Alpha **HPA**

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ASX: **A4N**
ASX Announcement
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(7 pages by email)

HPA FIRST PROJECT UPDATE

- **HPA test order received from sapphire glass/LED manufacturer in Taiwan**
- **Alpha HPA passes first stage testing by US based lithium-ion separator manufacturer**
- **Two SX trials at double-flow rate successfully completed**
- **'Demo' scale run of the HPA pre-cursor circuit generates 99.998% HPA purity**
- **Appointment of Rob Williamson as Chief Operations Officer**

The Board of Alpha HPA Limited ('Alpha HPA' or 'the Company') is pleased to provide an update on activities for its HPA First Project, representing the evaluation and intended commercialisation of the production of ~10,000tpa of high purity alumina (HPA) using the Company's proprietary licenced solvent extraction (SX) and HPA refining technology.

HPA test order received from sapphire glass/LED manufacturer in Taiwan

Following the recent commencement of a market outreach program in Taiwan, Alpha HPA has now received its first test sample order from a Taiwan based sapphire glass manufacturer. Alpha HPA will supply this order from its existing HPA stockpile as well as product from its upcoming 'Demo' scale pilot plant run. This order complements existing test sample orders from US and Korean based sapphire glass/LED manufacturers. The Company's market outreach activities remain ongoing.

Alpha HPA passes first level testing by US based lithium-ion separator manufacturer

The Company has been advised that the test sample provided to a US based manufacturer of alumina coated separators for the lithium-ion battery market has successfully passed the first stage of testing as part of their commercial qualification assessment. The first stage testwork is the assessment of all physical HPA characteristics, including purity. The next stage of qualification will test separator coating performance.

DEMO SCALE PILOT PLANT PRODUCTION

Alpha HPA is currently gearing up to commence a large volume 'demo' scale operation of its pilot plant facility in Brisbane QLD, to meet larger scale test orders being received, particularly from sapphire glass/LED manufacturers. The preparation process has included the trial operation of the solvent extraction, salt crystallisation and pre-cursor circuits at higher volumes, as well as the procurement and commissioning of some key process equipment including a pellet press and sintering kiln.

Two SX trials at double-flow rate successfully completed

In preparation for the demonstration scale operation, the solvent extraction (SX) circuit of the pilot plant has now been operated twice on a trial basis at double the previous flow rates. Process assays confirm the SX circuit is successfully operable at double capacity.

'Demo' scale run of the HPA pre-cursor circuit generates 99.998% HPA purity

Alpha HPA has completed trial operation of the pre-cursor circuit at demonstration-scale. The trial has been very successful generating high-purity alumina (HPA) at 100% alpha form and assaying at 99.998% purity (Appendix 1). This result builds confidence that purity levels will continue to improve with increased process volumes and scale.

Feedstock and reagent procurement

Other preparation activities for the demonstration scale pilot run include the procurement of feedstock (complete) and working with Orica for the supply of process reagents from the Orica Yarwun facility, to fully replicate commercial process conditions.

Appointment of Chief Operations Officer

Alpha HPA is pleased to advise the appointment of Rob Williamson as Chief Operations Officer (COO). Rob is a mechanical engineer and joins the Company having recently rebuilt and started up a new 155ktpa SX zinc refinery in the USA in the capacity of Vice President and GM of the facility and ideally placed to bring 20 years of experience in large facility operations to Alpha HPA. Rob will be based in Brisbane and responsible for building a Project delivery team for our HPA project in Gladstone.

Managing Director, Rimas Kairaitis, commented; "*Alpha HPA continues to build momentum for the HPA First Project, with strong progress towards our demonstration scale production run, continued market interest in the Company's products and the key addition of Rob Williamson to the Alpha HPA team*"

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About the HPA First Project

The Company's HPA First Project represents the evaluation and intended commercialisation of the production of ~10,000tpa of high purity alumina (HPA) using the Company's proprietary licenced solvent extraction and HPA refining technology. The technology provides for the extraction and purification of aluminium from an industrial feedstock to produce 4N (>99.99% purity) alumina for the intended use within the lithium ion battery and LED lighting industry. Following a successful testwork program and completion of a Pre-Feasibility Study (PFS), updated in March 2019, Alpha HPA has now completed Definitive Feasibility Study (DFS) based on the successful completion of its Pilot Plant program at its dedicated laboratory facility in Brisbane.

