

Talga's Graphene Focus Paying Massive Dividends

After generating some of the best graphite results ever seen, Talga Resources Ltd. (ASX: TLG) ("Talga") have secured deals with two graphene giants to provide essential materials for some of the world's most ground-breaking new developments. Graphene has been flagged by as a revolutionary technology capable of opening a multitude of new markets, and Talga has the people, resources, and now the commercial go-ahead to be a true leader in their emerging field.

The Deals

Talga announced on 22nd March that they had finalised a joint development agreement with Zinergy, a UK-based energy-tech company focused on producing ultra-thin batteries for which they require a superb quality graphene product. Graphene being extremely thin and highly conductive makes it the material-of-choice for use in the ink needed to print flexible circuitry. The pioneering technology will be used to further develop exciting applications such as wearable-tech, seen by most experts as an inevitable evolution in the booming mobile device sector.

Furthermore, and barely a week later, the company signed with Chemetell, a subsidiary of chemical-goliath BASF, to jointly develop Talga value-added graphene products for use in Chemetall surface treatment products. The joint development program aims to set new industry standards for eco-friendly, high performance, corrosion resistant surface treatments, further empowering Talga's global impact and resulting in significant movement on company stocks.

Why Talga Graphene?

Talga's Vittangi project already has an existing resource of

9.8 million tonnes at 25.3% graphitic carbon, which is the highest resource grade amongst all the graphite deposits globally. Further drilling was undertaken in December and January, resulting in a great Christmas for Talga, not only confirming that their mega-project has one of the best gradings in the world, but also accidentally proving the existence of significant cobalt and gold deposits throughout the area.

Graphene is to be found wherever graphite lurks, but is notoriously difficult to separate and scale-up. The prohibitively expensive nature of graphene production scares away most companies, but Talga's incredible resource purity is what opened up the opportunity for them to move-in on the true cutting-edge of the cleantech world.

What Next?

The company's focus will no doubt be on its fresh commercial graphite interests for a good while, but the additional opportunities brought about by the discovery of significant cobalt mineralisation will almost certainly come into play this year. Cobalt has received significant attention of late; since conflict-free supplies have grown in demand, the world is looking for offtake from more stable jurisdictions. The particular spread of assets to which Talga now has access, makes them a supreme choice for security of investment this year, as it is almost unthinkable that they would run out of high-end resources to commercialise anytime soon.

Talga have made some excellent market decisions over the last twelve months, switching from their Australian resources to the now-highly-anticipated smorgasbord of Swedish deposits. The area ranks highly for many reasons; notably its established bulk commodity infrastructure with open access rail, road and ports, and low cost power from hydro-electric and nuclear grid. A corporate tax rate of only 22%, and a tiny mineral production tax rate of 0.2% makes for a very workable

model. Add to this the fact that the area has an abundance of highly-skilled workers and it's no surprise that the place was ranked as the second-best mining jurisdiction in the world by the Fraser Institute in 2012-13.

Rarely has there been a company with so many irons in the hottest fires, and investment in these sharp-minded and quick-thinking people would provide much more than just financial returns; there's progress in them there hills.

Talga – Rubber Hits the Road

As we have noted in the past the three key words that best sum up Vittangi are “cheap, cheap, cheap” and they are music to investors' ears in these days where all other things being in a projects favour the Capex then spoils the show. The other mantra is, as we never tire of saying, “production, production, production”. The markets may have picked up, but this truism has not gone away. We are not going to “party like its 2008 or 2011” again for a long while.

With Talga we have yet another case of a stealth producer creeping up, like the tortoise on the hare, as its two successive campaigns of trial mining are turning into a test of the viability of, firstly, its mining plans and, secondly, its value-added products, primarily for now in the Industrial Coatings space.

In this update I shall look at the progress made over the summer months towards these two goals.

A Refresher

Talga Resources (ASX: TLG) has joined the rush and becomes the

second graphite player of note to target Sweden (the other being Flinders, which is also run by Australians despite its TSX-listing).

Talga Resources has five 100% owned graphite projects comprising multiple deposits, all of which are located in Norrbotten County in the far north of Sweden. The two most advanced projects, Nunasvaara and Raitajärvi, both contain JORC Indicated resources. Nunasvaara, which forms part of the Vittangi Project, is a microcrystalline flake deposit, with what the company claims is the highest-grade JORC/NI 43-101 resource in the world (7.6mn tonnes @ 24.4% graphite). Raitajärvi, located some 150kms south-east of Vittangi is a coarse flake deposit, with 49% of contained flake classified large to jumbo size (4.3mn tonnes @ 7.1% graphite).



