

Investing in the future with Australian Vanadium

Resources Rising Stars May 2016

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Disclaimer

The views expressed in this presentation contain information derived from publicly available sources that have not been independently verified. No representation or warranty is made as to the accuracy, completeness or reliability of the information.

Comment

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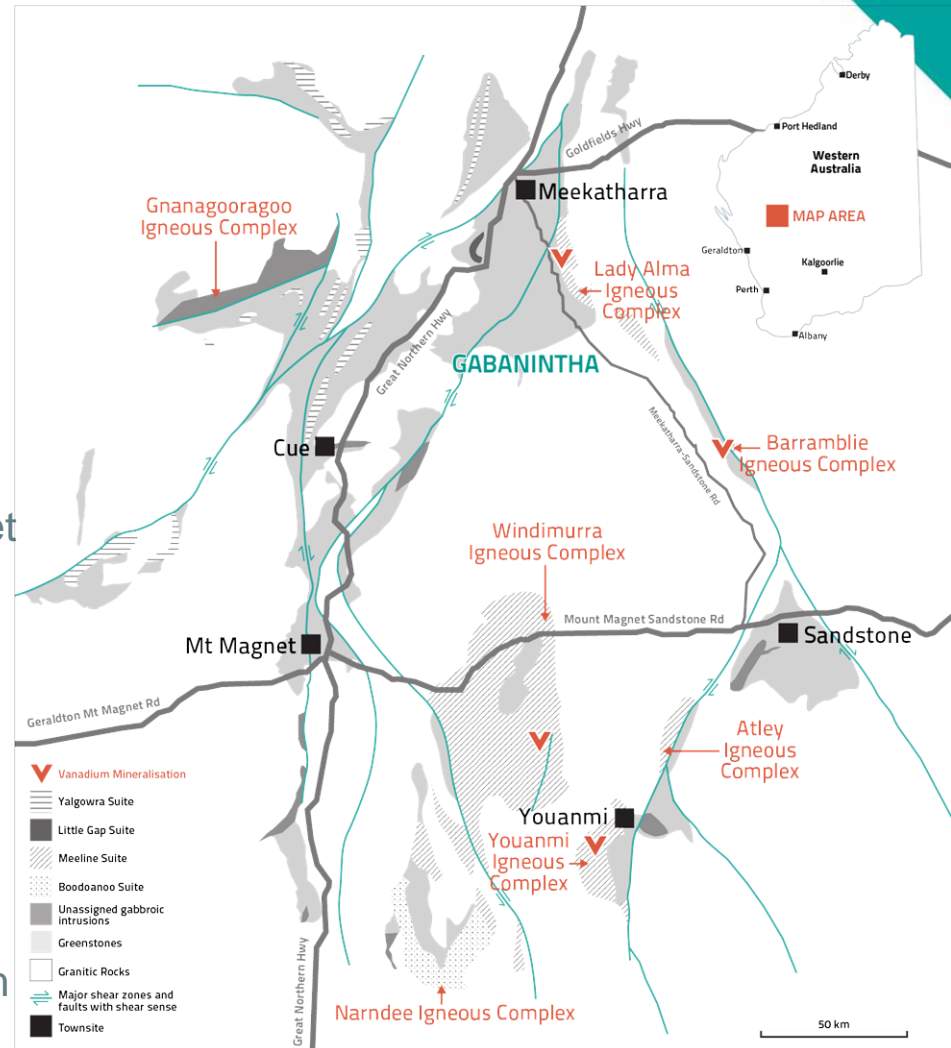
Forward Looking Statements

No representation or warranty is made as to the accuracy, completeness or reliability of the information contained in this release. Any forward looking statements in this presentation are prepared on the basis of a number of assumptions which may prove to be incorrect and the current intention, plans, expectations and beliefs about future events are subject to risks, uncertainties and other factors, many of which are outside Australian Vanadium Limited's control. Important factors that could cause actual results to differ materially from the assumptions or expectations expressed or implied in this presentation include known and unknown risks. Because actual results could differ materially to the assumptions made and Australian Vanadium Limited's current intention, plans, expectations and beliefs about the future, you are urged to view all forward looking statements contained in this release with caution. The release should not be relied upon as a recommendation or forecast by Australian Vanadium Limited. Nothing in this presentation should be construed as either an offer to sell or a solicitation of an offer to buy or sell shares in any jurisdiction.



Who is AVL ?

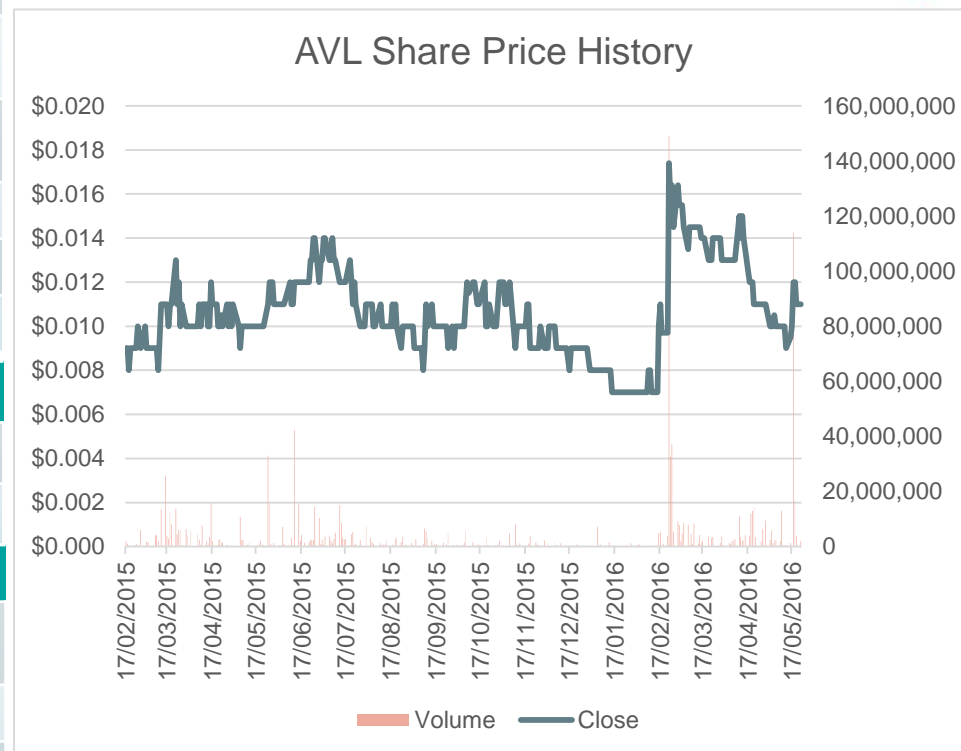
- Vanadium focused ASX listed company
- Active evaluation and development of a long-life, low-cost vanadium Project (Gabanintha) in Western Australia
- Significant project with large, high-grade Measured, Indicated and Inferred resources
- Believe vanadium energy storage market will disrupt global vanadium supply
- Key agreements with Vanadium Battery Suppliers and Solar Energy Installers to develop local market
- AVL offers investors exposure to entire vanadium energy storage value chain
- Focus offers leverage to rising vanadium prices



