

18 July 2025

## Investor Presentation – Scandium Market Update

MELBOURNE, Australia – Sunrise Energy Metals Limited (**Sunrise Energy Metals** or **the Company**) (ASX:SRL and OTC:SREMF) is pleased to release the attached Investor Presentation focused on an update to scandium markets at the Company's Syerston Scandium Project.

The Company will host the Investor Webinar via Zoom today, 18 July 2025 at 11.00 AEST (Sydney time). To register, please follow the link below:

[https://us02web.zoom.us/webinar/register/WN\\_Ra1tdZvQSmL7xAn8av9Mg](https://us02web.zoom.us/webinar/register/WN_Ra1tdZvQSmL7xAn8av9Mg)

This announcement and annexed Investor Presentation are authorised for release to the market by the Managing Director and CEO of Sunrise Energy Metals Limited.

**For more information, please contact:**

**Corporate**

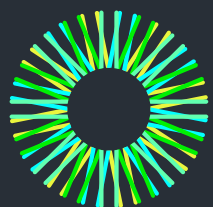
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**About Sunrise Energy Metals Limited (ASX:SRL: OTCQX:SREMF)** – Sunrise Energy Metals Limited (SEM) is developing the Syerston Scandium Project, near Fifield in central-west New South Wales (NSW), with the aim of delivering the World's first source of mineable, high-grade scandium. Sunrise also owns the Sunrise Nickel-Cobalt Project, one of the largest and most cobalt-rich nickel laterite deposits in the world.

**About the Syerston Scandium Project** – The Syerston Scandium Project (Project), located near Fifield in central-west NSW, hosts one of the world's largest and highest-grade scandium deposits. A Feasibility Study for the Project was completed in August 2016, supported by extensive piloting, metallurgical test work and engineering. The Feasibility Study is currently being updated.



