5 | 0.8 | 5 | 0.8 | 60.8 | **459** |
| EMD-017 | 16 | 17.5 | 6.1 | 82.8 | 28.5 | 24.6 | 92 | 14.4 | 3.6 | 8.9 | 1.1 | 5.7 | 1.2 | 3.6 | 0.5 | 3.4 | 0.5 | 37.8 | **309** |
| EMD-017 | 17.5 | 19 | 0.06 | 52.1 | 15.9 | 16 | 63.1 | 10 | 2.4 | 6.3 | 0.8 | 3.9 | 0.8 | 2.4 | 0.3 | 2.3 | 0.3 | 26.8 | **203** |
| EMD-019 | 0 | 2 | 0.06 | 3.6 | 5.7 | 0.7 | 1.4 | 0.3 | 0.2 | 0.3 | 0 | 0.2 | 0.1 | 0.2 | 0 | 0.2 | 0 | 2.4 | 15 |
| EMD-019 | 2 | 4 | 0.06 | 1.6 | 3 | 0.3 | 1.4 | 0.2 | 0.1 | 0.2 | 0 | 0.2 | 0 | 0.1 | 0 | 0.2 | 0 | 1.9 | 9 |
| EMD-019 | 4 | 6 | 0.06 | 0.6 | 0.7 | 0.1 | 1.4 | 0.1 | 0.1 | 0.2 | 0 | 0.2 | 0 | 0.1 | 0 | 0.2 | 0 | 1.8 | 6 |
| EMD-019 | 6 | 8 | 0.06 | 0.6 | 1.1 | 0.1 | 1.4 | 0.1 | 0.1 | 0.2 | 0 | 0.2 | 0 | 0.1 | 0 | 0.2 | 0 | 1.6 | 6 |
| EMD-022 | 0 | 2 | 0.06 | 0.6 | 0.6 | 0 | 1.4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.2 | 0 | 0.1 | 3 |
| EMD-022 | 2 | 4 | 0.06 | 0.6 | 0.1 | 0 | 1.4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.2 | 0 | 0.1 | 2 |
| EMD-022 | 4 | 6 | 0.06 | 0.6 | 0.1 | 0 | 1.4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.2 | 0 | 0.1 | 2 |
| EMD-022 | 6 | 8 | 0.06 | 0.6 | 0.6 | 0 | 1.4 | 0.1 | 0.1 | 0.1 | 0 | 0.1 | 0 | 0.1 | 0 | 0.2 | 0 | 0.9 | 4 |
| EMD-022 | 13 | 15 | 0.06 | 0.6 | 0.1 | 0 | 1.4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.2 | 0 | 0.1 | 2 |
| EMD-022 | 15 | 17 | 0.06 | 0.6 | 0.1 | 0 | 1.4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.2 | 0 | 0.1 | 2 |

