ASX Announcement
21 August 2023

ALVO
ASX: ALV

Bluebush Maiden Drilling Delivers Outstanding Magnet & Heavy REE Assays

HIGHLIGHTS

- **Alvo Minerals is pleased to report first assays from its maiden auger drill program from the Boa Vista prospect at the Bluebush Rare Earth Element (REE) Project, full assays results for 11 drill holes and partial results from 8 holes out of 197 holes drilled to date.**
  - 3 assay batches currently in the lab expected to be deliver consistent newsflow over the coming months, with more samples to be dispatched this week.
- **Exceptional magnet rare earth (MREO) and heavy rare earth (HREO) ratios, averaging 26% MREO (peak 35%) and 26% HREO (peak 76%) in line with the neighbouring Serra Verde deposit, highlights include:**
  - **8m @ 1,032ppm TREO (29% MREO) (16% HREO)** BLG0009 from 2m to **End of Hole (EOH)**
  - **5m @ 983ppm TREO (28% MREO) (22% HREO)** BLG0012 from 1m to **EOH**
    - Inc. **2m @ 1,296ppm TREO (35% MREO) (28% HREO)** BLG0012 from 4m
  - **11m @ 817ppm TREO (28% MREO) (39% HREO)** BLG0014 from 0m to **EOH**
    - Inc **4m @ 1,080ppm TREO (27% MREO) (31% HREO)** BLG0014 from 7m
  - **16m @ 760ppm TREO (25% MREO) (18% HREO)** BLG0028 from 0m to **EOH**
  - **6m @ 758ppm TREO (31% MREO) (76% HREO)** BLG0034 from 4m
  - **13m @ 859ppm TREO (24% MREO) (21% HREO)** BLG0038 from 1m to **EOH**
    - Inc **4m @ 1,111ppm TREO (27% MREO) (19% HREO)** BLG0038 from 5m
  - **14m @ 855ppm TREO (26% MREO) (26% HREO)** BLG0040 from 2m to **EOH**
    - Inc **3m @ 1,055ppm TREO (25% MREO) (26% HREO)** BLG0040 from 9m
- **Mineralisation at Boa Vista has now been defined over 2km, with the majority of drill holes ending in mineralisation indicating significant scale potential**
  - Only one hole did not record an intercept above cut-off illustrating the widespread mineralisation
- **Boa Vista is only one (1) of seven (7) high priority prospects defined at Bluebush to date – the current program is also testing the Ferradura and Fazendinha prospects.**
- **Bluebush is located adjacent to and in the same geological setting as the Serra Verde Ionic Clay REE Project, the only Ionic Clay project currently being commissioned outside of China.**

Alvo Minerals Limited (ASX: ALV) ("**Alvo**" or **the** "**Company**") is pleased to announce the first batch of auger drill assays from the highly prospective Bluebush REE Project ("**Bluebush**" or the "**Project**"), located on the northern half of the Serra Dourada granite, host of the Serra Verde Ionic Clay REE deposit ("**Serra Verde**").

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PROJECTS
Palma VMS Cu/Zn Project
Bluebush REE Project

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Rob Smakman, Alvo's Managing Director commented on the Bluebush Project:

"We are really pleased with the results from the first few holes drilled into Bluebush, finding that most of the holes are mineralised in the saprolite and many of the holes are mineralised to the base of the holes. With multiple batches of holes in the lab and the drilling ongoing, shareholders can expect constant updates on results in the coming months.

"Brazil really is emerging as the most important ex-China location for Ionic-Clay hosted Rare Earth projects, especially the Heavy REEs, and the early results indicate that Bluebush will be an important project in this space. Bluebush is shaping as having a high proportion of the more valuable magnetic and heavy REE's.

"Our due-diligence is off to a very positive start, and having now purchased the Loupe geophysical system, we are applying world-leading exploration in an emerging sector. We have the right project, at the right time, with the right tools to effectively explore and rapidly advance this exciting tenure."

Figure 1 Alvo's auger rig drilling at Bluebush REE Project (Boa Vista Prospect).
Note the piles of samples representing saprolite intercepted in the hole (each pile represents one or two metres of advance).

Bluebush REE Project

Alvo recently signed a binding option agreement with Mata Azul SA (**Mata Azul** or **Project vendors**) to acquire 100% of the Bluebush REE Project. Alvo has six months to complete due diligence on the Project to its satisfaction, after which it can purchase the Project. Bluebush neighbours Alvo's Palma VMS Project (see Figure 2) making due diligence and exploration a relatively simple exercise. The Project is considered highly prospective for Rare Earth Elements (**REEs**) hosted in surficial saprolites, potentially of the highly-valued ionic adsorption clay (**IAC**) classification.

Ionic clay hosted REE deposits are highly favoured due to the relatively simple processing required to create a REE oxide concentrate and for the high levels of Heavy[1] (**HREO**) and Magnet[2] (**MREO**) rare earth element oxides.

Bluebush is along strike from, and on the same biotite-rich granitic intrusion called Serra Dourada, host of the Serra Verde ionic clay REE Project, the only ionic clay REE project currently in the commissioning phase in the world outside of China. Serra Verde is expecting to commence production in late CY2023[3].

Serra Verde has an estimated Mineral Resource[4] of 911Mt @ 1,200ppm TREO and a Mineral reserve of 350Mt @ 1,500ppm TREO. With an elevated percentage of the higher value heavy and magnet REEs, Serra Verde is projecting a mine life of over 20 years.

The Serra Verde deposit is hosted in the weathered saprolite profile of the Serra Dourada biotite granite, the same granite which is mapped on the Bluebush areas. Historical work by the Bluebush Project vendors has been ongoing intermittently since they acquired Bluebush in 2004 and has confirmed the presence of mineralised REEs within the saprolite (Serra Verde was discovered in ~2010). **It is worthwhile noting a similar percentage of the valuable MREOs and HREOs that have been sampled to date at Bluebush which appear similar to the high percentages at Serra Verde.**

Alvo intends to utilise the due diligence period to not only verify the historical results by auger drilling, but will apply systematic exploration across the tenure to better understand the potential of the project. No specific tests for ionic clay hosted mineralisation within the Bluebush have been conducted thus far, and these tests will also be undertaken as part of Alvo's due diligence process.

Bluebush Auger Results

Initial assay results reported include holes drilled on broad spacing from the Boa Vista Prospect, the first area tested by Alvo at Bluebush (see Table 1 & 2 and Figures 2-5). Complete assays results are for only 11 drill holes, with a further 8 holes reporting partial results. To date, 197 holes drilled have been drilled by Alvo across multiple prospects with results pending from Boa Vista, Ferradura and Fazendiha Prospects (amongst others).

