

E25 HPMSM Project Update

Summary/Key Points

Project Location

- The United States Inflation Reduction Act (IRA) to inject hundreds of billions of dollars into clean energy EV incentives and programs.
- Geopolitical shifts associated with the IRA have caused a perceptible change in the appetite for North American produced battery materials including HPMSM.
- Offtake demand interest based on discussions with OEMs may therefore drive potential reprioritisation to a USA base case for the E25 Feasibility Study.
- Multiple suitable sites in the USA being actively assessed as location sites focussing on minimising project capital, local reagent supply, co-location opportunities and optimisation of the supply chain.
- E25 appoints Worley Group to lead the engineering studies for FS localisation for a USA site.
- Ernst & Young to advise on potential federal, state and local funding support for a USA based HPMSM Facility.
- Sarawak Malaysia remains a favourable location for a second E25 HPMSM facility subject to approval of federal government incentives.



Feasibility Study Timeline

- Redirection of engineering resources to cover a potential USA location will result in an adjusted FS delivery of Q1 CY23.
- The adjustment to the delivery schedule is not expected to materially delay the delivery of first product to market which remains in the project schedule for 2025.

Flowsheet Piloting Update

- Purification test work completed and produced very high-quality HPMSM liquor with very low impurity levels with results in line with processability and quality expectations. Full test results and confirmatory assays pending.
- Supports E25's ambition to ultimately offer an ultra-high purity manganese sulphate monohydrate (**UHPMSM**) product.
- Product liquors will be utilised for continuous crystallisation testing commencing in January 2023 to confirm engineering input data for the crystallisation and separation equipment design.

Project Financing

- The Company is pursuing a combined offtake/financing solution with OEMs and cathode manufacturers to provide substantial project funding.
- Project offtake and financing strategies scheduled to be finalised in line with the Feasibility Study.

COMPANY SNAPSHOT

Market Summary

ASX code:	E25
Shares on issue:	185M
Share price:	\$1.04

Board of Directors:

Seamus Cornelius	Chairman
Justin Brown	MD
John Ribbons	NED

Element 25 Limited is developing the world class Butcherbird Manganese Project in Western Australia to produce high quality manganese concentrate and high purity manganese products for traditional and new energy markets.

Element 25 Limited (E25 or Company) (ASX: E25) is pleased to provide an update with respect to the planned production of high purity battery grade manganese sulphate monohydrate (HPMSM) from manganese oxide concentrates currently produced at the Company's 100% owned Butcherbird Project (Project) including key developments in the delivery of a Feasibility Study (FS) for the Company's first HPMSM production facility (Facility).



Figure 1. 3D representation of HPMSM plant build using latest site layout.

Important macro-economic and geopolitical influences support the business case for HPMSM production from an Australian manganese source including widespread efforts to electrify the global vehicle fleet, as well as supply chain ESG considerations which require more scrutiny on material provenance and a move towards diversifying the source of supply of critical minerals.

E25 is assessing several locations in line with its ambition to develop multiple processing locations to serve the rapidly expanding lithium-ion battery material markets in different geographic regions, with a short-term focus on Asia and North America.

Flowsheet Development

Pilot Scale Test programmes

Purification test work has progressed in line with the originally defined plan and has produced some very high-quality liquor with very low levels of impurities which could potentially pave the way towards E25's production of a new product specification, termed ultra-high purity manganese sulphate monohydrate (UHPMSM).

Australian produced manganese sulphate liquor was shipped to North America for subsequent piloting and the results obtained during 24/7 continuous operation piloting runs have met expectations, in processability and quality, with no significant issues that could not be managed. Full test results are presently being analysed and additional and confirmatory assays are being concluded.

Liquors produced will undergo continuous crystallisation testing commencing in January 2023, aiming to confirm the engineering data for the proposed crystallisation and separation equipment. This testing program is scheduled to be concluded during February 2023 and will also provide additional HPMSM samples to supplement the present inventory.

Offtake/Marketing Update

The impact of the Inflation Reduction Act¹

The United States Inflation Reduction Act, (**IRA**) passed in the USA congress in August 2022 will inject hundreds of billions of dollars into clean energy and Electric Vehicle (**EV**) incentives and programs. Multiple provisions of the IRA directly impact EV supply chains including the HPMSM used in the manufacture of EV batteries.

