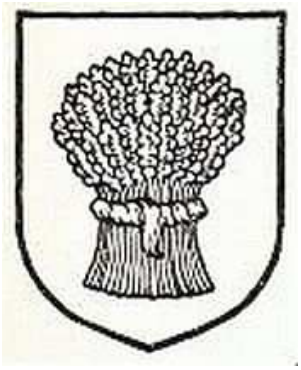
Sunday, September 13, 2015



HALLGARTEN & COMPANY

Coverage Update

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Neometals (ASX: NMT)
Strategy: LONG

Key Metrics			
Price (AUD)	$ 0.14		
12-Month Target Price (AUD)	$ 0.42		
Upside to Target	200%		
12mth hi-low	$0.025-$0.16		
Market Cap (AUD mn)	$ 71.26		
Shares Outstanding (mns)	509.0		
Fully diluted*	563.0		
	FY14	**FY15e**	**FY16e**
Consensus EPS		n.a	n.a
Hallgarten EPS		($0.010)	($0.008)
Actual EPS	$0.028		

Neometals

Titanium Giant Emerges from PFS

- + Latest PFS upgrades the size of the Barrambie Ti-V-Fe project from "merely" normal to a potential giant in the Titanium space, with the second largest known hard rock Ti deposit in the world
- + Important Vanadium by-product flow, with a less remunerative but substantial Iron oxide pigment sideline
- + Barrambie has the potential to have lowest quartile operating costs per tonne pure TiO_2 after by-product credits
- + Testwork results, at the company's mini-pilot plant in Canada, on material from Barrambie justifies the process flowsheet assumptions
- + The weakening of the USD against the AUD has strengthened the hand of Neometals in competitiveness terms
- + The recent Mt Marion deal with Ganfeng will leave Neometals very well cashed up when transaction closes
- + A rising market cap on the good lithium news will be the main enabler of moving Barrambie forward
- ✘ Vanadium prices remain mired in weakness
- ✘ Financing the Barrambie project's estimated $549mn capex will require securing an offtaker or trader as a strategic partner

Into the Major Leagues

Neometals is nothing if not flexible as it attunes itself to the shifting trends in the mining space. While it has had interests in Lithium, Gold, Iron Ore, Nickel, Titanium and Vanadium in the time we have been acquainted with the story, the focus is now narrowed down to its two main projects (and a project generation role in nickel, now that this metal is fashionable again). With the Mount Marion Lithium project having found its legs (and a very significant strategic investor), Neometals priority has switched to Titanium.

The Barrambie project is the subject of this update. While it started out as a Vanadium project, it is now being styled as a Titanium project with Vanadium (and Iron) as the by-products. Barrambie was pushed out of the limelight during the period in which gold was the main focus. Nevertheless it continued to move forward slowly despite, since 2008, being harder to access funding for a project of this nature.

The market's mood swings on these two metals in recent years made it difficult to decide which one should be developed first. However from being level pegging in the past, the Titanium component has come out in the latest PFS as the largest component by value by far. The decision is also made easier at the current time as Vanadium's linkage to the steel industry has made its price performance less than scintillating in recent times.

The Barrambie Project

This project is located is located 80 kms north of Sandstone in Western Australia and is 100% owned by Neometals. The deposit was discovered by Hector Ward in the 1960s and was acquired by Neometals (then Reed Resources) in April 2003 from Precious Metals Australia Ltd and Magnum Properties Pty Ltd. As noted it started out as a Vanadium project, it is now being styled as a Titanium project with Vanadium (and Iron) as the by-products.

The PFS

Neometals engaged the services of Michael Spratt, an experienced process/construction engineer and former COO of Minproc, to head the owner's team managing the production of the latest study.

The Prefeasibility Study for Barrambie was published in the first week of September. The economic assessment component was carried out by Snowden, and based on Capital and Operating costs developed by Sedgman Limited. The PFS signaled clearly that Barrambie had the potential to be a viable hard-rock titanium mining and processing operation.

The mining operation is envisaged as being rather compact as the ore is contained within 14 pits that strike north- south along the ore body and have a maximum depth of 70 vertical metres. The LOM strip ratio is expected to be 2.9:1. Mining costs are estimated at AUD$25.60 per tonne of ore with an extra AUD$6.65 per tonne as ore movement cost.

The PFS presumed the construction of a mineral processing facility to treat run-of-mine ore from the Barrambie Project. It is expected that run-of mine ore will be crushed, screened and concentrated at the minesite and the concentrate trucked to a processing facility near Kwinana (the state's major port/industrial complex), where high purity titanium, vanadium and iron compounds will be produced. The previous Scoping Study has posited the material being moved to the State's other major commodity port, Geraldton, which is quite significantly closer to the minesite.

The development scenario envisaged for the PFS can best be summarized as:

- A Mine Wet Plant (MWP) at Barrambie treating 550,000 tpa of mined ore and producing 308,880 tonnes of magnetic concentrate per annum
- The concentrate will be transported by road to Kwinana (834 km) in side tipping road trains
- A Chemical Processing Plant (CPP) at Kwinana will treat around 308,880 tpa of concentrate, using iron leach, titanium leach, titanium hydrolysis, iron oxide precipitation, vanadium precipitation and acid regeneration operations (that have been piloted for the PFS).

The proposed process for the CPP is based on the description provided in an Aspen simulation report carried out by Arithmetek Inc. in 2012. The process comprises the following steps:

- Primary leach of ROM feed in recycled hydrochloric acid to selectively dissolve up to 99% of the vanadium and <1% of the titanium. Most of the iron is dissolved in this step
- Recovery of pure vanadium pentoxide (>99.9% pure) via solvent extraction, precipitation of ammonium metavanadate and calcining
- Secondary leach to dissolve >90% of the titanium. All the remaining iron dissolves in this stage.
- Precipitation of >99% pure titanium dioxide
- Hydrolysis of the combined titanium and iron barren solutions for the precipitation of a pure hematite product (>99% pure) and recovery of the hydrochloric acid for recycle

The average cost per tonne for processing was estimated at AUD$336.78.

