

UPDATED FEASIBILITY STUDY AND FINANCIAL MODEL CONFIRMS ROBUST BUSINESS CASE FOR DEVELOPMENT OF MOUNT PEAKE VANADIUM-TITANIUM-IRON PROJECT

Enhanced financial returns reflect optimised processing flowsheet, updated CAPEX and OPEX estimates and updated commodity price assumptions

Australian strategic metals company TNG Limited (ASX: TNG) is pleased to advise that it has completed an updated Feasibility Study (FS) and Financial Model for its flagship 100%-owned Mount Peake Vanadium-Titanium-Iron Project in the Northern Territory.

The results of the FS reconfirm and enhance the outcomes reported in the Definitive Feasibility Study (DFS) completed in 2015 (see ASX Announcement 31 July 2015). The updated results underline the Project's strong economic and technical fundamentals are summarised in Table 1 below.

The updated FS has achieved a new pre-production Capital Expenditure (CAPEX) of A\$853 million representing a significant decrease of A\$117 million from the 2015 DFS CAPEX of A\$970 million, due primarily to the optimisations achieved during the past 18 months. The financial model has shown an increase in the Project's pre-tax internal rate of return (IRR) to 44% (up from 41%) on with only a moderate increase in forecast Operating Expenditure (OPEX) from A\$167 to a\$185 per tonne of ore processed² and a reduced payback period of 3 years.

Table 1 Updated FS results as at November 2017

	Updated FS, November 2017	DFS, July 2015
Pre-production CAPEX (Stage 1 infrastructure, mine site, concentrator, process plant)	A\$853 million	A\$970 million
Pre-tax IRR	44%	41%
Pre-tax NPV _{8%}	A\$4.7 billion	A\$4.9 billion
Pre-tax NPV _{10%}	A\$3.8 billion	A\$4.0 billion
Pre-tax NPV _{12%}	A\$3.1 billion	A\$3.3 billion
Pre-tax net annual average cash-flow	A\$738 million	A\$785 million
Life-of-mine net cash-flow	A\$11.7 billion	A\$11.6 billion
Total Operating costs ²	A\$185 per tonne of ore processed	A\$167 per tonne of ore processed
Payback	3 years	4 years

¹Updated Feasibility Study assumptions include long-term A\$/US\$ exchange rate of 0.75; updated long-term price assumptions of US\$22,400/tonne for V₂O₅ (US\$10.00/lb), US\$3,500.00/t TiO₂ pigment and US\$410.00/tonne for Pig Iron All other key physical parameters including mining and processing rates remain unchanged.

²Includes BOOT repayments

TNG's Managing Director, Paul Burton, said: "This marks the culmination of a vast body of work completed over the past 18 months in conjunction with our strategic development partner, SMS Group, Como Engineers and METS. This work has also included substantial additional variability test work overseen by Como Engineers in Perth on the TIVAN[®] flowsheet and mine site beneficiation flowsheet, a number of important enhancements to the TIVAN[®] flowsheet from work undertaken by the SMS Group, and further technical de-risking measures."

“The outcomes reinforce the robust business case for the Mount Peake Project and against the backdrop of a much stronger commodity environment, the updated Feasibility Study sets the stage for us to move ahead and secure an attractive and competitive project funding package”.

“Subject to securing a suitable funding package, the Board will target a Final Investment Decision to commence development of one of the world’s most important new strategic metals projects at a very opportune point in the global commodity cycle.”

OPTIMISATION STUDY

The 2015 DFS had shown areas where further de-risking was achievable and possible operating equipment improvements could be attained.

TNG engaged its team of professional engineering, metallurgical, mining, marketing and infrastructure groups for the completion of the updated FS. The study focussed on two key areas of the proposed operation – mine site beneficiation for concentrate production and the TIVAN® process plant for extraction of commodities from the concentrate.