Importantly, to qualify for certain incentives, a percentage of the value of applicable critical minerals contained in a vehicle's batteries must be extracted or processed in the US or in a country with which the US has a **free trade agreement (FTA)** (or must have been recycled in North America). Applicable percentages increase from 40 percent prior to 2024, to 80 percent after 2026.

Also significantly, after calendar year 2024, the incentives will not be available for EVs that contain critical minerals that were "extracted, processed, or recycled by a foreign entity of concern".

Importantly for E25 investors, qualifying FTA countries include **Australia** and qualifying critical minerals include **manganese**, placing the Project and the Company's HPMSM processing technology in an excellent position to supply US based EV market supply chains in coming years whilst allowing our partners to maintain eligibility for the incentives offered under the IRA scheme.

Offtake/Financing Negotiations

E25 considers that the IRA has caused a perceptible change in the appetite for North American produced battery materials including HPMSM. The Company has been engaged in constructive discussions for several months with several potential offtake partners in relation to the supply of HPMSM using the E25's process to satisfy potential growth in demand for HPMSM in lithium-ion battery cathodes for EVs.

¹ Reference: <https://www.dlapiper.com/en/us/insights/publications/2022/08/inflation-reduction-act-seeks-to-jumpstart-electric-vehicle-market/>

Counterparties to these discussions, aimed at securing binding supply agreements with high quality project partners, have included EV Original Equipment Manufacturers (OEM) as well as established cathode and precursor material manufacturers. The discussions have also been focussed on combining offtake, pricing and finance outcomes to bring certainty to project delivery and, in turn, provide supply and pricing certainty to customers.

The Company is progressing multiple discussions with potential offtake and funding partners with the aim of entering into binding agreement(s) in line with project timelines.

Site Selection

As a result of the demand-pressure for a USA production location to satisfy potential customer's requirements under the IRA, extensive detailed site search and identification activities were completed with the assistance of local and regional USA government agencies to short-list potential sites for further detailed evaluation.

During November and December 2022, E25 representatives made several visits to the USA with a particular focus on site evaluation. E25 have engaged local consultants with specialist experience in site selection to assist with this process.

The information acquired to date regarding potential available sites is supporting a detailed site selection process to define an optimum site location. It is expected that a preferred USA base location will be confirmed in the near future to enable Worley to progress the USA-centric localisation of the engineering and design which was originally developed and proposed for Malaysia.

The potential shift in focus from a Malaysian base-case to a USA base-case to align with our customers requirements as communicated in recent discussions will result in a later completion date for the Feasibility Study which is now scheduled for Quarter 1 2023, subject to the finalisation of offtake and financing commitments with potential OEM partners.

This change in the project FS schedule comes with potential benefits for the Project and for the Company, as a facility constructed in the USA will be ideally positioned to directly service USA markets and potentially take advantage of favourable aspects of the IRA and associated legislation with potential positive outcomes for the Company.

About HPMSM

HPMSM is the highest purity "battery grade" manganese chemical used in lithium-ion batteries and demand for this specialty material is expected to grow rapidly in coming years² in line with the growth in production of Electric Vehicles (EV's) and sustainable and ethical considerations will, in the opinion of the Company's board, become an increasingly important factor in sourcing strategies across the globe.

² Reference: <https://about.bnef.com/electric-vehicle-outlook/>

In western markets, battery makers are looking to manganese rich cathode chemistries to help solve the supply chain bottleneck for cathode materials. Adding **manganese** to the popular LFP formula is also becoming more widely adopted, as it increases the voltage and energy density of the battery cells, hence **LMFP** (an LFP cathode with around 25% elemental manganese³ is becoming an important option for some battery suppliers.⁴

Justin Brown

Managing Director

Company information, ASX announcements, investor presentations, corporate videos and other investor material in the Company's projects can be viewed at: <http://www.element25.com.au>.

Competent Persons Statement

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 17 April 2019 and 19 May 2020 continue to apply and have not materially changed. The company confirms that the form and context in which the competent person's findings are presented has not been materially modified from the original market announcements.

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.

This announcement is authorised for market release by Element 25 Limited's Board of Directors.

³ <https://pushevs.com/2022/07/12/catl-will-soon-mass-produce-lmfp-batteries/>

⁴ <https://electrek.co/2022/07/22/catl-m3p-batteries/>