



# TECHNOLOGY METALS AUSTRALIA LIMITED

(ASX: TMT)

## INVESTOR PRESENTATION AUGUST 2017

*“Building a World-Class Renewable Energy Company”*

# Important Information



All currency amounts are in AUD\$ unless stated otherwise.

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## Competent Person’s Statement

The information in this presentation that relates to Exploration Results are based on information compiled by Mr Ian Prentice. Mr Prentice is a Director of the Company and a member of the Australian Institute of Mining and Metallurgy. Mr Prentice has sufficient experience relevant to the styles of mineralisation and types of deposits which are covered in this presentation and to the activity which they are undertaking 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’ (“JORC Code”). Mr Prentice consents to the inclusion in this presentation of the matters based on his information in the form and context in which it appears.

*The information in this report that relates to Mineral Resources are based on information compiled by Mr Galen White. Mr White is a Principal Consultant with CSA Global and a Fellow of the Australian Institute of Mining and Metallurgy. Mr White has sufficient experience relevant to the styles of mineralisation and types of deposits which are covered in this report and to the activity which they are undertaking 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’ (“JORC Code”). Mr White consents to the inclusion in this report of the matters based on his information in the form and context in which it appears.*

## Exploration Targets

The terms “Target” or “Exploration Target” where used in this presentation should not be misunderstood or misconstrued as an estimate of a Mineral Resource as defined in the JORC Code and therefore the terms have not been used in this context. Exploration Targets are conceptual in nature, there has been insufficient exploration to define a Mineral Resource and it is uncertain further exploration will result in the determination of a Mineral Resource.

# Investment Highlights

*"Invest in a World-Class Vanadium Opportunity"*

**Technology Metals Australia (TMT)** A\$9.1 million market capitalisation, EV of A\$6.2 million\* listed on ASX 21 December 2016 after raising \$4.0 million.

**Wholly Owned Gabanintha Vanadium Project;** 5.5km strike length of mineralised layered mafic igneous unit. Infill and extensional drilling program underway.

**Maiden Inferred Resource;** with high grade basal zone of **29.5Mt at 1.1% V<sub>2</sub>O<sub>5</sub>** within an overall 62.8Mt at 0.8% V<sub>2</sub>O<sub>5</sub> based on initial 36 hole RC drilling program delivered within 6 months of listing placing the Project amongst the highest grade deposits in the World.

**Global Comparatives;** Largo Resources, Inc. (TSX:LGO market cap CN\$267m) operating high grade Maracas Menchen Mine, Bahia State, Brazil and TNG Limited (ASX:TNG market cap A\$129, EV ~A\$122m) developing Mount Peake vanadium – titanium – iron project in NT.

**Vanadium Market;** squeeze is on now with the market in deficit on cusp of period of expected dramatic demand increase driven by market penetration of Vanadium Redox Batteries (VRB's).

\* As at 4 August 2017

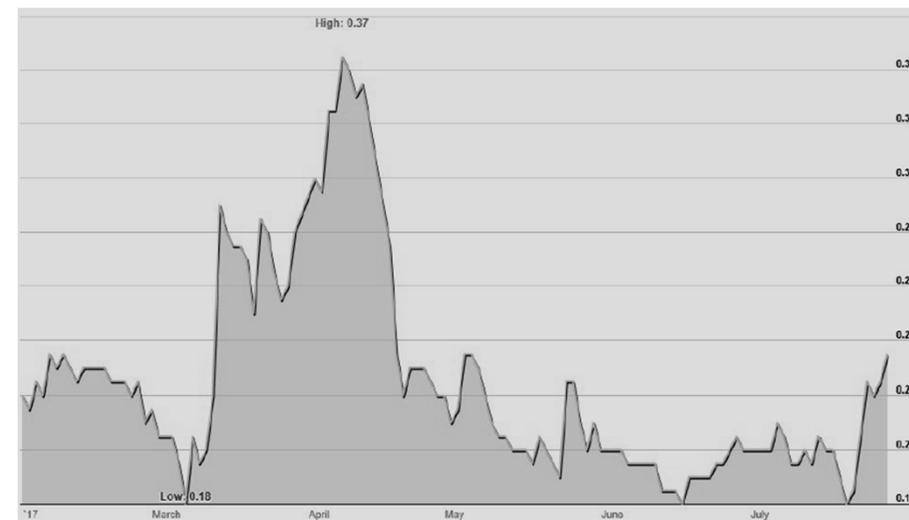
# Corporate Overview



Company Snapshot	
ASX Code	TMT
Cash as at 30 June 2017	\$2.9m
Market Cap (as at 4 August 2017)	\$9.1m
Shares on issue	35.1m
Options (\$0.25 – 31/12/19 expiry)	15m
Performance Shares B	10m
Enterprise Value	\$6.2m

Top Shareholders	Pro Forma*
Twentieth Century Motor Company	26.4%
Station Nominees PL	8.90%
Muncha Cruncha PL	2.76%
Matthew Steven Klein	1.48%
Top 20 Shareholders	53.7%

Technology Metals Australia Limited Price Chart



*"A company that provides multi-megawatt energy storage solutions using vanadium redox fuel cells. That's one of the coolest things I've ever said out loud!"*

**- President Obama**

# Company Board and Management



**Michael Fry**  
**Non-Executive Chairman**

Michael Fry holds a Bachelor of Commerce degree from the University of Western Australia, is a Fellow of the Financial Services Institute of Australasia, and is a past member of the Australian Stock Exchange.

Mr Fry has extensive corporate and commercial experience, financial and capital market knowledge and a background in corporate treasury management.



**Ian Prentice**  
**Executive Director**

Mr Prentice is a Member of the Australasian Institute of Mining and Metallurgy and holds a Bachelor of Science (Geology) from the University of Western Australia.

Mr Prentice has served as a Director for a number of ASX-listed resource companies, with activities ranging from exploration and project acquisition in Asia and Africa through to gold production in Australia.



**Sonu Cheema**  
**Non-Executive Director and Company Secretary**

Mr Cheema has completed a Bachelor of Commerce majoring in Accounting at Curtin University and is a member of CPA Australia.

Mr Cheema holds the position of Accountant and Company Secretary for Cicero Corporate Services and has over 10 years' experience working with public and private companies in Australia and abroad.

