TALGA RESOUCES LIMITED

Research Note

SOLID CONDUCTIVITY

- **Talga Resources Limited (TLG), is a technology minerals company with an industrial focus. TLG has graphite projects in northern Sweden, and represents a unique play on the anticipated commercialisation of large-scale graphene and ultra-thin graphite applications. The Company continues to test the scalability of its liberation and recovery process at its test work facility in Germany. We consider TLG well placed to provide a low-cost bulk graphene and ultra-thin graphite supply into existing and new growth markets. Meanwhile, the Company has a significant opportunity to transform its advanced iron ore and cobalt-copper deposits within its tenement package that lies close to bulk commodity infrastructure. We retain our Speculative Buy recommendation with a value of $2.00/share.**

- **TLG expects to generate revenue from graphene:** On March 2017, TLG signed a Joint Development Agreement (JDA) with Chemetall (part of BASF). The Agreement has been signed to co-develop and commercialise graphene-enhanced metal surface coatings. TLG expects to generate initial revenue from graphene sample sales in Q2 CY17 (magnitude unknown at this stage).

- **The signing of a Graphene Agreement for Printed Battery Development:** Also in March 2017, TLG signed an agreement with Zinergy UK Ltd. The Joint Development Agreement will focus on the development of ultra-thin, flexible, printed batteries. TLG will supply value-added graphene and graphitic carbon ink formulations from its Swedish graphite projects and, if successful, the Company will benefit as it will be able to capture downstream value added product margins.

- **Product Development and Marketing Update:** TLG has been actively advancing its product development and marketing initiatives, targeting early commercialisation opportunities. TLG is focused on four target sectors being: coatings, polymer composites, construction/building materials and energy/batteries. This 'product' strategy is in addition to the supply of raw graphene and graphite materials.

- **Commercialisation of Graphene is key to TLG value:** TLG has all the ingredients to potentially become a Company with low production cost and significant margins. However, the key to secure growth lays with securing off-take or product supply agreements.

- **Graphene is a green product:** Graphene is a product that can be used in many applications that are central to everyday life. Comprising only carbon atoms and causing materials to be more efficient or functional, it is a more sustainable alternative to many additives used today.

- **Valuation:** We have valued TLG using the sum of parts methodology at $2.00/share based on data from the Company released Scoping Study from 2014 and subsequent technical updates. Our conservative valuation yields an NPV of US$266m discounted at 12% and using only 25% of the project value. We assumed a graphene value of US$10/kg vs. TLG's US$55/kg. We also included a value to its iron ore and base metal projects (US$30m) and current cash position. We assume first major revenue in CY2021.

- **Catalysts**: (1) Signing key contract(s) with industry operators to sell its graphite and graphene products to validate TLG's specs combined the successful demonstration of large-scale, low-cost production at its test work facility. (2) The confirmation of a significant copper-cobalt-gold deposit and/or studies on its iron ore deposits. (3) Longer term, following intermediate scale-up stages, the decision to proceed with a full-scale plant development is expected to be a key milestone.

9 May 2017

12mth Rating		Speculative Buy
Price	A$	0.62
RIC: **TLG.AX**		BBG: **TLG AU**
Shares o/s	m	181.9
Free Float	%	80.9
Market Cap.	A$m	113
Net Debt (Cash)	A$m	(6.2)
3m Av. D. T'over	A$m	0.26
52wk High/Low	A$	018-0.915
Valuation:		
Methodology		
Value per share	A$	2.00

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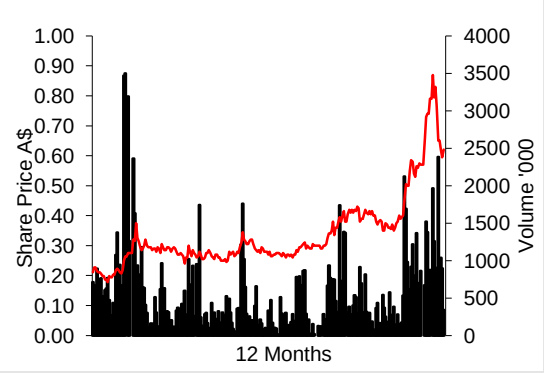
An investment in this company should be considered speculative and note assumptions employed are contingent on broader market conditions remaining supportive. These can change at short notice. Recommendations are current at the time of publication.

