

# ALKANE RESOURCES LTD

*Transitioned to operations*



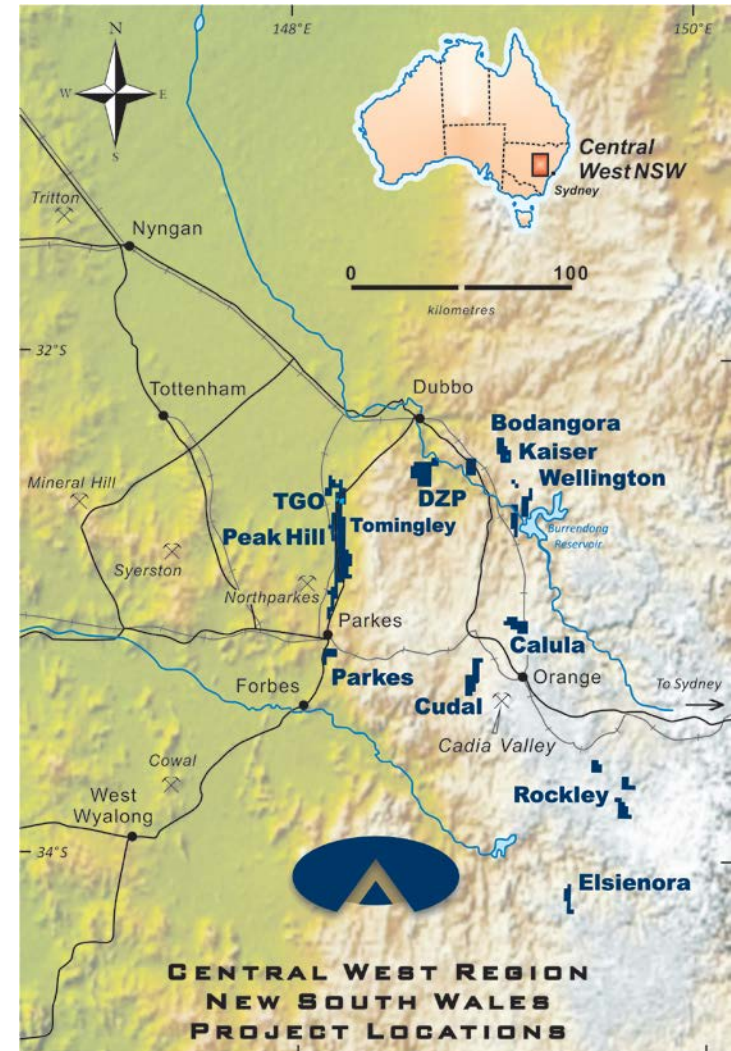
MULTI-COMMODITY MINER EXPLORER

[www.alkane.com.au](http://www.alkane.com.au)

**SydneyResourcesRound-up**

**13 May 2014**

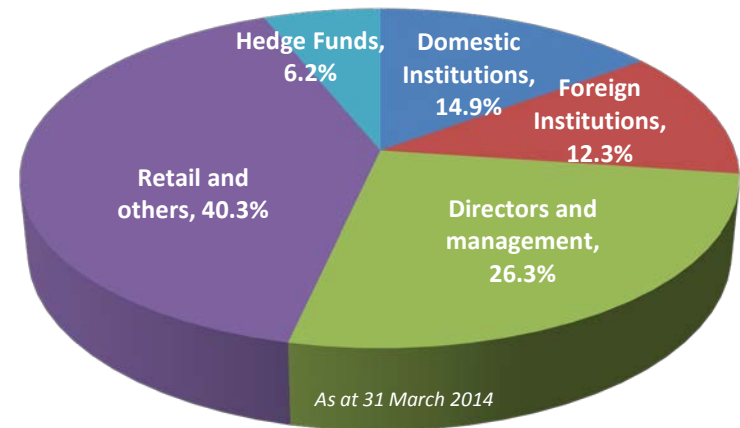
- Listed on ASX since 1969, also listed on OTCQX (US)
- ~6,300 shareholders
- Multi commodity explorer, miner and developer focused on Central West of NSW, Australia
- Active in region for more than 20 years
- Developed Peak Hill Gold Mine in 1996, operated to 2005 being the end of mine life
- Tomingley Gold Project (TGP) construction completed on time/budget, first gold production February 2014
- World-class Dubbo Zirconia Project (DZP) feasibility completed; environmental assessment and financing in progress
- Successful ongoing exploration program to provide a pipeline of development projects



## Financial

- Shares – 372,639,000
- Market Capitalisation – A\$110M (30 April 2014)
- Cash & Investments – A\$18M (31 March 2014)
- Debt – nil
- Share turnover – ~0.2M / day current
- 12 Month Low/High – A\$0.25/\$0.59
- Top 20 – 57%
- Codes – ALK (ASX)  
– ANLKY (OTCQX )

## Equity



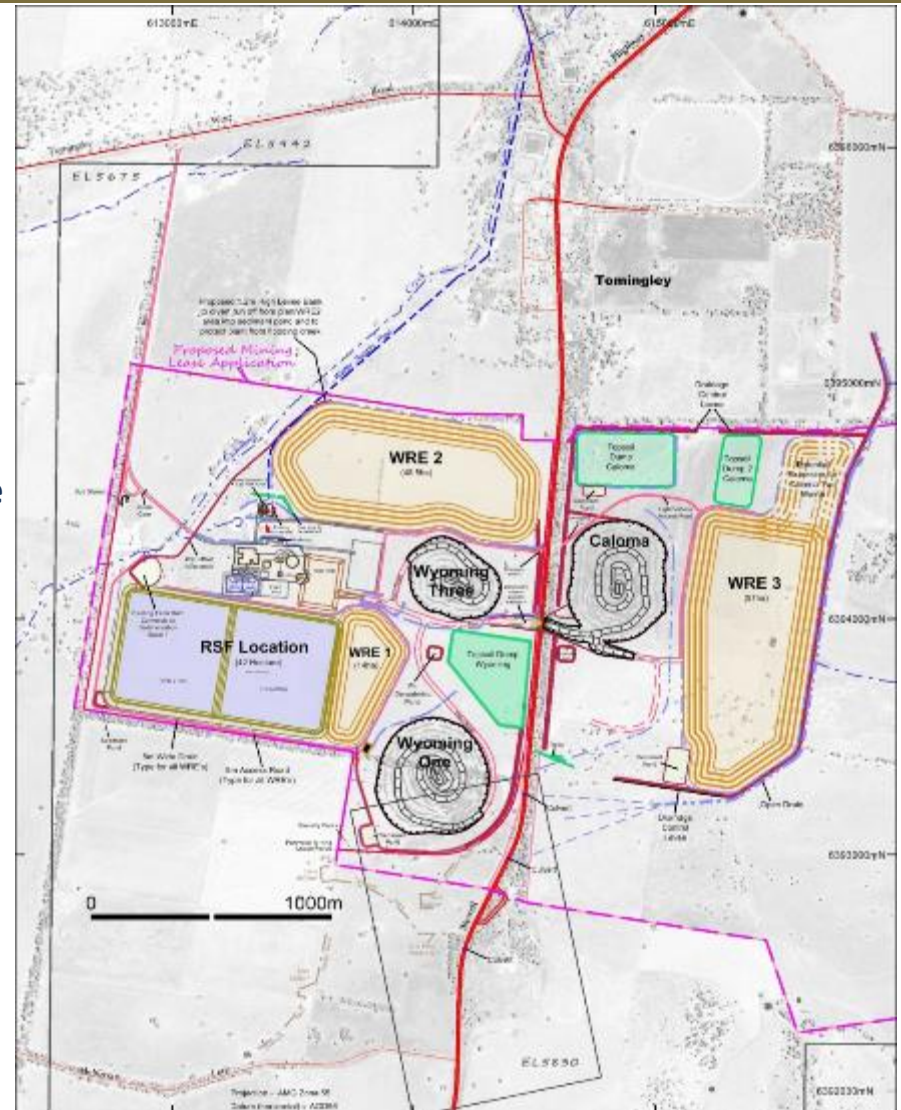
Major Shareholder: Abbotsleigh (Gandel Metals) – 25%  
Coupland Cardiff – 5.3%