| HOLEID | FROM | TO | Ag ppm | La2O3 ppm | CeO2 ppm | Pr6O11 ppm | Nd2O3 ppm | Sm2O3 ppm | Eu2O3 ppm | Gd2O3 ppm | Tb4O7 ppm | Dy2O3 ppm | Ho2O3 ppm | Er2O3 ppm | Tm2O3 ppm | Yb2O3 ppm | Lu2O3 ppm | Y2O3 ppm | TREO ppm |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| EMD-022 | 17 | 19 | 0.06 | 0.6 | 0.1 | 0 | 1.4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.2 | 0 | 0.1 | 2 |
| EMD-025 | 0 | 2 | 0.06 | 0.6 | 0.8 | 0 | 1.4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.2 | 0 | 0.1 | 3 |
| EMD-025 | 2 | 4 | 0.06 | 1.2 | 38.5 | 0.3 | 1.4 | 0.1 | 0.1 | 0.1 | 0 | 0.1 | 0 | 0.1 | 0 | 0.2 | 0 | 0.5 | 43 |
| EMD-025 | 4 | 6 | 0.06 | 0.6 | 4 | 0.1 | 1.4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.2 | 0 | 0.1 | 6 |
| EMRC-002 | 0 | 2 | 0.06 | 0.6 | 0.3 | 0.1 | 1.4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.2 | 0 | 0.1 | 3 |
| EMRC-002 | 2 | 4 | 0.06 | 0.6 | 0.9 | 0.1 | 1.4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.2 | 0 | 0.1 | 3 |
| EMRC-002 | 4 | 6 | 0.06 | 0.6 | 1.7 | 0.2 | 1.4 | 0.1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.2 | 0 | 0.1 | 4 |
| EMRC-002 | 6 | 8 | 0.06 | 0.6 | 2.3 | 0.2 | 1.4 | 0.1 | 0 | 0.1 | 0 | 0 | 0 | 0 | 0 | 0.2 | 0 | 0.1 | 5 |
| EMRC-009 | 16 | 18 | 0.06 | 0.6 | 1 | 0 | 1.4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.2 | 0 | 0.1 | 3 |
| EMRC-009 | 18 | 20 | 0.06 | 0.6 | 2 | 0.1 | 1.4 | 0.1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.2 | 0 | 0.1 | 4 |
| EMRC-011 | 0 | 2 | 0.06 | 0.6 | 3 | 0 | 1.4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.2 | 0 | 0.1 | 5 |
| EMRC-011 | 2 | 4 | 0.06 | 0.6 | 6.4 | 0.1 | 1.4 | 0.1 | 0 | 0.1 | 0 | 0.1 | 0 | 0 | 0 | 0.2 | 0 | 0.3 | 9 |
| EMRC-011 | 4 | 6 | 0.06 | 0.6 | 6.8 | 0.2 | 1.4 | 0.2 | 0 | 0.1 | 0 | 0.1 | 0 | 0 | 0 | 0.2 | 0 | 0.4 | 10 |
| EMRC-011 | 6 | 8 | 0.06 | 0.6 | 7.4 | 0.4 | 1.4 | 0.4 | 0.1 | 0.3 | 0 | 0.2 | 0 | 0.1 | 0 | 0.2 | 0 | 0.7 | 12 |

**Appendix 4**

**The following Table and Sections are provided to ensure compliance with JORC Code (2012 Edition).**

**JORC (2012) Table 1 – Section 1: Sampling Techniques and Data for the DD drilling**

| Item | JORC code explanation | Comments |
|---|---|---|
| **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.<br>• Include reference to measures taken to ensure sample representativity and the appropriate calibration of any measurement tools or systems used.<br>• Aspects of the determination of mineralisation that are Material to the Public Report.<br>• 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. | • Exploration results are based on the diamond drilling completed during 2021 and RC drilling completed in 2017.<br>• The data presented is based on the sampling and logging of reverse circulation and diamond drilling by company staff.<br>• The RC drilling and sampling procedures followed industry best practice, utilising an on-site riffle splitter to ensure representativity.<br>• Sample lengths are 1m with 2m composite samples along the entire hole.<br>• The entire 1m sample was collected in a raffia bag and split down to 1kg. Almost all the samples were dry.<br>  ◦ The 2m composite was generated by mixing the 1kg sample from each 1m interval forming a 2kg sample which was subsequently riffle split with 50% sent to SGS for preparation and 50% stored.<br>  ◦ 2 certified blank samples, 6 certified reference material (standard) samples and 2 duplicate samples were inserted into the sample sequence, in each run of 100 samples.<br>• The coarse rejects (75% < 3mm) of the RC and DD stored at Catalão were shipped back to SGS in Vespasiano for the ammonium sulphate leach assay.<br>• The Certified reference material (standard) were replaced by Certified reference material (standard) for REE. |