Assay results indicate the REE mineralisation is widespread, with all but one of the first 18 holes reported today intercepting broad results above the 500ppm TREO cut-off grade. Drillhole highlights include:

- **8m @ 1,032ppm TREO (29% MREO) (16% HREO)** BLG0009 from 2m to **End of Hole (EOH)**
- **5m @ 983ppm TREO (28% MREO) (22% HREO)** BLG0012 from 1m to **EOH**
  - Inc. **2m @ 1,296ppm TREO (35% MREO) (28% HREO)** BLG0012 from 4m
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  - Inc **4m @ 1,080ppm TREO (27% MREO) (31% HREO)** BLG0014 from 7m
- **16m @ 760ppm TREO (25% MREO) (18% HREO)** BLG0028 from 0m to **EOH**
- **9.7m @ 726ppm TREO (28% MREO) (21% HREO)** BLG0031 from 0m to **EOH**
- **6m @ 758ppm TREO (31% MREO) (76% HREO)** BLG0034 from 4m **and**
- **7.4m @ 769ppm TREO (27% MREO) (24% HREO)** BLG0034 from 14m

[1] **HREO Heavy rare earth oxides** are defined by their higher atomic weights relative to light rare earth oxides. HREOs include oxides of gadolinium (Gd), terbium (Tb), dysprosium (Dy), holmium (Ho), erbium (Er), thulium (Tm), ytterbium (Yb), lutetium (Lu) and include scandium (Sc) and yttrium (Y). Alvo's results do not include Sc. Uses include computer and phone displays, and fibre optic cables.

[2] **MREO Magnet rare earth oxides** can handle greater saturation magnetization than more common elements such as iron and allow for fabrication of stronger and smaller magnets. These can be used for climate economy products such as electric vehicles and wind turbines. MREOs include oxides of Nd, Pr, Dy, Tb and Eu and are some of the highest value REEs.

[3] For more information on the Serra Verde operation, please refer to the company website: https://serraverde.com/en/our-operation/

[4] For details of the Serra Verde Mineral Resource Estimate, please refer to Serra Verde presentation: https://www.cetem.gov.br/antigo/images/palestras/2015/iiisbtr/05-denilson-fonseca.pdf

- **13m @ 859ppm TREO (24% MREO) (21% HREO)** BLG0038 from 1m to **EOH**
  - Inc **4m @ 1,111ppm TREO (27% MREO) (19% HREO)** BLG0038 from 5m
- **14m @ 855ppm TREO (26% MREO) (26% HREO)** BLG0040 from 2m to **EOH**

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The MREO and HREO ratios are a significant highlight of the drill results to date, with an average of 24% and a maximum of 35% (MREO/TREO) and an average of 28% and an exceptional maximum of 76% (HREO/TREO) within the significant intercepts. The MREO and the HREO are a vital component of the global energy transition as they are utilised in rare earth magnets- making them, lighter, smaller and therefore more efficient. The mix of MREO and HREO is similar to the mix described in the public data available on the Serra Verde Project.

The drilling to date has covered selected samples from broad spaced drilling at Boa Vista where historical handheld auger drilling has defined anomalous drilling in the saprolite horizon. Alvo has drilled with mechanical auger and the overall depth has doubled the historical work in terms of depth of penetration, however it is yet to be confirmed the holes are hitting bedrock granite. Additional holes are being completed across the wider Bluebush Project and results will be released when they come to hand.

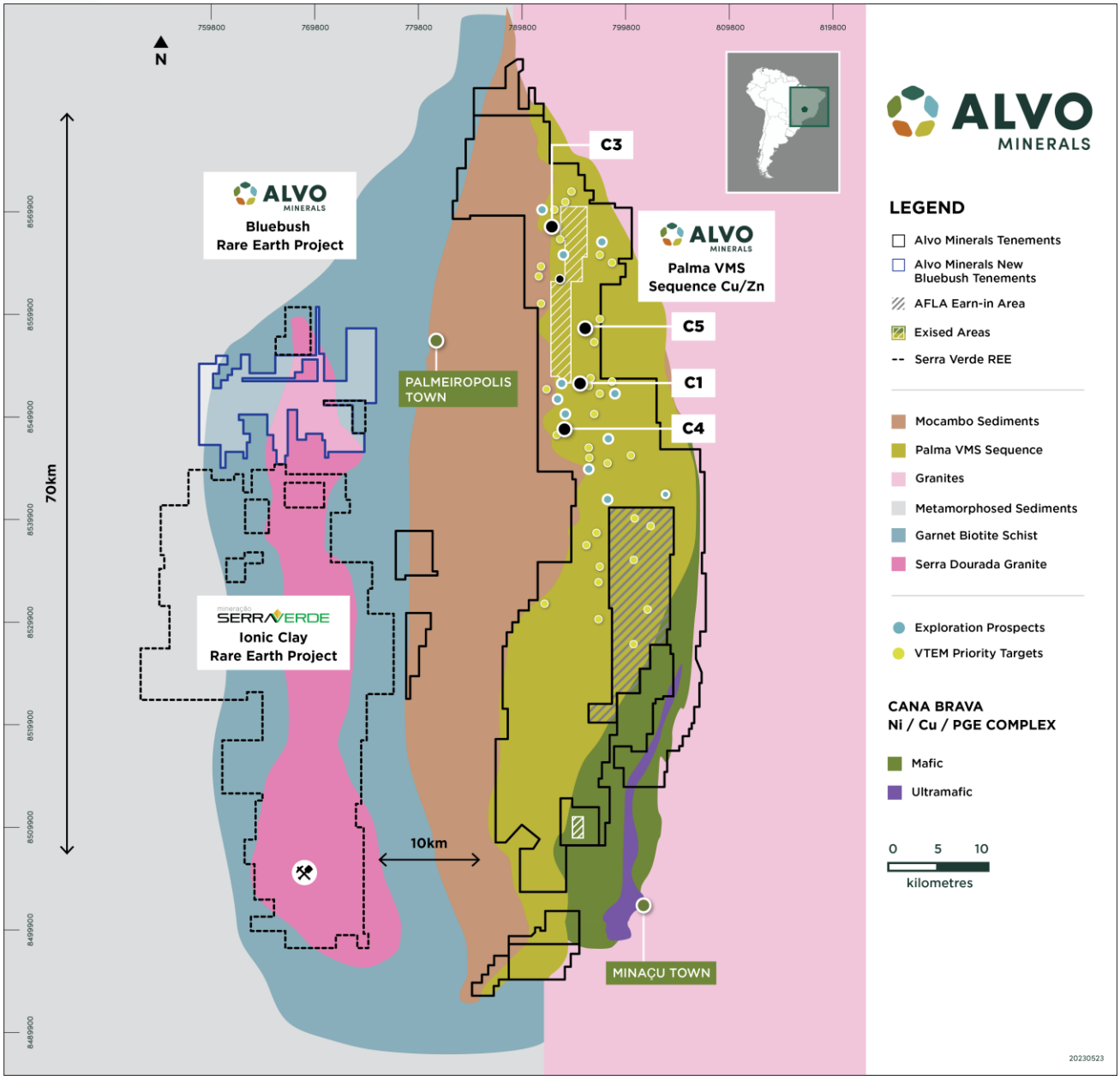

Figure 2: *Regional geology and tenement holdings for Alvo's Palma Project area and Bluebush REE Project area.*

