

# Goldletter INTERNATIONAL

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Special Situation – August 2011 Update

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ALKANE  
RESOURCES LTD

## Alkane Resources Ltd. (A\$ 1.02)

ASX	: ALK
H+L prices (12 months)	: A\$ 1.95 – 0.73
Net shares issued	: 372.5 million shares
Fully diluted	: 376.5 million shares
Market Capitalization	: A\$ 380.0 million

**Next price target: A\$ 3.00**

## Company profile

Alkane Resources is a multi commodity explorer and miner focused on a single geographic area, the Central West of New South Wales, Australia, about 400 kilometres northwest of Sydney.

Currently, Alkane has two projects heading towards production in 2013/15, the **Tomingley Gold Project (TGP)** and the nearby **Dubbo Zirconia Project (DZP)**.

The **TGP** is a new gold development planned to commence production in the second half of 2013 based on an 812,000 ounce (12.6 million tonnes grading 2.0 g/t) resource.

Gold production is expected to be an average of 50-60,000 ounces per year over the base case of 7.5 years although target life is 10+ years.

On August 1 2012, Alkane announced that it has received approval from the NSW Department of Planning and Infrastructure for the TPG Project.

The **DZP** has a completed a Definitive Feasibility Study in September 2011 based upon 400,000 tonnes per year ore throughput. The Project will make Alkane a significant world producer of zirconium products and heavy rare earths. Changes in the dynamics of the markets for DPZ's output over the last 24 months, particularly the very important heavy rare earth and zirconium production, led to the evaluation of a 1 million tonnes per year project. A revised final assessment of the DPZ to confirm the 1 million tonnes per annum model is being compiled.



## Overview of Projects

### ➤ Tomingley Gold Project, Central West, New South Wales

The Tomingley Gold Project (TGP) is located in the Central West of New South Wales about 400 kilometres northwest of Sydney and is based on three gold deposits (Wyoming One, Wyoming Three and Caloma).

Over several years, including experience in developing the Peak Hill Gold Mine, Alkane has built a substantial resource base and is proceeding towards several developments, located 14 kilometres north of the Company's Peak Hill Gold Mine.

Previously reported Identified Mineral Resources total approximately 812,000 ounces of gold (ASX Report dated March 29, 2012) and a Definitive Feasibility Study (DFS) was completed in December 2010.

On August 1, 2012, Alkane announced that it has received approval from the NSW department of Planning and Infrastructure for the TGP. A number of operational and environmental management plans have been finalized or are being prepared and approval of the site Mining Lease from the Division of Resources and Energy is anticipated.

The final step should enable construction work to commence.

The TGP development consists of 3 open pit mines, Caloma, Wyoming One and Wyoming Three, to be followed in year 3 and 4 by an underground operation initially focused on the Wyoming One Deposit. The mine rate will average 1.0 million tonnes per annum from the open pit operations and 0.25 million tonnes per annum from underground.

The higher grade underground ore will be blended with low grade stockpiled open pit ore to maintain a processing rate of 1.0 million tonnes per annum through a conventional CIL gold recovery circuit, pending development of other potential resources.

This treatment rate would recover an average 50-60,000 ounces of gold a year for a minimum of 7 ½ years. Longer term there is potential to expand the resources through development of the Caloma Two Deposit and Caloma underground and regional exploration.

As with the mining industry in general, both capital and operating costs have increased over the last two years and a recent review of the TGP has seen capital costs rise to A\$ 107 million (\$ 116 million with contingencies).

As at the end of the June 2012 quarter, \$ 9.37 million have been expended on the development and capital costs, including \$ 2.11 million for EPCM expenditures.

An update of operating costs is in progress and these will be incorporated into the financial model to ensure the Project maintains adequate returns. The updated financial model will not initially include the revised resource potential from the Caloma open pit identified by recent RC drilling.

At current gold prices the TGP base case will generate revenues around A\$ 570 million with an anticipated EBITDA of A\$ 200 million.

Detailed design by the EPCM contractor, Mintrex Pty, is well advanced. Some off-site construction work could begin in September, assuming all approvals are in place with the upgrade of primary and secondary road access and commencement of the water and power lines.

Some long-term items, such as the ball mill, were ordered last year to minimize construction delays and it is planned to commence production by the fourth quarter of 2013

Recently Alkane agreed to extend to December 31, 2012 the mandate to Credit Suisse to provide a project financing facility. The financing comprises a Project Loan Facility of up to A\$ 45 million and a Gold Hedging Facility of up to 163,100 ounces.

Last year, the Company entered into an initial 90,000 ounces forward sale that will underwrite a minimum price of approximately A\$ 1,600 per ounce for the first 2 ½ years of production from the TGP.

**Tomingley (TGP) – Mineral Resources**

DEPOSIT	MEASURED		INDICATED		INFERRED		TOTAL		
	Tonnage (t)	Grade (g/t)	Tonnage (t)	Grade (g/t)	Tonnage (t)	Grade (g/t)	Tonnage (t)	Grade (g/t)	Gold (koz)
Top Cut 2.5x2.5x5.0m model									
Wyoming One	2,318,550	2.2	890,340	2.2	3,117,350	1.7	6,324,240	1.9	392.4
Wyoming Three	642,470	2.0	63,225	2.0	102,820	1.3	808,510	1.9	49.9
Caloma	2,890,530	2.3	567,860	2.1	2,194,490	1.9	5,452,870	2.1	389.4
<b>Total</b>	<b>5,649,550</b>	<b>2.2</b>	<b>1,521,420</b>	<b>2.1</b>	<b>5,414,660</b>	<b>1.8</b>	<b>12,585,630</b>	<b>2.0</b>	<b>811.7</b>