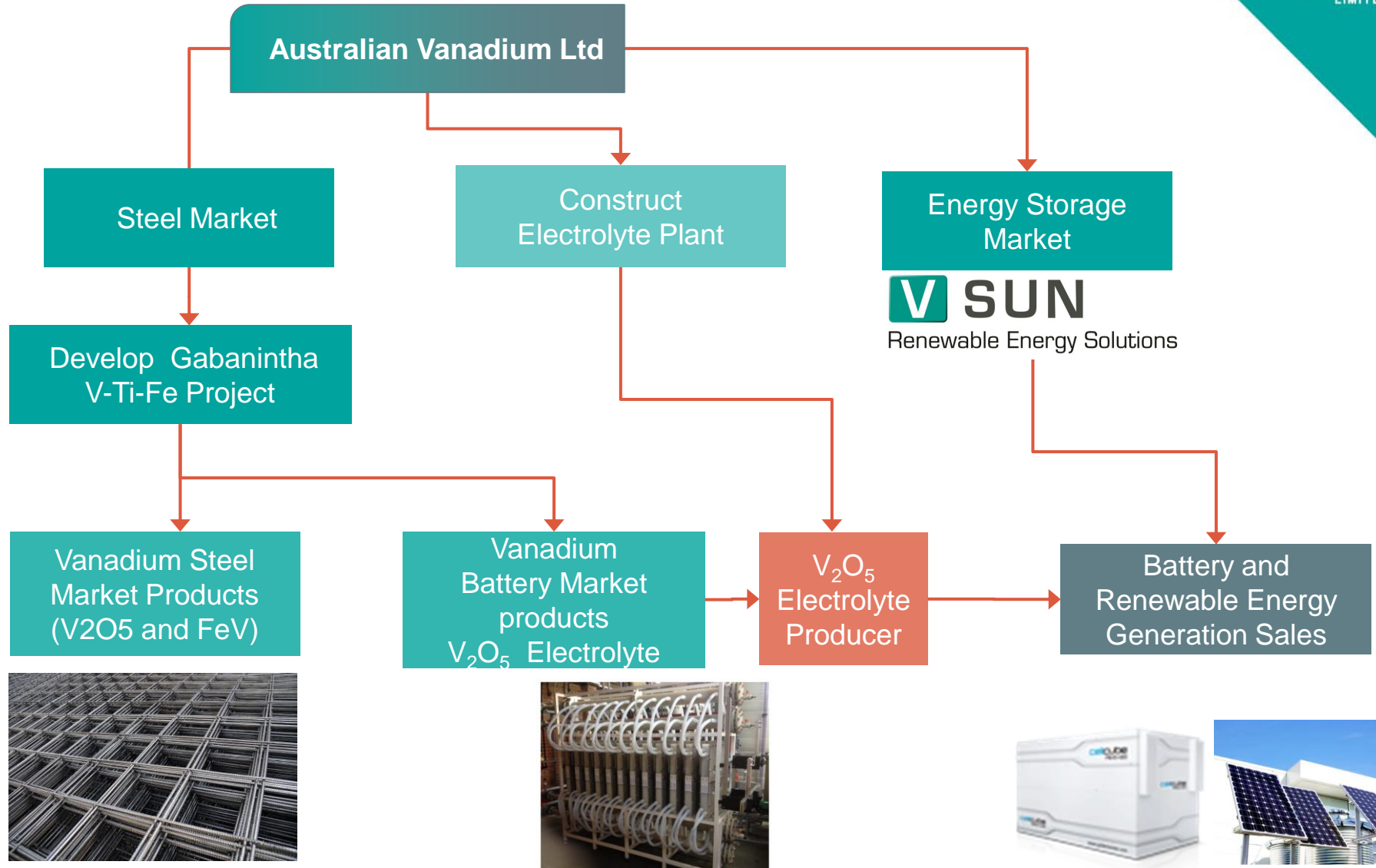
Corporate Snapshot

Capital structure and major shareholders

Key Statistics (as at 3/04/16)	
Ordinary shares on issue	998.1m
Options on issue (ex at 1.47c expire Dec 2017)	258.3m
Listed Options (ex at 2.c exp Dec 2018) AVLO	231.8m
Share price	AUD \$0.012
Market capitalisation (undiluted)	\$12m (Cash ~\$3.4m)
Shareholders	2,165
Substantial Shareholders	
Mr Neale Parsons	4 %
Management	7 %
Board of Directors	
Vincent Algar Bsc(Hons) Geol, MAusImm	Managing Director
Leslie Ingraham	Executive Director
Brenton Lewis MBSc., BBSec.(Hons)	Non Executive Chairman



AVL Vertical Integration Strategy





Vanadium Markets

Energy Storage

Vanadium in Energy Storage

“Energy storage has the potential to transform our entire energy system.”– Clean Energy Australia



