

Building a Global Manganese Business

Supplying low-carbon sustainable manganese
and HPMSM to global markets

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Element 25 Introduction

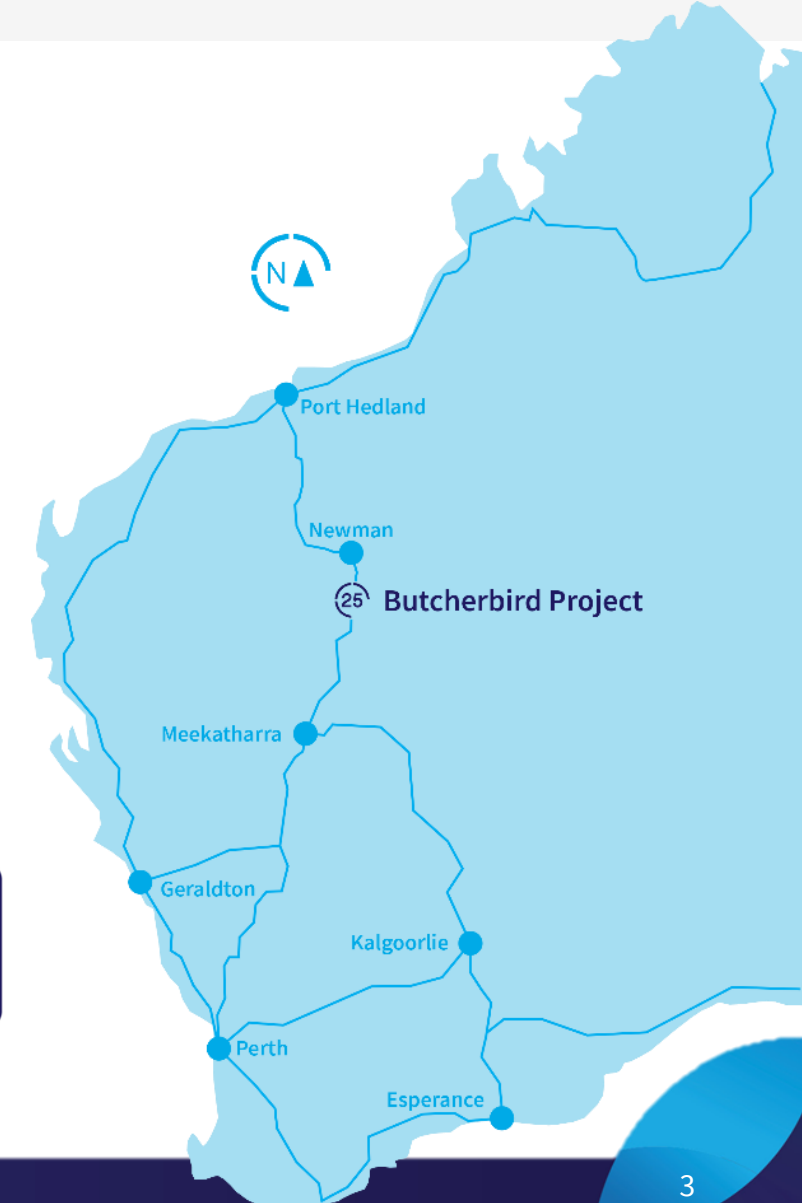
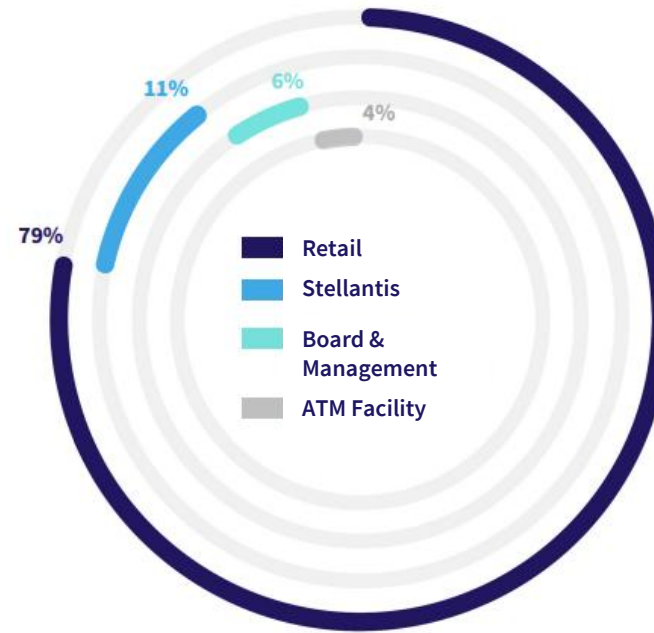
Element 25

Expanding the 100% owned Butcherbird Manganese Mine in Western Australia to produce high-quality manganese oxide concentrate.

Developing a USA-based refinery to supply ethical battery-grade High Purity Manganese Sulphate Monohydrate (HPMSM) products.

Offtake and funding agreements in place with our partners General Motors and Stellantis to supply HPMSM for Electric Vehicle batteries.

Share Register:



Experienced Company Leadership

Board of Directors



John Ribbons
Chairman
CPA



Justin Brown
Managing Director
Geologist



Fanie van Jaarsveld
Non-Executive Director
Analytical Chemist



Sam Lancuba
Non-Executive Director
Chemical Engineer

Multi-disciplinary Board & Management



Michael Jordon
Chief Financial Officer
CPA



Neil Graham
VP Battery Materials
Chemical Engineer



Sias Jordaan
VP Marketing & Logistics
Accountant



Chad Moloney
Technical Services
Mining Engineer



Leon Lima
Technology Manager
Chemical Engineer



Liam O'Connor
Business Systems
Systems Engineer

Butcherbird Expansion

1.1Mt p.a. Manganese Concentrate¹

Build and commission a large-scale processing facility at the 100% owned Butcherbird Manganese Mine in WA.



Louisiana HPMSM

USA Critical Raw Materials²

Construct the first US HPMSM processing facility (Louisiana), producing 65,000 tonnes per annum of battery-grade HPMSM with GM and Stellantis



Expand Globally

HPMSM Expansion - EU & Asia

Multiple HPMSM modules globally to deliver sustainable HPMSM supply to global markets targeting Europe and Asia.

1-Year Plan

3-Year Plan

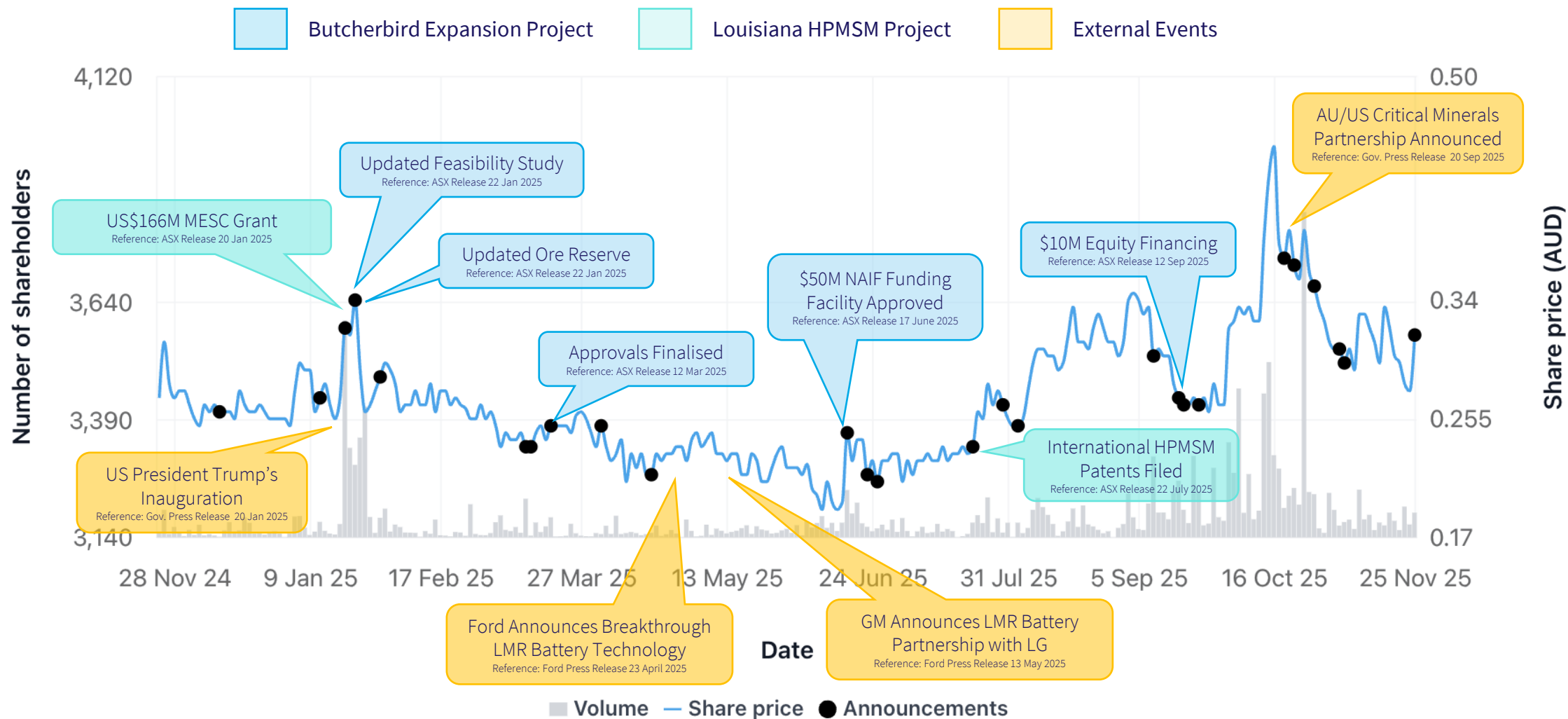
10-Year Plan

Best in class, secure supply, ethically produced,
scalable HPMSM for lithium-ion batteries:
Sustainably Supplying Global Markets