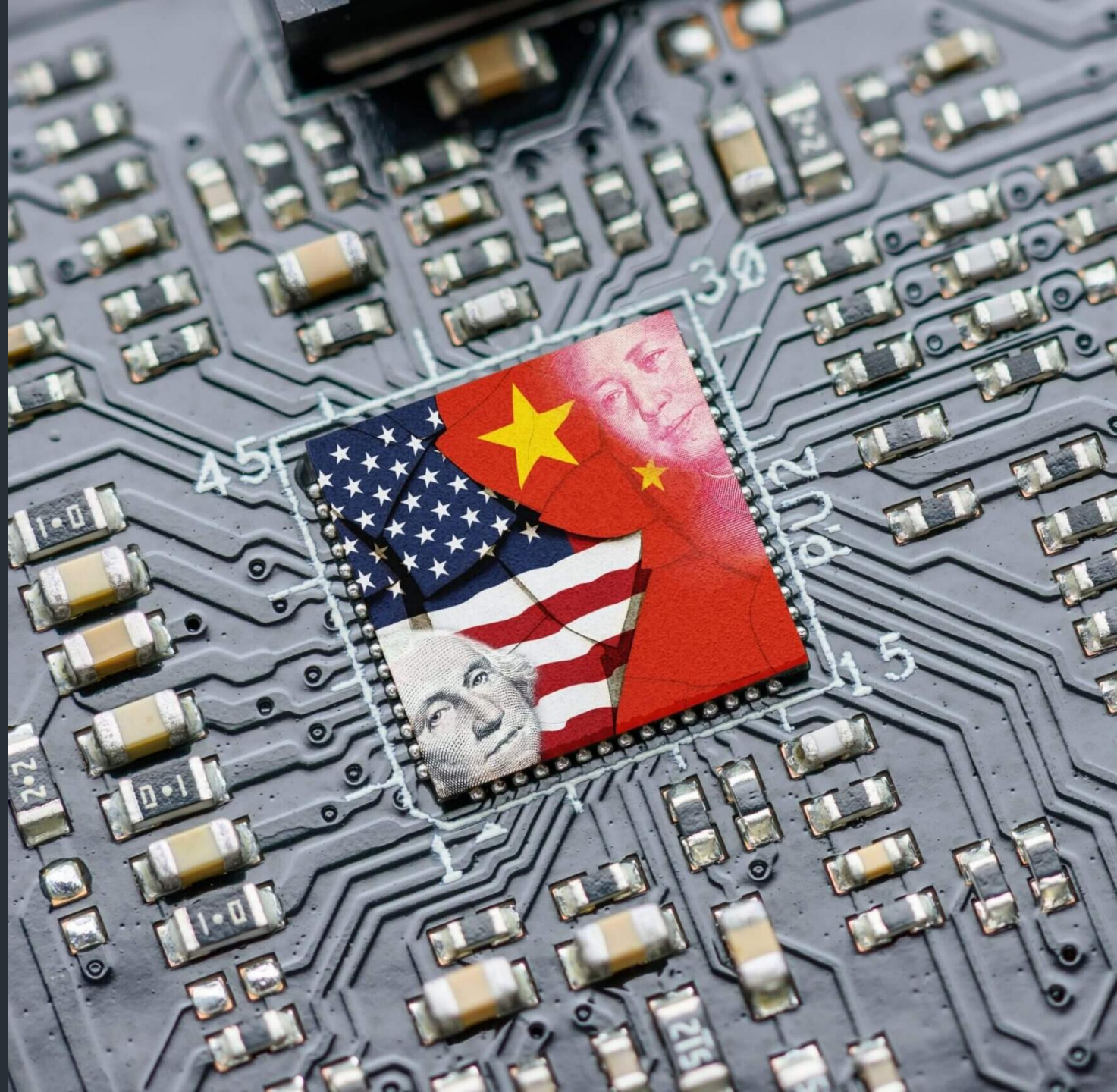
**sunrise**  
energy metals

# Syerston Scandium Project

## Scandium in Alloys

Sam Riggall, Managing Director  
Timothy Langan, Global Manager Scandium Alloy Development

July 2025



# Cautionary statement



Certain statements in this news release constitute “forward-looking statements” or “forward-looking information” within the meaning of applicable securities laws. Such statements involve known and unknown risks, uncertainties and other factors, which may cause actual results, performance or achievements of the Company or industry results, to be materially different from any future results, performance or achievements expressed or implied by such forward-looking statements or information. Such statements can be identified by the use of words such as “may”, “would”, “could”, “will”, “intend”, “expect”, “believe”, “plan”, “anticipate”, “estimate”, “scheduled”, “forecast”, “predict” and other similar terminology, or state that certain actions, events or results “may”, “could”, “would”, “might” or “will” be taken, occur or be achieved. These statements reflect the Company’s current expectations regarding future events, performance and results, and speak only as of the date of this release.

Readers are cautioned that actual results may vary from those presented.

All such forward-looking information and statements are based on certain assumptions and analyses made by Sunrise Energy Metals’ management in light of their experience and perception of historical trends, current conditions and expected future developments, as well as other factors management believe are appropriate in the circumstances. These statements, however, are subject to a variety of risks and uncertainties and other factors that could cause actual events or results to differ materially from those projected in the forward-looking information or statements including, but not limited to, unexpected changes in laws, rules or regulations, or their enforcement by applicable authorities; the failure of parties to contracts to perform as agreed; changes in commodity prices; delays in financing or project funding; unexpected failure or inadequacy of infrastructure, or delays in the development of infrastructure, and the failure of exploration programs or other studies to deliver anticipated results or results that would justify and support continued studies, development or operations. Readers are cautioned not to place undue reliance on forward-looking information or statements.

Although the forward-looking statements contained in this news release are based upon what management of the Company believes are reasonable assumptions, the Company cannot assure investors that actual results will be consistent with these forward-looking statements. These forward-looking statements are made as of the date of this release and are expressly qualified in their entirety by this cautionary statement. Subject to applicable securities laws, the Company does not assume any obligation to update or revise the forward-looking statements contained herein to reflect events or circumstances occurring after the date of this release.

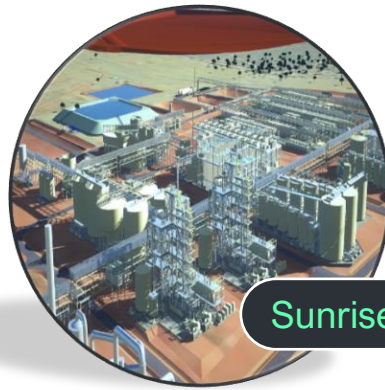
The information in this document that relates to Exploration Results, Mineral Resources or Ore Reserves is based on information compiled by Mr Stuart Hutchin who is a Member of the Australian Institute of Geoscientists (#5285), and a full-time employee of Mining One Pty Ltd. Mr Hutchin has sufficient experience that 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’. Mr Hutchin, who is a consultant to the Company, consents to the inclusion in the report of the matters based on his information in the form and context in which it appears.