# Vanadium Market

- **Vanadium market squeeze is on;** with consumption exceeding supply for the past five years and inventory now depleted.
- Global production has been running at 70,000 to 90,000tpa (76,000t in 2016).
- Concentrated supply by China (+55%), Russia (+10%) and South Africa (~10%).
- 2016 production predominantly co-product steel slag (73%), then primary ores (17%) and 10% from secondary.
- Industry rationalisation, reduced magnetite ore for steel production and environmental constraints in China resulting in a dramatic production decline (9,700t deficit in 2017).
- Emerging primary producers ideally placed to take advantage of structural change to meet increasing demand.

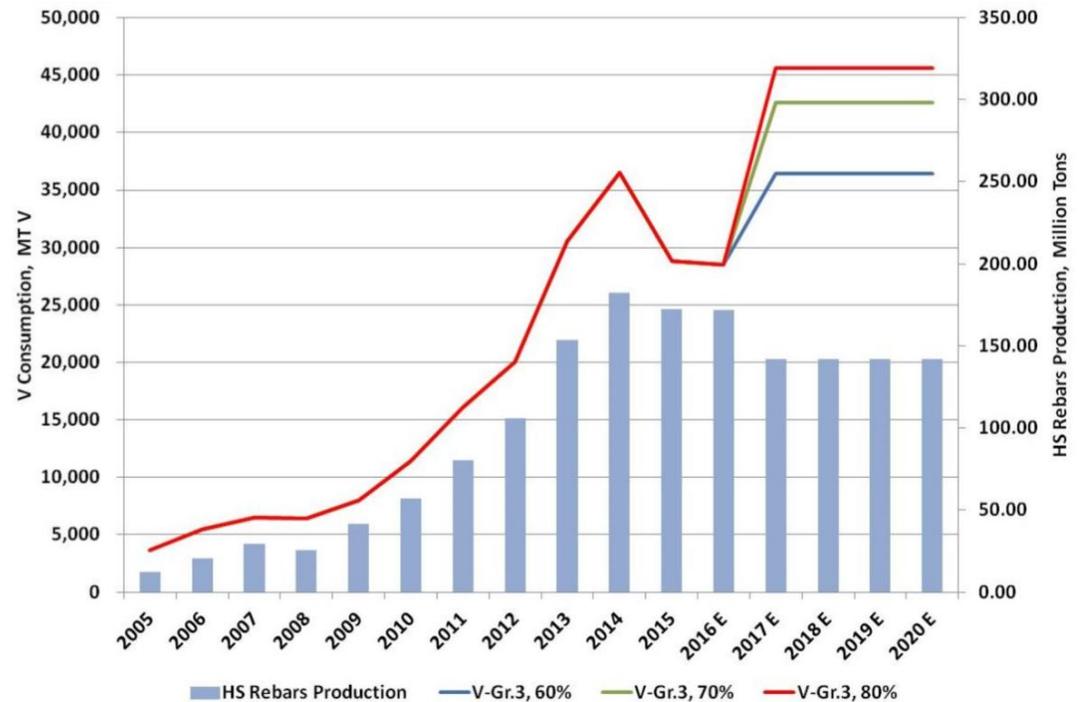


Source: TTP Squared, Inc.

# Vanadium Demand

- **Expected to increase** to 131,000tpa by 2025 (source: Roskill), excluding significant growth in the energy storage (battery) sector.
- Consumption in 2016 dominated by steel alloys (91%), with energy storage sector at 2%.
- Increased intensity of use of vanadium in steel driving near term growth.
- Imminent move to Grade 3 quality Chinese Rebar forecast to increase vanadium consumption in China by up to 50% (15,000tpa).
- The addition of around 0.2% vanadium content increases steel strength up to 100% and reduces weight for the same use by up to 30%.

Vanadium Use in Chinese Rebar



Source: China Iron & Steel Research Center

# Market Disruptor

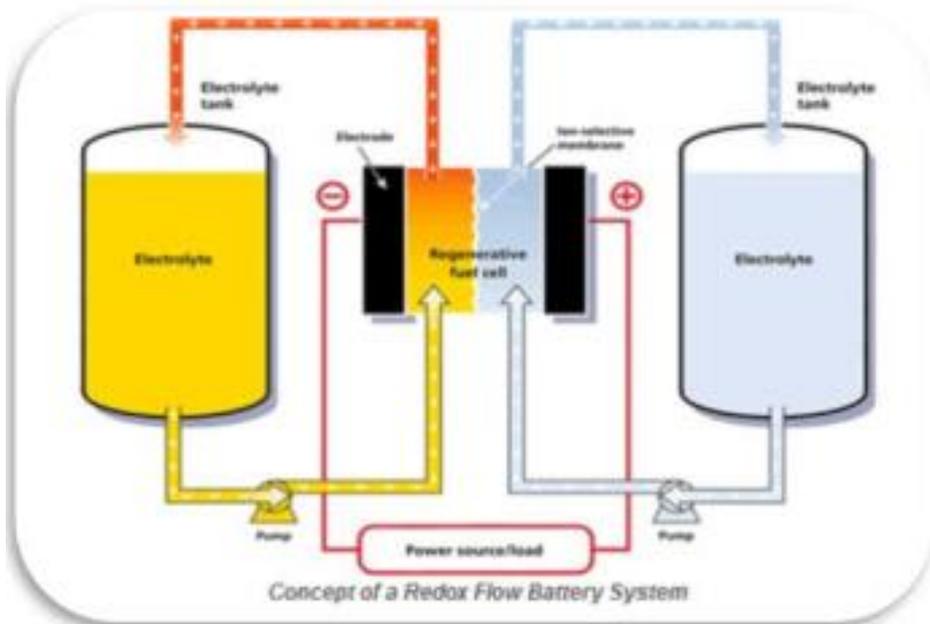
- **Efficient storage** of renewable energy is driving the development of the battery industry, with global storage capacity expected to grow to 185 Gwh over the next few years (source; Lux Research).
- If 30% of this expected capacity is taken up over time by Vanadium Redox Batteries (VRB's) this would result in 300,000 tonnes of new vanadium demand.
- Demand increase from VRB's expected to accelerate as further technological developments improve the competitive advantage.
- Vanadium deployed in VRB's has grown from 1,000 tonnes to 5,000 tonnes in the past 12 months, with further rapid growth forecast.
- Widespread adoption of VRB's could increase demand for vanadium by 10,000 – 20,000tpa by 2025.