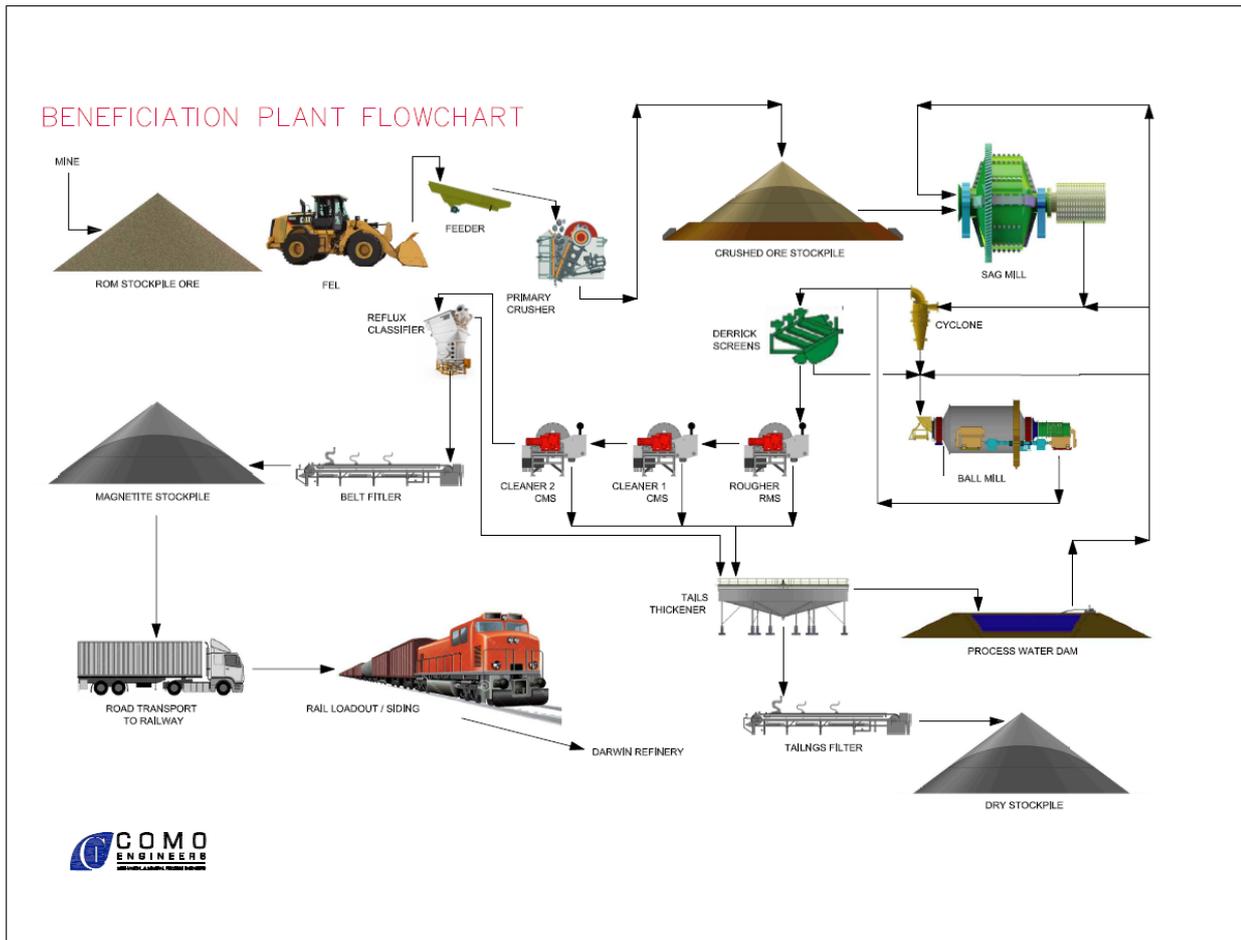
The resulting updated operating cashflow model was compiled by Snowden Mining Industry Consultants (Snowden) based on contributions as follows:

