

ASX : QEM

AusIMM Critical Minerals Conference in Brisbane, August 2024

"We would like to acknowledge the Wunumara people as Traditional Owners and their custodianship of the lands on which QEM operates its Julia Creek Project. We pay our respects to their Ancestors and their descendants, who continue cultural and spiritual connections to Country. We recognise their valuable contributions to Australian and global society."

Advancing the Julia Creek Project

Disclaimer

QEM Limited ACN 167 966 770 (QEM or the Company) is the issuer of this presentation. The issue of this presentation is intended only for the person or entity to which it has been transmitted. By attending an investor presentation or accepting, accessing or reviewing this presentation, you acknowledge and agree to the terms set out below.

Summary information and reliance on presentation

This presentation is for information purposes only and should be read in conjunction with the most recent financial reports and other documents lodged by QEM with the Australian Securities Exchange (ASX) in connection with its continuous disclosure obligations. A recipient of this presentation must make their own assessment of the matters contained herein and rely on their own investigations and judgment in making an investment in QEM. This presentation does not purport to contain all of the information a recipient of this presentation requires to make an informed decision whether to invest in QEM. Specifically, this presentation does not purport to contain all the information that investors and their professional advisers would reasonably require to make an informed assessment of QEM's assets and liabilities, financial position and performance, profits, losses and prospects. Recipients of this presentation should make investment decisions based on their own investigations and not this presentation.

Future performance and forward-looking statements

This presentation contains 'forward-looking' statements, opinions and estimates, which are based on assumptions and contingencies that are subject to change without notice and involve known and unknown risks and uncertainties beyond the control of QEM and its officers. Those forward-looking statements reflect views held only as at the date of this presentation. Actual events or results may differ materially from the events or results expressed or implied in any forward-looking statement, and such deviations are both normal and to be expected. Recipients are cautioned against placing undue reliance on forwardlooking statements and must make their own assessment about the likelihood of a matter, about which a forward-looking statement is made, occurring. QEM makes no representation about the likelihood of a matter, about which a forward-looking statement is made, occurring.

Disclaimer

To the maximum extent permitted by law, QEM and its directors, employees, agents, advisers and consultants:

- matter
- in or for any statement in this presentation.

No Recommendation

The information in this presentation is not a recommendation to acquire shares in QEM and does not constitute financial advice. Any person who intends to acquire shares must conduct their own investigations, assessment and analysis of QEM and its operations and prospects and must base their investment decision solely on those investigations (including reviewing the Company's announcements available on www.asx.com.au) and that assessment and analysis. Prospective investors should consult their own legal, accounting and financial advisers about an investment in OEM.

Not an offer

This presentation does not constitute or form part of any offer or invitation to sell or issue, or any solicitation of an offer to buy or subscribe, any securities in the Company in any jurisdiction, including the United States. This document and its contents must not be distributed, transmitted or viewed by any person in any jurisdiction where the distribution, transmission or viewing of this document would be unlawful under the securities or other laws of that or any other jurisdiction. In particular, this document is not for release to US newswire services or distribution in the United States. This document is not considered a recommendation by the Company or any of its affiliates, directors or officers that any recipient invest in the Company nor does it constitute investment, accounting, financial, legal or tax advice

give no representation or warranty, express or implied, to a recipient of this presentation as to the accuracy or completeness of the statements contained in this presentation or in relation to any other

• disclaim any obligations or undertaking to release any updates or revisions to the information in this presentation; and

• to the full extent permitted by law, disclaim responsibility for and have no liability to a recipient of this presentation for any error or omission

Disclaimer

Refer to QEM Limited ASX announcement 27 August 2024 for full details of the Julia Creek Project Scoping Study (including all relevant material assumptions). QEM confirms that it is not aware of any new information or data that materially affects the information included in the relevant announcement and that all material assumptions and technical parameters underpinning the forecast financial information and production target in the relevant announcement continue to apply and have not materially changed.

Scoping Study Cautionary Statement

The Scoping Study referred to in this presentation was undertaken for the purpose of initial evaluation of the potential for development of a series of an open pit and processing facilities at the Julia Creek Project. It is a preliminary technical and economic study of the potential viability of the Julia Creek Project.

