



Advancing the **Julia Creek** Project

Corporate Presentation June 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."

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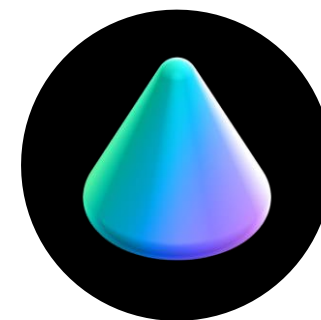
Competent Persons and Qualified Estimator Statements

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 Vanadium and Oil Shale Project**, a unique world class critical minerals resource.

Julia Creek Project

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



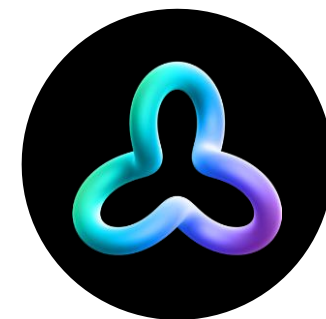
Multi Commodity

Vanadium
Transport Fuel



Sovereign Supply

Fuel Security
High Purity V_2O_5



Unique Process

Renewable Power
Green Hydrogen



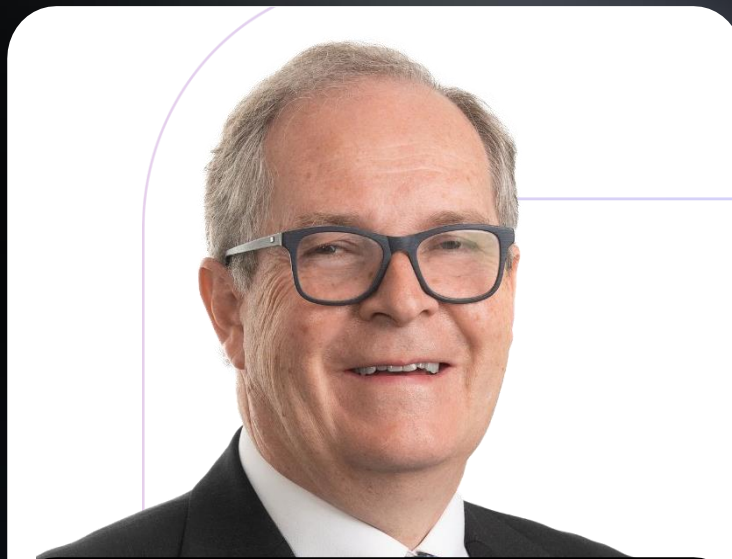
Globally Significant

Vanadium Resource
Critical Mineral

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



Daniel Harris

Non - Executive Director

- Over 40 years of global vanadium experience
- Former Director of US Vanadium LLC (USA), Australian Vanadium Ltd (ASX: AVL), Flinders Mines (ASX:FMS)
- Former CEO positions with 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 & ASX-listed Cellnet Group Ltd; Non-Executive Director of ASX listed Xanadu Mines & not-for-profit Communicare
- Global investment and finance experience - former MD of HSBC
- Strong ESG & critical minerals credentials



David Fitch

Non - Executive Director

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

Corporate Snapshot

QEM Limited

Shares on Issue

151.4m

Share Price 10/06/24

\$0.150

Cash at 30/03/24

\$3.175m

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

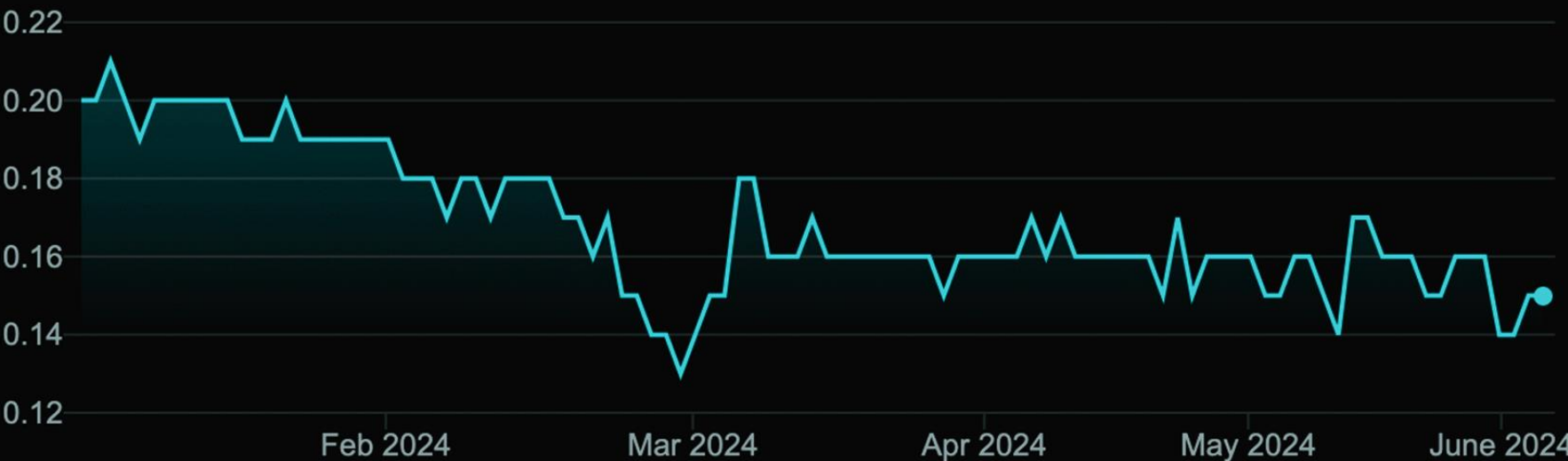
6,350,000

0.15 AUD

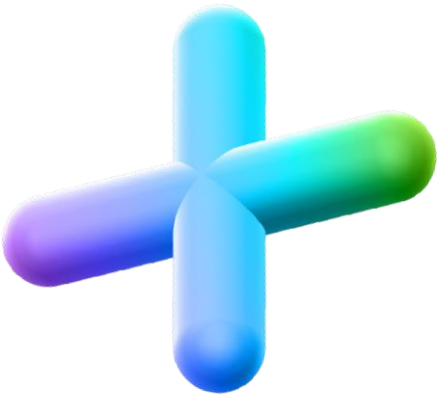
-0.05 (-25.00%) ↓ year to date

7 June, 4:10 pm AEST • Disclaimer

1D 5D 1M 6M YTD 1Y 5Y Max



Open	0.14	Mkt cap	22.71M	52-wk high	0.23
High	0.15	P/E ratio	-	52-wk low	0.13
Low	0.14	Div yield	-		



\$22.70m

Market Cap (10/06/24)



Director Support

Management alignment with public shareholders

72.7%

Top 20 Shareholders

27.3%

The background of the slide is a dark, monochromatic image of a complex molecular or atomic structure. It features numerous black spheres of varying sizes, representing atoms, connected by thin, dark lines representing chemical bonds. The structure is dense and intricate, with many branches and loops, creating a sense of depth and complexity. The lighting is dramatic, with highlights on the spheres that give them a three-dimensional appearance.

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

World Ranking

Resources
2 (31%)

Production
0 (0%)

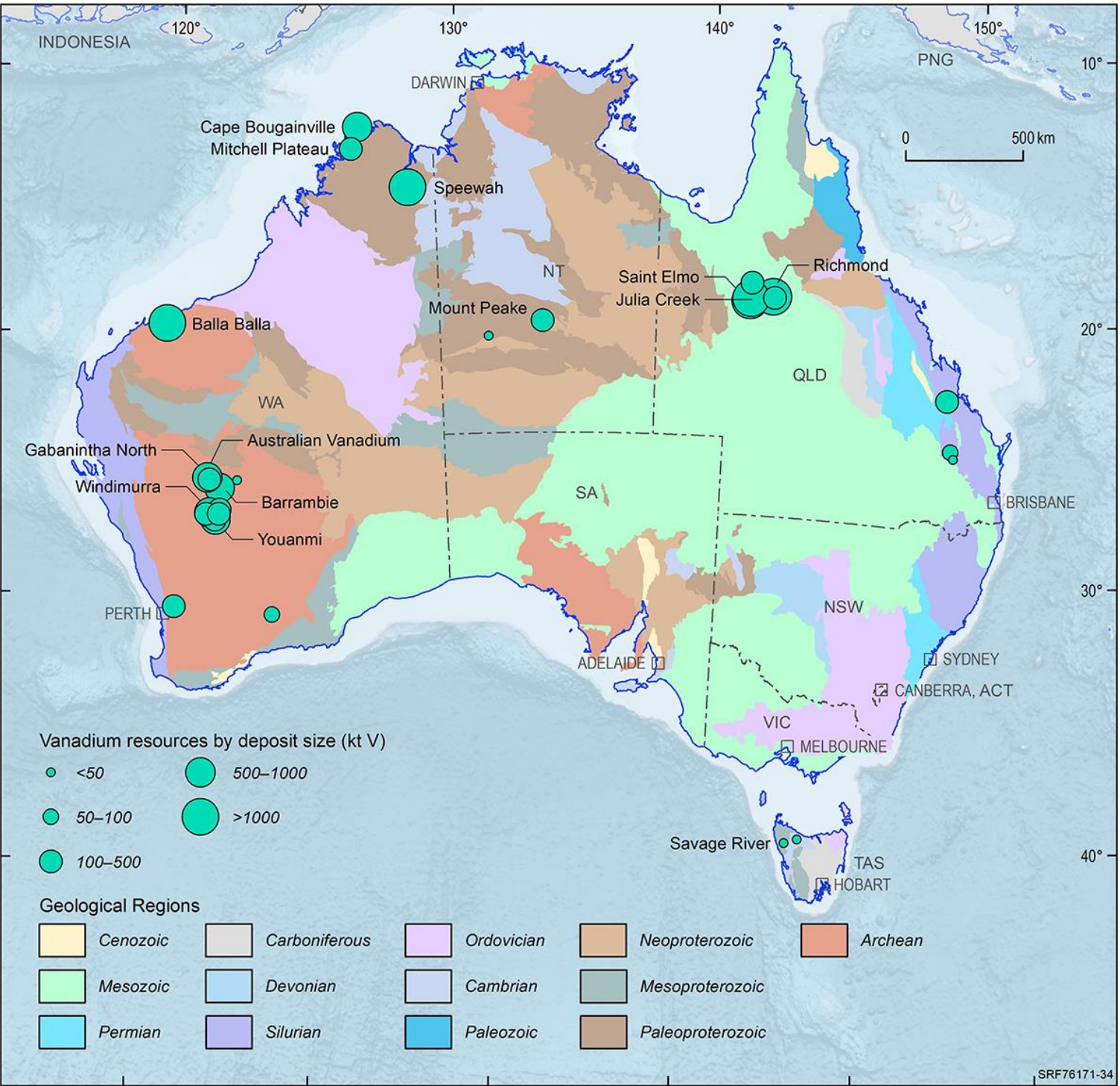
Operating Mines
0

Production
0 kt V (0%)

Export Income
\$0 (0%)

EDR
8,110 kt V (▲ 10%)

Ore Reserves
2,948 kt V (▲ 75%)



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.



