

# TNG LIMITED



*10<sup>th</sup> Annual Resource Rising Stars Conference  
October 2013*

## ***DEVELOPING THE MOUNT PEAKE PROJECT*** ***Strategic Metals for Global Economic Growth***

Paul Burton – Managing Director

# Big battery eyed as green energy cure

Six-story Hokkaido cell to keep power flowing

## Japan will build the world's largest storage battery system

....“redox flow” battery system, produced by Sumitomo,

....using an electrolytic solution of **vanadium**.

....safe and has a life span of 10 to 20 years, it can be readily converted into a large system, experts say.





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## Competent Person's Statement

### JORC 2004

The information in this report that relates to Exploration Results and Exploration Targets is based on information compiled by Paul Burton who is a Member of The Australasian Institute of Mining and Metallurgy and a Director of TNG Limited. Paul Burton 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 a Competent Person as defined in the 2004 Edition of the 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves'. Paul Burton consents to the inclusion in the report 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 included in the 2012 PFS and is based on information compiled by Lynn Olssen who is a Member

of The Australasian Institute of Mining and Metallurgy and a full time employee of Snowden Mining Industry Consultants Pty Ltd. Lynn Olssen 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 a Competent Person as defined in the 2004 Edition of the 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves'. Lynn Olssen consents to the inclusion in the report of the matters based on his information in the form and context in which it appears.

The information in this report that relates to Financial Analysis is based on information compiled by Jeremy Peters who is a Member of The Australasian Institute of Mining and Metallurgy and a full time employee of Snowden Mining Industry Consultants Pty Ltd. Jeremy Peters 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 a Competent Person as defined in the 2004 Edition of the 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves'. Jeremy Peters consents to the inclusion in the report of the matters based on his information in the form and context in which it appears.

Mr Damian Connelly, MAAusIMM, Chartered Processional (MET), tMMICA, MSME, MSAIMM was responsible for the preparation of the metallurgical test work results reported herein. Mr Connelly has sufficient experience to the activity which he is undertaking to qualify as a Competent Person as defined in the 2004 Edition of the "Australasian Code for Reporting of the Exploration Results, Mineral Resources and Ore Reserves". Mr Connelly consents to the inclusion in the report of the matters based on his information in the form and context in which it appears.

### JORC 2012

The information in this report that relates to 2013 Mineral Resource Upgrade for the Mount Peake project is based on and fairly represents, information and supporting documentation

compiled by Lynn Olssen who is a Member of The Australasian Institute of Mining and Metallurgy and a full time employee of Snowden Mining Industry Consultants Pty Ltd. Lynn Olssen has sufficient experience relevant to the style of mineralisation and type of deposit under consideration and to the activity which she is 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'. Lynn Olssen consents to the inclusion in the report of the matters based on his information in the form and context in which it appears

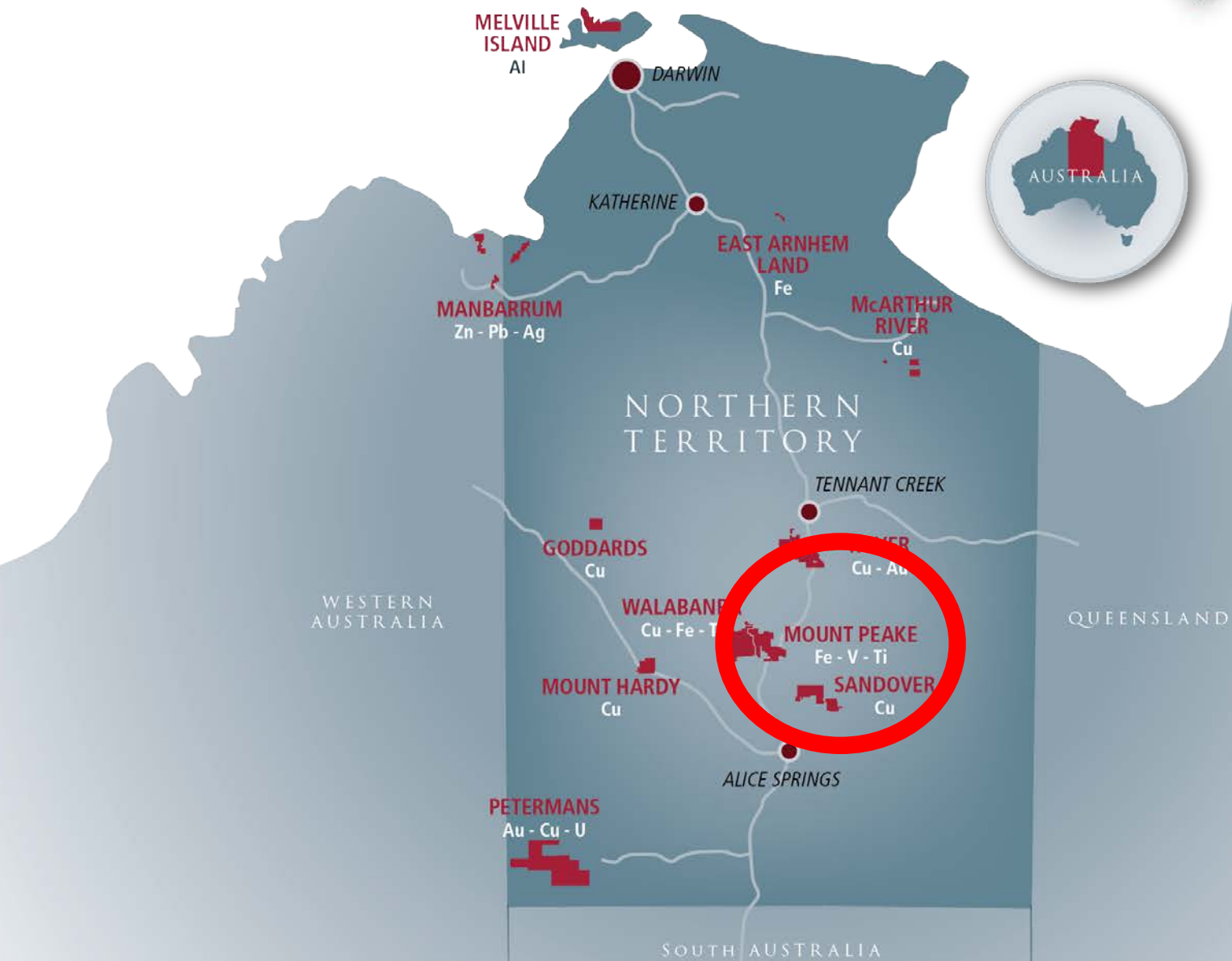
The information in this report that relates to Exploration Results and Exploration Targets for Mount Peake and Mt Hardy projects are based on information compiled by Exploration Manager Mr Kim Grey B.Sc. and M. Econ. Geol. Mr Grey is also a member of the Australian Institute of Geoscientists and a full time employee of TNG Limited. Mr Grey 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 a Competent Person as defined in the 2012 Edition of the 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves'. Mr Grey consents to the inclusion in the report of the matters based on his information in the form and context in which it appear.

