

## HIGHLIGHTS

### High Purity Alumina (HPA) Project

WESTERN AUSTRALIA

#### Integrated Plant Study

- Significant cost savings identified by the **Study** conducted by AMMG's specialist engineering consultants (**Consultants**);
- Based on **700tpa** off-mine site HPA processing pilot plant (**Plant**):
  - Plant **opex \$8.56/kg** (incl. +/-20% accuracy);
  - Plant **capex <\$10m** (incl. +/- 30% accuracy).

#### Successful Optimisation Test Work

- Assays from intermediate aluminium chloride confirm purity of **99.994% alumina** can be produced, provided no impurities are added in the final stages;
- Test Work nearing completion with focus now on procedure for materials handling in the final stages of calcination and washing, rather than the chemical process;

- Test Work has identified **considerable efficiencies** to streamline the process.

#### Bulk Sample Production

- Bulk sample program has commenced to produce **99.99% (4N)** HPA to send to potential **off-take partners**;
- Final stage grinding to cater to end-user specifications is being investigated;
- **DMP approval** for extraction of a total 10,000t kaolin from EL70/3923 (Meckering) to support AMMG's initial HPA feedstock requirements.

#### Off-take Negotiations and Funding

- Some major HPA producers have expressed an interest in potential Plant funding as well as requesting sample;
- With the Study's findings, AMMG is advancing various fundraising options for its proposed Plant.

### South West Kaolin DSO Project

WESTERN AUSTRALIA

- Following strong interest received from some major international kaolin end-users and potential customers, AMMG is exploring the opportunity for a potential **bulk direct shipping ore (DSO)** operation;
- AMMG has commenced an internal scoping study to review the feasibility of processing its primary kaolin by dry separation for a wide variety of end-use applications;
- Samples of AMMG's **naturally pure kaolin** sent to external laboratories and processing experts for test work;
- AMMG's JORC defined kaolin resource currently stands at **297Mt**.

#### Corporate

BOARD OF DIRECTORS & MANAGEMENT

- Mr Ric Dawson's employment contract will not be renewed in line with the Company's long-term strategic goals;
- Company secretary/CFO Mr Piers Lewis will serve as acting chief executive officer (CEO) until a new appointment is made;
- AMMG has commenced the search for a suitably qualified individual with experience in **plant operations** and construction, project management, acid mineral processing, project funding and off-take negotiations to facilitate the **advancement** of its **HPA project**;
- A number of highly qualified candidates have approached AMMG.

#### Corporate FINANCE

- Fully subscribed placement of 21,465,000 options for an additional working capital of \$42,930;
- Substantial reductions in tenement portfolio of non-core projects to cut costs;
- AMMG remains well funded with circa **\$1.78m in the Bank** as at 30 June 2014.

## information

**Australia Minerals & Mining Group  
(AMMG)**

ABN 45 125 301 206

#### Financial Information

(as at 30 June 2014)

**Share Price:** 0.081

**Shares:** 107.75m

**Market Cap:** 8.62m

**Cash:** \$1.78m

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## board

**LUKE ATKINS LLB**

Non-executive Chairman

**PETER BAILEY**

B.Sc(Hons) Elect.Eng MIEE C.Eng

Non-executive director

**DAN TENARDI**

Non-executive director

**PIERS LEWIS B.Comm/CA**

Company Secretary & CFO

Acting Chief Executive Officer



Fig 1. Intermediate aluminium chloride sample

## High Purity Alumina (HPA) Project

### Integrated Plant Study

During the quarter an integrated plant study (**Study**) was successfully completed, which was based on the kaolin to high purity alumina (HPA) process flowsheet specifically researched and developed by AMMG ([click here to view the announcement](#)). The Study was conducted by AMMG's specialist engineering consultants (**Consultants**) in conjunction with an optimisation test work program (**Test Work**), which is nearing completion.

AMMG's Study, termed the "Integrated Plant Study", aimed to confirm the economic flow sheet developed by AMMG and was based on the test outcomes and Consultants' engineering knowledge. The scope of work included providing deliverables such as process flow diagrams, process design criteria, capital/operating cost estimates, mass/energy balance, equipment sizing and reagent calculation.

