ASX and MEDIA RELEASE

19 September 2017

ALKANE RESOURCES LTD
ABN 35 000 689 216

Dubbo Project Resource and Reserve Statements FY17

- **Mineral Resources and Ore Reserves for the Toongi deposit within the Dubbo Project have been independently re-estimated to account for revised estimated operating costs, product revenues and regulatory approved site layouts:**
  - **Total Mineral Resources**

    75.18Mt @ 1.89% ZrO_2, 0.04% HfO_2, 0.44% Nb_2O_5, 0.03% Ta_2O_5, 0.88% TREO*
  - **Total Ore Reserves**

    18.90Mt @ 1.85% ZrO_2, 0.04% HfO_2, 0.44% Nb_2O_5, 0.03% Ta_2O_5, 0.87% TREO*

    *** = total rare earth oxides plus yttrium oxide**

- **The Toongi deposit is a very large open pittable resource of zirconium (Zr), hafnium (Hf), niobium (Nb), tantalum (Ta), yttrium (Y) and the rare earth elements lanthanum (La), cerium (Ce), praseodymium (Pr), neodymium (Nd), samarium (Sm), europium (Eu), gadolinium (Gd), terbium (Tb), dysprosium (Dy), holmium (Ho), erbium (Er), thulium (Tm), ytterbium (Yb), lutetium (Lu).**

- **Over several years, Alkane Resources subsidiary, Australian Strategic Materials Ltd (ASM) has developed a flow sheet to recover all of these metals, except tantalum.**

- **The flow sheet has been proved through a demonstration pilot plant at ANSTO since 2008 enabling optimisation of capital and operating costs, and supply of samples for product certification to end users.**

- **A definitive feasibility study was completed in 2013; front end engineering design (FEED) in 2015; and a revised modularised and staged construction concept is in progress to provide a bankable level study.**

- **Many of these metals are required for modern advanced technologies with supply chains subject to critical issues.**

- **The Proved Ore Reserve will support an initial 20 year mine life.**

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Mineral Resource and Ore Reserve Estimates as at 30 June 2017

Industry consultants Mining One Pty Ltd were engaged to provide an independent estimation of the Mineral Resources and Ore Reserves for the Toongi deposit which is the foundation of the Dubbo Project. The revised estimation took account of the Dubbo Ore Reserve Upgrade (ASX Announcement 16 November 2011); Definitive Feasibility Study (ASX Announcement 11 April 2013); the Front End Engineering Design - FEED (ASX Announcement 27 August 2015); and the Significant Improvements in Capital Cost and Execution Strategy for the DZP – Modular Study (ASX Announcement 28 October 2016) to comply with the 2012 edition of the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (JORC 2012).

ASM maintains an active product market program which sources global demand and price information from multiple sources. This was used to inform the revenue data for this study.

Geology

The Toongi Trachyte is an elliptical shaped subvolcanic intrusion or lava flow with approximate dimensions of 850 metres east-west by 550 metres north-south. The deposit forms a low irregular topographic rise and has a depth extent of 115 metres below surface.

Petrographically the orebody is dominantly a massive, fine grained microporphyritic trachyte. It contains >80% feldspar, albite and aegirine which are in roughly equal amounts. These minerals occur as scattered randomly orientated to rarely aligned tabular, lath shaped and prismatic mircophenocrysts and glomeroporphyritic clusters as fine grained interlocking aggregates with a trachytic fabric in a very fine grained groundmass. The remainder of the rock is made up of opaque minerals and titanite which occur as scattered discrete interstitial grains and clusters.

Mineralogy

Scanning electron microprobe work was completed on samples from core drill holes by CSIRO Division of Exploration Geoscience and ANSTO Minerals to identify ore minerals within the Trachyte. These minerals are generally very fine grained (<100 micron) and occur as disseminated grains, fine crystal clusters and aggregates, fine veinlets and microscopic (<0.5 mm) vug fill. There is generally uniform distribution of zirconium, rare earth and niobium assays in the drill holes.

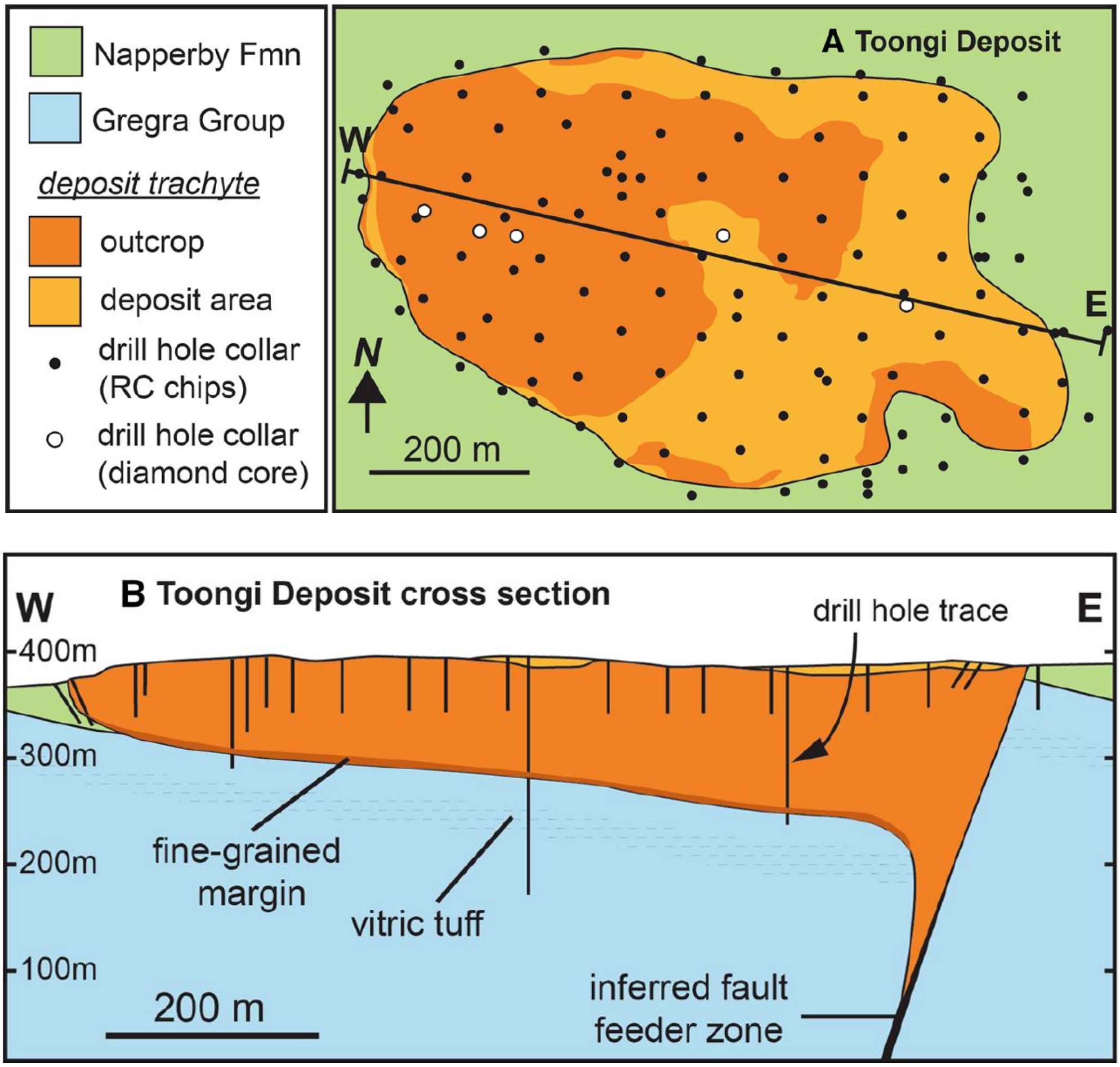
In November 2016 a research paper released by Spandler and Morris (James Cook University) confirmed that the deposit has a remarkable level of uniformity in the mineralogy and textural setting of the ore minerals. The ore minerals are always sub-mm in size and are distributed throughout the rock mass. The bulk of the ore metals are hosted in complex Na–Ca–Zr silicate phases (probably eudialyte).