12 Month Share Price Performance



EXECUTIVE SUMMARY

TLG is a graphite and graphene focussed company, with five wholly-owned graphite mineral projects located in Sweden (Figure 1). Two of the projects (Vittangi and Jalkunen) have particular attributes, being high grade (according to TLG, Vittangi is the world's highest grade JORC or Canadian equivalent graphite resource at 25.5%), with high rock competence and highly conductive particle morphology. This allows for the unique outcome of liberating graphitic carbon products (graphene and ultrathin graphite) directly from the graphite ore using an electrochemical exfoliation processing and recovery route (no crushing or grinding required).

Also, TLG has completed Phase 2 commissioning and processing at its test work facility in Germany. Importantly, the facility is currently achieving a 76% recovery of graphitic carbon to graphene products (Few-Layer Graphene (FLG) and Graphene Nanoplatelets (GNP)). The Company has a JORC (2012) Total Mineral Resource (Indicated 87% and Inferred 13%) at Vittangi of 12.3Mt grading 25.5% TGC for 3.1Mt of contained graphite (using a 17% TGC low cut-off). Also, TLG has JORC Mineral Resources at two other graphite projects in Sweden, Jalkunen and Raitajarvi. Jalkunen has a Total Inferred Mineral Resource of 31.5Mt grading 14.9% TGC, for 4.69Mt of contained graphite, while Raitajarvi has a Total Indicated and Inferred Mineral Resource of 4.3Mt grading 7.1% TGC, for 305kt of contained graphite.

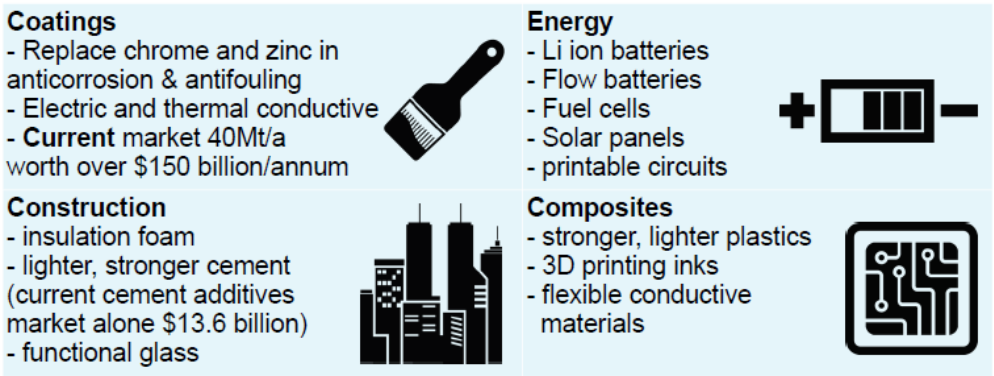
The Company's product development and marketing strategy are to provide prototype graphene products to increase demand for commercial sample volumes of graphitic products, develop strong customer relationships and bridge the gap in availability of supply as large scale Research and Development (R&D) is conducted into new commercial applications. Within the Company's key target markets, TLG has narrowed down on a targeted selection of value added products which include, but are not limited to, surface treatment coatings, epoxy resins, conductivity and strength enhanced concrete and batteries. This product strategy is in addition to the supply of raw graphene and graphite materials and offers the potential to provide early commercialisation opportunities (and revenue) during the current processing stage.

In parallel, the Company has advanced iron ore projects that host Resources of 236Mt at 30.7%Fe (magnetite, JORC 2004) at the Masugnsbyn and Vittangi projects, located in Norrbotten County in northern Sweden. The projects have well understood and encouraging metallurgical (un-optimised) concentration results reflecting >68%Fe. Lastly, and within Vittangi's tenements, TLG has the Kiskama Cobalt-Copper-Gold Project quoted to have similar geological mineralisation style to Ernest Henry and described by the Company as the largest cobalt deposit in Sweden. More significantly, all three projects are adjacent to each other and close to existing infrastructure for bulk commodities. The projects are located 30km from an existing open-cut magnetite operation.

We consider TLG to be well-placed to provide low-cost bulk graphene and ultrathin graphite supply into existing and new growth markets. Meanwhile, and since our last publication, we want to add a new angle to TLG's other projects in Sweden as illustrated in Figure 2. We believe that the Company has further ways to increase the value by exploring/optimising in parallel to its graphite aspirations. Importantly, all of TLG's assets are 100% owned and located in Northern Sweden which could provide substantial synergies for future development. We believe that this combination presents potential synergies and cost savings whilst developing these projects.