The Study's findings indicated **significant cost savings** to capital (**capex**) and operating (**opex**) expenditure for the Company's proposed HPA processing pilot plant (**Plant**).

Using a base case of **700t/year** (or approximately 2t/day) the off-mine site **Plant's capex** is estimated at **under \$10m**, which is inclusive of a +/- 30% accuracy. The **Plant's opex** is estimated at **\$8.56/kg**, inclusive of +/- 20% accuracy. Based on major industry producers' recently reported HPA prices, the average price for HPA is around **US\$54/kg** and can potentially **sell up to \$300/kg** (depending on purity and other specifications). The Study's findings support a business case for AMMG to deliver a potentially competitive product.

The positive findings established during the Study and the current Test Work were a result of further developing major operating parameters by incorporating **several efficiencies** into AMMG's process flowsheet, with the following benefits identified:

- Lower energy costs by amending specific process stages and/or alternative equipment selection;
- Lower potential environmental factors by recycling, minimising waste and alternative equipment selection;
- Removal/amendments to non-essential stages of the flowsheet;
- Introduction of innovative equipment solutions to increase efficiencies and lower costs;
- Amendments to process flowsheet to maximise the extraction of impurities and/or minimise reagent consumption;
- Lower equipment costs by sourcing qualified overseas suppliers rather than locally or custom-designed; and
- Lower operating costs by sourcing alternate reagent suppliers, amending reagent types, or recycling to reduce reagent consumption.

### Bulk Sample Production

AMMG's Consultants have commenced the **bulk sample program** (see Fig 2), which aims to produce a large trade sample of approximately 20kgs of 99.99% (4N) HPA for despatch to international end-users and potential off-take customers.

Additionally, AMMG is investigating final stage grinding options to cater to **individual end-user specifications** for 4N HPA.

### DMP Approval for Kaolin Extraction

During the quarter AMMG's application for "excess tonnage" was approved by the Western Australian state government mines department (DMP) pursuant to the Mining Act 1978. The approval permits the extraction of additional tonnes of kaolin **totalling 10,000 tonnes** from AMMG's 100%-owned Meckering exploration licence (EL) 70/3923. The DMP approval will support AMMG's initial **feedstock** requirements for its HPA processing technology.



Fig 2. Bulk sample program to produce 99.99% (4N) HPA underway



## High Purity Alumina (HPA) Project

### Successful Optimisation Test Work Results

The preliminary assay results of the intermediate aluminium chloride confirm that a grade of 99.994% aluminum oxide ( $Al_2O_3$ ) can be produced as long as no impurities are added in the final stages.

To date the optimisation test work (Test Work) has identified **considerable efficiencies** to streamline the process by way of optimising reagent concentrations, solid-liquid ratios, temperatures as well as the consolidation of solid/liquid separation and washing equipment.

The initial leaching phase of AMMG's process was successfully conducted on a continuous basis (refer to Fig 4), which confirmed its capacity for the full-scale processing pilot plant (Plant). Lower-than-expected optimal leaching temperatures were also determined, which **reduces the energy consumption**.

These efficiencies were incorporated into the design of AMMG's HPA Plant detailed in the announcement dated June 5, 2014 ([please click here to view the announcement](#)).

AMMG engaged the Consultants in January 2014 ([click here to view the announcement](#)) to conduct the Test Work on the process flowsheet researched and developed by the Company and to subsequently produce a bulk trade sample of 4N HPA product.



Fig 3. Aluminium chloride assay results confirm that a grade of 99.994% alumina can be produced

### Final Stages of Optimisation Test Work

The last remaining stages of the Test Work are nearing completion with the focus now centred on refining the procedure for **materials handling** in the final calcination and washing stages, rather than the actual chemical process.

Following the successful production of the aluminium chloride that confirms aluminum oxide can be produced at 99.994% purity, the final process stages of calcination and washing depend on a highly efficient **materials handling system** to ensure that no outside material or contaminants are introduced into the process. These final stages of the Test Work are currently underway. Further updates will be announced upon completion.



