

# TNG LIMITED



*Resources Rising Stars Conference  
April 2014*

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

Paul Burton – Managing Director

# Disclaimer

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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, FAAusIMM, 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.



# 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.

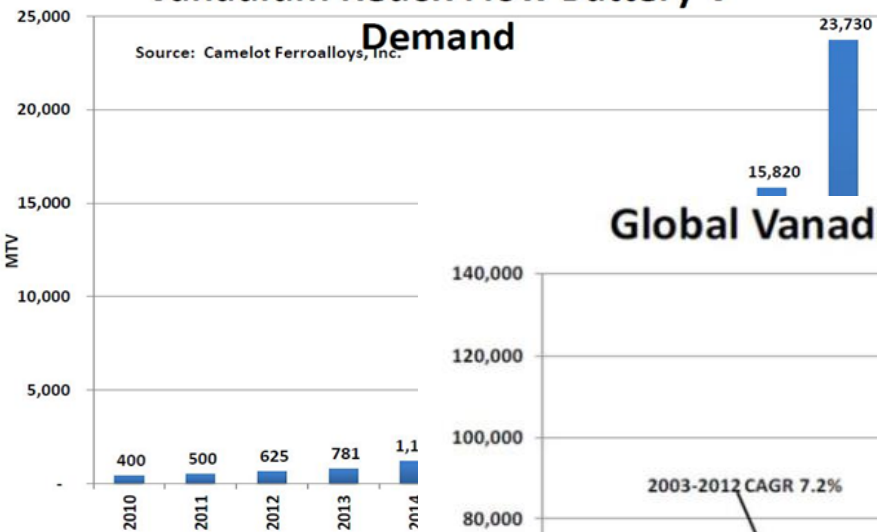


# Demand and Price forecast

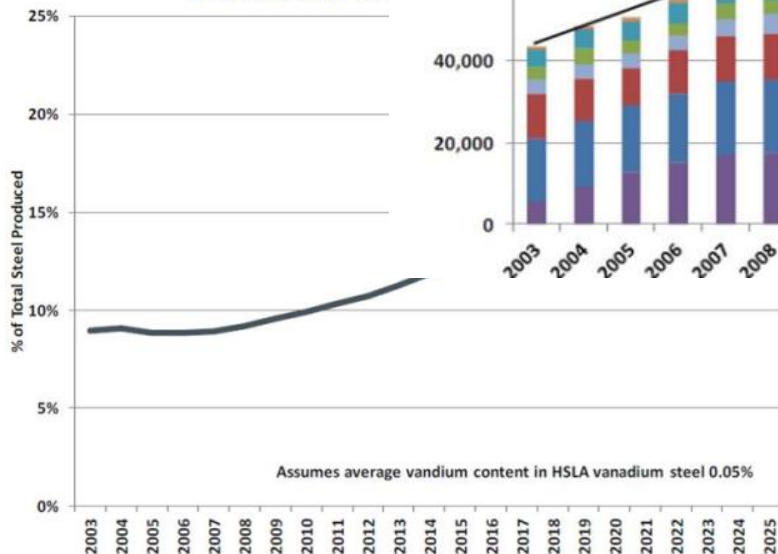
## Vanadium Redox Flow Battery V

Source: Camelot Ferroalloys, Inc.

