



14 July 2016

## Quarterly Activities Report to 30 June 2016

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### Tomingley Gold Operations (TGO)

- The quarter finished an excellent operating year despite persistent heavy rain during the last two months (244mm) with production close to guidance:
  - Gold production 18,064 ounces
  - Site operating cash costs were A\$1,009/ounce and total operating costs (AISC) of A\$1,149/ounce
  - Gold sales 17,733 ounces for revenue of A\$29.4 million at an average price of A\$1,658/ounce
  - Gold hedge at 30 June 2016 of 63,900 ounces at average forward price of A\$1,690/ounce.
- Site net operating cash inflow for the quarter after site operating expenses and development expenditure was \$9.0M
- Production for FY16 was within guidance at 67,812 ounces with site costs of A\$1,124 and AISC of A\$1,256
- Revenue for FY16 was A\$109.1M generating site net operating cash flow of A\$27.6M

### Dubbo Zirconia Project (DZP)

- The final Project land purchases were completed taking the total site area to 3,500 hectares. Approximately 500ha are required for operations and 1,000ha are allocated to biodiversity offsets. The residual 2,000ha will remain as mixed farming land and the Toongi Pastoral Company Pty Ltd has been incorporated as the manager for these activities
- The DZP is now construction ready pending financing and no major expenditures are planned apart from operation of the demonstration pilot plant to confirm recent process optimisation and test results obtained at laboratory scale, and to produce additional products for customer certification,
- Discussions continued with Vietnam Rare Earth JSC (VTRE) following signing of the Letter of Intent (LOI) to toll process AZL's rare earths concentrate produced to maximise the value of VTRE's existing facilities

### Corporate

- The Group's cash position totalled A\$29.8M with A\$24.5M cash in addition to bullion on hand valued at A\$5.3M, an increase of A\$8.8M from the previous quarter
- An A\$16.5M share entitlement issue was successfully completed, with \$12.4M received by 30 June and the remainder in early July
- Post quarter end a A\$14M working capital facility was executed with Macquarie Bank Ltd

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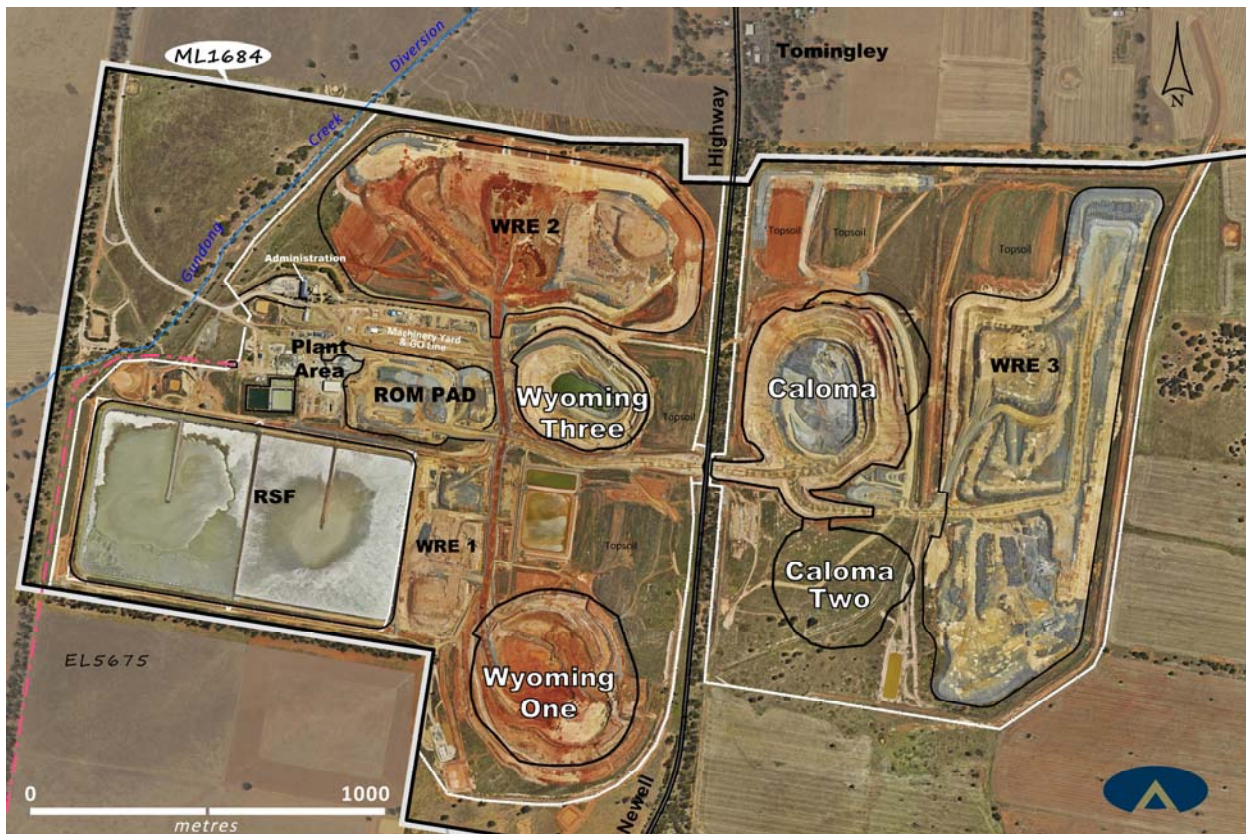


