

14 September 2023

Outstanding Results from Roadside Drilling at Murraydium REE Project

- Assays received from the 215 reconnaissance roadside Air Core drill holes on the Bordertown Block targeting REE's in the shallow Loxton Parilla Sands
- SBT199: 2m @ 1,560ppm TREO including
 - 1m @ 2,420 ppm TREO
- Further 4 holes all greater than 1,000 ppm TREO
 - SBT048 1m @ 1,055ppm TREO
 - SBT082 1m @ 1,085ppm TREO
 - SBT100 1m @ 1,080ppm TREO
 - SBT190 1m @ 1,264ppm TREO
- 40 holes with grades between 500 and 2,420ppm TREO
- Loxton Parilla Sands the same formation that hosts Australian Rare Earths Ltd (ASX:AR3) Koppamurra Resource of 101mt @ 818 ppm TREO (Total Rare Earth Oxide) ⁽¹⁾

Mr Brian Thomas, Lanthanein Technical Director commented *"We are very excited to finally release the long awaited assay results from the roadside drilling programme at the Murraydium Project in the South East of South Australia. These results are the absolute confirmation of the exciting exploration opportunity in a region that is highly prospective for ionic clay hosted rare earth deposits as evidenced by work done in the region by AR3 who have outlined an extensive mineralised system at Koppamurra where shallow near surface exploration has delineated significant JORC Resources of REE's."*

¹ JORC resource comprising 1Mt @ 894ppm TREO (Measured), 63Mt @ 839ppm TREO (Indicated) and 38Mt @ 782ppm TREO (Inferred) (17 April 2023).

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Lanthanein Resources Ltd (ASX: LNR) (**Lanthanein** or the **Company**) is pleased to announce assay results from the roadside drilling programme at the Murraydium Project in the Southeast of South Australia (Figure 3). The drill program targeted ionic clay hosted rare earths within the Loxton-Parilla Sands unit in a region which is host to an extensive mineralised system at Koppamurra (Figure 2).

A total of 215 Air Core drill holes totalling 3,709 metres (Table 2) were completed. Results confirm the REE regional prospectivity where 40 drillholes returned greater than 500ppm TREO and five holes greater than 1000 ppm TREO (Figure 1).

Results include (Table 1):

- SBT199: 2m @ 1,560ppm TREO including 1m @ 2,420 ppm TREO from 19m depth, with combined 23% Neodymium/Praseodymium (Nd/Pr) and 1.8% Dysprosium (Dy)
- SBT190: 2m @ 808 ppm TREO including 1m @ 1264 ppm TREO from 14m depth, with combined 21% Nd/Pr and 2.5% Dy
- SBT082: 1m @ 1085 ppm TREO from 23m depth, with combined 22% Nd/Pr and 2.2% Dy
- SBT100: 1m @ 1080 ppm TREO from 15m depth, with combined 25% Nd/Pr and 2.8% Dy
- SBT048: 1m @ 1055 ppm TREO from 19m depth with combined 14% Nd/Pr and 0.6% Dy

Proportions of Neodymium (**Nd₂O₃**) from the mineralised intersection also range from 11% to 23% of TREO

The shallow nature of the rare earths (0 to 29m depth) will help with rapid exploration drilling to explore for a mineral resource where there has been support from landowners through consistent and transparent communication.

The Murraydium Project is located in the south-eastern region of South Australia with EL 6717 covering an area of 872 km² of the Murray Basin (Figure 3). The region is seeing continued activity in the exploration for REE minerals with the success of Australian Rare Earths (ASX:AR3) at their 100% owned Koppamurra Project, host to a total mineral resource of 101 Mt @ 818 ppm TREO (Figure 2), plus other successes with Resource Base Ltd (ASX:RBX) announcing a maiden Mineral Resource Estimate of 21Mt @ 767 ppm TREO at their Mitre Hill Deposit in the Murray Basin in Victoria.

The project area forms part of an extensive Tertiary strand plain comprising a series of sandstone-dominant fluvial and beach-dune strand complexes. The sand units commonly form undulating sand ridges interspersed with low lying areas of clay, mud and sand. The Koppamurra Deposit of REE-bearing clays that contain the Yellow Tail and Red Tail deposits occurs within the lower part of the Loxton-Parilla Sand unit (Figure 2). The Loxton-Parilla Sand is a very extensive unit widely distributed across the southern Murray Basin. Extensive areas of Loxton-Parilla Sand are exposed at surface within the Bordertown Block where it typically forms rolling terrain of low sandy hills and ridges.

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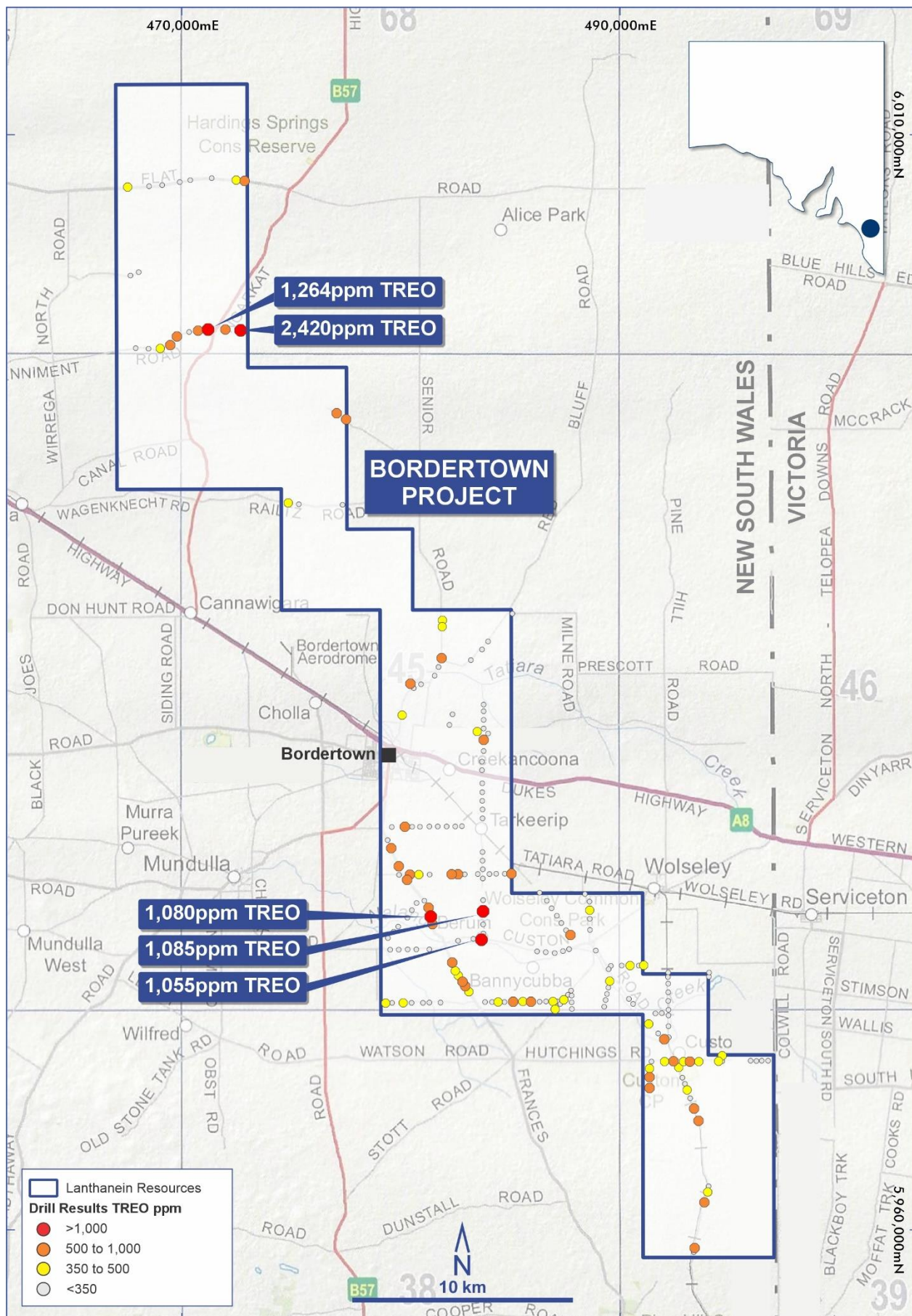