¹ Reference: Company ASX Release Dated 22 January 2025

² Reference: Company ASX Release Dated 12 April 2023

Key Milestones & Events in 2025



The Butcherbird Manganese Project

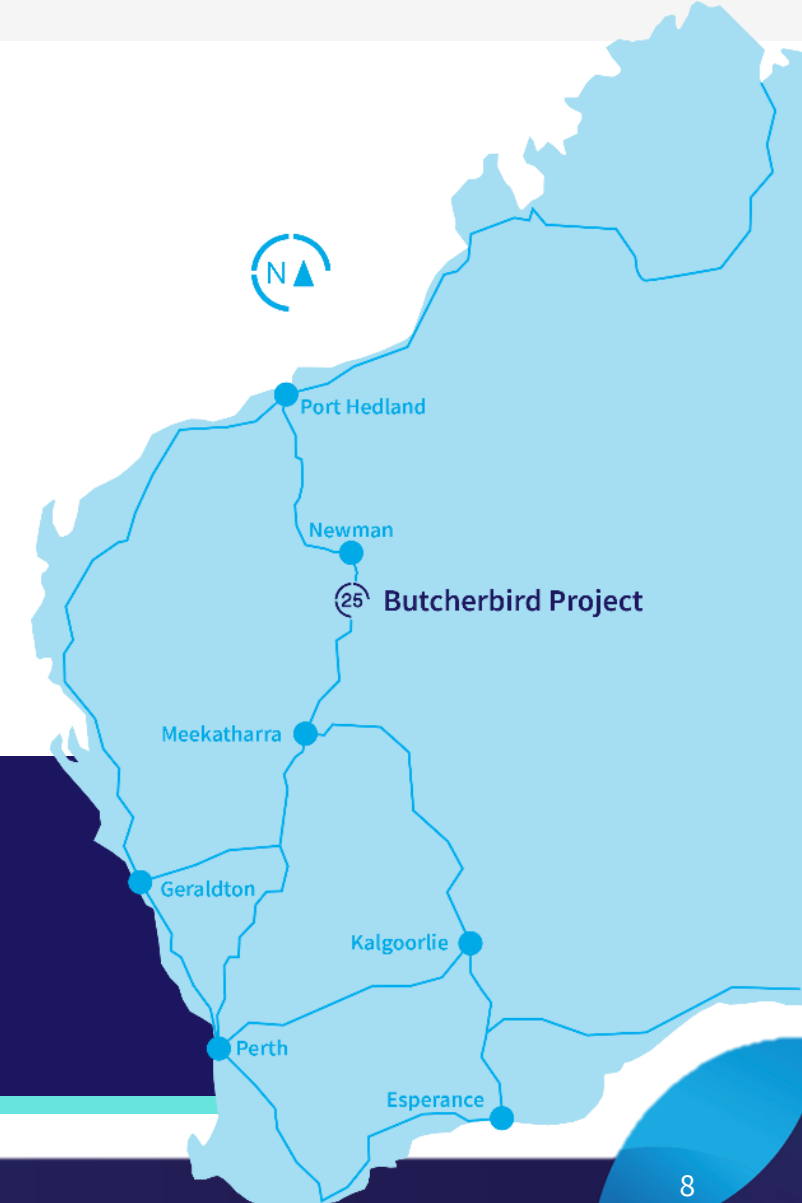
Butcherbird Manganese Project

Element **(25)**

- World-class manganese resource.
- Located in a Tier-1 jurisdiction with strong ESG regulation.
- Over 270 million tonnes in resources with potential to expand (2024 resource update¹).
- > 18-year Reserve at 1.1Mt per annum production supported by an updated Feasibility Study².
- Long mine-life with further upside by converting Inferred Resources.
- Very clean metallurgically – no toxic contaminants.
- Produces a low carbon, high-quality manganese concentrate ideal for manganese alloys and high-purity manganese sulphate monohydrate (HPMSM)³.



Providing high quality
manganese for traditional
and new energy markets.

