

# New Technologies and Manufacturing ASM - Independent Supplier of Critical Metals

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## **Competent Person**

Unless otherwise stated, the information in this presentation that relates to mineral exploration, mineral resources and ore reserves is based on information compiled by Mr D I Chalmers, FAusIMM, FAIG, (director of the Company) who 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 Competent Person as defined in the 2012 Edition of the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves. Ian Chalmers consents to the inclusion in the presentation of the matters based on his information in the form and context in which it appears. Mr Chalmers is a shareholder of Australian Strategic Materials Limited.

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# ASM – Mine to Manufacturing

## Dubbo Project



- Key products defined
- Flowsheet optimised to deliver key products, with potential at a lower capital and operating costs with increased revenue
- Envisioned to be “net zero carbon”

## Ziron Tech



- Ownership of a novel patented metallisation process
- World class Ziron Tech R&D team focused on new materials for emerging technologies
- Developer/preferred partner of innovative materials processing

## Metal



- Enables preferred partnerships of metal production
- Delivered a new business unit on Titanium metal / metal powder business
- Enables the integration into global markets through boutique metal plants strategically located

# Critical Materials – Essential for New Technology

**Electric Vehicles - ~5kg**  
Rare Earth Permanent Magnets



**Growth - 3.4M to 25.3M EV cars by 2030**

*Source: Deloitte Insight – Electric Vehicle: Setting a course for 2030*

**Wind turbines – ~ 195kg of Nd/MW**



**Forecast 7.9% annual growth - 2020 to 2024**

*Source: EU's Joint Research Centre*

**Defence / Aerospace**

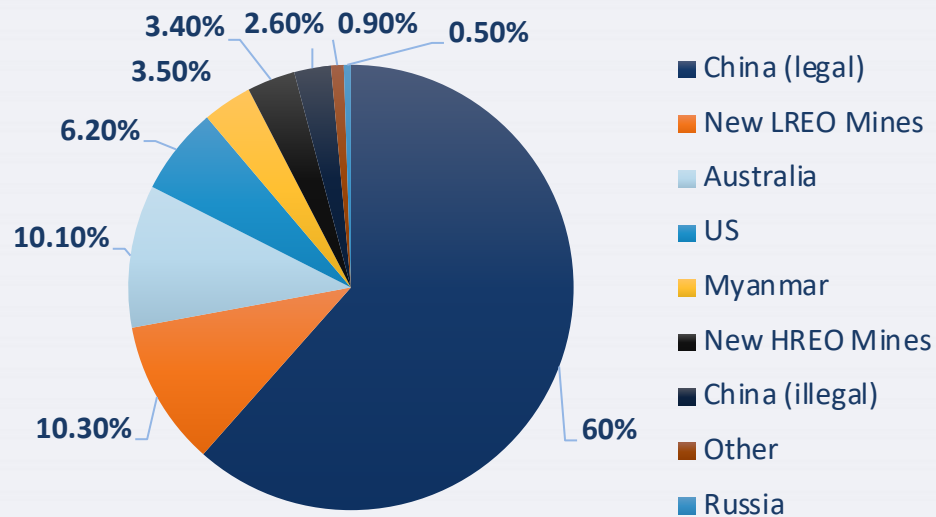


**Jet turbines, GPS, defence systems**

# Critical Materials Supply – Snap Shot

1. Production of oxides, metals and metal powders highly concentrated
2. Suppliers of concentrates and oxides receive discounted Realised Pricing
3. Metals and Powders integrated within manufacturing sectors where additional value is gained.

