

# **Diamond core TREO assay** boosts confidence; exceptional 38.9% MREO



# **Highlights**

- The assay results for diamond core from TT 005DD undertaken at the Tors Tank Prospect (refer Appendix A) - significantly boosts confidence in the shallow, clayhosted, rare-earth element (REE) discovery<sup>1</sup>, with the best intercept:
  - ❖ 13m @ 1,550ppm Total Rare Earth Oxides (TREO) from 5m
  - ❖ Notably, high value Magnetic REO (Nd+Pr+Dy+Tb) represented an exceptional 38.9% of the TREO grade vs 25% peer average<sup>2</sup>
- Re-assays of 4m composite samples at Tors Tank & Fence Gossan to 1m provided greater clarity on the underlying geology, whilst delivering further evidence of an extensive, shallow REE mineralisation system - the best intercepts comprise:
  - 17m @ 1,605ppm TREO from 2m and 1m @ 3,236 TREO from 19m (FG\_003RC)
  - ❖ 10m @ 1,013ppm TREO from 49m (FG\_001RC)
  - ❖ 6m @ 1,480ppm TREO from 7m (FG\_004RC)
  - ❖ 5m @ 1,598ppm TREO from 14m (TT\_002RC)
  - 4m @ 1,342ppm TREO from 28m (FG\_004RC)
  - **❖** 2m @ 3,491ppm TREO from 7m (TT 003RC)
- Assays for circa 70% of the recent hand auger surface sampling campaign across Fence Gossan delineated a sizeable 4.5km<sup>2</sup> anomalous area for REE mineralisation:
  - ❖ A preliminary interpretation suggests there are several more prime targets to test-drill that could potentially extend known mineralisation between the Fence **Gossan and Tors Tank Prospects**
- A fuller interpretation will be released once all the assay results for the auger sampling campaign and drill-holes RT\_002-004RC are received from the laboratory

Castillo Copper's MD Dr Dennis Jensen commented: "The Board is delighted with the latest results, especially the diamond core assay at Tors Tank and exceptional MREO value, as it increases confidence in the underlying REE system. In addition, the hand auger surface sampling campaign is proving to be a treasure trove of insights, with several new targets now on the radar. The Board looks forward to receiving the remaining assays and charting the next phase of the exploration campaign."

## ASSAYS BOOST REE CONFIDENCE AT BROKEN HILL

Castillo Copper Limited's ("CCZ") Board is delighted with the latest assays results for the Tors Tank and Fence Gossan Prospects, as collectively they materially increase confidence in the shallow, clay-hosted, REE discovery across the central part of the BHA Project's East Zone (Appendix A).

### Diamond core

Drill-hole TT 005DD, which produced diamond core from the Tors Tank Prospect (refer Figure 1), returned an excellent assay result, with the best intercept: 13m @ 1,550ppm TREO from 5m.

More significantly, the high value Magnetic REO, which comprises in-demand REEs (Nd+Pr+Dy+Tb), represented an exceptional 38.9% of the TREO grade which is well above the 25% average among the peer group<sup>2</sup>.

FIGURE 1: TORS TANK DIAMOND CORE FROM 5.3-11.8M (TT\_OO5DD)





Source: CCZ geology team

### Re-assays: Tors Tank & Fence Gossan

To gain greater insights of the underlying geology at Tors Tank and Fence Gossan, the 4m composite samples were re-assayed to 1m - with the best results highlighted in Figure 2, with up to 3,491ppm TREO recorded. Interpreting the re-assays provides clearer evidence there is an extensive, shallow REE mineralisation system across the centre of the BHA Project's East Zone (refer Appendix A).

FIGURE 2: BEST "RC" INTERCEPTS TORS TANK / FENCE GOSSAN

Hole	From (m)	To (m)	Width (m)	TREO (ppm)	MREO (%)
TT_001RC	25	27	2	1,048	27.1%
TT_002RC	14	19	5	1,598	29.1%
TT_003RC	4	11	7	890	34.6%
	12	13	1	1,103	28.4%
	15	17	2	3,491	24.6%
FG_001RC	8	20	12	907	31.0%
	49	59	10	1,013	24.7%
FG_002RC	11	16	5	1,065	28.9%
FG_003RC	2	19	17	1,605	28.6%
	19	20	1	3,236	28.9%
FG_004RC	7	13	6	1,480	28.9%
	28	32	4	1,342	22.9%

## Surface sampling: Fence Gossan

So far, for the Fence Gossan Prospect, around 70% of the hand auger surface sampling assays have been returned. Pleasingly, the assays delineate a sizeable (circa 4.5km²) anomalous REE zone – refer to Figure 3 below.

Surface readings indicate anomalous areas to the south, south-west and north-west of the four recent cobalt-focussed Fence Gossan drill-holes which suggest possible higher mineralisation in these zones than identified in the drill-holes (Figure 3).

Having reconciled these findings and performed a statistical analysis, the geology team believe surface sample readings with Ce > 100ppm is a likely indicator of higher grade REE mineralisation at depth. As such, these are interpreted to be prime targets for test-drilling that could extend known mineralisation between the Tors Tank and Fence Gossan Prospects.

573000 575000 577000 579000 FG\_004RC FG 002RC FG 003RC 6454000 Fence Gossan Cobalt Model Mas FG\_001RC 6452000 645200 Costean (6m x 1m x 0.6 573000 577000 579000

FIGURE 3: SURFACE MAPPED LITHOLOGY VS CERIUM CONTOURS (PPM)

Note: Coordinates in MGA94 – Z54; scale range cerium contours 20-230ppm.

Source: CCZ geology team / ALS Laboratory

The Board of Castillo Copper Limited authorised the release of this announcement to the ASX.

**Dr Dennis Jensen** 

**Managing Director** 

#### **Competent Person's Statement**

The information in this report that relates to Exploration Results and Mineral Resource Estimates for "BHA Project, East Zone" is based on information compiled or reviewed by Mr Mark Biggs. Mr Biggs is a director of ROM Resources, a company which is a shareholder of Castillo Copper Limited. ROM Resources provides ad hoc geological consultancy services to Castillo Copper Limited. Mr Biggs is a member of the Australian Institute of Mining and Metallurgy (member #107188) and has sufficient experience of relevance to the styles of mineralisation and types of deposits under consideration, and to the activities undertaken, 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, and Mineral Resources. Mr Biggs holds an AusIMM Online Course Certificate in 2012 JORC Code Reporting. Mr Biggs also consents to the inclusion in this report of the matters based on information in the form and context in which it appears.

The Australian Securities Exchange has not reviewed and does not accept responsibility for the accuracy or adequacy of this release.