Figure 1: Locations of Roadside Air Core Drill Holes with assays for Each Drill Hole

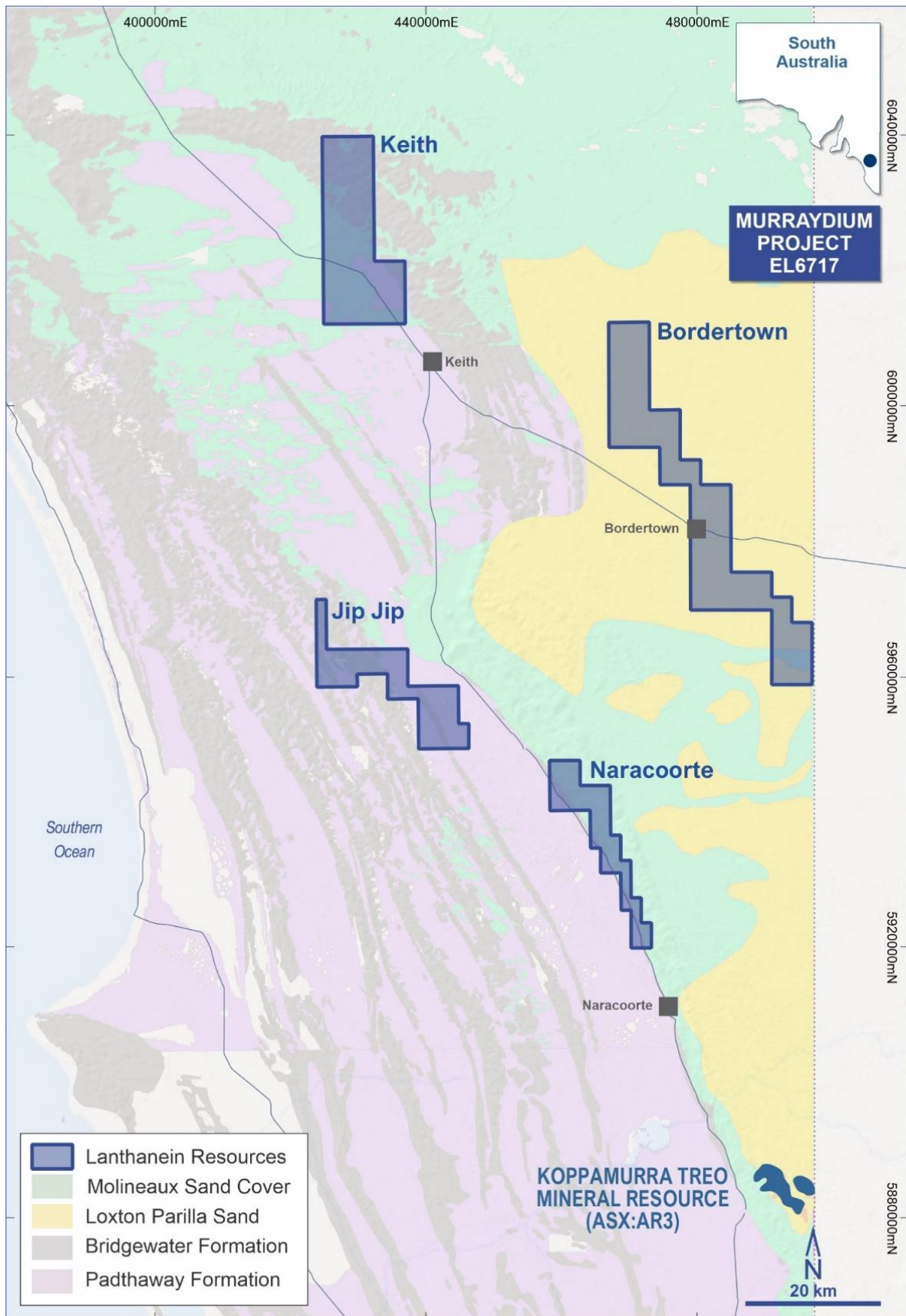


Figure 2: Plan showing extent of Loxton Parilla Sands in the Southeast of South Australia