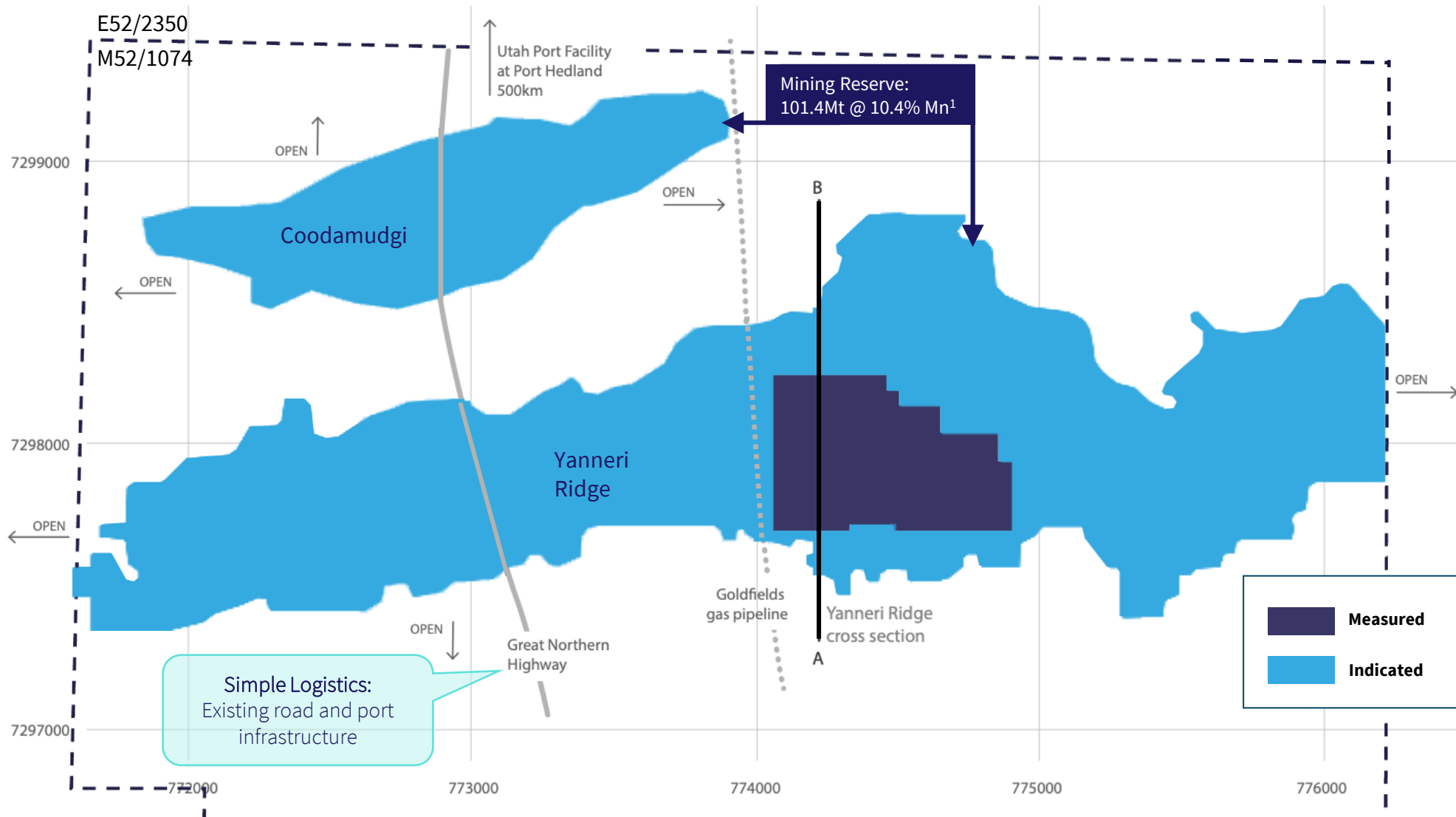


¹ Reference: Company ASX Release Dated 29 October 2024

² Reference: Company ASX Release Dated 22 January 2025

³ Reference: Company ASX Release Dated 21 February 2023

Large, Long-Life Manganese Mine in Western Australia



CONSTRUCTION READY

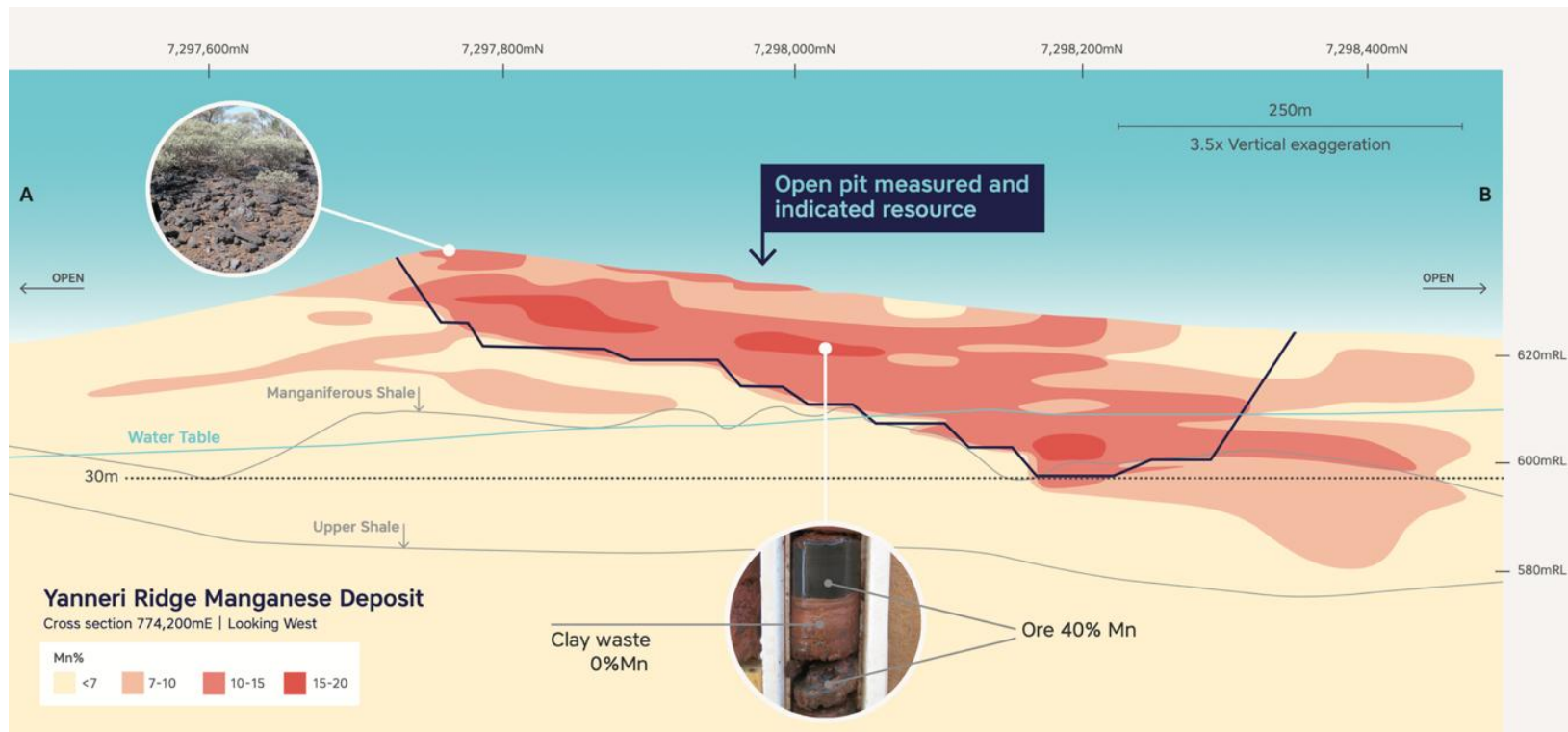
- Granted Mining Lease
- Fully Permitted
- Early Procurement Commenced
- Existing infrastructure (bore fields, TSF, roads, camp)
- ~12 Month Construction

¹Reference: Company ASX Release dated 22 January 2025

²Reference: Company ASX Release dated 29 October 2024

Simple Geology: Low-Cost, Low-Impact Operations

Classification	Tonnes (Mt)	Mn (%)	Contained Mn (Mt)
Resource ¹	274	10.0	27.4
Reserve ²	101.4	10.4	10.5



RESOURCE GROWTH POTENTIAL

- Large resource offers long term operating potential.
- Mineralisation outside existing resource provides upside.
- Ore suitable for ferroalloys, battery grade HPMSM and EMM.

ENVIRONMENTALLY BENIGN OPERATION

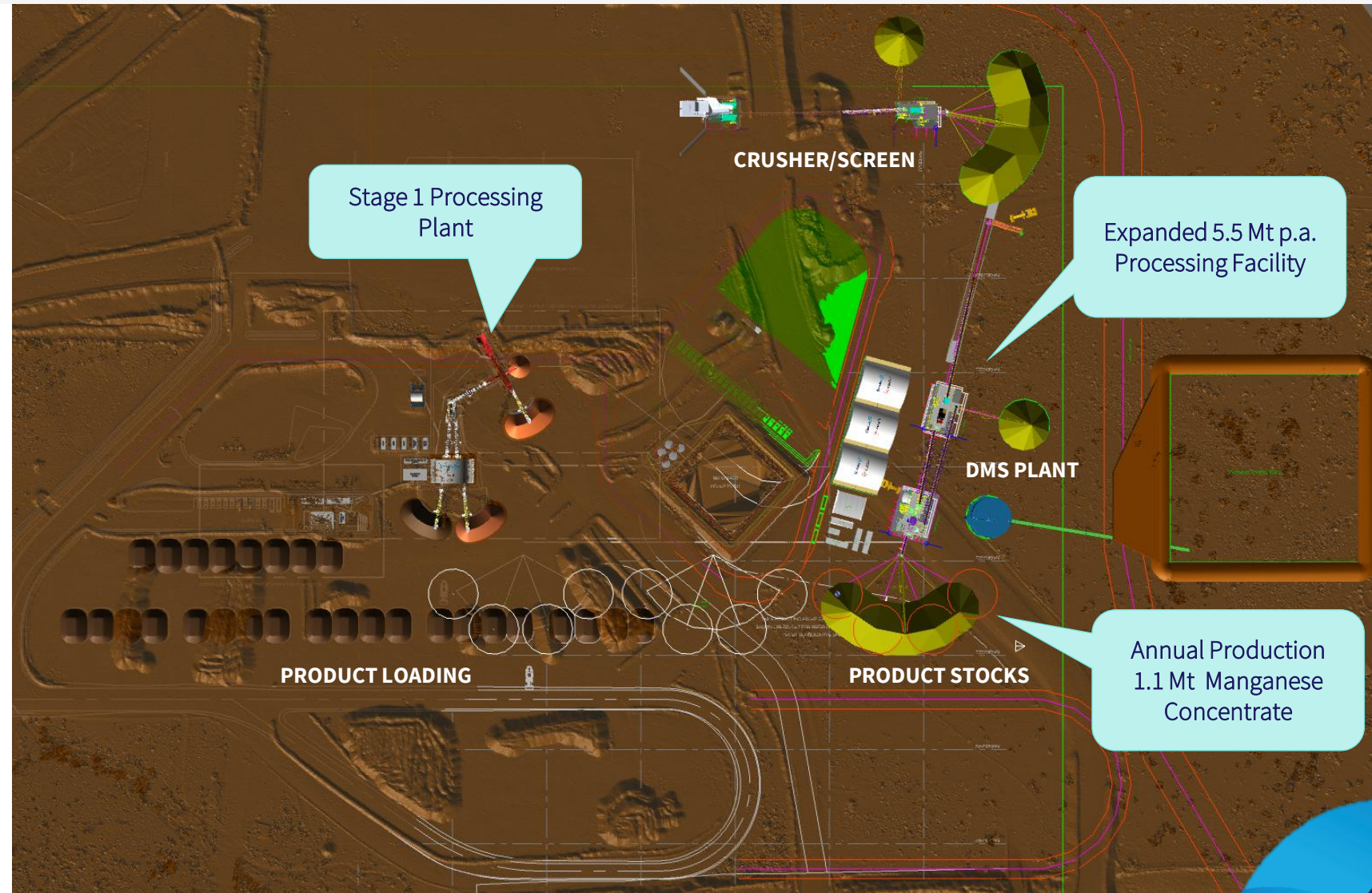
- Ore from surface.
- Low strip-ratio.
- No explosives required.
- No dewatering required.
- One reagent – water.
- Very low levels of contaminants.

¹ Reference: Company ASX Release Dated 29 October 2024 (Mineral Resource Estimate Update)

² Reference: Company ASX Release Dated 22 January 2025

Butcherbird to Expand to 1.1Mt p.a. Production

- New, re-designed and expanded processing facility to optimise and scale the process.
- Scale and improved efficiencies target **lower costs** and increased profits¹.
- Process optimisation to de-bottleneck and improve key processing outcomes:
 - Uptime (availability and utilisation)
 - Throughput
 - Grade (Mn & impurities)
 - Production Volume



¹Reference: Company ASX Release Dated 22 January 2025

²Reference: Company ASX Release Dated 7 October 2024

Upgrade 1 - Crushing:

Opportunity: Better clay handling

- High clay feed material can cause throughput challenges in the crushing circuit.
- Production impacts materially compromises unit costs in a bulk operation.

