



Advancing the **Julia Creek** Project

Investor Presentation Spark +. Singapore, September 2023

"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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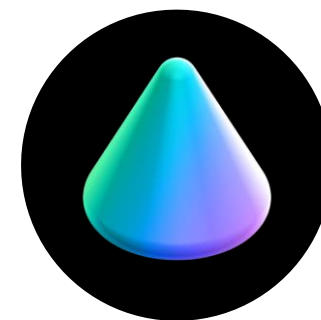
Competent Persons and Qualified Estimator Statements

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 and 7 April 2022. 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



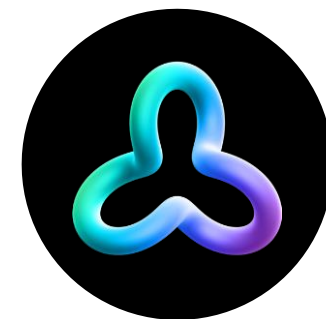
Multi Commodity

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 background of the slide features a complex, abstract molecular structure. It consists of numerous dark, glossy spheres of varying sizes connected by thin, dark lines, creating a network that resembles a crystal lattice or a molecular model. The lighting is dramatic, with highlights on the spheres and deep shadows, giving it a three-dimensional appearance. The overall color palette is dark, with shades of black and dark grey.

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.

Vanadium – Australia & Globally

Market Set for growth



Market expected to reach

\$3.89 Billion

in 2025 at CAGR of ~ 5%.

VRFB demand expected to equate

~23% of vanadium market

by 2030. Currently about ~7%.

Global Production 2022

118,000 MTV*

or approx. 200,000tpa V_2O_5 equivalent.

Australia holds

31% of undeveloped

global reserves BUT has no domestic production – YET!

Vanadium Listed as

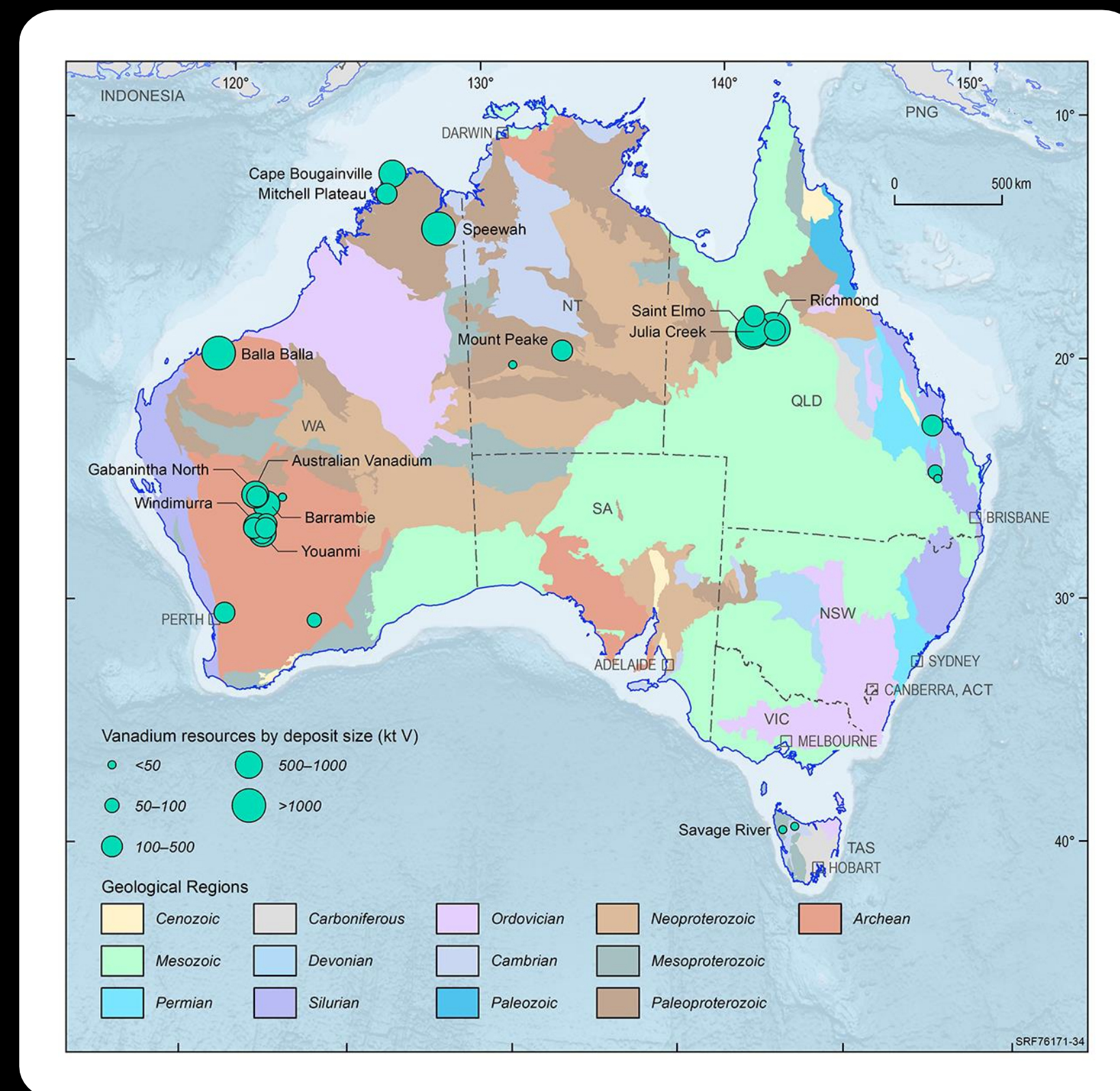
Critical Mineral

in Aust, US, EU and Japan

Global Vanadium demand

100% Increase by 2030

This is due to the growing demand for Vanadium Redox Flow Batteries (VRFBs) – Vanitec, 2022.



* MTV is Metric Tonne Unit of Vanadium

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

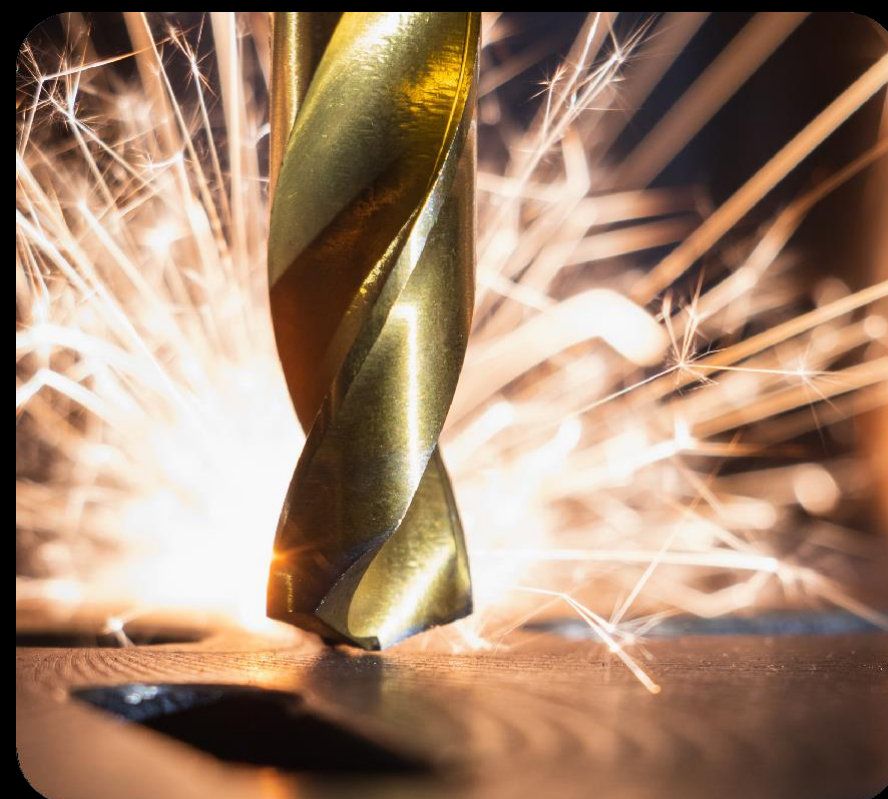
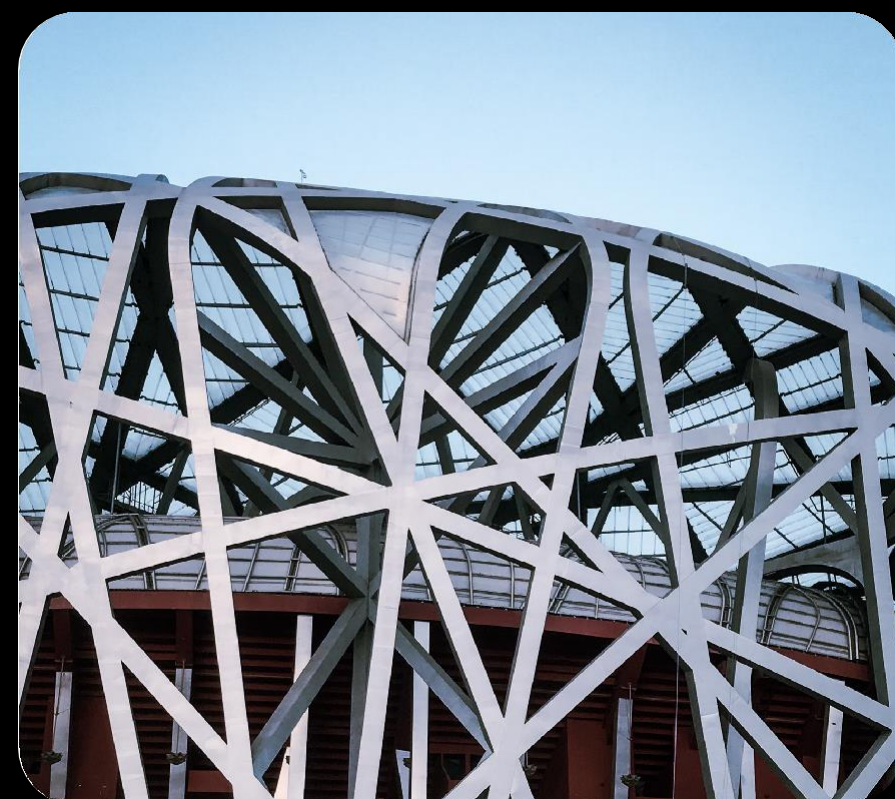
In steel-Lowers CO₂ emissions by 185 million metric tons annually.