*These Mineral Resources are based upon information compiled by Mr Richard Lewis MAusIMM (Lewis Mineral Resource Consulting Pty Ltd) 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. Richard Lewis 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 are given in the ASX Reports dated 26 March 2009, 2 October 2010 and 29 March 2012.*

**Tomingley (TGP) – Ore Reserves**

DEPOSIT	PROVED		PROBABLE		TOTAL		
	Tonnage (t)	Grade (g/t)	Tonnage (t)	Grade (g/t)	Tonnage (t)	Grade (g/t)	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 2004 Edition of the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves. The Reserves and Resources are estimated at an effective A\$1,540 per ounce gold price. 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.*

**Peak Hill – Mineral Resources**

DEPOSIT	MEASURED		INDICATED		INFERRED		TOTAL		
	Tonnage (t)	Grade (g/t)	k Ounces						
0.5g/t gold cut off									
Proprietary			9,440,000	1.35	1,830,000	0.98	11,270,000	1.29	467.4
3.0g/t gold cut off									
Proprietary P					810,000	4.40	810,000	4.40	114.6

*These Mineral Resources are based upon information compiled by Mr Terry Ransted MAusIMM (Principal, Multi Metal Consultants Pty Ltd) 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.*

### ➤ Peak Hill Gold Mine

During the last quarter a deep core hole at Peak Hill did not reach target depth but intersects gold mineralization of 6 metres grading 5.52 g/t gold from 286 metres below the Great eastern pit.

Due to proximity to homes and infrastructure in the town of Peak Hill, any mine development would be underground

Identified Mineral resource at Peak Hill as at December 31, 2011 remains at 467,400 ounces at a 0.5 g/t gold cut-off and 114,600 ounces at a 3.0 g/t gold cut-off.

### ➤ Orange District Exploration Joint Venture with Newmont Australia

Near Orange, Alkane (49%) has a joint venture with Newmont Australia (51%), which resulted in the discovery in 2006 of a significant gold deposit at **McPhillamys** within the **Moorilda Project**.

An initial conceptual target of **2 to 4 million ounces of gold** and **50,000 to 100,000 tons of copper** was assigned to the discovery and it rates as the potentially largest greenfields gold discovery in Australia since the Anglo Gold – Independence Group discovery at Tropicana in Western Australia in 2005.

In July 2010, Alkane released its first resource estimate for the McPhillamys gold discovery which was completed by Lewis Minerals Consulting in Sydney. An initial Indicated and Inferred resource at a 0.3 g/t cut-off defined 91.954 million tonnes grading 1.00 g/t gold and 0.07% copper for a cumulative total of 2.96 million ounces of gold and 60,000 tonnes of copper.

On August 9, 2012, Alkane announced that the Company and Newmont Exploration have accepted an offer from Regis Resources (RRL - ASX) for their respective interests in the Orange District Exploration Joint Venture, including the 2.96 million ounce gold resource of the McPhillamys Gold Project. Regis will pay \$ 150 million for the tenements, mining information, all fixtures, machinery, equipment and other property or rights of any description acquired with funds of the Joint Venture.

Alkane will receive \$ 3.75 million for its 49% interest, to be settled by the issue of fully paid ordinary shares in Regis. The number of shares received will be calculated at \$ 4.20 per share being the volume weighted average trading price of Regis shares for the 45 days preceding acceptance of the offer, i.e. 17.5 million shares.

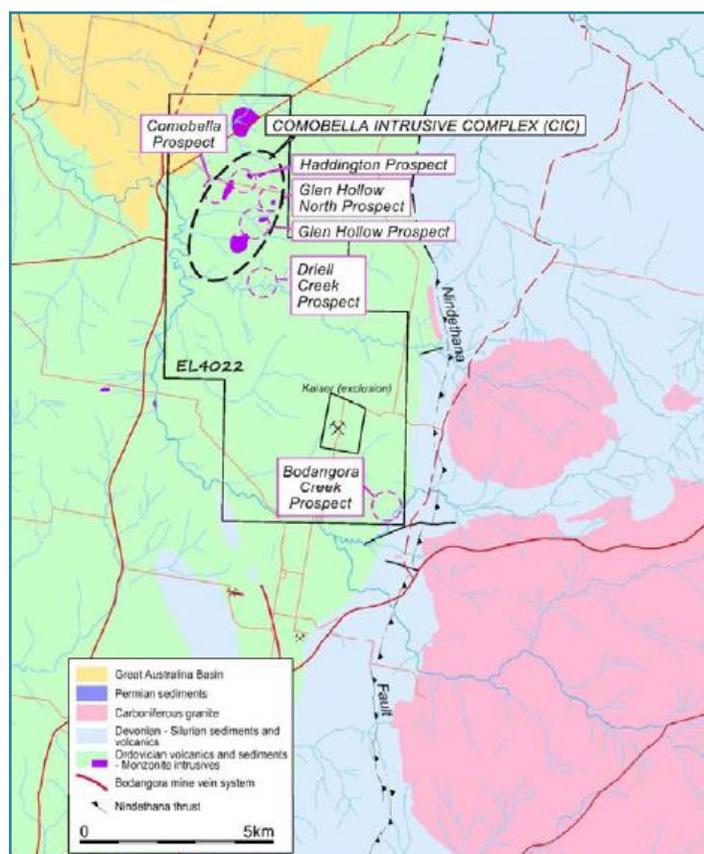
### ➤ **Wellington Copper Project, Central West region, New South Wales**

Alkane has defined a shallow Indicated resource of 2 million tonnes grading 0.99% copper and 0.3 g/t gold, which is being reviewed for its development potential at **Galwadgere** within the **Wellington Project** and several other advanced exploration projects with encouraging drill intercepts. New exploration targets have been identified at several other locations.