The dominant Nb (and Ta) mineral is close to $NaNbO_3$ (natroniobite) in composition, and is found as small (<40 µm) irregular grains that also formed in the interstices between matrix feldspar and aegirine grains. A second assemblage of ore minerals is found infilling vesicles and micro-fractures in the rock. The dominant minerals of this assemblage are irregular REE (fluoro) carbonate (bastnasite).

Drilling and Analysis

122, largely vertical, RC holes were drilled on a 50 metre offset rectangular pattern to depths varying from 50 to 100 metres vertical depth. 5 vertical core holes were also drilled to confirm the geology and geochemistry of the deposit.

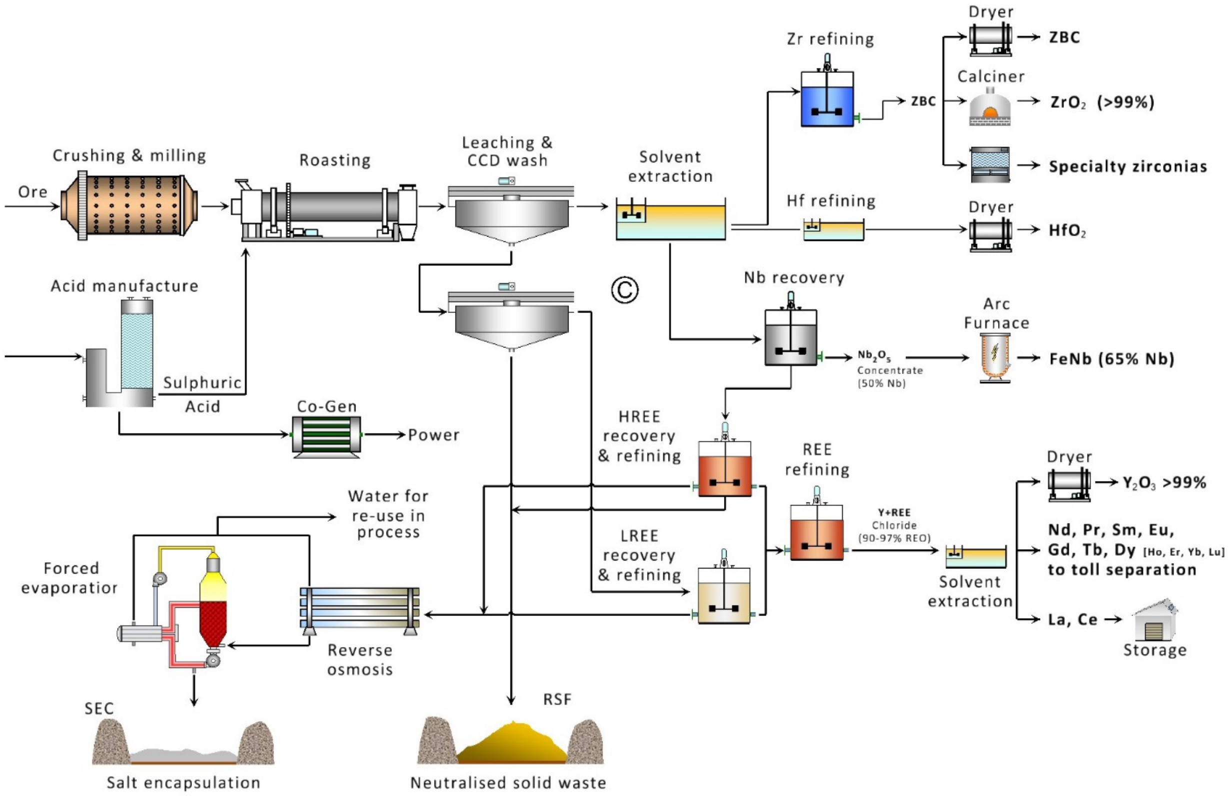
Several analytical processes were also trialled over many years, including XRF, AAS, ICPMS, SE:F and Neutron Activation, and detailed statistical studies completed to provide a comprehensive grade model within the deposit.



Process

Ore is crushed and screened and ground ore is then mixed with sulphuric acid and roasted to form sulphated solids. The sulphated solids are quenched to extract zirconium, niobium and rare earth sulphates as well as impurity elements into solution. The leach slurry is washed in two stages of counter current decantation (CCD) thickeners, each stage comprising four thickeners. The stage one CCD circuit separates the zirconium/niobium/heavy rare earth (HRE) solution and the stage two CCD separates the light rare earths (LRE) bearing solution from the waste solids. Separation of zirconium, niobium and HRE takes place in the solvent extraction (SX) circuit.

The process has been trialled and proved since 2008 through the operation of the demonstration pilot plant (DPP) located at the facilities of ANSTO Minerals in Sydney. The DPP has provided capital and operating cost estimates, as well as samples for customer certification.



Products and Marketing

The flowsheet enables products to be varied for specific market conditions and customer demand, but the primary output is zirconium chemicals and zirconia (ZrO_2); hafnia (HfO_2); ferroniobium (FeNb); selected high value rare earth oxides such as neodymium, praseodymium, terbium, dysprosium, gadolinium and yttrium.

ASM has a dedicated marketing team which has secured sales and marketing agreements for zirconium products and ferroniobium. Memoranda of Understanding (MOUs) for specific rare earths and Letters of Intent (LOIs) for other products have also been completed.

Individual element recoveries based on the DPP mass balances and price projections are provided in the attached tables.

