

February 2015

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Company Information

ASX Code	MLM
Share Price	A\$0.055
Ord Shares	166.9m
Options	2.51m
Market Cap (FD)	A\$9.32m
Cash (Dec 31, 2014)	A\$2.47m
Total Debt	A\$0m
Enterprise Value	A\$6.85m

Directors

Non-Executive Chairman	David Barwick
Managing Director	Andrew Gillies
Non-Executive Director	Barry Casson
Non-Executive Director	Wu Shu (Shu Jang – Alternate)
CFO/Company Secretary	John Haley

Substantial Shareholders

Jien Mining Pty Ltd	24.96%
Victorian Ferries	10.82%
Golden Breed	6.16%
Bondline Limited	3.06%
Codan Trustees	1.56%
Top 20	57.35%

Source: Metallica

Company Details

Address	71 Lytton Road East Brisbane QLD 4169
Phone	+617 3249 3000
Web	www.metallicaminerals.com.au

1 Year Price Chart



Metallica Minerals Limited (MLM)

Near Term Cash Flow

Recommendation: Speculative BUY

Key Points

- **Strategy is to develop low capex, near term heavy mineral sands ("HMS") and bauxite production projects on Cape York Peninsula**
- **Planned near term cash flow from Urquhart Point HMS operation, currently under construction, with capex fully funded**
- **Positive drilling results from neighbouring bauxite mineralisation**
- **Urquhart Point is well-located, adjacent to Weipa**
- **A number of other prospective HMS and bauxite prospects identified within the Cape York tenements**
- **Looking to JV out other projects**

Metallica is concentrating activities on its Cape York zircon/rutile HMS and bauxite projects, which it holds in joint venture ("JV") with Ozore Pty Ltd., with production expected mid-year from the Urquhart Point HMS operation.

The JV is also investigating the adjacent Urquhart Point bauxite mineralisation which, should it prove marketable, could provide reasonable cash flow through a bauxite export operation.

In addition, follow up work is now required on a number of quality HMS and bauxite prospects that have been identified in other exploration tenements in the Cape York project area.

We rate Metallica Minerals as a SPECULATIVE BUY, with price movers including successful development and operation of the HMS project, and positive exploration results from the Urquhart Point bauxite and other projects.

Company Overview

Metallica's key focus is the Cape York HMS and Bauxite Project, which it holds in a joint venture with Ozore, a company held by Chinese Interests. Ozore is earning 50% through spending A\$7.5 million on the development of the Urquhart Point HMS deposit and exploration drilling on the adjacent bauxite mineralisation; A\$5 million has been contributed to date.

The Company's strategy is on identifying and then developing HMS and bauxite projects within its tenements, which run for 250km along the coastal strip from Weipa to the tip of Cape York Peninsula. The rationale here is to develop projects with ready access to waters suitable for shipping, hence potentially cutting capital and operating costs.

The aim is to utilise operational cash flow to enable the Company to be self-funded in a tough market, without having to go to shareholders, and hence minimising dilution. This will also provide the cash necessary to explore for larger resources.



Investment Thesis

Background

Concentrating activities on Cape York HMS and bauxite project

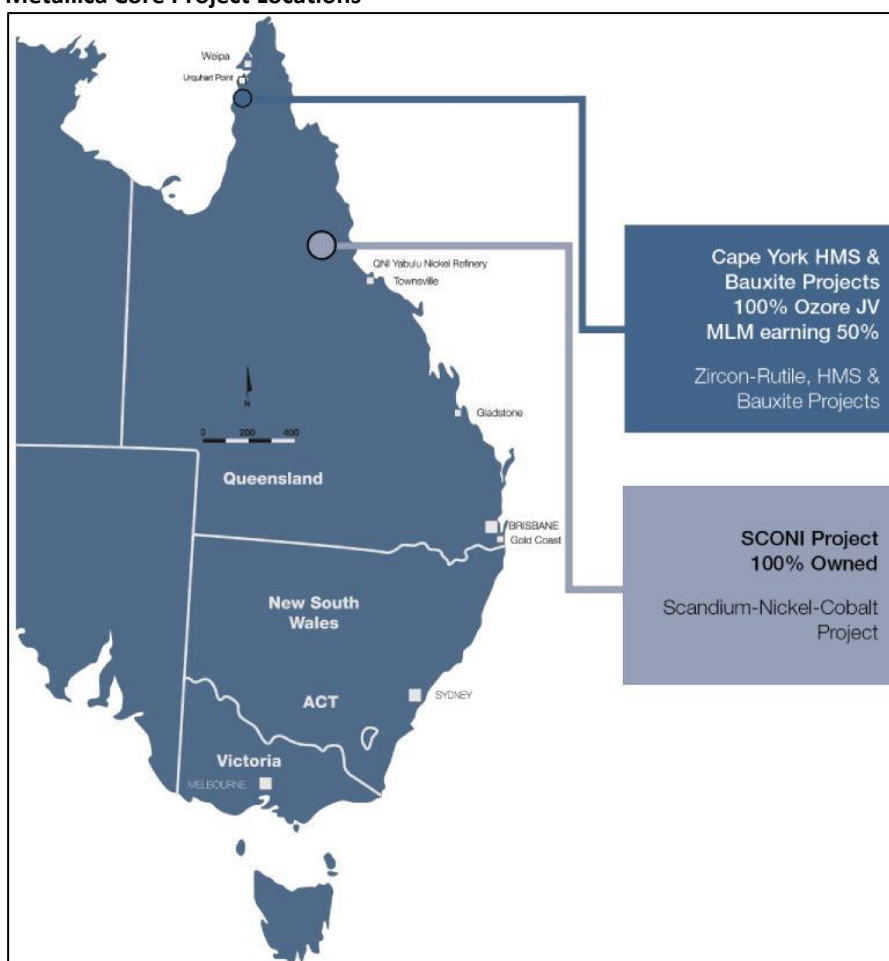
Other core project is the SCONI Project, near Greenvale

Metallica Minerals Limited (ASX: MLM, “Metallica” or “the Company”) is an ASX listed explorer and developer, with a diverse portfolio of projects in Queensland.

The Company is concentrating activities on its 66.66% (reducing to 50%) held Cape York HMS and Bauxite Project, where it expects to soon commence HMS concentrate production at Urquhart Point, and is carrying out exploration and delineation drilling over nearby bauxite mineralisation, adjoining Rio Tinto’s South of Embley deposit.

The other core project is the SCONI Scandium-Cobalt-Nickel Tri-metal Project, located near Greenvale in North Queensland, for which JV partners are currently being sought.

Metallica Core Project Locations



Source: Metallica

Corporate Strategy and Activities Appropriate for the Times

Strategy to preserve value by divestment and developing near term low capex production opportunities

With the current difficult market conditions, Metallica is continuing to follow a strategy to allow it to avoid going to the equity market to fund ongoing activities (and hence not dilute shareholders) – it still has a relatively tight capital structure for an Australian junior (167m shares) despite having been listed for over 10 years.

As part of this strategy the Company has recently disposed of shareholdings in a number of companies that started life as spin-outs of Metallica –divestments include Metro Coal (ASX: MTE) and Cape Alumina (ASX: CBX). JV partners are also being sought for other projects, including the SCONI (scandium, cobalt, nickel) laterite project, located near Greenvale in North Queensland.



The current HMS and bauxite activities in Cape York are focussed on assessing deposits that can be developed with relatively small capex requirements, and then can return reasonable cash flows to fund ongoing exploration, development activities and potentially returns to shareholders.

Fully Funded Through the Cape York Joint Venture

The Urquhart Point HMS Project is fully funded through the JV with Ozore

In order to fund the Cape York HMS and bauxite activities Metallica's wholly owned subsidiary Oresome Australia Pty. Ltd. ("Oresome") entered into a JV agreement with Ozore Resources Pty. Ltd. ("Ozore"), whereby Ozore can earn 50% of the tenement portfolio by contributing A\$7.5 million towards development of the Urquhart Point HMS Project, and funding nearby bauxite drilling. Ozore has thus far earned a 33.33% interest through contributions of A\$5 million.