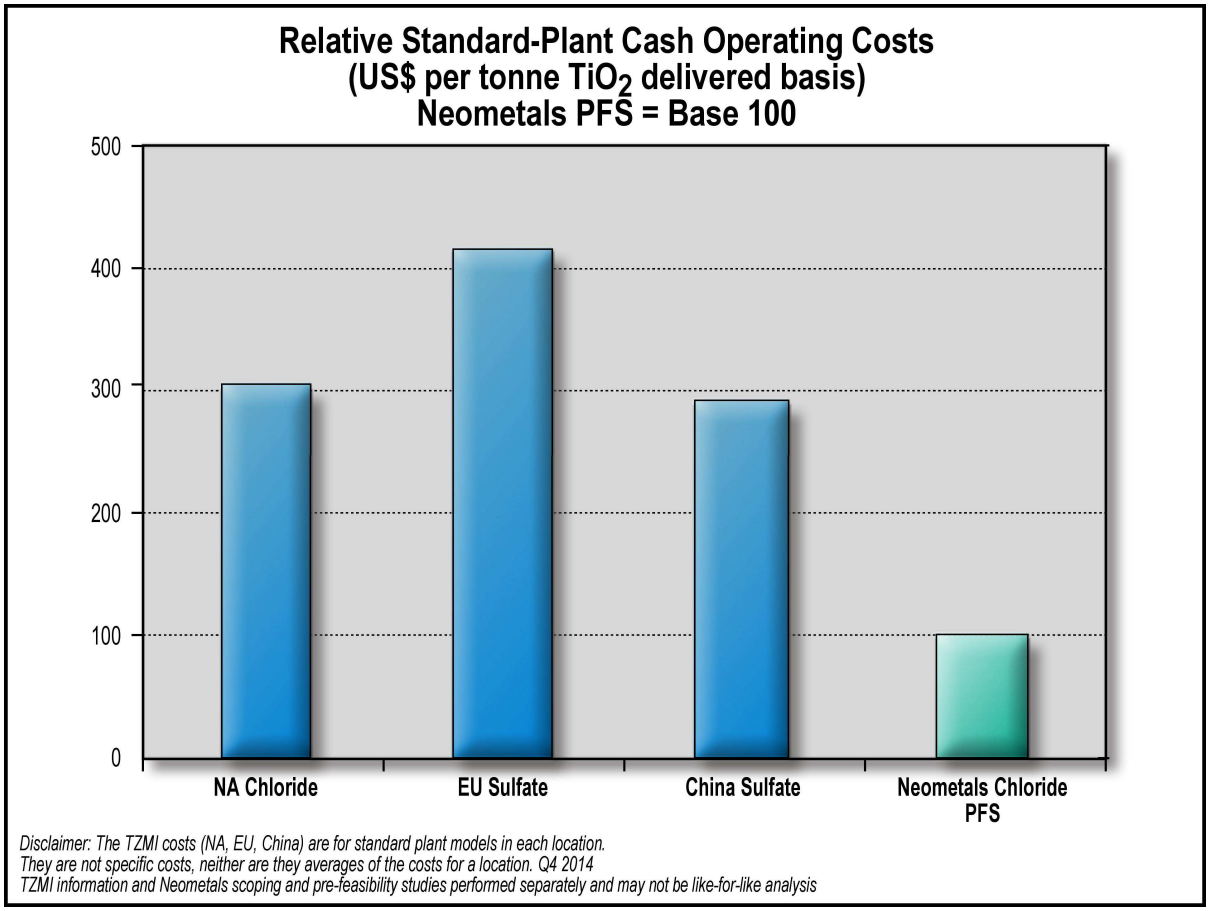
In these days of wildly fluctuating prices the price assumptions used in studies can quickly become outdated. This is to some degree unavoidable however using heavily discounted prices certainly reduces that risk. The economic model of the Barrambie PFS assumed conservative, real long-term prices of US$1,838/t for titanium dioxide, US$14,873 /t for vanadium pentoxide, US$520/t for synthetic iron oxide pigment. It should be noted that the prices used were lower than the reigning market rates and, particularly in the case of the synthetic iron oxide pigment price, the assumed price was discounted by 30% to the long term price (out to 2025). The output of Barrambie in this mineral will constitute 20% of current global production, hence a significant new addition to global supply.

The table below from the PFS shows the Operating Cost per tonne of TiO_2 produced in AUD, ignoring any co-product credits.

OPEX IN AUD

	TiO2 $ per tonne
Contract mining, crushing & screening	123.36
MWP (at Barrambie)	426.32
CPP (at Kwinana)	1,749.46
Total	2,299.14

The chart below shows the relative operating costs for Standard Plant models in North America, Europe and China using Chloride or Sulfate Process flowsheets compared to Neometals's PFS projections of costs. This shows a dramatic cost advantage for Neometals' project, even *vis a vis* China.



Source: TZMI

While it's no surprise that the project beats North American and European producers, the advantage over China is also of an order of magnitude that should draw a potential Chinese strategic investor. As Mount Marion shows, the Neometals' management team is respected by the Chinese and knows how to cut mutually advantageous deals with Chinese partners.

The Economics

Firstly it is useful to note that the model also used an AUD exchange rate of US$0.75 (currently around 70 cts to the USD). The AUD has been in a serious swoon over the last 12 months, much of which has been prompted by weak metals prices, particularly iron ore. Obviously the current rate, or even the rate used by the consultants, is highly favorable to a project such as this. We must remain cognizant though that the AUD has been a wild ride over the last decade and could be back at 85-90 cts with an improvement of sentiments on the metals sector.

