

Strategic Metals & Rare Earths Letter

INTERNATIONAL

the independent information and advisory publication on investing in Strategic Metals & Rare Earths

August 2016



Booming lithium market orchestrated by price controlled variety of end-use processing

Marino G. Pieterse, strategic analyst, publisher and editor

Heavy Rare Earths Oxides (HREO)		Light Rare Earth Oxides (LREO)	Critical Metals and Special Minerals	
europium (Eu)	erbium (Er)	lanthanum (La)	yttrium (Y)	lithium (Li)
gadolinium (Gd)	thulium (Tm)	cerium (Ce)	scandium (Sc)	graphite (C)
terbium (Tb)	ytterbium (Yb)	praseodymium (Pr)	niobium (Nb)	tungsten (W)
dysprosium (Dy)	lutetium (Lu)	neodymium (Nd)	tantalum (Ta)	titanium (Ti)
holmium (Ho)		promethium (Pm)	beryllium (Be)	zirconium (Zr)
		samarium (Sm)	gallium (Ga)	hafnium (Hf)
			indium (In)	antimony (Sb)
			germanium (Ge)	cobalt (Co)

3

Li

Lithium
6.941

Lithium (chemical symbol: Li) is the lightest of all metals. It does not occur as a pure element in nature but is contained within minerals in a range of hard rock types or in solution in brine bodies, with salt lakes (“salars”), in sea water or geothermal brines.

The continued concentration of lithium is generally low and there are only a limited number of known resources where lithium can be economically extracted and be processed to form a variety of different chemicals depending on its end-use.

According to Roskill Information Services the author of “Lithium Market Outlook to 2017”, Twelfth Edition, 2013, **lithium carbonate** represents approximately 48% of the total global consumption of **lithium chemicals** **25% technically lithium carbonate** and **23% of battery grade carbonate**.

The next most common chemical is **lithium hydroxide**, which represents 16% of total global consumption. Other forms of lithium consumed include lithium bromide, lithium chloride and lithium minerals.

Lithium and its chemical components exhibit a broad range of beneficial properties, including the highest electrochemical potential of all metals; an extremely high co-efficient of thermal expansion; fluxing and catalytic characteristics; and acting as a viscosity modifier in mills.

As a result of these properties, lithium is used in numerous applications, including ceramics and glass, batteries, greases, aluminium, air treatment and others.

Lithium demand

Roskill estimates that total global demand of lithium in 2012 reached 150,200 tonnes LCE, with a value estimated at around US\$ 2.2 billion. Overall lithium demand increased at an average compound annual growth rate (“CAGR”) of 6.8% from the beginning of the millennium.

Future demand is projected by Roskill to grow at an annual base rate of 9.7% until 2017 based on an optimistic forecast at 15.7% per year consumptive growth.

Consumption of lithium in volume terms will be largely driven by the rechargeable battery market which is predicted to grow 21.5% per year.



Lithium-ion batteries have become the most important storage technology in the area of portable and mobile applications (e.g. laptops, cell phones, smartphones, tablets, power tools, medical devices, electric bicycles, and electric cars, since around 2000.

Lithium's high electrochemical potential: it has the highest electric output per unit weight of any battery material, making it the standard material for lithium-ion (high energy-density rechargeable) batteries. Lithium ion batteries generally have a very high efficiency, typically in the range of 95-98%.

In the **automotive sector**, the advent of lithium-ion hybrids (“HEV”), plug-in hybrids (“EV”) require large format batteries.

While portable consumer goods alone continue to provide impressive growth in demand for lithium batteries, the start of mass production of hybrid, plug-in hybrid and electric vehicles presents the most significant upside “step growth potential” for lithium demand.

A Citi Research (Citigroup) forecast in July 2012 projected the lithium-ion battery market to rise from US\$ 13.9 million in 2011 to US\$ 23.6 billion in 2015 and US\$ 34.3 billion in 2020.

Citi analysts also note an “upside” 2020 forecast of US\$ 45 billion, based on an improved Chinese domestic market for vehicles and storage batteries.

Citi estimates that the market for lithium-ion battery cells used in consumer electronics will grow from US\$ 8.5 billion in 2011 to US\$ 13.2 billion in 2015 and US\$ 14.7 billion in 2020.

In the automobile sector, Citi expects demand from HEVs to drive overall demand over the medium term and projects an increase in demand from US\$ 1.2 billion in 2011 to US\$ 4.4 billion in 2015 and US\$ 10.2 billion in 2020.

Lithium supply

Commercial lithium production currently comes from two sources:

- **Brines:** lithium-rich brines from salt lakes or salars; and
- **Minerals:** pegmatic rock deposits containing lithium bearing minerals

The process of producing lithium from brines is generally much lower cost than that from hard rock minerals.

Roskill in the Market Outlook 2017 estimates that global production in 2012 reached 83,000 tonnes from lithium minerals and 86,000 tonnes from lithium brine operations.

Current global production of lithium is highly concentrated, both geographically and in corporate ownership. Approximately 85% of world production comes from **Chile** (Sociedad de Quimica Minera de Chile or SQM and Rockwood Lithium), **Argentina** (from Rockwood Lithium) and **Australia** (Talison Lithium).

Nearly one-half of the world's lithium production comes from Lithium brines in an Andes mountains' region encompassing parts of **Argentina, Chile, and Bolivia** (no current production). The area is often referred to as the "**Lithium Triangle**".

In the mid-1990s, the development of these large-scale low-cost brine resources fundamentally changed global lithium supply.

Operating costs at mineral concession plants are largely dependent on the prices of key raw materials (namely spodumene, sulphur acid and soda ash). Soda ash in particular is an energy extensive chemical.

Talison Lithium's Greenbushes lithium operations in Western Australia produces the vast majority of lithium from minerals and accounted for 70% of global lithium mineral production in 2012. Talison is the main supplier of spodumene concentrate to the Chinese market.

With its cost advantage over mineral-based production, brine producers lowered prices to gain market share. This resulted in closure of mineral conversion plants in the USA, Russia and China.

There are **three lithium minerals** commercially mined today: spodumene, petalite and lepidolite. Spodumene is the most important commercially mined lithium mineral given its high inherent lithium content. Both open-pit and underground mining methods are used to extract lithium minerals.

Typically, the mineralized rock contains approximately 12% to 20% spodumene, or approximately 1% to 1.5% lithium oxide.

Different separation processes will produce concentrate with different levels of lithium content, which can be used in either the technical or chemical-grade markets.

Chemical grade lithium concentrate sold to chemical producers undergoes additional processing through the sulphate route process to convert the chemical-grade lithium concentrate to a variety of lithium chemicals, including lithium carbonate, lithium chloride and lithium hydroxide.

Lithium pricing

There is no exchange traded market for lithium chemicals as prices are set by negotiation between producers and customers often based on customer-specific formations.

Prices for lithium concentrates used for conversion into chemicals are correlated to and tend to follow the same trend, as lithium carbonate prices.

In the period of June 2012 until December 2013, average lithium prices in the Chinese spot market for battery grade materials traded in a narrow range of US\$ 5,500 to US\$ 5,800 per tonne, increasing to an average price of US\$ 6,577 per tonne in 2014.

Since then, the lithium price almost tripled from US\$ 7,000 in the middle of last year to US\$ 20,000 per tonne in just two years according to research house CRU, as a result of the "Tesla effect" on lithium.

The Tesla-effect was caused by the Company announcing that it will need about 27,000 tons of uranium carbonate a year to reach its sales target of 500,000 vehicles a year by the end of 2018, which equates to 16% of global consumption last year.

The lithium price is about US\$ 7,000 for Chinese imports of carbonate – the most traded form of the metal – but only US\$ 5,000 for US imports, according to analysts of Macquarie Bank, who also noted that Chinese import prices for Chinese carbonate and export prices for hydroxide have hit record highs.

Considering the great number of products that can be made from lithium and all are normally converted for pricing into lithium carbonate, largely used for battery manufacturing, this makes its price picture complex, enhanced by most trade being conducted between a small number of producers and their customers.

This means that price assessments such as those from CRU and Macquarie rely first and foremost on published trade volumes.

As a result, the big question mark is to what extent the expected strong growth of lithium is for real and how much time it will take for existing producers and advanced stage development companies to expand output to narrow the gap between demand and rising supply.

With no reliable answer available, one should recognize that it would not be for the first time that a metal boom, as now occurs for lithium, has collapsed. An illustrative example is the great magnesium boom of approximately 20 years ago when it was believed that magnesium as a superlight metal would replace steel and aluminium in central car parts and then faded when cheap Chinese metal hit the market and demand failed to grow as promised.

History repeated itself recently with the rise and fall of REE prices dictated by Chinese export quota in the last five years.

Consequently, booming market valuations of leading lithium companies this year, in my view, are exaggerated. As a result, with the share price having tripled, I have removed **Galaxy Resources** from my 2016 Shortlist of REE and Strategic Metals/Special Minerals recommendations as at 1 August 2016, with **Galaxy** to be replaced by **Altura Mining** as at the same date (see company profile).

In the first 7 months of 2016, the market performance of the shortlist is 74%.

