

# Rare Earth Elements Letter

## INTERNATIONAL

*the independent information and advice bulletin for Rare Earth Elements and related investments*

Special Situation – December 2011 Update

www.alkane.com.au



### Alkane Resources Ltd. (A\$ 0.98)

ASX	: ALK
H+L prices (12 months)	: A\$ 2.73 – 0.78
Net shares issued	: 269.0 million shares
Fully diluted	: 269.0 million shares
Market Capitalization	: A\$ 263.7 million

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

### Company profile

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

Alkane's **Dubbo Zirconia Project (DZP)**, 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.

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 income estimated at 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.

MOU's for Heavy rare earth concentrate and light rare earth concentrates are hoped to be announced around the end of the 2012 March quarter

Alkane's **Tomingley Gold Project** (TGP) currently has a mineable gold reserve of 209,100 ounces and a recoverable open pit 310,022 ounce gold resource within the Wyoming and Caloma deposits. The Project is centred on three gold deposits, Wyoming One, Wyoming Three and Caloma, located 14 kilometres north of the Company's Peak Hill Gold Mine.

In December 2010, Alkane completed a Definitive Feasibility Study (DFS), which shows that the TGP can recover 369,260 ounces of gold over a 7.5-year mine life representing A\$ 559 million in revenue at current spot prices.

In April 2011, Alkane announced that it had entered into a mandate to arrange and underwrite a project loan and hedging facility for the Tomingley Gold Project. This financing will indicatively comprise of a Project Loan Facility of up to A\$ 45 million and a Gold Hedging Facility of up to 163,000 ounces. The facility does not impact Alkane's ability to separately finance the DPZ.

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

In July 2010, an initial resource of Indicated plus Inferred resources containing 2.96 million ounces of gold and 60,000 tonnes of copper has been defined for McPhillamys. Newmont is proceeding to complete a Bankable Feasibility Study for the development of the Deposit.

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**.

## Overview of Projects

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

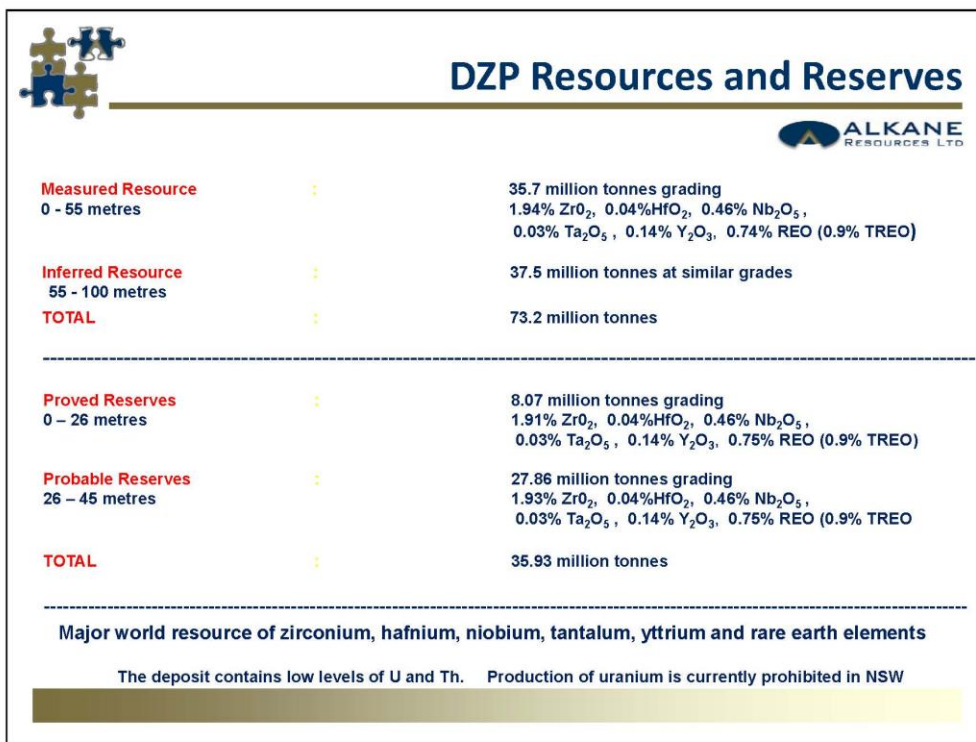
Alkane's **Dubbo Zirconia Project** (DZP), developments located 30 kilometres south of the large regional centre of Dubbo is one of the world's most advanced zirconium, niobium, yttrium and rare earth production areas and is based upon a world class reserve.

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 DFS which was completed in September 2011.

Alkane hopes to submit an Environmental Impact Statement (EIS) by mid-year 2012 with a view to commencing construction no later than early 2013 and production by half of the December 2014 quarter.



**DZP Resources and Reserves**

ALKANE RESOURCES LTD

<b>Measured Resource</b> 0 - 55 metres	35.7 million tonnes grading 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 Resource</b> 55 - 100 metres	37.5 million tonnes at similar grades
<b>TOTAL</b>	73.2 million tonnes
<hr/>	
<b>Proved Reserves</b> 0 - 26 metres	8.07 million tonnes grading 1.91% 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 Reserves</b> 26 - 45 metres	27.86 million tonnes grading 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>TOTAL</b>	35.93 million tonnes
<hr/>	
<b>Major world resource of zirconium, hafnium, niobium, tantalum, yttrium and rare earth elements</b>	
The deposit contains low levels of U and Th. Production of uranium is currently prohibited in NSW	

In May 2011, Alkane signed a Memorandum of Understanding (MOU) with a leading chemical company and a leading trading company to produce ZOC from a new joint venture facility, using DZP zirconium chemical intermediate feed.

The facility will be developed to be able to produce 15,000 to 20,000 tonnes per annum ZOC which will require all of the base case production zirconium output of the Project of 400,000 tonnes per annum of ore or about 50% of the expanded 1 million tpa development case.

The ZOC output will target the Japanese, European and North American markets.

Following the agreement between the parties, the terms and conditions would be incorporated into a Head of Agreement (HOA), including off-take agreements for the ZOC production, ownership, structure, and management of the joint venture and location of the ZOC production facility. It is aimed to obtain a signed HOA by June 30, 2012.