HMS Project Nears Production

Production is expected from the HMS project in mid-2015, and may deliver \$7.3m of free cash flow throughout its 5 year mine life

The Urquhart Point HMS Project is the most advanced, with first production expected in mid-2015. Surprisingly, this is the first deposit of its type to be developed on Cape York Peninsula. The all-up capital cost is expected to be A\$6.5 million, which has been fully funded by Ozore. Site establishment works have commenced, and a modular treatment plant is being fabricated in South Africa, and is expected to be delivered to site in May/June 2015

The project feasibility study envisages a free cash flow after capex of A\$7.3 million over the estimated 4.9 year, 87,000t HMS concentrate mine life, with the majority (~80%) in the first two years of operation. With Metallica being free carried for the estimated A\$6.5 million capex, 50% of the operating cash flows will be attributable to the Company. Total operating cash flows were estimated to be around A\$14 million in the feasibility study; however subsequent falls in rutile and zircon prices will reduce this.

At the time of the feasibility study in mid-2014 forecast average life of mine concentrate values were attractive, estimated at US\$250 - \$US330/tonne FOB Weipa by independent industry expert TZMI.

Synergies With Bauxite

There are potential synergies with the adjacent bauxite project

Initial drilling, again funded under the JV, has been completed on the adjacent Urquhart Point bauxite mineralisation, with encouraging results being obtained from two areas which are contiguous with that within the adjacent South of Embley ML of Rio Tinto. Should upcoming testwork be positive, the Company envisages a 1-2mtpa bauxite export operation, again with minimal capex – our analysis indicates that there is potential to delineate up to 10-12Mt of marketable material.

There are obvious synergies with the HMS project, including the opportunity to utilise common port/barge infrastructure.

Bauxite Demand Growing

The Company is readily placed to meet expected demand for bauxite from China

Any development of the Point Urquhart bauxite would be timely, given growing demand from Chinese merchant alumina refiners for imported bauxite, largely due to the Indonesian imposition of quotas, and in some cases bans on exports of unprocessed materials. Prior to the bans Indonesia was a major seaborne supplier to China, providing up to 25mtpa, or ~65% of China's then import requirements.



Urquhart Point is well located, being 3km across the Embley River from Weipa

Well Located

Urquhart Point is well located, being 3km SW of Weipa, and accessible via a short barge trip, with Metallica having an access agreement with the Queensland Bulk Ports Corporation (“QBPC”). Being located on the Gulf coastline and the Embley River, the project area has potential access to deep water suitable for barge transshipment to nearby ocean going vessels.

The location will help minimise operating and capital costs, with no need for expensive access infrastructure, and only short transport distances for supplies and products. There are also possible port/infrastructure synergies with other possible operators in the area.

Permitting and Agreements in Place

Work done in permitting the HMS project should help in any future permitting of bauxite operations. As part of the HMS operation the Company has reached an agreement with the Traditional Landowners (“TLO’s”)

Pipeline of Exploration Targets

The JV has a pipeline of exploration targets in the Cape York tenements

Work to date on the JV’s extensive 2,500km² tenement package has identified a number of other bauxite and HMS targets, including the T16 HMS prospect and the Vrilya Point bauxite prospects.

The low-cost exploration over these areas will be funded through the JV, (including through using cash flow from operations). There are potential synergies with existing operations, including the reuse of portable plant.

Peer Comparison

Given their unique mix of projects Metallica has no true peers listed on the ASX. Although they are developing the HMS project, we consider them primarily as a bauxite explorer, which we believe has the best potential to add significant value to the Company. The table below lists a number of ASX-listed junior bauxite hopefuls sorted by enterprise value. We have also included the EV/tonne of contained Al₂O₃ to give an idea of comparative value, and what values could be expected with development of a bauxite project.

ASX-Listed Bauxite Juniors

Company	Location	Last Price AUD	EV Diluted (A\$m)	Global Resource (Mt)	Al ₂ O ₃ Grade (%)	Company Equity Share	Contained Al ₂ O ₃ Mt Co Share	EV/t Al ₂ O ₃ equity share	Project Stage
Australian Bauxite	Australia	\$0.270	\$33.2	116	33.01%	100%	38.20	\$0.87	Development
Queensland Bauxite	Australia	\$0.015	\$20.2	2.2	29.00%	100%	0.64	\$31.53	PFS
Canyon Resources	Cameroon	\$0.045	\$8.5	-	-	-	-	-	Exploration
Metallica Minerals	Australia	\$0.055	\$6.8	-	-	-	-	-	Resource definition
Metro Mining	Australia	\$0.038	\$5.9	62	49.97%	100%	30.73	\$0.19	PFS
Aziana Resources	Madagascar	\$0.020	\$3.4	-	-	-	-	-	Exploration
Bauxite Resources	Australia	\$0.092	-\$2.5	403	40.20%	39%	63.17	-\$0.04	Scoping

Source: IRESS, Company reports, Breakaway analysis, no value ascribed for other projects the companies may hold



This figure needs to be used with care, as it can be affected by a number of factors. A case in point here is Queensland Bauxite, which has only a small JORC compliant resource, but a large exploration target of 193-405Mt. We also note the negative enterprise value for Bauxite Resources – this is by virtue of the company having a cash balance of ~\$24 million, with the company virtually being valued on cash only – this is a not unknown situation in the current market.

Risks

As in any resources stock there are a number of risks involved.

There are a number of risks associated with an investment in Metallica

- **Exploration Risk** – As for any explorer this is key for Metallica, and includes upcoming results from the Urquhart Point bauxite testwork which will be critical in determining the potential marketability of the mineralisation. There is also the challenge that any bauxite discoveries are of sufficient scale to support development.
- **Funding** – Short to medium term funding would not appear to be a critical issue for Metallica, should the HMS operation perform to expectations, although given current heavy minerals prices we would expect significantly lower cash flows attributable to Metallica than the ~A\$7 million 50% share of operating cash flow forecast in the feasibility study. In addition, any capital required for the Urquhart Point Bauxite Project should be reasonably modest, and given it will be split 50:50 between the JV partners, this should be relatively easy to source assuming the bauxite market remains buoyant.
- **Permitting and Sovereign Risk** - Permitting is a key risk for any resources project. This can be particularly risky in Queensland, and especially on Cape York Peninsula, as evidenced by the Queensland Government's 2013 decision to ban mining over the Bertiehaugh Cattle Station and Steve Irwin Wildlife Reserve (and the previously enacted and repealed Wild Rivers Legislation). However, successful permitting and agreements with TLO's at the Urquhart Point HMS Project indicate permitting is possible, and helps mitigate this risk, provided of course the newly elected Queensland Government doesn't throw any new spanners into the works! Having permitted projects in the region previously Metallica are aware of and know how to work through the environmental and TLO issues.
- **Development** – There are a number of risks involved in taking a project from scoping through development to operation. These include cost blowouts and plants not performing as designed. Given the low capex and simple treatment route for the HMS operation, and if feasible, any bauxite operation, this risk is somewhat mitigated, however care will need to be taken so that the early, high grade feed for the HMS plant is treated efficiently.
- **Price and Market Risk** – This is a key risk for any resources project, and one which companies have little or no control over. We consider this the key risk now facing Metallica – successful operation of the HMS project relies on pricing for products, with the market currently being weak. We note that Iluka realised prices of US\$1,037/tonne of zircon and US\$777/tonne of rutile through 2014, considerably less than the figures used in the Urquhart Point feasibility study. Another factor here is the AUD: USD exchange rate – project economics will improve with falls in the Australian dollar. Also there are no marketing partners or offtake agreements in place as yet for the HMS project.