Mineral Resource and Ore Reserve Estimation

Historical resource estimates were completed internally by ASM that comprised an inverse distance estimate within a 3D model of the mineralisation to assign ZrO_2, HfO_2, Nb_2O_3, Ta_2O_5, Y_2O_3 and total rare earth metal content to the deposit.

Mining One ran an ordinary kriged and inverse distance estimate to estimate ZrO_2%, HfO_2%, Nb_2O_5%, Ta_2O_5%, Y_2O_3% and REO%. The resources have been reported above 0% ZrO_2%.

Results of the estimation are shown in the table below, blocks were constrained by reporting blocks >0% ZrO_2, blocks within the mineralised domain 3D wireframe, blocks below the cover sequence and excluding the chilled margin material on the edges of the trachyte sill.

Mineral Resources

Resource Category	Tonnes (Mt)	ZrO_2 (%)	HfO_2 (%)	Nb_2O_5 (%)	Ta_2O_5 (%)	Y_2O_3 (%)	TREO* (%)
Measured	*42.81*	*1.89*	*0.04*	*0.45*	*0.03*	*0.14*	*0.74*
Inferred	*32.37*	*1.90*	*0.04*	*0.44*	*0.03*	*0.14*	*0.74*
Total	***75.18***	***1.89***	***0.04***	***0.44***	***0.03***	***0.14***	***0.74***

***TREO% is the sum of all rare earth oxides excluding ZrO_2, HfO_2, Nb_2O_3, Ta_2O_5, Y_2O_3,**

These Mineral Resources are wholly inclusive of Ore Reserves.

Full details are given in Appendix 1 (Table1, Sections 1-3; JORC 2012).

The Ore Reserves statement has been compiled by Mining One in accordance with the guidelines defined in the 2012 Edition of the 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves' ("2012 JORC Code"). Data from ASM personnel and other external consultants provided specific data for the assessment.

As the DP is a polymetallic deposit a block value script was used to determine the ore/waste cut-off as an alternative to a traditional cut-off grade. This script included all the relevant parameters to calculate the blocks individual margin value. If a block's margin value was greater than zero then it is included in the Ore Reserve after appropriate modifying factors and mining/processing costs have been applied.

The 2017 Dubbo Project Ore Reserve is based on the December 2016 Mineral Resource model above.

Ore Reserves

Reserve Category	Tonnes (Mt)	ZrO_2 (%)	HfO_2 (%)	Nb_2O_5 (%)	Ta_2O_5 (%)	Y_2O_3 (%)	TREO* (%)
Proved	*18.90*	*1.85*	*0.04*	*0.440*	*0.029*	*0.136*	*0.735*
Probable	*0*						
Total	***18.90***	***1.85***	***0.04***	***0.440***	***0.029***	***0.136***	***0.735***

***TREO% is the sum of all rare earth oxides excluding ZrO_2, HfO_2, Nb_2O_3, Ta_2O_5, Y_2O_3,**

Full details are given in Appendix 2 (Table1, Section 4; JORC 2012).

The table below compares the Mineral Resources and Ore Reserves year on year with 2016 as per the current reporting requirements.

Comparison of 2011/2016 to 2017 Mineral Resources

2011/2016								2017							
Resource Category	Tonnes (Mt)	ZrO_2 (%)	HfO_2 (%)	Nb_2O_5 (%)	Ta_2O_5 (%)	Y_2O_3 (%)	TREO* (%)	Resource Category	Tonnes (Mt)	ZrO_2 (%)	HfO_2 (%)	Nb_2O_5 (%)	Ta_2O_5 (%)	Y_2O_3 (%)	TREO* (%)
Measured	*35.7*	*1.96*	*0.04*	*0.46*	*0.03*	*0.14*	*0.74*	*Measured*	*42.81*	*1.89*	*0.04*	*0.45*	*0.03*	*0.14*	*0.74*
Inferred	*37.5*	*1.96*	*0.04*	*0.46*	*0.03*	*0.14*	*0.74*	*Inferred*	*32.37*	*1.90*	*0.04*	*0.44*	*0.03*	*0.14*	*0.74*
Total	*73.2*	*1.96*	*0.04*	*0.46*	*0.03*	*0.14*	*0.74*	*Total*	*75.18*	*1.89*	*0.04*	*0.44*	*0.03*	*0.14*	*0.74*

***TREO% is the sum of all rare earth oxides excluding ZrO_2, HfO_2, Nb_2O_3, Ta_2O_5, Y_2O_3**

Comparison of 2011/2016 to 2017 Ore Reserves

2011/2016								2017							
Reserve Category	Tonnes (Mt)	ZrO_2 (%)	HfO_2 (%)	Nb_2O_5 (%)	Ta_2O_5 (%)	Y_2O_3 (%)	TREO* (%)	Reserve Category	Tonnes (Mt)	ZrO_2 (%)	HfO_2 (%)	Nb_2O_5 (%)	Ta_2O_5 (%)	Y_2O_3 (%)	TREO* (%)
Proved	*8.07*	*1.92*	*0.04*	*0.46*	*0.03*	*0.14*	*0.75*	*Proved*	*18.90*	*1.85*	*0.04*	*0.44*	*0.029*	*0.136*	*0.735*
Probable	*27.86*	*1.93*	*0.04*	*0.46*	*0.03*	*0.14*	*0.74*	*Probable*	*0*						
Total	*35.93*	*1.93*	*0.04*	*0.46*	*0.03*	*0.14*	*0.74*	*Total*	*18.90*	*1.85*	*0.04*	*0.44*	*0.029*	*0.136*	*0.735*

***TREO% is the sum of all rare earth oxides excluding ZrO_2, HfO_2, Nb_2O_3, Ta_2O_5, Y_2O_3**

The primary differences from 2016 to 2017 are:

Mineral Resources are 2.7% higher for the total, with Measured 19% higher. Metal grades are fundamentally the same.

Proved Ore Reserves are 134% higher with metal grades similar, reflecting greater confidence in the Project economics.

Total Ore Reserves have been reduced 47% due to removal of the Probable Reserves. This reflects that the initial project site design and regulatory approvals, including appropriate waste storage facilities is for a start-up 20 year life.

Competent Person

The information in this report that relates to the Mineral Resource estimates is based on, and fairly represents, information which has been compiled by Mr Stuart Hutchin, MIAG, and an employee of Mining One Pty Ltd. Mr Hutchin has sufficient experience that is relevant to the style of mineralisation and type of deposit under consideration and to the activity that is being 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'. Mr Hutchin consents to the inclusion in this report of the matters based on his information in the form and context in which they appear.

The information in this report that relates to the Ore Reserve estimate is based on, and fairly represents, information which has been compiled by Mr Ievan Ludjio MAusIMM(CP) and Mr Mark Van Leuven FAusIMM (CP), employees of Mining One Pty Ltd. Mr Ludjio and Mr Leuven have sufficient experience that is relevant to the style of mineralisation and type of deposit under consideration and to the activity that is being 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'. Mr Ludjio and Mr Leuven consent to the inclusion in this report of the matters based on his information in the form and context in which they appear.