Overview of LITHIUM companies

(by market capitalization)

29 July 2016	Trading symbol		Share price		Change in %	12 months prices		Total shares issued million	Market cap. million	
			Current	Year-end 2015		H	L		local	US\$
			US\$	US\$	US\$	US\$	US\$	US\$		
Albemarle Corp. x	NYSE	ALB	84.170	55.520	52	87.30	41.37	112.4	9.460.7	9460.7
FMC	NYSE	FMC	47.540	38.820	22	50.57	32.24	133.8	6.360.9	6360.9
SQM	NYSE	SQM	24.780	18.420	35	26.33	12.69	120.4	2.983.5	2983.5
Tianqi Lithium xx	HKSE	002466	38.980	36.980	5	52.65	12.32	994.3	38.757.8	5.038.5
ERAMET	Paris	ERA:FP	31.41	29.50	6	60.70	15.36	26.5	832.4	923.9
Orocobre	ASX	IRE	4.140	2.300	80	5.05	1.33	209.5	867.3	650.5
Pilbara Minerals	ASX	PLS	0.550	0.320	72	0.87	0.10	1.149.0	632.0	474.0
Galaxy Resources	ASX	GXY	0.470	0.120	292	0.58	0.02	1.288.0	605.4	454.0
General Mining	ASX	GMM	0.780	0.260	200	0.91	0.04	318.4	248.4	186.3
Neometals	ASX	NMT	0.400	0.150	167	0.52	0.1	563.0	225.2	168.9
Altura Mining	ASX	AJM	0.170	0.060	183	0.28	0.01	1.232.0	209.4	157.1
Lithium Australia	ASX	LIT	0.240	0.170	41	0.39	0.05	232.8	55.9	41.9
Nemasca Lithium	TSX	NMX	1.170	0.440	166	1.97	0.19	312.4	365.5	277.8
Lithium Americas xxx	TSX	LAC	0.960	0.365	163	1.15	0.26	299.5	287.5	218.5
Pure Energy Minerals	TSX	PE	0.860	0.560	54	1.15	0.36	66.2	56.9	43.3
Dajin Resources	TSX.V	DJI	0.195	0.140	39	0.30	0.07	131.4	25.6	19.5

x owns 51% of Talison Lithium

xx owns 49% of Talison Lithium

xxx formerly Western Lithium USA, name change effective March 31, 2016



Albemarle Corp. (ALB – NYSE) is a premier specialty chemicals company with leading positions in attractive and international markets around the world with a broad customer reach and diverse end markets.

The Company develops, manufactures and markets technologically advanced and high value products, including **lithium and lithium compounds**, bromine, derivate catalysts and surface treatment chemistries used in a wide range of applications, including consumer electronics, flame retardants, metal processing, plastics, contemporary and alternative transportation vehicles, refining, pharmaceutical, agriculture, construction and custom chemistry services.

On 12 January 2015, **Albemarle Corporation** completed the acquisition of **Rockwood Holdings** in consideration of which shareholders of Rockwood received US\$ 50.65 in cash and 0.4803 new issued common shares of Albemarle, valued at a purchase price of US\$ 5.7 billion of which US\$ 2.8 billion was recorded as goodwill.

Through the acquisition of Rockwood **Albemarle** holds a 49% equity interest in Windfield Holdings, owning **Talison Lithium**, one of the world's top lithium producers, operating the **Greenbushes Mine** in Western Australia (49% owned by **Tianqi Lithium Industries** of China).

Albemarle considers Windfield to be a variable interest entity and as such is not consolidated and is valued at \$ 292.6 million as at 31 March 2016.

Effective 1 January 2016, **Albemarle's** former **Performance Chemicals** reportable segment as split into two separate reportable segments: 1) **Lithium and Advanced materials**, which includes **Lithium and Performance Catalyst Solutions and Curatives** ("PCS") and 2) **Bromine Specialties**. The split was taken to provide further clarity into the performance of each business and did not affect the existing **Refining Solutions** and **Chemical Surface Treatment** reportable segments.

On 4 January 2016, **Albemarle** closed the sale of the metal sulfides business for net proceeds of approximately US\$ 137 million and recorded a gross gain of US\$ 1.5 million, followed by closing the sale of the **minerals-based flame retardants** and **specialty chemical business** for net proceeds of US\$ 187 million and recorded a net gross gain of US\$ 111.3 million on 1 February 2016.

In the 6 months ended 30 June 2016, **Albemarle** achieved net sales of US\$ 1.3 billion, down 2% from net sales of US\$ 1.4 billion in the first half of 2015. The **gross profit** increased to US\$ 490.6 million compared to US\$ 403.4 million in the same period in 2015.

The **operating profit** more than tripled from US\$ 105.7 million to US\$ 366.3 million. Net income from continuing operations increased from US\$ 98.5 million to US\$ 313.8 million.

After a loss from discontinued operations of US\$ 381.0 million compared to an income of US\$ 8.0 million in the first half of 2015, the **loss attributable in Albemarle** was US\$ 86.6 million, compared to a net income of US\$ 95.3 million in the corresponding period of 2015.

The adjusted EBITDA amounted to US\$ 382.5 million (for 6 months 2015: US\$ 400.9 million).

On 17 June 2016, Albemarle entered into a definitive agreement to sell the **Surface Treatment business** to **BASF SE** of **Germany** for proceeds of approximately US\$ 3.2 billion The transaction is expected to close in 4Q 2016.

At 30 June 2016, cash and cash equivalents amounted to US\$ 193.7 million compared to US\$ 207.2 million at the end of 2015.

Outlook

Albemarle expects for **Lithium** and **Advanced Materials** continued strong growth for the remainder of 2016, led by demand in battery-grade applications and continued price improvement in lithium.

PCS experienced strong growth in 2015 due to market demand in general and due to certain competitor outages. While the Company expects most of the PCS business to maintain a similar level of profitability in 2016, weakness in the curatives market and the bankruptcy filing of one of its customers expected to result in a US\$ 15 million impact to income from continuing operations before income taxes and EBITDA over the course of the current year.

On a longer term basis, **Albemarle** believes that demand for lithium will continue to grow as new applications for lithium power continue to be developed and the use of plug-in hybrid electric vehicles and battery electric vehicles escalates. In addition, the Company expects growth in PCS to come from growing global demand for plastics driven by rising standards of living and infrastructure spending, particularly in Asia and the Middle East.

Albemarle expects for **Bromine Specialties**, compared to the first half of 2016, a challenging remainder of the year to be challenging for Bromine sales and profitability due to expected decline in demand for clear brine fluids used in offshore drilling projects, lower flame retardant volumes due to order timing and seasonality, and inventory rebalancing.

Through working capital discipline and strong controls on costs, we expect to generate healthy cash flows in the Bromine business despite these second-half challenges.

Albemarle believes that the combination of solid, long-term business fundamentals, with its strong cost position, product innovations and effective management of raw material costs will enable the Company to manage its business through end market challenges and to capitalize on opportunities that are expected with favorable market trends in select end markets.

On a longer term basis, **Albemarle** continues to believe that improving global standards of living, widespread digitization, increasing demand for data management capacity and the potential for increasingly stringent fire safety regulations in developing markets are likely to drive continued demand for fire safety products.

Demand for drilling completion fluids in the first half of 2016 held up better than expected, but is likely to be impacted negatively in the near term as a result of sustained low oil prices impacting offshore drilling projects around the world. Longer term, absent an increase in regulatory pressure on offshore drilling, the Company would expect this business to follow a solid growth trajectory once oil prices recover from recent levels as it expects that deep water drilling will continue to increase around the world.

Net sales of flame retardants were also stronger than expected in the first half of 2016 due to favorable bid results as well as customer order timing. **Albemarle** is focused on profitably growing our globally competitive bromine and derivatives production network to serve all major bromine consuming products and markets. The Company believes the global supply/demand gap will tighten as demand for existing and possible new uses of bromine expands over time.

Albemarle expects for **Refining Solutions** in 2016, despite some near-term concerns about how the price of oil will continue to impact the crude slate used by refineries and the resulting demand for catalysts, to see continued, sustained high level performance from heavy oil upgrading as well as improvement in clean fuels technology results due to increased change outs by refiners and an improved product mix, although certain domestic oil companies, among others, are expected to look for ways to delay catalysts change outs due to the current oil economic environment.

On a longer term basis, **Albemarle** believes increased global demand for transportation fuels and implementation of more stringent fuel quality requirements will drive growth in our Refining Solutions business. Delivering superior end-use performance continues to be the most effective way to create sustainable value in the refinery catalysts industry. The Company believes its technologies continue to provide significant performance and financial benefits to refiners challenged to meet tighter regulations around the world, those managing new contaminants present in North America tight oil, and those in the Middle East and Asia seeking to use heavier feedstock while pushing for higher propylene yields.

While lower oil prices may impact the overall crude slate for a period of time, longer term, **Albemarle** believes that the global crude supply will get heavier and more sour, trends that bode well for catalysts demand. Given this and based on its technology, current production capacities and expected growth in end market demand, the Company believes that it remains well-positioned for the future.

Favorable performance in Lithium, Refining Solutions and Bromine Specialties continues to outpace headwinds in the Company's other businesses. Based on this, and the impact of a lower effective tax rate, **Albemarle** is raising its annual guidelines for continuing operations as follows:

	Previous / Outlook in US\$	Increase in US\$	Current / Outlook in US\$
Net sales	2.5 - 2.7 billion	0.0 - 0.1 billion	2.5 - 2.8 billion
Adjusted EBITDA	700 - 745 million	5 million	705 - 750 million
Adjusted EPS (per diluted share)	3.25 - 3.50	0.10	3.35 - 3.60



Sociedad Quimica y Minera de Chile “SQM” (SQM – NYSE) reported that during 1Q 2016, as anticipated, the downward trend in iodine prices and the weakness in potash prices continued, impacting the Company’s margins.

Pricing in the specialty plant metrition business has been more stable than potash pricing, and **SQM**’s leading position in the potassium nitrate market has helped to keep revenues stable in the face of uncertainty in the potash market.

The best news of the quarter has been **SQM**’s lithium business, where the Company saw significant revenue growth in response to strong global demand for lithium, where it is working to deliver more volumes and prices have also increased.

On 28 March 2016, **SQM** announced a 50/50 joint venture with **Lithium Americas** to develop the **Cauchari-Olaroz project** in the Jujuy province of Argentina. This joint venture went into effect following a capital contribution of U\$ 25 million by SQM in exchange for a 50% ownership in Minera Exar, a wholly-owned subsidiary of Lithium Americas.

The Project’s production capacity is targeted at 40,000 tons per year of lithium carbonate equivalent. Under the current project time line, **SQM** and Lithium Americas expect to begin plant commissioning and production by 2019.

Total capital expenditures for the Project are estimated to range between US\$ 500 million and US\$ 600 million, depending on final design criteria and project staging.

In 1Q 2016, revenues from Specialty Plant Nutrition (“SPN”) totaled US\$ 141.1 million, a decrease of 1.4% compared to US\$ 143.1 million reported for the first three months in 1Q 2015.

Sales volumes as a whole were flat, although **SQM** is seeing positive results from its strategy of focusing on the growing water soluble fertilizer market.