The proposed ZOC joint ventures with these companies will allow customers to become strategically independent of the Zircon supply chain, and reduce reliance on China's dominant ZOC supply problem.

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.

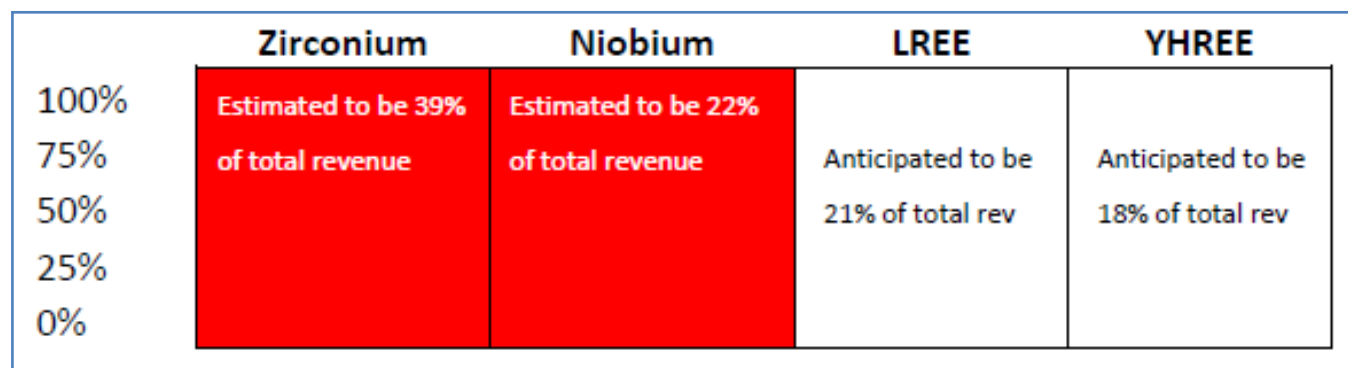
On October 26, 2011, Alkane announced that it had signed a MOU with a European company that specializes in the production of advanced materials through its chemical and metallurgical expertise to produce and market ferro-niobium (FeNb) using niobium concentrate from the DZP.

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.

Output committed by MOUs for 1 million tonnes per annum operation with annual income estimated at US\$ 260 million.

Negotiations are continuing with a number of parties expressing interest to sign MOUs for the Heavy Rare Earth concentrate and the Light Rare Earth concentrate. MOUs are hoped to be announced around the end of 2012 March quarter.



On September 19, 2011, Alkane announced that it had recently completed a definitive Feasibility Study (DFS) with 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%.

DUBBO ZIRCONIA PROJECT Financial Summary		
Project Capacity	400,000 tonnes pa	1,000,000 tonnes pa
Capex – Plant <sup>1</sup>	\$278M	\$543M
Infrastructure + Owners	\$84M	\$165M
SUB TOTAL	\$362M	\$708M
EPCM	\$36M	\$43M
Contingency	\$72M	\$142M
TOTAL	\$470M	\$893M
Revenue	\$189M	\$508M
Operating Costs	\$97M	\$196M
EBITDA <sup>2</sup>	\$92M	\$312M
IRR <sup>3</sup>	16.8%	30.2%
NPV <sup>4</sup>	\$181M	\$1,207M

<sup>1</sup> - Includes acid plant; <sup>2</sup> - Annual average after ramp up; <sup>3</sup> - 20 year life, pre-tax; <sup>4</sup> - 20 year life after tax

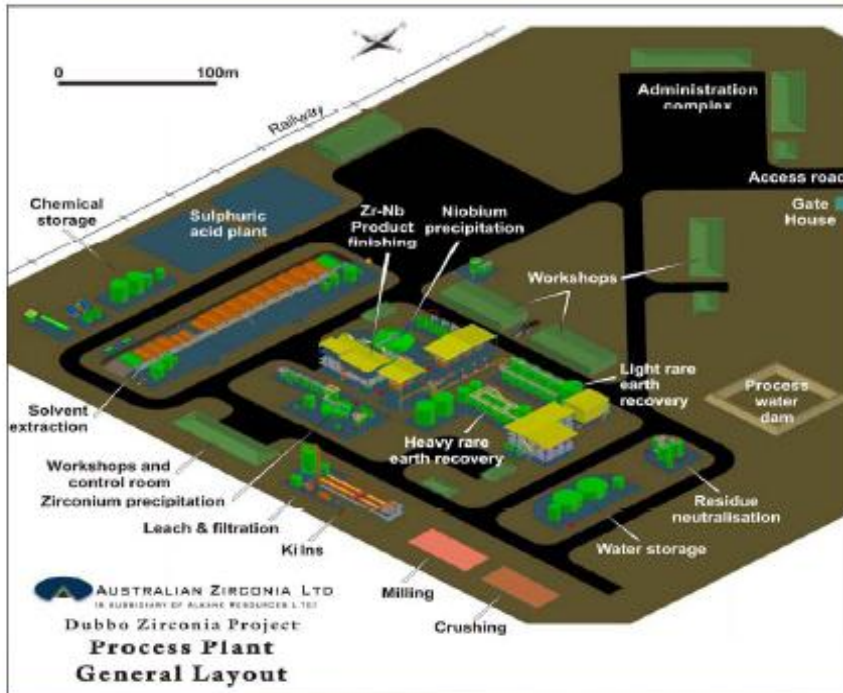
Preliminary discussions with financial institutions and off-take partners indicate several project funding options.

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

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



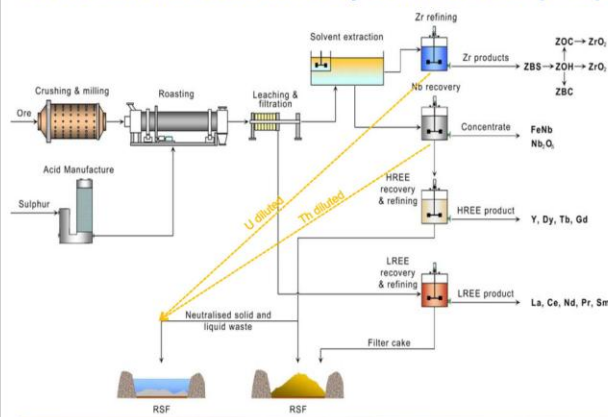
# DZP Production Plant Layout



# DZP Flow Sheet



Flow sheet has been tested by demonstration pilot plant since 2008



### PROCESS

Whole of ore sulphuric acid leach, solvent extraction separation and refining, with chemical precipitation to produce final products.