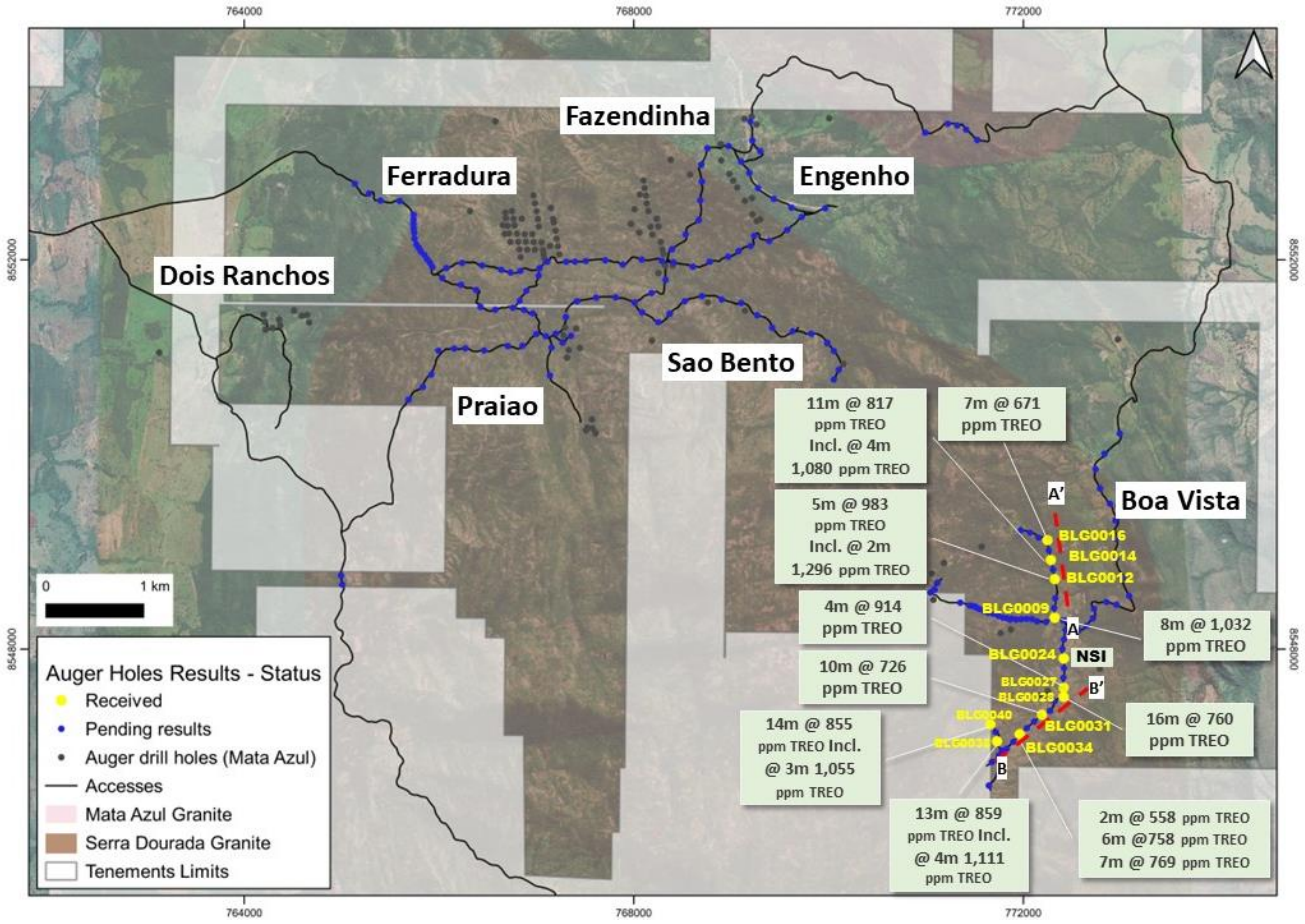

Figure 3: *Bluebush auger results and completed drilling.*

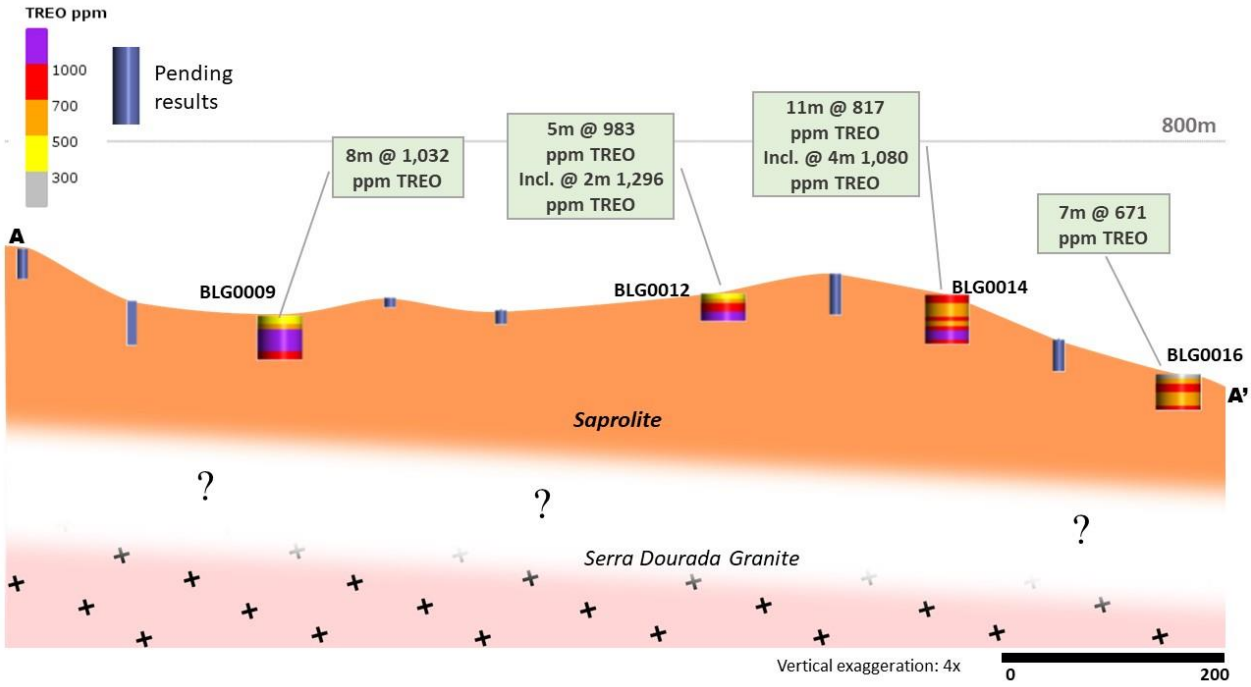

Figure 4: *Cross section through A-A' prospect at the Bluebush REE Project.*

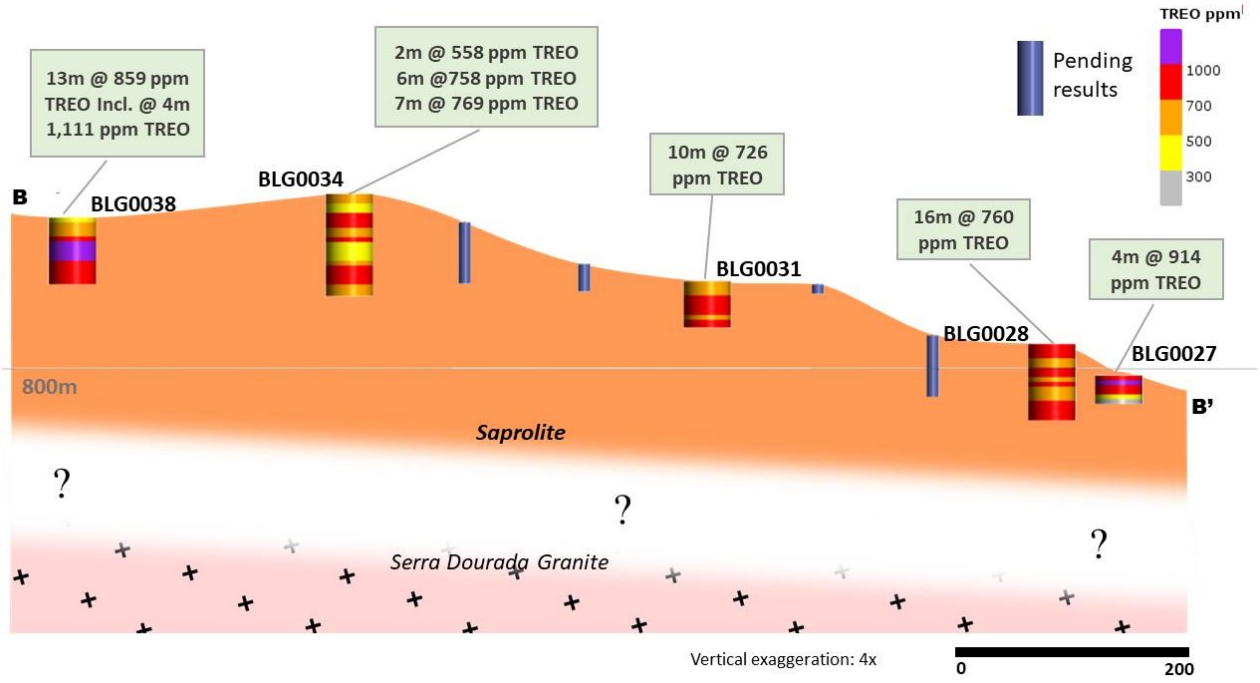

Figure 5: *Cross section through B-B' prospect at the Bluebush REE Project.*

Alvo's Bluebush Exploration Strategy and Future Work

Alvo is uniquely positioned to rapidly explore and advance the Bluebush due to its existing exploration infrastructure, personnel and the equipment the Company has on site in Palmeiropolis.

The Bluebush Project area will be prioritised within Alvo's wider Brazilian exploration schedule, cognisant of the 6-month (extendable by agreement) due diligence period.

As a part of the innovative approach to exploration, Alvo has recently purchased a Loupe Portable Electromagnetic survey system which specialises in mapping near surface conductivity (Loupe Geophysics – New Technology in Portable TEM for Near Surface Measurements). Alvo will import this equipment into Brazil and use it to map the near-surface conductivity. The strategy of this mapping is to map the thickness and extent of saprolite/clay horizons in order to prioritise the ongoing exploration. This is a unique exploration procedure to Brazil and perhaps the world, and Alvo believes this is the only equipment of its design in Brazil.

Alvo will continue to advance Bluebush within the due diligence period through activities including:

- Auger drilling using Alvo's truck-mounted auger drill rig that has completed 1,071 auger holes for 10,151m across all of Alvo's Projects since mid-January 2023 (197 holes for 1,572m at Bluebush). The auger rig has a capacity up to 30m depth which should be sufficient to test the depth extent of the saprolite in the various prospects. Work by the vendors included 233 auger holes at an average depth of 3.6m.
- Systematically sampling of the auger holes and transport the samples back to the field lab where they will be dried overnight, sieved, and analysed using Alvo's in house SciApps X-555 portable XRF analyzer. This analyzer has a higher voltage, providing higher sensitivity for strategic metals, including the REEs.
- Samples collected will also be sent to an independent lab in Brazil for analysis.
