



# A Battery Minerals Developer Focused on Critical Mineral Vanadium

121 Mining Investment London Conference Presentation

20-21 November 2023

ASX:VKA



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## Competent Person's Statements

Information in this release that relates to Exploration Results is based on information compiled by Mr Julian Woodcock, who is a Member and of the Australian Institute of Mining and Metallurgy (MAusIMM(CP) - 305446). Mr Woodcock is a full-time employee of Viking Mines Ltd. Mr Woodcock has sufficient experience which is relevant to the style of mineralisation and type of deposit under consideration and to the activity being undertaken 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 Woodcock consents to the disclosure of the information in this report in the form and context in which it appears.

The information in this announcement that relates to the Mineral Resource Estimate is derived from information compiled by Mr Dean O'Keefe, a Fellow of the Australasian Institute of Mining and Metallurgy (AusIMM, #112948), and Competent Person for this style of mineralisation. Mr O'Keefe is a consultant to Viking Mines Limited, and is employed by MEC Mining, an independent mining and exploration consultancy. Mr O'Keefe has sufficient experience relevant to the style of mineralisation and type of deposit under consideration and to the activity which he is undertaking to qualify as Competent Person as defined in the 2012 edition of the Australasian Code for the Reporting of Exploration Results, Mineral Resources, and Ore Reserves (JORC Code). *The Company confirms that the form and context in which the results are presented and all material assumptions and technical parameters underpinning the estimates in the original market announcement continue to apply and have not materially changed from the original announcement and that the form and context in which the Competent Person's findings are presented have not been materially modified from the original announcement on 20 November 2023.*

The information contained in this report, relating to metallurgical results, is based on, and fairly and accurately represent the information and supporting documentation prepared by Mr Damian Connelly. Mr Connelly is a full-time employee of METS Engineering who are a Contractor to Viking Mines Ltd, and a Fellow of The Australasian Institute of Mining and Metallurgy. Mr Connelly has sufficient experience which is relevant to the style of mineralisation and type of deposit under consideration, and to the activity being undertaken to qualify as a Competent Person as defined in the 2012 Edition of the Australasian Code for Reporting of Exploration Results, Exploration Targets, Mineral Resources and Ore Reserves. The Company confirms that the form and context in which the Competent Person's findings are presented have not been materially modified from the original announcements.

# Corporate Overview



**ASX Code**  
**VKA**

**Share Price**  
**\$0.012**  
(16 November 2023)

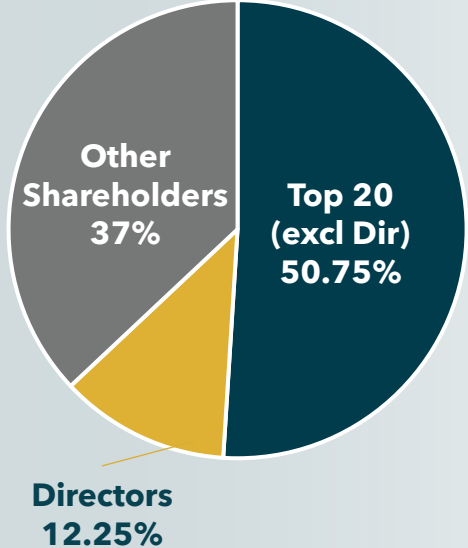
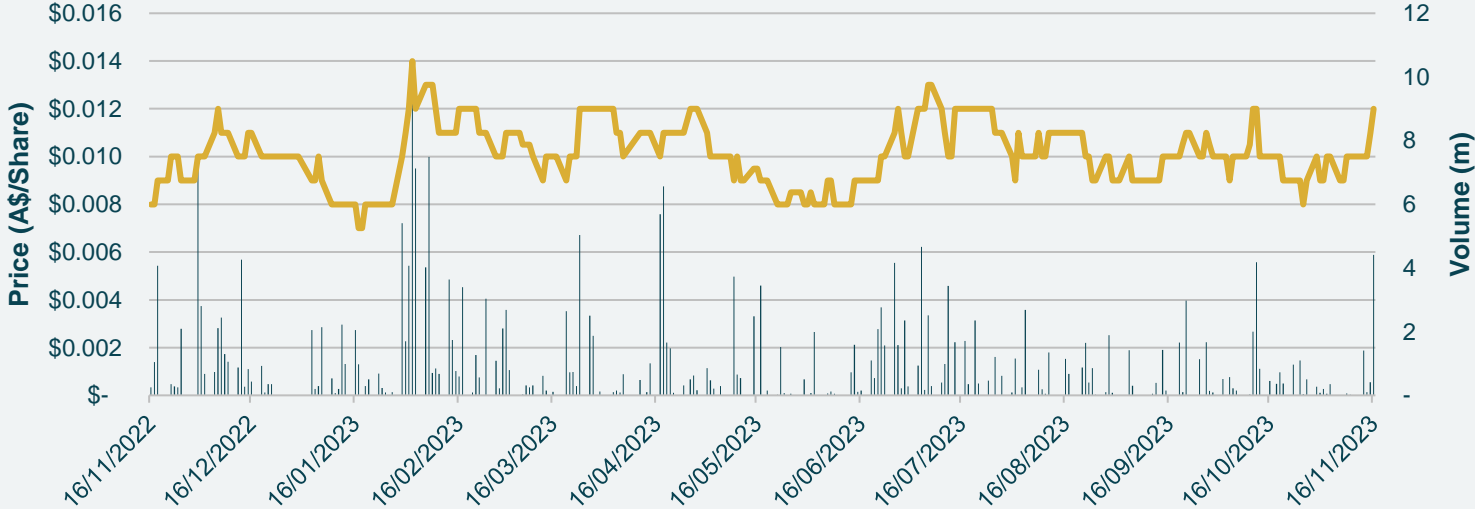
**Shares on Issue**  
**1.025B**

**Market Cap**  
**\$12.3M**  
(Undiluted)

**Cash**  
**\$5.6M**  
(as at 30 September)

**Enterprise Value**  
**\$6.7M**

VKA Share Price Performance



# Board and Management



**Charles Thomas**  
Chairman

Mr. Thomas is an Executive Director and Founding Partner of GTT a leading boutique corporate advisory firm based in Australia.

Mr. Thomas has worked in the financial service industry for more than 17 years and has extensive experience in capital markets as well as the structuring of corporate transactions.



**Julian Woodcock**  
Managing Director & CEO

Mr. Woodcock is a geologist with a career spanning 2 decades in the exploration and production of various commodities across multiple counties.

Notable accomplishments involve significant gold discoveries and resource ounce growth including the +2Moz Invincible Deposit at St Ives which advanced from discovery drillhole to production in <3 years, the 0.3Moz Gilmour deposit at Yamarna defined in <12 months and +1Moz resource conversion at Gruyere.



**Michael Cox**  
Non-Executive Director

Mr Cox has run a private corporate advisory services firm since 2008.

He commenced his career as a mining analyst for stockbroking firms followed by a role being responsible for the delineation and grade control of a developing bentonite deposit.

He then moved into various board positions and corporate development roles with a number of listed and unlisted public companies.



**Bevan Tarratt**  
Non-Executive Director

Mr Tarratt has over 20 years' experience in the accounting industry primarily focused on small cap resource companies.

He has extensive equity capital markets experience with Paterson's Securities Ltd and as Partner of a venture capital firm.

He is currently the Non-Executive Chair of Hartshead Resources NL (ASX.HHR) and previously held the role of Non-Executive Chair of Fenix Resources Ltd (ASX.FEX).



## Established Critical Mineral with Massive Growth Potential



**85% of global production coming from China, Russia and South Africa.** Opportunity to diversify supply chains to stable jurisdictions.



Main component in **Vanadium Redox Flow Batteries (VRFB)**, which are a proven and commercially available technology to meet demand for long duration energy storage.