Syerston Scandium

- Largest high-grade scandium resource globally
- Feasibility study update underway
- Markets are strategic – e.g. semiconductors, defense alloys, microelectronic mechanical systems (MEMS)
- Strategy is to develop a source of mineable scandium for customers



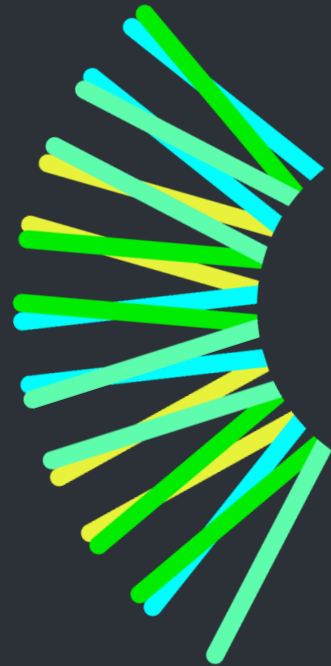
Sunrise Nickel-Cobalt

- Large, long-life, low-cost resource
- Permitted, engineered and development-ready
- Market currently flooded with excess Chinese supply (Indonesia / DRC)
- Plan is to limit work and preserve options until market conditions improve



Exploration

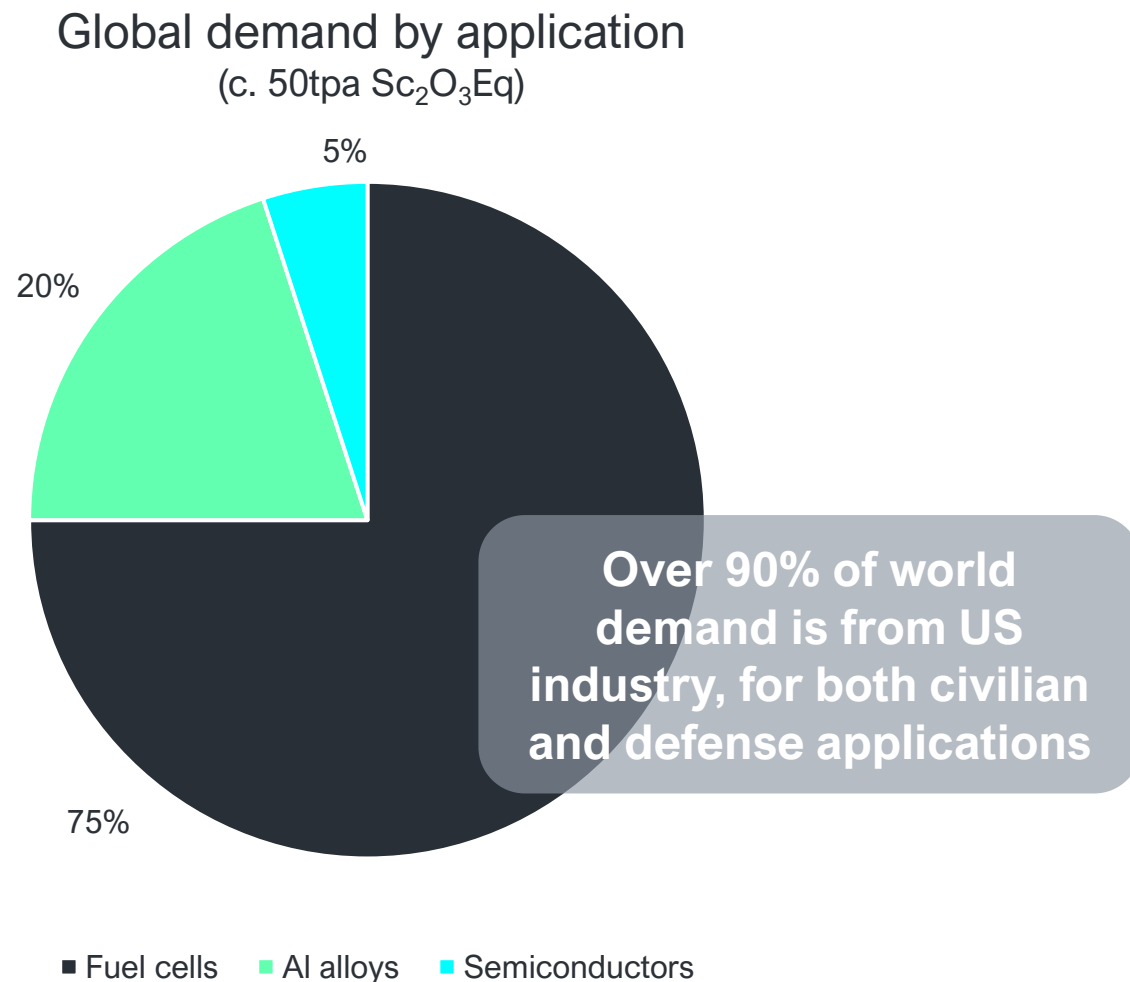
- Prospective copper-gold targets across the Cloncurry district covering 1,000 km<sup>2</sup> north-east of Mt Isa
- Focus is on the 400km north-south structural corridor hosting Osborne, Starra, Swan and Ernst Henry
- Shallow drill program to commence 1H25



