

# Element 25 Limited Investor Update

Building a globally significant, low cost, high purity manganese project to supply high growth markets.

Energy and Mines Conference - June 2019



# Disclaimer

This presentation contains only a brief overview of Element 25 Limited and its associated entities ("Element 25") and their respective activities and operations. The contents of this presentation, including matters relating to the geology of Element 25's projects, may rely on various assumptions and subjective interpretations which it is not possible to detail in this presentation and which have not been subject to any independent verification.

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# Corporate Overview

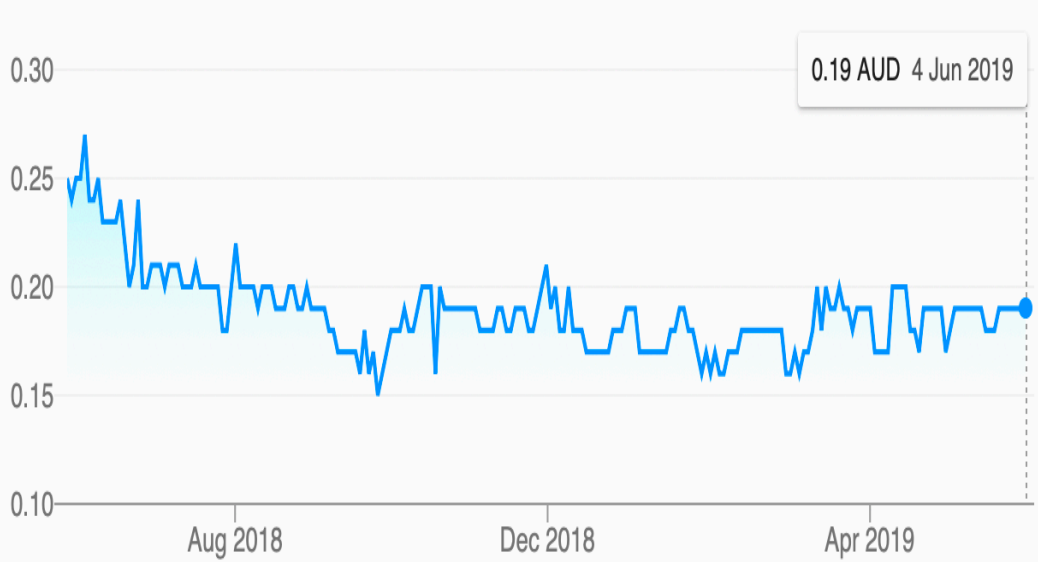
## Financial Information

ASX Ticker	E25
Shares on Issue	92M
Share Price	\$0.185
Market Capitalisation	\$17M
Cash & Investments ( at 31 March 2019)	~\$8.5M
Debt	Nil
Enterprise Value	~\$8.5M

## Board and Management

Seamus Cornelius	Chairman
Justin Brown	Executive Director
John Ribbons	Non Executive Director
Ian Huitson	Study Manager
Sias Jordaan	Marketing Manager

## Share Price Performance



## Major Shareholders

Top 20 Shareholders	67%
Board and Management	8.2%
JP Morgan Nominees Australia	11.4%
Duketon Mining Ltd	6.5%




# The High Purity Manganese Market


Processing ore to to high purity chemical products, NOT manganese concentrate for bulk shipping.



HPMSM



EMM



EMD



# What is High Purity (Class 1) Manganese?



## Electrolytic Manganese Metal (“EMM”)

- E25 Primary product
  - Well understood
  - Bankable

- Used in series 200 SS and specialty alloys
- Largest market, ~1.8Mt or ~US\$4B annually, steady growth
- Chinese producers: lack of domestic ore = African ore = high costs
- Easy to market, simple offtake, predictable pricing, US\$2K-\$3K/t
- Forms the E25 base case to underpin debt finance
- E25 expects to be the lowest cost producer globally

- **ESTABLISHED DEMAND**
- **STEADY GROWTH**
- **EASY OFFTAKE**
- **MOST BANKABLE**

## Battery Grade Manganese Sulphate

- E25 Secondary product
  - New, fast growing market
  - Huge blue sky upside potential
  - Will increase exposure over time

- Used in fertilisers and new energy NMC and LNMO batteries
- Small market, ~0.1Mt or ~US\$0.2B/a, BUT (very?) fast growth
- Currently produced by dissolving EMM
- Challenging to market for now, small parcels BUT highest price, US\$3.5-4K/t
- Market growth potentially 10 fold to 2030
- E25 expects to be the lowest cost producer globally

