

**Metro Mining Limited**

MMI AU / MMI.AX

▶ **Market Cap**  
**A\$24.5m**  
 US\$30.6m

▶ **Avg Daily Turnover**  
**A\$0.01m**  
 US\$0.013m

▶ **Free Float**  
**61%**  
 174 m shares

Current **0.09**  
 Target **0.18**  
 Prev. Target **NA**  
 Up/Downside **100%**

**STOCK RATING****ADD**

HOLD

REDUCE

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Share price perf. (%)	1M	3M	12M
Absolute	0%	165%	215%

## A bauxite beauty

*The A\$27.4m development of the simple Bauxite Hills project in the Cape York bauxite province would exploit current compelling bauxite market dynamics. Equity market recognition of Bauxite Hills has improved with an EV of A\$20m (at 9c/MMI share). Funding the development in this market on attractive terms appears the biggest hurdle, with successful production generating an NPV<sub>15%</sub> of A\$197m.*

### Bauxite Hills – simple and profitable ▶

Bauxite Hills is located 5km south of the Skardon River, and 95km north of Weipa, which is the hub for Rio Tinto's Cape York bauxite operations. MMI's Preliminary Feasibility Study evaluated a 2Mtpa operation over 21 years with a Capex of A\$27.4m. Low strip ratio free-dig open pit mining will be followed by crushing and screening, with trucking to a barge port on the Skardon River for transshipment to bulk carrier. This option requires lower initial Capex than alternatives. MMI forecasts an after tax NPV<sub>15%</sub> of A\$197m with average annual NPAT of ~A\$38m. MMI's cornerstone shareholder Xinfu Group operates Alumina refineries and Aluminium smelters in China and has expressed interest in offtake agreements.

### Seaborne bauxite – robust price dynamics ▶

Since Indonesia brought in its export ban on raw ores (bauxite and nickel laterites) 12 months ago prices have firmed as seaborne tonnages have declined. While there are many undeveloped deposits of bauxite around the globe, very few of them offer a sufficient investment return, a clear path to government approval and access to infrastructure. The prospect of new large scale projects is unlikely in the short to medium term. Chinese stockpiles of bauxite which stood at 30Mt in late 2014 are dropping by ~1Mt each month. Chinese refineries are now struggling to source material from non-traditional destinations such as Malaysia and Thailand, driving up the price.

### Investment view ▶

Bauxite Hills looks to be a relatively simple free-dig mining, trucking and barging operation. Followers of the sector will have noted the strengthening fortunes of the large alumina producer Alumina (AWC, MCap A\$4.97b) and the small bauxite producer Australian Bauxite (ABX, MCap A\$42.9m). We take the view that interest will percolate down to pre-development plays such as MMI.

**Bauxite Hills PFS Economics – Low CAPEX & OPEX**

2016 Construction Capex	Cost (A\$M)	Operational Cost AUD	Cost (A\$/t)
	Pre-Feasibility		Pre-feasibility
Mine Access (Haul Road)	2.8	Mining Cost to ROM stockpile	3.03
Mine & barge Loading Infrastructure	10.6	Crush, Load and Barge costs	10.50
Mine Camp & Airport	5	Off Mine costs (inc marketing)	6.80
Mining Equipment	2.5	Sub-Total Site & Overhead Costs	20.33
Contingency & Owners Costs	6.5	Royalties	6.36
Total Capex	27.4	Total Cost to FOB Inc. Royalties	26.69