Solution – Design Change

Two stage mineral sizer solution.

- Eliminate grizzly
- Designed for clay rich feed
- Will handle wet or dry feed



Butcherbird Stage 1 Pilot
Grizzly/Jaw Crusher



Process Upgrade: Mineral Sizer /Rolls Crusher



Examples of Mineral Sizers in
use in similar settings to BBX

Upgrade 2 – Quality/Grade:

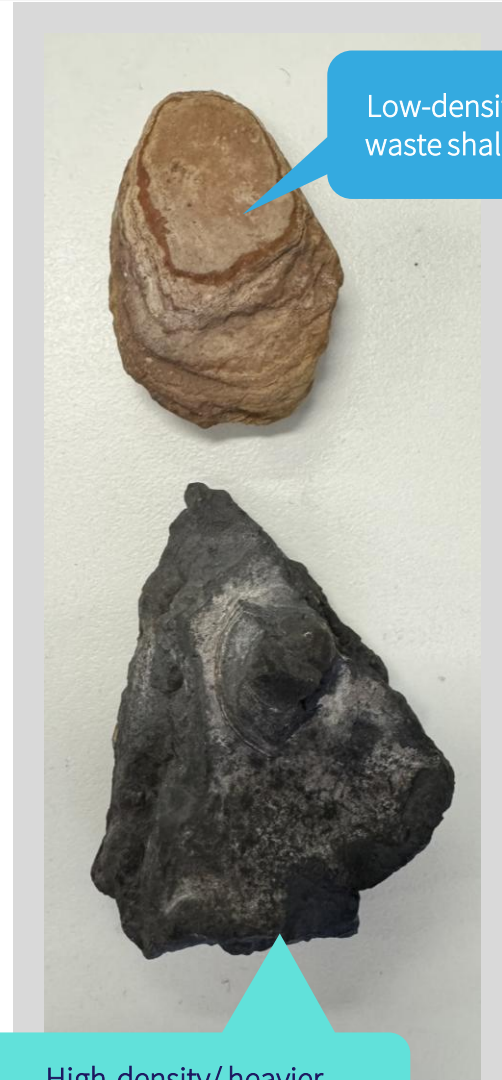
Opportunity: Improve Product

- More effective separation of ore from waste.
- Increased product grade (improved sale price).
- Increase recovery and yield.

Solution – Design Change

Replace ore sorters with DMS.

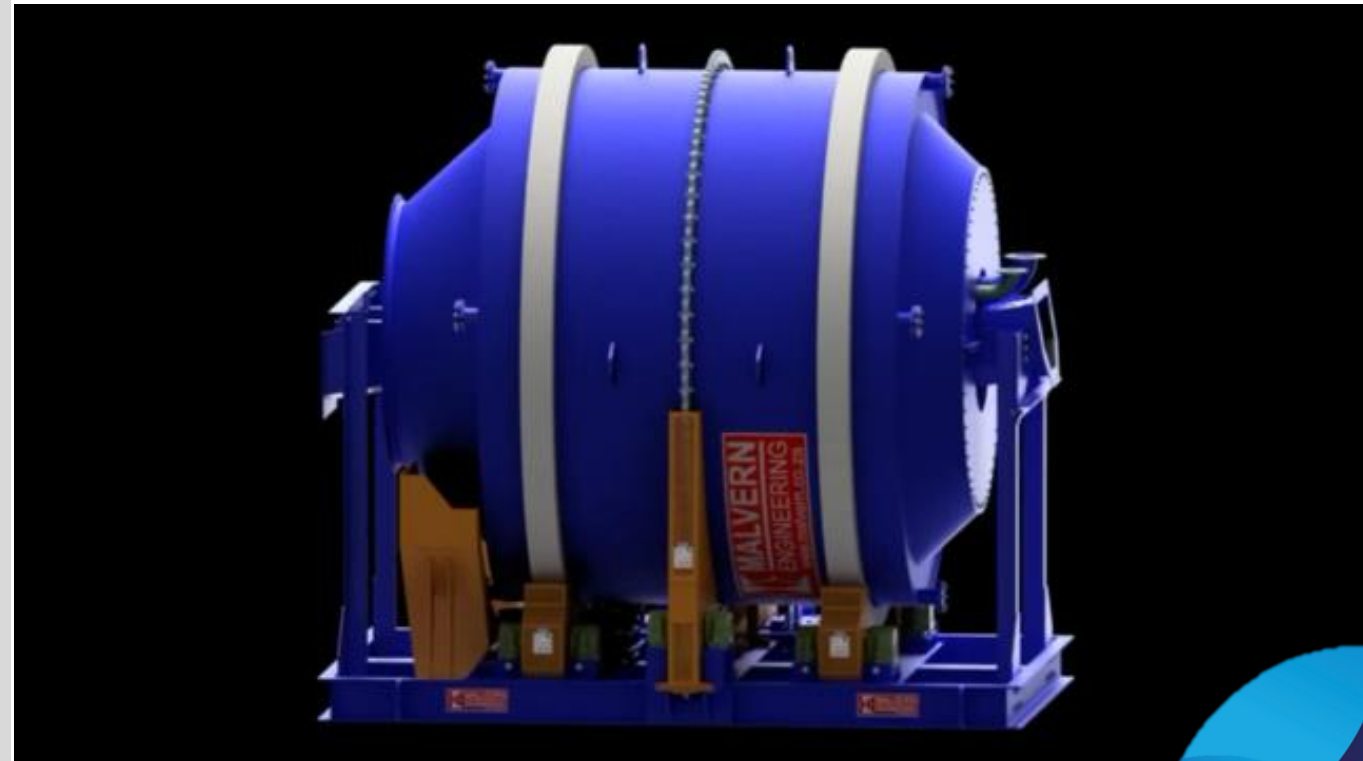
- Separate ore from gangue based on density not optics/colour
- Eliminate separation challenges associated with imperfect washing and ore presentation.



Low-density/lighter waste shale particle

High-density/ heavier manganese product particle

Dense media Separation (DMS) is a mature process technology used in a wide range of mineral processing plants including iron ore and manganese to separate lighter waste material from denser ore material by floating the waste in a ferro-silicon slurry to create separate product and waste streams.



Butcherbird Expansion Delivers Robust Economics



Capital Cost

AU\$64.8

(incl. contingency)



NPV₈

AU\$561M

(Pre-tax, real)



IRR

96%



Cashflow

AU\$70.5M

(annual)



Payback

1.3

(years)

AUSTRALIAN FEDERAL GOVERNMENT (NAIF) TO PROVIDE \$50 MILLION FINANCE PACKAGE FOR BUTCHERBIRD EXPANSION PROJECT²



The expansion will establish Butcherbird as a low-cost manganese operator (US\$ 2.86/dmtu C1 cost) able to produce high-quality manganese concentrate at a globally competitive operating cost.



The Feasibility Study utilises all the available measured and indicated resources within the 18.3-year mine plan supporting this Study.



Low capital requirement of AU\$64.8M capital in total construction costs including process and non-process infrastructure. Average base case annual operating cashflow of AU\$ 70.5M at full production.



Forecast cashflows generate a simple payback period of 16 months from commencement of operations.

- Northern Australia Infrastructure Facility (NAIF) to provide up to AU\$50 million senior debt facility for Element 25's Butcherbird Manganese Expansion Project².
- Butcherbird development based on a 1.1 Mtpa manganese concentrate operation and delivers outstanding metrics ¹.
- Manganese concentrate to be sold to steel industry partners and provide feedstock for E25's planned HPMSM facility in Louisiana, USA.
- Butcherbird Expansion plan is fully approved under WA Regulatory Framework³.
- NAIF to act as the sole senior secured lender to the project - the balance of funds to be sourced from financiers including offtake prepayment, subordinated debt and royalty financing as potential mechanisms.

