

ACTIVITIES REPORT

QUARTER ENDED 30 SEPTEMBER 2023

Lyons Project

- **Infill drilling at the Lyons 12 & 13 prospects extend known strike length of economic TREO mineralisation to 1,200 metres and remains open**
- **Maiden Resource Estimation at Lyons 12 & 13 and Project Exploration Target in process**
- **Significant new intercepts from the latest round of drilling include:**
 - **LYRC135: 1m at 0.76% TREO and 1.22% Nb₂O₅ (45% NdPr:TREO) from 33m**
 - **LYRC138: 2m @ 0.57% TREO and 0.18% Nb₂O₅ (50% NdPr:TREO) from 14m**
 - **LYRC141: 2m @ 0.66% TREO and 0.49% Nb₂O₅ (46% NdPr:TREO) from 51m**
 - **LYRC140: 3m @ 0.36% TREO and 0.63% Nb₂O₅ (39% NdPr:TREO) from 34m**
 - **LYRC133: 1m at 0.36% TREO and 1.09% Nb₂O₅ (42% NdPr:TREO) from 53m**
- **Kilometre scale potentially mineralised ironstones both undercover and outcropping still to be drill tested**

Murraydium Project

- **Assays received from the 215 reconnaissance roadside Air Core drill holes on the Bordertown Block targeting REEs 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**

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- **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**

Lanthanein Resources Limited (**Lanthanein** or the **Company**) is pleased to provide its quarterly report for the three-month period ending 30 September 2023.

Gascoyne Rare Earth Elements (REE) Project, Western Australia

During the quarter the Company announced the results of recent infill drilling completed at its Lyons Rare Earths Project in the Gascoyne Region of Western Australia (**Lyons Project**). The drill program targeted high-grade rare earth mineralisation previously discovered at the outcropping ironstones at Lyons 12 and 13 (Figure 1).

Additional drilling of targeted priority high magnetic curvilinear trends where two 450 metre deep diamond holes co-funded with \$200,000 from the Department of Mines Industry Regulation and Safety (DMIRS) Exploration Incentive Scheme were completed to investigate potential for large tonnage REE carbonatites similar to Lynas Corporation's Mount Weld deposit in Western Australia.

A total of 93 RC and two diamond drillholes totalling 10,407 metres were completed testing both the known ironstones at surface, ironstone and carbonatite targets undercover (Figure 2).

RC Drilling Assay Results Lyons 12 and 13 (LYRC112 to LYRC147):

The Company's step out and infill drilling program from its maiden drilling program (refer to ASX Announcement dated 14 December 2022) completed a total of an additional 36 Reverse Circulation drillholes at Lyons 12 and 13 for 2,791m drilled, at an average depth of 78m. Mineral Resource Estimation is currently underway.

Significant 2023 drill intersections at the Lyons 12 and 13 prospects include (ASX 31 August 2023):

- LYRC135: 1m at 0.76% TREO and 1.22% Nb₂O₅ from 33m
- LYRC138: 2m @ 0.57% TREO and 0.18% Nb₂O₅ from 14m
- LYRC141: 2m @ 0.66% TREO and 0.49% Nb₂O₅ from 51m
- LYRC140: 3m @ 0.36% TREO and 0.63% Nb₂O₅ from 34m
- LYRC133: 1m at 0.36% TREO and 1.09% Nb₂O₅ from 53m

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

Potential remains for further discoveries of ironstones and carbonatites within the Company's tenure where no historical REE exploration has occurred (Figure 2).