| Item | JORC code explanation | Comments |
|---|---|---|
| **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 diamond drilling was conducted using an EDG S11 mobile rig supplied by Energold Ltd. Drilling diameter was all in NTW which is equivalent to NQ. Core was not oriented, and it was not directionally surveyed.<br>• The RC drilling was conducted using a Reverse Circulation (RC) percussion drill. Penetration rates were quite rapid down to the fresh rock, slowing thereafter. Average daily production was approximately 25m. |
| **Drill Sample Recovery** | • Method of recording and assessing core and chip sample recoveries and results assessed.<br>• Measures taken to maximise sample recovery and ensure representative nature of the samples.<br>• 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. | • Diamond recovery was logged by the on-site geologist by carefully comparing the length of core recovered with the length of the drilling run, as part of the routine core logging process<br>• Drilling was conducted slowly in the soil profile to maximize recovery and ensure sample representativity. The upper section of the hole was cased.<br>• No relationship was perceived between sample recovery and assay results.<br>• Sample recovery for the RC drilling was generally above 90% with almost all sample collected dry in fresh rock. |
| **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.<br>• Whether logging is qualitative or quantitative in nature. Core (or costean, channel, etc) photography.<br>• The total length and percentage of the relevant intersections logged. | • Detail geological logging of the DD drilling has been conducted by an experienced geologist to a high level of detail recording various qualitative parameters such as rock type, mineralogy, colour, texture and oxidation.<br>• The DD core was geologically logged using predefined lithological, mineralogical, and physical characteristics (colour, weathering, fracture density and type, etc). Logging was predominantly qualitative in nature. |

| Item | JORC code explanation | Comments |
|---|---|---|
| | | • 100% of the recovered intervals were geologically logged.<br>• All diamond core has been photographed, prior to cutting, wet and dry.<br>• Geological logging for the RC drilling has been completed by an experienced geologist to a high level of detail.<br>• Logging is qualitative in nature. |
| **Sub- Sampling Techniques and Sampling Procedures** | • If core, whether cut or sawn and whether quarter, half or all core taken.<br>• If non-core, whether riffled, tube sampled, rotary split, etc and whether sampled wet or dry.<br>• For all sample types, the nature, quality and appropriateness of the sample preparation technique.<br>• Quality control procedures adopted for all sub-sampling stages to maximise representativity of samples.<br>• 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.<br>• Whether sample sizes are appropriate to the grain size of the material being sampled. | • Diamond core was half core sampled, at all times sampling the same side of the core, with the exception of the ¼ core submitted for whole rock analysis.<br>• Sample preparation for the DD drilling was conducted at SGS Vespasiano (greater Belo Horizonte) comprising oven drying, crushing of entire sample to 75% < 3mm followed by rotary splitting and pulverisation of 250 to 300 grams at 95% minus 150#<br>• The <3mm rejects and the 250-300 grams pulverised sample were returned to BBX for storage and assay with a proprietary analytical technique.<br>• The RC samples were collected on a standard 1m interval.<br>• Raffia big bags were used to collect the entire sample from each 1m interval.<br>• A 1kg sample was split off for subsequent composition of 2m intervals, 1kg from each metre.<br>• The 2kg, 2m composite sample was split in two, with 1kg sent to the lab and 1kg stored on site.<br>• Almost all the samples were dry. |

<table>
<tr><th>Item</th><th>JORC code explanation</th><th>Comments</th></tr>
<tr>
<td>Quality of Assay Data and Laboratory Tests</td>
<td>
<ul>
<li>The nature, quality and appropriateness of the assaying and laboratory procedures used and whether the technique is considered partial or total.</li>
<li>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.</li>
<li>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</li>
</ul>
</td>
<td>
<ul>
<li>2 certified blank samples, 6 certified reference material (standard) samples and 2 duplicate samples were inserted by BBX into the sample sequence, in each run of 100 samples.</li>
<li>The 75% < 3mm rejects for the RC and DD stored at Catalão were returned to SGS Vespasiano to assay for REE and other elements.</li>
<li>The assay technique used for REE was a 2% Ammonium sulphate leach with ICPOES/MS reading (SGS code ICM655). This is a recognised industry standard analysis technique for ionic REE suite and associated elements amenable to be leached. Elements analysed at ppm levels:</li>
</ul>
<table>
<tr><td>Ag</td><td>Al</td><td>As</td><td>Au</td><td>B</td><td>Ba</td><td>Be</td><td>Bi</td></tr>
<tr><td>Ca</td><td>Cd</td><td>Ce</td><td>Co</td><td>Cr</td><td>Cs</td><td>Cu</td><td>Dy</td></tr>
<tr><td>Er</td><td>Eu</td><td>Fe</td><td>Ga</td><td>Gd</td><td>Ge</td><td>Hf</td><td>Hg</td></tr>
<tr><td>Ho</td><td>In</td><td>K</td><td>La</td><td>Li</td><td>Lu</td><td>Mg</td><td>Mn</td></tr>
<tr><td>Mo</td><td>Na</td><td>Nb</td><td>Ni</td><td>P</td><td>Pb</td><td>Pd</td><td>Pr</td></tr>
<tr><td>Pt</td><td>Rb</td><td>Re</td><td>S</td><td>Sb</td><td>Sc</td><td>Se</td><td>Si</td></tr>
<tr><td>Sm</td><td>Sn</td><td>Sr</td><td>Ta</td><td>Tb</td><td>Te</td><td>Th</td><td>Ti</td></tr>
<tr><td>Tm</td><td>U</td><td>V</td><td>W</td><td>Y</td><td>Yb</td><td>Zn</td><td>Zr</td></tr>
</table>
The sample, comprising dominantly clay minerals , was assayed without pulverization 50 grams are mixed with 80 ml of 2% ammonium sulphate 2% during 20 minutes.
The pulp is filtered and the reject washed with distilled water.
An aliquot of the solution is extracted and diluted 25 times with HNO3 2%. The solution is analysed by ICP-MS.
</td>
</tr>
</table>