The Scoping Study is based on low level technical and economic assessments (+/- 40% accuracy) that are not sufficient to support the estimation of Ore Reserves or to provide assurance of an economic development case at this stage or to provide certainty that the conclusions of the Scoping Study will be realised. Further exploration and evaluation work and appropriate studies are required before QEM will be able to estimate any Ore Reserves or to provide any assurance of an economic development case.

The Scoping Study is based on the material assumptions outlined in the Scoping Study. These include assumptions about the availability of funding. While QEM considers all the material assumptions to be based on reasonable grounds, there is no certainty that they will prove to be correct or that the range of outcomes indicated by the Scoping Study will be achieved. To achieve the range of outcomes indicated in the Scoping Study, funding of in the order of \$744 million excluding contingency costs and indirect costs such as owner's costs and EPCM (inclusive of these elements, the pre-production capital expenditure is \$1,095 million) will likely be required. Investors should note that there is no certainty that the Company will be able to raise that amount of funding when needed. It is also possible that such funding may only be available on terms that may be dilutive to or otherwise affect the value of QEM's existing shares.

Given the scale of the pre-production capital expenditure required, it is likely that QEM will need to access multiple streams of funding opportunities and/or partnering opportunities in order to support the pre-production capital expenditure, which may include a combination of project debt, equity capital, offtake prepayment, farm-in, joint venture and other appropriate initiatives.

It is also possible that QEM could pursue other 'value realisation' strategies such as a sale, partial sale or joint venture of the project. If it does, this could materially reduce the Company's proportionate ownership of the project. Given the uncertainties involved, investors should not make any investment decisions based solely on the results of the Scoping Study.

Competent Persons and Qualified Estimator Statements

The information in this announcement that relates to exploration results, mineral resource and contingent resource estimates for the Company's Julia Creek Project was first reported by the Company in its IPO prospectus dated 20 August 2018 and supplementary prospectus dated 12 September 2018 (together, the "Prospectus") and the subsequent resource upgrade announcements ("Resource Upgrades") dated 14 October 2018, 7 April 2022 and February 2024. The Company confirms that it is not aware of any new information or data that materially affects the information included in the Prospectus and Resource Upgrades, and in the case of estimates of Mineral Resources and Contingent Resources, that all material assumptions and technical parameters underpinning the estimates in the Prospectus and Resource Upgrades continue to apply and have not materially changed.

QEM Limited is focused on the exploration and development of the **Julia Creek Project**, a unique world class critical minerals and oil shale resource.



Julia Creek Project

QEM seeks to develop a **World-Class** Vanadium and Oil Shale Project





Multi Commodity

Vanadium **Transport Fuel**



Unique Process

Renewable Power Green Hydrogen



Sovereign Supply

Fuel Security High Purity V₂O₅



Globally Significant

Vanadium Resource **Critical Mineral**

Located in a Tier 1 mining jurisdiction, QEM aims to develop Australia's **Critical Minerals** Resources in Queensland's North West Minerals Province.





Julia Creek Project

4 EPM's covering 250km2 in Queensland's NWMP. Well located on major infrastructure corridor, including Copperstring access.





Source: QEM Scoping Study ASX Announcement, 27 August 2024





2024 Update - JORC and SPE-PRMS Resources

One of the world's largest single vanadium resources with significant oil resource.



Refer to QEM ASX Announcement dated 4 March 2024. QEM confirms that it is not aware of any new information or data that materially affects the information included in the relevant announcement, and all material assumptions and technical parameters underpinning the mineral resource estimates in the relevant announcement continue to apply and have not materially changed.





654 MMbbl's

3C 626 MMbbl's (SPE-PRMS) (recoverable @ 90%)



94 MMbbl's

2C 71MMbbl's (SPE-PRMS) (recoverable @ 90%)

2024 Scoping Study Highlights



Refer to ASX announcement dated 27 August 2024 and the following slide for further information. QEM confirms that it is not aware of any new information or data that materially affects the information included in the relevant announcement and that all material assumptions and technical parameters underpinning the forecast financial information and production target in the relevant announcement continue to apply and have not materially changed.



