

# Lithium Australia in the great global lithium race

Lithium Australia NL (ASX: LIT) (“Lithium Australia” or “LIT”) is perhaps one of the busier entities in the great global lithium race. Knowing that this game is more time sensitive than most, it has continually forged onward with acquisition and development of new sources and technologies with the aim of becoming one of the world’s great lithium suppliers. Australia is shipping product to China more frequently each month, and Lithium Australia is perched firmly on the edge of the battery market boom.

The company has outlined that it intends to make a conditional off-market scrip bid of A\$23.8 million for all of the fully paid shares in fellow Western Australia lithium explorer and developer, Lepidico. The companies are currently engaged in litigation relating to the use of their processing technology, but LIT considers it distracting and expensive, and although Lithium Australia is confident of a positive outcome, their time and resources would be better employed in advancing their projects and technologies in unison.

Adrian Griffin, managing director for LIT, had this to say:

*“It is the synergies in aspirations and assets that make combining the two companies the perfect opportunity for all shareholders.*

*The combined entity is likely to be significantly more attractive for investors and financiers as well as a global leader in lithium processing at a time of unprecedented lithium demand.”*

There was only one producing lithium mine in Western Australia last year, but an estimated \$500 million of investment means that up to seven mines could be churning Australia’s battery

dust by early 2018. New shipments are leaving for China with some regularity these days, and an edge is necessary to drag as many pits to production as possible before the price is too heavily affected.

The company put their Sileach™ process to the test recently and managed to exceed quality specifications for the production of lithium carbonate. Operations undertaken at ANSTO Minerals (a division of the Australian Nuclear Science and Technology Organisation) have demonstrated the production of battery grade lithium carbonate. The lithium carbonate feed was produced by Lithium Australia's Sileach™ pilot plant, processing ore from Lepidolite Hill in Western Australia. Sileach™ is a hydrometallurgical process that is aimed at becoming a cheaper alternative for the recovery lithium from hard rock mining sources such as spodumene, pegmatite and other silicates.

LIT also began using airborne geophysics data in an attempt to identify buried lithium-tantalum bearing pegmatites at their Mt Day and Lake Johnston projects, located 420 kilometres east of Perth, while expanding their Australia-wide lithium grab by lodging applications to hunt for lithium on Kangaroo Island in South Australia. The area features a small mining claim which covers the abandoned Dudley Mine area, a collection of shallow pits and shafts in the pegmatite, lies within the application. Previous exploration has focused on kaolin and gem quality tourmaline with no exploration for lithium being recorded. These efforts continue to add to the company's strong domestic lithium holdings throughout Western Australia, Northern Territory and Queensland.

Adrian Griffin, Managing Director, commented:

*"The South Australia campaign adds to Lithium Australia's strong and expanding project suite and technological alliances over 2017 with private and government stakeholders alike as well as its 100% ownership of the versatile*

*Sileach™ processing technology and access to a number of other leading technologies.”*

Lithium Australia is trading up over the past month, closing at \$0.175 on the 10th of February from \$0.16 on the 13th of January.

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## **Tasman Metals to play a crucial role in addressing Europe's rare earth supply concerns**

✘ China's dominance in the rare earth metals world market continues to cause concern in the European Union and future supplies could be threatened if a competitive option is not found. Tasman Metals Ltd. (TSXV: TSM | NYSE MKT: TAS), already considered a leader in the EU, is certainly one of the potential alternatives. The EU Commission has therefore formed ERECON, European Rare Earths Competency Network to monitor the supply of rare earths within the Union. Tasman, the single European based (but Toronto listed) mining company included in elected to participate in its expert group, can claim the only NI 43-101 compliant rare earths resource in mainland Europe featuring one of the highest concentrations (50%) of heavy rare earths (HREE) vs. total rare earth oxides (TREO) and it is especially rich in yttrium and dysprosium.

Tasman's project is located in a politically stable, mining friendly jurisdiction thereby ensuring a reliable and steady supply of the strategic metals. The company's projects, Norra Karr and Olserum, in Sweden are two of the most important

known HREE deposits of dysprosium, yttrium, terbium and neodymium. Tasman strives to provide a safe, sustainable and responsible development of its mineral projects in Scandinavia. Norra Karr is located near a very important highway and thus has the necessary infrastructure requiring no major investments. The power supply is also well within reach. Tasman has received all relevant mining concessions and the company can start to prepare the launch of production, which will hopefully take place between 2018 and 2019; it has also received an exploration permit of up to 500 tons of ore at Norra Karr.