- 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



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).

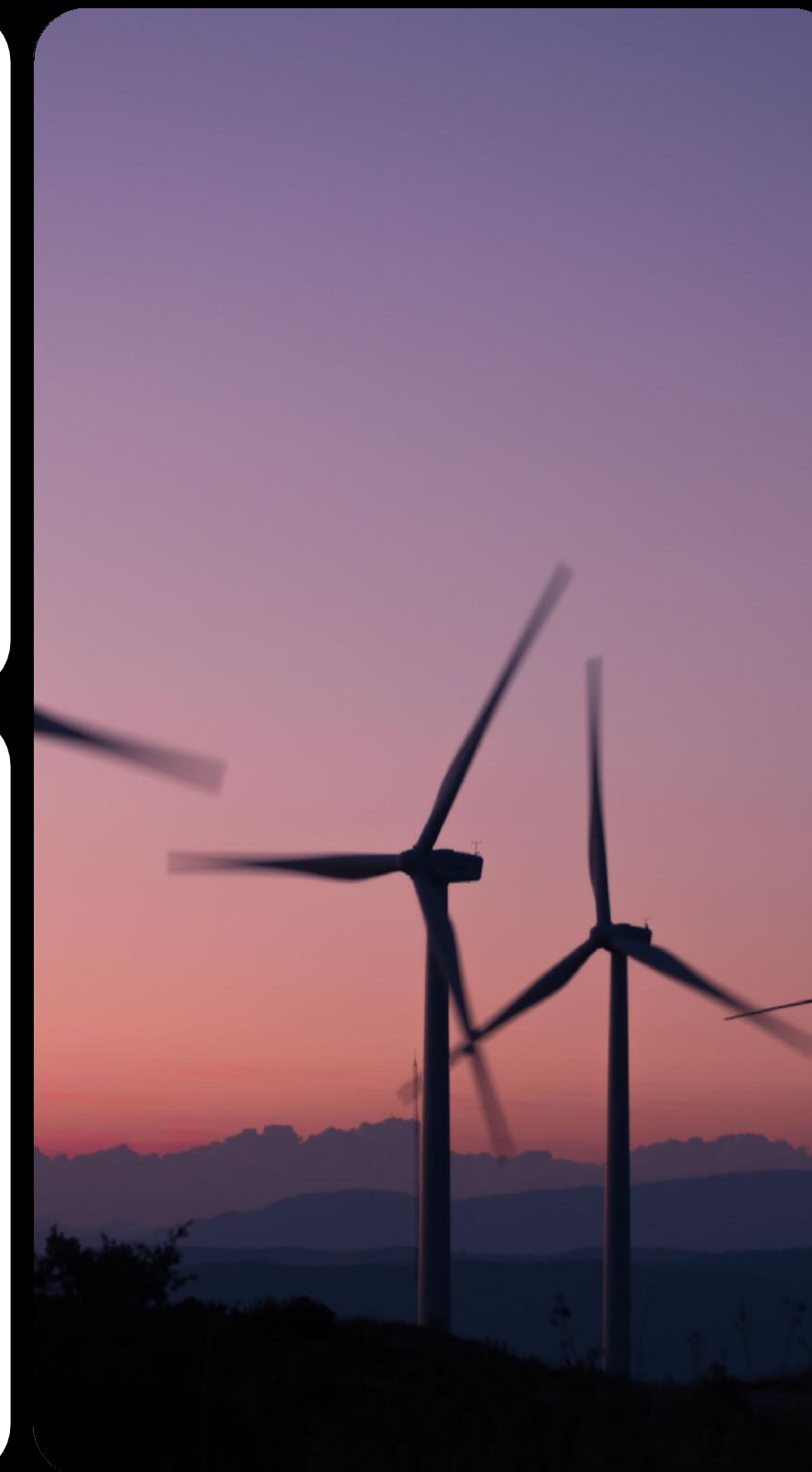


Chemical and Catalysts

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

Renewable Energy Storage

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



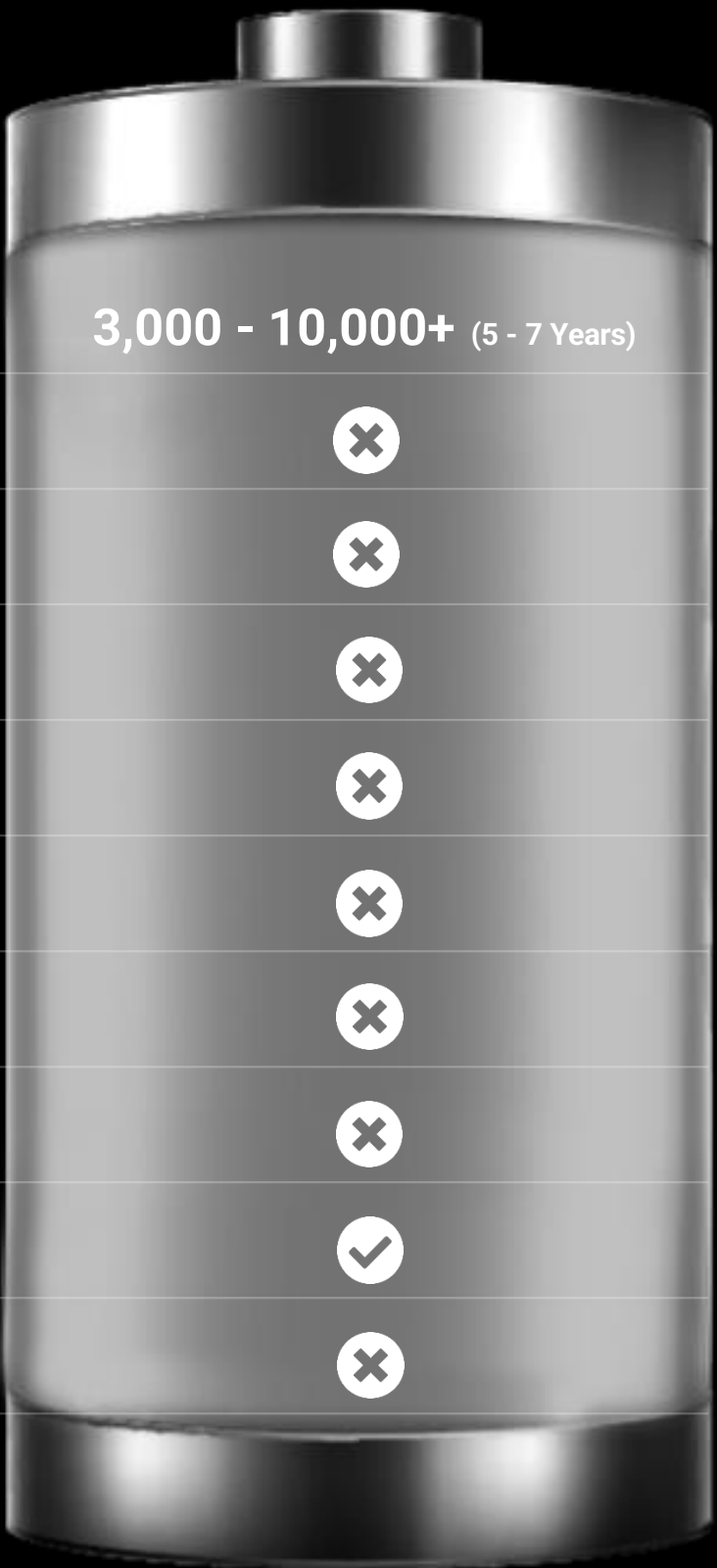
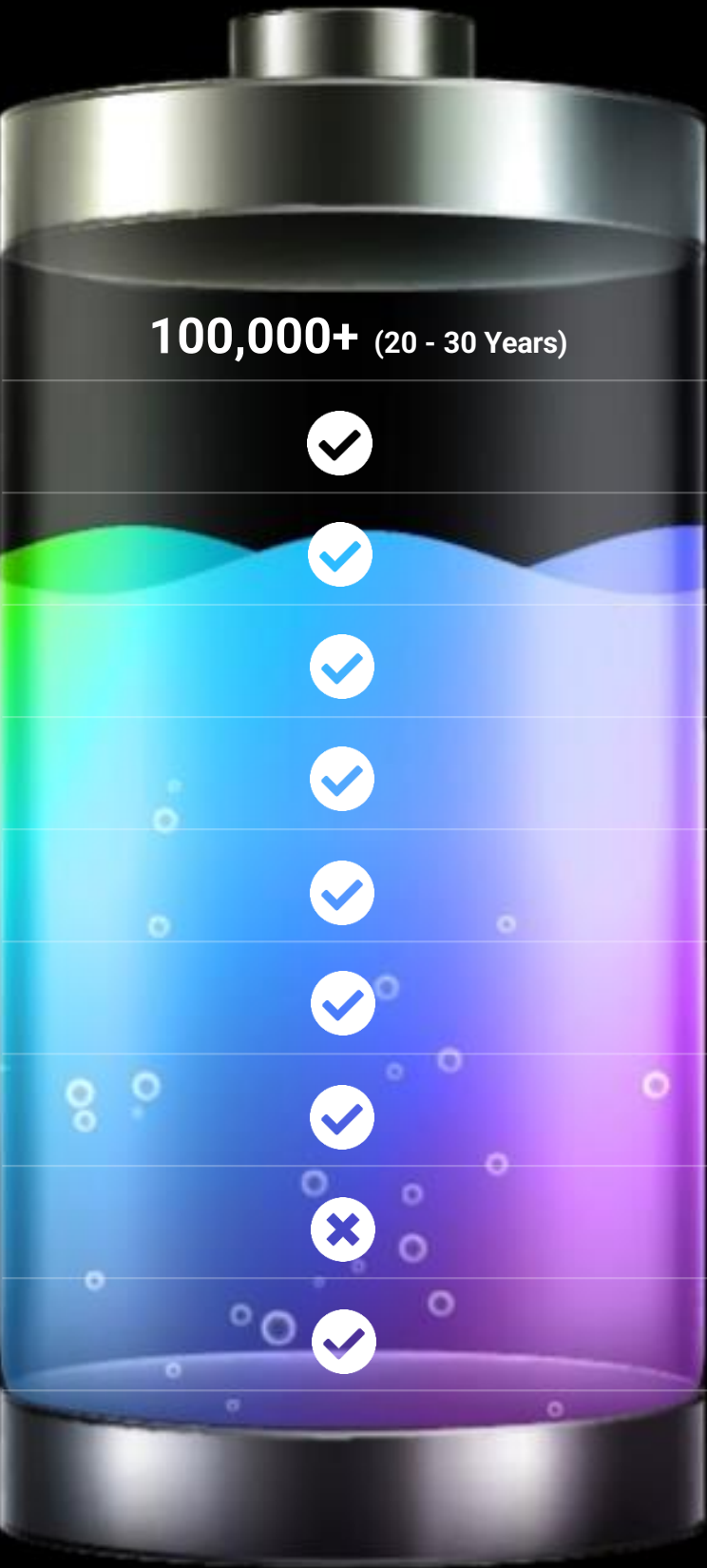
Renewable Storage