Talga came out with a Scoping Study for its main target, the Vittangi deposit, in October of 2014. The main findings were:

- Targeting dual production of ~46,000tpa graphite and ~1,000tpa graphene over approximately 20 years
- Low Capex of around AUD\$29mn and capex payback 1.4 years
- Around AUD\$84/t feed costs for 2% graphene recovery and ~77% total graphite recovery
- Indicative pre-tax NPV in excess of AUD\$490mn based only on current JORC Indicated portion of resource – from surface

Stealth Production

While one sometimes despairs that the mining slump left no (or few) lessons learnt we are stumbling across more companies that do seem to have adjusted their strategies for the tough times and that this will hopefully carry on into the better times as there is no assurance “this time around” that money will flow in such an uninhibited and unfocussed way as it did pre-2011. Talga has joined the ranks of those companies that

have used the downtime to prove their thesis with trial or micro-mining.

In July the company commenced its second trial graphite ore mining campaign at the Vittangi project with the plan being to extract ~2,500 tonnes as required to feed Talga's upscaled pilot test work facility at Talga Advanced Materials GmbH in Germany and continue developing the proprietary graphene production process.

The 2016 trial mine is extending and deepening last year's open pit site and similarly extracting whole multi-tonne blocks of graphite ore from within the total 2012 JORC resource of 9.8 million tonnes @ 25.3% graphite. The mine looked like this after the first season's work.



For this season Talga adopted improved mining processes compared to the 2015 campaign with the main differences being:

- Larger, tailor-made and automated ore block cutting equipment for improved efficiencies and lower unit costs
- Ore blocks stockpiled in Sweden and delivered to Germany by truck as required

The benches at the start of the July 2016 campaign are shown below:



Slicing large blocks of graphite for dispatch reminds one more of stone quarrying than the traditional mining techniques of blasting and fracturing the material for processing into a concentrate. The advantage comes here from the grade of the graphite being so high.

Putting Together the Team

In early August the surest sign yet that Talga was determined

to hit the road to production came with the appointment of a heavyweight projects manager in the form of Martin Phillips. In an announcement to the ASX the company revealed that Phillips, a chemical engineer, had been appointed as Projects Manager – Europe. He is a veteran project manager, commercial manager and company director with over 25 years in the global metals and mining sector. The responsibilities of the role will include managing Talga's graphene and graphite project developments as well as overseeing and driving of processing operations through Talga's German subsidiary operations, Talga Advanced Materials GmbH.

Building on an early career that included engineering roles in battery recycling programs and smelting innovations at MIM's Mt Isa and UK operations, he constructed and managed operations and implemented growth strategies for offshore smelting businesses. His more recent roles at the mineral sands group, Iluka Resources, included Commercial Manager where his responsibilities were business and industry analysis, supply/demand models, market pricing and strategies.

Though compensation was not mentioned, we can be sure that snagging such an industry veteran didn't come cheap which is a further sign of Talga's seriousness on this front.

Thinking Outside the Box

The graphite space has seen a bewildering amount of applications floated past investors in recent years. Most investor's attention spans did not extend beyond the flake size "debate" and then narcolepsy set in. The "big" theme is the usage in Lithium Ion batteries but it is good to see that not all graphite players are not putting all their playing chips on this one space on the roulette table.

In Talga's case it has gone in the first instance for coating technologies and the users thereof as its initial end-users. This certainly reduces the competitive field and works on the

angle that, being based in Sweden, Talga's mine/processing facilities are within easy distance of some of the most important industrial users in the world. While coatings may not sound as sexy as Tesla they are considerably more "tried and true" with the total global coatings pre-treatment sector is worth about US\$15bn per annum and falls within the US\$120bn paint and coatings market, which has reported compound annual growth of over 5%.