Tasman recently announced that it has successfully produced a heavy rare earth (HREE) enriched concentrate at its Norra Karr project, representing a metallurgical milestone for Tasman and the last step toward creating its flow chart. The processing and hydrometallurgical tests were performed in various internationally recognized laboratories and data delivered in a quality sufficient for a pre-feasibility study currently under elaboration (PFS). Norra Karr is one of the world's most significant deposits of heavy rare earths, which are characterized by a simple and calculable mineralogy. Thanks to a relatively 'undemanding' flow diagram, conventional mining and processing facilities can be adopted using commonly used chemicals production is possible. Tasman has chosen sulfuric acid, because it is relatively inexpensive and widely available in Sweden and there is a rail link that runs just 25 km from the Norra Karr project, sulfuric acid is already transported in larger quantities. Tasman has performed extensive metallurgical process tests and has achieved a significant milestone with the precipitation of a product of high purity HREE and it now has a solid processing method. Tasman commissioned Australia's ANSTO in 2013 to optimize the hydrometallurgical flow sheet for Norra Karr that had already been started by other firms. ANSTO is an internationally recognized, leading analyst firm, which specializes in hydrometallurgical investigations of rare earth metals and

similar projects.

Tasman's progress comes at a crucial time as Europe's industrial powers have expressed concerns about the security of rare earth supplies in Europe. ERECON has served as a platform to address such issues as primary sources of rare earths production, resource efficiency and alternatives to raw materials in the form of recycling. Mark Saxon, Tasman's CEO, was one of the distinguished speakers at the ERECON conference in Milan last October 16. ERECON brought together experts and representatives from the most promising companies working toward improving the rare earth supply for Europe and the rest of the world. The timing could not have been more ideal as China has increased its efforts to limit the illegal mining and export of rare earths, launching a five-month campaign, especially designed to prevent a further drop in prices. From October to the end of March 2015 China will track down illegal and smuggling rare earth operations, setting severe fines – and criminal charges – against offenders. Provincial and municipal governments will monitor the efforts but there is the risk that in this latest effort by Beijing to attempt a reform of its rare earth industry may lead to stricter production quotas with allotments granted to an ever smaller number of authorized companies. The People's Republic is believed to have about 40% of the world's known rare earth reserves, addressing more than 90% of global demand. The United States, Japan and Europe have filed a complaint with the WTO (World Trade Organization) in 2012 insisting that China's production and export quotas limiting the supply for the global market gave Chinese companies an unfair competitive advantage.

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# Rare Element Resources expects to be able to challenge China's hold on the rare earth market

**Rare Element Resources delivers promised improvements in Pre-Feasibility Study** – Rare Element Resources ('RER', TSX: RES | NYSE MKT: REE) has integrated the series of improvements at the Bear Lodge Project in Wyoming, promised throughout the past months, in its 2014 Pre-Feasibility Study (PFS), which was published on August 26. Highlights from the PFS include a low initial CAPEX of USD\$ 290 million; increased cash flow and a 2.9-year payback from the start of production; a 45-year Project life based on an expanded Measured and Indicated mineral resource with the potential for an additional high-grade and heavy rare earth (HREE) resource exploration targets. RER has also developed and refined a proprietary recovery process that can deliver 97% (or higher) purity total rare earth oxide (TREO) concentrate. The PFS also states that average annual production will exceed 7,500 tons of TREO concentrate. The PFS activities have also aimed to advance the various permits, including the preparation of a draft Environmental Impact Statement (EIS). RER has also received favorable feedback for some of its concentrate material sent to potential customers for evaluation.

The Bear Lodge project, located in the Black Hills, Wyoming, near Sundance, contains one of the richest REE deposits in North America. It has heavy rare earth elements (HREE) as well as critical rare earth oxides (REE oxides with the greatest value) in all deposits. The drilling results, moreover, suggest that all resource could see additional expansion both in the current deposit and in surrounding target areas. During the test phase in 2012, RER worked with the Australian Nuclear

Science and Technology Organization (ANSTO) to improve the purification process, which will enable the Company to deliver 'mid-weight' REEs such as samarium, gadolinium, terbium, dysprosium and europium as well as neodymium-praseodymium (aka: didymium), cerium and lanthanum. RER expects to be able to challenge China's hold on the REE market. The changing nature of the Chinese REE industry, now experiencing a period of 'introspection' as more controls and environmental regulations, should allow RER to reach success sooner. The Black Hills near Sundance, where RER has its Bear Lodge property contain one of the richest REE deposits in North America.

