



# M O U N T R I D L E Y M I N E S L T D

RARE EARTHS PROJECT - November 2022 ASX: MRD

AGM PRESENTATION



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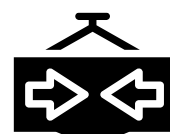
# Overview



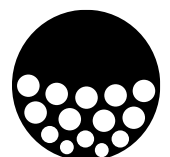
Why rare earth elements.



Mount Ridley's opportunity.



About Rare Earth Elements



The Mount Ridley REE Project



The next steps





# Why we are exploring for rare earth elements?

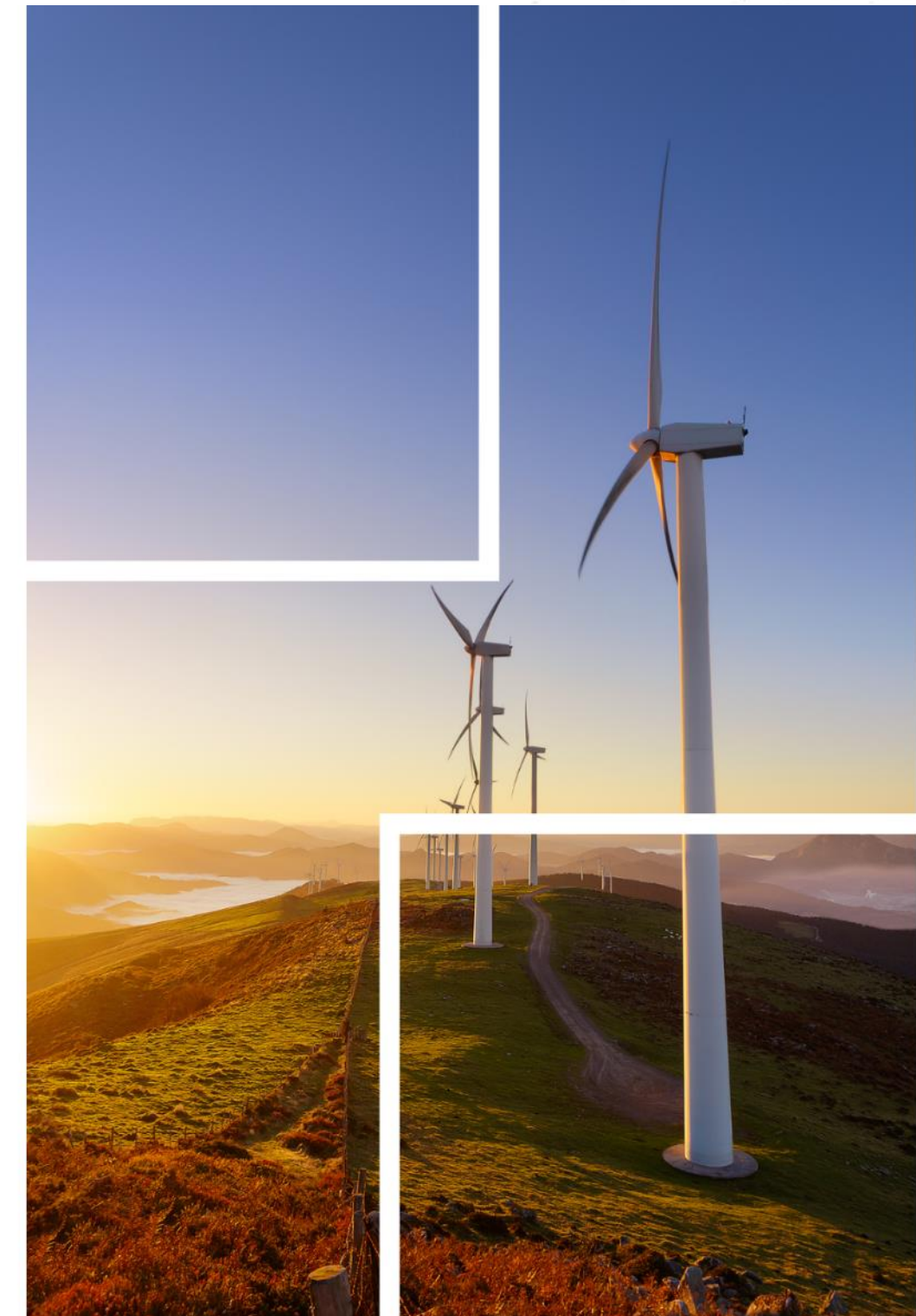
## Simple:

The world is expecting action towards **limiting climate change**.

Climate change is widely recognized as being exacerbated by atmospheric CO<sub>2</sub> pollution; the result of burning carbon-based fuel.

One aspect of the de-carbonization effort is the increased use of wind turbines and electric motors.

Certain rare earth elements are critically necessary for the manufacture of magnetic direct drive turbines.



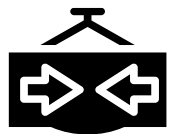
# The Mount Ridley Opportunity



The Esperance-Southern Ocean District of WA hosts major quantities of critical REE mineralisation.



Mount Ridley has tenements with an area of 3,400km<sup>2</sup>.



Very widespread REE mineralisation - apparently clay-hosted.