# Vanadium Redox Batteries

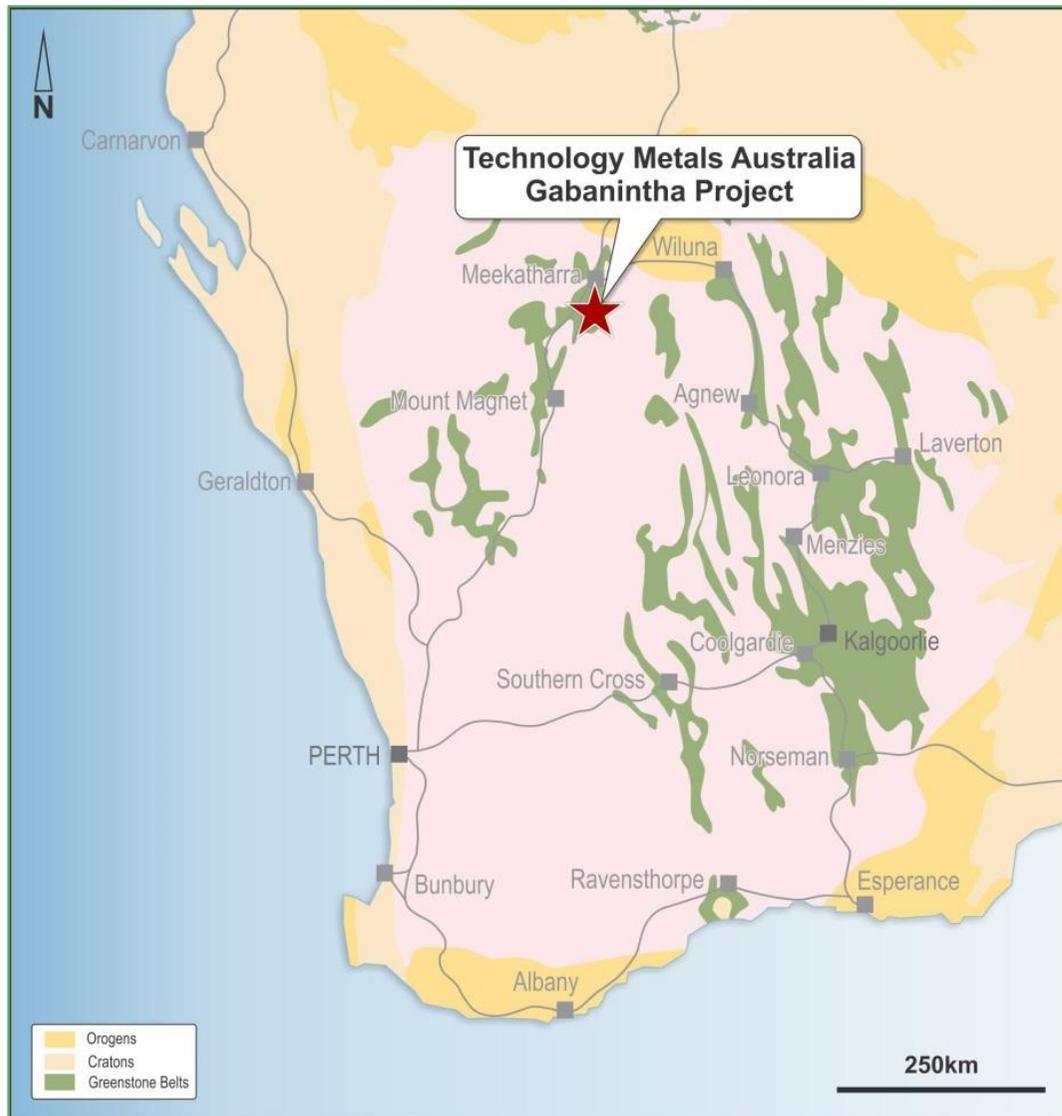
- **Vanadium Redox Batteries (VRB's)** provide an efficient storage and re-supply solution for renewable energy, with high capacity suitable for large-scale applications.
- VRB's are able to time-shift large amounts of previously generated energy for later use – balancing solar and wind intermittency.
- Provide a grid scale solution – peak shaving, regulating load frequency, driving grid efficiency.
- Suitable for micro grids for remote communities, mine sites, islands etc currently reliant on diesel fired power stations.
- VRB's use vanadium ions in different oxidation states to store energy, using  $V_2O_5$  processed into an electrolyte. Battery capacity can be expanded by adding more storage tanks.
- Sumitomo Electric is operating a 15MW – 60MWh VRB in Hokkaido, Japan, which contains ~522 tonnes  $V_2O_5$  (source; Gildermeister Energy Solutions).
- Rongke Power developing a 200MW – 800MWh project in Dalian, China, using ~6,960 tonnes  $V_2O_5$  (source; Gildermeister Energy Solutions).

# Advantages of VRB's



- Lifespan of +20 years with very high cycle life (up to 20,000 cycles) and no capacity loss.
- Rapid recharge and discharge, with very fast response time (<70ms).
- Easily scalable into large MW applications.
- Excellent long term charge retention.
- Can discharge to 100% with no performance degradation.
- Only one battery element – vanadium is anode and cathode – unique among flow batteries.
- Improved safety (non-flammable) compared to Li-ion batteries.