# Scandium market

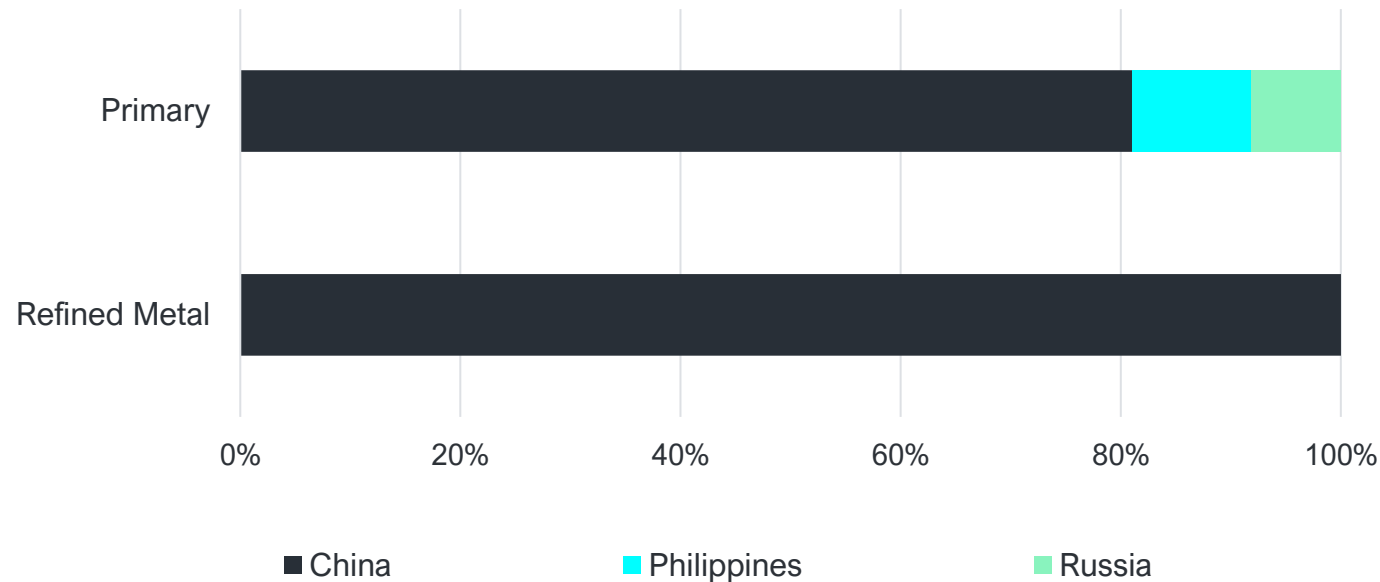


- Scandium (Sc) is the lightest transition metal and classified as a rare earth element (REE) - it is common in the earth's crust, but at very low concentrations
- It has a potent ability to transform the properties of other elements and compounds, especially in aluminium and in piezoelectric and ferroelectric applications
- Scandium has rarely been produced via mining – usually waste reprocessing or as by-product
- A lack of diversified supply options, and concerns that production cannot scale fast enough to meet new demand, has limited Sc adoption despite its intrinsic industrial value



- **Solid oxide fuel cells** remain the largest end-use application - steady growth driven primarily by Bloom Energy (CA), with future potential in hydrogen electrolyzers
- **Aluminium alloys** are the largest use case - automotive, marine and aerospace. Scandium improves strength, extrudability, corrosion-resistance and weldability. The high-volume requirements demand proof of diverse and scalable supply chains.
- In **radio frequency (RF) filtering**, the piezoelectric properties of aluminum scandium nitride (AlScN) thin film makes it the (only) material of choice in 5G/6G spectrum >3GHz. Its ferroelectric properties also make it an emerging option for stable, low-energy **flash memory** at high temperature.