In Talga's opinion its coating technology has the potential to be used in many industries, but is particularly well suited to the automotive, electronics and aerospace markets and anywhere the use of toxic chemicals, such as hexavalent chromium (which Talga's product does not contain), are banned. Inhaled hexavalent chromium is recognized as a human carcinogen, nevertheless workers in many occupations are exposed to hexavalent chromium in their daily activities. Problematic exposure is known to occur among workers who handle chromate-containing products and those who weld, grind, or braze stainless steel. Chronic inhalation of hexavalent chromium compounds increases the risk of lung cancer. The lungs are the most vulnerable, followed by the fine capillaries in kidneys and intestines. Within the European Union, the use of hexavalent chromium in electronic equipment is largely prohibited by the Restriction of Hazardous Substances Directive.

The product offers enhanced corrosion protection by harnessing graphene's extreme electrical conductivity, impermeability and chemical structure to form a high performance coating.

Talga also claims that its coating can be applied with industrial scale roll to roll machinery, reducing post-formation spray coating steps and improving manufacturing efficiency across products including automobile bodies to battery casings.

In recent weeks Talga announced that it had produced and

delivered its first value-added graphene based product. The product, a metal pre-treatment coating (“Coating”), was delivered to a leading global coatings company following the filing of a patent application over the Coating composition and production method.

The Coating is the first of a range of targeted value-added products that Talga is developing and looking to commercialise. The global coatings company assessing the Coating will undertake accelerated application and performance trials over coming months.

At the same time, further tests on Talga’s coating technology are underway at research institutions in India and the UK, where scientific peer review analysis and publication of the results will be conducted.

Talga has aspirations to create a range of graphite products. The siting of the plant for these endeavours in Germany is a very interesting move by the company and heralds that it sees end-uses away from the almost “plain vanilla” Lithium Ion battery space as the way to go.

Conclusion

With Talga ticking the “cheap (by three)” box and the “production (by three)” box, it has earned a place in our affections.

Like many others in the graphite space, Talga needs to bag an offtaker/sponsor to get a leg up on the competition. At least in its case, the low capex is a draw while the positioning in Europe is also a plus. Flinders has shown it can be done in Sweden with minimal outside interference and for the Swedish government the area where Talga are working is an even higher priority to see economic reactivation and job creation.

Now that pilot production had provided proof of concept then it will be interesting to see if the company moves to a

Feasibility Study (unless that phase can be short-circuited) and a partner found to kick-start the capex.

As for value-added products, it would seem that potentially Talga's gain is the chromium mining industry's loss because if its product can gain sufficient traction it should be able to displace hexavalent chromium where it is still used and provide an alternative to those manufacturers grappling with the issue of finding a safe and responsible alternative. Indeed like some others we can think of in the mining space, the idea of pursuing the value-added and downstream alternatives in their "spaces" has been made more attractive by the wrenching times that most miners have suffered since 2011.

Talga – Its Designs on Nordic Graphite

All things Scandinavian seem to be the buzz these days with their fiction writing and television programs being much sought after. Of course the region has been in demand before. The 1960s and 1970s brought us Swedish interior design (and porn, need we mention) and then there was Abba, while the 1990s bought us Nokia. Farther back though in the 1940s and earlier Sweden was one of the major sources of iron ore in Europe and its production of this mineral was hotly contested during World War Two (as was its ball-bearing output).

Now there is somewhat of a Nordic Renaissance going on in mining and this, in a way, is a reinforcement of the revival going on in Spain. Norway, Finland and Sweden have become hot spots with their traditionally propitious geology being

revisited in a swathe of metals, both base and specialty (and even precious) as a way of creating jobs and bolstering export income.

Much to our surprise Australian companies have featured prominently in pushing into these parts where the weather could not be more daunting for those used to Southern climes. Talga Resources, which is listed on the ASX, has joined the rush and becomes the second graphite player of note to target Sweden (the other being Flinders, which is also run by Australians despite its TSX-listing).

The thing that first hit me in the eye with Talga's presentation was the use of the word "scalable" before all others. After "production", "scalable" is our second most favorite word at the current moment. Though "cheap" is also a favorite...

The Graphite Project(s)

Talga Resources has five 100% owned graphite projects comprising multiple deposits, all of which are located in Norrbotten County in the far north of Sweden.



The two most advanced projects, Nunasvaara and Raitajärvi, both contain JORC Indicated resources, and preliminary economic studies on these deposits have commenced.

Nunasvaara, which forms part of the Vittangi Project, is a microcrystalline flake deposit, with what the company claims is the highest-grade JORC/NI 43-101 resource in the world (7.6mn tonnes @ 24.4% graphite). Raitajärvi, located some 150kms south-east of Vittangi is a coarse flake deposit, with 49% of contained flake classified large to jumbo size (4.3mn tonnes @ 7.1% graphite).

