



**Breakaway  
Research**

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**Grant Craighead** | Research Manager  
gcraighead@breakawayinvestmentgroup.com

**Mark Gordon** | Senior Research Analyst  
mgordon@breakawayresearch.com

### Company Information

ASX Code	TNG
Share Price	A\$0.17
Ord Shares	553.9m
Options	54.1m
<b>Market Cap FD</b>	<b>A\$103.37m</b>
Cash (Mar 14)	A\$5.45m
Total Debt	A\$0m
<b>Enterprise Value</b>	<b>A\$97.92m</b>

### Directors

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

### Substantial Shareholders

Ao-Zhong Int. Min Resources	11.24%
Aosu Inv. & Develop. Co	10.80%
WWB Investments P/L, Mr & Mrs Brown	10.33%
Mr Paul Burton	1.64%
JP Morgan Nom's	1.60%

Source: TNG

### Company Details

Address	Level 1, 282 Rokeby Rd Subiaco, WA, 6008
Phone	+618 9327 0900
Web	www.tnglimited.com.au

### 1 Year Price Chart



# TNG Limited (TNG)

*Delivering on the Mount Peake Strategy, with Key  
Offtake and Development MoU's in Place*

**Recommendation: Maintain Speculative BUY**

### Company Update

### Key Points

- **Significant progress on key aspects of the Mount Peake Vanadium-Titanium-Iron Project since our March 2014 report**
- **Non-binding MoU signed with South Korean WOOJIN IND. CO. Ltd regarding vanadium and by-product offtake, marketing and sales**
- **WOOJIN is one of the world's leading suppliers of ferro-vanadium and related products**
- **Non-binding development MoU signed with POSCO Engineering and Construction, a part of the multi-billion dollar POSCO Group of Companies**
- **This includes the potential for DFS and project funding, and project development and construction**
- **Technical review of the Mount Peake Project, including the option of siting the TIVAN® hydrometallurgical plant offshore boosts project economics**
- **Ongoing progress on the TIVAN® metallurgical testwork**
- **We maintain our indicative value of \$0.28/share**

*TNG has made significant key advancements on the Mount Peake Project, with the signing of MoU's with WOOJIN and POSCO E&C subsequent to our March 2014 report. These agreements cover critical aspects of project development, including offtake, financing and construction. In the shorter term the POSCO E&C MoU covers potential funding and completion of the Definitive Feasibility Study, a critical near term step in advancing Mount Peake. One key now will be to progress these non-binding MoU's into binding agreements, which will add significant impetus to Mount Peake.*

*The key technical consideration is to prove the commercialisation of the TIVAN® hydrometallurgical process, with pilot scale work now under way.*

### Company Overview

TNG continues to work towards development of its Mount Peake V-Ti-Fe project, and commercialisation of the TIVAN® hydrometallurgical process. It is expected that the DFS will be completed by late 2014 – timing will be dependent upon results of the pilot scale TIVAN® testwork and obtaining funding.

With the signing of the recent MoU's TNG has moved closer to sourcing funding for the DFS and development of Mount Peake.

Given the progress made since our March report we maintain our Speculative Buy recommendation, with an unchanged indicative value of \$0.28/share.

Recent progress increases our confidence that TNG's development strategy for Mount Peake is on track to be executed.