Unless otherwise advised above, the information in this report that relates to exploration results, Mineral Resources and Ore Reserves is based on information compiled by Mr D Ian Chalmers, FAusIMM, FAIG, (director of the Company) who has sufficient experience which is relevant to the style of mineralisation and type of deposit under consideration and to the activity which he is undertaking 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. Mr Chalmers consents to the inclusion in this report of the matters based on his information in the form and context in which it appears

Disclaimer

This report contains certain forward looking statements and forecasts, including possible or assumed reserves and resources, production levels and rates, costs, prices, future performance or potential growth of Alkane Resources Ltd, industry growth or other trend projections. Such statements are not a guarantee of future performance and involve unknown risks and uncertainties, as well as other factors which are beyond the control of Alkane Resources Ltd. Actual results and developments may differ materially from those expressed or implied by these forward looking statements depending on a variety of factors. Nothing in this report should be construed as either an offer to sell or a solicitation of an offer to buy or sell securities.

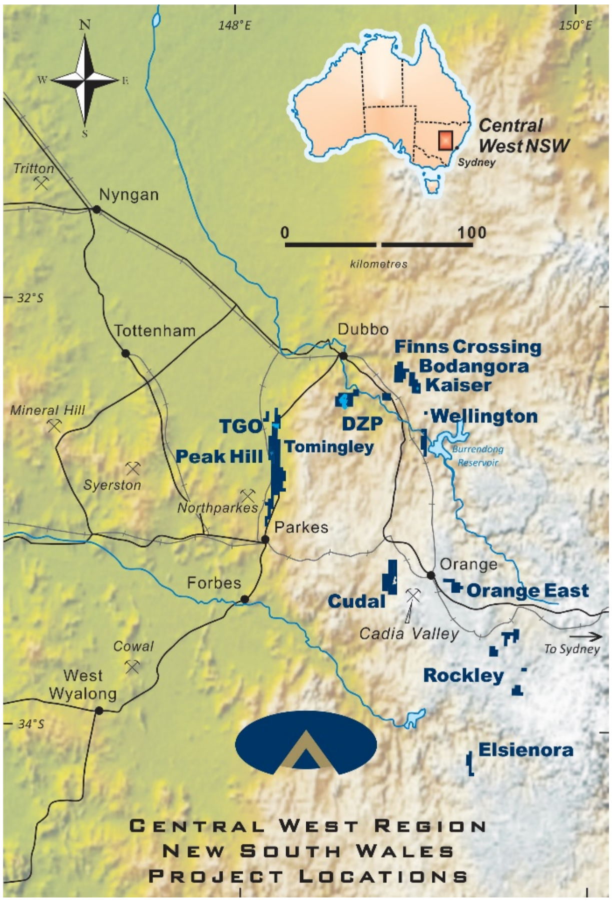
This document has been prepared in accordance with the requirements of Australian securities laws, which may differ from the requirements of United States and other country securities laws. Unless otherwise indicated, all ore reserve and mineral resource estimates included or incorporated by reference in this document have been, and will be, prepared in accordance with the JORC classification system of the Australasian Institute of Mining, and Metallurgy and Australian Institute of Geoscientists.

ABOUT ALKANE - www.alkane.com.au - ASX: ALK and OTCQX: ANLKY

Alkane is a multi-commodity company focused in the Central West region of NSW, Australia. Currently Alkane has two advanced projects - the Tomingley Gold Operations (TGO) and the nearby Dubbo Project (DP). Tomingley commenced production early 2014. Cash flow from the TGO has provided the funding to maintain the project development pipeline and will assist with the pre-construction development of the DP.

The NSW Planning Assessment Commission granted development approval for the DP on 28 May 2015 and on 24 August 2015 the Company received notification that the federal Department of the Environment gave its approval for the development. Mining Lease 1724 was granted on 18 December 2015 and the Environment Protection Licence was approved on 14 March 2016. Financing is in progress and this project should make Alkane a strategic and significant world producer of zirconium, hafnium and rare earth products with production targeted for 2019.

Alkane's most advanced gold copper exploration projects are at the 100% Alkane owned Bodangora, Wellington and Elsienora prospects Wellington has a small copper-gold deposit which can be expanded, while at Bodangora a large monzonite intrusive complex has been identified with porphyry style gold copper mineralisation. Gold and base metal mineralisation has been identified at Elsienora.



APPENDIX 1

JORC Code, 2012 Edition – Table 1 report – Dubbo Project

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.*	• The deposit was primarily sampled via reverse circulation chip samples from reverse circulation drill holes and half core samples based on geological considerations within diamond drill holes drilled on an average 80m x 80m grid through the deposit. The samples were typically taken on 1m intervals through the deposit. • The holes were orientated to ensure drill intersections were approximately perpendicular to the dip and strike of the mineralisation lenses and overall geological package which is generally flat lying. • Diamond core and reverse circulation drill samples were crushed and assayed for ZrO_2, HfO_2, Nb_2O_5, Ta_2O_5, Y_2O_3, La_2O_3, CeO_2, Th, U, Nd_2O_3, Dy_2O_3, Er_2O_3, Eu_2O_3, Gd_2O_3, Ho_2O_3, Lu_2O_3, Pr_6O_{11}, Sm_2O_3, Tb_4O_7, Tm_2O_3 and Yb_2O_3 via a combination of Pressed Powder XRF, mixed acid digest ICPMS and NAA (Neutron Activation) methods.
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).*	• A total of 127 drillholes holes have been used to estimate the Toongi Resources, of these a total of 4 were surface diamond holes and 123 were reverse circulation holes. The diamond core size drilled was predominately with standard tube NQ2 sized core. All diamond core was orientated.
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.*	• The diamond core drill recovery was monitored using a combination of the drillers run sheets, core block markings and manual piecing together of core and measurement. Any core loss was noted within the logging sheets. Core recovery averaged >98% through the ore intervals. Recovery of the RC samples were not routinely recorded however samples were weighed of the subset of samples that were sent for metallurgical testwork, these weights were in line with expectations from the size of hammer used.
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 diamond core and reverse circulation chips were logged for geological and geotechnical characteristics. Rock type, alteration style and sulphide mineral content were logged by a site geologist. The logging was sufficient to enable creation of detailed geological model that supports the resource estimate.