# TNG Investment Highlights

- ✓ Well-funded Australian resource company
- ✓ Flagship asset: Mount Peake strategic metals project
- ✓ Definitive Feasibility Study well advanced – due for completion early 2014
- ✓ World-scale +20-year project with forecast revenues of **\$13.6 billion**
- ✓ High-quality and purity products: **vanadium-pentoxide, iron-oxide, titanium dioxide**
- ✓ Two-stage development scenario under review: **early cash flow**
- ✓ Extensive NT minerals portfolio with potential to realise further value



# Mount Peake Project Location





# Mount Peake Project Key Facts

- ✓ \$13.6B LOM revenue
  - ✓ 20 year plus LOM
- (Supporting information in Appendix)
- ✓ 100%-owned + Close to road, rail and gas
  - ✓ Direct access to Darwin Port
  - ✓ Large, shallow JORC Measured resource
  - ✓ PFS completed: DFS commenced
  - ✓ TIVAN – Revolutionary hydro- process
  - ✓ Targeting production **high purity oxide metals**

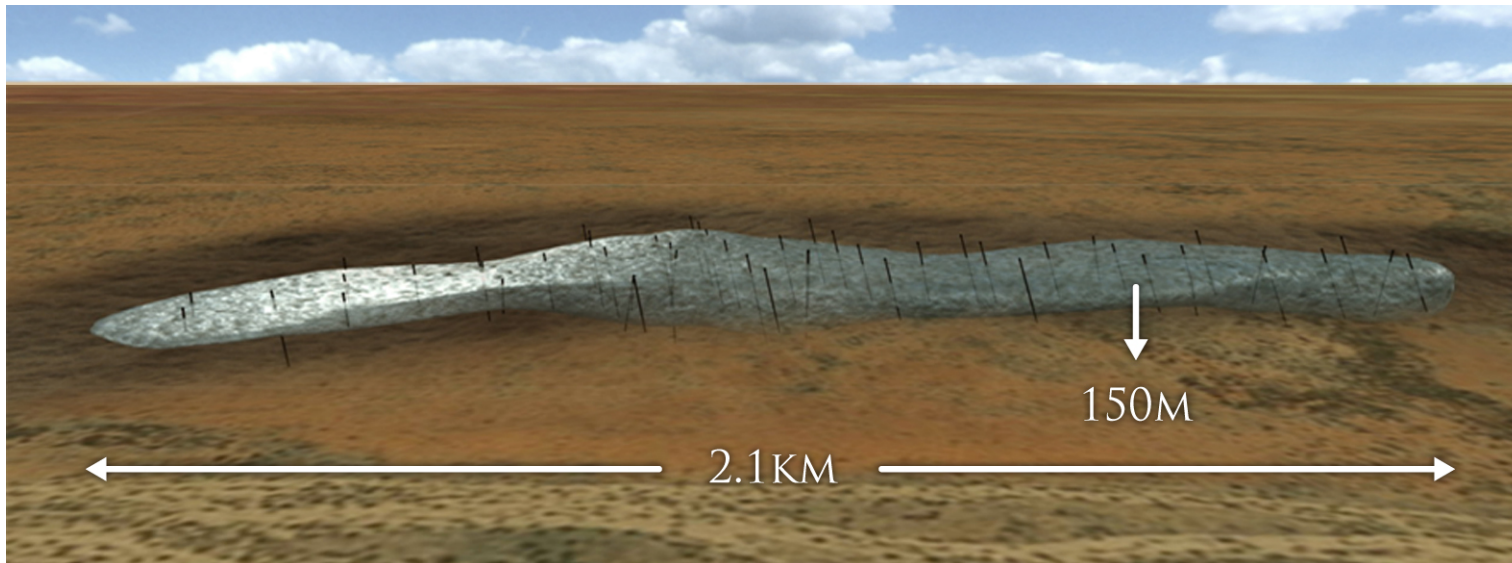


# Resource: 2013 Upgrade

## Shallow large-scale resource underpins long-life project (Resource update March 2013)

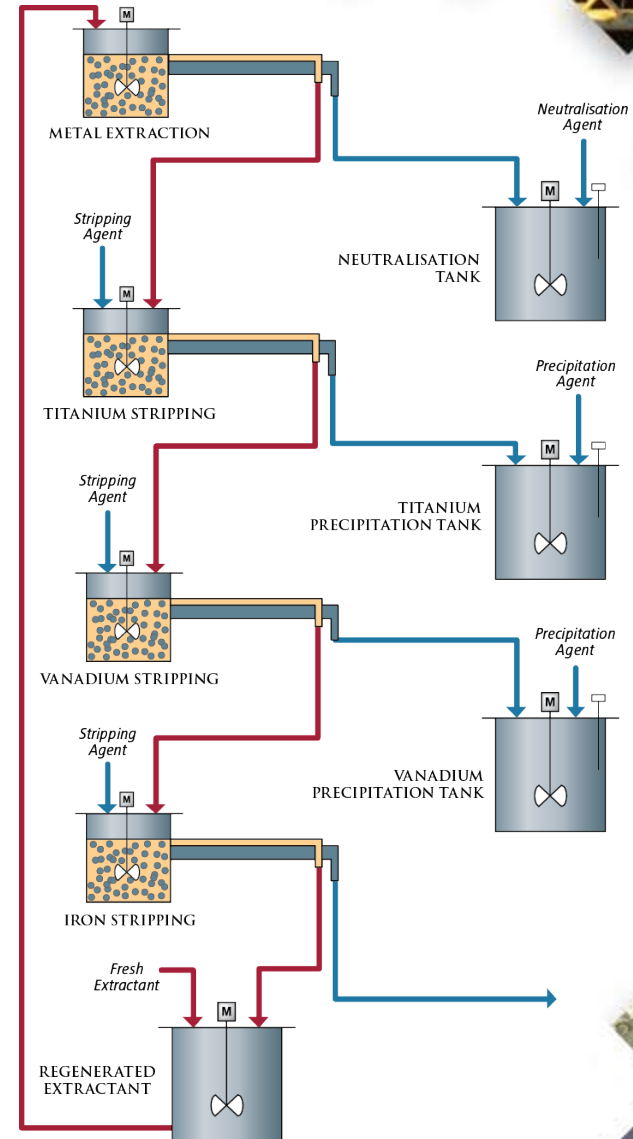
Category	Tonnes (Mt)	V <sub>2</sub> O <sub>5</sub> %	TiO <sub>2</sub> %	Fe%	Al <sub>2</sub> O <sub>3</sub> %	SiO <sub>2</sub> %
Measured	118	0.29	5.48	23.64	8.18	32.81
Indicated	20	0.28	5.33	22.05	9.09	33.98
Inferred	22	0.22	4.41	19.06	10.38	37.79
<b>TOTAL</b>	<b>160</b>	<b>0.28</b>	<b>5.31</b>	<b>22.81</b>	<b>8.60</b>	<b>33.64</b>

**Ave Magnetite Concentrate: 1.2% 18% 55%**



# The Revolutionary TIVAN<sup>®</sup> Process

- ✓ Hydrometallurgical process that extracts high purity vanadium, titanium and iron (Patent pending)
- ✓ 2012 PFS Pilot plant test work (refer ASX announcement 15/5/2012)
  - >99%  $V_2O_5$  (+80% recovery)
  - 99.9%  $Fe_2O_3$  (69.2% Fe) (80% recovery)
  - >55%  $TiO_2$  (+75% recovery)
- ✓ Final optimisation work well advanced
- ✓ Now Registered in over 12 countries





# Product 1 – Vanadium Pentoxide

## Vanadium Pentoxide – 99.6% Purity

Uses:

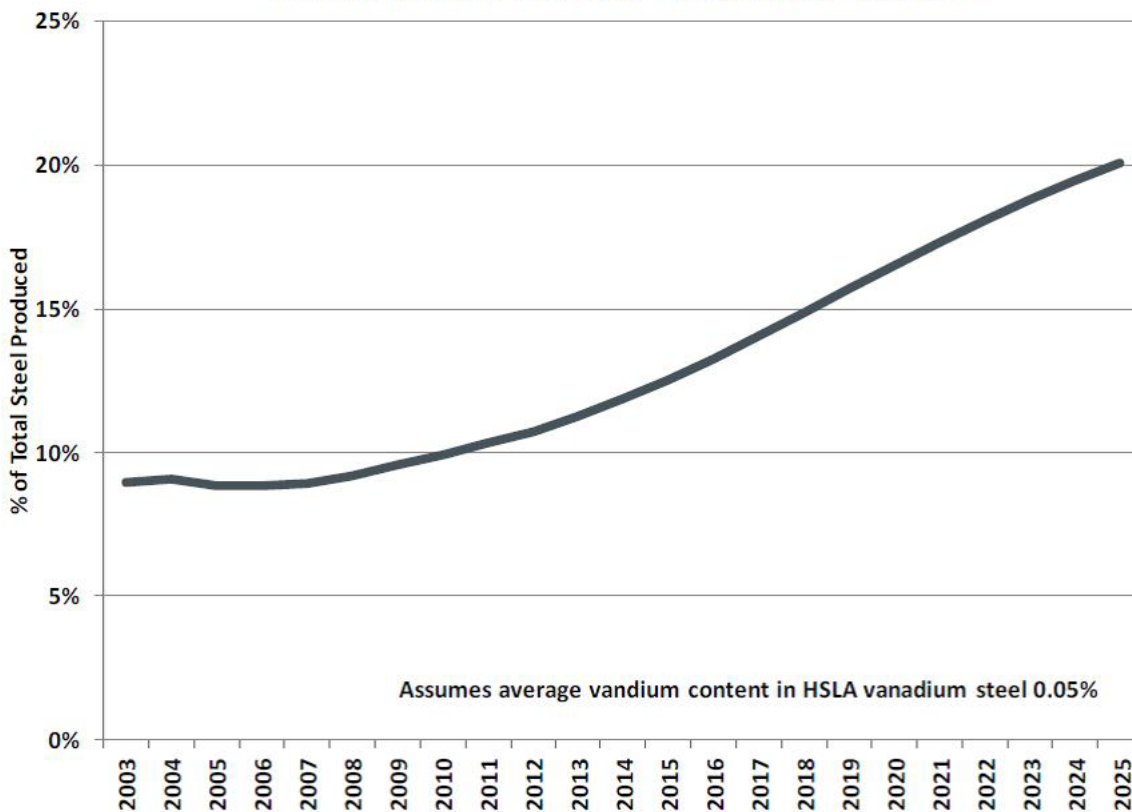
- ✓ **STEEL:** Ferro-Vanadium FeV; Corrosion resistant (REBAR GRADE 3)
- ✓ **ENERGY:** Power, Energy and Nuclear applications
- ✓ **HIGH TECHNOLOGY:** Vanadium Pentoxide  $V_2O_5$  – Multiple new technology uses



# Product 1 – Vanadium Pentoxide

Essential component in the development of high strength steels

## Vanadium Steel Market Share



Source: Roskill

# Product 1 – Vanadium Pentoxide

## Critical element for batteries

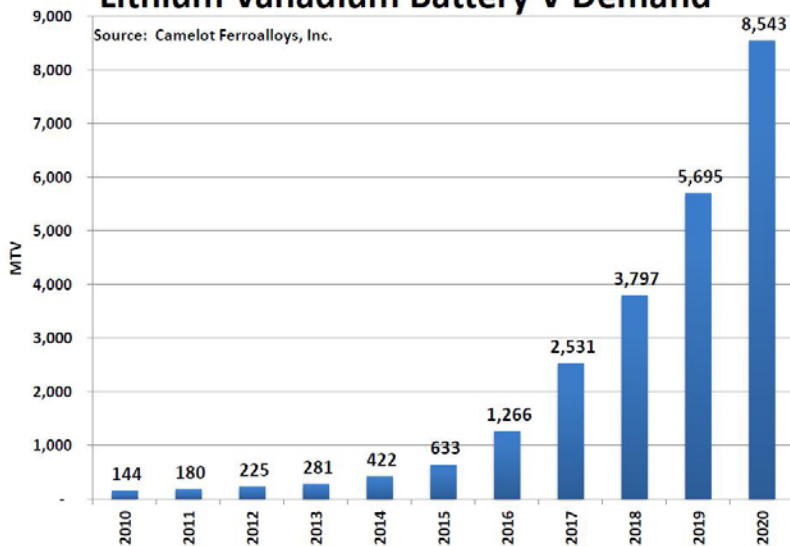
The growth in demand for Vanadium is expected to grow rapidly:

- ✓ **ELECTRIC CARS:** Increases due to rising energy prices and CO<sup>2</sup> Reduction targets
- ✓ **POWER STORAGE:** Investment in power storage has increased



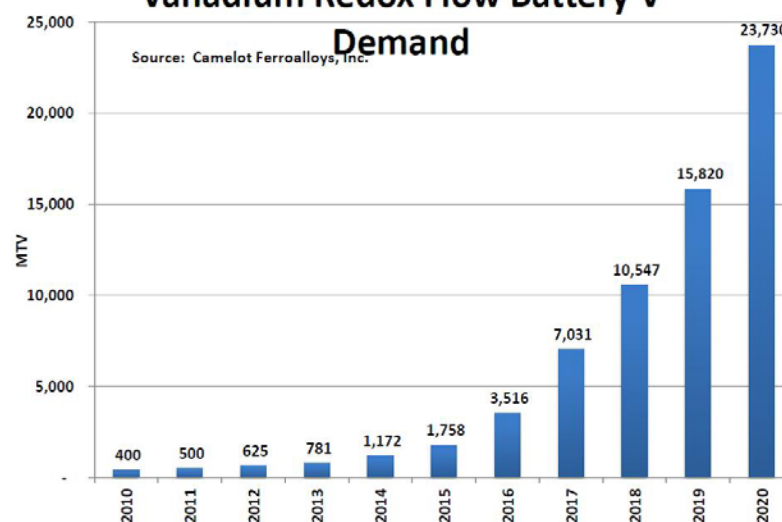
### Lithium Vanadium Battery V Demand

Source: Camelot Ferroalloys, Inc.



### Vanadium Redox Flow Battery V Demand

Source: Camelot Ferroalloys, Inc.