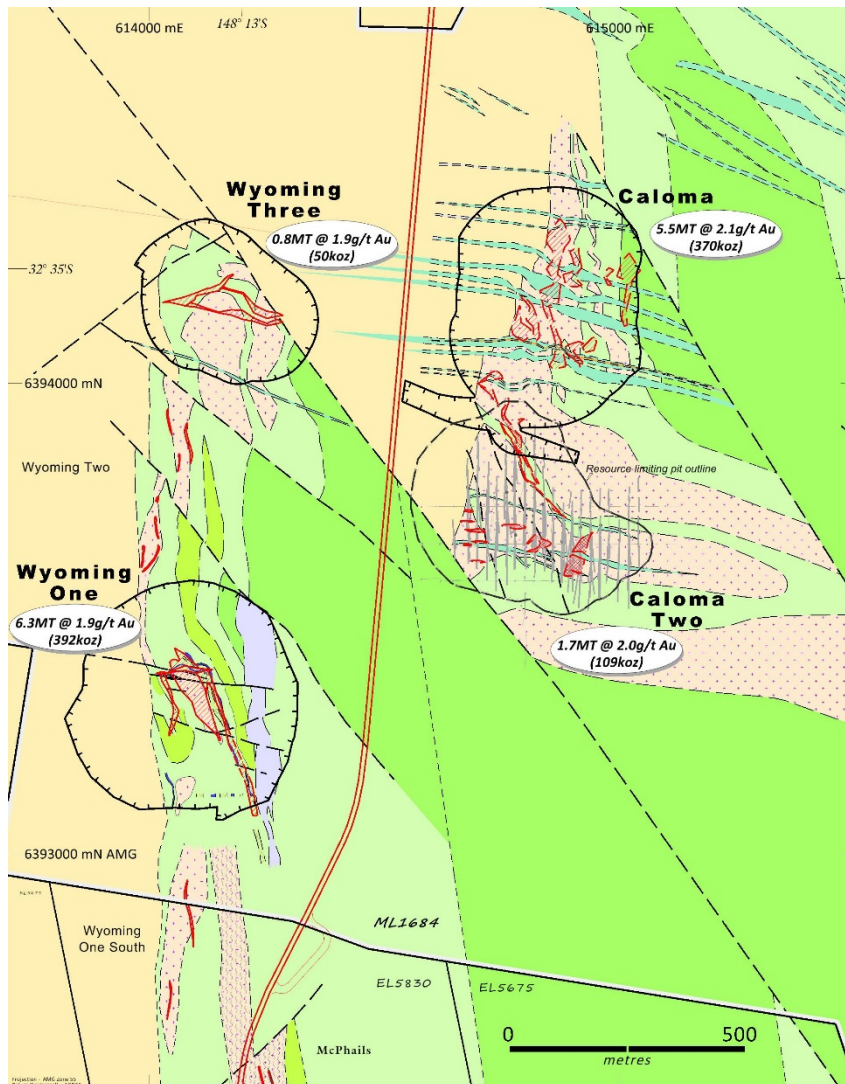
## Strategy

- ✓ Alkane is a multi commodity company totally focussed within the Central West Region of New South Wales
- ✓ Dedicated to multiple cash flow operations and returns to shareholders
- ✓ Maintain strong environmental credentials and community involvement

## Base case statistics

- Mining Lease approved February 2013
  - Resource – 921,000oz of gold
  - Construction CAPEX – A\$116M
  - Mine Method – open cut & underground
  - Mine Life – 7.5years (targeting 10+ years)
  - Processing plant throughput – 1.0Mtpa
  - 2.00g/t Au and 93% recovery standard CIL
  - Gold Production – ~400,000oz over base case life
  - Cash operating costs (C3) estimated and averaged over base case life – ~A\$1,000/oz
  - EBITDA – estimated \$140M (spot A\$1,350/oz)
  - Base case does not include Caloma Two
- **Gold production February 2014**
- March Quarter 4,363oz @ A\$1,210 (C3)
  - Processed 120,270t @ 2.32g/t Au
  - Hedge 20,000oz @ A\$1,449/oz

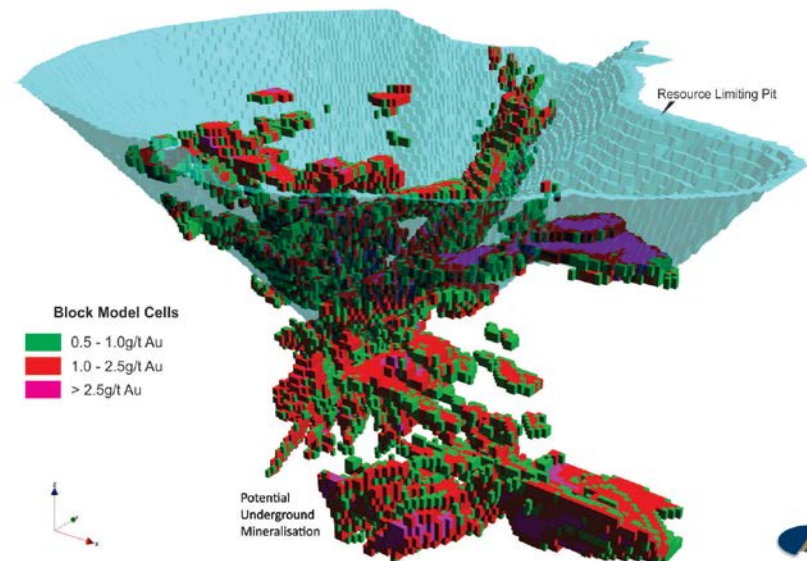




*Additional Resource Potential*

**Caloma Two open pit and underground**  
**Expand Wyoming One underground**  
**Caloma underground**  
**Myalls underground**  
**Wyoming Two and Three underground**  
**McLeans**

