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## Metro Mining

### COMPANY SNAPSHOT

Reuters/Bloomberg:	MMI.AX / MMI AU
Market cap:	US\$35.4m
	A\$47.3m
Current price:	A\$0.09
Average daily turnover:	US\$0.01m
	A\$0.01m
Current shares o/s	525.6m
Free float:	70%

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### Bauxite Hills funding in place

- Metro Mining (MMI) is moving to develop the Bauxite Hills project, Cape York, with capex of A\$40m for 4Mtpy of bauxite production. Submissions – public and government – to MMI's Environmental Impact Statement (EIS) closed on 29 June 2016. Responses and MMI's final statement of environmental commitments is to be lodged for approval, with determination of the EIS anticipated by end 2016.
- Under the terms of an earn-in JV with Mahar San, MMI is earning an 80% interest in the Mahar San volcanogenic massive sulphide project, Myanmar, where in-pit sampling and re-sampling diamond drilling has reported ore grade and width base and precious metal intercepts, with the best channel 4m @ 6.7g/t Au, 261g/t Ag, 1.35% Cu, 11.6% Zn and 2.63% Pb.
- MMI has now announced a placement to Greenstone Resources at A8.5cps to raise A\$8.9m. Greenstone will hold a 19.9% stake in MMI, will have representation on the Bauxite Hills development steering committee, and is committed to funding a further A\$20m in follow-on equity.

### Bauxite Hills – simple and profitable

Bauxite Hills, located 95km north of Weipa, looks to be a relatively simple free-dig mining, trucking and barging operation, with construction scheduled to commence early 2017. MMI's updated (January 2016) Preliminary Feasibility Study evaluated a 4Mtpy operation over 13 years with initial capex of A\$40m. MMI's cornerstone shareholder Xinha Group operates Alumina refineries and Aluminium smelters in China and has expressed interest in offtake agreements.

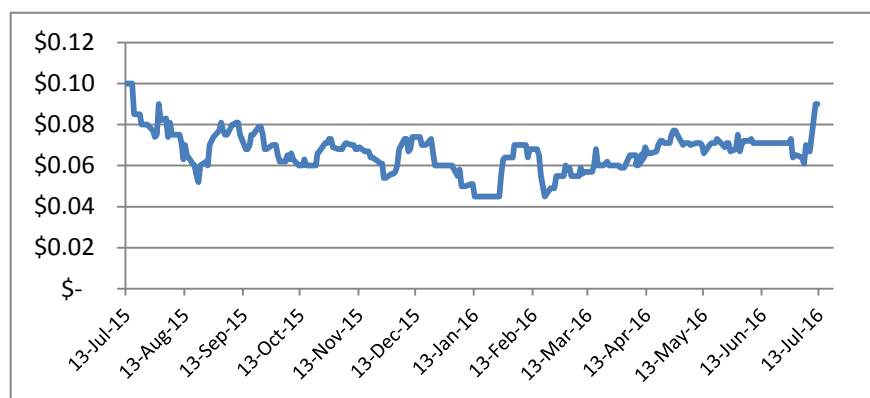
### Seaborne bauxite – in recovery?

After Indonesia brought in its export ban on raw ores (bauxite and nickel laterites) in mid 2014, bauxite prices firmed as seaborne tonnages declined; however, weaker Chinese growth coupled with funding restrictions in 2015 resulted in weaker demand and lower bauxite prices from late-2015. The prospect of new large-scale projects appears unlikely in the short to medium term, with stronger prices as demand increases.

### Share price risk

Investors in MMI have experienced a 50% lift in the share price since January 2016 (A6.0cps to A9.0cps) with the release of the expanded PFS and now the funding commitment from Greenstone Resources, as MMI works through the final stages of the regulatory process ahead of the projected development, which is expected to drive the MMI share price over the next 12 months. The acquisition of an 80% interest in the Mahar San copper project in Myanmar offers upside in the event of exploration success.