The Scoping Study

Talga came out with a Scoping Study for its main target, the Vittangi deposit, in October of 2014. The main findings were:

- Targeting dual production of ~46,000tpa graphite and ~1,000tpa graphene over approximately 20 years
- Low Capex of around AUD\$29mn and capex payback 1.4 years
- Around AUD\$84/t feed costs for 2% graphene recovery and ~77% total graphite recovery
- Indicative pre-tax NPV in excess of AUD\$490mn based only on current JORC Indicated portion of resource – from surface
- Project was deemed viable on graphite production alone, with graphene a by-product icing on the cake
- The company hopes that economic metrics will become even more robust as graphite and graphene recovery yields increase with future optimisation work
- Permitting underway for pilot plant production
- Metallurgical work undertaken on fresh rock – samples not subject to naturally elevated graphite purity by virtue of oxidation
- Conservative Study numbers – graphene price severely discounted to then current minimum pricing and low-end yields assumed

☒ Above can be seen the pit design of the Nunasvaara graphite deposit, including haul ramps. This model does not encompass the potential for extensions/combinations of the pits. The Scoping Study contemplated simple pits to depth. The company feels that economics may be significantly improved should shallow resources along around 30kms of strike be proved viable.

The metrics of the operation would be:

☒

Other Considerations

There are also three other graphite projects, Piteå, Jalkunen

and Pajala which according to the company all contain significant historically drilled graphite intersections requiring follow up exploration. Jalkunen though has a JORC Resource totalling 31.5Mt @ 14.9% Cg, Graphene and <100 µ flake.

However, with the two main projects, the company has more than enough to keep itself busy for the meantime. A further attraction of the two main targets is that both Nunasvaara and Raitajärvi have been declared areas of national interest by the Swedish Geological Survey, providing protection against competing land uses.

The company also has some iron ore projects in the same region, and northern Sweden has been an epicentre of iron ore production for hundreds of years. However, with the current glut and price slump these shall probably stay, literally, in the freezer for the foreseeable future.

The whole area is laced with rail infrastructure due to the historic iron ore trade in the vicinity. As can be seen from the accompanying map Talga's graphite deposits are located adjacent to existing transport infrastructure including high quality sealed roads and open-access heavy haulage rail.

In Passing

When coming to write on Talga, I initially thought the name was new to us but in fact I have written, in passing, on this company before with reference to its project, the Bullfinch Gold deposit in Western Australia. It had come into focus before when we wrote about Tellurium because the Bullfinch deposit has readings of up to 107ppm of Te.

Conclusion

The three words that best sum up Vittangi are cheap, cheap, cheap and they are music to investors' ears in these days where all other things being in a project's favour, the capex

number often spoils the show. Like many others in the graphite space, Talga needs to bag an offtaker/sponsor to get a leg up on the competition. At least in its case, the low capex is a draw while the positioning in Europe is also a plus. Flinders has shown it can be done in Sweden with minimal outside interference and for the Swedish government the area where Talga are working is an even higher priority to see economic reactivation and job creation.

The time has come to move to pilot production and then maybe a Feasibility Study (unless that phase can be short-circuited) and a partner found to kick-start the capex. At that point the company will have its ducks (or maybe geese as its northern Sweden) in a row for the move to production.

Saxon on Tasman's Prefeasibility Study and the REE-Awakening of the Rare Earth Market

March 24, 2015 – Mark Saxon, President, CEO and Director of Tasman Metals Ltd. (NYSE MKT: TAS | TSXV: TSM) in an interview with Tracy Weslosky, Publisher for **InvestorIntel** speaks about their recent +77% stock movement in February and their recent filing of NI 43-101 Technical Report on Pre-Feasibility Study for the *Norra Kärr* heavy rare earth element project in Sweden.

Tracy Weslosky: It has been. It's nice to have you in-house. Why don't we just kick off this discussion by saying congratulations – you're stock price was up +77% (NYSE MKT:

TAS) and +68% (TSXV: TSM) last month.

Mark Saxon: Yes. Certainly it's been a very strong February. It's nice to have a month like that behind us I suppose. The rare earth sector hasn't seen really strong trading like that for a very long time.