Project Review

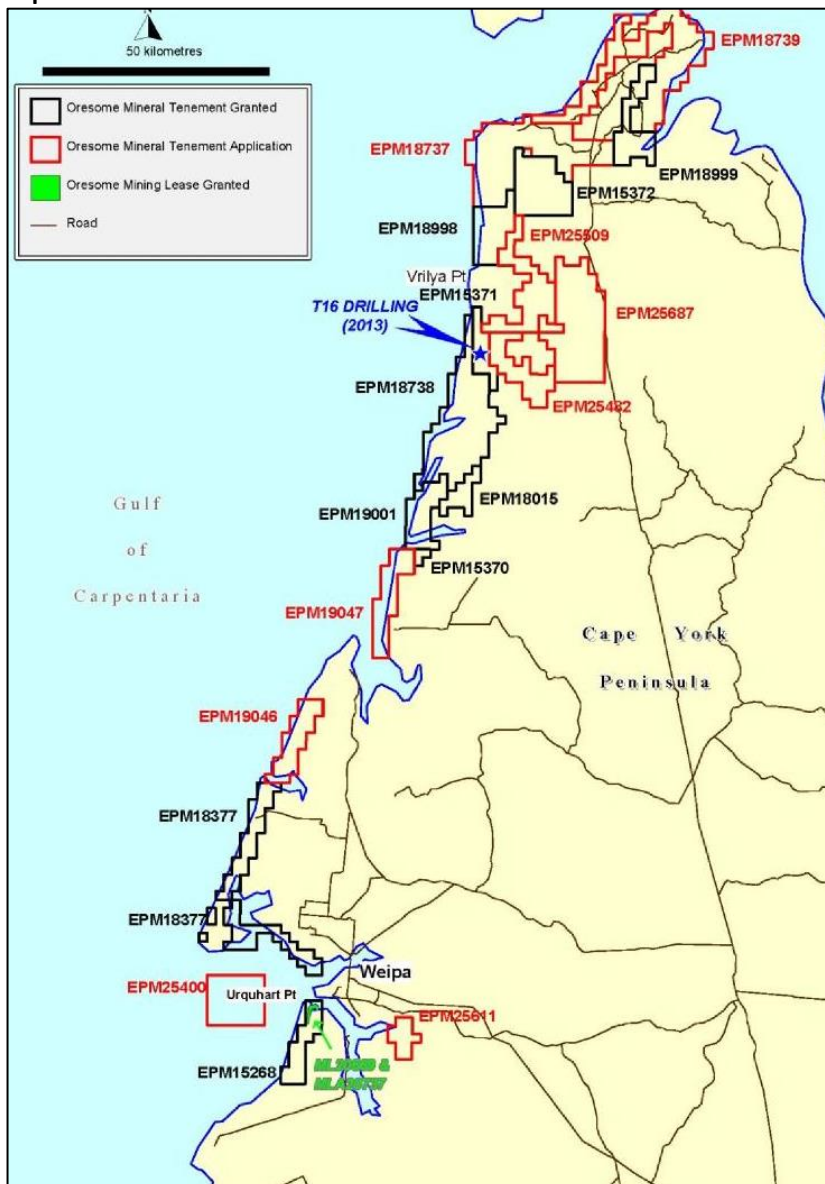
Background

Metallica has two core projects, and a number of lower priority targets:

- Cape York HMS and Bauxite Project
 - Urquhart Point HMS Project
 - Urquhart Point Bauxite
 - Cape York HMS and bauxite exploration areas
- SCONI Project
 - Nickel-Cobalt-Scandium, Greenvale area
- Other projects
 - Lucky Break Nickel, near Greenvale
 - Warrior Graphite, south of Croydon
 - Cape Flattery Silica Sands, north of Cairns
 - Various limestone projects near Townsville and Gladstone

Activities are concentrated on the Cape York area, as shown below.

Cape York Tenements



Source: Metallica

The key project is the Cape York HMS and Bauxite Project

The Cape York tenements extend for 250km along the western coast of Cape York Peninsula, from Weipa to the tip



Cape York Heavy Mineral Sand and Bauxite Project (MLM 66.66%, reducing to 50%)

Introduction and Tenure

The Cape York tenements are subject to a JV agreement with Chinese interests, who are earning 50%

The overall Cape York project includes the Point Urquhart HMS Project and adjacent bauxite prospect, and a number of regional exploration areas as shown in the preceding map. The tenement package, including granted tenements and applications, covers approximately 2,500km². It also includes the 366ha ML20669 at Urquhart Point, granted for a period of 10 years expiring 31 October 2023.

The Cape York tenements (held through Metallica's wholly owned subsidiary Oresome) are subject to a JV agreement with Ozore, a wholly owned subsidiary of Chinese interests. The JV was set up predominantly to fund the Urquhart Point HMS project, with bauxite drilling also being carried out. Metallica is free carried to \$7.5 million, when Ozore will earn a 50% interest in the projects. The JV is managed by Metallica through a committee.

To date Ozore has provided \$5 million, and has earned a 33.33% interest.

The Urquhart Point HMS Project is the most advanced, being under construction, with production estimated in mid-2015

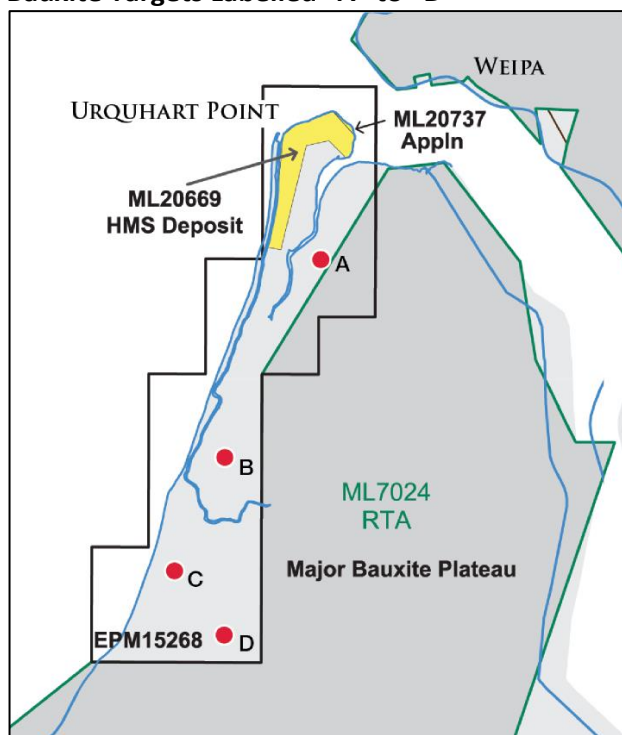
The strategy at Cape York is to find and define HMS and bauxite resources that are close to the shoreline or rivers that will allow ready access for barging and protected anchorages, and that will be amenable to low capex start-ups. The Company has thus far identified a number of bauxite and HMS prospects along the 250km coastal belt between Weipa and the tip of Cape York Peninsula.

Urquhart Point HMS Project

This is the most advanced project in the package, currently under development, with production expected to start in mid-2015. The project is located immediately south of the Embley River, 3km south-west of the town of Weipa.

Development is being fully funded by Ozore under the terms of the JV.

Urquhart Point Mineral Tenements – Bauxite Targets Labelled “A” to “D”



Source: Metallica



The project is fully permitted, with agreements with the TLO's also in place

The HMS deposit is a low slime strand deposit

Reserves of 1.17Mt @ 9.5% HM have been identified

A completed feasibility study returned positive results for a 4.9 year, small scale operation, producing a total of 87,000t of mixed concentrate

The project is fully permitted, including agreements with the TLO's, the Wik and Wik Way People. Production of approximately 87,000t of heavy mineral concentrate over 5 years is expected to commence later in 2015. A modular plant is currently being constructed by Consulmet Pty. Ltd. in South Africa, and is expected to be delivered to site (in containers) in May/June 2015. Site works have already commenced.

Geology and Resources

The HMS deposit is a low slime strand style deposit, with the heavy fraction containing around 35% valuable minerals (rutile, zircon and ilmenite), and approximately 65% others, including iron oxides. The sands overlay a base of partially cemented shelly limestone, termed coquina. They are a modern day equivalent of the Eucla and Murray Basin mineral sands deposits, and the first to be developed on Cape York Peninsula.

Mineral resources and mineral reserves are presented in the tables below.

Urquhart Point Mineral Resource Estimate (Inside ML/MLA and Excluding Buffers) – 2.0% HM Cut-Off

Category	Tonnes	HM %	HM t	OS %	Slimes %	Zircon % of HM	Rutile % of HM	Ilmenite % of HM
Measured	1,781,360	6.85	122,090	12.5	1.0	9.8	12.0	12.4
Indicated	1,305,680	4.70	61,335	14.4	1.2	11.4	10.9	13.2
Total	3,087,040	5.94	183,425	13.3	1.1	10.3	11.6	12.7

Source: Metallica

Urquhart Point Mineral Reserve Statement

Category	Tonnes	HM %	HM t	OS %	Slimes %	Zircon % of HM	Rutile % of HM	Ilmenite % of HM
Proved	967,000	10.6	102,000	8.1	1.0	11.1	13.7	12.9
Probable	210,000	4.8	10,000	6.7	1.2	17.7	13.2	14.4
Total	1,177,000	9.5	112,000	7.9	1.0	11.7	13.6	13.1

Source: Metallica

Feasibility Study and Development

Metallica completed a positive feasibility study in 2014, which led to a decision to develop Urquhart Point.