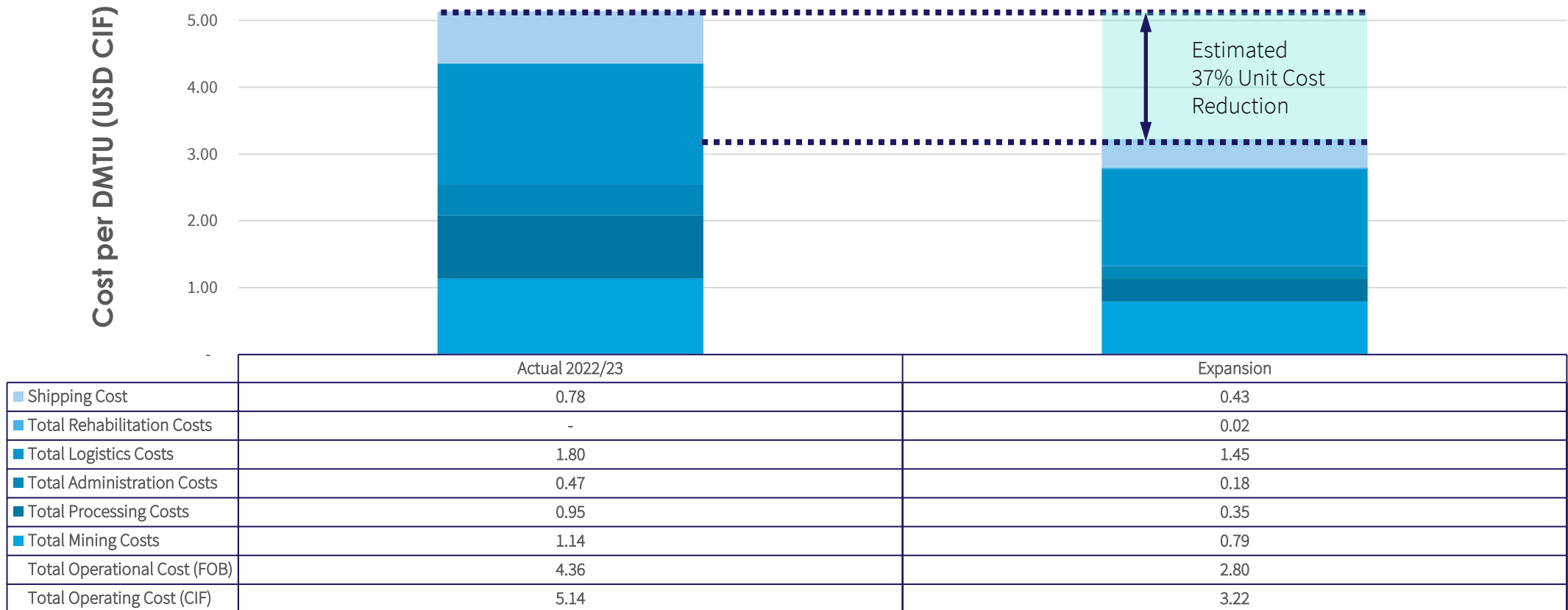
¹Reference: Company ASX Release Dated 22 January 2025

²Reference: Company ASX Release Dated 17 June 2025

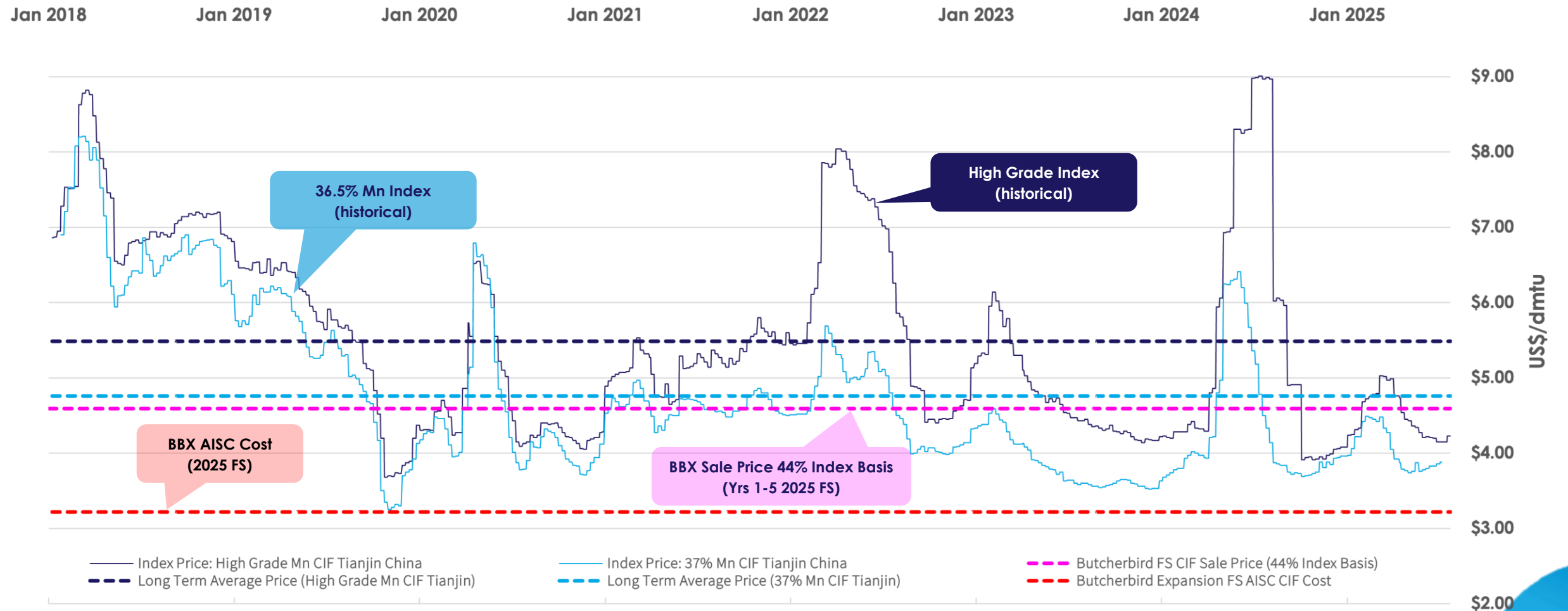
³Reference: Company ASX Release Dated 12 March 2025

Butcherbird Expansion Project economies of scale delivers ~3x Increase in production volume and 37% reduction in unit operating costs

Butcherbird Operational Cost Comparison Stage 1 Actuals v Stage 2 Expansion Feasibility Study (AISC)



Historical Mn Ore Price Cycles – US\$/dm tu CIF China



Butcherbird Expansion Project Key Suppliers



- Element 25 engaged Perth-based Altris Engineering (Altris) to lead the expansion project on the Butcherbird Manganese Mine. Engineering works under this contract have been initiated and are currently underway with the E25 team working closely with Altris as part of an Integrated Project Team (IPT).



- Mineral Sizers from MMD have been selected as the preferred equipment for this application and a procurement contract has been entered into with MMD to supply both the primary and secondary sizer units along with critical spares and commitment for commissioning support and post-commissioning maintenance services.



- The road haulage agreement for the BBX Project is currently being negotiated with REGROUP to provide for increased volumes as well as more efficient material movement through revised equipment selection and scheduling and improved analytics as well as a broader review of contract terms.



- E25 has entered into a supply contract with KISA GmbH to supply a logwasher unit with a nominal 600 t/h federate and max 11° gradient. The unit has been carefully selected for the proposed BBX use. The logwasher has been manufactured and awaits transportation to the Project site in accordance with the current schedule.

Butcherbird Expansion Project Timeline Guidance

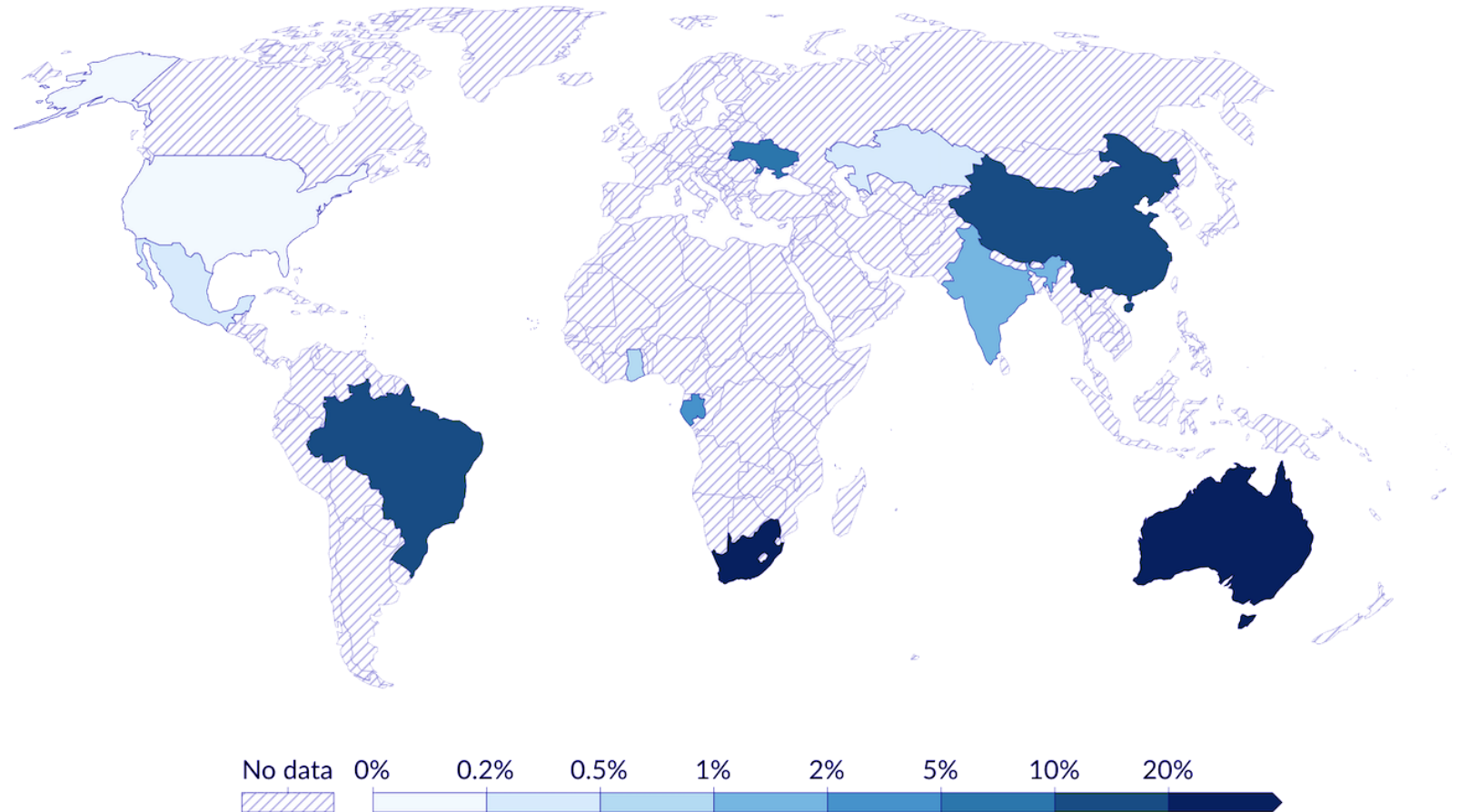
BBX Project Schedule Summary													2025				2026				2027			
Quarter	1			2			3			4			1			2			3			4		
Month	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D
Major Milestones																								
E25 Board FID																								
Commissioning Complete																								
Commercial Production																								
Major Activities																								
All Approvals and Permitting																								
Project Financing																								
Detailed Engineering Design																								
Engineering Procurement (MPI)																								
Logistics Procurement (MPI)																								
Camp Construction																								
Construction - Civil																								
Construction - SMP																								