The Company has commenced full permitting, market outreach and project financing processes, with the expectation of positioning the HPA First Project to Final investment Decision.

Competent Persons Statement (Process Development Testwork)

Information in this announcement that relates to metallurgical results is based on information compiled by or under the supervision of Dr Stuart Leary, an Independent Consultant trading as Delta Consulting Group. Dr Leary is a Member of The Australasian Institute of Mining and Metallurgy (AusIMM). Dr Leary has sufficient experience to the activity which he is undertaking to qualify as a Competent Persons under the 2012 Edition of the 'Australasian Code for reporting of Exploration Results, Mineral Resources and Ore Reserves'. Dr Leary consents to the inclusion of the technical data in the form and context in which it appears.

For further information on testwork results and processes see ASX announcements dated 21 May 2020, 23 April 2020, 25 March 2020, 17 March 2020, 10 December 2019, 21 November 2019, 10 October 2019, 23 September 2019, 28 August 2019, 5 August 2019, 25 July 2019, 2 July 2019, 3 June 2019, 17 April 2019, 7 March 2019, 4 December 2018, 20 November 2018, 6 September 2018, 31 August 2018, 9 July 2018, 30 April 2018, 26 April 2018, 21 March 2018, 6 March 2018, 21 February 2018, 8 December 2017, 30 November 2017, 29 November 2017, 24 November 2017 and 13 November 2017.

Appendix 1: Alpha Alumina Purity Assays (Method: GDMS)

Sample ID: HPA B69100320 - Alpha Alumina					
Element	[ppm wt]	Element	[ppm wt]	Element	[ppm wt]
Ag	< 0.5	Ho	< 0.1	Ru	< 0.5
As	< 0.5	I	< 0.1	S	< 0.5
B	0.17	In	< 0.5	Sb	< 0.1
Ba	0.89	Ir	< 0.05	Sc	< 0.05
Be	< 0.05	K	< 0.5	Se	< 0.5
Bi	< 0.1	La	< 0.1	Si	1.6
Br	< 0.5	Li	0.32	Sm	< 0.1
Ca	5.7	Lu	< 0.1	Sn	< 0.5
Cd	< 0.5	Mg	0.72	Sr	< 0.05
Ce	< 0.1	Mn	< 0.05	Ta	Electrode
Cl	0.49	Mo	< 5	Tb	< 0.1
Co	< 0.05	Na	5	Te	< 0.1
Cr	1.8	Nb	< 50	Th	< 0.05
Cs	< 0.1	Nd	< 0.1	Ti	0.06
Cu	< 1	Ni	< 0.5	Tl	< 0.1
Dy	< 0.1	Os	Matrix	Tm	< 0.1
Er	< 0.1	O	< 0.05	U	< 0.05
Eu	< 0.1	P	2.9	V	0.09
F	< 5	Pb	< 0.1	W	< 20
Fe	1.1	Pd	< 0.5	Y	< 0.05
Ga	0.4	Pr	< 0.1	Yb	< 0.1
Gd	< 0.1	Pt	< 0.1	Zn	3.2
Ge	< 1	Rb	< 0.05	Zr	< 0.1
Hf	< 0.5	Re	< 0.1	Total Impurities	24.44
Hg	< 0.5	Rh	< 0.5	Purity %	99.998

1. JORC CODE, 2012 EDITION – TABLE 1

1.1 Section 1 Sampling Techniques and Data

(Criteria in this section apply to all succeeding sections.)