#### References

- 1) CCZ ASX Release 23 November 2022
- Nelson, S. "Rare earths rush showed no signs of abating in Q4 2022" 6 February 2023. Available at: https://www.proactiveinvestors.com.au/companies/news/1005217/rare-earths-rush-showed-no-signs-of-abating-in-q4-2022-1005217.html

# **About Castillo Copper**

Castillo Copper Limited is an Australian-based explorer primarily focused on copper across Australia and Zambia. The group is embarking on a strategic transformation to morph into a mid-tier copper group underpinned by its core projects:

A large footprint in the in the Mt Isa copper-belt district, north-west Queensland, which delivers significant exploration upside through having several high-grade targets and a sizeable untested anomaly within its boundaries in a copper rich region.

Four high-quality prospective assets across Zambia's copper-belt which is the second largest copper producer in Africa.

A large tenure footprint proximal to Broken Hill's world-class deposit that is prospective for cobalt-zincsilver-lead-copper-gold and platinoids.

Cangai Copper Mine in northern New South Wales, which is one of Australia's highest grading historic copper mines.

The group is listed on the LSE and ASX under the ticker "CCZ."

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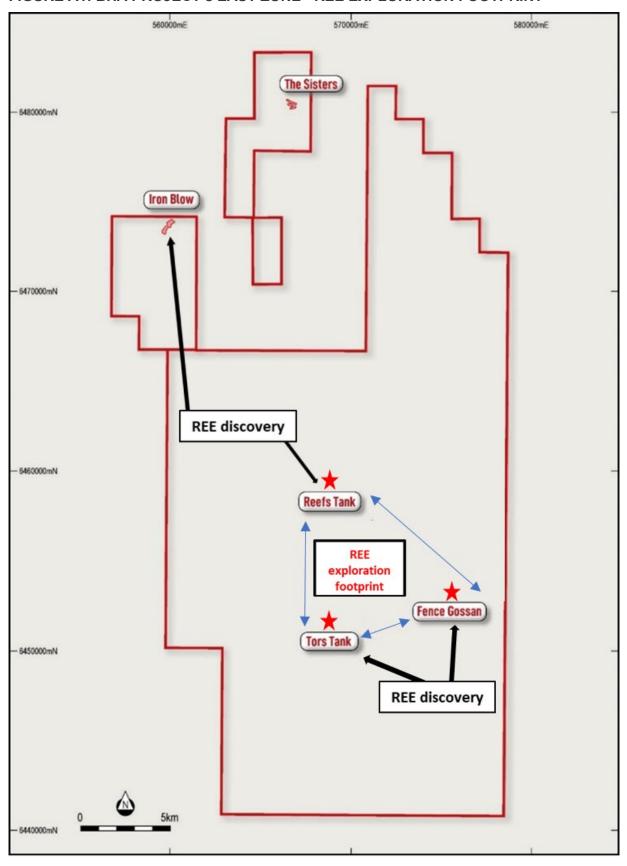
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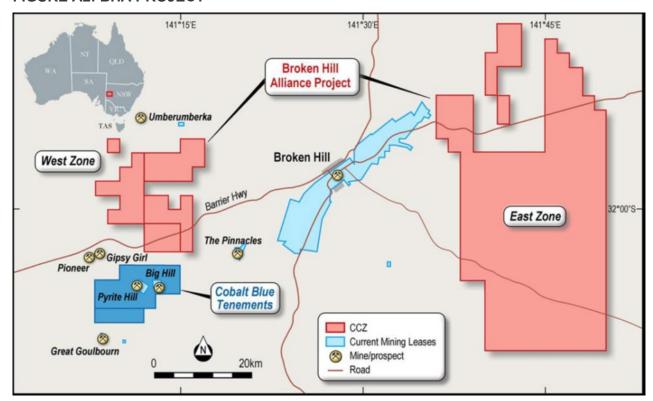


# APPENDIX A: BHA PROJECT'S EAST ZONE

FIGURE A1: BHA PROJECT'S EAST ZONE - REE EXPLORATION FOOTPRINT



## FIGURE A2: BHA PROJECT



## APPENDIX B: REE RESULTS / TREO CONVERSION FACTOR

FIGURE B1: TORS TANK / FENCE GOSSAN - 1M INTERSECTIONS >500PPM TREO

Hole	From (m)	To (m)	Apparent Width (m)	Ag (g/t)	Th (ppm)	U (ppm)	TREO (ppm)1	TREO-Ce (ppm)	LREO (ppm)	HREO (ppm)	CREO (%)	MREO (%)
FG_001RC	3	4	1	0.05	20.2	7.1	864	511.78	751.75	112.58	26.5%	30.1%
	8	20	12	0.07	7.7	13.0	907	539.26	788.62	118.24	26.3%	31.0%
	49	59	10	0.03	11.1	17.0	1,013	595.88	860.49	152.98	24.9%	24.7%
FG_002RC	3	5	2	0.11	8.2	10.7	637	363.49	554.22	83.20	24.5%	26.3%
	6	10	4	0.07	15.6	7.1	711	411.55	622.39	88.89	24.2%	27.2%
	11	16	5	0.02	8.8	17.6	1,065	643.95	910.78	154.51	26.7%	28.9%
FG_003RC	2	19	17	0.08	14.3	19.6	1,605	1011.78	1378.22	226.81	26.7%	28.6%
	19	20	1	0.11	1.8	47.6	3,236	2441.30	2079.08	1156.99	40.3%	28.9%
	59	60	1	0.04	8.7	25.1	808	546.46	632.71	175.40	31.3%	26.0%
FG_004RC	7	13	6	0.21	18.4	10.4	1,480	863.25	1299.89	179.81	25.2%	28.9%
	28	32	4	0.13	19.4	28.2	1,342	762.43	1185.14	156.78	21.9%	22.9%
	48	57	9	0.08	9.7	24.1	848	477.63	736.43	111.69	23.2%	24.3%
	61	63	2	0.07	17.3	7.8	782	432.64	689.41	92.71	22.0%	23.4%
TT_001RC	25	27	2	0.17	4.3	15.7	1,048	755.07	668.01	380.03	41.0%	27.1%
	39	40	1	0.05	19.2	1.7	752	396.02	705.28	46.97	20.1%	25.8%
	41	42	1	0.04	22.0	1.9	624	310.71	583.08	40.87	19.6%	24.7%
	43	44	1	0.04	9.0	3.8	747	437.58	677.48	69.66	23.7%	29.0%
	47	48	1	0.09	19.6	3.2	684	374.60	627.57	56.59	18.2%	20.3%
	49	51	2	0.07	32.5	3.6	676	379.43	595.53	80.57	22.5%	23.6%
TT_002RC	14	19	5	0.72	0.9	7.4	1,598	959.58	1235.37	363.60	31.5%	29.1%
TT_003RC	4	11	7	0.23	1.2	8.6	890	586.78	708.95	181.16	32.8%	34.6%
	12	13	1	0.08	1.8	14.0	1,103	676.16	805.70	297.95	34.6%	28.4%
	15	17	1	0.14	1.8	15.0	3,491	3072.18	1281.72	2209.34	59.3%	24.6%
TT_005DD	5	18	13	0.38	3.0	12.4	1,550	1150.56	1123.35	427.05	40.1%	38.9%
	67	68	1	0.12	6.8	8.2	722	443.76	599.73	122.88	30.5%	31.2%
TT_004RC	n/a	n/a										

#### Notes:

- 1. TT 001RC 39-52m composite also reports 6,388 ppm Ba (Barium); TT 003RC 1,140 ppm Ba.
- Two of the Lanthanum (La) assay from FG\_003R returned >500ppm were re-analysed (514 and 527ppm, respectively).
   Verification has been undertaken by ROM Resources personnel.
- 4. Sample results from ALS method ME-ICP81.