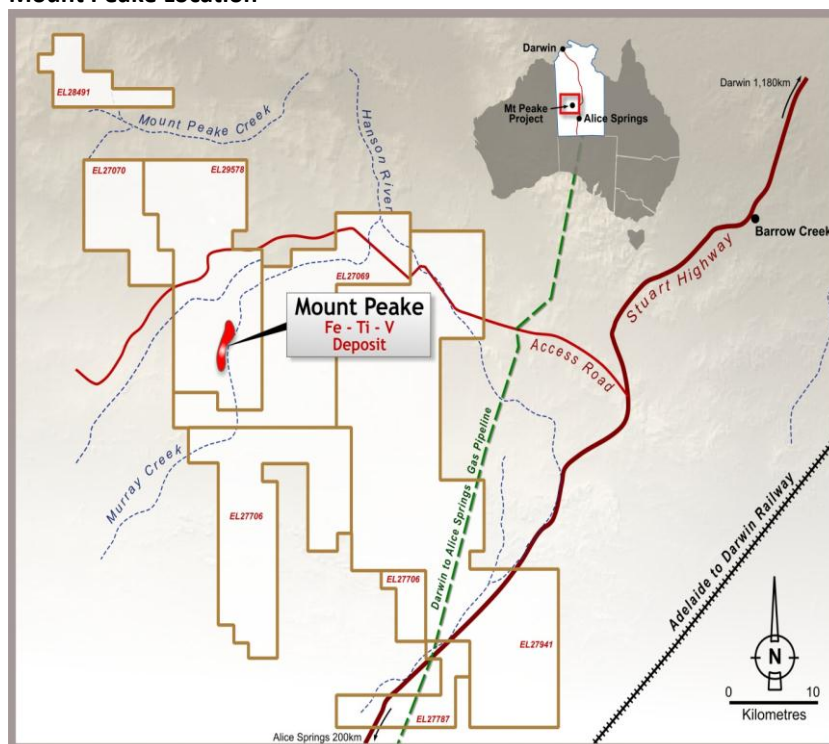
## Company Update

### Mount Peake Vanadium -Titanium - Iron Project - Background

*Significant advances on the flagship Mt Peake V-Ti-Fe Project in the NT*

TNG Limited (“TNG” or “the Company”), has made key advances on the Mount Peake Vanadium – Titanium – Iron Project (“Mount Peake” or “the Project”) since our March 2014 report.

#### Mount Peake Location



Source: TNG

*Non-binding MoU's with prospective offtake, financing and development partners*

Importantly, these advances have included signing key non-binding MoU's with prospective offtake, financing and development partners, and a review of the Project with a view of siting the TIVAN<sup>®</sup> plant in Malaysia. The MoU's, should they be converted into binding agreements, will cement confidence in the Project, and in our view are key value drivers, as has been seen in recent price momentum.

Mount Peake is TNG's key and most advanced project. It is being advanced in parallel with the TIVAN<sup>®</sup> metallurgical process, a solvent extraction process developed to extract high purity vanadium, iron and titanium oxides from magnetite concentrates.

Mount Peake is located approximately 235km north of Alice Springs, and close to key Central Australian infrastructure, including the Stuart Highway (40km), the Adelaide to Darwin Railway (60km, and then 1180km to Darwin along the railway) and the Alice Springs gas pipeline (30km).

#### WOOJIN IND. CO. Ltd. MoU

*MoU with WOOJIN covers strategic cooperation, including offtake, development and financing*

On March 28, 2014 TNG announced that it had signed a non-binding MoU with WOOJIN IND. CO. Ltd (“WOOJIN”), for long term strategic co-operation, including offtake, development and financing of Mount Peake.

The Company is currently now in advanced negotiations with WOOJIN following completion of the due diligence phase on May 29, 2014, and successful negotiations with WOOJIN may lead to binding agreements with regards to:



- Off-take of Mount Peake's products and by-products
- The marketing and sales of Mount Peake's products and by-products
- Technology exchange and development for added value products
- Other mutually beneficial arrangements

Any agreements will be structured in such a way that will allow TNG to finance the Project directly or through third parties. There may also be the option to attach a WOOJIN FeV plant to the proposed TIVAN® plant.

*Woojin is one of the world's largest producers of FeV, with contracts with major manufacturers*

WOOJIN is a South Korean company, and one of the world's largest high grade ferro-vanadium producers, with four operating plants in South Korea and two in China. WOOJIN was formed in 1990, and since then has grown significantly, with exclusive FeV supply contracts with a number of major manufacturers, including POSCO, Hyundai and Hitachi.

### **POSCO Engineering and Construction MoU**

The second major MoU, as announced to the market on May 23, 2014, was signed as a three way agreement between POSCO Engineering and Construction ("POSCO E&C"), TNG, and METS Pty. Ltd., TNG's metallurgical consultants.

This again is a non-binding MoU, and may lead to binding agreements in regards to the following:

*MoU signed with POSCO E&C, covering completion of the Mount Peake DFS, assistance in obtaining project finance and project development*

- Completion of the Mount Peake Feasibility Study
- The potential for assistance in obtaining project finance by POSCO E&C via the Korean Export Credit Agency or other agreed sources
- Potential for POSCO E&C to be awarded Engineering and Development contracts for the development of Mount Peake, and
- Other agreements relating to Mount Peake, including short and long term project development requirements

POSCO E&C, which is a member of the POSCO group of companies specialises in major project development, with over 8,000 employees globally, orders of US\$12 billion and sales of US\$8 billion in 2013.

The parent, the POSCO Group, is a major player in the Australian resources sector, including a 12.5% equity stake in the \$9.8 billion Roy Hill iron ore project and a major shareholder in Sandfire Resources (ASX: SFR). POSCO is also the world's 4<sup>th</sup> largest steel producer, producing some 37Mtpa of crude steel in 2013.