2024 Scoping Study Highlights

Key Outcomes of the Scoping Study:1

0	Post-tax NPV of AUD 1,106 M (8% discount rate), DCF-IRR of 16.3%, and a payback period of 5 years from the start of mining	0	Over V2O
0	Pre-production capital expenditure is estimated at approximately AUD 791M. ²		annu
0	Projected revenue over the life of mine from V2O5 sales is approximately	0	Appr
	11.5Bn AUD and approximately 10.1Bn AUD from sale of transport fuel (Total revenue 21.7Bn)		the a
0	30-year mine schedule with over 80% of the process plant feed is Indicated Resources	0	Ongo
0	Scheduled plant feed quantities of approximately 148.4M dmt (154.7 M wmt		of Al
	@ ~4% moisture) at an average of 0.27% V2O5 and 54.1 litres per tonne (L/t) (PRMS), and strip ratio of 5:1	0	Mine rova
0	Pit limit sensitivity analysis indicated the majority of the lease has economic ore and, therefore, the Project has significant potential to increase production or the life of the operation	0	Proje
0	Mine life of 30 years, assuming an ore production rate of 5.1 Mt (dry) (5.3 Mt wet) per year		GAUI

- (1) A sensitivity analysis across a range of +/-15% undertaken on product selling price, capital and operating costs, and product output indicates that the NPV remains positive for each analysis. Refer to ASX announcement dated 27 August 2024 for further information.
- (2) Excluding contingency costs and indirect costs such as owner's costs and EPCM. Inclusive of contingency costs and indirect costs, pre-production capital expenditure is estimated at AUD 1,096M.
- (3) Based on a projected V2O5 selling price of approximately USD11.56/Ib and exchange rate of AUD:USD 0.68. The projected selling price has been selected on the assumption that a premium is to be applied on the basis of the 99.5% grade of the V2O5 and with reference to the Vanitec Forecast and Vanadium Market Overview presented in July 2024 which projects the long-term average price of V2O5 to be USD12.26/lb. The transport fuel selling price of AUD 1.202/L (AUD 191.18/bbl) has been selected based on the 3-year average wholesale at the gate price for diesel ex. Brisbane (excluding excise and GST).



the LOM, an average production of 10,571 tpa (23.3Mlbs) 05 (99.5% grade) and 5,960 bbl/day (313 million litres per um) of transport fuel

roximately 7% of the produced transport fuel is to be provided freee to the mining contractor to undertake the mining work. Therefore, average transport fuel sold is 5,500 bbl/day (874,500 L/day) totalling million litres per annum

joing replacement and sustaining capital of AUD 598 M (over 30-year e life ~AUD 20 M per annum), resulting in a total capital expenditure UD 1,694 M (including contingency costs and indirect costs)

e cash operating costs average AUD 83.36/dmt plant feed (including lities, transport costs and contingency)

ected vanadium pentoxide (V2O5) selling price of approximately 011.56/lb and transport fuel at AUD 1.20/L (AUD 191.18/bbl) uding excise and GST3

In June 2023, the Queensland Government released the Queensland Critical Minerals Strategy. The Julia Creek/Richmond area has been identified as a Critical Minerals Zone in the Queensland Critical Minerals Strategy. The Julia Creek/Richmond area has significant vanadium resources with the potential to develop an important critical minerals industry for Queensland. There are currently seven known vanadium projects proposed in the Julia Creek/Richmond area at various stages of development.

- State Development and Public Works Organisation (Julia Creek–Richmond Critical Minerals Zone Water Delivery Options) Amendment Regulation 2023

Vanadium is classed as a **Critical Mineral** by the Australian Government. Vanadium is a 'strategic metal' when building a new energy economy. As a Critical Mineral, Vanadium is listed for priority development and investment.