The State of Wyoming is also an ideal location, given this State's favorable mining regulatory climate. Indeed, the State and the University of Wyoming have been promoting the identification and study of REE mining prospects. The State itself is considering REE's as a strategic asset for economic growth and rather than discouraging – as some have over environmental concerns – is encouraging the establishment of REE processing facilities within its jurisdiction. The strong regulatory regime, which puts an emphasis on responsible and clean practices, suggests that Wyoming could attract processing contracts from beyond the State and beyond the United States themselves. Wyoming is also rich in energy resources, which makes it cheaper to mine and process the minerals. RER believes that its Black Hills deposit is one of the very best in the world and that the combination of geology, existing infrastructure and favorable regulations make it more appealing than some geologically superior but more remote deposits in Canada's Northwest Territories.

RER is evidently very well placed to take advantage of this favorable context and its project, while also aimed at uncovering potential gold resources, is mainly interested in the rare earths. While, RER is not at production stage – therefore it has no revenue yet – it has a solid cash position

and no debts. The PFS suggests that RER has one of the most auspicious REE mining propositions in North America as it heads toward a targeted production date in 2016. Meanwhile, as the Bear Lodge Project advances through the next phase, the rare earth market has started to show some signs of improvement. The Chinese government has started to stockpile rare earths again, building the necessary pressure to lift prices. China's major REE companies have been asked to rationalize production and apply greater environmental controls, which has impacted – that is raised – their cost structure. Labor costs are also increasing as China's economic growth gradually spurs changes at all levels of society. In other words, prices of REE's will have to be increased just so the Chinese can absorb the new environmental rules and related costs.

Chinese producers, which account for some 85-90% of global rare earth production and 65% of consumption, will inevitably have a great impact on the overall market even as the miniaturization trend can only intensify, increasing the needs for smaller and ever more powerful electric motors, which require neodymium, dysprosium, terbium and praseodymium. Even the 'ho-hum' lanthanum could experience a 'second wind' thanks to the automotive market in China, where catalysts will see rising demand, especially in response to the use of heavier crude oils to refine gasoline and other fuels. And then there is that old human drive toward innovation, which will generate an entirely fresh set of applications and technology, which may well require more rare earths for magnets and beyond, changing the entire market dynamic, now dominated by demand to one driven by supply where magnets and related materials are concerned.

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# Alkane – With the Stamp of Approval from Fidelity

While there are some mining companies that are chameleon-like and change their colours depending on the mining climate, there are some companies that are multifaceted because it's just the way their deposits are, good examples being Texas Rare Earths and Alkane.

Alkane's Dubbo Zirconia Project (DZP) was around before the REE boom erupted and is still here after the tide has gone out. Part of its longevity is that it is multi-metal in nature with zirconium (hafnium), niobium (tantalum), yttrium and rare earth elements. It also helps that it is one of the world's largest in-ground resources of rare metals and rare earths. Due to the size of the resource, the mine is expected to process 1,000,000 tonnes of ore throughput per year over a period of 70 years or more.

A demonstration pilot plant at ANSTO (the research complex on the outskirts of Sydney) has been running since 2008, allowing Alkane to prove up the DZP's technical and financial viability. The pilot plant aided in the development of a working flowsheet and verified resource extraction and processing methods for the complex mineralogy.

It was these attractions that lured in Shin-Etsu, the massive Japanese chemicals combine that ranks 9th in the world in that space, as the strategic partner in the development. Shin-Etsu is the operator of Japan's only large scale separation and refining plant for rare earths. Australian Zirconia Limited, a wholly owned subsidiary of Alkane, inked the non-binding MOU with Shin-Etsu in June 2012. AZL will produce a suite of separated heavy and light rare earths using the rare earth concentrates from the DZP.

A toll processing agreement will use Shin-Etsu Chemical's

technology to process 100% of DZP heavy and light rare earth concentrates in Japan (or other agreed location) to produce high purity separated rare earth oxides.