Building a Renewable Future with Vanadium Redox Flow Batteries (VRFB)



Vanadium

Lithium

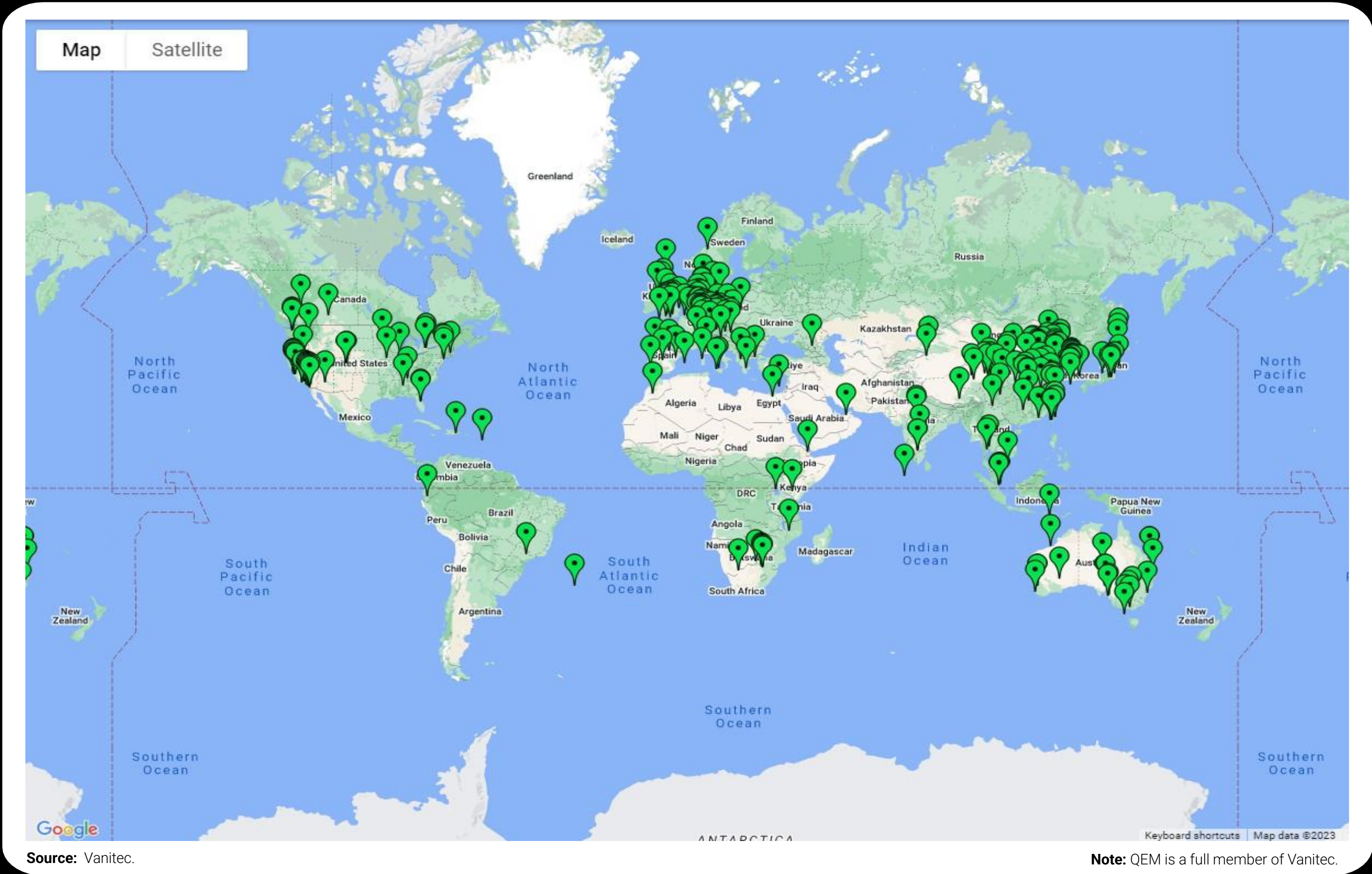


Number of Cycles
Low Self Discharge (Stays Charged)
Low Environmental Footprint
Highly Expandable
Generates Low Level of Heat
Charges and Discharges Simultaneously
Can Release Energy Instantaneously
Suitable for Connection to Power Grid
Small Footprint
Can be Completely Recycled