As can be seen in the table that follows summarizing the key metrics of the project the minelife is very significant at nearly 20 years and with payback after four years, the period for which the project will be free-carrying is significant. The difference between the opex cash costs cited before and this table is that the previously cited ones did not include co-product credits.

PFS - Key Metrics

Average Annual Production (in tonnes)		
	TiO2	98,000
	V2O5	2,000
	Fe2O3	234,000
Life of Mine		19.6 years
LOM Revenues		AU$ 8.75 bn
Pre-tax NPV (at 12%)		AU$ 355 mn
Pre-tax IRR		21%
Cash Opex TiO2 per t.		US$572
Pre-production capex		AU$ 549 mn
Payback of capex		3.9 years

Focus will be given in the forthcoming more advanced study to the issue of transport as this is obviously a significant cost. Total transport cost per tonne of ore is estimated in the PFS at AUD$64.44, while the total transport cost per tonne of product is AUD$114.72.

Contrasts with the 2013 Scoping Study

There are substantial differences between the latest PFS and the Scoping Study prepared by the Snowden in October 2013. That study, based on the same process, indicated the potential for a viable hard-rock titanium and vanadium mining and processing operation. Average net operating costs per tonne of titanium dioxide recovered were estimated at AUD$1,214 per tonne with an indicative accuracy of ±35%, the long term price assumption used in the study was US$3,000 per tonne.

Key metrics for that proposed Titanium operation were:

- Annual Production 13,000 tonnes of TiO_2 & 300 tonnes of V_2O_5, no synthetic iron oxide credit
- Life of Mine of 27 years
- Life of Mine Revenue of AUD$ 1,143 million
- Pre-tax Cashflow AUD$ 516 million
- Pre-tax NPV (at a 12% discount rate) AUD$ 87 million
- Pre-tax Internal Rate of Return 24%
- Average Net Operating Cost of recovered TiO_2 at AUD$ 1,214 per tonne
- Total initial capital costs of AUD$ 109 million
- Payback of capital costs within four years

As can be noted, production capacity and projected outcome have changed drastically over a relatively short time and has taken Barrambie from a rather small scale TiO_2 producer, with some desultory Vanadium credits into a major leagues producer. This quantum leap does not seem to have been

grasped by the markets and investors.

The five-fold increase in the capex is an inevitable corollary of this surge in the project's parameters. However, the capital efficiency as measured in $ capex per tonne of production capacity has improved significantly and is roughly 66% of that in the Scoping Study. Cash opex has been reduced at the same time and project NPV increased fourfold.

Barrambie's Backstory

This project is by no means new having been spawned in the late 1960s when everyone, literally, was pawing over territory in Western Australia looking for nickel in the boom for that metal at that time. Drilling at Barrambie began in 1968 and continued to the most recent campaigns in 2008.

Companies having undertaken drilling campaigns on this target are Greenstone Investments Pty Ltd (GSI), Ferrovandium Corporation NL (FVC), Great Australian Resources Ltd (GAR), Trans Global Resources (TGR), Precious Metals Australia (PMA) and finally Neometals.

Drilling work has included rotary air blast (RAB), open hole percussion (OHP), reverse circulation (RC) and diamond drilling (DDH). Some of the campaigns were exploration for gold and therefore had no vanadium, titanium, iron or minor element assays.

In 2007, Neometals completed three diamond drill programs, three RC drilling campaigns and a campaign of bulk sampling using a Caldwell bucket drill rig. In 2008, a RC and a diamond drilling campaign were completed.

In addition, in December 2009, Neometals concluded the acquisition of two exploration licenses (E57/769, E57/770) that contain magnetite bearing formations along strike and to the west of the Barrambie deposit. The total consideration for these was AU$2 million dollars and 600,000 ordinary shares.