## TOMINGLEY GOLD OPERATIONS (TGO)

Tomingley Gold Operations Pty Ltd 100%

The TGO is based on four gold deposits (Wyoming One, Wyoming Three, Caloma and Caloma Two) located about 14 kilometres north of the Company's inactive Peak Hill Gold Mine, and approximately 50 kilometres southwest of Dubbo. Underground operations below the Wyoming One and Caloma orebodies are now incorporated into the life-of-mine schedule.

### TGO Site layout June 2016



### Operations

This quarter finishes an excellent year at TGO, with both production and cost being within the original full year guidance issued over a year ago.

Mining occurred in two pits, Caloma and Wyoming One. During the quarter production from Wyoming One steadily increased. The quarterly strip ratio is still well in excess of the life of mine strip ratio of 9.7:1, however the unseasonably high rainfall in the quarter kept overall material movements lower than planned. Wyoming Three is currently being used for water storage.

The Caloma pit resource model has been updated to take into account the presence and interpretation of the boundaries of some dolerite dykes; reconciliations are meeting this updated model. Initial reconciliations from Wyoming One are also meeting expectation.

Shortly after the end of the quarter approval was granted from the Department of Planning & Environment for the development of the Caloma Two open cut. Preliminary works are expected to



commence in the coming quarter. Construction of the next lift of the residue storage facility has also commenced and is due to be completed in the coming quarter.

Despite the impact of weather, with rainfall from late April to the end of June totalling 244mm (long term average ~100mm), mining productivity remained high and overall total costs met forecast. Gold poured for the quarter was 18,064 ounces, 17,773 ounces were sold at an average sales price of A\$1,658/oz, generating revenue of A\$29.4 million and an site operating cash flow of A\$9.0 million. Gold poured for FY2016 totalled 67,812 ounces with 67,893 ounces sold at an average realised price of A\$1,605 to generate revenue of A\$109.1 million and an operating cash flow of A\$27.6 million.

#### TGO FY 2016 Quarterly Production Figures

TGO Production		Sept Quarter 2015	Dec Quarter 2015	March Quarter 2016	June Quarter 2016	FY 2016
Waste mined	BCM	1,676,850	1,447,753	1,839,737	1,235,480	6,199,820
Ore mined	Tonnes	433,744	277,061	198,877	375,772	1,285,454
Strip Ratio	Ratio	10.6	14.4	23.6	7.2	12.2
Grade	g/t	1.87	1.84	1.93	1.75	1.84
Ore milled	Tonnes	271,980	257,998	270,155	295,972	1,096,105
Head grade	g/t	2.44	1.93	2.02	1.94	2.08
Recovery	%	92.6	91.4	89.5	90.5	90.9
Gold poured	Ounces	19,789	15,347	14,612	18,064	67,812
<b>Revenue Summary</b>						
Gold sold	Ounces	21,000	14,250	15,000	17,733	67,983
Average price realised	A\$/oz	1,565	1,583	1,621	1,658	1,605
Gold revenue	A\$M	32.9	22.6	24.3	29.4	109.1
<b>Cost Summary</b>						
Mining	A\$/oz	784	731	774	659	736
Processing	A\$/oz	242	322	361	266	292
Site Support	A\$/oz	78	113	114	84	96
C1 Site Cash Cost	A\$/oz	1,104	1,166	1,249	1,009	1,124
Royalties	A\$/oz	46	43	45	51	46
Sustaining capital	A\$/oz	36	44	1	39	31
Rehabilitation	A\$/oz	16	20	22	15	18
Corporate	A\$/oz	32	43	41	35	37
<b>AISC<sup>1</sup></b>	<b>A\$/oz</b>	<b>1,234</b>	<b>1,316</b>	<b>1,358</b>	<b>1,149</b>	<b>1,256</b>
Bullion on hand	Ounces	1,951	3,040	2,645	2,971	2,971
<b>Stockpiles</b>						
Ore for immediate milling	Tonnes	678,681	698,744	618,218	701,047	701,047
Grade	g/t	0.95	0.94	0.80	0.82	0.82
Contained gold	Ounces	20,735	21,155	15,914	18,480	18,480