Battery storage capacity expected to grow to 185 Gwh in the next few years



62 Gwh (30%) of this market demand expected to be taken up by Vanadium Redox Batteries



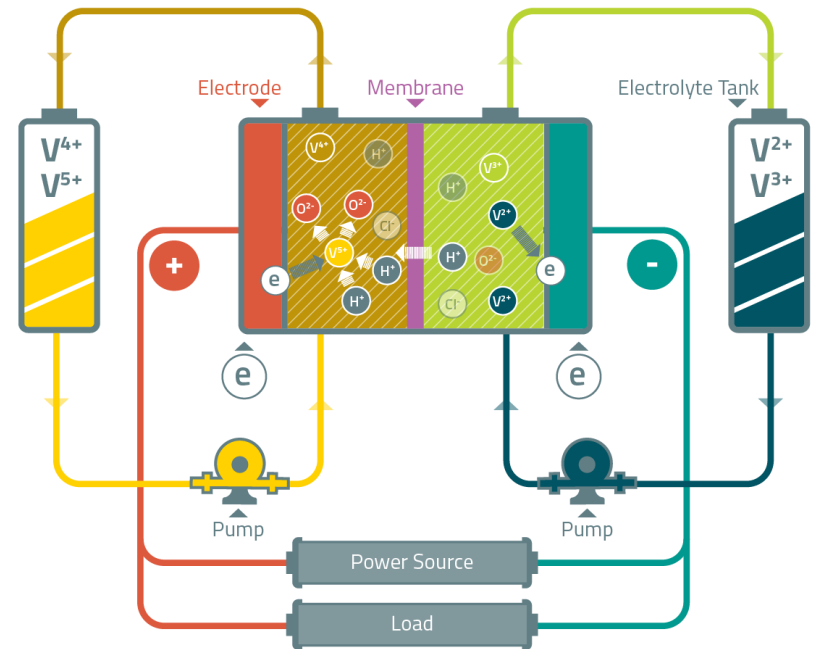
Results in 300,000 tonnes of new demand for vanadium

 **SUN**
Renewable Energy Solutions

Vanadium in Energy Storage

Unique characteristics of Vanadium Redox Batteries (VRBs)

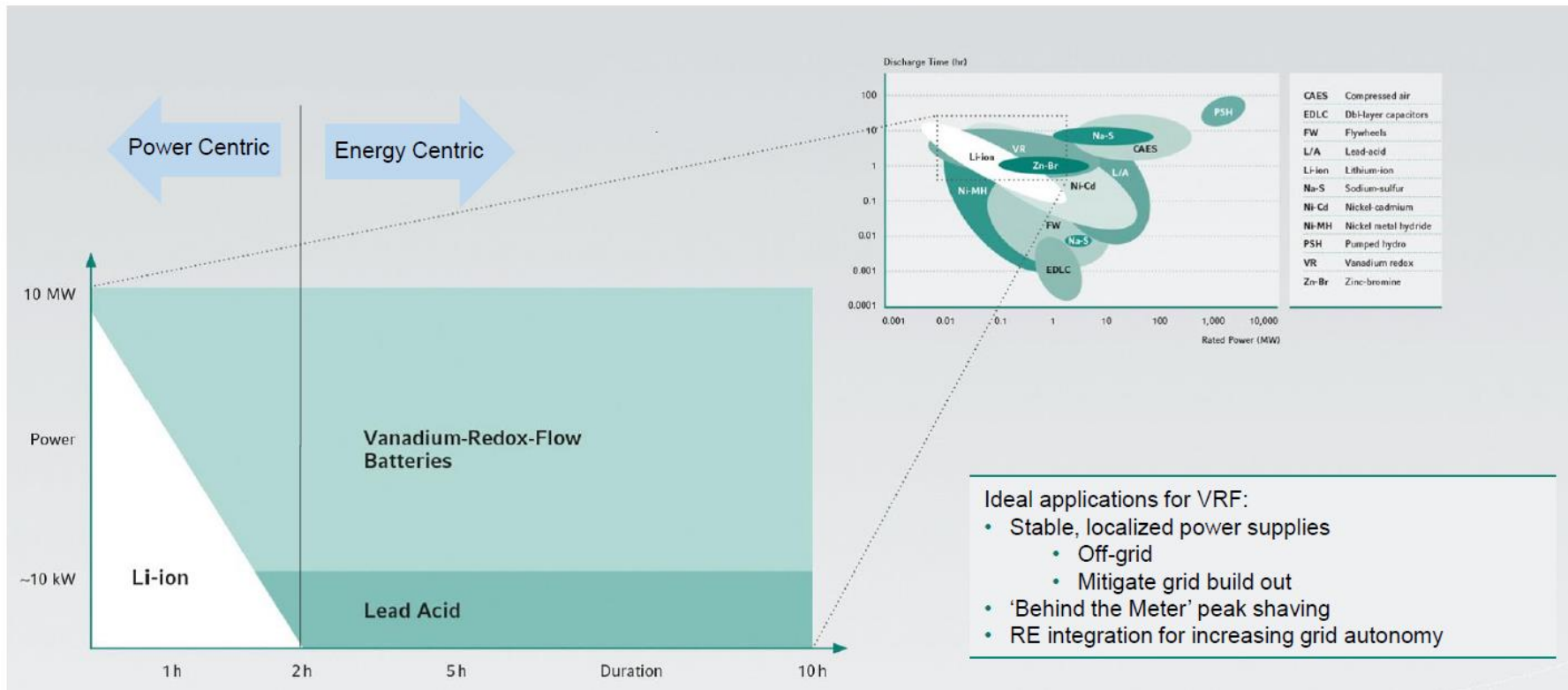
- Flow Battery Technology well established and at commercial deployment status
- VRBs provide a way to store and re-supply renewable energy. Their very high capacity is ideal for large-scale energy storage applications, unlocking the full potential of renewables while maintaining grid security.
- VRBs have unique advantages over other batteries;
 - Easily scaled into grid scale solutions
 - Lifespan of 20 years with very high cycle life and no capacity loss over time
 - Only one electrolyte, V_2O_5 which can be re-cycled
 - Immediate and rapid energy release
 - Excellent charge retention (up to 1 year)
 - Can discharge 100% with no damage
 - Improved safety and low replacement rate compared to Li-ion (lower lifetime LCOE)



Vanadium in Energy Storage

Battery technology—Defining the space for flow battery technology

Vanadium Flow Batteries are Energy Batteries that provide a unique ability to significantly time-shift very large amounts of previously generated energy.