Key metrics, as presented in the feasibility release of June 24, 2014 are given below.

Urquhart Point HMS Metrics – 100%

Parameter	Quantity
NPV10%	A\$4.9M
IRR	69%
Mine life	4.9 years
CAPEX estimate	AU\$6.5M
OPEX estimate (including royalties)	A\$12.52/ROM tonne
Undiscounted cash-flow (after CAPEX)	AU\$7.3M
AUD:USD exchange rate	0.85
Mining Rate	240,000tpa
Total concentrate production	87,000t
Concentrate FOB value (est. by TZMI)	US\$250-\$US330/tonne
Bulk Pricing – Zircon US\$1,500/t, Rutile - \$US1,200/t, Ilmenite - \$US200/t	
Bulk concentrate discount – allows for shipping, offsite processing	25%

Source: Metallica



*Mining is simple, and will be from a number of pits
Treatment will be by wet gravity methods, with concentrates being loaded directly onto barges for transshipment to vessels moored close offshore*

Mining is simple, and will be carried out by dry mining methods using bulldozers and front end loaders, with waste and overburden placed back into the mined pits, which will be up to 2m deep. Treatment will be by wet gravity methods (spirals), with the plant design based on results of testwork on a six tonne bulk sample.

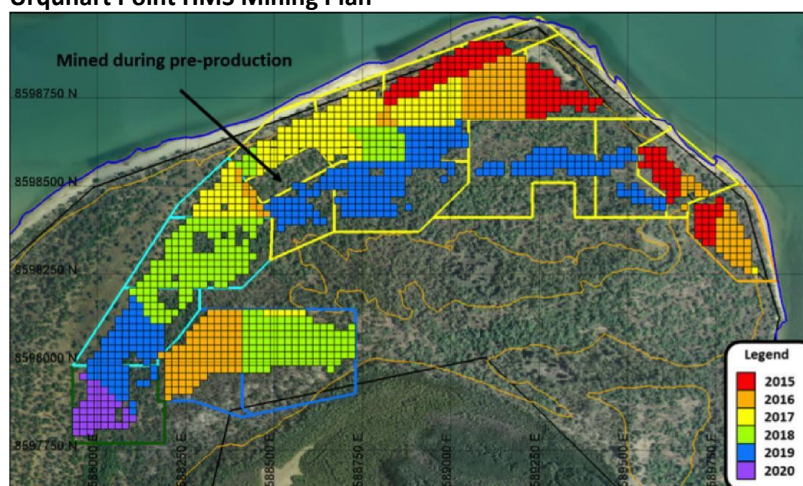
The Company is looking at producing a bulk mixed concentrate, containing zircon, rutile and ilmenite, however given the currently relatively depressed HMS market are also looking at the possibility of separating the higher grade products to maximise value by using a screen and additional spirals.

The concentrate will be directly loaded onto barges using front end loaders or conveyors, which will then tranship to self-loading vessels close offshore. Given the scale of the operation the Company would look at buying hold capacity on a ship, and not a complete vessel charter.

The mining schedule is designed to maximise returns in the early years, with payback expected within one year. The plan is to mine sequentially from a number of pits, as shown in the following diagram.

We note however that around 25% of the in-ground value is attributed to one proposed pit, Kite 1, which comprises 8% of the reserve tonnage – this does expose the project to resource risk should this anomalously high grade area not perform as expected.

Urquhart Point HMS Mining Plan





Urquhart Point Bauxite Project

The Urquhart Point Bauxite Project is located adjacent to the HMS project

This project is located immediately to the east of the HMS project within EPM15268. The geology comprises the western edge of the bauxite plateau that includes Rio Tinto's South of Embley Project.

2014 Drilling

Initial data reviews and reconnaissance auger drilling identified four areas of potential mineralisation, "A" through "D", with recent work including drilling areas A (23 holes) and B (62 holes).

Urquhart Point Bauxite Drilling



Source: Metallica

This drilling intercepted shallow bauxite, initial assaying was on samples screened to +1.2mm, with details and results given below. This includes our indicative estimate of potential beneficiated tonnage – the Company has not completed a resource estimation as yet. Note that the tonnage (and grades) is on material screened at 1.2mm to reduce silica content. Areas are based on holes having a 320m x 320m area of influence.

Urquhart Point Bauxite Drilling Results – Screened Assaying

Block	Min. Holes	Area	Overburden	Thickness	Yield @ 1.2mm	Av. Total Al ₂ O ₃ %	Av. Total SiO ₂ %	Density*	Potential tonnage*
Area A	21/23	2.15 km ²	~4m	2.40m	65.48%	56.01%	8.00%	1.6	5.4Mt
Area B	40/62	4.10 km ²	~2m	1.40m	55.42%	51.58%	12.08%	1.6	6.1Mt
Total	61/84	6.25 km²	~2.6m	1.70m	59.92%	53.56%	10.25%	1.6	11.5Mt

Source: Metallica and *Breakaway estimate

We see the potential for up to 11Mt of bauxite



Subsequent assaying of unscreened samples from Area A has been completed to determine the potential for direct shipping (“DSO”) mineralisation. Results are shown below, with 15 of the 21 holes further assayed indicating the potential for DSO mineralisation.

Urquhart Point Bauxite Drilling Results - Potential DSO Assaying

Block	Min. Holes	Area	Over-burden	Thickness	Av. Total Al ₂ O ₃ %	Av. Total SiO ₂ %	Density*	Potential tonnage*
Area A	15/23	1.54 km ²	~4m	2.00m	53.40%	13.26%	1.6	4.9Mt

Source: Metallica and *Breakaway estimate

We note these have alumina contents similar to the screened material, however significantly higher total silica levels, with silica ranging from 9.49% to 15.69%

Further assaying will now be carried out to determine the low temperature trihydrate alumina (“THA”) and reactive silica (“R_xSi”) contents of the mineralisation – these are vital in determining the marketability and potential sales price of the bauxite. We note the assay results have returned high total silica, however our review of some other projects in the region shows that a large component of the silica is in non-reactive quartz.

Should this assaying be positive, Metallica will then move towards infill drilling and resource estimation for the Urquhart Point bauxite. Current drill spacing is 320m; it is estimated that at least 160m spaced drilling will be required to take it to a Measured and Indicated Resource category, and given the shallow depth of drilling this will be a relatively quick, cheap programme.

Potential Development Scenario

Please note as that the discussion below is based on early exploration results it is conjectural only.

Should a viable resource be identified, there is the opportunity to develop up to a 2mtpa bauxite export operation. Given the permitting regime in Queensland and deposit size, 2mtpa would be the upper limit – a larger operation would be considered a major project, with a more rigorous permitting process.

There are potential synergies, particularly in relation to barge loading, with the nearby Hey Point deposit, located 7km east of Metallica’s bauxite mineralisation. Hey Point contains a JORC compliant resource of 2.5mt screened bauxite (dry), at a grade of 55.3% Al₂O₃ and 9.8% SiO₂. This is owned by a party related to Victorian Ferries, a major shareholder of Metallica, who is looking to fast track development. The Hey Point tenement and resource was purchased from Cape Alumina Limited in 2012.

Any co-operation with loading facilities would however involve negotiating access with Rio Tinto to allow haulage across the South of Embley ML.

The Company estimates that a minimum of 12 months would be required for permitting, which should be aided by the work carried out to permit the HMS project.

Indicative Financials

The Company is of the view that any such operation should yield operating margins in the order of at least A\$10/tonne, and possibly up to \$A20/tonne. This then has the potential, for a 2mtpa operation, to provide A\$20 to A\$40 million operating cash flow per annum over say a five year mine life, split 50:50 between the JV partners.