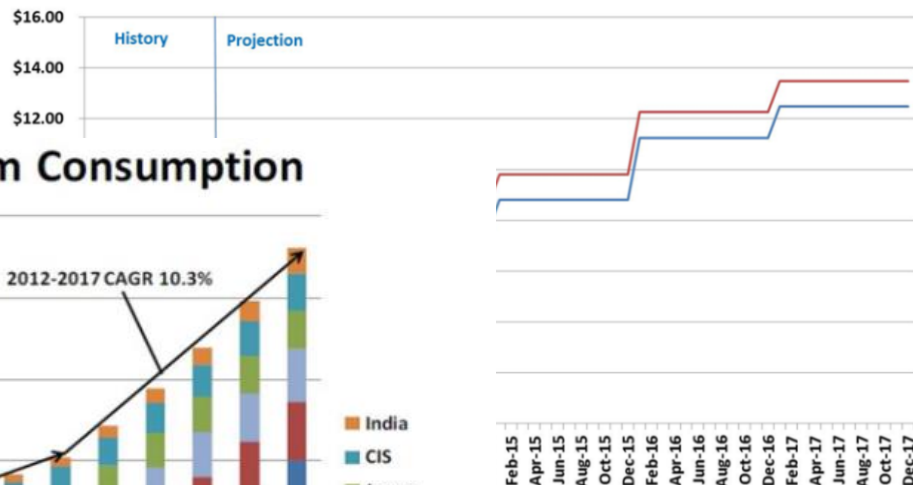
### Demand



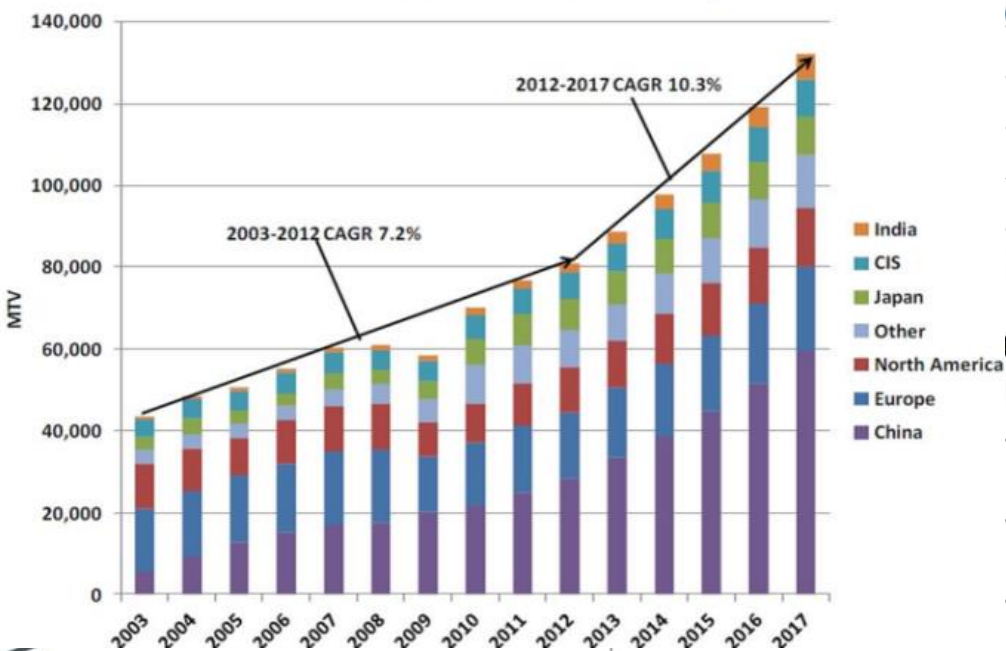
### Vanadium Steel



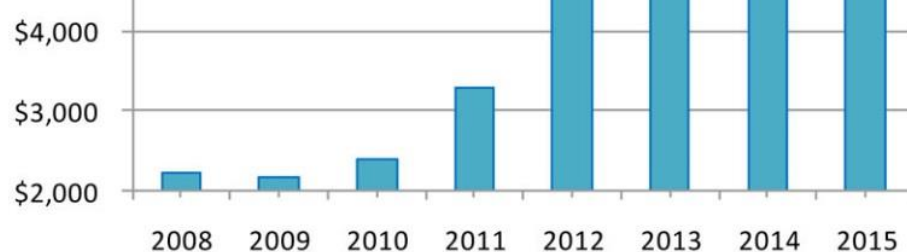
## Metal Bulletin V2O5 Monthly Average Price 2012-2013 Historical, 2013-2017 Projection



## Global Vanadium Consumption



## Price Forecast



Source: Ti Insight LLC

# *The Global View: Consider*

*Renewable energy.....*



*High technology.....*



*Population growth.....*



What resources will be in demand?





# Think BIG!

- High demand in line with population growth...means
- Large world class deposits
- High purity for precision metals
- *Vanadium and titanium essential metals*



# Facts:

- Future population demands will require huge resources of vanadium and titanium
- Current vanadium resources are depleting
- New large deposits close to infrastructure are RARE!
- Vanadium batteries and storage cells are now a REALITY
- High strength, light metals – essential for future
- Titanium dioxide one of the widest used materials
- High quality  $TiO_2$  sources depleting
- Key commodities for markets for :  
USA, Europe, China, Korea and Japan



# Vanadium Pentoxide Facts

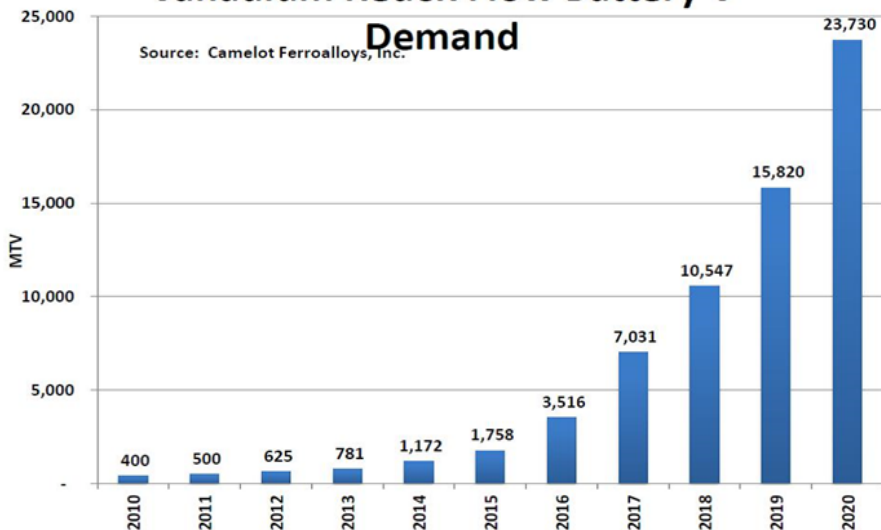
- **Current global vanadium consumption is 90,000 tonnes** (source: Roskill)  
*expected to increase 30% by 2017 to >120,000 tonnes*
- **Current price approximately USD \$18/kg (USD \$18,000 / tonne)**  
*expected to double by 2017 to USD >\$30,000 / tonne*
- **Forecast increase in vanadium for steel of 5% year on year.**  
*If REBAR grade 3 enforced in China – could add 40,000t demand*
- **Increasing use in batteries and high technology metals**  
*Batteries and storage cells could add exponential demand and growth!*
- **One million hybrid cars would demand 8,000t vanadium**



