

The Company Announcements Officer Australian Securities Exchange Ltd via electronic lodgement

# The following is an *Inside Briefing* interview with TNG Managing Director, Mr Paul Burton

In this interview, Paul Burton provides an update on Australian resource company TNG Limited (ASX: TNG) (market capitalisation ~\$65m; 623.4m shares on issue). Highlights of this interview include:

- The status of the Feasibility Study on the Mount Peake Vanadium Project in the Northern Territory and TNG's plans to develop a world-class multi-commodity strategic metals project;
- The recent strategic off-take agreement with Sinometal and TNG's two-stage development strategy based on establishing early cash-flow from the sale of magnetite concentrate, which could begin as early as the end of 2015;
- The Company's network of strategic global partners and its financing and development strategy to develop Mount Peake to benefit from rapidly growing demand for vanadium;
- TNG's plans to spin-off its non-core zinc and copper assets this year via a new IPO, Todd River Resources, consistent with its focus on building a world-class strategic metals business.

Inside Briefing: TNG has recently announced the award of two key Feasibility Study contracts for the Mount Peake Vanadium Project. What is the current status of the Feasibility Study and when do you expect to complete it? What is your overall development timeline in terms of project finance, commencement of construction and first production?

**Paul Burton:** We are progressing the Feasibility Study steadily and achieving coverage of all key areas as required. The award of these latest contracts is for geotechnical studies and completion of the final mine plan, which will allow conversion of the current JORC Measured Resource into an Ore Reserve. In addition to this, the Environmental Impact Study (EIS) is being progressed by our consultants, GHD, and we expect this to be submitted in Q2 2015. Importantly, the central part of the Feasibility Study is the TIVAN® refinery and the Company has adopted a measured approach relying on continued advice from our key consultants – CSIRO and METS – on the final stages of optimisation before the actual pilot plant is constructed.

I do note whenever I can – and would like to re-emphasise now – that this pilot plant is to establish the parameters for upscale to a full commercial refinery, not to prove the extraction of the three products which we achieved in the pilot run at the Pre-Feasibility Study stage. This is why we are fortunate to be able to use the facilities at the CSIRO in Perth, where they have a large hydrometallurgical research complex that allows construction of scalable pilot plants. CSIRO and METS have been instrumental in some important design changes leading up to the final construction which have further optimised and improved the process flow design criteria and should result in improved recoveries and a lower overall capital cost.

We are currently on track for completion and reporting of results from this work at the end of Q1 2015, but I do also point out that this is not a race and sometimes matters outside of our control can cause delays which are unfortunate but do not detract from our final goal. TIVAN® is a superb, innovative process and I am very proud we have developed this in such a relatively short timeframe.



Once the pilot plant is completed, the remainder of the Feasibility Study – namely the final engineering and logistics design – can be completed, and we are targeting mid-2015 for completion of the overall Feasibility Study. That would position us to secure project financing in the second half of 2015 and commence construction by either late this year or early 2016 with the overall goal of commencing first production in 2017.

Inside Briefing: Can you briefly summarise the key parameters of the Mount Peake Project? What are the key attributes of the project from an infrastructure, operational and financial perspective? Why are you proposing to locate your downstream processing plant in Malaysia? Can you briefly explain the two-stage project development strategy?

**Paul Burton:** The first attribute which makes Mount Peake unique in many respects compared to other deposits is the resource. Firstly, it is a large resource, 160 million tonnes JORC, with huge potential upside in surrounding areas. 160 million tonnes gives us a 20-year operating mine life at a maximum mine rate of 5 million tonnes per annum.

Secondly, and perhaps of most significance, it is located within what I call the Northern Territory infrastructure corridor, close to a sealed highway, a heavy gauge railway and a gas pipeline. This is always one of the most important and basic hurdles for any resource – without which many resources are simply not economic. We established very early on that, if the resource stacked up, then infrastructure is not a problem and we can get our product to port cheaply and efficiently.

From an operational perspective we have looked in detail at an integrated mine and refinery on site producing three final high-value and high-purity products, namely vanadium pentoxide, iron oxide and titanium dioxide. We have also examined the potential to commence the project with a simple mine operation producing a magnetite concentrate, with the refinery to produce the high value products to be located elsewhere in the Northern Territory or overseas.