Source: energyandcapital.com

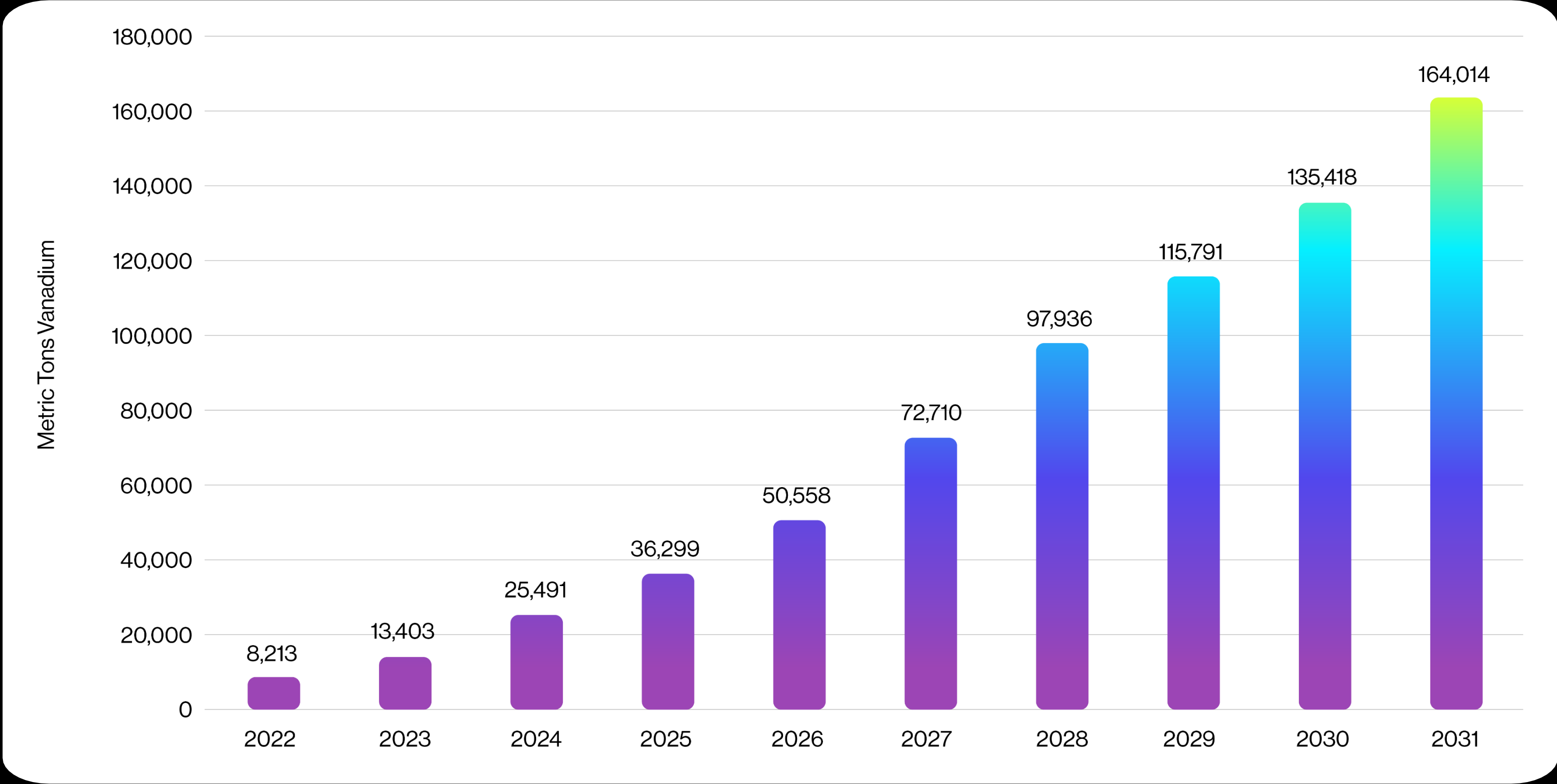
VFRB Global Installations 2023

Over 200 large scale VRFB projects worldwide



VFRB Market Forecasts

Vanadium for VRFB forecast to grow at an average compound rate of 41% YOY to 2031



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

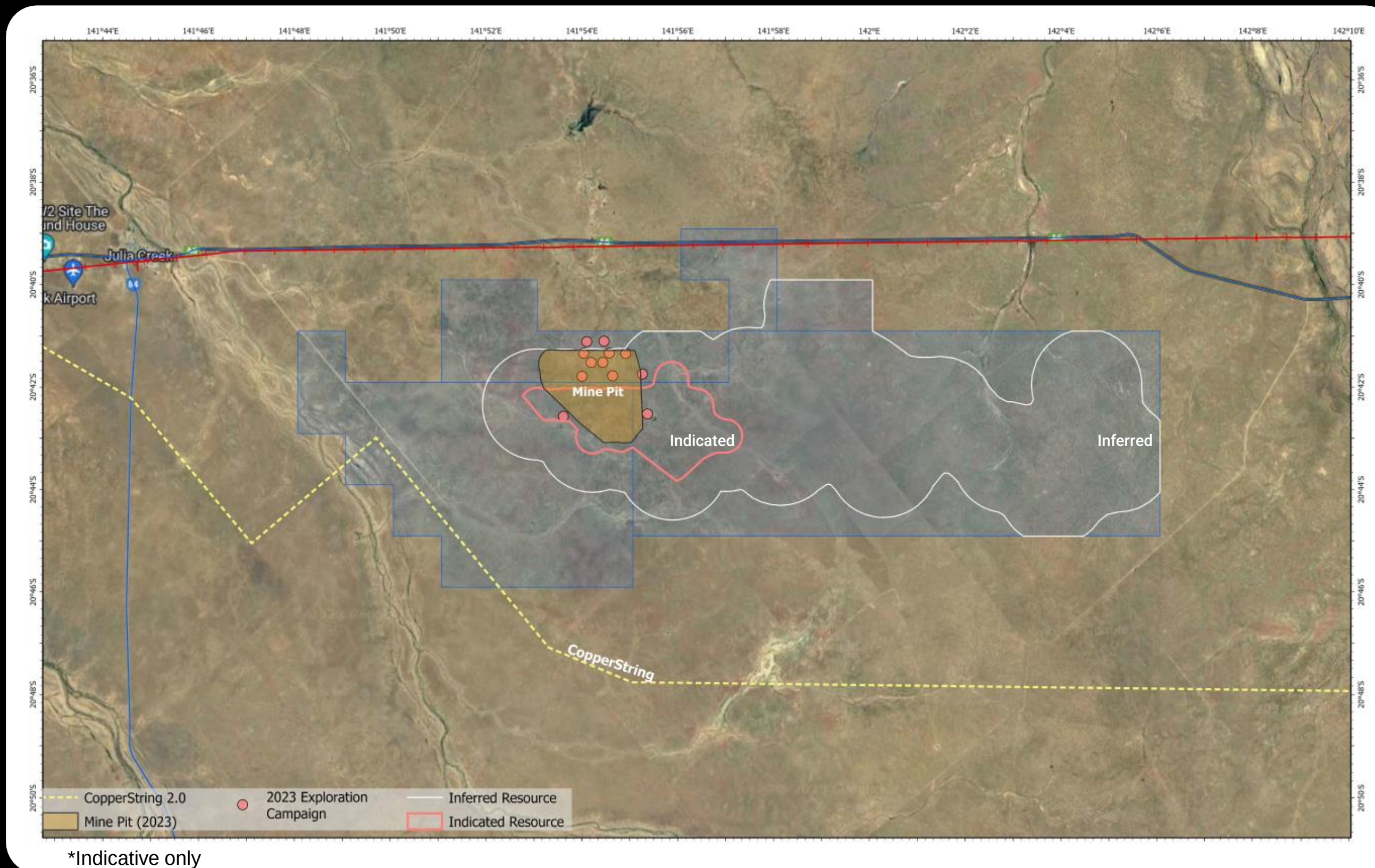
Note: QEM is a full member of Vanitec.

