



**ASX:RDM**

**Phase 2 Metallurgical Results**  
**Green Light**  
**Sybella REO Discovery**  
**Mount Isa Region**

**Booth #34**

**June 2024**

# Sybella Discovery Corporate Snapshot

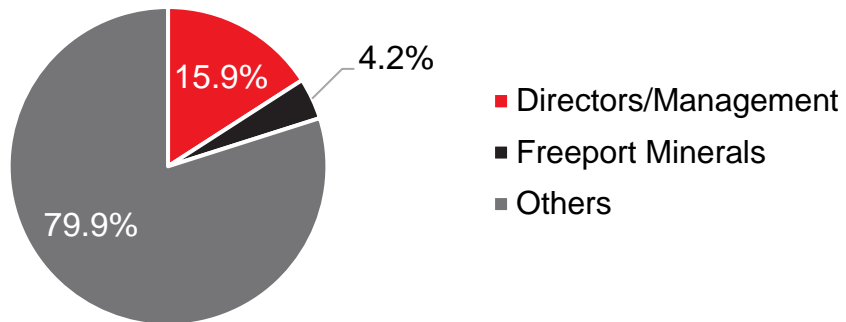


ASX Code	Shares on Issue	Share Price (Date)	Market Cap	Cash (at 31 Mar 2024)
RDM	299,485,829	14	\$42M	\$3.0M

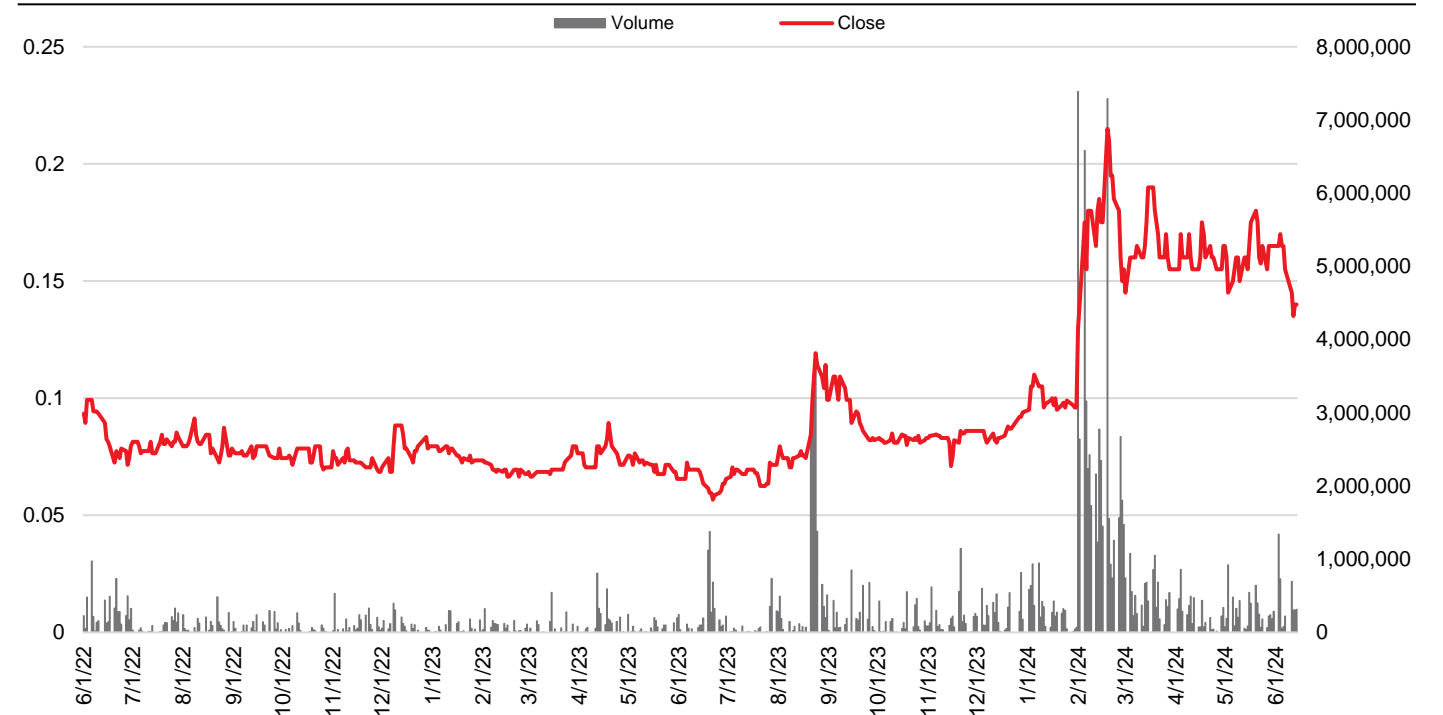
## Board Of Directors & Senior Management

Rob Rutherford	Managing Director
Russell Barwick	Chairman (non exec)
Joshua Pitt	Director (non exec)
Patrick Flint	Company Secretary

## Substantial Shareholders



## Share Price & Trade Volume: 01/06/2022 – 14/06/2024



2024

Near-Term News Flow

Booth #34



Project		Q2	Q3	Q4	Comments
<b>Sybella</b>	New REO Discovery	Phase 2 IBRT Results Step-out Drilling Impurity Removal Trials	Drill Results Column Leach Trials	Resource Definition	Mount Isa QLD Towards mine study
<b>Yarrie</b>	Copper-Gold		Drilling Initiated	Drill Results	Paterson WA BHP funded 4000m mud/core
<b>Lawn Hill</b>	Zinc-Lead-Silver		Drilling Initiated	Drill Results	Century-style QLD EIS grant \$150k
<b>Gidyea</b>	Copper-Gold		Drilling Initiated	Drill Results	IOCG breccia QLD EIS grant \$240k

