

30 January 2019

## *Quarterly Activities Report to 31 December 2018*

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### *Tomingley Gold Operations*

- Development of the underground operation has commenced with both the main decline and vent portals established.
- **Quarter Results**
  - Gold production was above forecast at 11,111 ounces.
  - Site operating cash costs were A\$846/ounce with AISC of A\$1,051/ounce.
  - Gold sales were 23,841 ounces for revenue of A\$40.9M at an average price of A\$1,716/ounce.
- Guidance for FY19 has increased with production of 35,000 to 40,000 ounces of gold at an AISC of A\$1,050 to A\$1,150 per ounce.

### *Corporate*

- Cash, bullion and listed investments position totalled A\$80.5M
  - A\$73.7M in cash, bullion on hand at fair value of A\$2.0M, and \$4.8M of listed investments at market value.
- Completed strategic placement into ASX listed gold developer Calidus Resources Ltd (Calidus). At the end of the quarter Alkane holds ~10.2% in Calidus.
- The Company did not progress with its proposed investment into gold exploration company Explaurum Limited (ASX: EXU); the deposit and a break fee of \$400,000 were paid to the Company.

### *Dubbo Project*

- Financing effort continues in a volatile global market:
  - Continued increasing environmental legislation is affecting supply of Chinese zirconium chemicals and powders.
  - Ferro-niobium prices remain high as steel companies continue to look to substitute ferro-vanadium, which is facing short supply.
  - China's rare earth permanent magnet industry continues to forecast increasing demand.

### *Exploration*

- The extensive regional exploration program underway around TGO continued. This program has the objective of defining additional resources that have the potential to be mined either via open pit or underground operations and fed to TGO.
- 24 RC drill holes for a total of 4,266 metres testing the gold resource potential of the Roswell prospect were completed as part of this program. One diamond core drill hole was completed to a depth of 372.2 metres characterising the mineralisation at the San Antonio prospect. Assays are pending and finalised results will be presented in a separate announcement.



## **TOMINGLEY GOLD OPERATIONS**

*Tomingley Gold Operations Pty Ltd 100%*

Tomingley Gold Operations (TGO) is a wholly owned subsidiary of Alkane, located near the village of Tomingley, approximately 50km southwest of Dubbo in Central Western New South Wales. The gold processing plant was commissioned in January 2014 and has been operating at the design capacity of 1Mtpa since late May 2014. Mining is based on four gold deposits (Wyoming One, Wyoming Three, Caloma One and Caloma Two).

### ***Operations***

TGO continues to perform very well. One fleet is operating in the Caloma Two pit. Open pit mining has finished in Wyoming One pit, which now has the underground development occurring in it. Open pit mining will finish on site in this quarter and the company wishes to thank all employees and contractors who have been involved in the successful open pit operations over the last five years.

A total of 11,111 ounces of gold were poured for the quarter. The site cash costs for the quarter were A\$846/oz with an all-in sustaining cost (AISC) of A\$1,051/oz.

Guidance for FY19 has increased with production of 35,000 to 40,000 ounces of gold at an AISC of A\$1,050 to A\$1,150 per ounce. The operation will be processing stockpiles from the end of January. Guidance has increased due to excellent end of pit ore recovery by the operations team and higher than expected grade of some parcels of ore recovered.

Gold sold for the quarter was 23,841 ounces at an average sales price of A\$1,716/oz, generating revenue of A\$40.9M. Bullion decreased to 1,077 ounces (fair value of A\$2.0M at quarter end). Run of mine ore stockpiles were used through the period as ore from the open pits ramped down.

Site operating cash flow<sup>1</sup> was A\$21.8M driven by gold sales of 23,841 ozs for the quarter.

### ***Underground Mining Development***

Underground development has commenced on schedule with both the main decline and vent portals established. All required personnel and equipment are on site, further equipment is on schedule to arrive as development continues.

During the quarter \$4.0M was spent on underground development. There is approximately \$A17M forecast that remains to be spent prior to stope ore production in September 2019.

<sup>1</sup>**Operating cashflow** = As prescribed by AASB 107 Statement of Cashflows where exploration outflows and development outflows are grouped under investing cashflows. Note that the Quarterly Cashflow (Appendix 5B) includes those outflows under operating cashflows.