Unique in the world today.

The process does not produce a mineral concentrate and does not concentrate the uranium and thorium.

These waste products are neutralised and dispersed in the residue storage facilities at less concentration than in the primary deposit.

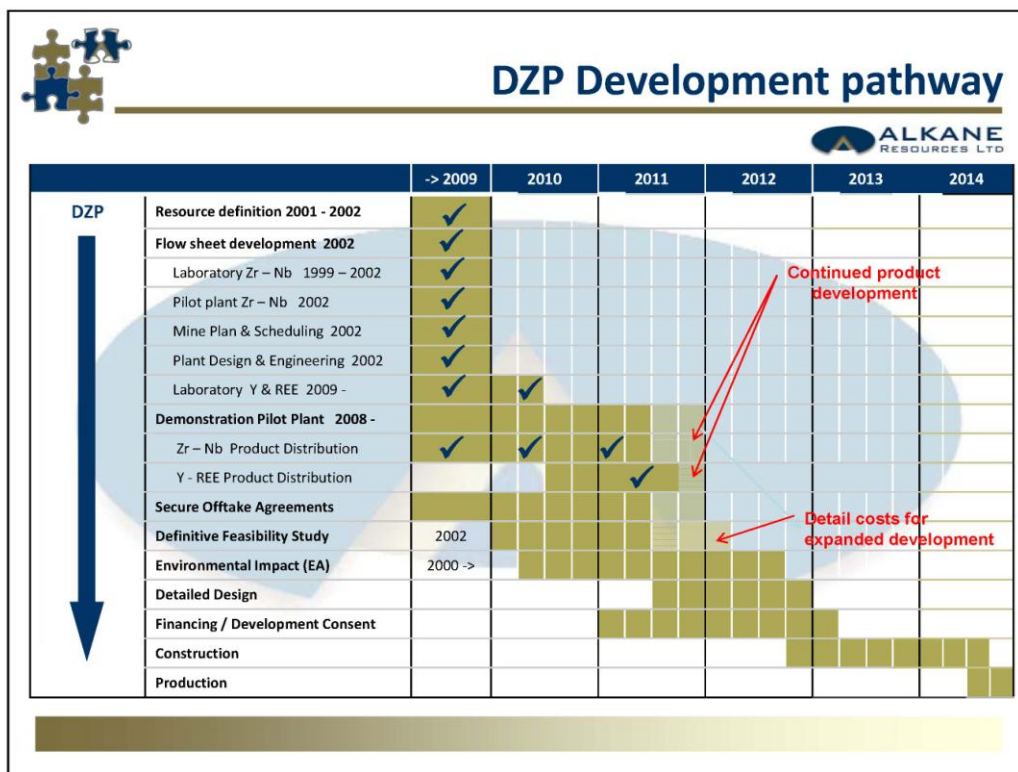
On November 16, 2011, Alkane published an ore reserve upgrade for the Toongi Deposit and a revision of the capital and operating costs and revenue from the proposed 1 million tonnes per annum operation.

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.



## 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 is experiencing a major supply deficit which continued to deteriorate 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 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. 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 current ZOC price equates to approximately US\$ 11,100 per tonne of zirconia for August deliveries. Current Chinese chemical zirconia prices range from US\$ 10,000 to 15,000/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.

### Zircon and Zirconium products pricing

PRODUCT	ZrO <sub>2</sub>	Q2 2010 US\$/T	Q1 2011 US\$/T	Q2 2011 US\$/T	Q3 2011 US\$/T
<b>Zircon (producer/trader)</b> (100% ZrO <sub>2</sub> basis)	65% 100%	\$900 - \$1,150 (\$1,380 - \$1,770)	\$1,500 - \$2,100 (\$2,310 - \$3,230)	\$1,700 - \$2,750 (\$2,620 - \$4,230)	\$2,200 - \$2,800 (\$3,380 - \$4,310)
<b>ZOC (zirconium oxychloride)</b> (100% ZrO <sub>2</sub> basis)	36% 100%	\$1,350 - \$1,450 (\$3,750 - \$4,030)	\$2,300 - \$2,600 (\$6,390 - \$7,220)	\$3,600 - \$4,000 (\$10,000 - \$11,110)	\$3,500 - \$3,900 (\$9,720 - \$10,830)
<b>ZBS (zirconium basic sulphate)</b> (100% ZrO <sub>2</sub> basis)	33% 100%	\$1,770 \$5,360	\$3,000 \$9,090	\$6,000 \$18,180	\$4,800 \$14,550
<b>ZBC (zirconium basic carbonate)</b> (100% ZrO <sub>2</sub> basis)	40% 100%	\$2,100 \$5,250	\$3,400 \$8,500	\$5,400 \$13,500	\$5,300 \$13,250
<b>Fused Zirconia</b>	98.50%	\$2,900 - \$3,100	\$4,100 - \$4,400	\$6,000 - \$7,000	\$6,000 - \$7,000
<b>Chemical Zirconia</b>	99.50%	\$4,200 - \$4,400	\$7,200 - \$7,500	\$10,000 - \$12,000	\$10,000 - \$12,000
<b>Chemical Zirconia</b>	99.90%	\$5,300 - \$5,500	\$8,500 - \$10,500	\$12,000 - \$15,000	\$13,000 - \$15,000

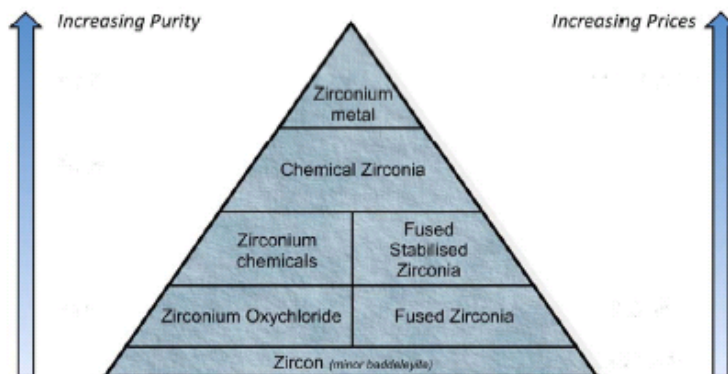
Source: TCMS



# Zirconium Industry



## ZIRCONIUM MATERIALS PYRAMID



China consumes about 50% of world's zircon output.