Criteria	JORC Code explanation	Commentary
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.* • *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.*	• HQ2 sized diamond core was marked up and cut in half with a diamond core saw. The right side of the core as sampled according to 1m intervals selected by the site Geologist. Sample fillets were also taken from the core holes where half core samples was not taken. • The RC samples were poured through a riffle splitter after the sample was circulated from the drill face through a cyclone and into a large plastic bag. • The methodology of selecting half core via geological intervals guarantees that the core samples are representative. The reverse circulation drilling samples are collected on 1m intervals so there is no selectivity bias with these. • The sample sizes vary from material sourced from the core samples given the varying sample lengths. The RC samples are generally 5-10 kg. • The sample sizes are appropriate given the relatively even distribution of base metal grades within the deposit
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.*	• Analabs Perth, Analytical Services (WA), ALS (Brisbane), Ultra Trace Pty Ltd and Becquerel Laboratories have all completed assaying of the Toongi mineralisation at various stages. Standard and duplicate samples were assessed for the 2000 and 2001 drilling samples. The results of these samples indicate that there are no known material biases in the original Toongi assay dataset.
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.*	• Several campaigns of duplicate sampling were completed, the majority of the results for these samples indicate an acceptable correlation with the original assay determinations. Reference standards were also used to ensure accuracy within the laboratory assaying protocols, as with the duplicates these samples show sufficient accuracy to confirm the validity of the original assay dataset. • Data was entered into a central database and then validated by a series of validation checks to ensure erroneous data was not saved into the resource database.
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.*	• The GDA94 grid system was used as the grid reference for the Toongi deposit. All holes were surveyed using a differential GPS survey system. • The topography surface is represented by a wireframe file. The surface covers the complete Toongi deposit area. The surface is an accurate representation of the actual topographic surface at the site.
Data spacing	• *Data spacing for reporting of Exploration Results.*	• The Toongi deposit has been drilled on an average spacing of 80 x 80m along the

Criteria	JORC Code explanation	Commentary
and distribution	• *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.*	strike of the ore domain. This drill spacing provides evidence of the mineralized zone continuity for the purposes of resource estimation. • No sampling compositing was necessary in the initial diamond drilling or RC drilling however compositing of raw assay data was completed in preparation for the resource estimation process.
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 majority of RC drill holes were orientated to provide an approximate perpendicular intersection angle with the main mineralized zone. • No sampling bias is assessed as being caused by the drilling orientation.
Sample security	• *The measures taken to ensure sample security.*	• Samples were supervised by either the drill crew, field assistant or geologist and at all times. Given the low grade rare earth oxide nature of the deposit sample security was not assessed as a significant risk.
Audits or reviews	• *The results of any audits or reviews of sampling techniques and data.*	• No audits have been undertaken

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.*	• The Toongi deposit is located within ML1724 that is located within EL5548. • The license areas area current.
Exploration done by other parties	• *Acknowledgment and appraisal of exploration by other parties.*	• All work completed by Australian Strategic Materials Ltd (formerly known as Australian Zirconia Ltd) or associated parties
Geology	• *Deposit type, geological setting and style of mineralisation.*	• The deposit consists of rare earth oxide mineralisation disseminated within a trachyte sill that occurs within the sedimentary units of the Jurassic Napperby Formation.
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 hole collar* o *elevation or RL (Reduced Level – elevation above sea level in metres) of the drill hole 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 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.*	• A list of each resource drillhole location and downhole survey is located as an appendices 2 & 3 to this table, see below.
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.*	• The exploration results reported for the Toongi deposit were included assay intervals for ZrO_2 and an extensive suite of rare earth oxide grades. No cutting of high grades was completed when reporting as exploration results
Relationship	• *These relationships are particularly important in the reporting of Exploration Results.*	• The typical drill sample interval is 1m in length, the average thickness of the

Criteria	JORC Code explanation	Commentary
between mineralisation widths and intercept lengths	• *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').*	mineralized zone 20m, there are no issues with reporting the results based on this. • The drillholes intercepted the mineralized lenses at an approximately perpendicular angle. All exploration results were reported as downhole thicknesses.
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.*	• See Appendix 4 for a location plan of all drill collars used in the resource estimate.
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.*	• Exploration data is not being reported here
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.*	• Exploration data not being reported here. No other data to report
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.*	• Further infill drilling will be required within the deposit area with a view to upgrading inferred resources to either indicated or measured categories.

Section 3 Estimation and Reporting of Mineral Resources

(Criteria listed in section 1, and where relevant in section 2, also apply to this section.)

Criteria	JORC Code explanation	Commentary
Database integrity	• *Measures taken to ensure that data has not been corrupted by, for example, transcription or keying errors, between its initial collection and its use for Mineral Resource estimation purposes.* • *Data validation procedures used.*	• The survey, sampling and logging data was electronically imported into the resource database. A visual check was also made of the drill traces, assay and logging data in the 3D environment of Surpac to ensure that results correlated between drillholes and were in line with the geological interpretation and mineralization continuity.
Site visits	• *Comment on any site visits undertaken by the Competent Person and the outcome of those visits.* • *If no site visits have been undertaken indicate why this is the case.*	• A site visit was completed by Stuart Hutchin in October 2016 where the Toongi site and core samples located within the core storage facility were inspected.

Criteria	JORC Code explanation	Commentary
Geological interpretation	• *Confidence in (or conversely, the uncertainty of) the geological interpretation of the mineral deposit.* • *Nature of the data used and of any assumptions made.* • *The effect, if any, of alternative interpretations on Mineral Resource estimation.* • *The use of geology in guiding and controlling Mineral Resource estimation.* • *The factors affecting continuity both of grade and geology.*	• The confidence in the overall geological interpretation is high given the regular distribution of the trachyte sill and 80m x 80m drill coverage over the deposit that have defined the sill edges in all directions. • The mineralisation occurs disseminated throughout the trachyte sill. Grades are relatively consistent however the grain size of the host trachyte does have a minor effect on grade variability, there is also some enrichment of grades in the vicinity of the trachyte contact.
Dimensions	• *The extent and variability of the Mineral Resource expressed as length (along strike or otherwise), plan width, and depth below surface to the upper and lower limits of the Mineral Resource.*	• The strike length of the mineralised domain modelled is approximately 500m long by 400m wide with an average thickness of 30m. The resource domain is located from near the surface topography and extends to a depth of 50m below surface.
Estimation and modelling techniques	• *The nature and appropriateness of the estimation technique(s) applied and key assumptions, including treatment of extreme grade values, domaining, interpolation parameters and maximum distance of extrapolation from data points. If a computer assisted estimation method was chosen include a description of computer software and parameters used.* • *The availability of check estimates, previous estimates and/or mine production records and whether the Mineral Resource estimate takes appropriate account of such data.* • *The assumptions made regarding recovery of by-products.* • *Estimation of deleterious elements or other non-grade variables of economic significance (eg sulphur for acid mine drainage characterisation).* • *In the case of block model interpolation, the block size in relation to the average sample spacing and the search employed.* • *Any assumptions behind modelling of selective mining units.* • *Any assumptions about correlation between variables.* • *Description of how the geological interpretation was used to control the resource estimates.* • *Discussion of basis for using or not using grade cutting or capping.* • *The process of validation, the checking process used, the comparison of model data to drill hole data, and use of reconciliation data if available.*	• The resource model was constructed using Surpac software. Mineralised domain wireframes were constructed using the geology boundary of the trachyte to guide the interpretation. A minimum domain thickness of 5m was used, this corresponds to the minimum practical mining width within an open pit mining scenario. • After review of the assay dataset statistics it was assessed that no top cutting was valid or required for the Toongi mineralisation. • A composite file was created using a composite length of 1m. The median sample length within the assay dataset is also 1m. • Variograms for each attribute were created for the modelled domain with the results of these used to assist with estimation of resources. • An ordinary kriged estimate was run for ZrO_2, HfO_2, Nb_2O_5, Ta_2O_5, Y_2O_3, La_2O_3, CeO_2, Th and U. For the other oxides where assay data was not available for all holes an inverse distance estimate was run. • The estimation process was validated by comparing global block grades with the average composite grades, visual checks comparing block grades with raw assay data, volume checks of the ore domain wireframe vs the block model volume and comparison of the ordinary kriged results with an inverse distance estimate. • The validation steps taken indicate that the block estimates are a realistic representation of the source assay data and that they block model volumes are valid in comparison to the modelled interpretation.
Moisture	• *Whether the tonnages are estimated on a dry basis or with natural moisture, and the method of determination of the moisture content.*	• The resource tonnages have been estimated on a dry basis
Cut-off	• *The basis of the adopted cut-off grade(s) or quality parameters applied.*	• Given the very even grade distribution within the deposit applying resource cut-off was not assessed as necessary, the grade tonnage curves of ZrO_2 % and TREO%

