



**Breakaway
Research**

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Company Information

ASX Code	TNG
Share Price (5 August 2015)	A\$0.18
Ord Shares	712.0m
Options	11.1m
Market Cap FD	A\$130.2m
Cash (3 August 2015)	A\$8.1m
Total Debt	A\$0m
Enterprise Value	A\$122.1m

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

WWB Investments P/L, Mr & Mrs Brown	11.15%
Ao-Zhong Int. Min Resources	8.74%
Aosu Inv. & Develop. Co	7.91%
Mr Paul Burton	1.69%
Top Class Holdings	1.65%
Top 20	41.4%

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



Source: IRESS

TNG Limited (TNG)

Positive BFS, Key Milestones Met

Recommendation: Maintain Speculative BUY

Company Update

Key Points

- **Flagship Mount Peake V-Ti-Fe Project Definitive Feasibility Study confirms a world class project**
- **Plans are for a 15 year, two phase project, with the second phase project expansion funded from project cash flows**
- **Average free cash flow of A\$780mpa over 15 years**
- **NPV₈ of A\$4.9 billion and an IRR of 41%**
- **The DFS has incorporated outcomes from the successful TIVAN® pilot scale and optimisation hydrometallurgical testwork**
- **Project development team strengthened with key MoU's signed and appointments in addition to those already in place**
- **We increase our base case indicative valuation to \$0.97/share, albeit contingent on successfully attracting an equity partner to fund and develop Mount Peake**

TNG has now met key milestones on the commercialisation of its Mount Peake V-Ti-Fe Project in the Northern Territory of Australia. These include the completion of the Definitive Feasibility Study, which has incorporated results from the successful TIVAN® pilot scale testwork.

The testwork has returned very positive results, including enhanced product quality. This includes the potential to produce a TiO₂ concentrate suitable for upgrading on site to a higher value pigment grade product, significantly enhancing project economics.

More encouraging exploration results at the McArthur River Project have boosted its potential, with this set to be a key element of the proposed spin out of non-core assets into Todd River Resources once market conditions allow.

We maintain our SPECULATIVE BUY recommendation for TNG, with price drivers including securing project offtake and finance, and completing permitting.

Company Overview

TNG is concentrating activities on financing and permitting for its flagship Mount Peake V-Ti-Fe project, located north of Alice Springs in the Northern Territory. The project has the potential to be a major global supplier of premium grade vanadium, as well as high purity iron and titanium products.

The TIVAN® hydrometallurgical process is being developed by TNG and partners to be a low cost method of leaching titano-magnetite concentrates to extract all valuable components, including vanadium, iron and titanium.

The Company also holds a number of other base and precious metals projects in the Northern Territory, which it plans to spin out, via an IPO, into Todd River Resources.



Company Update

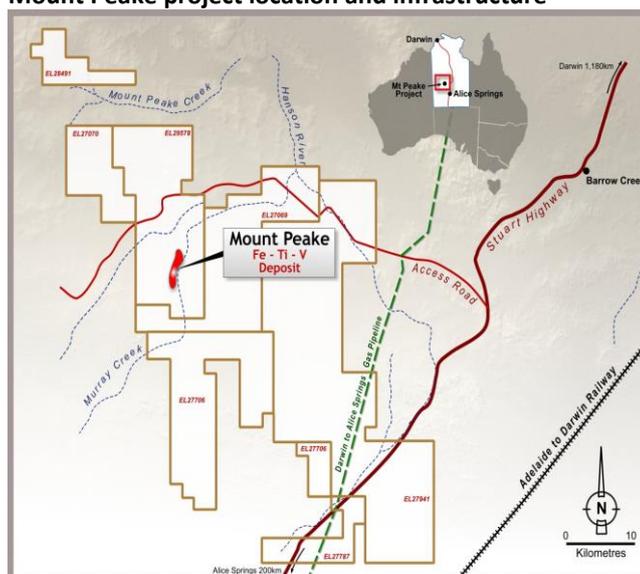
Background

TNG Limited (“TNG” or “the Company”), which Breakaway initiated coverage of in October 2012, is an ASX listed developer and explorer.