As a comparison, Metro Mining Limited (ASX: MMI, “Metro”) recently completed a pre-feasibility study (“PFS”) on a 21 year, 2mtpa operation at their Bauxite Hills Project, 95km north of Weipa.

Bauxite characteristics are yet to be determined – these will determine the marketability

Should a viable resource be identified, Metallica sees the potential to develop up to a 2mtpa operation

There are possible synergies with the nearby Hey Point mineralisation

Indicative financials suggest a robust, albeit short term bauxite export project at Urquhart Point.



The project is based on resources with potentially similar qualities to Metallica's, for which independent forecasters provided real FOB prices of US\$43.50/tonne in 2016, rising to US\$49.70/tonne in 2015 – based on their exchange rate of 0.81, these equate to FOB prices of A\$53.60/tonne to A\$61.40/tonne.

Dependent of course upon positive results of the upcoming Urquhart Point testwork, we consider this a reasonable basis for indicative pricing of any Urquhart Point product. Final pricing will depend on RxSi and THA contents.

Metro has published FOB operating costs (including a 10% government ad valorem royalty) of A\$26.69/tonne, construction capex of A\$27.4m (including a camp and airport) and 21 years sustaining capex of A\$18.1m, which includes a large component of haul road building due to the scale of the project.

Our view is that any potential capex requirements for Point Urquhart should be significantly lower due to, amongst others:

- Lower unit construction cost due to proximity to Weipa
- No requirement for a camp and airstrip
- Lower sustaining capex requirement.

Major capex (and operating) requirements will be related to barges used for transshipment – costs will be largely fixed, as the barges will need to be on site and crewed even when not in operation. This will be a key item in cost analysis of different scales of operations. The project would also benefit from any resource consolidation opportunities, to give a longer term, more robust operation.

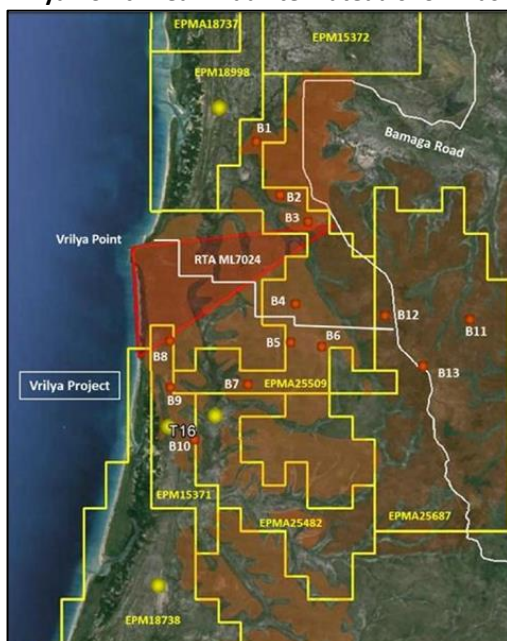
We have estimated FOB operating costs per tonne of screened product (60% recovery, we have not looked at a DSO case) in the order of A\$35 to A\$40/tonne (including royalties), which, using an FOB price of A\$55/tonne results in an operating cost margin of A\$15 to A\$20/tonne. A A\$5/tonne rise in shipping costs would reduce this margin to A\$10 to A\$15/tonne.

Cape York Exploration

The Cape York package includes a number of other HMS and bauxite prospects which the JV plans to explore dependent on the granting of tenements currently under application.

Vrilya Point Area – Bauxite Plateau shown as Brown Shaded Areas

Exploration has identified a number of promising HMS and bauxite targets at Vrilya Point, 160km north of Weipa



Source: Metallica



This includes the T16 HMS mineralisation, with samples currently being analysed

More recent activities on granted tenements have included the drilling of the T16 HMS prospect, located at Vrilya Point, 160km north of Weipa. The aircore drilling included 1,933m in 355 holes, with samples currently being analysed.

Should the analyses be positive, the Company will then commission the estimation of a JORC-compliant resource for T16.

Earlier work at T16 over an area of 1.8km x 800m resulted in average HM grades of 1.7%, with the HM grading 33% zircon and 16% titanium minerals.

The Vrilya Point area also contains an extensive bauxite plateau, with Metallica identifying 13 bauxite (red dots) and four HMS targets (yellow dots) as presented in the figure above.

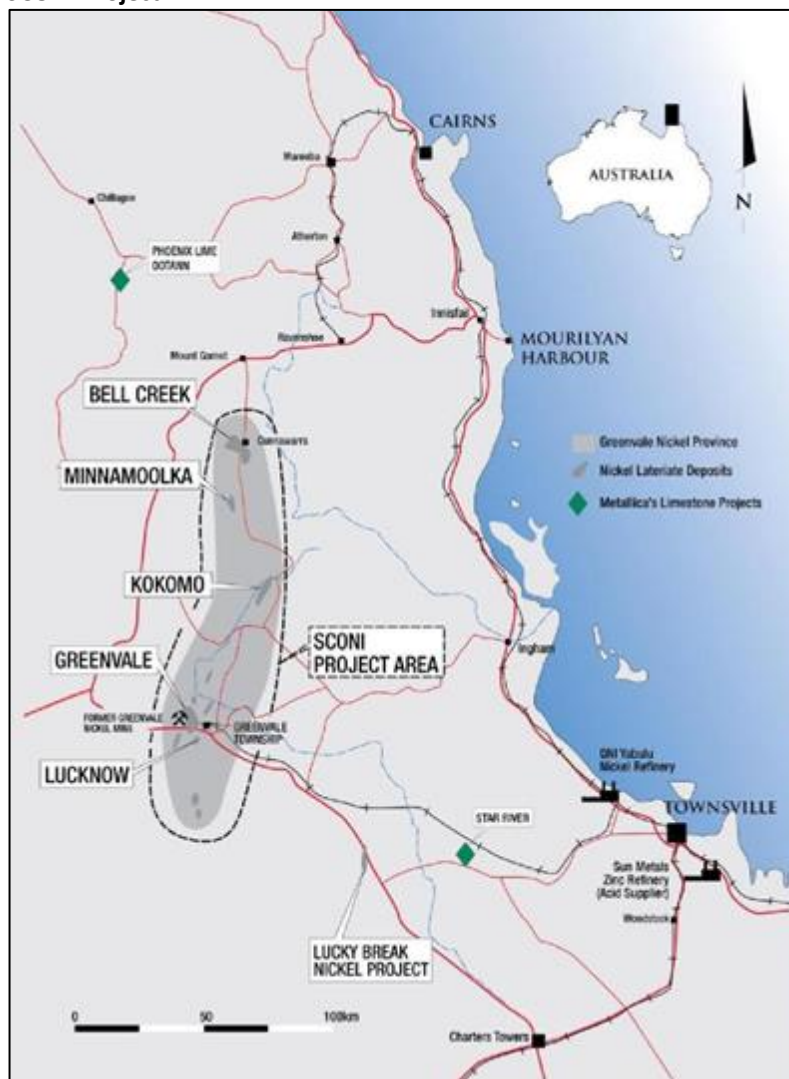
Other Projects

SCONI Scandium-Nickel-Lithium Project – Greenvale (MLM 100%)

Until recently, Metallica concentrated activities on the SCONI Project, centred over the historical Greenvale lateritic nickel mine, northwest of Townsville.

SCONI Project

The Company is looking for JV partners for its 100% SCONI laterite project, centred over Greenvale



Source: Metallica

Greenvale operated from 1974 to 1992, extracting some 40Mt of ore grading 1.57% Ni and 0.12% Co. Subsequent work by Metallica has been largely looking at the potential to produce scandium.



The Company completed a PFS in 2013, with the study predicated on the production of 51 tonnes of scandium oxide per annum. It was planned to progress to a definitive feasibility study ("DFS"), however market conditions have resulted in that the DFS being put on hold, with the Company now looking for a JV partner to fund and progress the project.

Geology and Resources

Lateritic mineralisation in the project area is formed over ultramafic units, including serpentinites, pyroxenites and metagabbros. The laterisation has led to the in-situ upgrading of nickel and cobalt, and in the case of the Lucknow deposit, scandium.

Overall resources of 89.1Mt @ 0.58% Ni, 0.06% Co and 48g/t Sc are hosted in five separate deposits, namely Greenvale, Lucknow, Bell Creek, Minnamoolka and Kokomo.