# Demand and Price forecast

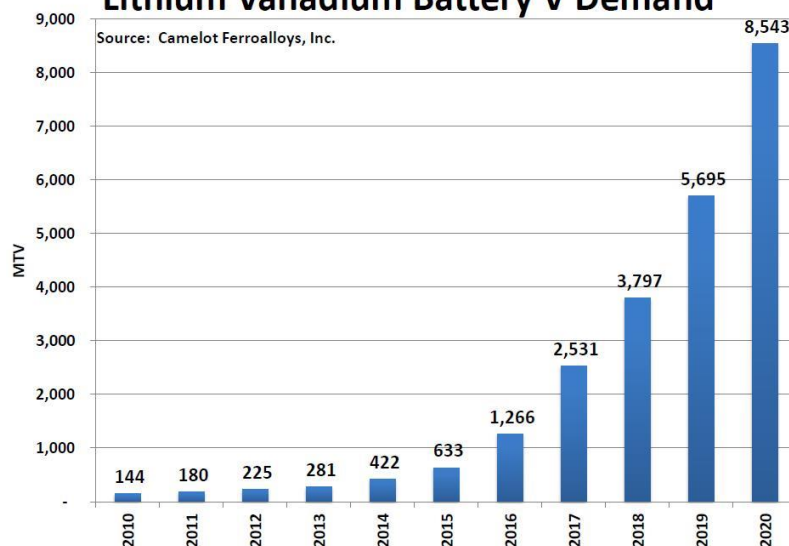
## Vanadium Redox Flow Battery V Demand

Source: Camelot Ferroalloys, Inc.

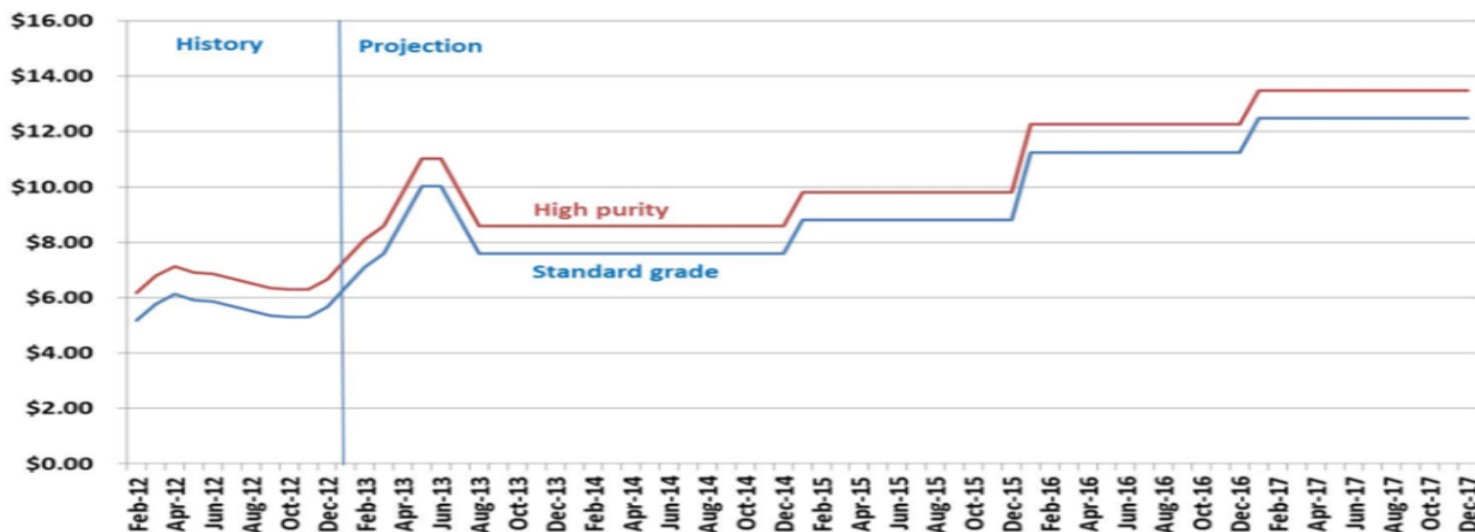


## Lithium Vanadium Battery V Demand

Source: Camelot Ferroalloys, Inc.