Flagship project is the Mt Peake V-Ti-Fe Project in the NT

Its flagship project is the 100% owned Mount Peake V-Ti-Fe Project (“Mount Peake” or the “Project”), located 235km north of Alice Springs in the Northern Territory (“NT”) of Australia, which has resources of 160Mt grading 0.28% V₂O₅, 5.3% TiO₂ and 23% Fe (with significant upside), and probable reserves of 41.1Mt grading 0.42% V₂O₅, 7.99% TiO₂ and 28% Fe.

Mount Peake project location and infrastructure



Source: TNG

Positive DFS recently released

The Company has recently completed a positive and robust Definitive Feasibility Study (“DFS”) for Mount Peake, and is now concentrating activities on approvals and financing. Pending approvals and financing, the Company is looking at commencing development in 2016, for a production start-up in 2018.

Plans for a two phase project to treat up to 1.8mtpa of concentrate

The DFS foresees a two phase development, with the first mining 3mtpa of ore at Mount Peake, beneficiating on site, and then shipping up to 0.9mtpa of concentrate to the TIVAN[®] plant located near Darwin port for refining and downstream processing into vanadium pentoxide (V₂O₅), pigment grade titanium dioxide (TiO₂) and pig iron – expected capital requirements are A\$970m. The second phase envisages a doubling of output from year 5 with the expansion capex requirements of A\$792m expected to be funded out of project cash flow.

Expansion expected to be funded from project cash flow

The key to the success of Mount Peake is the TIVAN[®] process, an innovative hydrometallurgical process that produces three products – premium (>99%) battery grade V₂O₅, +65% TiO₂ concentrate and high purity iron oxide powder (Fe₂O₃), with the titanium and iron suitable to be further processed to higher value products.

Processing is planned through the proprietary TIVAN[®] process

The process has been developed jointly by TNG and METS Engineering (“METS”) of Perth, along with the CSIRO. The technology is owned 100% by TNG, and pilot scale testwork completed in June 2015 returned excellent results, confirming the viability of the proprietary processing route, with this incorporated into the DFS.

Plans are to spin out non-core projects

The Company also has a portfolio of attractive base metal exploration projects located in the NT which it plans to spin out into the proposed Todd River Resources IPO, with shareholders approving the demerger at a meeting held on 20 May 2015.



Recent Events

TNG has achieved a number of major milestones in the short period subsequent to our April 2015 update. Key events (in reverse chronological order as announced to the market) include:

Major milestones have been achieved over the last four months, including successful pilot scale metallurgical testwork and completion of the DFS

- Completion of the DFS (July 31)
- Completion of TIVAN® pilot scale testwork (July 8)
- Solar Power MoU – Mount Peake – (June 19)
- High grade silver and copper results – McArthur project (June 8)
- MoU for vanadium supply signed with vanadium redox battery (“VRB”) manufacturer (May 4)
- Placements to Hong Kong institutional investors (April 24 and May 25)

In addition the Company has signed MoU’s for the civil works at the proposed Mount Peake mine site.

Mount Peake Definitive Feasibility Study

The key milestone has been the completion of the DFS, based on a production life of 15 years, as released to the market on July 31, 2015. The DFS was led and compiled by independent consultancy group Snowdon Mining Industry Consultants (“Snowdon”), who have been associated with the project since 2009. Significant inputs have also been made by a number of leading Australian and global specialists in the relevant fields.

The DFS has envisages a mining and beneficiation operation at Mount Peake, and refining in Darwin