Figure 1: Metro Mining share price – 1 year



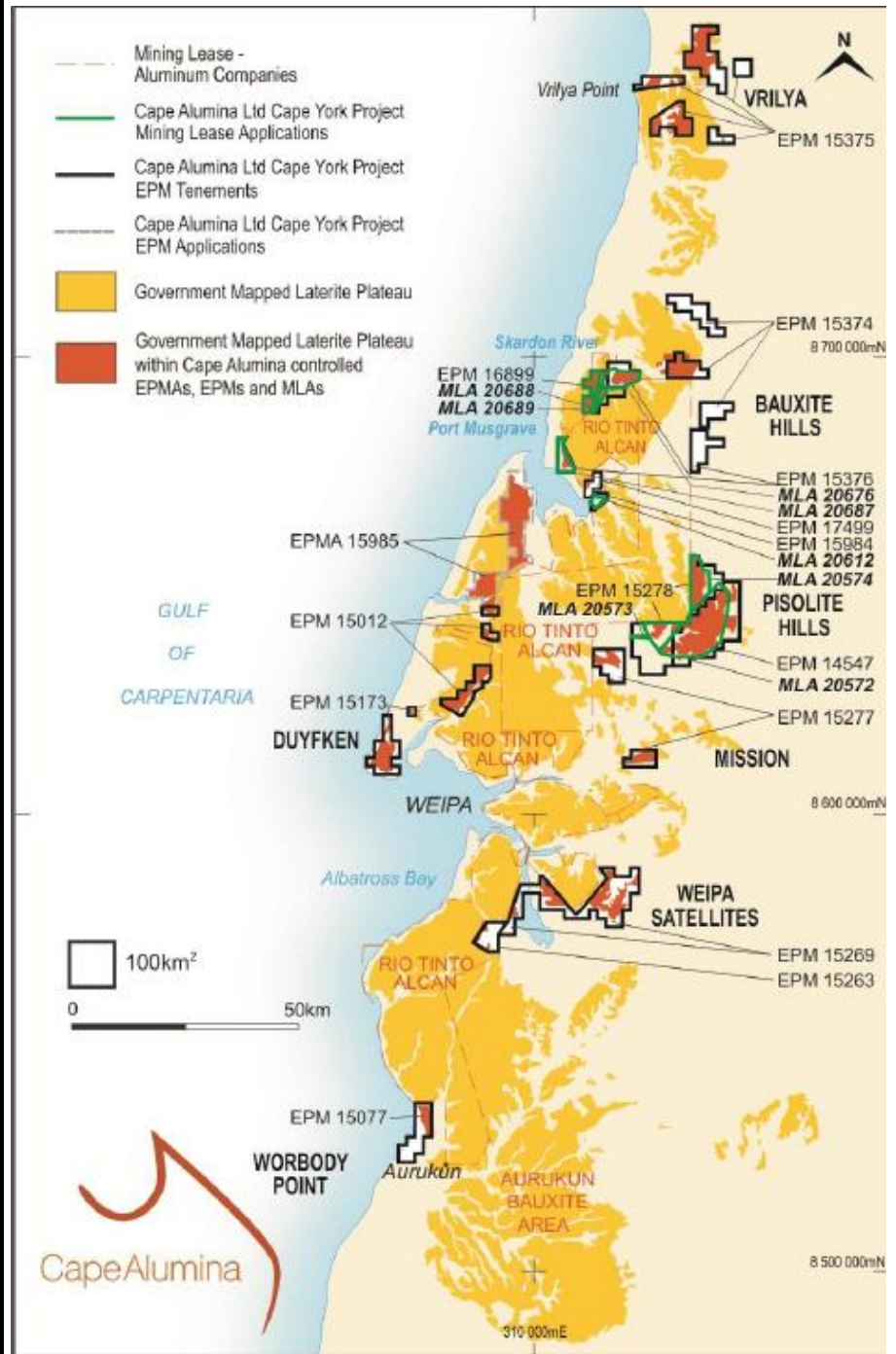
SOURCE: IRESS

# Bauxite Hills Project

## 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 65.3Mt at a grade of 50.3% Al<sub>2</sub>O<sub>3</sub> defined to JORC Code (2012) standards. The project has had, and continues to enjoy, strong community support. It lies within 1,300sq km of tenements held by MMI on the Weipa Bauxite Plateau. MMI has a 21.9% interest in unlisted Gulf Alumina Ltd, which holds adjacent tenements.