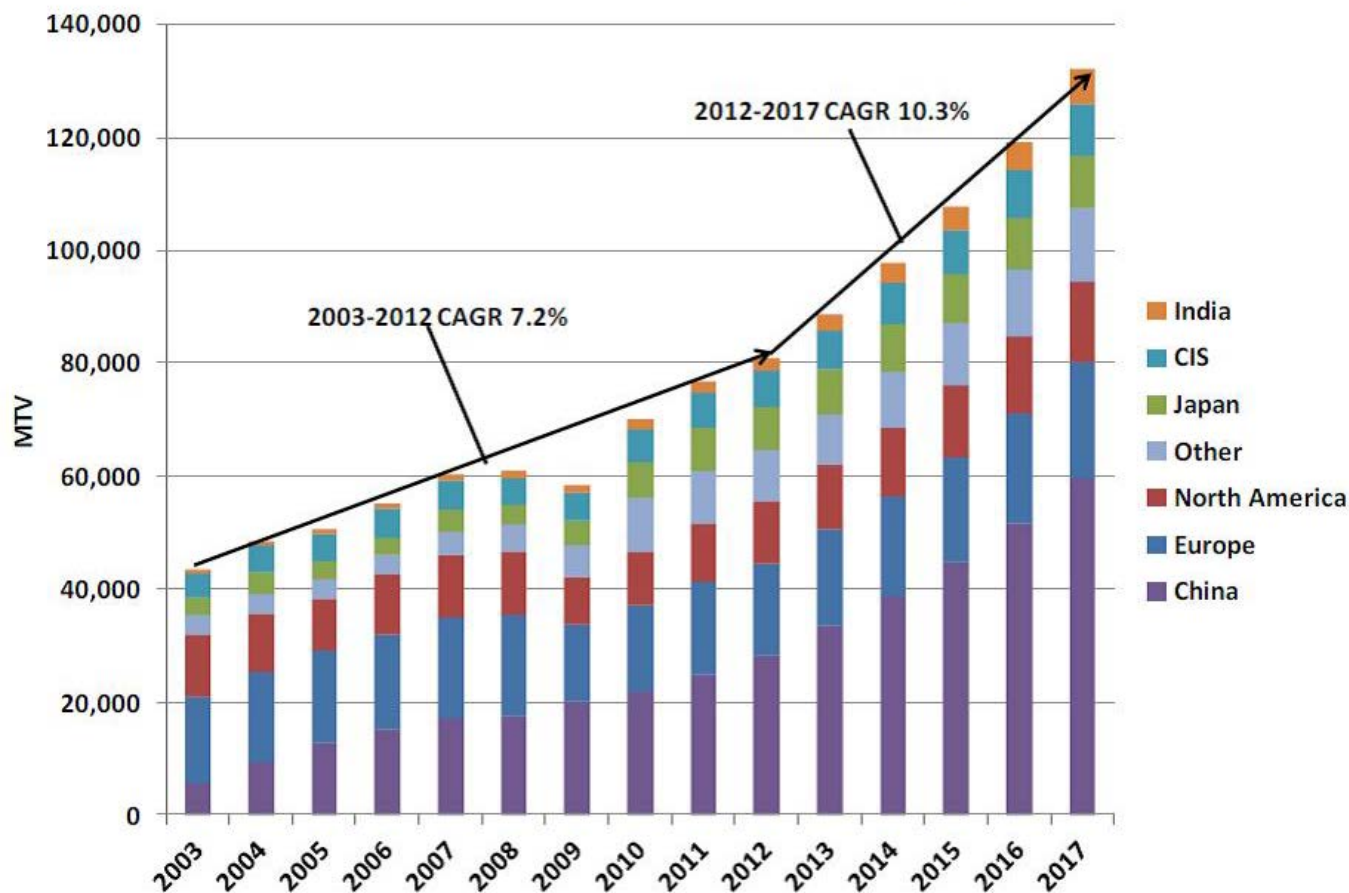
Source: Roskill



# Product 1 – Vanadium Pentoxide

## Strong Global Growth Forecast

### Global Vanadium Consumption

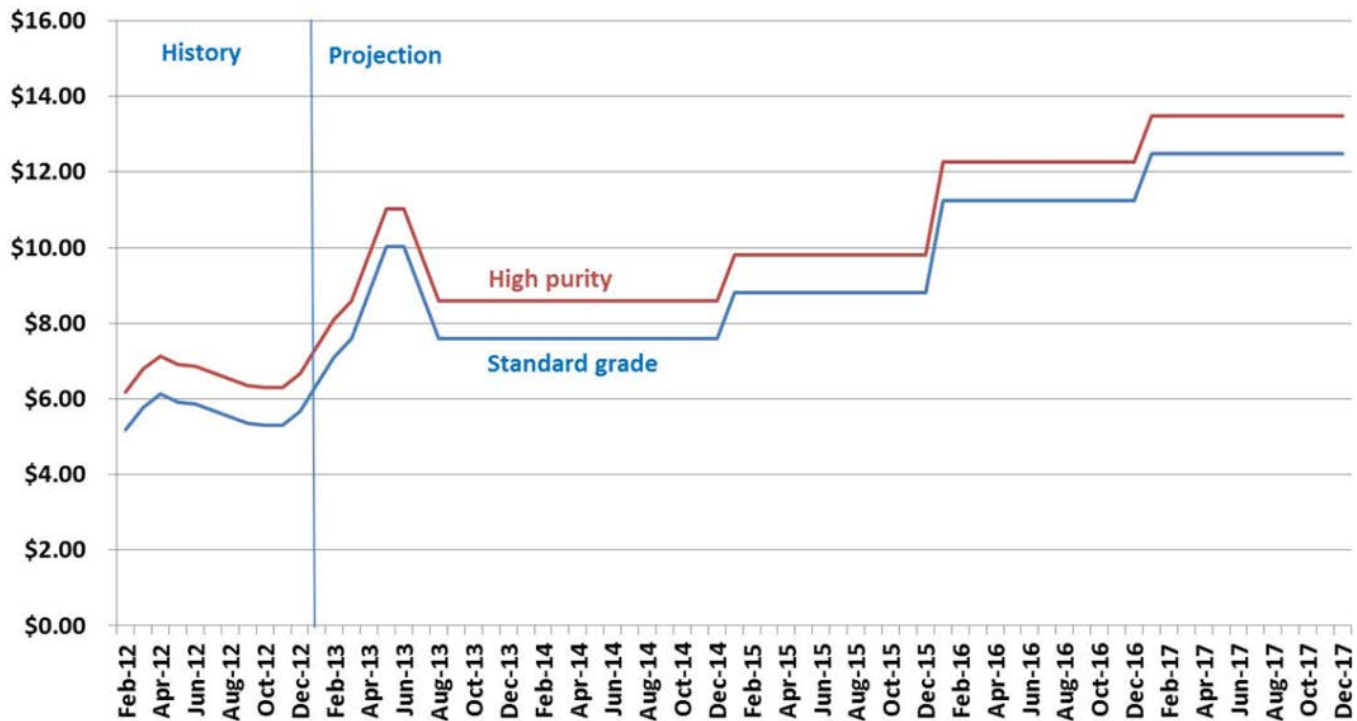


Source: Roskill

# Product 1 – Vanadium Pentoxide

## Strong Price Forecast

### Metal Bulletin V2O5 Monthly Average Price 2012-2013 Historical, 2013-2017 Projection



## Product 2 – Titanium

# Titanium – 55% $\text{TiO}_2$ (potential to upgrade to >90%) The Lightest & Strongest Metal

Uses:

- ✓ HIGH TECHNOLOGY
- ✓ MEDICAL
- ✓ AEROSPACE





# Product 2 – Titanium

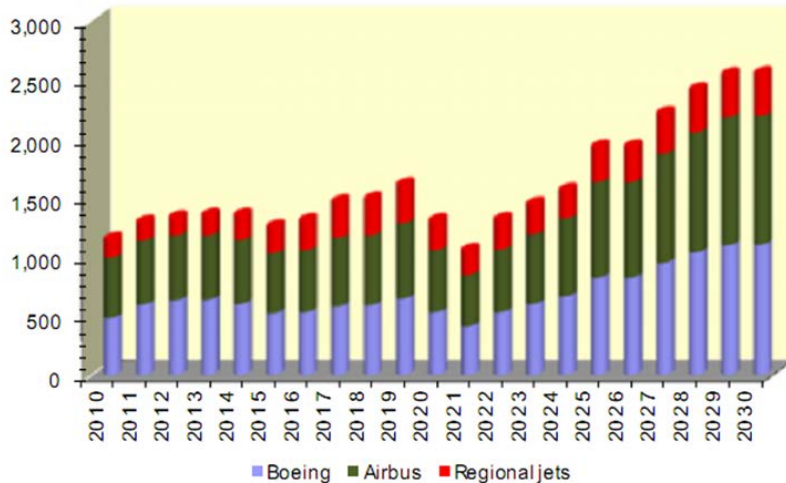
## Strong Growth Forecast

The demand for titanium will continue to grow:

- ✓ Titanium is a vital component in passenger jet manufacturing
- ✓ Titanium is a key structural component
- ✓ Demand for aircraft continues to grow

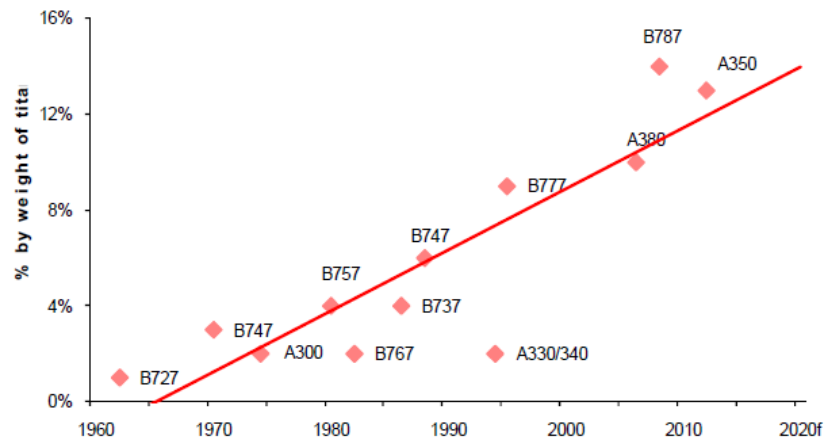


**Forecast deliveries of passenger jets by make 2010 to 2030**



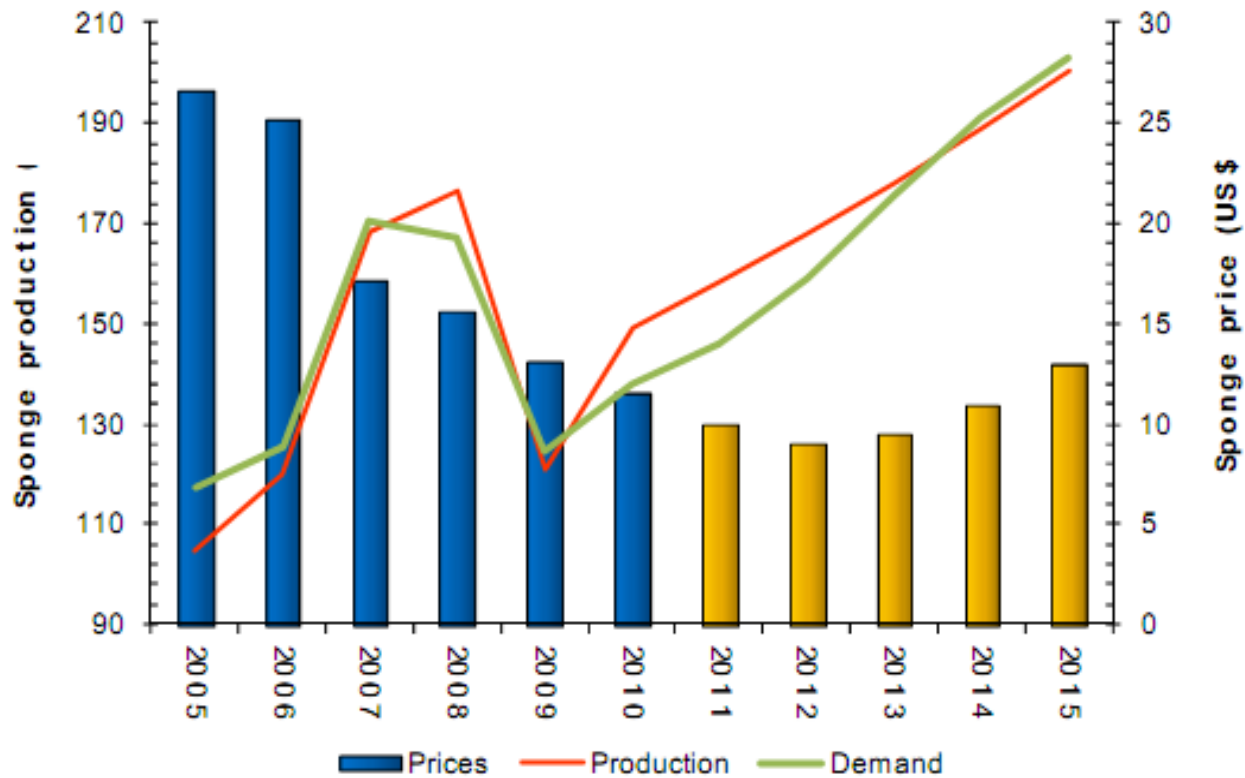
Source: Airline Monitor

**Titanium content per aircraft from 1960 to 2020**



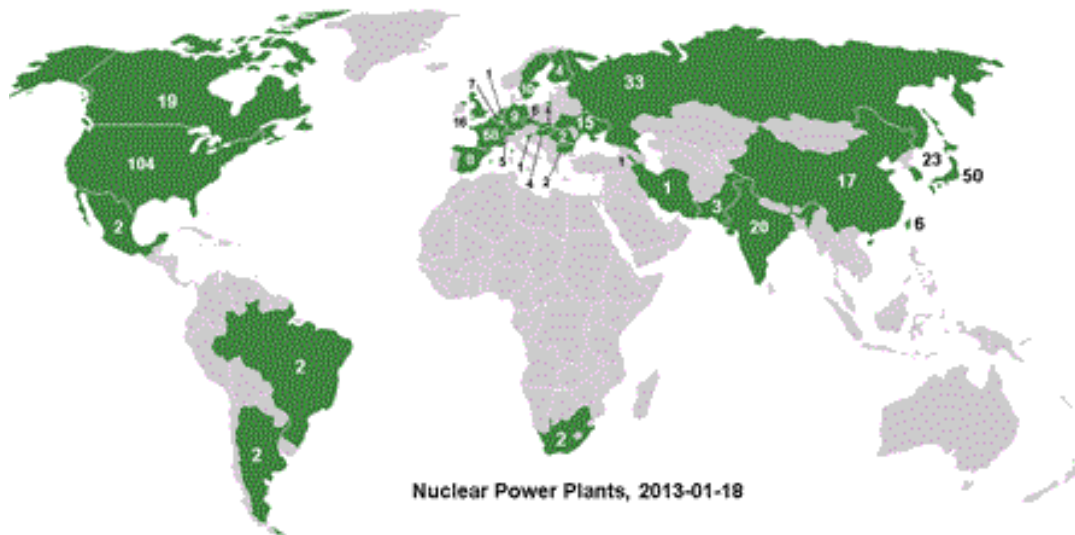
Source: VSMPO AVISMA

## Strong Price Forecast



## Future Energy Elements

- ✓ A new nuclear power station - up to 400t of titanium
- ✓ 31 countries: 437 nuclear power plant units are in operation
- ✓ IEA Forecast 60% increase to 2035 (1 unit / 5 days)
- ✓ Vanadium usage in energy storage increasing rapidly
- ✓ Electric vehicles, batteries and Redox Flow storage cells