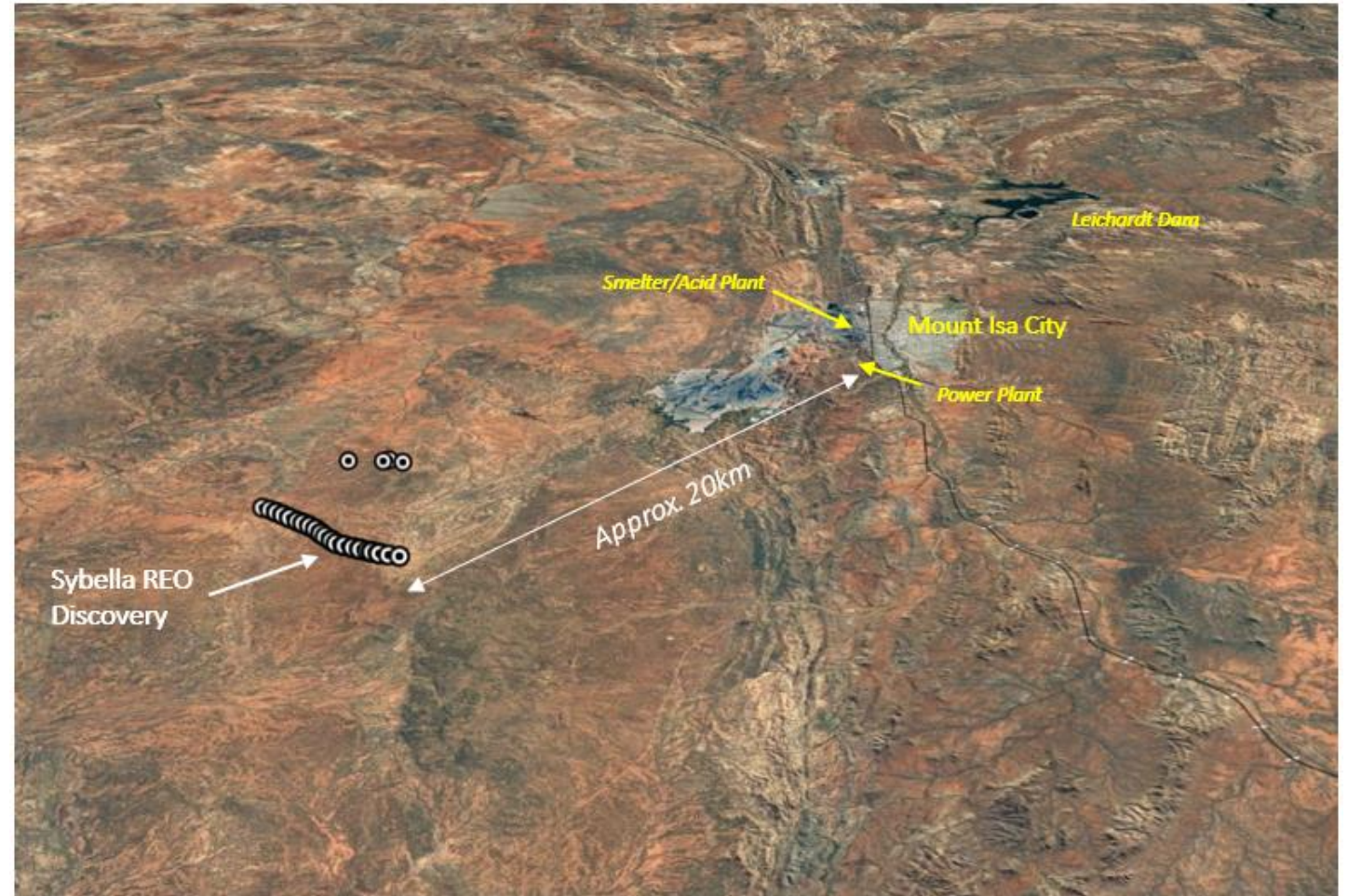
Asset	44% Equity	Q2	Q3	Q4	Comments
<b>Maronan ASX: MMA</b>	Advanced Silver-Lead Copper-Gold	Indicated Resource Drilling	Indicated Resource Drilling Advanced Mining Study	Updated Resource Scoping Study	Two 30Mt ore bodies 100m from surface

# Sybella Discovery

## A 'World First' in Northwest Queensland

### New REO Deposit Style

- Just 20 kilometres southwest of Mount Isa with excellent infrastructure options



## Two General REO Project Types Emerging

Complex High Temperature	Simple Low Temperature Leachable
<ul style="list-style-type: none"><li>• Monazite/Apatite Carbonatites</li><li>• Monazite Heavy Mineral Sands</li></ul>	<ul style="list-style-type: none"><li>• Clay-Hosted Ionic</li><li>• Clay-Hosted Non-Ionic</li><li>• Granite-Hosted “Sybella Discovery”</li></ul>
<ul style="list-style-type: none"><li>• High Capex</li></ul>	<ul style="list-style-type: none"><li>• Potential Low Capex</li><li>• Potential Low Opex</li></ul>

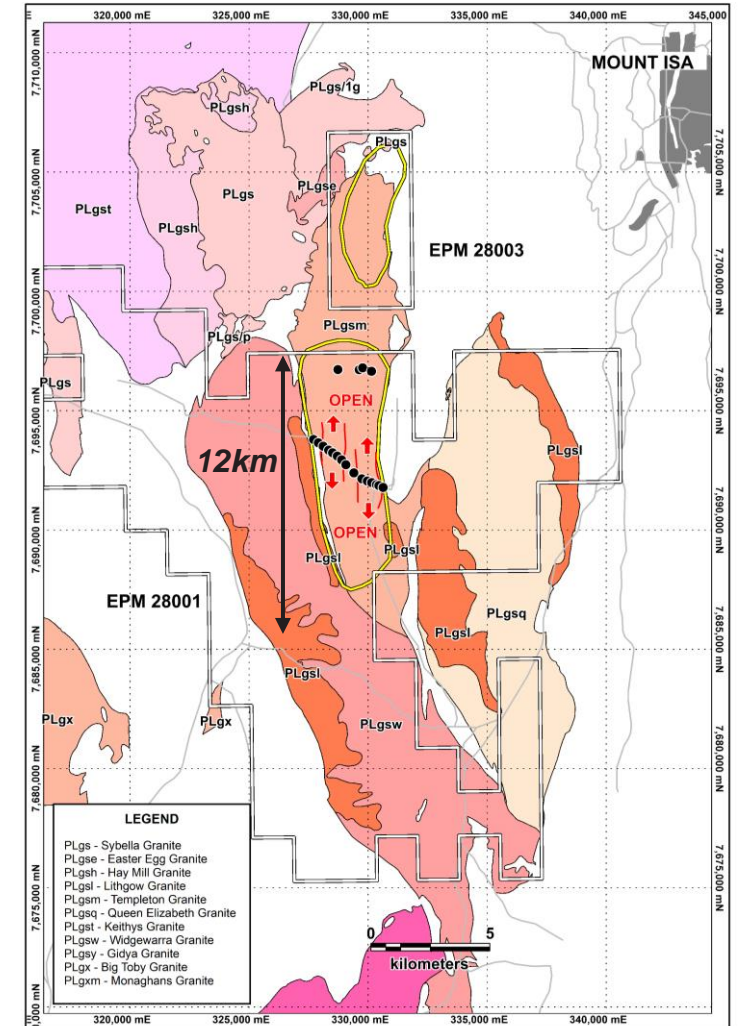
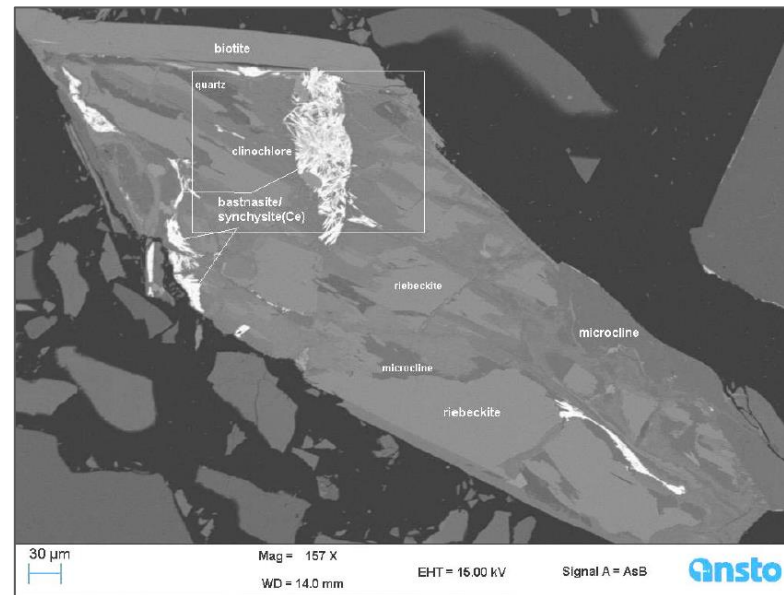
# Sybella Discovery

## A 'World First' in Northwest Queensland



### New REO Deposit Style

- Hosted in REO-enriched granite
- 12km long x 3km wide
- Bulk of REE's in soluble fluoro-carbonate minerals
- Soluble ore mineral in low acid consuming granite rock