Source: GILDEMEISTER Energy Storage

Vanadium vs Lithium : Key Comparisons

Vanadium Flow Battery	Lithium (Li-ion)
Energy Battery – Store large amounts of energy for later use	Power Battery – ideal for shorter term high power application
Energy stored in Electrolyte Tanks	All energy stored in cell
Stable – non-flammable	Flammable (prone to thermal runaway)
Long lifespan (20 years) due to very high cycle life. No degradation during cycling. (20,000 cycles)	Short lifespan (5-10 years) due to physical changes induced in charge discharge cycle (6000 cycles)
Vanadium Electrolyte can be re-used, does not degrade (30% residual value)	Recycling difficult due to multiple components (no residual value)
Scalability – as modules or by introduction of larger tanks – fewer control systems	Multiple small batteries required – Complexity of control increases
100% depth of discharge with no lifetime capacity loss	Limited to 80% depth but with increasing capacity loss in high cycle environment

Redox Battery Market Beckons in Australia

Can the VRB be the ultimate grid energy storage solution for Australia?

- Rising power costs: VRB can reduce power bills by peak off-peak shifting and demand management
- Australia has world's most extended networks: Many fringe-of-grid and off-grid opportunities exist
- Battery storage strongly on political agenda: Efforts to reduce power price rises and carbon dependency
- VRB rollout can assist with Australian networks primary goal – capital cost deferment
- Australian storage market expected to grow to 3000MWh by 2030.
- VSUN actively identifying multiple large (+10kW to 200kW) commercial storage opportunities being and in qualifying stages.



V SUN
Renewable Energy Solutions

First CellCube Sale Completed in WA

Rural Site to benefit from Solar PV plus CellCube to shift to 90% renewable energy self consumption

- First commercial vanadium flow battery to be commissioned in Western Australia.
- The GILDEMEISTER CellCube FB 10-100 is to be installed at a Busselton agricultural property as part of a 15kW solar PV installation.
- Order being filled at GILDEMEISTER facility in Vienna and will be shipped to Fremantle
- The CellCube can deliver up to 10kW of power and has a storage capacity of 100kWh. This can provide up to 10 hours of renewable power to the site, supplied by charging from the solar PV system.
- The CellCube will provide 3-phase power to the site which currently has only a single phase power connection to the grid.
- Our client is expecting to be up to 90% self-sufficient for their power needs



 **SUN**
Renewable Energy Solutions

Key Partnerships in Place to Grow Strategy

AVL is on track to achieving vanadium storage market objectives with excellent market and technology companies



- GILDEMEISTER energy storage GmbH developed the CellCube, the world's most commercially advanced Vanadium Flow Battery, based on 15 years of development with over 100 installations worldwide.
- MOU is in place for future co-operation in developing the Australian vanadium flow battery market .
- Signed Distribution Agreement for distribution of CellCube energy storage systems.

- Sun Connect is an Australia-wide commercial solar solution company, an appropriate partner for AVL in the installation of integrated solar and VRB solutions.
- MOU is in place to collaborate on VRB opportunities with installations throughout Australia.
- AVL and Sun Connect are actively evaluating several potential integrated solar and VRB installations throughout Australia.

- C-Tech Innovation is a UK research and technology company supplying technology for electrochemical applications
- MOU is in place to collaborate on VRB opportunities installations throughout Australia.
- AVL and C-Tech will collaborate on building Vanadium Electrolyte plant capacity in Australia
- C-Tech will assist in the integration of electrolyte production capacity into the Gabanintha Project design.

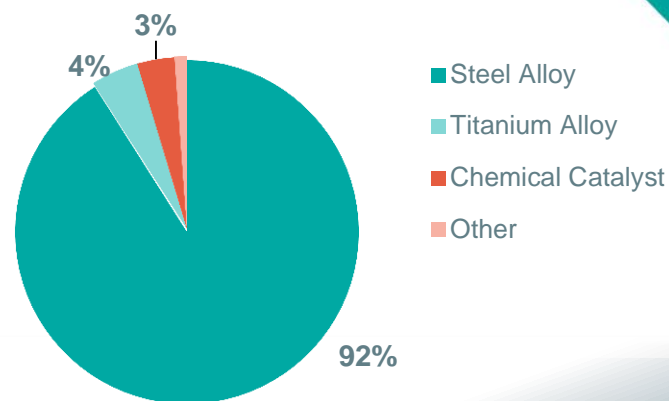


Vanadium Markets *Steel*

Vanadium Markets - Steel

Despite reduced rate of steel production, demand for vanadium continues to grow. Steel remains a price driver for vanadium

- Steel is primary market (92% of vanadium consumption)
- Addition of 0.2% vanadium increases steel strength up to 100% and reduces weight up to 30%
- Demand for use in rebar continues to increase at 6% annually (TTP Squared)
- New markets in steel will increase demand such as;
 - Materials for automotive, aviation and aerospace
 - Power lines and power pylons
 - High-strength steel structures

