Thursday, 7 October 2021

RESEARCH REPORT

CORPORATE CONNECT

TNG Limited – TNG

Price Target: $0.32/share

Strategic Vanadium-battery growth with Titanium & Iron earnings resiliency

An integrated, globally competitive & sustainable project

TNG Ltd (*TNG)* is an ASX-listed (*ASX: TNG*) technology owner and developer of the world-class Mount Peake near-surface vanadifferous titanomagnetite deposit. To unlock value, TNG will concentrate ore from its central Northern Territory mine for processing through its patented TIVAN® process produce three premium quality revenue streams: hi-purity vanadium pentoxide (V_2O_5) for steel alloys and Vanadium Redox Flow batteries, a quality titanium pigment for paints and a premium steel input with >64%Fe iron ore fines.

- On the 30th of Sept 2021, TNG announced intention to locate its TIVAN® processing facility at its Mount Peake mine site rather than Darwin. TNG is currently updating its Front-End-Engineering-Studies (FEED) and engaging with stakeholders to obtain permits and finalise the project delivery path. We expect this would make a Final Investment Decision (FID) potentially in DecH'2022. *We see FID as a transformational event.*
- Funding options are being progressed in parallel, all made more achievable due to TNG's banking and process partnerships, and the commitments secured for 100% off-take for all its 3-products.
- TNG has also established partnerships with technology groups to develop application of green hydrogen to reduce its CO_2 footprint and to supply and market green-H_2 and Vanadium Redox Flow Batteries (VRFB).

Monetising multi-stream metals and value-adding

TNG's vertically integrated project is part of a new wave of Australian resource groups that *capture more of the processed value-add and diversify earning streams.* TNG make upgraded products for the building and steel industries as well as emerging battery demand for the *accelerating* global energy transition.

Magnetite deposits with hi-titanium are a problematic ore source as steel inputs. However, TNG's innovative process design is an industry game changer, recovering multiple value-added products. TNG's project calls for a 2.0mtpa ore mine with an initial 37-year life to produce 0.7mtpa of concentrate. Processing at TNG's 100%-owned TIVAN® facility is expected to produce annually ~6k tonnes V_2O_5, 100kt of hi-titanium Pigment and 500ktpa of 64%Fe iron ore. At current spot prices, at full output revenue is estimated at ~A$700m pa or ~A$1000/t of concentrate with anticipated cash costs ~A$750/t. TNG are leveraged to expected higher prices of V_2O_5 and TiO_2 as these are over 80% of revenues.

Reducing carbon footprint and battery sales initiatives

TNG plan to make the critical V_2O_5 electrolyte to supply and sell Vanadium Redox Flow Batteries (VRFB's) in Australia. These efficient power storage units are suited to remote and grid applications. Development of solar at mine and H_2 for oxide reduction *cuts carbon emissions well below competitors*. *Recent NT EPA Directive encourage TNGs to deliver a world-class sustainable design.*

Catalysts – Project approvals, FID and financing

Locating the TIVAN® facility at mine site has reduced permitting risks. TNG could see a marked re-rating on the release of amended FEED studies project costing, timing and later on FID. The project has been internally assessed at pre-tax A$2.8billion NPV and 33% IRR. Accounting for a farmout, our commodity price view, tax and adjusting for project risk at 60% we assess TNG's risk-adjusted worth A$415m or $0.32/sh; that is also our is Target Price.

Key risks to view

Risks include delays in permitting or inability to fund capital costs. Added risks may be problematic construction, production ramp-up, low product recoveries or an extended period of low pigment, vanadium and iron ore prices, plus a stronger Australian/US exchange rate. See page 4 for more investment risks.

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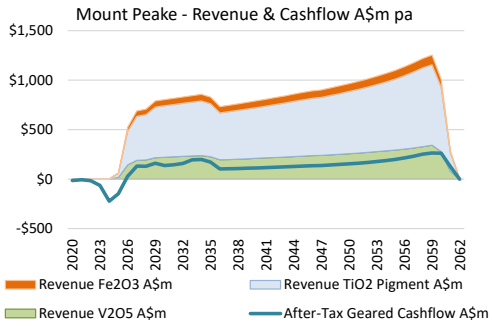
Company Data for ASX Code: TNG

ASX Code: TNG	Price	$0.082
Shares on issue		1,249.5m
Market capitalisation		$102m
12-month price range		$0.05 – 0.13
ASX av daily turnover (mil shares)		0.92 mil/day
Net Cash at Jun'21		$11.4m.

[1] Cash = Latest 4C balance + Raisings + Tax + 4C Expected outflows

Mount Peake Project [1,2]



[1].Mt Peake project prior to 25% farmout and gearing 65% of capex [2] 100% equity.

NPV-based Valuation after risking [1,2]

Asset or Liability	A$mil.	A$/share
Mount Peake Project	428.9	0.33
VRFB Battery Sales	13.4	0.01
Cawse & Exploration	1.5	0.00
Net Cash	-2.3	0.00
Options Exercise	0.0	0.00
Corporate Costs	-26.6	-0.02
Total	414.9	0.32

[1] Valuation @ 31 Dec 2021 [2] Aust assets discount rate 8.5% pa; post-farmout valn.

Price/Volume Chart – 1 year

Source FactSet

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Strategic Vanadium-battery growth with Titanium & Iron earnings resiliency

Section 1: Summary Profile & Investment View

TNG Limited (TNG) is an Australian company listed on the ASX and Frankfurt Exchanges. It is a mineral processing technology company and project developer of its 100% owned world-class Mount Peake Vanadium-Titanium-Iron Project in the Northern Territory. The decade-long work on the mine, technology and process has culminated in a FEED study that focussed on a Darwin sited processing facility. TNG are now engaged on an amended FEED study with an integrated mine/processing facility at the Mount Peake Mine. Next steps are to finalise site approval, final investment decision and a funding over the coming year.

The defining feature of TNG is its ownership and intended deployment of the patented TIVAN® treatment process that combines both pyro- and hydro-metallurgical processes. This extracts from magnetite a concentrate with three premium high purity products (V_2O_5, TiO_2 and Fe). TiO_2 is further processed to make a paint-grade pigments with the trademark TNG360™.

Investment View and Share Price Catalysts

Catalysts in 2021/22

- Securing TIVAN® facility operating approvals; Traditional Owner discussions
- Finalisation of project development path and updated costings
- Final Investment Decision

Catalysts 2022/23

- Completion of debt and equity funding
- Ordering long lead item
- Construction start-up

In May 2021 TNG received a "Direction to Provide Additional Information" from the NT EPA within 12-months concerning the Supplement on the Draft Environmental Impact Statement over the TIVAN® facility site near Darwin. TNG has since updated its previous reviews of alternate sites in South Australia, Malaysia as well as Alice Springs and at the Mt Peake mine-site.

Recent inclusion of a wastewater recycling facility has cut projected water usage by 65%. This plus the identification of sufficient gas for the process made siting for TIVAN® plant at the mine feasible and *possibly have superior returns. Crucially, a mine-sited facility has a lower risk to secure permits.*

TNG is proposing to apply its 100%-owned technology to extract and upgrade minerals products. Its high purity vanadium product will enable TNG to directly supply the critical ingredient for Vanadium Redox Flow Batteries. *This assists the global energy transition and security of supply in Australia.*

The TIVAN® process will enable TNG to produce a low-iron synthetic rutile and premium 64.4% Fe iron ore fines product that *increases and diversifies revenue and reduces waste disposal costs.*

TNG is engineering ways to reduce its operational carbon footprint. Installation of solar power in combination with VRFB can reduce reliance upon natural gas. Meanwhile, TNG is investigating the use of **green hydrogen as a reductant** for processing concentrate. *Designing for a net-zero World.*

Producing critical minerals for the energy transition from a long-life mine with a lower carbon footprint than many competitors, places TNG in a good position to commercialise one of the world's larger undeveloped vanadium deposits. Sustainable operations may attract the deepening pools of ethical debt and equity funds. *Diversified & sustainable revenue streams lowers the cost of capital.*

1-year Price Target and Valuation – $0.32/share on risked NPV basis, - *unrisked value $0.56/share*

Our valuation process assesses project NPV and applies a confidence factor to account for development risks. Our risked valuation amounts to $0.32/share, though this may rise closer to our un-risked $0.56/share as project milestones are achieved. Our 1-year target price is also set at $0.32/sh. This is higher than our $0.28/sh estimate of a Darwin sited processing facility.

TNG Ltd Diluted No. sh. 1286.2	$0.085 Ownership %	Concentrate Processed mil. t.	Project Duration Years	Confidence Factor %	Risked Valuation A$m.	Risked Valuation A$/sh	Unrisked Valuation Valn A$m.	Unrisked Valuation A$/sh
Mt Peake Project	100%	24	36	60%	470.2	0.37	783.7	0.61
Project Farmout	*-25%*						*139.8*	
Mt Peake Project	75%	18	36	60%	428.9	0.33	714.8	0.56
VRFB Battery Sales	100%			50%	13.4	0.01	26.9	0.02
Other businesses	100%			50%	1.0	0.00	2.0	0.00
Cawse&Exploration	100%			50%	0.5	0.00	1.0	0.00
Projects Valuation		18			443.8	0.35	744.7	0.58
Net Cash				100%	-2.3	0.00	-2.3	0.00
Net ST Liabilities				100%	0.5	0.00	0.5	0.00
Options Exercise				100%	0.0	0.00	0.0	0.00
Other incl. Corporate Cost				100%	-27.1	-0.02	-27.1	-0.02
Financials & Corporate					-29.0	-0.02	-29.0	-0.02
Total Valuation		18		59%	**414.9**	**0.32**	**715.8**	0.56

The Mount Peake Project's expected cashflow was assessed including 65% of project capex funded by debt at a rate 5.9%pa and discounted at 8.5%pa. We estimated that a 25% sell-down of project equity at 75% of NPV provides sufficient equity for the project. This project creates add-on opportunities including entry to the Vanadium-based battery business, which we assess on obtaining a tiny portion of the Australian battery market. Nominal value is currently assigned to exploration and Cawse interests. *See pages 18-19 for sensitivity analysis*.

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We have reviewed TNG's Mount Peake Project from company sourced expected metallurgical recoveries as well as pre-FEED completion capital and operating costs. The 2.0mtpa mine produces 0.7mtpa of concentrate has a life of ~37 years. While we then assume termination of *TIVAN® facility, it may continue operating or expand on feed from TNG's developing its Moonlight vanadium prospect in NT.* See Section 4 for detail of our project inputs, commodity prices and value of Mount Peake project.

Funding Options

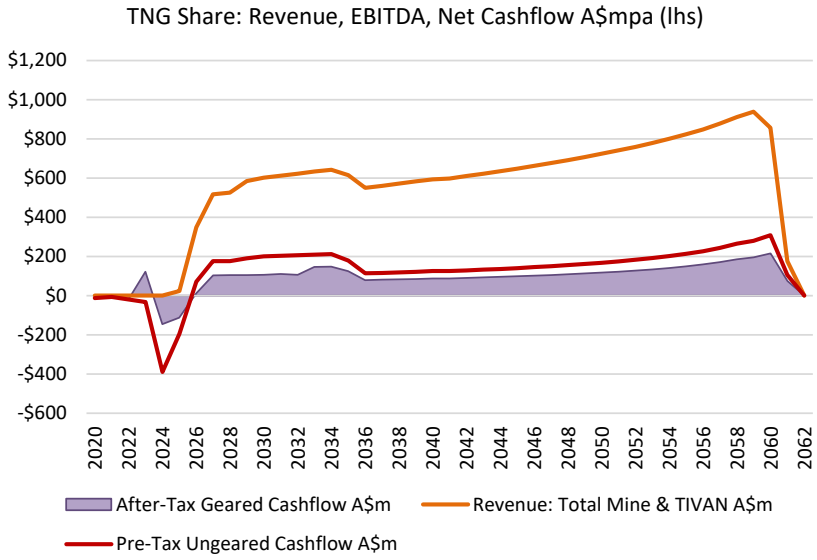
Project funding preparation has been a central component of TNG's pre-development studies. Rigorous work with recognised process developers including German based SMS group, provides the basis for a bankable project finance package.

TNG have retained **KPMG Corporate Finance** for advice and the appointment of CFO, **Jonathan Fisher** with track record of new project funding, to provide expertise.

The mandating of **KfW IPEX-Bank GmbH** in Germany opens the company to significant pools of both banking and *Ethical & Sustainable funds in Europe that back projects that drive the energy transition.*

Vendor financing and national export credit agency debt are added sources actively under consideration.

We have modelled a 65% of capex project debt, so during construction geared net cash outflows are far smaller than ungeared initial outflows as seen in *chart, above.*



TNG will need to raise added equity. Equity sources include existing and new investors active in the Australian and German markets where TNG is listed. Additionally, we see customers seeking vertical integration as potential providers of equity, or as project joint venturers akin to Japanese utilities investment in upstream LNG and coal.

Our assumption is that TNG raises a combination of 65% project debt and a ~A$140m cash-farmout of 25% of Mount Peake Project. We assess this provides the capital base for TNG to build, commission and operate the Mount Peake integrated project, and expand into further downstream battery businesses and participate in installing its technology regionally.

Risks of Investment

TNG is a minerals development and technology company. At this stage it has not yet finalised commitment to developing its flagship Mount Peake Project or secured funding for its development. TNG has risks including:

- TNG has no operating cashflow and relies upon equity providers for pre-project development activities.
- TNG is likely to require further equity capital including following a positive Final Investment Decision and to start construction. *However, this will be from a position of a more defined project and potentially a higher value project.*
- There are various funding paths including joint venture, vendor financing and project debt, but no guarantees these will be secured or obtained at reasonable rates. External factors may mean that funding may not be available.
- Significant increase in interest rates or commodity price falls may harm project viability or funding options.
- Construction may be delayed or there may be cost over-runs not offsetable under contracted or process guarantees.
- Regulation changes may cause delays or impose high compliance costs. TNG may be unable to secure all operating and environmental licences to establish operations, *though is helped by shift to integrated mine and processing site.*
- Metallurgical performance of the concentrator, TIVAN® or pigment plants; *SMS process guarantee reduces this risk*.
- Off-take agreements may be impacted by counter-party financial or operating performance issues.
- Competitor risk – there may be in future new discoveries or processes that may compete for market share.
- Technology risk – these developments may make TNG's processes uncompetitive; Geo-political and on-going pandemic related health risks can see disruptions in project timing, securing shipping, vital inputs or market access..

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Section 2: Assets Profile – Unlocking value of its big resource

Location and surprising infrastructure advantages

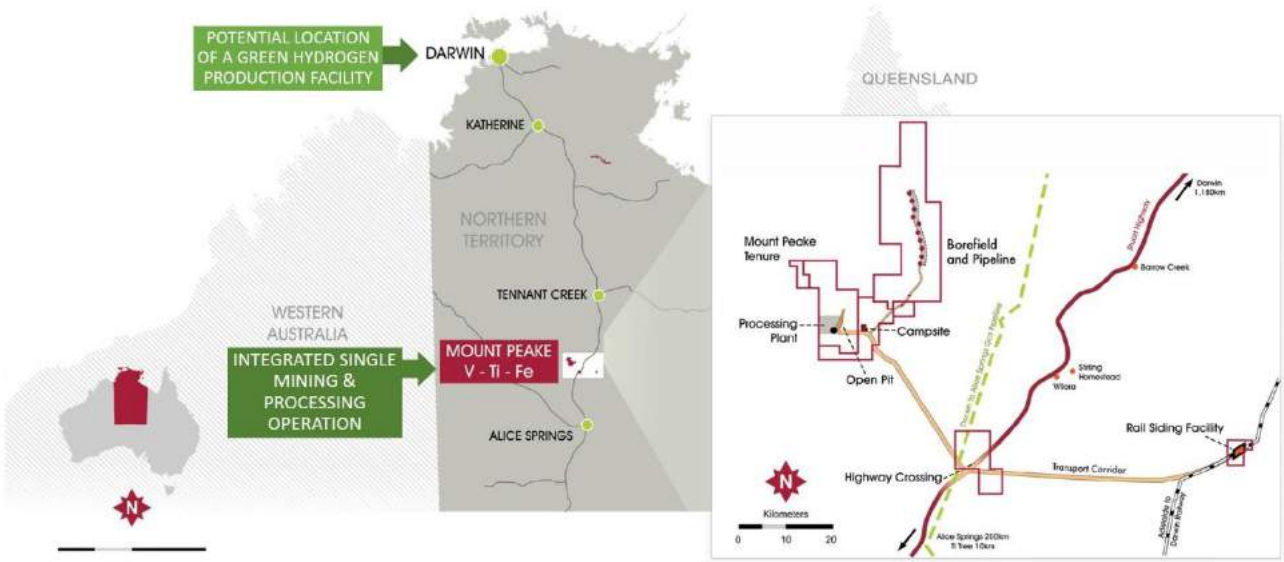
TNG discovered the Mount Peake deposit in 2008. Located in Australia's Northern Territory, it lies 230km North of Alice Springs. The deposit is strategically located close to existing infrastructure. The project is around 85km of the Alice Springs to Darwin rail line and closer to the sealed Stuart Highway and 20km west of the Amadeus to Darwin gas pipeline.