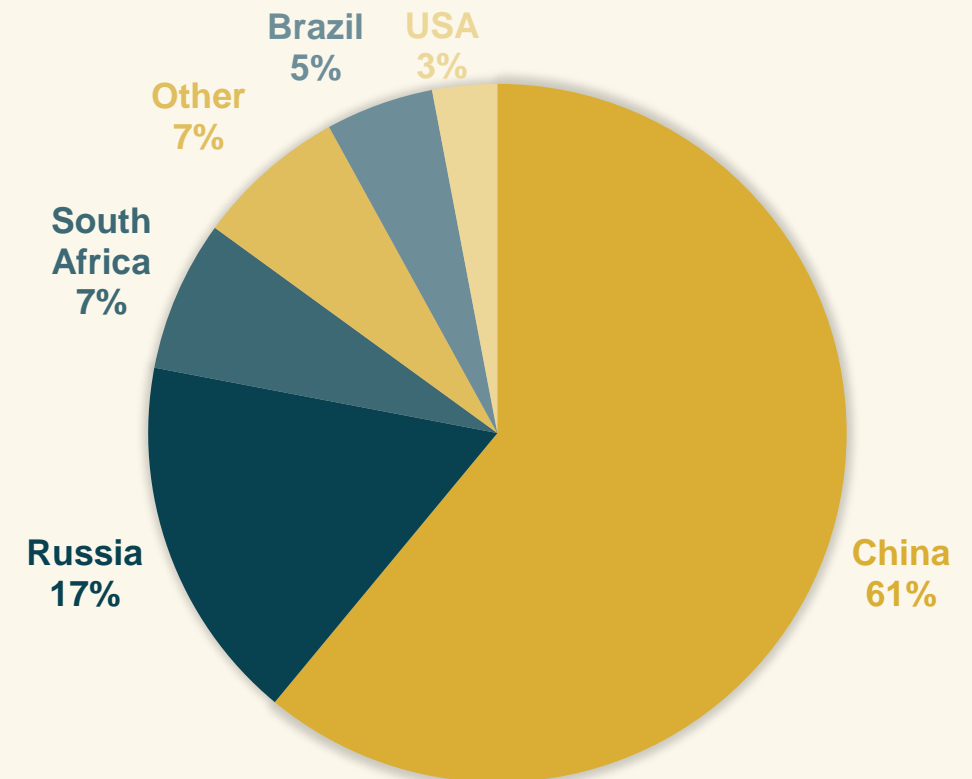


**Established industrial mineral**, primarily used in the steel industry as an additive to increase strength.



Future innovation applications for Vanadium, with potential in **solid state batteries** and use in lithium-ion cathodes and anodes.

## 2021 Production by Country



<https://www.bushveldminerals.com/about-vanadium/>

# Vanadium Outperforms Li-Ion Over Operating Life



## Vanadium Redox Flow Battery (VRFB)



**Low \$/kWh over battery life**



**No degradation**



**Fully recyclable**



**Non-flammable**

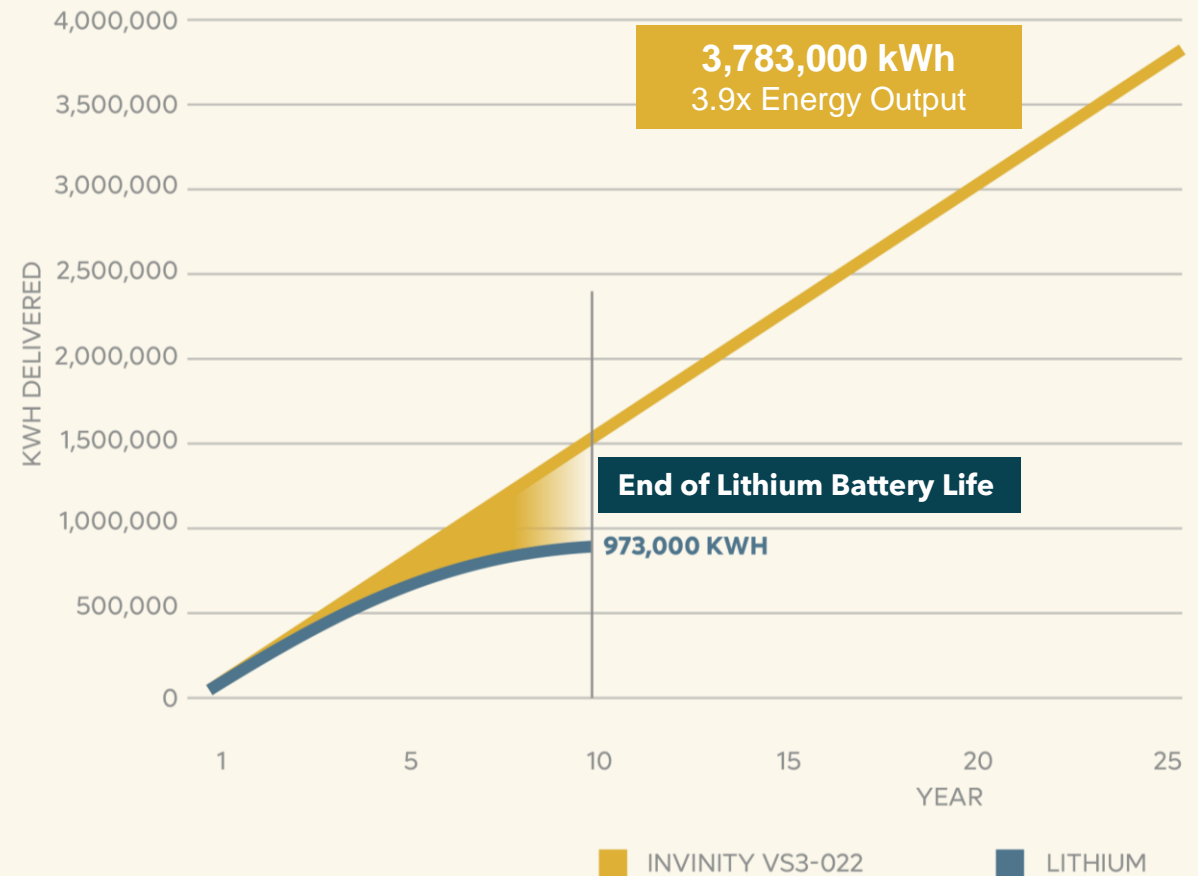


**Simple capacity expansion**



**Off grid deployment**

## CUMULATIVE ENERGY DELIVERED OVER TIME



Assumptions: 220 kWh DC capacity installed, 2 cycles per day, 100% DoD per cycle, 365 days a year.

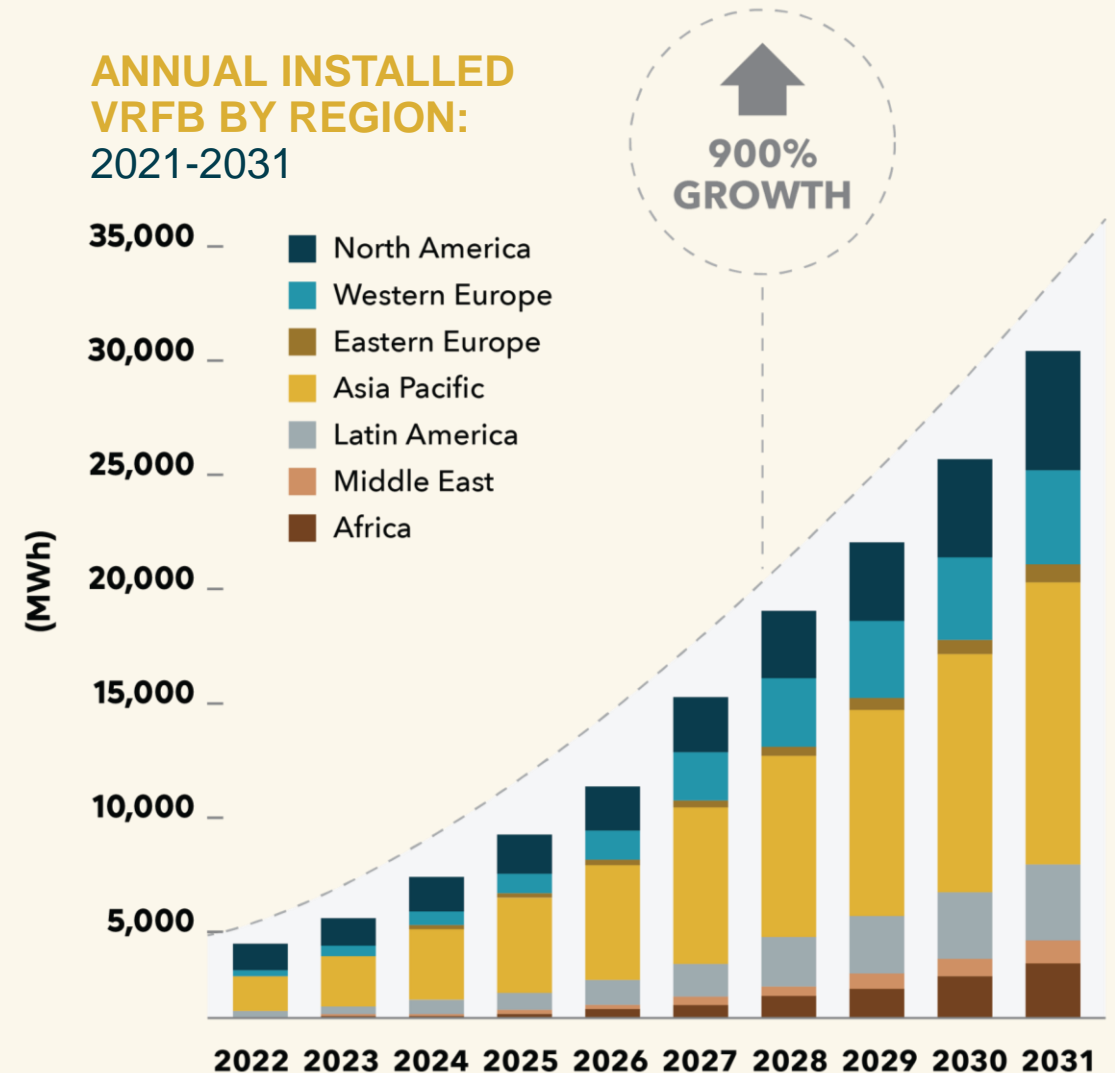
# Vanadium Alternate Energy Storage Solution