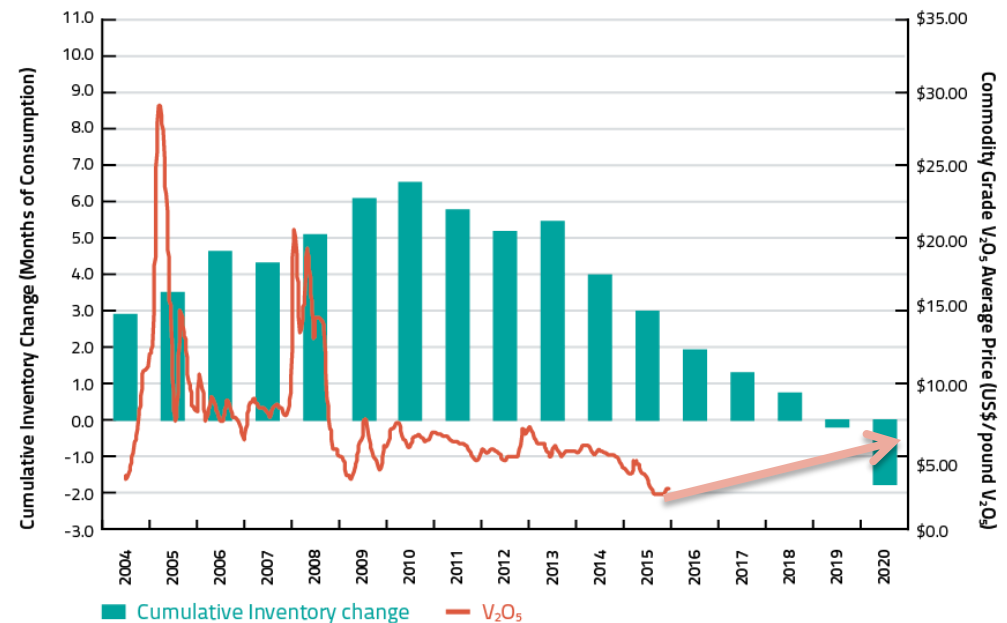


Vanadium Markets - Overview

Supply and demand outlook offers compelling opportunity for early involvement – particularly with interest from Energy Storage

- Upward price signals are clear from very recent data (RN and BM via TTP Squared analysis)
- FeV prices up between 36% and 41% in past four months
- V_2O_5 prices lagging FEV but also rising
- V_2O_5 prices up 18% in 2016 with indications of deals up to 55% higher.
- Supply under pressure with Highveld Steel (RSA) closed
- Chinese FeV capacity constrained at present due to low demand in 2014/5
- Rising prices make immediate improvement to Gabanintha Project economics due to its higher resource grades

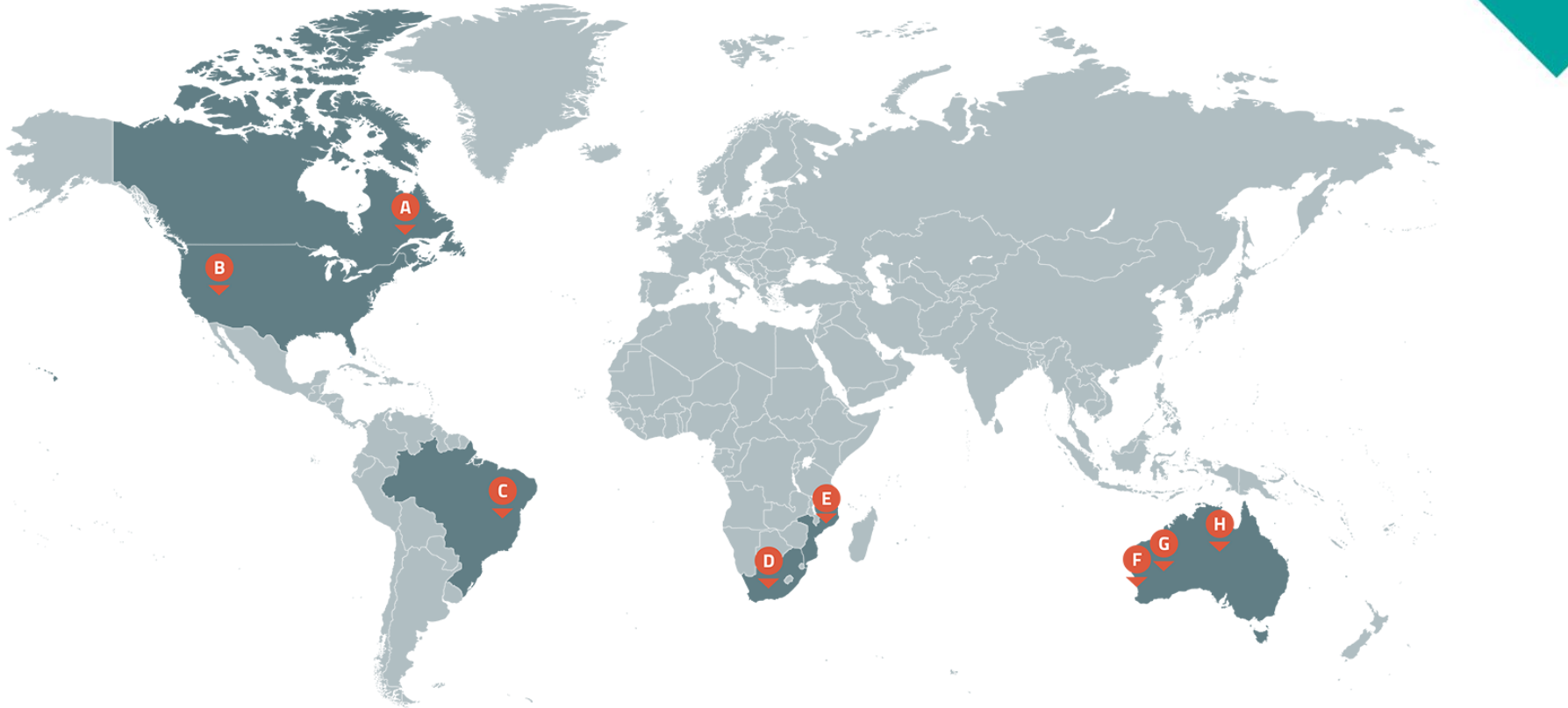
Global Vanadium Inventory Change vs V_2O_5 Price



Globally Significant Project

Global Player

Gabanintha Project is significant development project on a global scale in grade and size