<sup>1</sup>AISC = All in Sustaining Cost comprises all site operating costs, royalties, mine exploration, sustaining capex, mine development and an allocation of corporate costs, on the basis of ounces produced. AISC does not include share based payments or net realisable value provision for ore inventory.



The hedge book at quarter end was 63,900 ounces gold at an average forward price of A\$1,690/oz. FY2017 production is estimated to be 65,000 – 72,000 ounces within an AISC range of A\$1,200 -1,300/oz, with Caloma performance and timing of high grade ore releases from Wyoming One being the key variables. Costs remain higher than the anticipated long term life-of-mine AISC of A\$1,000 – 1,100/oz due to further waste stripping scheduled in FY2017 at the Wyoming One pit.

### **Exploration**

The Company is stepping up the exploration effort for additional resources in the Tomingley Project area, and a review of targets in the 30km long prospective belt, including the Peak Hill Gold Mine (the site of an earlier mining operation by Alkane) is in progress. Limited sub pit drilling is underway at Caloma and Wyoming One and exploration drilling will be scheduled on regional targets later this year.

### **DUBBO ZIRCONIA PROJECT (DZP) – zirconium, hafnium, niobium, yttrium, rare earth elements**

*Australian Zirconia Ltd (AZL) 100%*

The DZP is located 25 kilometres south of the large regional centre of Dubbo in the Central West Region of New South Wales. It is based upon large in-ground resources of the metals **zirconium, hafnium, niobium, tantalum, yttrium and rare earth elements**. Over many years the Company has developed a flow sheet consisting of sulphuric acid leach followed by solvent extraction recovery and refining to produce several products, including trialling the process extensively at demonstration pilot plant scale.

All New South Wales State Government and Australian Federal Government approvals for the development of the DZP are in place.

The final land acquisitions covering the project area were completed during the quarter and the Company owns about 3,500 hectares around the project site. Of this land, 500ha is required for mining and processing operations, about 1,000ha is allocated to biodiversity offset (federal environment requirement) and the remaining 2,000ha will be retained for farming. To manage the farming and biodiversity offset lands, Toongi Pastoral Company Pty Ltd (TPC) has been formed and a professional manager engaged to oversee these operations. A comprehensive business plan is being developed for TPC to be a self-sustaining and profitable agricultural enterprise.