Criteria	JORC Code explanation	Commentary
Sampling techniques	• *Nature and quality of sampling (eg cut channels, random chips, or specific specialised industry standard measurement tools appropriate to the minerals under investigation, such as down hole gamma sondes, or handheld XRF instruments, etc). These examples should not be taken as limiting the broad meaning of sampling.* • *Include reference to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used.* • *Aspects of the determination of mineralisation that are Material to the Public Report.* • *In cases where 'industry standard' work has been done this would be relatively simple (eg 'reverse circulation drilling was used to obtain 1 m samples from which 3 kg was pulverised to produce a 30 g charge for fire assay'). In other cases more explanation may be required, such as where there is coarse gold that has inherent sampling problems. Unusual commodities or mineralisation types (eg submarine nodules) may warrant disclosure of detailed information.*	• Samples of high purity alumina powder were taken as ~20g splits of homogonised, crystalline powder
Drilling techniques	• *Drill type (eg core, reverse circulation, open-hole hammer, rotary air blast, auger, Bangka, sonic, etc) and details (eg core diameter, triple or standard tube, depth of diamond tails, face-sampling bit or other type, whether core is oriented and if so, by what method, etc).*	• Not Applicable. The samples were generated from a feedstock of industrial chemicals.
Drill sample recovery	• *Method of recording and assessing core and chip sample recoveries and results assessed.* • *Measures taken to maximise sample recovery and ensure representative nature of the samples.* • *Whether a relationship exists between sample recovery and grade and whether sample bias may have occurred due to preferential loss/gain of fine/coarse material.*	• Not Applicable
Logging	• *Whether core and chip samples have been geologically and geotechnically logged to a level of detail to support appropriate Mineral Resource estimation, mining studies and metallurgical studies.* • *Whether logging is qualitative or quantitative in nature. Core (or costean, channel, etc) photography.* • *The total length and percentage of the relevant intersections logged.*	• Not Applicable
Sub-sampling techniques and Sample Preparation	• *If core, whether cut or sawn and whether quarter, half or all core taken.* • *If non-core, whether riffled, tube sampled, rotary split, etc and whether sampled wet or dry.* • *For all sample types, the nature, quality and appropriateness of the sample preparation technique.* • *Quality control procedures adopted for all sub-sampling stages to maximise representivity of*	• Samples were presented as a homogonised, crystalline aluminium salt generated from a crystallisation and centrifuge process

Criteria	JORC Code explanation	Commentary
	samples. • *Measures taken to ensure that the sampling is representative of the in situ material collected, including for instance results for field duplicate/second-half sampling.* • *Whether sample sizes are appropriate to the grain size of the material being sampled.*	
Quality of assay data and laboratory tests	• *The nature, quality and appropriateness of the assaying and laboratory procedures used and whether the technique is considered partial or total.* • *For geophysical tools, spectrometers, handheld XRF instruments, etc, the parameters used in determining the analysis including instrument make and model, reading times, calibrations factors applied and their derivation, etc.* • *Nature of quality control procedures adopted (eg standards, blanks, duplicates, external laboratory checks) and whether acceptable levels of accuracy (ie lack of bias) and precision have been established.*	• The purity analysis of the high-purity alumina (HPA) was determined by EAG Eurofins (USA) by glow discharge mass spectroscopy
Verification of sampling and assaying	• *The verification of significant intersections by either independent or alternative company personnel.* • *The use of twinned holes.* • *Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols.* • *Discuss any adjustment to assay data.*	• Not Applicable
Location of data points	• *Accuracy and quality of surveys used to locate drill holes (collar and down-hole surveys), trenches, mine workings and other locations used in Mineral Resource estimation.* • *Specification of the grid system used.* • *Quality and adequacy of topographic control.*	• Not Applicable
Data spacing and distribution	• *Data spacing for reporting of Exploration Results.* • *Whether the data spacing and distribution is sufficient to establish the degree of geological and grade continuity appropriate for the Mineral Resource and Ore Reserve estimation procedure(s) and classifications applied.* • *Whether sample compositing has been applied.*	• Not Applicable
Orientation of data in relation to geological structure	• *Whether the orientation of sampling achieves unbiased sampling of possible structures and the extent to which this is known, considering the deposit type.* • *If the relationship between the drilling orientation and the orientation of key mineralised structures is considered to have introduced a sampling bias, this should be assessed and reported if material.*	• Not Applicable
Sample security	• *The measures taken to ensure sample security.*	• Duplicates of all samples submitted were retained at the Company's Brisbane laboratories to insure against any sample loss
Audits or reviews	• *The results of any audits or reviews of sampling techniques and data.*	• Not applicable