About 30% of that zircon is converted to downstream products.

China currently produces about 90% of world's ZOC and 60% of FZA.

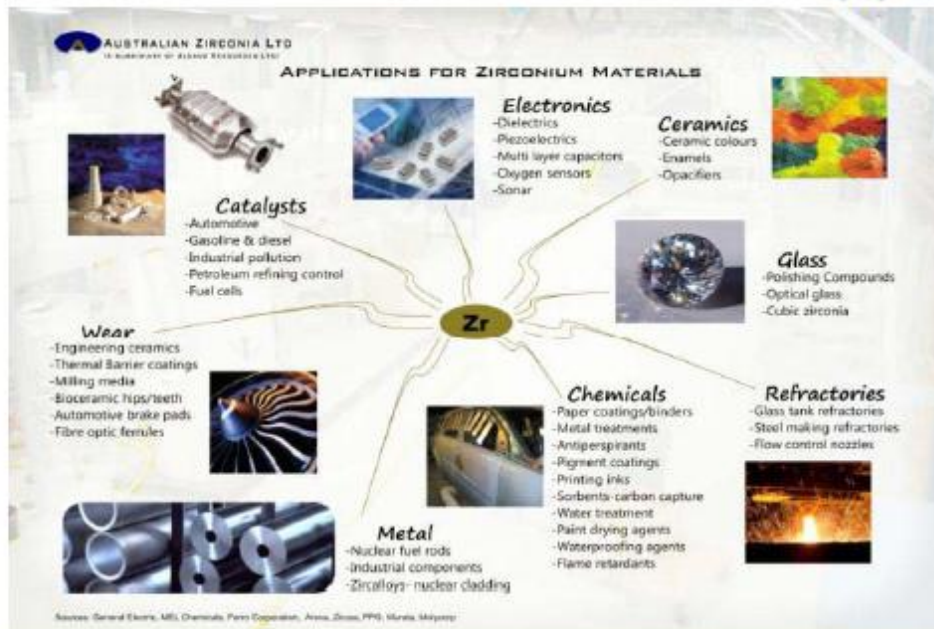
China has limited domestic supply of zircon and acquires from major producers (Aust and S Africa).

Zircon	Zirconium silicate $ZrSiO_4$	Primary Zr mineral source	Value 2010	1.4 million tonnes	~US\$1.6 billion	→ US\$3.5B
Zirconium products 2010	Zirconia $ZrO_2$ , Zirconium chemicals, Zr metal			120,000 tonnes	~US\$0.7 billion	→ US\$1.2B

Source: TCMS




# Zirconium Applications



➤ **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.

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.




## Tomingley Gold Project, NSW

**ALKANE RESOURCES: 100%**



- **Three deposits under conceptual development:**
  - **Caloma** (3.86Mt @ 1.76g/t Au)
  - **Wyoming One** (6.59Mt @ 1.86g/t Au)
  - **Wyoming Three** (0.84Mt @ 1.75g/t Au)

947 AC, RC and core holes totalling 109,114 metres
- **Total current combined resource (dil) +660,000oz**
  - Expansion potential
    - Deposits open at depth
    - Significant regional exploration potential
- **Minimum seven year mine life => +10yr target**
- **Initial open pit +underground operations (Yrs 1-7)**  
Additional open pit and ug (Yrs 7 -10)



**...advanced feasibility study**

The **Tomingley Gold Project (TGP)** currently had a mineable gold reserve of 209,100 ounces within an open pitable 310,022 ounce gold resource within the Wyoming and Caloma deposits.

The Project is centred on three gold deposits, Wyoming One, Wyoming Three and Caloma, located 14 kilometres north of the Company's Peak Hill Gold Mine.

In December 2010, Alkane announced that it had completed the Definitive Feasibility Study (DFS) for its Tomingley Gold Project which was compiled by Mintrex, the consulting division of Perth engineering group Holtfreters.

The base case development for the TGP will comprise open pit mining from the Coloma, Wyoming One and Wyoming Three pits and underground mining from Wyoming One.

The Caloma pit will be mined first, followed by Wyoming Three and Wyoming One.

In April 2011, Alkane announced that it had entered onto a mandate to arrange and underwrite a project loan and hedging facility for the Tomingley Gold Project. This financing will indicatively comprise of a Project Loan Facility of up to A\$ 45 million and a Gold Hedging Facility of up to 163,000 ounces.


The facility does not impact Alkane's ability to separately finance the DPZ.

### Summary of Open Pit Ore Inventory


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)	Ounces
Wyoming One	1,723,388	1.54	197,731	1.41	413,846	1.28	2,334,965	1.48	111,187
Wyoming Three	536,872	1.59	16,456	1.42	85,457	1.51	638,785	1.57	32,329
Caloma	1,736,740	1.98	321,125	1.70	851,568	1.41	2,909,433	1.78	166,506
<b>Total</b>	<b>3,997,001</b>	<b>1.74</b>	<b>535,312</b>	<b>1.58</b>	<b>1,350,871</b>	<b>1.38</b>	<b>5,883,183</b>	<b>1.64</b>	<b>310,022</b>

### Summary of Open Pit Ore Reserves

DEPOSIT	PROVED		PROBABLE		TOTAL		
	Tonnage (t)	Grade (g/t)	Tonnage (t)	Grade (g/t)	Tonnage (t)	Grade (g/t)	Ounces (minable)
Wyoming One	1,700,000	1.8	200,000	1.3	1,900,000	1.6	94,500
Wyoming Three	500,000	1.8	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>