Under the terms of the agreement, Shin-Etsu will have priority to purchase at commercial prices a quantity of the rare earths that they toll process under the agreement via an initial five-year offtake agreement. The remaining available quantity of separated rare earths will be sold to other companies with which AZL has been discussing off-take arrangements.

### **The Market Dynamics**

One of the most intriguing things on this company has been its steadily declining price over the last twelve months as the mining market has been improving (in a fashion). Alkane, it might be noted, has a US listing for its ADRs (OTCQX: ANLKY) where it trades regularly if not voluminously. In the Australian market though they stock has a lively demand with a three month daily average trading volume of just over 800,000 shares.

When asked recently why Alkane was heading in the opposite direction to the rest of the REE pack after having looked so robust at the start of the year, we were tempted to give the stock answer of "more sellers than buyers". Some though might see darker forces at work.

The current loaned (read "short") position according to ASX records is a mere 0.29%.



### **Dark Pools**

The stock price of Alkane has not behaving like that of company that is cashed up (from a recent financing) and with Fidelity just coming on board. Some have speculated that dark pool trading may be behind Alkane's flailing share price

performance because there is no good rationale evident from its business strategy for it to trade consistently lower.

Rule changes were brought in by the ASIC (the Australian Securities & Investment Commission) in May 2013 to try and restore order to this chaos and liquidity leakage. The result was a collapse in volumes moving through dark pools, according to a report in the newspaper, The Australian in October 2013. It quoted figures from financial data provider IRESS and the ASX showing that traditional “upstairs” or block trading venues increased their share by a fifth to 16.2% in the five months after regulations designed to drive trading activity back to the public market were introduced. Much of their gain came at the expense of broker-operated dark pools whose market share shrank from 11.1% to just 4.5%.

That having been said it does not necessarily mean that individual stocks, like Alkane, have not been tumbled by unscrupulous players.

### **Recent Financing**

In mid-June of 2014 Alkane undertook a placement of 40 million shares priced at \$0.26 each to raise \$10.4 million. Funds from this placement will be used to supplement existing cash reserves to progress the Dubbo Zirconia Project front-end engineering design. Funds were also going to be used to further DZP product development, enhancement and marketing; the development and acquisition of certain water resources for the DZP and certain acquisitions of land within the DZP area.

### **Heavyweights on Board**

A share register is about the only place where a heavy weight won't sink your boat. That makes more intriguing the ongoing weakness at Alkane Resources as it was only in June that the company received a notice of initial substantial shareholding from one of the world's largest asset managers, Fidelity Worldwide Investment, which declared a 10% stake in the

company. It had bought shares between the 3rd of March and the 16th of June at prices ranging from \$0.26 to \$0.40. The lower end price was when it participated in the aforementioned placement.

The interesting thing is that Fidelity as a group is not known to us as an investor in mining juniors. Fidelity Worldwide Investment manages over US\$274.9 billion for private individuals and institutions as at 31 March 2014. Clearly something must have piqued the behemoth's interests in Alkane over the vast heaving mass of more pedestrian mining stories.

However we would also note that around the same time the London asset manager, Coupland Cardiff (which was recorded as holding 5.3% in May) ceased to be a major holder.

It also might be noted that the largest shareholder (25% in May) is Ian Gandel who is also a non-executive director. The Gandel name is synonymous with various leading retail fashion chains in Australia. He has been a director of the Gandel Retail Trust and has had an involvement in the construction and leasing of Gandel shopping centres. Through his private investment vehicles, he has been an investor in the mining industry since 1994. Gandel Metals Pty Ltd is currently a substantial holder in a number of publicly listed Australian companies and now holds and explores tenements in its own right in Victoria, New South Wales and Western Australia. He is also a non-executive director of Gippsland Limited and non-executive chairman of Octagonal Resources Limited and Alliance Resources Ltd.

## **Conclusion**

Alkane is a paradox in a gently improving market for Rare Earths and specialty metals as it tests new lows. This is despite managing to bring on board sizeable financing and one of the world's largest institutional investors and yet the stock is testing its 12-month lows.

As one of the few REE stories to catch (and retain) a Japanese end-user/partner Alkane also stands out from the pack. Many REE companies gained the faith of the Japanese consumers but then lost it through inaction and promotional stunts using the partners' names with the partners seeing no output or even progress.