TNG has also secured Exploration Licences in the Northern Territory along the South Australian border, known as the Kulgera Project. This contains the Arrakis Prospect with a maiden Mineral Resource of 346mt and 6.3% of ilmenite dominated Heavy Minerals according to CSA Global's assessment. These are hosted in dune sands along a 10km strike.

In 2020 TNG received an exploration licence area of the Moonlight vanadium prospect (EL32433, EL32434) located 80km West of Daly Waters NT. Field work for this area and TIVAN® test-work on Kulgara starts this year*. Kulgera and Moonlight may provide future supplemental concentrate feed to its TIVAN® process facility to expand and/or extend its project life*.

While Mount Peake is its focus, TNG also owns a 20% free carried to production holding in the Cawse Extended Project, North-West of Kalgoorlie, WA. Operated by Mesmeric Enterprises Pty Ltd the Nickel/Cobalt operation is on care and maintenance for now, but rising metal price may prompt them to reopen given the remaining Resource is 62.6m t at 0.69% nickel and 0.03% cobalt. TNG can elect to convert its equity into a handy 2% net smelter return.

Project Locations with supporting infrastrucure



Source: TNG company announcements

Switching from Darwin to mine-sited Minerals Processing – opens room for Hydrogen venture in Darwin

TNG's project called for an onsite mine and mill at Mount Peake'. Until September 2021, TNG planned to truck to a siding and rail concentrate to its proposed TIVAN® chemical extraction process facility at Middle Arm Peninsula, Darwin. This area is identified by *Infrastructure Australia* as a priority investment zone. The 150 acre site is zoned heavy industry and has nearby rail, gas and power and is ~10km from the Darwin Port. TNG was in advanced negotiation to secure Crown Lease.

However, in May 2021, the NT's Environment Protection Authority sought from TNG a "Direction to Provide Additional Information" within 12-months to help secure environmental certification. TNG has made progress on a range of the 23 matters raised and marshalled efforts to meet the remaining items od Direction. These include air quality, traffic and onsite environmental matters; ***see Appendix-1***. On 30 Sep 2021, following a review, TNG announced it had decided instead to pursue a fully integrated mine, concentrate mill and minerals processing facility at the Mount Peake Mine site.

However, *TNG will pursue securing the Middle Arm site at Darwin to establish a green hydrogen production facility.* TNG recently executed a development agreement with **Malaysian AGV Energy & Technology** Sdn Bhd to exclusively develop in Australia its "HySustain" green hydrogen production technology.

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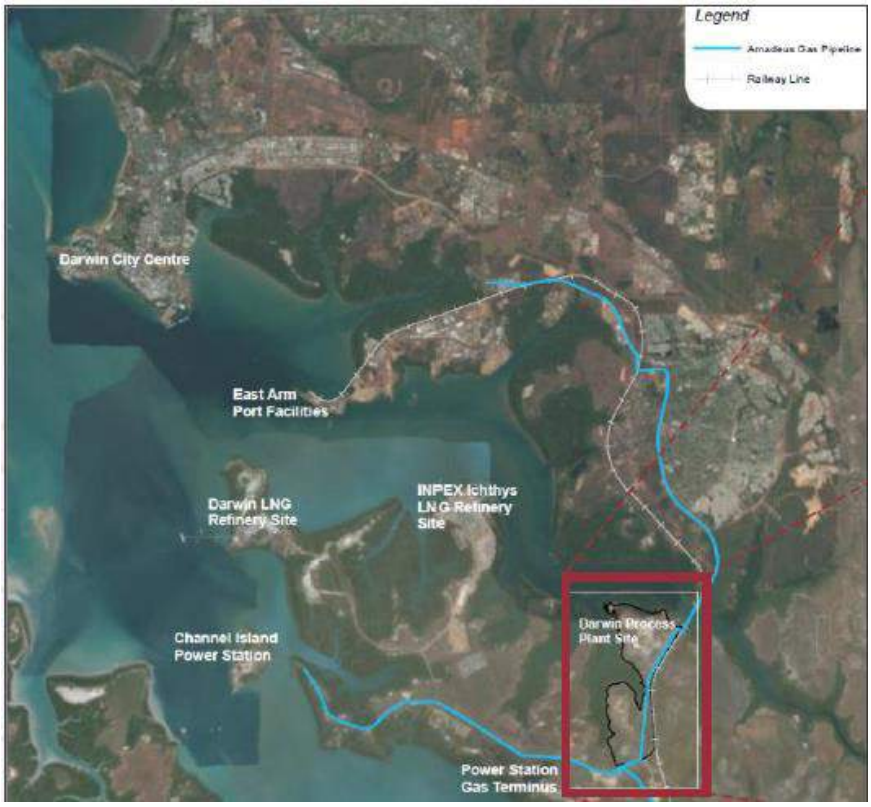
Darwin site may become available for a proposed Green Hydrogen export plant

An Ideal location for power infrastructure, port facilities and access to green energy and export markets

On Sep 3rd 2021 TNG announced its Project Development Agreement was executed with Malaysian-based green energy company AGV Energy & Technology to jointly and exclusively develop green hydrogen production projects in Australia using the "HySustain" technology developed by AGV and its partners.

HySustain, which produces green hydrogen using the electrolysis of demineralised water and renewable energy, is at an advanced stage of development based on a test plant under trials in Europe.

The Northern Territory has a number of proposed large-scale solar developments. These are foccussed on undersea power cables, however hydrogen also is an increasingly attractive way to "export" green-power in another form, to Asia, or for use in lowering emissions in local manufacturing processes.



TIVAN® and Pigment Processing Facilities – Advantages of siting at Mount Peake

TNG's FEED work and detailed interaction with various stakeholders in the Darwin precinct to obtain operating licences have led to opportunities to design process improvements. Specifically, energy efficiency and emission reductions will see markedly lower gas consumptions than originally envisaged. A desire to have zero water discharge into Darwin harbour saw TNG incorporate wastewater recycling plant into the TIVAN® and Pigment Processing Facilities design. This reduced projected water usage by 65%.

In meeting the NT EPA's "Direction to Provide Additional Information", TNG reviewed previous work on siting the process facilities in Malaysia, Whyalla and several locations in the Northern Territory. The Mount Peake Mine site was originally a preferred location except for the level of water and gas use. Now, lower process water needs and the recent identification of sufficient gas has led to TNG's switch to the mine site as preferred location. Advantages of the fully integrated site include:

- Lower capital cost as an integrated site consolidates non-process infrastructure plus reduced construction specifications as the mine site is in a non-cyclonic region. *We think process plant savings could top 14%.*
- The mine has four granted Mining Leases over 2,056 hectares. The 1,460-hectare ML 29855 already has approval for processing. There is sufficient area for a more linear and less costly plant layout than at the Darwin site.
- Mine site processing reduces multiple handling, trucking and railing requirements – including elimination of railing concentrate to Darwin and the subsequent return of process wastes back to the mine site.
- Single site enables reduced work-in-process inventories and simplified gas and power take or pay contracts.
- Higher productivity is expected due to less seasonal inclement weather.
- Greater security of exports as either Darwin or Adelaide are viable ports for shipping finished products. Central Australian location enables multi-sourcing of fly-in-fly-out (FIFO) skilled labour.
- TNG assess that the risks associated with permitting are lower at mine site than at Darwin. *Crucially, the NT EPA has provided TNG with a roadmap for environmental approval that is potentially shorter than for the Darwin site.*

The mine site location for the processing facility has some added costs like extra accommodation and larger utilities such as power and the bore field. Transport of reagents to site will be higher. *We conservatively see operating cost savings of around 2.5% with the mine sited processing facility versus Darwin.*

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Preliminary valuation comparison for a Mine-sited TIVAN® Processing Facility versus A Darwin Sited Facility

Mount Peake Mine and TIVAN® Operation		Darwin TIVAN Facility	Mine sited TIVAN Facility	
Assume no farmout		Life Of Mine	Life Of Mine	% Change
TNG Equity	%	100%	100%	
Startup - Mining	Qtr	*SepQ'24*	*SepQ'24*	
Fully Commissioned - TIVAN	Qtr	*JunQ'26*	*JunQ'26*	
YearsTreating Concentrate	Years	36.8	36.8	
Ore Processed	'000t.	70,169	70,169	0.0%
Concentrate Proces'd	'000t.	23,960	23,960	0.0%
V2O5 - sold	'000t.	232	232	0.0%
TiO2 Pigment - sold	'000t.	3,528	3,528	0.0%
Fe2O3 Fines - sold	'000t.	17,890	17,890	0.0%
AUD/USD Exchange Rate	US$	$0.765	$0.765	0.0%
V2O5 Average Rec'd fob	US$/lb	$12.71	$12.71	0.0%
Pigment Price cif	US$/t	$4,442	$4,442	0.0%
Iron Ore 64.4% Fe Price fob	US$/t	$109.40	$109.40	0.0%
Revenue: Total Mine & TIVAN	A$m	31,557	31,557	0.0%
Av. Price Rec'd/ tonne concentr	A$/t Con treated	$1,317.1	$1,317.1	0.0%
Revenue: Total V2O5	*%*	*27.0%*	*27.0%*	
Revenue: Total TiO2 Pigment	*%*	*64.9%*	*64.9%*	
Revenue: Total Fe2O3	*%*	*8.1%*	*8.1%*	
Total Cost	A$m.	-23,334	-23,050	**-1.2%**
EBITDA	A$m.	8,223	8,507	**3.5%**
EBTIDA Margin	*%*	*26%*	*27%*	
Depreciation - BV	A$m.	-1,168	-1,055	
Interest Payable	A$m.	-173	-156	
Net Profit Before Tax	A$m.	8,050	8,351	**3.7%**
Co. Tax	A$m.	-2,048	-2,172	
Tax Rate	%	*25.4%*	*26.0%*	
Net Profit After Tax	A$m.	6,002	6,178	
NPAT Margin	*%*	*19%*	*20%*	
Pre-Tax Cashflow	A$m	8,050	8,351	**3.7%**
Cashflow After Tax	A$m	6,002	6,178	**2.9%**
Total Capex & Exploration	A$m	-959	-867	**-9.6%**
Stay-in-business capex	A$m	-226	-202	-10.5%
Debt Drawdown	A$m	593	531	-10.5%
Cost of debt	*%pa*	*5.94%*	*5.94%*	0.0%
Ratio of Debt draw to Project capex (Gearing)		*61.85%*	*61.20%*	-1.0%
After-Tax Geared Cashflow	A$m	644	746	**15.7%**
	Disc Rate %pa	*8.5%*	*8.5%*	
	IRR	*21.0%*	*24.3%*	***3.3%***

Sources: RBA, CorporateConnect estimates, TNG Announcements, FactSet, RBA, Trade sources

On table left, we provide **Corporate Connect's estimate** of changes to key cost components and impact upon valuation of changing process site to the mine.

Timing of start-up could be earlier

While there is potential for the Mine sited processing plant to be built and commissioned perhaps 3 or more months sooner than a Darwin process facility, we maintain similar construction and ramp-up period. We assume first products processing starts March 2025 with gradual ramp-up to full output by June Qtr 2026.

Unit operating costs – lower

Key drivers of the lowered cost are reduced double handling and transportation costs, lower work-in-progress inventories and added process efficiencies.

The mine-site processing site is assumed to have 2.5% lower process facility unit costs, or 1.2% in overall unit costs compared to a Darwin sited processing facility. ***There may be higher cost savings than this conservative expectation.***

Capex costs – decisively lower

We see a 14% capex saving in process facility and ~10% lower overall capex saving. The mine-site process site option saves on duplication of power, waste handling and offices. Not needing cyclone-rating significantly lowers construction costs. More space has production line efficiencies and probably lower stay-in-business spend and maintenance.

Mine site valuation >15% higher

Combining the operating and capital cost savings, the mine-sited processing facility decision has the potential to realise a 15% or more NPV benefit.

The IRR has potential to be over 3 percentage points higher at over 24%pa, potentially making Mount Peake a highly attractive project.

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World-Class Resource – with some metallurgical advantages

TNG have delineated a discrete ~2km long, tabular and close to surface orebody containing a JORC-2012 compliant Resource of 160 million tonnes. The grades are 0.28% Vanadium Pentoxide (V_2O_5), 5.32% Titanium Dioxide (TiO_2) and 23.56% Iron. This is a world class sized V_2O_5 deposit, made more valuable with the potential to recover both TiO_2 and iron and its proximity to existing infrastructure. This represents one of the world's largest known well-defined vanadium ore deposits with extra iron and titanium metal credits.

Mount Peake Mineral Resource estimate dated March 2013

Category	Tonnes (Mt)	V_2O_5%	TiO_2%	Fe%	Al_2O_3%	SiO_2%
Measured	118	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**

TNG's July 2015 Mount Peake Feasibility Study delineated, a total of 41.1mt of Probable Ore Reserve (according to JORC Code-2012 code). Utilising a 15% iron cut-off grade, the metal grades **are 0.42% Vanadium Pentoxide (V_2O_5), 7.99% Titanium Dioxide (TiO_2) and 28.0% Iron.** The iron is contained within a magnetite or Fe_3O_4 mineral. This is crucial as TNG plan to mine, crush, grind and magnetically separate iron and much of the associated Vanadium and TiO_2 from the sizable fraction of silica which has no economic value. *The ore separates at a relatively coarse grind size which uses less energy and is less likely to produce slimes that can clog the magnetic separator.*

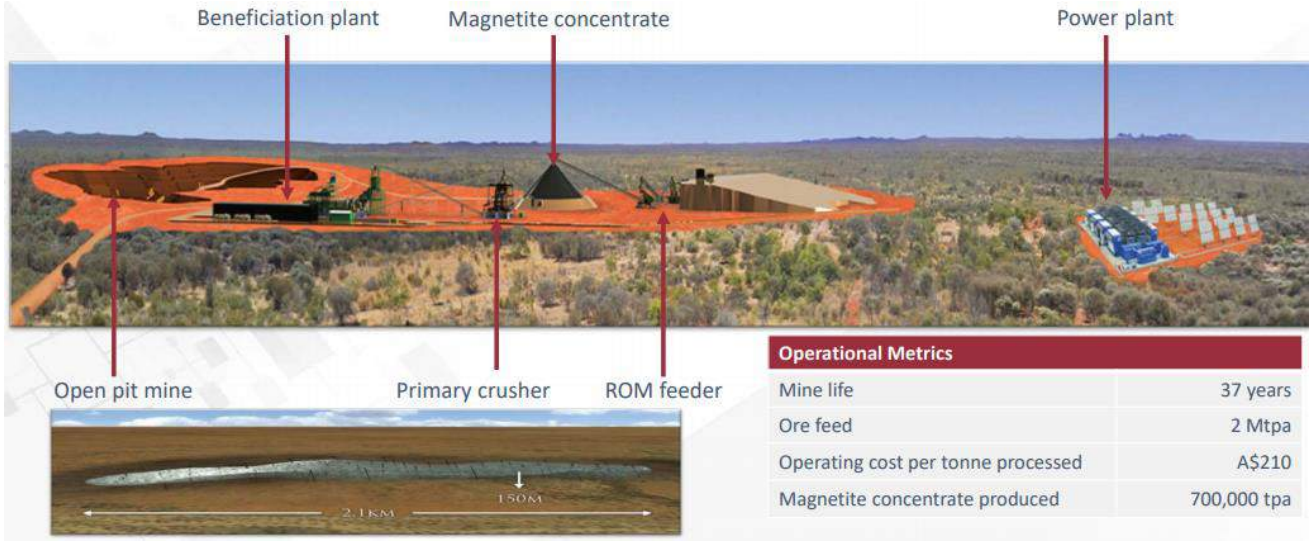
Processing Mount Peake ore leads to a big lift from Resource (*see above table*) to concentrate grades for V_2O_5 of ~225%, for TiO_2 by ~200% and for Fe of ~120%. Mount Peake's concentrate grade meets or exceeds competitor mining projects in Western Australia or Brazil with higher mine-grades. TNG use of high concentrate grade reduces handling costs and lowers energy and processing costs and disposal of waste materials. *See P.9-11 and Appendix-1 for details of process flow.*

Mount Peake Ore Reserve estimate dated July 2015

Category	Tonnes (Mt)	V_2O_5%	TiO_2%	Fe%
Proven	0	-	-	-
Probable	41.1	0.42	7.99	28.0
TOTAL	**41.1**	**0.42**	**7.99**	**28.0**

Source: TNG Ltd Annual Report 2020

Mount Peake Project – Mine & Mill Development



Source: TNG Ltd Presentation 20th Feb 2020

TNG Limited – TNG **Price Target: $0.32/share**

Strategic Vanadium-battery growth with Titanium & Iron earnings resiliency

Mine plan, beneficiation plant site & waste pad – with ample footprint to locate the TIVAN® process facility

TNG engaged **SMS group** and **Como Engineers** to deliver design, procurement and construction designs for a Front End & Engineering Study (FEED) for mining and beneficiation of ore at the Mount Peake mine site; is now complete.