1.2 Section 2 Reporting of Exploration Results

(Criteria listed in the preceding section also apply to this section.)

Criteria	JORC Code explanation	Commentary
Mineral tenement and land tenure status	• *Type, reference name/number, location and ownership including agreements or material issues with third parties such as joint ventures, partnerships, overriding royalties, native title interests, historical sites, wilderness or national park and environmental settings.* • *The security of the tenure held at the time of reporting along with any known impediments to obtaining a licence to operate in the area.*	• Not Applicable
Exploration done by other parties	• *Acknowledgment and appraisal of exploration by other parties.*	• Not Applicable
Geology	• *Deposit type, geological setting and style of mineralisation.*	• Not Applicable

Drill hole Information	• *A summary of all information material to the understanding of the exploration results including a tabulation of the following information for all Material drill holes:*
	  ○ *easting and northing of the drill hole collar*
	  ○ *elevation or RL (Reduced Level – elevation above sea level in metres) of the drill hole collar*
	  ○ *dip and azimuth of the hole*
	  ○ *down hole length and interception depth*
	  ○ *hole length.*
	• *If the exclusion of this information is justified on the basis that the information is not Material and this exclusion does not detract from the understanding of the report, the Competent Person should clearly explain why this is the case.*
		• Not Applicable

Data aggregation methods	• *In reporting Exploration Results, weighting averaging techniques, maximum and/or minimum grade truncations (eg cutting of high grades) and cut-off grades are usually Material and should be stated.* • *Where aggregate intercepts incorporate short lengths of high grade results and longer lengths of low grade results, the procedure used for such aggregation should be stated and some typical examples of such aggregations should be shown in detail.* • *The assumptions used for any reporting of metal equivalent values should be clearly stated.*	• Not Applicable
Relationship between mineralisation widths and intercept lengths	• *These relationships are particularly important in the reporting of Exploration Results.* • *If the geometry of the mineralisation with respect to the drill hole angle is known, its nature should be reported.* • *If it is not known and only the down hole lengths are reported, there should be a clear statement to this effect (eg 'down hole length, true width not known').*	• Not Applicable
Diagrams	• *Appropriate maps and sections (with scales) and tabulations of intercepts should be included for any significant discovery being reported These should include, but not be limited to a plan view of drill hole collar locations and appropriate sectional views.*	• Not Applicable

Criteria	JORC Code explanation	Commentary
Balanced reporting	• *Where comprehensive reporting of all Exploration Results is not practicable, representative reporting of both low and high grades and/or widths should be practiced to avoid misleading reporting of Exploration Results.*	• Not Applicable
Other substantive exploration data	• *Other exploration data, if meaningful and material, should be reported including (but not limited to): geological observations; geophysical survey results; geochemical survey results; bulk samples – size and method of treatment; metallurgical test results; bulk density, groundwater, geotechnical and rock characteristics; potential deleterious or contaminating substances.*	• Not Applicable
Further work	• *The nature and scale of planned further work (eg tests for lateral extensions or depth extensions or large-scale step-out drilling).* • *Diagrams clearly highlighting the areas of possible extensions, including the main geological interpretations and future drilling areas, provided this information is not commercially sensitive.*	• From July-December 2019 the Company completed pilot plant operations validating the process flow sheet on a semi-continuous, end-to-end basis • Additional testwork is planned during CY2020 to refine the process flow sheet