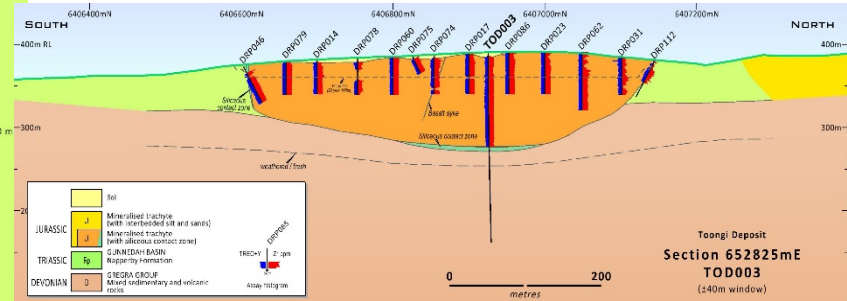
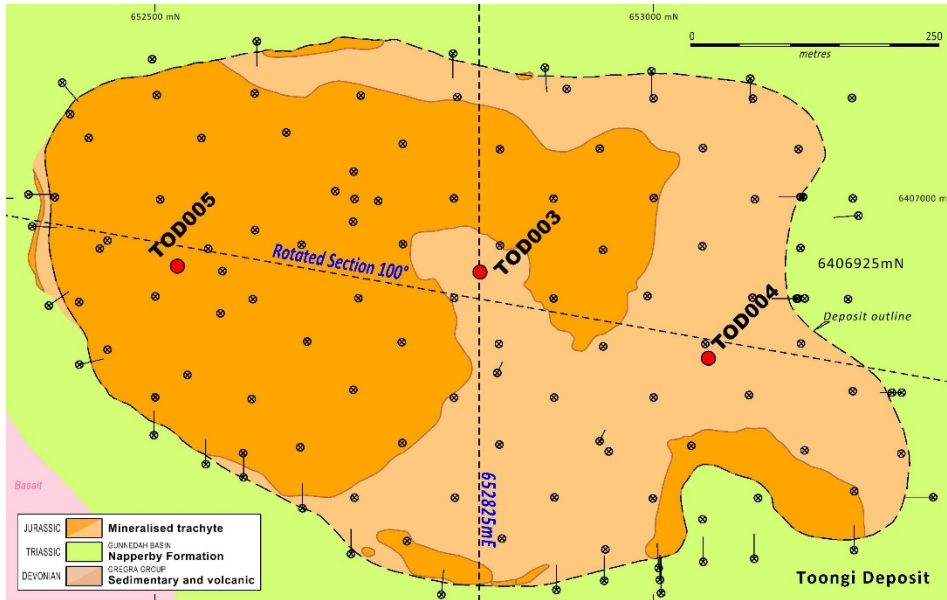
## Caloma Two – Geological model



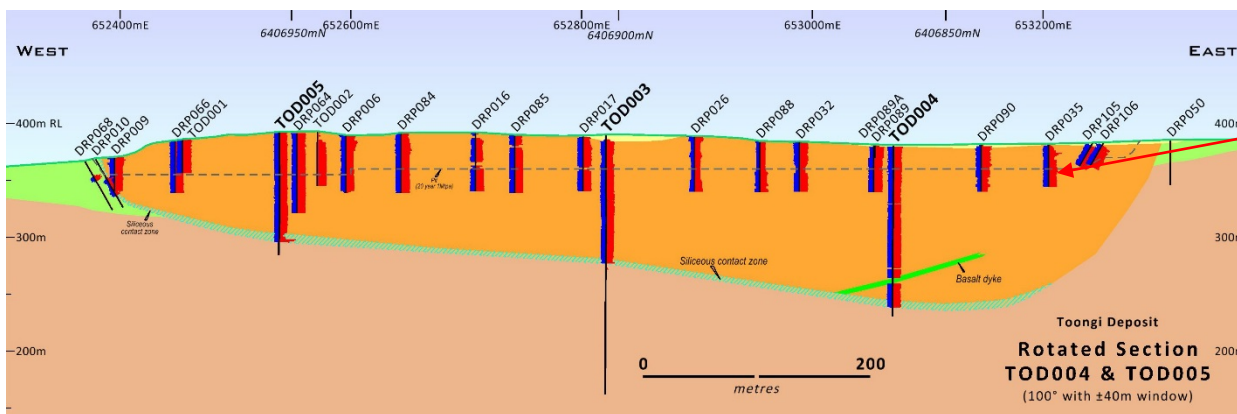


- A very large polymetallic resource of the metals zirconium (hafnium), niobium (tantalum), yttrium and rare earths
- Important and strategic metal mix - 25% of rare earth output is in “heavy” group
- Reserve supports 35 year mine life at 1 million tonne ore processing per annum with defined resource potentially supporting a significantly longer operation
- A\$1B project cost including A\$166M contingencies - 95% capex in processing plant, acid plant and infrastructure
- Demonstrated flow sheet with pilot plant and products for market evaluation at ANSTO
- Robust technical and financial feasibility completed April 2013
- Environmental Impact Statement lodged in June 2013 and approval process proceeding
- Strong market interest in products
- Growing and diverse markets