Figure 2: MMI's Tenements & The Weipa Bauxite Plateau

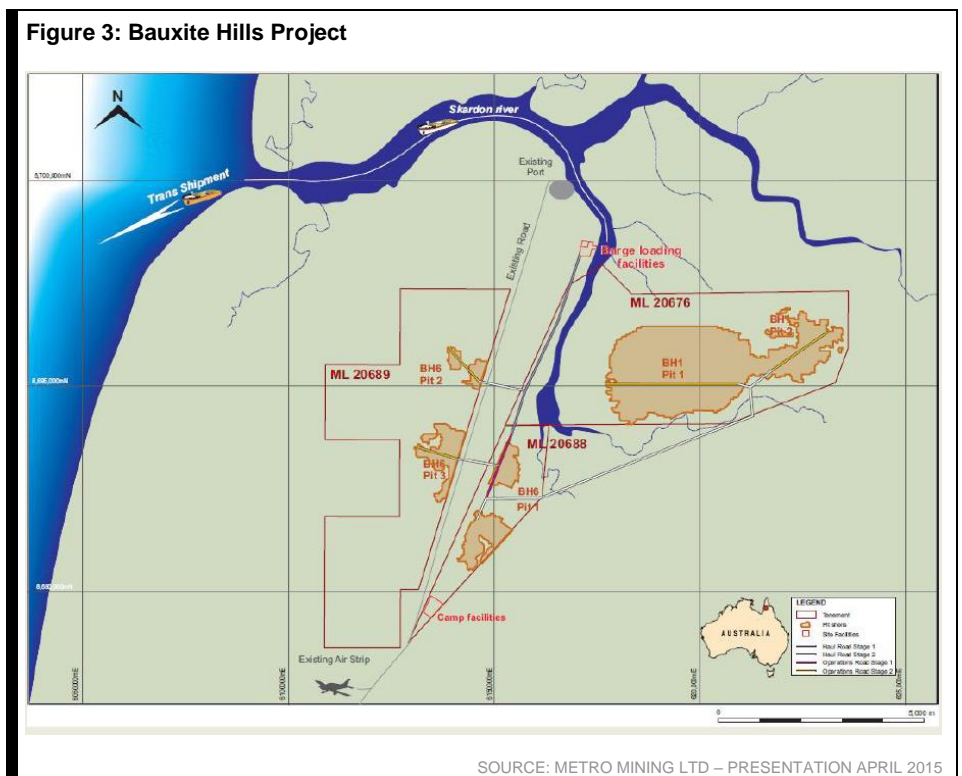


SOURCE: METRO MINING LTD – PRESENTATION DECEMBER 2014

MMI also holds coal tenements in the Surat Basin containing over 4.4 billion tonnes of coal (reported to JORC Code 2012 standards). These include the wholly-owned Bundi project, and the Columboola JV (MMI 49% - China Coal 51%). MMI has recently acquired an 80% interest in the Mahar San copper project, Myanmar.

**The Revised Pre-feasibility Study**

After a PFS reported in February 2015 by MMI, a Definitive Feasibility Study (DFS) with an accuracy estimated at +/-15% was released for a 2Mtpy operation to satisfy a streamlined regulatory approval process. The approvals received satisfied the streamlined approval process for operations with production below 2Mtpy, meeting the standards for release of a DFS. MMI was subsequently advised by the Queensland Department of Environment and Heritage Protections (DEHP) that a full environmental approvals process would be required for the Bauxite Hills development.



Sensitivity analysis had indicated that a larger 4-5Mtpy project would be more robust. In January a revised study, to Pre-feasibility standards, was released. 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:

**Figure 4: PFS fundamentals**

INITIAL CAPEX - 4Mtpy	A\$M	OPERATING COSTS - 4Mtpy	A\$/t	A\$M/yr
Haul roads, civil & site	3.03	Mine, haul, stockpile	6.27	25.1
Nav. aids, mooring	1.15	Transshipment	8.40	33.6
Infrastructure (BLF, accomm)	27.63	Site & admin	4.13	16.5
Mining & equipment	6.18	<b>Site costs</b>	<b>18.80</b>	75.2
EPC, mobilisation, insurance, other	2.11	Royalty & other	7.27	29.1
<b>Total</b>	<b>40.10</b>	<b>Operating costs</b>	<b>26.07</b>	104.3

SOURCE: METRO MINING LTD – ASX ANNOUNCEMENT JANUARY 2015

The study was based on the resources and reserves, reported to JORC Code 2012 standards, below.