Lowers CO₂ emissions

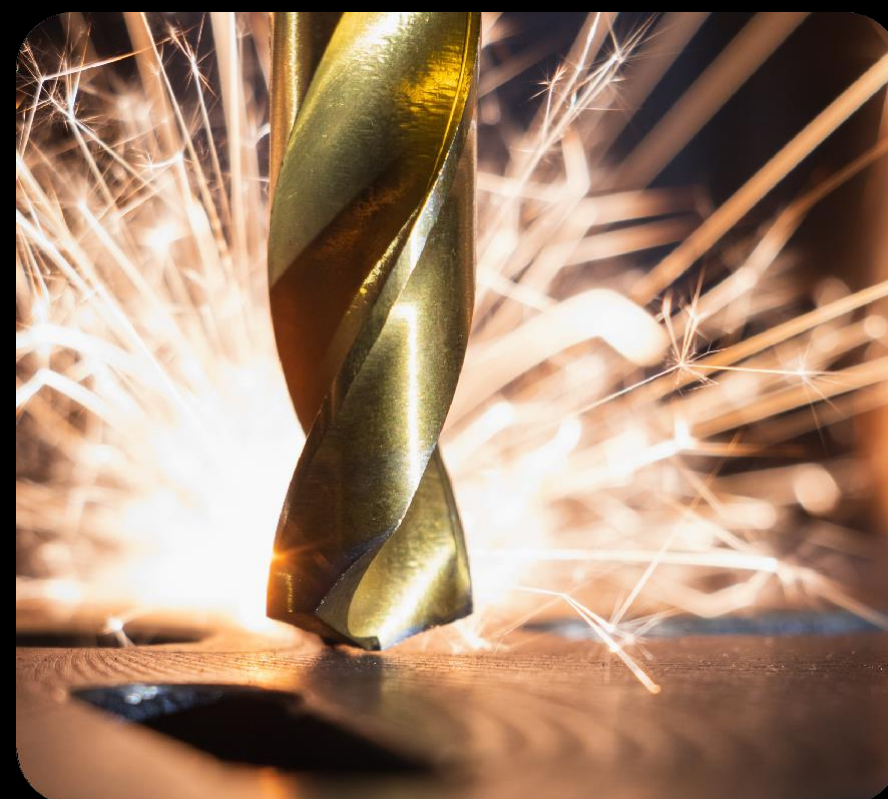
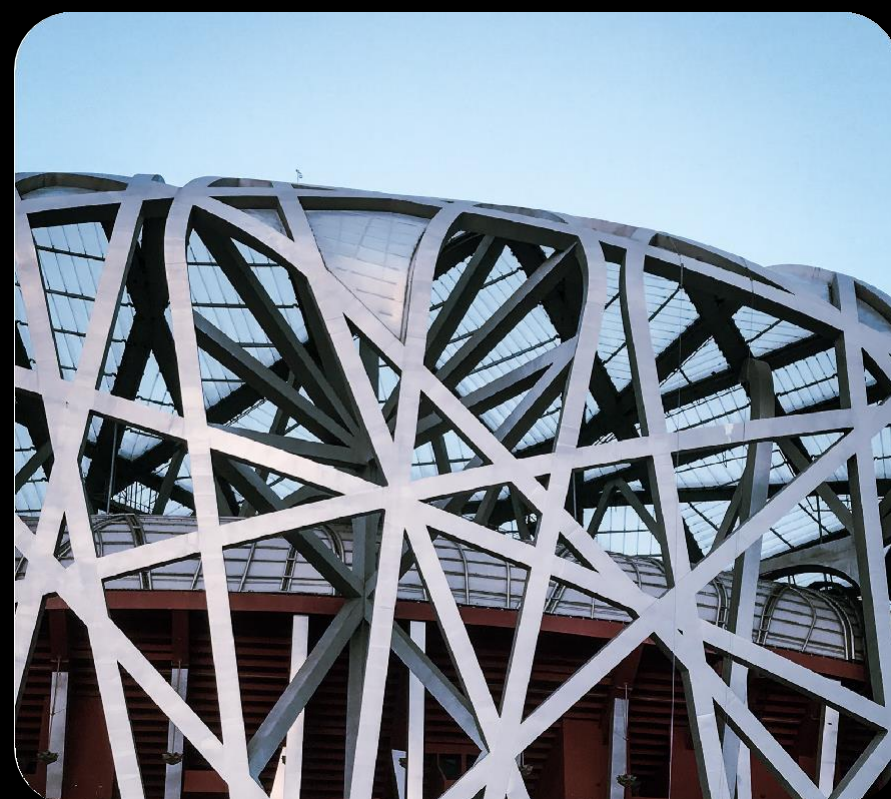
In steel-Lowers CO₂ emissions by 185 million metric tons annually.

- Texas A&M University



Supports Fuel Efficiency

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.



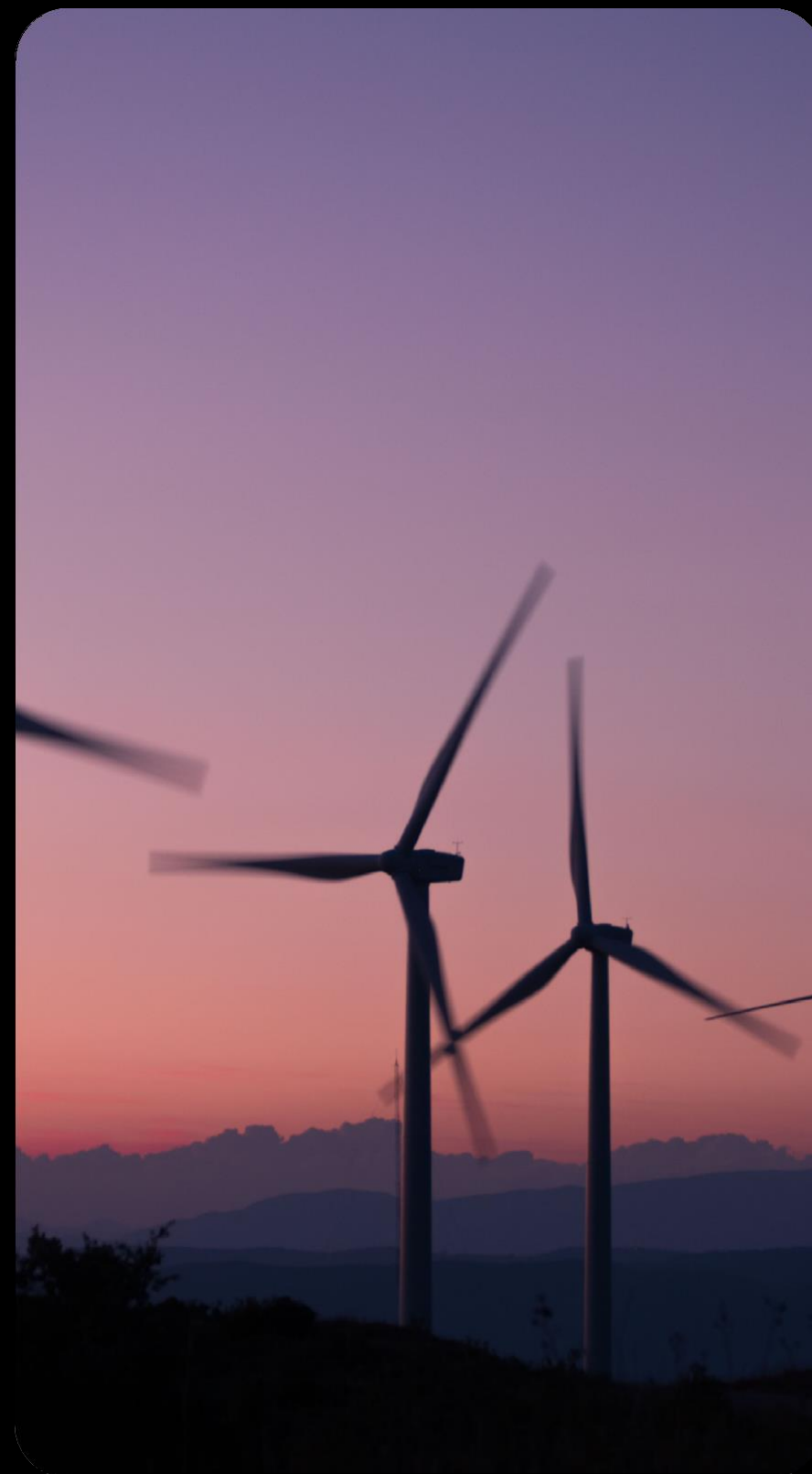
Vanadium Uses

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.



Chemical and Catalysts

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

Durability and Weather Resistance

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).