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



# Titanium Dioxide Facts

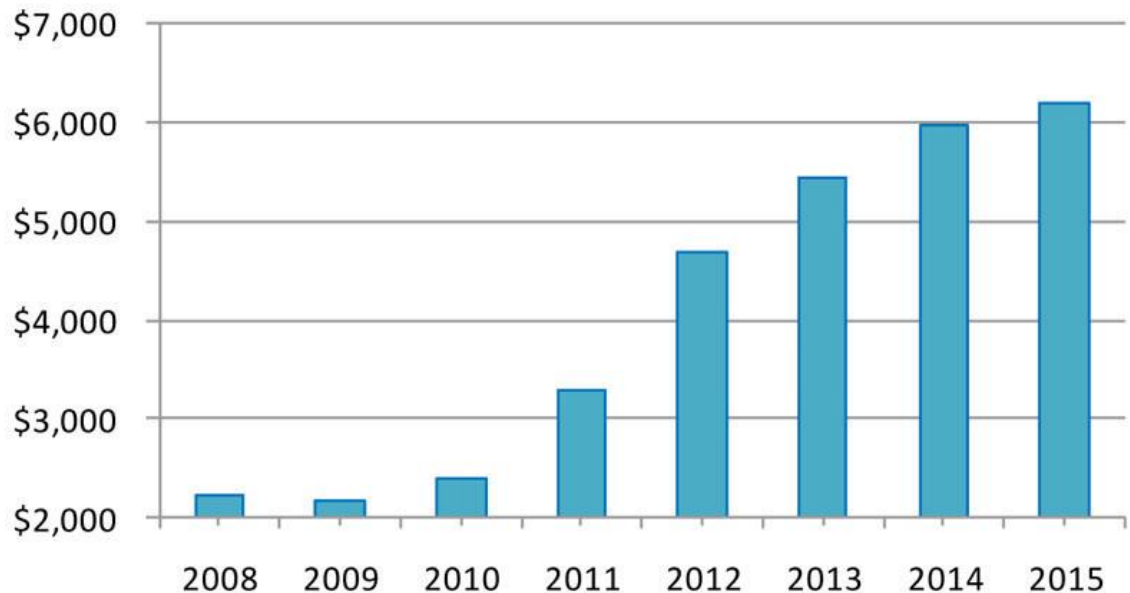
- **Forecast 7% annual growth increase in demand**  
(source:Roskill)

Main uses:

- ☐ High technology
- ☐ Coatings and pigments
- ☐ Medical
- ☐ Aerospace



**TiO<sub>2</sub> World Annual Average Price Forecast**  
(US\$ PMT)



Source: Ti Insight LLC

# High Purity Iron Oxide Facts

- **High Purity Iron Oxide  $\text{Fe}_2\text{O}_3$**
- 99.9% purity (69.2% Fe)

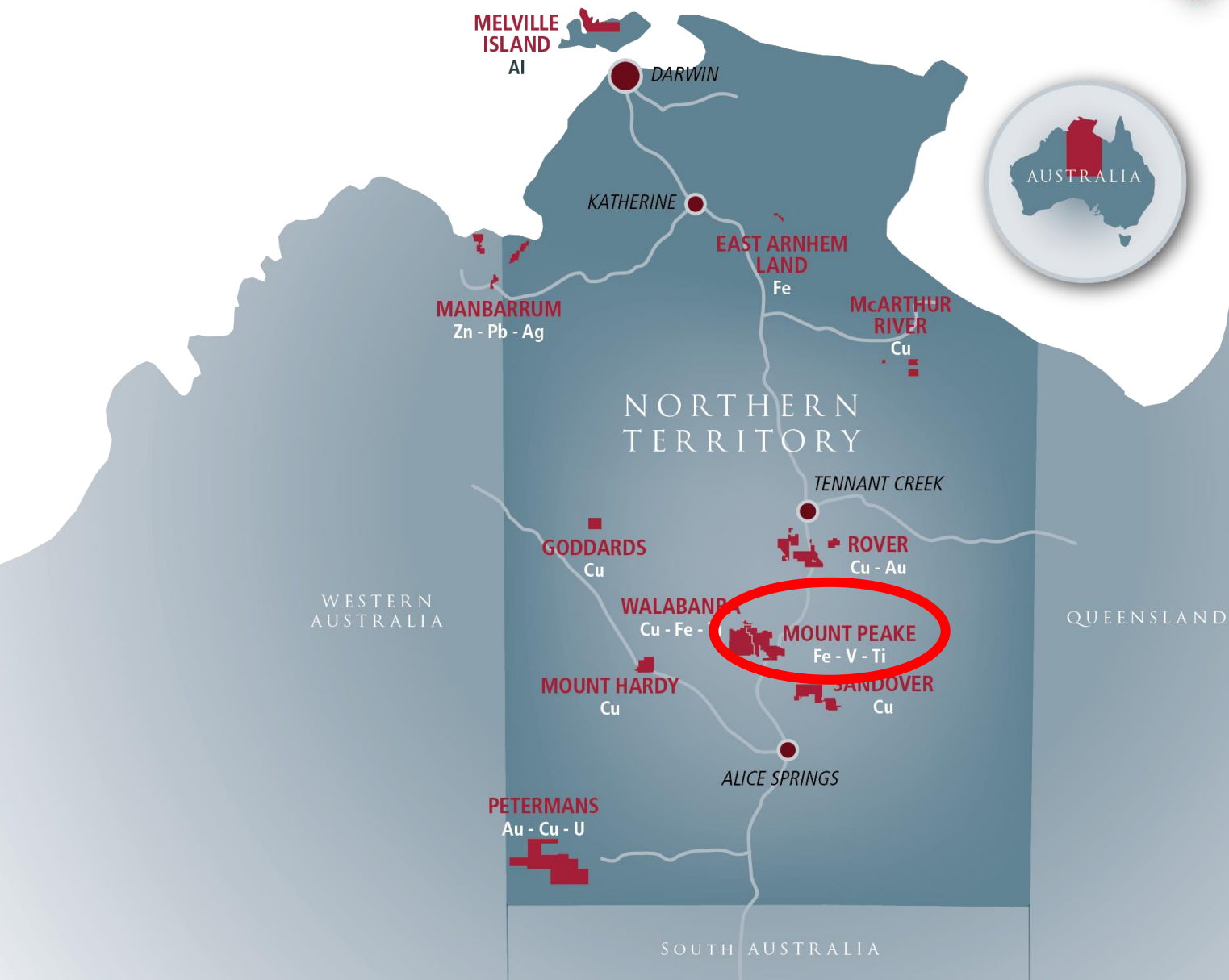
Main uses:

- ☐ Coatings and pigments
- ☐ Chemicals and food additives
- ☐ Magnetics
- ☐ Feedstock for processing
- ☐ Powder metallurgy
- ☐ Price can range up to \$1,000/tonne





# Mount Peake: World class Vanadium Titanium Iron



# Key Facts

- ✓ \$13.6B Life-of-Mine revenue
- ✓ \$2.6B NPV
- ✓ 38% IRR
- ✓ 20-year plus mine life
- ✓ Shallow; easy open cut mine
- ✓ 100% owned by TNG
- ✓ Close to road, rail and gas
- ✓ Direct access to Darwin Port
- ✓ Large, shallow JORC Measured resource
- ✓ PFS completed: DFS well advanced
- ✓ TIVAN – High purity products by hydrometallurgical process

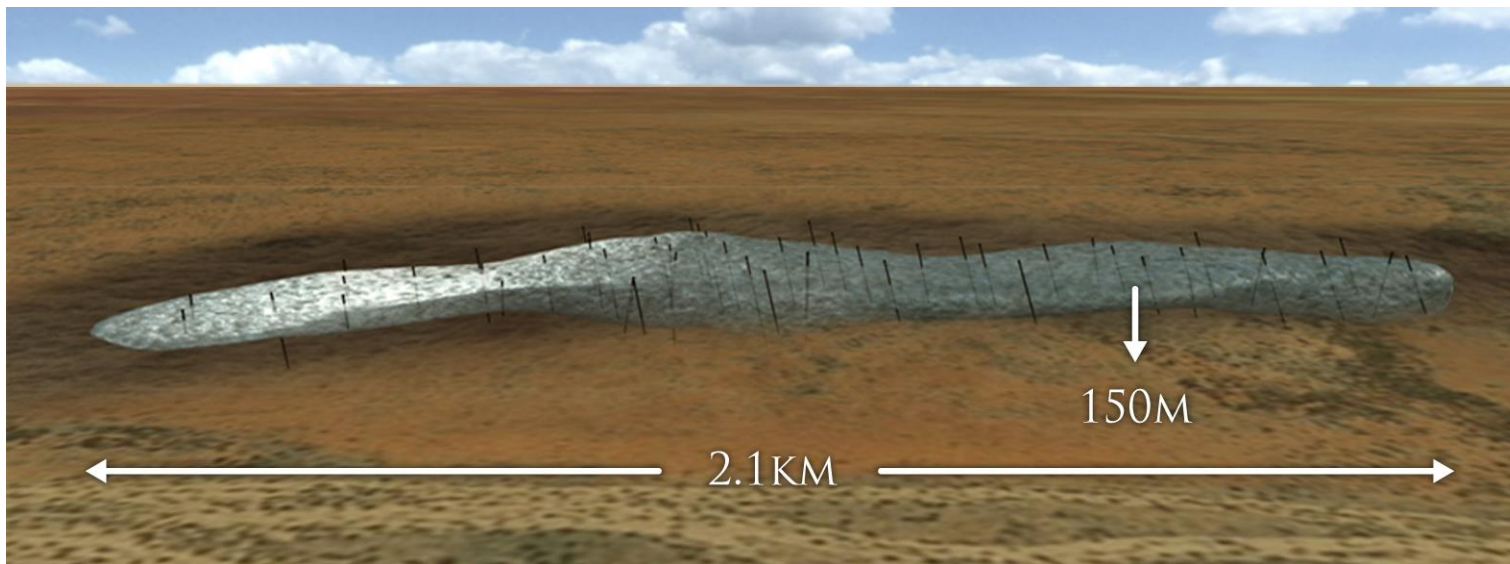


# JORC Resource:

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
TOTAL	160	0.28	5.31	22.81	8.60	33.64