The schedule remains subject to a number of key dependencies including achieving project financial close, completion of detailed engineering, procurement of key equipment and finalising the construction contract(s) in accordance with the planned key dates.

High Purity Manganese Strategy

Manganese Is Comparatively Abundant But Not Everywhere...

- Heavily concentrated in a small number of jurisdictions:
 - South Africa
 - Gabon
 - Ghana
 - Australia
 - China
 - Brazil
- Supply chain security a key factor in sourcing strategies.
- Refined manganese even more heavily concentrated - >95% in China.



Data source: USGS - Mineral Commodity Summaries (2024)

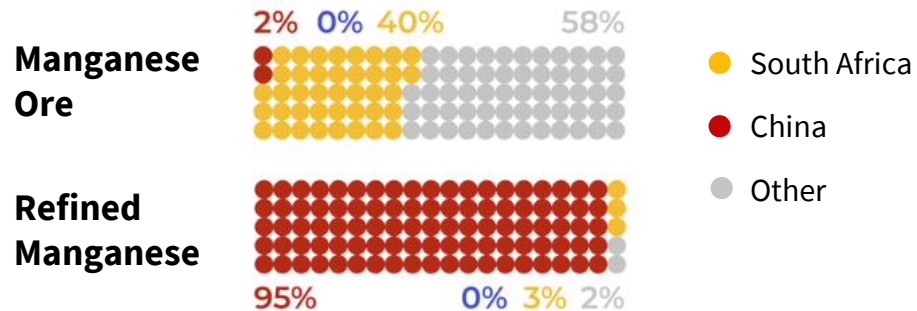
Manganese Is Comparatively Abundant But Not Everywhere...

- The USA is dependent on imports for 100% of its manganese requirements.
- Includes steel, battery and defence related end users.
- Australia has a relative abundance of manganese and has a strong partnership with the USA.
- Presents an opportunity for growth for Butcherbird manganese in both high purity and traditional markets.

	Supply			Demand
Mineral	Production	Pipeline	2035 Supply	2035 Consumption
Copper	1,100,000	700,000	1,800,000	2,915,875
Graphite	0	350,000	350,000	1,026,795
Lithium	4,000	24,000	28,000	106,936
Manganese	0	0	0	810,300
Molybdenum	33,000	3,000	36,000	16,644
Nickel	8,000	0	8,000	749,987
Silver	1,100	300	1,400	16,596
Zinc	750,000	200,000	950,000	970,000

Selected US Critical Mineral Supply Metrics and Forecasts
Reference: US Geological Survey, 2025

Manganese Is Abundant But Refining Capacity Is Not...



Breaking the Chinese Supply Chain Dominance

- Refined manganese (HPMSM) capacity is heavily concentrated with >95% of refining capacity located in China.
- Concentrated supply creates supply risk for critical raw materials used in batteries including manganese.
- Customers are seeking alternative sources of long-term manganese supply.
- Element 25 provides a long-life mine and a future facing processing technology.

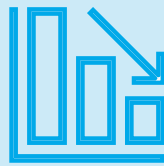
Refined battery grade manganese capacity is heavily concentrated in China.



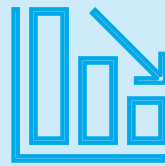
The Element 25 Process makes significant changes & improvements:



Reagents/Cost



Carbon Emissions



Waste Residue

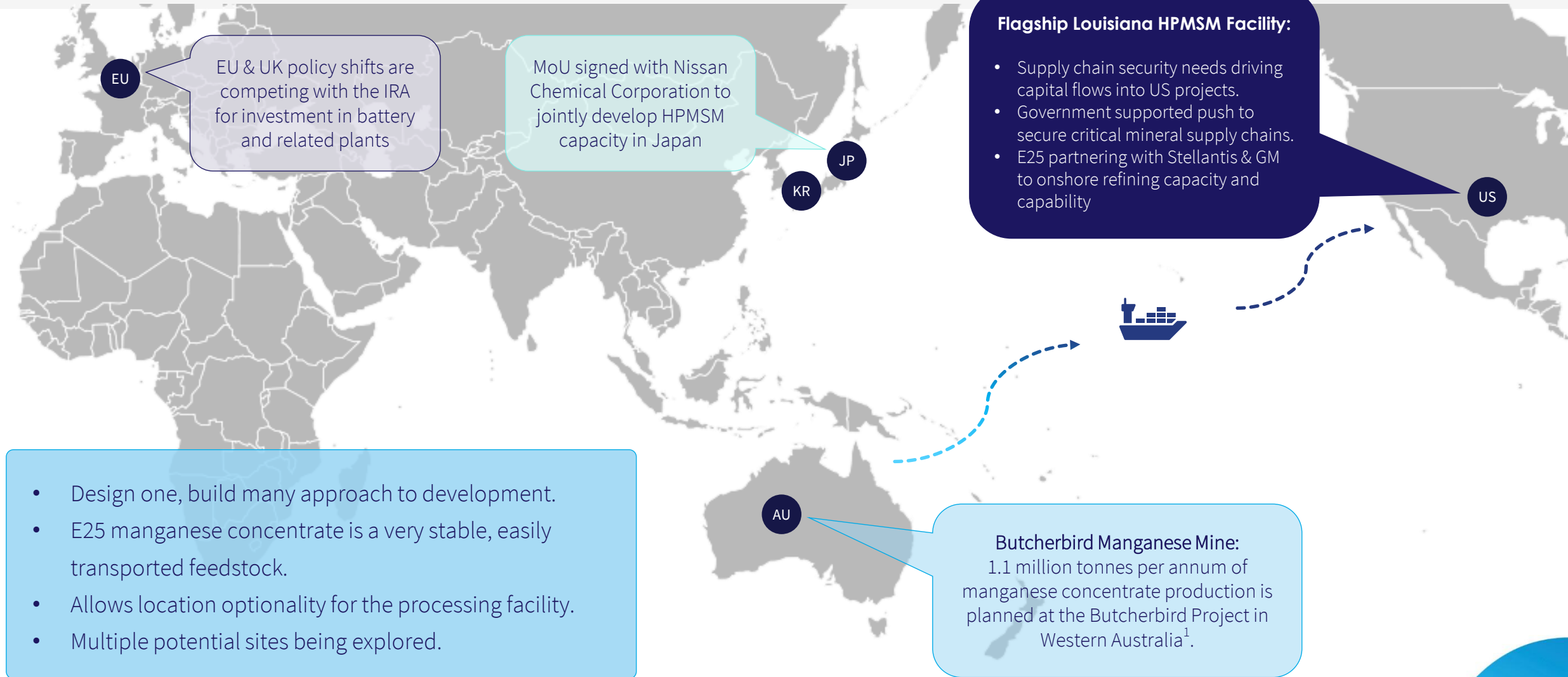
Current Outdated Technologies mean:

- Large volumes of waste residues.
- Toxic Reagents like fluorine.
- Inefficient.
- Higher Cost.
- Outdated processing technology.

