Andromeda Metals Limited
ABN: 75 061 503 375

Corporate details:

ASX Code: ADN

Cash: $1.309 million
(at 31 March 2018)

Issued Capital:
896,028,227 ordinary shares
486,280,451 ADNOB options
2,476,507 unlisted options

Directors:

Rhod Grivas
Non-Executive Chairman

James Marsh
Managing Director

Nick Harding
Executive Director and Company Secretary

Andrew Shearer
Non-Executive Director

Contact details:

69 King William Road,
Unley, South Australia 5061

PO Box 1210
Unley BC SA 5061

Tel: +61 8 8271 0600
Fax: +61 8 8271 0033

admin@andromet.com.au
www.andromet.com.au

Andromeda METALS

ASX announcement

30 May 2018

Initial High Purity Alumina (HPA) results confirm 99.99% (4N) potential at Poochera

- **Carey's Well Kaolin/Halloysite deposit closes in on a targeted 4N Al_2O_3 product for HPA manufacture with 99.9855% purity achieved from first metallurgical testwork**
- **The extremely low level of impurities and high extraction rate indicate world class potential for a HPA product to complement other new technology halloysite applications**
- **Additional testing is now planned with the aim to incorporate these results into earlier internal studies undertaken on the Poochera Project**

Summary

Andromeda Metals is pleased to announce the results of initial HPA metallurgical testwork on a sample of Carey's Well kaolin-halloysite. Andromeda and Minotaur Exploration Limited (ASX: MEP) commissioned the metallurgical testwork through Perth-based BHM Process Consultants as part of a Joint Venture Heads of Agreement executed on 26 April 2018.

Flagship Carey's Well PW90 hydrous processed kaolin-halloysite was generated by Minotaur through pilot plant processing of wide diameter Calweld drilled bulk samples for global market evaluation (see MEP ASX release "Poochera Kaolin Project Moves into Marketing Phase" dated 12 August 2012). With indicative offtake agreements now in place with a number of Asian consumers, PW90 was selected for HPA testwork through BHM Process Consultants as a successful HPA outcome for PW90 would further strengthen the case for fast-tracking Carey's Well kaolin-halloysite deposit through the feasibility and mining approval processes.

Introduction

The Kaolin-Halloysite Project covers two main geographic areas of interest, both situated in the western province of South Australia (Figure 1). The main area of focus, the Poochera Kaolin-Halloysite Project on the Eyre Peninsula comprises three tenements and is located approximately 635kms west by road from Adelaide and 130kms east from Ceduna (Figure 2). The port of Thevenard at Ceduna offers export facilities appropriate for likely future production.

Figure 1 Project location plan

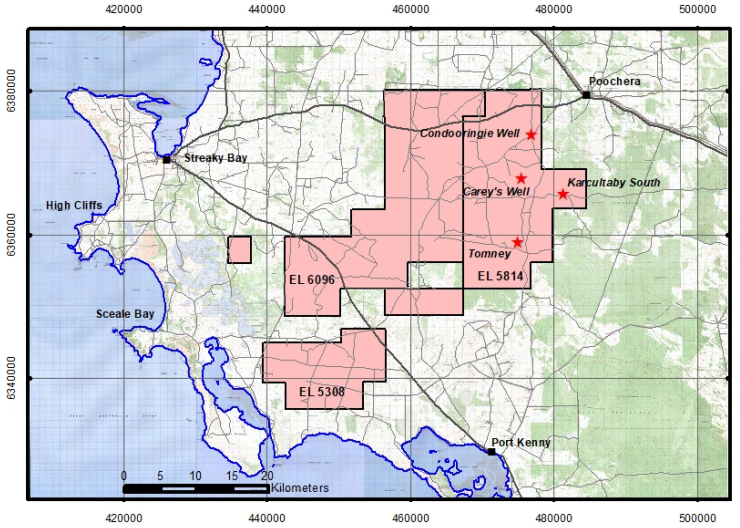

Figure 2 Poochera tenements and key kaolin-halloysite deposits

High quality kaolin-halloysite deposits occur extensively across the Poochera Project area (Figure 2) making this a region of global significance for the mineral and capable of supporting a considerable long-life mining operation should final feasibility studies determine the project to be economically viable.