Gross profit for the SPN segment accounted for approximately 34% of SQM’s consolidated gross profit for 1Q 2016.

In 1Q 2016, revenues from sales of iodine and derivates were US\$ 8.3 million, a decrease of 20.7% compared to US\$ 73.6 million generated for 1Q 2015. Lower revenues were primarily the result of lower prices. The average price was slightly below US\$ 25/kg, a decrease over 15% compared to 11Q 2015.

Sales volumes for 1Q 2016 were slightly lower compared to 1Q 2015, but for the full year the Company expects to report a moderate increase in iodine sales volumes.

SQM maintains its view that global iodine demand growth will be around 2% for the whole year.

Gross profit for the iodine and derivates accounted for approximately 9% of **SQM**’s consolidated gross profit.

Revenues from sales of lithium and derivates totaled US\$ 78.9 million during 1Q 2016, an increase of 62.5% compared to US\$ 48.6 million for 1Q2015.

The significant increase in revenues from sales of lithium in 1Q 2016 was the result of both higher prices and higher sales volumes. Average lithium prices increased close to 30% compared to 1Q 2015.

SQM continues to see very strong demand in the lithium market, primarily driven by batteries, and estimates that global demand growth for 2016 could exceed 10% compares to 2015.

In an effort to satisfy this robust lithium demand, **SQM** expects its sales volumes for the full year 2016 to be close to 20% higher than 2015 sales volumes.

SQM expects to see additional supply from other producers in Argentina and Australia this year, in addition to its own higher sales volumes.

Gross profit for the lithium and derivatives segment accounts for approximately 41% of SQM's consolidated gross profit for 1Q 2016.

Potassium chloride and potassium sulfate revenues for 1Q 2016 totaled US\$ 84.3 million, a 4.1% decrease compared to US\$ 87.9 million reported for 1Q 2015.

The average price for this business line, including both potassium chloride and potassium sulfate for 1Q 2016 was more than 25% lower compared to 1Q 2015.

The average price for only potassium chloride during the quarter was approximately US\$ 260 per metric ton, and continued downward pressure has been seen during 2Q.

Current estimated for global potash demand in 2016 ranges between 58 and 60 million tons, which is higher than the 2015 figure.

Gross profit for the potassium chloride and the potassium sulfate segment accounted for approximately 9% of **SQM's** consolidated gross profit for 1Q 2016.

Industrial chemicals revenues amounted to US\$ 16.9 million in 1Q 2016, a 30.8% decrease compared to US\$ 24.5 million for 1Q 2015, due to having sales of solar salt during the first quarter. **SQM** continues to expect to see sales volumes of over 70,000 metric tons related to this product this year

Gross profit for the industrial chemicals segment accounted for approximately 5% of the Company's consolidated gross profit for 1Q 2016.

Revenues from sales of other commodity fertilizers and other income reached US\$ 12.3 million in 1Q 2016, an increase of 24% compared to US\$ 9.9 million for 1Q 2015.

SQM's EBITDA for 1Q 2016 was US\$ 153.7 million (EBITDA margin of 39.7%) compared to US\$ 176.9 million for 1Q 2015 (EBITDA margin of 45.7%). Net income amounted to US\$ 58.5 million (Q1 2015 US\$ 71.7 million) a decline of 18.4%.

Total cash and cash equivalents as of 31 March 2016 amounted to US\$ 527 million. Total assets were US\$ 1.94 billion, of which US\$ 1.65 billion in property, plant and equipment.

Total shareholders' equity amounted to S\$ 2.43 billion.



Tianqi Lithium Industries is the world's largest lithium chemical producer that converts from hard rock lithium concentrates. The Company has been focusing on the development, production and sales of lithium chemical products for more than 10 years.

The lithium portfolio of **Tianqi Lithium** includes lithium carbonate technical and battery grade, lithium carbonate high priority, lithium chloride anhydrous battery grade, lithium hydroxide monohydrate battery grade, lithium dihydrogen phosphate, lithium metal etc.

In March 2014, **Tianqi Lithium** completed a fund raising of RMB 3.13 billion (US\$ 505 million) via non-public offering (NPO) or 111.76 million new common shares a RMB 28 per share, to buy a 51% equity interest in Windfield Holdings Pty from Tianqi Group, after the latter entered into several agreements with Rockwood and CIC, changing Windfield into a joint venture whereby Tianqi Group owns 51% and Rockwood 49%.

With the completion of the Offering, **Tianqi Lithium** gained control over the world's biggest and best spodumene deposit, **Greenbushes** in West Australia.



Orocobre (ORE – ASX; ORL – TSX) is building a substantial Argentinian-based industrial chemicals and minerals company through the construction and operation of its portfolio of lithium, potash and boron projects and facilities.

As a leading company in Argentina's "Lithium Triangle", **Orocobre** has built the first large-scale, de-novo brine based lithium project over 20 years at its flagship Salar de Olaroz resource located in the elevated and arid Puna region of Argentina's north-west province of Jujuy.

The operation consists of 63,000 hectares of tenements over a slar (salt lake) which contains high values of lithium and potash in brine.

The **Olaroz Lithium Facility** began as a joint venture project built in partnership with Japanese trading giant Toyota Tsusho Corporation ("TTC") and the mining investment of Jujuy Energy y Minería Sociedad del Estado ("JEMSE"). The effective Olaroz Project equity interest is **Orocobre 66.5%**, TTC 25.5% and JEMSE 8.5%.

Olaroz hosts a JORC/NI 43-101 compliant, high quality, low-cost and long life resource. The Measured and Indicated resource of 6.4 million tonnes LCE is capable of sustaining current continuous production for 40-plus years at a modelled cash operating cost of approximately US\$ 2,000/t (excluding any production or boran credits), with only ~15% of the defined resource extracted.

The Olaroz Lithium Facility is presently ramping up production to reach the nameplate capacity of 17,500 tonnes per annum of high quality lithium carbonate by 4Q 2016.

The economy of the Olaroz resource combined with the sustainable practices of the business support the future potential for expansion plans or additional stage developments to occur in-line with growing lithium market demands.

Orocobre expanded its industrial minerals operational capabilities in northern Argentina with the August 2012 purchase of NORAX Argentina from Rio Tinto.

BORAX Argentina owns one of the few important borate deposits globally and has a significant quantity of estimated mineralization for long-life output and has been in operation for more than fifty years and is a well-established boron minerals and refined chemical supplier.

Beyond current operations **Orocobre** is well positioned to substantial growth through the expansion substantial of **Salar de Olaroz**, for additional production of the Olaroz operation and through the future development of its pipeline of lithium, potash and borates in the Puna region.



Pilbara Minerals ("Pilbara") (PLS – ASX) is a lithium and tantalum mining exploration company within the Pilbara region of Western Australia. The Company's portfolio of projects comprises 2 substantial near-production assets located within 100 kilometres of Port Hedland.

The 100%-owned Pilgangoora Lithium-Tantalum Project contains a world-class resource and is being aggressively explored by the company. Pilgangoora is on track to become a leading supplier of high-quality spodumene concentrate to the global lithium market by the end of 2017.

On 11 July 2016, **Pilbara** announced a 60% increase in the total Measured, Indicated and Inferred resource to 128.6 million tonnes grading 1.22% LiO₂ (spodumene) and 138 ppm Ta₂O₅ and 0.63% Fe₂O₂ containing 1.57 million tonnes of lithium oxide and 39 million pounds of Ta₂O₅.

A 134% increase in the total amount Measured and Indicated resource, available for conversion to Ore reserves, to 83.6 million tonnes grading 1.27% LiO₂ (spodumene), 135 ppm Ta₂O₃ and 0.53% Fe₂O₅, containing .06 million tonnes of lithium oxide and 24.9 million pounds of Ta₂O₅, was announced.

With the total Mineral resource of 128.6 million tonnes and at a cut-off of 1% L₁O₂, the Inferred and Indicated lithium resource amounts to 91 million tonnes grading 1.43% L₁O₂, containing 1.3 million of lithium oxide.

The resource upgrade reinforces **Pilgangoora's** status as the world's leading lithium development project, with the global resource containing a total of 3.89 million tonnes of lithium Carbonate Equivalent (LCE) – the benchmark equivalent raw material used in the lithium industry.

The new resource will underpin the new re reserve for **Pilgangoora**, which in turn will underpin the Definitive Feasibility Study (DFS), which is now well advanced and on track for completion in August 2015.

On July 4, 2016, **Pilbara** signed a binding Off-take Agreement with General Lithium Corp (NEEQ – Code No. 837358), a leading Chinese producer of lithium carbonate (Li_2CO_3) and lithium hydroxide monohydrate ($\text{Li}_2\text{OHH}_2\text{O}$) and key supplier of lithium products and materials to the fast growing lithium-battery industry in China.

The Off-take is for the supply of 140,000 tonnes of 6% chemical trade spodumene concentrate from the Pilgangoora Lithium-Tantalum Project from 1Q 2018 for an initial 6-year period, with the option extend for a further 3 years.

This represents over 40% of Pilgangoora's anticipated annual output of ~ 330,000 tonnes per annum of concentrate (inclusive of technical grade spodumene), from the Phase 1 Project.

The Of-take pricing mechanism is to be based on the price of Lithium Carbonate so that **Pilbara** can share in pricing outcomes derived from carbonate deliveries to higher volume contracts with cathode makers in China.

A binding Memorandum of Understanding (MOU) has also been executed with the off-take to participate in the evaluation and development of future offshore spodumene conversion plant, to process spodumene concentrates from the Pilgangoora Project.

Under this binding MOU, the off-take will provide technology, technical expertise and intellectual, and will be build and operate the lithium chemicals production facility through an incorporated joint venture, which is likely to be located outside China.

Pilbara is expected to have a 50% share of the equity in the proposed joint venture. This would position the Company to move up the lithium share value and establish its pre-eminence as a vertically integrated participant in the rapidly growing global lithium industry via the high-quality **Pilgangoora** resource.

A binding Equity Subscription Agreement has also been executed with the Off-taker, who has agreed to invest A\$ 17.75 million into Pilbara Minerals via 3% placement at A\$ 0.50 per share; with settlement to occur after the conditions precedent to the Off-take Agreement terms have been satisfied.

