

2 June 2015



## ***Dubbo Zirconia Project Receives Development Consent***

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### **DUBBO ZIRCONIA PROJECT (DZP)**

**Zirconium, hafnium, niobium, yttrium, rare earth elements**

*Australian Zirconia Ltd (AZL) 100%*

The New South Wales Planning Assessment Commission (PAC), as delegate for the NSW Minister for Planning and Environment, has advised that it has approved the development application for the Dubbo Zirconia Project (DZP).

This is a significant milestone for the project, enabling Australian Zirconia Limited (AZL), a wholly owned subsidiary of Alkane Resources Ltd, to move ahead with applications for the Environmental Protection Licence (EPL), Mining Lease and other permitting and to secure project financing and advance the DZP into a development phase.

Alkane Managing Director, Mr Ian Chalmers, said approval for the project was the culmination of many years' of hard work and the Company recognises the significant contribution from employees and consultants, managed by RW Corkery & Co., in the approvals process.

"We recognise there are a number of important steps before construction begins but we are delighted to achieve development consent for the Dubbo Zirconia Project, and are looking forward to taking the next steps towards establishing this globally significant operation," Mr Chalmers said.

"This project will not only mean a transformation for Alkane, but it will have a significant impact on the region, creating some 300 jobs and strategically important resources exports for Australia."

The full PAC report is available on their website at:

**<http://www.pac.nsw.gov.au/Projects/tabid/77/ctl/viewreview/mid/462/pac/473/view/readonly/myctl/rev/Default.aspx>**

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## PROGRESS UPDATE

### Front End Engineering and Design (FEED) and pre-development studies

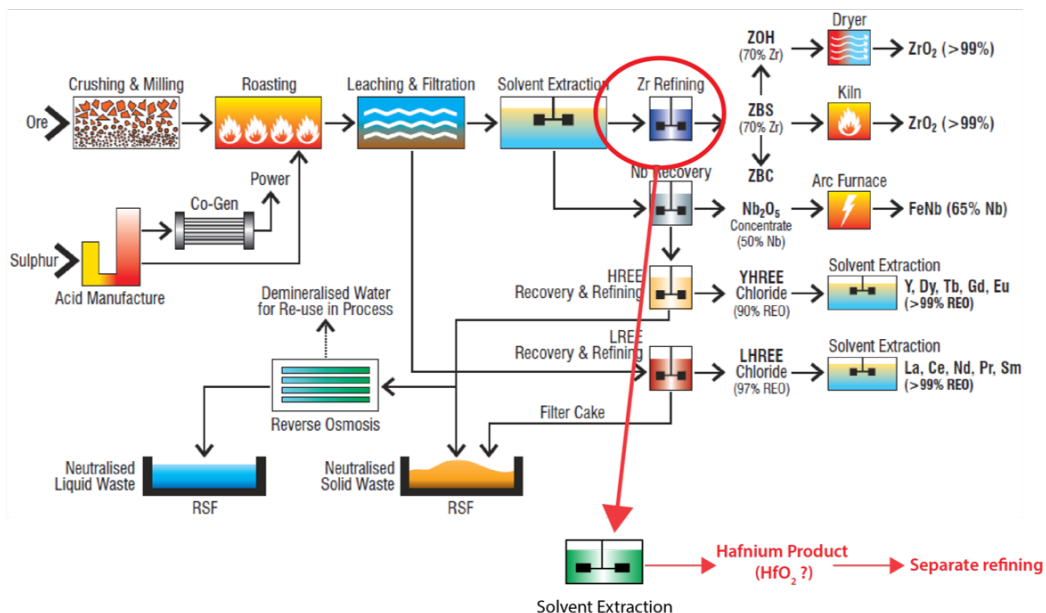
FEED pre-construction work has been completed by international engineering company Hatch on primary design with tender responses from vendors providing revised capital costs. Further analyses incorporating vendor feedback and the review of revenue streams will provide a bankable standard document within the next 3-4 months. The study will enable updated operating costs and revised revenues for the financing program to be advanced.

### Process and product improvements

Over the last 12 months Alkane has focussed on optimising the flow sheet to decrease the amount of water required, to provide an alternate waste management stream and to improve the quality and yield of the DZP products. This included development of a new zirconium basic carbonate (ZBC) process which will provide the DZP with a simpler zirconium product process and more diverse offtake options. Recoveries for rare earths have also been improved and the design and costing for these have been included in the current bankable study.

In recent months, substantial interest has been generated in the metal, hafnium (Hf) driven by expanding applications. As a result ANSTO commenced R&D on hafnium separation and has prepared a new and simple flow sheet for its recovery using solvent extraction. Small additional capital and operating costs will be required to extract an estimated 200tpa of hafnium (based on 50% recovery).