Interestingly, from the work we have done a location in Malaysia has proved to be most efficient, mainly because of the lower cost of power and water, lower operating costs and proximity to end markets, resulting in an increase in the overall economics of the project. In light of this, we decided to explore the feasibility of this offshore location for the downstream processing facility with the Malaysian authorities. I have made numerous presentations to various Government departments in Malaysia and personally inspected several potential sites.

We are now at the stage where our application to establish a processing plant in Malaysia has been submitted. This application is not a one-pager but a very detailed professional document outlining the whole process, the equipment and logistics required, personnel requirements, expected salaries, environmental considerations, investment opportunities, potential downstream opportunities incountry, and so on. This has taken several months to put together. If successful, we can then proceed to negotiate on the two potential locations that have been provisionally offered to TNG following my trip there.

The other key aspect of the project is its robust financial parameters. The Pre-Feasibility Study financials compiled by Snowden showed a strong \$13.6 billion life-of-mine revenue, a 38 % IRR and a Net Present Value of over \$2 billion. This is a considerable project for Australia and for the Northern Territory. We see no change to these figures despite the downturn in some commodity prices.

Interestingly, while the price of many other commodities has fallen, prices for vanadium pentoxide and titanium dioxide have remained relatively static or started a gradual increase. This bodes well for a very high-value operation when we commence production, which is still targeted for 2017.





Inside Briefing: What benefits does the recent fall in the Australian Dollar have for Mount Peake? What are the key parameters of the current Feasibility Study relative to the 2012 Scoping Study? Are you seeing any evidence of lower input costs flowing through the resource sector?

**Paul Burton:** The Pre-Feasibility Study was carried out using an exchange rate of USD1:AUD1, and resulted in the very strong financial metrics noted above. Since then we have seen the Australian Dollar decrease by more than 20 per cent, this week falling to around 76-78c. As announced previously, we have calculated that, with all other metrics and parameters the same, a 10 per cent fall in the Australian Dollar results in a 20 per cent increase in the Project's Net Present Value. That means that the recent exchange rate movements are a big positive for Mount Peake.

In addition, it's important to note that our Pre-Feasibility Study was carried out in mid-2012 using available figures and costings at that time for construction, materials, labour, and so on. I think we can all see now that mid-2012 was probably the peak of the current "boom" and, since then, we have seen a decrease across the board in costs such as fuel, wages, engineering etc. These important changes haven't yet been quantified in our Feasibility Study but they can only have an additional positive effect.

Inside Briefing: Before Christmas, TNG announced a strategic off-take and funding deal with Chinese steel group Sinometal for magnetite concentrate to be produced by the Mount Peake Vanadium Project. Can you explain the key elements of this agreement and what it means for the project?

**Paul Burton:** This remains a very interesting option for TNG. The agreement revolves around production of a magnetite concentrate on site at Mount Peake, and railing this up to Darwin Port. The product would then be sold FOB to Sinometal for distribution to its steel clients. The Mount Peake concentrate specifications were assessed by Sino and established that it was a very clean and pure concentrate which was suitable for their steel mills.

The agreement envisages a due diligence period whereby they fully assess our product and we assess costs. We have now shipped a 100kg sample to Sino for testing and also engaged with the rail operator Genesee and Wyoming, together with the Darwin Port Authority, to establish and negotiate the lowest cost for getting our product to Darwin. These study results should be available soon. Coupled with the floor price that Sino require (which has yet to be decided), we can then see whether it makes economic sense to pursue this.

From our preliminary analysis, if we can make more than A\$10-a-tonne, this will provide a suitable early cash flow to TNG and allow for a timely construction of the TIVAN® refinery. Once TIVAN® is up and running, we would either continue a part-shipment of concentrate to Sino with the remainder going to TIVAN® or ship all of the concentrate to the TIVAN® facility. I think this is a very viable concept for TNG and could allow production to commence as early as late 2015 or early 2016, providing an early cash flow which would catapult TNG into the producer category and help establish Mount Peake as the next major mine in Australia.