## Product 3 – Iron Oxide

### High Purity Iron Oxide – 99.9% (69.2% Fe)

Uses:

- ✓ Coatings and Pigments
- ✓ Chemicals and Food Additives
- ✓ Magnetics
- ✓ Feedstock for onwards processing to metallic iron
- ✓ Powder Metallurgy

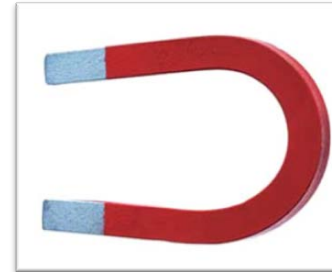


# Product 3 – Iron Oxide

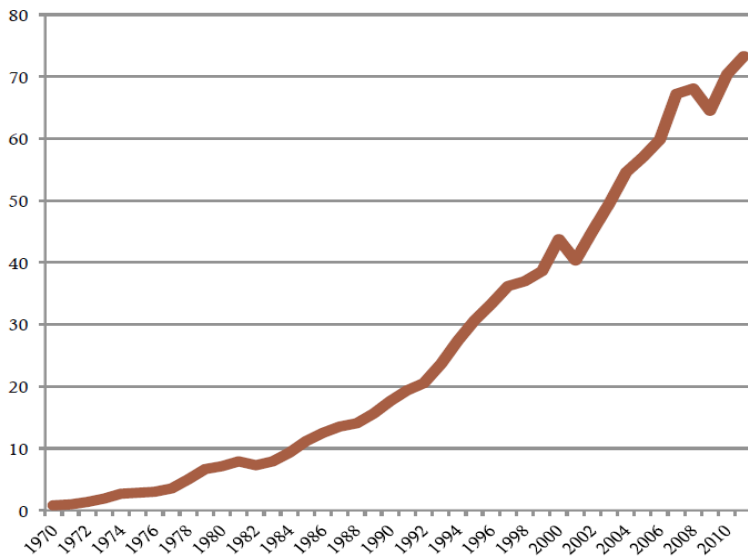
## Demand & Price Forecast

✓ Feedstock for onwards processing to metallic iron

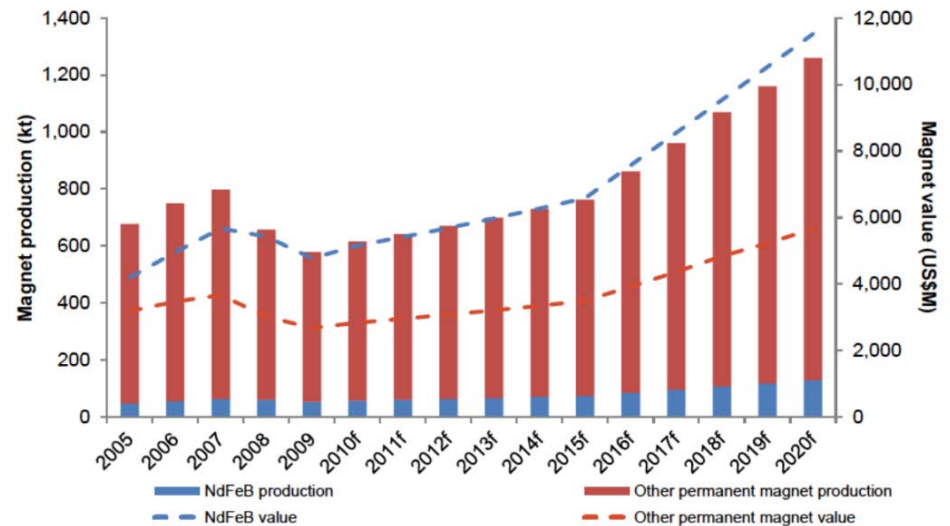
✓ Magnetics



Globally Reduced Iron demand



Demand projection permanent magnets



Source: Midrex Technologies

Source: Roskill

— Installed Production Capacity (Mt)

# Pre-Feasibility Study Results 2012

## Key Financial Outcomes\*

Mine life:	20 years
Total revenue (LOM):	A\$13.6 billion
NPV:	A\$2.6 billion
Net annual cash flow:	A\$339M
IRR Pre-tax:	38%

- ✓ 10% drop in AUD: USD + 20% increase in NPV

Supporting data in Appendix. Refer ASX announcements 12/7/2012;13/02/2013

Source: Refer ASX announcements 09/09/2013 ;19/09/13

<i>Total Metal Production</i>	<i>Tonnes</i>
V <sub>2</sub> O <sub>5</sub>	236,000
TiO <sub>2</sub>	5,822,000
Fe <sub>2</sub> O <sub>3</sub>	17,400,000