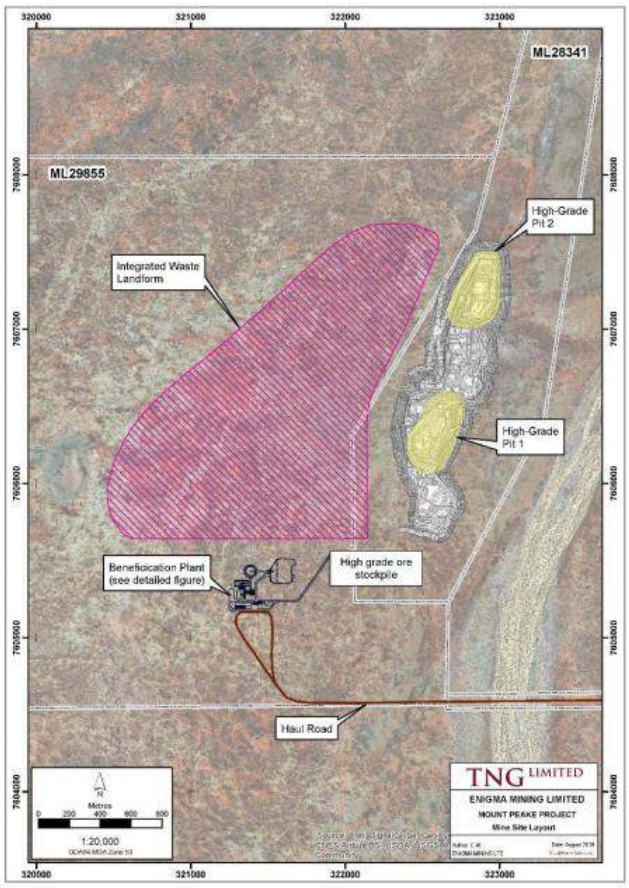
While Reserves amount to 41.1mt, the mine plan calls for a 37-year operation at 2.0mtpa ore feed to the beneficiation plant. This requires ~70mt of ore. An adequate inventory exists in Measured Resource to convert to Reserves during project life. Two areas of high-grade Reserves are present in the orebody can provide plant feed resulting in extra output and cashflow in early years at reduced unit costs *(see schematic on right)*. Features of the mine include:

- The mine calls for a simple open-pit operation.
- Has a low waste-to-ore strip ratio over the Life-of-mine of ~1 to 1:1
- Beneficiation plant to first process 1.8mtpa then up to 2.1mtpa of ore to produce around 0.7mtpa of a magnetite-TiO2-V2O5 concentrate.
- The beneficiation plant is sited close to mine, as shown in site schematic plan above.
- SMS & Como Engineers estimate on-site works capital at $146m (+/- 10%) which is prior to tendering and is indicative only.

The Beneficiation Plant will use conventional technology. It will comprise crushing, grinding and magnetic separation. Finally, the process dewaters the magnetite concentrate with tailings thickened for emplacement in dry stockpile.

See Appendix-1 for Beneficiation plant flowsheet.

A further ~A$4.3m is estimated be required to provide first fills for plant commissioning and an adequate supply of spares. In our base case we see operations ramp-up to 1.8mtpa of ore milled, plateau for 3-years and thereafter operate at 2.0mtpa.



The Infrastructure Advantage

Critical Infrastructure key to mine development – with opportunity to reduce carbon footprint

Mount Peake Mine's proximity to the Stuart Highway, Amadeus-Darwin gas pipeline and the Alice Springs to Darwin rail line create the basis for a cost-effective development to be progressed. TNG's feasibility studies shows that despite its Central Australian location, these linkages combined with transporting a modest tonnage of high-value products and input reagents has seen highly positive returns. TNG will need to construct site communication, accommodation, mine site haul road and bore-field with power link or own power generation. TNG will also upgrade certain sections of road and the rail siding.

TNG's emerging phase-2 plan is to generate, store and use renewable power. TNG are considering installing a solar energy and Vanadium Redox Flow Batteries facility to supplement external energy sourcing and reduce its carbon footprint.

With mine-site chosen to host the TIVAN® process facility rather than Darwin – facilities need to be scaled up. *However, there are considerable savings from reduced duplication of the power station, loading/unloading and lower cost construction from not being in a cyclone zone.*

TNG's mine-sited processing facility now sees *products travelling to port* and not concentrate nor with wastes returning to mine. This is likely to result in saving costs and reduced project carbon footprint.

TNG Limited – TNG **Price Target: $0.32/share**

Strategic Vanadium-battery growth with Titanium & Iron earnings resiliency

Transportation – Rail's still critical role

While TNG will lower its overall tonnage need for rail; products and essential reagents need to be moved efficiently. TNG has entered a Binding Heads of Agreement with Genesee & Wyoming Australia's One Rail Australia for rail haulage services for the Mount Peake Project. The agreement covers the transport of materials produced at the mine site from the proposed Adnera rail siding to the TIVAN® Facility in Darwin. The scope of services may see need for amendment, but originally extended to transport of the three end-products to be produced by the TIVAN® Facility to the Darwin Port at East Arm.

Genesee & Wyoming is a global railroad owner and operator with extensive experience in transporting of bulk commodities. There is scope to develop an optimised rail haulage strategy for Mount Peake ahead of finalising a Rail Haulage Agreement. The upcoming exhaustion of the 1mpta Bootu Creek mine adds incentive for One Rail to work with TNG.

We have modelled transport costs of A$0.11/ tonne km for trucking the 85km distance from Mount Peak beneficiation plant to the rail siding and A$0.25/tonne loading cost. TNG will adapt arrangements as final products are now refined at the mine site, we had assumed to be around $0.028/tonne km for the 1,180km journey. Total transport + handling costs of ~A$90/t of concentrate. *Rail provides a competitive advantage* over potential rival developments that are reliant upon road logistics.

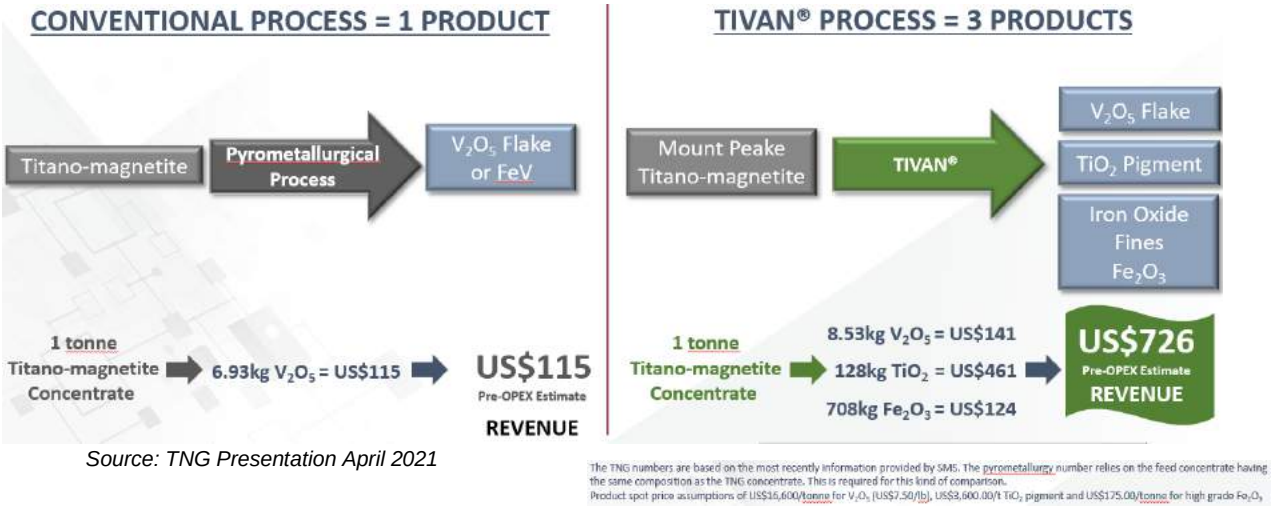
TIVAN® Process – a global competitive advantage

The TIVAN® Process Facility is a multi-stage pyro-metallurgical and hydro-metallurgical chemicals plant for treating titano-magnetite with vanadium ores. It progressively recovers titanium dioxide, vanadium pentoxide and iron oxide at purity levels above commodity grades. The technology is a result of multiple collaborations.

The TIVAN® Process is a game changer because competing conventional pyrometallurgical processes create a single product with low or average grade V_2O5 or a Ferrovanadium. The older pyro- processes have remaining mixed iron/titanium fraction that is either waste and/or as hi-impurity concentrate that is problematic to sell to either iron ore or TiO2 buyers.

TIVAN® process revenue and diversification advantages

The value of a tonne of concentrate under conventional pyro-metallurgical perhaps ~US$115/tonne for a single product. The TIVAN® Process produces three hi-grade products that can achieve premium prices and over US$700/tonne.



Source: TNG Presentation April 2021

We see TNG's collaborations with Tier-1 engineering and finance groups as a catalyst for progressing its project. The TIVAN® process is being **engineered by the German-based SMS Group**. SMS is a privately owned group with 2019 turnover of Euro3.0 billion and a world leader in metallurgical plant engineering. The process has been extensively tested and significantly de-risked progressively by SMS's 10-year involvement. ***SMS's confidence is demonstrated by its provision of plant guarantees on the process efficiency, through-put and resultant product quality.***

SMS's guarantee provides a key level of security in TNG obtaining project debt via lead debt arranger KfW IPEX-BANK.

TNG Limited – TNG **Price Target: $0.32/share**

Strategic Vanadium-battery growth with Titanium & Iron earnings resiliency

TIVAN® Processing Facility – *Major Project* status in critical minerals

The importance of TNG's project to the Northern Territory is recognised by its Government with NT Major Project status that provide benefits in guiding through complex development approval steps. The national significance of the project has been recognised by the Commonwealth Government with both a Major Project Status and *inclusion in the Federal*

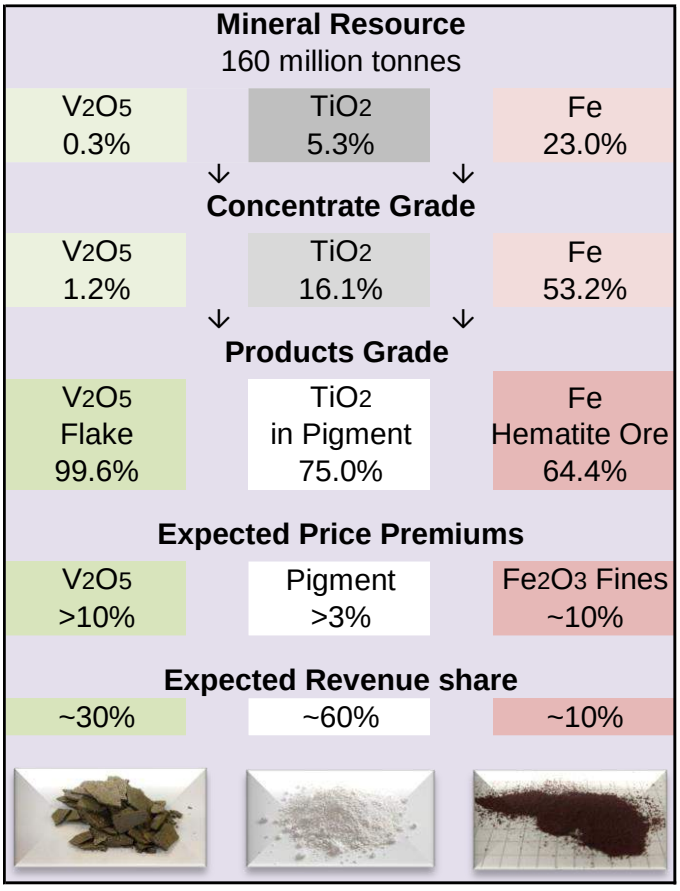
Federal Government's Critical Minerals Processing Roadmap.

The Federal Government policies are designed to see value-adding to raw materials with benefits spanning jobs to wealth generation. These policies are backed by a $2 billion fund to promote its goals. The policies encourage local value-adding to minerals diversifies supply of critical inputs to Australia's factories and to newly emerging industries.

TNG's production of high purity V_2O_5 to Vanadium Redox Flow Batteries is seen as a critical material input. Vanadium is used in wind turbines and alloys for hi-efficiency engines and for anode alloys in Lithium-ion batteries.

Australian Government
Department of Industry, Science, Energy and Resources
Critical Minerals Facilitation Office

Australian Government | Infrastructure Australia



Overview of the TIVAN® process flow

Darwin site plan above showing rail connection, concentrate storage. *A mine-sited TIVAN® processing facility – with the advantage of added space could enable more linear process lines that can reduce both initial capital cost and ongoing maintenance of fewer transfer conveyors.*

- The process steps start with kiln reduction of the concentrate. This step will initially use coal or gas *but may be re-fitted for hydrogen as a reductant* which significantly reduces the carbon footprint of the plant.
- Kiln waste heat is recovered for process use. Calcined concentrate is then sent to the TIVAN® leach plant with acid generated on-site. Iron and vanadium remain in solution while titanium dioxide is filtered out, flash dried and sent to the onsite Pigment-making plant.
- The next hydrometallurgical process sees the precipitation and filtering of vanadium with final kiln and cooling steps to make ~99% pure vanadium pentoxide flakes which are then packaged for transport to port. *A mine sited TIVAN® processing facility reduces the volume of material railed to Darwin port but perhaps at higher unit cost for packaged materials versus bulk transport.*
- The remaining metal in solution is largely iron. This is oxidised and acid recovered for further use. The original magnetite – Fe_3O_4 have now been transformed to a high purity 64.4% export grade hematite iron ore or Fe_2O_3. With few impurities, this is a premium product.
- TIVAN® generates low waste products and all process water is treated and retained on site, and/or returned to mine site. *A mine-site sited TIVAN® facility reduces the cost of handling stabilised wastes.*

A full process flow is outlined in the Appendix-1.

Source: TNG releases including feasibility study and presentations

TNG Limited – TNG **Price Target: $0.32/share**

Strategic Vanadium-battery growth with Titanium & Iron earnings resiliency

Pigment Plant – innovation creates a premium product *with brand differentiation*

In early 2018 TNG, together with its technical consultants, METS, SMS and CSIRO, confirmed a TiO2 pigment process for the Mount Peake Project that would provide superior whiteness and opacity that is valued in the pigment market.