SOURCE: MORGANS, COMPANY REPORTS

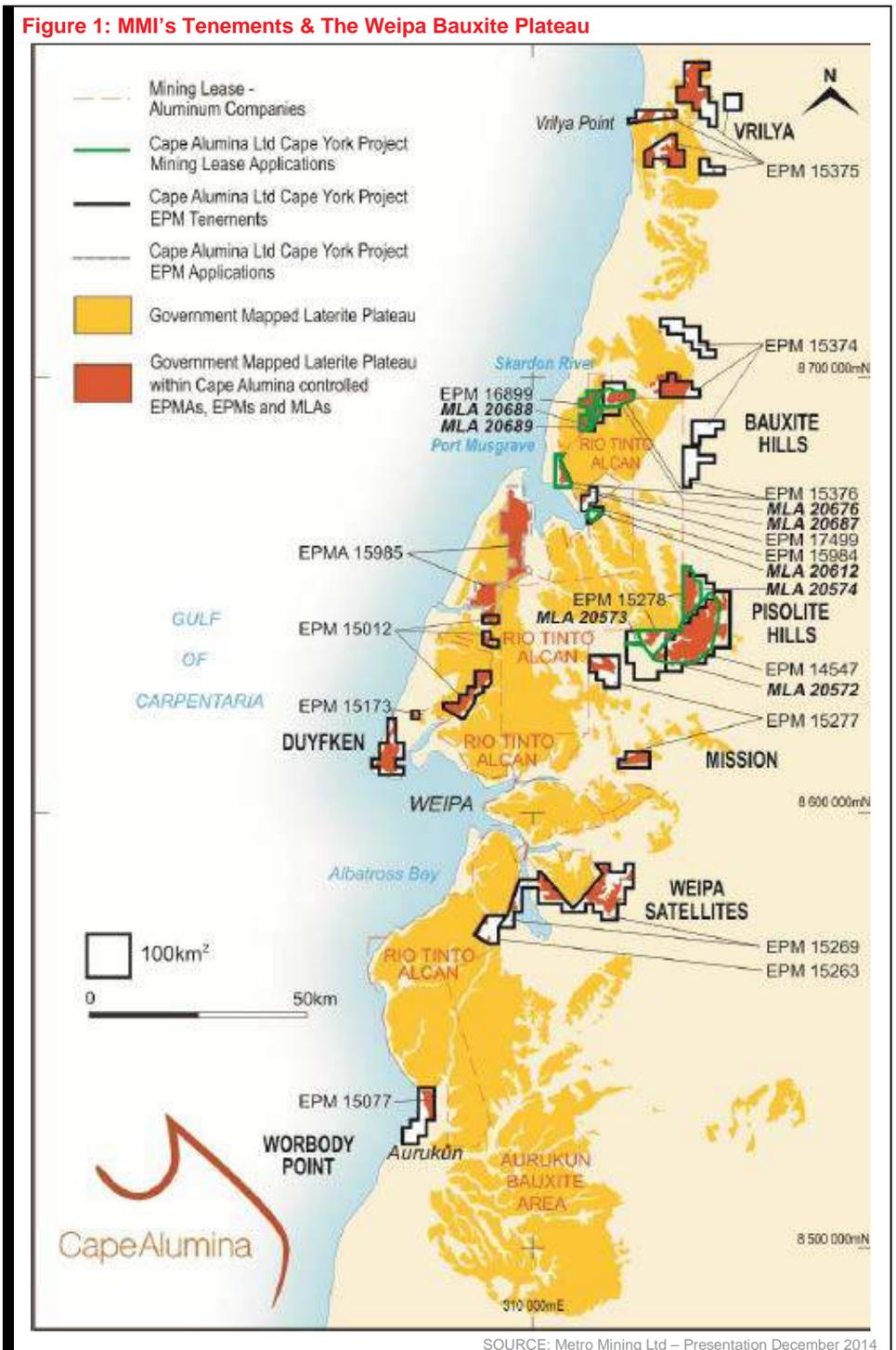
## Bauxite Hills Project

*Development of the Bauxite Hills project is the primary focus for Metro Mining.*

**Focus in a broader portfolio** – Development of the Bauxite Hills project 95km north of Weipa is the focus for Metro Mining Ltd (ASX:MMI). The PFS is based on a resource of 61.5Mt at a grade of 49.2% Al<sub>2</sub>O<sub>3</sub> defined to JORC Code standards. The project has had, and continues to enjoy strong community support. It lies within 1,400sq km of tenements held by MMI on the Weipa Bauxite Plateau which also cover the Pisolite Hills resource (to JORC Code standards) of 132.4Mt at 53.1% Al<sub>2</sub>O<sub>3</sub>.

*Work at Pisolite Hills is suspended and other exploration and evaluation delayed with the focus by management on progressing the Bauxite Hills development.*

**Figure 1: MMI's Tenements & The Weipa Bauxite Plateau**



SOURCE: Metro Mining Ltd – Presentation December 2014

MMI also holds tenements in central Queensland with bauxite potential, as well as coal tenements in the Surat Basin containing over 4.4 billion tonnes of coal (reported to JORC Code standards). These include the wholly-owned Juandah project, and the Columboola JV (MMI 49% - China Coal 51%).