| Item | JORC code explanation | Comments |
|---|---|---|
| | | The sample preparation and assay techniques used are industry standard and provide partial analysis; total analysis is achieved with the lithium metaborate fusion.<br>• The SGS laboratory used for the RRE assays is ISO 9001 and 14001 and 17025 accredited.<br>• Analytical Standards for REE<br>ITAK-705 was used as CRM material in the batches sent to SGS.<br>The assay results for the standards were consistent with the certified levels of accuracy and precision and no bias is evident.<br>• Blanks<br>The blanks used contain some REE, with critical elements Ce, Nd, Dy and Y present in small quantities.<br>• Duplicates<br>Duplicate samples were allocated separate sample numbers and submitted with the same analytical batch as the primary sample. Variability between duplicate results is considered acceptable and no sampling bias is evident.<br>• Laboratory inserted standards, blanks and duplicates were analysed as per industry standard practise. There is no evidence of bias from these results. |
| **Verification of Sampling and Assaying** | • The verification of significant intersections by either independent or alternative company personnel.<br>• The use of twinned holes. | • Apart from the routine QA/QC procedures by the company and the laboratory, there was no other independent or alternative verification of sampling and assaying procedures.<br>• Analytical results for REE were supplied digitally, directly from SGS laboratory facility in Vespasiano to the BBX´s Exploration Manager in Rio de Janeiro. |

| Item | JORC code explanation | Comments |
|---|---|---|
| | • Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols.<br>• Discuss any adjustment to assay data. | • No twinned holes were used.<br>• Geological data was logged into paper and transferred to Excel spreadsheets at end of the day and then transfer into the drill hole database. Microsoft Access is used for database storage and management and incorporates numerous data validation and data validation and integrity checks. All assay data is imported directly into the Microsoft Access database.<br>• No adjustments were made to the data.<br>• All REE assay data received from the laboratory in element form is unadjusted for data entry.<br>• Conversion of elements analysis (REE) to stoichiometric oxide (REO) was undertaken by spreadsheet using defined conversion factors. (Source:https://www.jcu.edu.au/advanced-analytical-centre/resources/element-to-stoichiometric-oxide-conversion-factors). |

| Element ppm | Conversion Factor | Oxide Form |
|---|---|---|
| Ce | 1.2284 | $CeO_2$ |
| Dy | 1.1477 | $Dy_2O_3$ |
| Er | 1.1435 | $Er_2O_3$ |
| Eu | 1.1579 | $Eu_2O_3$ |
| Gd | 1.1526 | $Gd_2O_3$ |
| Ho | 1.1455 | $Ho_2O_3$ |
| La | 1.1728 | $La_2O_3$ |
| Lu | 1.1371 | $Lu_2O_3$ |
| Nd | 1.1664 | $Nd_2O_3$ |
| Pr | 1.2082 | $Pr_6O_{11}$ |
| Sm | 1.1596 | $Sm_2O_3$ |