Fig 4. Continuous leaching stage

### Off-take Negotiations and Funding

AMMG is highly encouraged by the **favourable opex/capex** indicated by the Study. Following the completion of the current Test Work, the Company will move forward towards finalising a competitive funding arrangement for its proposed Plant.

AMMG has received requests for samples from a number of HPA end-users and potential off-take customers from around the world, as well as some of the major HPA producers who have expressed an interest in potential Plant funding. The Company looks forward to providing its 4N HPA sample to those interested end-users and potential off-take partners.

In parallel to developing its ongoing fundraising activities in Australia, AMMG is advancing its funding strategy for the Canadian capital and investment markets, following the investor road show conducted in early 2014.

## South West Kaolin DSO Project Western Australia

Based on the level of unsolicited interest received from several international kaolin end-users and potential customers, AMMG commenced an internal scoping study to review the feasibility of a potential **bulk direct shipping ore (DSO)** kaolin operation.

A major overseas export/shipping company also approached AMMG regarding a potential **joint venture opportunity** for the co-operation and development of a kaolin export operation. Highly competitive indicative transport costs from pit to destination port were proposed as well as innovative logistics handling solutions. Discussions are continuing.

Given the enormity of its **world-class resource** (297Mt combined JORC kaolin resource) as well as the exploration target potential of the surface outcropping kaolin, the opportunity exists for a potentially sustainable kaolin DSO export to operate within AMMG's kaolin project.

As such the extensive kaolin resource could be shared across both the high purity alumina (HPA) processing plant as well as the proposed DSO operation.

AMMG's internal scoping study aims to determine the **value proposition** of processing the kaolin using a "dry separation" method to cater to a wide variety of high-end applications such as advanced ceramics, fibre glass, rubbers, high quality coatings and glosses. Preliminary findings have indicated **lower processing costs** associated with the dry method compared to the standard wet processing method.

The Company is gaining confidence that, based on external expert advice and previous test work results, its unique kaolin product has the potential to meet the required specifications such as whiteness, particle size distribution, brightness or low levels of impurities for several applications as listed above. Further, as the properties of the final processed kaolin product are highly dependent on the properties inherent in the raw kaolin, AMMG believes its kaolin's **unique inherent properties** will support the production of a highly desirable product.

The Company's current position with regards to the development of a potential kaolin DSO project is reviewing the most efficient and economical dry processing options in order to achieve the desired specifications for high-end applications. AMMG has provided samples of its naturally pure kaolin to external laboratories and processing experts for processing and classification test work.



Fig 5. AMMG's raw kaolin material with unique inherent properties



Fig 6. Inside the kaolin trial test pit located at Meckering

## Board of Directors/Management

During the quarter AMMG announced that Mr Ric Dawson's employment contract will not be renewed at its conclusion, 9 July 2014, in line with the Company's long-term strategic goals.

As the Company moves towards the development of its proposed HPA processing pilot plant it requires a suitably qualified individual with experience in plant operations/construction, acid mineral processing, plant implementation, project management, plant commissioning, project funding and off-take negotiations.

The board would like to thank Mr Dawson for the role he has played over the past three and a half years as the Company's inaugural managing director.

AMMG has commenced the process to secure a new managing director; until that time, company secretary/CFO Mr Piers Lewis will serve as acting chief executive officer (CEO).

A number of highly qualified candidates have approached AMMG and discussions are progressing.

## Corporate

During the quarter AMMG announced the fully subscribed placement of 21,465,000 options for an additional working capital of \$42,930. Each option has an exercise price of \$0.20 each on or before 5.00 pm (WST) on 31 May 2015.

AMMG conducted an internal review of its non-core projects and as a result substantial reductions were made within the Company's tenement portfolio. AMMG's tenement exploration expenditure and commitments have therefore significantly decreased.

## Working Capital

AMMG remains well funded with current cash reserves of circa **\$1.78m** as at **30 June 2014**.

The federal government's R&D Tax Incentive Scheme supports Australian R&D activities by providing cash refunds to those eligible companies.