Whatever the temporary price setback might be the Rare Earth race will ONLY go to the serious players and Alkane with its Japanese partner is up there amongst the sector leaders.

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## **Tasman Metals ever closer to achieving a European heavy rare earth supply chain**

✘ Tasman has the only NI 43-101 compliant rare earths resource in mainland Europe featuring one of the highest concentrations (50%) of heavy rare earths (HREE) vs. total rare earth oxides (TREO), especially rich in yttrium and dysprosium. The project is backed by excellent infrastructure and it is based in one of the most politically stable regions of the world.

Last July, Tasman Metals Ltd ("Tasman", TSXV: TSM | NYSE MKT: TAS) announced that it has obtained a heavy rare earths concentrate as part of the hydrometallurgical testwork at its Norra Karr heavy rare earths project in Sweden. Tasman said that this is the last step "in defining the Norra Karr flowsheet", representing a major achievement and that the related beneficiation and hydrometallurgy testwork has delivered enough quality data to help complete the ongoing Norra Karr Pre-Feasibility Study (PFS). Investors have been

pleased by Tasman's progress in 2014. Last March, Tasman's shares almost hit CAD\$ 2.00/share, hovering at around the CAD\$ 1.4/share level throughout most of the spring and hitting a low of about CAD\$ 1.10 in June. It is now trading in the CAD\$ 1.12-1.15 range, which is still higher than the 200 day average of CAD\$ 1.10/share. Tasman's potential remains high and the preparation of the HREE concentrate will help to generate the flow chart for the Norra Karr project, leading up to the all important production phase.

Norra Karr is one of the world's richest deposits of heavy rare earths. They have the additional benefit of being characterized by a relatively simple mineralogy, which allows for a less 'intrusive' than expected metallurgy, requiring little more than conventional processing facilities and readily available and commonly used chemicals. Indeed, the ore at Norra Karr – eudialyte – responds well to crushing and grinding using readily available equipment. Using a single-phase magnetic separation courtesy of equipment manufacturer Metso Minerals, tests have suggested that it is possible to raise the rare earths content to over 86% "in less than 35% of the original mass", eliminating the need for flotation. Magnetic separation systems are sufficient with the advantage that no chemical processing is required. Meanwhile, the Australian ANSTO Minerals has performed sulfuric acid leaching hydrometallurgical research. ANSTO chose sulfuric acid because it is relatively inexpensive and widely available in Sweden; moreover, the Norra Karr project is located just 25 km from a railway line used for the bulk transport of sulfuric acid. The relatively simple magnetic separation allows for a reduction of the amount of sulfuric acid needed to separate the REE concentrate. SO far the testing has revealed that the very high in demand dysprosium (Dy) accounts for as much as 4.8% of the REE content at Norra Karr; other notable concentrations include high grade zirconium (Zr), hafnium (Hf), niobium (Nb) and yttrium (Y).

✘ The fact that Tasman Metals is operating in Sweden is a significant bonus because of that country's highly predictable mining regulatory framework. Indeed, if anything, the Swedish government has become even more generous in approving exploratory drilling, despite the fact that some environmentalist organizations have become more vociferous on trying to limit mining activity. In the last week of July, there were highly publicized protests along the shore of Lake Vattern, close to Tasman's project. These protests have been frequent and regular but the mining regulatory bodies have never threatened license repeals or other punitive or restrictive measures. In Sweden, mining concessions – provided the Company has obtained all applicable environmental permits as Tasman has done – have been very tough to challenge. In fact, the Swedish Mining Inspectorate has become more generous in granting permits: between 2004 and 2009, it approved 85 percent of all exploration applications according to its statistics; in the past five years, that proportion has risen to 90 percent. At Norra Karr, it would appear that the many Swedes who use smart phones, laptops, electric cars, digital cameras and a host of other devices requiring rare earths are not afraid to realize that the necessary metals must be extracted 'from somewhere'.

Tasman is one the keys to achieving a more European rare-earth supply chain. Moreover, the Russian-Ukrainian crisis – and related sanctions – have led many European investors to be less concerned about a negative impact on global economic growth dynamics and more aware that raw material prices are increasing in price, benefiting from the uncertainty. Tasman Metals says there are some 70 million tons of ore at its Norra Karr property and with an annual mining rate of 1.5 million tons a year; the company expects the mine could run 40 years.