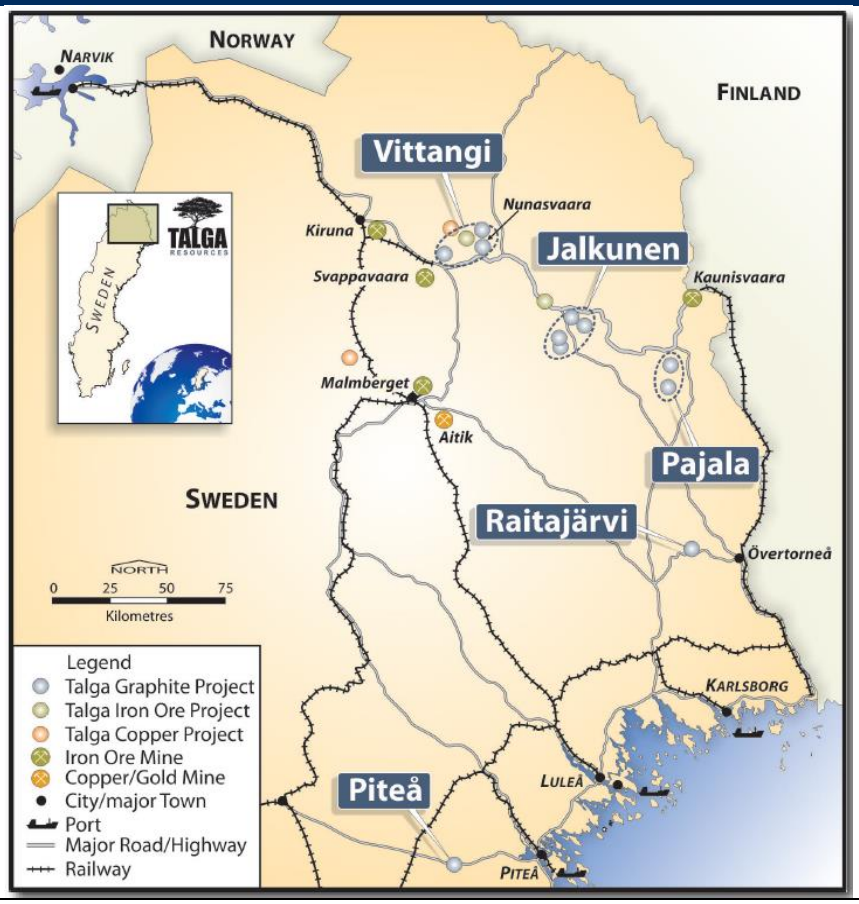
Summarising, while we believe that there are many unknowns in the new graphene market, we think that TLG has more than one way to generate significant value to its shareholders from its diversified portfolio of graphene and graphite products. An illustration of TLG's target markets is illustrated below in Figure 1.

Figure 1: TLG - Graphene Target Markets



Source: Talga Resources Limited

Figure 2: TLG's Projects in Sweden



Source: Talga Resources Limited

UPDATE

On 27 April 2017, TLG announced a 25% increase in its Graphite Resource with an updated Mineral Resource Estimate (MRE) at its Nunasvaara graphite deposit in Northern Sweden. The new JORC MRE stands at 12.3Mt @ 25.5%Cg with a cut off 17%Cg. 87% of the MRE is classified as Indicated, present from surface and c.220m in depth, remaining open along strike and at depth. TLG highlighted the existence of a high-grade domain of 2.0Mt @32.6%Cg with a cut off 30%Cg.

The new Resource update means that TLG has added flexibility to mine and supply its graphite and graphene to the market. We like that the MRE update did not reduce the carbon grade content (it increased marginally, while TLG retains its world's highest grade graphite Mineral Resource). As a result, the continuity of the deposit at strike and depths means the potential for further resources while retaining its carbon grade remains with minimal exploration expenditure.

From a mining point of view, the results are encouraging as the deposit can be mined from the surface, potentially minimising mining capital development expenditure and operating costs. As a Company, we firmly believe in TLG's industrial value proposition on the application of its graphite and graphene products. We believe that TLG has the means to penetrate a wider downstream industrial market successfully.

On 22 March 2017, TLG announced the signing of a Graphene Agreement for Printed Battery Development in the UK with Zinergy UK Ltd. The Joint Development Agreement (JDA) will focus on the development of ultra-thin, flexible, printed batteries. TLG will supply value-added graphene and graphitic carbon ink formulations from its Swedish graphite projects over an initial 12 month period.