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

~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

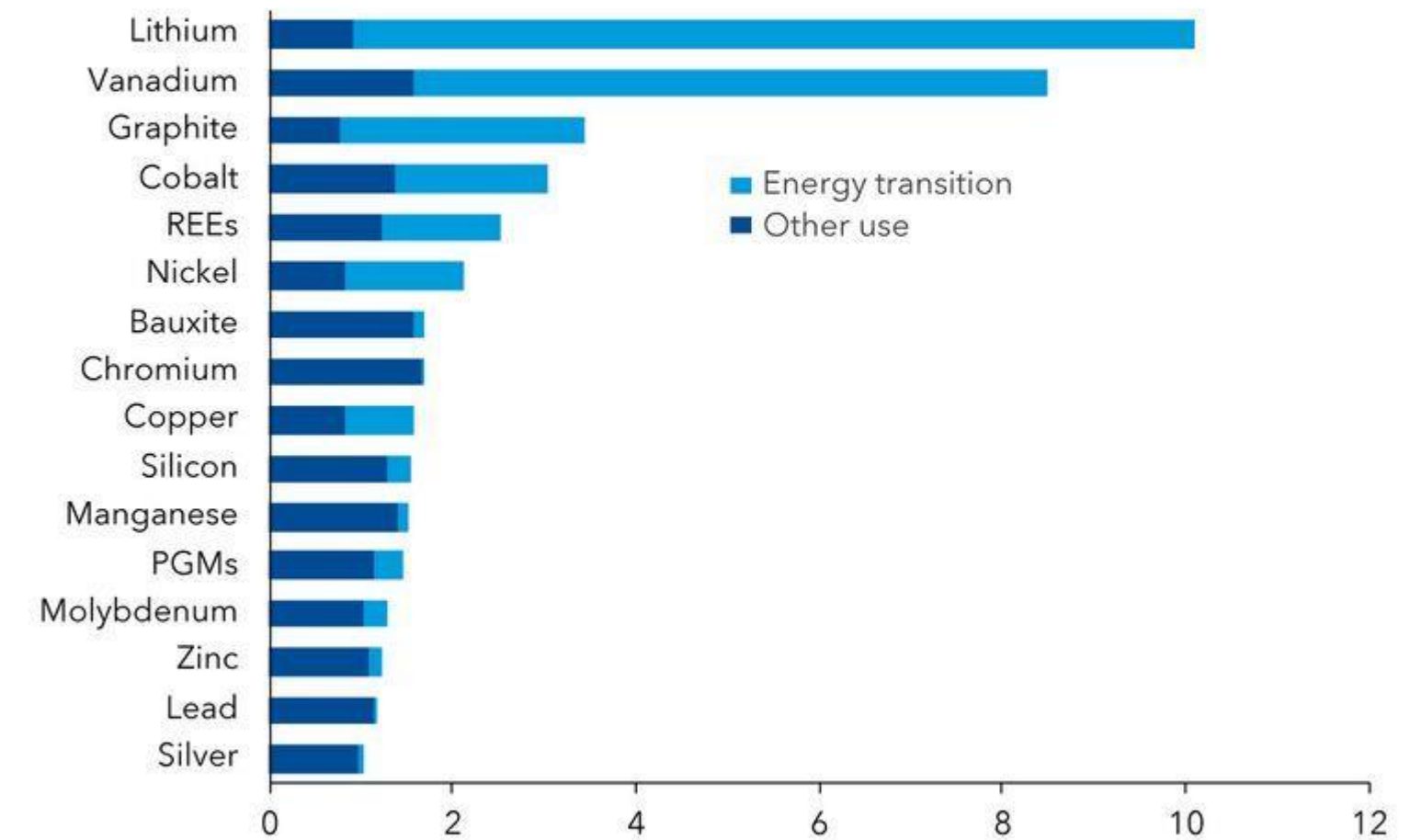


IMF predicts 8-fold surge in Vanadium Demand by 2050

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.

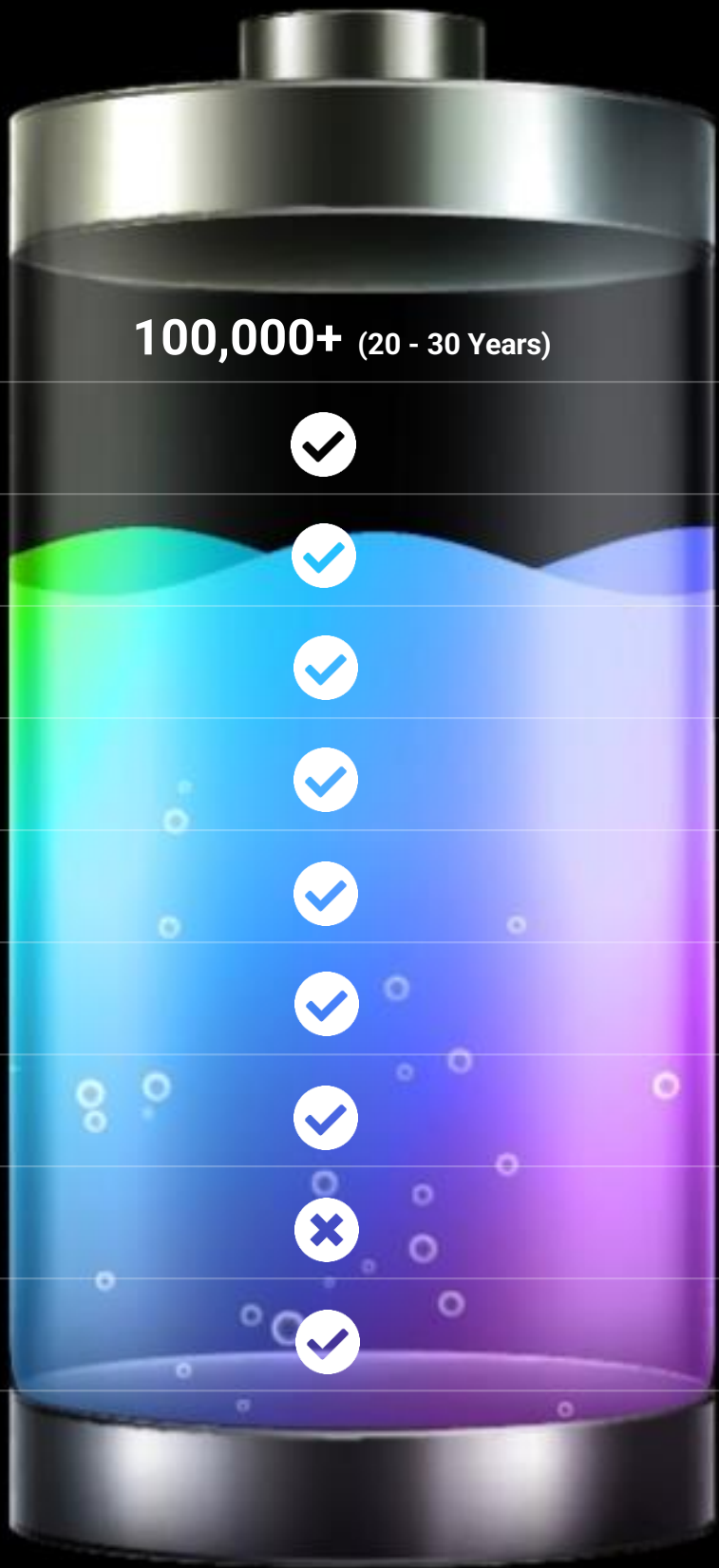
IMF

Renewable Storage

Building a Renewable Future with Vanadium Flow Batteries (VFB)



Vanadium



LONG ASSET LIFE - Number of Cycles

Low Self Discharge (Stays Charged)

Long Duration Energy Storage (LDES 4hr+)

Highly Expandable

SAFETY – Non Flammable, non Toxic.

Charges and Discharges Simultaneously

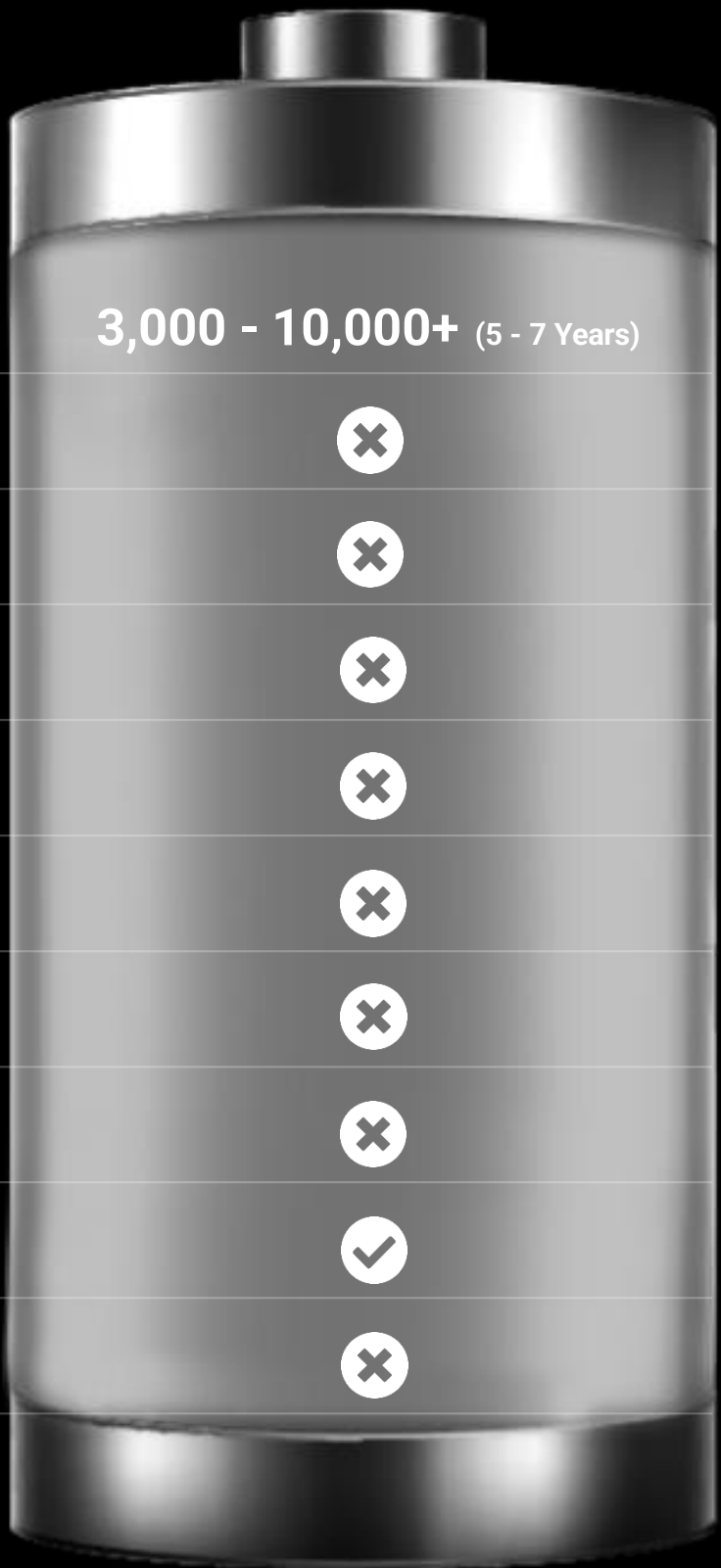
COST - Lower Operating Cost (LCOS)

Suitable for Connection to Power Grid

Small Footprint

Can be Completely Recycled

Lithium



LONG ASSET LIFE - Number of Cycles

Low Self Discharge (Stays Charged)

Long Duration Energy Storage (LDES 4hr+)

Highly Expandable

SAFETY – Non Flammable, non Toxic.