Source: ALS Adelaide

### **TREO** conversion factor

Conversion of elemental analysis (REE parts per million) to stoichiometric oxide (REO parts per million) was undertaken by ROM geological staff using the below (Figure B2) element to stoichiometric oxide conversion factors.

FIGURE B2: ELEMENT - CONVERSION FACTOR - OXIDE FORM

Rare Earth Element	Factor for Conversion	Rare Earth Oxide Common Form
Ce	1.2284	CeO <sub>2</sub>
Dy	1.1477	$Dy_2O_3$
Er	1.1435	Er <sub>2</sub> O <sub>3</sub>
Eu	1.1579	Eu <sub>2</sub> O <sub>3</sub>
Gd	1.1526	$Gd_2O_3$
Но	1.1455	Ho <sub>2</sub> O <sub>3</sub>
La	1.1728	La <sub>2</sub> O <sub>3</sub>
Lu	1.1371	$Lu_2O_3$
Nd	1.1664	$Nd_2O_3$
Pr	1.2083	Pr <sub>6</sub> O <sub>11</sub>
Sm	1.1596	$Sm_2O_3$
Tb	1.1762	Tb <sub>4</sub> O <sub>7</sub>
Tm	1.1421	$Tm_2O_3$
Υ	1.2699	Y <sub>2</sub> O <sub>3</sub>
Yb	1.1387	Yb <sub>2</sub> O <sub>3</sub>

Source: CCZ geology team

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) =  $La_2O_3 + CeO_2 + Pr_6O_{11} + Nd_2O_3 + Sm_2O_3 + Eu_2O_3 + Gd_2O_3 +$  $Tb_4O_7 + Dy_2O_3 + Ho_2O_3 + Er_2O_3 + Tm_2O_3 + Yb_2O_3 + Y_2O_3 + Lu_2O_3$ .
- TREO-Ce = TREO CeO<sub>2</sub>
- LREO (Light Rare Earth Oxide) = La<sub>2</sub>O<sub>3</sub> + CeO<sub>2</sub> + Pr<sub>6</sub>O<sub>11</sub> + Nd<sub>2</sub>O<sub>3</sub> + Sm<sub>2</sub>O<sub>3</sub>
- HREO (Heavy Rare Earth Oxide) =  $Eu_2O_3 + Gd_2O_3 + Tb_4O_7 + Dy_2O_3 + Ho_2O_3 + Er_2O_3 + Tm_2O_3$  $+ Yb_2O_3 + Y_2O_3 + Lu_2O_3$
- CREO (Critical Rare Earth Oxide) = Nd<sub>2</sub>O<sub>3</sub> + Eu<sub>2</sub>O<sub>3</sub> + Tb<sub>4</sub>O<sub>7</sub> + Dy<sub>2</sub>O<sub>3</sub> + Y<sub>2</sub>O<sub>3</sub>
- MREO (Magnetic Rare Earth Oxide) =  $Pr_6O_{11} + Nd_2O_3 + Sm_2O_3 + Gd_2O_3 + Tb_4O_7 + Dy_2O_3$ .

## **Total Rare Earth Oxides (TREO):**

To calculate TREO an oxide conversion "factor" is applied to each rare-earth element assay.

The "factor" equates an elemental assay to an oxide concentration for each element. Below is an example of the factor calculation for Lanthanum (La).

Relative Atomic Mass (La) = 138.9055

Relative Atomic Mass (O) = 15.9994

Oxide Formula =  $La_2O_3$ 

Oxide Conversion Factor =  $1/((2x \ 138.9055)/(2x \ 138.9055 + 3x \ 15.9994))$  Oxide Conversion Factor = 1.173 (3 decimal places)

## APPENDIX C: DRILLHOLE COORDINATES AFTER SURVEY

All drill-holes have now been surveyed, with coordinates showing only 0.5-4m errors in X and Y compared to the initial GPS readings (Figures C1-3). The total program consisted of 1,568m of RC and 137.7m of HQ diamond core.

FIGURE C1: TORS TANK SURVEYED DRILL COLLARS

HoleID	Easting (GDA94)	Northing (GDA94)	AHD (m)	TDepth (m)	Grid Azimuth	Dip Horizontal	Hole Type	Start	End
TT_001RC	571356	6451399	191.2	120	193.1	-63.1	RC	30-Sep-22	1-Oct-22
TT_002RC	571473	6451248	191.4	108	188.6	-63.0	RC	1-Oct-22	2-Oct-22
TT_003RC	571421	6451278	193.1	140	192.1	-62.5	RC	2-Oct-22	3-Oct-22
TT_004RC	571230	6451498	189.9	120	186.8	-66.1	RC	3-Oct-22	4-Oct-22
TT_005DD	571427	6451276	193.0	137.7	187.2	-60.8	DDH	11-Oct-22	17-Oct-22
				625.7					

Source: CCZ geology team

FIGURE C2: FENCE GOSSAN SURVEYED DRILL COLLARS

HoleID	Easting (GDA94)	Northing (GDA94)	AHD (m)	Tdepth (m)	Grid Azimuth	DipH	Hole Type	Start	End
FG_001RC	576347	6453786	171.2	126	191.8	-64.9	RC	4-Oct-22	7-Oct-22
FG_002RC	576547	6453751	169.1	110	195.2	-65.2	RC	7-Oct-22	8-Oct-22
FG_003RC	576696	6453833	167.7	160	193.7	-67.9	RC	8-Oct-22	9-Oct-22
FG_004RC	575998	6453831	173.7	120	188.2	-64.2	RC	9-Oct-22	10-Oct-22
				516					