Australia's Vanadium Deposits

QEM- Globally significant vanadium project with half of Queensland's total resource

Vanadium

	Critical Mineral			
(C).	World Ranking			
	Resources 2 (31%)			
	Production 0 (0%)			
	Operating Mines 0			
(P)	Production 0 kt V (0%)			
\$	Export Income \$0 (0%)			
0000	EDR 8,110 kt V (^ 10%)			
\bigcirc	Ore Reserves 2,948 kt V (▲ 75%)			

- Soll





Vanadium Uses

Vanadium - The Versatile Element

Improves Tensile Steel Strength

Most widely used alloy to strengthen steel (HSLA.) in construction, automotive, aerospace, rail, shipping, tools, drilling and more.





High strength-to-weight ratio makes vanadium a critical component in the automotive industries. In 85% of all vehicles by 2025. Henry Ford first used in Model – T.



Lowers CO₂ emissions

In steel-Lowers CO₂ emissions by 185 million metric tons annually.

- Texas A&M University



Supports Fuel Efficiency



Vanadium Uses

Vanadium - The Versatile Element



Renewable **Energy Storage**

Vanadium Flow Batteries (VFB) are the preferred solution for large scale energy storage globally. Produces 78% less CO₂ than Li-B - Cradle-to-gate, with recycling and renewables.

Energy storage is the key to unlocking Queensland's renewable energy revolution

- Queensland Treasurer and Minister for Trade and Investment Cameron Dick

Vanadium alloys are naturally durable to extreme temperature and corrosion, making it irreplaceable in the aerospace industry. Suitable for hydrogen storage and pipes (reduces failure due to hydrogen embrittlement).



Chemical and Catalysts

Catalyst in sulphuric acid production, 'Smart Glass", ceramics, dyes, cathodes for lithium batteries.

Durability and Weather Resistance



Vanadium Global Production

Market Set for growth

Market expected to reach \$2.36 Billion

in 2025 at CAGR of 10.2%

VFB demand expected to equate

 $\sim 25^{\%}$ of vanadium market

by 2040 currently only ~ 4% (CRU- 17 Nov 2022)

Global Production 2022

118,500 MTV*

China, Russia, Brazil, South Africa, US

Australia holds

31% of undeveloped

global reserves BUT has no domestic production – YET!

Vanadium Listed as

Critical Mineral

in Aust, US, EU and Japan

Global Vanadium demand

200% Increase by 2050

5th highest growth market in critical minerals according to the World Bank- Minerals for Climate Action

* MTV is Metric Tonne Unit of Vanadium

V IMF predicts 8-fold surge in Vanadium Demand by 2050

A critical surge

Global demand for energy transition minerals will increase significantly in the coming decades.



Ratio of 2050 to 2022 demand under a net zero emissions scenario

Sources: International Energy Agency (IEA) World Energy Outlook (2023); and IMF staff calculations.

Note: The chart shows the IEA's projected increase in mineral demand (in quantity terms) broken down by sector as a ratio of 2050 to 2022 demand, under the IEA's net zero emissions transition scenario. REE = Rare Earth Elements; PGMs = Platinum Group Metals.

IMF



QEM Lithium 3,000 - 10,000+ (5 - 7 Years) (\mathbf{X}) (\mathbf{X}) (\mathbf{X}) (\mathbf{X}) (\mathbf{X}) (\mathbf{X}) \mathbf{X} (\checkmark) (\mathbf{X})

VFB Global Installations

Approx. 300 large scale VFB projects worldwide under construction or operational (Vanitec 2024)



Source: Vanitec.



QEM Limited: Full Member of Vanitec since 2016

The QEM Board draws upon decades of experience in the resources sector ensuring that the Company is best placed to capitalise on the vast opportunities afforded from the **Julia Creek Project.**



Experienced Team

Led by a team of successful and invested professionals, with proven record of project development



Tim Wall

Chair

- Senior Executive of multiple 0 ASX 100 companies
- Director and Principle of TJW 0 Energy, Senior Advisor ANZ – Oil and Gas at DSS+
- Former MD BP Refinery (Bulwer) 0
- Former President Global 0 Manufacturing at Incitec Pivot Ltd (ASX:IPL)



Daniel Harris

Non - Executive Director

- Over 40 years of global vanadium experience
- Former Director of US Vanadium \bigcirc LLC (USA), Currently, Australian Vanadium Ltd (ASX: AVL), Flinders Mines (ASX:FMS)
- Former CEO positions with 0 Atlantic (ASX: ATI): Atlas Iron (ASX: AGO); ex VP EVRAZ plc. -Vanadium Assets; ex MD Vametco Alloys