# Project Overview



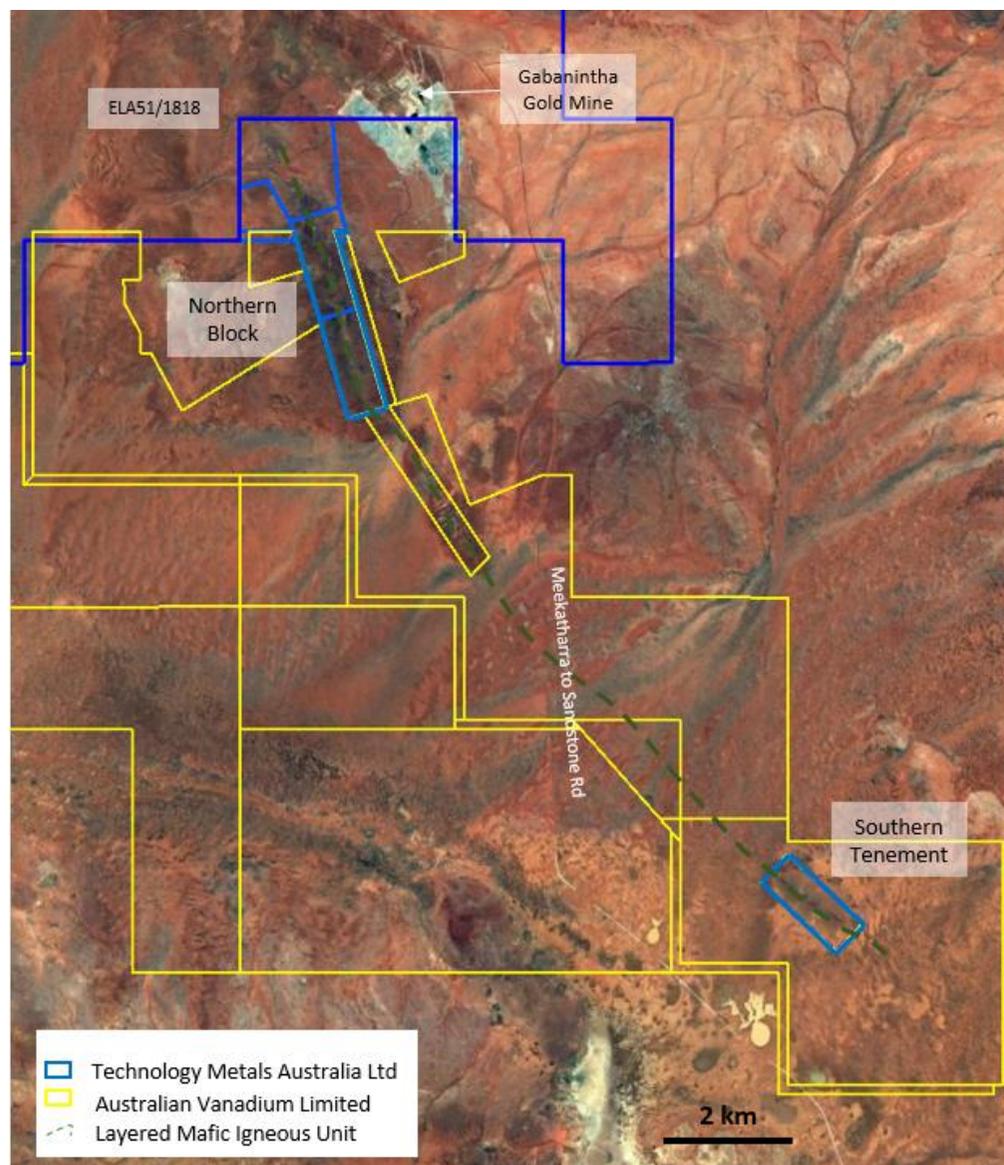
## Gabanintha

## Vanadium Project

- Located 40km SE of Meekatharra in Western Australia.
- Excellent infrastructure with the Great Northern Highway from Perth passing within 30km of the project.
- Port of Geraldton 500km to the south west accessible via sealed highway.
- Gas pipeline within 150km.



# Project Setting



- Five granted tenements – divided in to the Northern Block and Southern Tenement – and one exploration licence application.
- Mineralisation is hosted by a layered mafic igneous unit – magnetite enriched layers host high grade vanadium and titanium mineralisation.
- The project contains over 5.5km strike length of the mineralised unit.
- Maiden wide spaced RC drilling program in Northern Block returned broad high grade zones (+1.0%  $V_2O_5$ ) from each of 11 traverses.
- Historical drilling<sup>1</sup> on TMT's Southern Tenement has intersected broad zones of high grade vanadium mineralisation.

1 – Refer TMT ASX announcement dated 21 December 2016 for full details of historical drilling.

# RC Drilling Program

**“Exceptional widths and grades from Maiden Drilling Program”**

Initial drilling program over 4.0km of strike length of the Northern Block reported high grade vanadium mineralisation on each of 11 traverses.

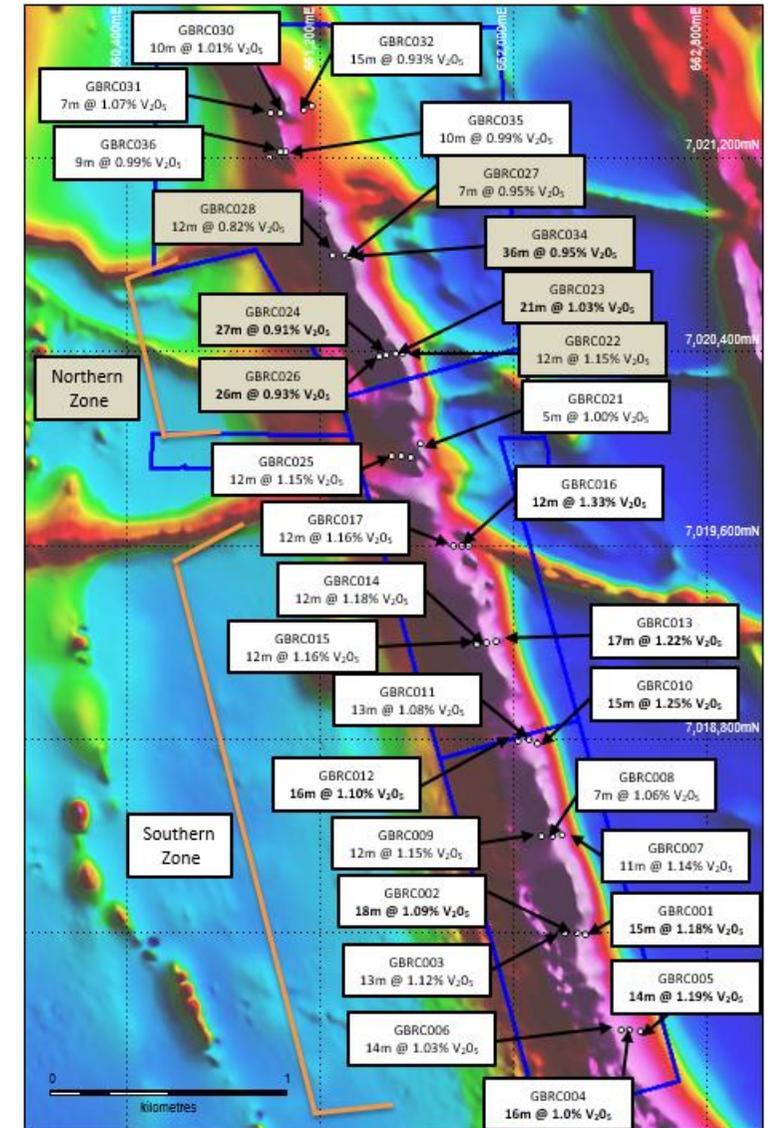
36 holes on traverses nominally 400m apart to an average vertical depth of 160 m