Source: CCZ geology team

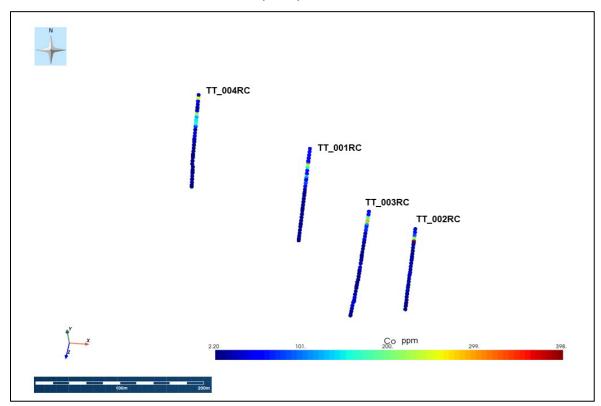
FIGURE C3: REEFS TANK SURVEYED DRILL COLLARS

HoleID	Easting	Northing	AHD (m)	TD	Azimuth	DipH	Type	Start	Finish
RT_001RC	574106.703	6456242.501	179.7	120	188.0	-62.1	RC	10/10/2022	11/10/2022
RT_002RC	574120.601	6455468.441	188.1	204	189.2	-65.3	RC	9/11/2022	10/11/2022
RT_003RC	573418.409	6455244.784	191.7	120	186.4	-63.7	RC	10/11/2022	14/11/2022
RT_004RC	573726.282	6454924.984	186.6	120	190.2	-61.5	RC	14/11/2022	15/11/2022
				564					

Source: CCZ geology team

Figures C4 and C5 show a cross-section of the extent of downhole distribution of cobalt and cerium at Tors Tank. Most of the major occurrences are at <50m depth.

FIGURE C4: TORS TANK - COBALT (PPM)

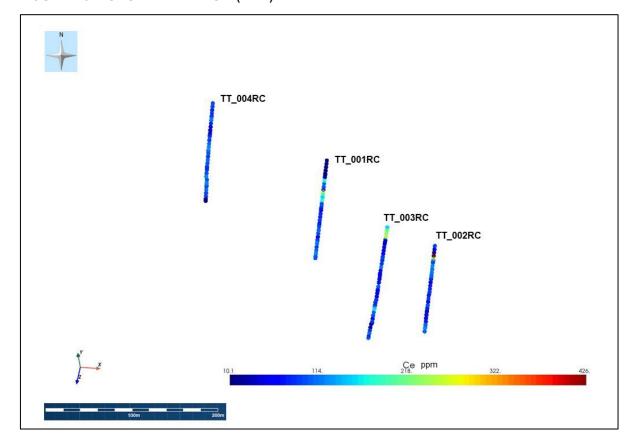


### Notes:

- 1. View looking north-west.
- 2. Vertical exaggeration 2:1

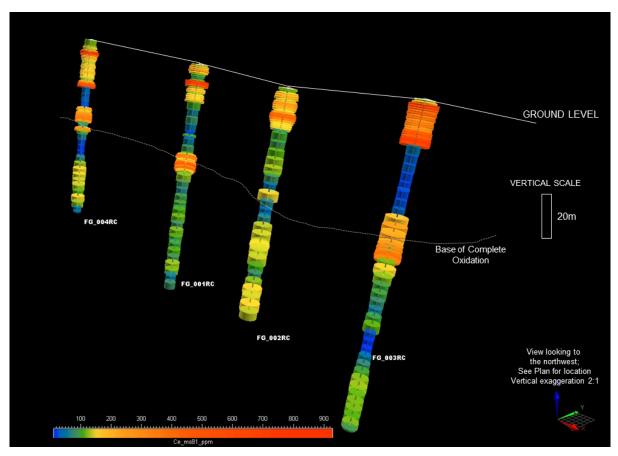
Source: CCZ geology team

FIGURE C5: TORS TANK CERIUM (PPM)



At Fence Gossan, a downhole cross-section shows the distribution of the rare earth element cerium (ppm), especially highlighting the anomalous zones near surface and a second zone at about 50m depth. The high REE zones appear in extremely weathered clays derived from mostly pegmatite.

FIGURE C6: FENCE GOSSAN CERIUM (PPM)



# **APPENDIX D: JORC CODE, 2012 EDITION – TABLE 1**

# **Section 1: Sampling Techniques and Data**

Criteria	JORC Code explanation	Commentary
Sampling techniques	Nature and quality of sampling (e.g., 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 (e.g., 'reverse circulation drilling was used to obtain 1 m samples from which 3 kg was pulverised to produce a 30g 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.	Diamond Drilling (DDH)  Diamond drilling of HQ diameter (TT_005DD) was completed to 137.7m recently in the completed program and was located 5m away from a RC hole already drilled (TT_003RC).  Reverse Circulation ('RC') Drilling  RC drilling at Fence Gossan was used to obtain a representative sample by means of riffle splitting with samples submitted for analysis using the above-mentioned methodologies.  Four (4) reverse circulation (RC) holes for a total of 516m have been completed at the Fence Gossan Prospect.  Four (4) RC holes were completed at Reefs Tank for a total of 564m.  At Tors Tank, four (4) RC holes for a total of 625.7m (including the cored hole) were completed.  The RC drilling technique was used to obtain a representative sample by means of a cone or riffle splitter with samples submitted for assay by mixed acid digestion and analysis via ICP-MS + ICP-AES with anticipated reporting a suite of 48 elements (sulphur >10% by LECO).
Drilling techniques	Drill type (e.g., core, reverse circulation, open-hole hammer, rotary air blast, auger, Bangka, sonic, etc.) and details (e.g. 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.).	Historical drilling consisted of auger, rotary air blast, reverse circulation, and NQ, BQ, and HQ diamond coring. One cored hole of HQ (61mm) diameter was completed at Tors Tank after all the RC holes had been completed.

		Diamond drilling will be completed with standard diameter, conventional HQ and NQ with historical holes typically utilizing RC and percussion pre-collars to an average 30 metres (see Drillhole Information for further details).
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.	Reverse Circulation ('RC') Drilling - Reverse circulation sample recoveries were visually estimated during drilling programs. Where the estimated sample recovery was below 100% this was recorded in field logs by means of qualitative observation.  Reverse circulation drilling employed sufficient air (using a compressor and booster) to maximise sample recovery.  Historical cored drillholes by North Broken Hill, CRA, and Pasminco were well documented and generally have >90% core recovery.  No relationship between sample recovery and grade has been observed.
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.	The drilling that did occur was completed to modern-day standards. The preferred exploration strategy in the eighties and early nineties was to drill shallow auger holes to negate the influence of any Quaternary and Tertiary sedimentary cover, and then return to sites where anomalous Cu or Zn were assayed. In this program at all three areas holes were completed to varying depths ranging from 100-160m.  No downhole geophysical logging took place; however, measurements of magnetic susceptibility were taken at the same 1m intervals as the PXRF readings were taken.
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	Core samples will be hand-split or sawn with re-logging of available historical core indicating a 70:30 (retained: assayed) split was typical. The variation of sample ratios noted are considered consistent with the sub-sampling technique (hand-splitting).  No second half samples will be submitted for analysis, but duplicates have been taken at a frequency of 1:20 in samples collected.  It is considered water planned to be used for core cutting is

maximise representivity of samples.