- **NEW DEMAND**
- **HIGHEST GROWTH**
- **DIFFICULT OFFTAKE**
- **BANKABLE?**

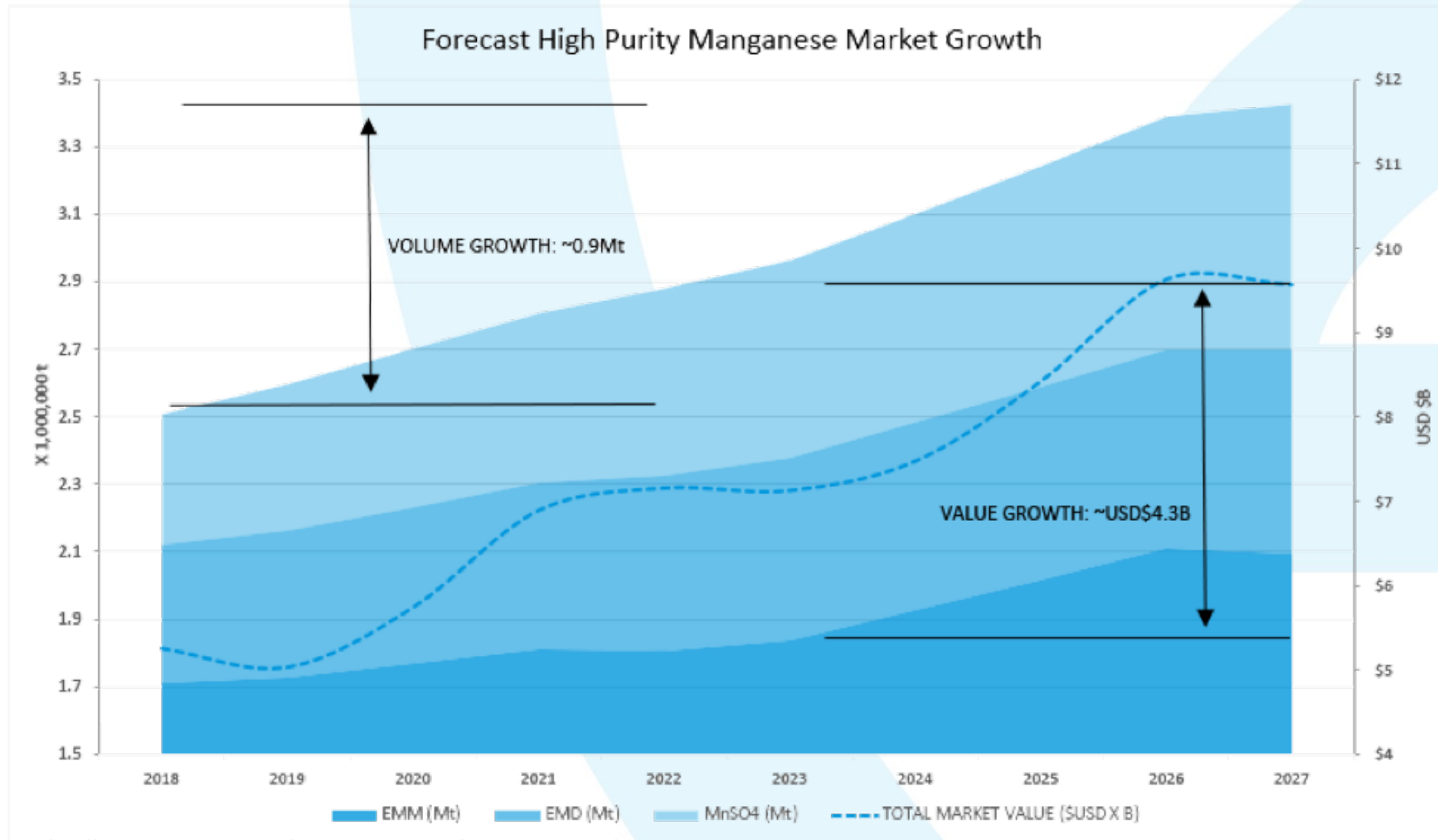
## Electrolytic Manganese Dioxide

- Used in traditional dry cell and older LMO batteries
- Intermediate market, ~0.4Mt or US\$1B annually, steady growth
- More difficult to market, long qualifying periods, risky, no price advantage

- **ESTABLISHED DEMAND**
- **STEADY GROWTH**
- **DIFFICULT OFFTAKE**
- **NOT BANKABLE**

# High Purity Manganese Market Forecast = Strong Growth

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Reference: Metal Bulletin Commissioned Manganese Market Report April 2018

An aerial photograph of a construction site, heavily tinted with a dark blue color. The image shows numerous tire tracks crisscrossing the ground, indicating heavy machinery movement. In the upper right, there is a complex structure of scaffolding or a crane. In the lower left, a small piece of construction equipment is visible. The overall scene is industrial and active.

# Competitor's Costs are Rising

China's competitiveness is being eroded by rising costs.



# Chinese Producers are struggling to control costs...

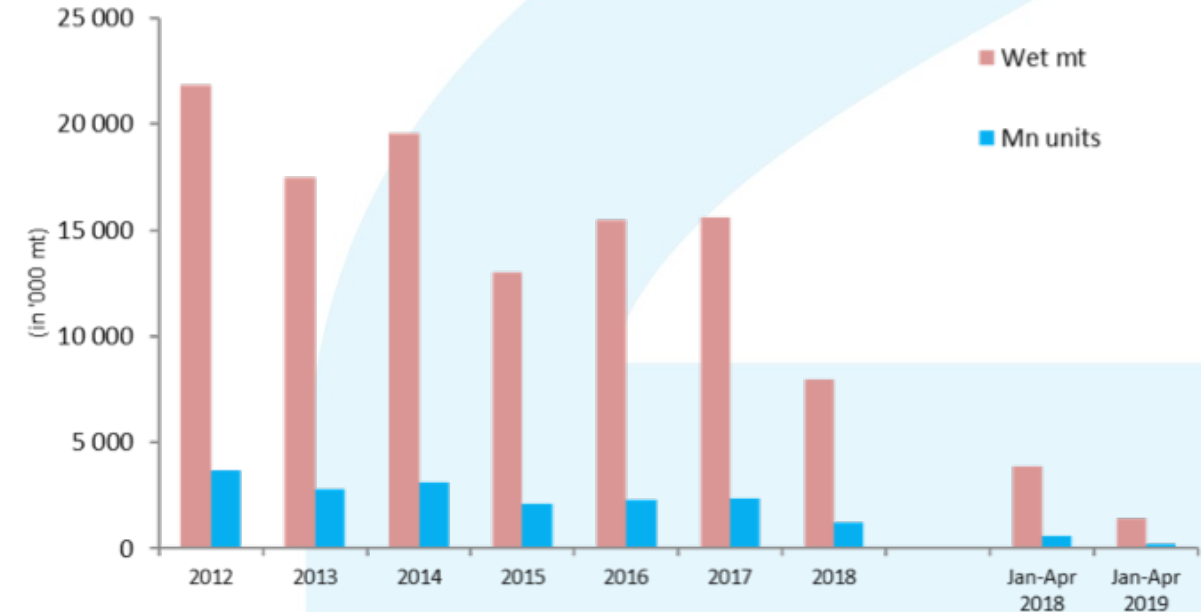
- Ageing infrastructure.
- Expensive African ore; local ores are depleted.
- Labour intensive processes.
- Difficulties sourcing labour and rising costs.
- Increasing power costs
- Complex logistics.
- Waste disposal and other environmental problems rife.



# Chinese manganese mines are depleted...

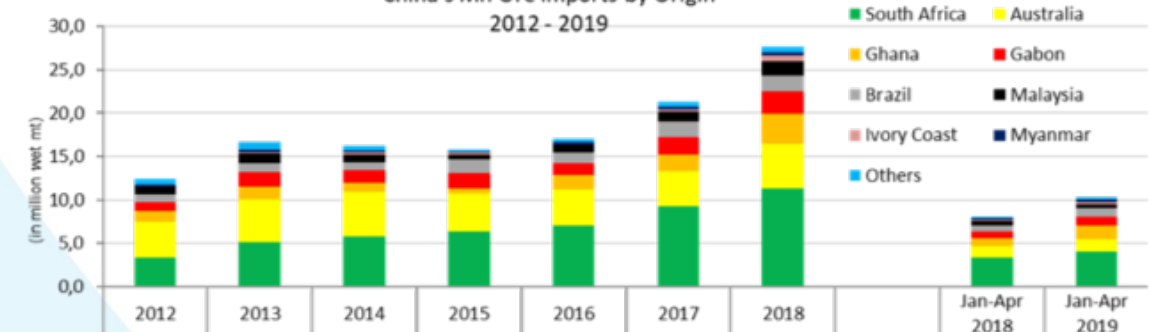
- Local production is dropping YoY.
- Grades are declining YoY.
- Imports rising each year.
- Demand continues to grow.
- Ore costs are now the biggest cost driver for Chinese high purity manganese producers.
- Costs are rising in China.