A further 2% placement is proposed for a total stake of 5% in **Pilbara Minerals**, once a formal investment decision has been made to proceed with the development of the lithium chemical facility.

On June 28, 2016, **Pilbara** advised that it has reached agreement with **Lithium Australia (LIT – ASX)** to jointly evaluate the commercial potential of a new low-cost processing technology for the production of lithium carbonate.

Lithium Australia owns the **Sileach™ Process**, a proprietary hydrometallurgical process designed to recover lithium from spodumene concentrates. Unlike conventional processed, the Sileach™ Process does not require a roasting step and therefore has the potential to be much more energy efficient, Reduction of energy consumption, together with the potential to recover valuable by-product credits, may provide cost efficiencies which were not previously possible.

Under the agreement **Pilbara** will work with Lithium Australia to progress the commercial evaluation of the Sileach™ Process, initially trough a pilot network program to be undertaken at ANSTO in the second half of 2016. This test work program is scheduled to commence in the near future.

Pilbara will provide at its cost, 1 tonne of spodumene concentrate at a grade of no less than 4% L₂O for the purpose of undertaking the pilot test work program, while Lithium Australia will cover all capital costs for establishing the pilot plant.

The parties will share equally in the operating cost of this pilot plant program, which is estimated to be approximately A\$ 400,000.

If the program is successful, the parties will commit to form a 50/50 joint venture and undertake a Pre-feasibility Study on the establishment of a large-scale pilot plant facility in the Port Hedland area, the capital cost of which would be met by Lithium Australia.



Altura Mining (AJM – ASX) is building a leading position in the independent supply of lithium raw materials, with a world-class lithium project at **Pilgangoora**, ready to set the platform and be the first new hard rock lithium product supplier in 2017.

On 11 April 2016, **Altura** announced the results of the Project Feasibility Study (FS) completed on the 100%-owned **Pilgangoora Lithium Project** in Western Australia's Pilbara region.

Significant potential exists to increase both the current mineral resource of 5.7 million tonnes (JORC 2012) and ore reserves estimate via upgrading portions of the current Inferred resources in order to convert the probable ore reserves and additional drilling in previously untested areas of the tenements.

The **Pilgangoora Deposit** will be extracted by open pit methods enhanced by the shallow and thick mineralization allowing spodumene ore to be mined from the commencement of mining.

The FS has highlighted very attractive LOM strip ratio of 2.7:1 providing **Altura** with a very low operational mining cost.

The FS has assessed strategic option for development, determined and economic open pit operation production schedule and site layout for the preferred option. All works completed to date form the basis for progressing to a Definitive Feasibility Study (DFS) with a further referred overall accuracy of $\pm 15\%$.

Altura plans to further tighten the overall accuracy via completion of its FS which is expected to be delivered early in Q3, 2017.

Key outcomes of the FS include a LOM annual production of 215,000 tonnes and a project net Present Value (NPV) of \$ 382 million and Internal Rate of Return (IRR) over an initial 12+ year mine life based on the current probable maiden ore reserves of 18.47 million tonnes. Low grade ore stockpiled during mining will be processed after year 12.

Life of Mine (LOM) cash cost (FOB) is estimated at A\$ 298 per production tonne of spodumene concentrate at a gross margin of A\$ 345 per tonne at an attractive capital estimate of A\$ 129 million.

On 3 May 2016, **Altura** announced the signing of an Access and Compensation Deed with the pastoral leaseholders for the **Pilgangoora Lithium Project**.

The execution of the Deed is a key component to progressing the Company's Mining Lease Applications in M45/1230 and M45/1231 which cover the current planned mining operation, process plant and site facilities.

Altura remains on track to complete the 2 Mining Lease Applications with the Department of Mines and Petroleum (DMP).

On 7 July 2016, **Altura** advised that it has agreed to terms and executed the Native Title Agreement (NTA) with the Njamal people, the traditional owners of the land at the Project.

The signing of the NTA with the Njama people is the final pre-requisite approval to allow the grant of the 2 mining leases covering the planned development of the **Pilgangoora Lithium Project**.

Altura prepared a Mining Proposal for submission to DMP in July 2016.

Further updates will be provided as they come to hand with delivery of the DFS during 3Q, 2016.

On 20 June 2016, **Altura** announced that the settlement of a A\$ 20 million capital raising consisting of 100 million ordinary shares at an issue price of A\$ 0.20 per share with institutional investors had taken place with joint lead managers Bizzell Capital Partners Pty and Canaccord Genuity (Australia).

Consequently, the Company will conduct a Share Purchase Plan (SPP) to raise approximately A\$ 3 million.

The placement issue price represents a 9% discount to the attest trading price, a 13% discount to 5-day and 15-day CWAP, and a 9% discount to 30-day VWAP.

The use of funds includes completion of a DFS A\$ 40 million; payments due on long-term items and deposits on plant A\$ 110 million; additional exploration of Pilbara tenements A\$ 3.0 million; and working capital of A\$ 9.6 million.

Altura Mining is included in my **2016 Shortlist of my lithium investment recommendations**.

Overview of GRAPHITE companies (by market capitalization)										
29 July 2016	Trading symbol		Share price		Change in %	12 months prices		Total shares issued million	Market cap. million	
			Current	Year-end 2015		H	L		local	US\$
			A\$	A\$		A\$	A\$		A\$	
	Syrac Resources	ASX SYR	4.560	3.900	17	6.66	2.39	263.8	1,202.9	902.2
	Magnis Resources	ASX MNS	0.830	0.390	113	1.12	0.28	431.6	358.2	268.7
	Kibaran Resources	ASX KNL	0.240	0.170	41	0.34	0.15	189.5	45.5	34.1
	Walkabout Resources	ASX WKT	0.010	0.010	0	0.0127	0.0035	1,981.0	19.8	14.9
			Cdn\$	Cdn\$		Cdn\$	Cdn\$		Cdn\$	
	Zenyatta Ventures	TSX.V ZEN	0.690	0.880	-22	1.78	0.63	60.5	41.7	31.7
	Flinders Resources	TSX.V FDR	0.600	0.150	300	0.77	0.13	47.0	28.2	21.4
	Canada Carbon	TSX.V CCB	0.280	0.355	-21	0.42	0.23	95.1	26.6	20.2
	Focus Graphite	TSX.V FMS	0.135	0.085	59	0.30	0.07	154.6	20.9	15.9
	Northern Graphite	TSX.V NGC	0.380	0.220	73	0.63	0.16	51.5	19.6	14.9
	Graphite One Resources	TSX GPH	0.085	0.075	13	0.18	0.07	213.0	18.1	13.8
	Alabama Graphite	TSX ALP	0.140	0.170	-18	0.24	0.11	119.3	16.7	12.7
	Canada Strategic Metals	TSX.V CJC	0.105	0.030	250	0.13	0.03	75.0	7.9	6.0
	Lomiko Metals	TSX.V LMR	0.035	0.035	0	0.05	0.03	179.1	6.3	4.8
	Great Lakes Graphite	TSX.V GLK	0.070	0.085	-18	0.13	0.06	101.2	7.1	5.4
	CKR Carbon 1)	TSX.V CKR	0.085	0.070	21	0.13	0.06	33.2	2.8	2.1
			US\$	US\$		US\$	US\$		US\$	
	Next Graphite 2)	OTC GPNE	0.060	0.050	20	0.12	0.01	50.4	3.0	3.0
			pence	pence		pence	pence		£	
	StratMin Global Resources	AIM STGR	1.500	2.880	-48	5.75	1.13	163.1	2.4	3.2

1) formerly Caribou King Resources; option to earn 53% interest in the Aukam Graphite Project in Namibia from Next Graphite
2) to sell 53% interest in the Aukam Graphite Project in Namibia to CKR Carbon



Syrah Resources (SYH – ASX) is an Australia-based resource company that is rapidly progressing its flagship **Balama Graphite Project** in **Mozambique, Africa**.

Balama is a 110 km² granted Mining Concession located within the Cabo Delgado province in the district of Balama in northern Mozambique.

The Project hosts the largest graphite ore reserves in the world, with a JORC compliant ore reserve of 81.4 million tonnes at 16.2% total graphite carbon (TGC) for 13.1 million tonnes of contained graphite.

A Feasibility Study completed during May 2015 confirmed that the **Balama Project** will be a first quartzite producer due to its high-grade open-pit operation which has an extremely low stripping ratio.

The processing plant will have a feed rate of 2 million tonnes per annum, and based on an average head grade of approximately 19% TGC over the first 10 years of operations, 356,000 tonnes of graphite concentrate will be produced per annum.

Commercial production is scheduled to commence in 2Q 2017.

This production profile will make **Balama** the largest producer of graphite globally and ideally positioned to meet the anticipated increase in demand from lithium battery applications, as well as servicing traditional graphite markets.

On June 16, 2016, **Syrah** provided a development update for the **Balama Project** and announced a fully underwritten A\$ 194 million capital raising to complete the funding of the Project consisting of 32 million ordinary shares at A\$ 6.05 per share, representing approximately 12.2% of the Company's undiluted share capital.

The Offer price of A\$ 6.05 represents a discount of 5.5% to Syrah's closing price of A\$ 6.40 on the ASX as at June 15, 2016 and 2.2% to the Company's 10-day volume weighted average price of A\$ 6.19.

The proceeds of the Offer will be used to complete the development of the **Balama Project** (including working capital commitments) and to fund **Syrah's** general and administrative cost requirements and provide balance sheet flexibility to allow the Company to accelerate its serial graphite strategy in response to significant market demand.

Key construction activities undertaken to date include:

- Engineering and procurement activities are well advanced and mechanical equipment and structural steel deliveries to site are now commenced.
- Process plant and infrastructure concrete works are progressing
- Notices of award issued for major construction contract (structural, mechanical and piping) and other various operations at contracts including mining, product transport and logistic, as well as fuel supply

Estimated total development cost requirements for the **Balama Project** have been revised from US\$ 144 million (CPC Engineering FEE Study) to US\$ 175 million, of which US\$ 39 million has been spent to 31 May 2016.

Estimated working capital requirements have been revised from US\$ 30 million to US\$ 47 million to provide increased flexibility during production ramp-up and provide an allowance for the timing of the tax returns.