Halloysite is a rare derivative of kaolin where the mineral occurs as nanotubes. Halloysite has a wide variety of industrial uses beyond simple kaolin and commands a significant premium above the average kaolin price. The Poochera kaolin deposits contain variable admixtures of kaolin and halloysite that appear amenable to selective mining to produce specific low, medium and high halloysite blends for the ceramic markets, new nanotechnology applications and as a strengthening additive in the cement and petroleum fraccing industries.

The northern project area includes the near pure halloysite Camel Lake deposit on EL6128 (Figure 1) which could potentially be processed to provide a marketable pure product to be used to further upgrade halloysite blend products from Carey's Well and for the development of halloysite nanotubes and their potential use as replacements for carbon nanotubes in the areas of energy storage and carbon-hydrogen capture and storage.

Extensive test work has been completed by Minotaur on the Carey's Well deposit, including resource drilling, bulk sampling, pilot test plant trials and marketing for ceramics and other conventional applications, and the deposit is now considered ready for Mining Lease application as part of feasibility evaluations. Minotaur has also undertaken preliminary research into innovative uses of halloysite nanotubes as strengthening additive for proppants, concrete and other nanotubular uses (refer Minotaur's Quarterly Reports June 2015, December 2016 and June 2017).

The potential for Carey's Well to produce high purity HPA represents a significant opportunity for further development. Pilot plant trials conducted by Minotaur on kaolin from Carey's Well have produced one of the purest kaolin feedstocks available (refer Minotaur's Quarterly Report

September 2012), while testwork with the goal of confirming that 3N and 4N HPA grades can be achieved is underway in trials being conducted by a commercial laboratory and with UniSA and the University of Newcastle researchers.

The Company has signed a binding Heads of Agreement with Minotaur Exploration Limited (ASX: MEP) covering their Poochera Kaolin-Halloysite Project. ADN has, on completion of appropriate due diligence investigations, the option to acquire up to a 75% interest in the project through either sole funding $6.0M over 5 years from the signing the HOA or alternatively a decision to mine is made by the Joint Venture partners, with an initial 51% interest earned by the Company through the expenditure of $3.0M on advancing the project within the first 2 years.

HPA testwork results by BHM Process Consultants

Preliminary testwork on alumina content and the ability to produce HPA previously carried out with Bureau Veritas, UniSA and the University of Newcastle showed that the Carey's Well product would be suitable for HPA generation with the added bonus that it gives a significantly higher alumina mass yield than comparable Australian kaolins.

BHM were commissioned to undertake the necessary concept metallurgical investigation and future process design aspects for upgrading typical hydrous processed kaolin from Carey's Well to a saleable HPA product via industry standard hydrometallurgical processing routes. BHM have specific metallurgical experience and knowledge in the field of HPA production principles as well as being hydrometallurgical specialists that understand the intricate processes involved in HPA production.

The BHM testwork indicates that an HPA product with 99.99% purity is readily available from Carey's Well kaolin/halloysite feedstock using an industry standard HCL two-stage dissolution-precipitation process, with the initial testwork achieving 99.9855% alumina. Key impurities in the first testwork include Silicon (66.84ppm), Sodium (30.16ppm) and Iron (28.28ppm), each of which can be expected to be further reduced by processing improvements moving forward.