China's Mn ore production  
2012 - 2018



Source: IMNI

China's Mn Ore Imports by Origin  
2012 - 2019







# World Class Manganese Resource

Australia's largest onshore manganese resource is ripe for development to produce high purity products, NOT manganese concentrate for bulk shipping. Multiple competitive advantages mean lower costs of production.



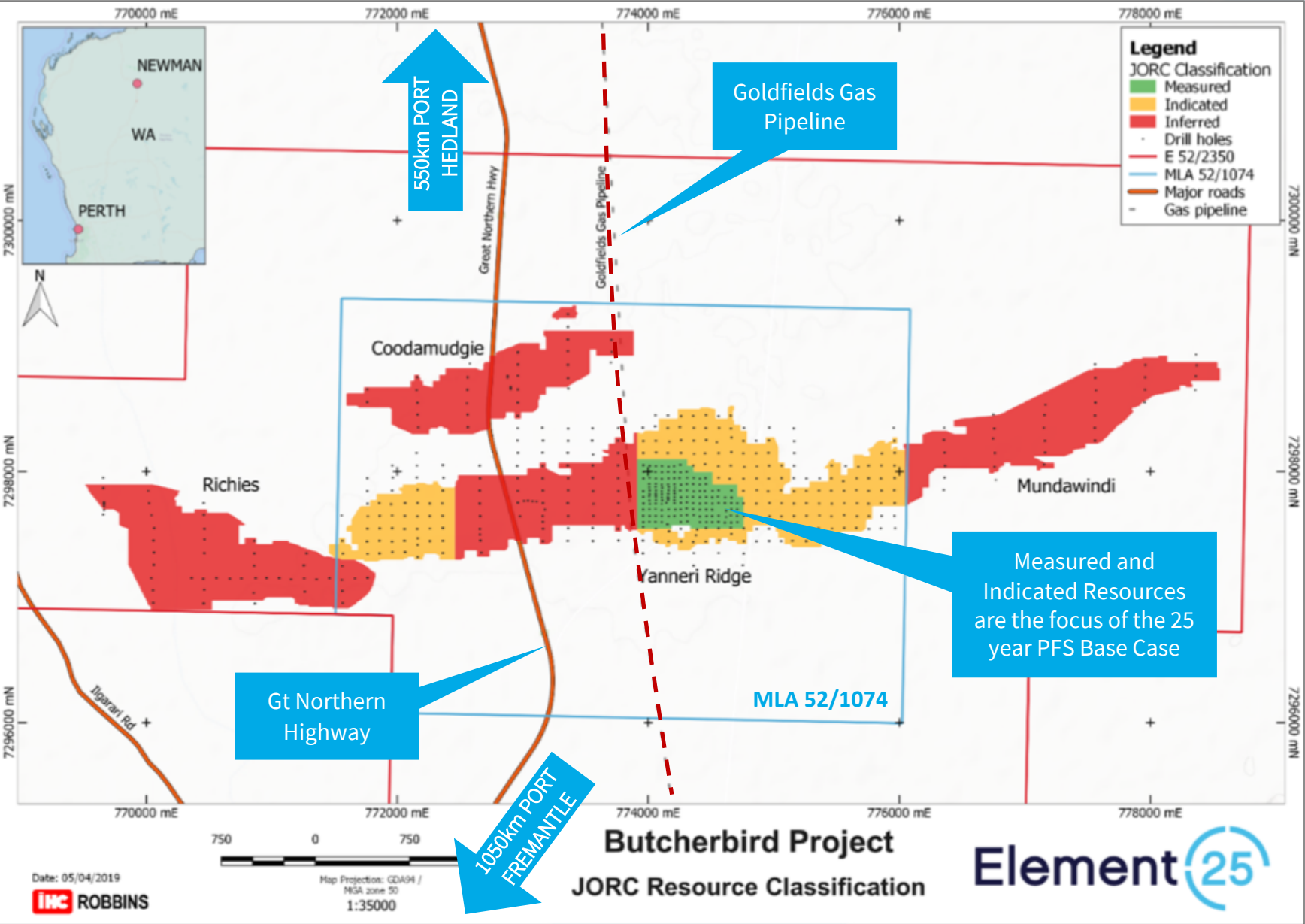
# The Butcherbird Manganese Project

- Huge resource, currently **>260 Mt of manganese** ore in Measured, Indicated and Inferred JORC resources\*.
- Excellent local infrastructure (**bitumen road and gas pipeline**).
- 100% owned by Element 25 Limited.
- Located in WA, a tier 1 mining jurisdiction.
- Very simple geology, no strip and free dig.
- Measured and Indicated resources are the focus of the **25 year PFS**.
- Metallurgically process proven.
- Scoping Study completed, Pre Feasibility Study well advanced.