Gavin Loyden Founder and Managing Director

- **QEM Founder**
- Identified & acquired QEM's Julia Creek resource
- Over 12 years experience in mining industry
- Responsible for QEM's project development along with renewables project development and sale



Tony Pearson

Non - Executive Director

- Chair of Possability Group Ltd 0 & ASX-listed Cellnet Group Ltd; Non-Executive Director of ASX listed Xanadu Mines & not-forprofit Communicare
- Global investment and finance 0 experience - former MD of HSBC
- Strong ESG & critical minerals 0 credentials



David Fitch*

Non - Executive Director

- President & CEO Class1 Nickel (Canada) (CSE:NICO)
- Director of BioCentral 0 Laboratories Ltd
- QEM's largest shareholder 0
- Former Chief Operating Officer of the Fitch Group

Corporate Snapshot •

QEM Limited

Cash at 30/06/24

\$1.645m

6,350,000

 Shares on Issue
 Share Price 25/08/24

 151.4m
 \$0.130

Options on issue 250k Exp 01/05/25 @ \$0.20 500k Exp 01/03/26 @ \$0.20 5.6m Exp 12/08/25 @ **\$0.345**

0.13 aud



23 Aug, 04:00 pm AEST • Disclaimer



\$19.70m

Market Cap (25/08/24)



72.7%

Top 20

Shareholders



Director Support

Management alignment with public shareholders

27.3%

Our mission is to operate in the **safest** and **cleanest** way possible while providing strong and sustained value to our shareholders.



QEM and UQ produce first vanadium pentoxide 99.93% from Queensland industrial waste

- QEM partnered with The University of Queensland (UQ) to produce the first high purity vanadium pentoxide (V_2O_5) from an industrial waste stream in Australia.
- QEM engaged UQ in this Circular Economy project to upcycle spent vanadium-bearing catalyst from Queensland industrial waste (Sourced from Sun Metals Corporation's Townsville Zinc Refinery and Incitec Pivot's Mount Isa Plant).
- UQ conducted a small-scale laboratory demonstration of all the processing steps in recycling the vanadium catalyst into a high purity vanadium pentoxide product, repeatedly producing a **99.93**% product, suitable for VFBs.
- UQ is now optimising the processing conditions for subsequent piloting, as well as producing larger samples of V₂O₅ for potential future marketing purposes.
- This research and development project is part of the Trailblazer Universities Program for Resources Technology and Critical Minerals.







i waste italyst)

Crushed catalyst



Acid leaching



Leachate from acid tests - Ozone sparging at 0, 20, and 35 minutes



Dried ammonium metavanadate

Calcined V2O5

Vanadium Pentoxide extraction from spent catalyst : QEM ASX Announcement - 22 February 2024

Strong Government Support

A framework of support across the Value Chain





Queensland Government













Australian Government

Department of Industry, Science and Resources

Critical Minerals Office





National Battery Testing Centre

Queensland Critical Minerals and Battery Technology Fund (QCMBTF)

QEM's ESG UPDATE

Highlights and achievements H1 2024:

- 10th consecutive quarter that QEM is monitoring and disclosing the Company's ESG progress and initiatives via Socialsuite's ESG Go platform.
- QEM's investment in our Julia Creek community – sponsored Dirt N Dust Festival & Saxby Roundup.
- QEM's water monitoring program in Julia Creek continued.
- QEM became a WISER (Women In Sustainable Energy & Resources) Inc. Bronze Partner & sponsored IWD Event.
- Completed inaugural stakeholder Materiality Assessment with updated ESG focus areas (see diagram opposite).
- Completed first full year of offsetting unavoidable GHG emissions through verified carbon credits.
- Updated ESG website dashboard.