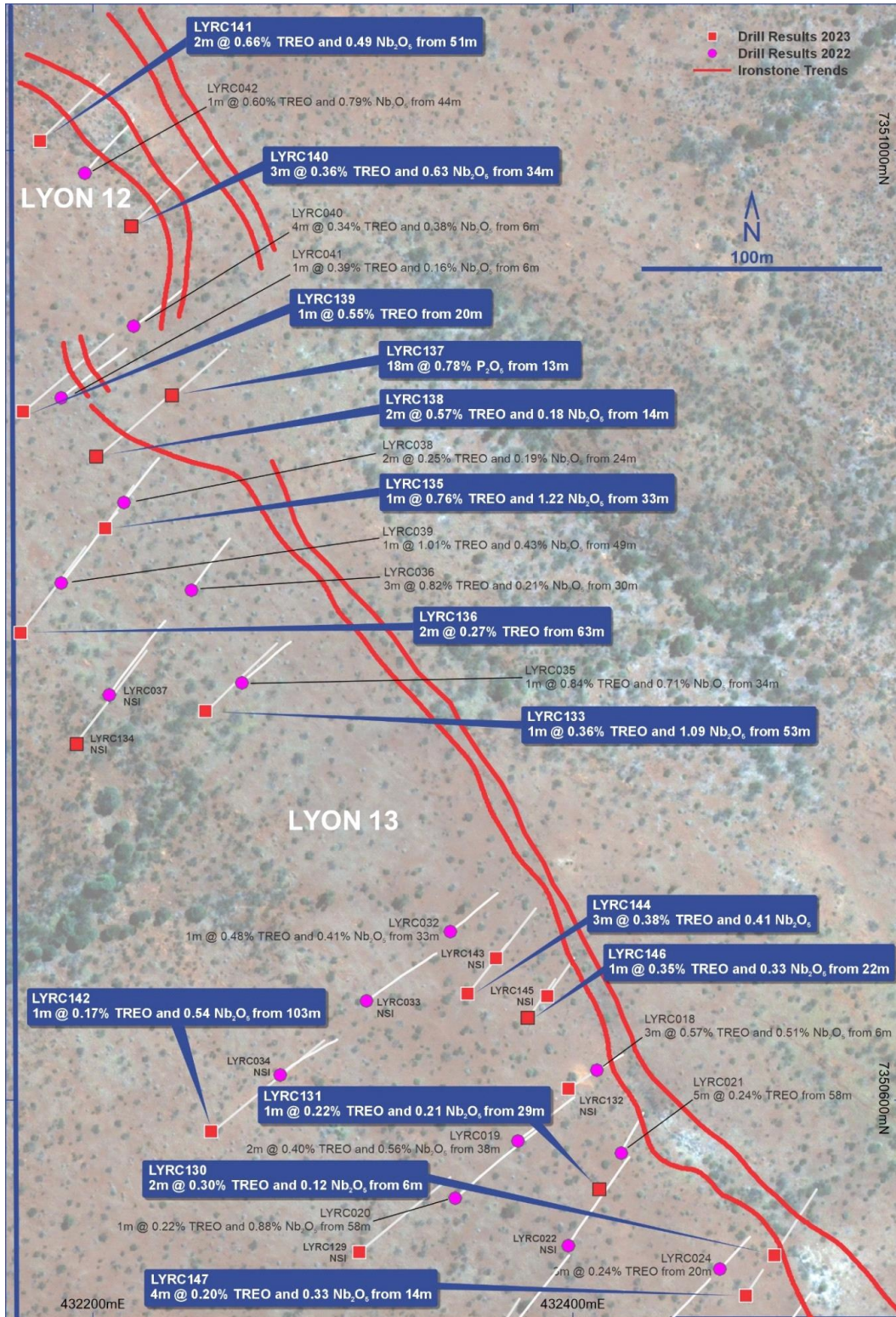


Figure 1: Plan View of the Lyons 12 and 13 Drillholes and Results

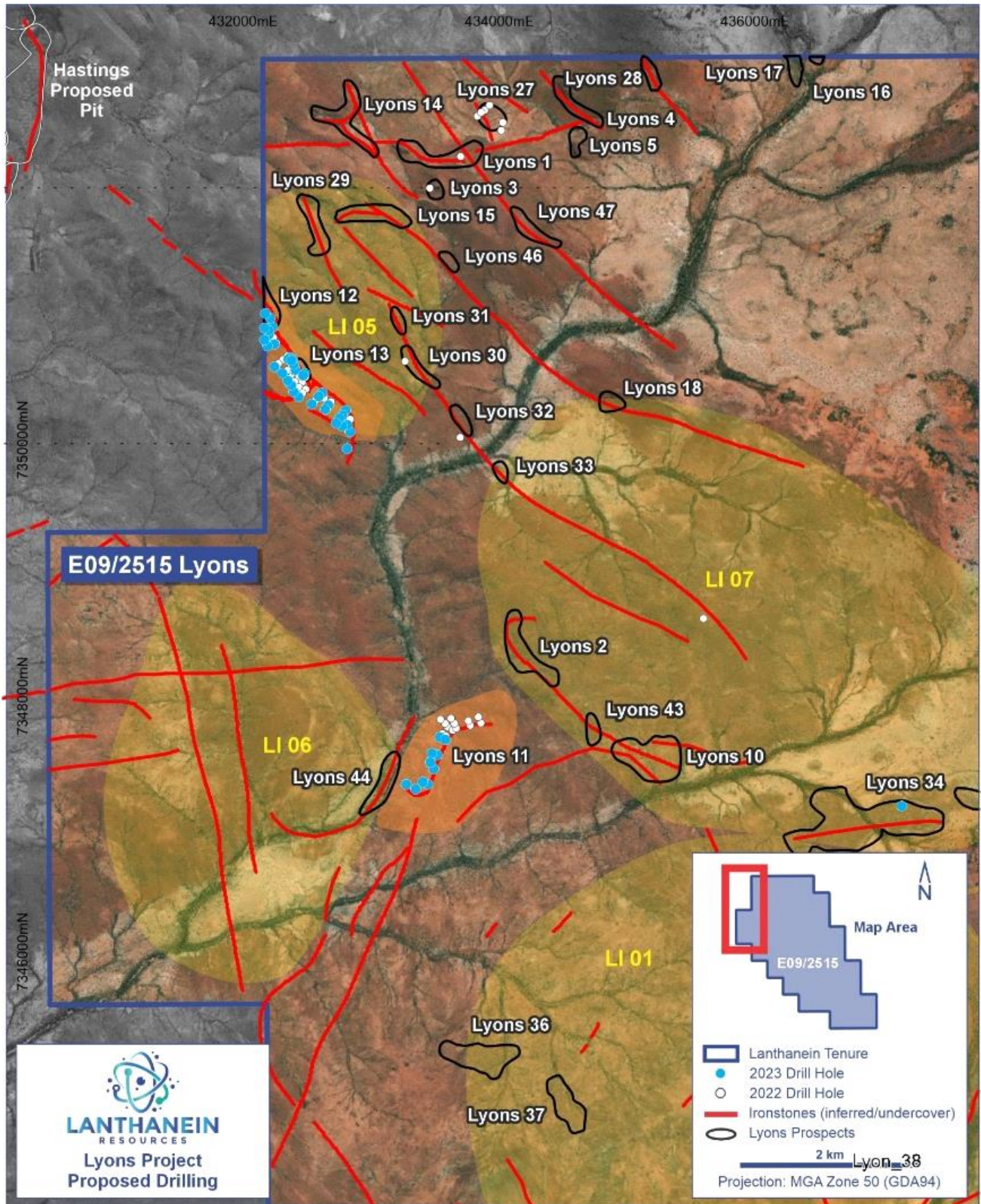


Figure 2: Interpreted intrusives Showing Lyons Prospects and Ironstones within close proximity of Hastings Technology Metals' Yangibana REE Mine

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Murraydium Rare Earths Project, South Australia

During the quarter the Company announced the 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.

A total of 215 Air Core drill holes totalling 3,709 metres 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 3).

Results include (ASX 14 September 2023):

- 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 (Nd_2O_3) from the mineralised intersection also ranged 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. 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, 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. 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.