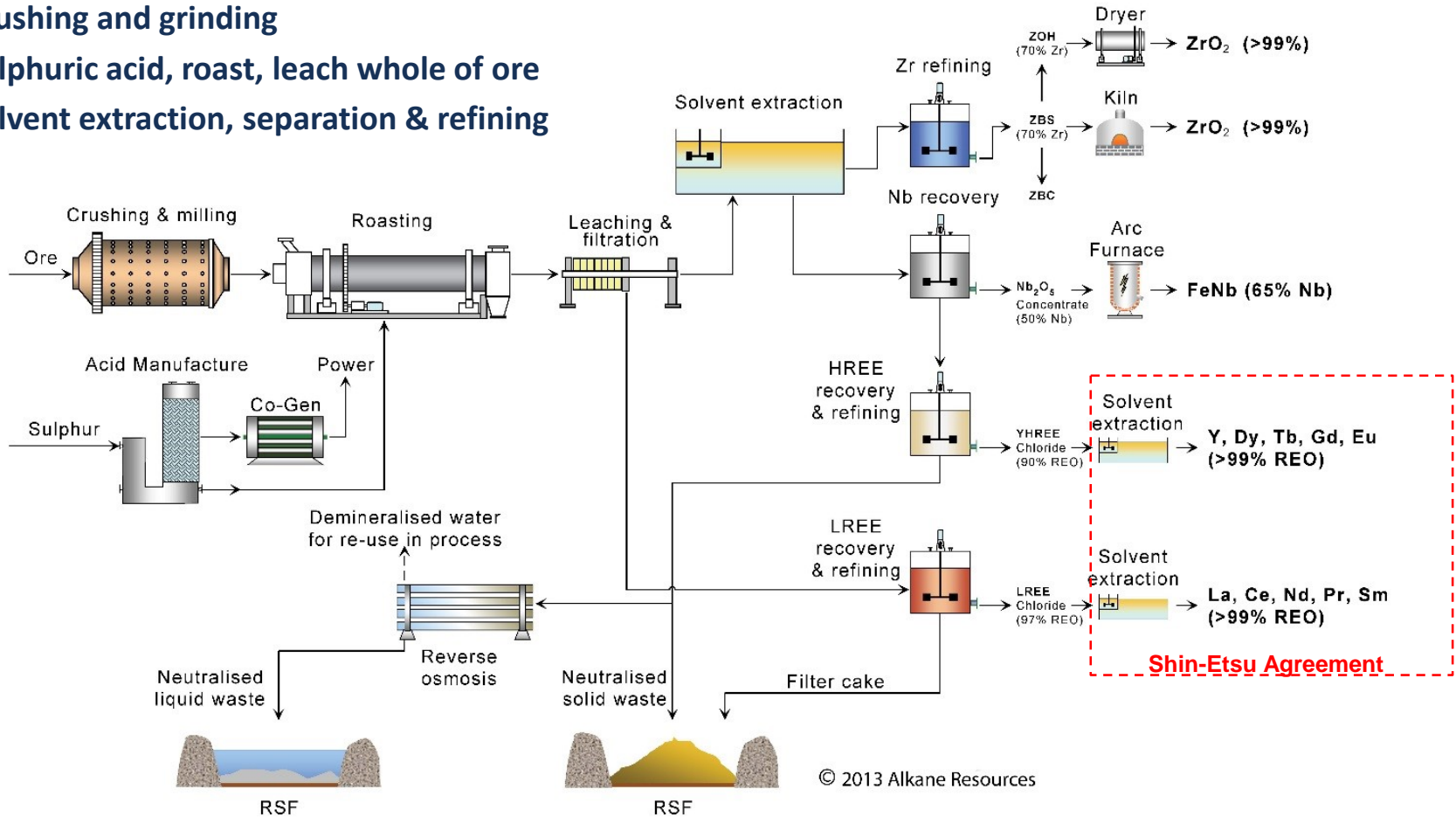
**Trachyte lava or sub-volcanic intrusive**  
**Largely homogenous ore body**  
**Ore mineralogy – eudialyte, natroniobite, basnaesite – all readily soluble in sulphuric acid**



**20 year pit floor**  
**(40 metre depth)**



- Simple open cut mining operation
- Crushing and grinding
- Sulphuric acid, roast, leach whole of ore
- Solvent extraction, separation & refining



## Continuing Product Development for Increased Return

- **Rare Earths:**
  - **MOU with Shin-Etsu Chemical to produce suite of separated rare earth oxides**  
**Sale of products to others excess to Shin-Etsu's requirements**
  - **Further work to improve recoveries proceeding at ANSTO**
- **Niobium:**
  - **Treibacher JV to produce FeNb product for direct sale to end users**
- **Zirconium:**
  - **Zr development to produce value added zirconium products of variable particle size and quality for different applications:**
    - **Production of yttria stabilised zirconia microsphere grinding media**
    - **Production of PZT – piezoelectric lead zirconate titanate**
    - **Ceramic colours eg yellow using praseodymium**
    - **Glass and steel making refractories**



DPP Filtration, PLS, SX, Zr and Nb recovery



Y and HREE refining and recovery



Zirconium refining and precipitation



Reverse osmosis and water recycle

➤ **Zirconium Materials:**

- Electronics, ceramics, glass, refractories, chemicals, metal, catalysts

➤ **Rare Earth Materials:**

- Electronics, magnets, ceramics, glass, metal alloys, phosphors, catalysts

➤ **Niobium Materials:**

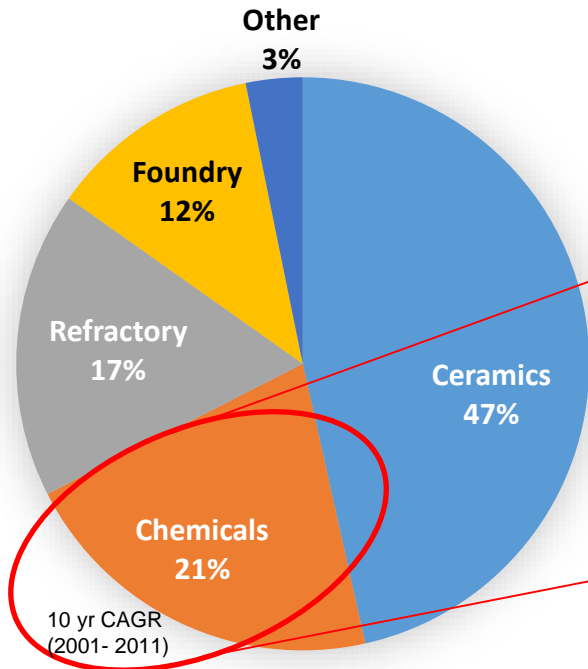
- Special steels, alloys, capacitors, glass, jewellery, coinage, superconducting magnets

Demand for these products are driven by “green” technologies: energy efficiency and alternates, and emissions minimisation

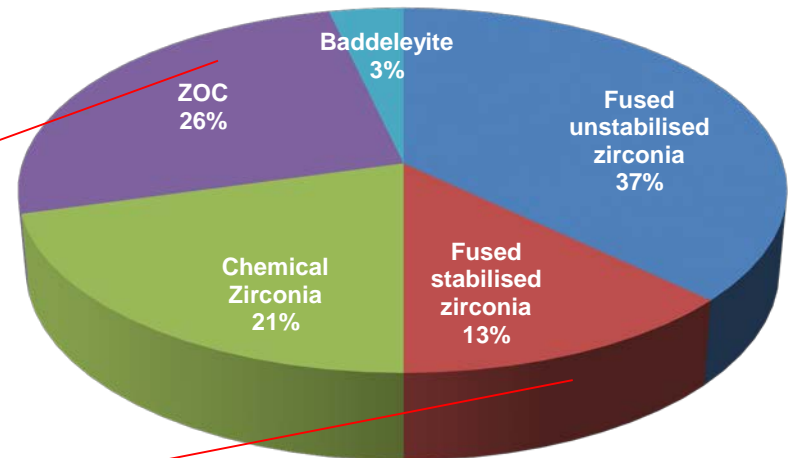
The DZP can provide a long term supply of zirconium chemicals independent of the zircon supply chain, and critical rare earths not reliant on China