Charges and Discharges Simultaneously

COST - Lower Operating Cost (LCOS)

Suitable for Connection to Power Grid

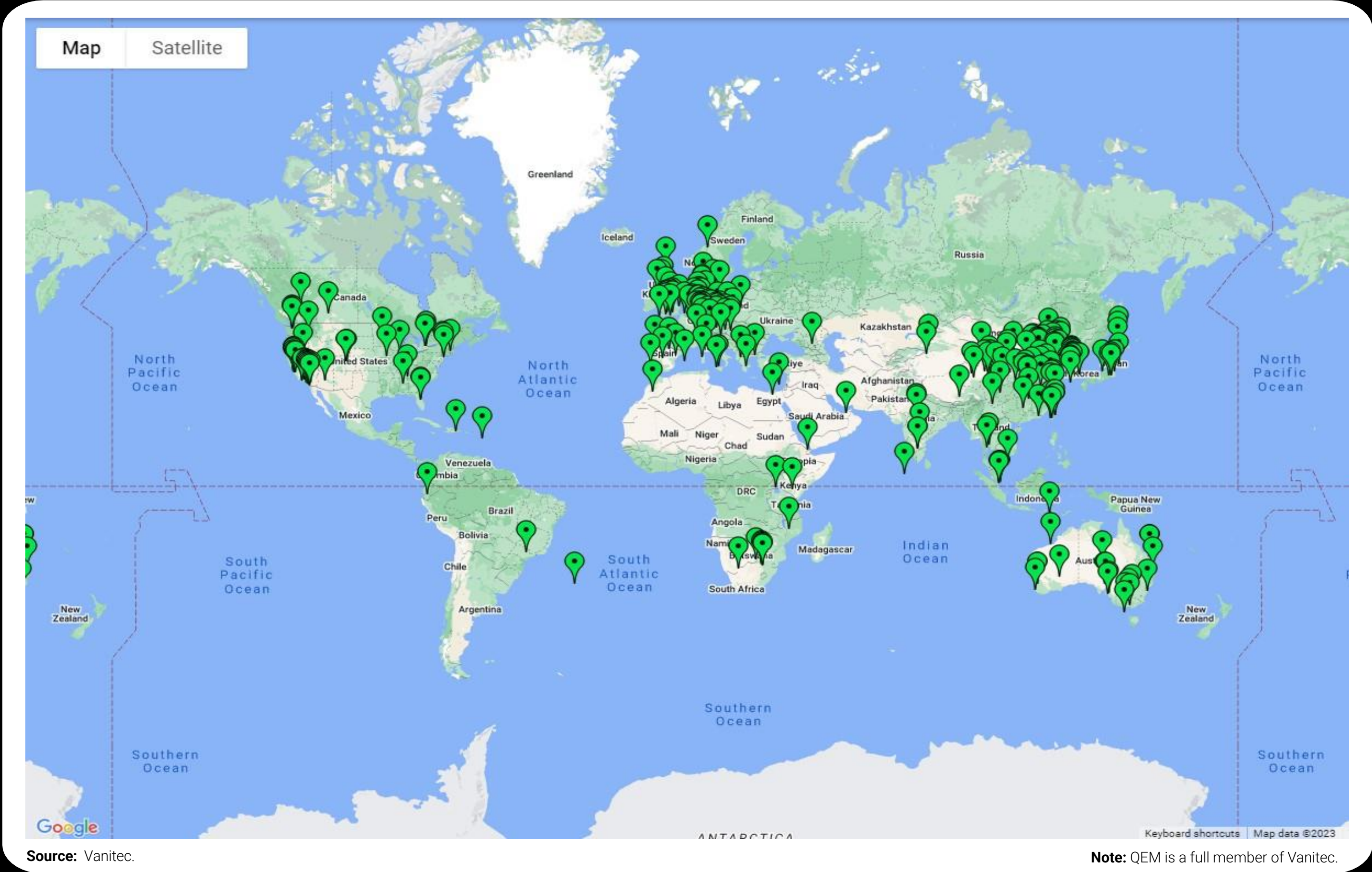
Small Footprint

Can be Completely Recycled

Source: energyandcapital.com

VFB Global Installations

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

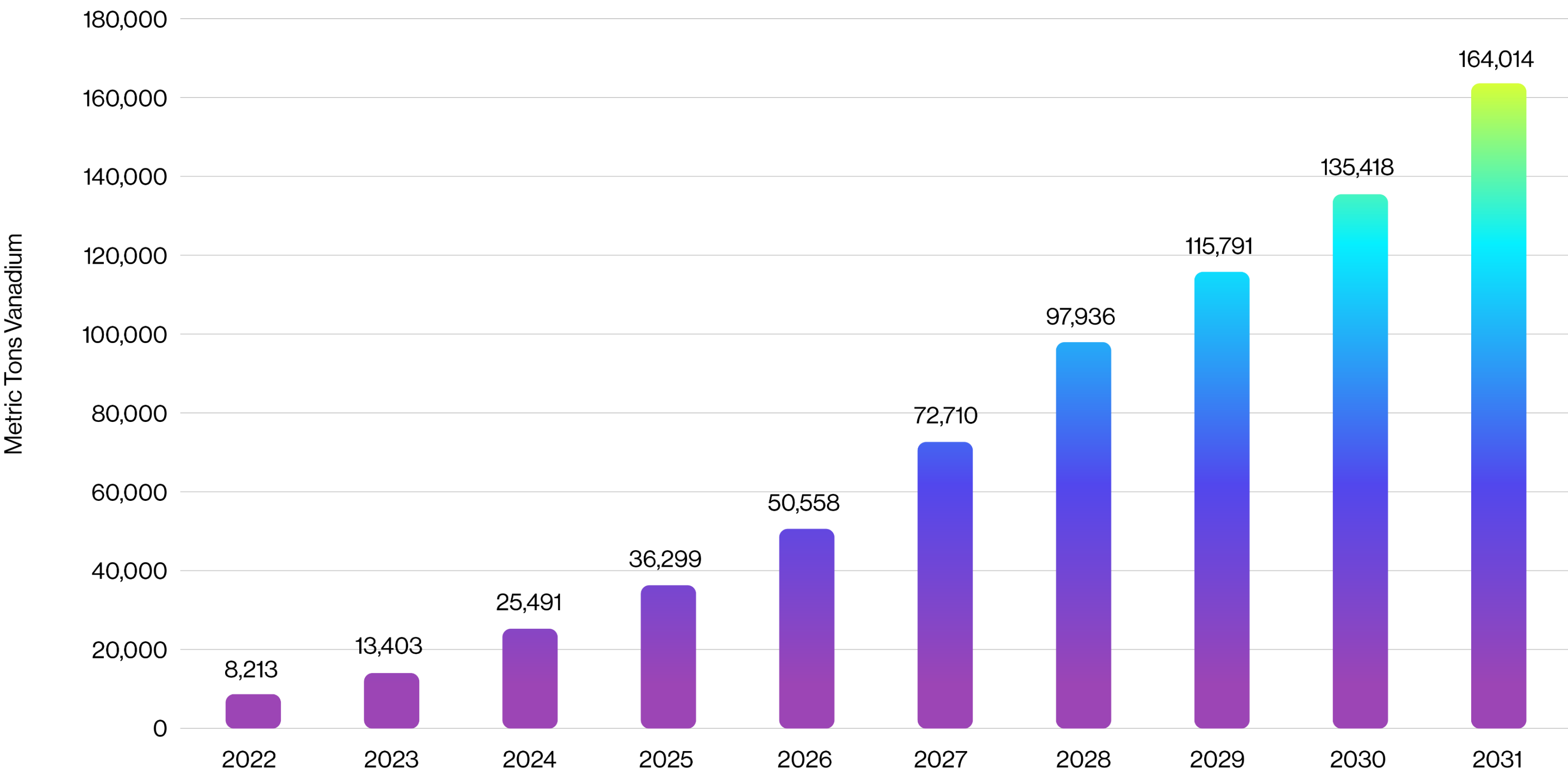


Source: Vanitec.

Note: QEM is a full member of Vanitec.

VRB Market Forecasts

Vanadium for VRFB forecast to grow at an average compound rate of 41% YOY to 2031. World Bank expects 173% increase in global V demand by 2050.



Source: Guidehouse Insights: White Paper Identifying Market Opportunities and Enablers Q2 2022, for Vanitec.

Note: QEM is a full member of Vanitec.

Fuel Security

Running on Empty

- Fuel imports at **93%**, adding **\$30B** to Australia's trade deficit
- Australia now highly exposed to supply shock
- Australia's obligation as a member of the International Energy Agency (IEA) – Minimum 90 days supply
- COVID-19 has further exposed Australia's lack of resilience in this area



We consider this an opportunity!