Zenyatta Ventures (ZEN – TSX.-V) is currently developing its flagship **Albany Graphite Project** ("Albany Deposit"), a rare igneous related hydrothermal graphite deposit with the potential to produce a natural highly-purity graphite project that may compete in high-technology markets traditionally reserved for synthetic graphite.

To date, Albany is the largest and only known global deposit within the rare igneous-hosted hydrothermal ("vein") subclass graphite deposits to be in development.

Albany is located 30 kilometres north of the Trans-Canada Highway, power line and natural gas pipeline near the communities of Constance Lake First nation and Hearst, local resources and business essential to exploration activities are readily available.

Zenyatta has developed an environmentally friendly metallurgical process flow sheet that consists of grinding, flotation and caustic treatment using sodium hydroxide and has been able to achieve an extraordinary carbon purity result of >99.9% in bench-scale tests, using this proprietary and environmentally friendly purification process.

Besides the Albany Property, **Zenyatta** holds an interest in exploration licences on properties in the “Arc of Fire area” in Northern Ontario, Canada.

During the fiscal year ended 31 March 2016, **Zenyatta** had expenditures of Cdn\$ 2.56 million consisting of deferred exploration costs, equipment purchases and operating expenses.

As of 31 March 2016, Zenyatta reported Cdn\$ 20.98 million in deferred exploration costs as a result of its air borne survey, additional staking and exploration costs, drilling program, which includes Cdn\$ 1.29 million worth of cash, shares and warrants given to Cliffs Natural Resources Exploration Canada in connection with the amended Albany Agreement.

Operating activities were Cdn\$ 0.39 million negative and resulted in a decrease in cash of Cdn\$ 1.68 million.

Investing activities resulted in a decrease of cash of Cdn\$ 0.94 million.

Financing activities resulted in an increase in cash of Cdn\$ 2.67 million.

The Company recorded a loss of Cdn\$ 4.2 million for the period ended 31 March 2016.

Total equity amounted to Cdn\$ 21.45 million.

Zenyatta is actively working to target the high-purity (high-quality) synthetic graphite market. A 2012-2013 drill campaign has been completed and was used to develop an NI 43-101 compliant resource estimate.

A Preliminary Economic Assessment (PEA) was completed in June 2015.

The Technical Report authorized by Roscoe Postle Associates highlights a large and discrete graphite deposit with estimated Indicated Mineral Resources delineated to date totaling 25.1 million tonnes (“Mt”) at an average grade of 3.89% graphite carbon (“Cg”), containing 9.77 million tonnes of Cg.

In addition, Inferred Mineral Resources delineated to date are estimated to total 20.1 million tonnes at an average grade of 2.20% Cg, containing 441,000 tonnes of Cg.

These results are based on a cut-off grade of 0.6% Cg with an assumed market price of \$ 8,500 per tonne Cg.

On 1 June 2015, Zenyatta announced the results of a positive PEA report, which concluded that the **Albany project** should be advanced to the Pre-feasibility stage.

PEA highlights are:

- Open-pit, life of Mine (“LOM”) of 22 years based on less than 50% of the Indicted & Inferred Mineral Resources. Underground mining of Inferred Resources below the sill are not included in the study. The Deposit is open at depth.
- 3,000 tonne per day open-pit mine and process plant to produce 30,000 tonnes of high-purity (>99.9% Cg) graphite annually.
- Price of purified graphite @ US\$ 7,500 per tonne and operating costs of US\$ 2,046 per tonne showing a margin of US\$ 5,454 per tonne.
- Total LOM gross revenues of ~US\$ 4.8 billion and an after-tax cash average annual cash flow of US\$ 110 million.
- A base-case after-tax Net Present Value (NPV), at a 10% discount rate of US\$ 438 million yielding an after-tax Internal Rate of return (“IRR”) of 24%.

Total initial capital costs are estimated at US\$ 411.46 million of which total direct capital costs (mining, processing & infrastructure (US\$ 262.9 million, EPCM/Owners/Indirect (engineering, procurement and construction management) US\$ 68.7 million and Contingency (24%) US\$ 79.8 million.

The pricing model for the PEA was derived from an extensive detailed study of targeted market segments and industry trends that are relevant for the high-quality and high-priority graphite sector. A summary of approximate price ranges for these market segments of the graphite industry are shown for reference.

Estimated annual production of 30,000 tonnes of high-quality graphite product from the Albany Deposit represents ~7% of the 2017 market demand estimate.

Zenyatta has previously reported that preliminary testing has indicated that the performance of Albany graphite is within the range of anode materials that are presently used for lithium-ion batteries (“LIB’s”). Independent testing has also indicated that it is suitable for use in hydrogen fuel-cells and in powder metallurgy (“PM”) applications.

At this time, Zenyatta anticipates having a targeted market application segmentation which included 25-30% in LIBs, 20-25% for Fuel Cell products, 25-30% for high-purity graphite in PM and 15-30% from other applications in the list above. The Company is in discussion with end-user on other types of high-purity applications that could possible change the market segmentation and will disclose these potential at the appropriate time.

HIGH PURITY GRAPHITE MARKET Zenyatta Ventures Ltd. – Albany Project			
Market Segment	2017 Market Demand Estimate (kt)	Price Range (US\$/tonne)	Average Price (US\$/tonne)
Batteries ¹	160	4,000 -> 20,000	12,000
Powder Metallurgy ²	20	3,000 -> 12,000	7,000
Fuel Cells ³	15	5,000 -> 10,000	8,000
Conductive Polymers ³	6	3,000 -> 5,000	4,000
Carbon Brushes ³	90	3,000 -> 5,000	4,000
Nuclear ³	30	10,000 -> 35,000	23,000
Lubricants ⁴	80	3,000 -> 5,000	4,000
Super-Capacitors ³	2	5,000 -> 10,000	8,000
Graphite Artifacts ³	15	3,000 -> 10,000	7,000
Electronics ²	8	30,000 -> 40,000	35,000
Total	426		

Sources and Notes:

1. Includes lithium-ion and additives for primary and secondary batteries. Source: Roskill and BCC Research
2. Source: Roskill and end-user data provided to Zenyatta market development personnel under a confidentiality agreement
3. Source: Roskill, BCC Research
4. Volume includes only high purity (>99.9% Cg) graphite. Source: Roskill

Outlook

Zenyatta will continue with a market and business development program initiated over a year ago to further validate Albany graphite in high-purity graphite applications. Since the start of this program, the Company has had detailed conversations with more than 35 graphite end-users, academic labs and third party testing facilities in Europe, North America and Asia under confidentiality agreements.

Many of these organizations were provided a small amount of purified graphite material produced at the **SGS Lakefield site** during the development of a process flow sheet for the Albany graphite deposit pursuant to a Preliminary Economic Assessment (“PEA”). These samples will provide a good initial assessment and guidance for the potential of Albany graphite for various applications.

Zenyatta is now starting to receive feedback from several end-users and independent labs, some of which received repeat samples. Some positive news has been released within the last year related to these efforts, Information from this initial test program will be used to further define the Company’s product and market strategy and set the stage for next steps in development.

Zenyatta Ventures is included in my **2016 Shortlist of graphite investment recommendations.**

Overview of TUNGSTEN companies (by market capitalization)

29 July 2016	Trading symbol		Share price		Change in %	12 months prices		Total shares market cap.		
			Current	Year-end 2015		H	L	issued million	million local	US\$
			Cdn\$	Cdn\$		Cdn\$	Cdn\$		Cdn\$	
Almonty Industries	TSX.V	All	0.420	0.280	50	0.86	0.21	100.0	42.0	31.9
Wolf Minerals	ASX	WLF	0.120	0.230	-48	0.38	0.11	1.083.0	130.0	97.5
Carbine Tungsten	ASX	CNQ	0.030	0.030	0	0.12	0.02	418.9	12.6	9.4

Overview of TITANIUM companies (by market capitalization)

29 July 2016	Trading symbol		Share price		Change in %	12 months prices		Total shares market cap.		
			Current	Year-end 2015		H	L	issued million	million local	US\$
			US\$	US\$		US\$	US\$		US\$	
Kronos Worldwide	NYSE	KRO	5.65	5.640	0	10.05	3.94	115.9	654.8	654.8
Tronox	NYSE	TROX	6.49	3.910	66	11.85	2.79	65.0	421.9	421.9
Argex Titanium	TSX	RGX	0.08	0.035	114	0.14	0.02	152.6	11.4	8.7
Iluka Resources	ASX	ILU	7.02	6.130	15	8.20	5.01	418.7	2,939.3	2,204.5
TNG	ASX	TNG	0.13	0.140	-7	0.29	0.10	751.8	97.7	73.3
World Titanium Resources	ASX	WTR	0.04	0.020	100	0.07	0.02	463.4	18.5	13.9
Mineral Deposits 1)	ASX	MDL	0.49	0.210	133	0.74	0.18	103.7	50.8	38.1
FinnAust Mining	LSE	FAM	5.18	1.530	239	6.00	0.45	494.4	25.6	33.8
Bushveld Minerals 2)	LSE	BMN	1.63	3.500	-53	4.20	1.8	584.0	9.5	12.6

1) owns 50% of the TiZir joint venture in partnership with ERAMET of France
2) suspension of trading on April 22, 2016 due to proposed acquisition of Vametco vanadium mine and plant in South Africa



Mineral Deposits' (MFL – ASX) primary asset is a 50% interest in the **TiZir joint venture**, which owns the **Grande Côte mineral sands operation (“GCO”)** in **Senegal**, **West Africa** and the **TiZir Titanium Iron ilmenite upgrading facility (“TTI”)** in **Tyssedal, Norway**.

ERAMET of France is MDL's 50% joint venture partner in TiZir.

In the first half of 2016 ended 30 June 2016, **MDL** had an underlying net loss of US\$ 19.8 million, compared to an underlying net loss of US\$ 14.3 million in 1H2015.

TiZir achieved its first positive EBITDA of US\$ 1.8 million since completion of construction at GCO – a sound achievement since the ramp-up status of operations at TTI following the completion of the furnace reline a capacity expansion project in December 2015 and the conditions that prevailed during 1Q 2016 in commodity markets.