A Vanadium Corp
E Syrah Resources

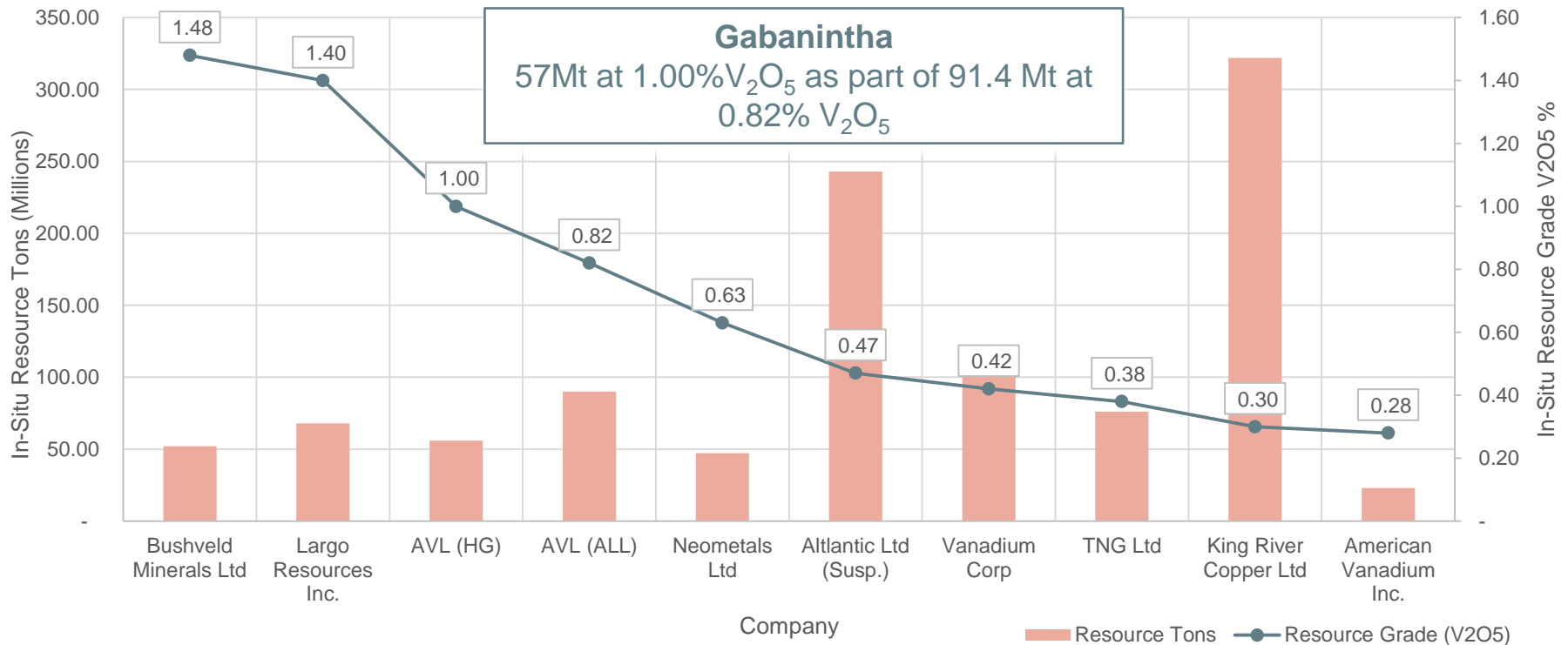
B American Vanadium
F Australian Vanadium