Chemical Signature of the Carey's Well Material

Head	Al (%)	Fe (%)	Ti (%)	Si (%)	Mg (%)	Ca (%)	K (%)	Na (%)
Assay	20.254	0.301	0.059	21.683	0.039	0.023	0.154	0.177

HPA Product Analysis

Final	Al (%)	Fe (ppm)	Ti (ppb)	Si (ppm)	Mg (ppm)	Ca (ppm)	K (ppm)	Na (ppm)
Assay	53.06	28.28	<0.01	66.84	0.698	<0.1	1.555	30.16

- The resultant liquor from the dissolution of the Carey's Well product has been shown to be amenable to the HCl gas injection purification process.
- Improvements in performance are expected with improving leach performance and potential pre-concentration methods.
- A product with ~100-140ppm of impurities can be produced with 2 stages of purification precipitation, and it is likely that with 3 stages a product with <20-40ppm can be generated to satisfy the HPA markets

The inherent balance of mineral properties in the Carey's Well resource is incredibly rare for such a natural product and represents a tremendous market opportunity, which is being borne out by testing to date.

HPA is a new age material critical in the manufacture of many high-tech products of today including the rapidly expanding battery technologies and energy storage sector, LED lighting, and sapphire glass used in the production of smart phones and TV screens.

High Purity Alumina crystals (99.9855% Al_2O_3)

Next steps

The next steps will involve further refinement of the extraction process and process flow sheet development for HPA production. Also more extensive testing to characterise the halloysite fully to determine the optimum processing required for semi and fully refined products. This will also allow halloysite development opportunities to be assessed. The Scoping Study will be revised and bulk samples collected for trials with potential customers and process plant suppliers.

Commencement of new Managing Director

James Marsh has commenced as Managing Director of Andromeda Metals as of today. James is an industrial chemist with extensive experience across a wide range of industrial minerals spanning a 25 year period, including senior technical and marketing roles with two global market leaders. His knowledge and experience will be of great benefit to ADN as the Company positions itself in the newly emerging high growth sectors of HPA and halloysite application with respect to new age technology advancements.

Competent Person Statement

The information in this report that relates to Exploration Targets, Exploration Results, Mineral Resources or Ore Reserves is based on information compiled by Dr Antonio Belperio, a Competent Person, who is a fellow of the Australasian Institute of Mining and Metallurgy, an executive director of Minotaur and part-time consultant to Andromeda. Dr Belperio has sufficient experience relevant to the style of mineralisation and type of deposit under consideration and to the activity that he has undertaken to qualify as a Competent Person as defined in the 2012 Edition of the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (JORC Code). Dr Belperio consent to inclusion in this document of the information in the form and context in which it appears.

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 (e.g. cut channels, random chips, or specific specialised industry standard measurement tools appropriate to the minerals under investigation, such as down hole gamma sondes, or hand held 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 (e.g. '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 (e.g. submarine nodules) may warrant disclosure of detailed information.*	• Calweld drilling undertaken by Minotaur at Carey's Well in 2008 was used to obtain bulk samples for analysis and generation of the PW90 kaolin product which was subjected to HPA testing. • The Calweld rig drills an 810mm diameter hole enabling collection of approximately 1 tonne of kaolinised material per downhole metre drilled. Selected bulk samples from the 2008 Carey's Well drilling were sub-sampled and processed at Minotaur's Streaky Bay kaolin processing facility to produce a range of hydrous kaolin products, including ParlaWhite90 (PW90). Full product characterisation was undertaken, including analysis of particle size distribution, ISO brightness, colour, +45µ grit content, oil absorption, surface area, major and minor elements and mineralogy. • Approximately 1kg of PW90 product was sent to BHM Process Consultants for HPA testing in March 2018.
Drilling Techniques	• *Drill type (e.g. core, reverse circulation, open-hole hammer, rotary air blast , auger, Bangka, sonic, etc.) and details (e.g. core diameter, triple*	• Drilling contractor Kim Thiele completed the Calweld drilling program