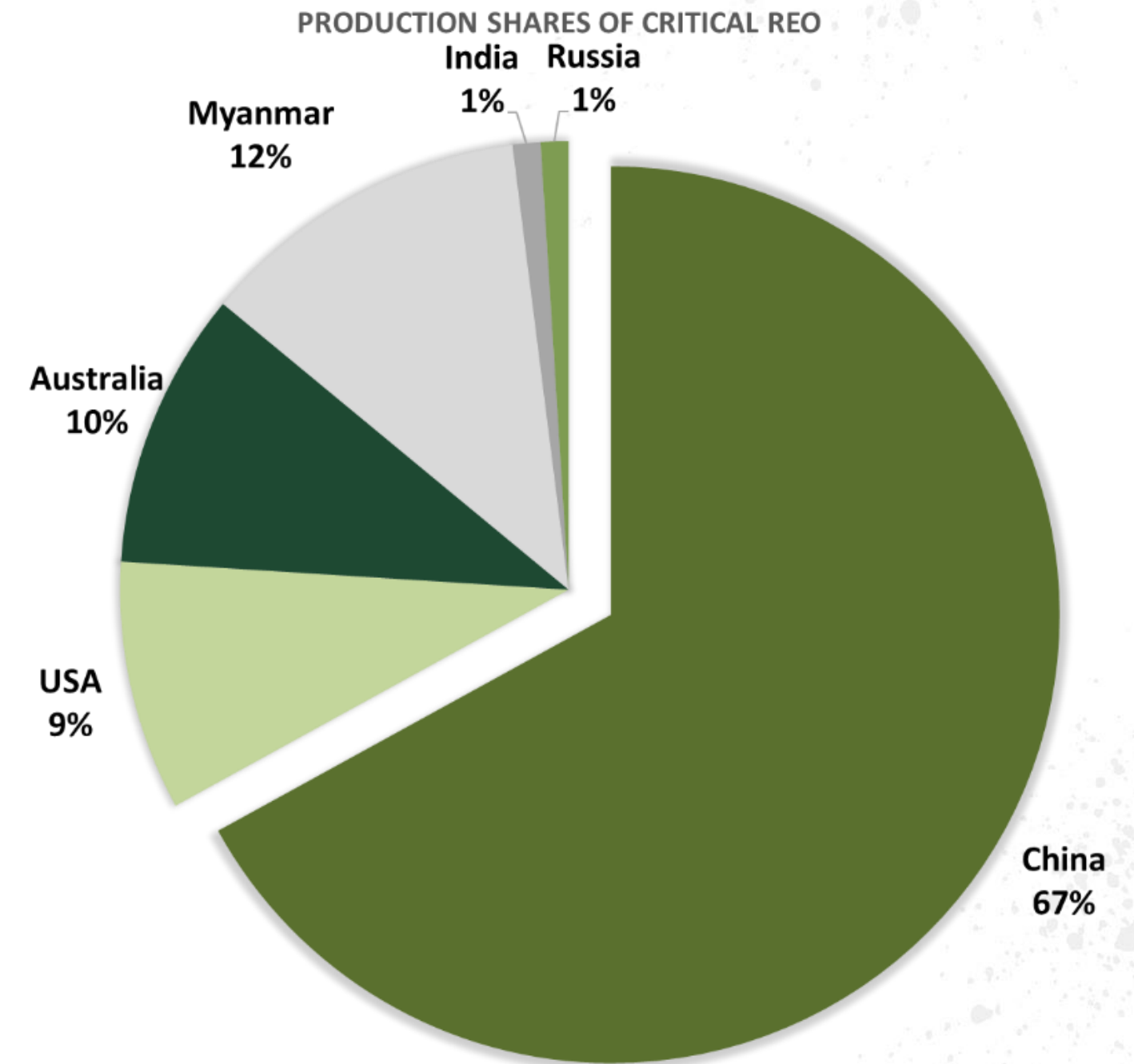


Results returned to date compare favourably with other Australian and Ugandan projects.



# About Rare Earth Elements

- REE here refers to 14 elements plus yttrium<sup>1</sup>.
- Of these, **Dy, Tb, Nd, Eu, and Y** are classed as critical by the US Department of Energy. Most come from China.
- REEs make the world's strongest permanent magnets, that are fundamental to the manufacture of electric generators and hybrid vehicle power systems eg<sup>3</sup>.
- By 2035, the demand for Nd is estimated to increase by 4,000 to 18,000 tons and for Dy by 200 to 1200 tons<sup>9</sup>.



57	58	59	60	61	62	63	64	65	66	67	68	69	70	71
La	Ce	Pr	Nd	Pm	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb	Lu
Lanthanum	Cerium	Praseodymium	Niodymium	Promethium	Samarium	Europium	Gadolinium	Terbium	Dysprosium	Holmium	Erbium	Thulium	Ytterbium	Lutetium
138.90547	140.12	140.90768	144.242	(145)	150.36	151.964	157.25	158.92535	162.500	164.93033	167.259	168.93402	173.045	174.967

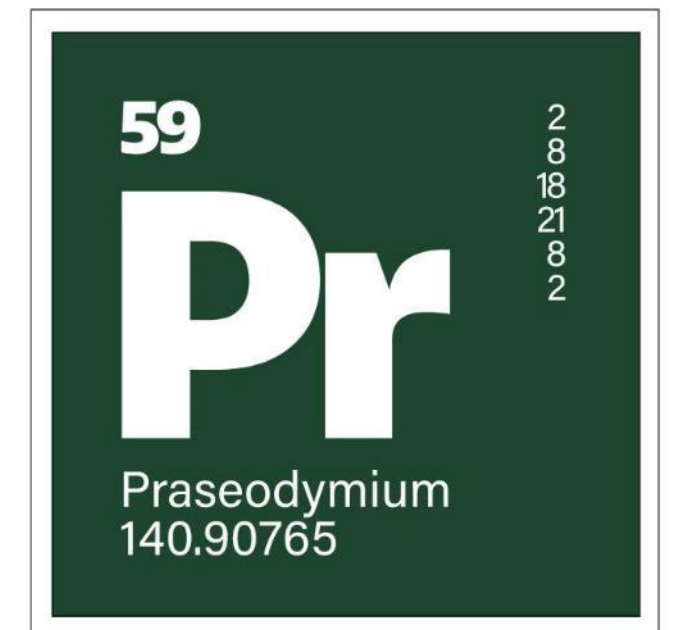
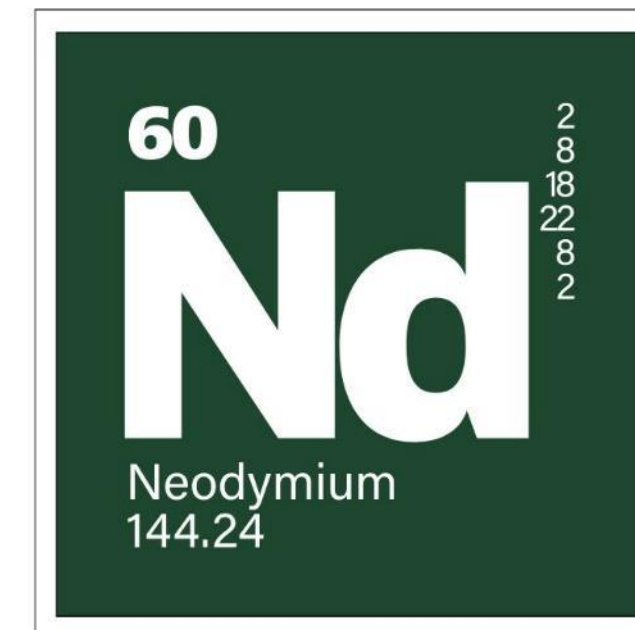
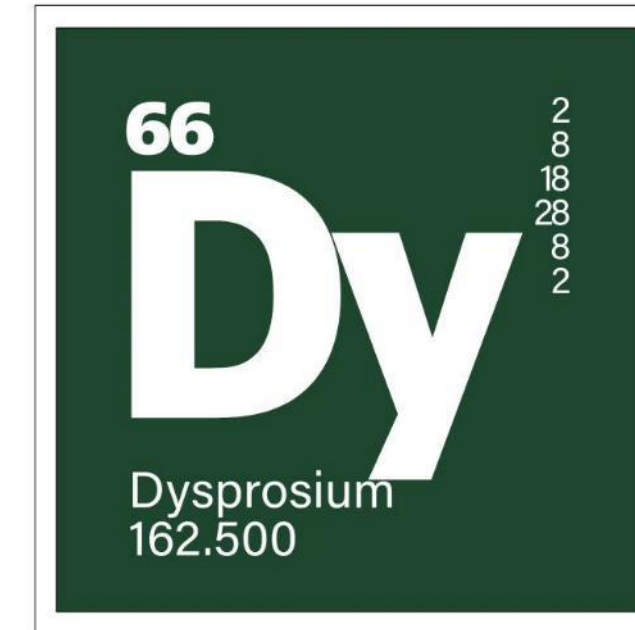
# About Rare Earth Elements