Mount Peake – DFS parameters and outcomes

Operating Parameters	
Total ore mined	76Mt
Total waste movement	72Mt
Total material moved	148Mt
Strip ratio	0.90: 1
Mining method	Conventional drill and blast
Beneficiation	Crushing, HPGR grinding, conventional magnetic separation
Mount Peake power	On-site gas-fired power station, potential for gas from the Amadeus Gas pipeline 20km from the site
Concentrate transport	103km truck to railhead, 1,180km rail to Darwin
Ore processing rate	3Mtpa expanding to 6Mtpa after 4 years
TIVAN® processing rate	900ktpa expanding to 1,800ktpa after 4 years
Average head grade	0.38% V ₂ O ₅ , 27.1% Fe, 7.04% TiO ₂
Overall recoveries	84% V ₂ O ₅ , 66% Fe, 69% TiO ₂
Average annual production	17,560tpa V ₂ O ₅ , 637ktpa pig iron, 236ktpa pigment grade (+90%) TiO ₂ con
Life of mine	15 years + 2 years pre-production, commencing 2016
Financial Outcomes (pre-tax and financing)	
Total Revenue	A\$ 27.3 billion life of mine (product prices used in the modelling are commercial in confidence)
Surplus operating cash flow	A\$ 13.6 billion life of mine
Net cash flow	A\$ 11.6 billion life of mine
CAPEX	A\$970 million (3Mtpa), A\$792 million (expansion) Expansion capex funded out of project cash flow
Total operating costs	A\$167/tonne ore
Average net annual cash flow	A\$ 780 million
TIVAN® production costs	US\$5.50/kg V ₂ O ₅ , US\$1,380/t TiO ₂ US\$137/t pig iron,
NPV (8% DR)	A\$ 4.9 billion
Pre-tax IRR	41%
Initial capital payback	4 years
Exchange rate	0.75 AUD/USD

Financial modelling has returned an NPV of A\$4.9m, and average free cash flows of A\$790pa



The project as it now stands includes a number of significant changes and improvements to the proposed operation from that considered previously.

Key changes include:

- TIVAN[®] plant to be located in Darwin, and not Malaysia – a site has been reserved with negotiations currently underway with the NT Government
- Two phase mining, beneficiation and TIVAN[®] refining operation, with previous plans for an initial magnetite concentrate export operation dropped due to low iron ore prices
- Additional chloride process refining to upgrade the TIVAN[®] 65% TiO₂ concentrate to +90% TiO₂ pigment grade concentrate
- Production of pig iron on site, through additional processing of the high (99% purity) Fe₂O₃ TIVAN[®] product.

The DFS incorporates a number of key value adding changes over the PFS

A number of factors have enhanced the project economics

Although the latter two points will involve additional operating and capital expenditure, financial modelling carried out as part of the DFS indicates that, given the higher product prices, these have a positive impact on the overall project economics. For instance, 65% TiO₂ concentrate currently sells for around US\$400/tonne, whereas the 90% product sells for around US\$3,000/tonne.

Project economics have also been enhanced by the recent devaluation in the Australian dollar, with costs largely denominated in Australian dollars and product prices denominated in US dollars. We note that the DFS modelling was predicated on forecast increases in commodity prices, and has used a flat AUD/USD exchange rate of 0.75. This rate has been sourced from RBA estimates, and is close to the average of 0.70 for the 20 year period prior to the rapid appreciation due to the mining boom commencing in 2006.

The table below gives a summary of the change of the project economics from the 2012 PFS to the present

Mount Peake project economics evolution

	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	DFS 07/15 AUD = 0.75 US
Total capex	A\$563m (2.5mtpa)	A\$563m (2.5mtpa)	A\$563m (2.5mtpa)	A\$520m (2.5mtpa)	A\$520m (2.5mtpa)	A\$970m (3mtpa)
Expansion capex	A\$151m (5mtpa)	A\$151m (5mtpa)	A\$151m (5mtpa)	A\$151m (5mtpa)	A\$151m (5mtpa)	A\$792m (6mtpa)
LOM cash flow	A\$5.8B	A\$6.79B	A\$9.13B	A\$7.22B	A\$8.53B	A\$11.6B
NPV₈	A\$1.88B	A\$2.65B	A\$3.68B	A\$2.80B	A\$3.40B	A\$4.9B
Pre-Tax IRR	31.8%	38.7%	47.5%	43%	46%	41%

Source: TNG

Reserves and Mining Inventory

As part of the DFS, the Company has also announced a maiden ore reserve as given in the table below. Previously announced resources are also included.

Mount Peake ore reserves and mineral resources (JORC-2012 compliant)

Category	Tonnes (Mt)	V ₂ O ₅ (%)	TiO ₂ (%)	Fe (%)
Ore Reserves – 15% Fe cutoff				
Proven	0	-	-	-
Probable	41.1	0.42	7.99	28.0
Total Reserves	41.1	0.42	7.99	28.0
Mineral Resources, 0.1% V₂O₅ cutoff, inclusive of reserves				
Measured	120	0.29	5.5	24
Indicated	20	0.28	5.3	22
Inferred	22	0.22	4.4	19
Total Resources	160	0.28	5.3	23

Source: TNG

The Project has resources of 160Mt including reserves of 41.1Mt



The reserves comprise around 53% of the total mining inventory of 78Mt, which have been defined by a Lerchs Grossman optimized pit shell. The remainder of the inventory includes current measured resources (27Mt) and indicated resources (10Mt).