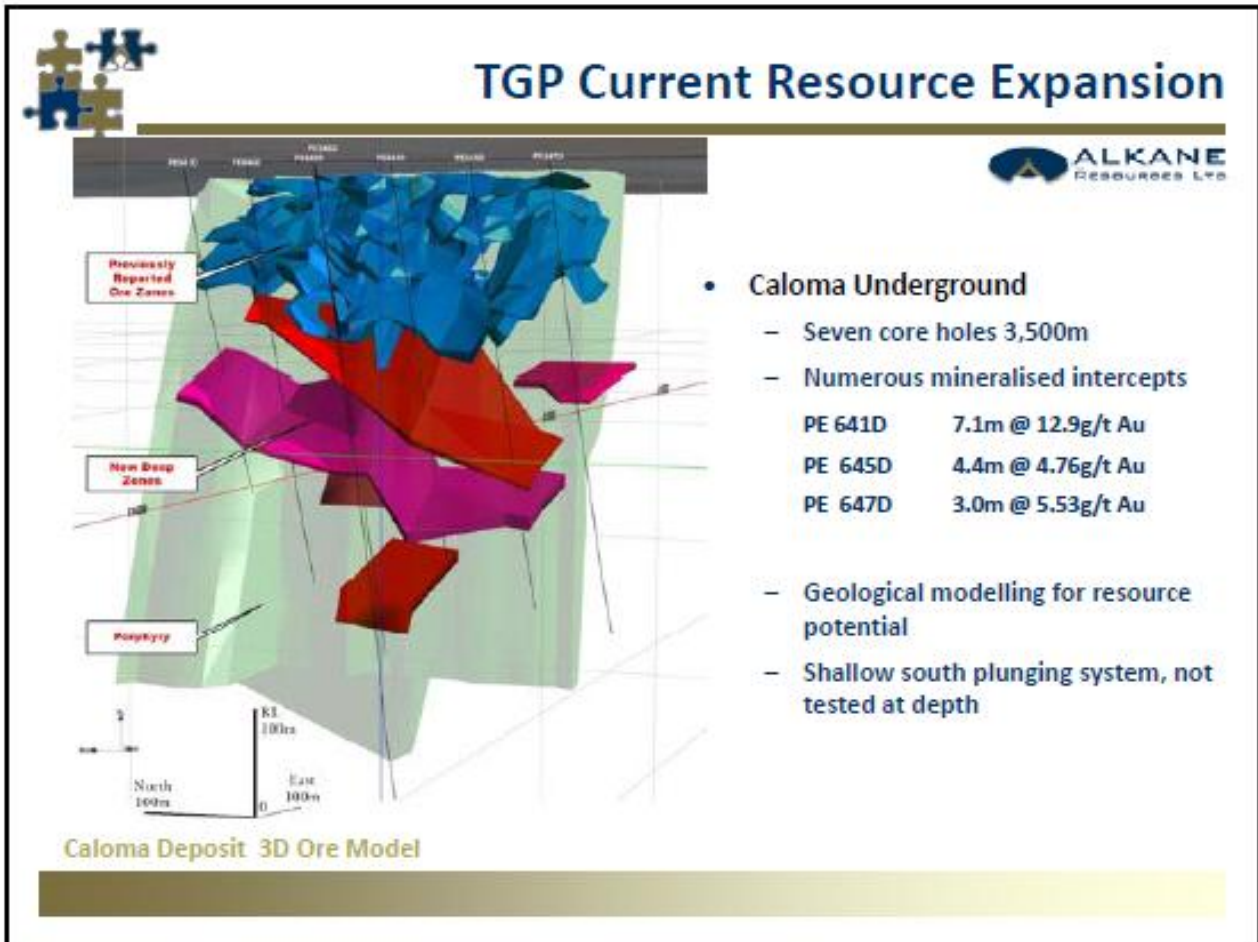
## TGP Economics



PRODUCTION OUTCOMES	BASE CASE	EXPANDED CASE
Mine Life	7 Years	8 - 10 Years
Throughput		
Open Pit	5.9 Million tonnes	1.5 million tonnes
Underground	0.7 million tonnes	0.5 Million tonnes
Production	370,000oz	150,000oz
Method	conventional CIL circuit	conventional CIL circuit
Recovery	>90%	>90%
Capex (+/- 10%)	A\$90 Million	+A\$10 Million
Estimated cash costs	A\$940/oz	A\$940/oz
Potential LOM cashflow	~A\$170 Million <sup>#</sup>	A\$250 Million <sup>#</sup>

# Based on A\$1400 per ounce gold price; 1 Mtpa mill throughput

...targeting 10 year mine life



In August 2011, Alkane announced that RC drilling at the Caloma Two Deposit has returned several significant drill intersections. Results include: 15 metres grading 4.13 g/t from 48 metres (PE 667), 9 metres grading 4.35 g/t gold from 76 metres (PE 672), 10 metres grading 19.95 g/t gold from 92 metres, including also 4 metres grading 38.93 g/t gold from 93 metres and 14 metres grading 2.40 g/t gold from 214 metres (PE 673), 5 metres grading 9.07 g/t gold from 51 metres.

On October 4, 2011, Alkane announced recent RC drilling results within the Caloma Deposit, designed to improve resource status and increase ore reserves, Significant gold mineralization was intersected. Highlights include: 13 metres grading 4.4 g/t gold from 50 metres (PE 715); 23 metres grading 3.54 g/t gold from 55 metres (PE 726); 7 metres grading 9.8 g/t gold from 50 metres (PE 727); and 6 metres grading 16.69 g/t gold from 36 metres (PE 739B).

The drilling data is being incorporated into the geological model and revised resources and reserves will be estimated.

The early work program has commenced to accelerate the construction timetable when the program received development approval.

On November 18, 2011, Alkane announced that the next step in the development of the Tomingley Gold Project has been reached. Following receipt of notification from the NSW Department of Planning and Infrastructure that the Environmental Assessment (EA) for the mine development has been assessed as adequate, copies of the EA have been distributed to the relevant government agencies, exhibition centres and special consultants for public exhibition.

The Company has been advised that the exhibition period will run from November 17 to December 19, 2011.

A successful outcome to the development approach process could see Alkane start construction in 2012, with this leading to commencement of production before mid-2013.

The construction phase is 12 months and will create 100 jobs, with ongoing operations creating 90 full jobs.


The Definitive Feasibility Study (DFS) for the Tomingley Gold Project envisages production of 50,000 to 60,000 ounces of gold a year for an initial 7.5 years.