In May 2011 Alkane announced that a diamond core drill hole (GAL 032) has been completed to test the down plunge extensions to the known mineralization with results from 363 metres down hole, which intersected 14 metres grading 1.13 g/t gold, 0.94% copper and 0.89% zinc, including 4 metres grading 0.94 g/t gold, 1.69% copper and 2.98% zinc.

These results have extended the mineralization 200 metres down plunge and add to the resource potential.

Further drilling will be scheduled to evaluate this extended resource potential.



### ➤ **Bodangora Gold- Copper Project, Central West region, New South Wales**

In April 2011, Alkane announced the discovery of porphyry style gold/copper mineralization at the Bodangora Project in the Molong Volcanic Belt, located 15 kilometres north/east of Wellington in the Central West region of New south Wales and about 25 km north of the Company's Wellington (Galwadgere) Project.

Soil geochemistry and IP Surveys identified a number of prospective areas which were evaluated by broadly spaced RC drilling in early 2011.

The most significant results, released in April 2011, were returned from the Glen Hollow prospect intersecting 46 metres grading 0.9 g/t gold and 0.25% copper from 60 metres, including 18 metres grading 1.7 g/t gold and 0.45% copper from 85 metres.

On February 1, 2012, Alkane announced that reconnaissance core drilling has confirmed the potential of the Glen Hollow prospect at Bodangora. Two diamond drill holes were completed in December 2011 to provide initial geological information as follow-up of the COMRC009 intercept.

Drilling at COMDD002 has identified four styles of mineralization which intersected up to 60 metres grading 0.10% copper and 0.15 g/t gold from 81.4 metres, including 15.9 metres grading 0.16% copper and 0.33 g/t gold from 81.4 metres.

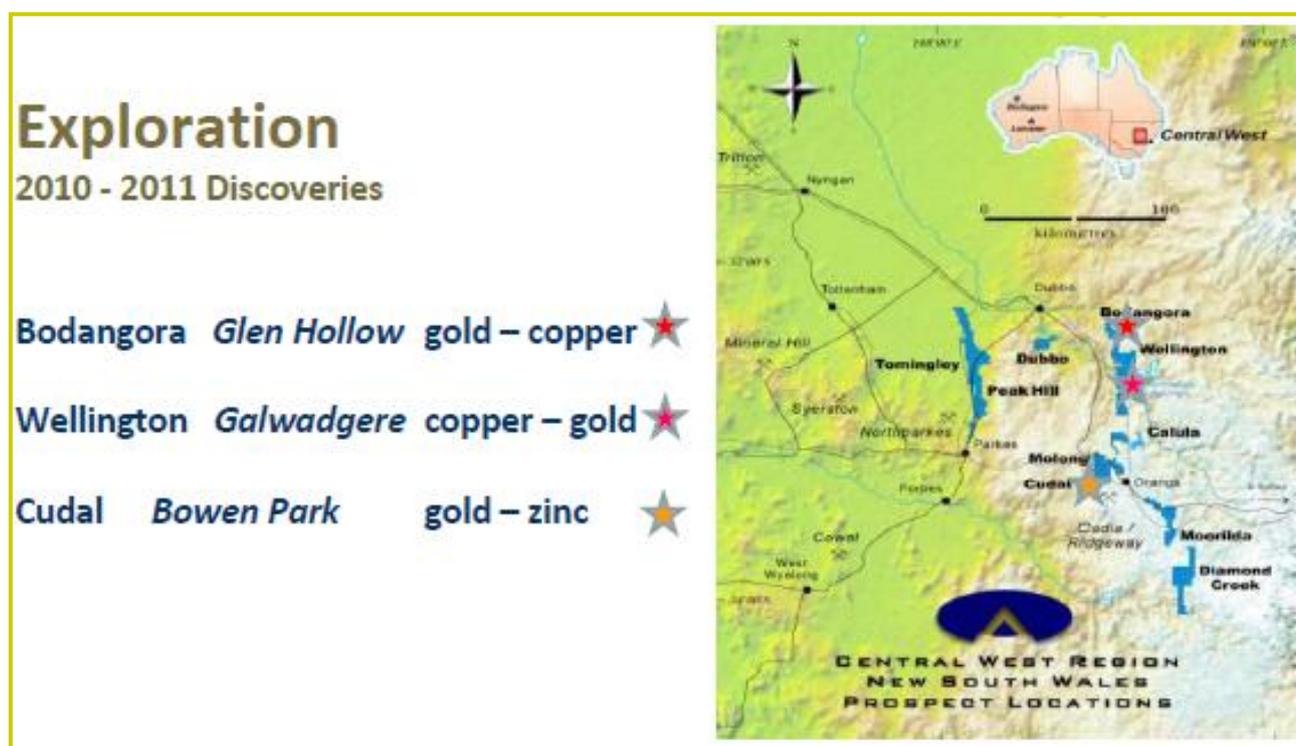
Exploration to date, and in particular drilling, has tested a very small portion of what is seen as a very prospective intrusive complex covering 12 km<sup>2</sup>. The recent core drilling has confirmed a number of key geological features associated with porphyry copper systems, particularly those of New South Wales.

Similarities are evident to other porphyry copper-gold systems in the Molong Volcanic Belt such as Newcrest's Cadia-Ridgeway deposits.

A program of RC drilling has been budgeted to commence later in the quarter, with these holes sited to assist further clarifying the key geological aspects of the system

Geology and alteration features identified elsewhere within the CIC are currently being integrated to develop vectors to copper-gold mineralization with many targets remaining to be tested.

A detailed review of all the data will be scheduled to confirm the controls to the mineralization and plan further drilling.



➤ **Nickel sulphide joint venture with Xstrata Nickel – 23% interest**

In **Western Australia**, Alkane holds a 20% diluting residual interest in a nickel sulphide joint venture with Xstrata Nickel (Jubilee) near Leinster.