Wide zones of high grade vanadium mineralisation returned from the thickening of the massive magnetite basal unit in the Northern Zone, including;

- 18m at 1.09%  $V_2O_5$  from 58M in GBRC002
- 36m at 0.95%  $V_2O_5$  from surface in GBRC034

Southern Zone contains over 2.0km strike length of high grade vanadium mineralisation, including;

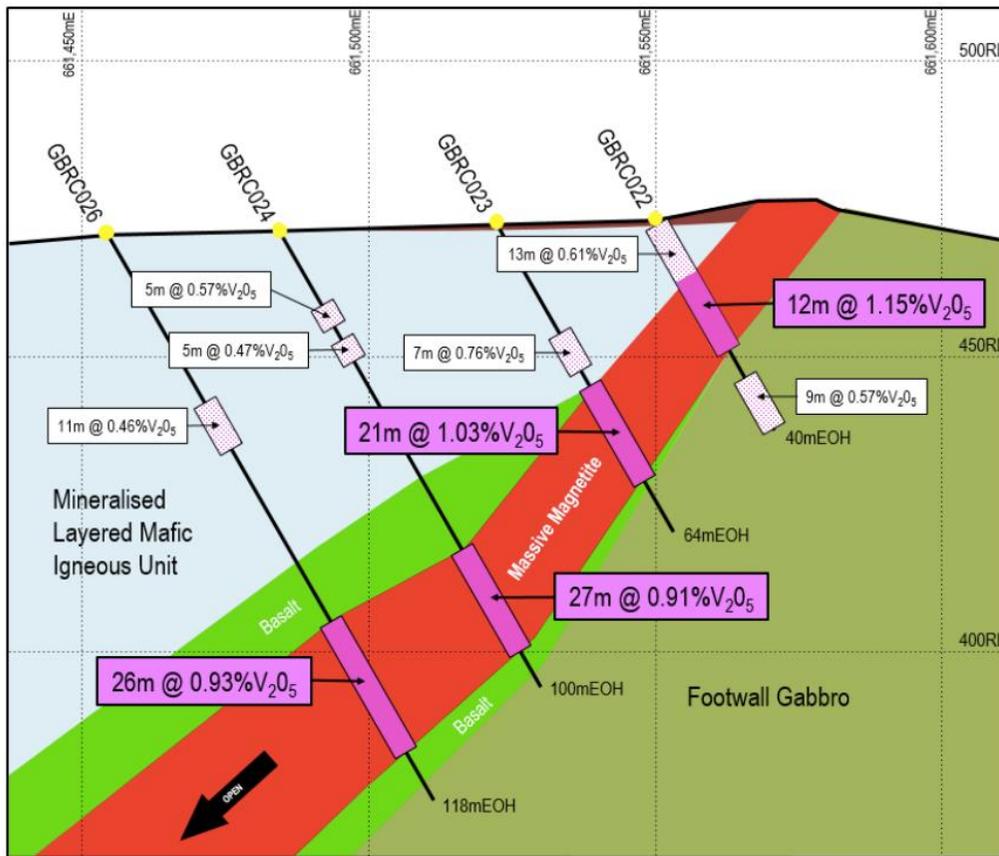
- 12m at 1.33%  $V_2O_5$  from 68M in GBRC016
- 17m at 1.22%  $V_2O_5$  from 19M in GBRC013



Gabanintha Vanadium Project – Northern Block

Note: Refer TMT ASX announcement dated 19 April 2017 for full details of drilling data.

# Geological Control



Section 0400N – Wide High Grade Mineralisation with Thickening of the Massive Magnetite Zone

- Single broad continuous high grade basal mineralised zone (massive magnetite) overlain by multiple medium grade zones.
- Mineralisation extends to surface and outcrops along majority of strike length.
- Massive magnetite zone dips at 55 to 60° to the west.
- Thickening of high grade mineralisation in north and presence of multiple medium grade zones up dip expected to have a materially positive impact on project economics.
- Excellent geological (visual) control on high grade basal mineralised zone.