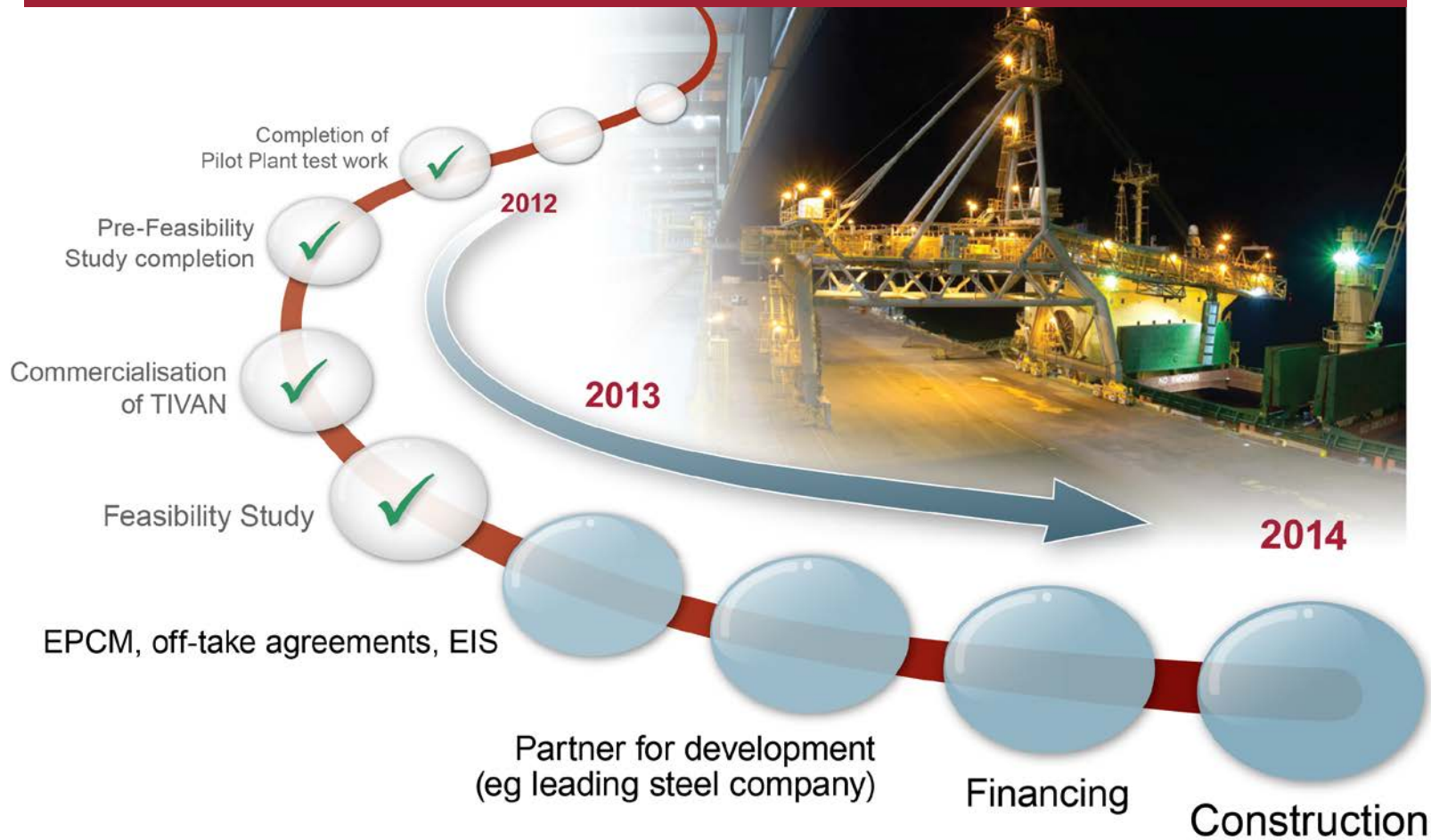
<i>Average Concentrate Grade</i>	
V <sub>2</sub> O <sub>5</sub>	1.2%
TiO <sub>2</sub>	18%
Fe	55%

<i>Metal Purity</i>	
V <sub>2</sub> O <sub>5</sub>	99%
TiO <sub>2</sub>	55%
Fe <sub>2</sub> O <sub>3</sub>	99.9%



# Project Development

TNG has outlined a clear development pathway, leveraging off its key relationships and alliances in China



# The next steps

- ✓ Finalise processing plant commercialisation
- ✓ Complete Definitive Feasibility Study
- ✓ Complete Environmental Impact Statement
- ✓ Secure partner for EPCM
- ✓ Secure long-term sales contracts

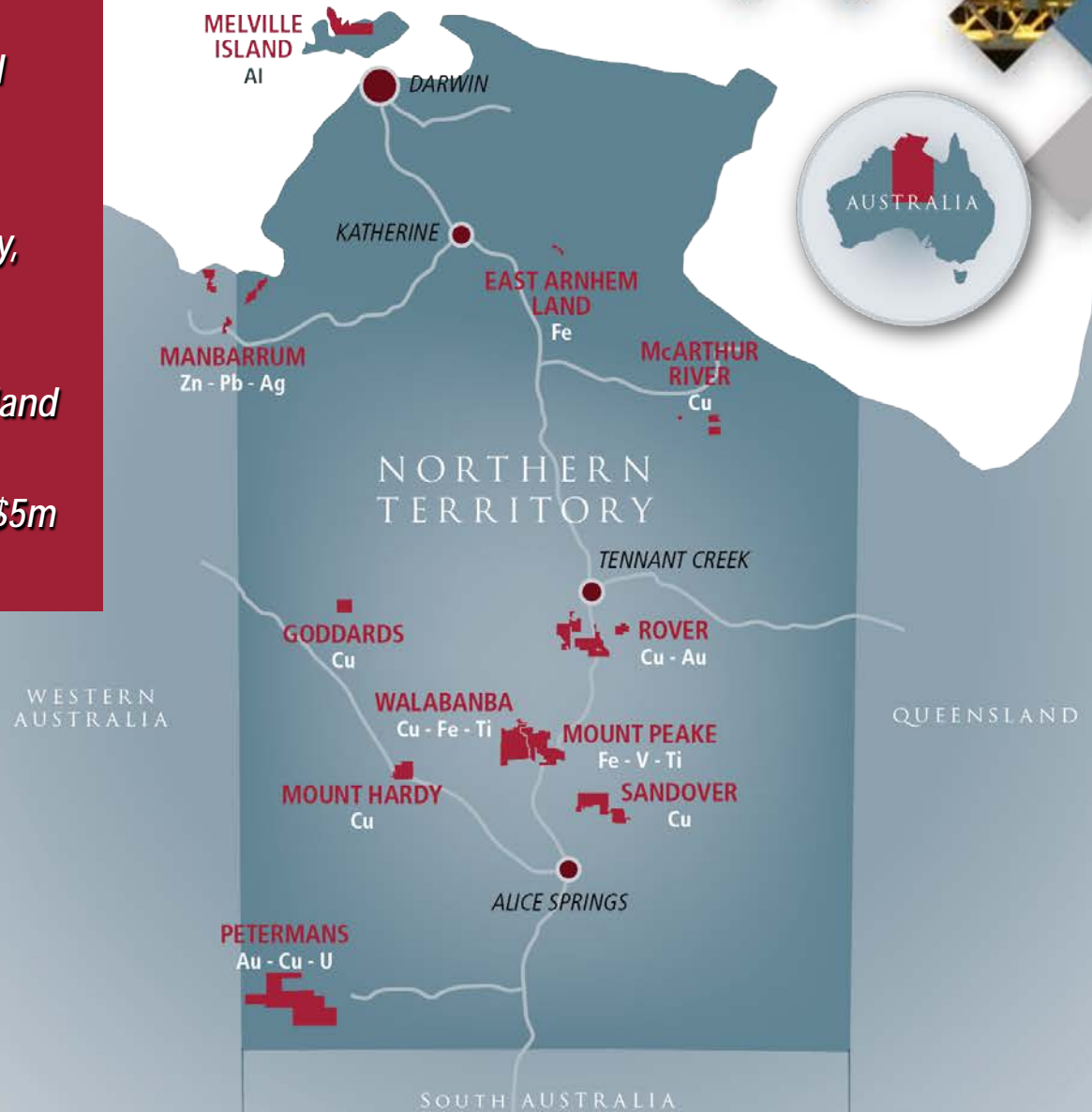




# TNG: Northern Territory Focused

*TNG's extensive Australian mineral asset portfolio:*

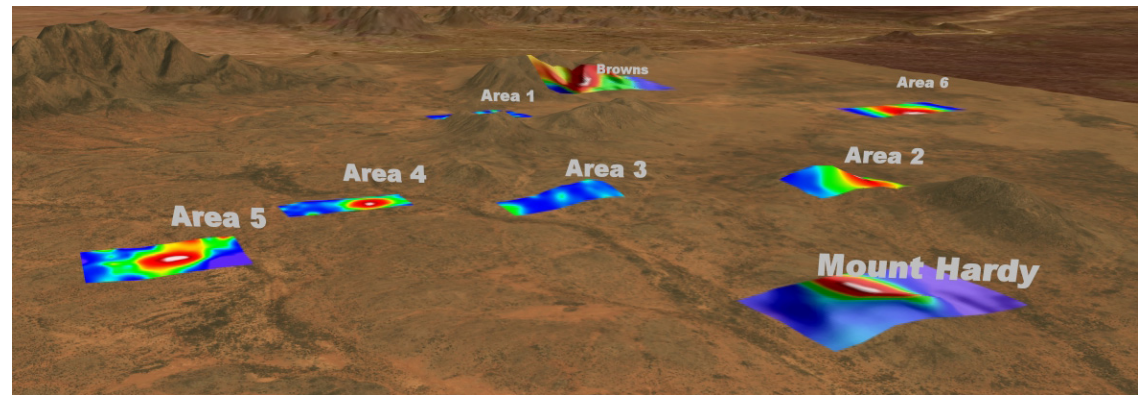
- *Mount Peake (Feasibility),*
- *Copper projects at Mount Hardy, McArthur River, Sandover, and Walabanba*
- *A bauxite project on Melville Island (JV with Rio Tinto)*
- *Sale of Manbarrum Project for \$5m*