Element 25 Process

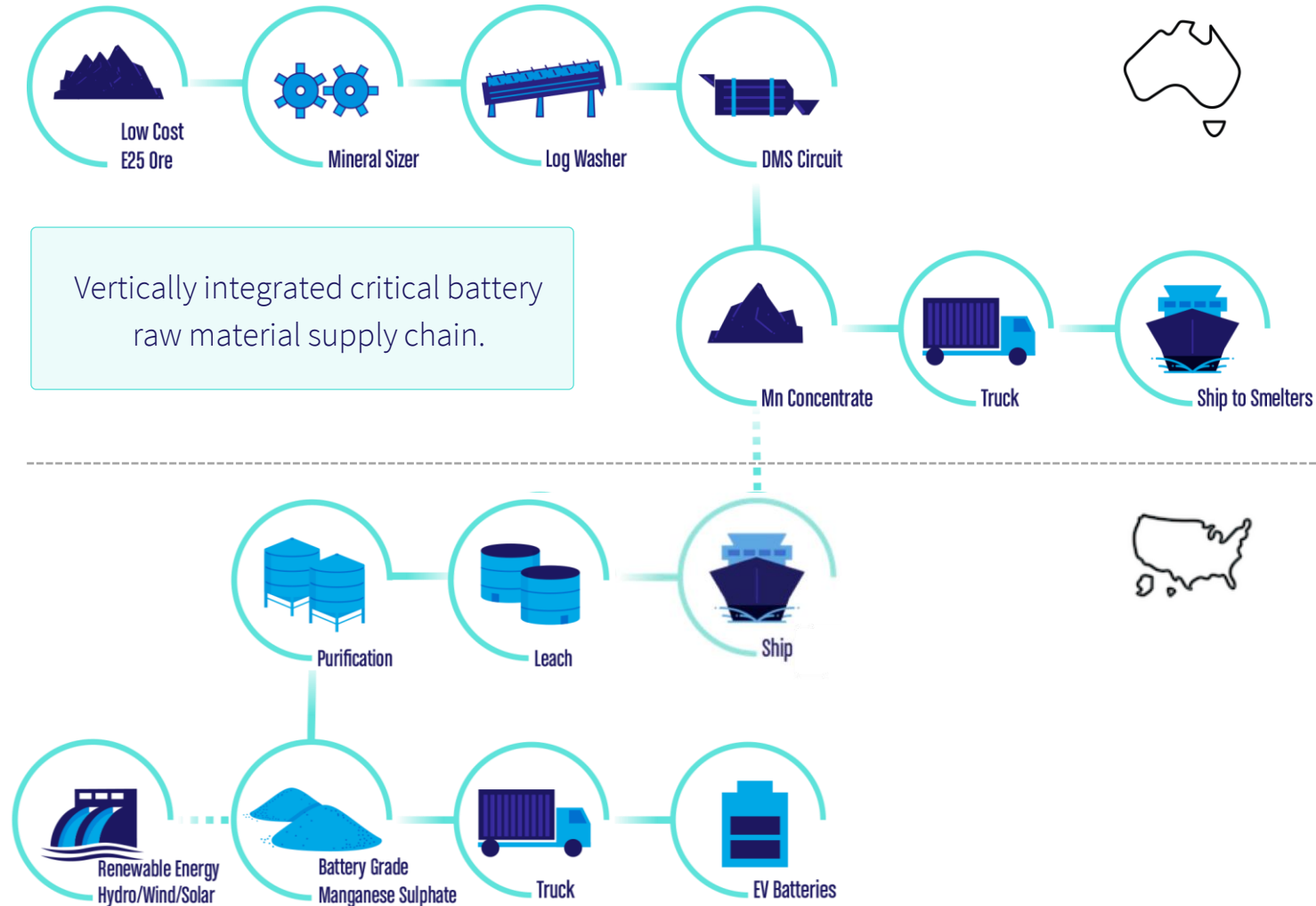
- More efficient (fast kinetics, reduced energy)
- Minimises reagent requirements
- Reduced carbon intensity
- Lower volumes of waste residues
- Non-toxic residues may be able to be repurposed.

Global Refining Capacity in the Longer Term **



- Design one, build many approach to development.
- E25 manganese concentrate is a very stable, easily transported feedstock.
- Allows location optionality for the processing facility.
- Multiple potential sites being explored.

World-First Non-China HPMSM Refinery – Louisiana USA



WA Manganese Ore:

Australian manganese concentrate supplying customers in traditional ferro-alloy markets and planned battery grade manganese (**HPMSM**) production for US lithium-ion battery manufacturers.



Steel



Louisiana HPMSM:

The planned Louisiana HPMSM refinery to utilise Australian manganese to produce high purity battery grade manganese sulphate (**HPMSM**) for lithium-ion batteries.



Li-Ion Batteries

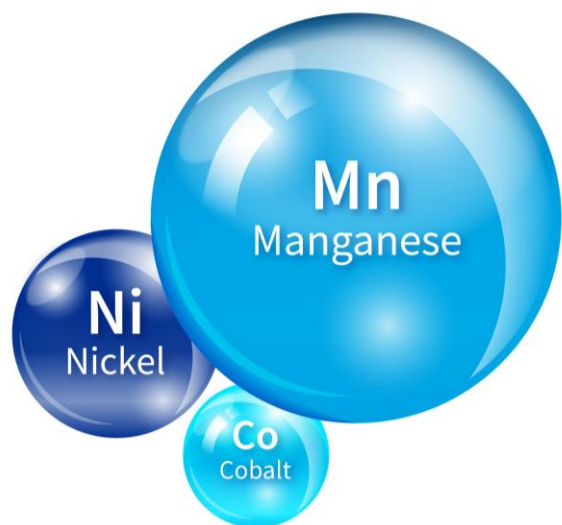


The Importance of Manganese

Transition to Higher Manganese Battery Cathodes

LMFP, LMR, LMNO and NM_x cathode chemistries offer improved safety, higher energy density, reduced cost per kWh and greater supply chain flexibility.

High Mn means reduced reliance on Ni and Co:



Reduced nickel and very low to no cobalt content.

Reference: Umicore 2023



LMR Cell Production at Ford Ion Park

Ford Makes Breakthrough with LMR Battery Chemistry: Targeting More Affordable, Long-Range Electric Vehicles by End of Decade



Charles Poon
Director, Electrified Propulsion Engineering

April 23, 2025



NEWS



May 13, 2025 | TECHNOLOGY

Why LMR batteries will change the outlook for the EV market

Share article: [f](#) [X](#) [in](#) [@](#)

By Kushal Narayanaswamy, director, advanced battery cell engineering, GM



Transition to Higher Manganese Cathodes

LMFP, LMR, LMNO and NM_x cathode chemistries offer improved safety, higher energy density, reduced cost per kWh and greater supply chain flexibility.

Lithium Manganese Rich (LMR) batteries offer a number of key advantages over high nickel:



Enhanced Safety and Stability: With a safety profile comparable to Lithium Iron Phosphate (LFP) batteries, LMR offers peace of mind without compromising performance.

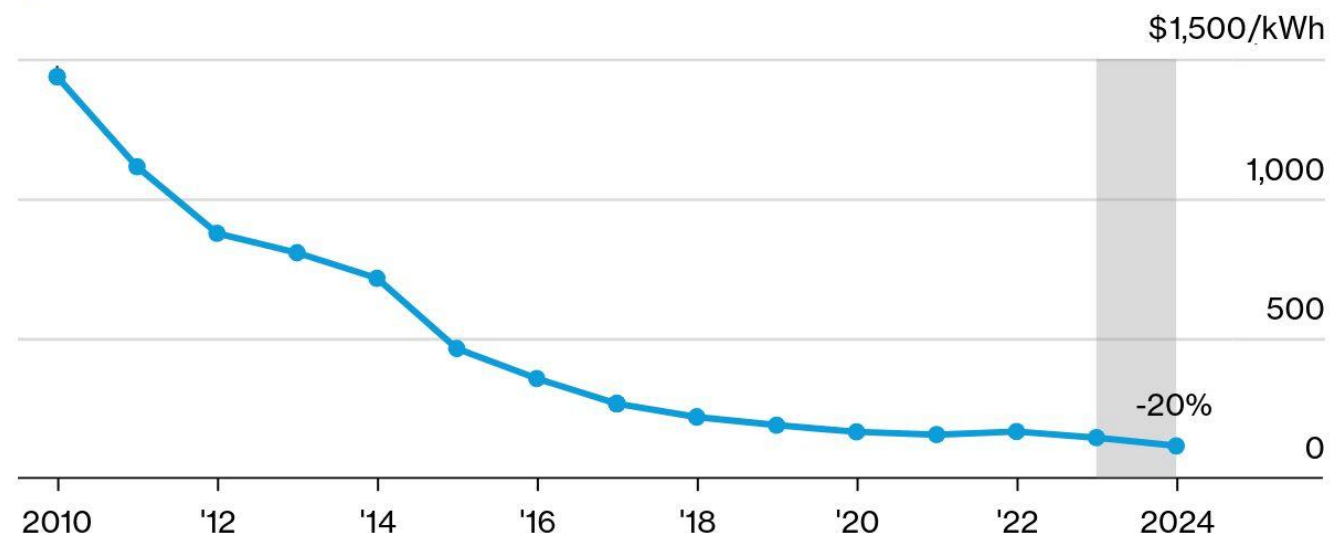
Industry-Leading Energy Density: LMR chemistry provides higher energy density than high-nickel batteries, allowing EVs to achieve greater range and reduce consumer range anxiety.

Unprecedented Cost Reduction: Targeting a cost point well below current mid-nickel batteries. This cost efficiency is essential to reaching parity with gasoline-powered vehicles and making EVs more accessible to the masses.