It achieved this with a new version of the conventional TiO2 sulphate route which uses Ti-Con's technology, Germany's leader in TiO2. The TiO2 sulphate route is cheaper and usually produces inferior product than titanium slag and chloride route or processing hi-cost rutile. However, TNG's TIVAN® leach process' results in a superior product with low iron.

See Appendix-2 for process comparison.

TNG's hydro-metallurgically sourced feedstock is a synthetic rutile with among the world's lowest iron contaminant content. It enables TNG to use the less-costly TiO2 sulphate route and still provide a better product and reduced troublesome waste containing iron. *The low waste process is a defining feature to help obtain operating licences in Australia and overseas.*

TNG's TiO2 pigment finished product, will have similar properties and command a similar premium to the chloride produced pigments.

Oxide	Ilmenite 44%	TiO_2 Slag 80%	Tivan
TiO_2	44.0	79.4	74.20
Fe_{Total}	35.5	9.40	2.34
SiO_2	3.3	4.30	18.39
Cr_2O_3	0.09	0.13	0.03
Al_2O_3	0.7	1.80	2.43
MgO	4.5	5.70	0.42
CaO	0.35	0.66	0.91
V_2O_5	0.20	0.35	0.24

On the left, we see TIVAN® sourced feedstock material has far lower iron content and thereby reduces discolouration.

The Company expects that its new process to produce titanium dioxide pigment will yield very high physical and optical properties compared to other TiO2 pigments *– see left.*

TNG are reviewing an engineering firm to build and commission the pigment plant.

General characteristics of pigments from three process routes – TNG's product has desirable features

	Sulfate	Chloride	TNG
Brightness	Less bright	More bright	More bright
Undertone	More yellow	Less yellow	Neutral
Dispersibility	More	Less	More
Abrasiveness	Less	More	Less

Source: TNG Presentations

Not just a commodity – supplier of branded product – "TNG360™"

The desirable features of TNG's pigment move it from a commodity grade to the realm of a brandable product. TNG has secured a Trademark for its titanium dioxide pigment "TNG360™". Trademark recognition spans Australia, European Union, India, Indonesia, the Madrid Protocol countries, Singapore, the UK and the United States of America.

TNG's first pigment product will service the *outdoor and industrial paint segments* that demand stable and durable coatings. In time, TNG have ambitions to develop a product portfolio to target the plastics, cosmetics and pharmaceutical industries.

Section 3: Project Status, Offtake Agreements & Funding

Mount Peake is a highly advanced project – with FY2021 and 2022 a pivotal year

In July 2021 TNG reported the completion of FEED for the Mt Peake Project, meaning that the upstream part of the integrated project is at advanced review and engineering stage. In September it announced the movement of the process plant from Darwin to mine site. While most of the deliverables of the FEED study are equally applicable to a mine-sited process facility, some modules require extra work and amendment.

Importantly, TNG also received from SMS the FEL-3 report for the TIVAN® Processing Facility and associated plants. TNG's in-house Project Engineering team are currently reviewing this report with the added priority of facilitation of added information for and to ultimately meeting the NT's EPA's roadmap for grant of environmental permits.

Both the FEED and FEL-3 reports will assist TNG and its development partner SMS to finalise the pathway for project delivery over coming months.

Part of the FEL-3 TIVAN® Processing Facility module has been impacted by Covid-19 restrictions in Germany regarding repeat process testing. Once received, TNG can complete an internal review and in parallel advance 2 extra work streams:

- The completion of commercial process for the project delivery on firm contract pricing; and
- A joint TNG and SMS Group initiative to update an enhanced final project execution plan to optimise capital spend.

TNG is in advanced **discussions with a local Tier-1 engineering group** to work alongside SMS to progress and deliver an integrated mining and processing operations site. Given the complications of the Covid-19 pandemic, securing added local engineering capability may *both raise the market's confidence in the project and perhaps trigger a near-term re-rating*.

Final Investment Decision (FID) – aiming for 2022

Optimised project execution plans plus receipt of the agreed pathway to meeting licencing directives for the TIVAN® processing facility could allow the **TNG Board to make a Final Investment Decision (FID), likely by mid to late 2022. We believe this timeframe to be more achievable with the process facility sited at the Mount Peake mine.**

We note that construction will likely take up to two years with a further 9 to 15-month commissioning period that varies for each project module segment.

The securing of the remaining environmental and operating licences can be largely undertaken in parallel with FID and financing. This means that with the NT EPA's roadmap to approvals, first ordering of long lead items and work on ground could start early 2023 and first mine output Dec'24 and first processed material by early 2025.

TNG's ongoing contact with funding agents, debt and equity providers, Commonwealth and Territory agencies and potentially the German Export Credit Agency can see a relatively quick response on debt and equity arrangements being settled. This will provide a construction start date and duration for completion of works and mine and plant commissioning.

TNG stated that discussions with their project financiers and advisors were supportive of the process facility relocation.

We see a positive FID as a transformational event for the market's assessment of TNG project.

Front-End Engineering and Design study – *validates the move to commercial phase evaluation*

In 2019 TNG engaged with the SMS group to manage the FEED Study for the Mount Peake integrated mine to processing plants project. The study has a series of FEL modules to provide the key deliverables for project design; and to assist TNG's internal review of facility sites and a Final Investment Decision.

Mine and beneficiation plant modules have confirmed design

In March 2021, TNG's technical team received and reviewed the FEL-3 module delivered by SMS Group that covered the beneficiation plant at the Mount Peake Mine-site. This confirmed the design to process up to 2.1mtpa of titanomagnetite ore to produce up to 0.7mtpa of concentrate.

The beneficiation flow sheet consists of conventional technology employed in crushing, grinding and ore classification plus magnetic separation of ore and dewatering of concentrate and tailings. The study resulted in an estimated capital cost of A$146m with a + / - 10% accuracy estimated capital cost. Como Engineers provided an indicative A$4.3m cost for spares and process plant fills. Both estimates are subject to tender and includes an overall contingency factor of 13.6%.

Earlier, **the Non-Process Infrastructure** work module was completed enabling detailed internal review. TNG is now in commercial phase review for items that include haul roads and mining operations. TNG will need uprated specifications on larger bore field, accommodation, logistics and for integrated site power.

TNG Limited – TNG **Price Target: $0.32/share**

Strategic Vanadium-battery growth with Titanium & Iron earnings resiliency

Approvals' status – upstream largely complete; *downstream processing the current focus*

TNG has made considerable progress obtaining approvals. The Mount Peake mine site has secured the following grants:

- Commonwealth and Northern Territory Environmental Approvals have been secured.
- A Native Title Agreement has been reached and executed with the Traditional Owners; We would expect extra consultations with the move to more elaborate processing at the mine site.
- Mineral Leases have been awarded; and
- The Revised Mining Management Plan has been submitted.

Just as the proposed Darwin-sited TIVAN® Processing Facility required TNG to undertake several work streams to meet the May 2021 NT EPA Direction to Provide Additional Information on the Supplement. The re-siting to Mount Peake will require TNG to provide information on the now more closely defined matters within the roadmap.

In Darwin this meant meeting agreed standards on *air quality, noise, traffic, visual impact, greenhouse gas emissions, biodiversity offsets, waste management plans within the 12-month required submission period.*

Gathering this information is likely to be either simpler and/or quicker at the Mount Peake mine site compared to Darwin. TNG will be assisted by its consultants, Animal Plant Mineral (APM) who support the merits of the new process facility location.

*We see the added EIS work streams as potentially **enhancing project sustainability credentials** fit for the 21st Century.*

Designing in energy saving and green initiatives at this stage can enable TNG to gradually add lower or zero carbon footprint processes and power generation on an integrated mine, mill and process facility site.

Remaining in-progress approvals are as follows:

- We expect steady accumulation of milestones on the NT's EPA's roadmap whilst in parallel establish project implementation plans, processes and appointment of key contractors to begin project delivery.
- TNG can also negotiate with the NT Government for execution of a Crown Lease over the TIVAN® processing site for re-purposing to a hydrogen production facility using renewable generated energy.
- Regulatory – TIVAN® pprocessing facility environmental and operational approvals can proceed on settlement of protocols.
- Added discussion with Traditional Owners on added site activities and expanding local employment opportunities.

Project Funding Strategies

KPMG Corporate Finance has been appointed to provide a project finance team to assist TNG in securing total project finance for the development of Mount Peake integrated project. In addition, following introductions by SMS Group, TNG awarded a bank funding mandate to German based KfW IPEX-BANK which has experience is project debt for metals & mining and process industries. There has been considerable progress in reviewing debt funding options.

TNG also appointed Jonathan Fisher as Chief Financial Officer. Mr Fisher has had a successful track record in raising capital required for mining and process ventures including a Vanadium operation. Most recently he raised capital to develop Australia's only high-level waste repository near Kalgoorlie, for unlisted Tellus Holdings Ltd. This achievement was in the context of stringent and complex approvals required by multiple levels of governments and agencies.

TNG is seeking to raise up to US$600m or A$780m in debt. There are a range of sources project debt including:

- Export credit agency finance
- Specialist Financiers
- Syndication of commercial banks and Debt Fund Managers

TNG Limited – TNG **Price Target: $0.32/share**

Strategic Vanadium-battery growth with Titanium & Iron earnings resiliency

Equity raising options

As of 30th June 2021, TNG's cash position was $11.4m, sufficient to undertake present engineering work, licensing work modules and construction tendering in lead up to upon final investment decision (FID). An equity raising strategy is likely required upon FID for initial deposits for long-lead time items and for licencing and security deposits. Raising even modest additional equity capital may assist in securing competitive debt terms. We expect TNG to seek to tap equity from:

- ASX-listed existing and new retail and Institutional investors.
- International investors – via the ASX or overseas listings.
- Strategic investors – both existing and a new supporter.
- Development and Offtake partners – like SMS Group or and new investors such as customers

We expect firm funding offers to emerge as remaining project evaluation steps conclude and regulatory permits granted as FY22 progresses.

Capital Structure as of 31 July 2021	
Number of shares issued	1,249,497,040
Listed Options 30/11/21; $0.18/share strike	124,951,916
Unlisted Options 26/02/24; $0.15/share strike	2,500,000
Unlisted Options 26/02/24; $0.20/share strike	2,500,000
Unlisted Options 26/02/24; $0.25/share strike	5,000,000
Unlisted Options 26/02/24; $0.30/share strike	5,000,000
Performance Shares class A-F 17/Dec/23	32,500,000
Non-Exec. Director Rights Class A-F 17/Dec/23	4,200,000
Total	1,426,148,956

Shareholding Structure as of 31 July 2021	
Deutsche Balaton & Associates (Germany) -	12.28%
Vimson Group (India) – 8.86%	8.86%
WWB Investments Pty Ltd (Australia) –	7.47%
AOSU Investment & Development Co	4.84%
SMS Investments SA (Germany)	1.26%
Board, Management and insiders' holdings	0.63%
Top -20 Holdings	*41.45%*
Free Float	*64.66%*

Board & Management – experience focussed on project execution

TNG has a highly experienced yet compact board honed towards the successful pre-development and review of the Mount Peake project and for its successful implementation upon a favourable final investment decision.

Specific skills cover project evaluation, planning and commissioning as well as processing and infrastructure expertise. The Directors' experience is complemented by executive skills ranging from feasibility studies, plant operation and debt arrangement and equity raising capabilities. Further appointments will be made as the TNG enters the development phase.

John Elkington *Independent Non-executive Director and Non-executive Chairman*	Mr Elkington brings over 30 years of executive and non-executive experience in mining, consultation and governance with extensive operational and technical roles. His experience extended to infrastructure, as chairman of the Mid-West Ports Authority, the operator of port of Geraldton in WA.; and power, where he was a non-executive director at Government-owned Horizon Power. Earlier, as Managing director he oversaw commissioning four mines and has been the mine manager role. Mr Elkington has also owned and operated analytical and metallurgical laboratories in WA. He holds a Master of Science degree (Mineral Economics) from the WA School of Mines, Curtin University. Director's Interest in Securities: 2,800,000 NED Rights expiring 17 Dec 2023 As Southern Nominees Pty Ltd ATF the Southern Trading Trust 33,334 ordinary shares; 3,334 listed options $0.18 expiring 30 Nov 2021
Paul Burton *Managing Director and CEO*	Appointed as Director of TNG in August 2008 and Managing Director and CEO of the Company in April 2009, Paul Burton has I 30-years' experience as a mining executive. He has been involved in the discovery and development of TNG's major projects including Project Mount Peake as well as all projects spun out into Todd River Resources Ltd. Mr Burton has been instrumental in obtaining various partner support to enable the commercialisation of TNG's proprietary TIVAN® technological hydrometallurgical process. Previously he managed mineral exploration and feasibility study programs, and held senior

	and executive roles at Anglo American/De Beers Ltd, Normandy Mining Ltd (Newmont) and Minotaur Exploration Ltd. Mr Burton holds a Bachelor of Science Honours degree (BSc Hons) in Geology, and a Master of Science (MSc) degree in Mineral Exploration & Mining from McGill University, Canada. Director's Interest in Securities: 4,055,556 ordinary shares,5,556 listed options $0.18 expiring 30 Nov 2021; 11,800,000 Performance Rights expiring 17 Dec 2023 as Bontur Investments Pty Ltd as trustee for the BB Super Fund A/C 3,633,333 ordinary shares; 401,236 listed options $0.18 expiring 30 Nov 2021
Simon Morten *Independent Non-executive Director*	Mr Morten has 30 years of experience in the titanium pigment industry including extensive expertise in pigment manufacture and processing. He spent most of his career with Cristal, which was acquired by Tronox, one of the world's leading vertically integrated producers of high-quality titanium products and pigment. Mr Morten was appointed as a Director of the Company on 17 Feb 2020 and provides insights for TNG's developing pigment business. Mr Morten holds a bachelor's degree in applied science (Chemistry) from the University of Central Queensland. Director's Interest in Securities: as Trustee for Miceva Family A/C 164,609 ordinary shares; also 16,461 listed options $0.18 expiring 30 Nov 2021 and 1,400,000 NED Rights expiring 17 Dec 2023
Jason Giltray *General Manager Commercial & Corporate Development*	Mr Giltay is a senior finance executive with resources industry and executive experience in corporate finance and commercial management roles. He has worked with companies over the mine life cycle from pre-development engineering/planning/feasibility, project financing and development, project commissioning and operational start-up, working for mining services companies specialising in both surface and underground mineral drilling. He holds a Bachelor of Commerce and Postgraduate Diploma in HRM from the University of WA. Mr Giltay joined the Company in July 2018 as General Manager - Commercial and was the Company Secretary from 21 Dec 2018 to 16 March 2021. He was reappointed to the new expanded role of General Manager – Commercial & Corporate Development on the 16 Mar 2021.
Jonathan Fisher *Chief Financial Officer*	Mr Fisher is a senior mining and corporate finance executive. Recently he held senior executive roles of Chief Financial Officer and Company Secretary with public unlisted infrastructure company Tellus Holdings Ltd. Mr Fisher was responsible for the successful delivery of pre-development and project development funding for Tellus' highest grade of waste facility that came with complex regulatory requirements. He was General Manager, Corporate Finance and later General Manager Corporate Strategy for the former ASX-listed iron ore producer Atlas Iron Ltd, delivering a $325m debt package. Project Finance & Corporate Development roles at mining investment company Atlantic Ltd, saw delivery of a US$335m bond financing package to acquire and develop the Windimurra Vanadium Project in WA. Mr Fisher earlier was a Director at PwC Strategy in Perth and a member of the Rothschild Natural Resources, Utilities & Infrastructure Team in UK.
Dan Foo *Project Director*	Mr Foo is a qualified mechanical engineer with over 40 years' experience as a hands-on executive with front-line exposure to major projects in the mining and mineral industry. His experience ranges across iron ore, bauxite, alumina, nickel, coal, gold, gallium, rare earths, power generation and waste-to-energy. For the past three years, Mr Foo was the CEO of Endeavour Energy Corporation, an international start-up company in the Waste-to-Energy sector. Prior to that, he was the General Manager of Doric Group, a resource and infrastructure company. Between 2010 and 2012, he served as Director of Major Projects of UGL Limited. He was also the Director of the Feasibility Study phase of a $5 billion Qld Aurukun Bauxite/Alumina refinery.