*“ Metallurgical Nirvana ”*

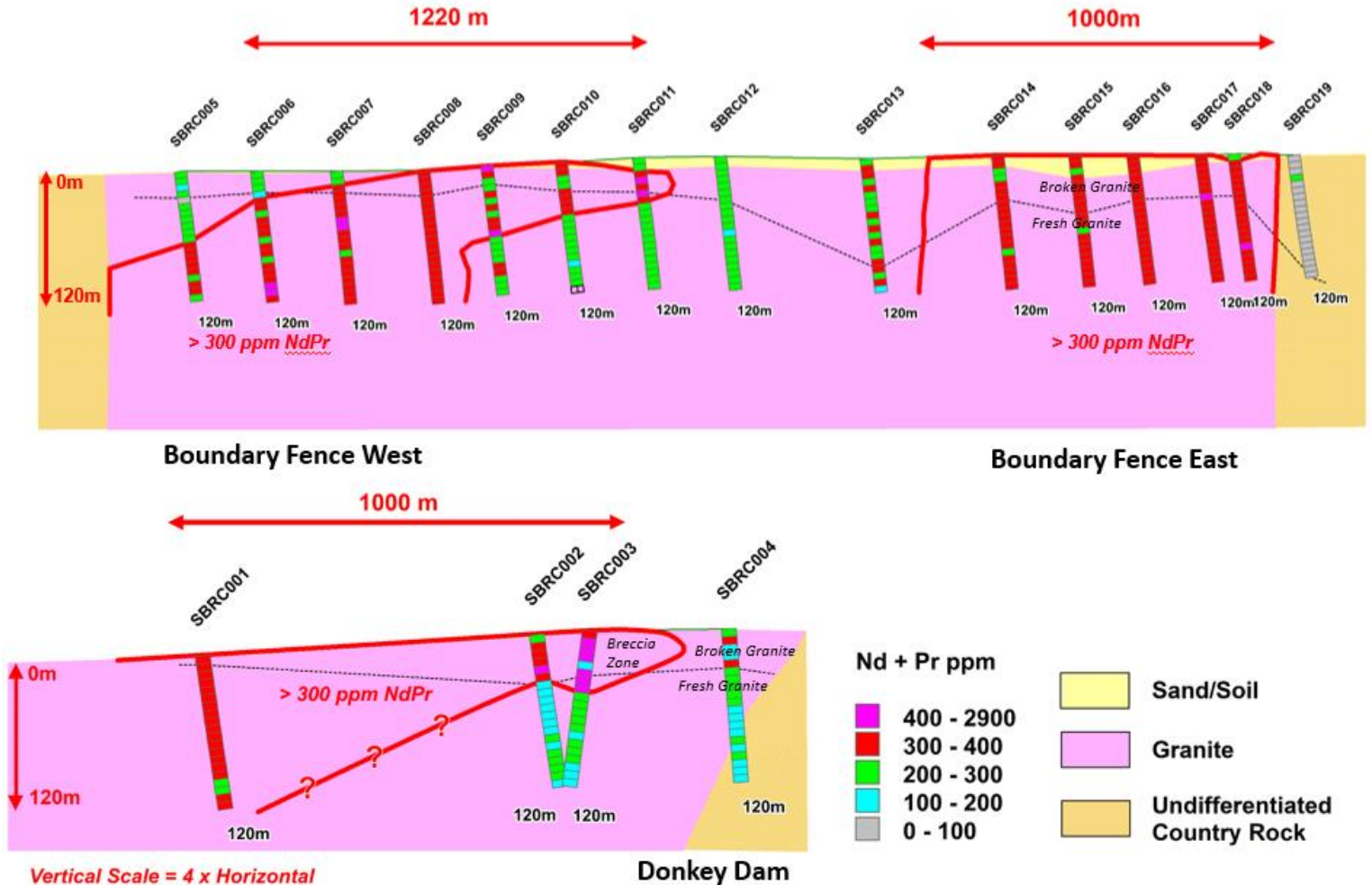
# Sybella Discovery

## A 'World First' in Northwest Queensland



### New REO Deposit Style

- Proof-of-concept RC drilling reveals two higher grade REO zones, each about 1km wide



