



# The Growing Future for Manganese in Electric Vehicle Batteries

Perth, Western Australia | 29 April 2025

Paydirt Battery Minerals Conference

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Jupiter is the largest pure play listed manganese miner in the world, with 49.9% ownership of Tshipi, a Tier 1 manganese mine.

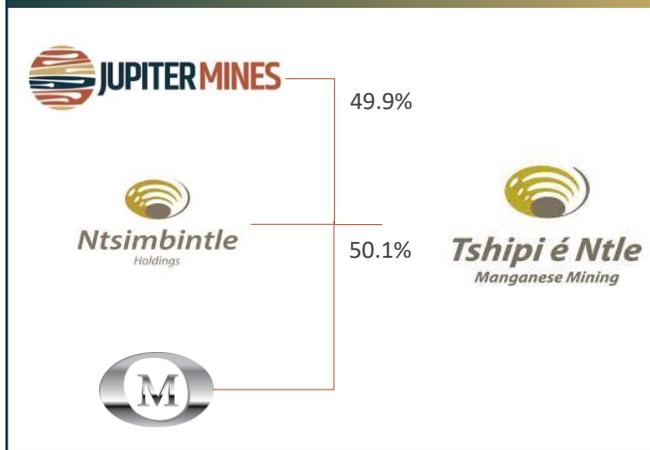


	Share Price A\$0.145		Market Cap A\$284m
	NPAT A\$14m (6 months)		Cash in Hand A\$86m <sup>1</sup>
	Debt A\$0m		Net Assets A\$553m

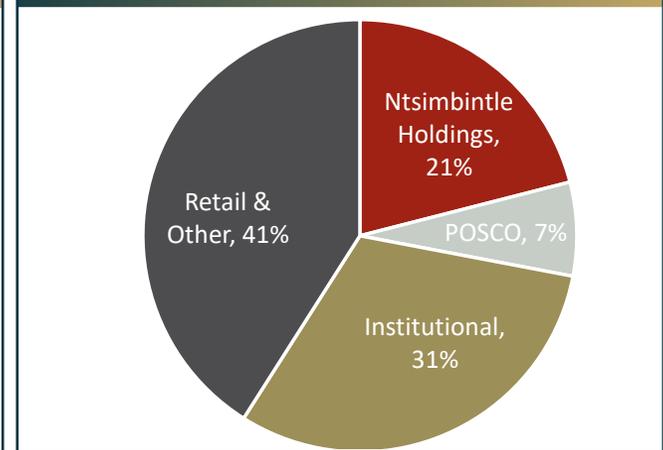
### Board of Directors

	<b>Ilan Murray</b> Chairman <i>ex Gold Road MD</i>		<b>Scott Winter</b> NED <i>ex Perenti Surface CEO</i>		<b>Sally Langer</b> NED <i>Northern Star, Sandfire &amp; Others</i>
	<b>Brad Rogers</b> MD <i>ex Bis Industries MD</i>		<b>Kiho Han</b> NED <i>MD, POSCO Australia</i>		

### Mine Level Ownership



### Top Jupiter Shareholders



### Dividends in Last Seven Years

Total of 21cps / A\$410m in dividends declared

(145% of current market cap)