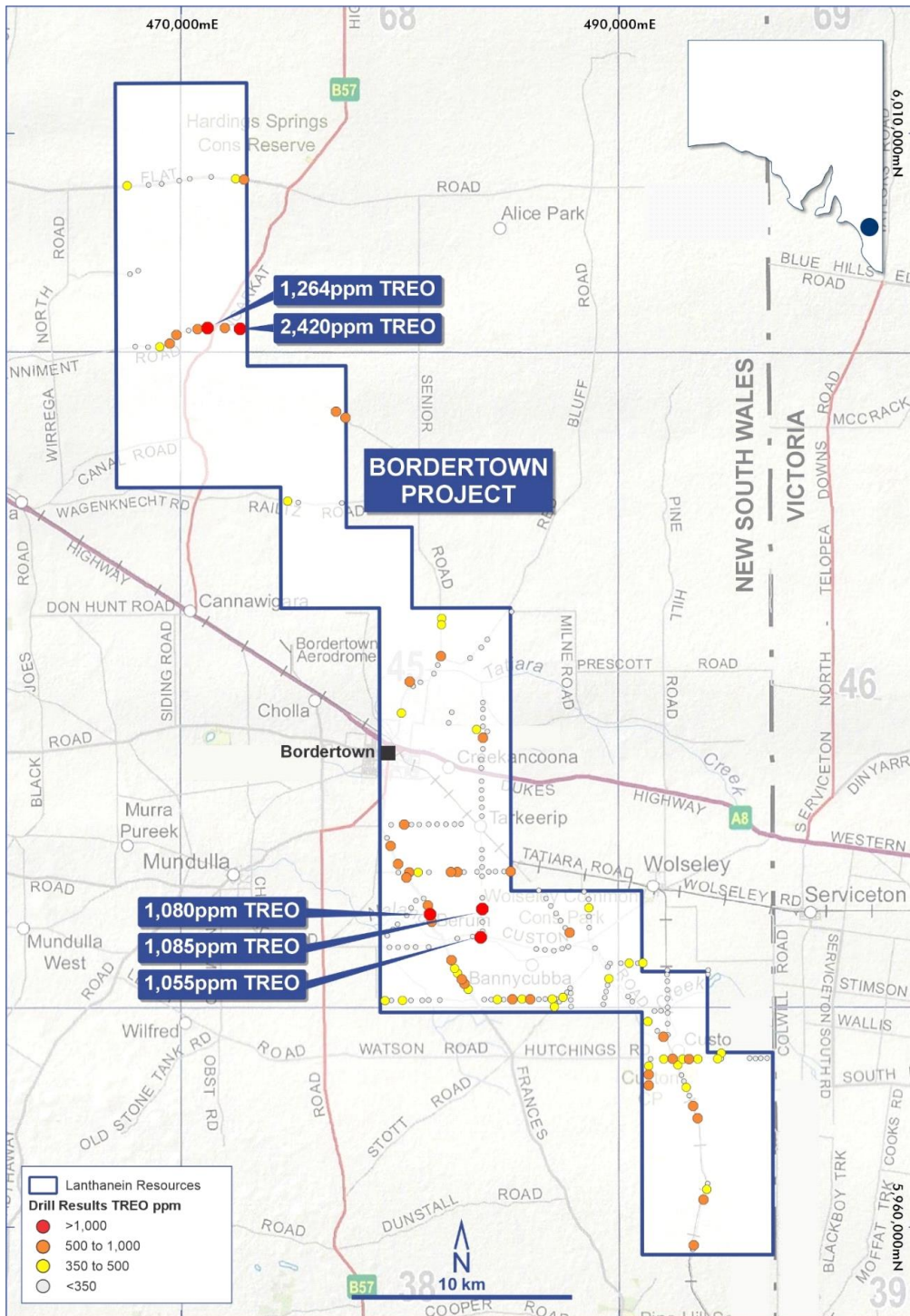


Figure 3: Locations of Roadside Air Core Drill Holes with assays for Each Drill Hole

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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 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.

ESG

Environmental

As part of our ongoing dedication to environmental stewardship, we have been diligently working on the development of disclosures and metrics in line with the World Economic Forum (WEF) framework.

Social

We continue to conduct Heritage Avoidance Surveys in collaboration with the Thiinmar Elder, Peter Salmon. This ongoing engagement ensures that our operations are sensitive to the cultural heritage and traditions of the communities we operate in.

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Governance

The annual review of Lanthanein's Governing Policies has been successfully completed. As a result, we have identified areas for improvement, and two additional policies are currently in draft format, set to be presented to the Board for review. These policies will further strengthen our governance framework and ensure we are aligned with the highest ethical standards.

We remain dedicated to embedding ESG principles into every aspect of our operations. We will continue to engage with stakeholders, seek feedback, and incorporate best practices to drive meaningful change and sustainable impact.

Corporate

The Company's annual general meeting has been scheduled for 9.30am WST on Friday, 10 November 2023 at 104 Colin Street, West Perth WA 6005.