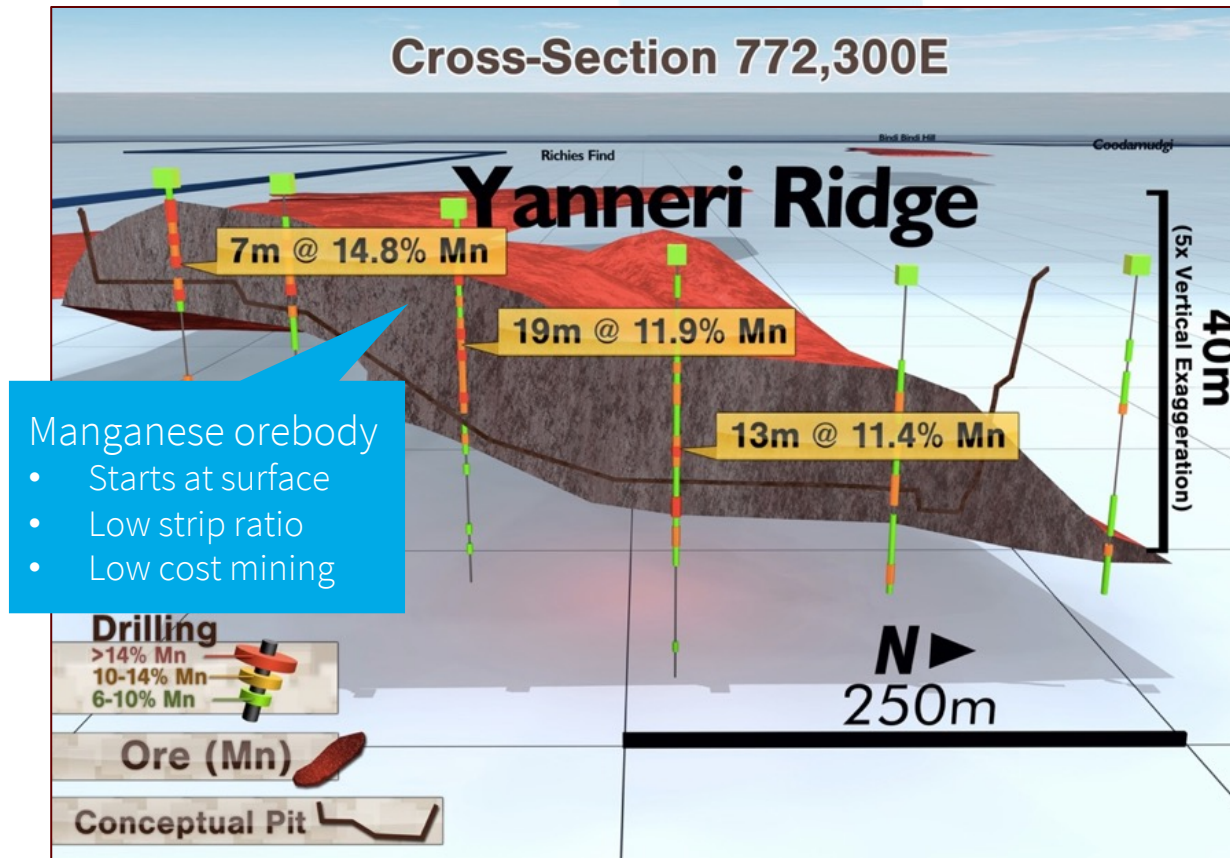
# World Class Resource, Great Infrastructure Endowment

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# Simple Geology

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- Flat lying stratiform ore body, very simple geology.
- Ore zone starts at surface and is laterally continuous.
- No selective mining required.
- Low strip ratio of 0.2:1 based on preliminary pit optimisations.
- Ore zone is above the water table.
- Free dig with localised ripping.

Note: All intersections are approximately true width



An aerial photograph of an industrial facility, possibly a mining or processing plant, with a large central processing unit and extensive conveyor systems. The image is overlaid with a blue tint.

# A Lower Cost, Cleaner Processing Pathway

“Every once in a while, a new technology, an old problem, and a big idea turn into an innovation.”

Dean Kamen, Inventor.

# Breakthrough Technology

- CSIRO co-developed process produces high purity manganese with less energy and lower emissions.
- Products include high purity manganese sulphate (“HPSM”) for NMC Li-Ion battery cathodes and Electrolytic Manganese Metal (“EMM”) for specialty steels.
- These are high value products. Electrolytic Manganese Metal (EMM) >USD\$2,000/t<sup>1</sup>.



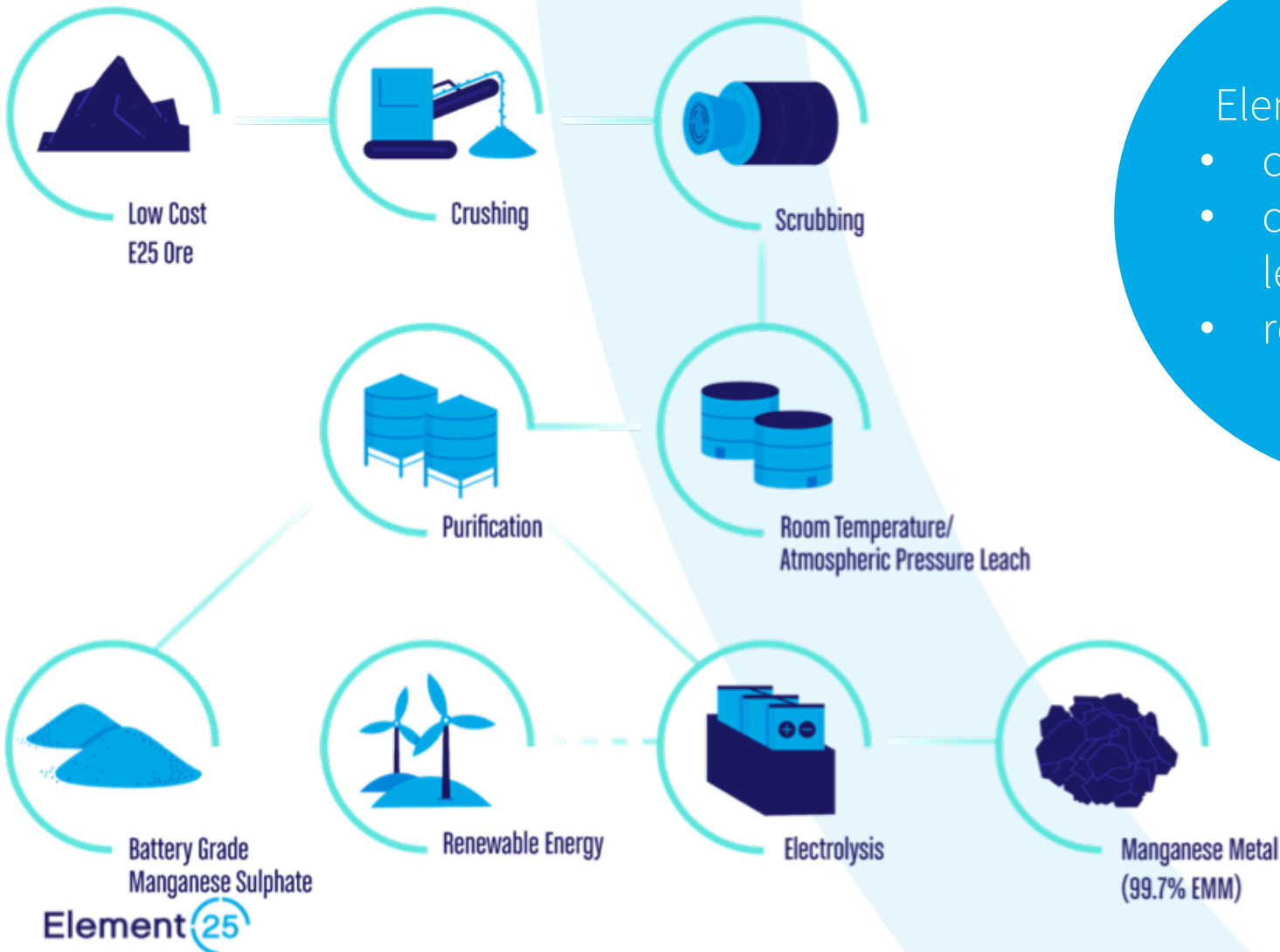
High purity  
manganese  
products, EMM  
and HPSM