	or standard tube, depth of diamond tails, face sampling bit or other type, whether core is orientated and if so, by what method, etc.).	under contract to Minotaur Exploration in 2008. • The Calweld drill rig used to collect the bulk samples at the Carey's Well prospect drills an 810mm diameter hole enabling collection of approximately 1 tonne of kaolinised material per downhole metre drilled. Kaolin samples were scraped out of the hole in a corkscrew action by a toothed bit, lifted out of the hole by the drill rig and deposited into labelled flexible bulka bags for transport to Minotaur's storage facility.
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 coarse/fine material.*	• The depth of penetration of the drill bit was noted and the downhole interval recorded for each bulka bag filled with sample. • Geological logging was undertaken by the onsite geologist during the drilling process. Determination of optimal samples and, conversely, intervals of poor recovery were based on visual observation of kaolinised material collected from each metre drilled. • Due to the large size of sample, approximately 1 tonne per metre, sample recovery and sample bias have minimal negative impact on samples collected by Calweld drilling.
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.*	• All drill samples were logged by an experienced geologist on-site at the time of drilling. • Observations on lithology, colour, degree of weathering, mineralisation and alteration for sampled material were recorded.
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*	• 100% of mineralised intervals of the Calweld drilling were sub-sampled from bulka bags at the Minotaur kaolin processing facility in Streaky Bay in 2012.

	technique. • *Quality control procedures adopted for all sub-sampling stages to maximise representativity of 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.*	• All sample preparation was undertaken at Minotaur's kaolin processing facility. • Sub-samples were mixed with water then processed by blunging at high solids content in a high shear blunger with sodium polyacrylate dispersant to ensure kaolin was fully dispersed and then screened and decanted to remove quartz and mica to produce a minus 45 micron kaolin sample.
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 mode, reading times, calibration factors applied and their derivation, etc.* • *Nature and quality control procedures adopted (e.g. standards, blanks, duplicates, external laboratory checks) and whether acceptable levels of accuracy (i.e. lack of bias) and precision have been established.*	• BHM Process Consultants were tasked with developing a detailed testwork program to upgrade the supplied feedstock (PW90) to a high purity kaolin product for HPA feed, and undertake testwork to prove that a HPA >99.99% Al_2O_3 product can be generated from the supplied feedstock. • Analytical techniques used by BHM Process Consultants for HPA testing are considered appropriate and included test work through Nagrom Mineral Laboratories and independent verification through Labwest Minerals Analysis. BHM Process Consultants have a strong expertise in analysis of industrial minerals.
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 or electronic) protocols.* • *Discuss any adjustment to assay data.*	• The intersections reported have not been verified by any personnel other than the geologists responsible for the project at the time of drilling, sub-sampling and processing of sub-samples. • Some Calweld twin holes have been completed at this stage in the exploration process. • Field data is collected during drilling, sampling and processing, validated by the project geologists and backed up for eventual

		import into Minotaur's server and geological database. • No assay results have been adjusted.
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.*	• Drill collar locations were collected using a differential GPS with an industry standard high degree of accuracy for easting-northing and RL. • The collar locations are recorded relative to GDA94 geodetic datum, Universal Transverse Mercator (UTM) projection, Zone 53. • All holes were shallow vertical holes with no downhole orientation surveying required. .
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 classification applied.* • *Whether sample compositing has been applied.*	• The drillhole collar spacing was deemed appropriate for the determination of grade continuity. • The bulk drill samples were collected over ~1m intervals downhole (ranged 0.9-1.1m) • The PW90 sample used as feedstock in the HPA trials was a composite sample from drillhole CW08C02 produced by combining material from 10.3-14.3m depth, 15.3-19.1m depth and 20.1-23m depth downhole.
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.*	• The risk of sample bias is considered low due to the large uniform tonnage of mineralised material. • The Carey's Well kaolin deposit is a flat-lying body of mineralisation, therefore the 100% vertical drillholes intersect the mineralisation at a perpendicular angle, effectively testing for any horizontal variability in the deposit.
Sample security	• *The measures taken to ensure sample security.*	• The drill samples were collected by Minotaur personnel then delivered to the kaolin processing facility either by Minotaur personnel, or competent exploration contractor.