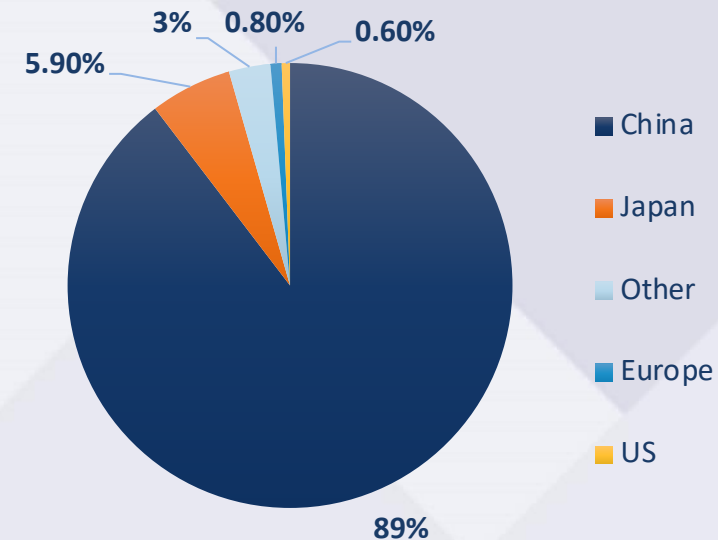
Projected Regional Production  
of Rare Earth Oxides - 2030



Forecast Production 2030 - ~90 ktpa

Source: Adamas Intelligence

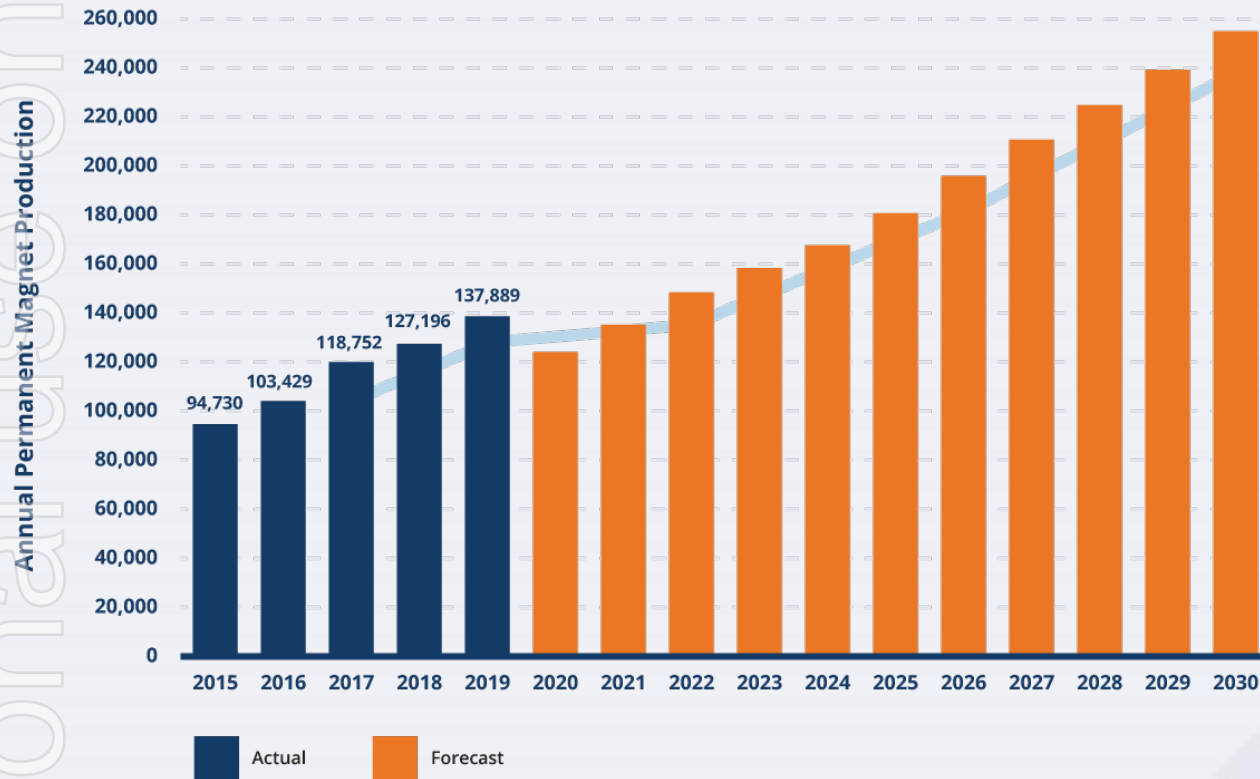
Projected Regional Manufacturing  
of Permanent Magnets - 2030