### **Project Technical Review**

#### **Initial PFS Results and Reviews**

*Original 2012 PFS has undergone a number of reviews.*

A robust PFS was delivered by the Company in July 2012, which has subsequently been reviewed both internally and externally. The PFS assumed an open-cut mining operation, with on-site integrated processing.

Outcomes and assumptions from the original PFS, as delivered by Snowdens, Sinclair Knight Mertz (SKM) and METS are as in our March report, and are reiterated below.



## Mount Peake PFS parameters and outcomes

Operating Parameters	
Total ore mined	75.9Mt
Total waste movement	72Mt
Total material moved	147.9Mt
Strip ratio	0.95: 1
Processing rate	2.5Mtpa expanding to 5Mtpa after 3 years
Average head grade	0.39% V <sub>2</sub> O <sub>5</sub> , 27.09% Fe, 7.02% TiO <sub>2</sub>
Average recoveries	80% V <sub>2</sub> O <sub>5</sub> , 66% Fe, 67% TiO <sub>2</sub>
Average annual production	15,300tpa V <sub>2</sub> O <sub>5</sub> , 1.13Mtpa Fe <sub>2</sub> O <sub>3</sub> , 375ktpa TiO <sub>2</sub> con
Life of mine	17.2 years + 2.8 years pre-production
Financial Outcomes (pre-tax and financing)	
Total Revenue	A\$ 11.8 billion
Surplus operating cash flow	A\$ 5.8 billion
Net cash flow	A\$ 5 billion
CAPEX	A\$563 million (2.5Mtpa), A\$151 million (expansion)
Total operating costs	A\$75/tonne ore
Net annual cash flow	A\$ 294 million
Pre-tax IRR	31.8%

Source: TNG

Subsequent reviews have enhanced the project economics, due to exchange rates changes, and also revenue from the iron product being significantly underestimated in the PFS. No operating parameters were changed during the reviews.

*Most recently TNG has looked at siting the TIVAN® plant in Malaysia, with improved project economics*

The most recent review, as announced to the market on March 18, 2014, envisages locating the TIVAN® plant in Malaysia. The Company estimates that the Malaysian option will decrease capex by A\$43 million, from A\$563 to A\$520 million, and cut operating costs by A\$2/tonne mined.

The results of the initial PFS and subsequent reviews are presented in the table below.

### Revised Project Financials

	Original PFS	Revised 09/13 AUD = 1.00 US	Revised 09/13, AUD = 0.85 US	Revised 03/14 AUD = 1.00 US	Revised 03/14, AUD = 0.90 US
<b>Total Capex (2.5mtpa)</b>	A\$563m	A\$563m	A\$563m	A\$520m	A\$520m
<b>Expansion Capex ( 5mtpa)</b>	A\$151m	A\$151m	A\$151m	A\$151m	A\$151m
<b>LOM Cashflow</b>	A\$5.8B	A\$6.79B	A\$9.13B	A\$7.22B	A\$8.53B
<b>NPV<sub>8</sub></b>	A\$1.88B	A\$2.65B	A\$3.68B	A\$2.80B	A\$3.40B
<b>Pre-Tax IRR</b>	31.8%	38.7%	47.5%	43%	46%

Source: TNG

### The Malaysian Option

One key factor in the latest review is the option of locating the TIVAN® plant in Malaysia should the option of locating the TIVAN® plant at Mount Peake not be viable. According to the Company this option has a number of advantages for chemical-type processes, including:

*The Malaysian option has a number of advantages*

- Direct access and proximity to deep water ports
- Availability of cost effective inputs, including power, water and acid
- Availability of land already environmentally zoned for such processing activities
- Potentially lower capex as detailed above
- Potential synergies with existing steel mills and titanium dioxide production plants

Should this option be advanced, TNG would produce a magnetite concentrate at the



Mount Peake site, which would be then railed to Darwin and shipped to a port on the east coast of Malaysia.

To further advance this option, TNG has engaged ENVIRON Consulting Services (M) Sdn Bhd (“ENVIRON”) to provide technical and scientific support, and facilitate meetings with government departments.

### Key is still the TIVAN® Process

The key to the success of Mount Peake is the TIVAN® process, a hydrometallurgical process that produces three products – premium (>96%) battery grade vanadium pentoxide (V<sub>2</sub>O<sub>5</sub>), titanium dioxide concentrate (TiO<sub>2</sub>) and high purity iron oxide powder (Fe<sub>2</sub>O<sub>3</sub>).

The process is being developed jointly by TNG and Mineral Engineering Technical Services (“METS”) of Perth, along with the CSIRO. The technology is owned 100% by TNG, and is currently being optimised for pilot-scale testwork.