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

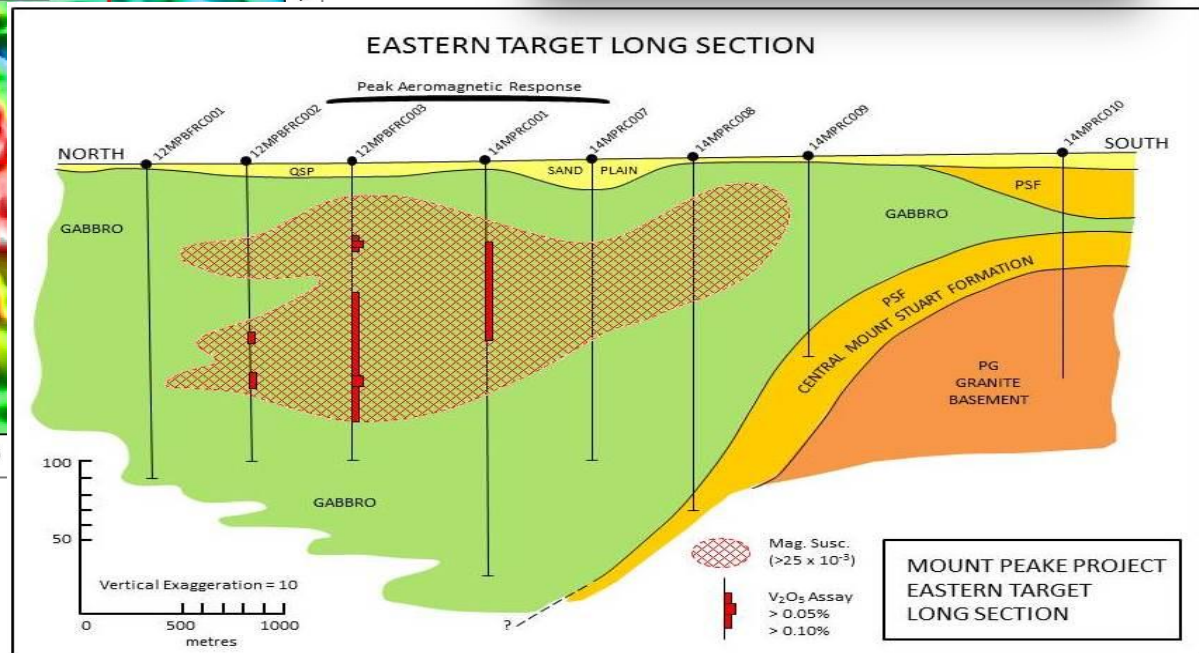
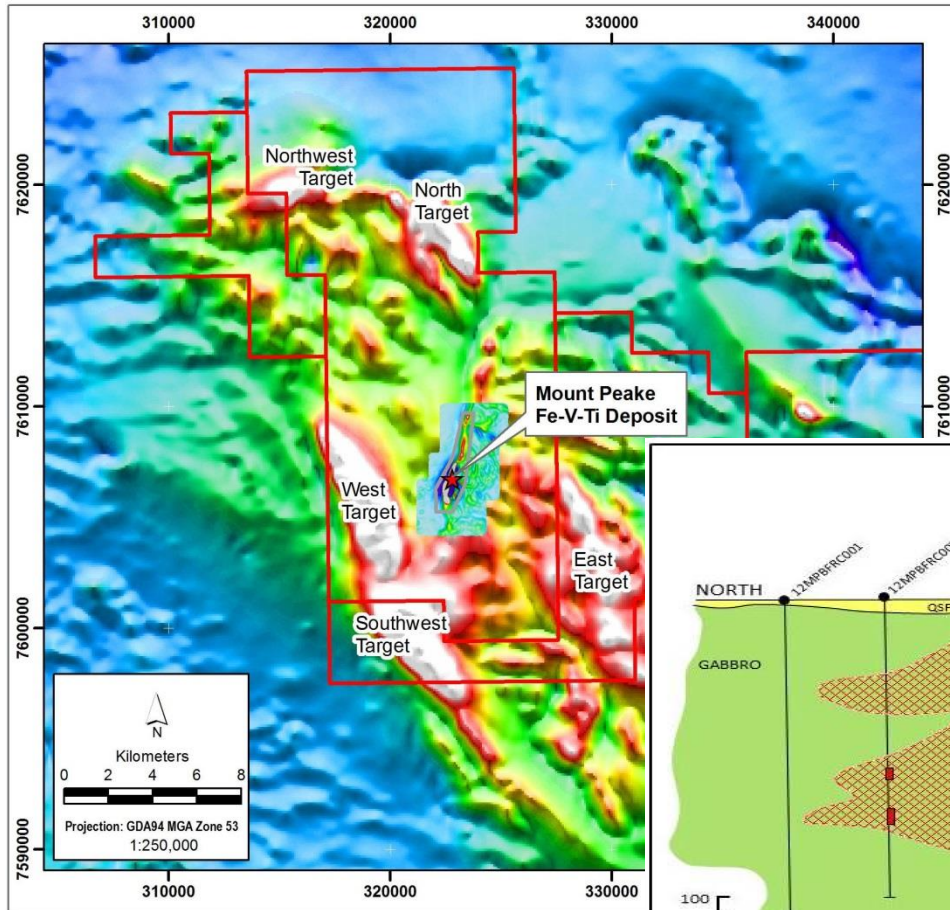
- Shallow large-scale resource
- Close to NT Road Rail Gas infrastructure corridor
- Long-life project