Measures taken to ensure that the sampling is representative of the insitu 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.

unprocessed and unlikely to have introduced sample contamination.

Procedures relating to the definition of the line of cutting or splitting are not available. It is expected that 'standard industry practice' for the period was applied to maximize sample representivity.

Quarter core will be submitted to ALS for chemical analysis using industry standard sample preparation and analytical techniques.

The sample interval details and grades quoted for cored intervals described in various maps in the main section are given in previous ASX releases (Castillo Copper 2022a, b, c, d, e, f).

### 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 (i.e. lack of bias) and precision have been established.

The following rare earth elements were analysed using ME-MS61R Sample Decomposition digestion, HCl leach (GEO-4A01). The Analytical Method for

#### Silver is shown below:

Element	Symbol	Units	Lower Limit	Upper Limit
Silver	Ag	ppm	0.01	100

Inductively Coupled Plasma - Atomic Emission Spectroscopy (ICP - AES) Inductively Spectrometry (ICP-MS)

A prepared sample (0.25 g) is digested with perchloric, nitric, hydrofluoric, and hydrochloric awith dilute hydrochloric acid and analysed by inductively coupled plasma atomic emission spanalysis, the results are reviewed for high concentrations of bismuth, mercury, molybdenum accordingly.

Samples meeting this criterion are then analysed by inductively coupled plasma-mass spect spectral interelement interferences.

Four acid digestions can dissolve most minerals: however, although the term "near total" is unatrix, not all elements are quantitatively extracted.

Results for the additional rare earth elements will represent the acid leachable portion of the cannot be used, for instance to do a chondrite plot.

## **Geochemical Procedure**

Element geochemical procedure reporting units and limits are listed below:

Element	Symbol	Units	Lower Limit	Upper Limit
Molybdenum	Мо	ppm	0.05	10 000
Sodium	Na	%	0.01	10
Niobium	Nb	ppm	0.1	500
Nickel	Ni	ppm	0.2	10 000
Phosphorous	Р	ppm	10	10 000
Lead	Pb	ppm	0.5	10 000
Rubidium	Rb	ppm	0.1	10 000
Rhenium	Re	ppm	0.002	50
Sulphur	S	%	0.01	10
Antimony	Sb	ppm	0.05	10 000
Scandium	Sc	ppm	0.1	10 000
Selenium	Se	ppm	1	1 000
Tin	Sn	ppm	0.2	500
Strontium	Sr	ppm	0.2	10 000
Tantalum	Та	ppm	0.05	100
Tellurium	Te	ppm	0.05	500
Thorium	Th	ppm	0.2	10 000
Titanium	Ti	%	0.005	10
Thallium	TI	ppm	0.02	10 000
Uranium	U	ppm	0.1	10 000
Vanadium	V	ppm	1	10 000
Tungsten	W	ppm	0.1	10 000

Element	Symbol	Units	Lower	Upper Limit
Yttrium	Y	ppm	0.1	500
Zinc	Zn		2	10 000
		ppm		
Zirconium	Zr	ppm	0.5	500
Dysprosium	Dy	ppm	0.05	1 000
Erbium	Er	ppm	0.03	1 000
Europium	Eu	ppm	0.03	1 000
Gadolinium	Gd	ppm	0.05	1 000
Holmium	Но	ppm	0.01	1 000
Lutetium	Lu	ppm	0.01	1 000
Neodymium	Nd	ppm	0.1	1 000
Praseodymiu	Pr	ppm	0.03	1 000
Samarium	Sm	ppm	0.03	1 000
Terbium	Tb	ppm	0.01	1 000
Thulium	Tm	ppm	0.01	1 000
Ytterbium	Yb	ppm	0.03	1 000

Element	Symbol	Units	Lower Limit	Upper Limit
Aluminum	Al	%	0.01	50
Arsenic	As	ppm	0.2	10 000
Barium	Ва	ppm	10	10 000
Beryllium	Ве	ppm	0.05	1 000
Bismuth	Bi	ppm	0.01	10 000
Calcium	Ca	%	0.01	50
Cadmium	Cd	ppm	0.02	1 000
Cerium	Се	ppm	0.01	500
Cobalt	Со	ppm	0.1	10 000
Chromium	Cr	ppm	1	10 000
Cesium	Cs	ppm	0.05	500
Copper	Cu	ppm	0.2	10 000
Iron	Fe	%	0.01	50
Gallium	Ga	ppm	0.05	10 000
Germanium	Ge	ppm	0.05	500
Hafnium	Hf	maa	0.1	500
Indium	In	ppm	0.005	500
Potassium	K	%	0.01	10
Lanthanum	La	ppm	0.5	10 000
Lithium	Li	ppm	0.2	10 000
Magnesium	Mg	%	0.01	50

		Mai	nganese	Mn	ppm	5	100 000
							were analysed per i m these results.
/erification of sampling and essaying	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.	• Co sto geo oxi (htt an-	onversion o bichiometric cological statide convers ttps://www.j -untapped-	f elemental c oxide (RE aff using the sion factors cu.edu.au/ resource)	lu.au/news/releases/2020/march/rare-earth-metal		
	Discuss any adjustment to assay data.		Ce Dy		1.1477		<b>CeO2</b> Dy2O3
			Er		1.1435		Er2O3
			Eu		1.1579		Eu2O3
			Gd		1.1526		Gd2O3
			Но		1.1455		Ho2O3
			La		1.1728		La2O3
			Lu		1.1371		Lu2O3
			Nd		1.1664		Nd2O3
			Pr		1.2083		Pr6O11
			Sm		1.1596		Sm2O3
			Tb		1.1762		Tb4O7

Tm

Υ

Yb

1.1421

1.2699

1.1387

Rare earth oxide is the industry accepted form for reporting rare earths.