ASX Additional Information

- ASX Listing Rule 5.3.1: Exploration and Evaluation Expenditure during the quarter was \$1,232,000. Full details of exploration activity during the September quarter are set out in this report.
- ASX Listing Rule 5.3.2: There was no substantive mining production and development activities during the quarter.
- ASX Listing Rule 5.3.5: Payment to related parties of the Company and their associates during the quarter: \$123,292. The Company advises that this relates to non-executive directors' remuneration and additional technical consulting fees. Please see the Remuneration Report in the Annual Report for further details on Directors' Remuneration.

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

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

Releases submitted to the ASX during the Quarter included:

28/09/2023	Annual Report to Shareholders
28/09/2023	Appendix 4G and Corporate Governance Statement
14/09/2023	Outstanding REE Results from Roadside Drilling at Murraydium
13/09/2023	Closing Date for Director Nominations
31/08/2023	Lyons 12 & 13 Drilling Extends High Grade REE & Niobium
27/07/2023	Quarterly Activities/Appendix 5B Cash Flow Report



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Reference

¹ Hastings Technology Metals Ltd, COMBINED GROUP REPORT C265/2008 For the period: 1st December 2014 to the 30th November 2015 YANGIBANA PROJECT (WAMEX A107803)

LANTHANEIN RESOURCES LTD

**Competent Persons’ Statements:
 Papua New Guinea and South Australian Projects.**

The information in this report that relates to Exploration Results and Mineral Resources is based on information compiled by or compiled under the supervision of 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.

Western Australian Projects

The information in this announcement that relates to Exploration Results and other geological information has been compiled under the supervision of Mr Thomas Langley. Mr Langley is a member of the Australian Institute of Geoscientists and the Australasian Institute of Mining and Metallurgy and is a consultant to the Company. Mr Langley has sufficient experience which is relevant to the style of mineralisation and type 23 of deposit under consideration and the activity he is undertaking to qualify as a Competent Person as defined in the 2012 Edition of the “Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves ('the JORC Code')”. Mr Langley consents to the inclusion in the report of the matters based on his information in the form and context in which it appears. The Company confirms that it is not aware of any new information or data that materially affects the information in the original reports, and that the form and context in which the Competent Person’s findings are presented have not been materially modified from the original reports.

ABOUT LANTHANEIN:

Lanthanein is focused on Rare Earth Elements and battery metals, directly in line with global push for carbon neutrality driven by renewable energy (particularly wind turbine) installations and Electric Vehicle adoption driving global demand for the combination of rare earths. Following the recent acquisitions of Southern Rare Earths Pty Ltd and Dalkeith Capital Pty Ltd, Lanthanein has secured 100% interest in the Murraydium, Gascoyne, Koolya and Kalgoorlie projects which are all located in Australia. Lanthanein also owns 100% of the Tolukuma project in PNG.

Schedule 1 – Lanthanein Resources Limited Tenement Information (Australia) as at 30 September 2023

Tenement Number and Name	Ownership	Sub-blocks	Area (sq.km)	Application /Grant Date	Expiry Date
E 09/2515 - Gascoyne (WA)	100% Dalkeith Capital Pty Ltd	47	147.02	17-Dec-21	16-Dec-26
E 09/2516 - Gascoyne (WA)	100% Dalkeith Capital Pty Ltd	25	78.35	17-Dec-21	16-Dec-26
E 77/2796 - Koolya (WA)	100% Dalkeith Capital Pty Ltd	47	138.78	05-Nov-21	04-Nov-26
E 77/2797 - Koolya (WA)	100% Dalkeith Capital Pty Ltd	28	82.68	05-Nov-21	04-Nov-26
E 52/4012 - Mt Clere (WA)	100% Dalkeith Capital Pty Ltd	191	591.63	23-Mar-22	22-Mar-27
EL6717 - Murraydium (SA)	100% Southern Rare Earths Pty Ltd	78	876.00	06-Apr-22	05-Apr-28



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	Total of Granted Tenements	421	1,929.22		
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No changes in tenements occurred during the quarter.