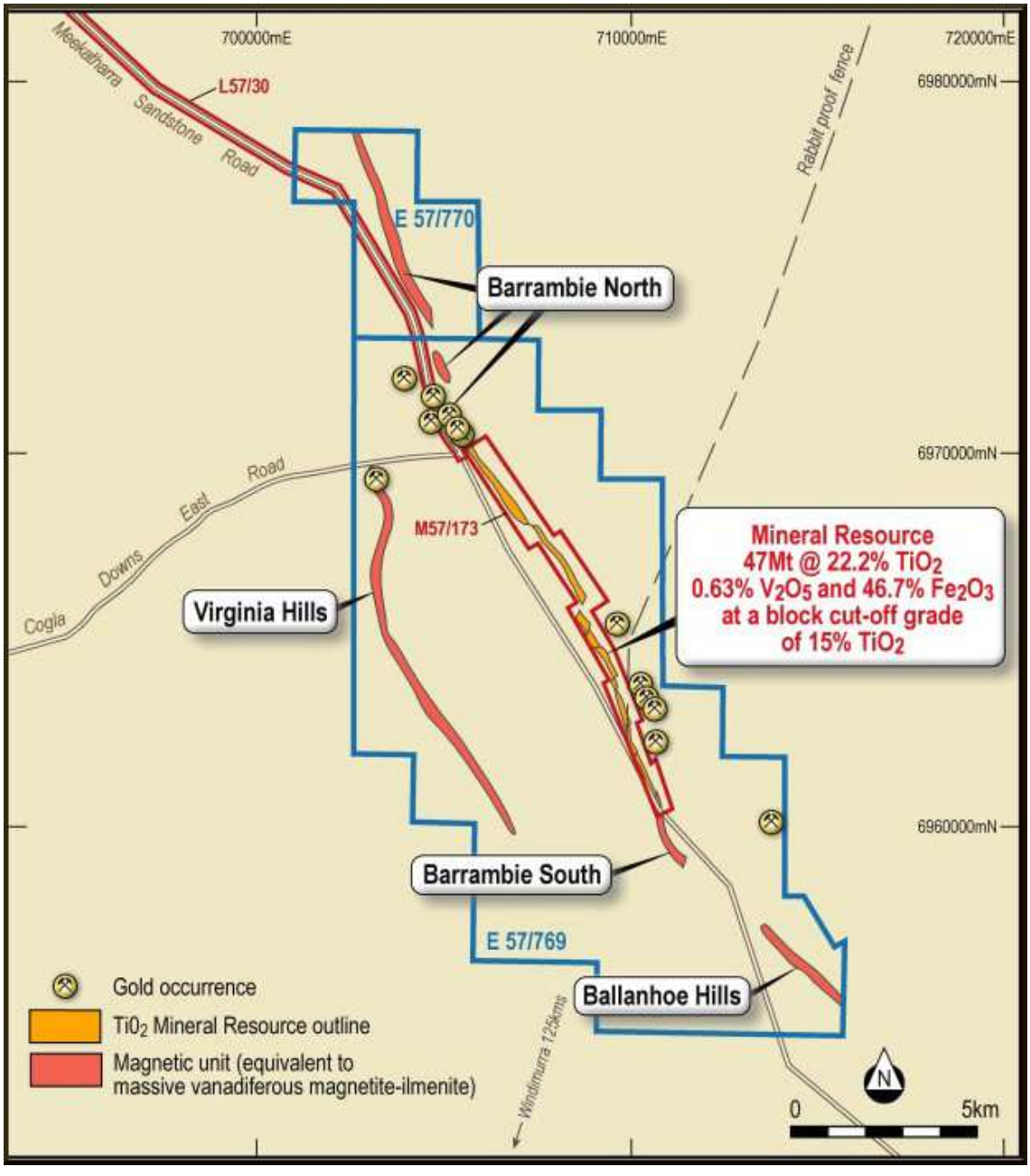
Barrambie Geology

The ferrovanadium titanium (Ti-V-Fe) deposit occurs within the Archaean Barrambie Greenstone Belt, which is a narrow, NNW-SSE trending greenstone belt in the northern Yilgarn Craton. The linear greenstone belt is about 60 km long and attains a maximum width of about 4 km. It is flanked by banded gneiss and granitoids.

The mineralisation is hosted within a large layered, mafic intrusive complex (the Barrambie Igneous Complex), which has intruded into and is conformable with the general trend of the enclosing Greenstone Belt. From aeromagnetic data and regional geological mapping, it appears that this layered sill complex extends over a distance of at least 25 km into tenements to the north and south of M57/173 that have been acquired by Neometals. The layered sill varies in width from 500 m to 1700 m.

The sill is comprised of magnetite-bearing gabbros that intrude a sequence of metasediments, banded iron formation, metabasalts and metamorphosed felsic volcanics of the Barrambie Greenstone Belt. The metasediment unit forms the hanging-wall to the layered sill complex.

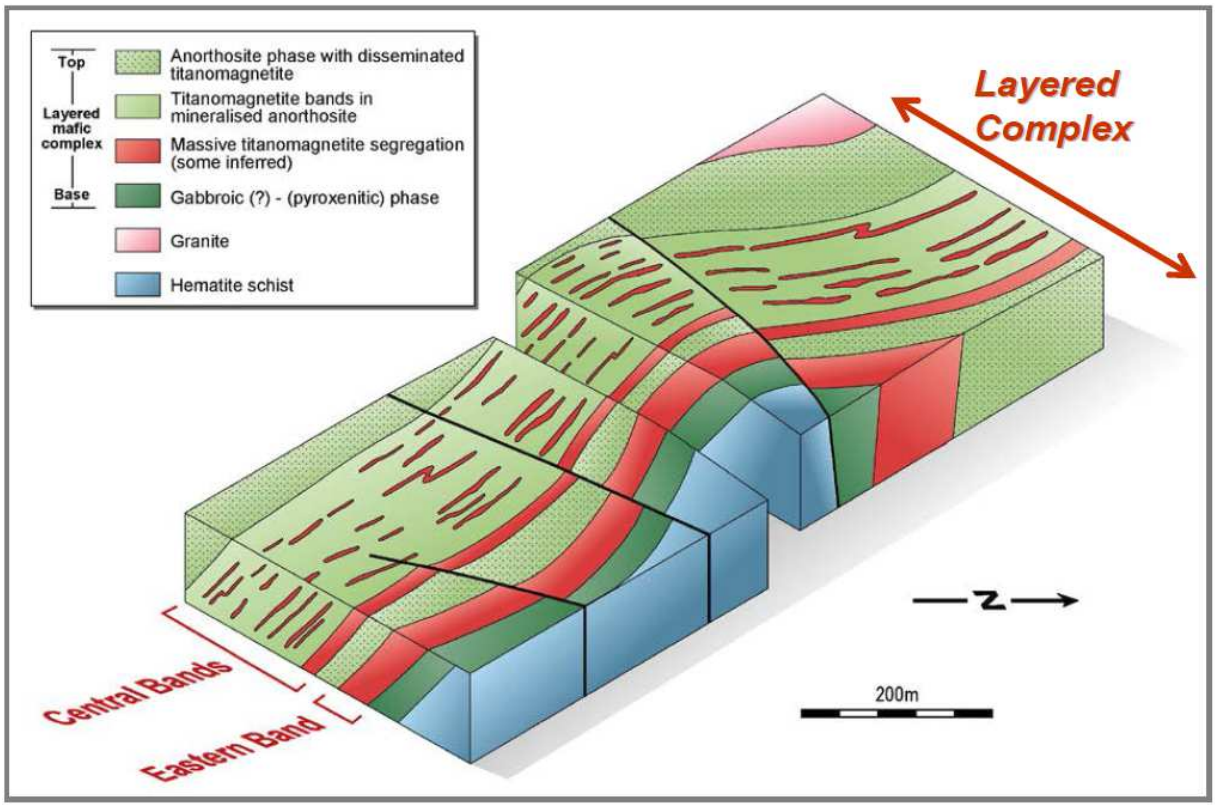
Exposure is poor due to deep weathering, masking by laterite, widespread cover of transported (wind-blown and water-borne) sandy and silty clay, laterite scree and colluvium. Where remnant laterite profiles occur on low hills, there is ferricrete capping over a strongly weathered material that extends down to depths of 70 m.