Criteria	JORC Code explanation	Commentary
parameters		demonstrate this.
Mining factors or assumptions	• *Assumptions made regarding possible mining methods, minimum mining dimensions and internal (or, if applicable, external) mining dilution. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider potential mining methods, but the assumptions made regarding mining methods and parameters when estimating Mineral Resources may not always be rigorous. Where this is the case, this should be reported with an explanation of the basis of the mining assumptions made.*	• The resources have been estimated using a minimum thickness of 5m for the domain shape, this minimum thickness therefore accounts for any dilution in zones that are less than this thickness. The proposed mining method is via open pit mining techniques, the model parameters are therefore deemed to be suitable for this type of potential mining operation.
Metallurgical factors or assumptions	• *The basis for assumptions or predictions regarding metallurgical amenability. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider potential metallurgical methods, but the assumptions regarding metallurgical treatment processes and parameters made when reporting Mineral Resources may not always be rigorous. Where this is the case, this should be reported with an explanation of the basis of the metallurgical assumptions made.*	• A detailed metallurgical testwork program, has been completed including the construction and running of a pilot plant. The metallurgical process, including capital and operating costs, is well understood. A detailed Front End Engineering Design report has been completed.
Environmen-tal factors or assumptions	• *Assumptions made regarding possible waste and process residue disposal options. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider the potential environmental impacts of the mining and processing operation. While at this stage the determination of potential environmental impacts, particularly for a greenfields project, may not always be well advanced, the status of early consideration of these potential environmental impacts should be reported. Where these aspects have not been considered this should be reported with an explanation of the environmental assumptions made.*	• An Environmental Impact Statement has been prepared and approved covering all aspects of environmental impacts for the proposed project. Development Approval has been granted by the NSW Government
Bulk density	• *Whether assumed or determined. If assumed, the basis for the assumptions. If determined, the method used, whether wet or dry, the frequency of the measurements, the nature, size and representativeness of the samples.* • *The bulk density for bulk material must have been measured by methods that adequately account for void spaces (vugs, porosity, etc), moisture and differences between rock and alteration zones within the deposit.* • *Discuss assumptions for bulk density estimates used in the evaluation process of the different materials.*	• The bulk densities for the ore and waste rock types were estimated using the Archimedes method, that is (Dry Weight / (Dry Weight – Wet Weight). A density of 2.49 was assigned to the fresh ore material.
Classification	• *The basis for the classification of the Mineral Resources into varying confidence categories.*	• The resources have been classified according to the drill density and the modelled continuity of both the thickness and grade of the mineralized zones in the view of the

Criteria	JORC Code explanation	Commentary
	• *Whether appropriate account has been taken of all relevant factors (ie relative confidence in tonnage/grade estimations, reliability of input data, confidence in continuity of geology and metal values, quality, quantity and distribution of the data).* • *Whether the result appropriately reflects the Competent Person's view of the deposit.*	competent geologist. Measured and Indicated blocks have been reported for the resource. • The resource classification is deemed appropriate in relation to the drill spacing and geological continuity of the mineralized domains.
Audits or reviews	• *The results of any audits or reviews of Mineral Resource estimates.*	• Stuart Hutchin has visited the Toongi site in 2016. The review involved a high level assessment of the exploration potential.
Discussion of relative accuracy/ confidence	• *Where appropriate a statement of the relative accuracy and confidence level in the Mineral Resource estimate using an approach or procedure deemed appropriate by the Competent Person. For example, the application of statistical or geostatistical procedures to quantify the relative accuracy of the resource within stated confidence limits, or, if such an approach is not deemed appropriate, a qualitative discussion of the factors that could affect the relative accuracy and confidence of the estimate.* • *The statement should specify whether it relates to global or local estimates, and, if local, state the relevant tonnages, which should be relevant to technical and economic evaluation. Documentation should include assumptions made and the procedures used.* • *These statements of relative accuracy and confidence of the estimate should be compared with production data, where available.*	• The resource estimate is deemed to be an accurate reflection of both the geological interpretation and tenure of mineralization within the deposit.

APPENDIX 2

JORC Code, 2012 Edition – Table 1 report

Section 4 Estimation and Reporting of Ore Reserves

(Criteria listed in section 1, and where relevant in sections 2 and 3, also apply to this section.)