Tracy Weslosky: Well, you know, what's interesting to me is it seems to be the rare earth and critical materials right across the board. You have tungsten as well, which is technically a critical material.

Mark Saxon: I guess. We've seen the markets reawaken. Perhaps it's the New Year and perhaps it's the start of a new cycle. I'm not sure which one, but certainly for our stock in particular the stock was up on very strong volume, which obviously all goes well for the next few months.

Tracy Weslosky: For all of the InvestorIntel audience that's currently watching the news out of China, of course, there's a huge demand or the prices have definitely been rising aggressively in both terbium and dysprosium, yes?

Mark Saxon: Yes, certainly they have. I guess the news from China is very positive for those metals and it's about time. The prices have been falling for a while and then stabilizing and so we've now seen some lift in the prices. Certainly Tasman has a good opportunity to be a large supplier of both those metals.

Tracy Weslosky: Tasman, of course, has got two of the largest projects in heavy rare earths in the world and you just put out your prefeasibility study. Can you please give us an update?

Mark Saxon: So we just published the prefeasibility study Tracy for our *Norra Kärr* project, which is Tasman's flagship. Obviously, as I think we've said, it's in Sweden. It's got

great infrastructure, a very large deposit and we have done the prefeasibility on a 20-year mine life, although it's very much larger than that. I guess the key thing, you know, in the prefeasibility we're focused on having a very simple processing flow sheet. The technology and the chemicals that are required are very simple, are used widely in Sweden today. Much of the technology we're using is Scandinavian and so very, very simple and not dependent on any new and untested technologies. That means there's a very high level of trust in the process. The financials are good. The rate of return is 20% after tax. The capex is \$375 million. It's very cheap on the current market and certainly that's one of the lowest capex's for a major dysprosium producing project...to access the rest of this interview, [click here](#)

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Ecclestone on Tasman Metals: Dedication to rare earth production and a Zirconium 'kicker'

Ancient Greek and the Scandinavian region have been the inspiration for most of the names of the elements in the Lanthanide series of the Periodic table. Ancient Greek is a perennial for naming elements but Scandinavia came into its own with Rare Earths grouping because of the "discovery" of Rare Earths in Sweden back in the 19th century. Amongst those elements with Nordic nomenclature we have Terbium, Yttrium,

Scandium, Ytterbium, Gadolinium, Holmium. Thulium and Erbium.

While Tasman Metals Ltd. (TSXV: TSM | NYSE MKT: TAS) is the leader in Scandinavian Rare Earths, it and its quasi-sister company Flinders have been named by their antipodean progenitors after famous explorers of the Great South Land, providing a paradoxical link between global extremes.

Norra Kärr

✘ Tasman's main target, if one needs reminding, is the Norra Kärr project located approximately 300 kms south of Stockholm. The project is near the towns of Jönköping and Linköping, from whence would come the required workforce for the mining operations.

The property was initially discovered in 1906. It was explored by the Swedish mining giant, Boliden AB, for nepheline in the late 1940's, and for Zirconium and Hafnium in the 1970's. However it was relinquished in 2001 and data from these previous efforts was only made available in 2009. The Swedish government declared it to be a "Project of National Interest" in 2002 which prevented conflicting land use.

Tasman claimed the ground in mid-2009 and first drilling began in December 2009 with a goal of proving up a heavy rare earth and zirconium resource. The deposit now has in excess of 100 holes amounting to around 12,000 metres. The first NI43-101 compliant resource was released in November 2010 and an updated PEA came out in July 2013.

Zirconium – The Bonus Metal

It is worth digressing into this metal because the traditional focus on Tasman has been rightly on the Rare Earth component but this metal is also an important part of the revenue mix. The closest parallel to Tasman, and an inexact match, is the Dubbo project of Alkane Exploration which in its mix of metals also can boast of being both Rare Earths and Zirconium.

Frankly these days having any metals that can add to the value mix is a plus for the economics of a REE project (with Texas Rare Earths being the *non plus ultra* of multi-metal REE deposits).

As we shall discuss further on the Zirconium component makes for a useful percentage of the Norra Kärr product mix. Zirconium is mainly used as a refractory and opacifier, although it is used in small amounts as an alloying agent for its strong resistance to corrosion.