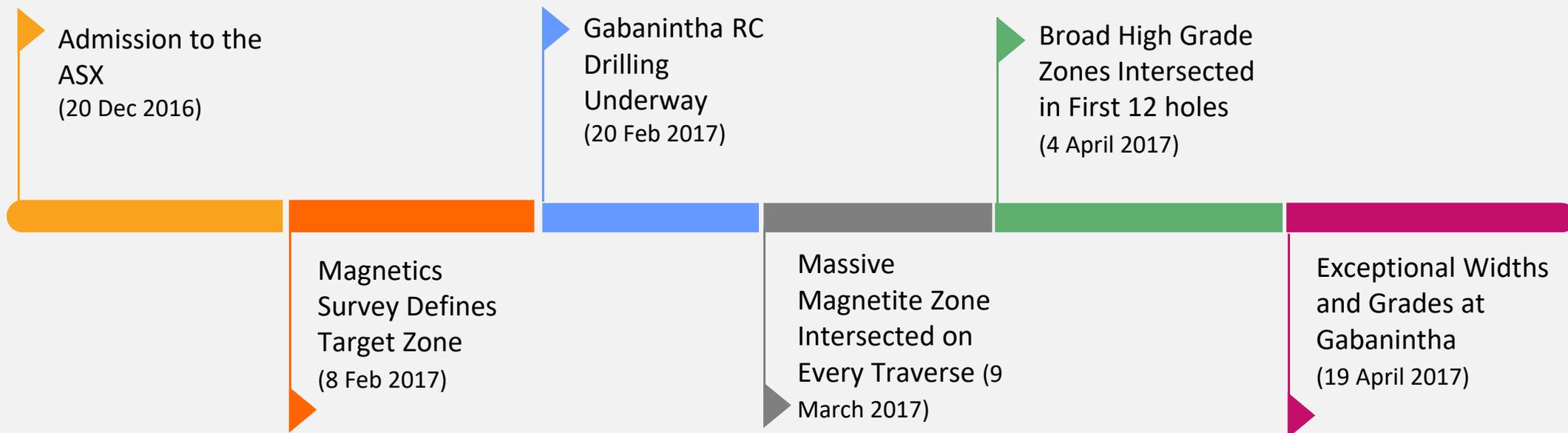
# Delivering Results



*“TMT hit the ground running post listing”*

*December 2016*

*April 2017*



*“Significant milestones achieved”*

*Andrew Shearer PAC Partners 30 May 2017*

# Maiden Inferred Resource<sup>1</sup>

- Exceptional high grade resource of 29.5Mt at 1.1% V<sub>2</sub>O<sub>5</sub> and 12.6% TiO<sub>2</sub> within consistent, continuous basal massive magnetite zone.
- Places the Gabanintha Vanadium Project comfortably amongst the highest grade vanadium deposits in the World.
- Overall maiden resource of 62.8Mt at 0.8% V<sub>2</sub>O<sub>5</sub> and 9.7% TiO<sub>2</sub> well on the way to achieving the Company's initial Exploration Target of 80 – 100Mt at 0.8 to 1.0% V<sub>2</sub>O<sub>5</sub>.
- Resource infill and extensional drilling program underway including diamond drilling for advanced metallurgical testwork.

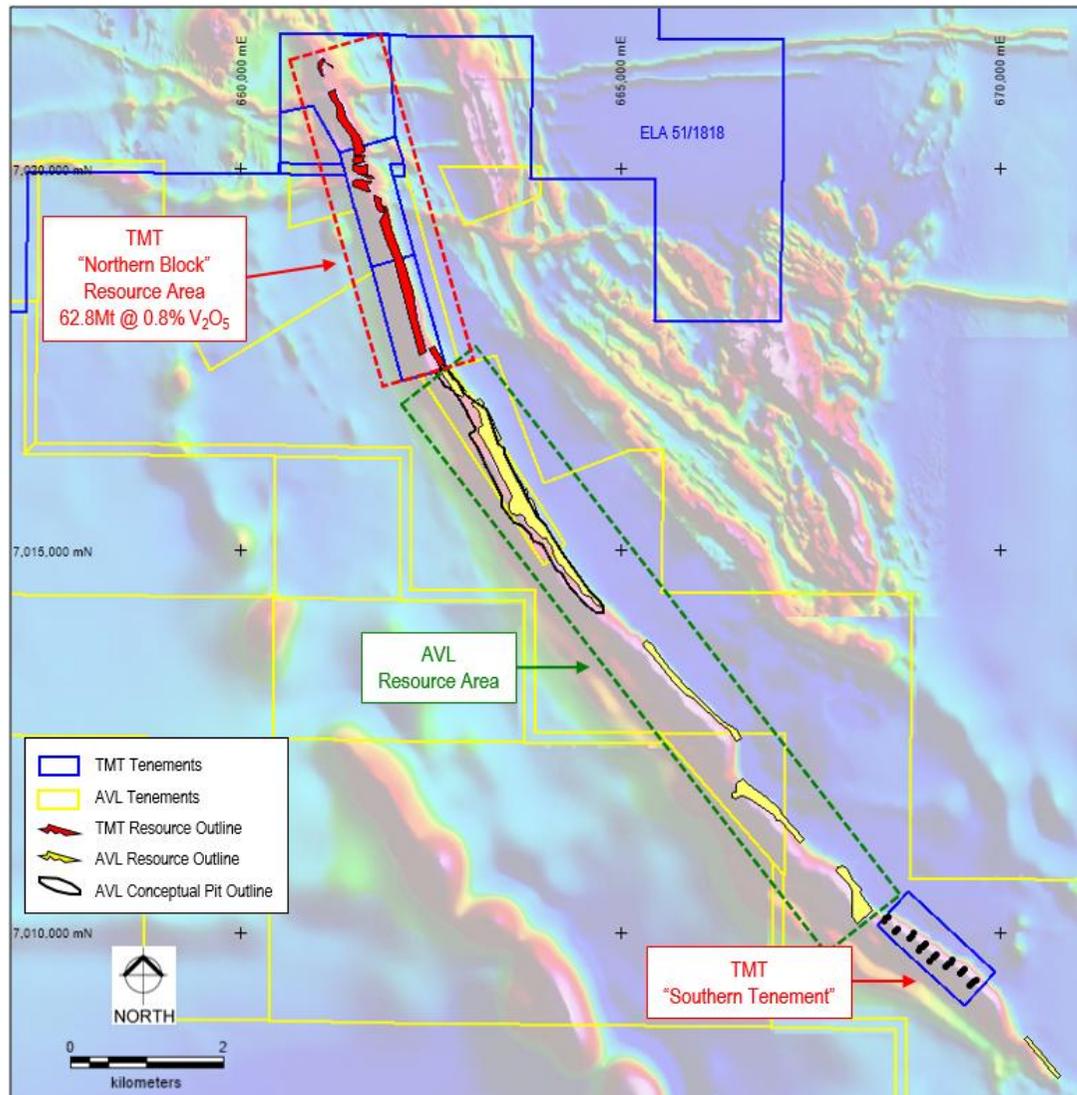
Mineral Resource estimate for Technology Metals Gabanintha Vanadium Project as at 12 Jun 2017

Mineralised Zone	Classification	Million Tonnes	V2O5%	Fe%	Al2O3%	SiO2%	TiO2%	LOI%	Density t/m3
Basal massive magnetite	Inferred	29.5	1.1	46.4	6.1	8.2	12.6	1	3.6
Hanging wall disseminated	Inferred	33.2	0.5	26.6	14.9	27.1	7.2	5.1	2.4
<b>Combined Total</b>	<b>Inferred</b>	<b>62.8</b>	<b>0.8</b>	<b>35.9</b>	<b>10.8</b>	<b>18.3</b>	<b>9.7</b>	<b>3.2</b>	<b>2.8</b>

\* Note: The Mineral Resource was estimated within constraining wireframe solids using a nominal 0.9% V2O5 lower cut off for the basal massive magnetite zone and using a nominal 0.4% V2O5 lower cut off for the hanging wall disseminated mineralisation zones. The Mineral Resource is quoted from all classified blocks within these wireframe solids above a lower cut-off grade of 0.4% V2O5. Differences may occur due to rounding.