Battery Prices Fall Amid Lower Metal Costs and Increased Scale

Lithium-ion battery pack prices

Volume-weighted average in real 2024 dollars



Source: BloombergNEF

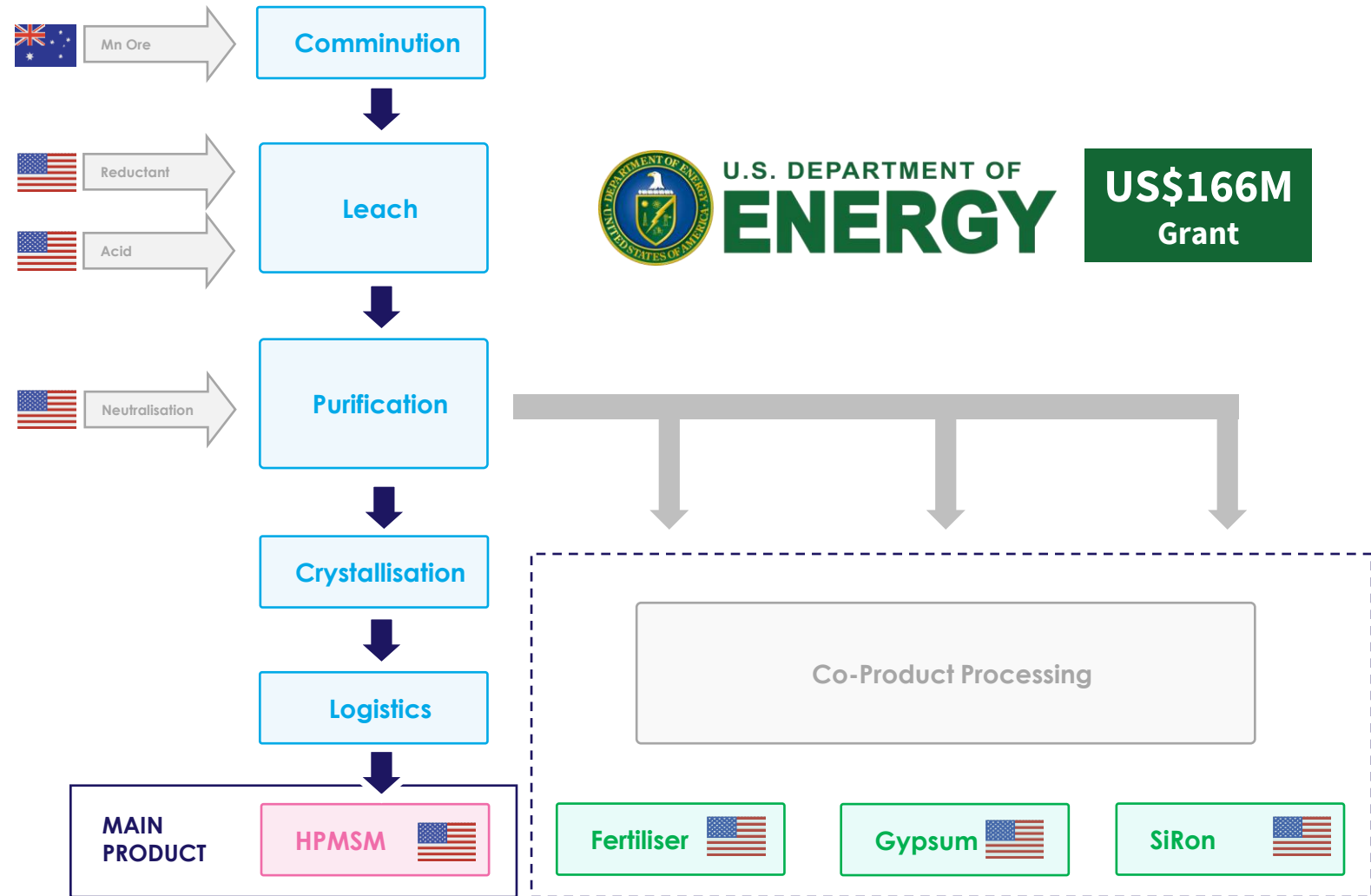
Note: Historical figures have been adjusted to real 2024 dollars. Values are averages across passenger EVs, commercial vehicles, buses, two- and three-wheelers and stationary storage. Includes cell and pack.

BloombergNEF

Louisiana Battery Grade HPMSM

Local Supply Chain

- Process and supply chain developed to maximise U.S. industry involvement.
- Working with partners GM and Stellantis to supply low carbon HPMSM for EV batteries.
- All reagents sourced locally from established suppliers.
- Site located close adjacent to acid recycling facility.
- Solid residues as co-products will be placed into local industries targeting zero waste.
- Low carbon, circular economy approach.



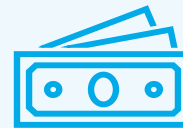
DoE Grant Award Underpins Project Capital Stack

- DoE US\$166M grant award provides cornerstone funding to support project success¹.
- Louisiana HPMSM Project grant awarded under DoE's MESC Battery Materials Processing Grant Program.
- Binding grant agreements signed, award committed.
- Grant support is **in addition to US\$115M financing commitments** from GM and Stellantis.
- Discussions in train with prospective financiers to close out remaining capital funding requirement.



Final funding piece ~15% of capital requirement. Process underway.

MESC Grant provides 50% of capital requirement up to US\$166M



Global Sustainable Secure Manganese Supply

	Long Mine Life	• 18.3 Year Reserve within granted Mining Lease • 274Mt Resource global resource with exploration upside	1
	Construction Ready	• Feasibility Study and project permitting complete • Northern Australia Infrastructure Facility (NAIF) finance of up to \$50M approved	2
	ESG Leading HPMSM Flowsheet	• Life cycle assessment (LCA) completed confirming industry leading carbon intensity • Further reductions available via renewable energy and reagents	3
	Strong Feasibility Study/Financials	• \$64.8M Construction Capital (\$70.5M approved NAIF project budget) • 96% Internal Rate of Return (IRR) and \$561M Net Present Value (NPV) (Pre-Tax, Real)	4
	Innovative HPMSM Flowsheet	• Competitive cost structure through innovation • Waste minimisation and reduced emissions provides competitive advantages	5
	Tier 1 Jurisdiction	• Australian owned and operated mine providing long term secure ethical Mn supply • USA, Japan and EU Partnerships to enhance battery raw material supply chains	6
	Tier 1 Project Customers & Partners	• Stellantis N.V and General Motors LLC – Louisiana HPMSM Project • Nissan Chemical Corporation – Tokyo Bay Japan HPMSM Project	7

The Planned Element 25 HPMSM facility in Louisiana, USA

Element 



For Illustration Purposes Only

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Ore Reserve¹

Deposit	Classification	Tonnes (Mt)	Grade (Mn%)	Contained Mn (Mt)
Yanneri Ridge	Proved	11.3	11.8	1.33
	Probable	70.4	10.2	7.15
Coodamudgi	Proved	-	-	-
	Probable	19.1	10.3	1.97
Stockpiles	Proved	0.6	9.2	0.06
Total		101.4	10.4	10.5

Mineral Resource²

Resource Category	Tonnes (Mt)	Mn (%)
Measured	14	11.3
Indicated	116	10.1
Inferred	144	9.8
Total	274	10.0

- Current Reserve:
 - Only utilises approximately ~40% of global Mineral Resource;
 - Provides for a mine life of >18 years¹.
- High conversion of measured and indicated resources to reserve.
- Excellent potential for future expansion with known mineralization outside resource areas.
- Simple geology, low technical risk.
- Global resources not closed off.

¹ Reference: Company ASX Release Dated 22 January 2025 (Ore Reserve Update)

² Reference: Company ASX Release Dated 29 October 2024 (Mineral Resource Estimate Update)

The information in this report that relates to Exploration Results and Exploration Targets is based on information compiled by Mr Justin Brown who is a member of the Australasian Institute of Mining and Metallurgy. At the time that the Exploration Results and Exploration Targets were compiled, Mr Brown was an employee of Element 25 Limited. Mr Brown is a geologist and 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'. Mr Brown consents to the inclusion of this information in the form and context in which it appears in this report.

The Company confirms that in the case of Production Targets, all material assumptions underpinning the production target, or the forecast financial information derived from a production target, in the market announcement dated 22 January 2025 continue to apply and have not material changed.

The Company confirms that in the case of estimates of Mineral Resource or Ore Reserves, all material assumptions and technical parameters underpinning the estimates in the market announcements dated 29 October 2024 and 22 January 2025 continue to apply and have not materially changed. All estimates of Mineral Resources or Ore Reserves underpinning the production target have been prepared by a competent person/s in accordance with the requirements of the JORC Code, Appendix 5A. The Company confirms that it is not aware of any new information or data that materially affects information included in previous announcements, and all material assumptions and technical parameters underpinning the estimates continue to apply and have not materially changed.

Please note with regard to exploration targets, the potential quantity and grade is conceptual in nature, that there has been insufficient exploration to define a Mineral Resource and that it is uncertain if further exploration will result in the determination of a Mineral Resource.

For further information on Element 25 Limited and its Projects please visit its website at www.element25.com.au which contains copies of all continuous disclosure documents to ASX, Competent Persons' Statements and Corporate Governance Statement and Policies.

This release has been approved by the Element 25 Limited Board of Directors.