Global supply by location



- China's share of global scandium supply exceeds that of almost all strategic metals, including gallium, germanium, silicon and rare earths
- China has actively pursued a vertical integration strategy to control supply and pricing into western markets
- Higher tech applications require extremely pure refined metal, which can only be sourced from China



# Chinese supply – titanium dioxide pigment waste

- Most of China's scandium production has come from re-processing of  $\text{TiO}_2$  pigment waste, which is acidic and usually contains traces of radioactive elements (U, Th)
- This feedstock has low concentrations of scandium (c. 10-20ppm) and is often disposed of by deep-welling, landfill or direct riverine discharge, leaving a significant impact on ground water quality<sup>1</sup>
- Industry consolidation, government fiscal support and low environmental regulatory oversight has enabled China to control global scandium supply



An example of acidic  $\text{TiO}_2$  waste sludge after dewatering

# New trade and export controls on scandium

## A new US trade landscape

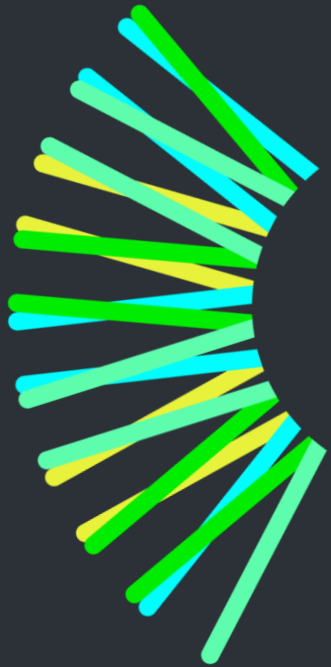
US trade policies have rapidly increased the landed cost of scandium in the US:

- new tariffs on Chinese chemical ( $\text{Sc}_2\text{O}_3$  and  $\text{ScF}_3$ ) and metal (ingot and powder) imports, plus aluminum-specific tariffs
- defense contractors to satisfy foreign entity of concern (FEOC) tests
- US trade controls on transfer of high-tech components and equipment (eg semiconductors)
- closing trans-shipment loopholes

## China's response

In April 2025 MOFCOM declared scandium a '**dual-use item**' under the new *Dual Use Items Export Control Regulations* (ECR), resulting in:

- no Sc exports since April
- a new reporting and notification regime on all Sc exports, which will be enforced extra-territorially
- prohibitions on US companies and their customers transferring products from any location where those products '**incorporate, intermingle, or use**' Chinese scandium



Sunrise – leadership in the development of Sc end markets

# Why use scandium in aluminum alloys?

- Scandium is the most potent alloy for aluminum – it increases strength, improves extrudability, enhances corrosion resistance and makes aluminum both weldable and printable
- Increased strength (and lower weight) of Al-Sc alloys can drive substitution of steel and other alloys in critical, high value markets, such as aerospace, automotive and additive manufacturing (3D printing)
- The world market for aluminum is estimated at over US\$140bn<sup>1</sup>

## Increasing economic impact on alloys

Grain refinement	Increased recrystallisation temperature	Dispersoid strengthening	Nucleation of strengthening precipitates
Primary $\text{Al}_3\text{Sc}$ particles are very effective at nucleating grains during solidification, particularly $>0.35\text{wt}\%\text{Sc}$ (e.g. welding wire)	Prevents recrystallisation and grain growth in wrought product  Stabilises substructure after plastic deformation	Precipitates as a coherent dispersoid ( $\text{Al}_3\text{Sc}$ ) with a large lattice mismatch  Coherent $\text{Al}_3(\text{ScZr})$ dispersoids are stable at elevated temperatures	Scandium dispersoids enhance nucleation of strengthening precipitates formed during aging