For wind turbines, a single 3MW [direct-drive] wind turbine needs 2 tons of REE<sup>4</sup> or ~216kg of neodymium per megawatt of capacity<sup>5</sup> (600-800kg per turbine)



Western Australia generates 40% (2,740 MW) of renewable electricity <sup>6,7</sup> The remaining 4,110 MW could take >1,300 wind turbines to generate.







**Mount Ridley REE Project  
Drilling at Vincent**

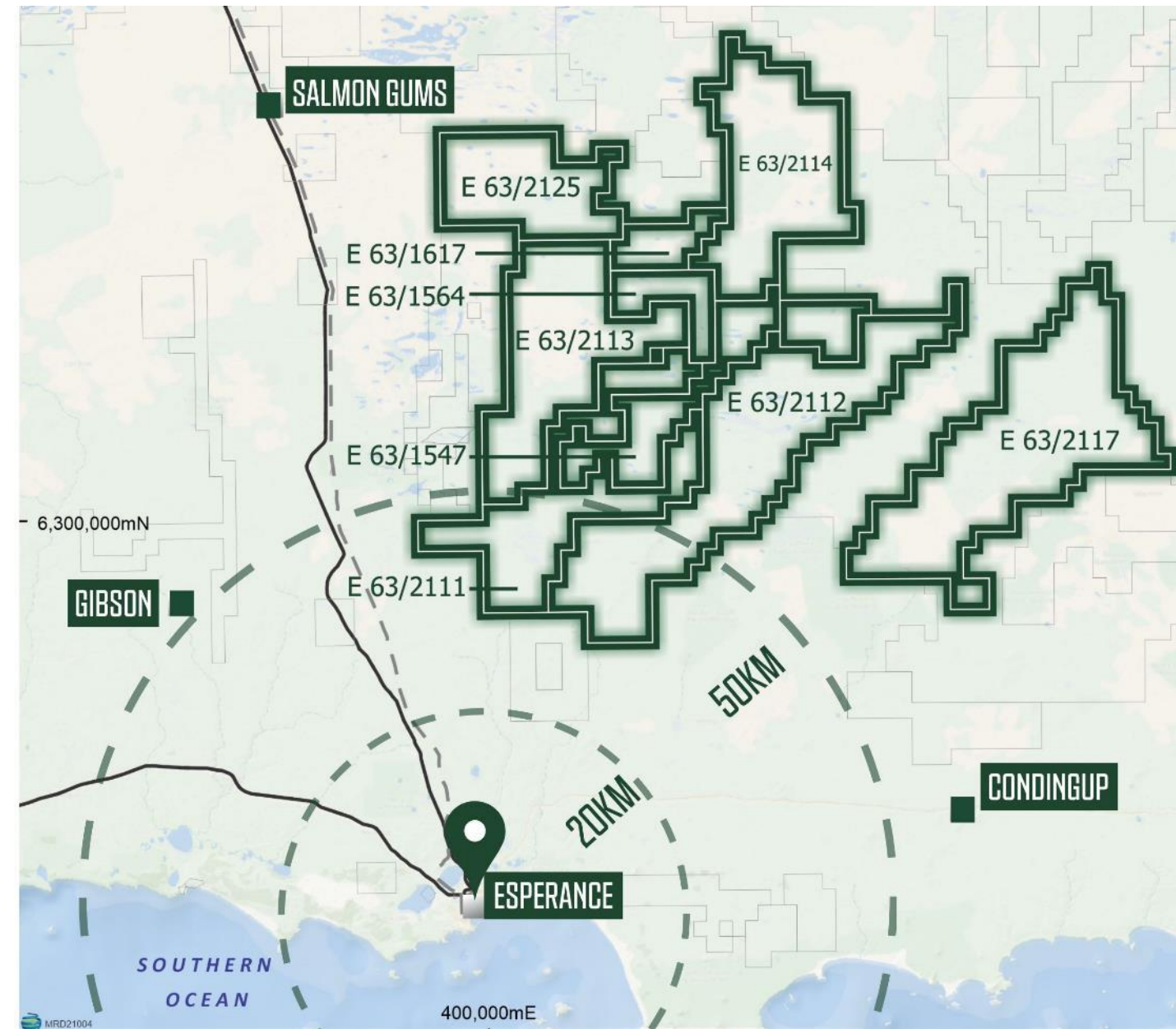


# Near Esperance and infrastructure corridor

📍 Located 50km northeast of the deep-water port of Esperance

🚚 Adjacent to Goldfields Esperance Highway, railway and gas pipeline