Subsequent to quarter end, AMMG completed its 2013-2014 R&D tax incentive claim based on its extensive R&D-related activities conducted over the financial year. AMMG anticipates a considerable cash rebate on its R&D expenditure.

## Contact

### AMMG

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## About AMMG

AMMG was established in 2007 and listed on the ASX in January 2010 for the purpose of securing exploration ground over areas that have typically been subject to historical exploration and where significant geological data was available and/or the land was considered sufficiently prospective.

Areas with existing or potential access to infrastructure were also targeted.

To date, the Company has identified a diversified suite of mineral projects located in Western Australia and Queensland. AMMG is now focused on advancing its key projects.

As at quarter end, the Company had **11 granted** tenements and **16 tenement applications** (in Western Australia and Queensland) totalling approximately 5,020km<sup>2</sup>.

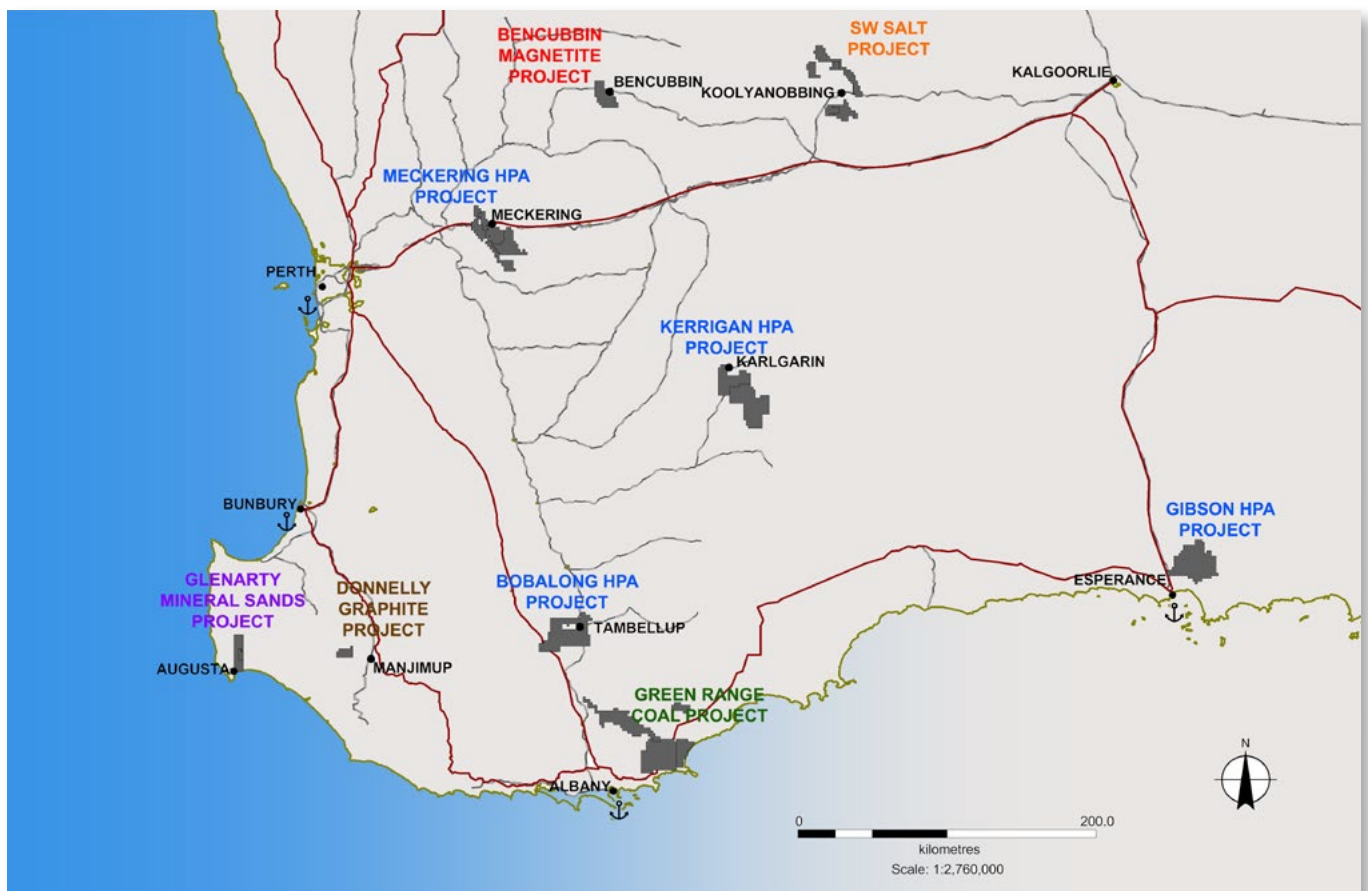


Fig 7. AMMG's projects located in the south-west region of Western Australia

## Schedule of Tenements

AMMG wishes to provide the following information in relation to additional information required by Listing Rule 5.3.3. Exploration tenements held at the end of the June 2014 quarter and their location:

| Tenement ID | Location       | Project         | Grant Date  | Interest at beginning of quarter | Interest at end of quarter |
|-------------|----------------|-----------------|-------------|----------------------------------|----------------------------|
| E70/4341    | WA, Australia  | Glenarty Creek  | 16/01/2013  | 100%                             | 100%                       |
| E70/4581    | WA, Australia  | Bobalong        | Application | 100%                             | 100%                       |
| EPM16620    | QLD, Australia | Constance Range | 4/11/2008   | 100%                             | 100%                       |
| EPM17919    | QLD, Australia | Constance Range | 28/02/2011  | 100%                             | 100%                       |
| EPM18375    | QLD, Australia | Constance Range | 27/04/2012  | 100%                             | 100%                       |
| EPM19772    | QLD, Australia | Constance Range | Application | 100%                             | 100%                       |
| EPM19773    | QLD, Australia | Constance Range | 11/02/2013  | 100%                             | 100%                       |