<sup>1</sup><https://www.metalbulletin.com/My-price-book.html?price=34473>



# Element 25 Uses a Simpler, Lower Cost, Cleaner Process

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## Element 25 Process:

- cheaper local ore
- cleaner, cheaper leach process
- renewable energy

simpler,  
lower cost,  
cleaner,  
greener



An aerial photograph of an oil rig on a dark sea, with the entire image tinted in a deep blue color. The rig's complex structure, including cranes and platforms, is visible against the dark water.

# Energy Solution: Gas, Wind or Solar

“Research from Morgan Stanley estimates that renewables will be the cheapest source of power in the world in less than three years.”

Business Insider Australia, 8 July 2017.

# Electrowinning Metals is Energy Intensive

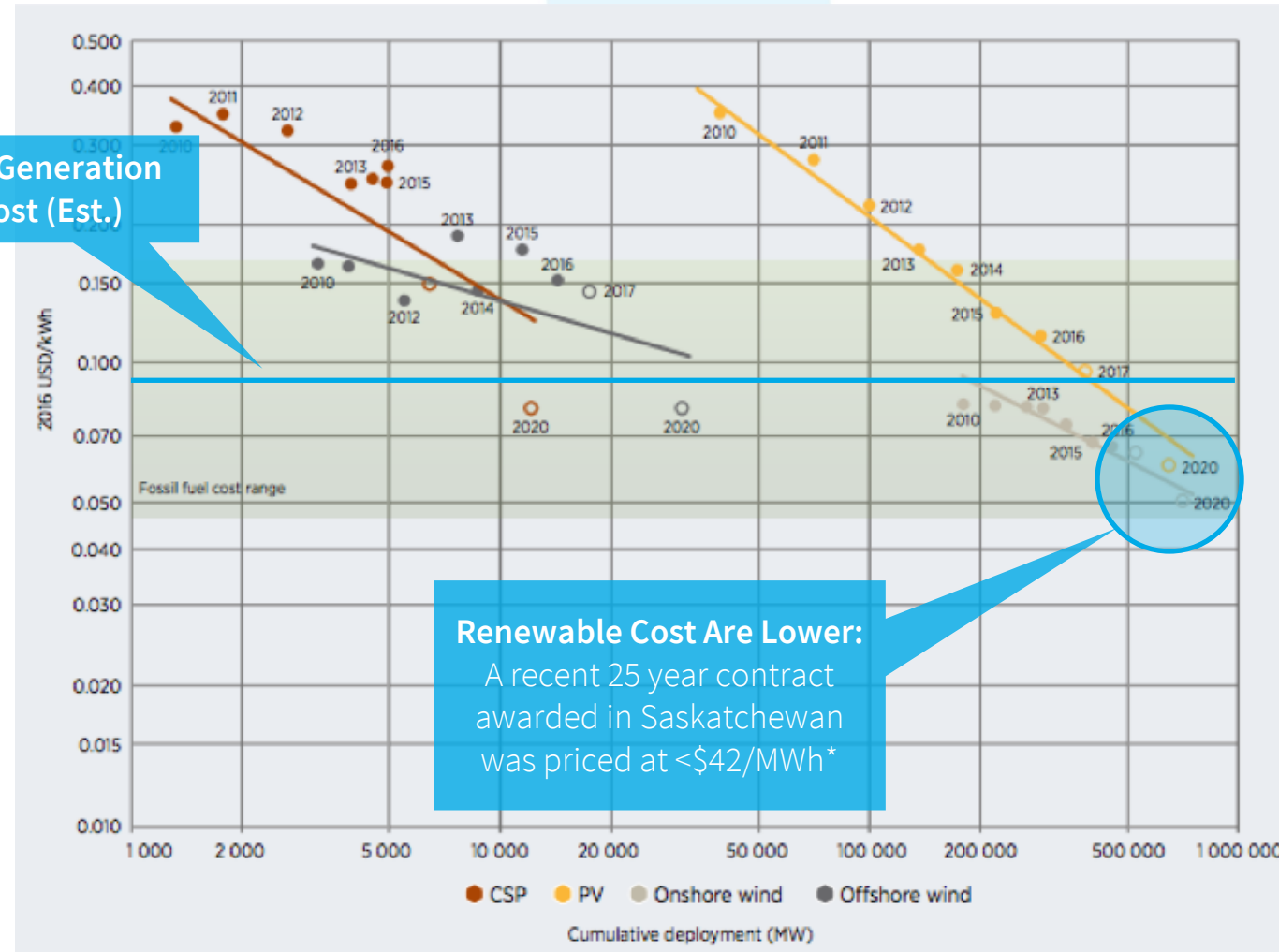
- Making metal through electrolysis involves passing a current between a cathode and anode through a pregnant liquor.
- Under the right conditions, metal is plated on the cathode.
- Making manganese metal (EMM) takes approximately 6.5MWh/t of metal produced.
- Electricity to power the cell house is the largest single cost in making EMM at Butcherbird.
- A cost effective power solution is critical.





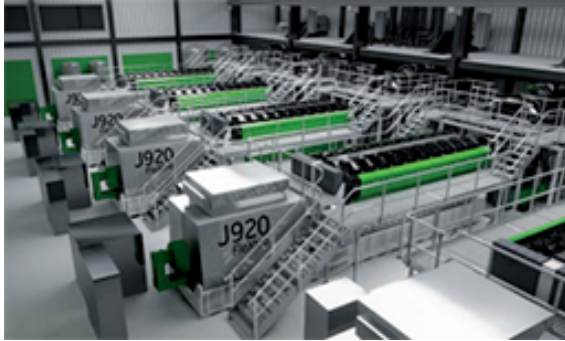
# Renewable Energy - Lower Emissions and Cost Effective

- Cost of renewables steadily declining.
- Renewables are cheaper than fossil fuel sources.
- Maximising renewables will maximise project economics.
- Reduces carbon footprint.
- Decarbonises products for end users.