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

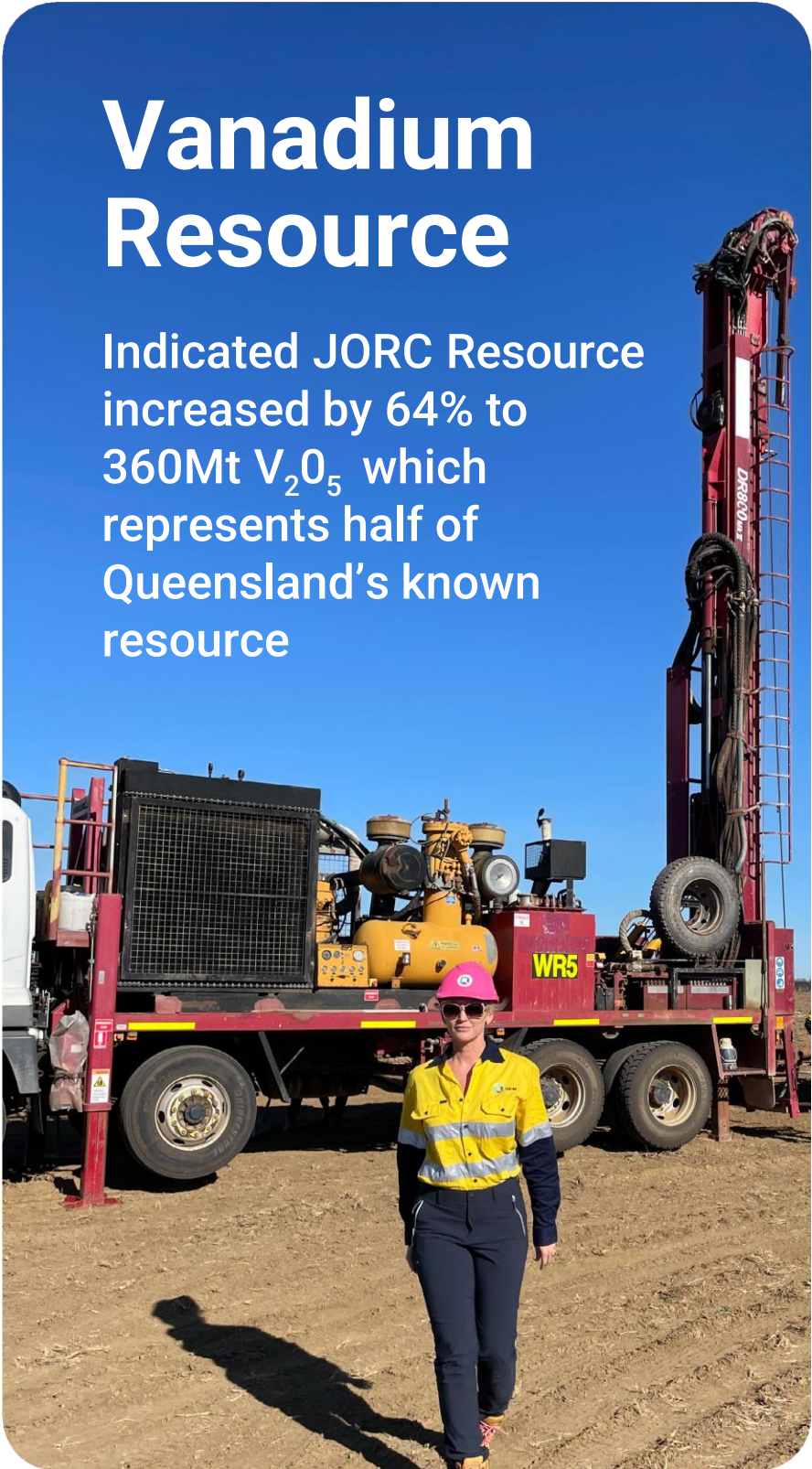
4 Exploration Tenements Covering 249.6km² in the Julia Creek Area, North-Western Queensland
12 holes (620m) completed. Update to JORC Report pending.



Core sample
33m
Transition
CQL-OS 2023

Large JORC Resources

One of the world's largest single vanadium resources.



Vanadium Resource

Indicated JORC Resource increased by 64% to 360Mt V_2O_5 which represents half of Queensland's known resource



2,490Mt

Inferred @ Ave V_2O_5 ore content of 0.31%

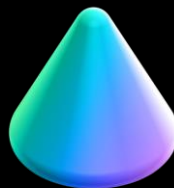


360Mt

Indicated @ Ave V_2O_5 ore content of 0.29%

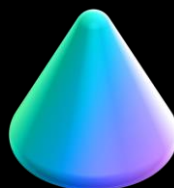


Oil Resource



626MMbbl's

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



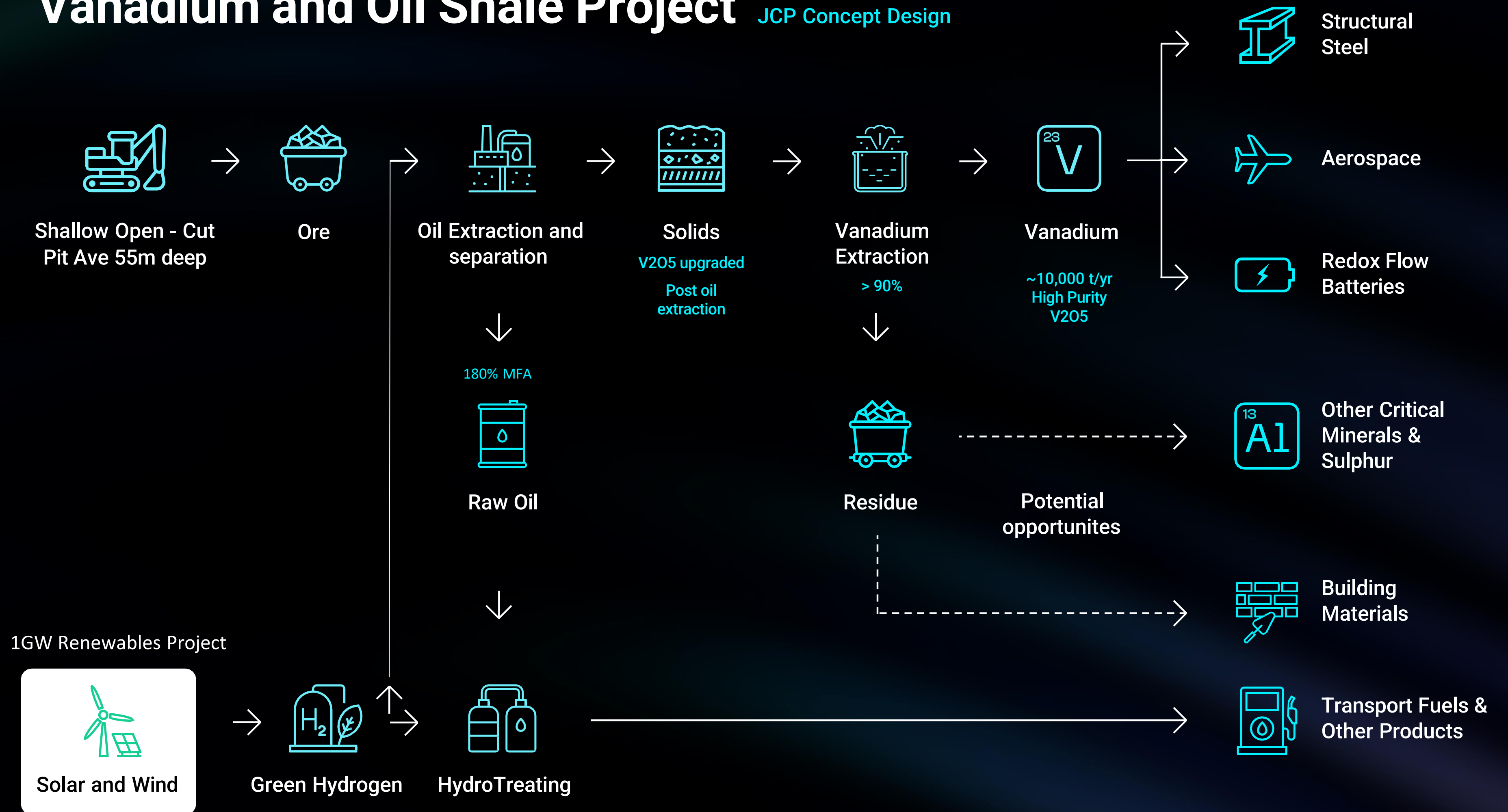
71MMbbl's

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 Concept Design





Pilot Plant Progress

Bench scale pilot plant - Testing program and optimisation program underway

- **Pilot plant test program delivering exciting results**
- **>98% V_2O_5 extraction achieved using acid leaching***
- **>92% V_2O_5 extraction achieved using alkali leaching***