Inside Briefing: TNG has also announced a series of MOU's and agreements with a range of groups over the past 12 months including Hyundai Steel, POSCO Engineering & Construction, Gunvor Group and WOOJIN. Why has the Company put in place alliances and arrangements with so many different groups and what do they achieve for the Company and the Project?

**Paul Burton:** In late 2013, I decided to embark on a strategy to assess the potential interest in participating in the project development and to assess the level of interest in our products. I believed this was important even though we had not yet completed the Feasibility Study because the Mount Peake Project will produce three products, not just one like most mines, and it was the right time to be able to quantify where these products would go and be able to demonstrate to our shareholders that our products were in demand and that logistically the project was viable.

## Attention: ASX Company Announcement Platform Lodgement of Inside Briefing – **5 February 2015**



It was also important that we could secure either a major cornerstone investor to underpin the Project's development or a major group that could facilitate or assist with the development itself. Make no mistake, this is a very large high value project and we rightly anticipated that some of the world's top-tier companies would be interested in becoming involved in its development.

Of most significance was our vanadium product, and we consequently employed an ex-Noble Group commodity trader, Paul Vollant, who has extensive experience in the strategic metals area, particularly vanadium. We were then able to identify specific companies for potential vanadium off-take and reached agreement with one of the world's largest ferro-vanadium producers, WOOJIN, which has operations in Korea and China.

Interestingly for TNG, WOOJIN have their own proprietary process for producing ferro-vanadium and a technology exchange was also agreed whereby TNG could conceptually produce ferro-vanadium alongside its TIVAN® plant. This is still being explored but, if successful, it would add another capability and cash-flow to TNG's Malaysian operation. WOOJIN also have the advantage of providing 100 per cent of the ferro-vanadium requirements for Hyundai Steel. Initial discussions with Hyundai were very encouraging, leading to an in-principle agreement for their support when we come to a development position. We remain in constant discussion and dialogue with WOOJIN and Hyundai on the project's progress towards development.

POSCO E&C came to TNG with a terrific proposal to build the mine and refinery in Malaysia. We are still in negotiation on the details, but it is appealing as POSCO can fund up to 60 per cent of the capital expenditure for the construction and design work awarded to them, to be repaid later from cash-flow. This provides some certainty to TNG when we consider sources and the structure of funding development. Following completion of the Feasibility Study, I expect further announcements with respect to POSCO E&C.

Our other products, iron oxide and titanium dioxide, also needed "homes". Because the iron oxide is of extremely high purity – being 99.9% pure Fe<sub>2</sub>0<sub>3</sub> – we looked at the major iron ore traders. The Gunvor Group, based in Switzerland but with a major branch in Singapore, are the world's largest traders of Fe<sub>2</sub>0<sub>3</sub> and bring vast experience in the high-end markets our product could be sold into. It was very welcome to reach agreement with such a high profile name as Gunvor for our product and negotiations are now moving to a binding off-take agreement.

Global Pacific Partners, with their huge logistics ability as the world's largest supplier of soda-ash and with a Melbourne base, were also a very welcome partner. They see significant synergies with their customer base and the supply of titanium dioxide and, coupled with their global logistics ability, bring a welcome third potential partnership to TNG.

I would add that all these companies have expressed the ability to provide pre-production finance which has been included in the current agreements; again, these help to de-risk our production and development financing, as all of these agreements are bankable.

Inside Briefing: How does the TIVAN® metallurgical process work? Why is this an important aspect of your development proposal for Mount Peake and where could it be applied elsewhere in the mining industry?

**Paul Burton:** TIVAN® works simply by extracting the vanadium and titanium from the magnetite. At Mount Peake, we are fortunate that all the vanadium and titanium is bound within the magnetite mineral. There is very little else in the magnetite mineral except for iron. By dissolving the magnetite and then carefully applying certain chemicals – all of which are commonly used in the mining and refining industries – we can separate out and capture the three elements. As it's a chemical process, we can achieve very high recoveries and high purities.





Our focus was always on extracting the vanadium as this was and remains the highest value product. Being able to produce the two additional products of iron and titanium as oxides is an additional bonus.