We welcome TLG's agreement. The Company is differentiating itself from being just another graphite producer. Instead, TLG is targeting the potential production of graphene with its high-tech industrial applications. As a result, we believe that TLG is not just a resources company, TLG is a Company with a high potential to integrate its graphite and graphene products with a greener footprint. We see TLG being akin to a

speciality chemicals/materials organisation. Overall, we like TLG's business proposal. If the battery development is successful, then the Company will benefit as it will be able to capture value-added market opportunities from the downstream process.

On 28 March 2017, TLG announced that it had signed a second JDA with Chemetall a global business unit of BASF Coatings Division (Germany). The Agreement has been signed to co-develop and commercialise graphene-enhanced metal surface coatings. TLG expects to generate first revenue from graphene sample sales to Chemetall during Q2 CY17.

We like the Agreement as TLG is beginning to demonstrate that it can differentiate itself as high-tech graphene Company. Most importantly, TLG expects to generate revenue from graphene sample sales in Q2 CY17 (magnitude unknown at this stage). If the development of graphene-enhanced metal protective treatment works, then TLG will be able to participate in the metal protective treatment market valued by Mordor Intelligence at c.US$10.4bn. The agreement is targeting the use of graphene in surface treatment applications which include coatings for anti-corrosion treatment. TLG's graphene has the advantage to reduce corrosion while being environmentally friendly as it is made of a few layers of carbon atoms. We firmly believe that TLG has the means to penetrate a wider downstream industrial market potentially adding further value to its graphite and graphene products in several other industrial applications.

On 4 April 2017, TLG confirmed by an independent laboratory (Betotech Baustofflabor GmbH in Erfurt, Germany) that TLG's graphene could boost thermal-conductive concrete for large infrastructure projects. The testing programme shows that the blend of TLG's graphene mixed with primary ore can have a 30% improvement over the leading market thermal concrete product available. The results are encouraging as the testing was performed without any blend optimisation. The independent test results will be used to attract potential buyers.

We believe that the TLG strategy to use all forms of ore from its graphite in several different products can have, a full utilisation of all the mineral ore without generating mining waste or tailings. This is relevant because all extracted ore has the potential to be sold as a type of graphite or graphene at different grades providing a strong economics for a full commercial scale operation. The success of the project will depend on securing off-take contracts to give TLG the confidence to move forward towards a full-scale plant. TLG is following a step-wise approach, and progressive processing scale-ups will allow TLG to assess the economic and technical parameters of large-scale development better.

CORPORATE

TLG currently has 181.9m ordinary shares on issue. The Company has 44.9m quoted options (exercisable at A$0.45/share, expiry 31 December 2018) with potential funds to TLG of A$20.2m, and 36.2m unlisted options (various expiry dates and strike prices) with a potential cash to TLG of A$14.2m. If all Options are converted into Ordinary Shares. TLG's cash position would increase by A$34.5m adding 73.6m shares totalling 255.5m shares.

As at 31 March 2017, TLG had A$6.2m in cash. The Company estimated that cash outflows for the June 2017 Quarter would amount to A$1.6m giving a cash estimate of A$4.6m for the June 2017 Quarter results. The Company has no debt.

VALUATION

TLG has announced a commercialisation strategy where a range of graphitic carbon materials are to be sold as not only raw but also value-added products. This differs from the strictly raw products contemplated in the 2014 scoping study. Additionally, TLG has announced a significant increase in graphene yield compared to the initial metallurgical work, apparently pioneered in 2014. Together this suggests the ultimate size of the full-scale plant will likely be revised in an upcoming feasibility study with different options considering ongoing test process facility scale-up, product pricing from commercial agreements and other market considerations. However, until the Company completes this work, we have taken a conservative valuation approach that assumes, amongst other things, that only graphene raw materials will be sold and for the sake of valuation robustness, ultra-thin graphite and graphene products have been ignored for now. A summary of the difference in assumptions is illustrated in Figure 3 below.

Figure 3: Summary of TLG's assumptions vs. Patersons Securities Limited (PSL) assumptions		
Assumption	**TLG**	**PSL**
Capital Cost	A$29m	US$60m
Operating Cost/t	A$83.8	US$84.4
Discount rate %	12	12
Project Risked Value %	0	75
Graphene Price US$/Kilo	55	10
Sales	Graphite and Graphene	Graphene Only
Graphene Recovery %	76.7	51

Source: TLG and Patersons Securities Limited Estimate

We have used the published information from the Scoping Study to base our estimate on TLG. We have estimated the value of the Company at A$2.00/share using a sum-of-parts methodology. We applied a Discounted Cash Flow method, discounted at a rate of 12% pa, more than doubled Capex by US$30m (from A$29m to US$60m) to cover further contingencies and risked 75% of total project value (for Project's unknowns) of the Project. We have included US$30m given to the exploration upside for the Base Metals and Iron Ore Projects in Sweden. The Company's cash balance of $6.8m at the end of March 2017 m was added to the estimate.