Section 4: Products Analysis and Economic Assessment

Product Profile and Offtake Agreements

During the detailed project assessment, design and approvals activities TNG has also formed strong relationships with customers. The result is TNG has secured essentially 100% of the life-of-mine (LOM) for each of its three products. This has been achieved with execution of Binding offtake contracts, with each of the customers listed below.

- Woojin – Korea up to 60% LOM Vanadium Pentoxide output - with negotiated prices with reference to spot sales; and Gunvor – Singapore for up to 40% offtake of V2O5. Prices are 80% of spot indices and 20% netback post costs. Woojin is the largest independent ferrovanadium converter in Asia.
- DKSH – Switzerland for up to 100% offtake LOM of Titanium Pigment as branded by TNG: with a pricing formula of ~80% of spot indices and 20% netback post-marketing costs.
- Vimson Group – Mining Conglomerate in India for up to 100% offtake of LOM Iron Fines output. The pricing formula is ~80% of spot indices and 20% netback post-marketing costs.

Product	Est Production	Product usage	Off-take	Est. Revenue Split	Est. Price Premiums
Vanadium Pentoxide V2O5	6,000 tpa 3.2% of world demand	Steel alloys, chemicals, catalysts & Vanadium Flow Batteries	Woojin – Korea up to 60% LOM Gunvor – Singapore for up to 40%.	30% *Currently would be ~20%*	Product 99.6% versus standard 98%. Expect 10-15% premiums
Titanium Dioxide Pigment TiO2	100,000 tpa 1.5% of world demand	Steel alloys, chemicals, catalysts and emerging Vanadium Flow Batteries	DKSH – up to 100% LOM	60% *Currently would be ~64%*	TiO2 75% & Fe 2.3% versus Fe 9% for hi-quality TiO2 slag Expect ~3% premiums
Hematite Iron Ore Fines Fe2O8	500,000 tpa <0.5% of world fines demand	Steel making	Vimson – India up to 100% LOM	10% *Currently would be ~16%*	Product fines 64.4% Fe versus standard 62% Expect ~10 % premiums

Recent record iron ore prices would see higher share of TNG's revenue compared to our expected long-term pricing.

In the next section we examine the influence of the past 10-years price dynamics on TNG's expected margins per tonne of concentrate.

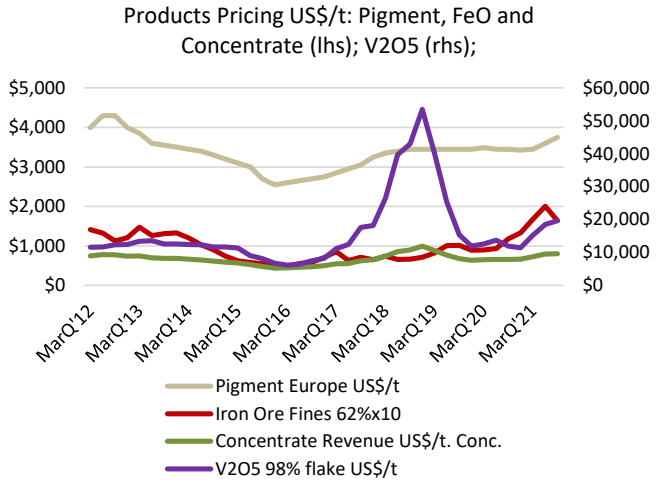
TNG Limited – TNG **Price Target: $0.32/share**

Strategic Vanadium-battery growth with Titanium & Iron earnings resiliency

Three premium products - Diversifies commodity price volatility

Past decade pricing – Vanadium prices has been volatile.

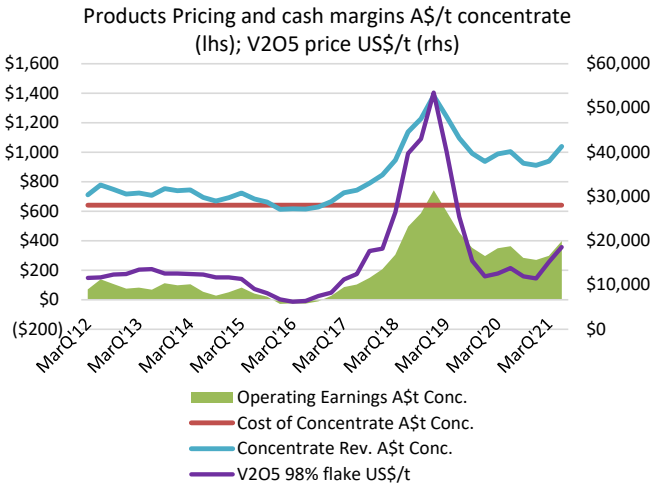
Mixing three commodities reduces overall revenue volatility per tonne of metal recovered from Mount Peake concentrate. Adding the AUD/USD exchange rate further reduces volatility.



Source: FactSet, Live vanadium news

Positive Implied Margins over the past decade

Margins averaged A$195/per tonne of metal recovered from concentrate assuming a flat Concentrate cost A$640/t. Only in 2016 were operating results at breakeven. At SepQ21 pricing, EBITDA margins would be overA$400/t, see *green shaded area below.*



Source: TNG, FactSet, Live vanadium news

Commodity Prices Forecasts

Base Case pricing is in nominal dollars in addition to estimated revenue & EBTIDA per tonne of concentrate is set out below. We note that while iron ore securities trading started in volume arounds 2012 and provides transparent pricing, the picture is opaque for the pricing of vanadium and pigment with internal transfer pricing or derived from trade sources.

V2O5 cif commodity pricing is assumed to settle at US$8.80/lb in 2025 (nominal dollars) or +20% above versus previous 10-year average or ~9% higher than recent spot price. Vanadium demand is set to surge with expanding infrastructure demand in steel and rising need for high grade V2O5 battery feedstock. Vanadium has high price volatility; however, we expect hi-grade V2O5 to trade at a premium price and firmly in demand versus lower grade Vanadium products.

Pigment prices are assumed to be roughly in line with the 10-year average. Note that depletion of higher-grade natural rutile and lower cost ilmenite deposits call for new mine investment and suggest higher pricing. New technologies like TIVAN® can supply part of the mine depletion and we take a conservative view of pricing on TNG's number one revenue generator.

Recent stratospheric iron ore prices will see reaction for both traditional producers like Vale in Brazil and new entrants in West Africa to expand output. In part, this will be aided by China's wish to diversify supply from Australia. We therefore take a conservative view on future pricing 17% below the past 10-year average, *however with risks skewed to the upside.*

The key issue is that each commodity is being driven by different demand segments or are at different stages of the investment cycle. Exposure to three different commodities is most likely to reduce the aggregate impact of price changes.

Base Case forecast compared to 10-year commodity pricing

Base Case to Historical Pricing *Pricing is on quarterly basis*	Base Case v. 10-year	Base Case 2025 Est.	10-year Average	10-year High	10-year Low	10-year Std Devn.
V2O5 98% grade flake US$/lb	19%	$8.78	$7.38	$24.25	$2.80	65.2%
Pigment TiO2 +70% US$/t.	-2%	$3,258	$3,333	$4,300	$2,550	12.5%
Iron Ore Fines 62% cif US$/t.	-17%	$80	$96	$200	$47	38.0%

Source: FactSet, Trade and CorporateConnect's estimates

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Strategic Vanadium-battery growth with Titanium & Iron earnings resiliency

Detailed Commodity forecast – Base Case

Below we outline the base commodity price forecast on an as delivered basis (i.e., cif). We adjust for premiums expected to be secured for TNG's products and deduct costs to obtain the received or fob price.

By applying the assumed fob received prices to expected sales volumes we can derive revenue, costs and EBITDA per tonne of concentrate treated. In our scenario full output is achieved during the 2025 calendar year. Stabilised unit costs are achieved in FY27 at ~A$710/t., while revenue per tonne of concentrate is around ~A$1090 leaving an EBITDA of ~A$380/t.

Base Case Commodity Assumptions

PRICE ASSUMPTIONS

Y/E 30 June		FY'20a	FY'21a	FY'22	FY'23	FY'24	FY'25	FY'26	FY'27
Australian $/USD $	A$/US$	0.671	0.747	0.751	0.765	0.765	0.765	0.765	0.765
V2O5 cif	US$/lb	6.09	6.48	8.89	9.56	9.20	8.78	8.91	9.05
V2O5 Average Rec'd fob	US$/lb						4.80	8.32	9.74
Pigment Price cif	US$/t	2,836	2,931	3,482	3,515	3,369	3,258	3,307	3,360
Pigment Price Rec'd fob	US$/t						3,301	3,340	3,390
Iron Ore 62% Fe Price cif	US$/t	93.55	154.70	112.03	83.75	82.50	80.24	81.45	82.75
Iron Ore 64.4% Fe Price fob	US$/t						81.31	82.27	83.48
Revenue /t. Concentrate	US$/t Con.						513	715	836
Revenue /t. Concentrate	A$/t Con.						670	935	1,093
Operating+Royalty costs	A$/t Con.						-1,495	-718	-712
EBITDA Margin	A$/t Con.						-824	217	381

Sources: FactSet, RBA, Vanadium.com, Trade sources, CorporateConnect estimates

Sensitivity of risked valuation to commodity changes & to Processing Facility re-siting

We have examined the sensitivity to each product and the AUDUSD exchange rate on our risked valuation of TNG Limited.

The tables show the impact of a decline in the commodity or rise in the AUDUSD exchange rate.

Additional sensitivity case for Mine-sited TIVAN® processing facility option

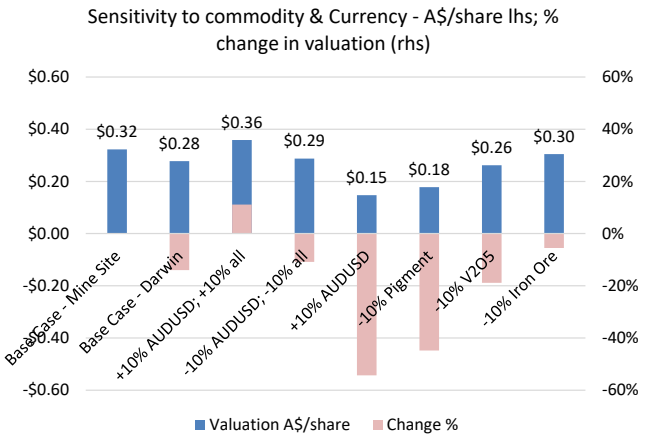
Sensitivity		Base Case - Mine Site	Base Case - Darwin	+10% AUDUSD; +10% all	-10% AUDUSD; -10% all	+10% AUDUSD	-10% Pigment	-10% V2O5	-10% Iron Ore
				Change on Base Case Darwin					
Valuation /	A$/share	**$0.32**	$0.28	$0.36	$0.29	$0.15	$0.18	$0.26	$0.30
Change %	%		-14%	11%	-11%	-54%	-45%	-19%	-6%
Weighting for target		100%	0%						
Target price	A$/sh.	**$0.32**							

The hierarch of valuation sensitivities to 10%Δ are:

- Highest is the AUDUSD rate, +/- 54%
- Second, is the Pigment price, +/- 45%
- Next sensitivity is the Vanadium price, +/-19%
- Iron ore price changes imparts the lowest sensitivity to valuation at just +/- 6%

Site selection moving the processing from Darwin to the Mount Peake Mine-site on our initial evaluation is: +16% to $0.32/sh.

We note that the AUDUSD often weakens when there are broad commodity price falls, such as when the global economic growth rate weakness. If all commodities prices fall 10% and the AUDUSD also falls 10%, the long-term valuation impact in Australian dollar terms falls only 10% to $0.29/share.



Section 5 – Product Markets and VRFB's

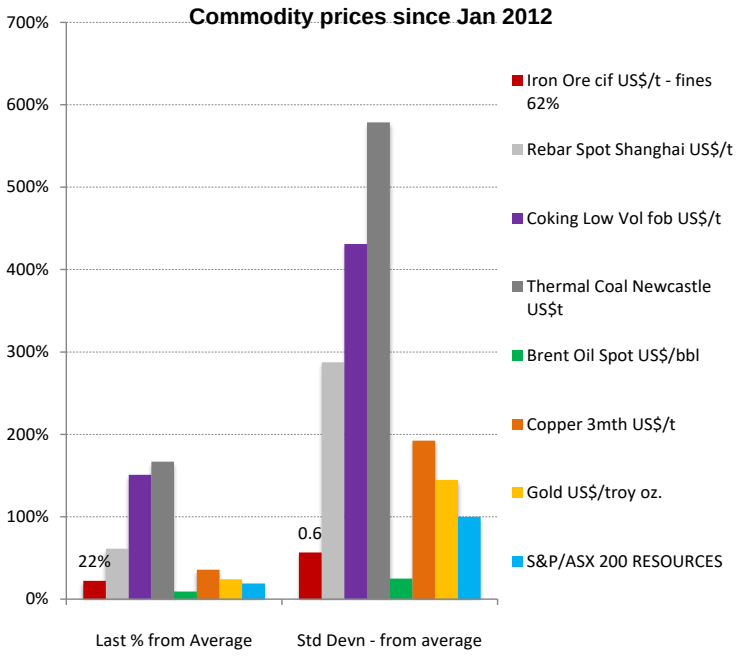
Iron Ore – price boom passes, reversion in progress but outlook still bright

Iron ore prices boomed to US$220/t in June 2020 benefitting from from the confluence of systemic supply problems and China's strong economic rebound post Covid-19. Prices have rapidly fallen to the US$100-120/t range on China's policy to constrain emissions, slow excess development activity and more recently seen caution rising on the financial credentials of China's over-geared construction companies.

Even so the Iron ore price is trading 10-20% above its average price since 2012 (when deep on-screen trading began) in US dollar terms. In Australian dollars, the iron ore price is closer to 35% above its average since 2012. So these producers are still making excellent returns.

While there are some headwinds for Chinese economic growth, the less spectacular and rising growth recovery of the Rest of the World can see mounting demand for commodities, including steel.

There is evidence of that growth with formerly lagging energy prices, now skyrocketing on renewed demand meeting chronic under-investment.



Combined with many countries fiscal expansion plans to include infrastructure redevelopemnt there is likely to be some stabilisation of demand and renewed price pressure on iron ore again over the next year or more.

Steel pricing a support for iron ore

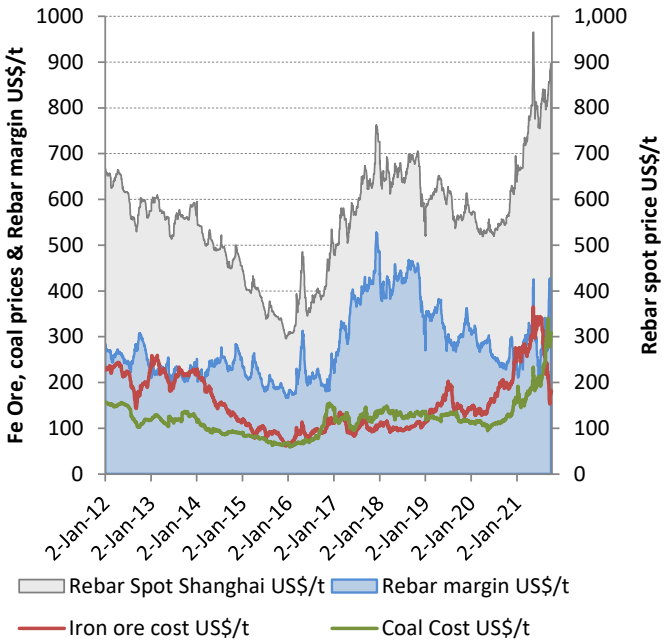
The chart on the right shows the rise of China's Rebar steel price (in grey) and and Rebar maker's margin after paying for ingredients in blue, shows that steel makers margins are still good even with the recent huge run up in coking coal.

This means that iron ore prices can be fundmentally supported by steel makers and start to rise once steel restrictions or steel demand starts rising once more.

Conservative forecast & upside bias

Our assumption is in 2025 iron ore fines CIF price is US$80/t, which is a 18% discount to the average price since 2012. While we see upside risks, we see China's ambitions to diversify supply of iron ore sources from Australia may rein-in prices as it is doing with investment in Guinean bauxite to displace growth in Australian bauxite.