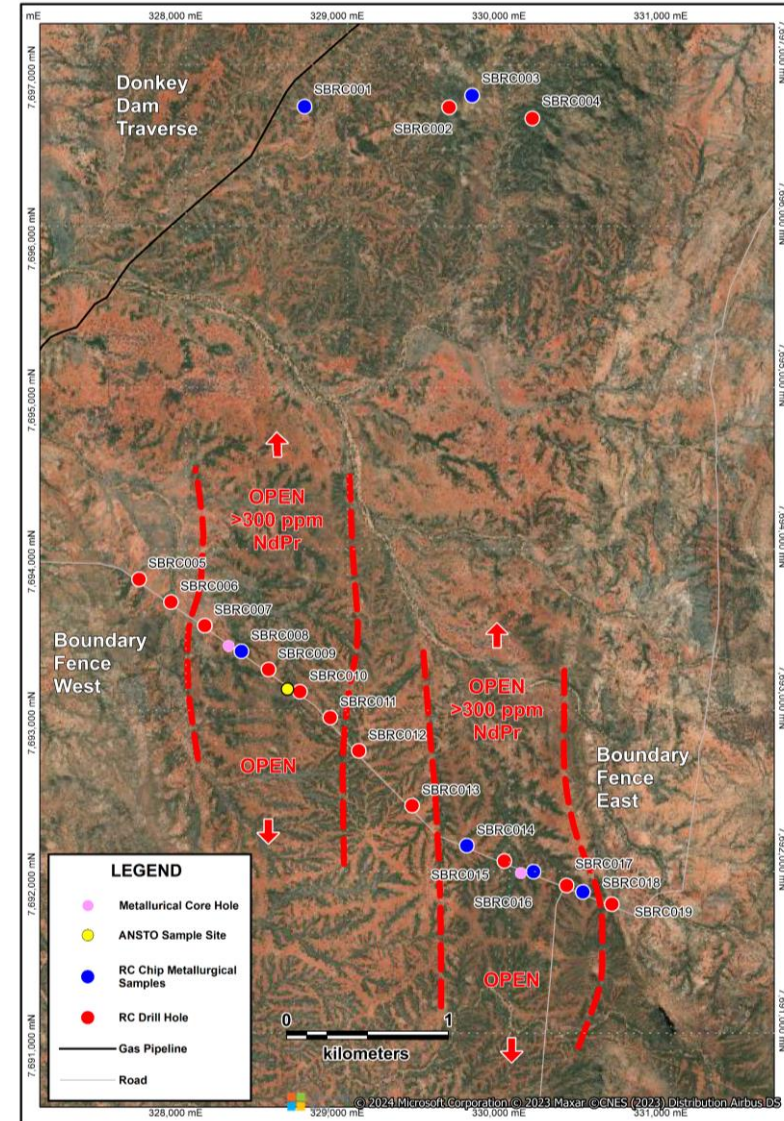
# Sybella Discovery

## A 'World First' in Northwest Queensland



### New REO Deposit Style

- Zones open north and south and at depth offering vast tonnage potential





# Sybella Discovery

## Accelerated Exploration Programs



### Metallurgical Test Work on Drill Core in Progress

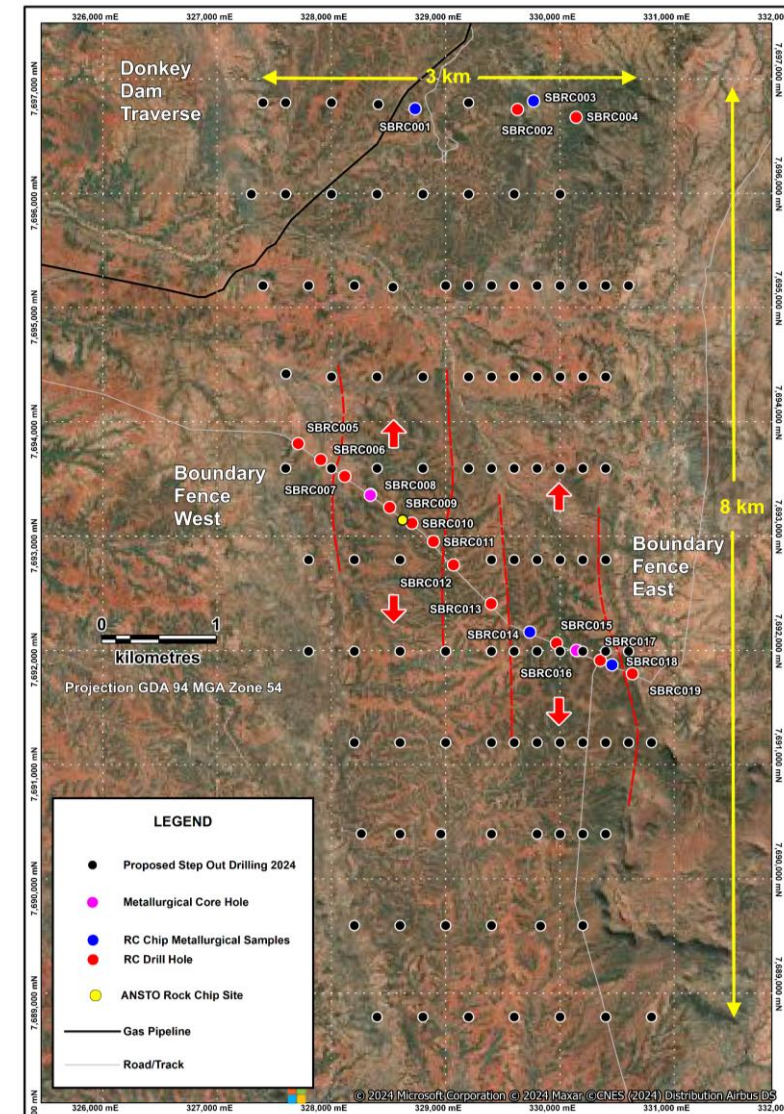
- Intermittent bottle-roll leach tests (Released June)
- Comminution tests (Released June)
- Impurity removal trials (Due shortly)
- Mineralogical work (On going)

### Step-out Drilling Just Completed (Assays end July)

- Initial 8km x 3km area
- 800m x 400m, 800 x 200m centres, 60m deep holes
- 120 holes, 8171 metres drilled

### Column Leach Tests Underway (Results Q3 2024)

### Localised Resource Definition Drilling (Q3/Q4 2024)



# Sybella Discovery

## Host Rock

Weathered Granite

Transitional - Part Weathered  
& Part Fresh Granite

Fresh Granite



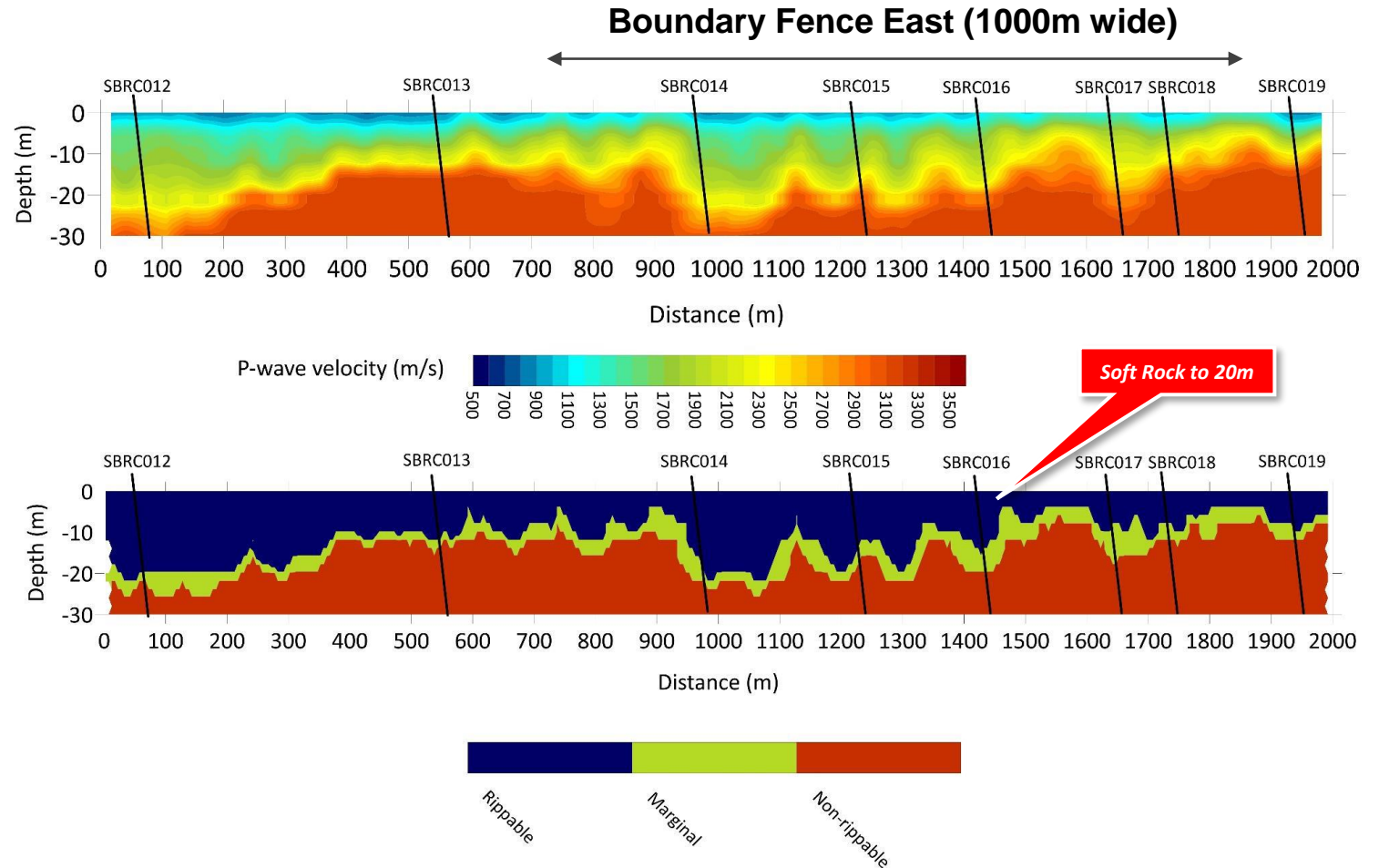
# Sybella Discovery

## Weathered Granite and Fresh Granite



### Mapping Weathered Granite

- Using seismic refraction
- Softer weathered granite in top 20m adds mining, comminution and processing advantages



Seismic Refraction Profiles showing interpreted P-wave velocity profile for rock rippability

# Sybella Discovery

## Successful Bottle Roll Leach Tests

### Green Light the Discovery

- “Define Ore”
- For both the fresh and weathered granite
- Shown the REO mineralisation is amenable to low-cost, low capital, heap leach processing
- Highlighted key pH set points, crush sizes and residence times for follow-on column leach test work