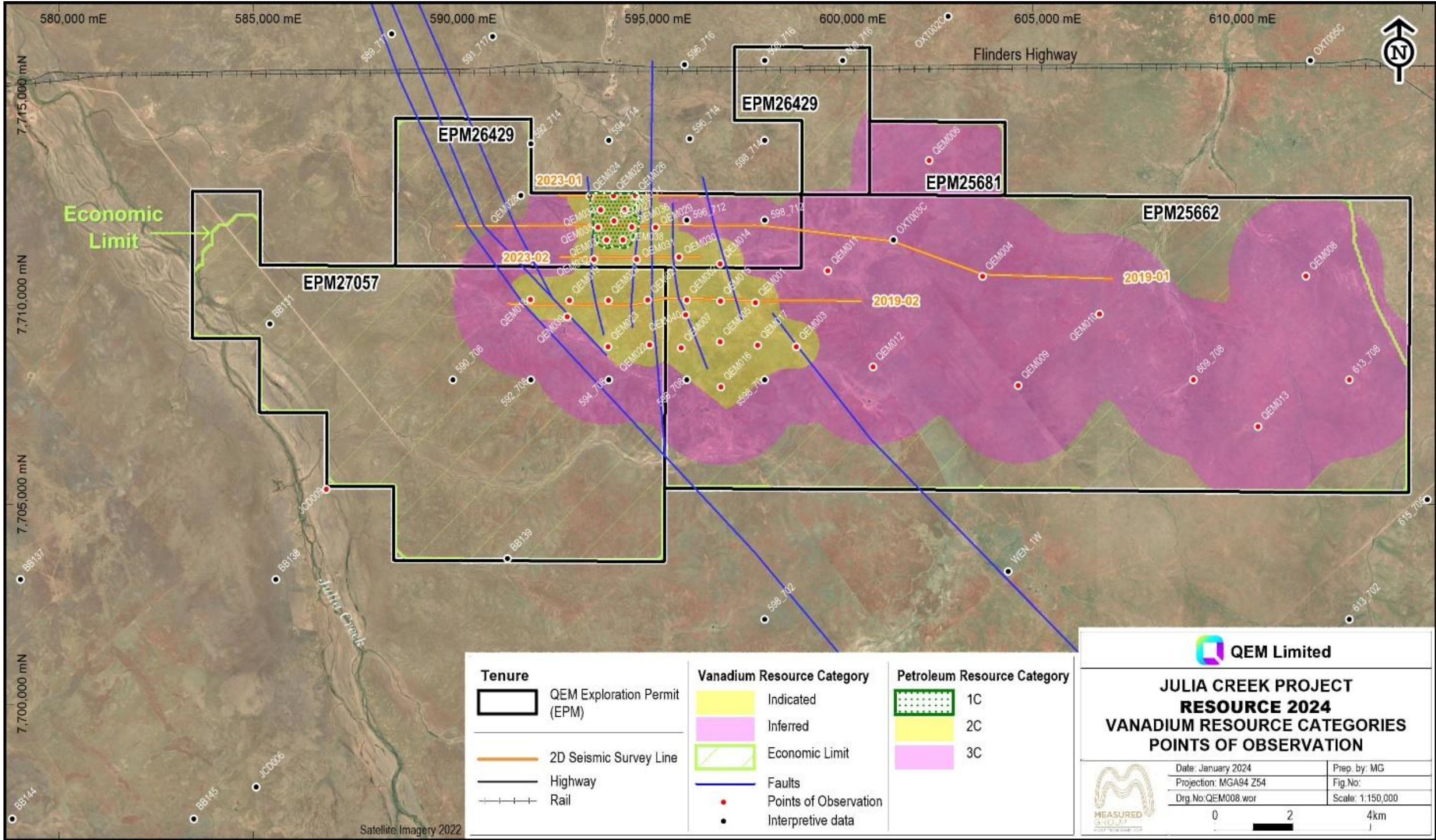


Located in a Tier 1 mining jurisdiction,
QEM aims to develop Australia's
Critical Minerals Resources in
Queensland's North West Minerals Province.



Julia Creek Project-2023 Exploration campaign

12 holes (620m) completed. 2 additional seismic lines
Update to JORC Report announced March 6 2024



*Indicative only

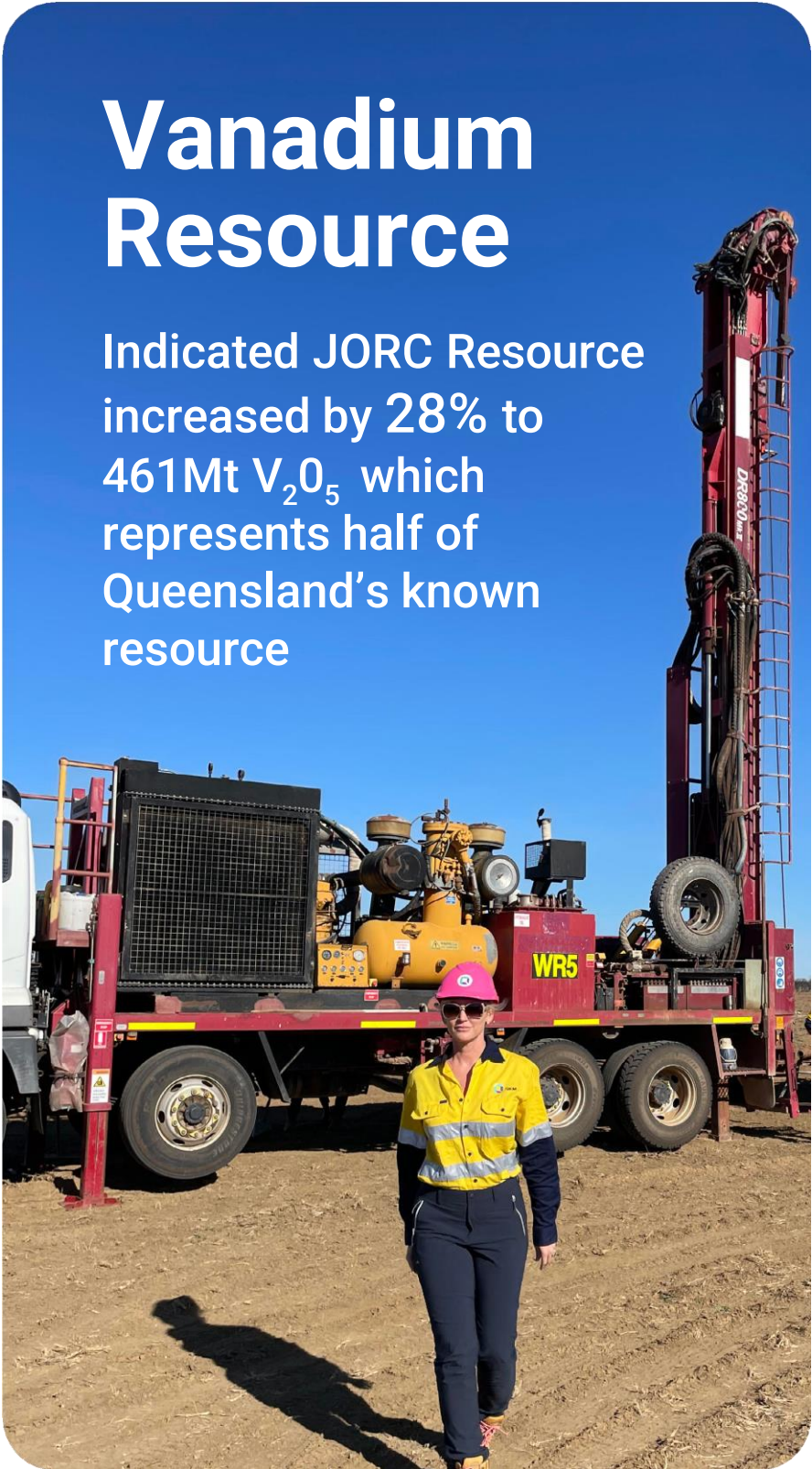


Core sample
33m
Transition
CQL-OS 2023

2024 Update - JORC and SPE-PRMS Resources



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



Vanadium Resource

Indicated JORC Resource increased by 28% to 461Mt V_2O_5 which represents half of Queensland's known resource



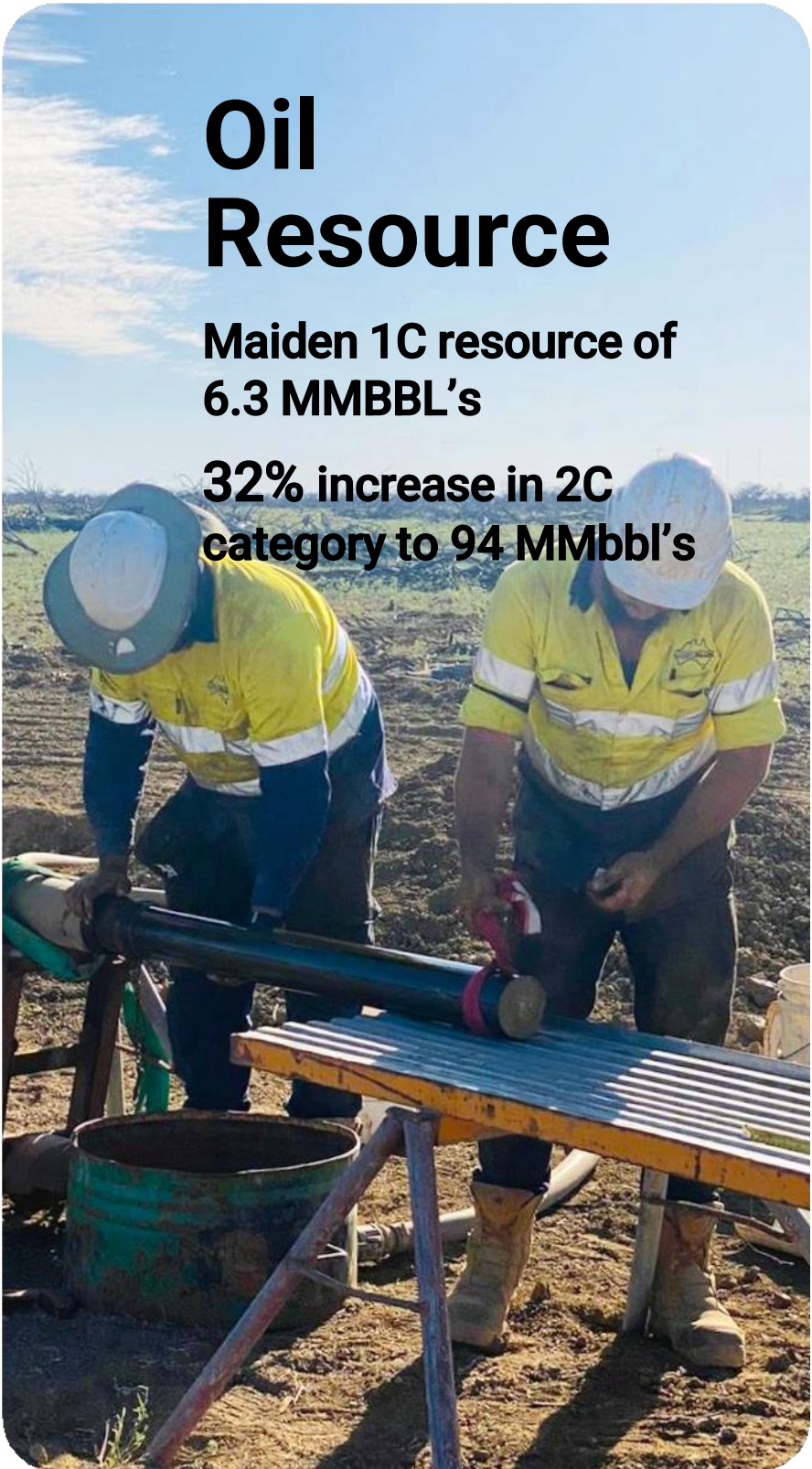
2,870 Mt

Inferred @ Ave V_2O_5 ore content of 0.31%



461 Mt

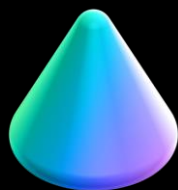
Indicated @ Ave V_2O_5 ore content of 0.29%