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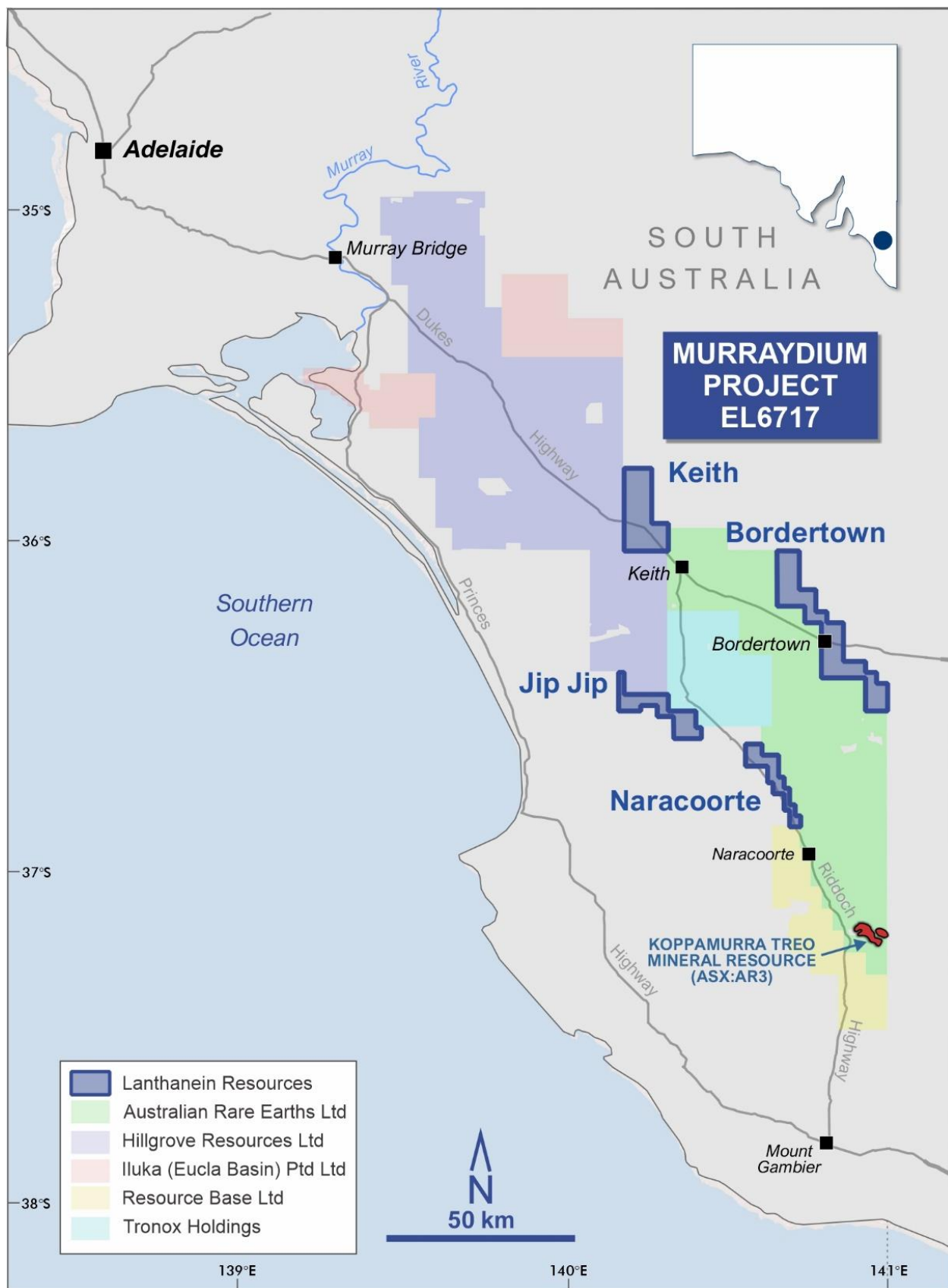


Figure 3: Location Plan of Murraydium Project

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Hole ID	Depth From (m)	Depth To (m)	Interval (m)	TREO (ppm)	Magnet Rare Earths							
					Praseodymium <i>Pr₆O₁₁</i>		Neodymium <i>Nd₂O₃</i>		Terbium <i>Tb₄O₇</i>		Dysprosium <i>Dy₂O₃</i>	
					(ppm)	%TREO	(ppm)	%TREO	(ppm)	%TREO	(ppm)	TREO
SBT002	16	17	1	355	20	6	70	20	1	0	4	1
	20	22	2	557	20	4	79	15	2	1	13	3
SBT003	6	7	1	542	26	5	95	18	2	0	9	2
SBT004	4	6	2	473	22	5	83	18	2	0	10	2
SBT006	1	2	1	520	26	5	99	19	1	0	12	2
	21	22	1	379	15	4	52	14	2	0	9	2
SBT007	1	2	1	542	25	5	90	17	2	0	12	2
SBT009	6	7	1	440	20	5	75	17	1	0	8	2
SBT012	2	3	1	462	20	4	75	16	2	0	10	2
	10	11	1	417	19	5	68	16	1	0	7	2
SBT017	7	8	1	376	17	4	60	16	1	0	7	2
SBT019	2	3	1	369	15	4	55	15	2	0	9	2
SBT020	15	16	1	484	18	4	63	13	1	0	7	1
SBT021	1	2	1	567	31	5	108	19	2	0	14	2
	17	18	1	423	16	4	59	14	2	0	10	2
SBT022	0	2	2	417	18	5	65	16	2	0	9	2
SBT023	6	8	2	627	37	6	128	20	3	0	10	2
SBT024	11	12	1	461	27	6	97	21	1	0	5	1
SBT026	0	1	1	390	15	4	57	15	1	0	8	2
SBT027	15	18	3	622	27	4	100	16	3	0	14	2
SBT028 Incl.	17	20	3	415	19	5	71	17	2	1	12	3
	19	20	1	555	26	5	98	18	3	1	16	3
SBT029	0	1	1	373	20	5	73	20	2	0	10	3
SBT031	3	4	1	407	13	3	45	11	1	0	6	1
	8	10	2	358	16	4	57	16	1	0	8	2
SBT035	1	2	1	371	18	5	67	18	2	0	9	2
SBT036	13	14	1	927	47	5	187	20	5	1	25	3
SBT037	14	17	3	672	31	5	122	18	4	0	18	3
SBT038	0	1	1	439	20	5	78	18	2	0	11	3
SBT039	2	3	1	429	22	5	82	19	2	0	11	3
SBT040	13	15	2	730	28	4	114	15	4	1	22	3
SBT048	19	20	1	1055	38	4	106	10	1	0	6	1
SBT053	15	16	1	436	18	4	75	17	3	1	16	4
SBT055	1	2	1	360	14	4	52	15	1	0	7	2
SBT066	8	9	1	385	18	5	72	19	2	1	11	3
SBT067	9	10	1	479	19	4	71	15	2	0	10	2
SBT070	17	18	1	702	47	7	161	23	3	0	16	2
SBT079	18	20	2	662	36	5	134	20	2	0	8	1

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					Praseodymium <i>Pr₆O₁₁</i>		Neodymium <i>Nd₂O₃</i>		Terbium <i>Tb₄O₇</i>		Dysprosium <i>Dy₂O₃</i>	
					(ppm)	%TREO	(ppm)	%TREO	(ppm)	%TREO	(ppm)	TREO
SBT082	23	24	1	1085	48	4	190	18	5	0	24	2
SBT090	17	18	1	927	58	6	211	23	3	0	15	2
SBT091	0	1	1	721	41	6	162	22	3	0	12	2
SBT093	1	2	1	390	14	4	54	14	2	0	9	2
SBT094	19	20	1	714	26	4	109	15	4	1	22	3
SBT096	15	16	1	864	39	5	154	18	5	1	27	3
SBT097	15	18	3	429	19	5	79	18	2	0	11	3
	16	17	1	543	25	5	104	19	3	1	16	3
SBT099	1	2	1	352	14	4	54	15	1	0	8	2
	17	18	1	520	19	4	81	16	3	1	18	3
SBT100	15	16	1	1080	56	5	215	20	6	1	30	3
SBT101 Incl.	13	15	2	495	22	4	85	17	2	0	12	3
	14	15	1	629	27	4	108	17	3	0	16	3
SBT111	0	1	1	372	17	4	62	17	2	0	8	2
SBT112	22	24	2	673	31	5	117	18	3	0	17	3
SBT113	2	3	1	438	20	5	74	17	2	0	11	2
SBT114	1	2	1	673	28	4	104	15	3	0	16	2
SBT117	2	3	1	360	19	5	74	20	2	0	8	2
SBT120	5	6	1	409	16	4	64	16	2	1	11	3
SBT121	3	4	1	358	11	3	39	11	1	0	7	2
SBT142	9	10	1	421	16	4	62	15	2	1	14	3
SBT145	14	16	2	529	24	5	91	17	3	1	14	3
SBT150	1	2	1	849	41	5	152	18	3	0	18	2
SBT153	2	3	1	658	28	4	105	16	3	0	15	2
SBT169	2	3	1	712	33	5	125	18	3	0	15	2
SBT175	10	12	2	398	16	4	59	15	2	0	8	2
SBT178	28	30	2	678	33	5	263	20	4	1	17	3
SBT179	2	3	1	582	29	5	109	19	3	0	13	2
	27	29	2	579	28	4	111	17	3	1	14	2
SBT180	23	24	1	430	11	2	41	10	1	0	8	2
SBT181	4	5	1	774	43	6	163	21	3	0	17	2
	25	27	2	481	17	4	68	15	2	1	12	3
SBT187	26	27	1	440	18	4	81	18	2	0	8	2
SBT190	14	16	2	808	34	4	139	17	4	1	19	3
Incl.	14	15	1	1264	54	4	219	17	6	0	29	2
SBT191	12	14	2	472	20	5	77	17	2	1	12	3
Incl.	13	14	1	513	20	4	76	15	2	0	11	2