## Vanadium Redox Flow Battery (VRFB)

- **Commercial production occurring globally** - >33 companies producing VRFB's including Sumitomo & LG.
- **Over 200 VRFB projects worldwide** - installed and operating.
- **Largest is 100MW/400MWh capacity** - enough to power 100,000 homes for 4 hours.
- VRFB Sector forecast to **grow >900%** by 2031.
- Vanadium demand from batteries totalled 1% in 2019, 7% in 2022 and forecasted to consume 50% by 2030. <sup>i</sup>
- **New mines required** - Current supply consumed by steel industry requires new production to meet battery supply needs.

### ANNUAL INSTALLED VRFB BY REGION: 2021-2031



Source: Guidehouse Insights

# Right Rocks, Right Jurisdiction, Right Location



## Investment Attractiveness

- WA, Ranked #1 in 2021 Fraser Institute Annual Survey of Mining Companies.
- Situated in the 'Vanadium Triangle' of substantial Vanadium Projects in WA
- Windimurra Igneous Complex - Directly comparable to the famous Bushveld Complex in South Africa.

## Location & Access

- 620km NE of Perth (WA).
- 60km from the township of Mount Magnet, with sealed airstrip & regular commercial flights.
- Bitumen road to within 22km of the Resource.

## Critical Infrastructure

- Midwest gas pipeline passes 22km north of the Project.

## Port & Rail

- 338km to Tenindewa rail head, on route to Geraldton.
- 419km to established Port at Geraldton already used to export iron ore & mineral sands.





# Canegrass Battery Minerals Project



**146Mt @ 0.70% V<sub>2</sub>O<sub>5</sub>, 31.8% Fe, 6.6% TiO<sub>2</sub><sup>i</sup>**

- Substantial MRE Update completed with **>100% increase in contained V<sub>2</sub>O<sub>5</sub> to 2.24 Billion Pounds.**
- High-grade component defined >0.8% V<sub>2</sub>O<sub>5</sub> cut-off:  
**27.5Mt at 0.87% V<sub>2</sub>O<sub>5</sub>, 37.3% Fe, & 8.0% TiO<sub>2</sub><sup>ii</sup>**
- Resources modelled from surface to ~250m depth at each of the deposits estimated. <sup>ii</sup>
- Multicommodity project with V, Fe, Ti, Cu, Ni & Co potential value streams.

Metal Content (>0.5% V <sub>2</sub> O <sub>5</sub> cut-off)	V <sub>2</sub> O <sub>5</sub> B Lbs	Fe Mt	TiO <sub>2</sub> Mt	Cu T	Ni T	Co T
<b>VKA 2023 Model</b>	2.24	46.4	9.6	96,503	90,172	23,359

- High Fe content demonstrated to produce >60% Fe concentrate provides opportunity to evaluate direct ship concentrate operation.
- Substantial value of the Project not appreciated in VKA Market Cap.



# Fold Nose Upgraded Mineral Resource

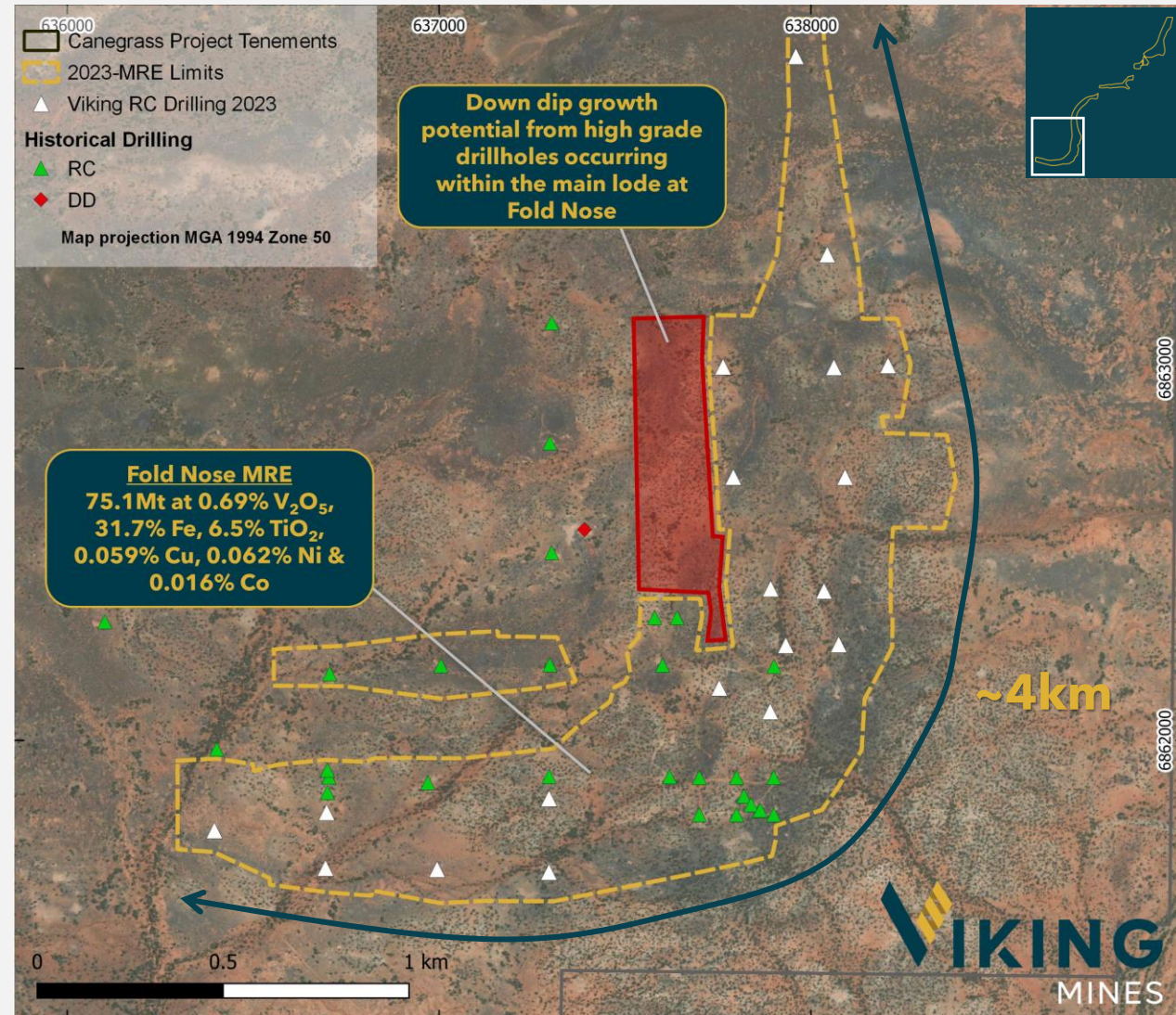


**75.1Mt at 0.69% V<sub>2</sub>O<sub>5</sub> for 1.15 Billion lbs V<sub>2</sub>O<sub>5</sub><sup>i</sup>**

- Upgraded Mineral Resource Estimate extended over ~4km of strike.
- High-grade component >0.8% V<sub>2</sub>O<sub>5</sub> defined and to form primary component for Scoping Study.

**14.5 Mt at 0.87% V<sub>2</sub>O<sub>5</sub>, 37.5% Fe, 8.0% TiO<sub>2</sub> for 0.28 B lbs V<sub>2</sub>O<sub>5</sub><sup>ii</sup>**

- Hinge of fold provides thick zones of mineralisation >30m wide with a shallow dip of 25° to the NW.
- Provides sound basis for an anticipated low strip ratio operation.
- Down dip growth area targeting high-grade zones identified and to be tested in future drilling programmes.