### **Process and Product Development**

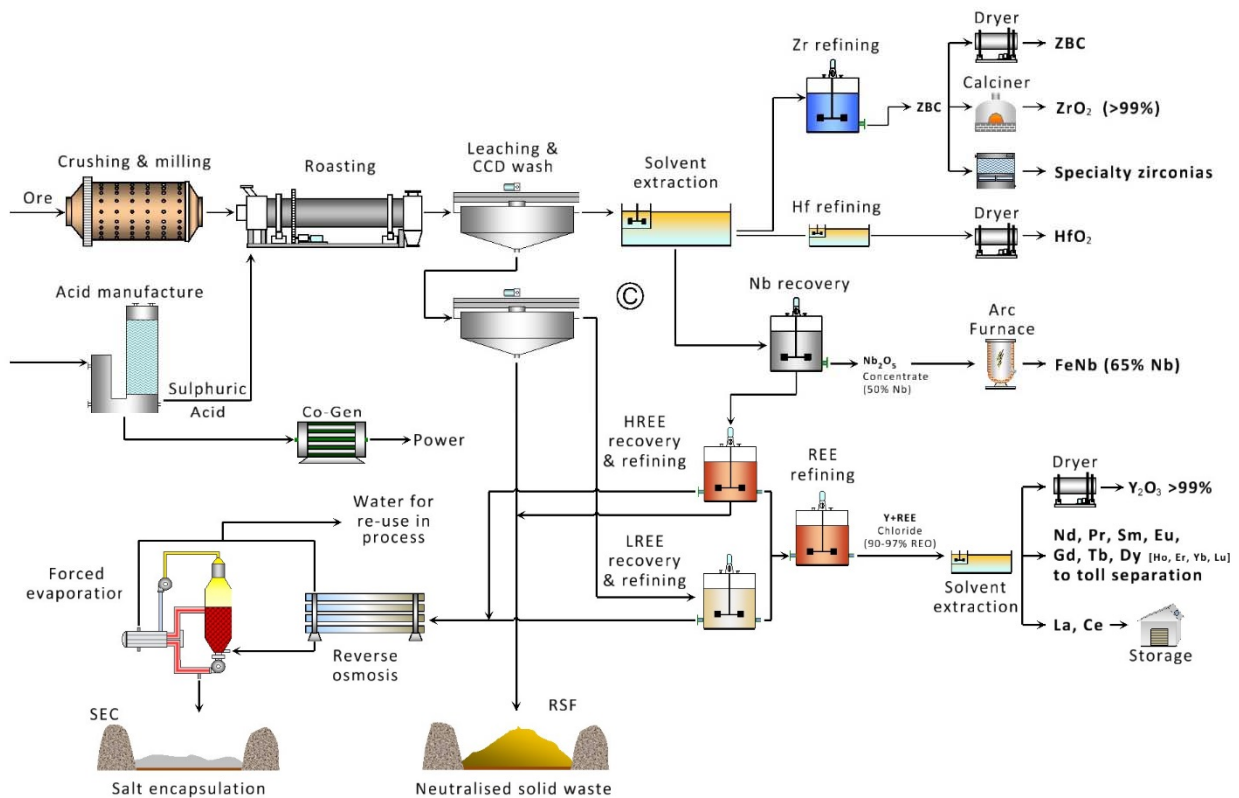
Planning has continued for demonstration pilot plant (DPP) trials scheduled to commence in August to assist with process refinement and confirmation of test results obtained at laboratory scale and to produce additional products for customer certification. The DPP will produce zirconium products and a hafnium concentrate as well as rare earth concentrate.

### **Engineering**

The project remains ready for detailed design and construction to commence, contingent on financing. Early Contractor Involvement (ECI) has continued with Outotec, with discussion on how to further reduce the project's overall capital cost.



## DZP Flowsheet



## Marketing

AZL's worldwide Zirconium Marketing agreement with a leading European manufacturing and trading company has been the subject of a number of meetings and discussions in recent months with both parties committed to finalising in the near term.

Further discussions with Vietnam Rare Earth JSC (VTRE) in Vietnam followed the signing of the Letter of Intent for the Rare Earth Toll Processing Agreement as reported in the *ASX Announcement of 7 April 2016*.

The partnership will allow AZL to provide a supply (alternate to that from China) of separated rare earth products, guaranteeing certification and supply chain traceability from ore mined and processed in Australia through to customers' products. It will also allow AZL to participate in downstream markets and capture further value adding for its rare earth products. VTRE's rare earths operating costs are similar to or lower than in China, which will ensure that AZL's production costs will be world competitive.

Further toll processing of DZP feed to produce rare earth metal alloys is also intended. An AZL/VTRE joint marketing company is planned as the vehicle to market VTRE's currently produced rare earths and associated downstream products.

A presentation on hafnium by the Company was very well received at the Minor Metal Trade Association (MMTA) annual conference in Amsterdam in April, with considerable interest in the output from the DZP. Some of the key customers for DZP products were visited in Europe and the USA during the quarter, with strong interest in further co-operation and offtake being considered.



AZL also made a presentation on zirconium products and the DZP at the Ruidow Zircon Conference in Nanjing, China in late May. Other meetings and visits were made in South Korea and Vietnam during the quarter.

During early August, AZL will attend the Baotou Rare Earth Conference in Baotou, China. This is the premier rare earths conference in China, which is run by the government and is only open to foreign participants every four years by invitation. AZL will also participate in the Rare Earth Permanent Magnets workshop in Darmstadt, Germany in late August, combined with follow up meetings with a number of companies in Europe.

### ***Product markets***

Prices for all DZP products remained flat during the quarter, with many Chinese producers reported to be operating at a loss at the present time. Overcapacity from old and inefficient plants over many years has led to excess stocks and high operating costs, which need to be removed from the economy. The government has responded with China's General Office of the State Council providing guidelines on market reform and the need for industry to restructure in order to improve profitability and long term sustainability. The Chinese government has issued guidelines for capacity reduction, consolidation, and technology innovation. This is an important development and highlights the need for Chinese industry to embrace change and become more efficient and profitable. Strict control of new capacity, as well as the accelerated withdrawal or closure of excess capacity will be aided by more stringent environmental laws and regulations. Overcapacity is present in many Chinese industries, so moves to limit capacity will reduce supply in China and export markets.