What may change the picture to the positive for iron ore is that China may see new steel-making competition from the Middle East and other places, with both abundant solar resources and fossil fuels reserves (with carbon sequestration) to make green & blue hydrogen. Used as a reductant, H2 can radically reduce steel-making's carbon footprint. What you can't substitute in steel making is the iron unit and who owns the *hi-quality ore* will probably secure the price advantage.



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Strategic Vanadium-battery growth with Titanium & Iron earnings resiliency

TiO2 Pigment **– product characteristis and markets**

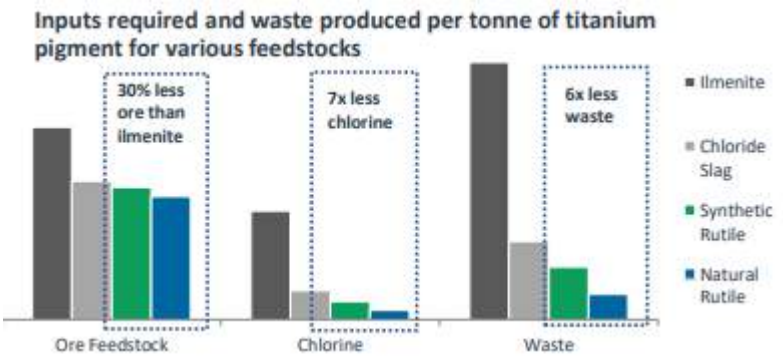
TiO2 pigment is primarily used for its ability to impart whiteness, brightness and opacity which is not matched by other materials. Added features include low toxicity compared to other coating opacifyers like lead. TiO2 pigment is used extensively in the manufacture of paint (~60% of use) and other coatings, plastics and paper at around 25% of total use.

Ultra-fine TiO2 is used as catalysts for uses including scrubbing emissions of nitrous oxide (NOX) in emmision contol at power stations, ships and vehicles. *NOX is a powerful greenhouse gas emission requiring control and a role for TiO2*.

TiO2 products are derived from three naturally occurring heavy minerals - ilmenite, leucoxene and rutile. Ilmenite has lowest TiO2 grade of 40% to 60%, while some rutile is well over 90% TiO2. Hi-grade rutile has the least processing requirement, but supply is insufficient meet the demand of TiO2 pigment. Instead, various processes are required to upgrade other TiO2 sources.

Titanium slag and synthetic rutile are both processed from ilmenite feedstock, are now the major input materials to produce TiO2 pigment.

Titanium slag is produced by smelting ilmenite in an electric arc furnace to separate titanium-oxide from the iron and other impurities via the chloride route. As shown in a graphic from a recent Iluka Limited presentation, Slag needs more ore, uses more chlorine, and produces more waste than synthetic rutile.

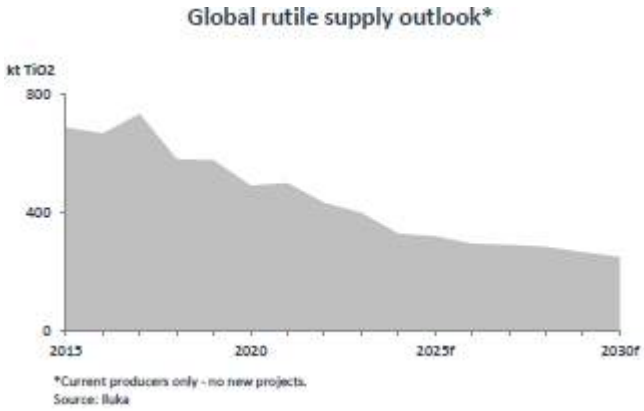


Synthetic rutile is produced by reducing ilmenite in a rotary kiln, followed by leaching to remove the metallic iron from the reduced ilmenite grains. This is a similar early step in the TIVAN® process – *see Appendix-1 for the process flow sheet*. Synthetic rutile has lower input needs and lower waste than other sources except for the increasingly supply limited sources of naturally occurring rutile. *The result is syn-rutile can have a lower environmental footprint than TiO2 slag.*

Pigment markets – pricing cycle continues moving up

Gloabal pigment demand is ~6.5 mtpa of which TNG's output is only 0.1 mtpa or just 1.5% of global demand.

During the Covid-19 pandemic, overall pigment demand has been firm on do-it-yourself painters buying. The key Northern Hemisphere market's seasonal peaks are in the JunQ and SepQ which is providing support for price rises. Housing booms are emerging through Australia/NZ, Asia, Middle East and the US. There is added emphasis on low-rise or detached building which typically are paint-intensive structures. Paint demand rises on a building's completion so this suggests that pigment pricing may remain firm for crucial years TNG is funding and commissioning.



Iluka has reported in the JunQ21 that high-grade feedstocks are in short supply following flooding outages and some permanent shutdowns of capacity in the US. Operational suspensions of Sierra Rutile and violence in South Africa pose ongoing supply issues. Pigment producers are restocking on supply concerns and rising demand. This is prompting purchase of high grade rutiles and synrutiles to meet demand and reduce wastes.

After rising most of 2021 to date, pigment prices in China have plateaued while the industry assesses the impact of restructure of over-geared construction companies. Iluka see rising need for synthetic rutile as it projects declining natural rutile production from existing sources, but few new projects are projected in the near term.

Large integrated miner to pigment maker **Tronox** forecast higher TiO2 pricing after a reporting record revenue in the JunQ21 and noted abnormally low feedstock inventories. Marking medium term industry confidence, private equity group Apollo Asset Management made an US$4.3 billion all-cash bid for Troxon in Sep 2021. *We conservatively use past average pigment price going forward, though note there is upside on changing industry structure.*

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Tronox and other producers are seeing higher demand post-pandemic. A global fiscal surge with an infrastructure and energy transition emphasis will likely see a rising TiO_2 demands, though new deamnd comes with a year or more lag.

Closures of feedstock due to mine exhaustion and inefficient ilmenite processing capaicty is leading more TiO_2 pigment makers considering how to vertically integrate operations. TNG's development plan achieves this goal. To fund it TNG may consider strategic partnerships, with a partial sell-down of the Mount Peake Project.

Perhaps a potential joint venturer could be off-take partner DKSH. Otherwise a partner *(or takeover offer)* may come from the following peer group companies, in which Kronos Worldwide estimates (2020 Annual Report) global shares of the TiO_2 capacity.

Worldwide production capacity - 2020

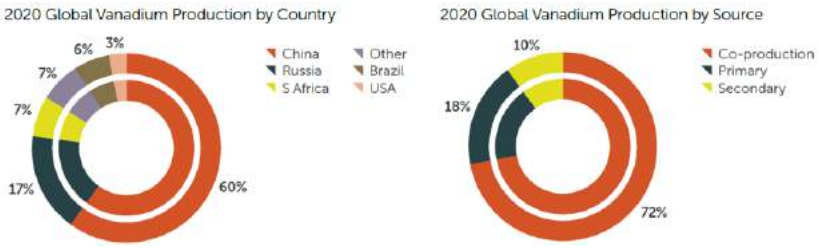
Chemours	15%
Tronox	13%
Lomon Billions	9%
Venator	8%
Kronos	7%
Other	48%

Vanadium – product characteristis and markets

Vanadium – V, is a soft ductile metal that occurs naturally only as mineral compound. While it is the 20th most abundant element in the Earth's crust, vanadium occurs in low concentrations, with 90% of production is in association with iron and/or titanium. **Co-production** of V is derived from magnetite ores processed for steel making. These accounted for 72.6% of the global output of 161 kt of V in 2020. China dominates this production though output varies with iron ore prices, which when over ~US$110/t enable *low grade local Chinese magnetite* plus V credits to be commercial. *There is an element of natural hedge if iron ore prices fall say on added Hi-quality supply, Vanadium prices may tend to rise.*

Primary production was 17.6% or 20.4k tonnes of global supply. it involves salt roasting, water leaching, filtration, desilication and precipitation. China, Brazil and South Africa predominate, with the latter two expanding and TNG to add output in 2025-2027 period.

Only primary production provides Vanadium at purity levels needed for VRBF's.



Secondary production of vanadium accounted for 9.8% of 2020 supply. The V is recovered from fly ash, petroleum residues, alumina slag, and from recycling of spent oil refining catalysts. Hi-V spent ore dumps are likely new V sources.

Vanadium is a strategic metal used primarily as an alloy in steel. *Adding 1kg of vanadium to 1-tonne steel increase tensile strength 84%.* Steel alloys consumes over 85% of global vanadium, mostly in ferro-vanadium form with ~80% V.

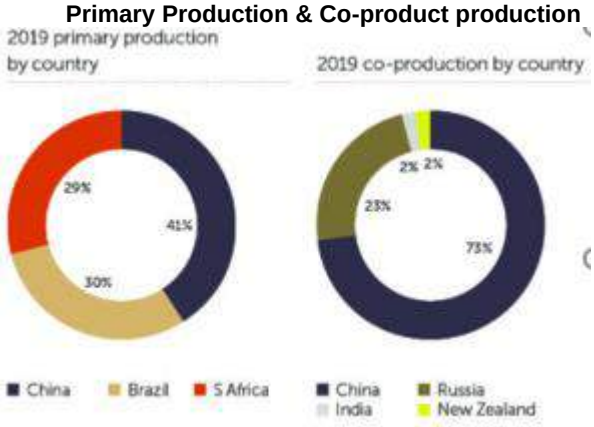
Vanadium industry structure – *China and co-product dominates volumes, Australia to be a new producer*

Vanadium pricing tends to be volatile in response to the swings of international steel markets, the construction sector and capital investment cycle for high performance steels needed like in aircraft engines.

High iron ore prices can trigger extra co-product V in China's marginal iron ore operations. Periodic shortages occurred in the mid-2000's, 2008 and 2018 periods. These saw Ferro-vanadium prices rise spectacularly from ~US$30/kg to the US$60 to $100/kg range.

However, the industry demand patterns may change pricing dynamics. Roskill is forecasting new Battery Energy Storage Systems representing 160 GWh including 3.0 GWh for VRFB in a base case. This is. the equivalent of 14.6k tonnes of V or 9% of the global usage; or 4.2 GWh meaning 20.3k tonnes of V in a high scenario in 2030, which is equal to entire 2020 Primary vanadium output.

Primary Production & Co-product production



Source: Bushveld Minerals Website

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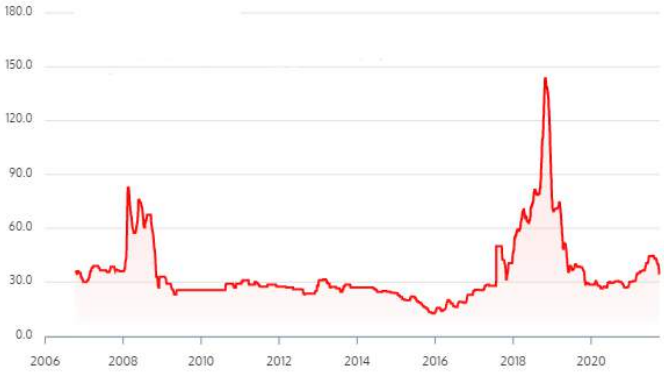
Ferro Vanadium 80% China US$/kg –

Spot price *1st Oct 21 US$34.50/kg*

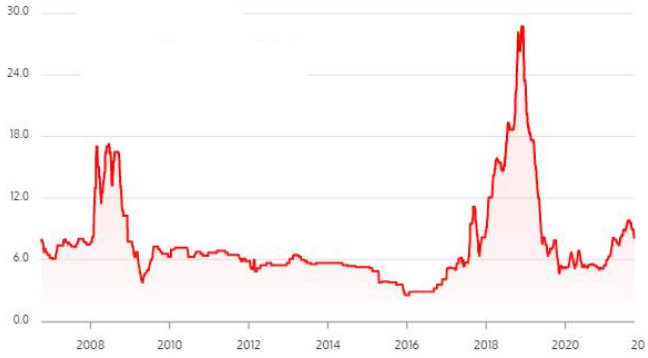


Source VanadiumPrice.com

The slowing growth of Chinese steel making is the current driver for price correction of Ferro Vanadium

Vanadium Pentoxide, Europe 98% US$/lb Flake

Spot price at 1st Oct 21 US$8.10/lb is US$17.86kg



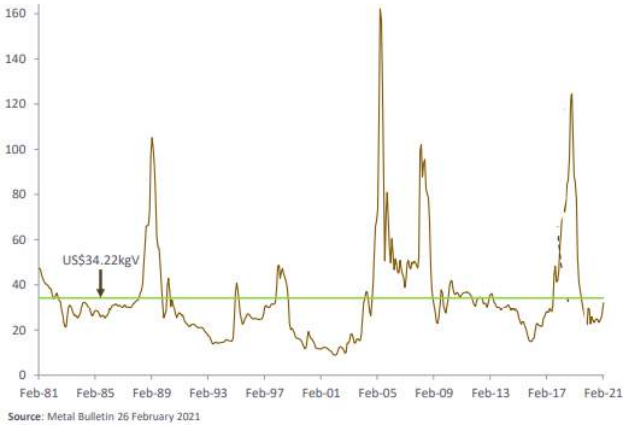
Source VanadiumPrice.com

Real Vanadium Price – Averaged US$34.22 /kg of V 1981-2020 or US$8.70 /lb V_2O_5, in mass *equivalent to 56.2% of V*

Vanadium pentoxide, V_2O_5, has generally followed ferro-vanadium prices even though it is used in other applications other than steel alloys. *See charts above.* V_2O_5 has a key role as catalyst for making *sulfuric acid – currently surging in price and demand*. Also used as catalyst for formulating maleic anhydride that is used to make resins, drugs and dyes.

According to Metal Bulletin the average Real price of Vanadium since 1981 has been US$34.22/kg of Vanadium. This translates to ~US8.70/lb of Vanadium Pentoxide.

Our own V_2O_5 pricing assumption in 2025 is US$8.78/lb** – virtually in line with the long-term real average. We apply escalation of 80% of inflation rate. As the market drivers of high purity-V products change, there may well be **upside to our possibly conservative Base Case.



Vanadium's strategic metal status…

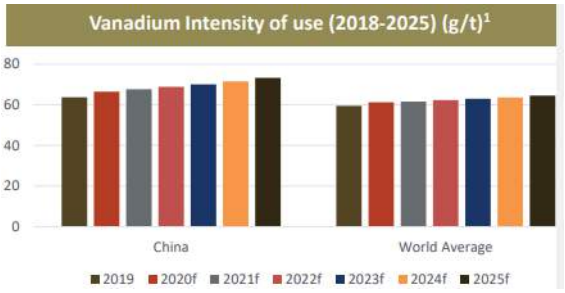
Vanadium is a strategic material due to its ability to exist in four oxidation states, be water soluble and is resistant to hydrochloric and sulphuric acids, alkalis and saline conditions. *To employ these features, the V must be of high purity.*

TNG intends to produce a high-purity vanadium pentoxide, V_2O_5, via the 100% owned TIVAN® Process. Tests conducted in 2015 indicate the product grade could be at ~99.6%. That purity level exceeds the standard-traded grade of 98%. This is likely to allow TNG to obtain a price premium of perhaps 10%. *High purity V_2O_5 enables TNG to have product acceptance into steel alloys, chemical catalysts as well as supply the emerging Vanadium Redox Flow Battery business.*

With a rising demand growth rate…

Roskill expect steel sector consumption of V to accelerate from a below 2% trend to 2.7%pa to 2029 as higher construction standards in China demand stronger steel. China consumes ~45% of the World's V output. While, its steel-make has surpassed world average V-intensity of use, it remains below Developed Countries. Other Developing Nations may also change standards this decade.

VRFB deployments have started to gain traction and some industry participants believe this battery use can grow its market share of vanadium use from ~3% to over 30%-plus by 2030. This according to Roskill industry forecast can skew growth upward to ~6%p.a.



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Vanadium pentoxide's status as a strategic input would be further enhanced if emerging new demand as an **anode ingredient for fast-growing lithium battery** segment and for **super conducting magnets**, accelerate.

At 6,000 tonnes, TNG's projected sales of V_2O_5, represents just 3.2% of the estimated global V_2O_5 demand of 190,000 tonnes pa or ~2-years of V industry growth. We see its output readily absorbed and welcomed value V-users.