- Selected samples (once sufficient drill results have been received) will be sent to an independent lab for testing of the Ionic-clay adsorption characteristics, vital in the due diligence of the Project.

Alvo expects that the time required to complete the planned work in the due diligence programme is sufficient, however the due diligence period can be extended by an additional 3 months by mutual agreement.

Exploration work is also continuing at the Palma VMS Project, across multiple prospects with the aim of advancing prospects to drill-ready status. Field activities include diamond drilling at the C4 prospect, geological mapping, soil sampling, auger drilling, Induced Polarisation Surveys (**IP**) and Fixed Loop electromagnetic surveys (**FLEM**). These activities are being undertaken concurrently within the district on various prospects identified by the Company from historical work completed to date.

This announcement has been approved for release by the Board of Alvo Minerals Limited.

ENQUIRIES

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Forward Looking Statements

Statements regarding plans with respect to Alvo's Palma Project and its exploration program are forward-looking statements. Forward-looking statements are only predictions and are subject to risks, uncertainties and assumptions which are outside Alvo's control and actual values, results or events may be materially different to those expressed or implied herein. Alvo does not undertake any obligation, except where expressly required to do so by law, to update or revise any information or any forward-looking statement to reflect any changes in events, conditions, or circumstances on which any such forward-looking statement is based.

Competent Person's Statement

The information contained in this announcement that relates to recent exploration results is based upon information compiled by Mr Rob Smakman of Alvo Minerals Limited, a Competent Person and Fellow of the Australasian Institute of Mining and Metallurgy. Mr Smakman is a full-time employee of Alvo and has sufficient experience relevant to the style of mineralisation and type of deposit under consideration and to the activity which he is undertaking to qualify as a Competent Person as defined in the "Australasian Code for Reporting of Mineral Resources and Ore Reserves" (or JORC 2012). Mr Smakman consents to the inclusion in this announcement of the matters based upon the information in the form and context in which it appears.