Hole ID	Depth From (m)	Depth To (m)	Interval (m)	TREO (ppm)	Magnet Rare Earths							
					Praseodymium Pr ₆ O ₁₁		Neodymium Nd ₂ O ₃		Terbium Tb ₄ O ₇		Dysprosium Dy ₂ O ₃	
					(ppm)	%TREO	(ppm)	%TREO	(ppm)	%TREO	(ppm)	TREO
SBT193	15	16	1	516	15	3	60	12	2	0	12	2
SBT194	24	27	3	448	21	5	80	18	2	1	11	3
Incl.	24	25	1	595	28	5	106	18	3	1	17	3
SBT195	1	2	1	484	19	4	71	15	2	0	10	2
SBT198	19	21	2	553	29	6	116	21	3	1	15	3
SBT199	19	21	2	1560	78	5	283	18	6	0	29	2
Incl.	20	21	1	2420	123	5	444	18	10	0	46	2
SBT200	0	1	1	379	18	5	68	18	2	0	7	2
SBT203	26	27	1	474	24	5	102	21	3	1	15	3
SBT203	24	26	2	443	19	4	82	19	3	1	15	3
SBT205	19	20	1	505	19	4	77	15	3	1	15	3
SBT213	24	25	1	639	28	4	111	17	3	1	17	3
SBT215	19	20	1	436	18	4	74	17	2	0	12	3

Table 1: Results from EL6717 (Bordertown Block) using sample length weighted averages at 350ppm TREO cut-off (Significant Results Highlighted)

Regolith Hosted REE Deposits - Background

There are several known types of regolith hosted REE deposits globally including, ion adsorption clay deposits, alluvial and placer deposits. The development of potentially economic regolith-hosted REE deposits requires a combination of a REE enriched protolith and weathering processes that concentrate the REE in the regolith. Ion adsorption type REE deposits are the dominant source of heavy REE currently mined in the world, with all economic examples of this type of deposit confined almost exclusively to areas underlain by granitic rocks in southern China. REE mineralisation in the Murray Basin at Australian Rare Earths (ASX:AR3) Koppamurra Project is hosted by clay material interpreted to have been deposited onto a limestone base (Gambier Limestone) and accumulated in an interdunal, lagoonal or estuarine environment. The mineralogy of the clay is indicative of formation under mildly alkaline conditions in a marine or coastal environment from fine grained sediments either river transported or windblown thereby supporting this interpretation.

Mineralogical test work conducted on a clay sample from the Koppamurra Project area established that the dominant clay minerals are smectite and kaolin, and the few REE-rich minerals detected during the SEM investigation are not considered inconsistent with the suggestion that a significant proportion of REE are distributed in the sample as adsorbed elements on clay and iron oxide surfaces. Work to date suggests that the source of the REE at Koppamurra is most likely basalt associated alkali volcanics of the Newer Volcanics Province in south-eastern Australia, with the wider Koppamurra project area being considered prospective for rare earth mineralisation.

However, whilst Koppamurra clays display ionic character, and the deposit shares a number of similarities with both ion adsorption clay deposits and volcanic ash fall placer deposits, there are also a number of differences, with further work required before a genetic model for REE

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mineralisation at Koppamurra and the broader Murray Basin can be conclusively defined. In addition, further work is required to better define metallurgical recoveries, process flow sheets, effective mining methods, and project economics.

Previous Reported pXRF Results

As reported previously on 1 May 2023 (“Encouraging XRF Results from Drilling at Murraydium Rare Earths Project”), the Company conducted XRF testing of samples collected in chip trays from the first phase of the roadside Aircore drilling. With the publishing of the certified assay results it is now evident that there was a significant over reporting of the Nd/Pr values at that time. The Company has previously had a strong correlation between XRF measurements and certified assay values in the past, particularly on hard rock occurrences in WA, but also by the Company’s exploration consultants on sediment hosted REE occurrences in SA. Discussions with other operators exploring for REE mineralisation in the ionic clay hosted environments particularly in the southeast of SA, has now cast doubts on the validity of the testing procedure using commonly available XRF instruments.

Subsequent information obtained by the Company suggest that a XRF instrument with a higher energy 55kV x-ray tube is required to accurately measure levels of Lanthanides in ionic clay hosted environments. The Company is currently investigating the issue of the over reporting of Nd/Pr levels taken with the standard 50kV x-ray tube instrument by cross checking samples with instruments with both energy ratings.

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

For additional information please visit our website at www.lanthanein.com

LANTHANEIN RESOURCES LTD

Competent Person’s Statement

The information in this report that relates to Geophysical Exploration Results is based on information compiled by Peter Swiridiuk - Member of the Aust. Inst. of Geoscientists. Peter Swiridiuk is a Technical Consultant and Non-Executive Director for Lanthanein Resources. Peter Swiridiuk has sufficient experience which is relevant to the type of mineralisation and type of deposit under consideration to qualify as Competent Person as defined in the 2012 Edition of the Australasian Code of Reporting Exploration Results, Mineral Resources and Ore Resources. Peter Swiridiuk consents to the inclusion in the report of the matters based on the information in the form and context in which it appears. Additionally, Mr Swiridiuk confirms that the entity is not aware of any new information or data that materially affects the information contained in the ASX releases referred to in this report.