Mining	OPEX and CAPEX	<i>Snowden</i>
Concentrator	OPEX and CAPEX	<i>Como Engineers</i>
Logistics	OPEX	<i>McMahon Services</i>
Process Plant	Equipment CAPEX	<i>SMS Group</i>
Process Plant	Construction and OPEX	<i>METS</i>

Mine Site Concentrator and flowsheet

An extensive metallurgical test work program involving CSIRO (Perth) and Nagrom Laboratories (Perth) was co-ordinated by Como Engineers. The testwork focussed on meeting the stringent process plant feedstock specifications provided by SMS Group (SMS). These specifications were achieved and the concentrator flowsheet was optimised and finalised by Como Engineers (see Figure 1 below).

Figure 1 Updated Mount Peake concentrator flowsheet



TIVAN® Processing Plant

TNG, together with its consultants, has implemented various improvements on the processing plant flow sheet, focusing on improved recoveries and the maximized utilization of proven technology modules. Ongoing development work is focused on tailoring/conditioning the TIVAN® feedstock for various potential TiO₂-pigment production processes, enhancing TIVAN®'s application to a wider range of titanomagnetite ore sources and pigment off-take demands. The TIVAN® process and associated plant flowsheet is shown in Figure 2.

After extensive refinement, the TIVAN® process now utilizes a proprietary method of vanadium extraction, which avoids the utilization of complex and CAPEX-intensive solvent extraction circuits. Due to successful improvements in chloride balancing, it also operates with a significantly smaller acid regeneration circuit.

An extensive metallurgical testwork program for the development of the TIVAN® process plant has been in progress since 2009, involving multiple flow sheets. For the 2015 DFS, an industry standard pilot plant was constructed at the CSIRO (Perth) with leaching and continuous solvent extraction conducted to simulate scale-up to commercial design (see ASX Announcement - 8 July 2015). Whether or not additional test work will be required depends on the outcome of ongoing and future negotiations with the providers of process guarantees and lenders to the Project.

UPDATED FEASIBILITY STUDY

Updated Study Parameters

TNG engaged a team of professional engineering, metallurgical, mining, marketing and infrastructure groups, to complete the updated FS.

The updated FS was led and compiled by Snowden. Snowden has been associated with the Mount Peake Project since 2009, has compiled all previous Mineral Resources and mine plans for the Project, and completed the operating cashflow model and results for the Pre-Feasibility Study (PFS) and July 2015 DFS.

SMS Group, the Dusseldorf based global metallurgical development and construction group, has been associated with the Mount Peake Project since 2011, and assisted in many aspects of the DFS including metallurgical testwork and flowsheet verification: TNG acknowledges significant input and contribution to the updated FS by SMS Group.

The updated FS and operating cashflow model have reaffirmed the compelling business case for development of the Mount Peake Project, confirming its potential as one of the premier undeveloped strategic metals projects in the world.

Updated Study Assumptions

The updated FS is based on the production of magnetite concentrate on site at Mount Peake. The study assumes that concentrate will be trucked to a rail siding and then railed north to a TIVAN[®] process plant facility to be located approximately 10km from Darwin Port. From the magnetite concentrate, the TIVAN[®] facility will produce high-purity vanadium pentoxide, titanium dioxide concentrate and iron oxide. Associated downstream plants will produce high grade titanium pigment, and pig iron.

While the additional plant facilities increase the capital requirement of the Project, the higher revenues which would be achieved from the higher value end products provide TNG with the potential for an early payback of 3 years and an exceptional internal rate of return. In addition, the products have well understood markets, transparent pricing and ready demand.

A summary of the key outcomes of the updated FS compared with the original DFS completed in July 2015 is provided in Table 2.