Lanthanein Resources Limited Exploration Licence Information (Papua New Guinea)

Exploration Licence Number and Name	Ownership	Sub-blocks	Area (sq.km)*	Grant Date	Expiry Date
EL2531 - Tolukuma	100% Frontier Copper PNG Ltd	65	223.00	25-Feb-19	24-Feb-23
ELA2529 - Gazelle	100% Frontier Copper PNG Ltd	211	719.51	N/A	N/A
	Total of Granted EL's	65	223.00		

*1 sub-block approximately 3.41 sq.km

Notes:	The PNG Mining Act-1992 stipulates that EL's are granted for a renewable 2 year term (subject to satisfying work and expenditure commitments).
	The PNG Government maintains the right to purchase up to 30% project equity at "Sunk Cost" if/when a Mining Lease is granted.

Appendix 5B

Mining exploration entity or oil and gas exploration entity quarterly cash flow report

Name of entity

LANTHANEIN RESOURCES LTD

ABN

96 095 684 389

Quarter ended ("current quarter")

30 September 2023

Consolidated statement of cash flows	Current quarter \$A'000	Year to date (3 months) \$A'000
1. Cash flows from operating activities		
1.1 Receipts from customers	-	-
1.2 Payments for		
(a) exploration & evaluation (if expensed)	(5)	(5)
(b) development	-	-
(c) production	-	-
(d) staff costs	-	-
(e) administration and corporate costs	(167)	(167)
1.3 Dividends received (see note 3)	-	-
1.4 Interest received	15	15
1.5 Interest and other costs of finance paid	-	-
1.6 Income taxes paid	-	-
1.7 Government grants and tax incentives	-	-
1.8 Other (provide details if material)	121	121
1.9 Net cash from / (used in) operating activities	(36)	(36)

2. Cash flows from investing activities		
2.1 Payments to acquire:		
(a) entities	-	-
(b) tenements	-	-
(c) property, plant and equipment	-	-
(d) exploration & evaluation (if capitalised)	(1,228)	(1,228)
(e) investments	-	-
(f) other non-current assets	-	-

Mining exploration entity or oil and gas exploration entity quarterly cash flow report

Consolidated statement of cash flows		Current quarter \$A'000	Year to date (3 months) \$A'000
2.2	Proceeds from the disposal of:		
	(a) entities	-	-
	(b) tenements	-	-
	(c) property, plant and equipment	-	-
	(d) investments	-	-
	(e) other non-current assets	-	-
2.3	Cash flows from loans to other entities	-	-
2.4	Dividends received (see note 3)	-	-
2.5	Other (provide details if material)	-	-
2.6	Net cash from / (used in) investing activities	(1,228)	(1,228)

3.	Cash flows from financing activities		
3.1	Proceeds from issues of equity securities (excluding convertible debt securities)	-	-
3.2	Proceeds from issue of convertible debt securities	-	-
3.3	Proceeds from exercise of options	-	-
3.4	Transaction costs related to issues of equity securities or convertible debt securities	-	-
3.5	Proceeds from borrowings	-	-
3.6	Repayment of borrowings	-	-
3.7	Transaction costs related to loans and borrowings	-	-
3.8	Dividends paid	-	-
3.9	Other (provide details if material)	-	-
3.10	Net cash from / (used in) financing activities	-	-

4.	Net increase / (decrease) in cash and cash equivalents for the period		
4.1	Cash and cash equivalents at beginning of period	2,892	2,892
4.2	Net cash from / (used in) operating activities (item 1.9 above)	(36)	(36)
4.3	Net cash from / (used in) investing activities (item 2.6 above)	(1,228)	(1,228)
4.4	Net cash from / (used in) financing activities (item 3.10 above)	-	-

Mining exploration entity or oil and gas exploration entity quarterly cash flow report

Consolidated statement of cash flows		Current quarter \$A'000	Year to date (3 months) \$A'000
4.5	Effect of movement in exchange rates on cash held	-	-
4.6	Cash and cash equivalents at end of period	1,628	1,628

5.	Reconciliation of cash and cash equivalents at the end of the quarter (as shown in the consolidated statement of cash flows) to the related items in the accounts	Current quarter \$A'000	Previous quarter \$A'000
5.1	Bank balances	1,128	876
5.2	Call deposits	500	2,016
5.3	Bank overdrafts	-	-
5.4	Other (provide details)	-	-
5.5	Cash and cash equivalents at end of quarter (should equal item 4.6 above)	1,628	2,892

6. Payments to related parties of the entity and their associates

- 6.1 Aggregate amount of payments to related parties and their associates included in item 1
- 6.2 Aggregate amount of payments to related parties and their associates included in item 2