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Table 2: Drill Hole Collars

Hole ID	Easting (m)	Northing (m)	Total Depth EOH (m)	Azimuth (Deg)	Dip (Deg)	RL (m)
SBT001	493364.0	5958980.3	25	0	-90	106.0
SBT002	493401.8	5959173.3	24	0	-90	106.0
SBT003	493846.4	5961248.5	30	0	-90	106.0
SBT004	494001.9	5961717.1	27	0	-90	106.0
SBT005	494033.3	5961995.5	27	0	-90	106.0
SBT006	493579.2	5964978.0	24	0	-90	104.0
SBT007	493372.5	5965534.8	24	0	-90	104.0
SBT008	493197.1	5966004.1	24	0	-90	104.0
SBT009	493056.1	5966379.5	21	0	-90	104.0
SBT010	492956.8	5966665.3	21	0	-90	104.0
SBT011	492842.9	5966944.1	14	0	-90	104.0
SBT012	492669.5	5967411.5	18	0	-90	104.0
SBT013	496757.5	5967723.3	24	0	-90	104.0
SBT014	496456.7	5967724.5	18	0	-90	104.0
SBT015	496214.9	5967708.3	18	0	-90	104.0
SBT016	495957.6	5967718.4	15	0	-90	104.0
SBT017	494661.6	5967945.9	17	0	-90	104.0
SBT018	494656.7	5967694.3	18	0	-90	104.0
SBT019	494488.6	5967691.9	18	0	-90	104.0
SBT020	493589.7	5967687.2	18	0	-90	104.0
SBT021	493189.3	5967678.6	18	0	-90	104.0
SBT022	492889.4	5967675.5	18	0	-90	104.0
SBT023	492434.6	5967688.4	15	0	-90	104.0
SBT024	492028.0	5967684.6	18	0	-90	104.0
SBT025	491435.5	5967678.0	30	0	-90	104.0
SBT026	491342.8	5967367.8	27	0	-90	104.0
SBT027	491342.7	5966967.9	30	0	-90	104.0
SBT028	491343.9	5966470.2	30	0	-90	104.0
SBT029	479300.1	5970350.9	16	0	-90	110.0
SBT030	479592.5	5970357.2	15	0	-90	110.0
SBT031	480100.5	5970364.2	15	0	-90	110.0
SBT032	480483.3	5970359.4	14	0	-90	110.0
SBT033	480998.6	5970366.4	14	0	-90	110.0
SBT034	481796.4	5970378.6	15	0	-90	110.0
SBT035	483099.3	5970870.6	16	0	-90	110.0
SBT036	482936.3	5971122.7	18	0	-90	110.0
SBT037	482798.3	5971323.1	17	0	-90	110.0
SBT038	482607.9	5971607.0	16	0	-90	110.0
SBT039	482474.5	5971826.5	18	0	-90	110.0
SBT040	482333.5	5972203.0	16	0	-90	100.0
SBT041	479495.6	5972787.3	15	0	-90	100.0
SBT042	480296.6	5972804.7	11	0	-90	100.0

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SBT043	479897.1	5972789.7	14	0	-90	100.0
SBT044	480693.8	5972800.4	12	0	-90	100.0
SBT045	481295.4	5972802.5	14	0	-90	100.0
SBT046	482598.8	5973192.7	19	0	-90	100.0
SBT047	483299.2	5973289.5	16	0	-90	100.0
SBT048	483663.9	5973248.2	20	0	-90	100.0
SBT049	487009.8	5972631.4	26	0	-90	100.0
SBT050	487386.8	5972724.1	22	0	-90	100.0
SBT051	487674.0	5972813.5	18	0	-90	100.0
SBT052	488893.4	5972755.2	15	0	-90	100.0
SBT053	491071.7	5972077.4	18	0	-90	100.0
SBT054	490839.5	5972066.4	18	0	-90	100.0
SBT055	490453.3	5972063.2	18	0	-90	100.0
SBT056	490068.3	5972060.0	18	0	-90	100.0
SBT057	489573.1	5972057.3	18	0	-90	100.0
SBT058	490404.3	5970541.8	15	0	-90	100.0
SBT059	489268.7	5970189.3	18	0	-90	100.0
SBT060	489330.2	5970483.5	18	0	-90	100.0
SBT061	489391.7	5970773.2	18	0	-90	99.0
SBT062	489454.5	5971067.4	18	0	-90	99.0
SBT063	489523.2	5971362.3	17	0	-90	99.0
SBT064	489478.6	5971903.4	13	0	-90	99.0
SBT065	490585.9	5970306.1	17	0	-90	99.0
SBT066	489518.2	5971359.7	15	0	-90	99.0
SBT067	491304.3	5969391.7	15	0	-90	99.0
SBT068	484428.2	5970405.0	16	0	-90	99.0
SBT069	491729.7	5968968.9	14	0	-90	99.0
SBT070	492018.1	5968693.7	18	0	-90	99.0
SBT071	491602.2	5969885.1	18	0	-90	99.0
SBT072	491900.1	5969892.8	18	0	-90	99.0
SBT073	486326.7	5975388.8	24	0	-90	99.0
SBT074	486655.2	5975025.6	24	0	-90	99.0
SBT075	486875.0	5974686.4	24	0	-90	99.0
SBT076	487110.0	5974338.6	18	0	-90	99.0
SBT077	487317.1	5974011.2	21	0	-90	99.0
SBT078	487531.6	5973679.3	15	0	-90	99.0
SBT079	487731.6	5973461.4	23	0	-90	99.0
SBT080	483756.2	5973531.9	22	0	-90	99.0
SBT081	483748.5	5973945.6	24	0	-90	99.0
SBT082	483744.5	5974546.2	24	0	-90	99.0
SBT083	483742.2	5975045.6	24	0	-90	99.0
SBT084	483729.2	5976040.3	21	0	-90	101.6
SBT085	483726.2	5976455.0	21	0	-90	100.3