Jupiter Mines

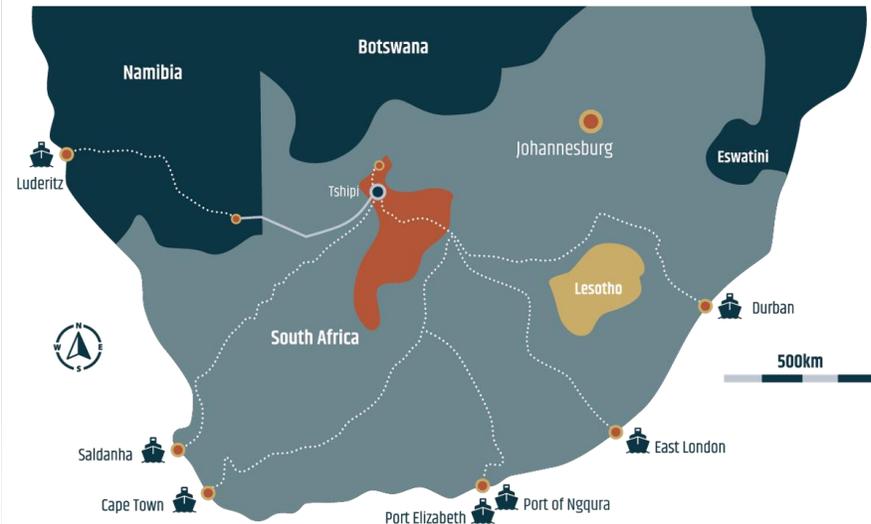
Notes: Share Price 24 April 2025. Financials shown for 6 month period ended and as at 31 December 2024.  
<sup>1</sup>Cash in hand as at 31 December 2024 includes Jupiter's 49.9% share of Tshipi's cash, as well as Jupiter's own cash in hand.

# Tshipi is established as one of the largest producing and longest life manganese mines in the world.

	Ore Sales 3.4mtpa		#4 largest Mn ore mine in the world
	Producing since 2012		100+ year mine life remaining at current rates
	Debt A\$0m		Cash in Hand A\$141m <sup>1</sup>



Tshipi Operations



Sources: CRU

<sup>1</sup>Cash in hand at 31 December 2024 (100% Tshipi)

Jupiter's five-year strategy includes targeted growth initiatives, while continuing its existing dividend policy and exposure to Tshipi.

# FIVE YEAR STRATEGY

FY2024 – FY2028



# EV Battery Strategy: Why is Jupiter Interested?

## 1 Market Entry Opportunity

### Battery Metals Market Balance (2023, 2030)

Metal	2023	2030
Lithium carbonate	-63,000 tons LCE	+268,000 tons LCE
Lithium hydroxide	+82,000 tons LCE	-47,000 tons LCE
Cobalt sulfate	+6,000 tons contained metal	+22,000 tons contained metal
Nickel sulfate	+312,000 tons contained metal	-7,000 tons contained metal
Manganese sulfate	+14,000 tons contained metal	-453,000 tons contained metal

Source: BloombergNEF. Note: Note: Negative values indicate deficit. LCE is lithium carbonate equivalent.

High growth in demand for battery grade manganese (HPMSM) is expected to outpace growth in supply in the second half of this decade, leading to a market deficit.

Jupiter believes that there will be an opportunity to enter the market...

## 2 + Competitive Advantage

### Jupiter's Ore Feedstock Advantage

HPMSM Feedstock Production Process	Typical HPMSM Project		Jupiter's HPMSM Project	
	Incremental Cost?	Typical Mn Grade %	Incremental Cost?	Typical Mn Grade %
1 Mining	Yes	10 - 12%	No - By Product	30% - 32%
2 ROM Stockpile	Yes	10 - 12%	No - By Product	30% - 32%
3 Crushing/Screening	Yes	10 - 12%	No - By Product	30% - 32%
4 Ore Stockpile	Yes	10 - 12%	No - By Product	30% - 32%
5 Beneficiation	Yes	30% - 32%	No - Unnecessary	30% - 32%
6 HPMSM Feed Stockpile	Yes	30% - 32%	No - By Product	30% - 32%

Jupiter has access to available, plentiful and suitable by-product ore feedstock. This should provide Jupiter with an operating cost advantage of around 19%.

Jupiter is a large, existing Mn producer, with existing strategic relationships. This presents Jupiter as a low risk potential supplier.

...and that Jupiter will have a market entry competitive advantage...