C Largo Resources
G Neometals

D Bushveld Minerals
H TNG Limited

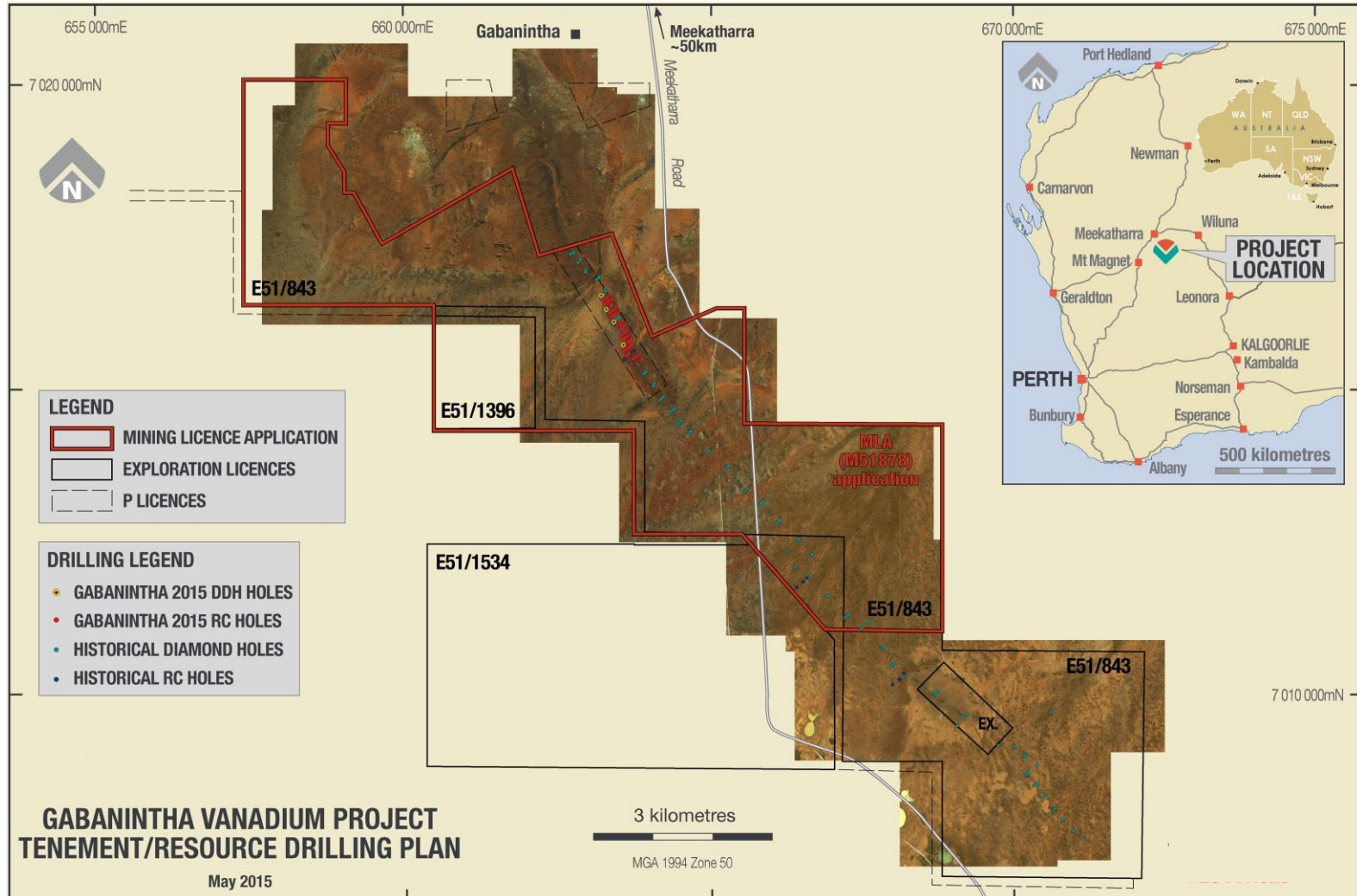
Vanadium Peer Comparison

- Gabanintha a globally significant deposit.
- Measured and Indicated Resources of 24.7Mt (HG zone of 57Mt at 1.00%V₂O₅ as part of total 91.4 Mt at 0.82% V₂O₅)
- Undervalued with significant leverage to current share price
- AVL Market Cap of \$10m compares to TNG Market Cap of \$100M and BMN \$24M



Gabanintha Vanadium Project

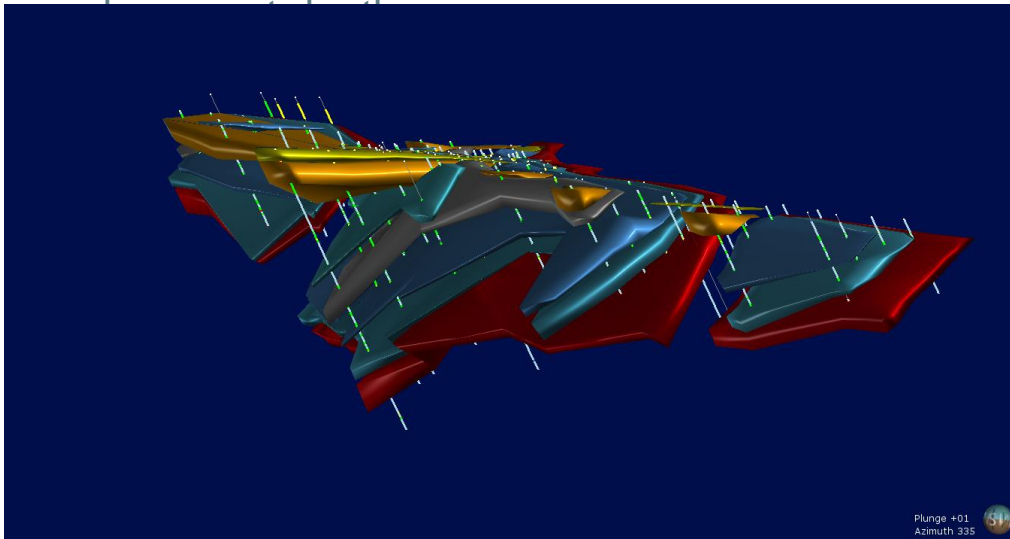
Excellent project location and significant additional resource potential



Gabanintha Vanadium Project

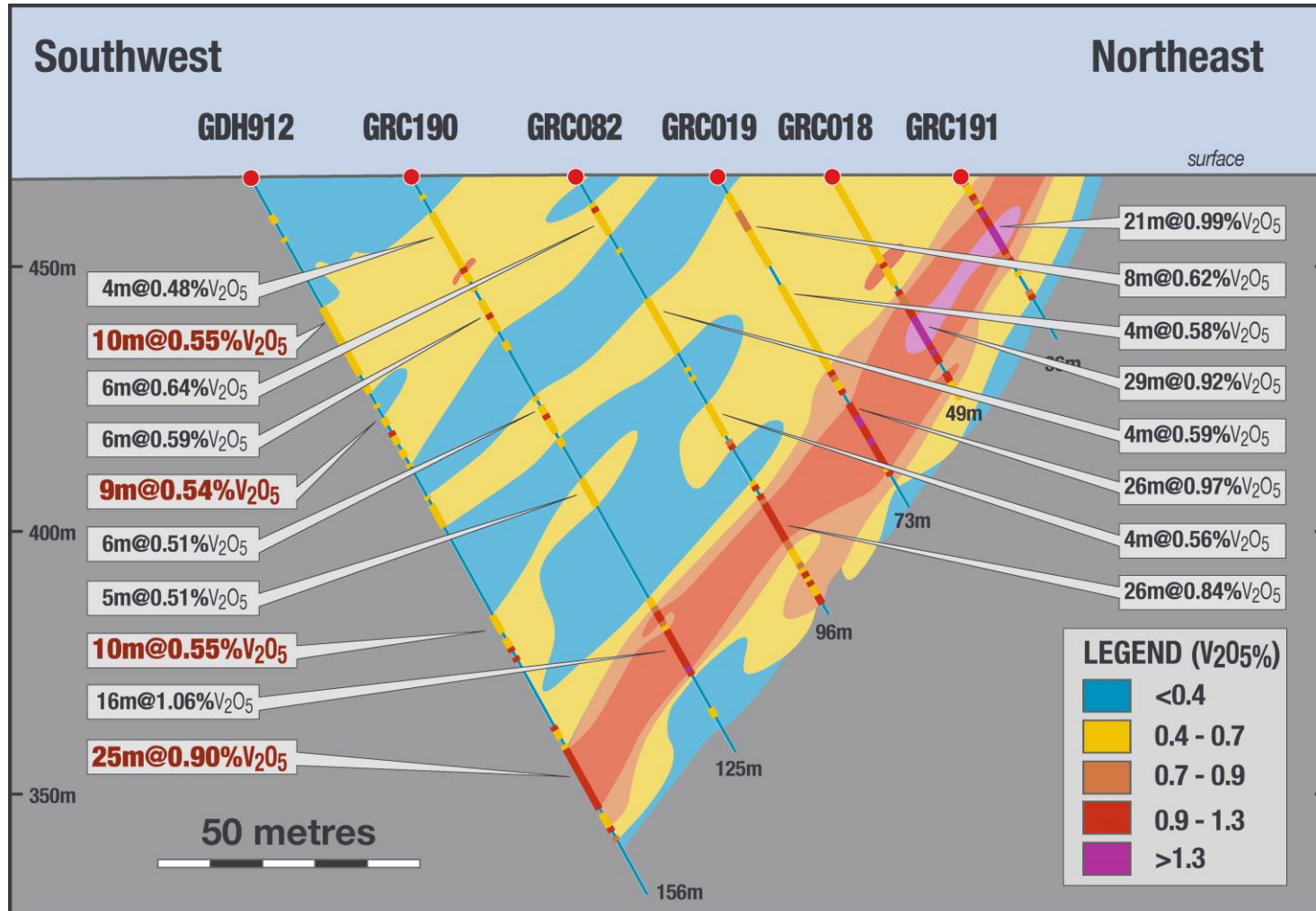
High grade resource in favourable mining jurisdiction in Murchison of WA