# Kinks Mineral Resource Refined

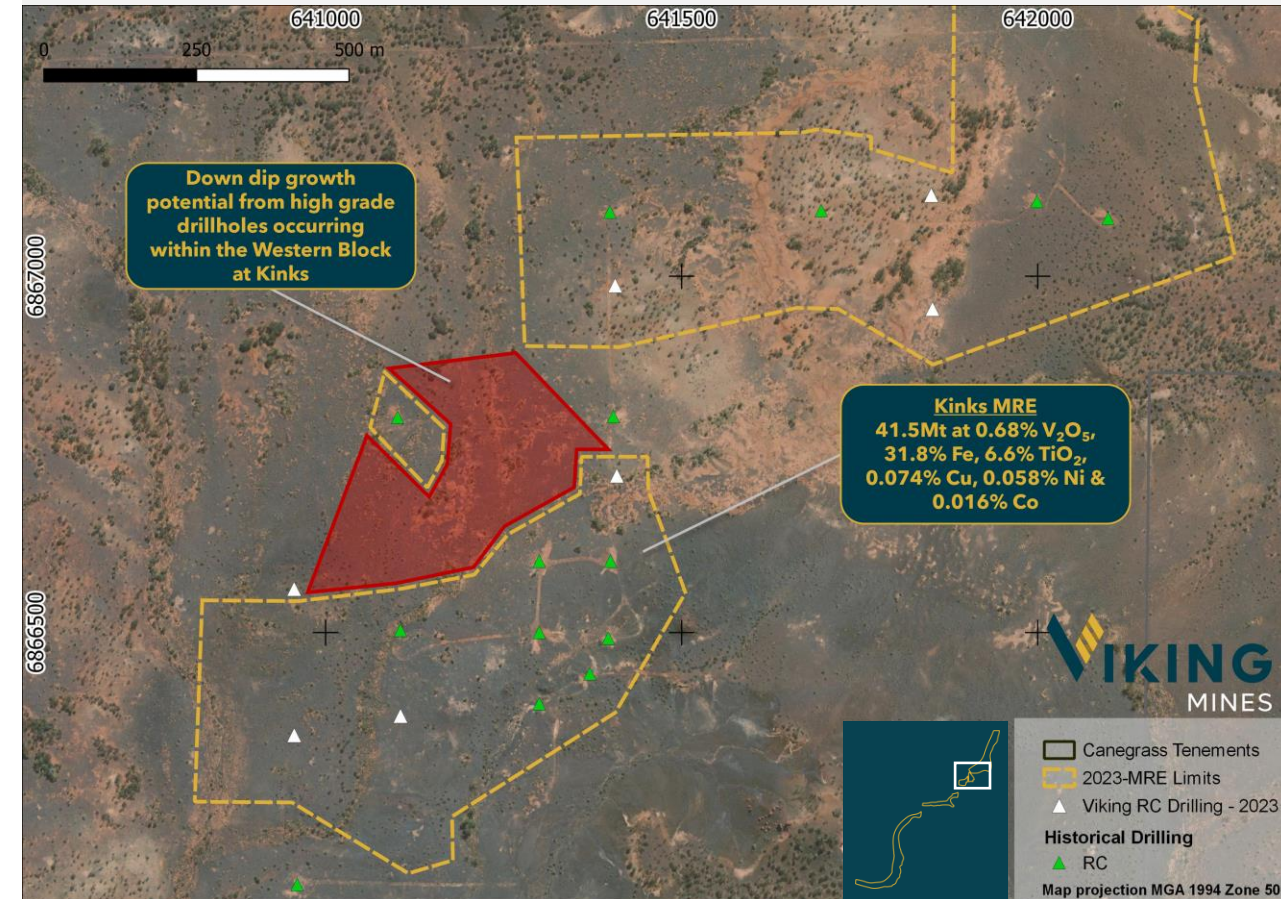


**41.5Mt at 0.68%  $V_2O_5$  for 0.62 Billion lbs  $V_2O_5$ <sup>i</sup>**

- Mineral Resource Estimate extended over 1.8km of strike.
- Includes high-grade  $>0.8\%$   $V_2O_5$  subset in Western Block not previously defined.

**3.5 Mt at 0.84%  $V_2O_5$ , 38.2% Fe, 8.1%  $TiO_2$  for 0.06 B lbs  $V_2O_5$ <sup>ii</sup>**

- Mineralisation up to 30m thick, outcrops to the south and dips at  $33^\circ$  to the north & north-west.
- Large shallow target extensions of high-grade zone identified for future drill testing.



# Kinks South New Mineral Resource

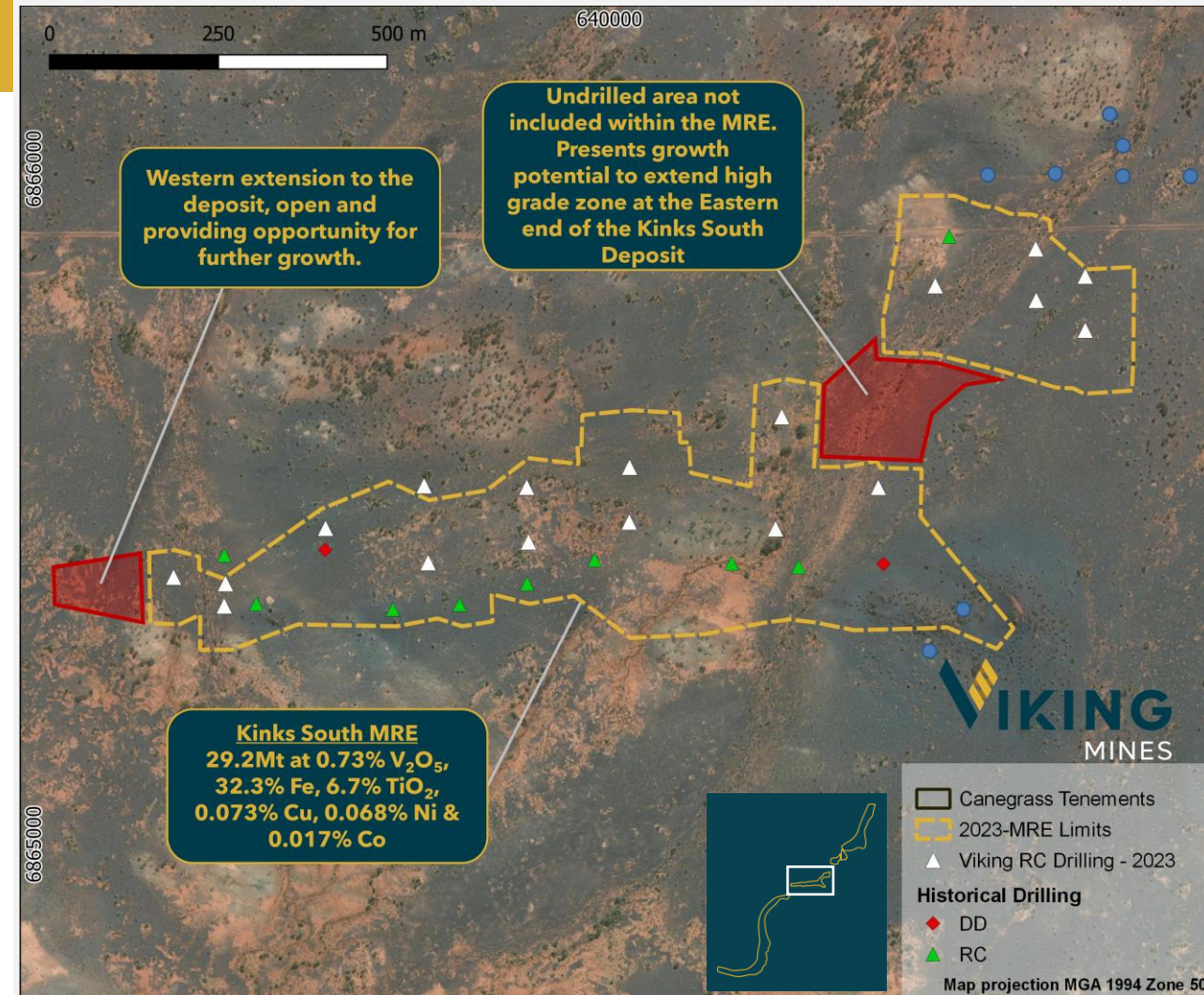


**29.2Mt at 0.73%  $V_2O_5$  for 0.47 Billion lbs  $V_2O_5$ <sup>i</sup>**

- New maiden Mineral Resource Estimate defined over >1.5km of strike.
- Includes high-grade core to be targeted in Scoping Study analysis.