Main decline portal in Wyoming One pit

### ***Regional Exploration***

An extensive exploration program focused on the immediate area to the south of the TGO mine has continued as part of the plan to source additional ore feed, either at surface or underground, in the future for TGO. The exploration target area has a cumulative strike length of 2,500 metres comprising the Roswell, San Antonio and El Paso prospects (**ASX Announcement 19 October 2018**).

Exploration for the quarter consisted of 24 RC drill holes for a total of 4,266 metres testing the gold resource potential of the Roswell prospect. One diamond core drill hole was completed to a depth of 372.2 metres characterising the mineralisation at the San Antonio prospect. Assays are pending and finalised results will be presented in a separate announcement.

### ***Peak Hill Gold Mine (PHGM)***

Core drilling has commenced early this year as part of the re-evaluation of the potential for Peak Hill to be developed underground to provide additional ore feed for TGO. Full details of the program are in the **ASX Announcement of 18 October 2018**.



## TGO FY 2019 Quarterly and Annual Production Figures

TGO Production		FY 2018	Sep Quarter 2018	Dec Quarter 2018	FY 2019
Waste mined	BCM	3,165,414	234,281	336,812	571,093
Ore mined	Tonnes	1,589,811	258,108	103,488	361,595
Strip Ratio	Ratio	5.4	2.5	8.8	4.4
Grade	g/t	1.99	1.79	1.67	1.75
Ore milled	Tonnes	1,092,602	240,797	239,687	480,484
Head grade	g/t	2.42	2.29	1.62	1.95
Recovery	%	91.9	92.4	93.1	92.7
Gold poured	Ounces	78,533	15,634	11,111	26,745
<b>Revenue Summary</b>					
Gold sold	Ounces	75,507	6,656	23,841	30,497
Average price realised	A\$/oz	1,706	1,720	1,716	1,717
Gold revenue	A\$M	128.8	11.4	40.9	52.4
<b>Cost Summary</b>					
Mining	A\$/oz	475	384	338	365
Processing	A\$/oz	236	309	410	351
Site Support	A\$/oz	56	70	98	82
C1 Site Cash Cost	A\$/oz	767	763	846	798
Royalties	A\$/oz	52	50	47	48
Sustaining capital	A\$/oz	32	23	73	45
Rehabilitation	A\$/oz	117	101	24	69
Corporate	A\$/oz	34	36	61	46
AISC <sup>2</sup>	A\$/oz	1,002	972	1,051	1,005
Bullion on hand	Ounces	4,836	13,811	1,077	1,077
<b>Stockpiles</b>					
Ore for immediate milling	Tonnes	1,256,823	1,266,911	1,132,562	1,132,562
Grade	g/t	0.97	0.89	0.83	0.83
Contained gold	Ounces	39,338	36,355	29,992	29,992

<sup>2</sup>AISC = All in Sustaining Cost comprises all site operating costs, royalties, mine exploration, sustaining capex, mine development and an allocation of corporate costs, calculated on the basis of ounces produced. AISC does not include share based payments or net realisable value provision for ore inventory.

### ***Glen Isla Prospect***

Previous drilling has produced broad low grade gold results and together with the presence of sinters, are typical of an upper section of a fertile high level gold epithermal system. A study on drill hole geochemical data is underway for the purpose of vectoring towards high grade gold feeder or 'bonanza' structures. Drill testing the results of this study is planned for the next quarter. A regional 1.5 km by 1 km soil sampling survey is underway approximately 1 km south of the epithermal gold system at Glen Isla.



## CORPORATE

### Cash, Bullion and Listed Investments

Description	Dec-18 Quarter A\$M	Sep-19 Quarter A\$M
Cash	73.7	59.6
Bullion	2.0	22.8
Cash and bullion sub-total	75.7	82.4
Listed investments	4.8	-
<b>Total cash, bullion and listed investments</b>	<b>80.5</b>	<b>82.4</b>

In accordance with its strategy of investing part of its cash balance in junior gold mining companies and projects that meet its investment criteria, namely potential investments that have high exploration potential and/or require near term development funding, the Company has slightly increased its investment into gold exploration company Calidus Resources Limited (ASX: CAI). As at the end of the quarter the Company now holds ~145M CAI shares which is equivalent to ~10.2% of the currently issued capital.