**The Bauxite Hills PFS** – A Preliminary Feasibility Study reported in February

2015 by MMI indicated a simple but robust project with both low capital and operating costs. The project incorporates a shallow open pit operation with low overburden removal, of the order of 0.5m, and free-dig mining of the 1.7m (on average) bauxite horizon, followed by crushing and screening. Product is to be trucked to a barge port to be established on Skardon River for transshipment offshore. Production is modelled from April to December, with a shipping hiatus for the summer wet season. The fundamentals of the Study are shown below:

**Table 1 : PFS Fundamentals**

2016 Construction Capex	A\$M	Assumptions	
Mine Access (Haul Road)	\$2.8	Discount Rate	15%
Mine & barge Loading Infrastructure	\$10.6	Equity Finance	100%
Mine Camp & Airport	\$5.0	Mine Life	21 Years
Mining Equipment	\$2.5	Production Rate	2Mtpy
Contingency & Owners Costs	\$6.5	Average FOB Bauxite Price	US\$44.80/t
<b>Total Capex</b>	<b>\$27.4</b>	A\$/US\$ Exchange Rate	US\$0.81
<b>Operating Cost</b>			
Mining Cost to ROM stockpile	AS \$/t	<b>Product Quality - LOM</b>	
Crush Load and Barge costs	\$10.50	Al <sub>2</sub> O <sub>3</sub> (THA)	39.1%
Total Site & Overhead Costs	\$20.33	RxSi	6.7%
Royalties	6.36	LOM Sustaining Capex	A\$18.1M
<b>Total Cost to FOB Inc. Royalties</b>	<b>26.69</b>	Capital Payback	1.1 Years

SOURCE: Metro Mining Ltd – ASX Announcement February 2015

The study was based on the resources and reserves tabled below.

**Resources to JORC Code standards - BH1 & BH 6**

61.5Mt @ 49.9% Al<sub>2</sub>O<sub>3</sub> (37.8% THA#), 12.2% SiO<sub>2</sub> (7.1% RxSi\*)

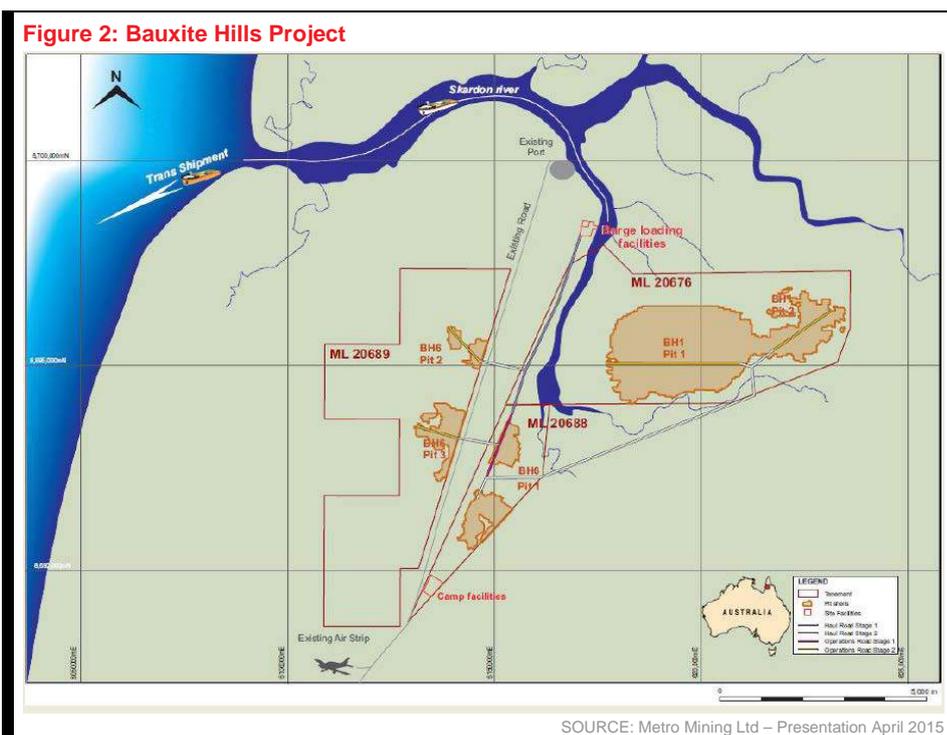
**Probable Reserve to JORC Code standards - BH1 & BH 6**