✈️ Near Esperance airport



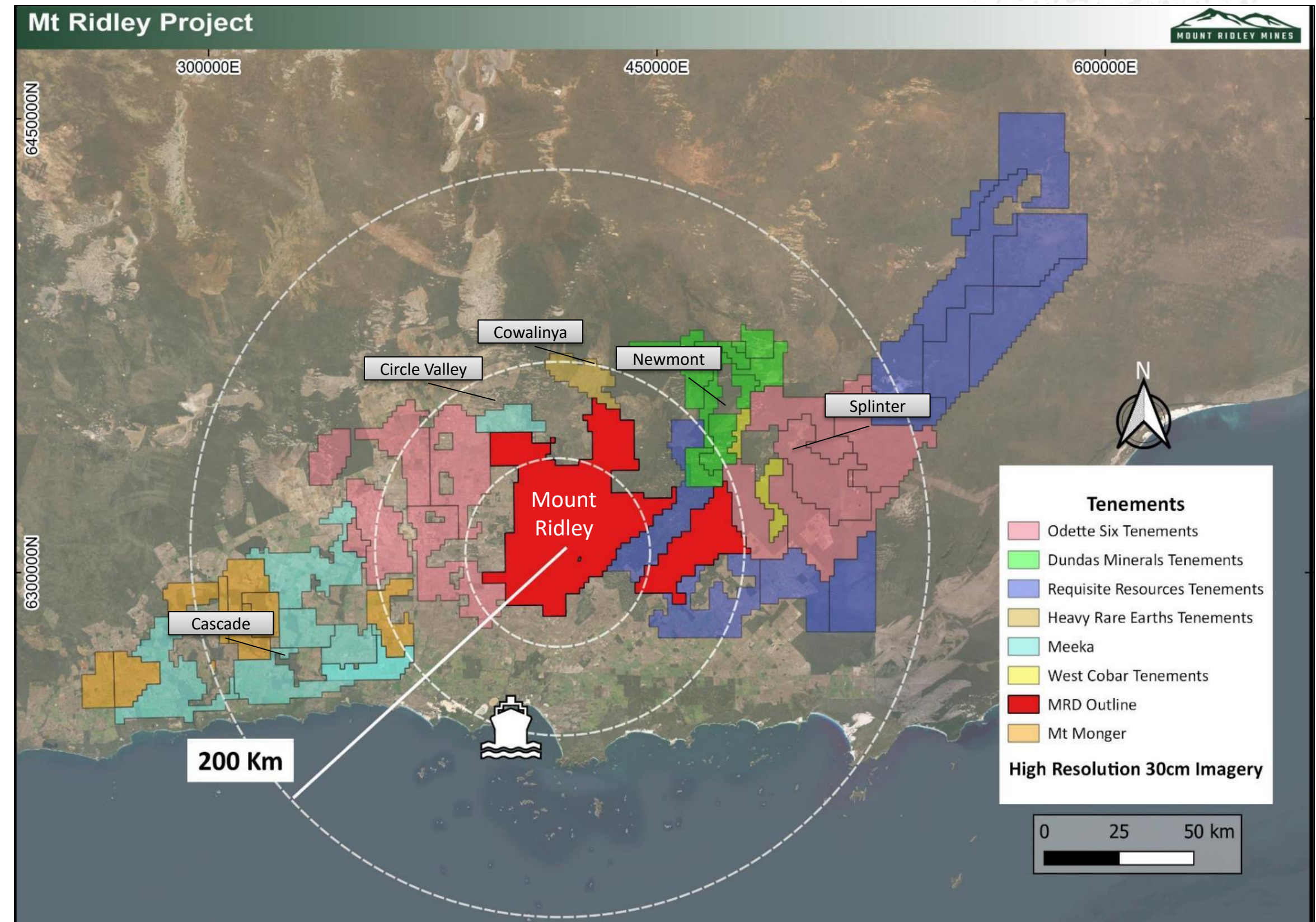


# Rare Earths Mineralisation widespread

⦿ Mineralisation intersected in drilling >250km E-W  
(Cascade to Splinter)

⦿ And >60km N-S  
(Cowalinya to Marcellus)

Mount Ridley has a policy to avoid cultivated land.





# The Mount Ridley Project: mineralisation footprint 1,200km<sup>2</sup>



Drilling completed: 768 holes, 32,600m.

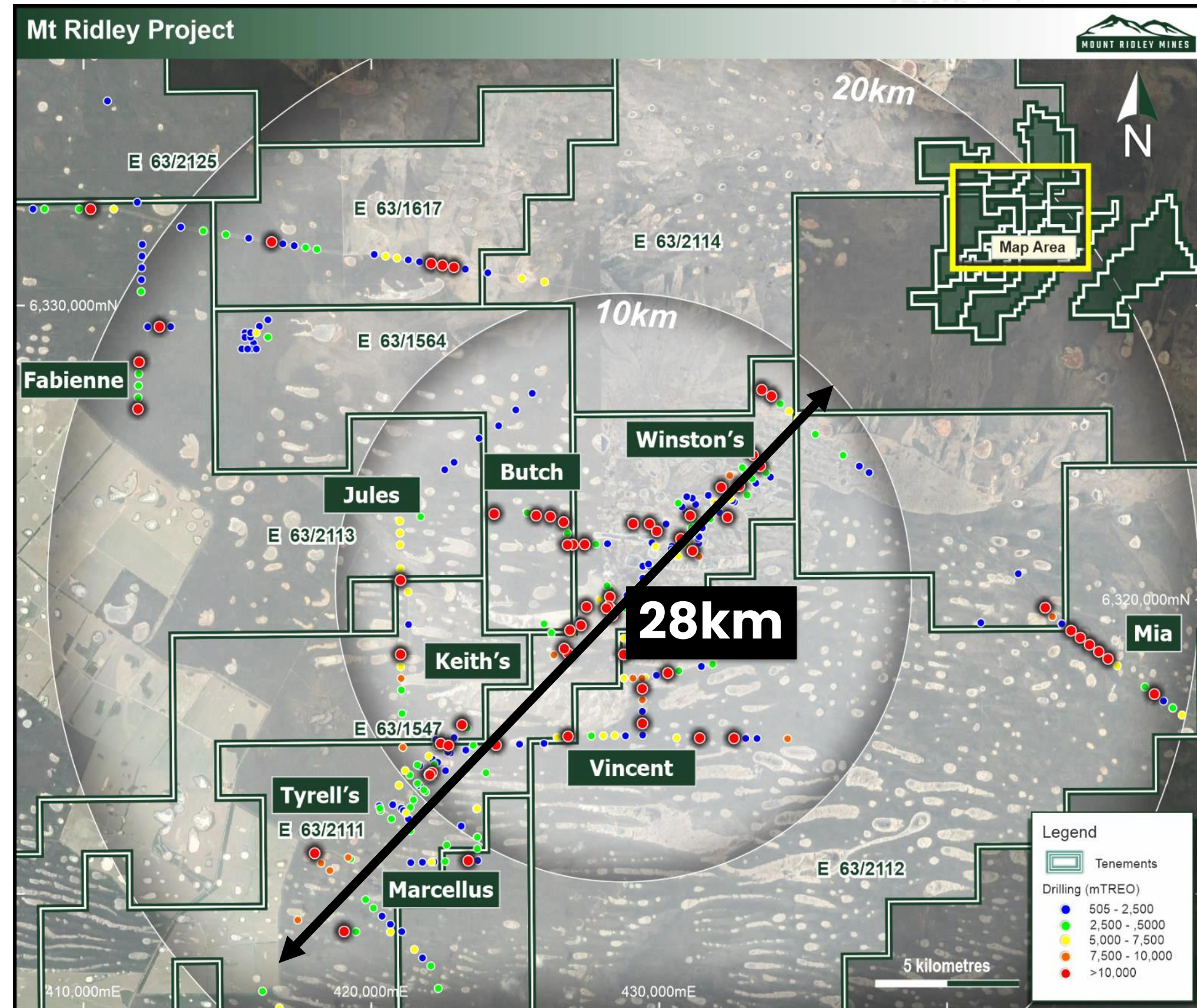
- 520 holes > 300ppm TREO (68%)
- 386 holes > 500ppm TREO (50%)



Length Weighted Average Grade (>3m at 500ppm) is 1,068ppm TREO.