The Company did not progress with its proposed investment into gold exploration company Explaurum Limited (ASX: EXU); the deposit \$800,000, and a break fee of \$400,000 were paid to the Company.

### Gold Forward Sale Contracts

At the end of the quarter 15,000oz had been priced at A\$1,770.81/oz for maturity in January 2019. Prior to maturity in January 2019 Alkane finalised a term hedging facility with Macquarie Bank Limited and rolled the positions so that the following forward sale contracts were executed:

Quarter	Forward Price A\$/oz	Delivery
March 2019	1,777	1,500
June 2019	1,777	1,000
December 2019	1,777	1,250
March 2020	1,777	2,250
June 2020	1,777	3,000
September 2020	1,777	2,750
December 2020	1,777	3,000
March 2021	1,777	250
<b>Total</b>	<b>1,777</b>	<b>15,000</b>

### DUBBO PROJECT – zirconium, hafnium, niobium, yttrium, rare earth elements

Australian Strategic Materials Ltd (ASM) 100%

The Dubbo Project (DP) remains construction ready, with the mineral deposit and surrounding land wholly owned, all material State and Federal approvals in place, an established flowsheet and a solid business case.

### Financing

Australian Strategic Materials (ASM) continues to work towards securing finance for the Dubbo Project. ASM's key focus is on securing offtake contracts for its products and a resultant strategic investor in the project. The increased regulatory pressure within China, as discussed in *Product Marketing* below should cause further price movement within the market which may create a catalyst for offtake contracts.



## ***Engineering***

The projects engineering is substantially complete such that execution options (staged versus full build) can be matched to the level of offtake contacts obtained.

## ***Product Development***

### *Zirconium*

Additional zirconium chemical samples have been produced and sent to customers, with further sample production occurring in the coming quarter.

### *Hafnium*

Further hafnium chemicals samples are being prepared for evaluation following strong interest in high purity hafnium chemicals for different applications.

### *Metallisation*

Engagement with technology companies on the conversion of zirconium oxide, hafnium oxide, and magnet rare earths to metals continued during the quarter. Progress has been made towards cooperatively producing metal samples. With many end users requiring critical metals, this value adding development provides a clear path towards commercialisation and fosters closer ties with downstream customers.

## ***Product Marketing***

China's ongoing "war on pollution" is having a profound effect on its chemical industry, which includes all Dubbo Project products. Increasingly strict emission levels and aggregate limits are being enforced for all industrial wastes, including air, water, and soil. Large numbers of inspection teams are moving from province to province to audit environmental compliance, leading to prosecution and penalties for offending companies and government officials. There is speculation that some companies actually suspend operations when government inspection teams visit, out of fear of prosecution for non-conformances.

From 1st January 2019 the country's first national law on soil pollution came into force, defining responsibilities for pollution and establishing a special fund for the costs of remediation. With owners of any polluted land being responsible for remediation costs, including present and past contamination, such costs should be included in current operating costs and therefore passed onto consumers. This is a pivotal moment for the chemicals industry and could result in a more level playing field for western producers when the full costs of production are accounted for, particularly for zirconium and rare earths products such as that which would be produced by the Dubbo Project.

Enforcement of emissions regulations has led to the closure of numerous chemical plants in China. A major European zirconium chemicals producer announced it has permanently closed its Chinese chemical zirconia facility in mid-December due to new regulations on effluent emission levels being lower than what can be achieved, even with capital expenditure. Further consolidation of the zirconium chemicals industry can be expected as smaller operations are either bought out by larger players or closed. Alkane's 'Review of the Chinese ZOC Market and Global Forecast', prepared by TZ Mineral International Pty Ltd, provides an insight on environmental regulations for the zirconium chemical industry and a long term pricing outlook.

Marketing visits were made to Korea and Japan during the quarter regarding product development and product offtake. The main focus of these visits were zirconium and hafnium materials, where there has been a marked increase in engagement due to concerns over sustainable supply from China in the face



of tighter environmental regulations, and forecast increased demand. Interest in new supply of hafnium materials has been particularly strong, as current supply is highly dependent on few suppliers, which produce hafnium materials as a co-product from hafnium free zirconium metal for the nuclear industry.