Intermittent Bottle Roll Tests (IBRT) on Fresh and Weathered Granite

# Sybella Discovery

## Bottle Roll Leach Tests - Weathered



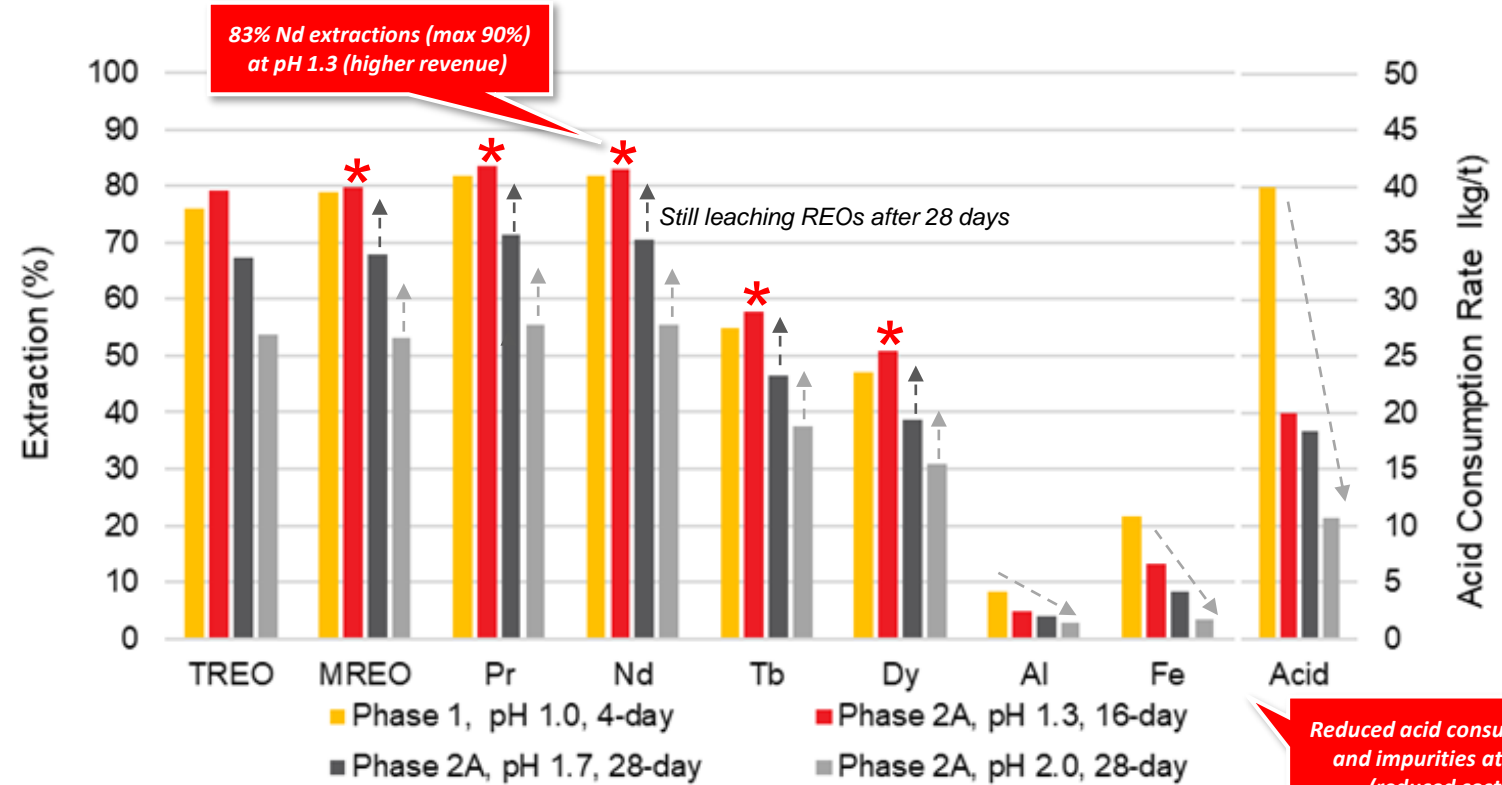
### Strong Revenue Potential

- 83% Nd extraction (max 92%) at pH 1.3
- Still leaching REOs after 28 days at pH 1.7 and pH 2

### Column Test Work

- Extend leach time to terminal REO extractions at weaker acid set points (pH 3-3.5)

Boundary Fence East Weathered Granite



IBRT, Weathered SBRC016/SBDD002 0-20m, RC Chip (0-15m) & 10mm jaw crush (15-20m), variable pH, longer residence time, ambient temperature, 33% w/w solids

# Sybella Discovery

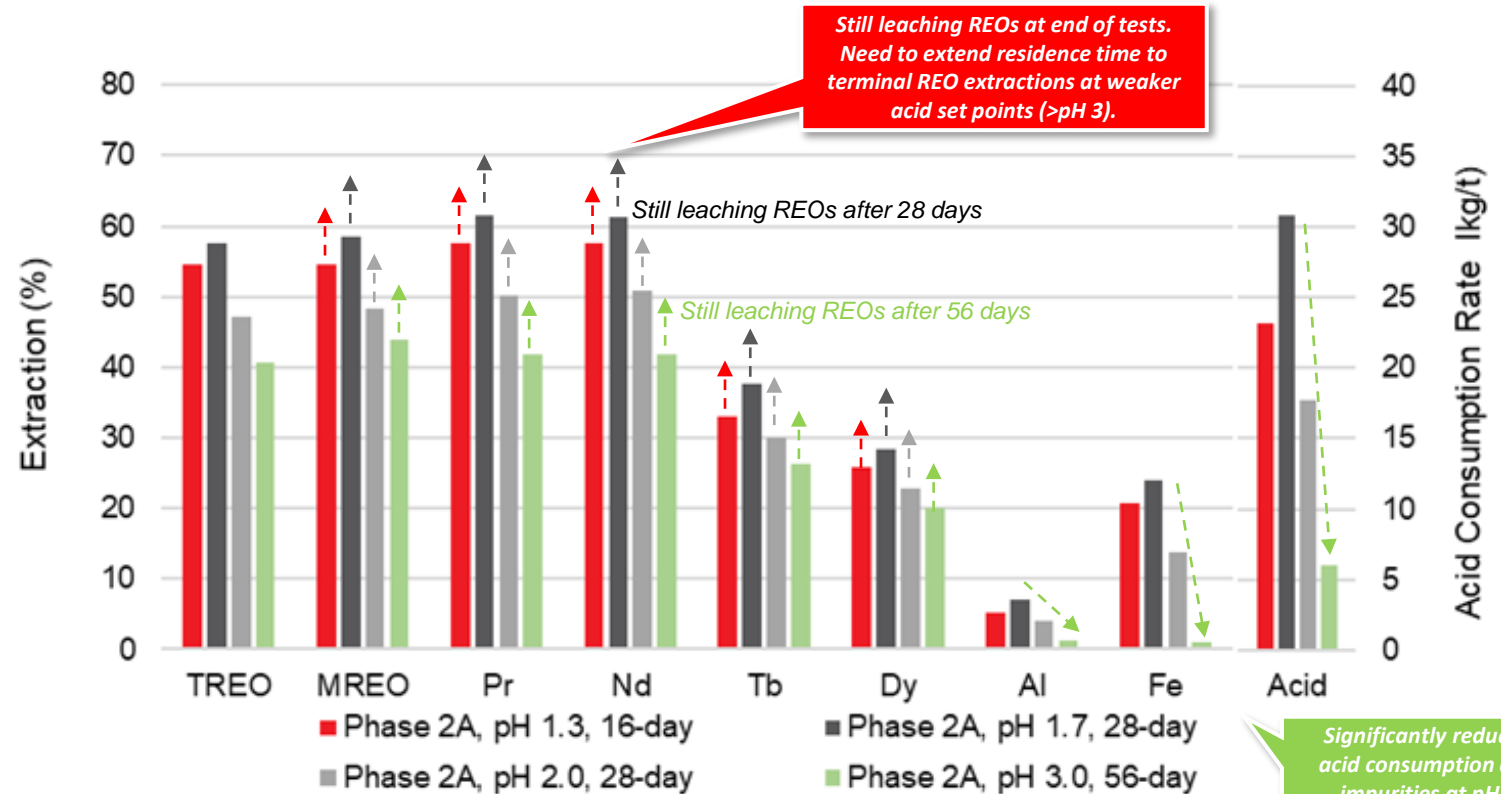
## Bottle Roll Leach Tests - Fresh



### Breakthrough pH 3 Result

- -15mm crush size
- Significant drop in acid consumption
- Significant drop in Fe and Al impurities in the leachate
- Still extracting REOs after 56 days at pH 3
- Ideal for heap leach processing