**Current quarter
\$A'000**

123

-

Note: if any amounts are shown in items 6.1 or 6.2, your quarterly activity report must include a description of, and an explanation for, such payments

Consulting fees and directors' fees \$123,292

Mining exploration entity or oil and gas exploration entity quarterly cash flow report

7. Financing facilities	Total facility amount at quarter end \$A'000	Amount drawn at quarter end \$A'000
<i>Note: the term "facility" includes all forms of financing arrangements available to the entity. Add notes as necessary for an understanding of the sources of finance available to the entity.</i>		
7.1 Loan facilities	-	-
7.2 Credit standby arrangements	-	-
7.3 Other (please specify)	-	-
7.4 Total financing facilities	-	-
7.5 Unused financing facilities available at quarter end		-
7.6 Include in the box below a description of each facility above, including the lender, interest rate, maturity date and whether it is secured or unsecured. If any additional financing facilities have been entered into or are proposed to be entered into after quarter end, include a note providing details of those facilities as well.		

8. Estimated cash available for future operating activities	\$A'000
8.1 Net cash from / (used in) operating activities (Item 1.9)	(36)
8.2 Capitalised exploration & evaluation (Item 2.1(d))	(1,228)
8.3 Total relevant outgoings (Item 8.1 + Item 8.2)	(1,264)
8.4 Cash and cash equivalents at quarter end (Item 4.6)	1,628
8.5 Unused finance facilities available at quarter end (Item 7.5)	-
8.6 Total available funding (Item 8.4 + Item 8.5)	1,628
8.7 Estimated quarters of funding available (Item 8.6 divided by Item 8.3)	1.29
8.8 If Item 8.7 is less than 2 quarters, please provide answers to the following questions:	
1. Does the entity expect that it will continue to have the current level of net operating cash flows for the time being and, if not, why not?	
Answer: No. The Company has completed its intensive drill programme timetable for the time being. No additional drilling will be undertaken during the December quarter.	
2. Has the entity taken any steps, or does it propose to take any steps, to raise further cash to fund its operations and, if so, what are those steps and how likely does it believe that they will be successful?	
Answer: No	
3. Does the entity expect to be able to continue its operations and to meet its business objectives and, if so, on what basis?	
Answer: Yes	

Compliance statement

- 1 This statement has been prepared in accordance with accounting standards and policies which comply with Listing Rule 19.11A.
- 2 This statement gives a true and fair view of the matters disclosed.

Date: 18 October 2023

Authorised by: (lodged electronically)
Matthew Foy – Company Secretary

Notes

1. This quarterly cash flow report and the accompanying activity report provide a basis for informing the market about the entity's activities for the past quarter, how they have been financed and the effect this has had on its cash position. An entity that wishes to disclose additional information over and above the minimum required under the Listing Rules is encouraged to do so.
2. If this quarterly cash flow report has been prepared in accordance with Australian Accounting Standards, the definitions in, and provisions of, *AASB 6: Exploration for and Evaluation of Mineral Resources* and *AASB 107: Statement of Cash Flows* apply to this report. If this quarterly cash flow report has been prepared in accordance with other accounting standards agreed by ASX pursuant to Listing Rule 19.11A, the corresponding equivalent standards apply to this report.
3. Dividends received may be classified either as cash flows from operating activities or cash flows from investing activities, depending on the accounting policy of the entity.
4. If this report has been authorised for release to the market by your board of directors, you can insert here: "By the board". If it has been authorised for release to the market by a committee of your board of directors, you can insert here: "By the [name of board committee – eg Audit and Risk Committee]". If it has been authorised for release to the market by a disclosure committee, you can insert here: "By the Disclosure Committee".
5. If this report has been authorised for release to the market by your board of directors and you wish to hold yourself out as complying with recommendation 4.2 of the ASX Corporate Governance Council's *Corporate Governance Principles and Recommendations*, the board should have received a declaration from its CEO and CFO that, in their opinion, the financial records of the entity have been properly maintained, that this report complies with the appropriate accounting standards and gives a true and fair view of the cash flows of the entity, and that their opinion has been formed on the basis of a sound system of risk management and internal control which is operating effectively.