* QEM ASX Announcement February 28th 2023

- Oil yields (equivalent) **~180% of Modified Fischer Assay (MFA)****
- Petrology studies now underway to understand potential product suite
- Pilot is a proof of concept that enables QEM to maximise vanadium and oil recovery, using this proprietary extraction process

** QEM ASX Announcement December 6th 2022

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
- Currently, 21 days of diesel supply as of July 2023. (energy.gov.au)
- COVID-19 has further exposed Australia's lack of resilience in this area



We consider this an opportunity!

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 by 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
- Director of US Vanadium LLC (USA), Australian Vanadium Ltd (ASX: AVL)
- Former CEO positions with Atlantic (ASX: ATI) Atlas Iron (ASX: AGO) ex VP EVRAZ plc. - Vanadium Assets



Gavin Loyden

Founder and Managing Director

- QEM Founder
- Identified & acquired QEM's Julia Creek resource
- Over 10 years experience in mining industry
- Responsible for QEM's project development



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 01/09/23

\$0.21

Cash at 01/09/23

\$2.0m

Options on issue

250k Exp 01/05/25 @ \$0.20

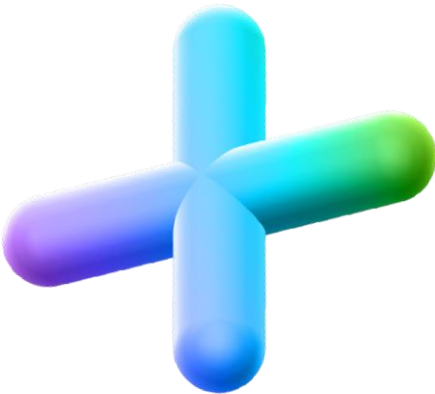
5.6m Exp 12/08/25 @ \$0.345

5,850,000

0.21 AUD

+0.01 (5.26%) ↑ year to date

01 Sept, 10:25 am AEST • Disclaimer



\$31.79m

Market Cap (01/09/23)



Director Support

Management alignment with public shareholders

71.5%

Top 20 Shareholders

28.5%

De-risking the Project

Access to affordable, reliable and renewable energy is a key development pillar for QEM.

With the **\$5B CopperString** network proposed to run through the western portion of QEM's Julia Creek Vanadium and Oil shale project, clean renewable energy will power the project operations.



Renewable Power Update

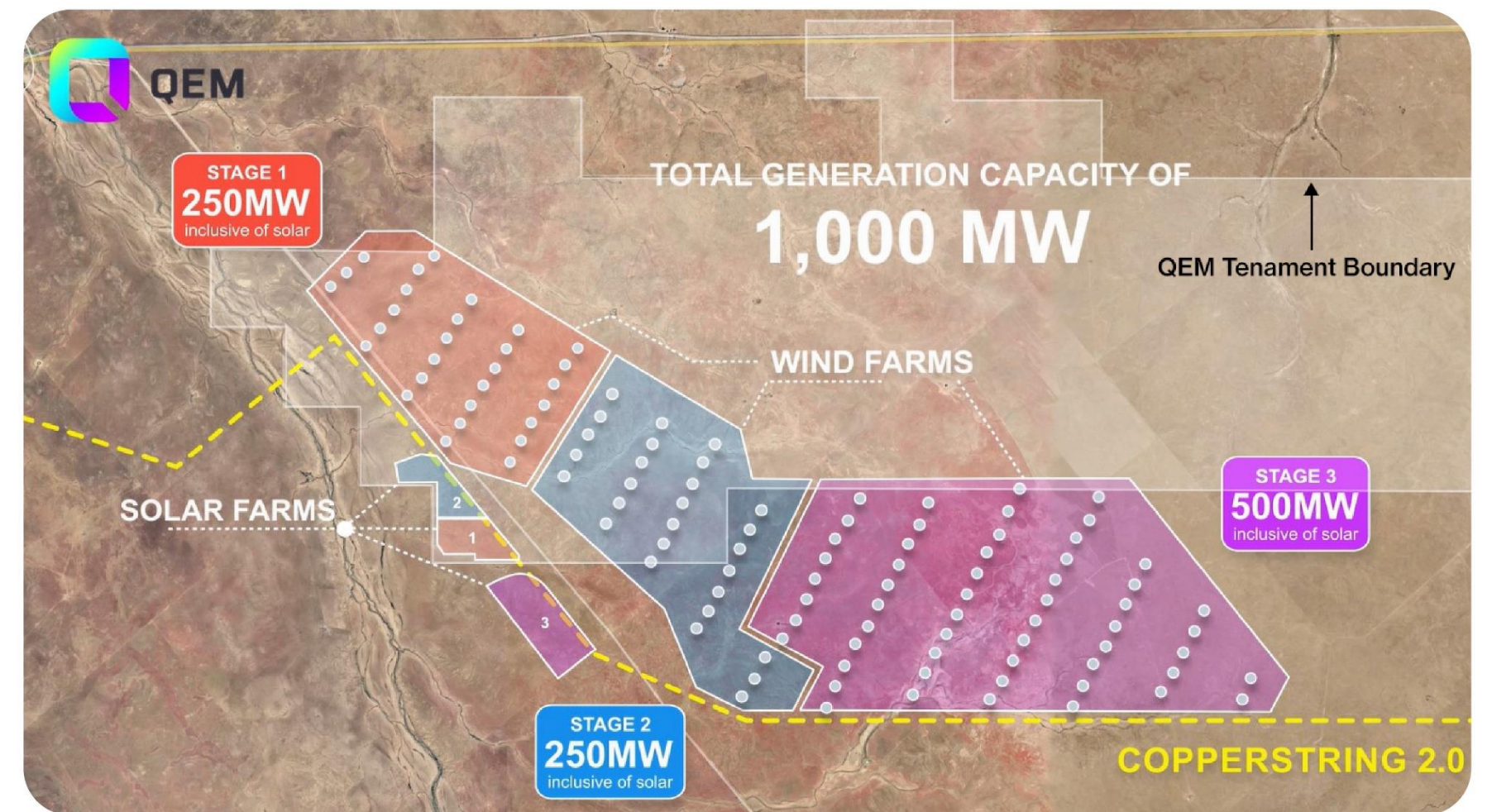
"Situated in the best co-located wind and solar resources in Eastern Australia" - AEMO

- Meteorological mast, SoDAR and solar monitoring instruments are transmitting data in real time. Over 14 months of data collected since installation
- Modelling for **250 MW, 500MW and 1GW**, hybrid solar/wind
- Julia Creek Project (JCP) proposed off-taker for **renewable power**
- **3 global developers now short-listed to develop 1GW project**
- 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 2028, 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: McKinlay Shire CEO Trevor Williams, Qld Resources Minister Hon. Scott Stewart, QEM MD Gavin Loyden, Deputy Mayor Janene Fegan, QEM Project Coord. Lian D'Netto