1 – Refer TMT ASX announcement dated 13 June 2017 for full details of the inferred mineral resource estimation.

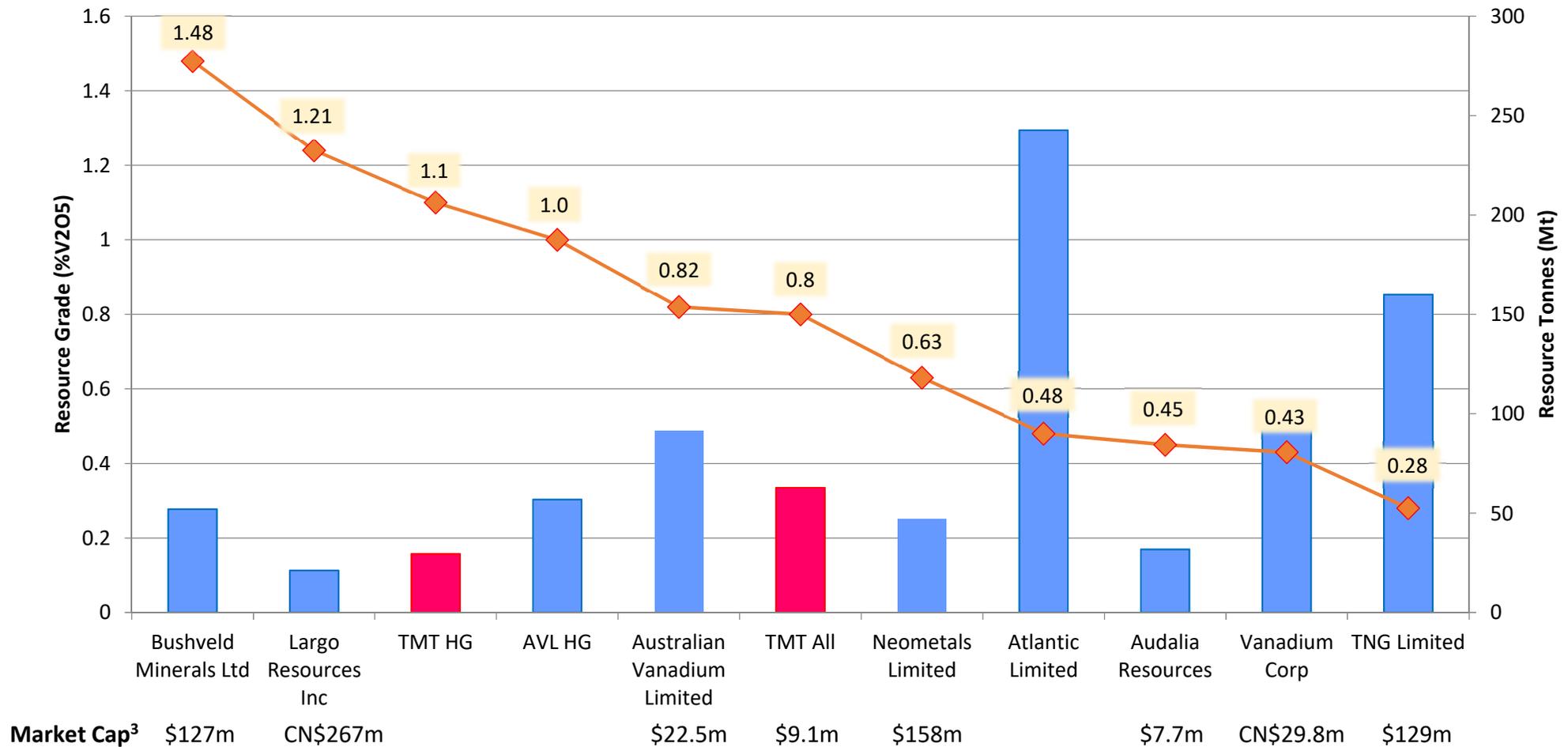
# Gabanintha Resource Layout



- Gabanintha Inferred Resource “adjoins” and extends to the north from AVL’s resource.
- Appears to be a correlation between outcropping basal massive magnetite zone and resource quality / grade.
- Confirms that Gabanintha Vanadium Project is continuation of geological formation that hosts AVL’s resource.
- Southern Tenement contains ~1.5km of strike of outcropping ironstone interpreted to represent the massive magnetite zone intersected in the Northern Block.

# Global Vanadium Projects

## GRADE IS KEY



3 – Market capitalisation of listed entities as at 4 August 2017. Bushveld Minerals and Neometals hold other significant resource assets. Atlantic Limited no longer listed.