The Ti-V-Fe mineralisation occurs as bands of cumulate aggregations of vanadiferous magnetite (martite)-ilmenite (leucoxene) in massive and disseminated layers and lenses.

Within the tenement the layered deposit has been divided into five sections established at major fault offsets. Cross faults have displacements that range from a few metres to 400 m. The water table occurs at about 35 m below the surface (when measured where the laterite profile has been stripped).

Below can be seen a schematic cross-section showing the bands at the Barrambie deposit.



As can be seen the mineralised envelopes are disrupted by 27 interpreted faults along the 10.5 km strike length of the resource, spaced at intervals of approximately 200 m to 300 m. The Eastern zone (which hosts the higher-grade TiO_2 mineralisation) is considered by Neometals' geologists to be continuous along strike, while the Central zone is thought to be discontinuous with lodes that can be traced 100 m to 150 m along strike. Central zone high-grade Vanadium lodes are observed in outcrop to merge and splay.

According to Neometals, Barrambie's Eastern Band is the world's second-highest grade Titanium deposit after RTZ's Lac Tio deposit in Quebec. Barrambie's Fe/Ti ratio is 2:1 whilst that of Argex is 4:1, TNG (TNG.ax) is 5:1 and Speewah is 6:1. Iron is essentially the costliest element to remove while Titanium is 75% of revenue and Vanadium is 25%. Fortuitously in Neometals acid regeneration system, the iron is recovered as a high-purity iron oxide product rather than needing to be smelted or neutralized.

In 2009 a Definitive Feasibility Study for a Vanadium Project was prepared by Sinclair Knight Mertz.

Neometals has a DFS on both the high-grade Vanadium Central Band and a Scoping Study on the high-grade Titanium Eastern Band. The Barrambie Titanium Project contains total **Indicated and Inferred Mineral Resources** of **47.2Mt** at **22.2% TiO_2**, **0.63% V_2O_5**, and 46.7% Fe_2O_3, at a cut-off grade of 15% TiO_2, making it the world's second-highest grade hard-rock titanium deposit known.

Barrambie

JORC- compliant Resource (December 2013)

15% TiO2 Cut-off

Category	Tonnage (Mt)	TiO2 (%)	V2O5 (%)	Fe2O3 (%)	Al2O3 (%)	SiO2 (%)
Indicated	34.70	22.25	0.64	46.77	9.48	14.95
Inferred	12.50	21.99	0.58	46.51	9.32	15.40
Total	47.20	22.18	0.63	46.70	9.44	15.07

As mentioned earlier the mining operation is envisaged as being rather compact as the ore is contained within 14 pits that strike north- south along the ore body and have a maximum depth of 70 vertical metres. The LOM strip ratio is expected to be 2.9:1.

As part of the PFS in 2015, Snowden calculated the JORC compliant Ore Reserve as:

Barrambie Ore Reserve

	Tonnage mn tonnes	TiO2	V2O5	Fe2O3
Probable	10.762	25.18%	0.60%	42.50%

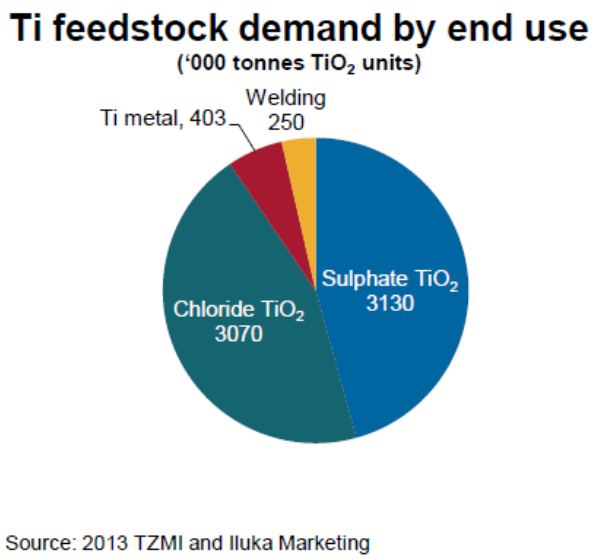
Titanium

Australia has long held a prime position in production of minerals (ilmenite and rutile) for Titanium production due to the prolific mineral sands deposits of Western Australia. The US used to be a major producer but this has spiraled down in recent decades for the same reasons as the rest of the US mining industry has retreated from relevance. This is despite the US being the biggest consumer of TiO_2 and the most significant intermediate processor.

Few materials possess titanium metal's strength-to-weight ratio and corrosion resistance. In high-strength applications, titanium competes with aluminum, composites, steel, and superalloys. Aluminum, nickel, specialty steels, and zirconium alloys may be substituted for titanium for applications that require corrosion resistance. Ground calcium carbonate, precipitated calcium carbonate, kaolin, and talc compete with titanium dioxide as a white pigment, though they are clearly inferior as inputs.