Table 2 Key outcomes of the updated FS

Key Physicals	Updated FS, November 2017	DFS, July 2015
Pre-production CAPEX (Stage 1 infrastructure, mine site, concentrator, process plant)	A\$853 million	A\$970 million
IRR pre-tax	44%	41%
NPV (at 8% discounted)	A\$4.7 billion	A\$4.9 billion
NPV (at 10% discounted)	A\$3.8 billion	A\$4.0 billion
NPV (at 12% discounted)	A\$3.1 billion	A\$3.3 billion
Pay back	3 years	4 years
Pre-tax net annual average cash-flow	A\$738 million	A\$785 million
Life-of-mine net cash-flow	A\$11.7 billion	A\$11.6 billion
Year 1-4 - ore feed	3Mt pa	3Mt pa
Year 5-17 - ore feed	6Mt pa	6Mt pa
Scheduled mined material (Mt)	81	78
Magnetic concentrate (Mt)	24.3	21.7
Fe ₂ O ₃ (Mt)	10.6	9.6
V ₂ O ₅ (Mt)	0.243	0.265
Titanium Pigment (Mt)	3.5	3.6

¹Includes BOOT repayments

BOOT arrangement for the TIVAN® Processing Plant facility

As with the 2015 DFS, TNG has considered the business case for assuming off-balance sheet Build-Own-Operate-Transfer (BOOT) arrangements for certain parts of the Project infrastructure. TNG considers it is prudent and commercially sensible to outsource certain isolated processing facilities which are of generic nature, not inherent to TIVAN® and can be operated more efficiently by their suppliers or distinct environmental/industrial services providers.

TNG expects these to be negotiated and entered into in the following areas:

- The Acid Regeneration Plant
- The Oxygen Plant
- The Chlor-alkali Plant
- The Titanium Pigment Plant.

Estimates for the operating costs of the BOOT areas are shown in Table 3.

Table 3 Estimates for the operating costs of the BOOT areas (Stage 1)

Key Physicals	Equipment and Construction Cost A\$M	BOOT Annual Cost A\$M
Acid Regeneration - BOOT (years 1-16)	\$212	\$23.9
Oxygen Plant - BOOT (years 1-16)	\$33	\$3.8
Pigment Plant - BOOT (years 1-16)	\$222	\$25.0
Chlor-Alkali Plant - BOOT (years 1-16)	\$95	\$10.7

Mineral Resource

The Mount Peake Mineral Resource estimate set out below (Table 4) was released in an ASX Announcement dated 26 March 2013, "Additional Information on the Mount Peake Resource", and was completed in accordance with the guidelines of the JORC Code (2012). Initial mining and financial assessment work, based on the Mineral Resource, followed (see ASX Announcement – 15 July 2013, "TNG Considers Two-Stage Development Option for Mount Peake Project, NT").

Table 4 Mount Peake Mineral Resource estimate

Category	Tonnes (Mt)	V ₂ O ₅ %	TiO ₂ %	Fe%	Al ₂ O ₃ %	SiO ₂ %
Measured	120	0.29	5.5	24	8.2	33
Indicated	20	0.28	5.3	22	9.1	34
Inferred	22	0.22	4.4	19	10.0	38
TOTAL	160	0.28	5.3	23	8.6	34

Note: Mineral Resource is inclusive of Ore Reserves. Tonnage and grade figures in tables have been rounded and small discrepancies in totals may occur. Ore Reserve is reported using a 0.1% V₂O₅ cut-off.

TNG is not aware of any new information or data that materially affects the mineral resource estimate included in the 26 March 2013 ASX Announcement and all material assumptions and technical parameters underpinning the assessment provided in that announcement continue to apply.

Ore Reserve

The Mount Peake Ore Reserve estimate (Table 5) was reported in an ASX Announcement dated July 31 2015, (“Mount Peake Feasibility Study confirms a world – class project capable of delivering outstanding returns over long life”).

Table 5 Mount Peake Ore Reserve estimate

Category	Tonnes (Mt)	V ₂ O ₅ %	TiO ₂ %	Fe%
Proven	0	-	-	-
Probable	41.1	0.42	7.99	28.0
TOTAL	41.1	0.42	7.99	28.0

Note: Tonnage and grade figures in tables have been rounded to 2 or 3 significant figures and as a result small discrepancies may occur due to the effect of rounding. Ore Reserve is reported using a 15% Fe cut-off.