#### Resources (Measured, Indicated & Inferred)

BH1 & BH6 - 53.5Mt @ 50.6% Al<sub>2</sub>O<sub>3</sub> (38.7% THA#), 11.7 SiO<sub>2</sub> (6.3% RxSi\*)  
 BH2 - 11.7Mt @ 49.1% Al<sub>2</sub>O<sub>3</sub> (37.4% THA#), 15.7 SiO<sub>2</sub> (6.7% RxSi\*)

#### Reserves (Proved & Probable)

BH1 & BH 6 48.2Mt @ 50.2% Al<sub>2</sub>O<sub>3</sub> (38.4% THA#), 11.2% SiO<sub>2</sub> (6.4% RxSi\*)

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

\* RxSi – reactive silica at 150°C.

#### 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 and Bauxite Hills product

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 was the largest contributor to the non-vertically integrated sea-borne trade with exports estimated at 40Mtpy. The Indonesian government banned the export of unprocessed laterite ores of nickel and aluminium from 2014. While this may not be fully maintained longer term, our expectation is that much of the illegal production that has been halted will not re-start, leading to a market opening for new production. Should the ban remain in place, the supply shortage will persist. 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>.

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 refining process that is important. It is the amount alumina available (Avl  $\text{Al}_2\text{O}_3$ ), typically defined at  $150^\circ\text{C}$ , rather than the total  $\text{Al}_2\text{O}_3$ . 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 diaspore, 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 ( $\text{SiO}_2$ ) content below 5% was desirable for refining, although higher levels were acceptable. For processors the limitation is reactive silica (Rx  $\text{SiO}_2$ ), which typically ranges from 50% to 80% of total silica. A module – the ratio of total  $\text{Al}_2\text{O}_3$  to total  $\text{SiO}_2$  - 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. Analysis of Bauxite Hills samples (May 2015) reported silica content ranging from 6.8% to 13.3%, with Rx  $\text{SiO}_2$  expected to be approximately 50-60% of this, comparable with Brazilian bauxites mined commercially.

High  $\text{Fe}_2\text{O}_3$  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 of 14-17%  $\text{Fe}_2\text{O}_3$ . Bauxite Hills  $\text{Fe}_2\text{O}_3$  ranges from 7.6% to 13.5%, averaging 9.8%.

High levels of  $\text{TiO}_2$  are not desirable. A common upper limit is 3%, although some Chinese bauxites have a  $\text{TiO}_2$  content of approximately 4%. At an average 2.8%  $\text{TiO}_2$ , the Bauxite Hills product is attractive, and a blend incorporating this could blend an attractive feedstock.

MMI shareholder Xinha 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.

### Myanmar VMS (MMI 80%)

Through its wholly-owned subsidiary Metro Myanmar, MMI will form a joint venture with Mahar San Company to earn an 80% interest in “three “small mining” concessions for copper and an enveloping larger copper exploration concession covering  $7.5\text{km}^2$ ”. MMI will spend US\$62,500 to earn the 80% interest, at which point the partners will contribute pro-rata. MMI will “loan at least US\$100K per year to the JV company” to explore and evaluate the property. Small-scale mining of copper and gold was undertaken from 2010 to 2013, followed by small-scale mining of deeper copper sulphide ore from 2013, and heap leach production of copper.

MMI's consultants have undertaken geological mapping, soil sampling, ground-based magnetic and Time Domain Electro-Magnetic (TDEM) surveying, with relatively poor outcrop in the concession. They have undertaken rock chip and channel sampling of gossan outcrop, and exposed in the workings, including what are described as “sulphide mounds”. They have also re-logged and re-sampled core from three diamond drill holes completed by Mahar San.

The strongest intersection was from channel sampling of a “sulphide mound” in the Mahaga pit which returned a 4m interval of 6.7g/t Au, 261g/t Ag, 1.35% Cu, 11.6% Zn and 2.633% Pb. The mineralisation and the geological setting indicate that this is a volcanogenic massive sulphide (VMS) system.