**Zircon Demand by End Use  
(2013 ~ 1 million tonnes)**

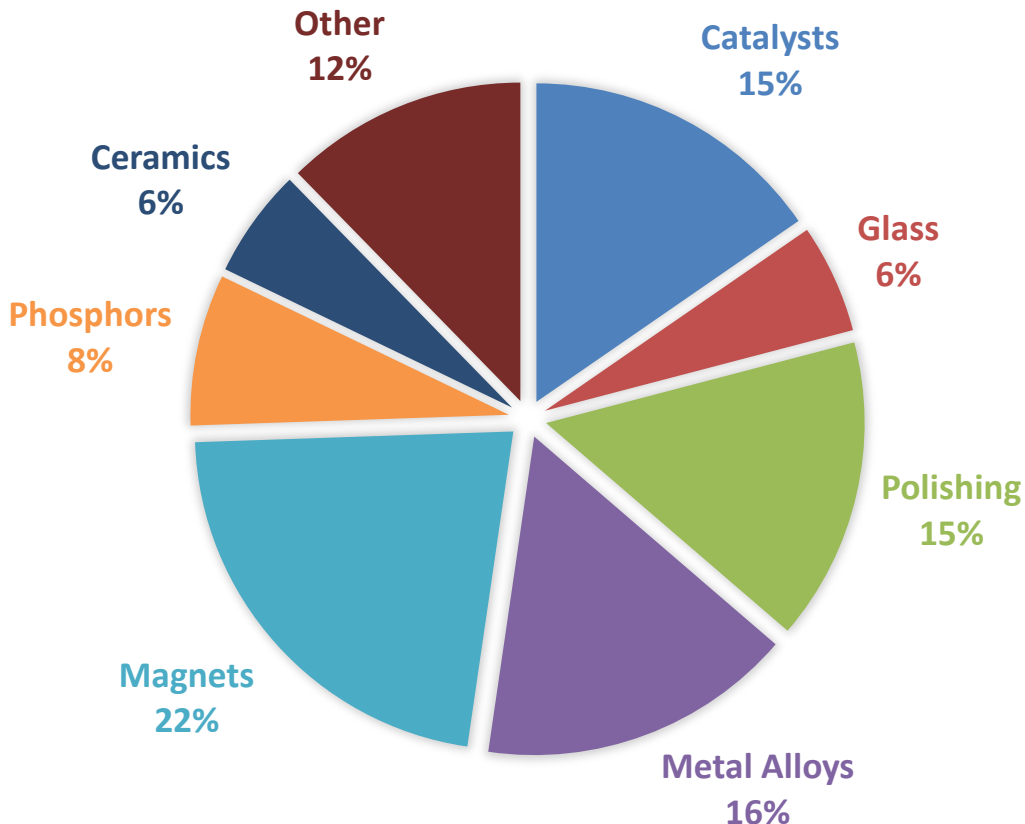


**Zirconium Chemicals Output**



- **Global market US\$2-3B**
- **2014 consumer zircon inventories running down**
- **Market expected to stabilise through 2015 - 2016**
- **CAGR anticipated at 5% - 7% pa**

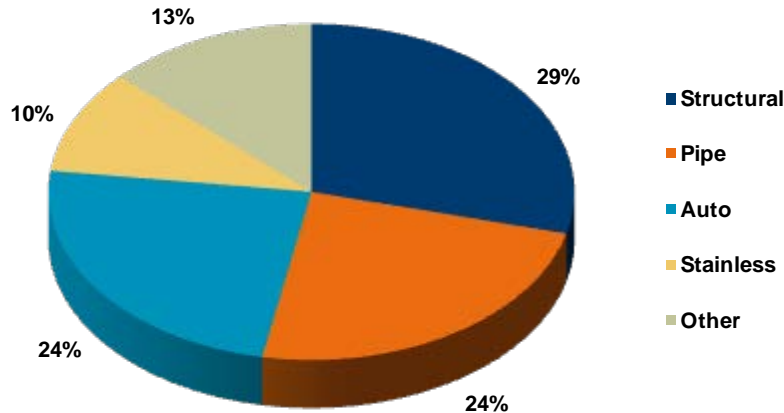
**REE DEMAND 2016**



- Total REE consumption 2012 115,000t with annual growth estimated at 5-10% to be 162,000t in 2016
- Global market US\$3-5B
- China produces about 90% of world supply and consumed about 65%, with Japan 15% and the US 14%
- The REE industry is “imbalanced” with potential oversupply of light rare earths (Ce & La) and undersupply of heavy rare earths and neodymium
- Nd, Eu, Tb, Dy and Y are considered to be in critical supply through to at least 2020

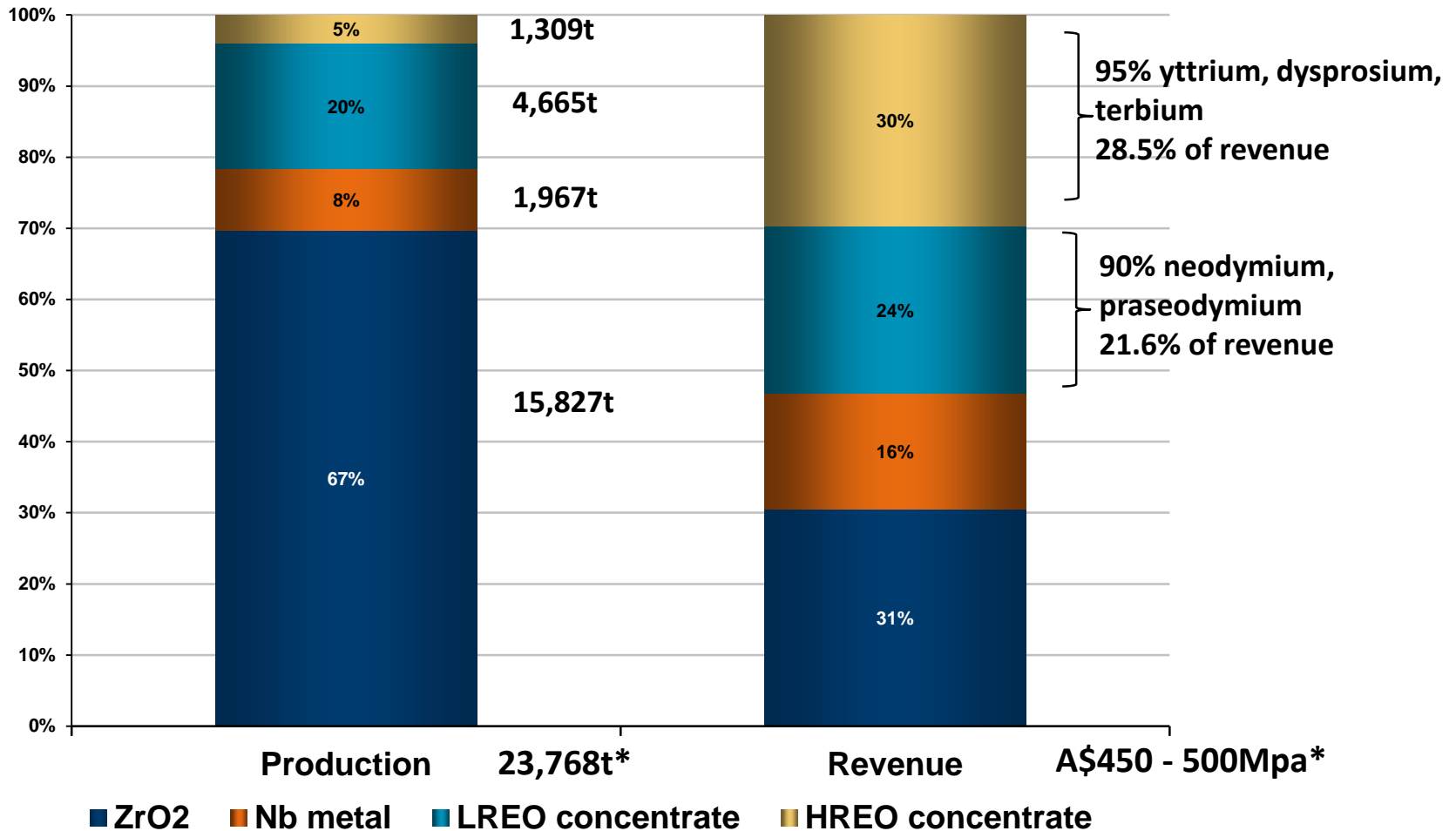
**Market imbalanced but overall CAGR 6% - 12% seems likely by 2016**