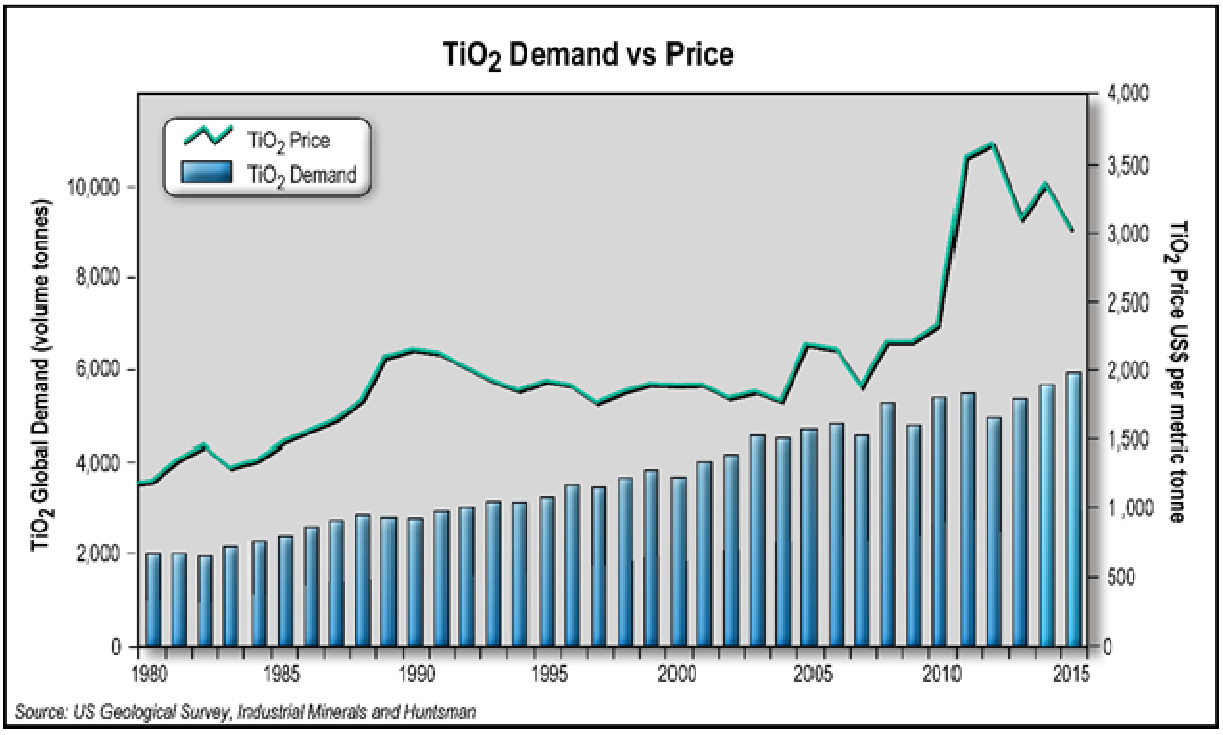
The majority of titanium feedstocks (US$17 Billion or 85% by value) are used to produce titanium dioxide pigment which is then used as an additive in paints, plastics, paper and ink with the balance (15%) used to produce titanium metal products.

Annual demand growth for TiO_2 is tightly correlated with global GDP averaging ~3.2%. As some 80% of the TiO2 produced goes to pigment applications and the largest component of that is paint, there is a high correlation with housing, which naturally correlates back to GDP. However as recent decades have shown it is possible to have growth without residential construction being particularly booming. Recent years have seen relatively torpid housebuilding in the West combined with lower paint sales for existing structures.



Source: 2013 TZMI and Iluka Marketing

Global titanium metal demand (as opposed to that in pigments) is strong with estimated growth of 5.2% CAGR 2013-2018. This is mainly driven by the aircraft sector. There is currently commercial aircraft backlog of 12,924 units over next eight years. This is the largest ever backlog. New models of aircraft (787, A380) contain three times the titanium content compared to older generation planes.



Price

The current median price for high quality titanium dioxide pigment is US$2,900 per tonne on a CIF basis to USA (source: Industrial Minerals 16 July 2015). As the preceding chart shows Titanium has shown a much closer correlation to demand growth in recent decades than have many other metals where the demand rises and the price falls. It may not be a coincidence that much of the rutile and ilmenite was produced by disciplined producers (including some end-users like Dupont).

The early part of the current decade showed TiO2 prices pulling away smartly from the long term trend though this has now started to go off the boil. It is worth repeating that the PFS used a long-term price of US$1,838/t for titanium dioxide which represents a significant discount to the recent prices as can be noted from the price graph above.

One should expect the price to return to a trend similar to that of the long term with prices exceeding US$2,000 in the next few years and rising from there. A price level of over $3,000 per tonne is easily foreseeable in the early part of the next decade.

Supply

The US is in descent as a producer of titanium concentrates. Dupont has formerly been the main miner with its facilities at Starke in Florida. The big trend in the metal is that rutile, which is the easiest source of Titanium to mine, has been in decline in recent decades due to the highest-grade deposits of this mineral sand having been identified and exploited. This means that most Titanium in the future will come from Ilmenite sources.

Globally, three heavy-mineral concentrate prospects began production in 2014. In South Africa, the Tormin project began production of zircon and rutile concentrates in January and was expected to produce 48,000 tons per year of nonmagnetic concentrate grading 81% zircon and 11.6% rutile over a rather short four-year mine life.

In Kenya, production of titanium mineral concentrates at the Kwale project of Base Resources (BSE.ax) began in February of 2014. Production of ilmenite and rutile was expected to be 360,000 tons per year and 80,000 tons per year, respectively, during a mine life of 13 years. In Senegal, production began at the Grande Côte (owned 50% by Eramet and 50% by Mineral Deposits Ltd – MDL.ax) in March 2014 with the first shipment of ilmenite made in August. At full production capacity the Grand Côte project was expected to produce about 575,000 tons per year of ilmenite during a mine life of more than 20 years. Heavy-mineral exploration and mining projects were also underway in Australia, Brazil, Madagascar, Mozambique, Tanzania, and Sri Lanka.

As for the processors (ergo the midstream) the top six TiO_2 producers, with 57% of global capacity, with a mix of both sulphate and chloride processes are Chemours (formerly DuPont), Huntsman, Cristal, Kronos, Tronox, Henan Billions/Sichuan Lomon.