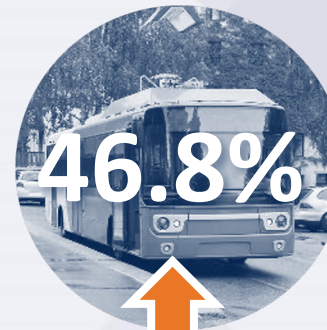
Source: Adamas Intelligence

# Critical Materials Demand - Rare Earth Magnets

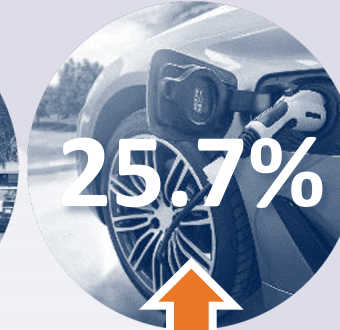
Electric vehicles will consume 1t out of 4t of permanent magnets globally by 2030



## Growth Rare Earth Permanent Magnets to 2030



Commercial EV  
traction motors



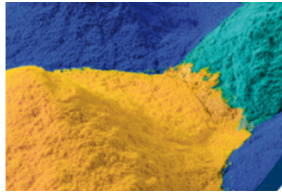
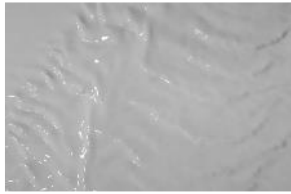
Passenger EV  
traction motors



Electric Mobility  
Vehicles



# ASM – An Emerging Independent Critical Metals Supplier



Ore

Concentrate

Oxide

Metals &  
Alloys

Metal  
Powders

Magnets

Components

OEMs

US \$ 4B

US \$ 40B

US \$ 400B

US \$ 4,000B

## ASX Producers and Developer Peers

- Producers achieve a % of **Realised Price** compared to FOB China due to VAT duties/taxes and discounting
- Exposed to highly concentrated buyer universe (rare earth refiners)
- Multiple parties involved adds to complexity and costs

## ASM Business Model

- ✓ Higher **Realised Prices**. Full value captured for oxides to metals/alloys across the business.
- ✓ Demonstrated commercial production of metals, alloys and powders
- ✓ Additional value in titanium and strip metal alloys



# Dubbo Plant Optimisation

Defined Dubbo products

Optimised flowsheet

Potential improved project financial returns



# Ziron Tech - Innovation – Technology - Value

ASM has 95% interest in Ziron Technology Corporation (Ziron Tech)

ASM owns the pilot plant and all IP related to the metallisation process

Ziron Tech team integrated into ASM



# ASM's Integrated Metals Business

## Rare Earths

- Long term stable, secure, and sustainable supply;
- Potential to provide strip metal alloy for permanent magnets;
- Potential to be part of a permanent magnet solution

## Titanium

- Independent, lower cost, environmentally responsible supply
- Independent business that provides titanium metal, metal alloys and powders
- Potential to integrate into 3D manufacturing

