

HIGH PURITY ALUMINA (HPA) PROCESS PLANT STUDY UPDATE

KEY POINTS

- AMMG's high purity alumina (HPA) process plant study (Study) now received from consulting engineers;
- Study indicates positive economics on operating and capital costs;

MOVING FORWARD

- AMMG is engaging a specialist process engineering firm to review the Study's flow sheet and test work to date;
- Engagement of contractor next quarter for production of **commercial HPA samples** to cater to requests from potential off-take customers;
- In conjunction with the above, AMMG is moving forward to secure necessary funding for its proposed HPA processing plant.

Following the appointment ("Appointment") of process engineering consultants ("Consultants") on 27 June 2013, **Australia Minerals & Mining Group Ltd** ("AMMG" or "the Company") (**ASX:AKA**) wishes to confirm that it has now received the high purity alumina ("HPA") process plant study ("Study") from its Consultants.

The Appointment scope included the preparation of a proposal for Process Package Development ("PPD"), which would provide for a number of deliverables, including the operating cost ("Opex") and capital cost ("Capex") for a skid-mounted modular HPA plant. The Study on the HPA plant provides the following information:

- Process design summary;
- Process Flow diagram;
- Process Design Criteria;
- Mass Energy balance;
- Preliminary Equipment List
- Plant Layout Diagram;
- Operating Cost model (plus/minus 15%);
- Capital Cost model (plus/minus 15%); and
- Piping and Instrument Diagrams.

MOVING FORWARD

The Study will now be forwarded to an independent engineering expert for peer review.

Although the Study has taken longer than the anticipated timeline, the favourable Opex and Capex figures enable AMMG to move forward and work toward securing necessary financing arrangements.

In the time that has elapsed since the Appointment of the Study's process engineers, the Company has gained a greater appreciation of its HPA process and is examining a number of ways to streamline and optimise the various process stages, with a view to further increasing efficiencies.

As the Company moves forward, it is currently finalising the appointment of a specialist process engineering firm to: review the flow sheet development and test work to date; identify areas of possible economic optimisation; and advise on the merits and implementation of a small-scale continuous trial process testing program ahead of the final construction phase.

AMMG is simultaneously engaging a third party to produce **commercial samples** of its HPA in order to satisfy potential **end-user** requests, which will facilitate the advancement of a potential **off-take contract**. Such contracts will furthermore support AMMG's pursuit in securing a suitable funding arrangement for the construction of its processing plant.

Project Background

The Company's 100% owned South West HPA Project area is located within relatively close proximity to existing infrastructure, including Kwinana, Esperance and Albany ports.

AMMG developed its innovative acid-based processing technology in collaboration with consulting processing chemists TSW Analytical Pty Ltd. The processing technology is a low energy intensive process that uses low temperatures at atmospheric pressures; it produces saleable by-products and the key reagents are recyclable. The aluminous clay feedstock is unique in that it contains extremely low levels of impurities such as iron and titanium. The final HPA product is a premium high-value product that is used in high-performance electronic applications, such as tablet screens and LED's.

AMMG previously announced the successful production of **99.99% (4N) HPA** ([please click here to view the announcement dated 21 May 2013](#)) using its processing technology. AMMG is confident that it will be able to produce higher 5N or 6N purity levels, subject to further successful development of the process.

The Company lodged three patent applications in February 2013 to protect the intellectual property of its processing technology (patent numbers 2013900637, 2013900636, 20139000639).

AMMG's process is favoured by the unique mineralogy of its aluminous clay material, which contains extremely low levels of impurities, such as iron and titanium. The Company's aluminous clay deposits are hosted by the Yilgarn Craton, which is one of the oldest weathered cratons on

earth. The ancient weathering has left the aluminous clay as a primary or in-situ resource; it is whitish in colour and extends from the surface to a reported depth of 42 metres.

High Purity Alumina (HPA)

HPA refers to alumina that has a purity level of more than 99.9% (3N). It is a premium high end product that is used in a number of applications such as high-performance electronics; tablet, smartphone and computer screen backlighting; LED's; and hybrid cars.

HPA is a specialised alumina that is used for its superior hardness, high brightness, inertness (non-conductive), superior corrosion resistance and its ability to withstand extreme temperatures.

It is utilised in automotive sensor applications as an alumina substrate, and is used for its excellent electrical insulating properties and high heat conductivity. Due to the high level of plasma corrosion resistance, HPA is also used in semiconductor applications.

While HPA is used in a variety of markets, it is reported that about 60% of HPA is designated to the LED industry. Reported worldwide production of HPA is estimated at 15,000tpa, which is expected to increase at 7% CAGR, predominantly driven by the rising LED market. Prices for HPA range from approximately **US\$30/kg to US\$300/kg**, depending on a number of variables such as level of purity, particle size and structure.



Figure 1. HPA is used in the LED industry; computer, tablet and smartphone backlighting; and semiconductors.

ENDS

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About AMMG

AMMG was established 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 project areas located in Western Australia and Queensland, which the directors believe may have the potential for the realisation of economic resources of these commodities currently targeted, being - **alumina, aluminous clay (kaolin), iron ore, coal, mineral sands, salt, gypsum and gold.**

The Company itself or under joint venture now has **20 granted tenements and 23 applications** for tenements covering approximately **7,450km²** over the project areas. AMMG is pursuing a **diversification strategy** at this stage of the Company's development in order to provide additional development options and potential production opportunities.