Xstrata advised that two RC drill holes tested two geophysical targets on the Miranda Project generated from FLEM surveys reported in 2011. A total of 518 metres of drilling was completed. Although substantial sulphide mineralization was intersected in sediments, neither hole returned any significant nickel assays (maximum Ni value of 25%).

Soil sampling on Leinster Downs generated one robust gold arsenic and copper anomaly.

➤ **Dubbo Zirconia Project, Central West Region, New South Wales**

Alkane's **Dubbo Zirconia Project (DZP)**, developments located 30 kilometres south of the large regional centre of Dubbo is one of the world's most advanced zirconium, niobium, yttrium and rare earth production areas and is based upon a world class reserve.

A Demonstration Pilot Plant (DPP) has been operating at the laboratory facilities of ANSTO Minerals at Lucas Heights south of Sydney since May 2008 and to date has recovered 1,300 kg of zirconium chemicals, nearly 300 kg of niobium concentrate and approximately 50 kg of rare earth concentrates.

The yttrium and rare earth distribution in the DZP ore deposit is unusual, having about 25% in the "heavy" category, which is very different to the standard distribution of about 95% light and 5% heavy.

The DPP operation has confirmed the process flow sheet and is providing engineering data for capital and operating cost estimates, and continues to generate substantial product for market evaluation. Data from the DPP was incorporated into the Definitive Feasibility Study, which was completed in September 2011.

Studies for the Environmental Impact Statement (EIS) are in progress.



## Resources & Reserves

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**Resources & Reserves**

- Resources & Reserves – open at depth
- Life – +20 years but can support longer life and higher production rates
- Major world resource - zirconium, hafnium, niobium, tantalum, yttrium & rare earth elements

Resources	Depth (m)	Tonnes (Mt)	Grade
<b>Measured</b>	<b>0-55</b>	<b>35.7</b>	1.94% ZrO <sub>2</sub> , 0.04%HfO <sub>2</sub> , 0.46% Nb <sub>2</sub> O <sub>5</sub> , 0.03% Ta <sub>2</sub> O <sub>5</sub> , 0.14% Y <sub>2</sub> O <sub>3</sub> , 0.74% REO (0.9% TREO)
<b>Inferred</b>	<b>55-100</b>	<b>37.5</b>	As above
<b>Total</b>	<b>0-100</b>	<b>73.2</b>	As above
<b>Reserves</b>			
<b>Proven</b>	<b>0-26</b>	<b>8.1</b>	1.93% ZrO <sub>2</sub> , 0.04%HfO <sub>2</sub> , 0.46% Nb <sub>2</sub> O <sub>5</sub> , 0.03% Ta <sub>2</sub> O <sub>5</sub> , 0.14% Y <sub>2</sub> O <sub>3</sub> , 0.75% REO (0.9% TREO)
<b>Probable</b>	<b>26-45</b>	<b>27.9</b>	As above
<b>Total</b>	<b>0-45</b>	<b>35.9</b>	As above

- The deposit contains about 100ppm uranium and 350ppm thorium, and would be classified as weakly radioactive
- The deposit contains about 25% high value heavy rare earths

The DFS had a base case of 400,000 tonnes per annum of ore throughput for an initial 20 year period. As the study progressed through 2010 and 2011, market developments for all of the DZP's product output enabled an expanded concept of 1 million tonnes per year to be considered.

The expanded 1 million tonne per annum project provides a substantial upside to the 400,000 tonnes base case model with a 20-year EBITDA estimated at A\$ 6 billion, an after tax NPV of A\$ 1.2 billion and pre-tax IRR 30.2%.

Preliminary discussions with financial institutions and off-take partners indicate several project funding options.

The detailed analysis to take the 1 million tonnes per year to feasibility study standard has already commenced and should be completed later in 2012.

		<h2>DZP DFS Financials</h2>	
Definitive Feasibility Study September 2011		DUBBO ZIRCONIA PROJECT Financial Summary (A\$)	
▪ Base case – 0.4Mtpa (superseded)		Project Capacity	0.4Mtpa      1.0Mtpa
▪ Current case – 1.0Mtpa (base case)		Capex – Plant <sup>1</sup>	\$278M      \$543M
▪ CAPEX – \$893M (\$751M pre-contingency)		Infrastructure + Owners	\$84M      \$165M
▪ EBITDA – \$308Mpa		<b>SUB TOTAL</b>	<b>\$362M      \$708M</b>
▪ IRR – 30%		EPCM	\$36M      \$43M
▪ NPV – \$1,207M		Contingency	\$72M      \$142M
▪ Mine Life – initial 20 years; overall much greater		<b>TOTAL</b>	<b>\$470M      \$893M</b>
		Revenue	\$189M      \$504M
		Operating Costs	\$97M      \$196M
		<b>EBITDA<sup>2</sup></b>	<b>\$92M      \$308M</b>
		<b>IRR<sup>3</sup></b>	<b>16.8%      30.2%</b>
		<b>NPV<sup>4</sup></b>	<b>\$181M      \$1,207M</b>
		<small>1. Includes acid plant            2. Annual average after ramp up            3. 20 year life pre-tax            4. 20 year life after-tax</small>	

The additional work will not impact on the project timetable as it will proceed in parallel with the Environmental Impact Statement (EIS) and Financing program. The EIS development approval remains the most difficult schedule to predict and delays in this process have the capacity to extend the Project's timetable.

In November 2011, Alkane published an ore reserve upgrade for the Toongi Deposit and a revision of the capital and operating costs and revenue from the proposed 1 million tonnes per annum operation. Proved and probable ore reserves now total 35 million tonnes of ore grading 1.93% zirconia (ZrO<sub>2</sub>), 0.46% niobium (Nb<sub>2</sub>O<sub>5</sub>), 0.03% tantalum (Ta<sub>2</sub>O<sub>5</sub>), 0.14% yttrium (Y<sub>2</sub>O<sub>3</sub>) and 0.74% rare earth elements REO (0.9% TREO).