TNG is not aware of any new information or data that materially affects the Ore Reserve estimate reported in the 31 July 2015 ASX Announcement and all material assumptions and technical parameters underpinning the assessment provided in that announcement continue to apply.

The Ore Reserve of 41.1Mt constitutes around 30% of the total Measured and Indicated Mineral Resource, limited by confidence in the long term price forecasts provided by TNG’s external consultants.

88% of the Probable Ore Reserve is derived from Measured Resource (36Mt), and 12% Indicated Resource (5Mt), with no Inferred Resource material included in the Probable Ore Reserve.

Mine schedule

The mine schedule has been revised to reflect updates to the beneficiation and processing flowsheets. The mine schedule has been designed to initially fill the plant and maintain a consistent blend to meet the specifications required for the process plant.

The total scheduled beneficiation and plant feed material is estimated to be 81 Mt at an average grade of V₂O₅ 0.37%, TiO₂ 6.87%, and Fe 26.38%. This comprises the Ore Reserve of about 41.1Mt with the remaining scheduled material sourced from Measured and Indicated Resource. The previous mine schedule was based on 78 Mt at an average grade of V₂O₅ 0.38%, TiO₂ 7.04%, and Fe 27.1%.

The revised mine schedule includes all economic material within an optimised pit design. It is inclusive of the Probable Ore Reserve mined for the first 8 years, and Measured Resource (34 Mt) and Indicated Resource (6 Mt) during Years 9 to 17. The material scheduled in Years 9 to 17 is not reported as an Ore Reserve due to lower confidence on the long term product pricing estimates. There is 34 Mt of Measured and 6 Mt of Indicated Resource in the material scheduled in year 9 to 17. There is no Inferred Mineral Resource included in the schedule.

The open pit strip ratio is 0.9:1 (waste:ore). The large size of the orebody (ca. 2000m x 350m x 100m) and gradual grade boundaries allows a low 2% dilution factor to be applied, with ore loss being correspondingly low. The mining method will be an open pit with conventional drill and blast and load and haul with excavators and large mining equipment. Ore and waste will be trucked to the concentrator and waste dump respectively. See Figures 3 and 4 for the current mine plan design and mine site plant layout.