… and the vertical integration impulse

We are uncertain whether in future the high-purity Vanadium products may become less price volatile than the commodity grade V market. What we do know is that VRFB makers and suppliers will want a mechanism to reduce input cost volatility. V_2O_5 electrolyte represents 20 to nearly 50% of the cost of an VRFB. battery, depending upon V's price. One answer is to become more vertically integrated from V_2O_5 production to VRFB making and marketing, just as we increasingly see in the TiO_2 to pigment industry.

Vertical integration to battery product is occurring in other Vanadium miners. Two examples are, firstly, the hi-grade but conventional single product producer of vanadium, Largo Resources (Brazil) has started its VRFB business. Secondly, Bushveld Minerals operating the integrated mine to processing South Africa's Bushveld Complex. It recently stated that Bushveld was partly funding Enerox to invest US$30m to scale up its VRFB production capacity to 30MW by 2022.

TNG has announced initiative to provide V-electrolyte directly market VRFB's. It has identified a battery component supplier and will own-source electrolyte. This builds upon its further testing of TNG's product that successfully produced vanadium electrolyte that can meet exacting standards for VRFB's.

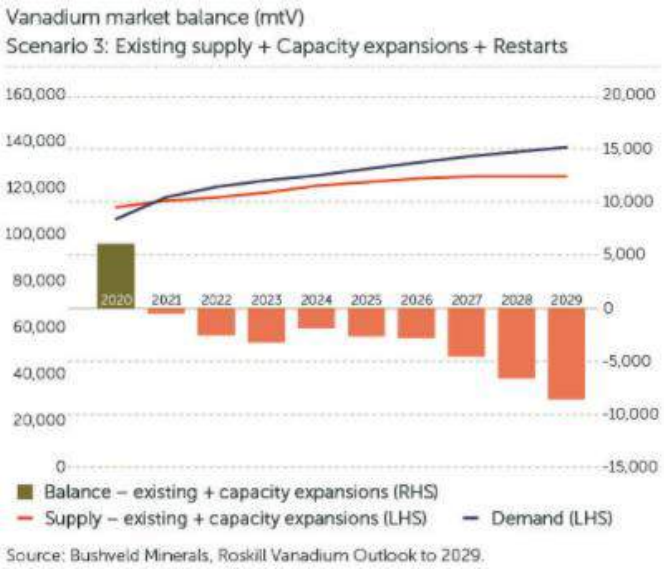
The result is new V supply is required…

Roskill industry monitor have assessed that emerging demand for vanadium units spanning steel, chemical catalysts and electrolyte will outstrip supply expanions by 2022. Even with incumbents' planned expasions and restart of hi-cost capacity, there will be need for new suppliers of 3 ktpa to 5 ktpa of V or ~5 to 9 ktpa of V_2O_5 equivalent. *See chart – right.*

This scenario sees TNG's ~6 ktpa accommodtated, but less smooth if a number of entrants can get developments approved and commissioned. However TNG has low post-credit costs.

Taking TNG's TiO_2 and iron co-products as credits sees our base case NPAT margin on V sales of 70% and 97% EBITDA Margin on V-sales – making it one of the lower cost producers.

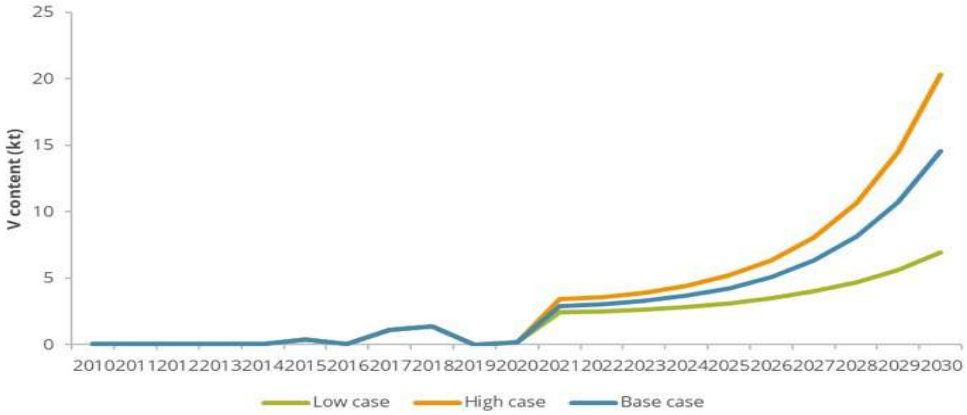
There may be more room for new entrants if some high polluting V processors permanently close. This may be due to these operations needing to pay for carbon offsets, or be judged unsustainable and receive no stay-in-business capital.



Source: Bushveld Minerals, Roskill Vanadium Outlook to 2029.

Our conclusion is that higher prices are needed to incentivise new supply of hi-purity vanadium.

Historical and outlook for vanadium demand from VRBs, 2010-2030 sourced from Roskill in '000 tonnes of Vanadium used



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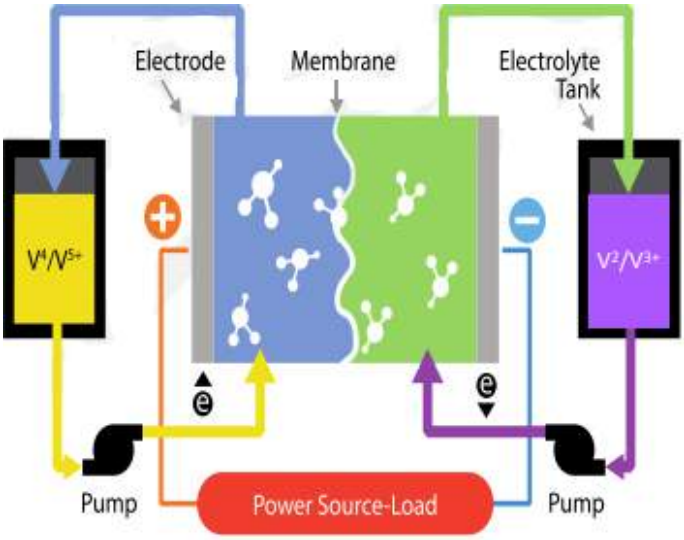
Vanadium Redox Flow Battery – technology and business opportunity

The current mega-trend for the electrification of most activities provides challenges in matching instantaneous demand with the timing of power generation. Electricity cannot be stored and only be transformed. For example, power can be stored as mechanical potential energy – like pumped water storage, or chemical potential energy such as within various types of batteries. We advocate there will be need for a variety of batteries suited to differing needs.

VRFB's Features – simple, safe & long life

The Vanadium Redox Flow Battery invented in the 1980's at University of NSW is one of the simpler forms of medium to large scale batteries. The flow battery, unlike conventional batteries, uses a liquid, vanadium electrolyte to store energy in separated storage tanks and not in the power cell of the battery. It exploits that uniquely vanadium in electrolyte form can exist in 4 different states V2 to V5.



During operation, these electrolytes are pumped through a stack of power cells, or membrane, where an electrochemical reaction takes place and electricity is stored or discharged.

The Vanadium electrolyte's durability enables long lifespan operation of 20-years and over 35,000 charge/discharge cycles without performance degradation. The vanadium is fully recyclable at the end of the battery's mechanical life. There is only one battery element and no risk of cross-contamination.

VRFB's present no thermal runaway risks (i.e., cannot catch fire). Lithium batteries that in some conditions result in intense vehicle fires and even in 20 MW battery facilities.

Importantly VRFB's have fast response times and uniquely they can discharge 100% of power stored without performance degradation. VRFB units are scalable for large storage. They have a ~70% full cycle efficiency which is lower than lithium-ion batteries 80-90% round-trip efficiency.

Around 145 grams of hi-purity V_2O_5 per litre of electrolyte is required.

Each megawatt hour (MWh) of power storage capacity in a VRFB uses ~10 tonnes of V_2O_5.

1 GWh of VRFB storage requires 10,000 t. V_2O_5 or nearly 5% of 2020 global V output of 115kt *(or 205k V_2O_5e)*

Est'd World demand for stationary storage batteries by 2027 is 65 GWh & 4,500 GWh by 2040 (Source: BNEF, EIA, IEA, WoodMackenzie)

VRFB's can advance grid independence & grid efficiency benefits

VRFB's are ideal for storing photo-voltaic solar generated power for use that night or later and for intermittent wind power.

- They can vastly reduce need for diesel generation in remote from power grid situations.
- There is development work to provide more compact VRFB's to match residential settings.
- VRFB's can be scaled-up to meet from micro-grid to larger grid-sized storage applications.

An Australian example is Hawker in South Australia A$20.3m Yadlamalka Sheep Station VRFB project to install a 2 MW / 8 MWh storage facility with 41 VRFB modules. The Australian Renewable Energy Agency (ARENA) grant of A$5.7m shows the interest in promoting this technology in Australia.

This battery will be linked to a solar array and provide:

- Stored power for owners from 6 MW solar array, and
- Provide local regulation services that help the local grid maintain frequency and sufficiency of energy 24 hrs/day.

TNG Limited – TNG **Price Target: $0.32/share**

Strategic Vanadium-battery growth with Titanium & Iron earnings resiliency

Recent announcements and development of large scale VRFB projects – *source Bushveld Minerals Sep 2021*

China is the largest market for VRFBs

China has 1.5-2GWh of VRFB projects underway at present in 6 Provinces. Recently Pangang, the largest vanadium producer and Bolong New Materials, the largest vanadium chemicals producer, signed a strategic cooperation agreement to develop and promote VRB technology.

Hebei and Liaoning Provinces:

- Fengning Renewable of 2MW/8MWh
- Wind Integration of 10MW/40MWh - Wafangdian Wind Farm
- Wind Integration of 10MW/40MWh for Tuoshan Wind Farm
- 200MW/800MWh for Peak Plant

Hubei & Jiangsu Provinces

- Phase 1 of 10MW/40MWh for PV Integration
- Phase 2 of 100MW/400MWh for Peak Plant
- Grid connected 100MW/400MWh VRFB in Yancheng

Qinghai and Xinjang Provinces

- Wind Integration of 2MW/10MWh
- Awati Renewable Integration of 7.5MW/22.5MWh

Rest of the World VRFB projects – the pace accelerates

- Largo Clean Energy acquired VRFB technology previously owned VionX Energy and announced its target production of 1,400MWh of VRFBs under rentals by 2022.
- Schmid & Nusaned Investments Joint venture established to build a VRFB facility an annual production capacity of 3 GWh.
- Sumitomo Electric 51MWh VRFB system awarded to Sumitomo for a wind farm in Hokkaido, **Japan**.
- Siemens Gamesa entered a "battery development deal with Invinity covering product development, sales and manufact.
- **Thai** renewable energy company BCPG announced a $24m investment into VRB Energy
- Large, multinational power companies are deploying VRFB technology, including ENEL in Majorca, **Spain** and EDF in Oxford, **UK**.
- AMG announced its venture into batteries with acquisition of an integration company and building its own lithium-vanadium hybrid system for industrial power management applications.

Energy Storage – key for renewable energy penetration

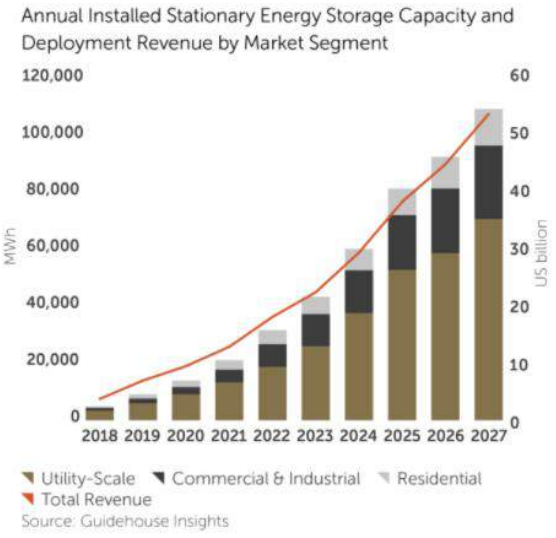
Electricity's share of global energy consumption has doubled from 10% in 1980 to ~20% today. It is expected to exceed 40% by 2050. At the same time, renewable energy is displacing fossil fuels in energy generation.

The solution to renewable energy intermittency is the storage during periods of high generation for later periods of demand..

Bloomberg New Energy Finance, global stationary energy **storage installations** will grow **122-fold from 2018 to 2040, rising from 17 GWh to 2,850 GWh by 2040.**

Guidehouse Insights, believe the market will **reach US$50 billion in annual value by 2027** – *see chart on right.*

A variety of power storage technologies suited for different application will be required. VRFB's are suited to grid applications run by large utilities. This is the largest segment growth sources. We see VRFB's as capturing a portion of the station sufficient to need to virtually double the need for hi-purity Vanadium over the next 7 to 10 years.



TNG's Business Opportunities – Licencing and VRFB's

While TNG's focus is on final assessment for decision to proceed to develop the Mount Peake integrated project, it is seeking to leverage its technology and operations in two ways:

Firstly, Licensing

TNG would look to licence its process technology internationally. This becomes an option upon a successful commissioning the TIVAN® process that demonstrates superior recoveries, product and economic returns. We believe SMS Group's collaboration in this venture will provide tangible benefits to shareholders and environmental benefits of more efficient process that recovers more metal with a lower ecological footprint.

Secondly, VRFB's

TNG announced in Nov'2020 the establishment of Vanadium Redox Flow Battery ("VRFB") business unit as part of the vertical integration strategy for its flagship Mount Peake Vanadium-Titanium-Iron Project. This activity will be placed within a 100% owned subsidiary – TNG Energy Pty Ltd.

In TNG's pilot scale test work, it has produced the essential ingredient for VRFB's, a high purity vanadium electrolyte. The electrolyte forms a substantial proportion of the final cost of an VRFB – from 25 to 50% depending upon the variable price of hi-purity vanadium. As discussed above in the Vanadium commodity review and VRFB technology sections, vertically integrating V-producers with VRFB supply and distribution makes logical and economic sense. TNG are following this path to be a prime mover in supplying Australia with this battery system. We understand that discussions are advanced on securing a manufacturer of the mechanical parts of the battery system.

First targets markets within Australia markets for VRFB's are likely to be remote communities, mining and industrial based micro-grids who are likely to benefit with displacement of diesel generation or reduction in peak power pricing payable for industrial processes.

Activity and revenue streams from this business could include:

- **Leasing** electrolyte **or Sale of electrolyte** for its own VRFB's or 3rd-party battery marketers
- Assembly and installation and servicing VRFB's
- Participating in energy projects that include battery storage.

TNG has not provided guidance on the scale of the investment or the market share and value ambition at this time.

Looking overseas to see how similar companies are scaling VRFB opportunities.

In South Africa, Bushveld Minerals' subsidiary Bushveld Energy has committed US$20m and has a pipeline of up to 250MWh projects they intend to roll out VRFB integrated power projects. This is in ventures with VRFB manufacturer Enerox, and VRFB maker, installer and electrolyte rentals manager InVinity Energy Systems. South Africa's main power generator Eskom has started a massive 1,400 MWh energy storage system which includes pump hydro and increasingly batteries. It has issued a tender for an 80 MW / 320 MWh storage system.

What could the VRFB business be worth to TNG?

We believe that TNG will be in a strong position to attract venture partners to help securing of VRFB sales. TNG can then ***optimise the best way of extracting added value of its V2O5 product***. That may be via electrolyte sales and VRBFs, leasing electrolyte or in participation in energy ventures. *We have not considered subsidies in our estimates.*

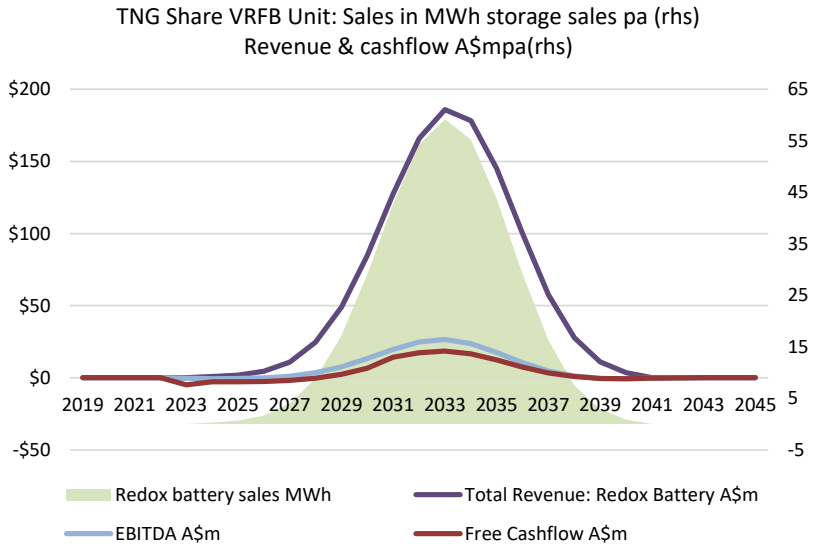
To obtain a sense of the business opportunity, we kept the TNG's Energy unit as a niche supplier of VRBFs to highest-value users - remote communities, micro-grids and medium sized business operations. We assume total sales of 550 MWh of VRFB storage. This is over a 15-year period with a slow ramp-up to peak in 2033 at 87 MWh and declining thereafter to reflect market saturation or product competition.