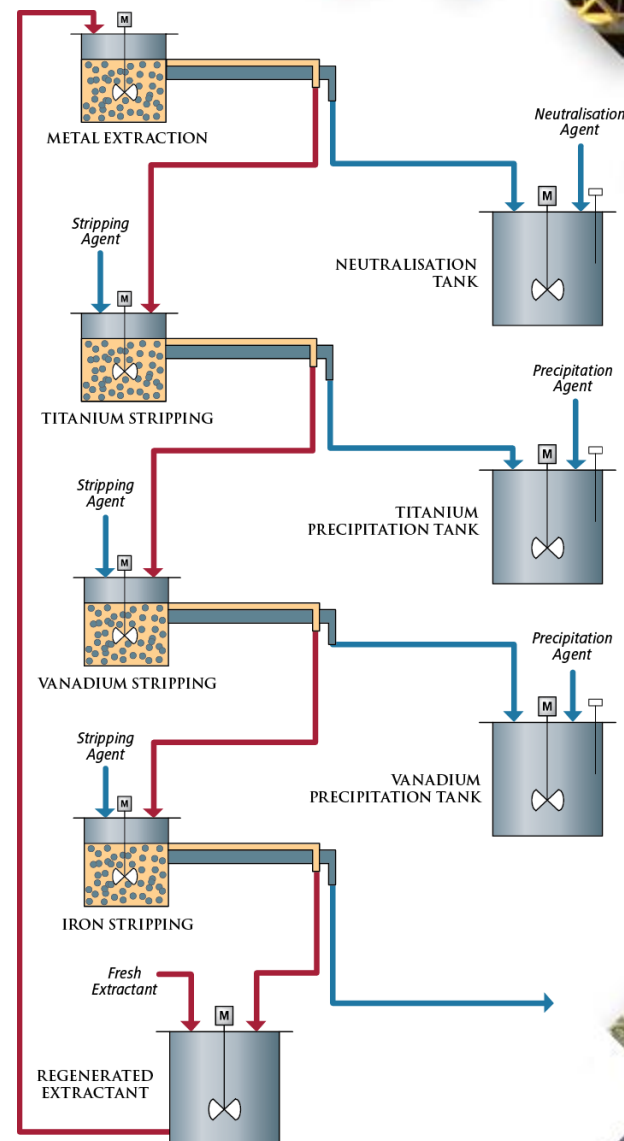
# Future *POTENTIAL*:

- Recent drilling defined potential future increase
- Over 270m of mineralised host rock



# High Purity PRODUCTS by TIVAN

- ✓ “TIVAN”: Hydrometallurgical process that extracts high purity vanadium, titanium and iron (Patent pending)
  - **>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 20 countries
- ✓ 100% owned by TNG





## Key Project Metrics (PFS):

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%

Annual Production (at 5Mt / annum )

11,000t	V <sub>2</sub> O <sub>5</sub>
290,000t	TiO <sub>2</sub>
900,000t	Fe <sub>2</sub> O <sub>3</sub>

For major assumptions underlying the financial information which is based on the 2012 PFS results refer ASX announcements 12/7/2012 and 06/02/2013 and to the appendix.

Further information can also be obtained from ASX announcements 09/09/2013 and 19/09/13.

<i><b>Total Metal Production</b></i>	<i><b>Tonnes</b></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