Figure 3: Mount Peake open pit mine layout

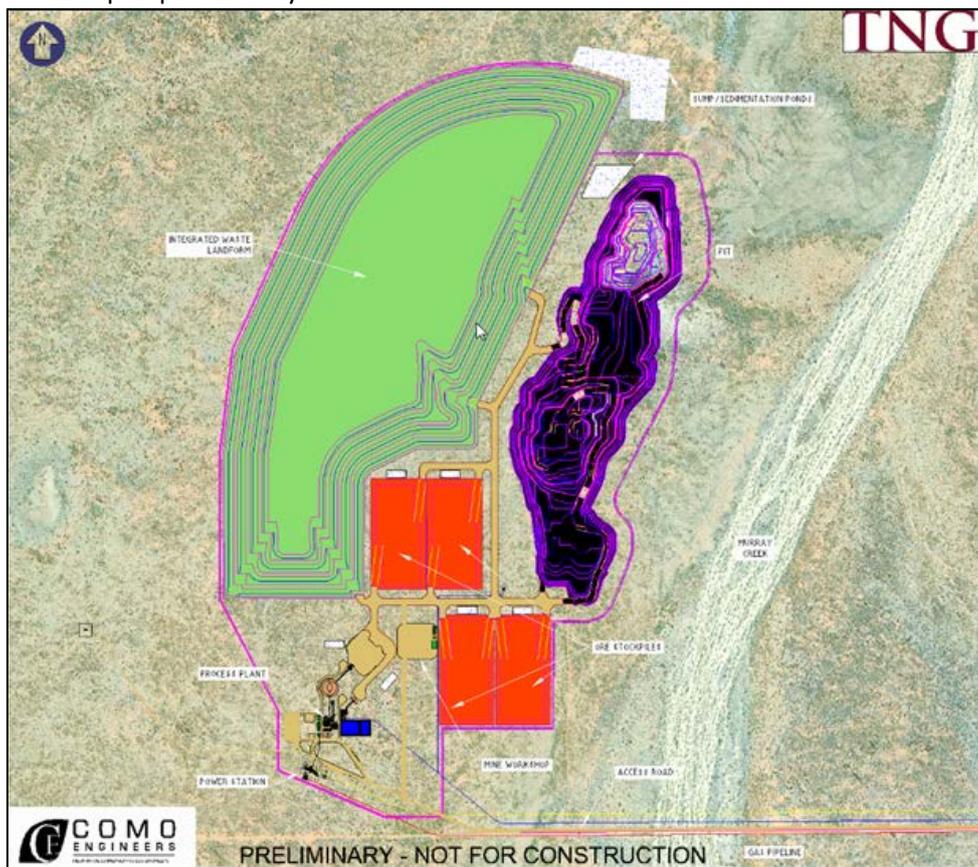
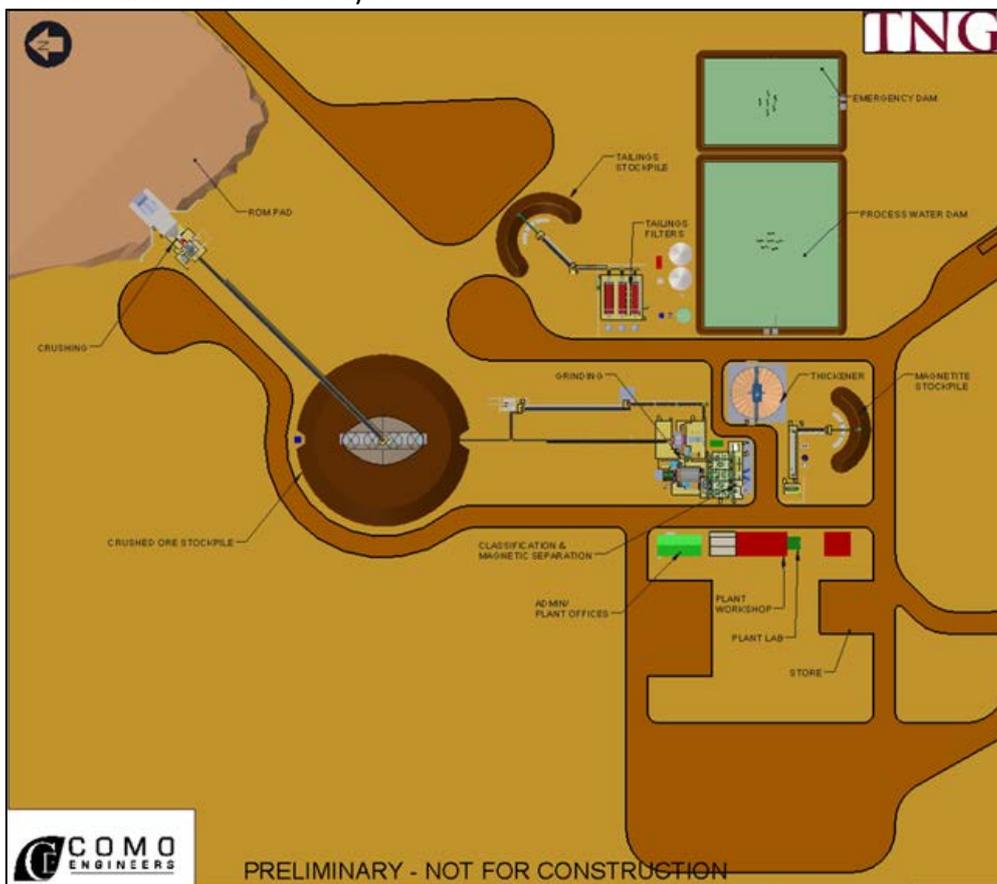


Figure 4: Mount Peake Mine concentrator layout



Mount Peake Final Products:

TNG's intention to produce three commodities from the single resource via the TIVAN® process has not changed.