Alkane participated in a one day workshop in South Korea in October organised by the Korean Institute of Industrial Technology (KITECH), covering supply chain issues for critical metals and materials, including rare earths, zirconium, and hafnium. The audience included key stakeholders from leading Korean research facilities and industrial groups. South Korea relies heavily on imported critical raw materials from other countries, particularly China for rare earths and zirconium materials. Alkane also attended the Metal Events Rare Earths Conference in Hong Kong and the TZMI Congress in Singapore in November, where numerous meetings were held with leading companies. Travel plans for the first quarter include Europe and North Asia.

#### *Zirconium*

Zirconium chemical prices remained flat during the quarter, with a pause in zircon price increases providing short term stability. Premium zircon prices have levelled out between 1,500-1,650/t, CIF China, with some weakness in demand as end users look to reduce stocks. ZOC prices were little changed at US\$2,450-2,500/t (~\$6,900/t ZrO<sub>2</sub> equivalent), FOB China. Whilst the Chinese ZOC is exempt from the 10% United States tariff, other zirconium chemicals including zirconium basic carbonate and zirconium dioxide attract the new tariff.

#### *Hafnium*

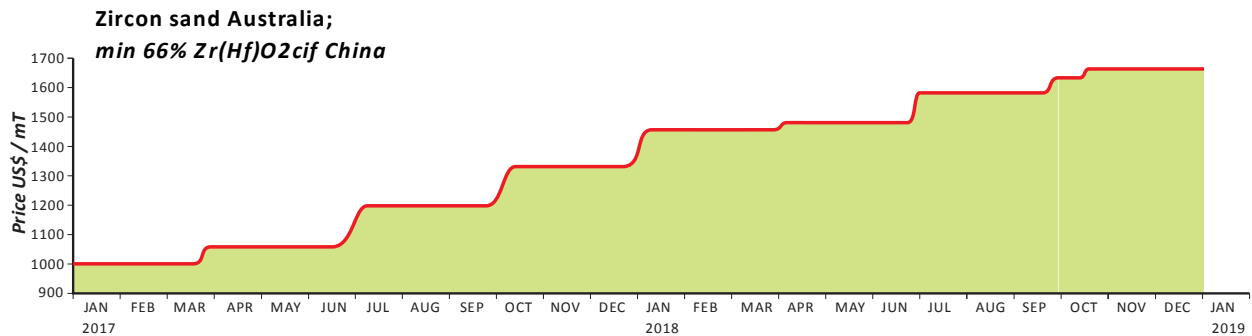
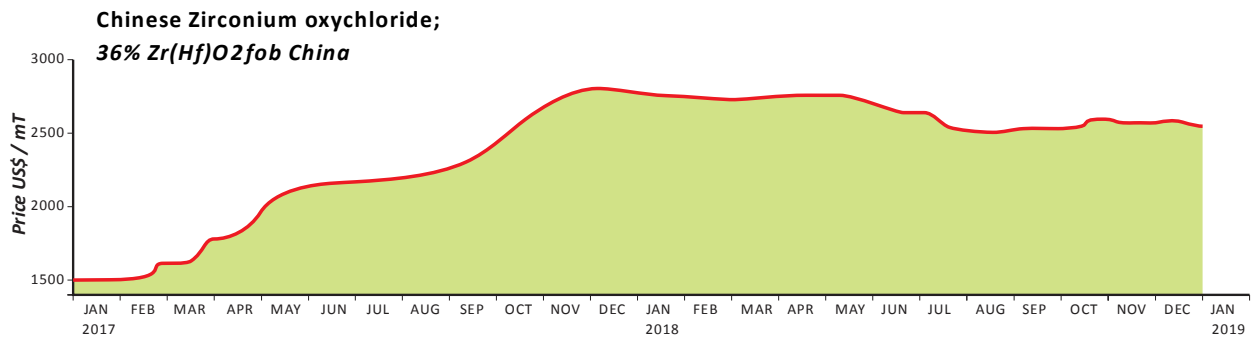
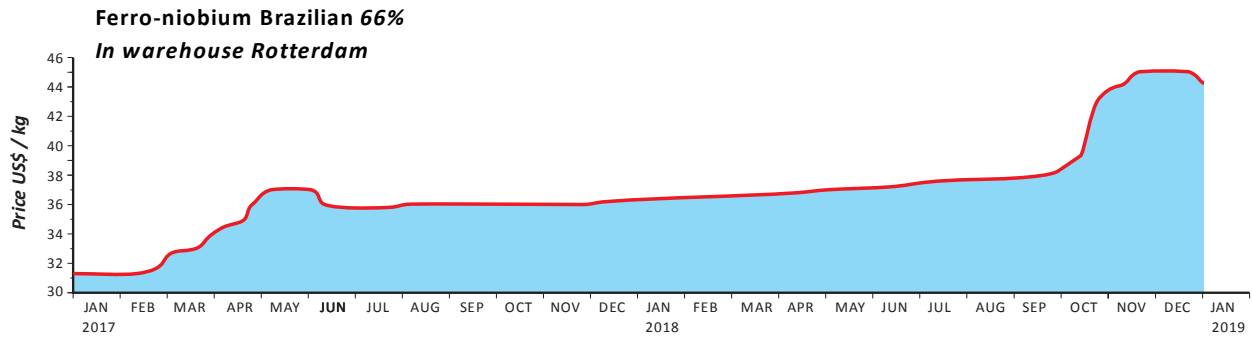
Hafnium metal prices (max 1% Zr) have increased to US\$800-875/kg, in warehouse, Rotterdam during the quarter and have trended higher since the 10% US tariff has been implemented. Increased demand and tight supply are expected to support hafnium metal prices in 2019.