After recognition of a gain of the Company's investment in World Titanium Resources of US\$ 3.4 million (30 June 2015: impairment charge of US\$ 1.9 million) and the Company's share of **TiZir's** amortization of assets recognized on the acquisition of US\$ 0.5 million after tax, **MDL** reported a net loss after tax of US\$ 6.9 million (June 2015 net loss after tax of US\$ 16.7 million).

Following completion of the furnace reline and capacity expansion project, production ramp-up at TTI began in earnest in 1Q 2016, achieving first production of chloride titanium slag in early January with iron tapping recurring shortly thereafter. TTI's new product suit of high-value chloride titanium slag, chloride fins and HPPI is produced using GCO ilmenite.

All sulphite titanium slag produced prior to the furnace reline and capacity expansion project was sold during 1Q 2016 at prices closely correlated to the market price.

HPPI sales volumes were 30,400 tonnes in 1H 2016, 30% lower than 1H 2015, primarily as a result of a decrease in production caused by the scheduled shutdown in 2015 and lower levels of iron contained in GCO ilmenite now being used as feed stock in **TTI's** production process.

During 1H 2016, **TTI** launched further cost optimization initiatives to reduce operational costs and maintain the competitiveness of its products.

GCO recorded an EBITDA loss of US\$ 2.9 million in 1H 2016 compared to an EBITDA loss of US\$ 12.6 million in 1H 2015 as a consequence of increased production performance due, in part, to the operations being in ramp-up throughout 2015.

Despite the EBITDA result, **GCO** recorded its first half year of positive cash flow of US\$ 1.4 million since mining commenced in 2014.

First half production constrained by GCO's first 180 degree mine part turnaround and scheduled maintenance shutdowns of the dredge in February and June. However, a throughput rate of 7,350 tph for the month of June continued to demonstrate the ability to deliver nameplate targets,

Sales volumes were significantly higher in 1H 2016 compared to 1H 2015, primarily due to the increase in production levels during the current period. Record quarterly sales of zircon and rutile leucosene were achieved in 2Q 2016 as a result of increasing zircon yields and improving production performance of the mineral separation plant.

In line with zircon price decreases announced by major producers during 1H 2016, average zircon sales prices decreased during 2Q 2016 by around US\$ 100 per tonne compared to 1Q 2016 and fiscal year 2015.

Whilst **TiZir's** key North American and European markets have slowed, these markets are now showing signs of stability and positive signs are appearing in the European title market.

Ilmenite sales were impacted early in 2016 due to the ramp-up of operations at **TTI**. Total sales for 1H 2016, however, were 35% higher than in 1H 2015 despite production only increasing by 6.7% primarily due to the timing of ilmenite shipments to TTI and higher grade ilmenite shipments to external customers.

GCO shipped a majority of its ilmenite to **TTI** during 1H 2016, resulting in US\$ 11.0 million of revenue being eliminated from its revenue for consolidation purposes.

There was no impact on GCO's EBITDA.

During 1H 2016, **GCO** initiated a wide-ranging and comprehensive cost-cutting project to identify both cost and operational efficiencies around at maximizing sustainable operations and increasing the cost competitiveness of the operations.

TiZir's cash flow from operations in 1H 2016 was negative US\$ 24.2 million compared to negative US\$ 20.7 million in 1H 2015.

TiZir's capital expenditure reduced in 1H 2016 to US\$ 10.2 million (1H 2015: US\$ 17.0 million) primarily due to residual payables relating to the furnace reline and capacity expansion project along with sustaining capital expenditures at GCO in relation to plant optimization projects.

Funding

At 30 June 2016, **TiZir's** cash and cash equivalents were US\$ 5.1 million. Net external debt amounted to US\$ 357.6 million.

A US\$ 60 million committed facility in favor of **TiZir** (US\$ 30 million of ERAMET and MDL) has been established, which facility in its entirety has been underwritten by ERAMET.

MDL's cash and cash equivalents at 30 June 2016 were US\$ 6.7 million. The decrease in cash balances of US\$ 1.4 million during the period primarily relate to corporate administration expenditures of US\$ 2.2 million and repayment of funding provided by ERAMET of US\$ 4 million. This was offset by proceeds from the disposal of the Company's interest in WTR of US\$ 4.7 million.

ERAMET provided funding of US\$ 8.5 million to **TiZir** on behalf of MDL (US\$ 6.2 million) under the terms of the US\$ 60 million committed facility and US\$ 2.3 million under the terms of the other operational financing facilities in order to fund both operational and financing cash flows of the joint venture.

The total outstanding balance at 30 June 2016 is US\$ 7.2 million (31 December 2015: US\$ 2.5 million).

Outlook

MDL's joint venture with ERAMET will continue to focus on maximizing production at **GCO** and ramp-up activities at **TTI** in order to consolidate the benefits of integrating the two assets.

A number of optimization projects are expected to come to fruition in 3Q2016.

GCO will focus on continued improvements at its operations. There are a number of minor operational projects to be commenced in 2H 2016 which will continue to drive to maximize the operation's mining recoveries and processing yields and deliver production consistency.

The **TTI** ramp-up is proceeding well with the facility operating for periods during 1H2016 at production levels close to its expanded name plate capacity.

The focus in 2H 2016 will be to consolidate production at these expanded levels. As at **GCO**, cost reduction initiatives to ensure product competitiveness and sustainable operations continue and will increase as operations are optimized.

MDL is included in my 2016 Shortlist of investment titanium recommendations.



FinnAust Mining (FAM – AIM) announced on 8 March 2016 that it had completed the acquisition of a 60% interest in **Bluejay Mining** following consideration of the issuance of 123.9 million new ordinary shares to the Bluejay Vendors and 10 million shares at a price of 2 pence per share placed with **Western Areas**, Australia's world-class nickel producer, which currently holds an approximately 25% equity interest in **FinnAust**.

FinnAust has also been granted the remaining 40% of **Bluejay** for the sum of £ 198,071,386 new shares.

The option will be exercisable for a period of 4 years until February 2020.

The Company now holds a majority interest in the 126 sq.km high-grade **Pituffik Titanium Project** in **North Greenland** which has proven to host an unusually pure titanium occurrence.

The **Pituffik Project** comprises three target areas along a >80 km coastline historically proven to contain large and high-grade accumulations of primary Ilmenite occurring as placer deposits in the following environments:

- **Raised beaches;** containing ilmenite accumulations over widths of more than 1 km of unknown depths, along more than 20 km of coastline.
- **Active beaches;** which refer to the area seaward of the frontal dunes including the beach, tidal zones and surf zone. Historical samples from this area have returned grades of ilmenite of up to 68% with an average grade of >39%.
- **Drowned beaches;** refers to the areas seaward of active beaches. The initial survey consisted of > 300 km of wide spaced array, followed by an additional 38 line kilometres of infill and sea flow sampling.

Two primary targets identified are:

- Moriusaq – most advanced and highest grade
- Interlak – largest volume with grade upside potential

Moriusaq will be advanced first as the marine environment offers simpler and lower cost development opportunities (namely by dredging).

2016 work programme

On February 2, 2016, **FinnAust** announced results from the bathymetry (depth) and seismic profiling survey, as well as the extensive sea floor sampling programmes at the **Pituffik Titanium Project**. The initial survey consisted of 300 line kilometres, followed by a further 38 line kilometres of infill and a wider spread sea floor sampling programme.

Results demonstrate that the shallow marine environment hosts very large volumes of potentially high-grade titanium and reinforce the stated strategy to deliver a bulk sampling proof of concept production by 2017.

- Hosted within shallow, extensive and thick ilmenite rich sediments extending for >30 km in length and 1,000 metres in width
- The sedimentary horizons are on average more than 5 metres in thickness (up to a maximum thickness of 27 metres)
- These results multiply the amount of known titanium mineralization significantly
- Three sedimentary units identified in total the two most shallow sequences show visual concentrations of ilmenite the third or “high stand” sequence was not sampled during 2015, however, continues to represent an attractive exploration target even if in slightly deeper water of 20-30 metres

In May 2016, **FinnAust** announced that it had completed a photogrammetry and 3D geologic model of the **Pituffik Titanium Project**.

Also a work programme for 2016 was submitted to the Mineral Licence and Safety Authority (“MLSA”).

The work programme prepared by SRK and the Geological Survey of Denmark and Greenland (“GEUS”) is anticipated to be sufficient to generate an initial mineral inventory or resource and to deliver an initial resource calculation from the work carried out in 2016.

The Company’s strategy is focused on the production of a bulk sample “proof of concept” from the **Pituffik Property** in 2017, with the aim of ultimately generating cash flow to create a core of self-funding exploration on future acquisitions.

On 13 July 2016, **FinnAust** announced that it had been granted an extension of its existing licence to include all minerals within the shallow marine environment at Pituffik. The extended licence now includes marine extensions of titanium-rich black sands (Drowned Beaches).

Modelling suggests that this area contains ilmenite bearing sediments similar to that of the active raised beaches, but in much larger volumes.

On 3 August 2016, **FinnAust** announced the approval of the Environmental Assessment Programme, as well as the terms Agreement that is required for public hearings associated with any development of the Pituffik Project. The receipt of these approvals, which comes from the Greenland Mineral Licencing and Safety Authorization (“MLSA”), marks another critical milestone in the valuation of the Pituffik Project.

The Environmental Baseline Study, which will be carried out during August, includes collection of marine, fresh water and terrestrial samples to describe the state of the environment prior to exploitation construction and operation of the Pituffik Mine,

FinnAust is included in my **2016 Shortlist of titanium investment recommendations**.