## Critical Metals

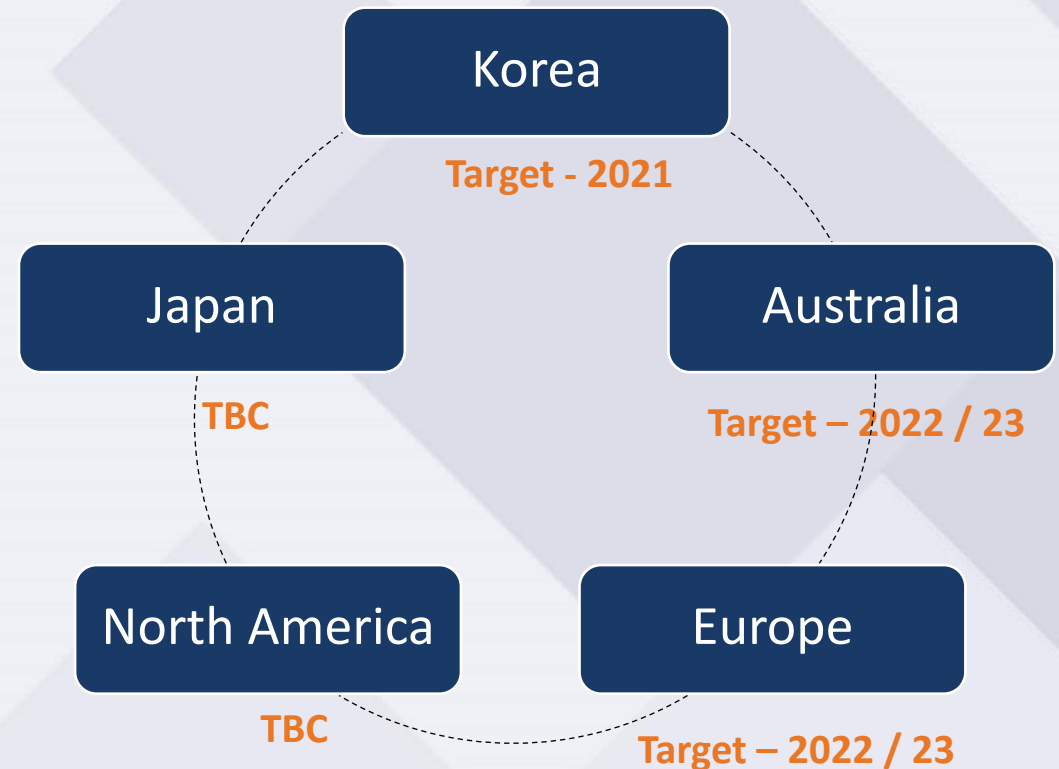
- Supply zirconium and hafnium metal for present and future demand
- Supplier of Niobium Metal
- Independent supply of critical metals