160m Met Mast commissioned on-site July 2022

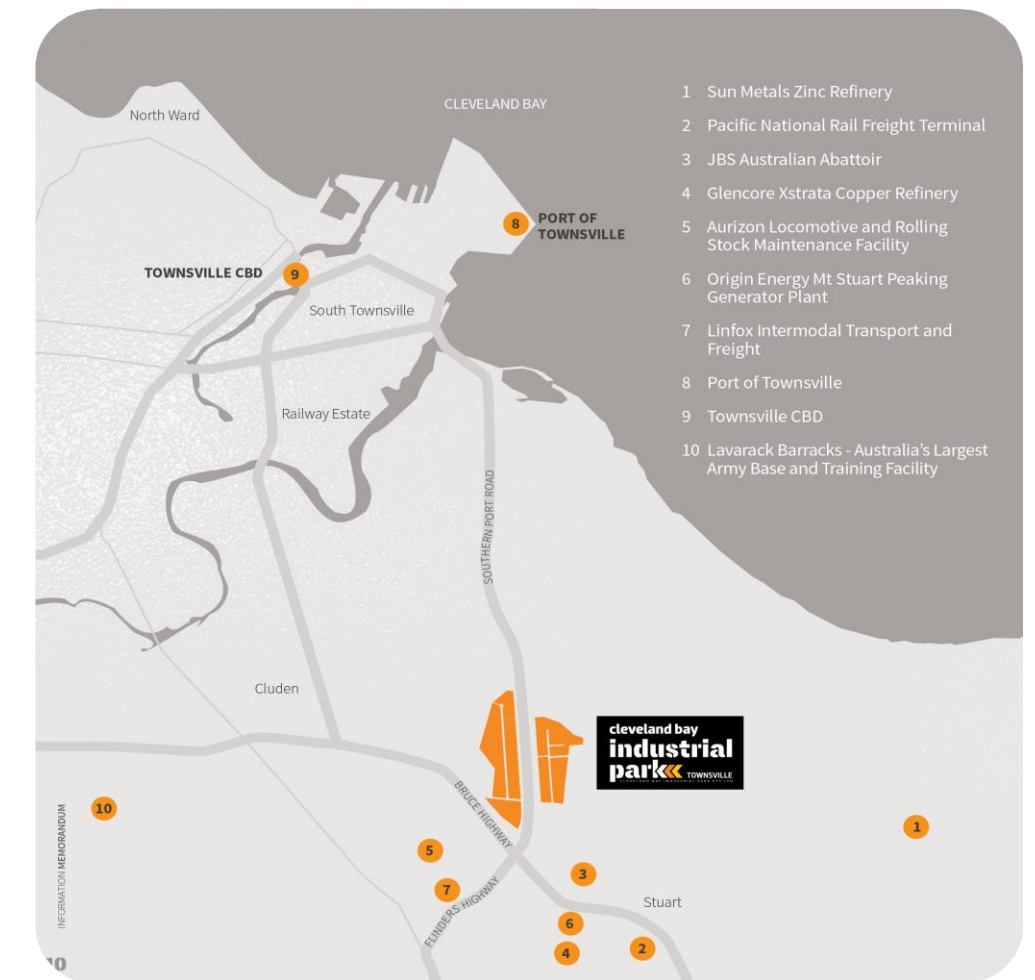
Queensland Government - Industry Support

Townsville QR-CUF Progress

- On January 24th 2023, the Qld Premier announced funding to increase from \$10M to **\$75M** for the construction of the **Queensland Resources Common User Facility (QR-CUF)**.
- QEM has been involved in the design inputs for the project since its inception and will utilise the facility to demonstrate its vanadium extraction flowsheet at demonstration scale.
- Queensland Government will provide introductions to off-take partners and assistance in accessing finance.
- The QR-CUF has been granted a Prescribed Project Status, with project completion due in early 2025.

June 2023: Qld Premier announced the Queensland Critical Minerals Strategy and a \$245 million investment into the sector, including:

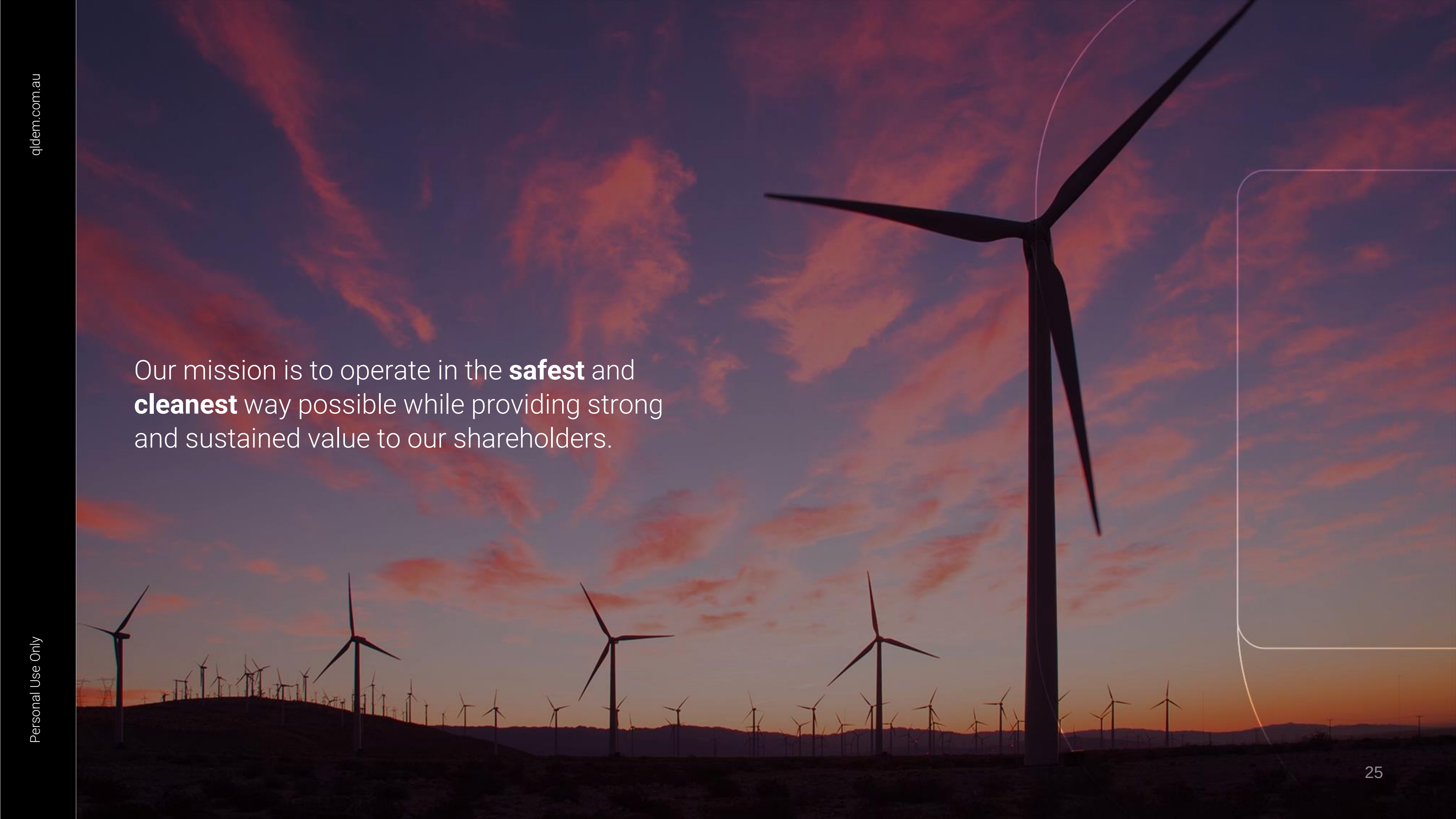
- Reducing rent for new and existing exploration permits for minerals to **\$0** for the next five years
- Establishing critical mineral zones, initially at Julia Creek/Richmond and around Mount Isa, to support critical minerals projects
- **\$75M**. Establishing Critical Minerals Queensland, a one-stop office to oversee the development of the sector
- Investment to target mining waste and tailings for critical minerals, and scientific research including circular economy initiatives
- Delivering the **\$100M** Critical Minerals and Battery Technology Fund to support new projects



Ref: Cleveland Bay Industrial Park Information Memo, Sep 2022



Ref: World Mining Congress, June 2023. (L to R: QEM Chair Tim Wall, Communications Director Joanne Bergamin, Qld Premier Annastacia Palaszczuk, Minister for Resources Scott Stewart)

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 other turbines stretches across the horizon, their forms also in silhouette. The ground appears to be a dark, flat landscape.