**9.6Mt at 0.88%  $V_2O_5$ , 36.8% Fe, 8.0%  $TiO_2$   
for 0.19 B lbs  $V_2O_5$ <sup>ii</sup>**

- Mineralisation outcrops in the south and dips at 40° to the north with zones up to 31m thick.
- Eastern end identified with greatest thickness and shallower dip (18°) providing target area with low strip ratio potential.
- Target areas for extensions to high-grade zones defined for future drill testing.

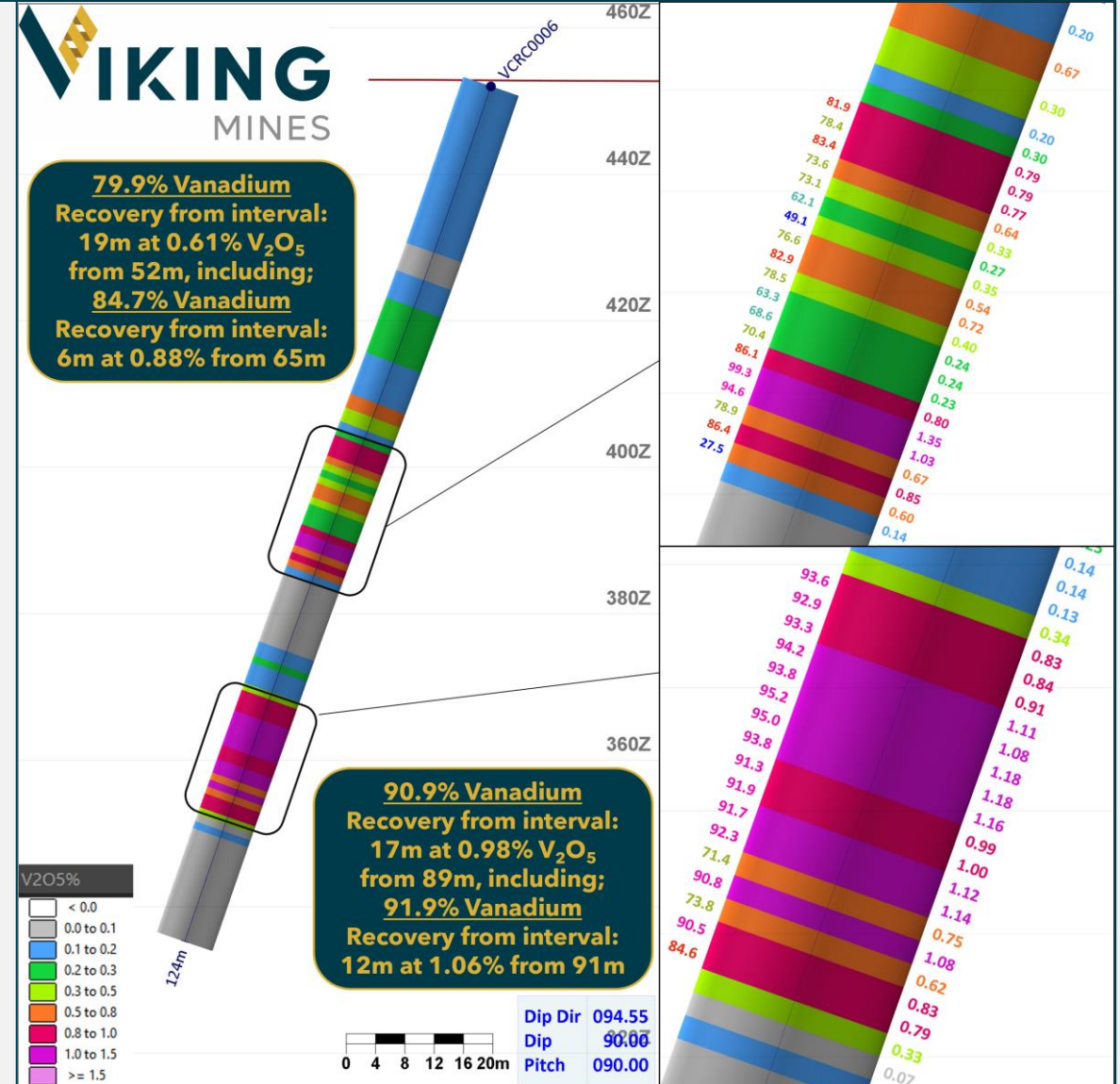


# Exceptional Vanadium Recoveries

## Up to 1.44% V<sub>2</sub>O<sub>5</sub> with >90% Vanadium Recoveries<sup>i</sup>

- Testwork has demonstrated that a high-quality magnetic concentrate can be produced from the VTM mineralisation at the Canegrass Project.
- Main mineralised zone in hole VCRC0006 of **17m at 0.98% V<sub>2</sub>O<sub>5</sub>**<sup>ii</sup> achieved **90.9% recovery to magnetic concentrate grading 1.44% V<sub>2</sub>O<sub>5</sub>**.
- Copper Nickel and Cobalt reporting to the non-magnetic tail confirming the opportunity to produce a sulphide concentrate in the process flow sheet.
- Up to **62.7% Iron** in concentrate indicates potential to produce a magnetite concentrate from the Project for direct shipping opportunity.
- Second stage testwork underway to clean the concentrate and produce V<sub>2</sub>O<sub>5</sub> flake & ore grade Fe concentrate.

Magnetic Concentrate Average Values							
Interval	Results	V <sub>2</sub> O <sub>5</sub> %	Fe%	TiO <sub>2</sub> %	SiO <sub>2</sub> %	Al <sub>2</sub> O <sub>3</sub> %	P%
17m	Grade	<b>1.44%</b>	60.3%	10.6%	1.1%	1.7%	<0.001%
	Recovery	<b>90.9%</b>	87.4%	79.1%	4.7%	19.4%	n/a
19m	Grade	<b>1.39%</b>	57.1%	11.2%	2.6%	2.7%	<0.001%
	Recovery	<b>79.9%</b>	71.4%	69.1%	3.3%	6.0%	n/a



# Strategic Options to Release value



## Produce Magnetic Concentrate

### Low capital cost option

Produce direct ship concentrate for supply to steel industry and seek credits for Vanadium content

### Toll Treatment/Product Sale

Toll treat or sale of magnetic concentrate from the Project to peers in the region who have developed full process plant infrastructure

**Multiple options available and to be investigated to deliver best return for shareholders**

## Produce V<sub>2</sub>O<sub>5</sub> Flake

### High capital cost option

Develop full process and produce V<sub>2</sub>O<sub>5</sub> flake for sale to market along with Iron Ore concentrate and Cu, Ni & Co credits

### Strategic Partnerships

Partner with neighbours and utilise existing Windimurra Mine Infrastructure (which is on care and maintenance) to process Canegrass product

# Critical Mineral Project Rapidly Advancing & Fully Funded Through Planned Work Programmes



MRE update completed and expanded to include Ni, Cu & Co. Preliminary pit optimisation studies to commence.



2<sup>nd</sup> Stage Metallurgical testing to expand on preliminary testwork by producing V<sub>2</sub>O<sub>5</sub> flake, marketable iron ore concentrate & evaluate Ni, Cu, Co potential.