Estimated total annual revenue from product sales is approximately \$ 500 million or \$ 500 per tonne of ore processed.

Given a life of mine average grade for ZrO<sub>2</sub> of 1.93%, 0.46% Nb<sub>2</sub>O<sub>5</sub>, 0.88% Y<sub>2</sub>O<sub>3</sub> + REO, the in the ground value of each percent of ZrO<sub>2</sub> + Nb<sub>2</sub>O<sub>5</sub> + YREO is approximately \$ 154.

The ore reserves will support an initial 36 year open pit life at 1 million tonnes per annum production in contrast to the feasibility study, which is based on a 20 year cash flow to indicate A\$ 1.2 billion Net Present Value.

1 million tonnes pa of ore processed

Anticipated Production		
Product	1,000,000 tonnes per annum	
	Output	% World
ZBS, ZOH, ZOC, ZrO <sub>2</sub>	15,700tpa	~10%
Nb -Ta conc / Ferro-Niobium	3,005tpa	~3%
LREE concentrate	3,050tpa	~2%
YHREE concentrate	1,120tpa	~8%
<b>TOTALS</b>	<b>22,875tpa</b>	

Tonnage based upon recoveries developed from mass balances of the demonstration pilot plant, and revenues based upon flat long term pricing and an exchange rate of A\$:US\$ of 0.86. Numbers are rounded. Product prices predicted Q2 2011 averages or as determined by specific industry consultants

- ZBS = zirconium basic sulphate; ZOH = zirconium hydroxide; ZOC = zirconium oxychloride    Equivalent ~99% ZrO<sub>2</sub> + HfO<sub>2</sub>
- Nb-Ta conc / FeNb = ~70% Nb<sub>2</sub>O<sub>5</sub> + Ta<sub>2</sub>O<sub>5</sub> calcined basis    ▪ LREE = La, Ce, Nd, Pr    ▪ YHREE = Y, Gd, Dy, Tb

## DPZ - 2012 drilling program

On June 2012, Alkane announced that it had completed a reconnaissance drilling program to assess the thickness and nature of trachyte at the Railway prospect located 4 kilometres north-west of the main Toongi ore body. The drilling comprised 7 RC drill holes totaling 492 metres scattered across the trachyte outcrop.

Drilling identified a broadly sub horizontal sheet of trachyte flows, unconformable over sediments of the Triassic aged Napperby Formation. Like the main Toongi ore body, the Railway trachyte displays remarkable continuity of zirconium, niobium, yttrium and rare earths grades laterally and vertically.

Total length weighted average grade of all drilling is: 0.912% ZrO<sub>2</sub>, 0.022% HfO<sub>2</sub>, 0.237% Nb<sub>2</sub>O<sub>5</sub>, 0.014% Ta<sub>2</sub>O<sub>5</sub>, 0.063% Y<sub>2</sub>O<sub>3</sub>, 0.343% REO (TREO 0.42%).

Overall, the metal grades reported are approximately 50% the average grade with the Toongi ore body, but the LREE to HREE distribution is approximately 70% to 30% for Railway against 75% to 25% for Toongi.

Based on the outcrop surface area, the depth to the base of the trachyte and assuming near vertical sides, the exploration target for the Railway Trachyte is 35 to 45 million tonnes using the specific gravity determined from measurements of the Toongi, and at a grade that ranges from 0.85% to 0.99% ZrO<sub>2</sub>, 0.21% to 0.23% HfO<sub>2</sub>, 0.21% to 0.26% Nb<sub>2</sub>O<sub>5</sub>, 0.013% to 0.015% Ta<sub>2</sub>O<sub>5</sub> and 0.43% to 0.48% TREO.

The potential quantity and grade are conceptual in nature, and there has been insufficient exploration to define a Mineral Resource and it is uncertain that further exploration will result in the determination of a Mineral resource.

Combined with the existing defined resources within the Toongi ore body of 73.4 million tonnes the Railway prospect could add to the long term production from the DPZ.

## ► Memo's of Understanding

Alkane has signed three Memorandums of Understanding (MOUs) for joint ventures to produce zirconium and one MOU to produce niobium, which has ensured that DPZ will be expanded to 1 million tonnes per annum of ore processed, with annual revenue estimated at approximately US\$ 500 million.

Revenue estimate for zirconium production is now approximately US\$ 190 million, which represents 39% of annual DZP revenue estimates of approximately US\$ 500 million. The revenue estimate for niobium is approximately \$ 110 million, which represents approximately 22% of total annual revenue.

- In July 2011, Alkane announced that it had signed a MOU with Australia's Mintech Chemical Industries (Mintech) for a joint venture to produce ZOC at its plant at East Rockingham, Western Australia, which currently uses ZOC, and previously produced other zirconium chemicals and zirconium dioxide products. Mintech has extensive chemical manufacturing expertise and a ready supply of low cost hydrochloric and available nearby, which is a key reagent for producing ZOC.

The joint venture will undertake a Scoping Study to produce 10-12,000 tpa ZOC requiring 25% of the zirconium output from the expanded 1 million tpa development scenario of the DZP.

- in October 2011, Alkane announced that it had signed a MOU with a European company that specializes in the production of advanced materials through its chemical and metallurgical expertise to produce and market ferro-niobium (FeNb) using niobium concentrate from the DZP. The joint venture expects to produce over 3,000 tonnes of FeNb from 100% of the niobium production from the expanded 1 million tonnes per annum development scenario of the DZP.

At current prices, annual production of 3,000 tonnes of FeNb will generate revenue of approximately US\$ 110 million, which is approximately 22% of total anticipated annual project revenue.