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

QEM's ESG UPDATE Q2 2023

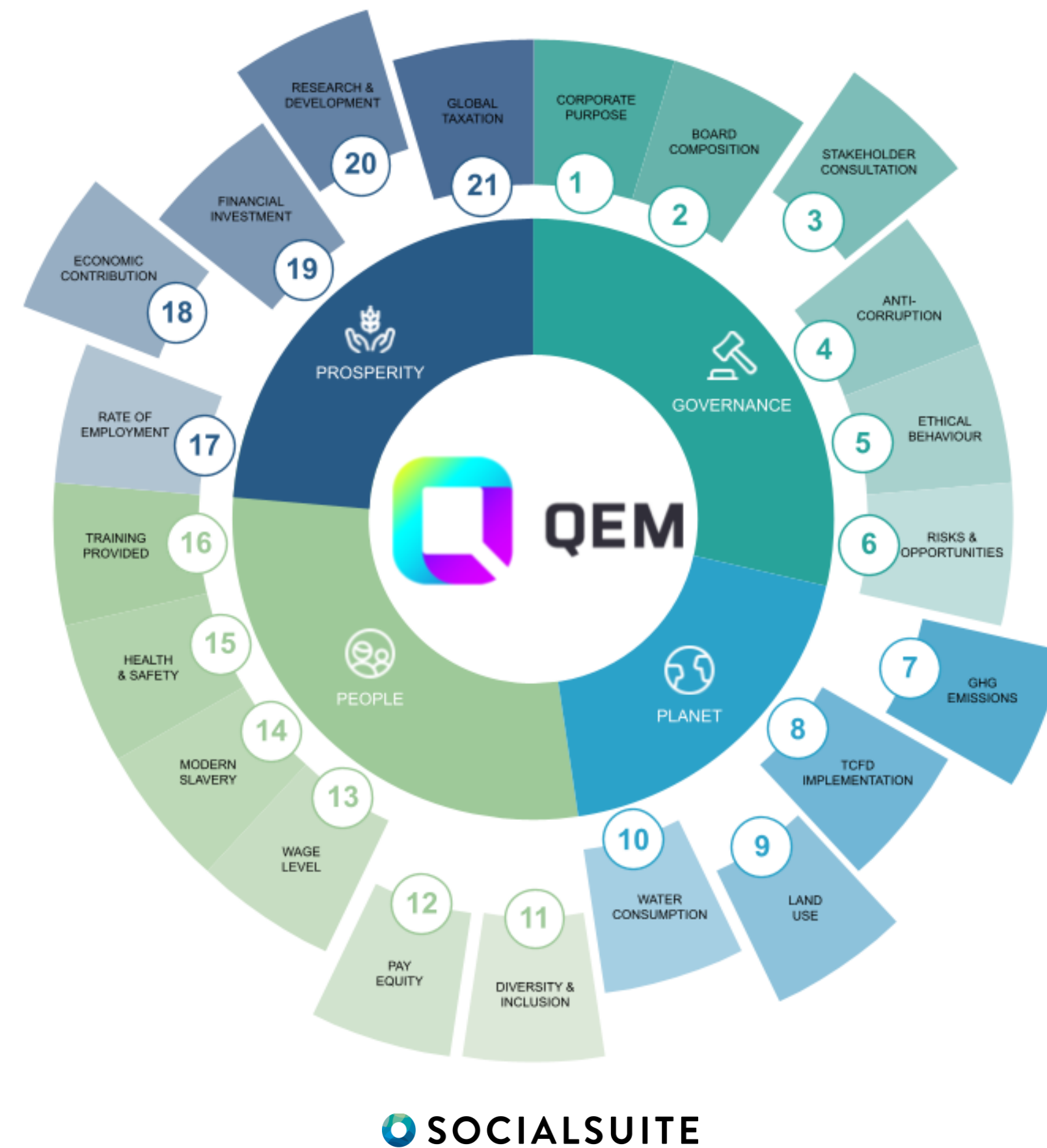
Highlights and achievements Q1-2:

- QEM secured Circular Economy opportunities with Sun Metals and Incitec Pivot to upcycle Queensland industrial waste to battery grade vanadium pentoxide (V2O5).
- QEM's investment in our community - 9 work packages awarded locally in Julia Creek & NWMP; opened local office; sponsored Dirt N Dust, Saxby Roundup, Julia Creek Saints etc.

Focus areas for Q3-4:

- Finalise and disclose QEM's 2nd annual Greenhouse Gas (GHG) emissions inventory assessment at a 3rd party verified level (Carbonhalo)
- Conduct Stakeholder Materiality Assessment
- Review ESG-inclusive Board Skills Matrix
- New ESG website dashboard

QEM's ESG Focus Areas*



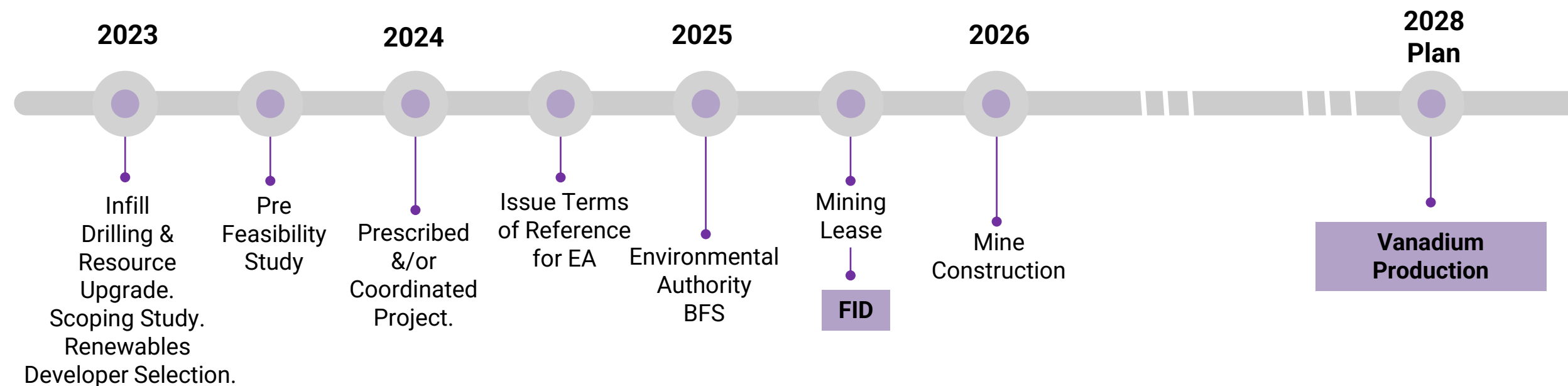
*QEM has adopted the WEF Stakeholder Capitalism Metrics ESG Framework

Right Project at Right Time

- **Multi Commodity Exposure** in high growth markets
- Globally significant Critical Minerals opportunity
- 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





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**

billion as Government energy project

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





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Appendix A:

Julia Creek Resource

Julia Creek Resource Overview



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)	Zi (ppm)	Al (ppm)
Indicated	CQLA	127	3.16	2.41	0.24	161	132	121	763	4525
	CQLB	104	2.74	2.32	0.30	201	180	151	912	5756
	OSU	64	1.97	1.99	0.32	217	162	194	1012	49360
	OSL	64	2.05	1.95	0.32	206	143	182	1006	52759
Inferred	CQLA	698	2.52	2.42	0.23	156	136	120	810	2706
	CQLB	879	3.32	2.24	0.38	225	226	205	1197	5322
	OSU	458	1.92	2.02	0.31	229	150	189	1121	60505
	OSL	457	1.94	1.97	0.29	215	130	169	1051	59696
Total		2,850		2.21	0.31	203	167	169	1029	24304

Table 1: Summary of JORC Mineral Resource Estimate 31 March 2022

Note:

- 1. 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.
- 2. 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



Oil Content

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	983	2.8	5.6	49.2	51.2	274	247
	OSU	522	1.8	5.6	74.6	78.8	221	199
	OSL	521	1.9	5.6	68.3	71	202	181
Total / Ave		2026		5.6	64	67	696	626
2C Contingent	CQLB	104	2.6	2.6	43.7	44.5	27	24
	OSU	64	1.9	9.5	79.4	83	28	25
	OSL	64	1.9	12.2	74.2	76	25	23
Total / Ave		2,850		8.1	66	68	79	71

Table 2: Summary of SPE-PRMS Oil Resource estimate 31 March 2022

Note:

- 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 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/tonnne for inclusion in the calculation. The 2C and 3C volumes reported here are unrisked.