The principal commercial sources of zircon are Australia, Brazil, India, Russia, South Africa and the United States, however the overwhelming amount of production (80%) of zircon mining occurs in Australia and South Africa. It is estimated by the USGS that Zircon resources exceed 67 million tonnes worldwide and annual worldwide zirconium production is approximately 1,400,000 tonnes. Zirconium is a by-product of the mining and processing of the titanium minerals ilmenite and rutile, as well as tin mining.

Most zircon is used directly in commercial applications, but a few percent is converted to the metal. Commercial-quality zirconium for most uses still has a content of 1% to 3% hafnium. This contaminant is unimportant except in nuclear applications. This brings us back to Boliden's original interest in the Norra Kärr deposit.

According to projections from Alkane Resources the global market of Zircon is worth around US\$2-3bn per annum. It also claims that, during 2014, consumer zircon inventories have been running down, then it expects the market to stabilize through 2015-2016, with a CAGR anticipated at 5%-7% pa over the next few years. Pricing in recent times has been around US\$1,400 per tonne for Zr imported into the US.

The PEA

As mentioned earlier, in July 2013, Tasman released an updated PEA on its main project. The chief findings were:

- an NPV of \$1.46 billion using what the company called a “conservative” metal price assumption
- an in-pit mineral resource of 41.6 million tonnes grading 0.57% TREO (51% HREO/TREO) and 1.7% zirconium in the indicated category
- 16.5 million tonnes grading 0.64% TREO (49% HREO/TREO) and 1.7% zirconium in the inferred category.
- an estimated mining rate of approximately 6,800 tonnes per year
- a 40-year mine life

The PEA estimated an initial capex of \$266 million for mine construction and start-up working capital (this included a 20% contingency of \$42.8 million). The Norra Kärr project has the advantage of already extant infrastructure including road access, power lines close by as well as rail access within 15 kms. This capex is neither high-end nor low-end. It would probably need an offtaker to be secured and/or a relationship with a nearby processor (as we shall discuss anon).

Operating costs were estimated at \$10.93 per kg of mixed TREO concentrate output.

Tasman has filed and been granted its mining lease for the project and continues to progress on the metallurgical testing that includes the development of a mineral concentrate as well as a mixed rare earth product for separation. The main byproduct of the project is zirconium though Tasman is also investigating the potential sale of nepheline to the glass industry in Europe.

The Revenue Mix

Tasman, like Rare Element Resources, has taken up the practice of using the term, CREOs (critical rare earth elements) to differentiate its product mix from that of the Great Unwashed

of the REE space. The company projects that the majority of its future revenue (over 85%) is expected to come from only four major elements amongst the so-called CREOs. These include Dysprosium, Neodymium, Terbium and our old favorite Yttrium.

This is once again a tacit recognition by yet another company in this space that Cerium and Lanthanum are essentially “throwaways” in the mix, if not deleterious elements (in the financial sense of the word). Tasman asserts that it is not reliant upon revenue from the lower value light rare earth elements, such as Ce and La.

The “Failed” Merger Attempt

Earlier in the year Tasman Metals Ltd. (TSXV: TSM | NYSE MKT: TAS) took the opportunity of the relative strength of Graphite to announce a merger with another company (**Flinders Resources** – TSXV: FDR) in its corporate grouping to corral all the cash into one place and run with two projects at once in the same country. This was an admirable facing of reality. Eventually the cashflow from graphite start-up (which is near to production) would help get the REE project onto its feet. This also tempted us to think that it might make sense to get a Stockholm listing once revenues kick in and lessen the sole focus on TSXV-type investors. However as things panned out the market hated the deal and it came to grief.

The More Obvious Synergy

With the Flinders deal having died the death, it does not mean that Tasman is no longer takeover material. In fact less financial and more synergistic deals could still be mooted. The one that strikes us as most obvious is some sort of arrangement with the 800-lb gorilla in the REE space, Molycorp. The rationale behind this one is simple in that Molycorp owns the Silmet processing plant in Estonia which used to source the bulk of its material from the Russian loparite mines. With those mines in a state of decay, the next

obvious source with reasonable proximity is Norra Karr with a rather short maritime voyage away. Molycorp is not in the healthiest of conditions itself these days, but should it survive this current swoon then the synergies between these two assets are pretty clear. It would be interesting to know what sort of savings on the Tasman capex might be able to be achieved by exploring this possibility of a tie-up.