9 prospect areas defined





# Recent Drilling Results

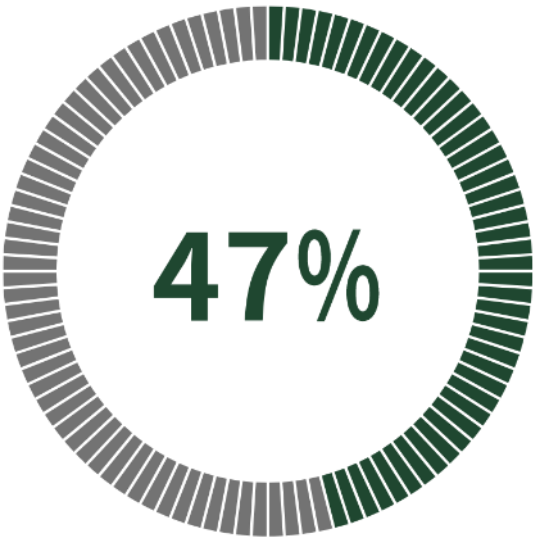
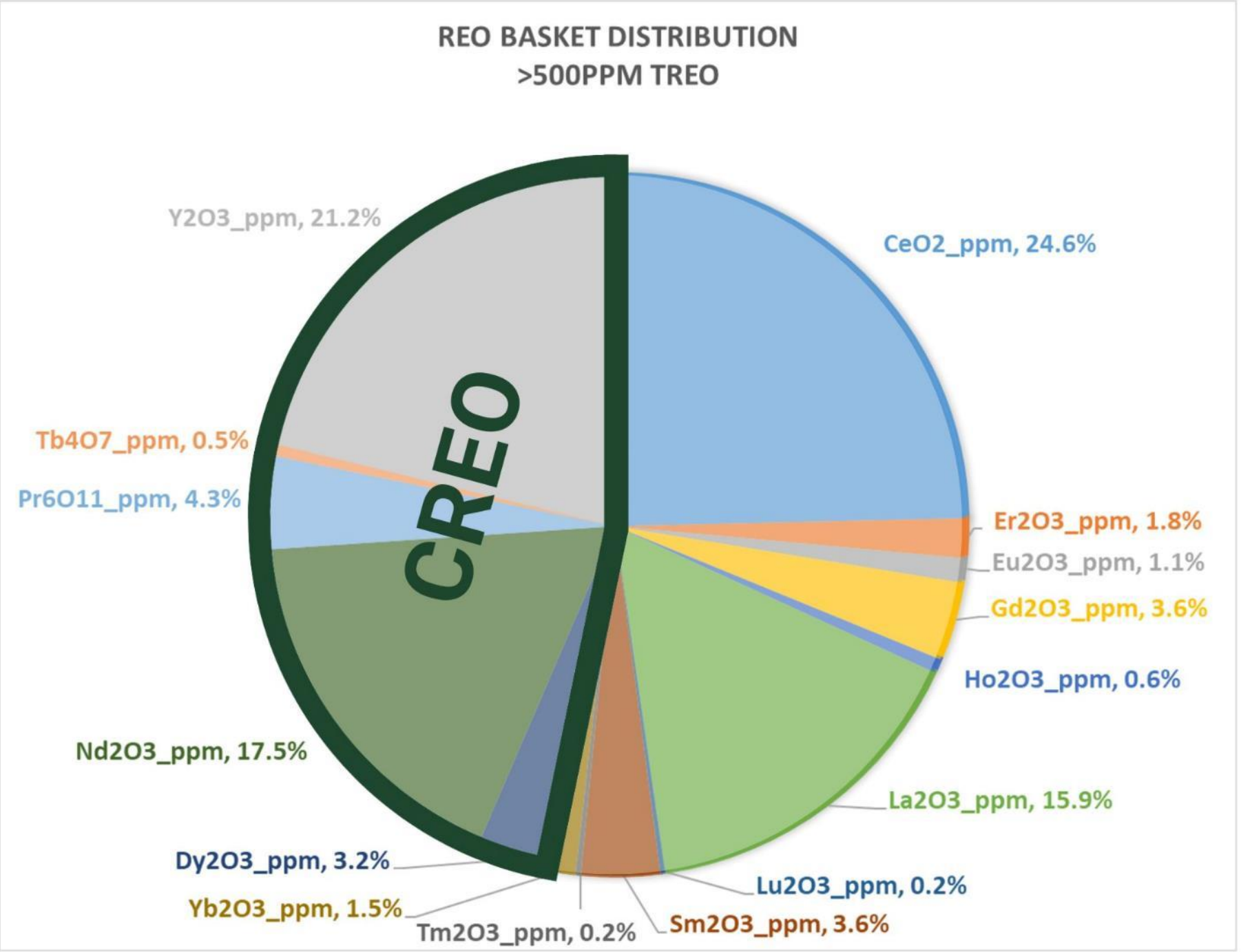


- 23m at 3,688ppm TREO from 6m in MRAC1053 at Tyrrell's Prospect;
- 15m at 2,120ppm TREO from 15m in MRAC1234 at the Mia Prospect;
- 47m at 1,521ppm TREO from 33m in MRAC0955 at the Butch Prospect; and
- 12m at 2,178ppm TREO from 45m in MRAC1325 at the Fabienne Prospect.