12.1Mt @ 49.2% Al<sub>2</sub>O<sub>3</sub> (36.6% THA#), 14.8% SiO<sub>2</sub> (7.4% RxSi\*)

# THA – trihydrate available alumina less desilication alumina at 150°C

\* RxSi – reactive silica at 150°C

Cut-off Grade - Total Al<sub>2</sub>O<sub>3</sub> ≥ 45% & Total SiO<sub>2</sub> ≤ 12%



**ESG and Queensland legislation** – The Bauxite Hills project enjoys strong support from the Traditional Owners, and The Cape York Institute also supports relatively simple economic development in the area which can incorporate high levels of indigenous employment. While both previous Labor and LNP governments frustrated the Pisolite Hills development – in the face of expert advice in support of the development and the support of a majority of Traditional Owners – neither political party has expressed opposition to development of Bauxite Hills.

In May 2010, the then Labor Queensland Government declared the Wenlock River Basin under the *Wild Rivers Act* in the face of opposition from Traditional Owners and The Cape York Institute. The Act designated *High Preservation Areas* extending 500m from waterways, while expert advice was for a 200m buffer – also ignored. This increase from 200m to 500m sterilised 45% of the Pisolite Hills resource. With the election of the single-term LNP government submissions were sought in early 2013 for the *Cape York Regional Plan* to supersede the *Wild Rivers* legislation, this time incorporating input from the Traditional Owners. This incorporated the expert opinion provided for the *Wild Rivers* legislation to establish an effective High Preservation Area within 200m of waterways. However in late 2013 the Newman government declared the *Steve Irwin Wildlife Reserve* effectively sterilising the Pisolite hills project, which covered less than 5% of the 135,000ha covered by the declaration.

Bauxite Hills was not affected by the *Wild Rivers Act*, legislated by the Labor government, nor by the Declaration by the LNP government.

## The Market for Bauxite & Bauxite Hills product

**The bauxite market** - World bauxite production is 215Mtpy, and Australia is the world's largest producer responsible for over 60 Mtpy. Much of this production – world-wide and Australian – is by vertically integrated producers including Alcoa, Rio Tinto Alcan, Rusal and Chinalco. China is the largest bauxite importer at a rate of 30-40Mtpy, with the world-wide seaborne trade estimated at 70Mtpy. Indonesia is the largest contributor to the non-vertically integrated sea-borne trade with exports estimated at 40Mtpy. The Indonesian government has announced plans to ban the export of unprocessed laterite ores of nickel and aluminium by 2014. While this may not be achieved we expect that much of the illegal production will be halted, leading to a market opening for new production.

A laterite with a minimum of 40% Al<sub>2</sub>O<sub>3</sub> is classified as bauxite. While there is an openly traded market for bauxite, it is somewhat opaque, and the relationship between specification ranges and price is not linear. As with coking coal, consumers will blend ore from a number of sources to achieve a specification to suit their particular process.

**Bauxite Hills and the Offtaker** – While most specifications for traded bauxite are reported as total levels, for the purchaser it is the performance of the product in the process which is important. It is the amount alumina available (Avl Al<sub>2</sub>O<sub>3</sub>), typically defined at 150°C, rather than the total Al<sub>2</sub>O<sub>3</sub>. In bauxite the aluminium comes from three minerals. Gibbsite, the aluminium trihydrate, is the most desirable, and can be refined at lower temperatures than the other two minerals, boehmite and diasporite, which are both monohydrates. Limited studies of both the Pisolite Hills and Bauxite Hills deposits indicate attractive in-situ grades, with the Bauxite Hills reserves yielding 36.6% Trihydrate Available Alumina (THA) at 150 degrees Celsius, an attractive grade.