China's rare earths industry has led the way in market reforms, with only six state owned enterprises now controlling Chinese rare earths production. Increased vigilance by authorities to restrict and stamp out illegal mining of rare earths should also reduce supply. The government has also acted to buy excess stocks of the most important rare earths such as those used in magnets, with indications that further measures can be anticipated in the near future.

With China responsible for 80% or more of global rare earths and zirconium production, successful restructuring will have significant flow on benefits for products from the DZP sold in export markets and into China.

### ***Financing***

AZL continues to work with its advisors to progress funding of the project. The broad strategy has not changed with strategic investment, Export Credit Agency finance and commercial debt remaining as the key components of the envisaged project funding suite.

The ability of the DZP to provide long term sustainable security of supply of a diverse range of over 10 critical metals and oxides is one of the strong themes which is being increasingly recognised both in Australia and overseas. The diversity of products and markets also provides stability of revenue streams over a broad base as different markets cycle through ups and downs over time.

The next key step in the full financing program is customer confirmation of products certification and committed off-take agreements that will underpin the financial model.



## **BODANGORA (including KAISER) (copper-gold)**

*Alkane Resources Ltd 100% (includes the Kaiser tenement)*

A limited RC drilling program of 7 holes totalling 1761 metres was completed within the Kaiser and Bodangora properties. The Bodangora and Kaiser tenements form part of the larger project area in the northern Molong Volcanic Belt (MVB) located approximately 20-25 km north of Wellington in the central west of NSW. The MVB is host to a number of mineral deposits exemplified by the world class alkalic porphyry deposits within the Cadia Valley Operations of Newcrest Mining Limited.

As reported in the *ASX Announcement on 6 May 2016*, initial drilling at the Belgium and Boda targets in April continued to expand the area of porphyry mineralisation around the margins of the Kaiser Intrusive Complex with KSR018, one of only 4 holes completed within the Boda target, intersecting:

**KSR018 311m grading 0.28g/t Au and 0.06% Cu from 19m**

The mineralisation is hosted by strongly altered volcanics and monzodioritic intrusive rocks. This mineralisation is associated with a strong magnetic response (determined with downhole magnetic susceptibility measurements) and appears broadly coincident with a discrete strongly magnetic feature in aeromagnetic imagery striking > 1.3km.

A single drill hole (**KSR013**) testing the Duke target, which is offset from the Belgium-Boda area, intersected:

**KSR013 111 metres grading 0.61g/t gold and 0.08% copper from 42 metres  
including 4 metres grading 9.69g/t gold and 0.06% copper from 110 metres**

This intersection confirmed the potential for increasing grades (in particular gold) within this zone, both along strike and down dip.

The drilling and the results from the extended induced polarisation survey continue to confirm the project area as a prime target for large tonnage Au-Cu alkalic porphyry mineralisation. Alteration systems with characteristics of alkalic porphyry systems have been identified at all four intrusive complexes within the project area. Low grade Au-Cu mineralisation, ranking on a par with early drilling by Newcrest at Ridgeway where intercepts such as 102m grading 0.13g/t Au and 0.40% Cu were encountered just 200m from the core of the system (e.g. 296m grading 4.41g/t Au and 1.02% Cu), has now been identified over a strike length of up to 1600m along the margins of the Kaiser Intrusive Complex at Kaiser, Duke and Boda.

## **ELSIENORA (gold)**

*Alkane Resources Ltd earning 80%*

As advised in the *ASX Announcement of 6 May 2016*, fourteen drill holes, ELRC014 – 027 totalling 1,594 metres were completed in April 2016 at the Cuddyong Prospect targeting surface geochemistry anomalies along strike from strong gold mineralisation previously intersected at the Cuddyong Prospect (ELRC001 29m @ 1.53g/t Au from surface and ELRC003 8m @ 3.14g/t Au from 30m; *ASX announcement 23 March 2015*). The drilling successfully delineated a zone of strong sericite-pyrite alteration and quartz veining hosted predominantly in intermediate to mafic volcanoclastic sediments along a strike length of approximately 700 metres (using a >0.5g/t gold cut-off). The better intercepts are:

**ELRC018 8m grading 2.78g/t Au from surface – up dip from ELRC00, and  
ELRC024 2m grading 2.60g/t Au from 44m – 200m along strike to the south from ELRC018  
ELRC021 2m grading 2.40g/t Au from 10m appears to be a new zone of mineralisation,  
hangingwall to the main Cuddyong zone**



Two drill holes, ELRC028 and ELRC029 tested the numerous orogenic gold workings at the Stockyard Prospect intersecting a small stope and two minor gold lodes of 1-2 metres thickness grading up to 1.00 g/t gold associated with quartz veining.