In relation to the MRE and other exploration results or estimates cross-referenced herein, these are extracted from the Independent Geologists' Report prepared by Target Latin America and others (the "**IGR"**), which is included in full in Alvo's prospectus dated 30 July 2021 (the "**Prospectus**") and which was announced to ASX within the Prospectus on 18 October 2021. Alvo confirms that it is not aware of any new information or data that materially affects the information included in the IGR and that all the material assumptions and technical parameters underpinning the Inferred Mineral Resource Estimate continue to apply and have not materially changed.

ABOUT ALVO

Alvo Minerals (ASX: ALV) is a base and precious metals exploration company, hunting high-grade copper and zinc at its flagship Palma Project, located in Central Brazil. The Palma Project has a JORC 2012 Inferred Mineral Resource Estimate - 4.6Mt @ 1.0% Cu, 3.9% Zn, 0.4% Pb & 20g/t Ag.

Alvo is also exploring for Rare Earth Elements, with a binding agreement for the purchase of the highly prospective Bluebush REE Project in Central Brazil, adjacent to its existing exploration base. Bluebush is adjacent to and along strike from the Serra Verde Ionic Clay REE Project, which is the only Ionic Clay REE project currently in construction outside of China.

Alvo's strategic intent is to aggressively explore and deliver growth through discovery, leveraging managements' extensive track record in Brazil. There are three phases to the exploration strategy – *Discover, Expand and Upgrade.*

Alvo is committed to fostering best in class stakeholder relations and supporting the local communities in which it operates.

Table 1: Significant Intercepts of Auger drilling from Bluebush REE Project

AUGER HOLE ID	From	To	TREO ppm	MREO ppm	HREO ppm	Length (m)	TREO ppm	MREO ppm	HREO ppm	% MREO / TREO	% HREO / TREO	Comments
BLG0001	0.0	1.0	631	128	227	1.0	631	128	227	20%	36%	
BLG0001	2.0	4.0	Pending									End of Hole
BLG0002	1.0	2.0	520	96	130	1.0	520	96	130	18%	25%	
BLG0002	2.0	4.0	Pending									End of Hole
BLG0003	0.0	1.0	507	95	178							
BLG0003	1.0	2.0	669	86	142	3.0	621	113	174	18%	28%	
BLG0003	2.0	3.0	688	159	203							
BLG0003	3.0	5.0	Pending									End of Hole
BLG0004	1.0	2.0	567	82	131	1.0	567	82	131	15%	23%	
BLG0004	3.0	7.0	Pending									End of Hole
BLG0005	1.0	2.0	560	95	165							
BLG0005	2.0	3.0	506	56	79							
BLG0005	3.0	4.0	504	70	87	6.0	532	97	104	18%	19%	
BLG0005	4.0	5.0	468	92	94							
BLG0005	5.0	6.0	576	131	90							
BLG0005	6.0	7.0	581	140	106							
BLG0005	7.0	13.0	Pending									
BLG0005	13.0	13.7	1336	432	613	0.7	1336	432	613	32%	46%	End of Hole
BLG0006	0.0	1.0	624	160	265							
BLG0006	1.0	2.0	746	212	171							
BLG0006	2.0	3.0	776	236	158							
BLG0006	3.0	4.0	516	159	140	8.0	655	189	192	29%	29%	
BLG0006	4.0	5.0	623	167	159							
BLG0006	5.0	6.0	597	177	222							
BLG0006	6.0	7.0	762	228	212							
BLG0006	7.0	8.0	598	175	212							
BLG0006	8.0	12.0	Pending									End of Hole
BLG0007	1.0	2.0	767	156	146							
BLG0007	2.0	3.0	472	80	111							
BLG0007	3.0	4.0	885	230	215	5.0	742	167	166	23%	22%	
BLG0007	4.0	5.0	710	168	158							
BLG0007	5.0	6.0	874	202	198							
BLG0007	6.0	8.0	Pending									End of Hole
BLG0008	0.0	1.0	836	86	163							
BLG0008	1.0	2.0	1744	203	268	3.0	1,478	233	289	16%	20%	
BLG0008	2.0	3.0	1854	409	435							
BLG0008	3.0	6.0	Pending									End of Hole

AUGER HOLE ID	From	To	TREO ppm	MREO ppm	HREO ppm	Length (m)	TREO ppm	MREO ppm	HREO ppm	% MREO / TREO	% HREO / TREO	Comments
BLG0009	0.0	2.0	NSI									
BLG0009	2.0	3.0	654	176	85							
BLG0009	3.0	4.0	1032	320	154							
BLG0009	4.0	5.0	1178	360	160							
BLG0009	5.0	6.0	1292	397	187	8.0	1,032	296	165	29%	16%	
BLG0009	6.0	7.0	1392	358	202							
BLG0009	7.0	8.0	1130	323	193							
BLG0009	8.0	10.0	789	218	171							End of Hole
BLG0012	0.0	1.0	NSI									
BLG0012	1.0	2.0	582	127	92	5.0						
BLG0012	2.0	3.0	962	185	117		983	280	215	28%	22%	
BLG0012	3.0	4.0	778	191	148	Including						
BLG0012	4.0	5.0	1413	503	378	2.0	1,296	448	358	35%	28%	
BLG0012	5.0	6.0	1180	392	339							End of Hole
BLG0014	0.0	1.0	906	155	188							
BLG0014	1.0	2.0	773	173	265							
BLG0014	2.0	3.0	561	161	238							
BLG0014	3.0	4.0	570	198	342	11.0						
BLG0014	4.0	5.0	566	204	364		817	225	323	28%	39%	
BLG0014	5.0	6.0	704	244	539							
BLG0014	6.0	7.0	586	185	276							
BLG0014	7.0	8.0	914	256	392	Including						
BLG0014	8.0	9.0	1247	358	358							
BLG0014	9.0	10.0	1266	327	386	4.0	1,080	289	334	27%	31%	
BLG0014	10.0	11.0	894	216	201							End of Hole
BLG0016	0.0	1.0	NSI									
BLG0016	1.0	2.0	587	127	89							
BLG0016	2.0	3.0	911	204	97							
BLG0016	3.0	4.0	782	180	80							
BLG0016	4.0	5.0	518	133	122	6.8	671	199	140	30%	21%	
BLG0016	5.0	6.0	531	180	155							
BLG0016	6.0	7.0	545	214	176							
BLG0016	7.0	7.8	858	389	287							End of Hole
BLG0024	0.0	155.0	NSI									
BLG0027	0.0	1.0	961	247	201							
BLG0027	1.0	2.0	1003	224	156	4.0	914	222	167	24%	18%	
BLG0027	2.0	3.0	885	220	172							
BLG0027	3.0	4.0	807	198	139							