Vanadium Pentoxide

It is planned that the Project will produce a high purity vanadium pentoxide (V_2O_5) via the 100% owned TIVAN® Process, providing an enhanced vanadium product available for different end-user markets and able to capture a premium price. This will be of a purity that can be used in both the ferro-vanadium and emerging Vanadium Redox Battery market sectors (VRB). TNG has already demonstrated its capability to produce high purity vanadium electrolyte (see ASX release – 10 October 2016).

Pigment grade Titanium Dioxide

TNG plans a titanium business operation where it will produce a high quality titanium dioxide (TiO_2) concentrate via the TIVAN® Process. This will then be further refined to pigment grade (>92% TiO_2 purity), through an industry standard chloride or sulfate process, providing an important high-value titanium product. It is planned to have either a strategic partner or operator for the pigment process.

Pig-Iron

TNG will produce a high purity iron oxide (Fe_2O_3) via the acid regeneration process of the TIVAN® process plant. In a reaction to the changed market conditions and outlook for iron oxide, TNG has taken advice from its metallurgical partners and decided to opt for a well-recognised, industry standard, iron product that has a guaranteed market and strong price. Pig-Iron is an intermediate iron product that is cast into ingot "pigs" and used in integrated steel mills and the metal casting industry.

Capital Expenditure

The updated FS assumes an overall CAPEX cost for Stage One of A\$853 million, which includes an EPCM charge of 8% and 5% contingency. This figure includes all infrastructure, access/haul roads, mining, rail works, camp, water supply, concentrator, tailing dam, and the Darwin process plant and port handling costs.

The capital cost is based on the maximized sourcing of largely pre-manufactured modules from qualified vendors from Asian manufacturing hubs with attractive labour cost. TNG considers it prudent to point out that the present capital cost assumptions may change if lenders (e.g. under an ECA-backed lending scheme) require a larger than presently assumed portion of the capital equipment to be sourced from fixed countries of origin.

The estimated EPCM overhead reflects TNG's present assumptions. This figure will be finalised after final negotiations with the successful bidder for the EPCM contract, during which TNG will seek an optimized balance between technical and commercial guarantees provided by the contractor and finally agreed capital expenditure

Capital Cost Summary

Capital Expenditure	Updated FS, November 2017		DFS, July 2015	
	Stage 1 \$AUD Million	Stage 2 \$AUD Million	Stage 1 \$AUD Million	Stage 2 \$AUD Million
*Total Mining and Infrastructure Capex	207	122	208	67.1
**Total Process Plant Capex	541	745	647	631
TOTAL CAPEX	748	867	856	698
EPCM (8%)	64	56	68.4	55.9
CONTINGENCY (5%)	41	46	46.2	37.7
TOTAL	853	969	970	792

*Includes: Camp, roads and rail infrastructure, water supply, concentrator and tailings facility.

**Includes: TIVAN process plant, Pig Iron plant, port handling facilities and sustaining capital.

Stage Two is planned to occur in Years 4-5, where mine production is projected to increase from 3Mtpa to 6Mtpa, and the capacity of both the concentrator and process plant double. It is assumed that Stage 2 CAPEX costs of AUD \$969 million are to be paid out of operating revenue.

Operating Costs Per Tonne of Ore Mined

Overall OPEX costs have been estimated based on life-of-mine tonnage and grade information, processing costs for the beneficiation plant, processing costs for the process plant, output tonnages, updated utility and consumable pricing. The overall assumed OPEX of \$185/tonne of ore mined includes all assume BOOT operating costs and has been used in the financial model.