## Current use of ferro-niobium



- 90% of Nb used in standard grade ferro-niobium for the production of high strength low alloy (HSLA) steels
- Nb HSLA steels are primarily consumed in structural and piping, but the auto industry is becoming an increasing consumer
- World production estimated at 80,000t Nb in 2012. CBMM in Brazil accounts for 85%
- Global market US\$3-4B
- CAGR anticipated at 10% - Demand expected to be driven by greater usage in steels of BRIC producers

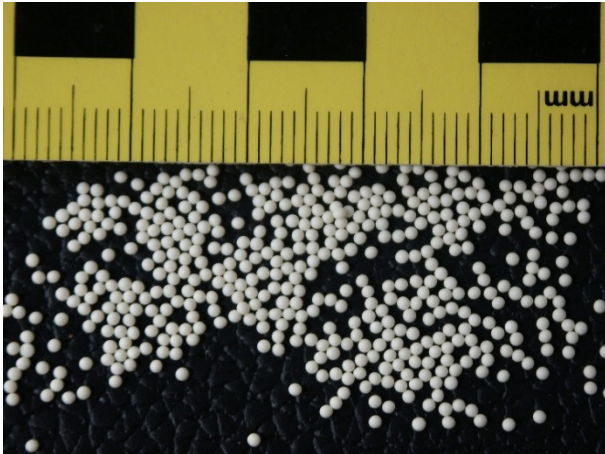
# DZP Estimated Product Output @ 1Mtpa



Revenue\* based on DFS long term product prices and A\$:US\$0.85. OPEX est A\$200M – A\$220Mpa



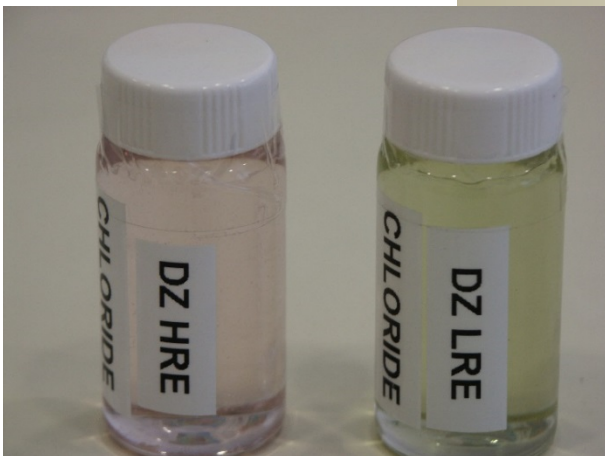
## Agreements to secure 100% of output



DZP yttria stabilised zirconia microspheres

### Zirconium (Zr)

- Leading chemical company to develop applications and markets in Asia for zirconia produced by DZP
- MoU with European manufacturer /trading company to market DZP products in Europe and North America
- Ceramic colours laboratory developed in Perth produce test products for ceramic tile industry



DZP high purity REE chemical concentrate

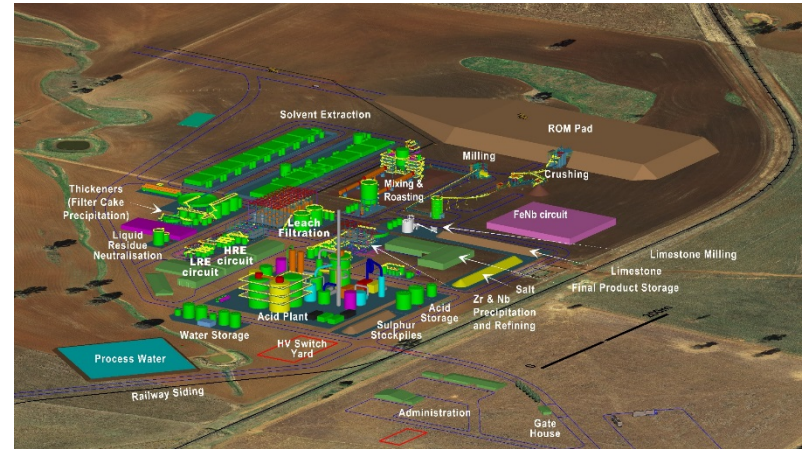
### Niobium (Nb)

- JV with European Treibacher Industrie AG to produce and market ferro-niobium
- Test work for tantalum recovery

### Light rare earths Heavy rare earths

- MoU with Japan's Shin-Etsu Chemical for toll treatment for separation and sale

- **Total Project Capex of \$996m**
  - Based on April 2013 DFS to +/- 17%
  - Includes \$166m contingency
  - Includes current FEED program to achieve BFS standard @ +/- 10%