MRD announcements to ASX dated 21 October 2021, 3 August 2022, 6 October 2022



# REO Type Breakdown



**CRITICAL**  
RARE EARTHS

57	58	59	60	61	62	63	64	65	66	67	68	69	70	71
La	Ce	Pr	Nd	Pm	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb	Lu
Lanthanum	Cerium	Praseodymium	Neodymium	Promethium	Samarium	Europium	Gadolinium	Terbium	Dysprosium	Holmium	Erbium	Thulium	Ytterbium	Lutetium
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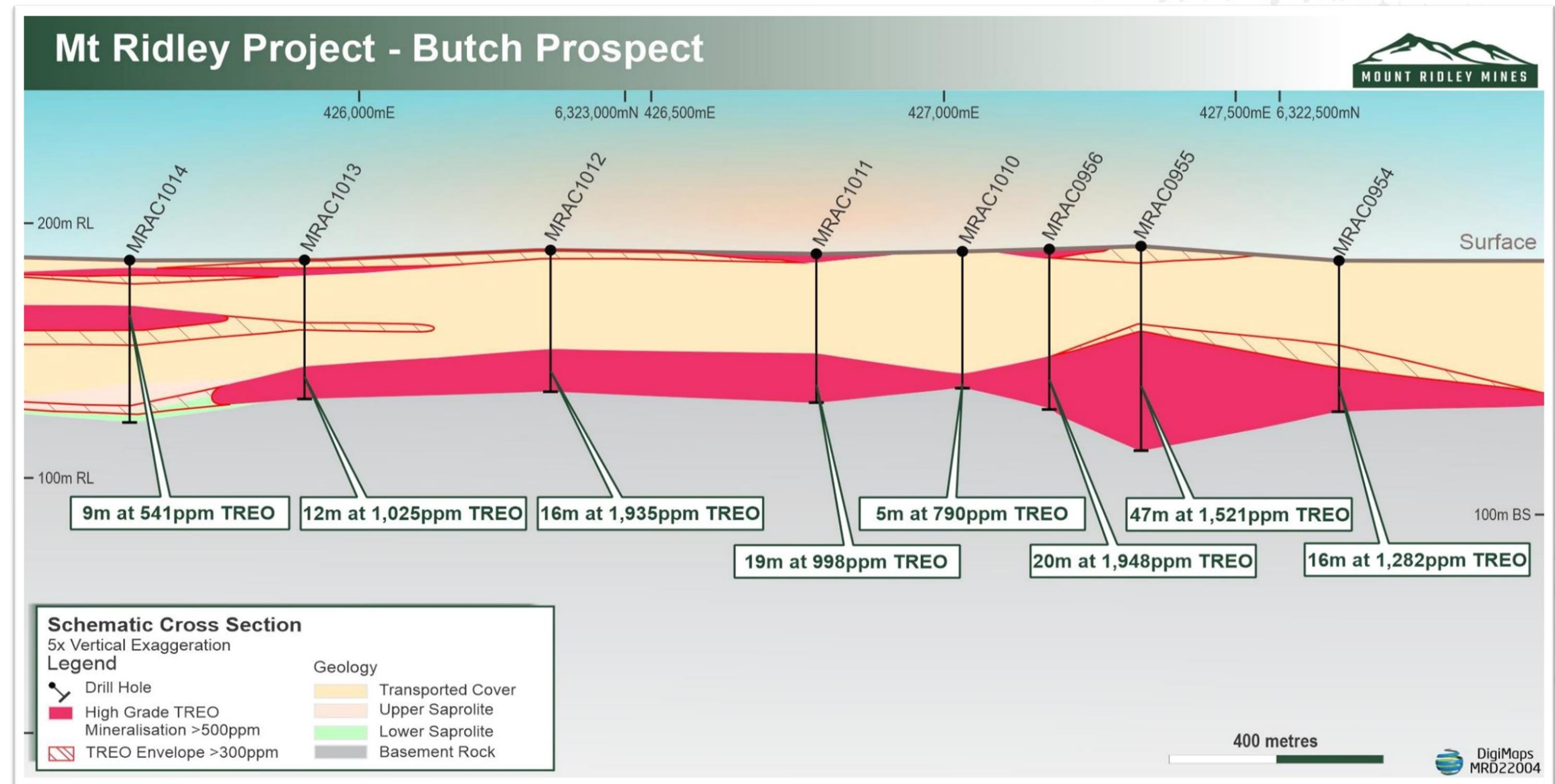