Reserves have not been calculated for the expected material to be mined from year 9 onwards due to product pricing estimates not being available.

TIVAN® Pilot Testwork

A key input into the DFS has been the results of the TIVAN® pilot testwork, as announced to the market on July 8, 2015. This included the ~14 day continuous run processing of a bulk sample of the Mount Peake mineralisation.

The TIVAN® Pilot Plant metallurgical testwork has returned very positive results, and demonstrated the commercial and technical viability of the process

As we have stated in previous notes, the process is vital to the success of the project as a whole, and the recent testwork has, according to the Company, returned results that met or exceeded expectations in all areas.

This work was undertaken at the Commonwealth Scientific and Industrial Research Organisation's ("CSIRO") hydrometallurgical facility in Perth, with results reviewed by METS and global engineering group SMS Siemag. SMS Siemag have also been contracted to oversee and coordinate the finalisation of the engineering study for the TIVAN® process.

Key conclusions and results of this work included:

- Demonstrated the commercial and technical viability of the TIVAN® process
- 93% recovery of vanadium to a +99% purity product
- >90% titanium recovery to a +65% purity, low iron product
- Production of a >99% purity iron oxide product

The improved specifications for the titanium dioxide product have resulted in it being suitable for being upgraded to pigment grade via the industry standard chloride process, hence the Company's decision to include this value adding process to the proposed Darwin facility.

VRB MoU

TNG has signed a non-binding MoU with a leading global VRB manufacturer, both as a potential off-take customer and also to examine the feasibility of installing a VRB to help power the Mount Peake site.

MoU signed with VRB manufacturer looking at Mount Peake power options

Under the terms of the MoU, the parties may enter into binding agreements regarding:

- The purchase of vanadium product from TNG's 100%-owned TIVAN® plant;
- The installation of a VRB unit for the supply of electricity at TNG's Mount Peake Project;
- Close cooperation for TNG's vanadium product development including but not limited to vanadium electrolyte; and
- Any other mutually beneficial arrangements with the aim of directly or indirectly supporting TNG's Mount Peake development, including its short- and long-term project development requirements.

Solar Power MoU

Solar power options are being considered – an MoU has been signed to this end

A non-binding MoU has been signed with Australian company Energy Made Clean Ltd ("EMC") to evaluate energy supply options at the Mount Peake mine site and Darwin TIVAN® facility. EMC are a Perth based company with experience in the delivery of commercial-scale solar power.

Options under the MoU include the commissioning of a Solar Power System ("SPS")



suitable for use with VRB's, with the aim of delivering efficient energy supply solutions.

Under the terms of the MOU TNG and EMC may enter into binding agreements for:

- The supply and installation of an SPS for the Mount Peake mine site;
- The supply and installation of an SPS for the TIVAN® refinery site;
- Close cooperation between TNG and EMC for TNG's project development including but not limited to assisting with completion of the Feasibility study by supplying the technical specifications and capital cost of the SPS;
- Close cooperation between TNG and EMC for EMC's product development;
- Agreements between EMC and TNG are intended to be structured in a way to allow TNG to raise direct or third party financing for the development of its Mount Peake project; and
- Any other mutually beneficial arrangements.