Lucky Break Nickel (MLM 100%, Subject to Royalty)

Metallica Has entered into an agreement to allow a private party to mine nickel laterite from the Dingo Dam ML, within the Lucky Break Project, located approximately 100km west of Townsville, North Queensland.

A private company has entered into a royalty agreement to mine the Lucky Break Nickel Project, west of Townsville

Terms of the agreement include:

- An initial payment of A\$250,000, due January 9, 2015 (paid)
- A second payment of A\$200,000 due at the latter of six months from the signing date or when 30,000t of nickel ore has been extracted and removed from the royalty area
- A third payment of A\$200,000 due at the latter of ten months from the signing date or when a cumulative total of 60,000t of nickel ore has been extracted and removed from the royalty area
- Additional payments of A\$4/tonne for any tonnages above 130,000t extracted and removed from the royalty area.

The agreement has an initial term of two years, however will lapse if at least 60,000t of ore is not extracted and removed in the first 12 months of operation.

Warrior Graphite Exploration Project (MLM 100%)

Late in 2015 the Company announced that two applications were made over graphite bearing granites, located approximately 70km south of Croydon in North Queensland.

Metallica previously had exploration tenements in the area, and intersected the graphite bearing granites when exploring for Ni-Cu-Au sulphides. No sulphides were intersected, with the targeted EM anomalies being due to the graphitic granite. At the time (2006) they were nothing more than a geological curiosity, however with changing markets they could now be of commercial interest. Metallica is proposing to twin previous RC holes with diamond drilling to elucidate the characteristics of the graphite within the granites.

Other projects include the Warrior Graphite and Cape Flattery Silica Sands

Cape Flattery Silica Sands (MLM 100%)

In the September quarter, 2014, Metallica applied for EPM25734 at Cape Flattery located approximately 220km north of Cairns. The application covers areas of high purity silica sands, and is located adjacent to Mitsubishi's export operation, the largest in the world.

Limestone Assets (MLM 100%)

Metallica owns a number of limestone deposits, including the operating Ootann limeworks at Almaden in North Queensland through its wholly owned subsidiary Phoenix Lime Pty. Ltd. ("Phoenix"). Metallica purchased Phoenix in 2007 to secure the key Ootann ML's, to provide a reliable source of lime for the SCONI project.



Breakaway's View

Metallica has taken a considered strategy in current tight capital markets

Metallica has taken a considered strategy in the current tight capital markets in looking to develop low capex operations to provide cash flow to keep the Company going while looking for the larger opportunities that may turn into game changers. In addition, attracting JV partners and the divestment of shareholdings to fund activities has eased pressure on the Company's balance sheet and shareholders.

The Company has managed to keep a reasonably tight register, and not overly dilute shareholders in its +10 years of existence.

The project mix is unique on the ASX

As far as we are aware, Metallica has a unique blend of projects when compared to other ASX-listed explorers and developers. The strategy of concentrating on the HMS and bauxite potential (which we view as positive) of north-western Cape York is innovative, and looks to be bearing fruit. The bauxite hunt is particularly relevant given the Indonesian situation.

There are risks in the strategy, including poor HMS market conditions

However there are risks in the strategy. Of most immediate concern is the mineral sands market – the Company will be relying on expected cash flow from the Urquhart Point project, however a poor market, or inability to get a reasonable offtake agreement will severely impact the economics.

There is some buffer given the grade of the initial years production, however as we mentioned commissioning and production will need to be carefully managed so as this valuable mineralisation is not wasted.

The viability of the Urquhart Point bauxite will rely on the results of current testwork

On the face of it the Urquhart Point Bauxite Project has the potential to provide significant cash flow, albeit over a short mine life. This of course hinges on the upcoming testwork to determine the marketability of the material, and then the successful advancement of the project through to permitting and development.

Project economics can only be improved by looking at consolidation opportunities to utilise infrastructure more effectively, and to depreciate capital over a larger resource base.

A positive is the choice of target mineralisation – HMS and bauxite mineralisation is relatively cheap and easy to drill, with the JV having a pipeline of projects now needing work.

Permitting and sovereign risk need to be considered when working in Cape York

Permitting of any future projects will be an issue, although Company personnel do have experience in successful permitting and reaching agreements with the TLO's. This is just a part of doing business in the part of the world the Company is operating in.

On the permitting and sovereign risk side, there is the past history of mining adverse environmental legislation over Cape York Peninsula, also with potential uncertainties with the recent change of government.

We rate Metallica as a SPECULATIVE BUY

Despite some of our comments above we rate Metallica as a SPECULATIVE BUY, with short term price movers including successful start-up of the Urquhart Point HMS Project, and positive results from the bauxite analyses. Longer term price movers will include successful exploration results, and ongoing positive production results from the Urquhart Point HMS Project.



Commodities Background

Bauxite

What is Bauxite?

Bauxite is the principal ore of aluminium

Bauxite is the principle aluminium ore, formed by extreme lateritic weathering and the in-situ upgrading of aluminium bearing minerals in the weathering profile. Bauxite deposits are generally shallow and flat-lying, forming easy to mine sheets of mineralisation. Commercial ores generally contain from 30% to 55% alumina (Al_2O_3).

Globally, the largest deposits are found in tropical areas, with Australia, Guinea and Brazil having the largest resources.

Mineralogy

Key aluminous ore minerals include gibbsite, boehmite and diaspore

Bauxite is generally a mixture of aluminous minerals, iron oxides, clays and silica. In some deposits the minerals take the form of pisolites, spherical concretions of the minerals.

The key aluminous ore minerals include the tri-hydrate gibbsite $\langle \text{Al}(\text{OH})_3 \rangle$, and the mono-hydrate minerals boehmite and diaspore $\langle \text{Al}(\text{OH}) \rangle$. The mineralogy is important in assessing bauxite – gibbsite is preferred given the lower temperatures required to convert the bauxite to alumina in the Bayer process. Mono-hydrate rich bauxites require treatment in the higher cost high temperature plants, and thus will sell at a discount.

Silica content is a key consideration in marketability

Other mineralogical considerations include silica content and characteristics, particularly the amount of reactive silica in the bauxite. Reactive silica is generally silica in clays, and will consume caustic soda in the processing to alumina, thus increasing costs. Reactive silica contents generally should be below 6% for the product to be marketable; however contents up to 8% are accepted, albeit at a discounted price, and the higher reactive silica product will be the first to suffer in a cooling of the bauxite market.

Processing

Processing includes a two-step process – initially smelting to alumina, and then refining to aluminium

Processing of bauxite to aluminium follows a two stage process, and is very energy intensive. It is no surprise that some call aluminium “congealed electricity”.

The first is the refining of bauxite to alumina through the Bayer Process. This involves the pressure digestion of the bauxite, using caustic soda (sodium hydroxide, NaOH). The aluminium oxide in the bauxite is converted initially into sodium aluminate, which through various reactions is ultimately converted to alumina.

Waste products include red mud, a caustic mixture of solid impurities.

The smelting of alumina to aluminium metal is carried out using the Hall-Heroult process. This involves dissolving alumina in molten cryolite (Na_3AlF_6), and then electrolysing the molten salt bath to deposit aluminium metal on the cathodes in the electrolytic cell.

Supply and Demand

Historically there has not been a large sea-borne trade in bauxite – this has changed with the growth of China

Historically there has not been a large seaborne trade in bauxite, with the low value of the material meaning that operations were predominantly vertically integrated, with the higher value products, alumina and aluminium metal being the main traded products. The bauxite trade was dominated by a few large mines, including Gove and Weipa in Australia, Boke in Guinea and Trombetas in Brazil.