AUGER HOLE ID	From	To	TREO ppm	MREO ppm	HREO ppm	Length (m)	TREO ppm	MREO ppm	HREO ppm	% MREO / TREO	% HREO / TREO	Comments
BLG0027	4.0	6.0	NSI									End of Hole
BLG0028	0.0	1.0	773	182	169	16.0	760	187	138	25%	18%	
BLG0028	1.0	2.0	975	265	257							
BLG0028	2.0	3.0	973	254	246							
BLG0028	3.0	4.0	630	167	185							
BLG0028	4.0	5.0	639	162	142							
BLG0028	5.0	6.0	738	182	122							
BLG0028	6.0	7.0	702	170	99							
BLG0028	7.0	8.0	661	160	118							
BLG0028	8.0	9.0	754	182	121							
BLG0028	9.0	10.0	651	157	95							
BLG0028	10.0	11.0	635	151	97							
BLG0028	11.0	12.0	699	166	95							
BLG0028	12.0	13.0	733	175	109							
BLG0028	13.0	14.0	835	197	114							
BLG0028	14.0	15.0	990	232	134							
BLG0028	15.0	16.0	775	185	109							End of Hole
BLG0031	0.0	1.0	516	104	91	9.7	726	205	151	28%	21%	
BLG0031	1.0	2.0	558	113	96							
BLG0031	2.0	3.0	665	158	114							
BLG0031	3.0	4.0	891	257	128							
BLG0031	4.0	5.0	732	248	134							
BLG0031	5.0	6.0	907	297	220							
BLG0031	6.0	7.0	862	256	199							
BLG0031	7.0	8.0	683	196	158							
BLG0031	8.0	9.0	730	223	202							
BLG0031	9.0	9.7	707	195	180							End of Hole
BLG0034	0.0	1.0	547	116	179	2.0	558	123	162	22%	29%	
BLG0034	1.0	2.0	568	129	144							
BLG0034	2.0	4.0	NSI									
BLG0034	4.0	5.0	844	271	611	6.0	758	233	576	31%	76%	
BLG0034	5.0	6.0	924	289	638							
BLG0034	6.0	7.0	740	234	793							
BLG0034	7.0	8.0	629	232	617							
BLG0034	8.0	9.0	504	151	580							
BLG0034	9.0	10.0	909	220	218							
BLG0034	10.0	14.0	NSI									
BLG0034	14.0	15.0	598	150	201	7.4	769	206	185	27%	24%	

AUGER HOLE ID	From	To	TREO ppm	MREO ppm	HREO ppm	Length (m)	TREO ppm	MREO ppm	HREO ppm	% MREO / TREO	% HREO / TREO	Comments
BLG0034	15.0	16.0	**903**	**225**	**119**							
BLG0034	16.0	17.0	**868**	**214**	**187**							
BLG0034	17.0	18.0	**835**	**204**	**215**							
BLG0034	18.0	19.0	**872**	**215**	**226**							
BLG0034	19.0	20.0	**691**	**295**	**238**							
BLG0034	20.0	21.4	**661**	**156**	**130**							**End of Hole**
BLG0038	0.0	1.0	NSI									
BLG0038	1.0	2.0	**625**	**90**	**99**							
BLG0038	2.0	3.0	**662**	**70**	**99**	**13.0**	**859**	**203**	**178**	**24%**	**21%**	
BLG0038	3.0	4.0	**601**	**84**	**101**							
BLG0038	4.0	5.0	**879**	**195**	**196**	Including						
BLG0038	5.0	6.0	**1048**	**241**	**173**							
BLG0038	6.0	7.0	**1030**	**293**	**195**	**4.0**	**1,111**	**302**	**211**	**27%**	**19%**	
BLG0038	7.0	8.0	**1146**	**319**	**220**							
BLG0038	8.0	9.0	**1219**	**354**	**255**							
BLG0038	9.0	10.0	**874**	**232**	**202**							
BLG0038	10.0	11.0	**824**	**205**	**184**							
BLG0038	11.0	12.0	**747**	**184**	**180**							
BLG0038	12.0	13.0	**780**	**189**	**201**							
BLG0038	13.0	14.0	**735**	**186**	**214**							**End of Hole**
BLG0040	0.0	2.0	NSI									
BLG0040	2.0	3.0	**503**	**100**	**218**							
BLG0040	3.0	4.0	**531**	**131**	**152**							
BLG0040	4.0	5.0	**859**	**244**	**209**							
BLG0040	5.0	6.0	**1033**	**299**	**261**	**14.0**	**855**	**225**	**221**	**26%**	**26%**	
BLG0040	6.0	7.0	**1005**	**305**	**275**							
BLG0040	7.0	8.0	**882**	**270**	**274**							
BLG0040	8.0	9.0	**883**	**247**	**276**							
BLG0040	9.0	10.0	**1049**	**260**	**282**							
BLG0040	10.0	11.0	**1054**	**265**	**283**	**3.0**	**1,055**	**258**	**276**	**25%**	**26%**	
BLG0040	11.0	12.0	**1061**	**251**	**263**							
BLG0040	12.0	13.0	**824**	**209**	**213**							
BLG0040	13.0	14.0	**770**	**195**	**206**							
BLG0040	14.0	15.0	**689**	**171**	**185**							
BLG0040	15.0	16.0	**819**	**203**	**228**							**End of Hole**