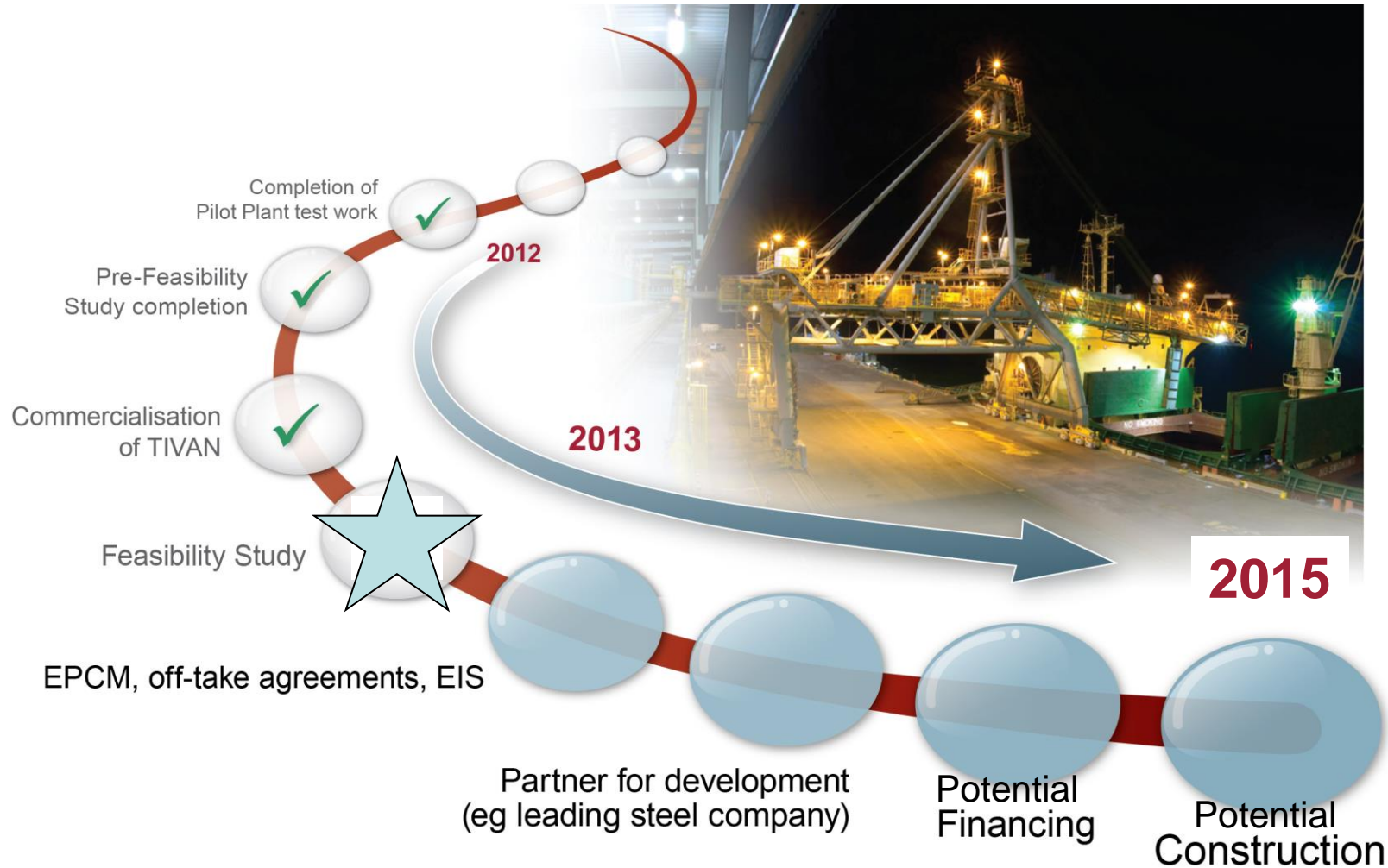
<i><b>Average Concentrate Grade</b></i>	
V <sub>2</sub> O <sub>5</sub>	1.2%
TiO <sub>2</sub>	18%
Fe	55%

<i><b>Metal Purity</b></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

- Clear development pathway
- TNG will develop long life resource with partners



# WOOJIN: Partnership MoU

- ✓ MoU signed with WOOJIN, Korea
- ✓ A key global supplier of FeV
- ✓ Long term
- ✓ Strategic





# The next steps

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





# Offshore Processing Option

- ✓ Malaysia attractive option
- ✓ Increase in NPV and IRR
- ✓ Lower CAPEX and OPEX
- ✓ Discussions on site location underway



# Corporate Overview

## Major Shareholders

Ao-Zhong International Mineral Resources	11.25%
Aosu Investment & Development Co	10.81%
WWB Investments P/L	10.33%

*(Directors along with their related companies hold approximately 14% of issued capital)*

## Key Corporate and Financial Data

ASX code:	TNG
Market capitalisation (at 8c):	\$44M
Shares on issue:	553M
Cash: (End March Qtr)	\$5.4M

## Board of Directors

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





# Summary AND Investment Highlights

- ✓ **Mineral-asset rich** project portfolio in NT
- ✓ World-class **Vanadium-Titanium-Iron Project**
- ✓ **High-quality and purity** products
- ✓ Robust Project: **LOM revenue of \$13B**
- ✓ **Experienced management** team
- ✓ **TIVAN® process**: competitive advance
- ✓ Outlook for **strategic metals** strong
- ✓ **Huge upside** to resource potential





# TNG LIMITED



ASX: TNG

## THANK YOU

Paul Burton – Managing Director

# 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. **Refer ASX Announcement dated 24/09/2013 for details.**

## 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, 6 February 2013, 9 September 2013 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.