Criteria	JORC Code explanation	Commentary
Mineral Resource estimate for conversion to Ore Reserves	• *Description of the Mineral Resource estimate used as a basis for the conversion to an Ore Reserve.*	The Mineral Resources are reported inclusive of the Mineral Resources used to define the Ore Reserves. The sub-celled Mineral Resource block model named 'toongi_model_dec16.mdl' was used for the pit optimisation. This model was produced by Stuart Hutchin of Mining One in December 2016. The Mineral Resource Estimate of this block model was reported in accordance with the JORC Code.
Site visits	• *Comment on any site visits undertaken by the Competent Person and the outcome of those visits.* *(If no site visits have been undertaken indicate why this is the case.)*	Ievan Ludjio visited the site 2nd of March 2017 and has met with relevant ASM personnel and the consultants.
Study status	• *The type and level of study undertaken to enable Mineral Resources to be converted to Ore Reserves.* *(The Code requires that a study to at least Pre-Feasibility Study level has been undertaken to convert Mineral Resources to Ore Reserves. Such studies will have been carried out and will have determined a mine plan that is technically achievable and economically viable, and that material Modifying Factors have been considered.)*	A Definitive Feasibility Study (DFS), prepared by TZ Minerals International Pty Ltd (TZMI), was completed in 2013 which built on previous studies prepared by TZMI in 2011 and SNC Lavalin in 2002. Subsequent studies and reports have been prepared by Hatch Pty Ltd in 2015, and then GHD in 2017.
Cut-off parameters	• *The basis of the cut-off grade(s) or quality parameters applied.*	As the deposit is polymetallic, a block value script using all relevant parameters was used to code a block value into the resource model. Each block needs to have a block value greater than zero for it to be included in the Ore Reserves. For the price assumptions please see section "Costs" below.
Mining factors or assumptions	• *The method and assumptions used as reported in the Pre-Feasibility or Feasibility Study to convert the Mineral Resource to an Ore Reserve (i.e. either by application of appropriate factors by optimisation or by preliminary or detailed design).* • *The choice, nature and appropriateness of the selected mining method(s) and other mining parameters including associated design issues such as pre-strip, access, etc.* • *The assumptions made regarding geotechnical parameters (e.g. pit slopes, stope sizes, etc), grade control and pre-production drilling.*	The Dubbo Project (DP) is a polymetallic zirconia, hafnium, niobium, and rare earth metals deposit. It is planned that the operation use front end loaders and articulated trucks along with a fleet of auxiliary equipment. This proposed mining method is appropriate for the style and size of the mineralisation. As DP consists of a simple bulk massive style deposit with no internal waste, a mining recovery of 100% and mining dilution of 0% has been assumed. Pit slope geotechnical parameters:

<table>
<tr><th>Criteria</th><th>JORC Code explanation</th><th>Commentary</th></tr>
<tr><td></td><td>

- *The major assumptions made and Mineral Resource model used for pit and stope optimisation (if appropriate).*
- *The mining dilution factors used.*
- *The mining recovery factors used.*
- *Any minimum mining widths used.*
- *The manner in which Inferred Mineral Resources are utilised in mining studies and the sensitivity of the outcome to their inclusion.*
- *The infrastructure requirements of the selected mining methods.*

</td><td>
<table>
<tr><th>Parameter¤</th><th>Value¤</th></tr>
<tr><td>Batter·Angle¤</td><td>55°¤</td></tr>
<tr><td>IRSA¤</td><td>40°¤</td></tr>
<tr><td>Berm·width¤</td><td>8m·¤</td></tr>
<tr><td>Bench·Height¤</td><td>10m¤</td></tr>
</table>

No Inferred material has been included in optimisation and/or Ore Reserves reporting.

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<tr><td>

Metallurgical factors or assumptions

</td><td>

- *The metallurgical process proposed and the appropriateness of that process to the style of mineralisation.*
- *Whether the metallurgical process is well-tested technology or novel in nature.*
- *The nature, amount and representativeness of metallurgical test work undertaken, the nature of the metallurgical domaining applied and the corresponding metallurgical recovery factors applied.*
- *Any assumptions or allowances made for deleterious elements.*
- *The existence of any bulk sample or pilot scale test work and the degree to which such samples are considered representative of the ore body as a whole.*
- *For minerals that are defined by a specification, has the ore reserve estimation been based on the appropriate mineralogy to meet the specifications?*

</td><td>

Ore is crushed and screened with the dry ground ore then mixed with sulphuric acid and roasted to form sulphated solids. The sulphated solids are subjected to quenching to extract zirconium, niobium and rare earth sulphates as well as impurity elements leaching in the water into solution. The leach slurry is washed in two stages of counter current decantation (CCD) thickeners, each stage comprising four thickeners. The CCD circuit separates the light rare earth (LRE) bearing solution from the zirconium/niobium/heavy rare earth (HRE) solution. Separation of zirconium, niobium and HRE takes place in the solvent extraction (SX) circuit.

The various products are then separated and refined in separate treatment circuits to produce the zirconium and niobium products and intermediate products for the heavy rare earth and light rare earth products.

Metallurgical Recoveries:

<table>
<tr><td>Lanthanum Oxide</td><td>80.1%</td></tr>
<tr><td>Cerium Oxide</td><td>69.8%</td></tr>
<tr><td>Praseodymium Oxide</td><td>66.7%</td></tr>
<tr><td>Neodymium Oxide</td><td>74.5%</td></tr>
<tr><td>Samarium Oxide</td><td>51.2%</td></tr>
<tr><td>Europium Oxide</td><td>42.3%</td></tr>
<tr><td>Gadolinium Oxide</td><td>56.9%</td></tr>
<tr><td>Terbium Oxide</td><td>47.5%</td></tr>
<tr><td>Dysprosium Oxide</td><td>67.4%</td></tr>
<tr><td>Holmium Oxide</td><td>59.3%</td></tr>
</table>

</td></tr>
</table>

Criteria	JORC Code explanation	Commentary
		Erbium Oxide 74.0% Thulium Oxide 38.6% Ytterbium Oxide 69.9% Lutetium Oxide 26.0% Yttrium oxide 74.3% Zirconium Oxide 84.4% Hafnium Oxide 50.0% Niobium Oxide 61.2%
Environmental	• *The status of studies of potential environmental impacts of the mining and processing operation. Details of waste rock characterisation and the consideration of potential sites, status of design options considered and, where applicable, the status of approvals for process residue storage and waste dumps should be reported.*	An Environmental Protection Licence (EPL 20702) was issued in March 2016 by the NSW Environment Protection Authority. This licence allows ASM to undertake Scheduled Development Works for the establishment of the Dubbo Project To minimise impacts on the endangered Pink-tailed Worm-Lizard, the Stage 1 of the open pit will be mined in two separate cutbacks. The western section of the open pit will be mined in the first 10 years with the eastern portion mined in the following 10 years. Extraction of both ore and waste will occur by bench, in line with the mining phases defined to address the environmental concerns.
Infrastructure	• *The existence of appropriate infrastructure: availability of land for plant development, power, water, transportation (particularly for bulk commodities), labour, accommodation; or the ease with which the infrastructure can be provided, or accessed.*	In order for mining, processing and product transportation to be undertaken, in addition to the standard infrastructure requirements, the following off-site infrastructure and other site features would first need to be established: • Upgrades and construction of road and bridges network including curve realignment, pavement upgrades and upgrades to creek crossings on Obley and Toongi Roads; • Installation of a Western Plains Zoo noise barrier along a 1 km section of the Obley Road; • Installation of a pumping station located at the Macquarie River and a 7 km water pipe to deliver raw water to the site; • A natural gas pipeline within the Toongi-Dubbo Rail and Gas Pipeline Corridor; • Installation of a new single circuit 132 kV overhead transmission line to supply HV power to site from Geurie sub-station; and Construction of a range of water management and retention structures within the DP site.