Tm2O3

Y2O3

Yb2O3

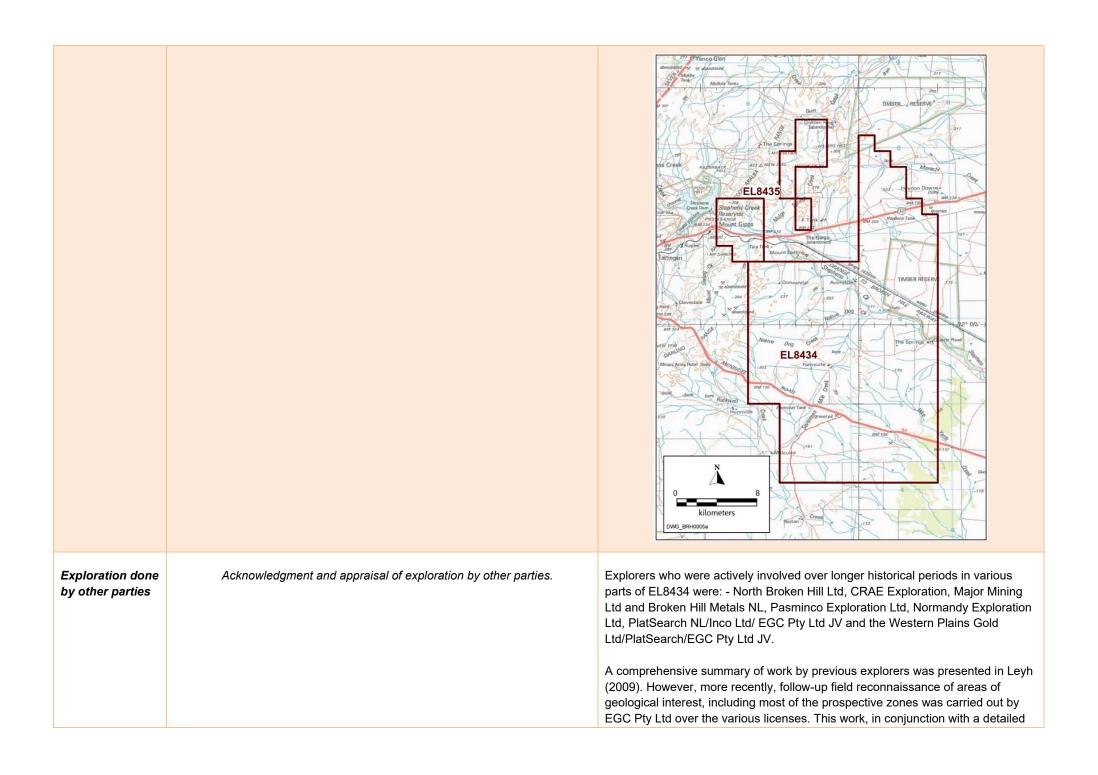
		The following calculations are used for compiling REO into their reporting and evaluation groups:  TREO (Total Rare Earth Oxide) = La2O3 + CeO2 + Pr6O11 + Nd2O3 + Sm2O3 + Eu2O3 + Gd2O3 + Tb4O7 + Dy2O3 + Ho2O3 + Er2O3 + Tm2O3 + Yb2O3 + Y2O3 + Lu2O3.  TREO-Ce = TREO - CeO2  LREO (Light Rare Earth Oxide) = La2O3 + CeO2 + Pr6O11 + Nd2O3 + Sm2O3  HREO (Heavy Rare Earth Oxide) = Eu2O3 + Gd2O3 + Tb4O7 + Dy2O3 + Ho2O3 + Er2O3 + Tm2O3 + Yb2O3 + Y2O3 + Lu2O3  CREO (Critical Rare Earth Oxide) = Nd2O3 + Eu2O3 + Tb4O7 + Dy2O3 + Y2O3  MREO (Magnetic Rare Earth Oxide) = Pr6O11 + Nd2O3 + Sm2O3 + Gd2O3 + Tb4O7 + Dy2O3.  Total Rare Earth Oxides (TREO):  To calculate TREO an oxide conversion "factor" is applied to each rareearth element assay. The "factor" equates an elemental assay to an oxide concentration for each element. Below is an example of the factor calculation for Lanthanum (La):  Relative Atomic Mass (La) = 138.9055  Relative Atomic Mass (O) = 15.9994  Oxide Formula = La2O3  Oxide Conversion Factor = 1/ ((2x 138.9055)/(2x 138.9055 + 3x 15.9994)) Oxide Conversion Factor = 1.173 (3dp)
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.  Specification of the grid system used.  Quality and adequacy of topographic control.	In general, locational accuracy does vary, depending upon whether the historical surface and drillhole samples were digitised off plans or had their coordinated tabulated. Many samples were originally reported to AGD66 or AMG84 and have been converted to MGA94 (Zone 54)  The holes are currently surveyed with handheld GPS, awaiting more accurate DGPS survey. It is thus estimated that locational accuracy therefore varies between 2-4m until the more accurate surveying is completed. This assessment was confirmed once the holes were surveyed by DGPS from GMC Surveying.  The quality of topographic control (GSNSW 1 sec DEM) is deemed adequate for the purposes of the exploration drilling program.
Data spacing and	Data spacing for reporting of Exploration Results.	The average sample spacing from the current drilling program across the tenure varies per prospect, and sample type, as listed in Table D1-2,

distribution	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.	below:  Table D1-2: EL 8434 Drillhole Spacing			
			RMS Drillhole Spacing (m)		
	Whether sample compositing has been applied.	The Sisters Not yet	, p		
	or a ser process of the service of t	Iron Blow Not Yet			
		Tors Tank 4	127		
		Fence 4 Gossan	208		
		Ziggy's Hill n/a	n/a		
		Reefs Tank 1			
data in relation to geological structure	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.	and RAB types (drilled along section lines) and angled at -55° or -60° the horizontal and drilled perpendicular to the mineralised trend for R and DDH (Figure D1-3 and D1-4).  Drilling orientations are adjusted along strike to accommodate folded geological sequences. All Fence Gossan holes were designed to dri toward grid south at an inclination of 60 degrees from horizontal.  The drilling orientation is not considered to have introduced a sampli bias on assessment of the current geological interpretation.  Geological mapping by various companies has reinforced that the stri			
		dips variously between 5 and 65 degrees.			
Sample security	The measures taken to ensure sample security.	Sample security procedures are considered current period.	·		
		Samples obtained during drilling completed 10/10/22 were transported by exploration e courier directly from Broken Hill to ALS Lab	mployees or an independe		
		·	oratory, Adelaide.		

		limited given the nature of the targeted mineralisation.
Audits or reviews	The results of any audits or reviews of sampling techniques and data.	No external audits or reviews have yet been undertaken.