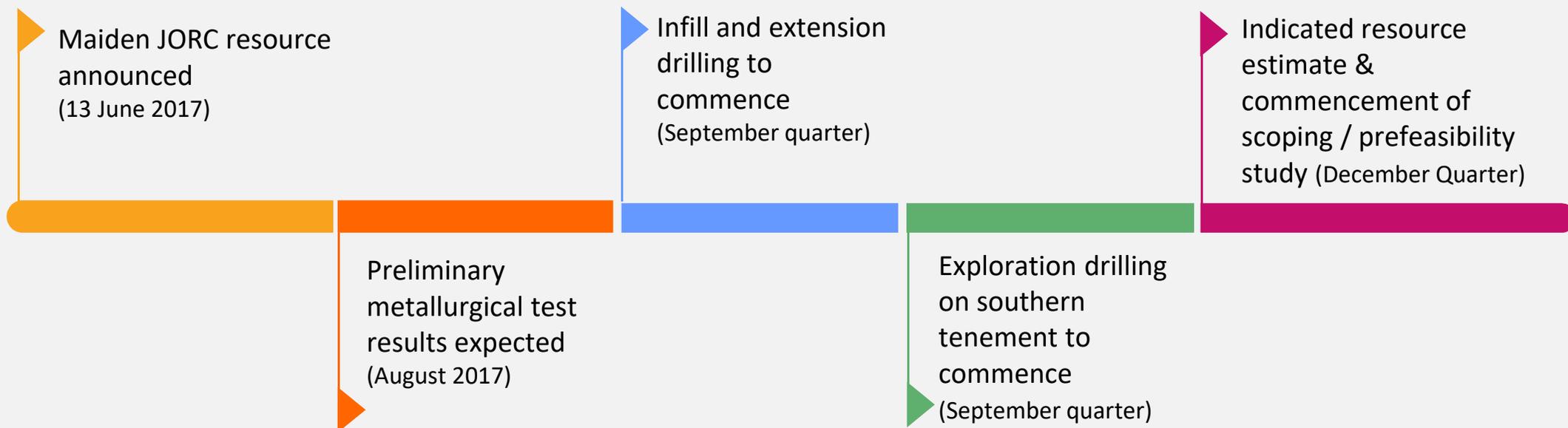
# Gabanintha Strategy



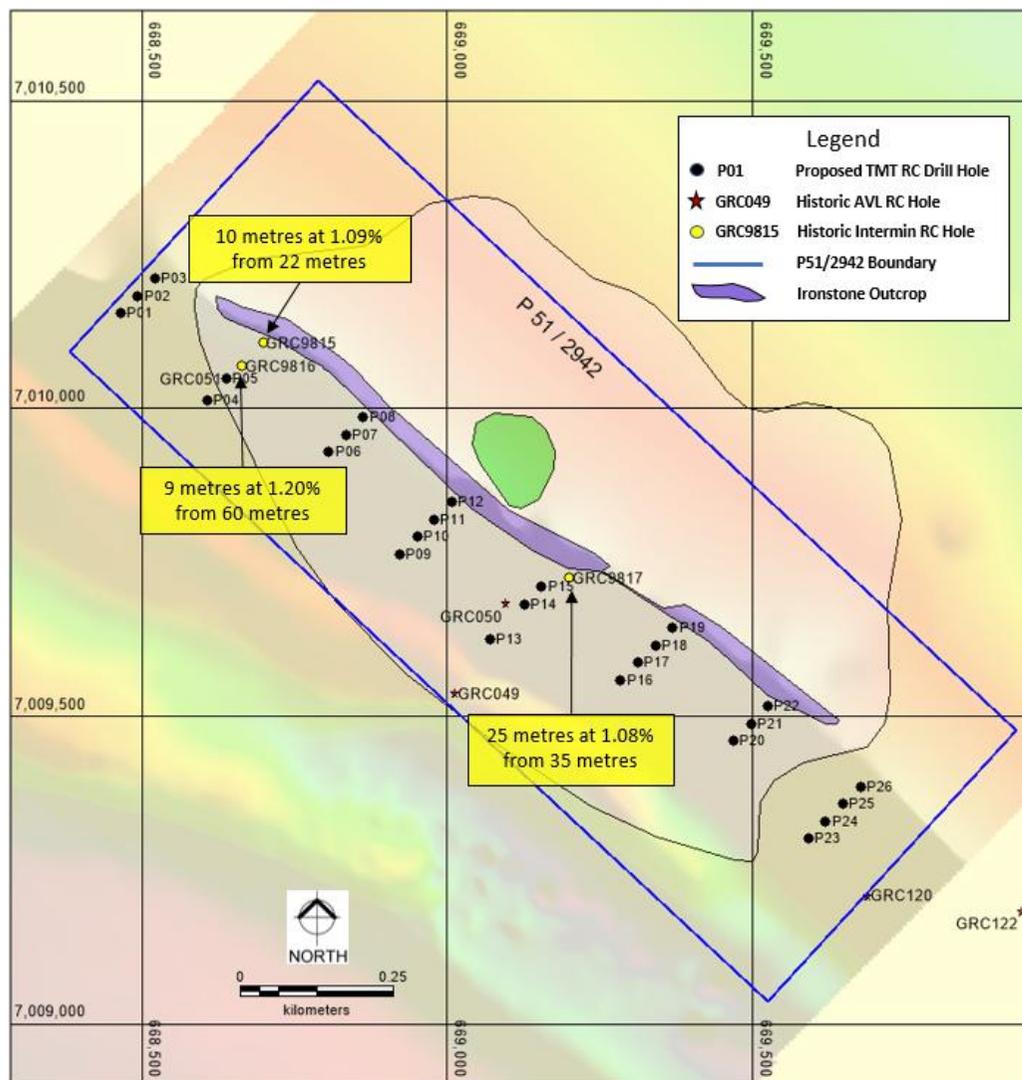
*“Significant milestones achieved”*

*June 2017*

*December 2017*



# Southern Tenement



- Contains ~1.5km of outcropping ironstone interpreted to represent the massive magnetite zone intersected in the Northern Block.
- Historical drilling (6 holes) has intersected layered mafic igneous unit down dip of the outcropping ironstone.
- Intermin drilling<sup>1</sup> (3 holes) intersected broad zones of high grade vanadium mineralisation including 25m at 1.08% V<sub>2</sub>O<sub>5</sub> (AVL drilling not assayed).
- Initial RC drilling on 200m line spacing underway.

1 – Refer TMT ASX announcement dated 21 December 2016 for full details of historical drilling.

# Summary



**Experienced Board / Management** team focused on delivering shareholder returns.

**Minimal geological / resource risk** with recent drilling leading to definition of maiden inferred resource estimate amongst the highest grade vanadium deposits in the World; infill and extensional drilling underway.

**Well placed** to feed the expected demand generated from the emerging energy storage (battery) sector in a reducing supply environment.

**Stable, well resourced** Western World mining environment to support project development, with excellent infrastructure and access to services.

**Team in place** to progress the project through resource definition and development phases as well as identify and evaluate opportunities in a wide range of technology metals including vanadium, lithium, graphite and cobalt.



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