Historically maximum silica (SiO<sub>2</sub>) content below 5% was desirable for refining, although higher levels were acceptable. For processors the limitation is reactive silica (Rx SiO<sub>2</sub>), which typically ranges from 50% to 80% of total silica. A module – the ratio of total Al<sub>2</sub>O<sub>3</sub> to total SiO<sub>2</sub> - above 8 is generally considered preferable. *Value in use* drives the bauxite blend specification, with tolerance for higher silica inversely correlated with caustic soda costs. Rio Tinto's Weipa bauxite reports 2.4%-3.4% total silica and 0.3%-0.6% quartz. The Bauxite Hills

bauxite reserves have a relatively high silica content at 14.8% SiO<sub>2</sub>, and Rx SiO<sub>2</sub> is 7.4%. This is comparable with Brazilian bauxites mined commercially.

High Fe<sub>2</sub>O<sub>3</sub> content and in particular a high Goethite to Haematite ratio are not desirable in Bauxite as these factors directly affect the settling rate of bauxite residue in settlers and washers resulting in high soda loss with washed residue. Weipa bauxite is commonly in the range 14-17% Fe<sub>2</sub>O<sub>3</sub>. Bauxite Hills Fe<sub>2</sub>O<sub>3</sub> ranges from 6.5% to 10.8%, with Pisolite Hills averaging 8.6%.

High levels of TiO<sub>2</sub> are not desirable. A common upper limit is 3%, although some Chinese bauxites have a TiO<sub>2</sub> content of approximately 4%. At \*. \*% TiO<sub>2</sub> the Bauxite Hills product is attractive, and a blend incorporating this could blend an attractive feedstock.

Indonesian bauxite specifications are reported to be 45-48% total Al<sub>2</sub>O<sub>3</sub>, 8-12% SiO<sub>2</sub>, and a maximum of 14% Fe<sub>2</sub>O<sub>3</sub>.

MMI shareholder Xinfra Group, which operates alumina refineries and aluminium smelters in China, previously signed an Offtake Agreement for 1Mtpy of Pisolite Hills product, prior to suspension of its development, and has indicated its intention to take Bauxite Hills product.

## Valuation and risks

The major shareholder is DADI Engineering Group with 16.4%. Balanced Property Trust holds 14.4%. China Xinfra Group, one of the largest alumina-aluminium enterprises in China, holds a 7.8% equity interest.

Delivery of the Bauxite Hills Pre-feasibility study has generated renewed interest in Metro Mining, which reported A\$4.6M cash at 31 March 2015. At 8.5cps, MMI has a Market Cap of A\$24.5M, valuing MMI's assets at A\$20M.

We perceive the major risk as financing the development of Bauxite Hills, with the capital required comparable with the current Market Cap. Achieving all regulatory approvals is not expected to be unduly difficult, given the previous governments have not flagged any issues, and it has had support from the majority of Traditional Owners. It is a relatively small scale and simple development. The MD, Simon Finnis, was most recently responsible for bringing the US\$600M Grande Cote Project on the Atlantic coast of Senegal, West Africa, through development and into successful production.

MMI's valuation derived using a DCF methodology generates a value of A\$197M. With 289m shares on issue this equates to A\$0.68 per share. Allowing for a doubling of issued capital would generate a value of A\$0.34ps. Our expectation would be for MMI to trade at a discount to this level until financing is achieved, construction completed, and production commenced.

A current target price between 15 cps and 20 cps would reflect this risk. We set our target price at 18cps.

## Company overview

MMI holds 1,400sq km of tenements on the Weipa Bauxite Plateau with the primary focus development of the Bauxite Hills resource of 61.5Mt at a grade of 49.2% Al<sub>2</sub>O<sub>3</sub> defined to JORC Code standards. The tenements also cover the Pisolite Hills resource (to JORC Code standards) of 132.4Mt at 53.1% Al<sub>2</sub>O<sub>3</sub>. MMI also holds tenements in central Queensland with bauxite potential, as well as coal tenements in the Surat Basin containing over 4.4 billion tonnes of coal (reported to JORC Code standards). These include the wholly-owned Juandah project, and the Columboola JV (MMI 49% - China Coal 51%).

**Figure 3: Existing Skardon river air strip**



SOURCE: Morgans

**Figure 4: Typical project resource cross-section**



SOURCE: Morgans

**Figure 5: Existing Skardon river pier**



SOURCE: Morgans

**Figure 6: Planned barge loading facility location**



SOURCE: Morgans

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