**Figure 5: Rock Chip & Channel Sampling Results – Mahar San project**

Sample from	Sample to	Site	Sample Type	Channel, Drill Hole	From (m)	To (m)	Interval (m)	Average Grade
277102	277105	Mahaga	Channel	MSCH_1	2	10	8	0.48 g/t Au, 1.33% Cu
277109	277110	Mahaga	Channel	MSCH_1	16	20	4	6.7 g/t Au, 261 g/t Ag, 1.35% Cu, 2.63% Pb, 11.6% Zn
277111	277112	Mahaga	Channel	MSCH_2	0	4	4	0.68 g/t Au
277127		Mahaga	Channel	MSCH_3	16	18	2	0.79 g/t Au, 1.78% Cu
277129	277131	Mahaga	Channel	MSCH_3	20	26	6	0.95 g/t Au
277135		Managa	Grab					1.51 g/t/Au
277136	277145	Thit Set Te	Channel	MSCH_4			2	1 g/t Au, 0.68% Cu
277146	277152	Shwe Mon	Channel	MSCH_6			2	0.39 g/t Au, 1.01% Cu
277154	277156	Mahaga South	Drill Core	DH_2	13.6	17.6	4	10.1 g/t Au, 254 g/t Ag, 0.58% Cu, 0.7% Pb, 9.96% Zn
277159	277168	Other prospects	Grab, channel					Maximum 0.45 g/t Au, 0.24% Cu

SOURCE: METRO MINING LTD – JUNE 2016

### Corporate & financial

MMI has announced a placement (11 July 2016) to Greenstone Resources at A8.5cps to raise A\$8.9m. On completion of the placement, Greenstone Resources will hold 19.99%, followed by Balanced Property Pty Ltd (13.02%), Joyday Pty Ltd (10.41%) and DADI Engineering Group (9.98%). China Xinfu Group, one of the largest alumina-aluminium enterprises in China, holds a 4.30% equity interest.

The raising and Greenstone Resources' commitment to A\$20m of follow-on funding has reduced the Bauxite Hills funding risk and lifted the share price. At a share price of 9.0cps, MMI has a market capitalisation of A\$47.3m.

### Risks

We perceive that the major risk, funding the development of Bauxite Hills, has been ameliorated. Achieving all regulatory approvals is not expected to be unduly difficult, given previous governments have not flagged any issues. With completion of the Native Title and Land Access Agreement and the transshipment agreement, the development has support from the majority of Traditional Owners. It is a relatively small scale and simple development. The CEO, Simon Finnis, was most recently responsible for bringing the US\$600m Grande Côte Project on the Atlantic coast of Senegal, West Africa, through development and into successful production.

**Upside valuation scenario:** MMI derives a valuation for Bauxite Hills, based on the PFS, using a Discounted Cash Flow methodology with a 15% discount rate, to generate a value of A\$440m. With an expanded issued capital of 525.6m shares on issue this equates to over A\$0.80 per share. Equity funding the development at the current share price would double the issued capital, reducing this valuation to A\$0.40 per share.

**Current valuation:** Allowing for finalisation of debt and equity funding, coupled with risks associated with the development, construction and operation, together with commodity price and exchange rate risks would see a valuation of A\$0.20, a 50% discount to DCF valuation on expanded issued capital.

**Downside valuation scenario:** Identification of a fatal flaw in the project through the Definitive Feasibility Study (not identified during the recent DFS into the 2Mtpy development), failure to achieve regulatory approval and funding, or a sustained collapse in the bauxite price – none of which the company anticipates – would see the project mothballed and the potential for zero value to be attributed to it. At this stage we also assign zero value to Mahar San.

### Company overview

MMI holds 1,300sq km of tenements on the Weipa Bauxite Plateau with the primary focus development of the Bauxite Hills resource of 65.3Mt at a grade of 50.3% Al<sub>2</sub>O<sub>3</sub> defined to JORC Code (2012) standards. The tenements also cover the Pisolite Hills resource. 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 Bundi project, and the Columboola JV (MMI 49% - China Coal 51%).

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