RARE EARTHS ELEMENTS IN WA





# Section through the Butch Prospect

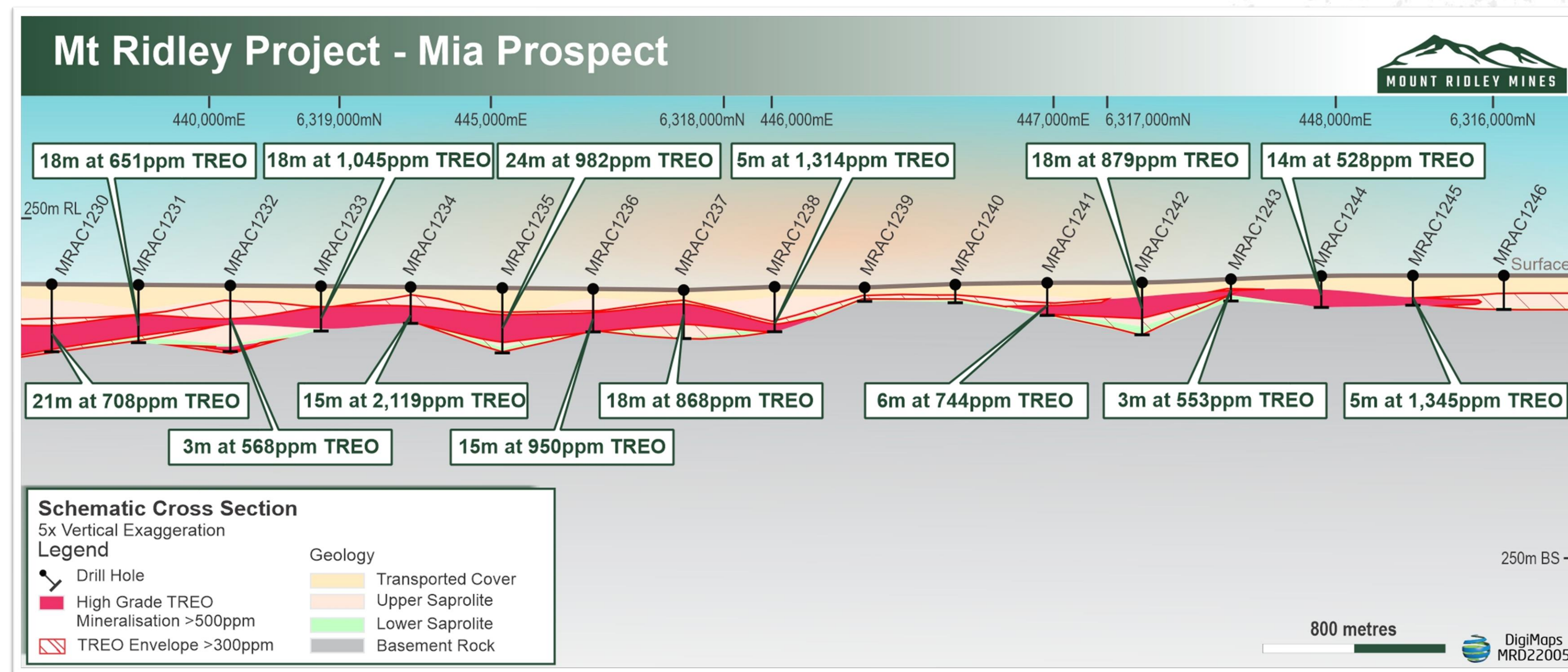


- Section is 2.3km wide

MRD announcements to ASX dated 21 October 2021, 3 August 2022, 6 October 2022



# Section through the Mia Prospect

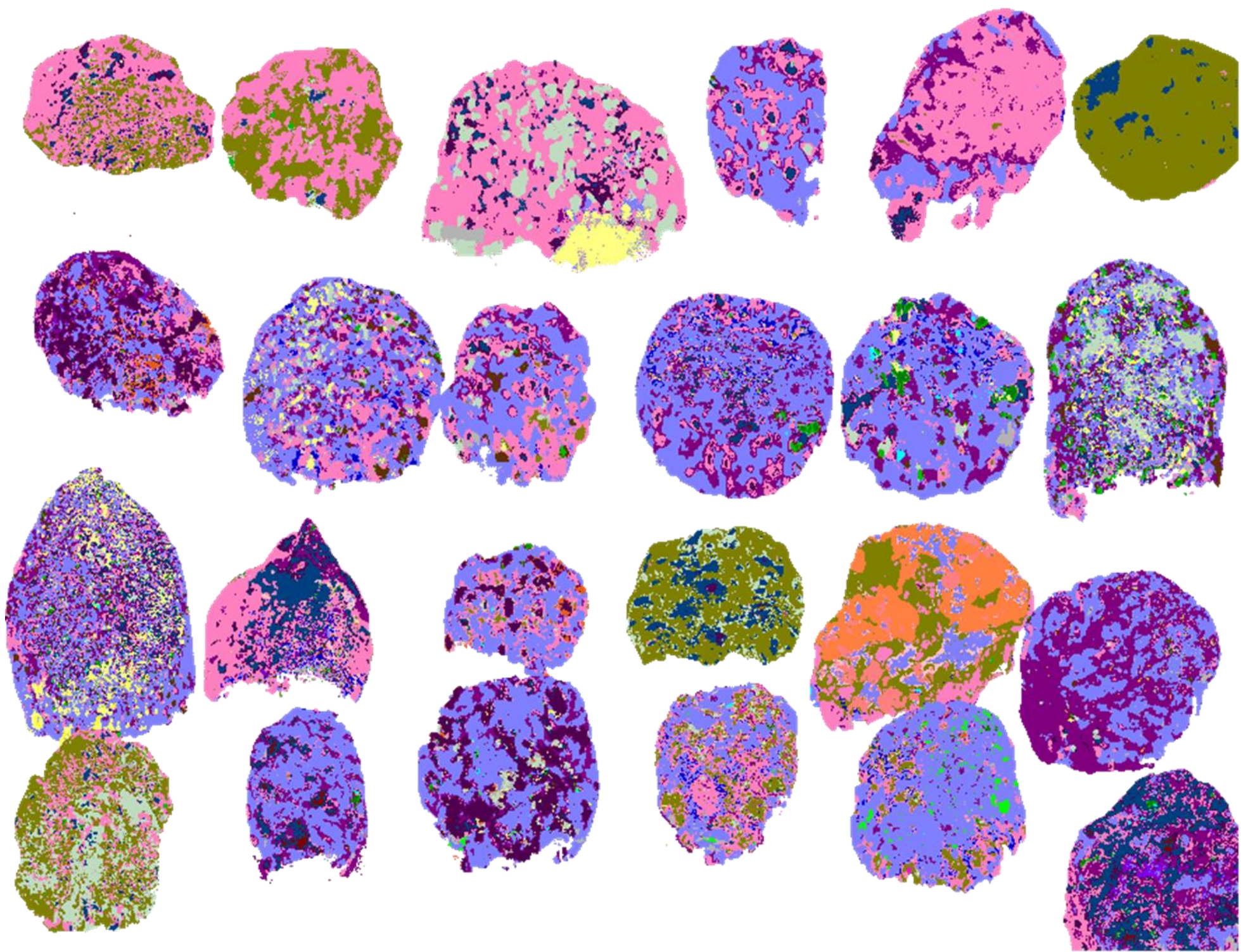


- ▶ Holes are 400m apart.
- ▶ Section is 6.4km wide.

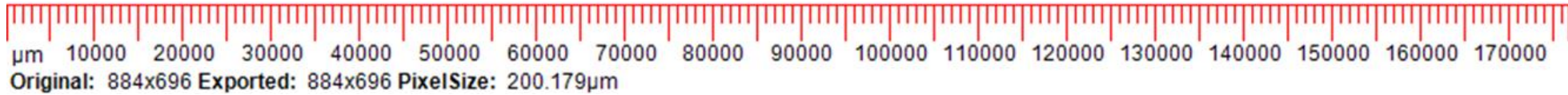
MRD announcements to ASX dated 21 October 2021, 3 August 2022, 6 October 2022



# Establishing the protolith



Name	Area%	Color
Plagioclase	28.56	
Fe-rich amphibole_middle Ca	23.07	
Fe-rich amphibole_high Ca	12.5	
FeAl silicate	11.66	
FeMg silicate	5.04	
Fe-rich amphibole_low Ca	4.62	
Halite	4.36	
Fe-sulphide	1.91	
Barite	1.56	
CaTi-rich amphibole	1.2	
CaK Al-silicate	0.97	
Ti-bearing phase	0.61	
Monazite	0.6	
Anorthoclase	0.49	
Calderite	0.26	
Ilmenite	0.2	
Manganbabingtonite	0.19	
Gypsum	0.17	
Chalcopyrite	0.17	
Apatite	0.16	
Fe-oxide	0.12	



Innovative EOH  
geology using Bruker  
Titan M4





# The next steps: Drilling Resources Metallurgy



Aircore drilling testing mineralisation throughout the 1,200km footprint.  
POW's in place for 100,000m of aircore drilling.



Diamond drilling for metallurgical samples, mineralogy,  
beneficiation testing.



Consulting metallurgists and laboratory appointed



Holistic approach to Heritage Flora and Fauna protection through management plan with  
ETNTAC (Esperance Tjaltjraak people).