**ORANGE EAST PROJECT (gold-copper), Wellington (copper-gold), CUDAL (gold-zinc), ROCKLEY (gold) and FINNS CROSSING (gold-copper)** were inactive during the quarter

#### **LEINSTER REGION JOINT VENTURE (nickel-gold)**

*Alkane Resources Ltd 19.4% diluting, Australian Nickel Investments Pty Ltd (ANI) 79.6%. Two prospects - **Miranda and McDonough Lookout.***

ANI (Western Areas Ltd) has advised that its exploration during the quarter has focused on interpreting the surface EM data acquired during the March quarter. Multiple strong and broad anomalous responses were identified, some of which have been drill tested previously and are interpreted to be associated with sulphidic black shale. A number of moderate to weak, short strike length anomalies were also detected, and some of these lie adjacent to the interpreted Camelot ultramafic stratigraphy, and in areas of other known ultramafics. These anomalies have not been explained by previous drilling. Planning is underway to test these anomalies and the ultramafic stratigraphy in the Apollo area.

#### **CORPORATE**

On 26 April 2016 the Company announced a one for five share entitlement issue to all eligible shareholders at a price of A\$0.20 to raise approximately A\$16 million. The offer closed on 23 May 2016 with about a 75% acceptance. The remaining 25% was placed by Petra Capital at the same price to institutional and professional investors with those new shares issued on 7 July 2016. Total funds raised were \$16.5 million, less the costs of the issue. The funds raised are to be applied predominantly to DZP related expenditures including land acquisitions, the DPP run and associated process/product enhancements and development of strategic partnerships. During the quarter some \$6.9M was spent on the DZP, with the major portion relating to key land purchases all of which have now been completed.

The Group's cash and bullion on hand at quarter end increased by A\$8.8M to A\$29.8M, comprising cash of A\$24.5M and bullion on hand valued at A\$5.3M.

As announced on 5 May 2016, subsidiary Tomingley Gold Operations Pty Ltd (TGO) has entered into a working capital facility for A\$14.0M with Macquarie Bank Limited. The facility documents have now been executed and draw down on the facilities is expected in the near term.

The facility comprises:

- a loan facility of \$7M repayable by 30 June 2017
- a performance bond facility of \$7M repayable by 29 September 2017; and
- hedging facilities comprised of A\$ gold forward facility, utilised as at 30 June 2016 with 63,900 ounces of gold forwards at an average forward price of A\$1,690/oz to be delivered into over the period to December 2017 and 12,000 ounces of A\$ call options expiring in equal portions in December 2017 and March 2018 at an average strike price of A\$1,771/oz .

The facility is secured over all of the assets of TGO with a parent entity guarantee which is expected to be released when the loan and performance bond facilities have been repaid in full.

As a result of securing the Macquarie facilities, the Group repaid in full the existing \$4.0M working capital facility during the quarter.





### Competent Person

Unless otherwise advised above, the information in this report that relates to exploration results, mineral resources and ore reserves is based on information compiled by Mr D I Chalmers, FAusIMM, FAIG, (director of the Company) who has sufficient experience which is relevant to the style of mineralisation and type of deposit under consideration and to the activity which he is undertaking to qualify as a Competent Person as defined in the 2012 Edition of the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves. Mr Chalmers consents to the inclusion in this report of the matters based on his information in the form and context in which it appears

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**ABOUT ALKANE - [www.alkane.com.au](http://www.alkane.com.au) - ASX: ALK and OTCQX: ANLKY**

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

The NSW Planning Assessment Commission granted development approval for the DZP on 28 May 2015 and on 24 August 2015 the Company received notification that the federal Department of the Environment gave its approval for the development. Mining Lease 1724 was granted on 18 December 2015 and the Environment Protection Licence was approved on 14 March 2016. Financing is in progress and this project will make Alkane a strategic and significant world producer of zirconium, hafnium and rare earth products when it commences production in 2018.

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