Titanium supply is going the same way as aluminium. Despite having the best deposits processors are shutting down capacity in the West as China builds up theirs, predominantly due to lower operating cost

and better proximity to market. Consequently, while non-China titanium raw material supply remains strong, western titanium dioxide production is contracting due to higher cost capacity than in China.

All of the big western titanium producers and end users appear to need a lower cost route to high quality titanium dioxide like this Barrambie Project as a circuit breaker to recover their competitive position, otherwise the western industry is doomed. This is evidenced by Dupont spinning titanium division off into Chemours, Huntsman accelerating their plans to spin out in 2016 etc.

Vanadium – Down in the Dumps

It was most fortuitous for Neometals that Barrambie has proven to be polymetallic as the original concept was to advance the deposit based upon its Vanadium attractions. Last decade was good for that metal but of late it has been going through a swoon. This is one of those metals that, up until now, has been dependent upon the fortunes of another (i.e. the steel complex) for its momentum. And that driver has not served it well with most Western economies never being able to regain their momentum post-2008. Steel will eventually recover but with China off the boil it might be quite a wait until prices match last decade's highs. Global vanadium production is dominated by by-product output. It is therefore hard to muster up price scenarios for Vanadium that are substantially higher than where they are currently. The swing factor is the great unknown of usage by new battery applications. This remains such an unknown that to make an investment decision based upon the "might be" of that factor would be daring indeed.

It seems all the current players have taken this static state price situation into account. While they wish the price to rise they know the projects have to work with the current price constraints. This, in itself acts as a rein upon future production heading into a glut situation. The Windimurra project in Western Australia has hit the rocks in recent times going down without trace. However, we believe that whatever the problems were at Windimurra they (excepting price considerations) are isolated to that project itself.

Thus the prospect is for virtually no new projects to come on stream within the next three years, however over that same period we can envision little reason for V_2O_5 prices to rise, except in the context of a rollicking global recovery or a quantum leap in usage of mass storage battery applications. As always in the mining sector, one lives in hope of higher prices and stronger metals demand so the latter scenario adds spice to the story of the handful of Vanadium players out there and gives good reason why Neometals have not discarded the Vanadium potential at Barrambie from their plans and calculations.

Vanadium Pricing and Trends

Vanadium demand in the West stands to benefit from the emerging recovery and restocking efforts in the steel sector, however this does little to counteract the retreat in demand in China as steel consumption there is trending off.

In addition to the cyclical economic shifts currently taking place, high-strength, low-weight metallurgical products are increasingly being demanded, as development projects require superior material

performance in non-ideal environments. Increased utilization of alloyed steels and titanium alloys will likely have a bullish effect on the vanadium market over the coming decade. In addition, China uses comparatively low amounts of vanadium per tonne of steel produced and will need to dramatically increase its use of vanadium to match the steel quality of regions such as North America and Western Europe.

Metals sector reflation, supply disruptions and above-trend demand growth pushed ferro-vanadium prices up from an annual average of US$7.73 per kg in 2002 to US$61.94 in 2008. The financial crisis and recession of 2008 and 2009 severely weakened global steel production and demand; in response to this vanadium prices fell to a monthly low of US$18.96 in May 2009. As global steel demand and output recovered, ferrovanadium prices rebounded to over $30 in 2013, easing back again to around $25 for most of the last year. Recent weakness is directly linked to the pullback in the Chinese economy.

In a report that was published in 2012, the metals consultancy, CPM Group, suggested that vanadium producers are likely to be operating at notably higher utilization rates through to 2019 to meet demand. This resulted in a conclusion that “if producer discipline remains intact, however, new projects will be needed to meet demand over the 10-year outlook”. However since then the Chinese steel market has turned turtle.

Being rightly wary of hanging Barrambie’s fate upon the fluctuations of Vanadium demand, Neometals has shifted the focus to the Titanium component with the Vanadium being relegated to co-product status. It will still play an important part in securing the economics of the project. Hopefully an upturn in demand will also have occurred over the years between now and when production is achieved yielding

higher values for production and a further kicker to the economics. In any case Barrambie promises to be the major Vanadium source in Australia now that Windimurra has hit the rocks.

Titanium Potential – all in the process

Neometals started with the objective of developing a process to unlock the potential of the large hard rock titanium deposit at Barrambie by delivering high commercial grade titanium dioxide at production costs with a competitive edge over Chinese producers and within a western production environment.

With Barrambie's somewhat novel mix of Ti/V/Fe getting the metallurgy sorted is a prime consideration. The process for doing so was pioneered at McGill University, after which the inventors split. Similar digestion/precipitation technology is now the property of Canadian Titanium Ltd (CTL) which is owned by Argex. The advent of these technologies coupled with low-temperature acid regeneration is the most significant change in Ti processing since the Kroll process and thus is regarded by Titanium mavens as a game changer.

During the March quarter of 2014 Neometals began construction of a mini-pilot plant in Canada to demonstrate a successful transition from laboratory-scale batch testing to continuous operation. The plant is testing a proprietary chloride-based process for the recovery of titanium as titanium dioxide, (TiO_2), vanadium pentoxide (V_2O_5) and iron as hematite (Fe_2O_3) from run of mine ore at a feed rate of 10 kilograms per day.

The process has produced high purity (>99%) titanium dioxide from Barrambie oxide ores and concentrates at high recoveries. A key feature of the patented process is the acid recovery and regeneration process which shows the potential to operate at significantly lower costs than established technologies previously evaluated by Neometals. In addition, the green credentials of the selected process are enhanced by its energy efficiency, low emissions and inert tailings. This process was evaluated in the Snowden Scoping Study.