Conclusion

That elusive goal of marketing industry folk, the USP (Unique Selling Point), is now the Holy Grail of Rare Earth companies as well. The hunt is on to find ways to discriminate themselves from the rest and in the process get themselves into the First Class lifeboats. Tasman main things it has going for it are its management's dedication to production, the presence in the heart of Europe, the proximity to Molycorp's Silmet facility, a capex number in the lower half of the project inverse and the hitherto little noted Zircon "kicker" in the revenue mix.

A thought came to us (with our i-banker hat on) that while Molycorp taking over Tasman might be conventional thinking, a better outcome (given the current travails of MCP) might be MCP folding Silmet into Tasman and in the process becoming the largest shareholder in a merged entity. This would create an integrated European REE producer. Just a thought....

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.

WTO ruling fails to alleviate European concern over China's rare earth dominance

☒ China has increased its efforts to limit the illegal mining and export of rare earths (REE). The Government has launched a five-month campaign, which has the specific goal of preventing prices of this commodity from dropping further in prices. Since the beginning of October until the end of March 2015 five authorities are working together to track down and punish illegal and smuggling REE operations. This is not the first time that the Chinese government has tried to tamper with (if not modernize) its rare earth industry, first by

trying to rationalize resource management by shifting more control to state mining companies and then by setting production quotas for an ever smaller number of authorized companies. However, none of these measures were able to curb pollution, smuggling and illegal mining in the Chinese rare earth industry. The People's Republic has insisted that it holds 23% of the world's rare earths reserves even if it is widely held to have 40% of the reserves, addressing 90% of global demand.

The United States, Japan and Europe have filed a complaint with the WTO (World Trade Organization) – and obtained validation – that China's production and export quotas limited rare earth supplies for the global market, giving Chinese companies an excessive competitive advantage. However, Beijing has started to comply with the WTO ruling because it is facing internal environmental and social pressure. The European Union (EU) is very concerned that China may revive the REE trading restrictions that prompted the WTO to intervene in the past few years. In fact, just over a week ago, in Milan, Italy, European leaders met at the final stage of the ERECON conference. The European Commission has formed a panel of rare earth experts known as the European Rare Earths Competency Network (ERECN). They are addressing the security of rare earth supplies in Europe as well as the primary production of rare earths, resource efficiency and alternatives to raw materials in the form of recycling.

ERECN's goal is to address the entire value chain challenge of rare earths in Europe, which are a key resource for its industry even though Europe is almost totally dependent on China, which covers 97% of total requirements – making the EU even more dependent on Chinese REE than the United States or Japan. Inevitably, this situation of strong imbalance in favor of China has led to consequences which continue to raise the importing countries' concerns, given the precedent of the Chinese government's decision to impose the cap on exports of

rare earths in 2009, which caused their prices to rise by as much as 1000%, sparking protests from the US, Europe and Japan – the latter facing geopolitical and economic consequences that may have hurt its economy. These countries then presented an appeal to the WTO, of which China is a member, but before it was incorporated in March, the Chinese government took precautions by further raising the share of exports and, therefore, forcing REE down. ERECON and other forums, however have shown that the EU's concerns about China's virtual REE monopoly have not ceased – and not just for economic motives.

Rare earths are used in many areas, including military drones, laser technology and latest generation communications among other things. The EU, in fact all Western powers, have reason to suspect that China is using REE to upgrade and modernize its military industry and equipment at low cost while exploiting its military rivals' need to upgrade theirs. If there is any doubt, recent interest by Chinese investors in recently discovered rare earth mines in Greece suggests that China is in no way interested in relinquishing its REE supremacy. Another factor of concern is China's rapid rapprochement with Russia, a country which is also very interested in re-entering the rare earths market. There are plans that would see ambitious projects starting to operate in Yakutia and the Kola Peninsula by 2020. The evolving Ukrainian crisis and the growing distance between the West and Russia has raised fears that the recently formed Russian-Chinese gas supply arrangements may extend to REE's as Russia seeks ways to confront the embargo imposed by most EU member states and NATO members. This should be encouraging news for the various REE mining operations under development In North America, South Africa, Tanzania and even Vietnam or Afghanistan – and there no assurances that the new operations will be able to deliver all of the rare earths that are in most demand such as neodymium, dysprosium or europium – among others. Efforts to recycle rare earths have yet to achieve any worthwhile results, which means that the REE challenge continues.