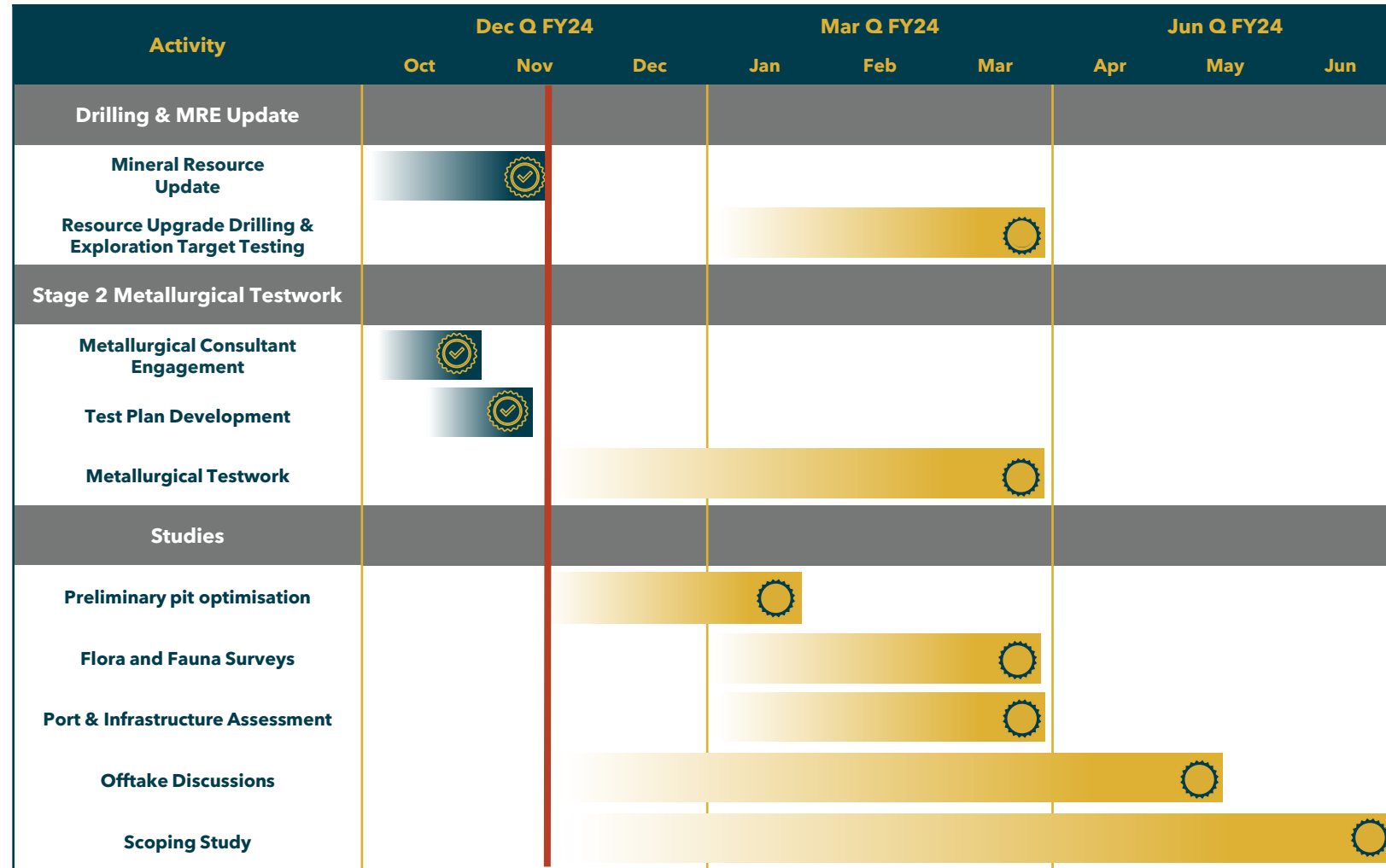
Scoping Study to determine value opportunity and decision to move to next step of resource drilling & studies required to advance the Project.



Port, transport and offtake discussions to commence regarding commercial structures/agreements.



Flora & fauna studies to develop required datasets to advance studies needed to move to more advanced study levels and ESG assessments.



*Timelines are indicative and subject to change based on results as the project progresses.*

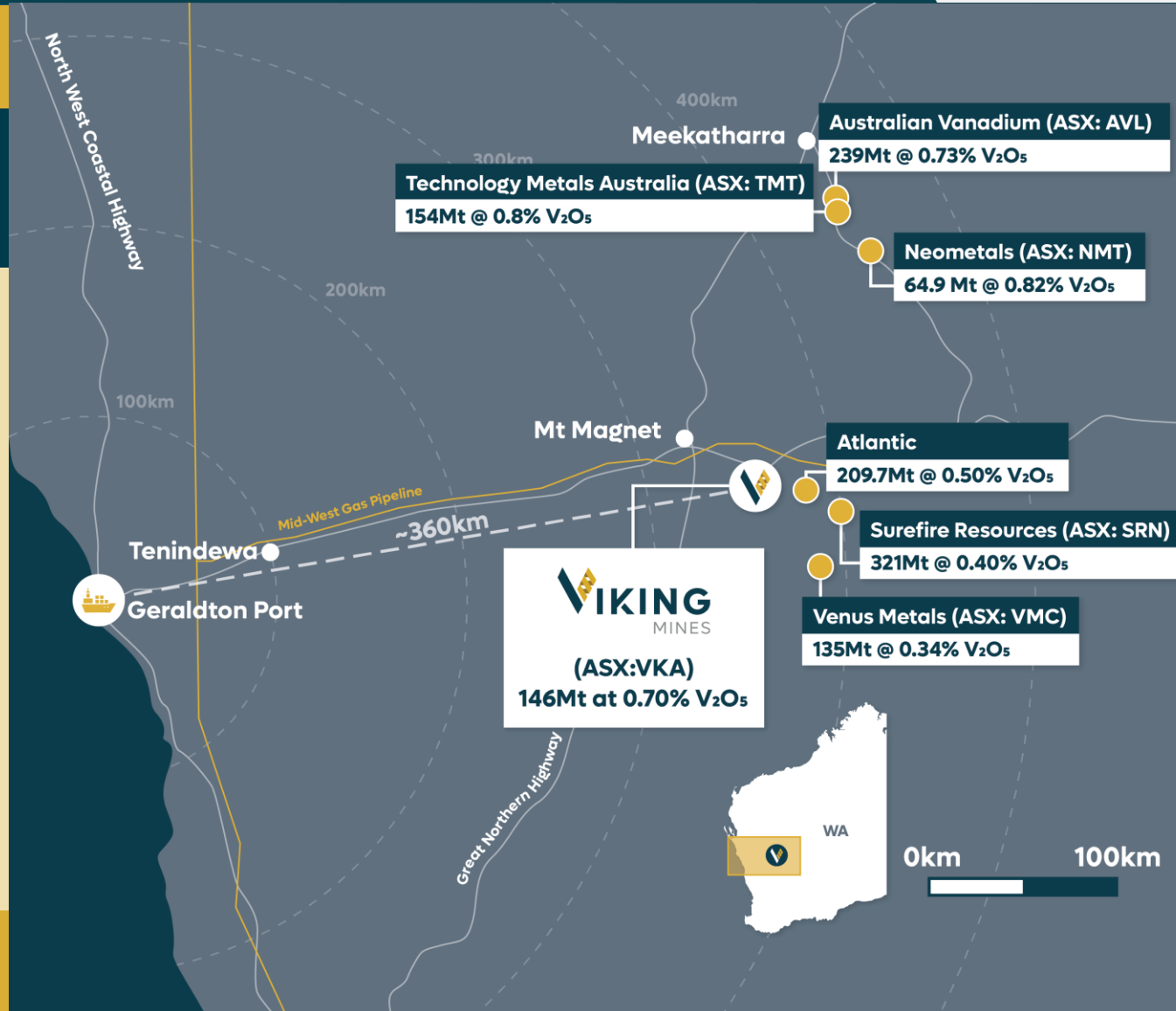
# Murchison Region Vanadium Focussed Projects