Neometals, in December 2013, licensed the patented acid leach process to extract all the metals of value from its Barrambie deposit. In exchange for the non-exclusive license, Neometals will pay a royalty of 5% of gross revenue. In addition, the patent holders will also receive up to 20% of the value of any transaction that involves a significant change in control of Australian Vanadium Corporation Holdings Pty Ltd, the Barrambie project entity

The Pilot Test Results

In September of last year the company announced the results of testwork undertaken on samples from Barrambie. These showed:

- ✓ Continuous production of high-purity titanium dioxide via a proprietary hydrometallurgical process
- ✓ Results confirm potential to deliver lowest-quartile operating costs as indicated in Scoping Study from 2013

The goal of the mini-pilot plant campaign was to test and demonstrate the successful operation of each

of the major unit operations of the proprietary flowsheet on a continuous basis:

- leaching of the mineralised material
- titanium dioxide precipitation
- iron hydrolysis
- acid regeneration

Internal laboratory AAS assays indicate final product purity levels are consistent with earlier testwork, being +99% pure titanium dioxide at recoveries exceeding 85%. External XRD assays confirmed the final product has a rutile structure which is necessary to achieve the premium prices for chloride-based titanium pigments.

Neometals plan to undertake full pilot plant evaluation of the proprietary hydrometallurgical technology, with this work planned in the current financial year as part of the BFS preparation.

Synthetic Iron Oxide Pigments

The largest end-use categories for total IOP output were construction (such as cement, mortar, and concrete) and paints and coatings.

Natural iron oxides are derived from hematite, which is a red iron oxide mineral; limonites, which vary from yellow to brown, such as ochers, siennas, and umbers; and magnetite, which is black iron oxide. Synthetic iron oxide pigments are produced from basic chemicals. The three major methods for the manufacture of synthetic iron oxides are thermal decomposition of iron salts or iron compounds, precipitation of iron salts usually accompanied by oxidation, and reduction of organic compounds by iron.

As noted earlier Barrambie will bring a sizeable new wave of production to the market, potentially equivalent to 20% of global supply and for this reason the consultants resolved to us an average price in the models that was 30% below long-term forecasts.

Moving Barrambie Forward

With respect to the titanium project Neometals will be running an external process review ahead of a strategic partner selection process in parallel with a pilot plant program in 2016. The company feels that it is the operating cost advantage, with or without the co-product credits, that make the deposit so attractive. The PFS has *hollow logs* in both the opex (for example, transport to Kwinana costs ~70% of feedstock opex) and capex that can be whittled down with the greater detail of the BFS.

Firstly we should say that this will ONLY move forward with Titanium as the primary product, with vanadium relegated to a by-product as in most profitable vanadium production. Neometals's take on Vanadium prices is rather close to ours, looking for flat at best in the near- to medium-term. The company also posits that massive substitution with ferro-niobium courtesy of expansions at CBMM (the dominant Niobium producer in Brazil) financed at first by the Japanese/Korean steel makers and then Chinese steelmakers (Ansteel, Baosteel, Shougang) have boosted Nb supplies and those of alternatives. There was also a massive build-up of vanadium by-product production in slag processing capacity by

China's Panzhihua complex. One consolation is that the majority of vanadium pentoxide produced in China is not suitable for chemical or energy storage applications.

This is why Neometals elected to not proceed with Vanadium project as originally envisioned as management feels that being a standalone primary producer is too energy intensive in the high energy cost environment of current times.

With Titanium as the primary goal now the potential field of offtakers becomes clearer with paint and pigment manufacturers being the most obvious parties to partner with.

Risks

The major risks now for Barrambie might be identified as:

- Financing difficulties
- Unfavorable evolution of the Titanium price
- A return to an appreciating AUD

Clearly the project will not be funded by an equity markets route as that path is closed even to the very largest companies at this time. We would not expect that to change much in coming years even if the mood of investors changes as large projects just do not seem suited to the old mode of placings and rights issues. In any case, Neometals is set against the type of dilution that might imply for the listed company's issued equity. Beyond that the Mount Marion experience has shown that the company can "have its cake and eat it too" with a project achieving standalone viability through a substantial partner(s). Thus the risk is better stated as difficulty in finding a partner. In the case of this specific project the potential output from Barrambie is such a key playing piece in the global Titanium game that the danger for major players is in NOT being involved rather than making a commitment.

As for commodity prices, we already have Vanadium and Iron Oxide pigments at unalluring levels (with the advantage that this scares off potential wannabes with mines where those are primary outputs). Titanium has held up reasonably well because of rising demand and the constant shedding of old mines (particularly those producing "low-cost" rutile). With most other metals trading near decade lows, Titanium has held up very well indeed. If the current moment is akin to a bottom for the broader metals space then it is difficult to see the rest of the metals complex gradually pulling out of its swoon and Titanium taking a negative tack.

Conclusion

Neometals is like a perpetual motion machine. It has over time been honing itself into the entity we see today with a highly-focused pair of projects, both in technology metals. The company is like a project generator but it takes the project 80% of the way before letting go of control to ensure maximum payback and that the project is "done right".

The Barrambie PFS which has just been published shows that this Titanium-Vanadium project is not only viable but should become one of the world's largest Titanium mines with an important Vanadium component and one of the world's largest producers of iron oxide pigments. The recently completed

testwork confirms that the Barrambie Titanium Project could be a globally significant lowest-quartile cost titanium dioxide producer.

Neometals' price has been on a strong run over the last six months but despite this the current valuation covers only a fraction of the real valuation of the Mt Marion Lithium project, let alone the Titanium/Vanadium and Nickel assets. This is clearly an anomaly that will be corrected by an upward move once the financing plans for the Titanium, Lithium and Vanadium start to coalesce. The addition of strategic partners or offtakers would be key to this and is most likely to occur around the time the BFS makes its appearance.

In the short term the cash mountain will be growing again with the proceeds from the recent Mt Marion deal with a Chinese producer. This dispels any fears that there will either be a financing or that envisioned works (the BFS etc) will require the company to "come back to the well".

We reiterate our Long call on Neometals Resources and we are lifting our twelve-month target price from 28 cts to 42 cts.

Important disclosures

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