At current gold prices of A\$ 1,700 per ounce the Project should generate cash flow (EBITDA) of around A\$ 250 million, with an internal; rate of return (IRR) of 32%.


The NSW government has agreed to provide financial assistance for a preparation of water and infrastructure costs for the Project.

### ➤ Orange District Exploration Joint Venture

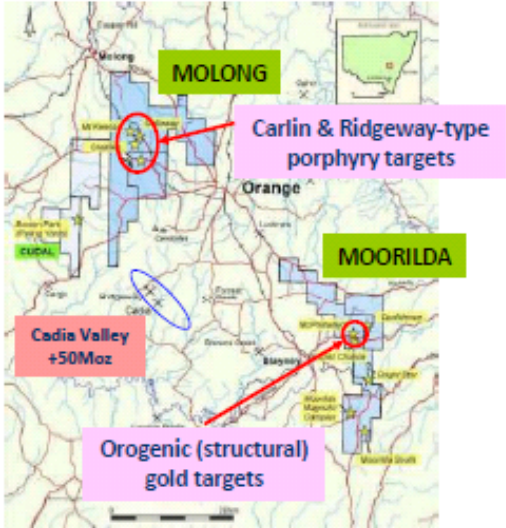
Near Orange, Alkane (49%) has a joint venture with Newmont Australia (51%), which resulted in the discovery in 2006 of a significant gold deposit at **McPhillamys** within the **Moorilda Project**.



**ODEJV**



**ORANGE DISTRICT EXPLORATION JOINT VENTURE (ODEJV)**  
Gold, Copper – Orange, NSW | Alkane Resources: 49%, Newmont Australia: 51%



**TWO FOCUS AREAS:**

- **Molong**
  - targeting copper-gold porphyry-style gold mineralisation (Ridgeway-type) and Carlin style
- **Moorilda**
  - drilling confirms a major gold system @ McPhillamys
- Newmont have earned 51%, to go to 75% by carrying all expenditures through to completion of final BFS

*...low risk with significant upside + 4moz system*

In 2006, reconnaissance drilling at McPhillamys located extensive gold mineralisation associated with altered felsic volcanic rocks with intersections of 123 metres grading 1.96g/t gold and 77 metres at 1.65g/t gold within a 600 metre by 200 metre mineralised zone.

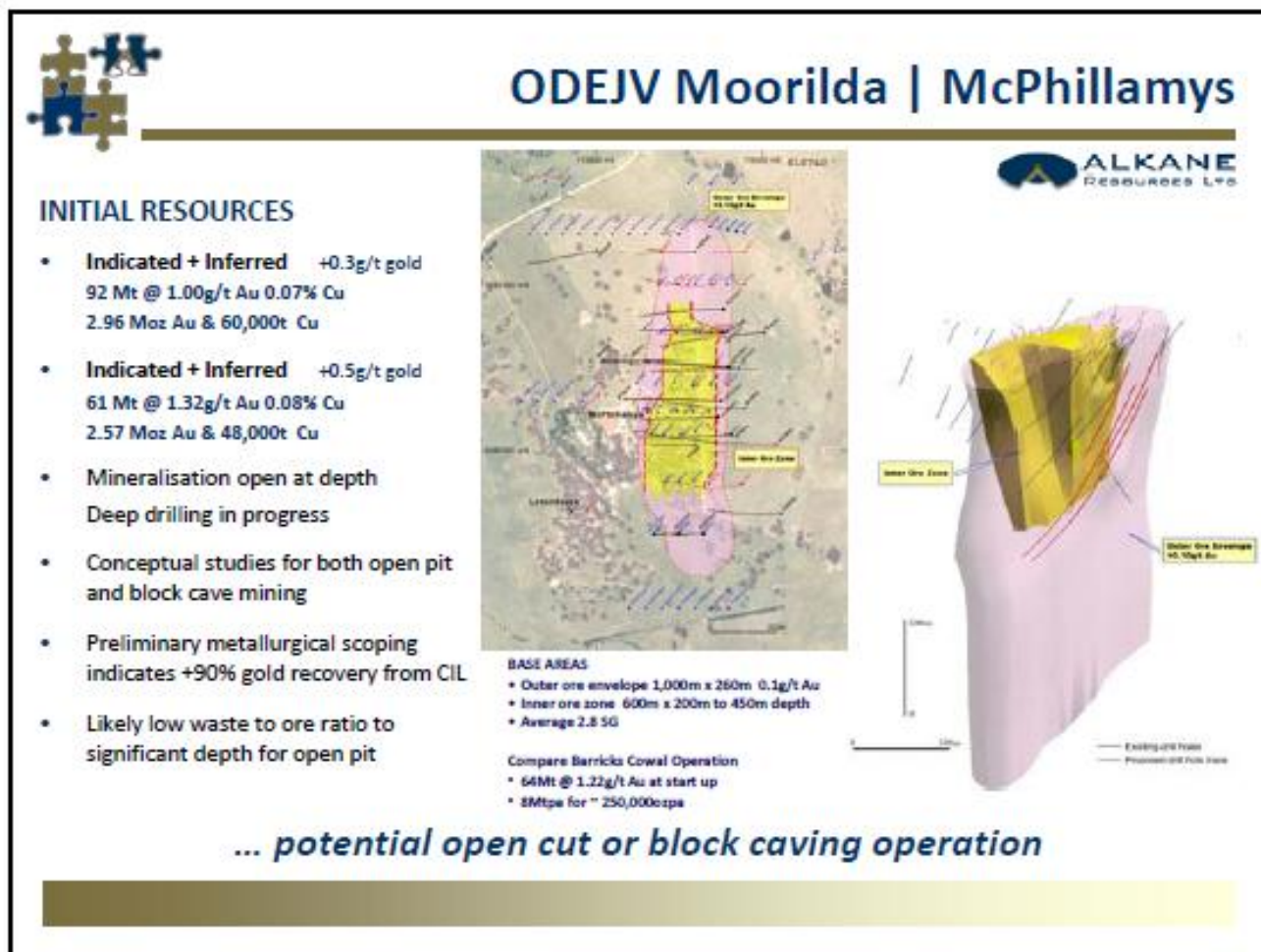
Follow up diamond drilling has confirmed the potential of the project to host a major gold system with an intersection in KPD003 of 366 metres grading 1.85g/t gold.