We have tested magnetite concentrates from other deposits in Australia and overseas, and confirmed that the TIVAN® process also works on these projects. This is important as we have established that TIVAN® could have its own business model, whereby we license the technology out to other parties for use on their deposits and collect a royalty or profit share. Of course we would control who and how many licenses were made available so we don't lose our competitive edge. The big picture and the bottom line here is that this conceptually places TNG in a controlling positon on the production of high purity vanadium pentoxide and iron oxide. As they say – do the math on that one!

Inside Briefing: What is the outlook for the vanadium market over the next few years? Why do you believe that TNG is well placed to succeed in this market where others have failed?

**Paul Burton:** We have been careful to always use experts in the strategic metals markets when looking at commodity pricing, forecasts and the markets. Let's look first at the fundamentals – vanadium is primarily used in the steel industry as a strengthening agent. Despite the recent fall in iron ore pricing, the steel industry remains strong on a global scale and the use of vanadium in steel is increasing.

In addition, over the past 18 months we have seen new uses for vanadium appearing – the most significant of which is power storage batteries. Vanadium has a unique property in that it can harness and retain an electric charge. This property has been known and understood for many years, but has only recently emerged as a major driver in global demand with the shift to greener energy and electric cars. It is now clearly the favoured element for use in large power storage batteries – Vanadium Redox Batteries – which require a pure form of vanadium pentoxide to power them.

Enter TNG. The manufacture of Vanadium Redox Batteries is where we see the main advantage of TIVAN® and the main growth in the use of vanadium pentoxide. What sets TNG apart from other vanadium producers is that we will produce the highest purity product and, because we use a chemical process, we are able to keep production costs to a minimum. Indeed, we expect to be able to achieve our aim of being the world's lowest cost vanadium pentoxide producer.

The other key point when comparing TNG's Mount Peake operation to other vanadium producers is that all other producers use a pyro-metallurgical process – which involves the use of high-energy blast furnaces to produce ferro-vanadium, which is exclusively used in the steel industry. This means they have a one-product, one-market operation.

By comparison, TNG will produce vanadium pentoxide through an environmentally attractive chemical process, with the end-product able to be used in a variety of markets – including the steel industry for conversion into ferro-vanadium (hence our agreement with WOOJIN) but also into the emerging energy markets which could have exponential growth.

If we then look at the global fundamentals of supply, the majority of vanadium pentoxide ( $V_2O_5$ ) and ferro-vanadium (FeV) is currently produced in ageing, high-cost South African mines, which are believed to have only 1-2 years left to run. The other major producers are China, which now has a 15 per cent export tariff imposed on  $V_2O_5$ ; Russia which has unpredictable supply; and South America which produces only  $V_2O_5$ . That's it! There are no other mines and no other deposits near infrastructure or as close to production as TNG.





Based on the expected depletion of the South African mines, I believe it's clear that in 1-2 years there will be a supply deficit – even just from the steel sector which is historically growing at 6 per cent year-on-year. The result of this structural deficit will be a natural increase in the price of vanadium, which many forecasters are now predicting could increase by as much as 50 per cent by 2017.

TNG is targeting production in 2017. In my experience good mining operations are all about timing. Unfortunately we live in global economy that provides almost daily uncertainties, but ruling out any catastrophes such as a meteor strike, I am confident TNG is in the right position at the right time to capitalise on what will be a major demand period for vanadium.

Inside Briefing: TNG has announced plans to demerge several of its non-core mineral assets in the Northern Territory via a spin-off of a new company, Todd River Resources. Can you explain the rationale for this demerger? What assets will Todd River hold and what benefits are there for TNG shareholders from this spin-off?

**Paul Burton:** TNG is fortunate to have a large project portfolio encompassing a range of commodities. Over the years we have built some of these projects up to "advanced" status and also built Mount Peake up to major project status. However, we probably have more projects than some major companies in Australia. We recognise that it's not possible for us do all the work we would like to on all these projects, simply from a cash and human resources perspective. As such, there is currently no value from these exciting projects reflected in our share price as we have been focusing all of our efforts and resources on Mount Peake.