Oil Resource

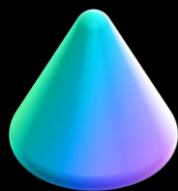
Maiden 1C resource of 6.3 MMBBL's

32% increase in 2C category to 94 MMbbl's



654 MMbbl's

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



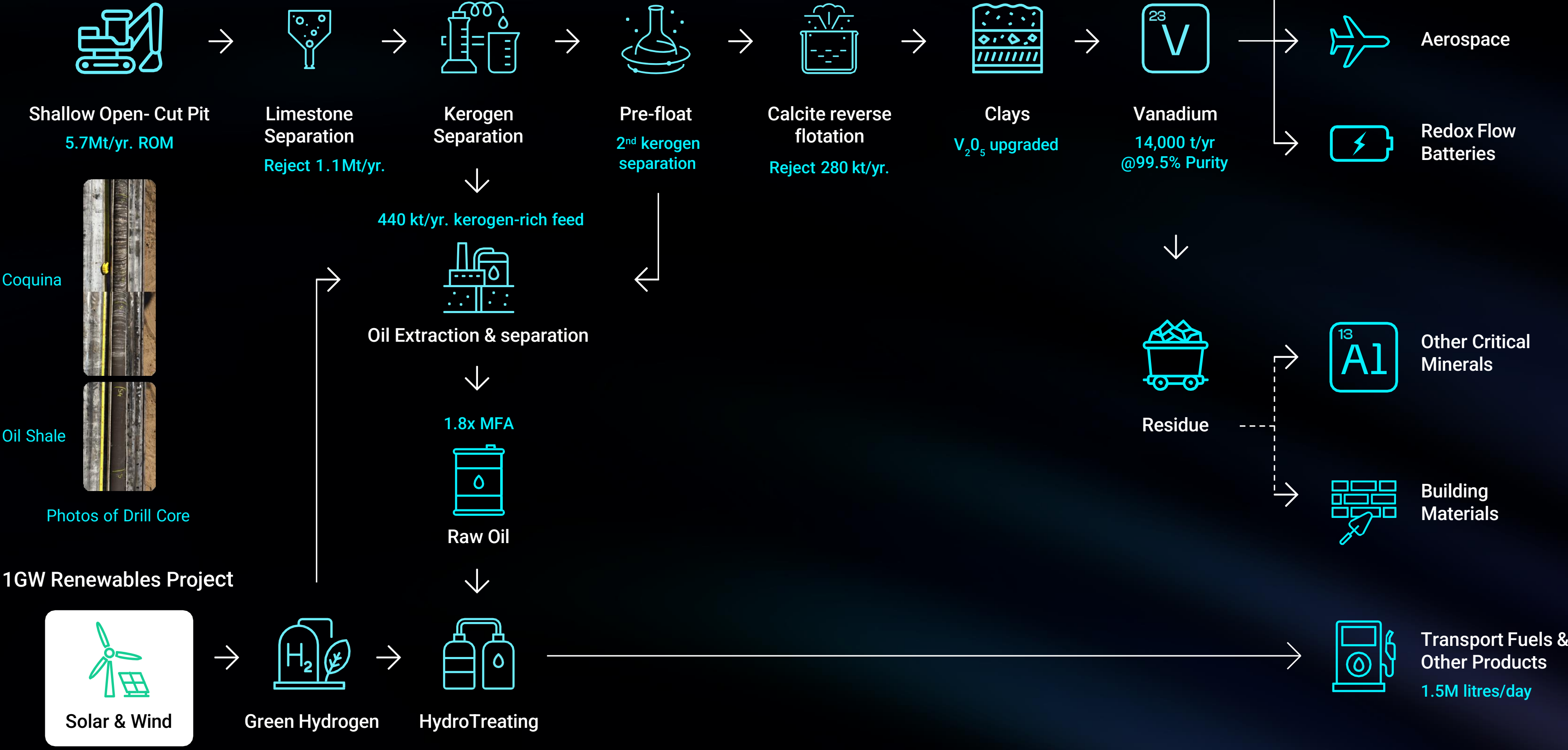
94 MMbbl's

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

QEM can efficiently reap the rewards of multiple commodities while only having to mine once. This offers potential to enhance margins and **drive long-term shareholder value.**

Vanadium and Oil Shale Project

JCP Scoping Study Concept Design



1GW Renewables Project



Solar & Wind



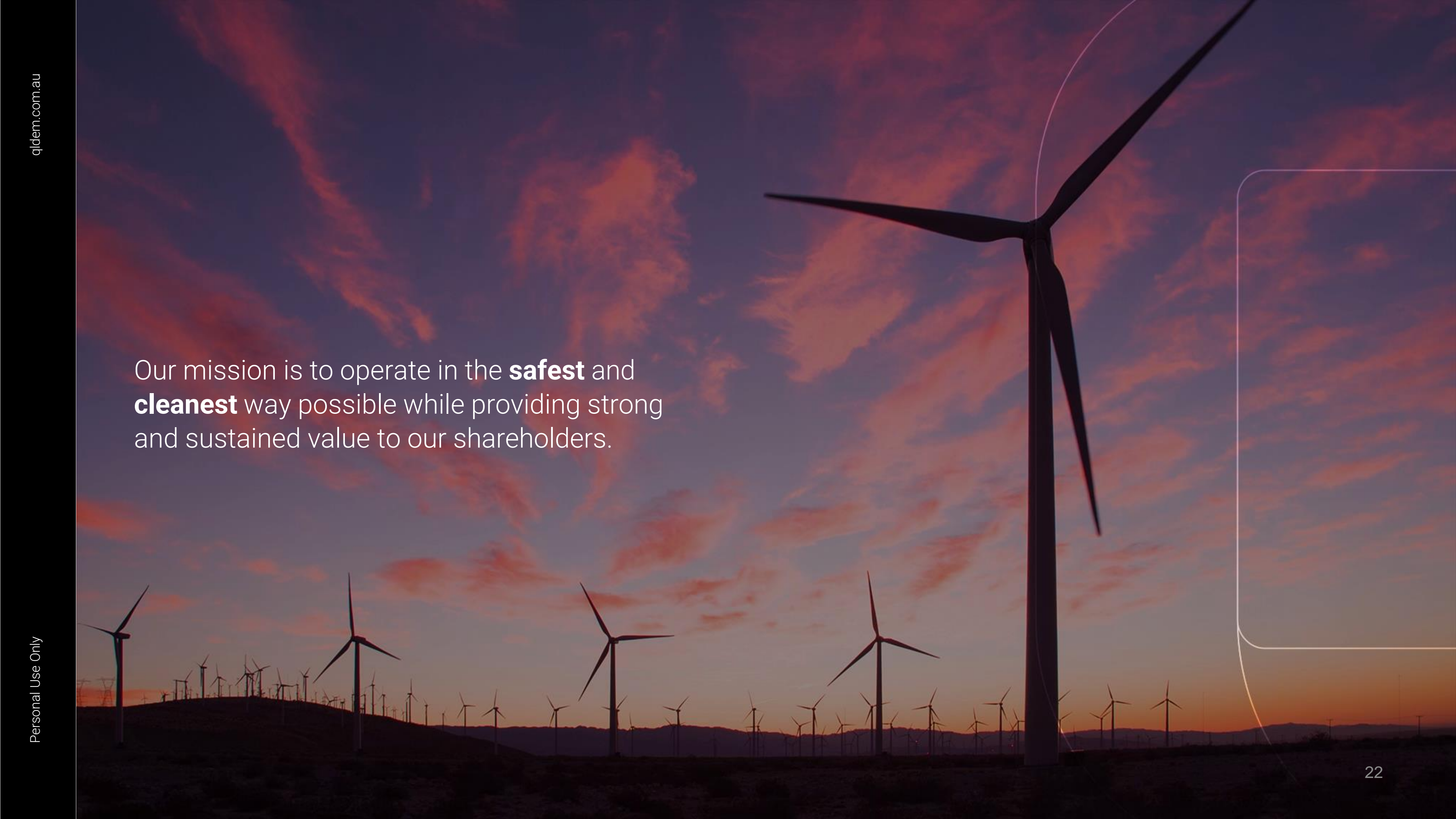
Green Hydrogen



HydroTreating



Transport Fuels & Other Products
1.5M litres/day

A large-scale photograph of a wind farm at sunset. The sky is a mix of deep blue and vibrant orange-red, with wispy clouds catching the low light. In the foreground, a large wind turbine is silhouetted against the sky, its three blades clearly visible. Behind it, a long line of smaller wind turbines stretches across a dark, rolling landscape. The overall mood is serene and emphasizes clean energy.