# Energy Optionality Allows for Optimal Energy Mix



## Gas generation:

- Reciprocating gas engines/turbines
- Cost effective base case power solution
- 100% gas power assumed in the Scoping Study

## Wind turbines:

- Competitive Levelised Cost Of Energy (“LCOE”)
- Long mine life supports favourable PPA terms
- Protection from gas price changes

## Solar photovoltaics:

- Competitive LCOE
- Offsets lower daytime wind speeds
- Assists in smoothing the renewable power supply

EMM EW  
consumes  
~6.5 MWh/t of  
electricity

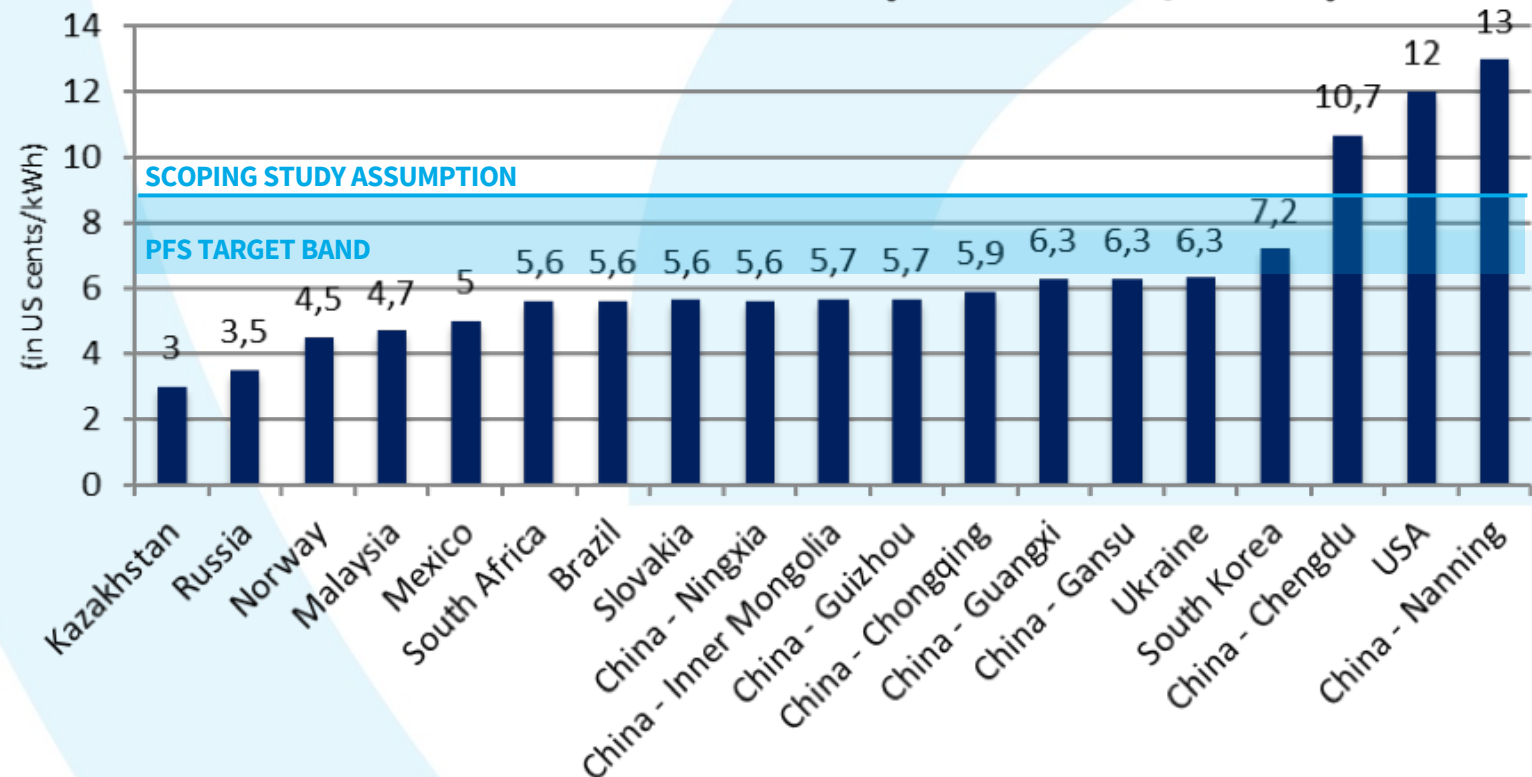
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Expected  
energy mix is  
50% wind and solar  
plus 50% gas, halving  
emissions and  
reducing cost over  
gas only\*

# Energy Competitiveness

- Scoping Study based on gas only power generation.
- Renewable energy/gas hybrid expected to show significant cost savings\*.
- Costs globally competitive.
- Supports low cost production of EMM.