## 3 + Attractive Value Upside

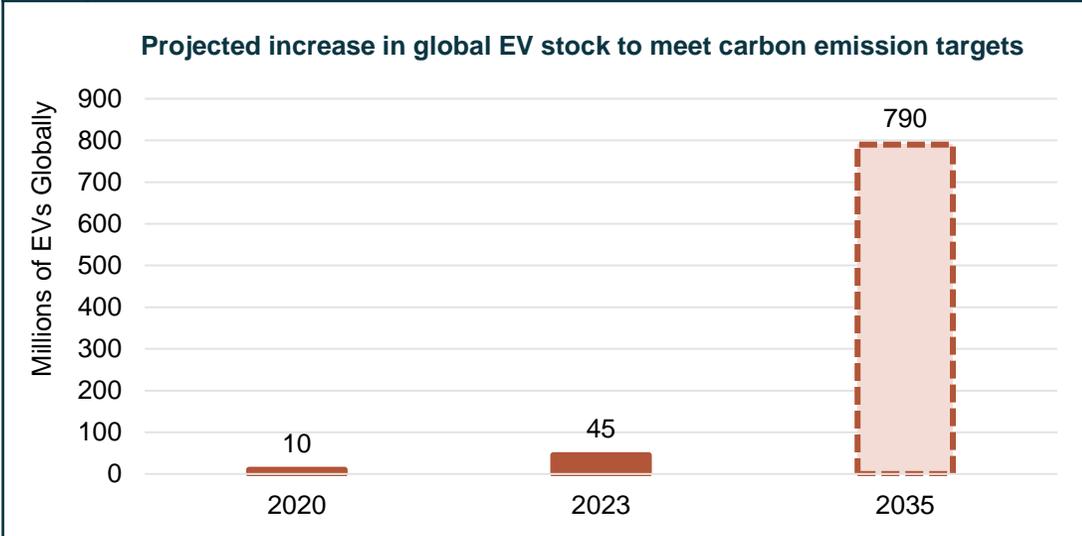


This HPMSM utilises low grade ore, which is produced as by product to Tshipi's high grade ore. By value upgrading this by product to HPMSM, there is the potential to derive significant incremental value, without diminishing returns from continuing to sell high grade ore into steel markets.

...as well as the ability to materially value add to its existing business.

# What's Going on with EV Demand Growth?

## 1 Incredible growth in the world's EV stock is expected, and needed...

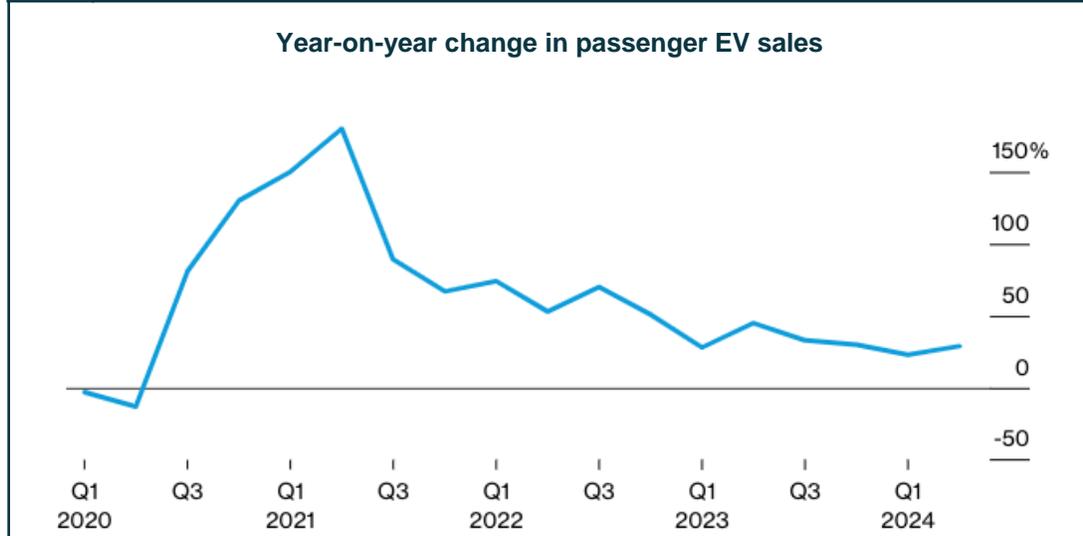


Passenger vehicles contribute approximately 12% of global carbon emissions.