## ➤ Targeted funding sources:

- **Government Assistance Programs/ECA style funding**
  - **Lead Coordinator: Sumitomo Mitsui Banking Corp**
  - Attractive Project:
    - ✓ long life low cost strategic source of critical metals
    - ✓ long term off-take agreements with international companies
- **Sale of Project Level (AZL) Minority Interest(s) (~15%)**
  - **Sale Advisors: Credit Suisse & SMBC**
    - ✓ Strategic interest(s) in long term supply of critical metals
    - ✓ Introduction of cornerstone investor(s)
- **Commercial Bank Debt**
  - **Advisors: Credit Suisse & SMBC**
  - Attractive Project:
    - ✓ strong operating cash flows
    - ✓ diversified revenue stream
    - ✓ new markets will add to project value
- **Equity Capital Markets (Alkane)**
  - **Advisors: Credit Suisse & Petra Capital**



- **Bodangora gold-copper prospect**

- Large monzonite intrusive complex with gold-copper mineralisation
- Similarities to Newcrest' Cadia-Ridgeway gold-copper mine
- Recent drill intercepts at new target (Kaiser)
  - 41m @ 1.15g/t gold and 1.24% copper
  - 8m @ 0.34g/t gold and 1.06% copper

- **Galwadgere gold copper prospect**

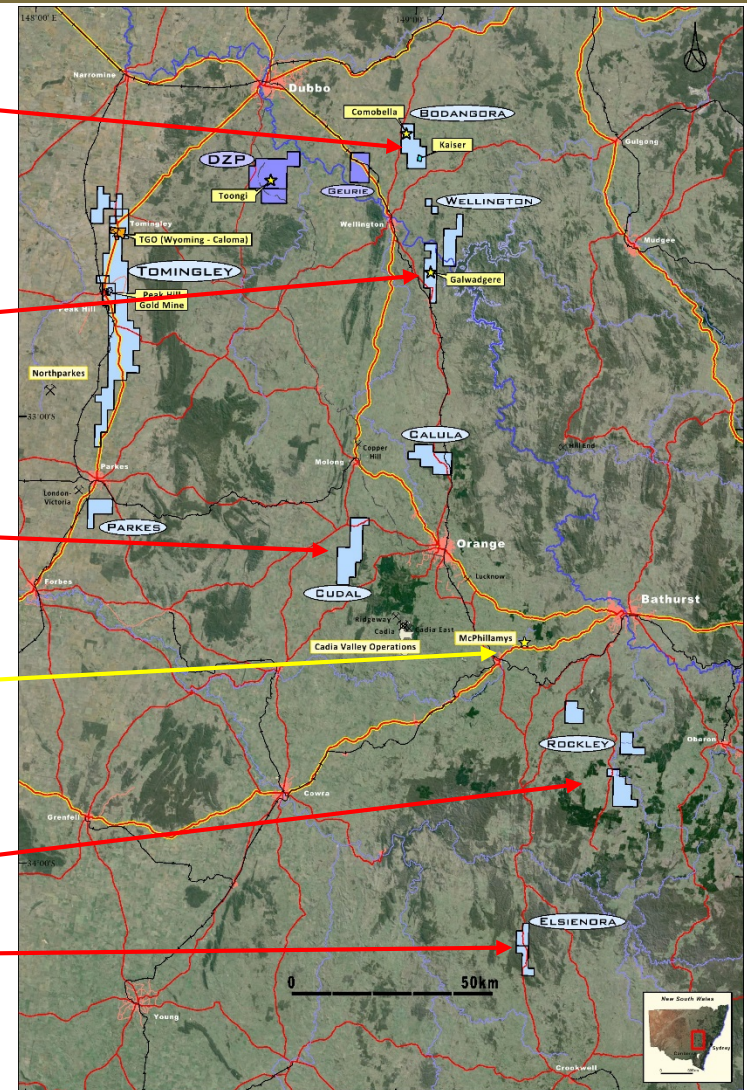
- Small VMS copper-gold deposit
- Drilling continues

- **Cudal gold-zinc prospect**

- Best drill intercept 17m @ 1.2 g/t gold and 2.9% zinc
- Interesting targets, both porphyry style copper-gold and possibly sedimentary replacement (Carlin model)

- **McPhillamys gold project – Regis Resources Ltd**

- Discovered by Alkane in 2005 – JV with Newmont Australia
- 3Moz gold resource identified in 2010 (ALK ASX 5 July 2010)
- Sold to Regis in 2012 for \$150M, Alkane's share \$73.5M
- Modified VMS type gold with minor base metals
- McPhillamys conceptual targets at:
  - Rockley
  - Elsenora



30 Apr 2014 by *Metal-Pages*

## Rare earths support \$329.6 billion of downstream industrial activity in NorthAm says RETA

LONDON (Metal-Pages) 30-Apr-14. The monetary value of rare earths used and produced in the North America is tiny, but its impact in terms of supporting numerous key industries is enormous, according to a report prepared by the Rare Earth Technology Alliance (RETA).

Rare earths support around \$329.6 billion of industrial activity in North America with their use in industries as varied as glass, phosphors, construction, oil refining, lasers through to magnets, according to a report called The Economic Benefits of the North American Rare Earths Industry published by RETA.

## Shin-Etsu Chemical to construct a rare earth magnet manufacturing plant in Hai Phong Province in Vietnam

*Aim is to strengthen Shin-Etsu's rare earth magnet supply system through having plural magnet sintering process plants in order to correspond to the expansion of the automobile market*

Shin-Etsu Chemical Co., Ltd. (Head Office: Tokyo, President, Shunzo Mori) has decided to establish a new rare earth magnet manufacturing plant in the Socialist Republic of Vietnam.

The manufacturing capacity of the new plant will be 2,000 tons/year and the investment amount is about ¥12 billion. The new plant will be built in two phases on land that Shin-Etsu Chemical's Group company in Vietnam, Shin-Etsu Magnetic Materials Vietnam, owns in Hai Phong Province. The construction work will start in October 2014. The first-phase portion of the plant construction work is scheduled to be completed in September 2015 with a production capacity of 1,000 tons/year and the second-phase portion to be completed in September 2016 with another 1,000 tons/year of capacity.

## Chinese Companies Pay \$1.95 Billion for CBMM Stake, Xinhua Says

By Bloomberg News | Sep 1, 2011 1:55 PM GMT+0800 | 0 Comments | Email | Print

CITIC Group, Baosteel Group Corp. and Taiyuan Iron and Steel (Group) Co. jointly acquired a 15 percent stake in Brazilian niobium producer CBMM for \$1.95 billion, Xinhua News reported, without saying where it got the information.

The Chinese companies set up a joint venture, China Niobium Investment Holding Co., to acquire the CBMM stake, according to the report. Calls to Taiyuan Steel's office in Shanxi province and CITIC Group's in Beijing weren't answered.

The report follows the purchase of a similar-sized stake in the closely held company whose full name is Companhia Brasileira de Metalurgia e Mineracao by a group of Japanese and Korean companies in March. The companies that bought that stake include Posco, South Korea's National Pension Service, Nippon Steel Corp. (5401), JFE Holdings Inc., Sojitz Corp. (2768) and Japan Oil, Gas and Metals National Corp.