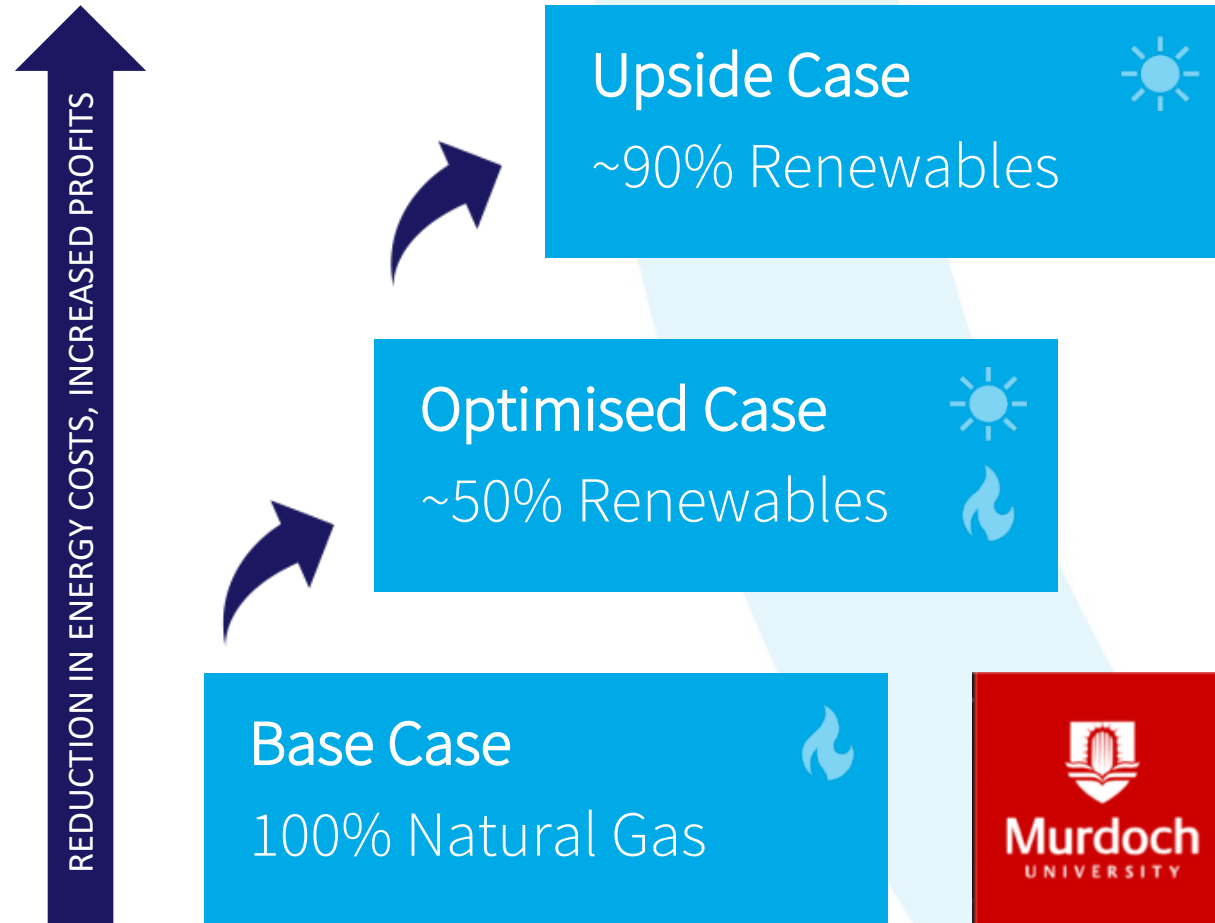
**Average national electricity price for industrial users in 2019 (us\$ cents/kWh)**



Sources: OANDA, Eurostat, Metal Experts, IMnI Members; some of these prices are estimated, and based on exchange rates of Feb 2019

# Making Metals with Renewables - IDE

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## INTERMITTENT DYNAMIC ELECTROWINNING

- Optimising electrowinning process to utilise dynamic energy supply.
- Finding the limits on key variables such as voltage, current density, solution chemistry.
- Designing management systems to use dynamic energy while maintaining quality.
- Co-funded to \$490K by the Australian Renewable Energy Agency (“ARENA”).



# Exporting Renewable Energy as Metals?

- Renewable energy powered electrowinning of metals embeds the renewable energy into the product for export.
- Technology potentially applies to a range of commodities including manganese, copper, lead, zinc, nickel etc.
- Positions Australia to become a leader in renewable energy exports.
- A viable alternative/adjunct to hydrogen exports which are currently a hot topic? Why not?



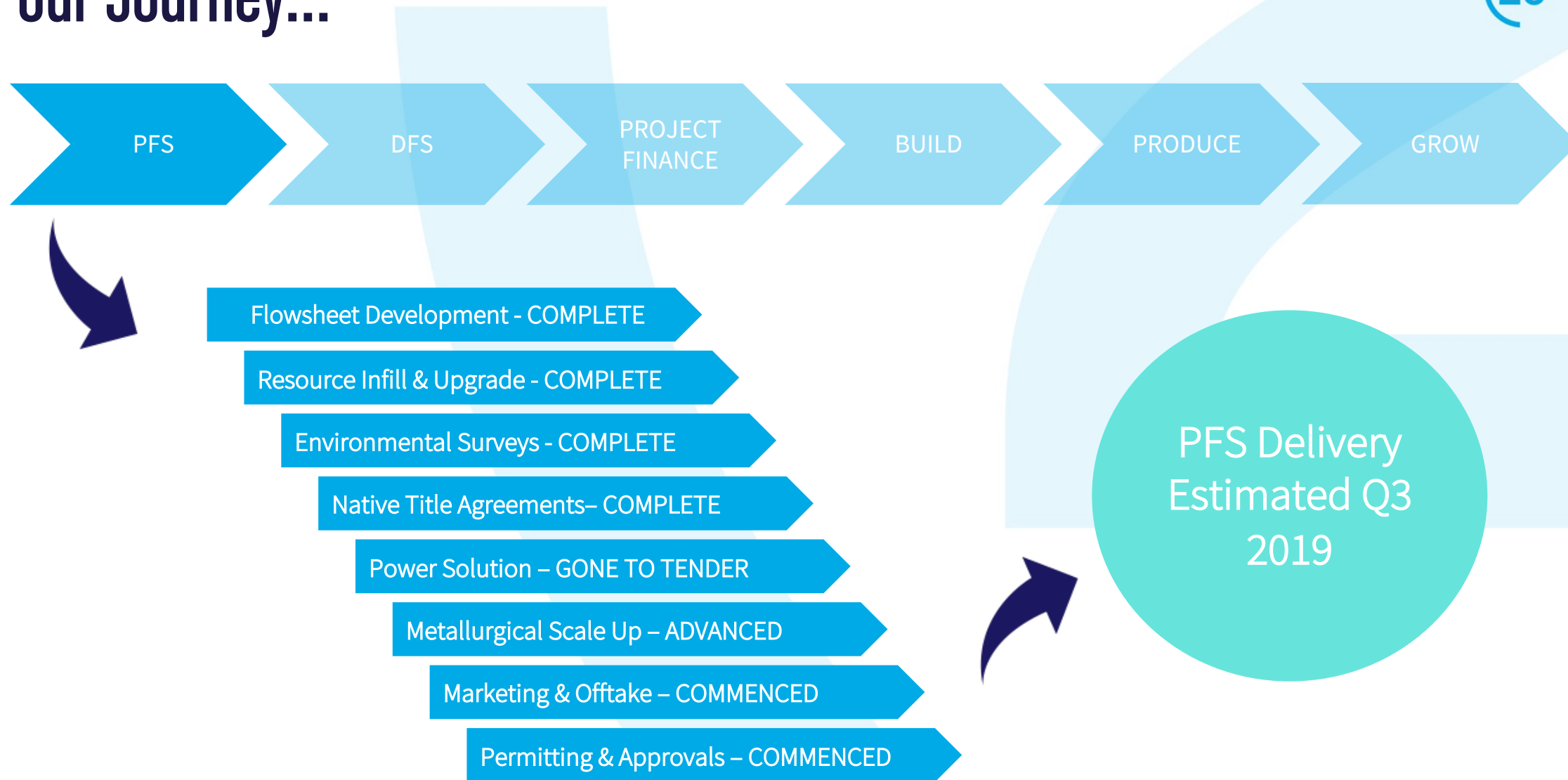
An aerial photograph of a large-scale industrial construction project, likely a port or a large-scale earthmoving operation. The image shows a vast area of dark, disturbed earth with numerous tracks from heavy machinery. In the upper right, a large crane or conveyor system is visible, extending over the site. The overall scene is one of intense industrial activity.