To achieve Net Zero Emissions by 2050, the International Energy Agency anticipates global EV stock will need to reach 790 million by 2035 – equating to a 27% growth rate per annum between then and now.

Meeting this target will require sustained growth, with EV sales needing to increase by an average of 27% year-on-year through to 2035.

## 2 ...yet growth in sales of new EVs has slowed recently.



In 2024 and 2025, global EV sales growth has slowed to around 25% to 30%.

The major reason for the slowdown has been consumer concerns: EV cost, battery performance ("range anxiety") as well as limited charging infrastructure in several countries.

While year-on-year growth has moderated, EV sales remain robust and on track to achieve 2035 targets.

The benefits of electric vehicles are expected to sustain strong growth long term, notwithstanding the current challenges.



Jupiter believes the strong benefits of EVs over internal combustion engine (ICE) vehicles will continue to drive sales growth and innovation to address the current challenges.

# Manganese is set to play a key role in solving key EV challenges, which will see a trend towards greater Mn use in EV batteries.

## 1 Manganese helps lower the cost and improve the performance of EV batteries...

### Enhanced Energy Density

Manganese increases energy density, improving driving range.



### Improved Thermal Stability

Manganese enhances thermal stability, improving vehicle safety.



### Cost-Effectiveness

Manganese reduces battery production costs for affordability.



### Better Cycle Life

Manganese extends battery life, reducing replacement costs.



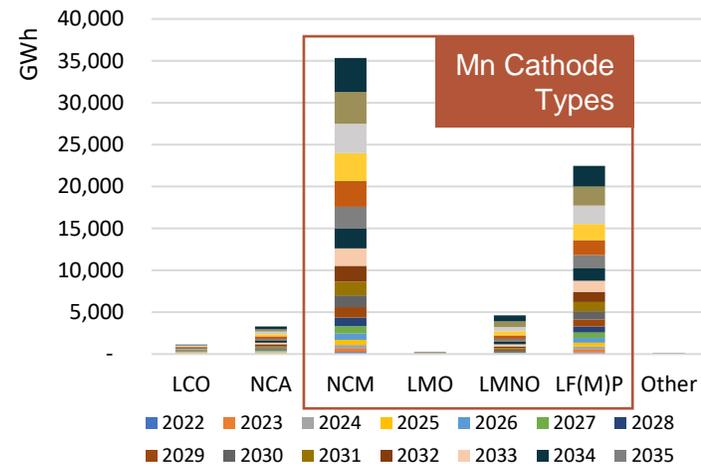
Compared to other battery minerals, manganese is cheaper and more stable.

Increasing the use of manganese can therefore help to lower the cost and increase the range and life of electric vehicles.

Greater manganese use can combat the key consumer uptake challenges with EVs currently.

## 2 ...which is why, looking forward, battery chemistries will lean towards increased use of manganese.

LIB Cathode Demand Forecast, by Cathode Type (2022 – 2040)



Until recently, electric vehicle batteries contained no or not much manganese.

Given the benefits of Mn in battery cathodes, this is forecast to change going forward, with the leading battery chemistries expected to include material amounts of manganese.

Manganese is expected to become a commonly used battery mineral going forward.



## Progress Update - EV Battery Market Entry Strategy

### EV Battery Scoping Study – Complete

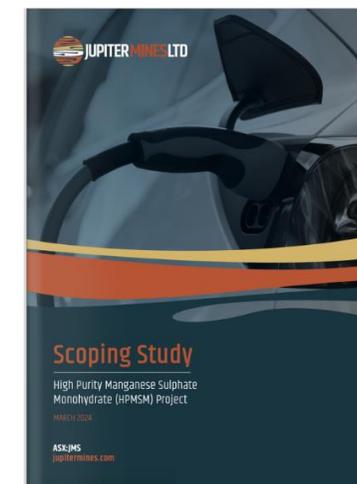
Released in 2024, the outcome demonstrated a strong business case for the continued study to produce High-Purity Manganese Sulphate Monohydrate (HPMSM).