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Hole ID	Easting (m)	Northing (m)	Total Depth EOH (m)	Azimuth (Deg)	Dip (Deg)	RL (m)
SBT086	483717.4	5977245.5	24	0	-90	100.3
SBT087	483498.5	5976239.2	24	0	-90	100.3
SBT088	482909.7	5976237.9	20	0	-90	97.6
SBT089	483720.2	5976854.6	18	0	-90	97.0
SBT090	482603.3	5976235.0	18	0	-90	97.7
SBT091	482302.0	5976230.8	18	0	-90	97.0
SBT092	481300.5	5976224.3	18	0	-90	97.3
SBT093	480803.0	5976215.6	18	0	-90	85.0
SBT094	480401.3	5976214.1	20	0	-90	85.0
SBT095	479900.7	5976205.4	18	0	-90	85.0
SBT096	479898.7	5976595.6	18	0	-90	85.0
SBT097	480278.9	5975974.4	18	0	-90	85.0
SBT098	481059.3	5975027.8	21	0	-90	85.0
SBT099	481249.1	5974703.1	19	0	-90	85.0
SBT100	481353.1	5974305.0	18	0	-90	85.0
SBT101	481426.3	5973960.1	18	0	-90	85.0
SBT102	479397.2	5973320.1	12	0	-90	85.0
SBT103	479668.5	5973618.2	12	0	-90	85.0
SBT104	480289.0	5974252.2	10	0	-90	85.0
SBT105	480496.3	5974595.7	18	0	-90	85.0
SBT106	480706.2	5974926.8	18	0	-90	89.9
SBT107	479869.1	5973842.6	12	0	-90	78.1
SBT108	481292.1	5970371.7	15	0	-90	85.2
SBT109	483827.7	5970401.2	20	0	-90	94.0
SBT110	484148.3	5970403.5	20	0	-90	99.6
SBT111	484424.3	5970405.4	18	0	-90	98.6
SBT112	485120.3	5970408.9	24	0	-90	104.7
SBT113	485565.3	5970424.7	18	0	-90	103.2
SBT114	485924.5	5970415.5	11	0	-90	101.9
SBT115	486319.8	5970418.6	12	0	-90	106.2
SBT116	486615.0	5970425.4	12	0	-90	106.0
SBT117	486929.2	5970426.0	9	0	-90	106.6
SBT118	487124.5	5970424.6	9	0	-90	103.5
SBT119	487268.4	5970312.7	9	0	-90	100.0
SBT120	487040.2	5970066.1	9	0	-90	100.0
SBT121	487423.4	5970503.5	9	0	-90	100.0
SBT122	487618.9	5970730.8	9	0	-90	100.0
SBT123	487762.8	5970918.6	6	0	-90	100.0
SBT124	487782.6	5970694.7	12	0	-90	100.0
SBT125	487788.0	5970389.1	7	0	-90	100.0
SBT126	487792.6	5970089.3	9	0	-90	100.0
SBT127	494051.2	5971552.1	6	0	-90	114.0
SBT128	494054.2	5971746.5	18	0	-90	114.0

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SBT129	492188.9	5971745.0	10	0	-90	111.0
SBT130	492181.2	5971546.5	9	0	-90	111.0
SBT131	492187.6	5971244.3	9	0	-90	111.0
SBT132	492190.7	5970845.6	9	0	-90	111.0
SBT133	492197.6	5970445.5	9	0	-90	111.0
SBT134	492200.3	5970045.7	9	0	-90	111.0
SBT135	492202.4	5969789.6	14	0	-90	111.0
SBT136	492207.9	5969289.8	9	0	-90	111.0
SBT137	492213.3	5968790.1	9	0	-90	111.0
SBT138	486600.4	5972675.3	9	0	-90	100.0
SBT139	486206.0	5972708.6	12	0	-90	100.0
SBT140	488616.4	5973694.5	9	0	-90	100.0
SBT141	488614.1	5974193.9	9	0	-90	100.0
SBT142	488610.9	5974593.7	12	0	-90	100.0
SBT143	488599.6	5974992.0	9	0	-90	100.0
SBT144	488391.6	5975333.5	9	0	-90	100.0
SBT145	485035.2	5976259.0	21	0	-90	100.0
SBT146	484735.3	5976255.9	12	0	-90	101.0
SBT147	484335.5	5976251.7	12	0	-90	101.0
SBT148	484035.4	5976247.8	6	0	-90	101.0
SBT149	484725.9	5970406.3	12	0	-90	101.0
SBT150	479544.7	5977423.9	12	0	-90	101.0
SBT151	479384.2	5977790.1	12	0	-90	101.0
SBT152	479576.3	5978394.0	6	0	-90	101.0
SBT153	480176.0	5978399.8	9	0	-90	101.0
SBT154	480500.7	5978410.2	9	0	-90	101.0
SBT155	480859.8	5978402.5	9	0	-90	101.0
SBT156	481289.5	5978417.3	9	0	-90	101.0
SBT157	481675.3	5978416.0	15	0	-90	101.0
SBT158	482075.1	5978420.5	9	0	-90	101.0
SBT159	482475.0	5978423.7	12	0	-90	101.0
SBT160	482774.8	5978426.1	6	0	-90	101.0
SBT161	483715.5	5978787.6	9	0	-90	101.0
SBT162	483712.6	5979187.4	7	0	-90	101.0
SBT163	483700.8	5979586.5	9	0	-90	101.0
SBT164	483705.4	5979985.4	6	0	-90	101.0
SBT165	483703.6	5980386.9	7	0	-90	101.0
SBT166	483688.0	5980978.4	9	0	-90	101.0
SBT167	483690.5	5981378.0	9	0	-90	101.0
SBT168	483773.8	5981858.5	6	0	-90	101.0
SBT169	483774.7	5982364.5	12	0	-90	101.0
SBT170	483772.1	5982883.9	9	0	-90	101.0
SBT171	483769.7	5983283.7	6	0	-90	101.0

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SBT172	483767.3	5983683.5	6	0	-90	101.0
SBT173	483765.5	5983983.4	9	0	-90	101.0
SBT174	483972.4	5982666.2	6	0	-90	101.0
SBT175	483480.4	5982743.9	14	0	-90	101.0
SBT176	482208.0	5983058.0	18	0	-90	91.7
SBT177	482343.0	5983542.0	12	0	-90	96.2
SBT178	477498.0	5997008.0	30	0	-90	108.6
SBT179	477065.0	5997284.0	30	0	-90	105.4
SBT180	472476.0	6007926.0	25	0	-90	100.2
SBT181	472860.0	6007891.0	30	0	-90	96.6
SBT182	471354.0	6008024.0	30	0	-90	97.6
SBT183	470376.0	6007930.0	27	0	-90	92.1
SBT184	469890.0	6007842.0	30	0	-90	93.9
SBT185	469099.0	6007701.0	30	0	-90	94.3
SBT186	468498.0	6007650.0	30	0	-90	91.2
SBT187	467514.0	6007610.0	27	0	-90	90.0
SBT188	467641.0	6003575.0	25	0	-90	87.1
SBT189	468025.0	6003701.0	26	0	-90	86.8
SBT190	471196.0	6001106.0	18	0	-90	80.6
SBT191	470727.0	6001060.0	17	0	-90	83.9
SBT192	470330.0	6001000.0	15	0	-90	86.0
SBT193	469773.0	6000790.0	18	0	-90	83.0
SBT194	469466.0	6000402.0	28	0	-90	89.3
SBT195	469000.0	6000240.0	30	0	-90	90.8
SBT196	468466.0	6000233.0	30	0	-90	84.6
SBT197	467884.0	6000252.0	24	0	-90	79.3
SBT198	471976.0	6001106.0	21	0	-90	89.2
SBT199	472674.0	6001066.0	21	0	-90	86.5
SBT200	474849.0	5993198.0	24	0	-90	93.8
SBT201	475337.0	5993131.0	30	0	-90	94.7
SBT202	477324.0	5993110.0	30	0	-90	107.6
SBT203	481888.0	5987829.0	28	0	-90	100.6
SBT204	481880.0	5987539.0	27	0	-90	97.9
SBT205	481847.0	5986099.0	20	0	-90	100.0
SBT206	485079.0	5988131.0	30	0	-90	108.7
SBT207	483975.0	5986869.0	27	0	-90	105.6
SBT208	483692.0	5986503.0	5	0	-90	110.5
SBT209	483187.0	5986012.0	28	0	-90	106.1
SBT210	481710.0	5985700.0	19	0	-90	98.2
SBT211	481531.0	5985300.0	19	0	-90	96.0
SBT212	480910.0	5984910.0	21	0	-90	96.4
SBT213	480431.0	5984938.0	30	0	-90	94.4
SBT214	480574.0	5984727.0	28	0	-90	98.9

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Hole ID	Easting (m)	Northing (m)	Total Depth EOH (m)	Azimuth (Deg)	Dip (Deg)	RL (m)
SBT215	480050.0	5983500.0	22	0	-90	91.7

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JORC Code, 2012 Edition – Table 1 report template

Section 1 Sampling Techniques and Data

(Criteria in this section apply to all succeeding sections.)