Audits or reviews	• *The results of any audits or reviews of sampling techniques and data*	• No audits or reviews of sampling techniques or data have been completed.

1.2 Section 2 Reporting of Exploration Results

(Criteria listed in the preceding section may apply to this section)

Criteria	JORC Code explanation	Commentary
Mineral tenement and land tenure status	• *Type, reference name/number, location and ownership including agreements of material issues with third parties such as joint ventures, partnerships, overriding royalties, native titles 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.*	• The Poochera Kaolin-Halloysite Project (Exploration Licences 5308, 5814, 6096) includes the Carey's Well deposit, which is located on EL5814 • The Poochera Project is held by subsidiaries of Minotaur Exploration Limited and is joint ventured to Andromeda under terms detailed in ADN ASX release dated 26 April 2018. • There are no known non-government royalties due beyond the Minotaur JV agreement terms. • The underlying land title is freehold that extinguishes Native Title. • There are no known historical sites within the Carey's Well area which preclude exploration or mineral development. • All tenements are secure and compliant with Department of Premier & Cabinet Mineral Resources Division requirements at the date of this report.
Exploration done by other parties	• *Acknowledgement and appraisal of exploration by other parties.*	• Minotaur has conducted exploration in the Carey's Well area since the tenement was granted in 2005. The general area that is the subject of this report has been explored for kaolinitic products in the past by Transoil NL, SA Paper Clays ECC (Pacific) & Commercial Minerals Ltd. Andromeda has reviewed past exploration conducted by Minotaur.
Geology	• *Deposit type, geological setting and style of mineralisation.*	• Kaolin deposits, such as Carey's Well, developed in situ by lateritic weathering of the feldspar-rich Hiltaba Granite. The resultant kaolin deposit at Carey's Well is a sub-horizontal zone of kaolinised material resting with a fairly sharp contact

		on unweathered granite. The kaolinised zone is overlain by loosely consolidated Tertiary and Quaternary sediments.
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:* o *Easting and northing of the drill collar;* o *Elevation or RL (Reduced Level – elevation above sea level in meters) of the drill collar;* o *Dip and azimuth of the hole;* o *Down hole length and interception depth;* o *Hole length.* • *If the exclusion of this information is justified on the axis 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.*	• No new drilling data are being reported here. • The HPA data detailed above are related to Minotaur's 2008 bulk Calweld drillhole CW08C02: • Collared at 475579mE / 6367340m N/ 115m RL • -90º dip, 360º azimuth i.e. vertical • 24 metres total length • PW90 is a composite of kaolinised material sampled from 10.3-14.3m, 15.3-19.1m and 20.1-23m downhole depths.
Data aggregation methods	• *In reporting Exploration Results, weighting averaging techniques, maximum and/ or minimum grade truncations (e.g. 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.*	• Samples for HPA analysis were from processed bulk drilling samples and reported as a single analysis for the PW90 product. No data aggregation was required. • No metal equivalent values have been reported in this document.
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 (e.g. 'down hole length, true width not known').*	• All holes were drilled vertically through a large horizontal mineralised body; all downhole intervals therefore reflect true widths.
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.*	• Appropriate maps and tables were included in Andromeda ASX release dated 26 April 2018 and Minotaur ASX release dated 8 Feb 2012
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.*	• This report relates to metallurgical process testwork to determine HPA purity based on a single composite sample sourced from a single Calweld drillhole.
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, ground*	• Metallurgical testwork conducted by BHM Process consultants utilising industry standard two-stage acid dissolution and precipitation product with chemical analysis through

	water, geotechnical and rock characteristics; potential deleterious or contaminating substances.	Nagrom Mineral Laboratories and Labwest Mineral Analysis.
Further work	• *The nature and scale of planned further work (e.g. 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.*	• Further HPA metallurgical testwork will be conducted as part of future Scoping and Feasibility studies.