### Boundary Fence East Fresh Granite



IBRT, Fresh SBRC016/SBDD002 20-60m, 10mm and 15mm jaw crush  
variable pH, longer residence time, ambient temperature, 33% w/w solids

“ Metallurgical Nirvana ”

# Sybella Discovery

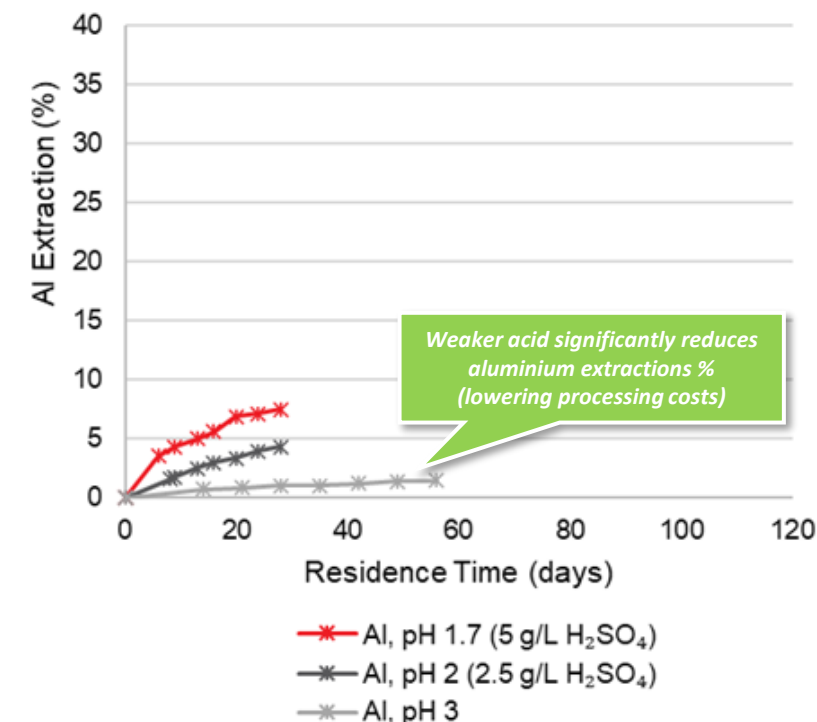
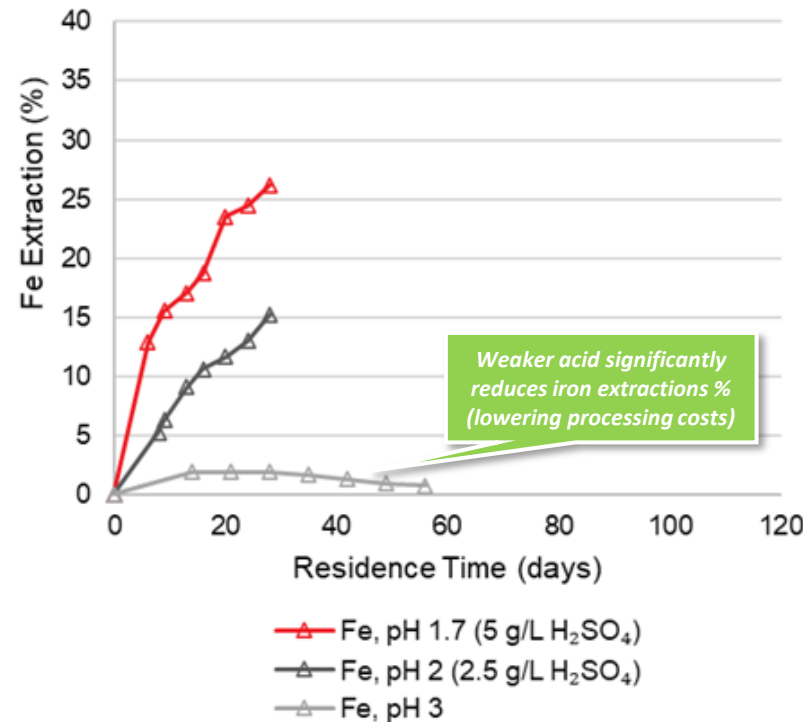
## Bottle Roll Leach Tests - Fresh



### Breakthrough pH 3 Result

- Very low acid strength effectively “turned off” Fe & Al impurities in pregnant leach solution
- Maintain revenue but at significantly lower processing cost
- Opens up vast tonnage potential below weathered zone to REO processing

### Boundary Fence East Fresh Granite



IBRT, Fresh SBRC016/SBDD002 20-60m, 10mm and 15mm jaw crush  
variable pH, longer residence time, ambient temperature, 33% w/w solids

“ Metallurgical Nirvana ”

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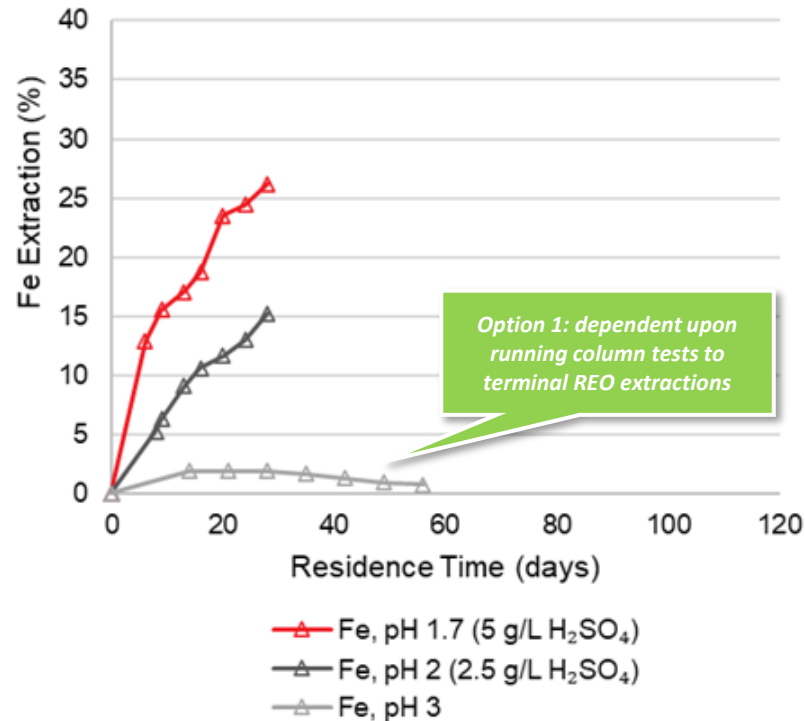
## Two Processing Options

### Option 1

- pH 3-3.5, coarse crush size, slow leach time, lower impurities in the pregnant leach solution and lower acid consumption costs
- Confirmation with column leach tests needed



### Boundary Fence East Fresh Granite



IBRT, Fresh SBRC016/SBDD002 20-60m, 10mm and 15mm jaw crush  
variable pH, longer residence time, ambient temperature, 33% w/w solids