Table 2: Collar file of Alvo Auger drilling

HOLE_ID	EASTING	NORTHING	RL	EOH	AZIMUTH	DIP	PROJECT	PROSPECT
BLG0001	771877	8548313	778	**4.10**	0	-90	BLUEBUSH	BOA VISTA
BLG0002	771047	8548584	811	**5.70**	0	-90	BLUEBUSH	BOA VISTA
BLG0003	771089	8548611	809	**6.70**	0	-90	BLUEBUSH	BOA VISTA
BLG0004	771117	8548681	802	**11.00**	0	-90	BLUEBUSH	BOA VISTA
BLG0005	771352	8548477	825	**13.70**	0	-90	BLUEBUSH	BOA VISTA
BLG0006	771450	8548448	818	**12.10**	0	-90	BLUEBUSH	BOA VISTA
BLG0007	771548	8548413	806	**9.00**	0	-90	BLUEBUSH	BOA VISTA
BLG0008	771640	8548373	801	**22.00**	0	-90	BLUEBUSH	BOA VISTA
BLG0009	772322	8548323	761	**10.00**	0	-90	BLUEBUSH	BOA VISTA
BLG0010	772316	8548421	765	**2.00**	0	-90	BLUEBUSH	BOA VISTA
BLG0011	772328	8548521	762	**3.00**	0	-90	BLUEBUSH	BOA VISTA
BLG0012	772322	8548719	766	**6.00**	0	-90	BLUEBUSH	BOA VISTA
BLG0013	772305	8548818	770	**9.00**	0	-90	BLUEBUSH	BOA VISTA
BLG0014	772282	8548916	766	**11.00**	0	-90	BLUEBUSH	BOA VISTA
BLG0015	772261	8549014	756	**7.00**	0	-90	BLUEBUSH	BOA VISTA
BLG0016	772248	8549120	748	**7.80**	0	-90	BLUEBUSH	BOA VISTA
BLG0024	772415	8547904	787	**15.50**	0	-90	BLUEBUSH	BOA VISTA
BLG0027	772414	8547604	799	**6.00**	0	-90	BLUEBUSH	BOA VISTA
BLG0028	772413	8547510	805	**16.00**	0	-90	BLUEBUSH	BOA VISTA
BLG0031	772190	8547325	818	**9.70**	0	-90	BLUEBUSH	BOA VISTA
BLG0034	771963	8547126	837	**21.40**	0	-90	BLUEBUSH	BOA VISTA
BLG0038	771729	8547053	832	**14.00**	0	-90	BLUEBUSH	BOA VISTA
BLG0040	771661	8547227	820	**16.00**	0	-90	BLUEBUSH	BOA VISTA

Appendix 1 JORC Tables

Section 1 Sampling Techniques and Data (Criteria in this section apply to all succeeding sections, note data in this section is extracted from historic reports)

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 Nickel that has inherent sampling problems. Unusual commodities or mineralisation types (eg submarine nodules) may warrant disclosure of detailed information.*	• Alvo auger drilling: Auger geochemical sampling was completed on 1 or 2 metres continuous samples. The samples are homogenised on a tarp and a representative sample of approximately 1kg is bagged and labelled. Sample information is collected in the field on a tablet. • The samples are dispatched to the independent external lab- SGS Geosol in Goiania. • Sampling was supervised by Alvo Minerals field technicians who described the material of each sample as soil, saprolite or weathered rock.
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).*	• Auger drilling was completed using a hydraulic auger drilling machine with a 4.5" auger bit and 2m helicoidal rods. The drilling is open hole, meaning there is a significant chance of contamination from the surface and other parts of the auger hole. Holes are vertical and not oriented.
Drill sample recovery	• *Method of recording and assessing core and chip sample recoveries and results assessed.* • *Measures taken to maximise sample recovery and ensure representative nature of the samples.* • *Whether a relationship exists between sample recovery and grade and whether sample bias may have occurred due to preferential loss/gain of fine/coarse material.*	• No recoveries are recorded. • The operator observes the volume of each metre and notes any discrepancy. • No relationship is believed to exist between recovery and grade.

Criteria	JORC Code explanation	Commentary
Logging	• *Whether core and chip samples have been geologically and geotechnically logged to a level of detail to support appropriate Mineral Resource estimation, mining studies and metallurgical studies.* • *Whether logging is qualitative or quantitative in nature. Core (or costean, channel, etc) photography.* • *The total length and percentage of the relevant intersections logged.*	• All holes were logged by Alvo Minerals geologists or field technicians, detailing the colour, weathering, alteration, texture and any geological observations. Care is taken to identify transported cover from in-situ saprolite/clay zones and the moisture content. • Qualitative logging only, no systematic photography • All auger drilling is logged onsite by Alvo field technicians. Logs include hole number, hole location, date drilled, collar location, dip and azimuth as well as qualitative data such as rock type, and descriptions of the colour, alteration, weathering, grain size, mineralisation and texture.
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 the sampling procedures were conducted by the Alvo Minerals geologists and technicians. • Auger sampling is completed on site. Samples are collected from a modified bucket around the mouth of the hole and then each sample is homogenised and quartered, with a sample bagged on site and sent to the independent lab (SGS Geosol). • Sampling is considered to be appropriate for the material being collected.
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.*	• The samples were dispatched to SGS in Goiania, where the physical preparation was done and analysed in the SGS Geosol laboratory in Vespasiano city – Minas Gerais state, Brazil. The SGS Geosol lab sample preparation includes drying, crushing with P75 of 3mm, homogenised, quartered and pulverized of 300g with P95 below 150#. The SGS Geosol analytical procedures include standard lithium metaborate fusion assays by IPC-MS, according to standard industry practices. In the SGS Geosol lab the sample were analysed using the methods ICP-MS (IMS95A). The elements analysed were Ce, Co, Cs, Cu, Dy, Er, Eu, Ga, Gd, Hf, Ho, La, Lu, Mo, Nb, Nd, Ni, Pr, Rb, Sm, Sn, Ta, Tb, Th, Tl, Tm, U, W, Y and Yb. • No samples duplicates. The Standards and Blanks showed acceptable values.

<table>
<tr><th>Criteria</th><th>JORC Code explanation</th><th>Commentary</th></tr>
<tr><td>Verification of sampling and assaying</td><td>

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.

</td><td>

Significant intercept tables are prepared by Alvo personal and checked by at least one other geologist.
No twinned holes are being reported
All data was received from Mata Azul in an Access database and checked against lab files (excel and PDF).
Adjustments to the data were made- transforming the elemental values into the oxide values. The conversion factors used are included in the table below. Only intervals of saprolite Weighted averages were used to calculate significant intercepts.

<table>
<tr><th>Element</th><th>Oxide</th><th>Factor</th></tr>
<tr><td>Sc</td><td>Sc2O3</td><td>1.5338</td></tr>
<tr><td>Ce</td><td>CeO2</td><td>1.1713</td></tr>
<tr><td>La</td><td>La2O3</td><td>1.1728</td></tr>
<tr><td>Sm</td><td>Sm2O3</td><td>1.1596</td></tr>
<tr><td>Nd</td><td>Nd2O3</td><td>1.1664</td></tr>
<tr><td>Pr</td><td>Pr6O11</td><td>1.2082</td></tr>
<tr><td>Dy</td><td>Dy2O3</td><td>1.1477</td></tr>
<tr><td>Eu</td><td>Eu2O3</td><td>1.1579</td></tr>
<tr><td>Y</td><td>Y2O3</td><td>1.2699</td></tr>
<tr><td>Tb</td><td>Tb4O7</td><td>1.1762</td></tr>
<tr><td>Gd</td><td>Gd2O3</td><td>1.1526</td></tr>
<tr><td>Ho</td><td>Ho2O3</td><td>1.1455</td></tr>
<tr><td>Er</td><td>Er2O3</td><td>1.1435</td></tr>
<tr><td>Tm</td><td>Tm2O3</td><td>1.1421</td></tr>
<tr><td>Yb</td><td>Yb2O3</td><td>1.1387</td></tr>
<tr><td>Lu</td><td>Lu2O3</td><td>1.1371</td></tr>
</table>
</td></tr>
<tr><td>Location of data points</td><td>

Accuracy and quality of surveys used to locate drill holes (collar and down-hole surveys), trenches, mine workings and other locations used in Mineral Resource estimation.
Specification of the grid system used.
Quality and adequacy of topographic control.