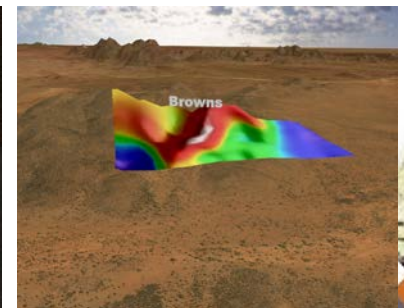
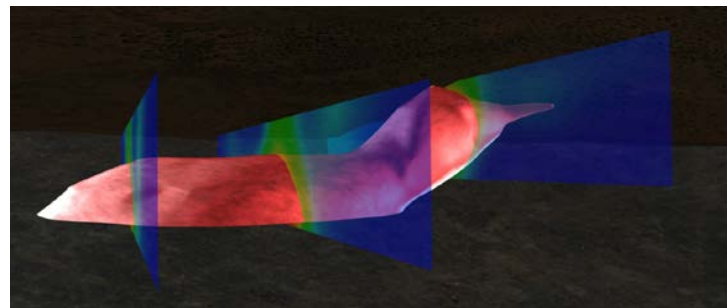
## Mount Hardy Copper Project (TNG: 100%)

- ✓ Extensive high-grade surface Cu with anomalous Au, Ag and Pb
- ✓ Rock chip grades of up to 35% Cu, 18% Pb, 10% Zn, 7g/t Au, 400g/t Ag
- ✓ Drilling confirms copper grades below supergene oxide material
- ✓ DHEM on 2012 RC holes outlines targets warranting further drill testing
- ✓ Mount Hardy and Browns prospects with existing workings, high grades and "drill ready" targets



### 2013 program including:

- ✓ IP and gravity geophysical surveys
- ✓ Further EM target checking
- ✓ Geological mapping and sampling
- ✓ Drill testing



# Corporate Overview

## THE VISION:

To build a diversified Australian resources company focused on supplying key strategic metals to Chinese and world markets from our extensive portfolio of mineral projects in the Northern Territory.

## Key Corporate and Financial Data

ASX code:	TNG
Market capitalisation (at 5c):	\$20M
Shares on issue:	526M
Cash:	\$5.2M

## Major Shareholders

Ao-Zhong International Mineral Resources	13.15%
Aosu Investment & Development Co	12.63%
WWB Investments P/L	6.64%

*(Directors hold approximately 17% of issued capital)*

## Board of Directors

Jianrong Xu	Chairman
Paul Burton	Managing Director
Michael Evans	Non-executive Director
Stuart Crow	Non-executive Director
Rex Turkington	Non-executive Director
Zhigang Wang	Non-executive Director

# Corporate Summary

- ✓ Mineral-asset rich project portfolio in NT
- ✓ Developing world-class **Vanadium-Titanium Project**
- ✓ Robust project: LOM revenue of \$13.6B
- ✓ Experienced management team
- ✓ TIVAN<sup>®</sup> process: competitive advantage
- ✓ Outlook for **strategic metals** strong
- ✓ **Huge upside** to resource potential – 500-700Mt Exploration Target of 500-700Mt with a grade range of 0.2-0.4% V<sub>2</sub>O<sub>5</sub>, 5-8% TiO<sub>2</sub>, and 25-35% Fe. The potential quantity and grade is conceptual in nature.  
There has been insufficient exploration to define a Mineral Resource and it is uncertain if further exploration will result in the determination of a Mineral Resource. (Refer ASX announcement 24/09/13).
- ✓ \$5m transaction with Legacy Iron pending





# Appendix – Supporting Data

## Mineral Resources and Exploration Targets:

The Pre-Feasibility Study (PFS) is based on the updated Indicated and Inferred Resource for Mount Peake published on 12 October 2011 of 160Mt @ 0.3% V<sub>2</sub>O<sub>5</sub>, 5% TiO<sub>2</sub> and 23% Fe (Indicated 110Mt @ 0.29% V<sub>2</sub>O<sub>5</sub>, 5.3% TiO<sub>2</sub> and 23% Fe; Inferred 48Mt @ 0.24% V<sub>2</sub>O<sub>5</sub>, 4.5% TiO<sub>2</sub> and 21% Fe). The Pre-Feasibility assumptions the financial model is based on mining 75.9 Mt of the 160 Mt Mineral Resource Of this amount 20.4% is from the Inferred Mineral Resource category. There is a low level of geological confidence associated with Inferred Mineral Resources and there is no certainty that further exploration work will result in the determination of Indicated Mineral Resources or that the production target itself will be realised.

In addition to this resource, TNG has published an Exploration Target of 500-700Mt grading 0.2-0.4% V<sub>2</sub>O<sub>5</sub> and 25-35% Fe. The potential quantity and grade is conceptual in nature, there has been insufficient exploration to define a Mineral Resource and that it is uncertain if further exploration will result in the determination of a Mineral Resource.

## Pre-Feasibility Study:

Reference to the PFS is to the ASX announcement 9 July 2012, which was prepared based on the Company's presently delineated mineral resource estimate. Any investment decision should be considered based on this information. Full details of the Mount Peake Pre-Feasibility Study are available in the Company's ASX Announcements 9 July 2012 and 19 September 2013. Mining is based on the PFS financial analysis which includes 20.4% of Inferred Resource material (there is a low level of geological confidence associated with Inferred Mineral Resources and there is no certainty further exploration work will result in the determination of Indicated Mineral Resources or that the production target itself will be realised).

## Key assumptions of 2012 PFS include:

- Operating costs and pit slope angles related to mining estimated to a Pre-Feasibility Study level ( $\pm 25\%$ )
- V<sub>2</sub>O<sub>5</sub> price of US\$20,305/tonne (> 90% grade)
- TiO<sub>2</sub> price of US\$400/tonne (> 55% grade)
- Fe<sub>2</sub>O<sub>3</sub> price of US\$200/tonne (> 69% grade)
- Royalty rate of 2.5% per tonne of plant feed
- Discount rate of 8%
- AUD\$/US\$ exchange rate of 1 US\$ = 1AUD\$

## Nett Annual Cash Flow:

Is defined as the average discounted cash flow per annum after all CAPEX (pre-strip CAPEX, initial CAPEX, and expansion CAPEX) has been deducted, but ignores cost or source of capital, hedging, tax, depreciation, rehabilitation and salvage.