We see markets improving this year, and consider that splitting off our non-core base and precious metals projects into a new listed entity is an appropriate way to realise value from these projects for TNG and its shareholders. The new company will be called "Todd River Resources" and the structure being considered is that TNG will retain a major shareholding, a new cornerstone investor will also be secured, and TNG shareholders will receive a free in-specie distribution of new TRR shares (as fundamentally these projects belong to our existing shareholders!).

We are considering a raising of between \$5 million and \$7 million from a combination of a cornerstone investment and the remainder under an IPO. I think it will work very well and create one of the largest base metal companies in the Northern Territory.

Subject to shareholders agreeing to the demerger at a forthcoming EGM, the new company would hold a large selection of projects including our Manbarrum Project which hosts combined resources of approximately 35 million tonnes of combined zinc, lead and silver mineralisation in shallow open-pittable prospects close to infrastructure. This is an advanced project with metallurgical work and a Scoping Study already completed.

Longer term shareholders may remember that, prior to the GFC, in 2007 TNG's share price was over \$1 based almost entirely on the Manbarrum Project alone. With zinc prices now forecast to achieve close to 2007 prices, this project has a great future and we believe it's the right time to bring it back into focus in a new company.

In addition, Todd River Resources will also hold the Mount Hardy Copper-Gold Project – which could easily see a JORC resource defined very quickly and generate potential early production from oxide copper/gold; and the exciting McArthur River, Wallabanba Hills and Tomkinson Basin projects – all of which offer drill-ready targets. I believe TNG has done an extremely good job of increasing our asset value through some of the most difficult and challenging market conditions, and I would sincerely like to now see this new venture capitalise on this success for our shareholders.





Inside Briefing: TNG currently has cash of approximately \$7 million and an active agenda planned for 2015. Can you summarise the key milestones that investors should look out for over the coming months?

**Paul Burton:** We are expecting another very full year and I have already been overseas to meet with some of our strategic partners and potential financiers. I expect to see the pilot plant and Feasibility Study completed before mid-year. We are also working closely with all our potential development, funding and off-take partners to move to binding agreements.

Over the next two quarters we also expect to obtain approvals from Malaysia for the downstream processing plant, secure project finance options and complete all the remaining permitting for Mount Peake. In addition, we have the Todd River Resources IPO to work on, and there is already a lot of work going on behind the scenes to get this underway.

We will also keep our eye on other projects and opportunities that may arise. I am always on the lookout for any project that could add significant value for our shareholders.

Inside Briefing: Thank you, Paul.

#### **ENDS**

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These factors include, but are not limited to, the failure to complete and commission the mine facilities, processing plant and related infrastructure in the time frame and within estimated costs currently planned; variations in global demand and price for gold and base metal materials; fluctuations in exchange rates between the U.S. Dollar, the Euro, other European currencies and the Australian dollar; failure to recover the resource and reserve estimates of the Project; the failure of TNG's suppliers, service providers and partners to fulfill their obligations under construction, supply and other agreements; unforeseen geological, physical or meteorological conditions, natural disasters or cyclones; changes in the regulatory environment, industrial disputes, labour shortages, political and other factors; the inability to obtain additional financing, if required, on commercially suitable terms; and global and regional economic conditions.

Readers are cautioned not to place undue reliance on forward-looking statements. We assume no obligation to update such information. The information concerning production targets in this announcement are not intended to be forecasts. They are internally generated goals set by the board of directors of TNG. The ability of the company to achieve these targets will be largely determined by the company's ability to secure



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adequate funding, implement mining plans, resolve logistical issues associated with mining and enter into off take arrangements with reputable third parties.

It is common practice for a company to comment on and discuss its exploration in terms of target size and type. The information above relating to any exploration target should not be misunderstood or misconstrued as an estimate of Mineral Resources or Ore Reserves. Hence the terms Resource(s) or Reserve(s) have not been used in this context. The potential quantity and grade is conceptual in nature, since there has been insufficient exploration to define a Mineral Resource. It is uncertain if further exploration will result in the determination of a Mineral Resource.

#### Competent Person's Statements

The information in this report that relates to Exploration Results is based on, and fairly represents, information and supporting documentation compiled by Exploration Manager Mr Kim Grey B.Sc. and M. Econ. Geol. Mr Grey is 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.

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 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.

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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 is appears.