- On July 16, 2012, Alkane announced the signing of a non-binding Memo of Understanding (MOU) with Shin-Etsu Chemical Co., a leading Japanese company specializing in the production of separated rare earths and associated downstream products, such as magnetics, which consume rare earths. Shin-Etsu supplies high purity separated rare earths to a wide range of Japanese and international customers, while consuming significant quantities itself. Currently, Shin-Etsu has a market capitalization of around US\$ 25 billion.

Shin-Etsu will have priority to purchase at commercial prices a quantity of the rare earths toll processed by it under the arrangement via an initial 5 year off-take agreement. The remaining available quantity of separated rare earths will be sold to other companies with which AZL has been discussing off-take arrangements.

Strong demand outside of China particularly for AZL's heavy rare earths, including yttrium, should ensure that all separated products are sold.

Shin-Etsu will also provide technical support and assistance to improve rare earths recoveries from the ore to the concentrate, particularly for heavy rare earths, This will complement recent improvements in heavy rare earths recoveries obtained at laboratory scale, which will be confirmed on the demonstration pilot plant at ANSTO.

This has the potential to significantly increase the quantity of heavy rare earth concentrates produced, and subsequent revenues, following separation by Shin-Etsu.

Similar improvements in light rare earths recoveries are also anticipated.

		-> 2009	2010	2011	2012	2013	2014	2015
DZP	Resource definition 2001 - 2002	✓						
	Flow sheet development 2002	✓						
	Laboratory Zr – Nb 1999 – 2002	✓						
	Pilot plant Zr – Nb 2002	✓						
	Mine Plan & Scheduling 2002	✓						
	Plant Design & Engineering 2002	✓						
	Laboratory Y & REE 2009 -	✓	✓					
	Demonstration Pilot Plant 2008 -							
	Zr – Nb Product Distribution	✓	✓	✓	✓			
	Y - REE Product Distribution			✓	✓			
	Secure Offtake Agreements							
	Definitive Feasibility Study	2002						
	Environmental Impact (EIS)	2000 ->						
	Detailed Design							
	Financing / Development Consent						?	
Construction						?		
Production							?	

*Continued product development* (red arrow pointing to 2013-2015)

*Detail costs for expanded development* (red arrow pointing to 2012-2013)

## Management

**John Stuart Ferguson Dunlop, Chairman, BE(Min), MEngSc(Min), FAusIMM(CP), FIMMM, MAIME, CIMM** is a consultant mining engineer with close to 40 years surface and underground mining experience both in Australia and overseas. He is a former director of the Australian Institute of Mining and Metallurgy but remains Chairman of their affiliate, the Mineral Industry Consultants Association. Mr. Dunlop is Chairman of Alliance Resources.

**David Ian Chalmers, Managing Director, MSc, FAusIMM, FAIG, FIMMM, FSEG, MSGA, MGSA, FAICD**, is a geologist and graduate of the Western Australian Institute of Technology (Curtin University). He also has a Master of Science degree from the University of Leicester in the United Kingdom. Mr. Chalmers has worked in the mining and exploration industry for over 40 years, during which time he has had experience in all facets of exploration through feasibility and development to the production phase.

**Ian Jeffrey Gandel, LLB, BEc, FCPA, FAICD**, is a successful Melbourne businessman with extensive experience in retail management and retail property. He has been a director of the Gandel Retail Trust and has had an involvement in the construction and leasing of Gandel shopping centres. Through his private investment vehicles, Mr Gandel has been an investor in the mining industry since 1994. Gandel Metals Pty Ltd is currently a substantial holder in a number of publicly listed Australian companies and now holds and explores tenements in its own right in Victoria and Western Australia. Mr. Gandel is also a non-executive director of Alliance Resources and Chairman of Gippsland.

**Anthony Dean Lethlean, BAppSc**, is a geologist with 10 years mining experience including 4 years underground on the Golden Mile in Kalgoorlie. In later years he has been working as a resources analyst with various stockbrokers and currently consults to Cartesian Capital. Mr. Lethlean is a non-executive director of Alliance Resources.

## **Finance**

In April 2012, Alkane completed the placement of 30 million shares at a price of A\$ 1.10 for gross proceeds of A\$ 33 million, bringing the Company's available cash resources to an excess of A\$100 million.

### **Investment recommendation:**

Alkane's **Tomingley Gold Project (TGP)**, located in the Central West region of New South Wales, currently has a gold reserve of 812,000 ounces and has planned to commence production in the second half of 2013.

The Definitive Feasibility Study for the Project envisages production of 50,000 to 60,000 ounces of gold per year for an initial 7.5 years. At current gold prices at A\$ 1,600 - 1,650 per ounce the Project should generate cash flow of around A\$ 240 million, with an internal rate of return of approximately 30%.

On August 1, 2012, Alkane announced that it has received official approval for the TGP Project

On August 9, 2012, Alkane announced that the Company (49%) and Newmont Australia (51%) had accepted an offer from Regis Resources for their respective interests in the Orange District Exploration Joint Venture, including the 21.96 million ounces gold and 60,000 tonnes copper resource of the **McPhillamys Gold Project**.

Alkane will receive A\$ 37.5 million for its 49% interest to be settled by the issue of fully paid shares.

Elsewhere within the region Alkane has defined a shallow Indicated resource of 2 million tonnes grading 0.99% copper and 0.3 g/t gold, which is being reviewed for its development potential at **Galwadgere** within the **Wellington Project**.

In **Western Australia**, Alkane holds a diluting 23% residual interest in a nickel sulphide joint venture with Xstrata Nickel (Jubilee) near Leinster.

Alkane's **Dubbo Zirconia Project (DZP)**, is also located in the Central West Region of New South Wales, is one of the world's most advanced zirconium, niobium, yttrium and rare earth elements in-ground resources.