Overview of global listed REE companies

29 July 2016		Trading symbol		Share price		Change in %	12 months prices		Total shares issued million	Market cap. million	
				Current	Year-end 2015		H	L		local	US\$
US:											
Molycorp Inc.	1)	MCPIQ	NYSE	US\$ 0.033	US\$ 0.023	43	US\$ 0.152	US\$ 0.017	259.3	US\$ 8.6	8.6
Texas Mineral Resources		TMRC	OTC US	0.170	0.180	-6	0.260	0.100	44.7	7.6	7.6
Rare Element Resources		REEMF	OTC US	0.098	0.151	-35	0.440	0.055	52.9	5.2	5.2
				Cdn\$	Cdn\$		Cdn\$	Cdn\$		Cdn\$	
Ucore Rare Metals		UCU	TSX.V	0.405	0.235	72	0.45	0.20	267.9	108.5	82.5
Canada:											
				Cdn\$	Cdn\$		Cdn\$	Cdn\$		Cdn\$	
Avalon Rare Metals		AVL	TSX	0.225	0.130	73	0.330	0.100	179.3	40.3	30.7
Commerce Resources		CCE	TSX.V	0.075	0.075	0	0.130	0.060	250.0	18.8	14.3
Eagle Plains Resources		EPL	TSX.V	0.140	0.050	180	0.170	0.045	84.3	11.8	9.0
Quest Rare Minerals		QRM	TSX.V	0.130	0.065	100	0.250	0.055	86.4	11.2	8.5
Search Minerals		SMY	TSX.V	0.080	0.050	60	0.110	0.035	132.5	10.6	8.1
Appia Energy		API	CNSX	0.200	0.010	1900	0.300	0.010	43.0	8.6	6.5
Matamec Explorations	2)	MAT	TSX.V	0.055	0.025	120	0.070	0.020	137.0	7.5	5.7
Pele Mountain Resources	3)	GEM	TSX.V	0.030	0.035	-14	0.055	0.025	209.6	6.3	4.8
Canada Rare Earth	4)	LL	TSX.V	0.025	0.025	0	0.040	0.015	166.9	4.2	3.2
Int. Montoro Resources	3)	IMT	TSX.V	0.030	0.035	-14	0.075	0.020	75.2	2.3	1.7
Canadian Int. Minerals		CIN	TSX.V	0.040	0.035	14	0.130	0.010	46.9	1.9	1.4
Medaillon Resources		MDL	TSX.V	0.025	0.035	-29	0.055	0.020	73.9	1.8	1.4
Cache Exploration		CAY	TSX.V	0.120	0.100	20	0.180	0.055	7.8	0.9	0.7
Australia:											
				A\$	A\$		A\$	A\$		A\$	
Lynas		LYC	ASX	0.080	0.100	-20	0.140	0.030	3,488.0	279.0	209.3
Alkane Resources	5)	ALK	ASX	0.240	0.230	4	0.290	0.180	496.9	119.3	89.4
Hastings Technology Metals		HAS	ASX	0.080	0.070	14	0.100	0.060	473.8	37.9	28.4
Northern Minerals	3)	NTU	ASX	0.070	0.080	-13	0.220	0.060	501.7	35.1	26.3
Arafura Resources		ARU	ASX	0.070	0.060	17	0.090	0.040	441.3	30.9	23.2
Western Europe:											
Sweden:											
				Cdn\$	Cdn\$		Cdn\$	Cdn\$		Cdn\$	
Tasman Metals		TSM	TSX.V	0.325	0.260	25	0.540	0.090	66.1	21.5	16.3
Greenland:											
				A\$	A\$		A\$	A\$		A\$	
Greenland Min. and Energy	6)	GGG	ASX	0.030	0.030	0	0.060	0.020	874.1	26.2	19.7
Central Asia:											
Kyrgyzstan:											
				Cdn\$	Cdn\$		Cdn\$	Cdn\$		Cdn\$	
Stans Energy		HRE	TSX.V	0.015	0.015	0	0.040	0.010	168.4	2.5	1.9
1) announced execution of a restructuring support agreement with creditors on June 5, 2015; court approved \$ 130 million DIP Financing on July 20, 2015											
2) also gold and base metal assets											
3) also uranium assets											
4) vertically integrated REE business											
5) also gold producer											
6) world's largest undeveloped multi-element occurrence (REE - uranium - zinc)											

29 July 2016

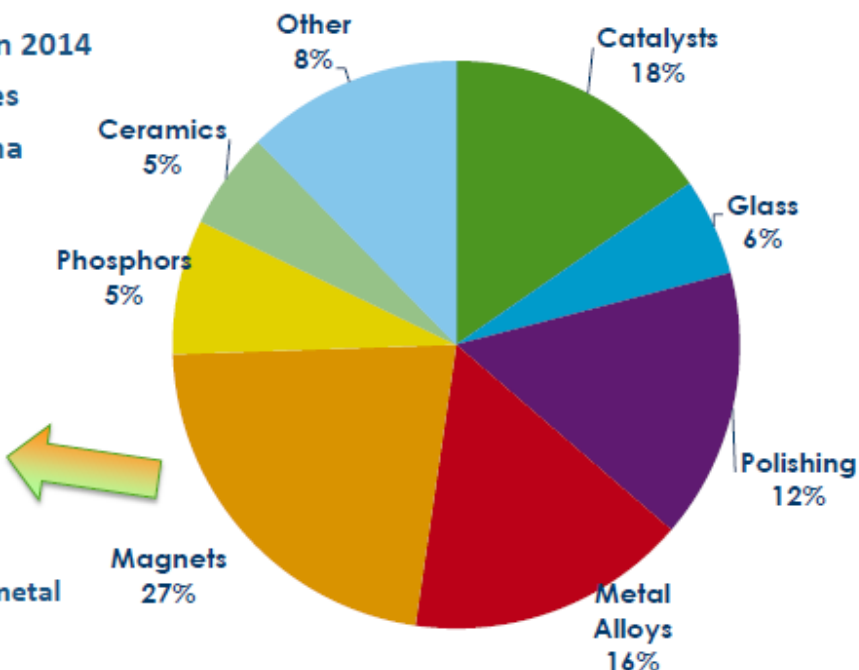
Africa:	Trading symbol	Share price		Change in %	12 months prices		Net shares issued million	Market cap. million		
		Current	Year-end 2015		H	L		local	US\$	
Tanzania:										
Peak Resources	8) PEK	ASX	A\$ 0.060	A\$ 0.090	-33	A\$ 0.090	A\$ 0.040	470.8	A\$ 28.2	21.2
Montero Mining and Exploration	9) MON	TSX.V	Cdn\$ 0.035	Cdn\$ 0.030	17	Cdn\$ 0.080	Cdn\$ 0.005	71.0	Cdn\$ 2.5	1.9
Madagascar:										
Tantalus Rare Earths	TAEN	Dusseldorf	Euro 1.120	Euro 2.500	-55	Euro 11.000	Euro 0.010	3.3	Euro 3.7	4.1
Kenya:										
Pacific Wildcat Resources	10) PAW.H	TSX.V	Cdn\$ 0.015	Cdn\$ 0.005	200	Cdn\$ 0.015	Cdn\$ 0.005	295.1	Cdn\$ 4.4	3.4
Malawi:										
Globe Metals and Mining	11) GBE	ASX	A\$ 0.020	A\$ 0.030	-33	A\$ 0.030	A\$ 0.020	469.7	A\$ 9.4	7.0
Mkango Resources	MKA	TSX.V	Cdn\$ 0.070	Cdn\$ 0.045	56	Cdn\$ 0.105	Cdn\$ 0.030	71.1	Cdn\$ 5.0	3.8
Namibia:										
Namibia Rare Earths	NRE	TSX.V	Cdn\$ 0.085	Cdn\$ 0.045	89	Cdn\$ 0.170	Cdn\$ 0.035	77.8	Cdn\$ 6.6	5.0

7) TSX delisting effective on September 30, 2015; still listed on US OTC
8) also gold projects in Tanzania and Australia
9) also phosphate assets South Africa
10) also tantalum mine in Mozambique and gold-silver project in Nevada; listing changed to US OTC on November 25, 2015
11) also graphite project
12) share consolidation 3 for 1 on June 15, 2016

REE Demand 2016 by Application

- US\$3-5B Global market
- 136,000t Annual consumption 2014
- 3-5% Annual growth estimates
- 85-90% REE produced by China

- Permanent magnet dominant consumer and growth ~ 8% pa
- Annual magnet market ~US\$20B
- Major use for Nd, Pr, Dy and Tb
- Growth in other REs for special metal alloys and ceramics



Source: IMCOA



Alkane Resources (ALK – ASX) is a multi-commodity company focused on the Central West region of **New South Wales (NSW)**, **Australia**. Currently, **Alkane** has two advanced projects, the **Tomingley Gold Operations (TGO)** and the nearby **Dubbo Zirconia Project (DZP)**.

TGO has been operational since February 2014 resulting in the generation of cash inflows from the sale of gold. Cash flow from the TGO has provided the funding to maintain the project development pipeline and will assist with the pre-construction development of **DZP**.

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 ore bodies are now incorporated into the life-of-mine schedule.

The NSW Planning Assessment Commission granted development approval for the **DZP** on 28 May 2015 and on 24 August 2015 **Alkane** 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 **DZP** will make **Alkane** a strategic and significant world producer of **zirconium**, **hafnium** and **rare earth products** when it commences production in 2018.

On July 15, 2016, **Alkane** announced its quarterly activities report to 30 June 2016. The quarter finished an excellent operating year for **TGO** despite persistent heavy rain during the last two months with production close to guidance.

Gold produced at TGO amounted to 18,064 ounces. Site operating costs were A\$ 1,009/ounce and total operating costs (AISC) of A\$ 1,149/ounce.

Gold sales amounted to 17,733 ounces for revenue of A\$ 29.4 million at an average price of A\$ 1,658/ounce.

At 30 June 2016 63,900 ounces gold were hedged at an average forward price of A\$ 1,690/ounce.

Site net operating cash inflow for the quarter after site operating expenses and development expenditures was A\$ 9.0 million.

Production for fiscal year 2016 ended 30 June 2016 was within guidance at 67,812 ounces with site costs of A\$ 1,124/ounce and AISC of A\$ 1,256/ounce.

Revenue for fiscal year 2016 was A\$ 109.1 million generating a site net operating cash flow of A\$ 27.6 million

In August 2015, **Alkane** completed a Front End Engineering Design (FEED) with the capital estimate for the **DZP** at A\$ 1.3 billion (US\$ 0.97 billion), including a contingency of A\$ 103 million.

The **DZP** has strong economics with anticipated production revenue of around US\$ 17/kg, with costs of approximately UA\$ 8/kg. Capital intensity is low at US\$ 38kg of annual product.