#### *Rare Earths*

Prices for rare earths materials remained steady and fluctuated within a narrow range during the quarter. Prices for Praseodymium/Neodymium mischmetal ended the quarter slightly lower at US\$59/kg, FOB China. A weaker Chinese economy and concerns over ongoing trade tensions between China and the United States resulted in subdued demand. Growth in demand for rare earth permanent magnet materials is expected to underpin the rare earths market in 2019.

#### *Niobium*

Spot ferro-niobium prices continued to trend higher during the quarter and reached US\$45.0/kg, in warehouse Rotterdam, and finished at US\$44.0/kg at the end of the quarter. Many steel companies are looking to substitute for vanadium due to its higher price and limited availability. Spot Chinese ferro-vanadium prices exceeded US\$140/kg at their peak and have since retraced to almost half this level.



## NORTHERN MOLONG PORPHYRY PROJECT (NMPP) (gold-copper)

Alkane Resources Ltd 100%

Alkane has established a geological framework for the region which highlights strong similarities with the Cadia alkalic porphyry gold-copper district. Ongoing exploration has demonstrated the margins of major magnetic complexes provide a primary control for porphyry and epithermal mineralisation, with significant intersections being reported from the Duke Target along the western margin of the Kaiser Magnetic Complex and the Boda Target at the western margin of the Boda Magnetic Complex (combined strike length >900m). Exploration is scheduled to recommence at the Kaiser and Boda prospects in the next quarter with a program comprising an Induced Polarisation (IP) survey, several diamond core and RC drill holes.





**ELSIENORA (gold); ORANGE EAST PROJECT (gold-copper); WELLINGTON (copper-gold); CUDAL (gold-zinc); ROCKLEY PROJECT (gold); TRANGIE (nickel-copper +); ARMSTRONGS (gold);** *Alkane Resources Ltd 100%.*

Trangie analytical results have been received and are now being interpreted.

On the other prospects activities were limited to data compilation and review, or preparation for field activities.

**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 have not advised of any changes at time of release.



## Competent Person

Unless otherwise advised above or in the Announcements referenced, 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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This document has been prepared in accordance with the requirements of Australian securities laws, which may differ from the requirements of United States and other country securities laws. Unless otherwise indicated, all ore reserve and mineral resource estimates included or incorporated by reference in this document have been, and will be, prepared in accordance with the JORC classification system of the Australasian Institute of Mining, and Metallurgy and Australian Institute of Geoscientists.

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

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

The DP is a large in-ground resource of zirconium, hafnium, niobium, yttrium and rare earth elements. As it is an advanced poly-metallic project outside China, it is a potential strategic and independent supply of critical minerals for a range of sustainable technologies and future industries. It has a potential mine life of 75+ years. The DP is development ready, subject to financing, with the mineral deposit and surrounding land acquired and all major State and Federal approvals in place.

Alkane's most advanced gold copper exploration projects are at the 100% Alkane owned Bodangora, Wellington, Rockley and Elsenora prospects. 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. Gold and base metal mineralisation has been identified at Rockley and Elsenora.