Alkane has signed three Memorandums of Understanding (MOUs) for joint ventures to produce zirconium and one MOU to produce niobium, which has ensured that DZP will be expanded to 1 million tonnes per annum of ore processed, with annual revenue estimated at approximately US\$ 500 million.

Revenue estimate for zirconium production is now approximately US\$ 190 million, which represents 39% of annual DZP revenue estimates of approximately US\$ 500 million. The revenue estimate for niobium is approximately \$ 110 million, which represents approximately 22% of total annual revenue.

On July 16, 2012, Alkane signed a MOU with Shin-Etsu of Japan specializing in the production of separated rare earths and associated downstream products.

Studies for an Environmental Impact Statement (EIS) are in progress, with a view to commencing construction of the DZP no later than mid-2013 and production by half of the December 2014 quarter.

With both the **Tomingley Gold Project** and the nearby **Dubbo Zirconia Project** heading towards production in 2013/15, and both projects representing a significantly higher NAV than the Company's actual market valuation for each project, in our view, the shares of Alkane are strongly undervalued.

Our next price target is remained at A\$ 3.00.

## The Zircon and Zirconium materials market

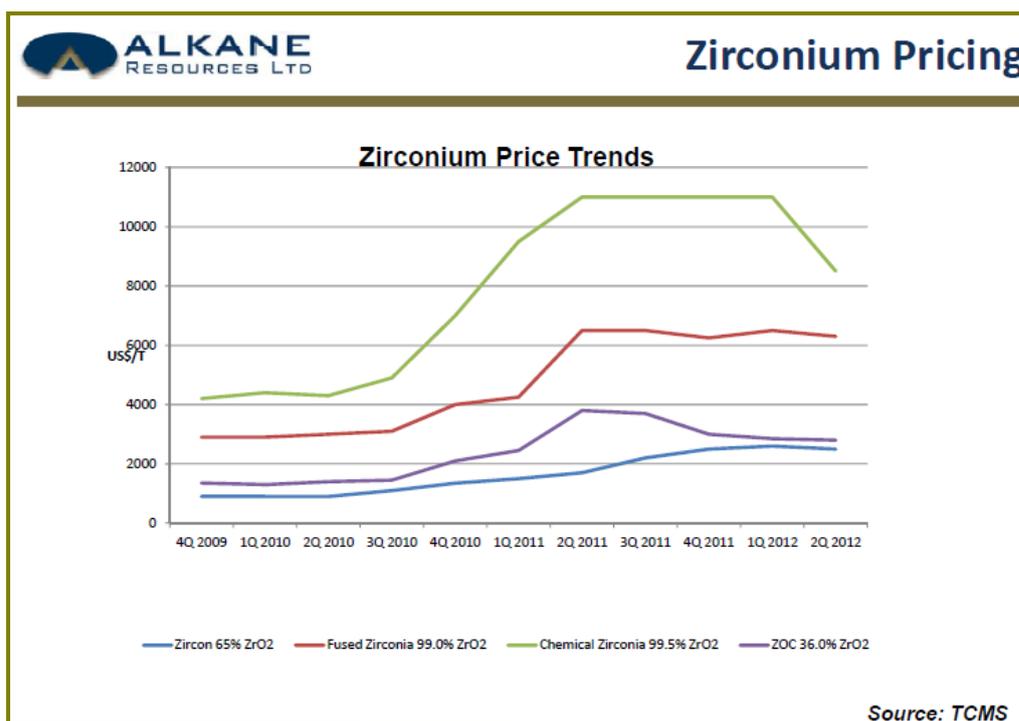
Zircon, derived from mineral sands mining operations in conjunction with the recovery of ilmenite and rutile, is the primary source of all downstream zirconium products. The zircon industry has experienced a major supply deficit which deteriorated throughout 2010 and early 2011 and has flowed on to the downstream zirconium industry with prices escalating substantially.

The total downstream zirconium market worldwide is forecast by TZ Minerals International Pty (TZMI) to reach 163,000 tonnes per annum of zirconia (ZrO<sub>2</sub>) by 2012, which will require 250,000 tonnes per annum of zircon feed or approximately 18% of total zircon usage. The zirconium market is the highest growth market for zircon at around 11% per annum and includes zirconium metals, chemical and fused zirconia and zirconium metal.

At this growth rate the zirconium market will require the equivalent of one new DZP sized operation each year (1 million tpa ore processed to produce 15,000 tpa zirconia (ZrO<sub>2</sub>) to meet demand.

ZOC (36% ZrO<sub>2</sub>) is the primary zirconium chemical used to produce most downstream zirconium chemicals, chemical zirconia, and zirconium metal. Existing ZOC production relies on zircon as the key raw material for downstream zirconium products.

China dominates world ZOC supply with a 90% share of the 200,000 tpa market, which is currently around US\$ 800 million. Approximately 40% of Chinese ZOC production is exported as ZOC or downstream zirconium chemicals and zirconia, while the remaining 60% is consumed in China.



Strong zircon demand, combined with a float of falling supply outlook, has fuelled a dramatic increase in zircon prices. Contracted zircon prices from mineral sands companies are AS\$ 2,2300 – 2,500/tonne in the third quarter of 2011, while spot prices reached RMB 21,000 tonne (US\$ 3,200/t) or higher in China (17% VAT included) in early May 2011. This resulted in ZOC prices increasing by over 285% in the past year to approximately US\$ 4,000/t, FOB China for August deliveries.

As ZOC contains 36% zirconia, the ZOC price equated to approximately US\$ 11,100 per tonne of zirconia for August deliveries. Current Chinese chemical zirconia prices range from US\$ 8,000 to 9,000/t.

A source of zirconium is critical, substitution is least likely in this market with Alkane's DZP, which is backed by a very long and sustainable mine life, being the only alternative to zircon for the immediate future.