30 Apr 2014 by *Metal-Pages*

## MMTA Conference: Zirconium and hafnium see rising demand - Areva

LONDON (Metal-Pages) 30-Apr-14. Zirconium demand should increase by 11-12% by 2025, according to Cyrille Rontard of French nuclear fuel producer Areva, a manufacturer of rare metals zirconium and hafnium from fused zirconia.

**“Reports of the demise of these industries have been greatly exaggerated”** (Apologies to Mark Twain)

## Disclaimer

This presentation 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 presentation 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.

## Competent Person

The information in this presentation that relates to mineral exploration, mineral resources and ore reserves is based on information compiled by Mr D I Chalmers, FAusIMM, FAIG, (director of the Company) 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 Competent Person as defined in the 2012 Edition of the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves. Ian Chalmers consents to the inclusion in the presentation of the matters based on his information in the form and context in which it appears.



## Dubbo Zirconia Project – Mineral Resources

Toongi Deposit	Tonnage (Mt)	ZrO <sub>2</sub> (%)	HfO <sub>2</sub> (%)	Nb <sub>2</sub> O <sub>5</sub> (%)	Ta <sub>2</sub> O <sub>5</sub> (%)	Y <sub>2</sub> O <sub>3</sub> (%)	REO (%)
Measured	35.70	1.96	0.04	0.46	0.03	0.14	0.75
Inferred	37.50	1.96	0.04	0.46	0.03	0.14	0.75
<b>Total</b>	<b>73.20</b>	<b>1.96</b>	<b>0.04</b>	<b>0.46</b>	<b>0.03</b>	<b>0.14</b>	<b>0.75</b>

*These Mineral Resources are based upon information compiled by Mr Terry Ransted MAusIMM (Alkane Chief Geologist) who is a competent person as defined in the 2004 Edition of the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves. Terry Ransted consents to the inclusion in the report of the matters based on his information in the form and context in which it appears. The full details of methodology were given in the 2004 Annual Report.*

## Dubbo Zirconia Project – Ore Reserves

Toongi Deposit	Tonnage (Mt)	ZrO <sub>2</sub> (%)	HfO <sub>2</sub> (%)	Nb <sub>2</sub> O <sub>5</sub> (%)	Ta <sub>2</sub> O <sub>5</sub> (%)	Y <sub>2</sub> O <sub>3</sub> (%)	REO (%)
Proved	8.07	1.91	0.04	0.46	0.03	0.14	0.75
Probable	27.86	1.93	0.04	0.46	0.03	0.14	0.74
<b>Total</b>	<b>35.93</b>	<b>1.93</b>	<b>0.04</b>	<b>0.46</b>	<b>0.03</b>	<b>0.14</b>	<b>0.74</b>

*These Ore Reserves are based upon information compiled by Mr Terry Ransted MAusIMM (Alkane Chief Geologist) who is a competent person as defined in the 2012 Edition of the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves. The reserves were calculated at a 1.5% combined ZrO<sub>2</sub>+Nb<sub>2</sub>O<sub>5</sub>+Y<sub>2</sub>O<sub>3</sub>+REO cut off using costs and revenues defined in the notes in ASX Announcement of 16 November 2011. Terry Ransted consents to the inclusion in the report of the matters based on his information in the form and context in which it appears.*

**Note:** ASX announcements 16 November 2011 and 11 April 2013 - the Company confirms that all material assumptions and technical parameters underpinning the estimated Mineral Resources and Ore Reserves, and production targets and the forecast financial information as disclosed continue to apply and have not materially changed.

## Tomingley (TGP) – Mineral Resources

DEPOSIT	MEASURED		INDICATED		INFERRED		TOTAL		
	Tonnage (Mt)	Grade (g/t) Au	Tonnage (Mt)	Grade (g/t) Au	Tonnage (Mt)	Grade (g/t) Au	Tonnage (Mt)	Grade (g/t) Au	Ounces
Wyoming One <sup>2</sup>	2.32	2.2	0.89	2.2	3.12	1.7	6.32	1.9	392,400
Wyoming Three <sup>2</sup>	0.64	2.0	0.06	2.0	0.10	1.3	0.81	1.9	49,900
Caloma <sup>2</sup>	2.69	2.3	0.57	2.1	2.19	1.9	5.45	2.1	369,400
Caloma Two <sup>1</sup>			1.0	2.4	0.7	1.4	1.70	2.0	109,300
<b>Total</b>	<b>5.65</b>	<b>2.2</b>	<b>2.52</b>	<b>2.25</b>	<b>6.11</b>	<b>1.73</b>	<b>14.29</b>	<b>2.0</b>	<b>921,000</b>

<sup>1</sup> These Mineral Resources are based upon information compiled by Mr Richard Lewis FAusIMM (Lewis Mineral Resource Consulting Pty Ltd) who is 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). Richard Lewis consents to the inclusion in this report of the matters based on his information in the form and context in which it appears. Full details of methodology were given in the ASX Announcement 12 November 2013

<sup>2</sup> These Mineral Resources are based upon information compiled by Mr Richard Lewis FAusIMM (Lewis Mineral Resource Consulting Pty Ltd) who is a Competent Person as defined in the 2012 Editions of the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (JORC Code). Richard Lewis consents to the inclusion in this report of the matters based on his information in the form and context in which it appears. The details of methodology for estimating these resources was reported 29 March 2012..

## Tomingley (TGP) – Ore Reserves

DEPOSIT	PROVED		PROBABLE		TOTAL		
	Tonnage (t)	Grade (g/t) Au	Tonnage (t)	Grade (g/t) Au	Tonnage (t)	Grade (g/t) Au	Ounces
Wyoming One	1,700,000	1.6	200,000	1.3	1,900,000	1.6	94,500
Wyoming Three	500,000	1.6	0	0.0	500,000	1.6	28,100
Caloma	1,100,000	2.3	100,000	1.7	1,200,000	2.2	86,500
<b>Total</b>	<b>3,300,000</b>	<b>1.8</b>	<b>300,000</b>	<b>1.5</b>	<b>3,600,000</b>	<b>1.8</b>	<b>209,100</b>

These Ore Reserves are based upon information compiled under the guidance of Mr Dean Basile MAusIMM (Mining One Pty Ltd) who is a competent person as defined in the 2012 Edition of the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves. Dean Basile consents to the inclusion in the report of the matters based on the information in the form and context in which it appears. Full details in ASX Announcement 13 December 2011

**Note:** ASX announcements 13 December 2010, 29 March 2012 and 12 November 2013 - the Company confirms that all material assumptions and technical parameters underpinning the estimated Mineral Resources and Ore Reserves, and production targets and the forecast financial information as disclosed continue to apply and have not materially changed.