### Jupiter's Advantages:

- Access to readily-available, high-quality manganese ore
- Strong cashflow to fund project development
- Established investor relationships and industry reputation

### Strategic Benefits of HPMSM Project:

- Vertical diversification of Jupiter's current business
- Continued commitment to ESG principles
- Optimised use of ore resources
- Leveraging investor relationships
- Supporting investment in a sustainable industry



## Jupiter's EV Strategy: Technical Assessment and Optimisation.

A Pilot Plant was established in 2024 as part of a thorough technical assessment and optimisation of the proposed HPMSM flow-sheet from the initial scoping study.

### Pilot Plant Overview

- **Replicates commercial operations:** Processes 50L/hour feed solution with 24/7 monitoring and remote data logging for precision.
- **Ensures quality:** Continuous sampling maintains consistent product standards.

### Key Design Features:

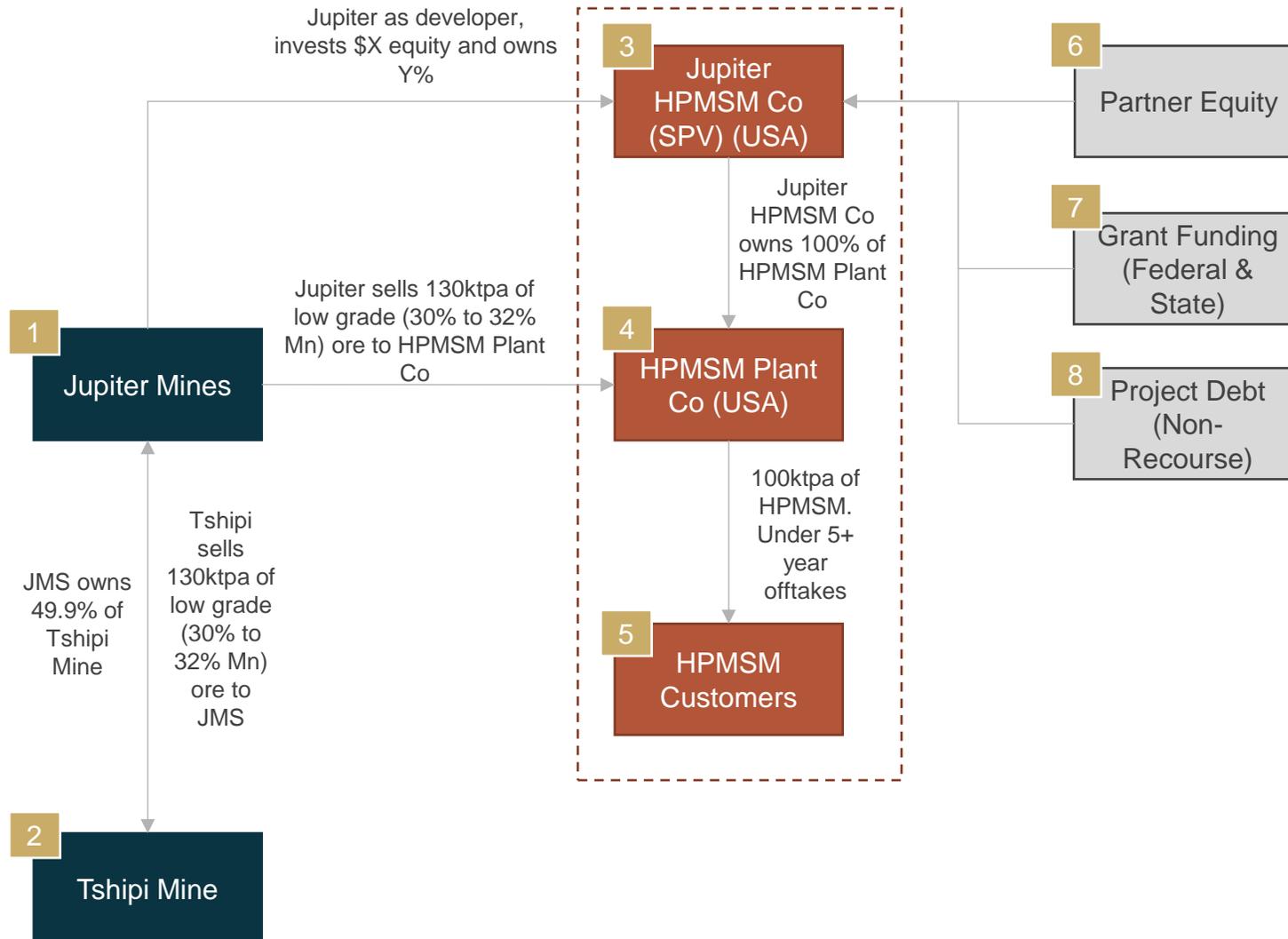
- Multi-stage continuous plant
- **Feed rate:** 50.8L/hr | **Slurry output:** 34.3L/hr
- **Leach residence time:** ~4 hrs | **pH:** 1.2–3.5 | **Efficiency:** ~95%
- **Reductant:** SO<sub>2</sub> | **Consumption:** ~605kg/t ore
- **Temperature:** ~80°C
- **Mn losses:** <3%