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 gold that has inherent sampling problems. Unusual commodities or mineralisation types (eg submarine nodules) may warrant disclosure of detailed information.	- The RC Aircore drilling program was undertaken by McLeod Drilling using industry standard air core drilling methods. To date, a total of 215 AC drill holes for 3,709m have been drilled at the Murraydium Project - Drill spoil from each 1m from drill rig was collected in buckets in rows adjacent to the rig. An aluminium scoop was used to then sub-sample each spoil pile to create a 2-3kg 1m sample in a calico bag. A further smaller sample was collected with a spoon and placed in chip sample tray. - All samples are submitted to Bureau Veritas Laboratories in Adelaide. - At the laboratory, the samples are oven dried at 105 degrees for a minimum of 24 hours and secondary crushed to 10mm. The samples are submitted for analysis using ICP Scan (Mixed Acid Digest – Lithium Borate Fusion). - Commercially obtained standards are inserted by the laboratory at a rate of ~ 1 in 15 into the sample.
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).	- LNR has completed air-core drilling, an industry standard technique. - McLeod Drilling used a Toyota Land air core rig and support vehicle for the Aircore drilling. - All drill holes were 3 inches in diameter. - Aircore drill rods used were 3m long. - AC drilling employed rotary blade type bit, with compressed air returning the chip samples through a reverse circulation up the innertube to a cyclone for sampling. - All Aircore drillholes were vertical with depths varying between 6m and 30m depths.
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	- No water was encountered during the drilling process, all drill samples were dry samples. - Sample recovery is expected to have minimal negative impact on the sample representativity. No significant loses of samples were observed due to the shallow drilling depths ($\leq 30\text{m}$)

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Criteria	JORC Code explanation	Commentary
	<i>sample recovery and grade and whether sample bias may have occurred due to preferential loss/gain of fine/coarse material.</i>	- Samples weights were not measured or weighed due to the preliminary nature of the project at the time of drilling. - Drilling was undertaken using a 'best practise' approach to achieve maximum sample recovery and quality through the mineralised zones. - Drill spoil from each 1m from drill rig was collected in buckets in rows adjacent to the rig. An aluminium scoop was used to then sub-sample each spoil pile to create a 2-3kg 1m sample in a calico bag. A further smaller sample was collected with a spoon and placed in chip sample tray. - Best practise sampling procedure included: suitable usage of dust suppression, suitable shroud, lifting off bottom between each metre, cleaning of sampling equipment, ensuring a dry sample and suitable supervision by the supervising geologist to ensure good sample quality. - At this stage, no known bias occurs between sample recovery and grade.
Logging	<i>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.</i> <i>Whether logging is qualitative or quantitative in nature. Core (or costean, channel, etc) photography.</i> <i>The total length and percentage of the relevant intersections logged.</i>	- AC chips were logged by a qualified geologist with sufficient experience in the geological terrane and relevant styles of mineralisation using an industry standard logging system which could eventually be utilised within a Mineral Resource Estimation. - Lithology, mineralisation, alteration, veining, weathering and structure were all recorded digitally. - Chips for each metre were stored in chip trays for preservation and future reference. - Logging is qualitative, quantitative or semi-quantitative in nature. Every drill hole was logged in full and logging was undertaken with reference to a drilling template with codes prescribed and guidance to ensure consistent and systematic data collection.
Sub-sampling techniques and sample preparation	<i>If core, whether cut or sawn and whether quarter, half or all core taken.</i> <i>If non-core, whether riffled, tube sampled, rotary split, etc and whether sampled wet or dry.</i> <i>For all sample types, the nature, quality and appropriateness of the sample</i>	- Single metre samples were collected from the drill spoil using a 'scoop'. - Scoop sampling was carried out by contract field assistant. The scoop samples were collected by taking a cross section of the drill spoil, to ensure a representative sample of the full 1m sample was collected.

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Criteria	JORC Code explanation	Commentary
	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.	- The Competent Person considers scoop sampling acceptable method for representative sample given the low natural inherent variability of the mineralisation. - Sample preparation is to be carried out by Bureau Veritas Laboratories. - Drill spoil from each 1m from drill rig was collected in buckets in rows adjacent to the rig. An aluminium scoop was used to then sub-sample each spoil pile to create a 2-3kg 1m sample in a calico bag. A further smaller sample was collected with a spoon and placed in chip sample tray.
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.	Laboratory Analysis - ICP Scan (Mixed Acid Digest – Lithium Borate Fusion) is considered appropriate for REE determination. - Samples are digested using a mixed acid digest and also fused with Lithium Borate to ensure all elements are brought into solution. The digests are then analysed for the following elements in ppm or in % when shown (detection limits shown in ppm): Ag(0.2), Al%(0.005), As(1), Ba(20), Be(0.5), Bi(0.1), Ca%(0.01), Cd(0.5), Co(1), Cr(20), Cs(0.1), Cu(2), Fe%(0.01), Ga(0.2), Hf(0.2), Ln(0.05), K%(0.01), Li(10), Mg%(0.005), Mo(0.5), Na%(0.01), Nb(0.5), Ni(2), P%(0.005), Pb(1), Rb(0.2), Re(0.1), S(50), Sb(0.1), Sc(1), Se(5), Si%(0.005), Sn(0.1), Sr(0.5), Ta(0.1), Te(0.2), Yh(0.1), Ti%(0.005), Tl(0.1), U(0.1), V(5), W(0.5), Y(1), Zn(2), Zr(10), La(0.1), Ce(0.1), Pr(0.05), Nd(0.05), Sm(0.05), Eu(0.05), Gd(0.2), Tb(0.02), Dy(0.05), Ho(0.02), Er(0.05), Tm(0.05), Yb(0.05), Lu(0.02). - Bureau Veritas completed its own internal QA/QC checks that included a Laboratory repeat roughly every 22 samples and a standard reference sample roughly every 6 samples and a blank roughly every 40 samples prior to the results being released. - Analysis of QA/QC samples show laboratory data to be of acceptable accuracy and precision. - No standards or blanks were submitted Lanthanein Resources. - Assays are covered under the NATA scope of accreditation. Documents procedures are in accordance with ISO 9001 Quality Management Systems.
Verification of sampling	The verification of significant intersections by either independent or	Logging and sampling were recorded directly into a logging system, verified and eventually stored in