</td><td>

A GPS are used to locate and records the auger drill collars. No auger drill holes are downhole surveyed.
All location data has been recorded SAD69 (South America 1969 Datum) UTM zone 22S.
Topographic control is adequate for the stage of exploration at Bluebush.

</td></tr>
<tr><td>Data spacing and distribution</td><td>

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.

</td><td>

Auger drillholes are variably spaced with auger locations targeting alluvial and colluvial accumulations.
Trench, channel and pit spacing were variably spaced.
The results reported may be considered in a MRE.
No compositing has been applied to the results- apart from weighted averages

</td></tr>
<tr><td>Orientation of data in relation to geological structure</td><td>

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.

</td><td>

Drilling is shallow and considered as a first pass sampling - generally lines are oriented across the assumed geological terrain. No bias is believed to have occurred. Sampling lengths were generally 0.5-2m downhole, unless there was a specific geological control required by the technician.
No relationship between mineralisation and drilling orientation is known at this stage.

</td></tr>
</table>

Criteria	JORC Code explanation	Commentary
Sample security	• *The measures taken to ensure sample security.*	• The auger samples were collected and split in the field and the remaining material was discarded. The quarter was sent to the SGS Geosol, the pulps returned for storage in Palmeiropolis -TO.
Audits or reviews	• *The results of any audits or reviews of sampling techniques and data.*	• No audit to date.

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 prospects described in the report are all located in Brazil on tenements owned by Mineracao Mata Azul S/A, over which Perth Minerals (Alvo's 100% owned Brazilian Subsidiary) has signed a binding purchase option for up to 100% of the shares in Mata Azul S/A. • Alvo has reviewed the publicly available information on the government websites and is comfortable the tenements are in good standing. Additional work will be completed during the due diligence period to verify the veracity of the tenement status and ownership.
Exploration done by other parties	• *Acknowledgment and appraisal of exploration by other parties.*	• Exploration was mainly completed by Mata Azul S/A (Project vendors). The work was completed to a high standard for the time and included auger drilling, pitting, trenching and channel sampling. Much of the focus of the historical exploration was completed looking for alluvial and colluvial deposits of REE minerals. • Some work was completed by GE21, an independent exploration services company based in Brazil. This work included pitting and auger drilling, comparing against the earlier work of Mata Azul. The work overall appeared to replicate the older work and focussed more on the alluvial potential of the Project. • Airborne geophysics. There have been several combined aeromagnetic and radiometric surveys which cover the area, generally flown by Brazilian Government Agencies. These are generally broad spaced and useful for regional context. Maps of radiometrics and magnetics flown by a third party- believed to be Mining Ventures Brazil, covered the area, although the source information is not available.

Processo	Titular	Área	Fase do processo
864.251/2004	Mineração Mata Azul S A	1827,85	Autorização de Pesquisa
864.381/2011	Mineração Mata Azul S A	1456,99	Autorização de Pesquisa
864.170/2007	Mineração Mata Azul S A	1070,8	Autorização de Pesquisa
864.059/2012	Mineração Mata Azul S A	787,88	Autorização de Pesquisa
860.066/2009	Mineração Mata Azul S A	1796,62	Autorização de Pesquisa
860.067/2009	Mineração Mata Azul S A	1875,6	Autorização de Pesquisa
864.056/2010	Mineração Mata Azul S A	95,64	Autorização de Pesquisa
864.612/2008	Mineração Mata Azul S A	3122,48	Autorização de Pesquisa
TOTAL		12033,86	

Criteria	JORC Code explanation	Commentary
Geology	• *Deposit type, geological setting and style of mineralisation.*	• The REE occurrences at Bluebush are located on the Serra Dourada Granite (GSD), which is part of the Goiás Staniferous Province. The GSD is an oval and elongated batholith approximately 55km long in the N-S direction by 12km wide. In the intrusion, there have been various phases of post-magmatic alteration identified that generated albitites and greisens mineralized in Sn (Ta-Nb-W), pegmatites mineralized in Be and tourmaline. These granites are generally enriched in U, Th, Nb, F, Li, Ga, Zn and REE including Y with progressive enrichment of the HREE in relation to the LREE in the most metasomatized phases. • Alvo is targeting the saprolie horizon above the granite where enrichment and transformation into ionic adsorption clay REE's may have occurred. Alvo believes the Bluebush project may have the same properties as the Serra Verde Project located 40km to the south.
Drill hole Information	• *A summary of all information material to the understanding of the exploration results including a tabulation of the following information for all Material drill holes:* ○ *easting and northing of the drill hole collar* ○ *elevation or RL (Reduced Level – elevation above sea level in metres) of the drill hole collar* ○ *dip and azimuth of the hole* ○ *down hole length and interception depth* ○ *hole length.* • *If the exclusion of this information is justified on the basis that the information is not Material and this exclusion does not detract from the understanding of the report, the Competent Person should clearly explain why this is the case.*	• See Collar table in report.
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.*	• The significant intercepts were calculated using values > 500ppm TREO only in consecutive intervals of saprolite or soil samples originally sampled meter by meter. No upper cuts were considered. • Weighted averages were calculated for all intercepts.
Relationship between mineralisation widths and intercept lengths	• *These relationships are particularly important in the reporting of Exploration Results.* • *If the geometry of the mineralisation with respect to the drill hole angle is known, its nature should be reported.* • *If it is not known and only the down hole lengths are reported, there should be a clear statement to this effect (eg 'down hole length, true width not known').*	• Mineralisation orientation is not known at this stage, although assumed to be flat lying. • The downhole depths are reported, true widths are not known at this stage.

Criteria	JORC Code explanation	Commentary
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.*	• See diagrams reported in the 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.*	• All results are reported above the cut-offs described above.
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 data is considered relevant at this time.
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.*	• Alvo intends to sample the auger drilling and in areas of high prospectivity, samples will also be tested for their ionic clay potential. • Alvo has recently purchased a Loupe Geophysical mobile electromagnetic equipment, which should be able to map the depth of the saprolite to the granite (soon to be imported). • Alvo has in-house electromagnetic and Induced polarisation survey equipment and is performing FLEM, DHEM and IP surveys in the region. These techniques or others may be utilised during the due diligence period and beyond. • Alvo will geologically map and occasionally dig trenches/pits to better understand the under-surface geology and geochemistry.