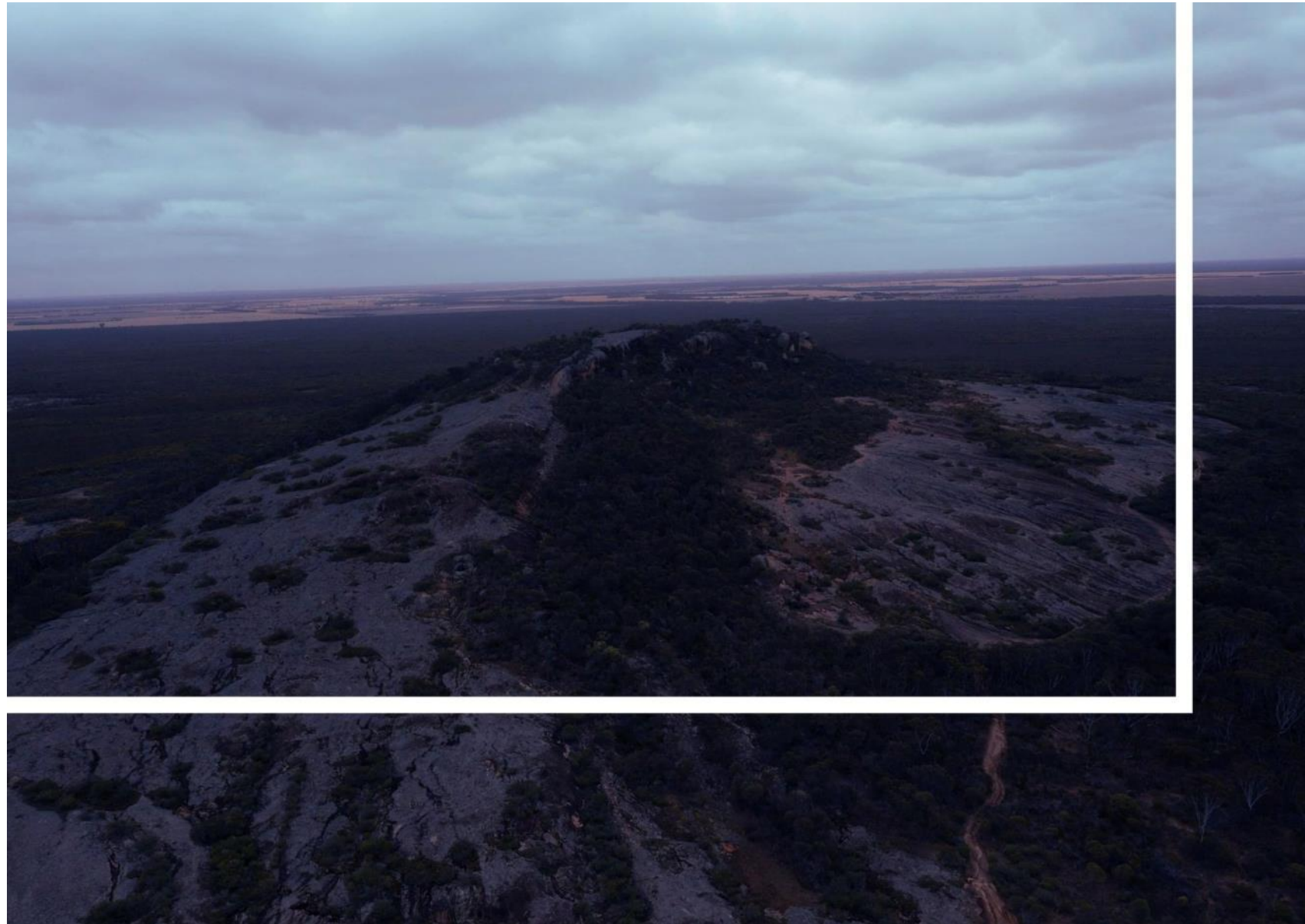


Fully funded, major drilling program for 2023, with opening mineral resource inventory  
completed during the year.





# Summary



- 🎯 The Mount Ridley Rare Earths Project has the hallmarks of being a large rare earth element deposit.
- 🎯 The exploration model is clay hosted mineralisation.
- 🎯 First world jurisdiction and close to infrastructure
- 🎯 The Company is well funded and anticipates an active drilling program in 2022



# Corporate Summary

## Board and Consultants

Share Price	\$0.005
Shares (m)	7,350
Market Capitalisation (m)	\$36.7
Options (m)	1,524
Cash+ Liquid Securities:	
Cash at Bank (m)	\$5,357
Liquid Assets (m)	\$5,991
Unlisted Securities	\$1,305
Total (m)	\$7,296



Peter Christie  
Chairman

25 yrs Accountant / Public and  
resource sector



Johnathon Busing  
Company Secretary/CFO

10 yrs accounting/corporate  
resource sector



Simon Mitchell  
Non-Executive Director

>30 yrs Geologist / Technical &  
Corporate



Guy Le Page  
Non-Executive Director

30 yrs Exploration and Finance /  
Corporate and resource sector



David Crook  
Technical Manager

>40 yrs Technical & Corporate  
Nickel, Gold, Lithium, Iron



# MOUNT RIDLEY MINES LTD



**+61 8 6165 8858**



**info@mtridleymines.com.au**



**mtridleymines.com.au**



**Ground Floor, 168 Stirling Hwy  
Nedlands, WA 6009**



# Notes

1. REE refers to 14 rare earth elements: cerium (Ce), dysprosium (Dy), erbium (Er), europium (Eu), gadolinium (Gd), holmium (Ho), lanthanum (La), lutetium (Lu), neodymium (Nd), praseodymium (Pr), samarium (Sm), terbium (Tb), thulium (Tm), ytterbium (Yb), plus yttrium (Y)
2. Critical or CREO means Critical Rare Earth Oxides; the sum of  $\text{Dy}_2\text{O}_3$ ,  $\text{Eu}_2\text{O}_3$ ,  $\text{Nd}_2\text{O}_3$ ,  $\text{Tb}_4\text{O}_7$ , plus  $\text{Y}_2\text{O}_3$
3. Alves Dias, P., Bobba, S., Carrara, S., Plazzotta, B. (2020), The role of rare earth elements in wind energy and electric mobility, EUR 30488 EN, Publication Office of the European Union, Luxembourg, ISBN 978-92-79-27016-4, doi:10.2760/303258, JRC122671
4. Northwest Mining Association quoted in [Kirby Mountain: Rare earths and wind turbines: Yes, it's a problem \(kirbymtn.blogspot.com\)](http://kirbymtn.blogspot.com)
5. Wind Energy in the United States and Materials Required for the Land-Based Wind Turbine Industry From 2010 Through 2030, by U.S. Geological Survey, U.S. Department of the Interior, Scientific Investigations Report 2011–5036
6. [Badgingarra Wind Farm | APA Group](#)
7. [What is decarbonisation? \(westernpower.com.au\)](http://westernpower.com.au)
8. MRD announcement to ASX dated 21 October 2021. "Encouraging Rare Earth Extraction Results"
9. Buchholz, Peter; Brandenburg, Torsten (1 January 2018). "Demand, Supply, and Price Trends for Mineral Raw Materials Relevant to the Renewable Energy Transition Wind Energy, Solar Photovoltaic Energy, and Energy Storage". *Chemie Ingenieur Technik*. 90 (1–2): 141–153.

Also refer to Mount Ridley Mines Limited announcements to ASX dated:  
1 July 2021, 2 August 2021, 13 September 2021, 21 October 2021