Criteria	JORC Code explanation	Commentary
Costs	• *The derivation of, or assumptions made, regarding projected capital costs in the study.* • *The methodology used to estimate operating costs.* • *Allowances made for the content of deleterious elements.* • *The source of exchange rates used in the study.* • *Derivation of transportation charges.* • *The basis for forecasting or source of treatment and refining charges, penalties for failure to meet specification, etc.* • *The allowances made for royalties' payable, both Government and private.*	Costs used in the determination of the Ore Reserves have been sourced from the following documents: • **Project Capital Estimate** - Hatch Pty Ltd, 'Addendum to FEED Services Report, H346794-00000-00-124-0007', 15th June 2015 • **Site General & Administration** - Hatch Pty Ltd, 'FEED Services Report, H346794-00000-00-124-0006', 21st August 2015 • **Processing (excluding SRSF costs)** - Hatch Pty Ltd, 'FEED Services Report, H346794-00000-00-124-0006', 21st August 2015 • **SRSF Costs** – 'GHD Memorandum 'Concept Design – Cost Estimate, Andrew Simmons, February 2017. • **Mining Costs** – 'Dubbo Zirconia Project Budget Mining Costs Owner Operator Model, by Glastonbury Mining Consultants in 2013
Revenue factors	• *The derivation of, or assumptions made regarding revenue factors including head grade, metal or commodity price(s) exchange rates, transportation and treatment charges, penalties, net smelter returns, etc.* • *The derivation of assumptions made of metal or commodity price(s), for the principal metals, minerals and co-products.*	For cost assumptions see section above – "Costs" Alkane employs specialist consultants and specific industry contacts to maintain an interactive product pricing regime. The assumed commodity prices, reported in ASX Announcement on 27th of August 2015, are based on the anticipated 2020 prices. The following commodity prices were used (values are in USD/kg): Praseodymium Oxide $80.00 Neodymium Oxide $60.00 Samarium Oxide $3.00 Europium Oxide $300.00 Gadolinium Oxide $20.00 Terbium Oxide $650.00 Dysprosium Oxide $350.00 Holmium Oxide $40.00 Erbium Oxide $40.00 Ytterbium Oxide $30.00 Lutetium Oxide $990.00 Yttrium oxide $15.00

Criteria	JORC Code explanation	Commentary
		Zirconium Oxide $8.27 Hafnium Oxide $500.00 Niobium Oxide $40.00
Market assessment	• *The demand, supply and stock situation for the particular commodity, consumption trends and factors likely to affect supply and demand into the future.* • *A customer and competitor analysis along with the identification of likely market windows for the product.* • *Price and volume forecasts and the basis for these forecasts.* • *For industrial minerals the customer specification, testing and acceptance requirements prior to a supply contract.*	The output of the various products planned to be produced by DP, is large enough to provide an alternative source of these critical metals, without being too large to affect the supply and demand balance. Markets for each of the DP products are separate but related, and have experienced high annual growth rates of between 7%-10%. The high growth rates are due to the rapid industrial and social development of countries such as China, where GDP is growing strongly and the intensity of use of critical metals is increasing from a low base compared to western industrialised economies.
Economic	• *The inputs to the economic analysis to produce the net present value (NPV) in the study, the source and confidence of these economic inputs including estimated inflation, discount rate, etc.* • *NPV ranges and sensitivity to variations in the significant assumptions and inputs.*	The costs used in the economic valuation are based on detailed studies mentioned in the "Costs" section of this table. They all have a level of confidence to be included in the Ore Reserve as per the requirements listed in the 2012 JORC Code. The inputs that inform the economic analysis include all foreseeable operating and capital costs, resulting in a positive NPV for the Ore Reserve. A discount rate appropriate to the size and nature of the organisation and deposit has been used in the determination
Social	• *The status of agreements with key stakeholders and matters leading to social licence to operate.*	As part of the 2012 DFS, a study on the social impact of the project determined that the project would have an overall beneficial impact on the surrounding local communities.
Other	• *To the extent relevant, the impact of the following on the project and/or on the estimation and classification of the Ore Reserves:* • *Any identified material naturally occurring risks.* • *The status of material legal agreements and marketing arrangements.* • *The status of governmental agreements and approvals critical to the viability of the project, such as mineral tenement status, and government and statutory approvals. There must be reasonable grounds to expect that all necessary Government approvals will be received within the timeframes anticipated in the Pre-Feasibility or Feasibility study. Highlight and discuss the materiality of any unresolved matter that is dependent on a third party on which extraction of the reserve is contingent.*	All government agreements and approvals required to realise the Ore Reserves are current and will be in place until the end of mine life.
Classification	• *The basis for the classification of the Ore Reserves into varying confidence categories.* • *Whether the result appropriately reflects the Competent Person's view of the deposit*	The Ore Reserves classification is based on the JORC 2012 requirements. The basis for the classification was the Mineral Resource classification and economic cut-off grade.

Criteria	JORC Code explanation	Commentary
	• *The proportion of Probable Ore Reserves that have been derived from Measured Mineral Resources (if any).*	
Audits or reviews	• *The results of any audits or reviews of Ore Reserve estimates.*	No Ore Reserve audits have been carried out, however Internal Peer Review has been carried out as part of this Ore Reserves Estimate
Discussion of relative accuracy/ confidence	• *Where appropriate a statement of the relative accuracy and confidence level in the Ore Reserve estimate using an approach or procedure deemed appropriate by the Competent Person. For example, the application of statistical or geostatistical procedures to quantify the relative accuracy of the reserve within stated confidence limits, or, if such an approach is not deemed appropriate, a qualitative discussion of the factors which could affect the relative accuracy and confidence of the estimate.* • *The statement should specify whether it relates to global or local estimates, and, if local, state the relevant tonnages, which should be relevant to technical and economic evaluation. Documentation should include assumptions made and the procedures used.* • *Accuracy and confidence discussions should extend to specific discussions of any applied Modifying Factors that may have a material impact on Ore Reserve viability, or for which there are remaining areas of uncertainty at the current study stage.* • *It is recognised that this may not be possible or appropriate in all circumstances. These statements of relative accuracy and confidence of the estimate should be compared with production data, where available.*	The most significant factors affecting confidence in the Ore Reserves are: • Although previous DFS's and other studies have been prepared to a sufficient level of confidence, variation in the capital, operating costs, and market fluctuations will have an impact on the project economics. • Traditionally as a result of their similar chemical properties, REE metals are extremely difficult to separate from each other. The technical metallurgical assumptions may differ once the plant is operating affecting the project economics.