<table>
<tr><th>Item</th><th>JORC code explanation</th><th>Comments</th></tr>
<tr><td></td><td></td><td>
<table>
<tr><td>Tb</td><td>1.1762</td><td>Tb4O7</td></tr>
<tr><td>Tm</td><td>1.1421</td><td>Tm2O3</td></tr>
<tr><td>Y</td><td>1.2699</td><td>Y2O3</td></tr>
<tr><td>Yb</td><td>1.1387</td><td>Yb2O3</td></tr>
</table>
Rare earth oxide is the industry accepted form for reporting rare earths. The following calculations are used for compiling REO into their reporting and evaluation groups:
TREO (Total Rare Earth Oxide) = La2O3 + CeO2 + Pr6O11 + Nd2O3 + Sm2O3 + Eu2O3 + Gd2O3 + Tb4O7 + Dy2O3 + Ho2O3 + Er2O3 + Tm2O3 + Yb2O3 + Y2O3 + Lu2O3
LREO (Light Rare Earth Oxide) = La2O3 + CeO2 + Pr6O11 + Nd2O3
HREO (Heavy Rare Earth Oxide) = Sm2O3 + Eu2O3 + Gd2O3 + Tb4O7 + Dy2O3 + Ho2O3 + Er2O3 + Tm2O3 + Yb2O3 + Y2O3 + Lu2O3
CREO (Critical Rare Earth Oxide) = Nd2O3 + Eu2O3 + Tb4O7 + Dy2O3 + Y2O3
(From U.S. Department of Energy, Critical Material Strategy, December 2011)
MREO (Magnetic Rare Earth Oxide) = Nd2O3 + Pr6O11 + Tb4O7 + Dy2O3
NdPr = Nd2O3 + Pr6O11
In elemental from the classifications are:
TREE: La+Ce+Pr+Nd+Sm+Eu+Gd+Tb+Dy+Ho+Er+Tm+Tb+Lu+Y
HREE: Sm+Eu+Gd+Tb+Dy+Ho+Er+Tm+Tb+Lu+Y
CREE: Nd+Eu+Tb+Dy+Y
LREE: La+Ce+Pr+Nd
</td></tr>
</table>

| Item | JORC code explanation | Comments |
|---|---|---|
| **Location of Data Points** | • Accuracy and quality of surveys used to locate drill holes (collar and down-hole surveys), trenches, mine workings and other locations used in Mineral Resource estimation.<br>• Specification of the grid system used.<br>• Quality and adequacy of topographic control. | • The UTM WGS84 zone 21S grid datum is used for current reporting. The drill holes collar coordinates for the holes reported are currently controlled by hand-held GPS. |
| **Data Spacing and Distribution** | • Data spacing for reporting of Exploration Results.<br>• 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.<br>• Whether sample compositing has been applied. | • Drilling in this target is typically with holes 200m apart, over the mapped unit in targets a few kilometres apart.<br>• This announcement refers to assays of exploration RC and diamond holes for Rare Earth Elements.<br>• The DD samples are from intervals of 1.00m up to 4.00m, but nominal length of 2.00m; no compositing was applied.<br>• All RC samples are 2m composites from original 1m samples.<br>• This announcement refers to RC and DD hole assays and no representation of extensions, extrapolations or otherwise continuity of grade are made.<br>• All samples are 2m composites from original 1m samples. drill holes and no representation of extensions, extrapolations or otherwise continuity of grade are made. |
| **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.<br>• 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. | • The location and orientation of the RC and DD drilling in the Ema project is appropriate given the strike and morphology of the mapped felsic and gabbro units.<br>• Relevant REE mineralisation intersected is interpreted to be in a flat-lying weathered profile including cover soil, clay transition to saprolite and saprock.<br>• Below the saprock are fresh rhyolites, ignimbrites and mafic rocks. |

| Item | JORC code explanation | Comments |
|---|---|---|
| | | • All drill holes are vertical which is appropriate for horizontal mineralised zones in the regolith profile. |
| **Sample security** | • The measures taken to ensure sample security. | • The RC and DD pulps as received from SGS, in sealed plastic bags, were kept in a locked room until shipped to BBX´s laboratory facility in Catalão. The Company has no reason to believe that sample security poses a material risk to the integrity of the assay data. |
| **Audit or Reviews** | • The results of any audits or reviews of sampling techniques and data. | • The sampling techniques and data have been reviewed by the Competent Person and are found to be of industry standard. |