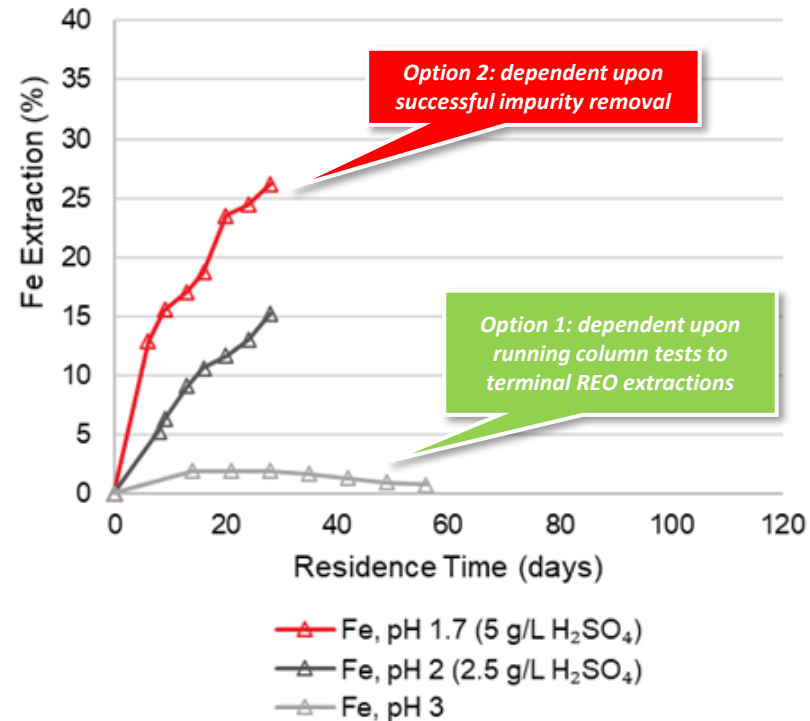
# Sybella Discovery

## Two Processing Options

### Option 2

- pH 1.3-1.7, coarse crush size, faster leach time, strong REO extraction (revenue)
- Dependent upon cost effective impurity removal from the pregnant leach solution

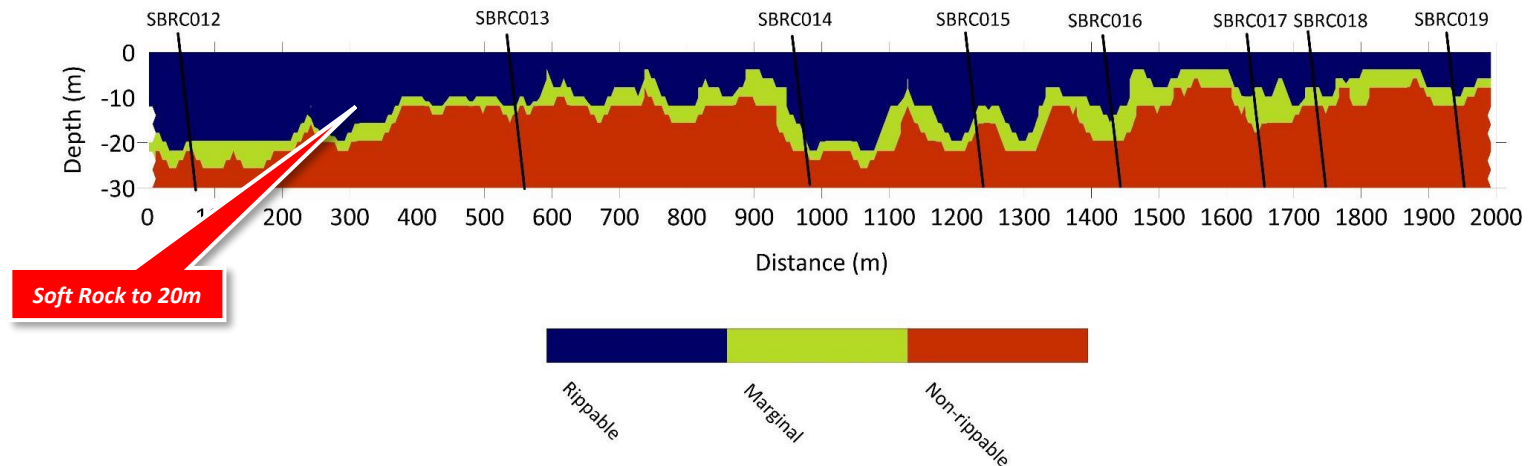
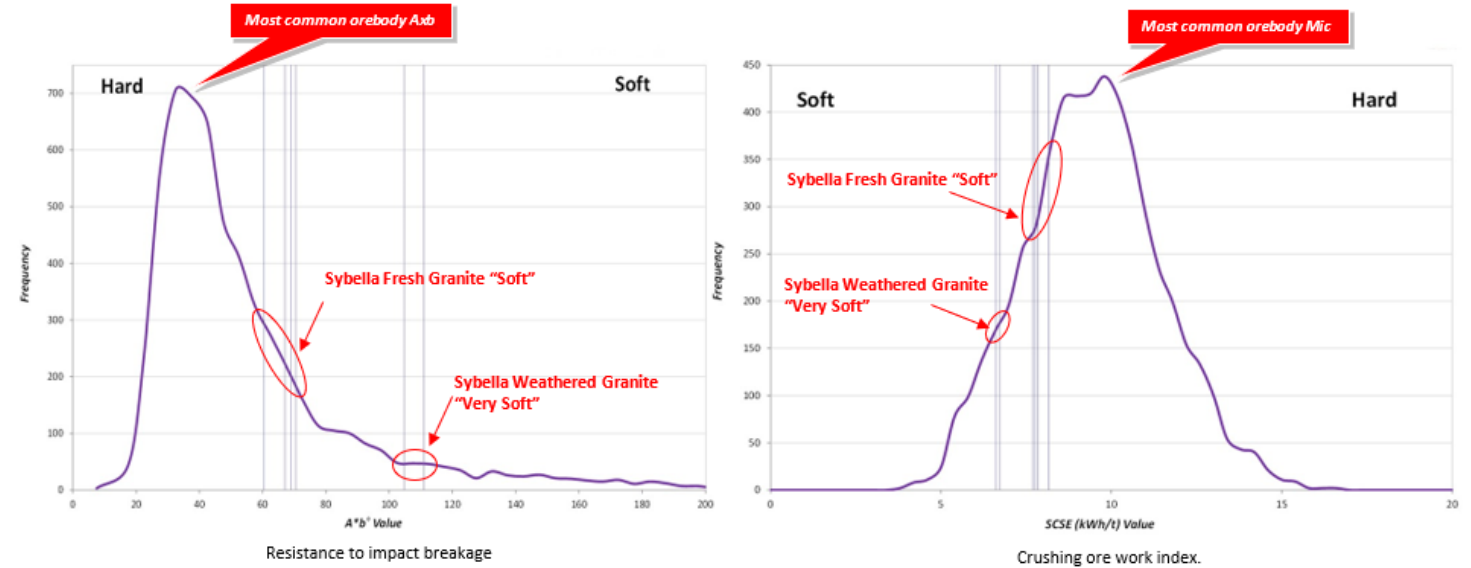
### Boundary Fence East Fresh Granite



IBRT, Fresh SBRC016/SBDD002 20-60m, 10mm and 15mm jaw crush  
variable pH, longer residence time, ambient temperature, 33% w/w solids

### Comminution SMC Tests

- -10mm crushed rock is “Very Soft” when weathered and “Soft” when fresh
- Suitable for simple low energy crushing circuit involving gyratory, jaw and/or cone crushers
- Should translate into low crushing and mining costs



### Sybella Aspiration

- 10-30Mtpa throughput
- 300-400 ppm Nd Equ
- 60%-90% Nd Recovery
- P80 10-20mm
- Residence time >100 days
- Leach pH 3-3.5