- One of the highest-grade vanadium deposits currently being advanced globally
- JORC 2012 compliant total resource of 91.4Mt at 0.82% V_2O_5 , 10% TiO_2 and 35% Fe
- Separate high-grade Measured Indicated & Inferred Resource of 56.8Mt at 1.0% V_2O_5 , 11% TiO_2 and 42% Fe
- Deposit is at surface suitable for open pit operation



Gabanintha Vanadium Project

Discrete high-grade zone, simple geometry, suitable for open pit mining



Vanadium Resource

Large high-grade resource

Material	JORC Resource Class	Million Tonnes	In situ bulk density	V ₂ O ₅ %	Fe%	TiO ₂ %	SiO ₂ %	Al ₂ O ₃ %	LOI%
High grade	Measured	7	3.73	1.09	43	12	10	8	3.4
	Indicated	4.3	3.29	1.07	41	12	12	9	4.6
	Inferred	45.5	3.67	0.97	42	11	12	8	2.8
Subtotal High Grade		56.8	3.65	1.0	42	11	12	8	3.0
Low grade	Indicated	13.4	2.39	0.55	24	7	27	19	8.7
	Inferred	21.1	2.48	0.53	25	7	27	17	7
Subtotal Low grade		34.6	2.45	0.53	25	7	27	18	7.6
Subtotal Measured	Measured	7.0	3.73	1.09	43	12	10	8	3.4
Subtotal Indicated	Indicated	17.8	2.61	0.68	28	8	23	16	7.7
Subtotal inferred	Inferred	66.7	3.29	0.83	37	10	17	11	4.1
	TOTAL	91.4	3.19	0.82	35	10	18	11	4.8

Note: density values quoted here are weighted average values. The Mineral Resource was estimated as a block model within constraining wireframes based upon logged geological boundaries and grade cut-offs of 0.30% V₂O₅ for Low Grade (LG) and 0.70% V₂O₅ for High Grade (HG). Tonnages have been rounded to reflect that this is an estimate.

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Gabanintha Vanadium Project

Concept engineering study shows potential

CONCEPT STUDY PARAMETERS – CAUTIONARY STATEMENT

The Concept Study in this presentation (nominal +/- 50% accuracy) is based on low-level technical and economic assessments, and is insufficient to support estimation of Ore Reserves or to provide assurance of an economic development case at this stage, or to provide certainty that the current conclusions of the Concept Study will be realised. While there is a high level of geological confidence associated with Measured and Indicated Mineral Resources, there is no certainty that further exploration and development work will result in the estimation of Ore Reserves.

The Company advises the Concept Study results reflected in this presentation are highly preliminary in nature as conclusions are drawn from the average grade of Measured, Indicated and Inferred Resources. A generic mining cost per tonne of material moved and an average resource grade has been used to determine overall mining and processing costs as opposed to a detailed mining block model evaluation to produce a detailed mining schedule.

Gabanintha Concept Study

Concept engineering study shows economic potential

- Engineering concept study being updated from 2014 to include new resource and metallurgical data
- High quality vanadium electrolyte plant for energy storage products will be part of design, offering significant value uplift opportunity.
- Upgraded resource base, and new study scenarios offers potential and opportunity to significantly improve project economics
- Detailed announcement with new scenarios delayed to end of Q2 2016
- The 2014 study considered production of high-purity (+98.5% V_2O_5 flake) via open pit mining, feed preparation/beneficiation and a salt roast-leach extraction process is well understood and commonly available technology
- Study investigated potential plant capacity options of between 5,000 – 10,000 t V_2O_5 flake,
- Outcome showed technically low risk project with long life (+20 years)
- Estimated C1 cash operating cost¹ of A\$7.26/kg (A\$3.29/lb) V_2O_5 - could position AVL as a competitive open pit producer (compare Bushveld Minerals PFS C1 Cost of U\$3.28/lb)
- Estimated capital cost of 2014 study of A\$170 million to A\$230 million (based on capacity options)

¹Estimated C1 cash operating cost

Estimated C1 cash operating cost is as defined in the Tables on page 8 of the ASX announcement dated 15 September 2014, Only site based General and Administration is included

Australian Vanadium: Investing in an energy future

AVL is an active company with a strategy to identify and grow opportunities that lead to cash flows and unique market positions

- Gabanintha resource quality and size can support a long life, low cost operation
- Outstanding metallurgical results support project advancement
- Updated Concept Study with additional scenarios due for release in June, additional scenarios being investigated to optimise project
- Vanadium electrolyte pilot plant to support local vanadium battery sales
- MOU and sales agreement executed with global leader in Vanadium Battery Manufacture – GILDEMEISTER Energy Storage
- MOU in place to collaborate with a leading Australian commercial solar installer
- Significant interest and demand identified for commercial scale solar and storage solutions (VSUN)
- 1:3 Rights Issue successfully completed, raising \$3m.
- Active and experienced team developing a multi-commodity project portfolio with low-cost entry positions and unique market positions.



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