Table 2. Rare earth pricing Q2 2010 to Q1 2012

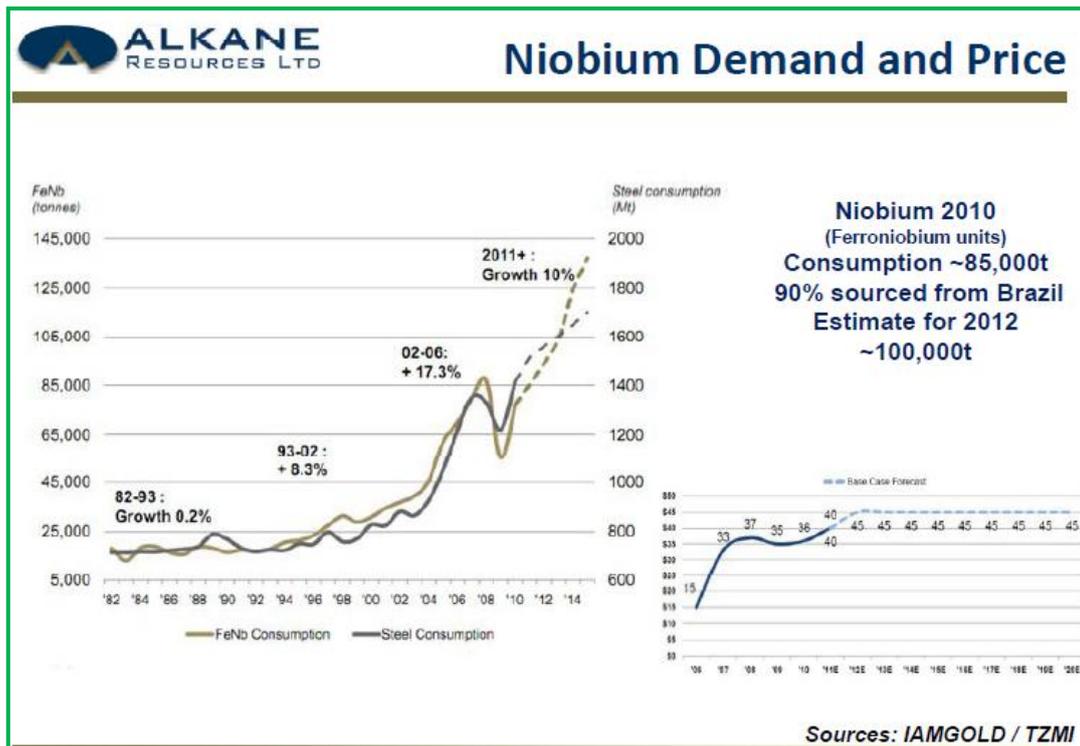
Rare Earths Prices (US\$/kg FOB China REO)						
Source: Metal Pages© Numbers have been rounded						
Light Rare Earth	DZP Distribution	Q2 2010 Average	Q4 2010 Average	Q2 2011 Average	Q4 2011 Average	Q2 2012 Average
Lanthanum Oxide	19.51%	\$7.13	\$53.00	\$138.00	\$64.00	\$23.00
Cerium Oxide	36.70%	\$5.58	\$50.00	\$138.00	\$56.00	\$24.00
Praseodymium Oxide	4.05%	\$30.60	\$77.00	\$215.00	\$204.00	\$118.00
Neodymium Oxide	14.12%	\$31.13	\$80.00	\$253.00	\$235.00	\$116.00
Samarium Oxide	2.20%	\$4.50	\$34.00	\$120.00	\$92.00	\$82.00
Heavy Rare Earth						
Europium Oxide	0.07%	\$521.67	\$625.00	\$1867.00	\$3783.00	\$2365.00
Gadolinium Oxide	2.15%	\$8.25	\$44.00	\$167.00	\$135.00	\$103.00
Terbium Oxide	0.34%	\$545.00	\$605.00	\$1767.00	\$2938.00	\$1982.00
Dysprosium Oxide	2.05%	\$196.67	\$295.00	\$983.00	\$1973.00	\$1072.00
Ho, Er, Tm, Yb, Lu	2.89%					
Yttrium Oxide	15.84%	\$11.42	\$56.00	\$158.00	\$128.00	\$116.00
DZP LREE	76.68%	\$12.06	\$57.20	\$163.00	\$100.00	\$47.00
DZP YHREE	23.32%	\$42.23	\$78.70	\$240.00	\$327.00	\$218.00
DZP LREE Concentrate		\$8.44	\$40.00	\$114.00	\$70.00	\$33.00
DZP YHREE Concentrate		\$29.59	\$55.00	\$168.00	\$229.00	\$153.00

Compiled by IMCOA

These prices are for individual separated rare earth oxides at 99% purity, and the actual value for DZP concentrates will depend on market acceptance of the concentrate, but for this table 70% of the value has been assumed. The prices quoted above are averaged for the full quarter.

## Market developments - Niobium

The market for niobium pentoxide (Nb2O5) and ferro-niobium (FeNb) remains stable and prices for the main traded product, FeNb, are US\$ 40 – 45/kg.



## Rare Earth Markets

Prior to the recent improved rare earths recoveries, DPZ output of approximately 1,120 tonnes of HREOs and 3,500 tonnes per annum of LREOs were anticipated.

Consolidation within the dominant Chinese rare earth industry continued and it is anticipated that this restructuring will stabilize rare earth prices into the near future.

Supply of HREOs remains problematic and the DPZ, with its 25% HREE distribution, is regarded as a strategically important supplier.

Prices of rare earths continued to weaken during the June quarter by poor demand with a slowing world economy, however, the price weakening was not uniform with the larger volume lanthanum and cerium taking the major drops

As shown in Table 2 below, prices for the quarter are still well above the previous long term base line values of the second quarter of 2010.

Importantly, the June quarter prices are well above the averages and in the Definitive Feasibility Study of September 2011.