# Global Independent Metals Producer

Agreement with Dongkuk R&S

Proven commerciality – 1,000 kg pd

Develop a Korean metals facility



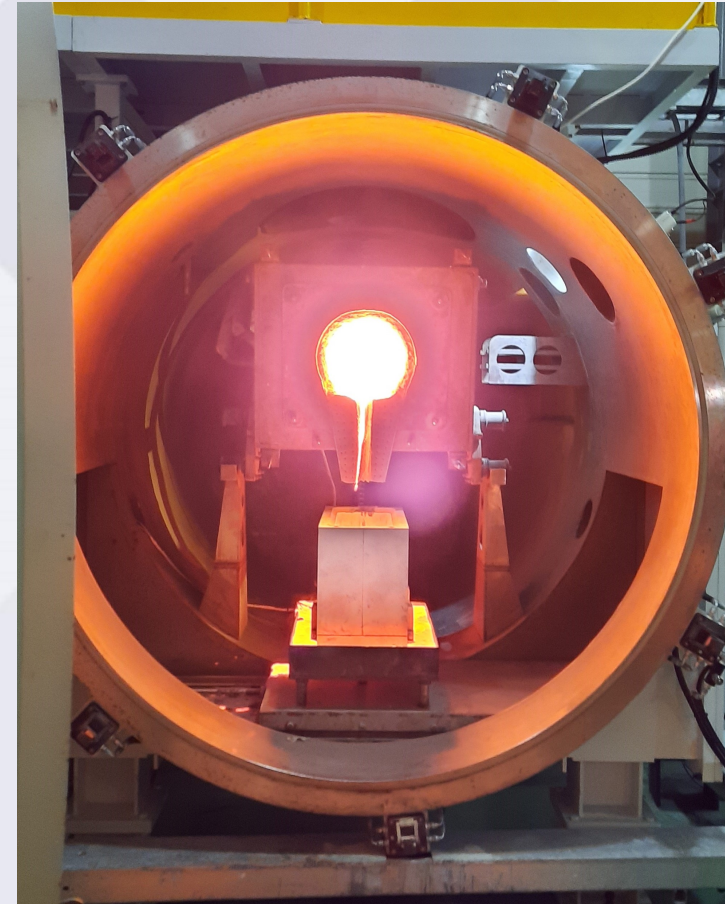
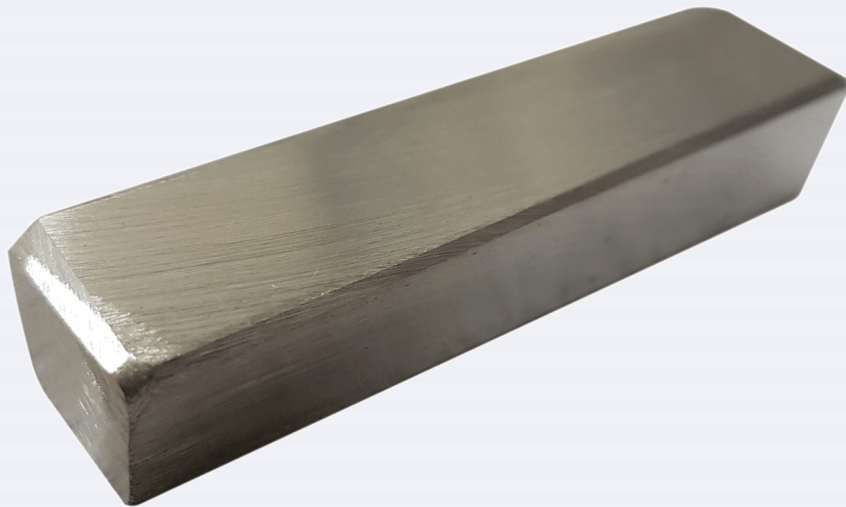


# Potential Timetable – Sustainable, Secure & Stable Supply



# ASM Focus – Next 6 Months

- Complete optimisation of the Dubbo Project
- Progress Offtake and Strategic Partner discussions
- Progress EPC / EPCM Financing
- Progress Korean metal plant
- Progress financing of the Dubbo Project





# Dave Woodall

ASM Managing Director



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# Dubbo Project Resources & Reserves

## Dubbo Project – Mineral Resources

| Resource Category | Tonnes (Mt)  | ZrO <sub>2</sub> (%) | HfO <sub>2</sub> (%) | Nb <sub>2</sub> O <sub>5</sub> (%) | Ta <sub>2</sub> O <sub>5</sub> (%) | Y <sub>2</sub> O <sub>3</sub> (%) | TREO* (%)   |
|-------------------|--------------|----------------------|----------------------|------------------------------------|------------------------------------|-----------------------------------|-------------|
| Measured          | 42.81        | 1.89                 | 0.04                 | 0.45                               | 0.03                               | 0.14                              | 0.74        |
| Inferred          | 32.37        | 1.90                 | 0.04                 | 0.44                               | 0.03                               | 0.14                              | 0.74        |
| <b>Total</b>      | <b>75.18</b> | <b>1.89</b>          | <b>0.04</b>          | <b>0.44</b>                        | <b>0.03</b>                        | <b>0.14</b>                       | <b>0.74</b> |