1. Allied Market Research

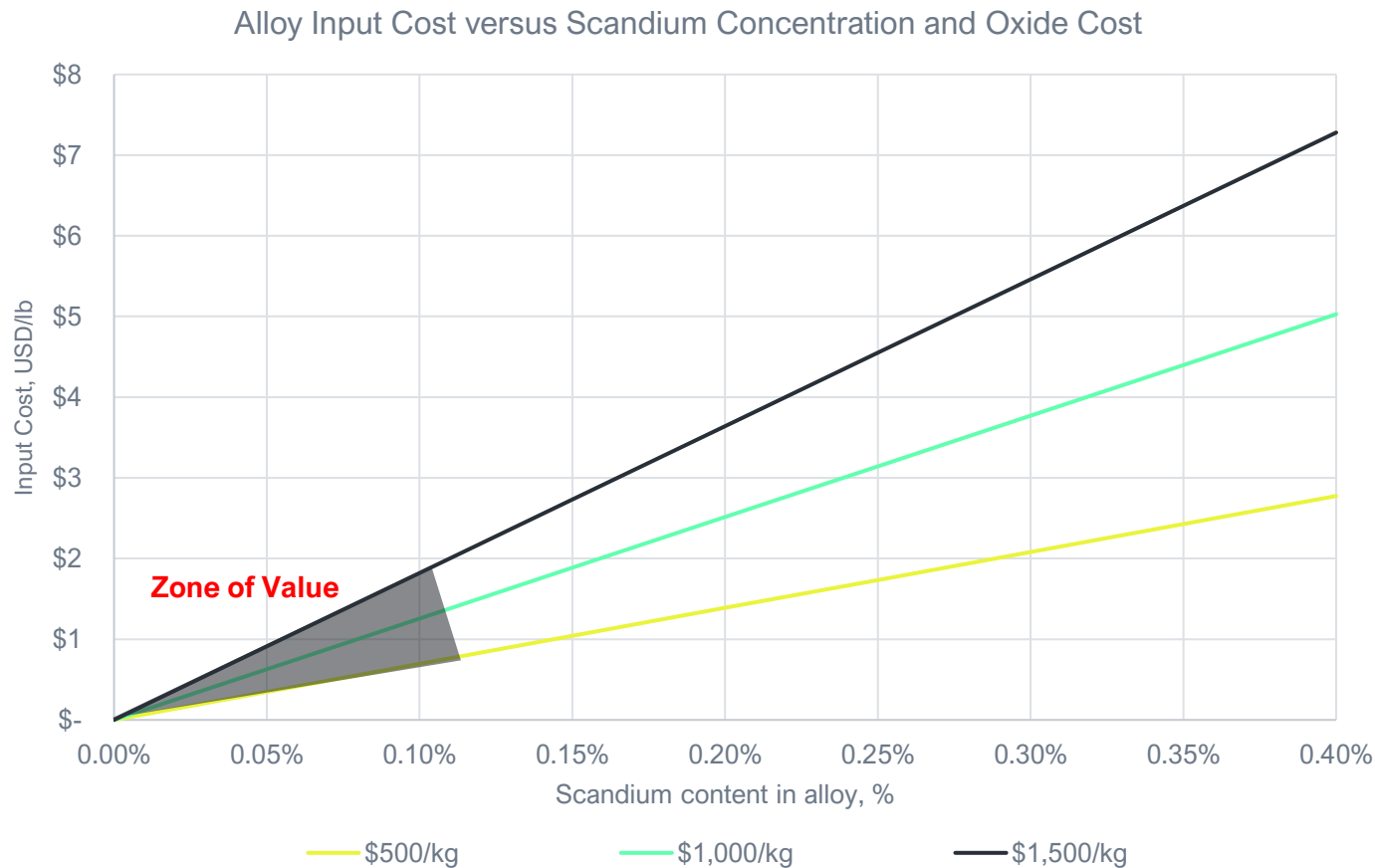


# Optimizing conversion of scandium units to master alloy

- Scandium is not a cheap metal, nor is its conversion into a useable form (or its incorporation into a functional alloy) particularly efficient – there can be yield losses in production of master alloy, in billet/ingot production and/or atomization to powders
- Therefore, every alloy incorporating scandium needs to assess the trade-off between cost and functional performance, which varies depending on the value-add in each end-use application (e.g. aerospace v automotive)
- An important focus of our development work has been alloy treatments that reduce scandium content per unit of performance – we want to grow the market by reducing its alloying level
- If we can deliver scandium atoms into final products more efficiently and at a lower cost, scandium can buy its way into higher volume applications, targeting hundreds to thousands of tonnes of demand



# Impact of scandium prices on alloy cost



- Scandium increases the cost of aluminum billet and ingot production
  - Scandium cost in billet at 0.10%wt adds between \$0.90 to \$1.80/lb
- Scandium alloys perform best with optimized heattreating processes (annealing, aging, cooling) which has been a strong focus of our development work
- Unlike some alloys (eg. Al-Li) Al-Sc alloys do not require separate cast houses

# A long history of partnering to develop the Sc market



Joint cooperation on development of aluminium-scandium alloys for automotive and aerospace



Supply and recycling process for scandium-containing 3D printing material



High-strength, low-concentration alloy to accelerate adoption in automotive



Development of extruded parts for commercial aircraft



Development of scandium-containing alloys for electric buses



Sc-containing printable welding wire in rocket construction and launch



Market development for aluminium-scandium master alloys



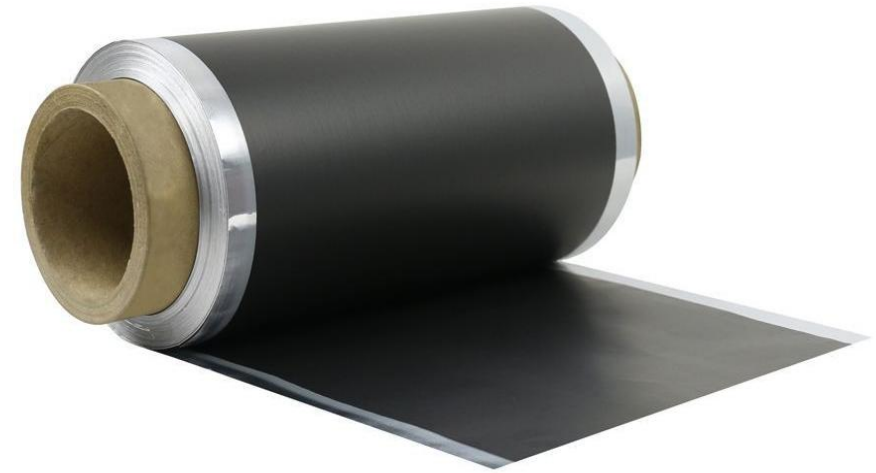
Jointly develop strong and heatresistant Sc-containing aluminum alloys for transportation parts and equipment