### Initial Impurity Removal:

- Fe: ~99.9% Al: ~99.8% | Si: ~96.8%



# Jupiter's EV Strategy: Investment and Funding Model.

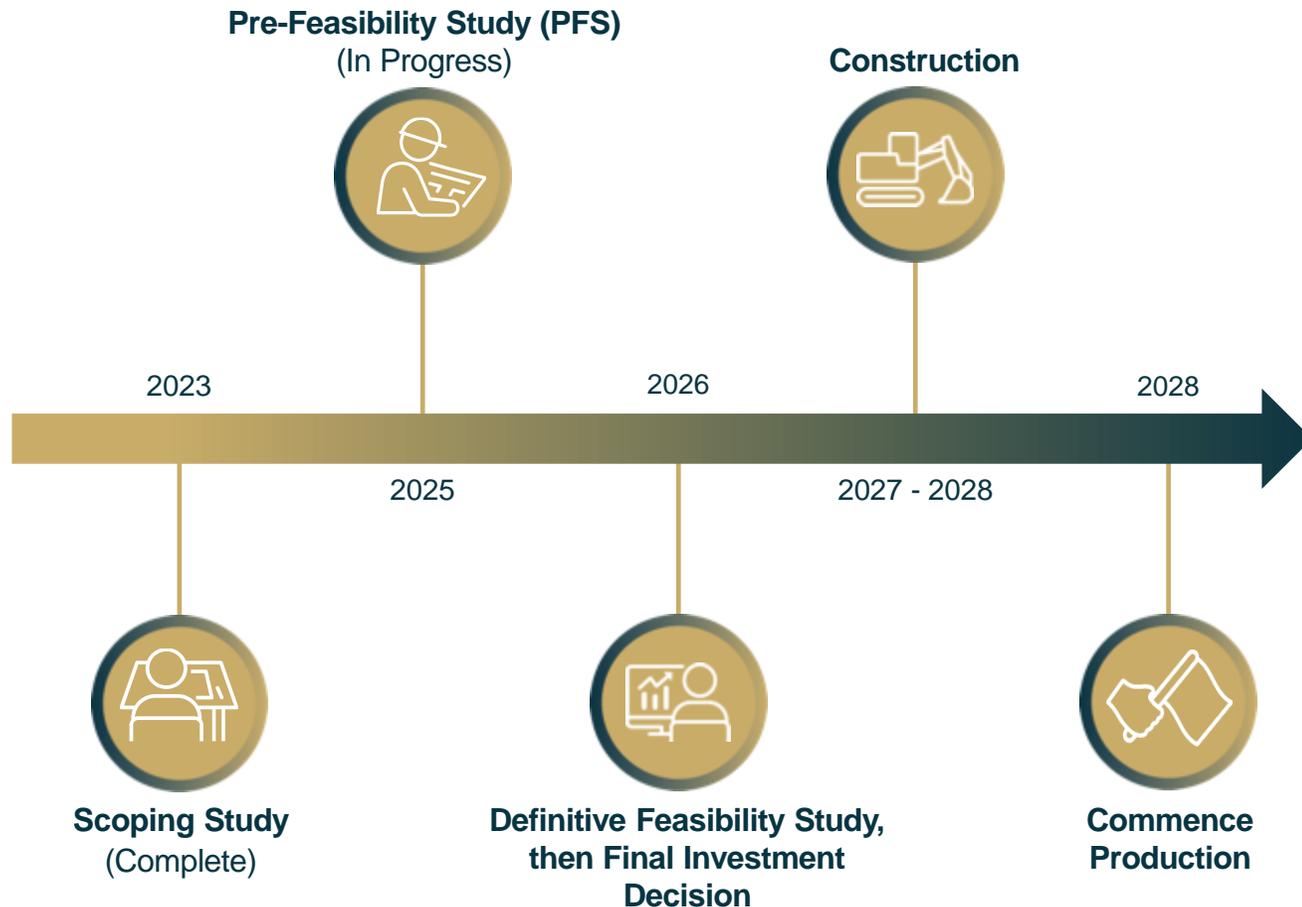


## Business Model Roles and Responsibilities

1. Jupiter: will sell Mn ore to the HPMSM business. Will invest equity the capitalisation of the business as the foundation owner and developer
2. Tshipi: will sell feedstock ore to Jupiter
3. SPV Co: will raise the required funding required to develop the HPMSM business and will own the HPMSM plant and associated assets
4. Op Co: will buy Mn ore from Jupiter (life of plant), operate the HPMSM plant and sell HPMSM under offtake to HPMSM customers