Mount Peake Civil Works MoU's

MoU's signed for the Mount Peake civil works

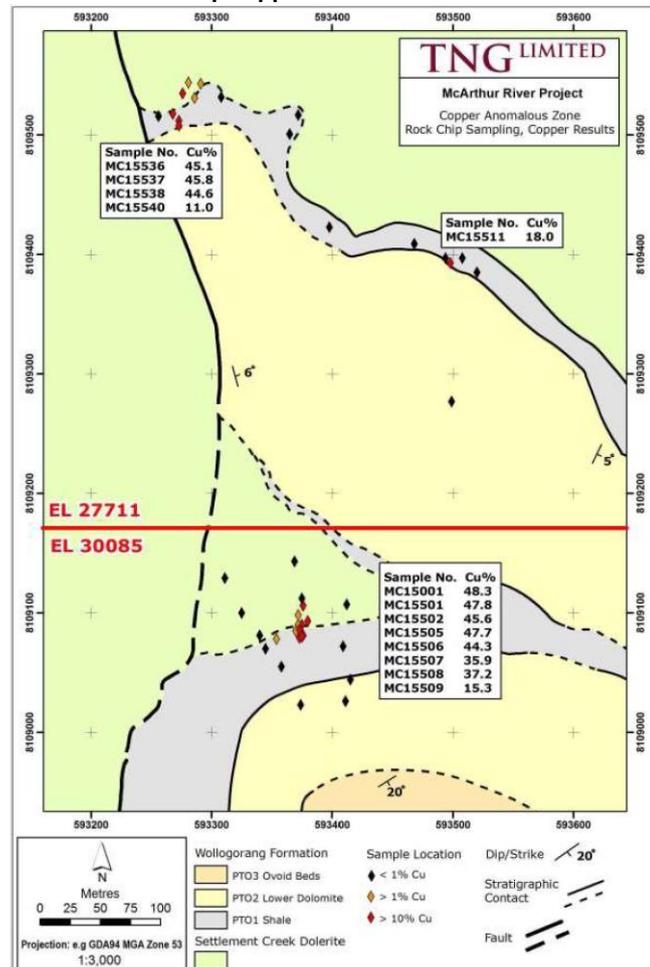
Non-binding MoU's have been signed with both McMahon Services Australia Pty Ltd and Intract Australia Limited, a leading indigenous contractor covering all aspects of the Mount Peake civil engineering and construction work.

McArthur River Exploration Results

Ongoing exploration work at the McArthur River Project has included geological mapping and geochemical sampling to follow up a 48% Cu rock chip result collected during previous reconnaissance sampling.

McArthur rock chip copper results

Ongoing exploration at the McArthur River Project has returned encouraging results



Source: TNG



This has resulted in the identification of an area of high grade copper rock samples, with associated silver and bismuth anomalism. The Company mentions that this has defined an area of some 600m x 400m associated with rock chips with >10% Cu, and potentially associated with stratabound mineralisation within a gently dipping shale unit.

Further work is required on this prospect – this will be carried out following the spin-out of Todd River Resources.

Corporate

Corporate activities have included receiving around A\$8 million cash from placements and option conversion

Todd River Resources

A meeting of shareholders held on May 20, 2015, approved the de-merger of non-core assets into Todd River Resources, a wholly owned subsidiary of TNG. It is proposed to, once market conditions improve, to spin-out this into a new listed entity which will then allow the projects to be sufficiently funded to allow effective exploration.

Institutional Investments

Two placements totalling \$4 million were made to Hong Kong based institutional investors. These included \$2m in April (15.72m shares at \$0.13) and \$2m in May (13.33m shares at \$0.15).

Option Conversion

The Company's treasury has been enhanced by the conversion of the majority of the \$0.08 listed options (TNGO) that expired on July 31, 2015. This raised over \$4m, taking the Company's cash position to over \$8 million at the time of writing.

Planned and Current Activities

Work now is concentrated on permitting and financing activities, to lead towards the development of the Project, which TNG has stated could commence in early 2016.

Work is now concentrated on financing, offtake and permitting

The Company is currently in the process of finalising the Native Title Agreement (NTA) with the Traditional Owners of the Mount Peake area, and once this is signed, it is expected that grant of the Mount Peake Mining Leases will take approximately one month following completion of the NTA. The Environmental Impact Statement ("EIS") is also well advanced, with submittal expected shortly. Approvals with the NT Government for the lease of land and with the Port Authority for shipping are expected by year end. The Project has Major Project status from the NT Government so permitting is expected to be fast tracked.

Financing, offtake and Engineering Procurement and Construction ("EPC") negotiations are under way, following up on the agreements that are already in place with a number of potential partners. The Company has indicated a potential financing consortium that includes Hyundai Steel, SMS Siemag and major funds in various capacities, as well as the possibility of obtaining financing from the Federal Government through the \$5 billion development fund for Northern Australia.