We note that the total installed Solar capacity of Australia in 2020 was ~20,100 MW and in 2020-year 3,900 MW of solar PV was installed.

We assume TNG secure a tiny fraction of the past and ongoing installation of solar generation.

We stress that the parameters used are highly uncertain and advise caution in interpreting the results. Free cashflows of up to A$25m pa on peak revenues of $270m may be possible. The NPV could be of the order of A$26m which we discount by 50% to reflect the many uncertainties.

We see our risked valuation of $13m as consistent with an option value of a non-exclusive franchise for a new product essential for Australia's Energy Transition.



Source: CorporateConnect research and estimates; Also, Clean Energy Council and Australian PV Industry

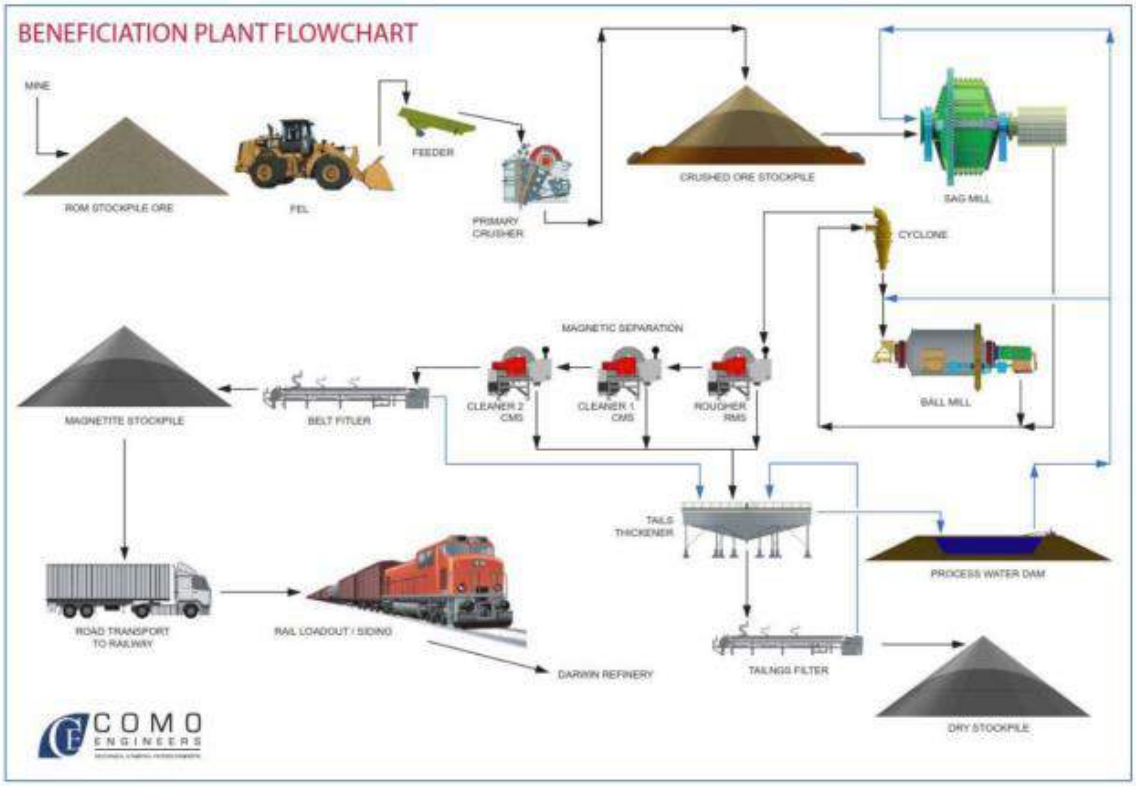
Appendix 1 – Beneficiation Plant, TIVAN® Process & EIS work modules

Simple mine and beneficiation materials flow using conventional technologies.

Energy use is mainly in grinding, magnetic separation and materials pumping.

Solar and V2O5 battery can supplement power generated from gas or diesel.

Source: TNG Ltd Announcement 9th April 2021

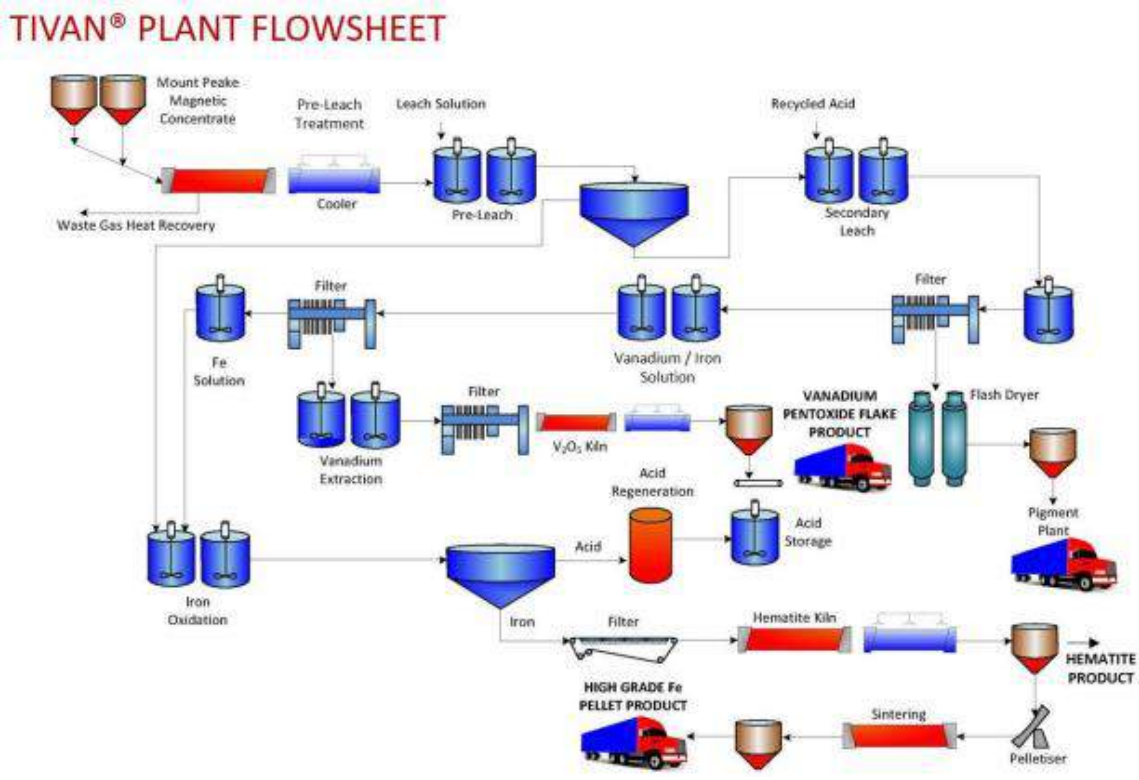


Patented TIVAN® process is a series of pyro- and hydro-metallurgical steps to progressively recover three saleable products and produce minimal waste fraction.

Being a chemical process, it delivers high purity V2O5 (99%) and iron oxides (to 64.4% Fe)

TiO2 at 75% grade is a synthetic rutile and an input to the adjoining pigment plant.

Source: TNG Ltd Announcements



The recent directions from the NT's EPA as requiring TNG to be more acutely able to measure its community impacts of its chemical's plant.

***We see this as encouragement to design and engineer both resilience and greater sustainability** fit for 21st Century requirements.*

It cheaper to design and build these features now, than later retrofitting solutions.

Supplemental work streams for Darwin site's EIS – TNG's 9th August 2021 Update

The work streams outlined below originally related to the Darwin sited processing facility. With the Strategic Change for this facility to be located at the Mount Peake Mine site announced on 30th Sept 2021, these work streams will be adapted for the localised situation.

"Following recent updates on the Darwin EIS, TNG and its environmental consultants, Animal Plant Mineral ("APM"), *have progressed engagements with technical consultants for the delivery of the required additional/updated technical reports*."

"As part of the "Direction to Provide Additional Information" ("Direction") on the Supplement to the Draft EIS, *TNG has been requested to demonstrate that reasonable alternative locations have been properly considered* and evaluated using the site selection criteria."

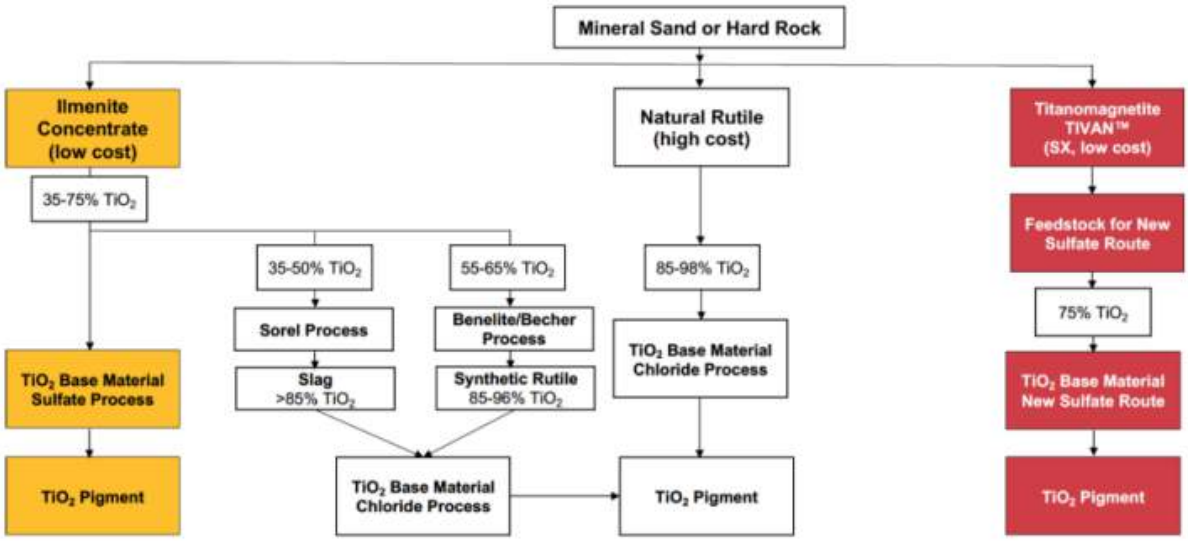
As required in the Direction under "Item 1.1 - Site Selection and Justification Process", the alternative site assessment ("Assessment") must consider environmental and social impacts, including:

- traffic from the transport of materials, including wastes;
- increased demands on local infrastructure;
- increased impact, including cumulative impact, on air quality; stress on water resources;
- impacts on the receiving environment;
- impacts from unplanned pollution events;
- greenhouse gas emissions; and
- community impacts including noise, visual, social and economic impacts.

TNG's management prioritised the Assessment and the TER's Project Engineering Teams *have concluded that on a detailed risk/benefit assessment, locating the TIVAN® Processing Facility at the Mount Peake mine site was a superior option.*

The Company had previously considered several potential alternative sites in the Northern Territory, South Australia and Malaysia.

Appendix 2 – Comparing TIVAN® to Other Pigment Making Processes



Traditional pigment feedstock sources are depicted on left and centre of the above chart. Variable Titanium Dioxide (TiO2) grades of Ilmenite are either processed via the Sulphate process route – is moderate cost to produce moderate quality pigments; or with expensive slagging or beneficiation processes to improve quality. Natural Rutile provides lower conversion cost with good quality, though is unable to supply all global needs.

On the right is TNG's TIVAN® process, that due its high-TiO2 grade and consistent feedstock with low-iron via an adapted Sulphate process it can produce high quality TiO2 pigment highly competitive against current producers.

Appendix 3 – Mount Peake Parameters for NPV Valuation;

Mount Peake Mine and TIVAN® Operation		Base Case & Mine-sited TIVAN®			
Assume farmout		**Life Of Mine**	**2025**	**2026**	**2027**
TNG Equity	%	75%	75%	75%	75%
Startup - Mining	Qtr	*SepQ'24*			
Fully Commissioned - TIVAN	Qtr	*JunQ'26*			
YearsTreating Concentrate	Years	36.8			
Ore Processed	'000t.	52,626	413	1,327	1,365
Concentrate Proces'd	'000t.	17,970	35	373	473
V_2O_5 - sold	'000t.	174.288	0.233	3.478	5.087
TiO_2 Pigment - sold	'000t.	2,646.1	3.6	51.7	75.4
Fe_2O_3 Fines - sold	'000t.	13,417.8	16.0	249.6	366.2
AUD/USD Exchange Rate	US$	$0.765	$0.765	$0.765	$0.765
V2O5 Average Rec'd fob	US$/lb	$12.71	$9.46	$9.56	$9.71
Pigment Price cif	US$/t	$4,442	$3,301	$3,340	$3,390
Iron Ore 64.4% Fe Price fob	US$/t	$109.40	$81.31	$82.27	$83.48
Revenue: Total Mine & TIVAN	A$m	23,668	23	348	516
Av. Price Rec'd/ tonne concentr	A$/t Con treated	$1,317.1	$670.3	$935.0	$1,093.1
Revenue: Total V2O5	*%*	*27.0%*	*27.0%*	*27.5%*	*27.5%*
Revenue: Total TiO2 Pigment	*%*	*64.9%*	*65.7%*	*64.8%*	*64.7%*
Revenue: Total Fe2O3	*%*	*8.1%*	*7.2%*	*7.7%*	*7.7%*
Operating Cost	A$/t conc. treated	-$962.02	-$1,494.75	-$718.23	-$711.91
EBITDA Margin	A$/t conc. treated	$355.04	-$824.41	$216.78	$381.18
Net Profit Before Tax Margin	A$/t conc. treated	$348.53	-$1,445.99	$157.56	$340.52
Total Cost	A$m.	-17,287	-52	-268	-336
EBITDA	A$m.	6,380	-29	81	180
EBTIDA Margin	*%*	*27%*	*-123%*	*23%*	*35%*
Depreciation - BV	A$m.	-791	-7	-42	-55
Interest Payable	A$m.	-117	-22	-22	-19
Net Profit Before Tax	A$m.	6,263	-51	59	161
Co. Tax	A$m.	-1,629	0	0	0
Tax Rate	%	*26.0%*	*0.0%*	*0.0%*	*0.0%*
Net Profit After Tax	A$m.	4,634	-51	59	161
NPAT Margin	*%*	*20%*	*-216%*	*17%*	*31%*
Pre-Tax Cashflow	A$m	6,263	-51	59	161
Cashflow After Tax	A$m	4,634	-51	59	161
Total Capex & Exploration	A$m	-666	-166	-7	0
Stay-in-business capex	A$m	-152	0	-3	-4
Debt Drawdown	A$m	398	108	6	3
Cost of debt	*%pa*	*5.94%*	*5.94%*	*5.94%*	*5.94%*
Ratio of Debt draw to Project capex (Gearing)		*59.79%*			
After-Tax Geared Cashflow	A$m	680	1,085	1,205	1,215
	Disc Rate %pa	*8.5%*	*8.5%*	*8.5%*	*8.5%*
Includes Farmout value	*IRR*	*48.6%*			

Source2: TNG announcement and financial reports, CorporateConnect estimates, RBA, FactSet

TNG Limited – TNG **Price Target: $0.32/share**

Strategic Vanadium-battery growth with Titanium & Iron earnings resiliency

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