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.

Regional exploration has discovered several areas with McPhillamys type gold mineralisation, including 78 metres grading 1.04 g/t gold at Kings Plains 2 kilometres to the south of the main deposit.

On March 2, 2010, it was announced that Newmont had elected to increase their interest in the joint venture to 75% by completing a Bankable Feasibility Study (BFS).

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 9.1.954 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.



The bulk of the resource is located within an Inner Ore Zone with dimensions of 600 metres by 200 metres and extending down to approximately 525 metres below the ground surface and overall higher grades within the Outer Ore Envelope.

The higher density drilling provided a greater level of confidence in the continuity of widths and grade of the mineralization.

In October 2010, Alkane announced that drill results confirmed the continuity of the mineralization envelope. Results include up to 52 metres grading 1.08 g/t gold from 403 metres, including 37 metres grading 1.33 g/t gold from 417 metres (NEWD 009); 94 metres grading 0.77 g/t gold from 449 metres, including 30 metres grading 1.49 g/t gold from 490 metres (NEWD 010); and 119 metres grading 0.82 g/t gold from 416 metres, including 64 metres grading 1.08 g/t gold from 416 metres.

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

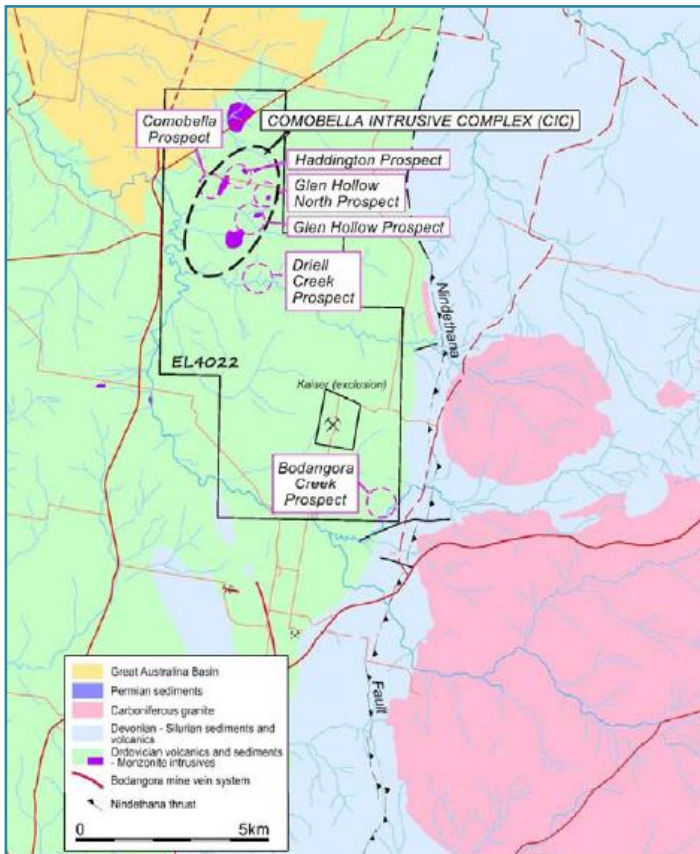
Alkane has defined a shallow Indicated resource of 2 million tonnes grading 0.99% copper and 0.3 g/t gold, which is being reviewed for its development potential at **Galwadgere** within the **Wellington Project** and several other advanced exploration projects with encouraging drill intercepts. New exploration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

On May 6, 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**

On April 19, 2011, Alkane announced the discovery of porphyry style gold/copper mineralization at the Bodangora Project 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.



Previous exploration had identified a number of geochemical anomalies associated with monzonitic intrusives which were interpreted to be similar to the well documented porphyry gold-copper system at Cadia-Ridgeway and Northparkes in the region.

The exploration had defined several zones of low grade copper-gold mineralization, however Alkane's initial target in the area was structurally controlled gold deposits, exemplified by the historic 200,000 ounce producing Bodangora.

Test drilling of targets near the historic mine failed to locate any potential economic mineralization.

To the north of the Bodangora mine area, several other targets which include skarn mineralization and extensive zones of alteration at Comobella has been identified. RC drilling had indicated broad intercepts of gold-copper, with narrower high-grade values.

Intervals included 18 metres at 0.95 g/t gold and 0.15% copper from 64 metres in NKRC003, with 2 metre grading 5.7 g/t gold and 0.44% copper.

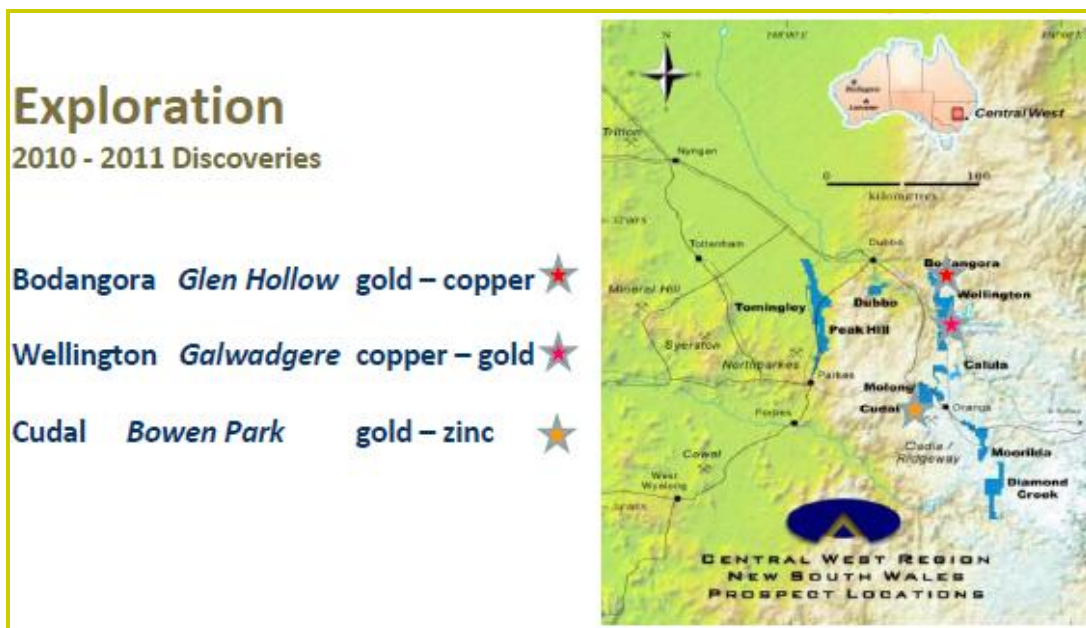
Following an Indicated Polarisation survey completed by Alkane early in 2010 and soil sampling later in the year, the Company recently completed a scattered reconnaissance 11 hole RC

drilling program totalling 2,431 metres to test geophysical, geochemical and geology targets at the Bodangora Creek, Drill Creek, Glen Hollow North, Comobella and Haddington project areas.