## JORC (2012) Table 1 - Section 2: Reporting of Exploration Results

| 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.<br>• 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 Ema lease is 100% owned by BBX with no issues in respect to native title interests, historical sites, wilderness or national park and environmental settings.<br>• The company is not aware of any impediment to obtain a licence to operate in the area. |
| **Exploration done by Other Parties** | • Acknowledgment and appraisal of exploration by other parties. | • No exploration by other parties has been conducted in the region. |
| **Geology** | • Deposit type, geological setting and style of mineralisation. | • The REE mineralisation is contained within the tropical lateritic weathering profile developed on top of rhyolites, ignimbrites and mafic rocks potentially derived from the underlying rocks as described for the Chinese iREE deposits.<br>• The REE mineralization is concentrated in the weathered profile where it has dissolved from the primary mineral form, such as monazite and xenotime, then adsorbed on to the neo-forming fine particles of aluminosilicates clays (e.g. kaolinite, illite, smectite).<br>• This adsorbed REE is the target for extraction and production of REO. |
| **Drill Hole Information** | • A summary of all information material to the understanding of the exploration results including a tabulation of the following information for all Material drill holes:<br>  • easting and northing of the drill hole collar | • Drillhole locations and diagrams are presented in this announcement.<br>• All drill-holes are vertical. The cores were not oriented and did not have a down-hole survey. |

| Criteria | JORC code explanation | Commentary |
|---|---|---|
| | • elevation or RL (Reduced Level – elevation above sea level in metres) of the drill hole collar<br>• dip and azimuth of the hole<br>• down hole length and interception depth<br>• hole length.<br>• If the exclusion of this information is justified on the basis that the information is not Material and this exclusion does not detract from the understanding of the report, the Competent Person should clearly explain why this is the case. | • Details are tabulated in the announcement. |
| **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.<br>• 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.<br>• The assumptions used for any reporting of metal equivalent values should be clearly stated. | • Aggregate intercepts were calculated for the REO (Rare Earth Oxides) based on a cut-off grade of 200ppm TREO (Total Rare Earth Oxides) minus Ce2O, with a maximum 2 meters for internal dilution., which was used as a cut-off grade in the analogous Makuutu project DFS.<br>• Significant intervals were tabulated downhole for reporting. All individual samples were included in length-weighted averaging over the entire tabulated range.<br>• No metal equivalent values have been reported. |
| **Relationship between mineralization widths and intercepted lengths** | • These relationships are particularly important in the reporting of Exploration Results.<br>• If the geometry of the mineralisation with respect to the drill hole angle is known, its nature should be reported. | • Relevant mineralisation of REE was intercepted as reported with thicknesses approximating true width due to the flat geometry. |

| Criteria | JORC code explanation | Commentary |
|---|---|---|
| | • 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'). | |
| **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 drill hole collar locations and appropriate sectional views. | • Drillhole locations and diagrams are presented in this announcement. |
| **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. | • Relevant REE mineralisation is reported after a 2% ammonium sulphate leach, confirming the presence of IAC (Ionic Adsorbed Clay) type mineralisation. |
| **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. | • No other significant exploration data has been acquired by the Company. |
| **Further Work** | • The nature and scale of planned further work (eg tests for lateral extensions or depth extensions or large-scale step-out drilling).<br>• Diagrams clearly highlighting the areas of possible extensions, including the main geological interpretations and | • Follow up the holes which reported significant REE elements with auger drilling.<br>• Conduct metallurgical test work at CETEM to optimise recoveries and define the process to leach the REE from the portion of the |

| Criteria | JORC code explanation | Commentary |
| --- | --- | --- |
| | future drilling areas, provided this information is not commercially sensitive. | mineralisation which did not respond to the 2% ammonium sulphate assay.<br>• Define by mapping and detailed topography (with a Drone) zones with preserved regolith profile amenable to auger drill testing for enriched iREE zones. |