Annual revenue has been estimated to be approximately A\$ 580 million, with operating costs of A\$ 280 million, including a \$ 320 million per annum EBITDA, 20 year Net Present Value of A\$ 1.22 billion and an Internal Rate of Return of 17.5%.

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 optimization and test results obtained at laboratory scale, and to produce additional products for customers' certification.

Discussions continued with **Vietnam Rare Earth JSC (VTRE)** following signing of the Letter of Intent (LOI) to process AZL's rare earths concentrate produced to maximise the value of VTRE's existing facilities.

Finance

On 23 May 2016, **Alkane** closed a 1 for 5 share entitlement issue to all eligible shareholders at a price of A\$ 0.20 to raise approximately A\$ 16 million. Acceptance was about 75%, with the remaining 25% having been placed by **Petra Capital** at the same price to institutional and professional investors, with those new shares issued at 7 July 2016.

During the quarter some A\$ 6.9 million was spent on the production, with the major position related to key land purchase, all of which have now been completed, taking the total site area to 3,500 acres.

On 5 May 2016, **TGO** has entered into a working capital facility for A\$ 14.0 million with **Macquarie Bank**. The facility comprises a loan facility of A\$ 7 million, repayable by 30 June 2017; a performance bond facility of A\$ 7 million repayable by 29 September 2017; and an A\$ gold hedging facilities facility of 72,663 ounces, utilised as at 30 June 2016, with 63,900 ounces of gold at an average forward price of A\$ 1,690/oz to be delivered over the period of 10 December 2017 and 12,000 ounces of A\$ call options expiring in equal portions in December 2017 and March 2018 at an average striking price of A\$ 1,771/oz.

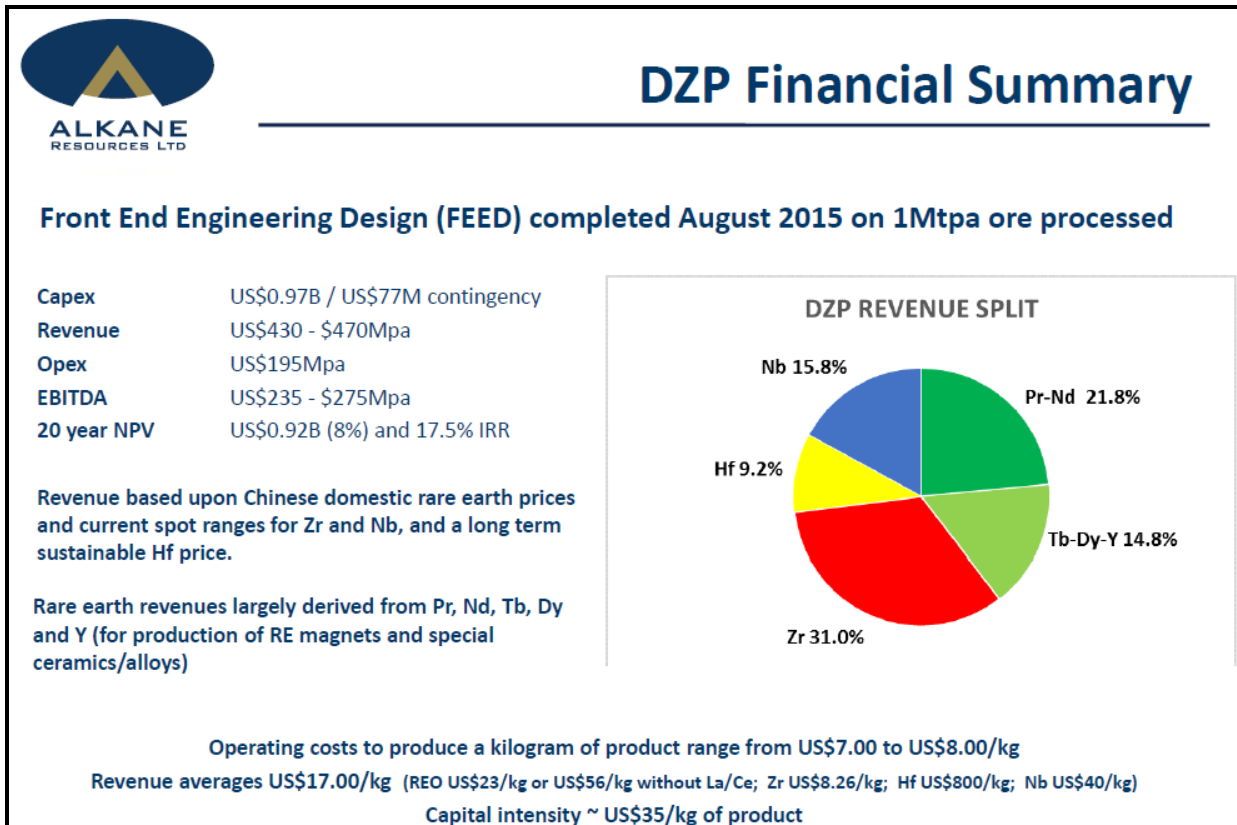
As a result of securing the Macquarie facilities, **Alkane** repaid in full the existing A\$ 4.0 working capital facility during the quarter.

Alkane's cash and bullion on hand at 30 June 2016 increased by A\$ 8.8 million to A\$ 29.8 million, comprising cash of A\$ 24.5 million and bullion on hand valued at A\$ 5.3 million.

In fiscal year 2016 ended 30 June 2016 net operating cash flow amounted to A\$ 12.3 million. Net investing cash outflows were A\$ 14.8 million. Net cash flow related to financing activities was A\$ 12.1 million.

Estimated cash outflows for the quarter ending 30 September 2016 are A\$ 30.4 million of which: Exploration and evaluation A\$ 4.0 million; development A\$ 8.3 million; production A\$ 16.5 million; administration A\$ 1.6 million.

Alkane Resources is included in my 2016 Shortlist investment recommendations.



2016 SHORTLIST of REE and Strategic Metals/Special Minerals as per 29 July 2016

Company	Trading symbol		Share price		Change in %		Market cap. (million)		Market cap. (in million)		Change MC in % 2016/2015
			29 July 2016	Year-end 2015	local	US\$	29 July 2016	year-end 2015			
REE companies (8)											
			<i>US\$</i>	<i>US\$</i>			<i>US\$</i>	<i>US\$</i>	<i>US\$</i>		
US (1)											
Rare Element Resources	REEMF	OTC US	0.098	0.151	-35	-35	5.2	5.2	8.0		-35
Canada (1)											
Avalon Rare Metals	AVL	TSX	<i>Cdn\$</i> 0.225	<i>Cdn\$</i> 0.130	73	77	<i>Cdn\$</i> 40.3	30.7	15.4		99
Australia (3)											
Alkane Resources	ALK	ASX	<i>A\$</i> 0.240	<i>A\$</i> 0.230	4	4	<i>A\$</i> 95.2	70.5	67.7		4
Northern Minerals	NTU	ASX	0.070	0.080	-13	-13	35.1	26.3	27.3		-4
Arafura Resources	ARU	ASX	0.070	0.060	17	17	30.9	23.2	18.8		23
Greenland (1)											
Greenland Minerals and Energy	GGG	ASX	<i>A\$</i> 0.03	<i>A\$</i> 0.03	0	0	<i>A\$</i> 26.2	19.7	16.8		17
Sweden (1)											
Tasman Metals	TSM	TSX.V	<i>Cdn\$</i> 0.325	<i>Cdn\$</i> 0.26	25	26	<i>Cdn\$</i> 21.5	16.3	12.4		31
Tanzania (1)											
Peak Resources	PEK	ASX	<i>A\$</i> 0.060	<i>A\$</i> 0.09	-33	-34	<i>A\$</i> 28.2	21.2	24.8		-15
Lithium companies (4)											
Argentina (1)											
Galaxy Resources	ASX	GXY	<i>A\$</i> 0.470	<i>A\$</i> 0.12	1)	292	300	<i>A\$</i> 605.4	454.0	107.7	322
Altura Mining	ASX	AJM	0.170	0.17	2)	0	0	209.0	157.0	38.0	0 2)
Australia (1)											
Neometals	ASX	NMT	0.400	0.15	167	171	225.2	168.9	57.4		194
US (1)											
Pure Energy Minerals	PE	RSX.V	<i>Cdn\$</i> 0.860	<i>Cdn\$</i> 0.56	54	57	<i>Cdn\$</i> 56.9	43.3	20.0		117
1) to be removed as at 1 August 2016											
2) included as at 1 August 2016											
Graphite companies (3)											
Tanzania/Australia (1)											
Magnis Resources	ASX	MNS	<i>A\$</i> 0.830	<i>A\$</i> 0.390	113	116	<i>A\$</i> 358.2	268.7	95.9		180
Tanzania (1)											
Kibaran Resources	ASX	KNL	0.240	0.170	41	42	45.5	34.1	21.0		62
Canada (1)											
Zenyatta Ventures	TSX.V	ZEN	<i>Cdn\$</i> 0.690	<i>Cdn\$</i> 0.88	-22	-23	<i>Cdn\$</i> 41.7	31.7	35.2		-10
Tungsten companies (2)											
England (1)											
Wolf Minerals	ASX	WLF	<i>A\$</i> 0.120	<i>A\$</i> 0.23	-48	-49	<i>A\$</i> 130.0	97.2	135.9		-28
Spain (1)											
Almonty Industries	TSX.V	AI	<i>Cdn\$</i> 0.420	<i>Cdn\$</i> 0.280	50	53	<i>Cdn\$</i> 42.0	31.9	17.6		81
Titanium companies (2)											
Senegal / Norway (1)											
Mineral Deposits	ASX	MDL	<i>A\$</i> 0.49	<i>A\$</i> 0.21	133	136	<i>A\$</i> 50.8	38.1	18.9		102
Greenland (1)											
FinnAust Mining	LSE	FAM	<i>GBP</i> 5.18	<i>GBP</i> 1.53	239	315	<i>£</i> 25.6	33.8	10.1		235
Market performance 2016 (in US\$) as at 29 July 2016: 64.4%											
Market capitalization increase 2016 (in US\$) as at 29 July 2016: 76.4%											