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Criteria	JORC Code explanation	Commentary																																																
and assaying	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.	an offsite database. - Assay data was received in digital format from the laboratory and was uploaded directly into the database. - Significant intersections are inspected by senior consultant personnel and company's Director. - No twinned holes have been drilled at this time. - Assay data yielding elemental concentrations for rare earths (REE) within the sample are converted to their stoichiometric oxides (REO) in a calculation performed within the database using the conversion factors in the table below, Note: Y₂O₃ is included in the TREO calculation. TREO = La₂O₃ + CeO₂ + Pr₆O₁₁ + Nd₂O₃ + Sm₂O₃ + Eu₂O₃ + Gd₂O₃ + Tb₄O₇ + Dy₂O₃ + Ho₂O₃ + Er₂O₃ + Tm₂O₃ + Yb₂O₃ + Lu₂O₃ + Y₂O₃. <table border="1"> <thead> <tr> <th>Element Name</th><th>Element Oxide</th><th>Oxide Factor</th></tr> </thead> <tbody> <tr><td>Ce</td><td>CeO₂</td><td>1.2284</td></tr> <tr><td>Dy</td><td>Dy₂O₃</td><td>1.1435</td></tr> <tr><td>Er</td><td>Er₂O₃</td><td>1.1435</td></tr> <tr><td>Eu</td><td>Eu₂O₃</td><td>1.1579</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>La</td><td>La₂O₃</td><td>1.1728</td></tr> <tr><td>Lu</td><td>Lu₂O₃</td><td>1.1371</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>Sm</td><td>Sm₂O₃</td><td>1.1596</td></tr> <tr><td>Tb</td><td>Tb₄O₇</td><td>1.1762</td></tr> <tr><td>Tm</td><td>Tm₂O₃</td><td>1.1421</td></tr> <tr><td>Y</td><td>Y₂O₃</td><td>1.2699</td></tr> <tr><td>Yb</td><td>Yb₂O₃</td><td>1.1387</td></tr> </tbody> </table>	Element Name	Element Oxide	Oxide Factor	Ce	CeO ₂	1.2284	Dy	Dy ₂ O ₃	1.1435	Er	Er ₂ O ₃	1.1435	Eu	Eu ₂ O ₃	1.1579	Gd	Gd ₂ O ₃	1.1526	Ho	Ho ₂ O ₃	1.1455	La	La ₂ O ₃	1.1728	Lu	Lu ₂ O ₃	1.1371	Nd	Nd ₂ O ₃	1.1664	Pr	Pr ₆ O ₁₁	1.2082	Sm	Sm ₂ O ₃	1.1596	Tb	Tb ₄ O ₇	1.1762	Tm	Tm ₂ O ₃	1.1421	Y	Y ₂ O ₃	1.2699	Yb	Yb ₂ O ₃	1.1387
Element Name	Element Oxide	Oxide Factor																																																
Ce	CeO ₂	1.2284																																																
Dy	Dy ₂ O ₃	1.1435																																																
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Eu	Eu ₂ O ₃	1.1579																																																
Gd	Gd ₂ O ₃	1.1526																																																
Ho	Ho ₂ O ₃	1.1455																																																
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Pr	Pr ₆ O ₁₁	1.2082																																																
Sm	Sm ₂ O ₃	1.1596																																																
Tb	Tb ₄ O ₇	1.1762																																																
Tm	Tm ₂ O ₃	1.1421																																																
Y	Y ₂ O ₃	1.2699																																																
Yb	Yb ₂ O ₃	1.1387																																																
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.	- Collar position was recorded using a Garmin handheld GPS which has an accuracy of +/- 5m. - GDA2020_MGA_Zone_54 is the grid format for all xyz data reported. - No downhole surveys have been completed – all holes are vertical and shallow.																																																
Data	Data spacing for reporting of	The drillhole spacing for the program is suitable as a																																																

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Criteria	JORC Code explanation	Commentary
spacing and distribution	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.	'first pass' for establishing a general trend of grade continuity for REE within the tenement. - See drill table for hole positions. - Data spacing at this stage is not suitable for Mineral Resource Estimation.
Orientation of data in relation to geological structure	- Whether the orientation of sampling achieves unbiased sampling of possible structures and the extent to which this is known, considering the deposit type. - 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.	- Vertical drilling generally achieved a very high angle of intercept with the flat lying, stratabound mineralisation. - No sample bias is known at this time.
Sample security	The measures taken to ensure sample security.	All geochemical samples were collected, bagged and sealed by a competent geological contractor. Bags were labelled with the drill hole and sample numbers and delivered to Bureau Veritas Laboratories in Adelaide.
Audits or reviews	The results of any audits or reviews of sampling techniques and data.	The program is continuously reviewed by senior company personnel.

Section 2 Reporting of Exploration Results

(Criteria in this section apply to all succeeding sections.)

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.	Lanthanein Resources Ltd entered into a conditional agreement to acquire all of the shares in Southern Rare Earths Pty Ltd (SRE) which holds the granted exploration licences in the Southeast of South Australia. The acquisition was completed on 16 September 2021. - The Murraydium Project consists of 1 granted Exploration Licence EL6717. - All tenements are 100% owned by Southern Rare Earths.
Exploration done by other parties	Acknowledgment and appraisal of exploration by other parties.	There has been limited drilling for mineral sands by Iluka Resources along existing roads and tracks in 2002 and Australian Desalinated Water Pty Ltd in 2013.

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Criteria	JORC Code explanation	Commentary
Geology	Deposit type, geological setting and style of mineralisation.	- The project area forms part of an extensive Tertiary strand plain comprising a series of sandstone-dominant fluvial and beach-dune strand complexes. The sand units commonly form undulating sand ridges interspersed with low lying areas of clay, mud and sand. - The neighboring Koppamurra Deposit of REE-bearing clays that contain the Yellow Tail and Red Tail deposits occurs within the lower part of the Loxton-Parilla Sand unit. The Loxton-Parilla Sand is a very extensive unit widely distributed across the southern Murray Basin. Extensive areas of Loxton-Parilla Sand are exposed at surface within the Bordertown Block where it typically forms rolling terrain of low sandy hills and ridges
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.	An overview of the drilling program is given within the text within this document.
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.	- No metal equivalents have been used. - Significant intercepts are calculated using downhole sample length weighted averages and a lower cut-off grade of 350 ppm TREO. - A full list of drillholes with significant intercepts > 350ppm TREO is included in the body of this report.

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Criteria	JORC Code explanation	Commentary
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').	Drillhole angle relative to mineralisation has been almost perpendicular, with vertical drillholes through the flat horizontal mineralisation related to the regolith. Generally, the stratabound intercepts are close to true width.
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.	Refer to figures within this report.
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.	The accompanying document is a balanced report containing drilling results that are consistent with the JORC guidelines. Where data may have been excluded, it is not considered material.
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.	All material results are reported in this release.
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.	Additional AC drilling Metallurgical test work