## **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.  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.	EL 8434 is located about 28km east of Broken Hill whilst EL 8435 is 16km east of Broken Hill. Both tenures are approximately 900km northwest of Sydney in far western New South Wales (Figures D2-1 and D2-2 in Appendix A &B, above).  EL 8434 and EL 8435 were both granted on the 2nd of June 2016 to Squadron Resources for a term of five (5) years for Group One Minerals. On the 25th of May 2020, Squadron Resources changed its name to Wyloo Metals Pty Ltd (Wyloo). In December 2020 the tenure was transferred from Wyloo Metals to Broken Hill Alliance Pty Ltd a 100% subsidiary company of Castillo Copper Limited. Both tenures were renewed on the 12th of August 2021 for a further six (6) years and are due to expire on the 2nd of June 2027.  EL 8434 lies across two (2) 1:100,000 geology map sheets Redan 7233 and Taltingan 7234, and two (2) 1:250,000 geology map sheets, SI54-3 Menindee, and SH54-15 Broken Hill in the county of Yancowinna. EL 8434 consists of one hundred and eighty-six (186) units) in the Adelaide and Broken Hill 1:1,000,000 Blocks covering an area of approximately 580km².  EL 8435 is located on the 1:100,000 geology map sheet Taltingan 7234, and the 1:250,000 geology map sheet SH/54-15 Broken Hill in the county of Yancowinna. EL 8435 consists of twenty-two (22) units (Table 1) in the Broken Hill 1:1,000,000 Blocks covering an area of approximately 68km².  Access to the tenures from Broken Hill is via the sealed Barrier Highway. This road runs north-east to south-west through the northern portion of the EL 8434, passes the southern tip of EL 8435 eastern section and through the middle of the western section of EL 8435. Access is also available via the Menindee Road which runs north-west to south-east through the southern section of the EL 8434. The Orange to Broken Hill Rail line also dissects EL 8435 western section the middle and then travels north-west to south-east slicing through the eastern arm of EL 8434 (Figure D2-1).  Figure D2-1: EL 8434 and EL 8435 General Location Map



interpretation of aeromagnetic, gravity plus RAB / RC drill hole logging originally led to the identification of at least sixteen higher priority prospect areas. All these prospects were summarized in considerable detail in Leyh (2008). Future work programs were then also proposed for each area. Since then, further compilation work plus detailed geological reconnaissance mapping and sampling of gossans and lode rocks has been carried out.

A total of 22 prospects were then recognised on the exploration licence with at least 12 occurring in and around the tenure.

With less than 45% outcropping Proterozoic terrain within the licence, this makes it very difficult to explore and is in the main very effectively screened from the easy application of more conventional exploration methodologies due to a predominance of extensive Cainozoic cover sequences. These include recent to young Quaternary soils, sands, clays and older more resistant, only partially dissected, Tertiary duricrust regolith covered areas. Depth of cover ranges from a few metres in the north to over 60 metres in some areas on the southern and central license.

Exploration by EGC Pty Ltd carried out in the field in the first instance has therefore been heavily reliant upon time consuming systematic geological reconnaissance mapping and relatable geochemical sampling. These involve a slow systematic search over low outcropping areas, poorly exposed subcrops and float areas as well as the progressive development of effective regolith mapping and sampling tools. This work has been combined with a vast amount of intermittently acquired past exploration data. The recent data compilation includes an insufficiently detailed NSWGS regional mapping scale given the problems involved, plus some regionally extensive, highly variable, low-level stream and soil BLEG geochemical data sets over much of the area.

There are also a few useful local detailed mapping grids at the higher priority prospects, and many more numerous widespread regional augers, RAB, and percussion grid drilling data sets. Geophysical data sets including ground magnetics, IP and EM over some prospect areas have also been integrated into the exploration models. These are located mainly in former areas of moderate interest and most of the electrical survey methods to date in this type of terrain continue to be of limited application due to the high degree of weathering and the often prevailing and complex regolith cover constraints.

Between 2007 and 2014 Eaglehawk Geological Consulting has carried out detailed research, plus compilation and interpretation of a very large volume of historic exploration data sourced from numerous previous explorers and dating back to the early 1970's. Most of this data is in non-digital scanned form. Many

hard copy exploration reports (see references) plus several hundred plans have been acquired from various sources, hard copy printed as well as downloaded as scans from the Geological Survey of NSW DIGS system. They also conducted field mapping, costean mapping and sampling, and rock chip sampling and analysis.

### Work Carried out by Squadron Resources and Whyloo Metals 2016-2020

Research during Year 1 by Squadron Resources revealed that the PGE-rich, sulphide-bearing ultramafic rocks in the Broken Hill region have a demonstrably alkaline affinity. This indicates a poor prospectivity for economic accumulations of sulphide on an empirical basis (e.g., in comparison to all known economic magmatic nickel sulphide deposits, which have a dominantly tholeitic affinity). Squadron instead directed efforts toward detecting new Broken Hill-Type (BHT) deposits that are synchronous with basin formation. Supporting this modified exploration rationale are the EL's stratigraphic position, proximity to the Broken Hill line of lode, abundant mapped alteration (e.g., gahnite and/or garnet bearing exhalative units) and known occurrences such as the "Sisters" and "Iron Blow" prospects.

The area overlies a potential magmatic Ni-Cu-PGE source region of metasomatised sub-continental lithospheric mantle (SCLM) identified from a regional targeting geophysical data base. The exploration model at the time proposed involved remobilization of Ni-Cu-PGE in SCLM and incorporation into low degree mafic-ultramafic partial melts during a post-Paleoproterozoic plume event and emplacement higher in the crust as chonoliths/small intrusives - Voisey's Bay type model. Programs were devised to use geophysics and geological mapping to locate secondary structures likely to control and localise emplacement of Ni-Cu-PGE bearing chonoliths. Since EL8434 was granted, the following has been completed:

- Airborne EM survey.
- Soil and chip sampling.
- Data compilation.
- Geological and logistical reconnaissance.
- Community consultations; and
- Execution of land access agreements.

### Airborne EM Survey

Geotech Airborne Limited was engaged to conduct an airborne EM survey using their proprietary VTEM system in 2017. A total of 648.92-line kilometres were flown on a nominal 200m line spacing over a portion of the project area. Several areas were infilled to 100m line spacing.

The VTEM data was interpreted by Southern Geoscience Consultants Pty Ltd, who identified a series of anomalies, which were classified as high or low priority based on anomaly strength (i.e., does the anomaly persist into the latest channels). Additionally, a cluster of VTEM anomalies at the "Sisters" prospect have been classified separate due to strong IP effects observed in the data. Geotech Airborne have provided an IP corrected data and interpretation of the data has since been undertaken.

#### Soil and Chip sampling

The VTEM anomalies were followed up by a reconnaissance soil sampling programme. Spatially clustered VTEM anomalies were grouped, and follow-up soil lines were designed. Two (2) VTEM anomalies were found to be related to culture and consequently no soils were collected. Two (2) other anomalies were sampled which were located above thick alluvium of Stephens Creek and were therefore not sampled. A line of soil samples was collected over a relatively undisturbed section at Iron Blow workings and the Sisters Prospect.

One hundred and sixty-six (166) soil samples were collected at a nominal 20cm depth using a 2mm aluminum sieve. Two (2) rock chips were also collected during this program. The samples were collected at either 20m or 40m spacing over selected VTEM anomalies. The samples were pulverised and analysed by portal XRF at ALS laboratories in Perth.