Metallurgical testwork is currently underway, and is a key part of the ongoing DFS. Work underway and planned includes:

1. Final optimisation of the HPGR circuit design – completed
2. Final optimisation of magnetic separation testwork – completed
3. Final continuous crushing, grinding and magnetic separation at ALS Metallurgy of the 15 tonne bulk sample for the CSIRO TIVAN® pilot plant – nearing completion
4. Final optimisation of bench leach and SX work at ALS Metallurgy
5. On completion of 1 to 4, a continuous bulk leaching and solvent extraction run
6. On completion of 5, a continuous bulk acid regeneration pilot plant in Europe

Items 1 and 2 above have provided better than expected operating parameters, and are expected to lead to a reduction in both operating and capital costs.

Other facets of the ongoing DFS include the EIS, mining, geology and geotechnical studies, aquifer search and tailings storage facility design.

### Company Valuation

We maintain our company valuation of \$0.28/share on an undiluted basis, as detailed in our March 2014 report.

*Significant progress on metallurgical testwork, with some better than expected operating parameters*

*We maintain our indicative valuation of \$0.28/share for TNG, based on a 40% FCI in Mount Peake*

#### Indicative TNG Valuation

Project	Value	Method	Risk Factor	Risk Value	Value/Share
<b>Mount Peake</b>	\$336 million	DCF, 8% real DR	40%	\$134 million	\$0.24
<b>Roper River</b>	\$2 million	Estimate	100%	\$2 million	\$0.005
<b>Mount Hardy</b>	\$5 million	Estimate	100%	\$5 million	\$0.01
<b>McArthur</b>	\$2 million	Estimate	100%	\$2 million	\$0.005
<b>Manburrum</b>	\$5 million	Based on MoU	100%	\$5 million	\$0.01
<b>Cash</b>	\$5.6 million	December 31	100%	\$5.6 million	\$0.01
<b>Total</b>				<b>\$153.6 m</b>	<b>\$0.28</b>

*Source: Breakaway Analysis*

We have retained our conceptual value for Mount Peake – we noted previously that the risked indicative value of \$0.24/share was predicated upon agreements being made with potential partners.



Our project value, using an 8% real DR, is \$544 million, with an IRR of 19%. TNG's share, used in the table above, is based on a 40% free carried interest, with distributions commencing once capital has been paid out of cash flow. This includes an upfront payment of \$33 million for the sale of a 60% equity stake in the current resources.

This valuation is still based on a conceptual 2 stage project as raised by the Company in 2013, and not the single stage as presented in the TNG PFS and subsequent reviews.

### **Breakaway's View**

TNG has made steady progress on the key Mount Peake Project since our March 2014 report.

*The key has been signing the MoU's with potential partners for Mount Peake*

The key for the Company has been the signing of the MoU's with WOOJIN and POSCO E&C – as we wrote in March we saw acquiring project partners as the critical step in advancement of Mount Peake (and a revaluation of TNG). Although currently non-binding, they give confidence in the potential of the project, and we now await for further progress on these, including successful completion of due diligence by WOOJIN, and an initial binding agreement for completion of the DFS with POSCO E& C. Completion of the DFS is dependent upon the results of the TIVAN® pilot scale work.

*Main technical risk is metallurgy, however results from work to date indicate a good chance of success*

Results from the upcoming final pilot scale TIVAN® work will be critical – this will need to work for the project to be viable. Given that the individual processes within the overall flow sheet are well proven, and that bench scale and previous pilot testwork was successful, we are confident that there is a high probability of success in this next pilot scale work, and that the process will be successfully commercialised.

*We maintain our Speculative Buy for TNG*

Given the significant progress we maintain our rating of TNG Limited as a **Speculative Buy**. We see ongoing price momentum, particularly with firming up of the current MoU's and confirmation of the TIVAN® process.



### **Analyst Verification**

We, Grant Craighead and Mark Gordon, as the Research Analysts, hereby certify that the views expressed in this research accurately reflect our personal views about the subject securities or issuers and no part of analyst compensation is directly or indirectly related to the inclusion of specific recommendations or views in this research.

### **Disclosure**

Breakaway Investment Group (AFSL 290093) may receive corporate advisory fees, consultancy fees and commissions on sale and purchase of the shares of TNG Limited and may hold direct and indirect shares in the company. It has also received a commission on the preparation of this research note.

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#### **Breakaway Investment Group**

AFSL 290093 ABN 84127962387

T+61293928010

F+61292792727

PO Box H116 Australia Square

Sydney, NSW 2001

Suite 505, 35 Lime Street,

Sydney, NSW 2000