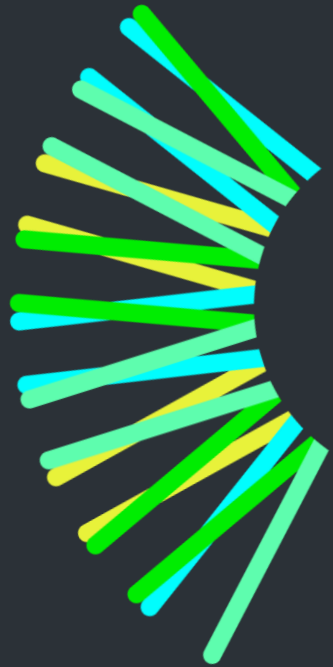


Development of high-Sc alloy for use in 5G/6G telecommunications technologies

## A growing patent portfolio

- Heat treatment of aluminum alloys containing silicon and scandium
- Fabrication of Sc containing sputtering targets
- Aluminum-Magnesium-Lithium-Scandium alloys for additive manufacturing
- High strength aluminum alloy conductor foils for batteries
- Aluminum alloy welding wire strengthened with scandium





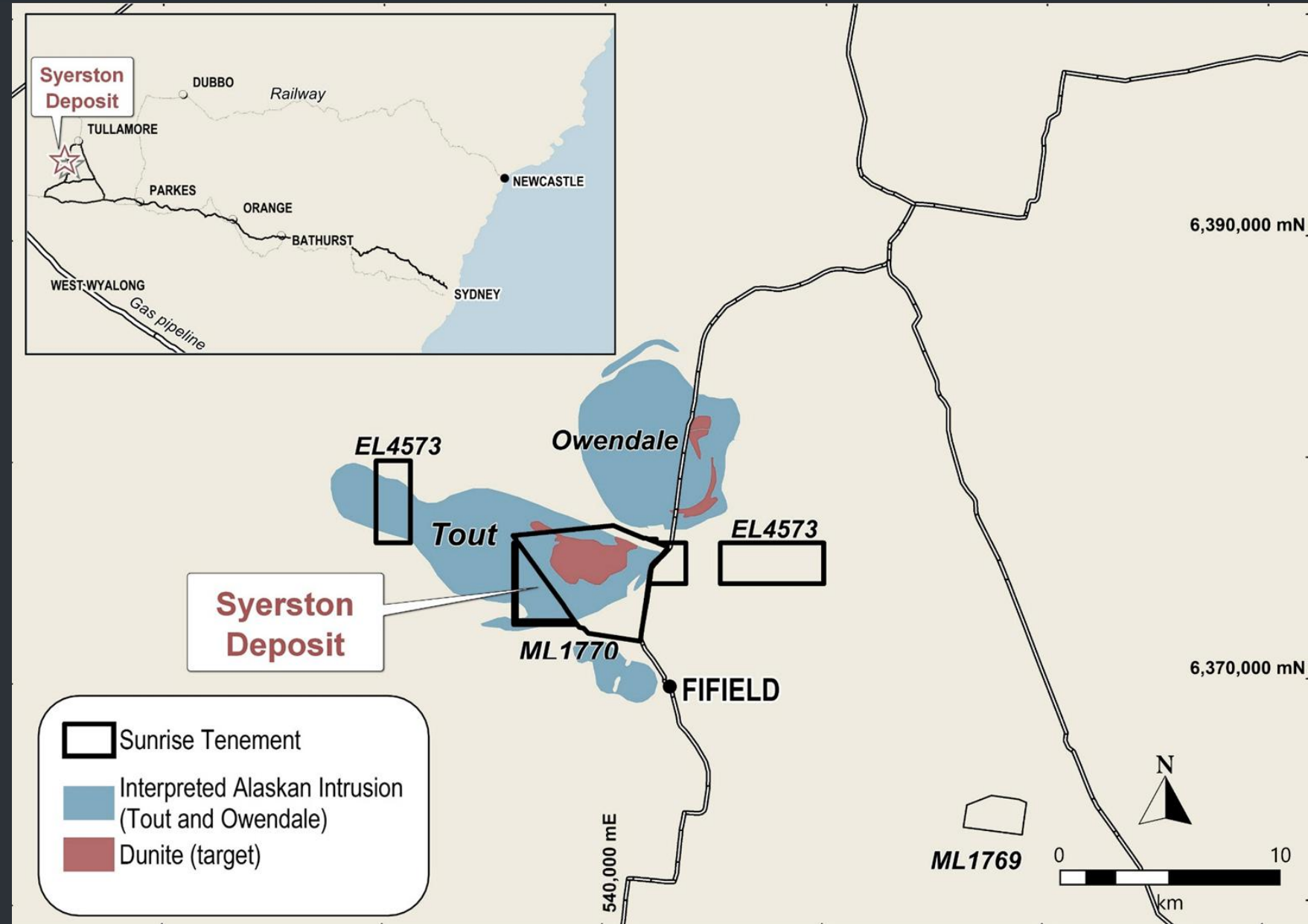
# Syerston Scandium Project

# Syerston Scandium Project: location and infrastructure

Granted **Mining Lease** (ML1770)  
adjacent to excellent road and rail  
**infrastructure**

**Water rights** secured, **electrical  
connection** application submitted

**Freehold land rights** surrounding  
the project are secured





# Syerston Mineral Resource Estimate

- Resource estimate supported by 1,940 drill holes over 73,870 metres of drilling, including 47,817 assays
- Deposit extends 4.5 km (north-south) by 4.2 km (east-west)
- Shallow, continuous mineralisation (30 - 40m depth) delivers a low strip ratio for simple, low-cost mining
- Further drilling is planned to target more high-grade mineralisation, with the resource open to the north and west

Syerston Mineral Resource Estimate (JORC 2012)

Cut-off	Class	Mt (dry)	Sc (ppm)	Sc (t)	Sc <sub>2</sub> O <sub>3</sub> Eq (t)*
300 ppm Sc	Measured	5.3	436	2,299	3,518
	Indicated	18.2	400	7,284	11,144
	<b>M+I</b>	<b>23.5</b>	<b>408</b>	<b>9,583</b>	<b>14,662</b>
	Inferred	36.9	379	13,972	21,376
	<b>M+I+I</b>	<b>60.3</b>	<b>390</b>	<b>23,554</b>	<b>36,038</b>
600 ppm Sc	Measured	0.4	680	302	462
	Indicated	0.2	638	140	214
	<b>M+I</b>	<b>0.7</b>	<b>666</b>	<b>442</b>	<b>676</b>
	Inferred	0.1	642	59	91
	<b>M+I+I</b>	<b>0.8</b>	<b>663</b>	<b>501</b>	<b>767</b>