QEM's ESG Focus Areas*



*QEM has adopted the WEF Stakeholder Capitalism Metrics ESG Framework

Right Project at Right Time

- Multi Commodity Exposure in high growth markets
- Globally significant Critical Minerals opportunity
- Domestic Fuel Security
- Helping to meet Australia's energy transition targets





- Unique proprietary extraction technology
- Low market capitalization
- Strong government support
- **Tier 1** Mining Jurisdiction

Development Partners

QEM is proud to partner with world-class institutions and companies









Fulcrum3D WIND SOLAR FUTURES





Get in touch:

Gavin Loyden Managing Director gavin@qldem.com.au

Joanne Bergamin Director, Communications & Sustainability jbergamin@qldem.com.au

Call: + 61 7 5646 9553

Visit: qldem.com.au





Appendix A:

Julia Creek Resource



Julia Creek - V₂O₅ and Oil Yield





The estimation methodology used is deterministic. The estimation is based on grids constructed for unit structure, thickness and oil grade parameters

Cross Section the Julia Creek Deposit



Julia Creek Resource Overview 2024 qldem.com.au JORC (2012) Vanadium & Other Metals

Resource Class	Strat Unit	Mass (Mt)	Average Thickness (m)	Insitu Density (gm/cc)	V ₂ O ₅ (Wt%)	Cu (ppm)	Mo (ppm)	Ni (ppm)	Zn (ppm)	Al (ppm)
	CQLA	167	3.17	2.40	0.24					
_	CQLB	128	2.58	2.28	0.30					
Indicated	OSU	81	1.92	1.95	0.31					
-	OSL	84	2.02	1.93	0.32					
Total Indicated		461		2.20	0.28					
	CQLA	697	2.46	2.42	0.23	293	137	120	801	2,943
	CQLB	826	3.13	2.23	0.39	448	226	199	1,165	5,555
Inferred	OSU	432	1.84	1.97	0.31	380	152	188	1,090	57,843
	OSL	451	1.95	1.95	0.29	346	133	170	1,040	58,502
Total Inferred		2,406		2.18	0.31					
Total		2,870		2.19	0.31					

Table 1: Summary of JORC Mineral Resource Estimate 9 February 2024

Note:

The estimate uses a minimum cut-off of 0.2% V2O5 for the oil shale units, and minimum cut-off of 0.15% V2O5 for the Coquina units.

1. The total resource tonnage reported is rounded to reflect the relative uncertainty in the estimate categories and component horizons may not sum correctly.



SPE-PRMS Petroleum Resource - Petroleum In Place (PIIP) @ 90% recovery

Resource Class	Strat Unit	Mass (Mt)	Average Thickness (m)	Total Moisture (Wt%)	Oil Yield (L/tonne)	Oil Yield LTOM	MMBbls (in-situ PIIP)	MMBbls Recoverable
	CQLB	903	2.5	6.8	53.1	55.0	254	228
3C Contingent	OSU	621	1.8	6.8	75.9	79.0	248	223
	OSL	609	1.9	6.8	70.7	76.7	224	202
3C Total / Ave		2134		6.8	66.6	70.2	726	654
	CQLB	107	2.1	2.8	50.9	52.3	33	29
2C Contingent	OSU	76	1.9	13.3	78.7	81.4	36	32
	OSL	81	2.0	11.8	74.8	76.7	36	33
2C Total / Ave		264		9.3	68.1	70.1	105	94
	CQLB	7	1.9	2.8	49.0	49.6	1.9	1.8
1C Contingent	OSU	5	1.9	13.3	77.2	78.7	2.5	2.2
	OSL	6	2.1	11.8	74.6	76.2	2.6	2.3
1C Total / Ave		18		9.3	66.9	68.1	7.0	6.3
Total / Ave								726

Table 2: Summary of SPE-PRMS Oil Resource estimate 9 February 2024

- 1. The total resource tonnage reported is rounded to reflect the relative uncertainty in the estimate and component horizons may not sum correctly.
- 2. The 3C petroleum resource reported includes the 1C and 2C volumes, ie. They are cumulative not incremental as per the PRMS 2018 guidelines
- 3. An economic cut-off of 40L/tonne was applied prior to the calculation; it must be noted that the CQU and CQLA did not meet the >40l/tonne for inclusion in the calculation. The 1C, 2C and 3C volumes reported here are unrisked.



31