## Regional Vanadium/Titanium Projects

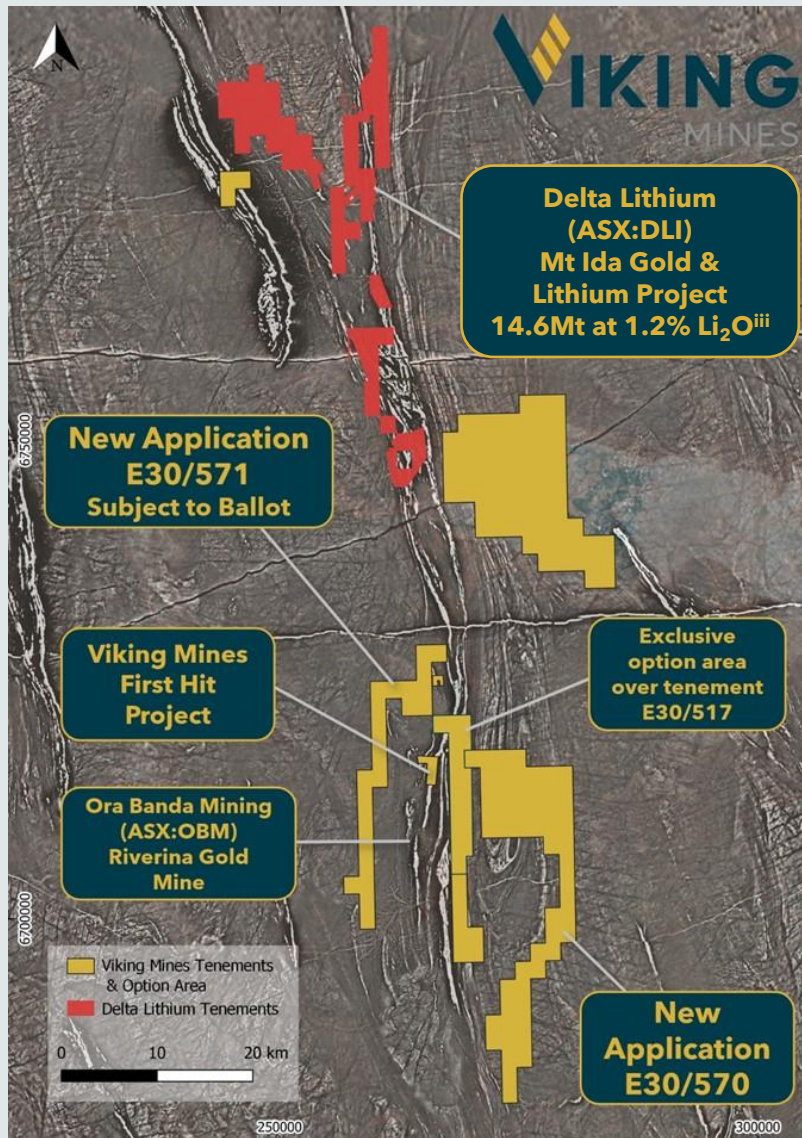
COMPANY	VIKING MINES (ASX:VKA)	TECHNOLOGY METALS (ASX:TMT)	AUSTRALIAN VANADIUM (ASX:AVL)	VENUS METALS (ASX:VMC)	SUREFIRE RESOURCES (ASX:SRN)
PROJECT	Canegrass Battery Minerals Project	Murchison Technology Metals Project	Australian Vanadium Project	Youanmi	Victory Bore & Unaly Hill
MRE	Inferred: 146Mt @ 0.70% V <sub>2</sub> O <sub>5</sub>	M+Ind+Inf: 154Mt @ 0.8% V <sub>2</sub> O <sub>5</sub>	M+Ind+Inf: 239Mt @ 0.73% V <sub>2</sub> O <sub>5</sub>	M+Ind+Inf: 135Mt @ 0.34% V <sub>2</sub> O <sub>5</sub>	M+Ind+Inf: 321Mt @ 0.40% V <sub>2</sub> O <sub>5</sub>
ORE RESERVES: PROVED & PROBABLE	n/a	44.48Mt @ 0.89% V <sub>2</sub> O <sub>5</sub>	30.9Mt @ 1.09% V <sub>2</sub> O <sub>5</sub>	n/a	n/a
PROJECT STATUS	Exploration	DFS complete	BFS complete	Exploration	Scoping Study

### Canegrass Project MRE Updated

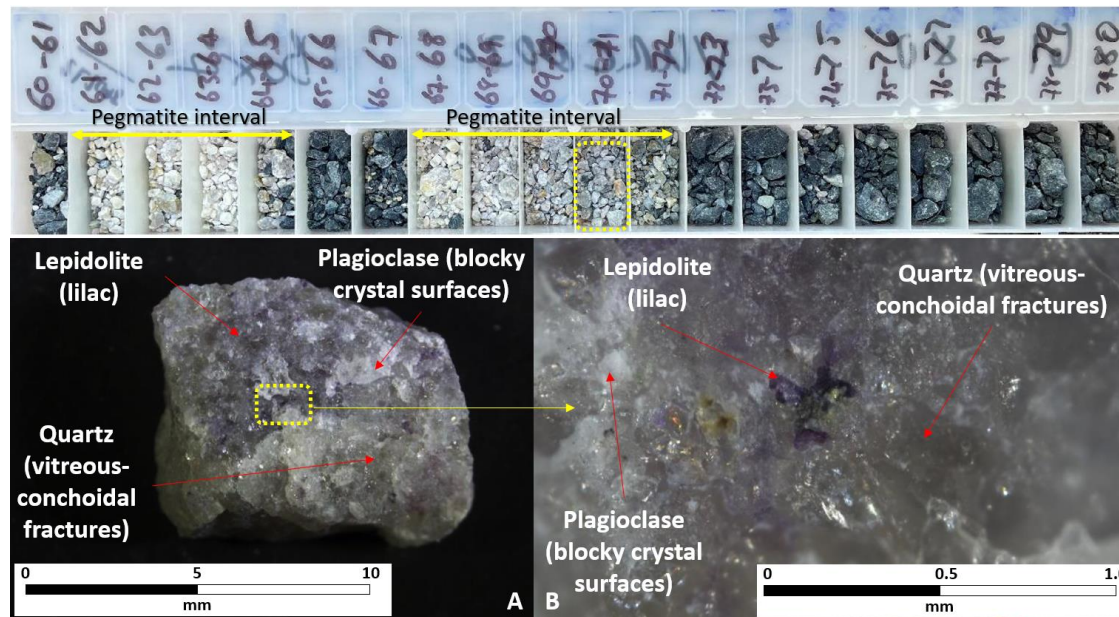




# First Hit Project Gold & Lithium Opportunity



- Substantial >270km<sup>2</sup> granted tenement holding in prolific gold and lithium district. <sup>i</sup>
- 25km long continuous land position covering 60km<sup>2</sup> along highly prospective and well-endowed Zuleika Shear Zone/Mt Ida Fault.
- Delta Lithium advancing to production at Mt Ida Lithium Project.
- Multiple pegmatites intersected at First Hit.
- Hole VKRC0030 intersected lithium bearing minerals in pegmatite intersected from 61-72m. <sup>ii</sup>
- Follow up exploration underway.





**Exposure To Critical Mineral Vanadium with Fe, Ti, Cu, Ni, & Co Upside + additional Li & Au Projects**



**Large MRE with High-Grade Component**



**Rapidly Advancing Project with Fully Funded Extensive Work Programme**



**Undervalued Compared to Peers, VKA has Significant Upside Potential**



**For more information  
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# Appendix 1 - Vanadium Company Snapshot



COMPANY	VIKING MINES (ASX:VKA)	TECHNOLOGY METALS (ASX:TMT)	AUSTRALIAN VANADIUM (ASX:AVL)	VENUS METALS (ASX:VMC)	SUREFIRE RESOURCES (ASX:SRN)	NEOMETALS (ASX:NMT)	ATLANTIC PTY LTD (PRIVATE)
PROJECT	<b>Canegrass</b>	Murchison Technology Metals Project	Australian Vanadium Project	Youanmi	Victory Bore and Unaly Hill	Barrambie	Windimurra
	<b>146Mt @ 0.70% V<sub>2</sub>O<sub>5</sub></b>	154Mt @ 0.8% V <sub>2</sub> O <sub>5</sub>	239Mt @ 0.73% V <sub>2</sub> O <sub>5</sub>	135Mt @ 0.34% V <sub>2</sub> O <sub>5</sub>	321Mt @ 0.40% V <sub>2</sub> O <sub>5</sub>	64.9Mt at 0.82% V <sub>2</sub> O <sub>5</sub>	209.7Mt at 0.50% V <sub>2</sub> O <sub>5</sub>
MINERAL RESOURCES	<b>Inferred: 146Mt @ 0.70% V<sub>2</sub>O<sub>5</sub> TOTAL: 146Mt @ 0.70% V<sub>2</sub>O<sub>5</sub></b> (Source: VKA 20 November 2023)	Measured: 12.1Mt @ 1.0% V <sub>2</sub> O <sub>5</sub> Indicated: 51.2Mt @ 0.9% V <sub>2</sub> O <sub>5</sub> Inferred: 90.5Mt @ 0.8% V <sub>2</sub> O <sub>5</sub> TOTAL: 153.7Mt @ 0.8% V <sub>2</sub> O <sub>5</sub> (Source: TMT 7 November 2022)	Measured: 11.3Mt at 1.14% V <sub>2</sub> O <sub>5</sub> Indicated: 82.4Mt at 0.70% V <sub>2</sub> O <sub>5</sub> Inferred: 145.3Mt at 0.71% V <sub>2</sub> O <sub>5</sub> TOTAL: 239Mt @ 0.73% V <sub>2</sub> O <sub>5</sub> (Source: <a href="https://www.australianvanadium.com.au/our-assets/the-australian-vanadium-project/">https://www.australianvanadium.com.au/our-assets/the-australian-vanadium-project/</a> )	Measured: 31.55Mt @ 0.33% V <sub>2</sub> O <sub>5</sub> Indicated: 54.37Mt @ 0.33% V <sub>2</sub> O <sub>5</sub> Inferred: 48.82Mt @ 0.36% V <sub>2</sub> O <sub>5</sub> TOTAL: 134.73Mt @ 0.34% V <sub>2</sub> O <sub>5</sub> (Source: VMC 20 March 2019)	Measured: 16.8Mt @ 0.42% V <sub>2</sub> O <sub>5</sub> Indicated: 70.3Mt @ 0.40% V <sub>2</sub> O <sub>5</sub> Inferred: 234.0Mt @ 0.40% V <sub>2</sub> O <sub>5</sub> TOTAL: 321Mt @ 0.40% V <sub>2</sub> O <sub>5</sub> (Source: SRN 1 February 2023)	Indicated: 49.0Mt @ 0.82% V <sub>2</sub> O <sub>5</sub> Inferred: 15.9Mt @ 0.81% V <sub>2</sub> O <sub>5</sub> TOTAL: 64.9Mt @ 0.82% V <sub>2</sub> O <sub>5</sub> (Source: NMT Annual Report 23 September 2022)	Measured: 34.6Mt at 0.49% V <sub>2</sub> O <sub>5</sub> Indicated: 123.5Mt @ 0.50% V <sub>2</sub> O <sub>5</sub> Inferred: 51.6Mt @ 0.50% V <sub>2</sub> O <sub>5</sub> TOTAL: 209.7Mt @ 0.50% V <sub>2</sub> O <sub>5</sub> (Source: <a href="https://atlanticptyltd.com.au/projects/windimurra/geology-reserves-resources">https://atlanticptyltd.com.au/projects/windimurra/geology-reserves-resources</a> )
ORE RESERVES	n/a	Proved: 1.12Mt @ 0.95% V <sub>2</sub> O <sub>5</sub> Probable: 43.36Mt @ 0.89% V <sub>2</sub> O <sub>5</sub> TOTAL: 44.48Mt @ 0.89% (Source: <a href="https://www.tmtlimited.com.au/murchison-technology-metals-project/mineral-resources-ore-reserves/">https://www.tmtlimited.com.au/murchison-technology-metals-project/mineral-resources-ore-reserves/</a> )	Proved: 10.5Mt @ 1.11% V <sub>2</sub> O <sub>5</sub> Probable: 20.4Mt @ 1.07% V <sub>2</sub> O <sub>5</sub> TOTAL: 30.9Mt @ 1.09% V <sub>2</sub> O <sub>5</sub> (Source: <a href="https://www.australianvanadium.com.au/our-assets/the-australian-vanadium-project/">https://www.australianvanadium.com.au/our-assets/the-australian-vanadium-project/</a> )	n/a	n/a	n/a	Probable: 87.5Mt @ 0.49% V <sub>2</sub> O <sub>5</sub> TOTAL: 87.5Mt @ 0.49% V <sub>2</sub> O <sub>5</sub> (Source: <a href="https://atlanticptyltd.com.au/projects/windimurra/geology-reserves-resources">https://atlanticptyltd.com.au/projects/windimurra/geology-reserves-resources</a> )
PROJECT STATUS	<b>Exploration</b>	Definitive Feasibility Study complete	Bankable Feasibility Study complete	Exploration	Scoping Study	Pre-Feasibility Study complete	Definitive Feasibility Study complete