*“The updated Syerston MRE highlights the scale and quality of our scandium assets, with enough grade and tonnage to support decades of future supply.”<sup>1</sup>*

# Deliverables

## Delivered

- ✓ Granted Mining Lease
- ✓ Environmental Impact Statement completed
- ✓ Water rights secured and pump testing completed
- ✓ Electrical connection application filed for renewable energy supply
- ✓ Metallurgical test work and piloting successfully completed
- ✓ Scandium patents

## Upcoming

- ❑ Update Syerston Mineral Resource and Ore Reserve Estimates
- ❑ Finalise Feasibility Study (3Q25)
- ❑ Offtake discussions (ongoing)
- ❑ Engagement on US Government critical metals programs (ongoing)
- ❑ Progress aluminium alloy development work (ongoing)

# Investment summary

## High quality asset



- A large, high-grade source of mineable scandium, adjacent to excellent infrastructure
- Amenable to shallow, low strip mining with decades of expandable resource available

## Advanced and with low sovereign risk



- Piloting and metallurgical test work completed with excellent results
- Mining Lease granted, key permits in place and good state government and community support

## Strategic

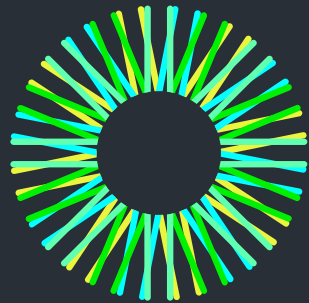


- Critical in modern semiconductor technologies and 3D printed alloys
- Declaration by China of scandium as a 'dual use' item and export controls
- The project has a high 'solution-to-cost' ratio for western customers and governments

## Upside and optionality



- Sunrise has almost a decade of investment in scandium development work and partnerships
- Alloys present an enormous volume opportunity
- The leap from tens to hundreds of tonnes of demand can only be supported by primary mine supply



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