Each site was annotated with a "Regolith Regime" such that samples from a depositional environment could be distinguished from those on exposed Proterozoic bedrock, which were classified as an erosional environment. The Regolith Regime groups were used for statistical analysis and levelling of the results. The levelled data reveals strong relative anomalies in zinc at VTEM anomaly clusters 10, 12 and 14 plus strong anomalous copper at VTEM 17.

#### Geology

Deposit type, geological setting, and style of mineralisation.

As the strata is tightly folded, the intersected cobalt-rich layers are overstated in terms of apparent thickness, however the modelling software calculates a true, vertical thickness. Cobalt mineralisation is commonly associated with shears, faults, amphibolites, and a quartz-

magnetite rock within the shears, or on or adjacent to the boundaries of the Himalaya Formation. In general, most of the cobalt and rare earth element - rich layers have a north-northwest to north strike.

REE enrichment generally occurs as a 5 to 10-metre-thick zone between the completely weathered layer and strongly weathered layer and it is targeted for commercial mining (Figure D2-2). Compared to other REE deposits, regolith-hosted rare earth element deposits are substantially low-moderate grade (containing 0.05-0.3 wt.% extractable REEs). Nevertheless, due to its easy extraction method, low processing costs and large abundance, the orebodies are generally economic to be extracted (Duuring, (2020); Kanazawa and Kamitani (2006); and Murakami, H.; Ishihara (2008)).

Weathering Profile of REE-rich Granite

(A) Humic layer (0-2m)

REES Enrichment Zone

(B) Completely weathered layer (3-10m)

(C) Strongly weathered layer (2-3m)

(D) Weathering front (5-10m)

Figure D2-2: Weathering Profile over REE - Rich Granite

https://en.wikipedia.org/wiki/Regolith-hosted rare earth element deposits

Weathering profile of regolith hosted REE deposits shown above, the legend is: (A) Humic layer. (B) Completely weathered layer. (C) Strongly weathered layer. (D) Weathering front. (E) Unweathered rock.

Most of the REE found in cerium monazite (Ce (PO<sub>4</sub>)) which always contains major to minor amounts of other REE (Nd, La, Pr, Sm etc) replacing Ce. Also, the mineral often contains trace amounts of U and

		Th (coupled with Ca). This will be collaborated with XRD and or SEM analysis.
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:  o easting and northing of the drill hole collar  o elevation or RL (Reduced Level – elevation above sea level in metres) of the drill hole collar  o dip and azimuth of the hole  o down hole length and interception depth  o 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.	Header information about all drillholes completed at Reefs Tank, Tors Tank and Fence Gossan have been tabulated in this release in Appendix C.
Data aggregation methods	In reporting Exploration Results, weighting averaging techniques, maximum and/or minimum grade truncations (e.g., cutting of high grades) and cut-off grades are usually Material and should be stated.  Where aggregate intercepts incorporate short lengths of high-grade results and longer lengths of low-grade results, the procedure used for such aggregation should be stated and some typical examples of such aggregations should be shown in detail.  The assumptions used for any reporting of metal equivalent values should be clearly stated.	No metal equivalents have been reported. Rare earth element results have been converted to rare earth oxides as per standard industry practice (Castillo Copper 2022f).  No compositing of assay results has taken place, but rather menu options within the Datamine GDB module have been used to create fixed length 1m assay intervals from the original sampling lengths.  The rules follow very similarly to those used by the Leapfrog Geo software in creating fixed length samples.
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.	A database of all the historical borehole sampling has been compiled and validated. It is uncertain if there is a strong relationship between the surface sample anomalies to any subsurface anomalous intersections due to the possible masking by variable Quaternary and Tertiary overburden that varies in depth from 0-15m. The mineralisation appears to be secondary enrichment in the regolith clays and extremely

	If it is not known and only the down hole lengths are reported, there should be a clear statement to this effect (e.g., 'down hole length, true width not known').	weathered material derived from quartzo-feldspathic pegmatites.
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.	Current surface anomalies are shown on maps released on the ASX (Castillo Copper 2022d, 2022e, 2022f and 2022g). All historical surface sampling has had their coordinates converted to MGA94, Zone 54.
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 recent laboratory analytical results have been recently reported (see Castillo Copper 2022a, b, c, d, e, f, and g) for assay results.  Regarding the surface and sampling, no results other than duplicates, blanks or reference standard assays have been omitted.
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.	Historical explorers have also conducted airborne and ground gravity, magnetic, EM, and IP resistivity surveys over parts of the tenure area but this is yet to be fully georeferenced (especially the ground IP surveys). Squadron Resources conducted an airborne EM survey in 2017 that covers Iron Blow and The Sisters, but not the southern cobalt and REE prospects.  REFERENCES  Biggs, M. S., 2021a, Broken Hill Alliance, NSW Tenure Package Background Geological Information, unpublished report to BH Alliance Pty Ltd, Sep 21, 30pp.  Biggs, M. S., 2021b, EL 8434 and EL 8435, Brief Review of Surface Sample Anomalies Lithium, Rare Earth Elements and Cobalt, unpublished report to BH Alliance Pty Ltd, Nov 21, 18pp.  Biggs, M.S., 2022a, BHA Cobalt Modelling and Mineral Resource Estimate Update, unpublished memo for Castillo Copper by ROM Resources.  Biggs, M.S., 2022b, Broken Hill BHA Tenures Update, Castillo Copper, unpublished memo prepared by ROM Resources, Mar 22, 5pp  Biggs M.S., 2022c, Geological Briefing Paper, Iron Blow Prospect, East Zone, BHA Project (BHAE), Broken Hill, NSW, ROM Resources, prepared for Castillo Copper Limited, August 2022

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#### Further work

The nature and scale of planned further work (e.g., 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.

#### It is recommended that:

- The remaining non-sampled zones within the Core Library drillholes, BH1, BH2, and DD90-IB3 in the north of the tenure group be relogged and sampled. DD90-IB3 had 21-87m retested recently and is a good candidate for hyperspectral logging.
- A program of field mapping and ground magnetic, IP or radiometric surveys be planned and executed at Fence Gossan. Mapping of pegmatite outcrops is a high priority.

Depending upon the results of the proposed geophysical surveys	<ul> <li>Complete rehabilitation of the 2022 BHAE drilling campaign that comprised mostly RC drilling. An application supporting an ESF2 lodgment is yet to be approved by the NSW Resource Regulator</li> </ul>
technique over the known cobalt and REE mineralisation downdip to a least 30m depth at all three prospects. That proposed drilling program	above, the next drilling program will specifically target the air coring technique over the known cobalt and REE mineralisation downdip to at least 30m depth at all three prospects. That proposed drilling program is also designed to increase the resource confidence of the REE to an Exploration target or Inferred Resources to the standard of the 2012