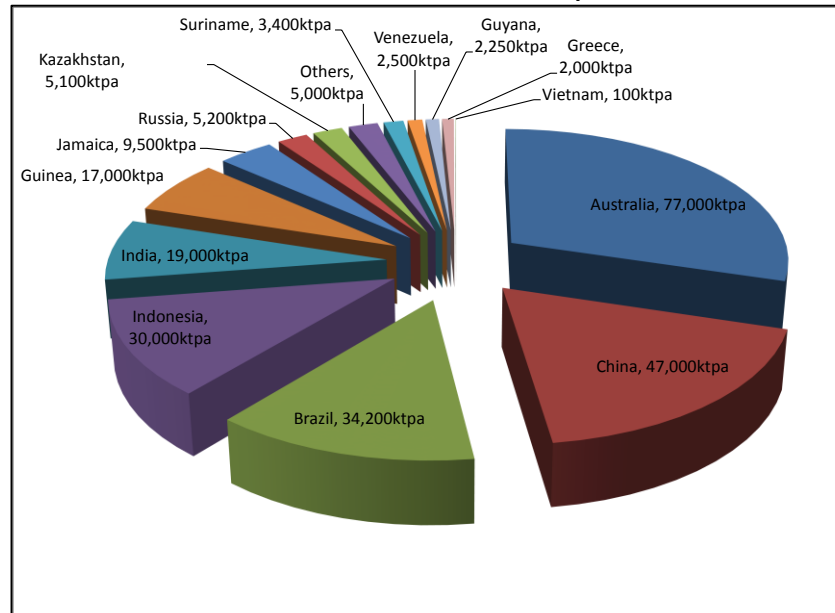
This has changed with the rise of China since 2001. It is estimated that the seaborne trade now comprises 35% of global bauxite production of 260mtpa, with this largely into China.



Key bauxite producers include Australia (with the bulk of production upgraded domestically), China and Brazil.

World Bauxite Production 2013 - Pre-Indonesian Export Bans/Quotas

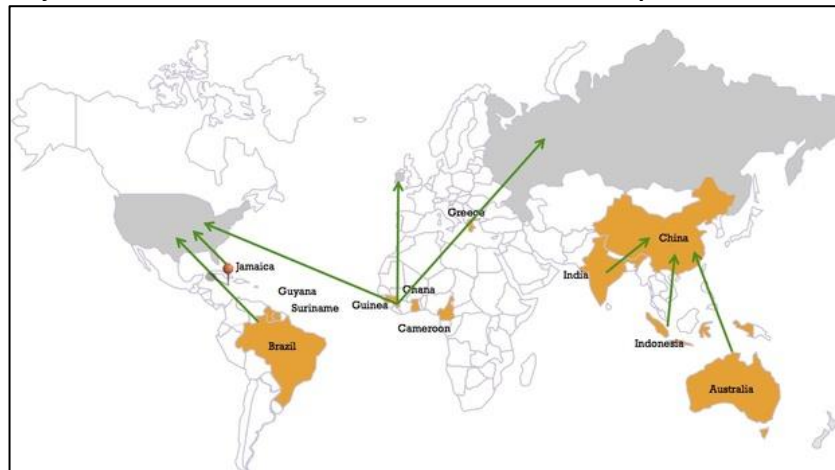
Australia is the world's largest producer, followed by China and Brazil



Source: USGS

Major Bauxite Seaborne Trade Flows – Pre-Indonesian Export Bans/Quotas

Two seaborne markets – the Atlantic and Pacific



Source: thebauxiteindex.com, extracted February 21, 2015

China now consumes 60% of the world's aluminium, and produces some 50% of the metal, or around 25Mt of estimated global production of 50Mt in 2013 (source World Aluminium.org).

China imports over 50% of bauxite requirements

To produce 25Mt amount of metal, approximately 50Mt of alumina is required – according to World Aluminium China produces (including estimated unreported production) ~48Mt of alumina (with the balance being imported), which would require around 100-120Mt of bauxite. This has led to the need to import over 50% of bauxite requirements, with China producing ~47Mt, or less than 50% of requirements in 2013.

The rest has had to be imported, including from Australia, Indonesia and, at high cost, Guinea. The Indonesian bans on the export of raw materials in 2014 severely curtailed supply to China, however China did prepare by stockpiling large amounts of bauxite prior to the ban taking effect, and smaller quantities (~10mtpa) are being exported from Indonesia under a quota system.

Indonesian production in 2013 prior to the imposition of the quotas was 29,000t of which the majority was exported to China.



Indonesian quotas and export bans have led to a hole in supply to China

This and the projection for increasing Chinese demand for bauxite has left an opportunity for other producers to ship into China. This however will be largely for material suitable for low temperature smelters – China does have domestic supply for its high temperature facilities.

Some forecasts see seaborne import demand rising from the current 50mtpa to 125mtpa over the next 10 years..

Pricing

Pricing is opaque, however currently around US\$60/tonne CFR China

Bauxite pricing is relatively opaque, and set by contracts between producer and customer. There is a benchmark, the CFR China CIBX Index, based on 5% reactive silica, 50% total available alumina and 10% moisture. Pricing will be affected by THA and RxSi contents, and shipping basis, including FOB or CFR. Whether or not a company has an ongoing offtake agreement, or is selling on a load by load basis will also affect received prices – in the latter case these will be lower.

Current index prices are in the order of US\$60/tonne CFR China, with this forecast to increase modestly in real terms. However, given the fall in the Australian dollar and low current shipping costs, Australian denominated FOB prices have increased significantly in recent times.

The Mineral Sands Industry

The mineral sands industry is the key supplier of zircon and titanium dioxide minerals

The mineral sands industry is the key supplier of zircon and titanium dioxide minerals worldwide. These are key feedstocks for industrial uses, with Australia being a major global producer, particularly of zircon.

In 2012 global production included 1.3Mt of zircon (down from 1.4Mt in 2011) and 7.1Mt of titanium dioxide feedstocks (up from 6.5Mt in 2011).

Zircon

The major use for zircon is ceramics, which comprise some 50% of demand

The zircon market is supplied by the one product, zircon, where the major use is in ceramics, with this comprising some 50% of the 2012 global demand of 1.3Mt. Approximately 90% of the ceramics demand is in tile manufacture. Other uses include chemicals (21%) and in refractory products (17%). The chemical demand is currently the largest growing, with a 10 year CAGR of 11%.

At 41% of demand in 2011 China is the largest market for zircon

China is the largest market, comprising 41% in 2011. This region has seen significant growth, largely due to the rapid urbanisation during the 2000's seeing increased demand for tiles and other ceramics – tiles comprise approximately 75% of all floor coverings in China (source: Iluka). Other major markets include Europe (25% in 2011) and North America (8% in 2011).

Urbanisation is seen to be the key driver of zircon demand, largely due to increasing demand for tiles and other ceramic products.

Australia is the largest producer of zircon, at 37% in 2012

Australia is the largest supplier globally, providing 37% of the world's production in 2012, with Iluka alone providing 28% of the global demand. Australia's (and Iluka's) shares of global production were significantly down on the 2011 figures (50% and 38% respectively), largely due to weakening demand and prices in the second half of the year leading to curtailment of production.

Titanium Dioxide

Unlike zircon, where the market is supplied by a single product, the 7.1Mtpa (2012) titanium dioxide market is fed by a number of products, with a number of processing routes. The two key pigment production processes are chloride and sulphate.



The titanium dioxide market is fed by a number of products

Key products sold by producers are shown in the table below. What can be seen is that almost 50% of the products sold to end users and pigment manufacturers are upgraded products, with the remaining 50% being raw materials. In addition, approximately 50% of feedstocks are chloride grade and 50% sulphate grade.

Titanium Dioxide Products Sold, 2012

Product, approximate market share	TiO ₂ %	Notes	End Uses
Rutile – 10%	95-97	Mined product	Pigments, metal
Synthetic rutile – 8%	88-95	Upgraded from ilmenite in a furnace	Pigments
Ilmenite			
• Sulphate – 37%	52-54	Processed to pigment - sulphate processing	Pigments
• Chloride – 6%	8-62	Processed to pigment - chloride processing	Pigments
Slag			
• Sulphate – 13%	80-85	Upgraded from sulphate ilmenite in a furnace	Pigments
• Chloride – 20%	85-90	Upgraded from chloride ilmenite in a furnace	
• Upgraded – 6%	95	Upgraded from ilmenite	

Source: Iluka

90% of titanium dioxide is used in pigments

The majority (90%) of titanium dioxide is used in the pigment industry. It is used in various products, including paints, coatings, paper and inks. It is a key white pigment in that it has a high refractive index (whiteness), provides UV protection and is non-toxic.