5. Customers: vehicle OEMs and battery supply chain companies. Will buy HPMSM under offtake from the HPMSM Op Co
6. Partner Equity: will invest in SPV Co. Likely a mix of offtake customers and sponsors
7. Grant Funding: US federal and state government grant funding
8. Project Debt: non-recourse project debt from commercial lenders

# Jupiter's EV Strategy: Project Timeline.

## HPMSM Project Timeline



### Next Step: PFS Completion

A PFS phase is underway and scheduled for completion during CY25.

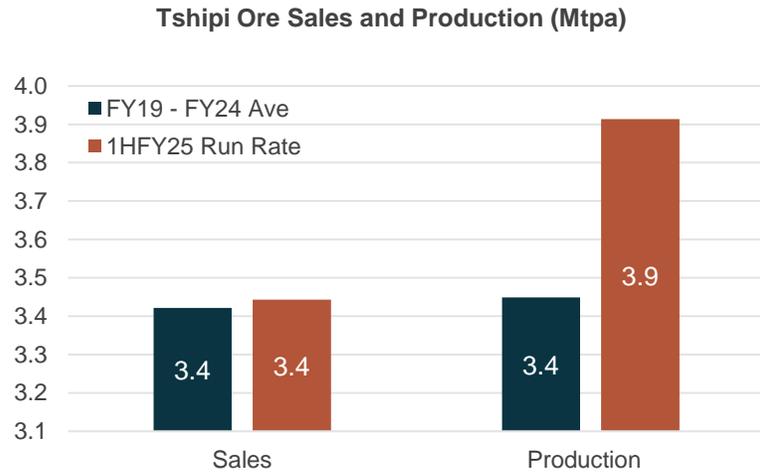
#### Focus Areas for the PFS are:

- ✓ **Technical:** pilot plant development and operation, to optimise HPMSM flow sheet - *Complete*
- **Commercial:** detailed MOU discussions with offtake partners, including sample sharing, aimed at underwriting the capital payback period (4.3 years) with take or pay commitments for 5+ years
- **Market:** bottom-up cost curve construction for post payback period
- **Location:** selection of a specific location
- **Funding:** complete funding model design

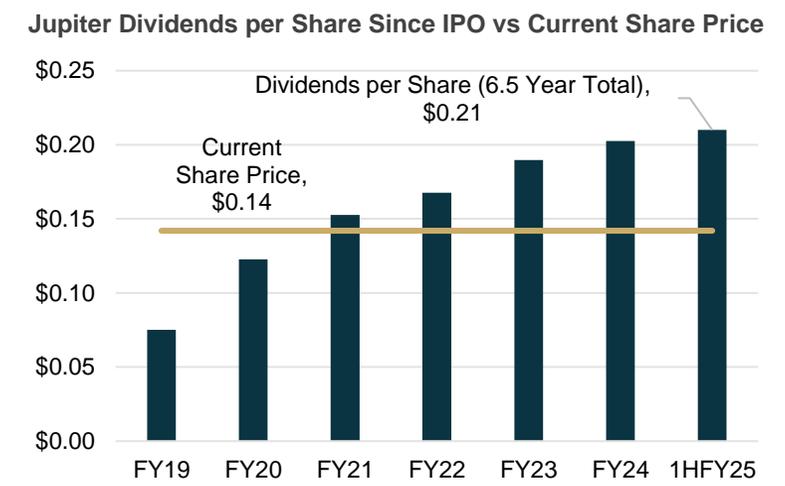
# Tshipi and Jupiter deliver outstanding production and shareholder returns. Jupiter's strategy includes positioning for value creation from future EV battery demand for manganese.



**1**  
**Tshipi continues to deliver operationally...**  
*First half sales in line with historical averages. First half production was higher – resulting in a high-grade ore stockpile build.*



**2**  
**...enabling Jupiter to continue an outstanding dividend history.**  
*In 6.5 years, Jupiter has declared dividends equal to 135% of its market capitalisation.*



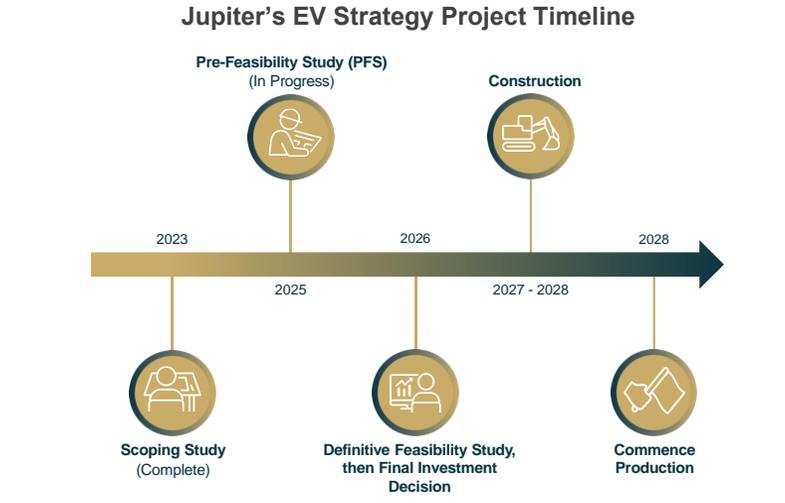
**3**  
**Strong growth for EV battery grade Mn is expected over the coming 10 - 15 years...**

**Battery Metals Market Balance (2023, 2030)**

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Source: BloombergNEF. Note: Note: Negative values indicate deficit. LCE is lithium carbonate equivalent.

**4**  
**...and Jupiter is pursuing a strategy to create value, leveraging its existing asset positioning and strengths.**





For more information contact:

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