The latter four targets are within the area now defined as the very prospective Comobella Intrusive Complex (CIC), which is currently interpreted to cover an area of approximately 4 kilometres by 3 kilometres.

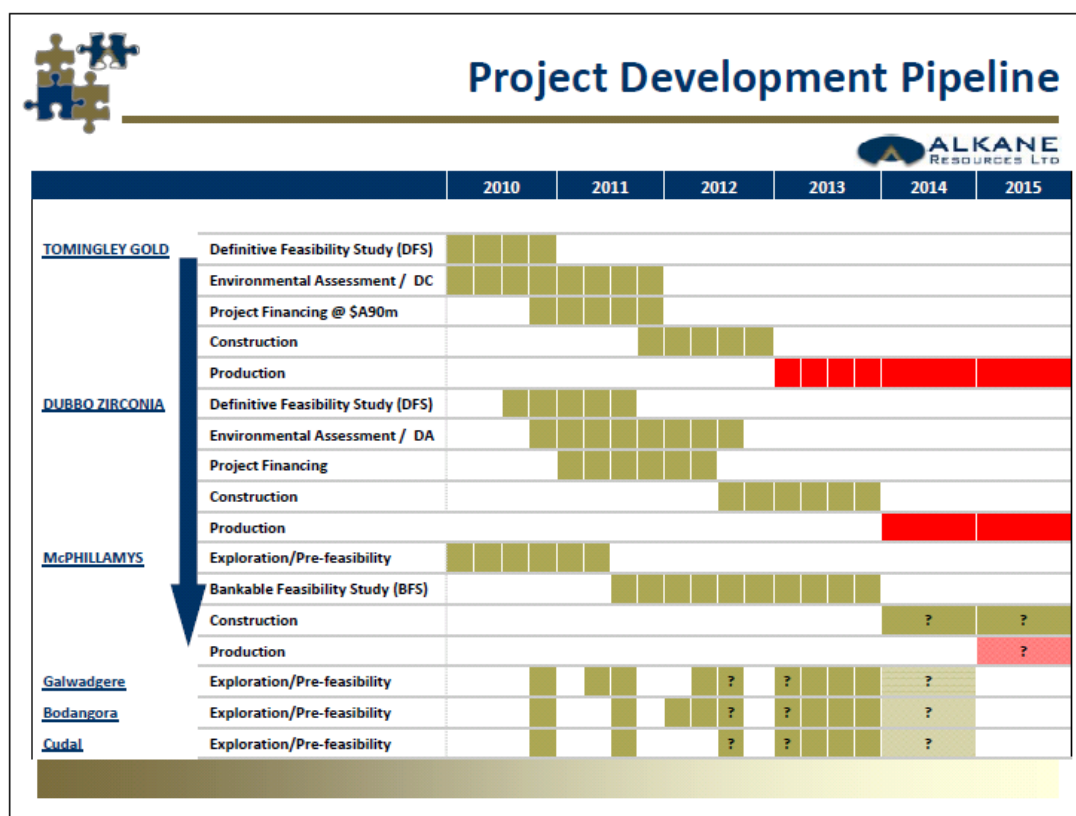
Several areas of extensive alteration with weak copper-gold values were intersected however, significant results were returned from the Glen Hollow prospect with 45 metres grading 0.9 g/t gold, 0.24% copper from 50 metres, including a zone of 21 metres grading 1.5 g/t gold, 0.41% copper from 84 metres (COMRC C009).

Geology and alteration features identified elsewhere within the CIV 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 diluting 23% residual interest in a nickel sulphide joint venture with Xstrata Nickel (Jubilee) near Leinster.



## **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. Stuart is Chairman of Alliance Resources and Drummond Gold and non-executive director of Gippsland.

**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. Mr. Chalmers is also a principal in Multi Metal Consultants.

**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 February 2011, Alkane announced that it had completed a placement for 20 million shares at A\$ 1.05 per share to raise gross proceeds of A\$ 21 million.

Alkane's current cash position is approximately A\$ 8 million.

### Investment recommendation:

Alkane's **Dubbo Zirconia Project**, 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 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.

MOUs for other DZP products include Light and Heavy Rare Earths, are hoped to be announced around the end of the 2012 March quarter.

Alkane hopes to submit an Environmental Impact Statement (EIS) by mid-year 2012, with a view to commencing construction no later than early 2013 and production by half of the December 2014 quarter.

Alkane's **Tomingley Gold Project** (TGP), also located in the Central West region of New South Wales, currently has a mineable gold reserve of 209,100 ounces and a open pitable 310,022 ounce gold resource within the Wyoming and Caloma deposits.

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\$ 1,700 per ounce the Project should generate cash flow of around A\$ 250 million, with an internal rate of return of 32%.

The Company also has a joint venture with Newmont Australia which resulted in the discovery in 2006 of a significant gold deposit at McPhillamys within the Moorilda Project. Newmont has elected to increase their interest in the joint venture from 51% to 75% by completing a Bankable Feasibility Study.

In July 2010, an initial resource of Indicated plus Inferred resources containing 2.96 million ounces of gold and 60,000 tonnes of copper has been defined for McPhillamys.

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.

With production possible by half of the December 2014 quarter, supported by having signed four MOUs to produce zirconium and niobium, the DPZ Project could emerge to one of the world's major REE producers, as a result of which in conjunction with a potential gold production of 400,000 ounces of gold, representing a higher value than the Company's current market valuation alone, in our view, the shares of Alkane are strongly undervalued.

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