Other uses are as metal and welding rod core wire

Other uses include as a metal (military, aerospace and specialty applications) and for welding rod core wire.

The pigment market is dominated by few countries and producers

The pigment market is dominated by Australia (28%), Western Europe (22%) and China (21%), with five major producers accounting for over half of global production. The majority of Chinese capacity is for sulphate grade feedstock, in Australia plants are entirely chloride process plants, with the rest of global capacity split between the two.

Four countries provide two thirds of world supply

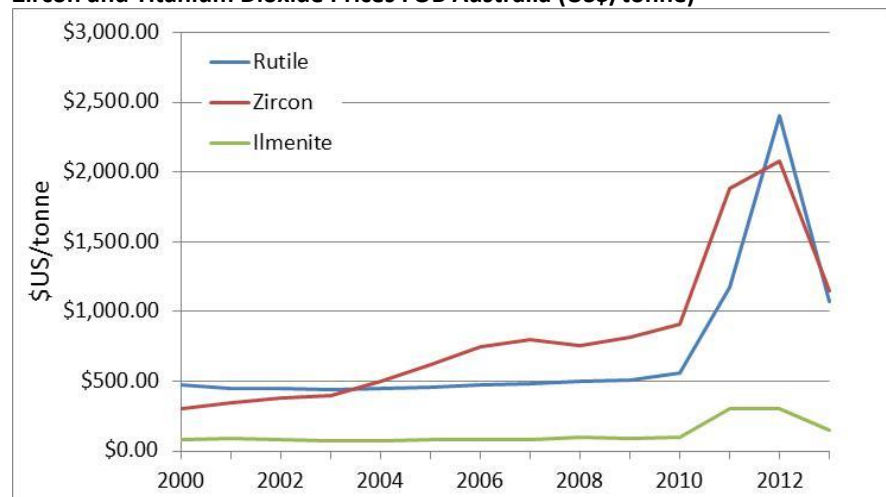
In 2012 (total production 7.1Mt) the major titanium dioxide producers were China (18%), Australia (17%), South Africa (17%) and Canada (15%). Like zircon, Australian share of production had fallen from 24% of 6.5Mt in 2011 (1.6Mt) to 17% of 7.1MT in 2012 (1.2Mt), again largely due to Iluka curtailing production and sales.

Pricing

The mineral sands market is relatively opaque, with pricing set between sellers and buyers

The mineral sands market is relatively opaque – prices are generally fixed between the producer and buyer, and until 2009-2010 were largely on long term contracts, leading to relatively stable prices. More recently, changes in demand and supply have led to contracts more commonly being negotiated quarterly or half yearly.

Zircon and Titanium Dioxide Prices FOB Australia (US\$/tonne)



Source: Iluka, various public documents



Indicative product prices are shown above – rutile and zircon prices largely are as published in Iluka reports, ilmenite prices are derived from various sources.

The noticeable feature is the sharp decrease in prices in 2013 – this followed slowing in demand during 2012, largely due to weakening global economic conditions. Also apparent are significant increases in all commodities starting in 2010. As mentioned, this was as a result of supply constraints enabling producers to renegotiate prices away from long term contracts, which were a disincentive on bringing on new production.

Zircon demand and pricing has largely been driven by urbanisation in China

The steady increase in zircon price from 2000 to 2010 of around 12% CAGR was largely due to the rapid urbanisation in China driving demand for ceramics, and hence zircon. There was a minor blip during the GFC, largely due to non-Chinese factors.

Until 2010 price increases in the titanium dioxide products tended to follow annual GDP growth of around 3%.



Board and Management

Non-executive Chairman

David Barwick

Mr David Barwick is an accountant by profession with over 30 years' experience in the management and administration of publicly listed companies in Australia and North America. In his capacity as Chairman, Managing Director or President he has played a significant role in successfully funding and bringing into production four mining projects. As Director, David has had significant experience in the management of over twenty public companies with his main strength being in the restructuring and financing of the entities, including preparation of prospectuses and other requirements for listing on the ASX.

In addition to being Chairman of Metallica Minerals, David is also Chairman of Jumbo Interactive Limited.

Managing Director

Andrew Gillies

Mr Andrew Gillies has been Managing Director of ASX-listed Metallica Minerals Limited and its subsidiaries since 1997. He has been instrumental in the selection and acquisition of all the mineral assets now held by the Metallica Group. Mr Gillies is a founding Director of Metallica Minerals Limited.

Mr Gillies' key strength is resource management and strategic planning specialising in project generation, selection and acquisition. He has acquired a considerable database and significant knowledge of metalliferous mineralisation and mineral deposits in Queensland. Since 1985 he has worked continuously as a geologist in the mining and exploration industry, accruing over 24 years' experience across a range of commodities. He has been a company geologist with BHP Gold Mines Ltd, Perseverance Corporation Ltd and Cracow Mining Venture and a consulting geologist for various exploration companies until his full time role with Metallica in 1997.

Mr Gillies graduated from the University of Queensland in 1985 with a BSc (Geology) and is a member of the AusIMM.

Non-executive Director

Barry Casson

Mr Casson was appointed to the board as an independent non-executive director on 1 December 2010. Barry has more than 40 years' experience in accounting, finance and general management initially, then with a number of listed and unlisted companies, primarily in the resources industry.

He is a Member of the Institute of Chartered Accountants and the Australian Institute of Company Directors. Mr Casson is currently a nonexecutive Director of Archipelago Metals Limited (an unlisted Public Company) and Finance Director/Company Secretary of Cloncurry Metals Limited (ASX-CLU).

Barry will also act as Independent Chairman of the company's Audit and Risk Committee.

Non-executive Director

Shu Wu

Mr Shu Wu is Director of Jilin Jien Nickel Industry Co. Ltd, and a Director & Managing Director of Jilin HOROC Nonferrous Metal Group Co. Ltd. Mr Wu was previously a Director, Company Secretary, Deputy Managing Director and CFO of Jilin Jien Nickel Industry Co. Ltd, and a Director of Jilin Nickel Industry Group (renamed in January 2006 as Jilin HOROC Nonferrous Metal Group Co. Ltd). Mr Wu was instrumental in Jilin Nickel's successful IPO in Shanghai stock market in 2003. His extensive experience in management and finance has enhanced Jilin Nickel's overseas strategic investment and expansion significantly.

Alternate Non-executive Director

Shu Zhang

Dr Shu Zhang has over 40 years' experience as a Mining Engineer and in management of operations and companies (including Sino Gold Mining Limited) in Australia, Chile, Canada and a number of other countries.

Dr Zhang has worked for the Jilin Nickel Group since 2011, and is a director of Jilin's Canadian subsidiaries, being the unlisted Canadian Royalties Inc., and the TSX listed



Northern Sun Mining Corporation. Director of Northern Sun Mining Corporation, listed on the TSX, Canada.

Company Secretary/CFO

John Haley

Mr John Haley has been Company Secretary and Chief Financial Officer of Metallica Minerals since late 2003. He was also a Director but did not seek re-election at the Annual General Meeting in November 2013. Mr Haley is also a of the Queensland Resources Council.

He is a Chartered Accountant (Fellow of the Institute of Chartered Accountants) with over 35 years work experience, beginning in taxation law and accounting (with Coopers & Lybrand and Arthur Andersen & Co.), then moving to general management, financial reporting and company secretarial duties. He has extensive experience in the preparation of prospectuses and has been involved in the listing of companies in Australia and Canada. His previous work experience is in a diverse range of industries including mineral exploration, and he has participated as a seed capitalist in a number of mineral exploration companies.

Mr Haley holds a B. Com and MBA University of Queensland, GradCert (Marketing) Queensland University of Technology, Grad. Dip. CSP, FCA and FTIA.

Biographies extracted from MLM website, February 15, 2015



Analyst Verification

We, Grant Craighead and Mark Gordon, as the Research Analysts, hereby certify that the views expressed in this research accurately reflect our personal views about the subject securities or issuers and no part of analyst compensation is directly or indirectly related to the inclusion of specific recommendations or views in this research.

Disclosure

Breakaway Investment Group (AFSL 290093) may receive corporate advisory fees, consultancy fees and commissions on sale and purchase of the shares of Metallica Minerals Limited and may hold direct and indirect shares in the company. It has also received a commission on the preparation of this research note.

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