### DZP flow sheet, incorporating hafnium





This conceptual flow sheet will be tested initially at bench scale by ANSTO. Importantly the process is simpler than current industrial techniques which recover hafnium from a complex process used in the production of high purity zirconium metal.



**Alkane hafnium solvent extraction trials at ANSTO**

### **Market Development and Off-take**

The demand for hafnium is escalating for use in superalloys for aerospace and industrial gas turbines. Importantly the potential for hafnium product from the Project has provided the catalyst for the aerospace industry to look closely at the full suite of DZP output as several products are critical additives in superalloys, or as protective coatings on jet engine components. Current global production levels of hafnium are estimated to be between 50-60 tonnes per annum with real demand estimated to be in excess of 100 tonnes per annum. The DZP offers the potential to encourage further usage of hafnium in existing and new applications by managing increased supply. The DZP would become a reliable long term source of hafnium independent of zirconium metal production for the nuclear industry (the predominant source of hafnium to industry).

Recently Metal Pages (6 May) reported that the spot price for hafnium metal has moved from US\$850-900/kg late last year, to US\$1,000/kg at the end of the year, to US\$1,200/kg currently. Crucially Metal Pages also reported that Areva, currently the world's largest hafnium producer, expects growth in demand for aerospace superalloys alone to be around 20% to 30%.



The DZP does not plan to produce hafnium metal, but AZL believes output of high purity HfO<sub>2</sub> is probable. The price of this product will be subject to marketing negotiations and AZL will work with off-take partners to provide hafnium metal of suitable quality for superalloy manufacture.

### Current DZP anticipated output

<b>DZP Product Output</b>	<b>Light rare earth chemical concentrate</b>	99% REO	4,665 tpa (LREO units)
	<b>Heavy rare earth chemical concentrate</b>	95% REO	1,309 tpa (HREO units)
	<b>Zirconium as ZBC (carbonate) &amp; Zirconia</b>	99% ZrO <sub>2</sub>	15,827 tpa (ZrO <sub>2</sub> units)
	<b>Hafnium as HfO<sub>2</sub> (process being trialed)</b>	Assumed 50% recovery	200 tpa (Hf units)
	<b>Niobium as ferro-niobium</b>	65% Nb	1,967 tpa (Nb units)

**Tonnage based upon recoveries developed from mass balances of the demonstration pilot plant.  
Process optimization to improve recoveries is continuing.**

The niobium joint venture with Treibacher Industrie AG (TIAG) is progressing with TIAG recently providing AZL with detailed engineering and costing for the ferro-niobium (FeNb) plant to be integrated into the DZP processing facility and based on their study of producing marketable FeNb from niobium concentrate feed from the DZP. The TIAG joint venture is a good example of how AZL is minimising technical, process and market risks for the end products, which ultimately reduces financial risks.

While the MoUs with the European manufacturing and trading company (EMTC) and Shin-Etsu Chemical Co., Ltd (Shin-Etsu) expired on 31 December 2014, negotiation of the marketing agreement for EMTC to establish off-take for DZP products in Europe, North America and other agreed locations is proceeding. In the interim EMTC has continued to act on AZL's behalf to progress off-take agreements. A draft rare earth toll-treatment and off-take agreement was provided to Shin-Etsu late last year as a basis for commercial discussions which are continuing. Concurrently AZL is extending its efforts in Europe, North America and North Asia to develop agreements to expand processing and product opportunities.

The deposit also contains significant quantities of tantalum but to date, no commercial recovery process has been identified. A review of options will be considered once the main project is operating.

### Financing

AZL is working with its advisors to progress funding of the project. With project development approval in hand, AZL is redoubling efforts in relation to funding. The broad strategy has not changed with strategic investment, Export Credit Agency finance and commercial debt remaining as the key components of the envisaged project funding suite.





### Competent Person

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 I 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 Geosciences.

### ABOUT ALKANE - [www.alkane.com.au](http://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 Zirconia Project (DZP). Tomingley commenced production early 2014. Cash flow from the TGO will provide the funding to maintain the project development pipeline and will assist with the pre-construction development of the DZP.

The DZP Environmental Impact Statement has been completed and development consent granted by the Planning Assessment Commission. Financing is in progress and this project will make Alkane a strategic and significant world producer of zirconium products and heavy rare earths when it commences production in 2017.

Alkane's most advanced gold copper exploration projects are at the 100% Alkane owned Wellington and Bodangora prospects, and Elsenora farm-in. Wellington has a small copper-gold deposit which can be expanded, while at Bodangora a large 12km<sup>2</sup> monzonite intrusive complex has been identified with porphyry style gold copper mineralisation. Encouraging gold mineralisation was recently drilled at Elsenora.