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

Renewable Power Project - sale of assets to EGPA

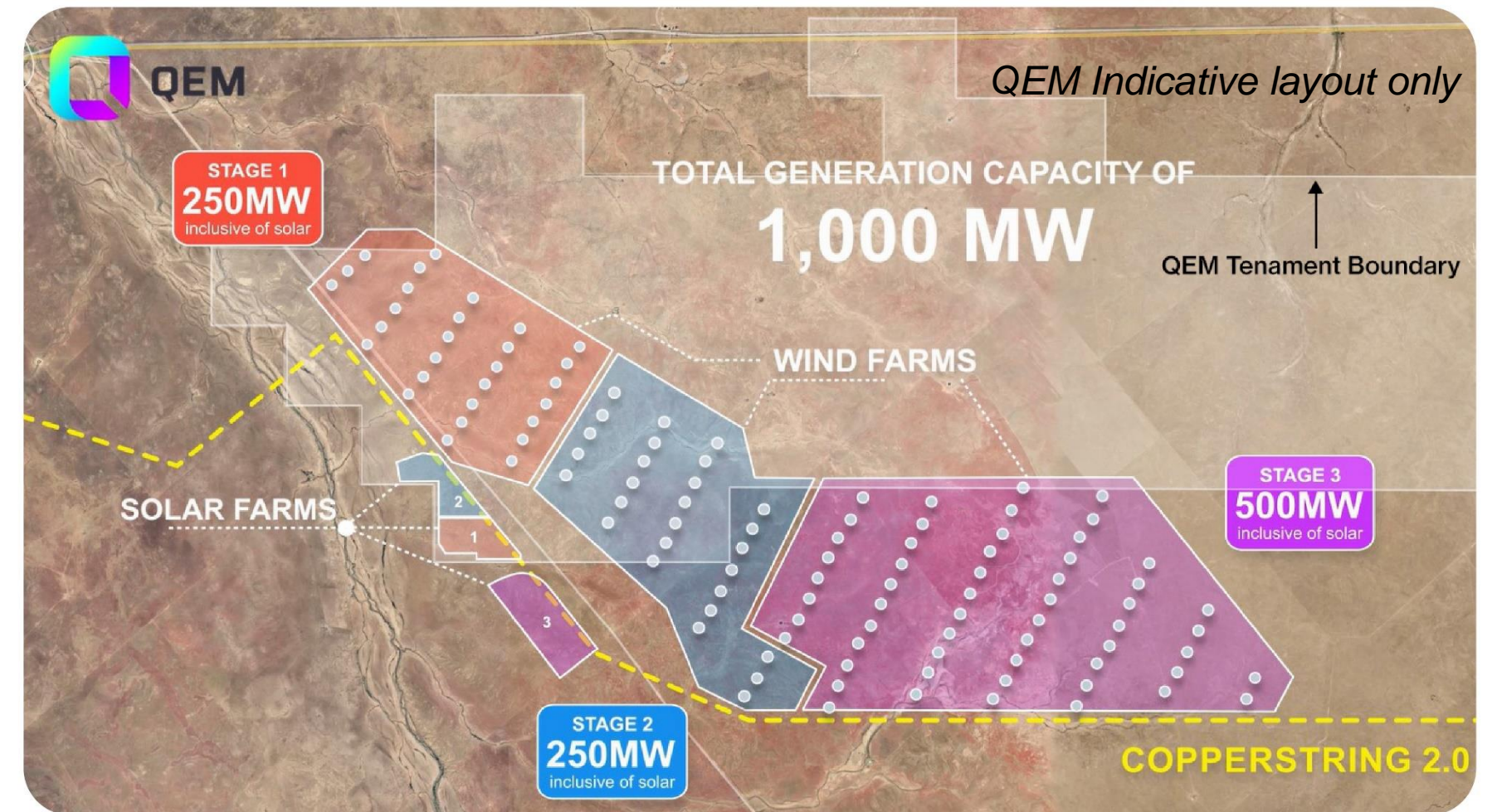
"Situated in the best co-located wind and solar resources in Eastern Australia" - AEMO

- In January 2024 QEM sold its project assets to global renewables giant ENEL Green Power Australia (EGPA)
- EGPA to develop up to **1GW hybrid wind, solar and BESS** project
- Julia Creek Project (JCP) proposed off-taker for **renewable power**
- The JCP will utilise this renewable power to generate Green hydrogen for processing and the project will have access to the NEM via the CopperString network
- Delivery of CopperString expected at Julia Creek 2029, aligning with QEM development timeframes



The Queensland government will deliver **CopperString** to provide affordable, renewable energy to open up the North West Minerals Province. The **1,100 kilometre \$5 billion** expanded CopperString project will be **100 per cent government owned**.

Source: Premier's Speech, Townsville 7 March 2023



On site: 2023 McKinlay Shire CEO Trevor Williams, Qld Resources Minister Hon. Scott Stewart, QEM MD Gavin Loyden, Deputy Mayor Janene Fegan, QEM Senior Project Coord. Lian D'Netto

Queensland Government - Industry Support



February 2024: Powering Queensland's Battery Industry Strategy - 2024-2029

\$570 million in new and existing investment for Queensland's nation leading Battery Industry Strategy to deliver clean economy jobs in battery technologies and manufacturing

- Queensland's battery industry could contribute up to \$1.3 billion to economy and generate 9,100 clean economy jobs by 2030
- The \$570 million package includes **new funding of \$210 million** to build capabilities across the value chain, drive development of battery standards, and testing.
- Strategy actions support battery industry innovation, commercialisation, investment, supply-chain growth, and will promote Queensland nationally and internationally

Complimented by commitments in 2023;

- **\$245 million** announced in June 2023 for the Queensland Critical Minerals Strategy
- **\$75 million** Queensland Resources Common-user Facility in Townsville, due for completion 2025.
- **\$68 million** Queensland Resources Industry Development Plan.

Queensland could require up to 14GWh of LDES by 2030, according to The Government Battery Industry Opportunities for Queensland discussion paper 2023



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



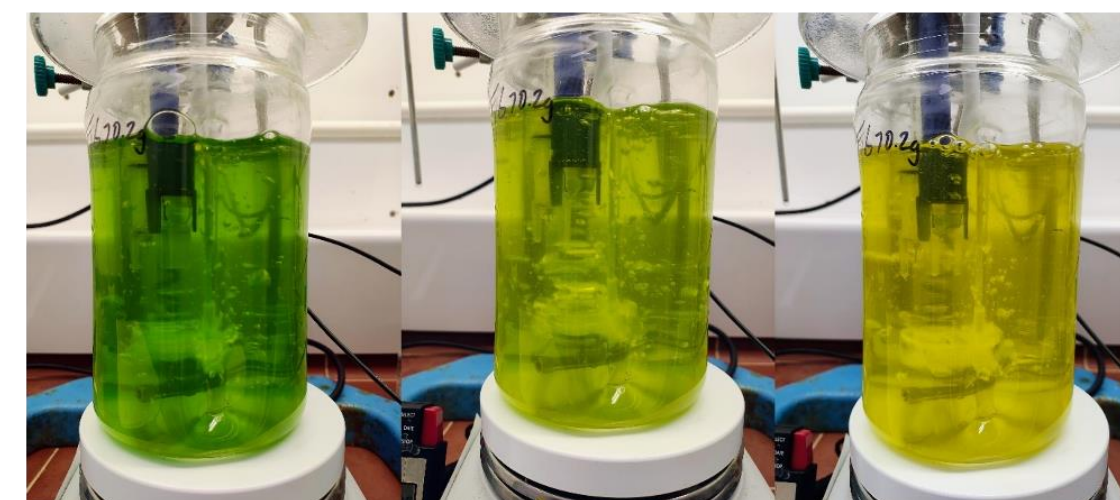
- QEM partnered with The University of Queensland (UQ) to produce the first high purity vanadium pentoxide (V₂O₅) from an industrial waste stream in Australia.
- QEM engaged UQ in this Circular Economy project to upcycle spent vanadium-bearing catalyst from Queensland industrial waste (Sourced from Sun 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 VRB's.
- 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.



Industrial waste
(spent catalyst)

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

QEM's ESG UPDATE Q2 2024

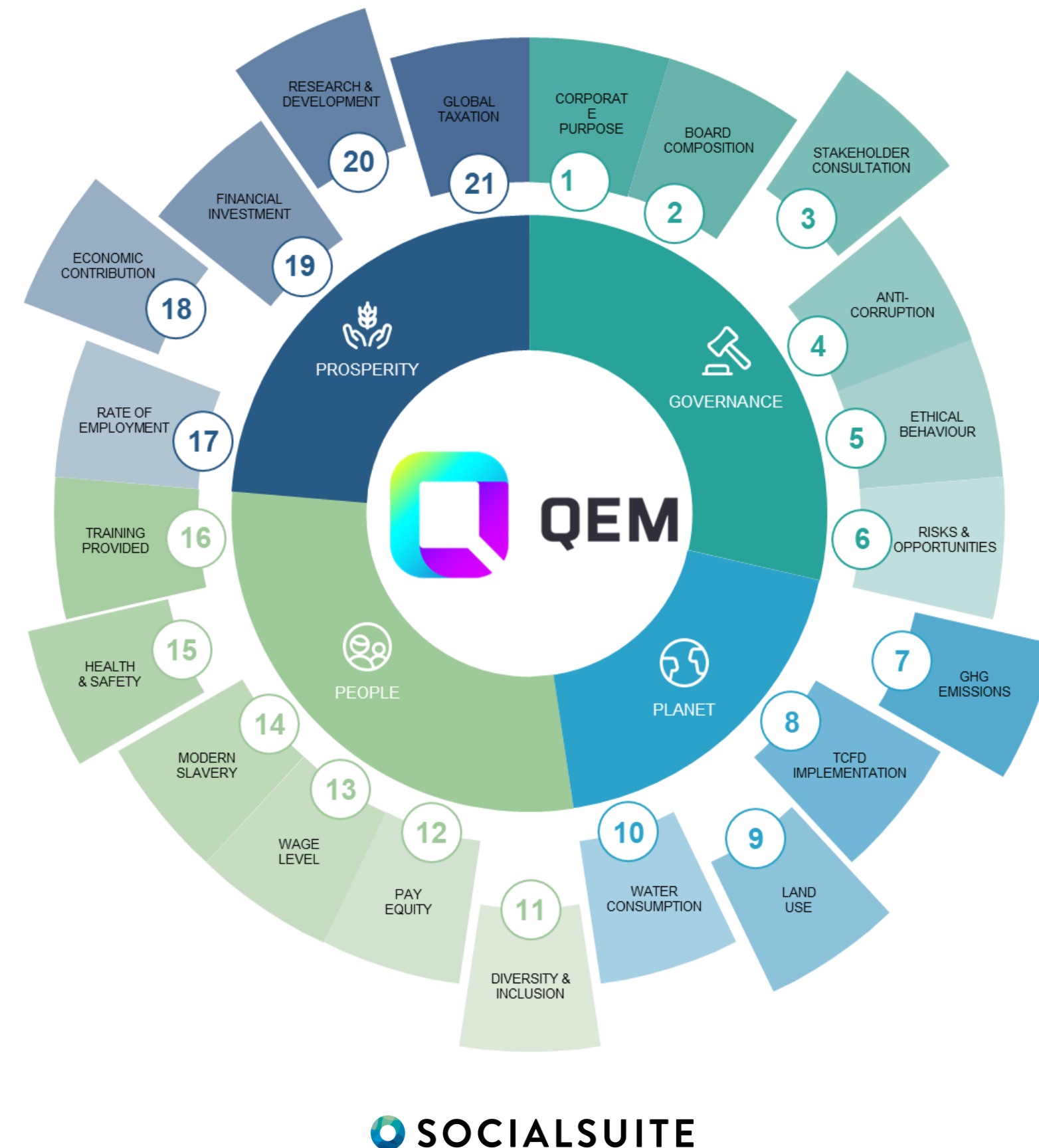
Highlights and achievements Q1 2024:

- This marks the 9th 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.
- QEM's water monitoring program in Julia Creek continued.
- QEM sponsored WISER (Women In Sustainable Energy & Resources) Inc. IWD Event.
- Updated ESG website dashboard.

Focus areas for Q2:

- Analysis of material issues captured and feedback of material issues to stakeholders.

QEM's ESG Focus Areas*



*QEM has adopted the WEF Stakeholder Capitalism Metrics ESG Framework



QEM joins up with UQ as a new vanadium company hits ASX

BUSINESS
The University of Queensland has signed on with fledgling vanadium company QEM to improve the value and yields from the Julia Creek deposit and search for rare earths.

ASX Resources Quarterlies: This oil play is raking in the dollars

January 31, 2023 | **Bevis Yeo** **STOCKHEAD**

Queensland just made a \$75m move to become a critical minerals centre of excellence

January 26, 2023 | **Christian Edwards** **STOCKHEAD**

QEM's critical minerals project is clearing and it looks really bright

March 8, 2023 | **Special Report** **STOCKHEAD**

Queensland transmission line upgrade to enable battery and renewables manufacturing ambitions

By Jonathan Tourino Jacobo, Andy Colthorpe
March 7, 2023

QEM achieves highest vanadium extraction results to date from Julia Creek Project in Queensland

By Adam Drought 1 March 2023 | mining.com.au

Outstanding extraction tests put vanadium spotlight on QEM's Julia Creek Shale

February 28, 2023 | **Special Report** **STOCKHEAD**

QEM's critical minerals project is clearing and it looks really bright

BUSINESS



Queensland's premier Annastacia Palaszczuk with the QEM team.

QEM, University of Queensland Partner for Minerals Study at Queensland Project; Shares Rise 3%

12/14/2022 | 03:29am GMT

MarketScreener

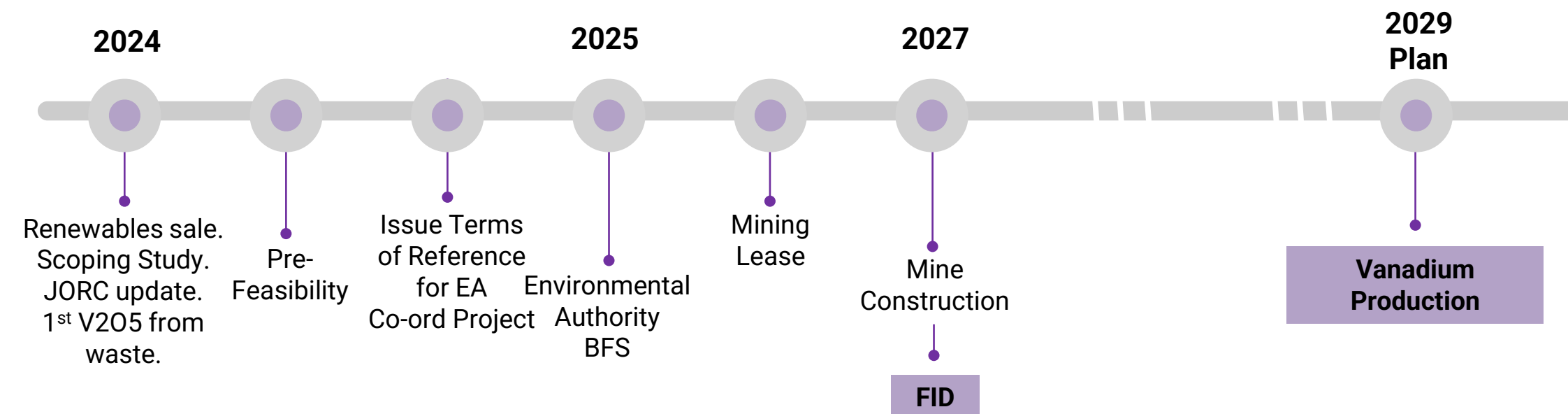


Right Project at Right Time

- **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**



Project Development



Development Partners

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



Sustainable Minerals Institute





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

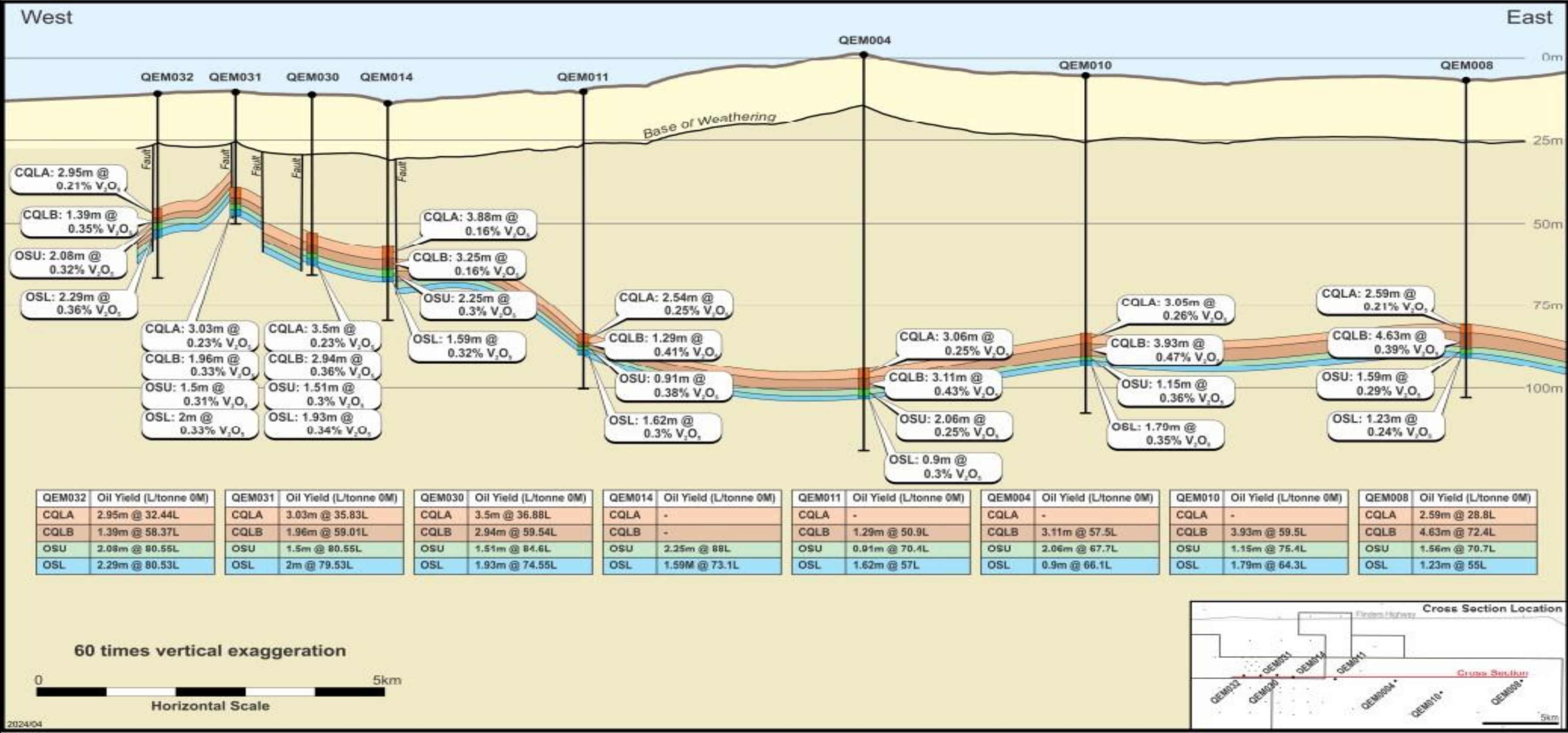
Follow us: [!\[\]\(4b7a79268f6ba26c1471d4232fffa85a_img.jpg\)](#) [!\[\]\(87d978583253c9bde1db2d6dfafe8de0_img.jpg\)](#) [!\[\]\(f35e6978c00a4669a23800ac9bf47246_img.jpg\)](#)

Appendix A:

Julia Creek Resource

Julia Creek - V₂O₅ and Oil

Cross Section the Julia Creek Deposit



Source: Measured Group

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

Julia Creek Resource Overview

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)
Indicated	CQLA	167	3.17	2.40	0.24					
	CQLB	128	2.58	2.28	0.30					
	OSU	81	1.92	1.95	0.31					
	OSL	84	2.02	1.93	0.32					
Total Indicated		461		2.20	0.28					
Inferred	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
	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.

Julia Creek Resource Overview



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
3C Contingent	CQLB	903	2.5	6.8	53.1	55.0	254	228
	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
2C Contingent	CQLB	107	2.1	2.8	50.9	52.3	33	29
	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
1C Contingent	CQLB	7	1.9	2.8	49.0	49.6	1.9	1.8
	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 unrisksed.