Parameter	Freeport-McMoRan Morenci Crushed Heap Leach		BHP Escondida Oxide Heap Leach	
	Value	Ref.	Value	Ref.
Throughput (mtpa)	26	1	20	4
Head grade (wt% Cu)	0.36	2	0.55	5
Cu Recovery (%)	82	2	62	5
Crush Size (P <sub>80</sub> mm)	40	3	19	5
Heap Residence Time (days)	-		150	5
Leach pH	-		1.3	6

1 - Freeport-McMoRan. *North America Morenci*. [https://www.fcx.com/operations/north-america#morenci\\_link](https://www.fcx.com/operations/north-america#morenci_link)

2 - Freeport-McMoRan. (2024). *Technical Report Summary of Mineral Reserves and Mineral Resources for Morenci Mine*. <https://www.fcx.com/sites/fcx/files/documents/operations/TRS-morenci.pdf>

3 - Drescher, W.H. (2001). *Phelps Dodge Morenci Has Converted All Copper Production to Mine-for-Leach*. <https://www.copper.org/publications/newsletters/innovations/2001/08/phelpsdodge.html>

4 - Ausenco. *Escondida Copper Mine: Oxide leach expansion project*. <https://ausenco.com/projects/escondida-copper-mine-oxide-leach-expansion-project/>

5 - BHP. (2022). Title: Technical Report Summary – Minera Escondida Limitada SEC S-K 229.1300 Technical Report Summary. <https://minedocs.com/23/Escondida-TR-6302022.pdf>

6 -Galleguillos Pérez, P. (2011). *Biodiversity and stress response to extremophilic prokaryotes isolated from the Escondida Copper Mine, Chile*. <https://research.bangor.ac.uk/portal/files/20575516/null>

2024

## Near-Term News Flow

Booth #34



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Asset	44% Equity	Q2	Q3	Q4	Comments
<b>Maronan ASX: MMA</b>	Advanced Silver-Lead Copper-Gold	Indicated Resource Drilling	Indicated Resource Drilling Advanced Mining Study	Updated Resource Scoping Study	Two 30Mt ore bodies 100m from surface

**This Presentation was Authorised by the Board of Red Metal.**

**Caution Regarding Forward-Looking Statements.**

This Presentation contains forward-looking statements which are identified by words such as ‘may’, ‘could’, ‘potential for’, ‘scope for’, ‘opportunity for’, ‘believes’, ‘expects’, or ‘intends’ and other similar words that involve risks and uncertainties.

These statements are expressed in good faith and believed to have a reasonable basis, and are based on a number of assumptions regarding future events and actions that, as at the date of this Presentation, are expected to take place.

Such forward-looking statements are not guarantees of future performance and involve known and unknown risks, uncertainties, assumptions and other important factors, many of which are beyond the control of the Company, the Directors and the Company’s management.

The Company cannot and does not give any assurance that the results, performance or achievements expressed or implied by the forward-looking statements contained in this Presentation will actually occur and investors are cautioned not to place undue reliance on these forward-looking statements.

The Company has no intention to update or revise forward-looking statements, or to publish prospective financial information in the future, regardless of whether new information, future events or any other factors affect the information contained in this Presentation, except where required by law.

These forward-looking statements are subject to various risk factors that could cause the Company's actual results to differ materially from the results expressed or anticipated in these statements.

### **Competent Persons Statement**

The information in this report that relates to Exploration Results is based on and fairly represents information and supporting documentation compiled by Mr Robert Rutherford, who is a member of the Australian Institute of Geoscientists (AIG). Mr Rutherford is the Managing Director of the Company. Mr Rutherford has sufficient experience which is relevant to the style of mineralisation and type of deposit under consideration and to the activity which he is undertaking to qualify as a Competent Person as defined in the 2012 Edition of the "Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves" (the JORC Code). Mr Rutherford consents to the inclusion in the report of the matters based on his information in the form and context in which it appears.



## Red Metal Limited

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# REO Supply vs Demand

## Mine Supply

- China dominates
- Red flags

Origin	Annual REO (tonnes)				
	Total	Pr	Nd	Tb	Dy
China – hard rock (2021)*	135,000	4,878	17,110	67	159
China – Ionic Clays (2021)*	19,150	880	3,264	159	962
Myanmar – Ionic Clays (2021)**	42,850	833	2,825	345	2,315
USA – Mountain Pass (2021)	43,000	1,849	5,160	26	22
Australia/Malaysia – Mt. Weld (2021)***	22,000	1,210	4,251	20	55
Others (2021)	18,000	929	3,263	16	45
<b>Total (2021)</b>	<b>280,000</b>	<b>10,578</b>	<b>35,873</b>	<b>633</b>	<b>3,558</b>
<b>Grouped Total</b>	<b>280,000</b>	<b>46,452</b>		<b>4,191</b>	
<b>Demand (2031)</b>	<b>560,000</b>	<b>92,903</b>		<b>8,382</b>	

## Demand

- Forecast to double by 2031

New REO production required by 2031	280,000	46,452	<b>4,191</b>
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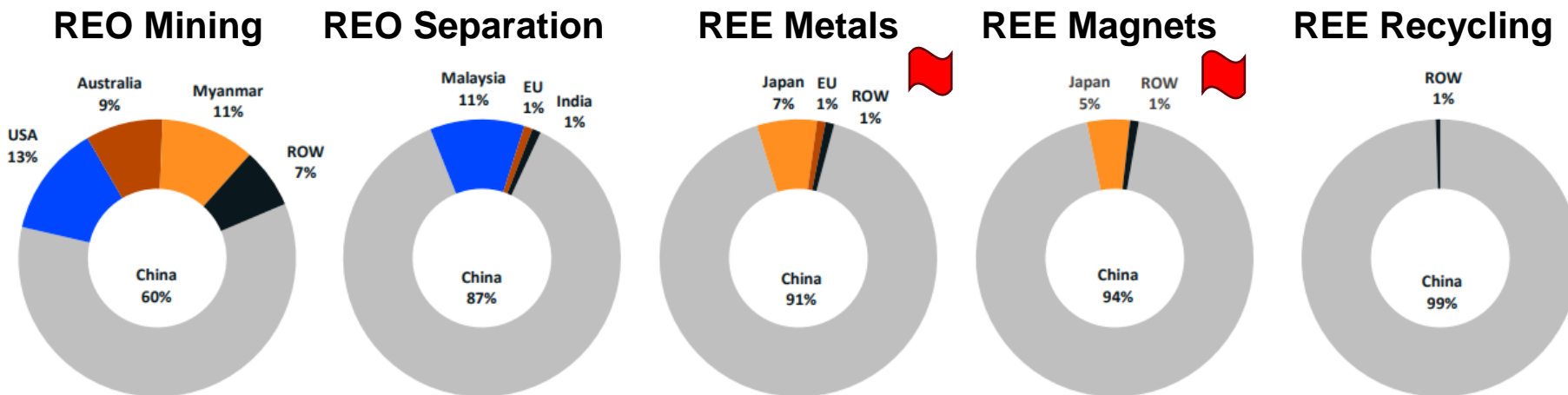
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# REO Supply vs Demand

## Downstream

- China dominates
- Red flags



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Total (2021)	280,000	10,578	35,873	633	3,558
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## Demand

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[https://assets-global.website-files.com/6267a587be31507747a1c8b6/63da79c8238104bb115c0597\\_OEMs%20presentation\\_vf.pdf](https://assets-global.website-files.com/6267a587be31507747a1c8b6/63da79c8238104bb115c0597_OEMs%20presentation_vf.pdf)