| E70/4548    | WA, Australia  | Donnelly        | Application | 0%                               | 100%                       |
| E45/4067    | WA, Australia  | East Pilbara    | Application | 100%                             | 100%                       |
| E63/1700    | WA, Australia  | Gibson          | Application | 100%                             | 100%                       |
| E70/4569    | WA, Australia  | Glenarty Creek  | Application | 100%                             | 100%                       |
| E70/4578    | WA, Australia  | Green Range     | Application | 100%                             | 100%                       |
| E70/4579    | WA, Australia  | Kerrigan        | Application | 100%                             | 100%                       |
| E70/4585    | WA, Australia  | Kerrigan        | Application | 100%                             | 100%                       |
| E77/1746    | WA, Australia  | Lake Deborah    | 21/09/2010  | 100%                             | 100%                       |
| E77/1747    | WA, Australia  | Lake Deborah    | 21/09/2010  | 100%                             | 100%                       |
| E77/1748    | WA, Australia  | Lake Deborah    | 21/09/2010  | 100%                             | 100%                       |
| E77/1770    | WA, Australia  | Lake Deborah    | 8/11/2010   | 100%                             | 100%                       |
| E77/2113    | WA, Australia  | Lake Deborah    | Application | 100%                             | 100%                       |
| E08/2506    | WA, Australia  | Lake Macleod    | Application | 100%                             | 100%                       |
| EPM18030    | QLD, Australia | Maytown         | Application | 100%                             | 100%                       |
| E70/3923    | WA, Australia  | Meckering       | 26/11/2010  | 100%                             | 100%                       |
| E70/4580    | WA, Australia  | Meckering       | Application | 100%                             | 100%                       |
| E70/4582    | WA, Australia  | Meckering       | Application | 100%                             | 100%                       |
| E70/4534    | WA, Australia  | Meckering       | Application | 100%                             | 100%                       |
| E70/4131    | WA, Australia  | Pingaring       | 31/05/2012  | 100%                             | 100%                       |
| E70/4577    | WA, Australia  | Bencubbin       | Application | 100%                             | 100%                       |