Commodity Pricing

Prices used for the cashflow model update were:

Commodity	Updated FS, November 2017	DFS, July 2015
V₂O₅	US\$22,400/t	US\$13,333/t
TiO₂ pigment	US\$3,500/t	US\$3,576/t
Fe₂O₃ - Pig Iron	US\$410.00/t	US\$437.50/t

Independent pricing forecasts for each commodity were commissioned by TNG. These included forecasts for vanadium (supplied by Roskills, London), titanium dioxide (supplied by Roskills, London) and pig iron (supplied by commodity traders, Shanghai).

Mount Peake is planned to commence production at a time when vanadium prices are forecast to continue to improve and the adjustment in vanadium pricing is reflected in this update, while titanium pigment and pig iron prices are expected to remain firm.

Forward estimate “real” and “nominal” prices for all commodities were provided by the consultants and are commercial in confidence. The methodology used by the consultants in the commodity forecasts was based on the following: current market reviews of suppliers, consumers, reviews of global consumption, new markets, trends, Strengths Weaknesses Opportunities Threats (SWOT) analysis, historical and future trends of supply and demand in “real” and “nominal” prices. Only “real” pricing was used for all commodities in the study.

Exchange Rate

A A\$:US\$ exchange rate of 0.75 based on RBA estimates was used. This is the same as in the DFS, July 2015.

Commodity Off-take

The company has executed:

- A binding life-of-mine off-take agreement with WOOJIN Metals for minimum 60% of vanadium output; (see ASX announcement – 19 March 2015)
- A binding Term Sheet for life-of-mine off-take agreement with Gunvor (Singapore) for iron products; (see ASX announcement – 23 March 2016)

Discussions for the titanium pigment business option off-take are well advanced.

Next Steps

The company will continue to progress granting of all required permits for the Mount Peake mine site and Darwin processing facility, conclude Titanium discussions and continue to engage with the German Export Credit banks and other financial groups with its appointed advisors.

Paul E Burton

Managing Director

20 November 2017

Inquiries:

Paul E Burton
Managing Director + 61 (0) 8 9327 0900

Nicholas Read
Read Corporate + 61 (0) 8 9388 1474

Competent Person Statements

COMPETENT PERSON'S STATEMENTS

The information in this report that relates to the Mount Peake Mineral Resource estimates is extracted from an ASX Announcement dated 26 March 2013, (see ASX Announcement – 26 March 2013, “Additional Information on the Mount Peake Resource”, www.tngltd.com.au and www.asx.com.au), and was completed in accordance with the guidelines of the JORC Code (2012). The Company confirms that it is not aware of any new information or data that materially affects the information included in the original market announcement and that all material assumptions and technical parameters underpinning the Mineral Resource estimates in the relevant market announcement continue to apply and have not materially changed. The Company confirms that the form and context in which the Competent Person's findings are represented have not been materially modified from the original market announcement.

The information in this report that relates to the Mount Peake Ore Reserve estimates is extracted from an ASX Announcement dated 31 July 2015, (see ASX Announcement – 31 July 2015, “Mount Peake Feasibility Study Confirms a World-Class Project”, www.tngltd.com.au and www.asc.com.au) and was completed in accordance with the guidelines of the JORC Code (2012). The Company confirms that it is not aware of any new information or data that materially affects the information included in the original market announcement and that all material assumptions and technical parameters underpinning the Ore Reserve estimates in the relevant market announcement continue to apply and have not materially changed. The Company confirms that the form and context in which the Competent Person's findings are represented have not been materially modified from the original market announcement.

Forward-Looking Statements

This announcement has been prepared by TNG Ltd. This announcement is in summary form and does not purport to be all inclusive or complete. Recipients should conduct their own investigations and perform their own analysis in order to satisfy themselves as to the accuracy and completeness of the information, statements and opinions contained.

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