# Next Steps for Element 25?

Scoping Study complete and positive.  
What is the pathway to development..?



# Our Journey...





# A Strong Team...

- An experienced owner's team for core disciplines.
- Experienced industry partners for specialist skill sets.
- All bases covered.
- Owner's team will grow as the project progresses.

**Lycopodium**



**Advisian**  
Worley Group



**ARENA**



# Our Journey...

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## Our Goal...

- Produce the cleanest, greenest manganese products globally.
- Become a globally significant high purity manganese producer.
- Achieve best in class quality and cost profile.
- Operate ethically and sustainably in a Tier 1 jurisdiction.
- Generate strong sustainable investor returns over the long term.



# Thank you.

For more information, please contact Element 25 Limited:

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[www.element25.com.au](http://www.element25.com.au)



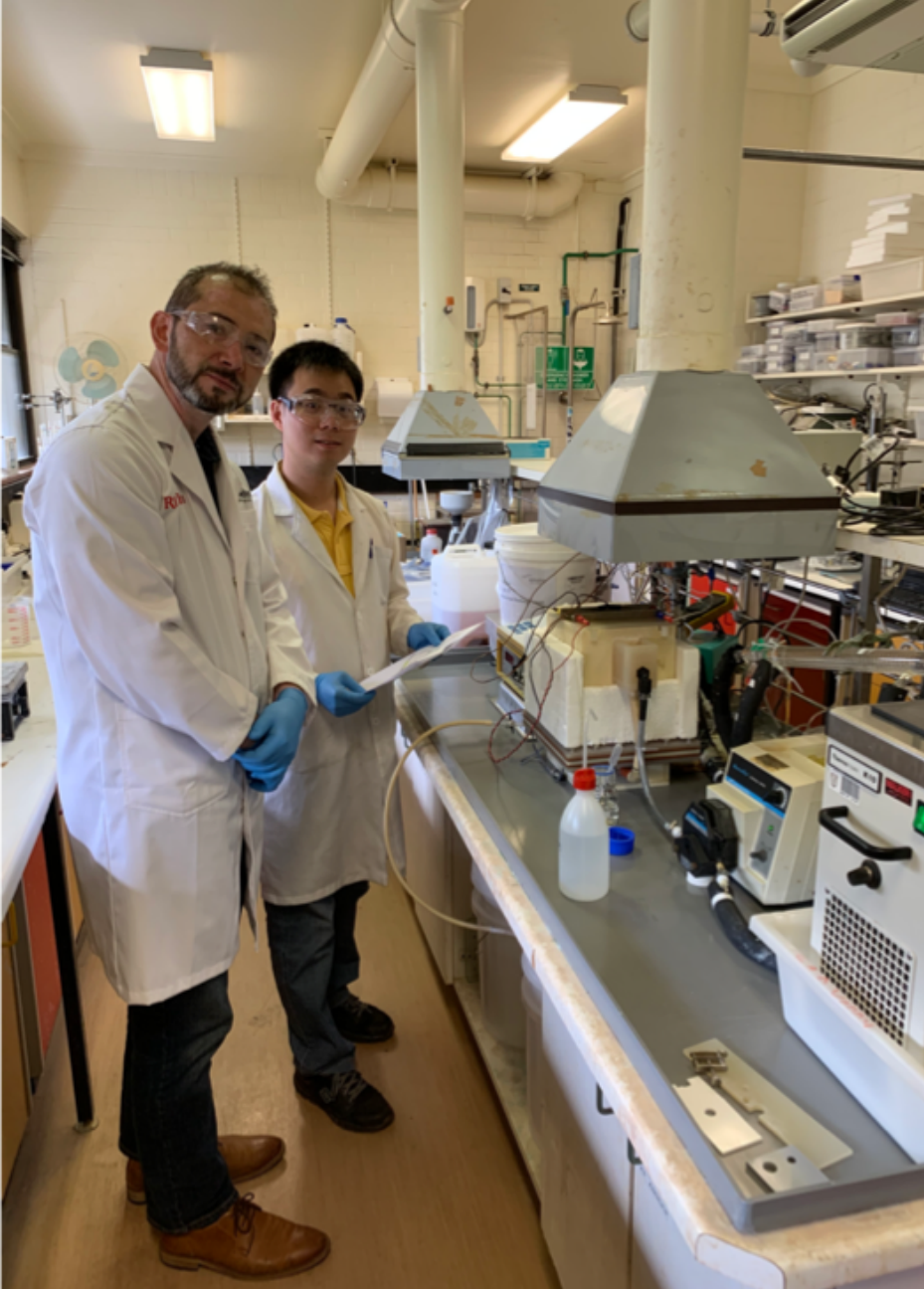














# Appendices



# Competent Person's Statement

Note: The information in this presentation that relates to Exploration Results, Exploration Targets and Mineral Resources is based on information compiled by Mr Justin Brown who is a full-time employee of the Company and is a member of the Australasian Institute of Mining and Metallurgy.

Justin Brown 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'. Justin Brown consents to the inclusion in the report of the matters based on his information in the form and context in which it appears.

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.

All references to Mineral Resources pertain to the ASX release dated 16 April 2019. The Company confirms that all material assumptions, underpinning the estimations continue to apply and have not materially changed.

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

## DISCLAIMER

The views expressed herein are not necessarily the views of the Australian Government, and the Australian Government does not accept responsibility for any information or advice contained herein.

# World Class Manganese Resource

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Category	Tonnes (Mt)	Mn (%)	Si (%)	Fe (%)	Al (%)
Measured	16	11.6	20.6	11.7	5.7
Indicated	41	10.0	20.9	11.0	5.8
Inferred	206	9.8	20.8	11.4	5.9
Total	263	10.0	20.8	11.4	5.9

- Significant potential remains to increase the resource with further drilling.
- Scale of development not resource constrained.

Resource is  
not closed off  
and can be  
extended.

Reference: Element 25 Limited ASX release dated 17 April 2019.