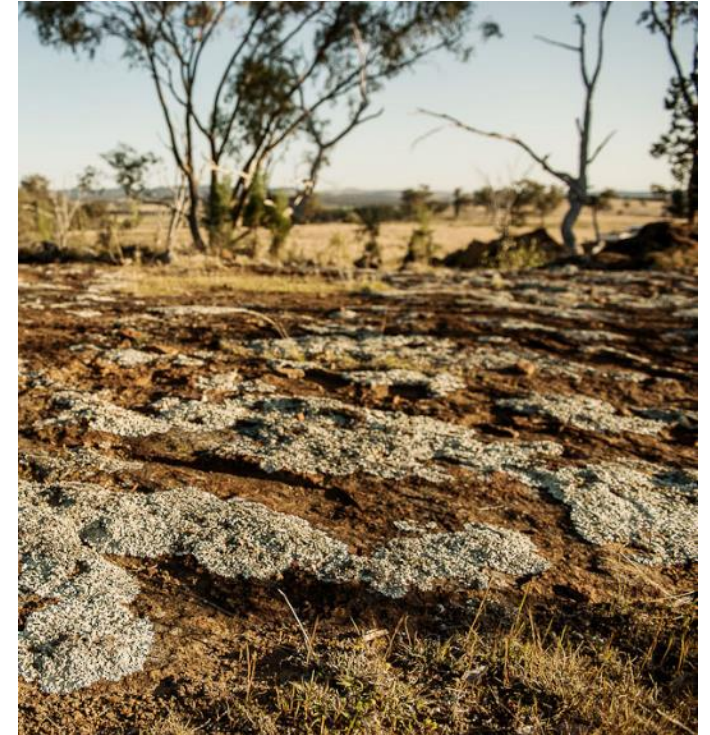
\*TREO% is the sum of all rare earth oxides excluding ZrO<sub>2</sub>, HfO<sub>2</sub>, Nb<sub>2</sub>O<sub>3</sub>, Ta<sub>2</sub>O<sub>5</sub>, Y<sub>2</sub>O<sub>3</sub>,

## Dubbo Project – Ore Reserves

| Reserve Category | Tonnes (Mt)  | ZrO <sub>2</sub> (%) | HfO <sub>2</sub> (%) | Nb <sub>2</sub> O <sub>5</sub> (%) | Ta <sub>2</sub> O <sub>5</sub> (%) | Y <sub>2</sub> O <sub>3</sub> (%) | TREO* (%)    |
|------------------|--------------|----------------------|----------------------|------------------------------------|------------------------------------|-----------------------------------|--------------|
| Proved           | 18.90        | 1.85                 | 0.04                 | 0.440                              | 0.029                              | 0.136                             | 0.735        |
| <b>Total</b>     | <b>18.90</b> | <b>1.85</b>          | <b>0.04</b>          | <b>0.440</b>                       | <b>0.029</b>                       | <b>0.136</b>                      | <b>0.735</b> |

\*TREO% is the sum of all rare earth oxides excluding ZrO<sub>2</sub>, HfO<sub>2</sub>, Nb<sub>2</sub>O<sub>3</sub>, Ta<sub>2</sub>O<sub>5</sub>, Y<sub>2</sub>O<sub>3</sub>,

*Note: Full details including Competent Person statements can be found in the ASX announcement 29 July 2020 (Information Memorandum & Demerger Booklet) and in the Company's Annual Report (ASX release 7 October 2020) - the Company confirms that all material assumptions and technical parameters underpinning the estimated Mineral Resources and Ore Reserves, as disclosed continue to apply and have not materially changed. The Company also confirms that the form and context in which the Competent Person's findings are presented have not been materially modified.*





# Corporate Profile

## Capital Structure

|                                   |                 |
|-----------------------------------|-----------------|
| Ordinary Shares                   | 119.05 million  |
| Share Price (1 December 2020)     | A\$4.18         |
| Market Capitalisation             | A\$497.63       |
| 52 week low/high                  | A\$0.84/\$4.25  |
| Cash (30 September 2020)          | A\$16.5M        |
| Enterprise Value                  | A\$481.13M      |
| Average Daily Turnover (3 Months) | A\$1.75 million |

## Experienced Board and Management Team focused on delivering:

- Development of the Dubbo Project
- Production of high purity metals direct to customers
- Integrate further in the critical metals value chain



Share Price and Volume (3 Months)