The Company has stated that it is possible that financing and offtake agreements could be in place prior to obtaining statutory approvals.

Valuation

We have updated our valuation, largely using inputs from the DFS

We have updated our DCF cash flow model for Mount Peake, and from it derived a value for TNG based on a conceptual funding scenario. We have largely used inputs as presented in the DFS, however, given that forecast product prices used by TNG are commercial in confidence, have used estimated current prices for the products of US\$18,000/t V₂O₅, US\$3,000/t pigment grade TiO₂ and US\$300/t pig iron and a AUD/USD exchange rate of 0.75.



We have a Project value of A\$2.9 billion

Our project value, using an 8% real DR, is A\$2.9 billion, with an IRR of 32%. Sensitivity analysis indicates a robust project, with capacity to absorb adverse movements of 10-20% in the major inputs. TNG's share, used in the table below, is based on a conceptual financing deal whereby TNG sells a 60% equity stake, with the purchaser funding all capital requirements.

Under this scenario TNG will retain a 40% free carried interest, with distributions commencing once the partner has recouped capital from cash flow. This includes an upfront payment of \$156 million to TNG for the sale of a 60% equity stake in the current 160Mt resources. This is based on a selling price of 10% of the project NPV per tonne of resource.

We have a risked valuation of TNG of \$0.97/share

Base Case Indicative TNG Valuation - AUD

Project	Unrisked Value	Method	Risk Factor	Risked Value	Value/Share
Mount Peake	\$1,354 million	DCF, 8% real DR	50%	\$677 million	\$0.95
Todd River Resources	\$10 million	Estimate	100%	\$10 million	\$0.01
Cash	\$8.1 million	August 4	100%	\$8.1 million	\$0.01
Total	\$1,372 million			\$695 million	\$0.97

Source: Breakaway Analysis

We note this is significantly higher than our previous valuation, however this is due to a number of factors, including higher expected revenues, lower Australian dollar and a higher risk multiple (50% vs 40%) for the Project to reflect ongoing de-risking.

It has to be noted that the value ascribed by us to TNG for Mount Peake is conceptual – this is totally dependent upon an off-take/equity partner signing up, and the terms of any agreement.

Breakaway's View

TNG has met critical milestones

TNG has met critical milestones in the four months since our last update, following on from steady progress that we reported on in April. The successful pilot plant operation of the TIVAN® process has been vital – failure here would have meant a potentially non-viable project. Most encouraging are the conclusions that outcomes met or exceeded those that were expected. This is particularly true in regard to TiO₂ production, with the option now to extend the process route to produce the value added pigment grade product which, as shown by the results of the DFS, greatly enhances project value. We also view the decision to produce pig iron as positive, again producing a value added product in times of low iron ore prices.

The key technical risk now will come with project development and start-up, and full scale implementation of the TIVAN® process – this includes meeting opex expectations.

Key risks now include securing project permitting and financing

A critical risk now is securing finance; actions by the Company in the signing of agreements with a number of potential partners in all three of the main product lines has gone a significant way to mitigating this risk and has formed the basis for current negotiations, including looking at various means of project financing and development in addition to securing offtake. It also needs to be noted that external financing is only expected for the Phase 1 capital requirements – modelling indicates that Phase 2 financing requirements will be met by cash flows generated by the Project.

The other important risk we see is in permitting, although the NT has been shown to be relatively mining supportive jurisdiction. The key factor here could be delays in the permitting.



*We maintain our
Speculative Buy rating
with an revised price
target of \$0.97/share*

We maintain our rating of TNG Limited as a **Speculative Buy, with a revised base case target price of \$0.97/share**. As mentioned previously this value is based on a conceptual financing structure that may or may not be achievable. We note that this is significantly higher than that in our previous note, but, as mentioned earlier, this is due to a number of factors.

Also, the current price is at a significant discount to our valuation (and any valuation that could be deduced from the results of the DFS), and did not move even with the recent announcements. Our view is that this is largely due to current tight capital markets, with companies requiring significant project finance being severely discounted. We therefore see potential short to medium term price appreciation on the back of any material progress in financing, offtake and permitting.

Exploration results from the other projects, particularly McArthur River, have proven encouraging and, should make the proposed Todd River Resources IPO an attractive investment proposition when market conditions allow for the spin-out.



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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