# Appendix 2 - Canegrass Mineral Resource Estimate <sup>i</sup>



Model	Deposit	Cut-Off V <sub>2</sub> O <sub>5</sub> %		JORC (2012) Classification	Volume	Density	Tonnes	Tonnage (Mt)	V <sub>2</sub> O <sub>5</sub> %	Fe %	Fe <sub>2</sub> O <sub>3</sub> %	TiO <sub>2</sub> %	Cu %	Ni %	Co %	Al <sub>2</sub> O <sub>3</sub> %	SiO <sub>2</sub> %	P %	P <sub>2</sub> O <sub>5</sub> %	LOI %	V <sub>2</sub> O <sub>5</sub> T	V <sub>2</sub> O <sub>5</sub> BLbs	Mt Fe	Mt TiO <sub>2</sub>	Cu T	Ni T	Co T
		From	To																								
November 2023 Model	Fold Nose	0.00	0.50	Inferred	5,888,852	3.3	19,650,571	19.7	0.44	21.8	31.2	4.1	0.056	0.046	0.012	15.8	31.9	0.005	0.01	1.4	86,017	0.19	4.3	0.8	11,063	9,122	2,296
		0.50	0.80	Inferred	16,751,576	3.6	60,641,026	60.6	0.65	30.3	43.3	6.2	0.057	0.059	0.015	13.1	23.2	0.004	0.01	1.8	396,405	0.87	18.4	3.8	34,427	35,965	8,989
		0.80		Inferred	3,710,784	3.9	14,468,533	14.5	0.87	37.5	53.6	8.0	0.070	0.071	0.018	9.9	16.5	0.004	0.01	1.3	125,508	0.28	5.4	1.2	10,102	10,343	2,675
		>0.5		Inferred	20,462,360		75,109,560	75.1	0.69	31.7	45.3	6.5	0.059	0.062	0.016	12.5	21.9	0.004	0.01	1.7	521,913	1.15	23.8	4.9	44,530	46,308	11,664
	Kinks South	0.00	0.50	Inferred	2,115,784	3.7	7,800,150	7.8	0.42	21.2	30.3	4.4	0.044	0.041	0.011	18.0	31.4	0.007	0.02	3.7	32,893	0.07	1.7	0.3	3,417	3,214	835
		0.50	0.80	Inferred	5,121,216	3.8	19,611,721	19.6	0.65	30.1	43.1	6.1	0.071	0.066	0.016	11.8	22.4	0.003	0.01	2.5	128,032	0.28	5.9	1.2	13,877	12,983	3,090
		0.80		Inferred	2,460,284	3.9	9,573,436	9.6	0.88	36.8	52.7	8.0	0.076	0.071	0.019	8.6	16.3	0.003	0.01	1.7	84,614	0.19	3.5	0.8	7,285	6,814	1,783
		>0.5		Inferred	7,581,500		29,185,158	29.2	0.73	32.3	46.2	6.7	0.073	0.068	0.017	10.7	20.4	0.003	0.01	2.3	212,647	0.47	9.4	2.0	21,162	19,797	4,873
	Kinks	0.00	0.50	Inferred	937,416	3.6	3,336,852	3.3	0.47	22.9	32.8	5.0	0.051	0.037	0.012	16.7	30.1	0.010	0.02	0.7	15,734	0.03	0.8	0.2	1,688	1,251	403
		0.50	0.80	Inferred	10,182,016	3.7	38,032,009	38.0	0.66	31.2	44.7	6.4	0.074	0.057	0.016	11.3	22.8	0.009	0.02	1.3	251,368	0.55	11.9	2.4	28,057	21,671	6,148
		0.80		Inferred	883,732	3.9	3,452,161	3.5	0.84	38.2	54.6	8.1	0.080	0.069	0.020	7.6	16.8	0.004	0.01	1.0	28,830	0.06	1.3	0.3	2,755	2,396	674
		>0.5		Inferred	11,065,748		41,484,170	41.5	0.68	31.8	45.5	6.6	0.074	0.058	0.016	11.0	22.3	0.008	0.02	1.3	280,198	0.62	13.2	2.7	30,812	24,067	6,822
	Combined	0.00	0.50	Inferred	8,942,052	3.4	30,787,573	30.8	0.44	21.8	31.1	4.3	0.053	0.044	0.011	16.4	31.6	0.006	0.01	1.9	134,643	0.30	6.7	1.3	16,168	13,586	3,534
		0.50	0.80	Inferred	32,054,808	3.7	118,284,756	118.3	0.66	30.6	43.7	6.3	0.065	0.060	0.015	12.3	22.9	0.006	0.01	1.8	775,805	1.71	36.1	7.4	76,361	70,619	18,227
		0.80		Inferred	7,054,800	3.9	27,494,131	27.5	0.87	37.3	53.4	8.0	0.073	0.071	0.019	9.1	16.5	0.003	0.01	1.4	238,953	0.53	10.3	2.2	20,142	19,553	5,132
		>0.5		Inferred	39,109,608		145,778,887	145.8	0.70	31.8	45.5	6.6	0.066	0.062	0.016	11.7	21.7	0.005	0.01	1.7	1,014,758	2.237	46.4	9.6	96,503	90,172	23,359

# Appendix 3 - Vanadium VRFB Global Uptake Increasing



## Over 200 Operating VRFB Projects Worldwide <sup>i</sup>

- Sumitomo Electric has grid scale projects from 125kW to 17MW in Japan, US, Europe, Africa & Asia, and recently announced a new order for a 1MW/8MWh system.
- German manufacture, Prolux Solutions, unveils STORAC residential VRFB unit (5kW & 10kW).
- Horizon Power - first Australian energy provider to purchase a VRFB, to power a pilot energy storage project in the remote town of Kununurra, WA.
- Mining company IGO to implement a VRFB trial at its Nickel Operation in WA's remote Fraser Range.
- AVL has commenced construction of a Vanadium Electrolyte facility in Perth, WA. The facility will produce 33MWh per year of vanadium flow battery (VFB) high purity electrolyte.
- \$26 million Townsville Vanadium Battery Manufacturing Facility, which will produce 175MWh of battery storage annually.