The valuation methodology for each segment is described in further detail below:

TLG is breaking new ground for its new graphene processing technologies and products. As a result, we have been substantially conservative in our estimations. We have assumed a long-term average of US$10/kg for graphene (TLG's assumption is US$55/kg). We have only included sales from graphene excluding graphite products. Our evaluation has estimated an operating cost of c.US$0.65/kilo of produced graphene (TLG indicates this cost is US$0.5/kg).

We understand that current market price of graphene is substantially higher averaging US$100/gram (US$100,000,000/tonne). However, we are cautious of the effect that, perhaps the largest global commercial graphene production, can have with a production influx of 25-50ktpa to the emerging graphene market (currently c.50ktpa). We also believe that the graphene market is still maturing and conditions may change significantly in a short period.

We used a capital spend of US$60m to be raised in a 70/30 debt/equity split (an issue price for the equity component of A$0.56/share was assumed). We have included a 20-year life-of-mine starting production treating 50ktpa in CY2021 with equal increments for five years. At full production, the plant could produce c.32ktpa of graphene from a 250kt processing plant in CY2025 at 25% carbon grade and recoveries of 51% (vs.TLG's 76.5%). We have valued the Project cash flows at a discount rate of 12%. Given the European location of the project and the likelihood of project off-take and finance, we would look to potentially reduce our discount rate to 10% or even 8% as the Project matures.

We have derived a value on the Project of US$266m. Using an exchange rate of US$0.75/AUD, we calculated a final AUD valuation of $342m. We estimated the current payback for the project is calculated as just over one year.

If TLG funded 100% of the Project as equity, it would reduce our price target from $2.00/share to $1.41/share. However, the project without buyers means that the Project may be uneconomic. Hence, TLG must secure off-take agreements before committing to starting producing graphene at an industrial rate.

The test facility is situated in Germany which is located near end-users looking for local supply. We expect that larger test plants and full-scale processing will occur in Sweden near the mining operation, which is connected to Germany and other potential customer locations by rail and road as an alternative to shipping.

SENSITIVITIES

We have tested the effect of graphene price on the Project. We believe that there is significant room to improve the economics of the project, this is due to the valuation being performed using a conservative price for graphene, a discount rate of 12%, sales from graphene only (excluding all graphite sales) and considering only 25% of the Project value. Figure 4 illustrates the value of TLG to changes in our most significant

assumptions. We highlight if we consider a price of graphene at US$55/kg (as per TLG's scoping study), then TLG value increases significantly to $9.32/share with an implied market capitalisation of $1.68b.

As mentioned earlier on, we may look to adjust the discount rate accordingly as the project matures. For example, a 10% discount rate on the Project will translate to a valuation of $2.29/share for TLG.

Figure 4: TLG Share Price Sensibility Table

Assumption	Discount Rate 10%	Base Case	Graphene US$55/kg	Unrisked Value
Company Value US$m	396	341	1,677	1,141
Discount rate %	10	12	12	12
Project Risked Value %	75	75	75	0
Graphene US$/Kilo	10	10	55	10
TLG Share Price value A$/Share	2.29	2.00	9.32	6.38

Source: Patersons Securities Limited Estimate

CATALYSTS

In our view, given the current climate change in commodities, several catalysts could ignite TLG's value. The clearest short-term catalyst for TLG is the successful demonstration of large-scale, low-cost graphene and graphite production at its test work facility. In addition, fostering relationships with end-users who are looking to develop near-term commercial scale applications of graphene and ultrathin nano graphite and micro graphite. In parallel, an additional short-term catalyst would be the outcomes of the Prefeasibility Study.

Whilst the Company has been providing samples free of charge (the Chemetall development agreement is the first exception to this), a further catalyst will be the transition to a revenue model, coupled with the successful conclusion of pricing point/s for the graphene products produced. Longer term, the decision to proceed with a full-scale plant development is expected to be a key milestone, as we expect this will be timed with a ramp-up in demand from identified end-users requiring bulk volumes of product for commercial applications.

Meanwhile, the iron ore and cobalt-copper-gold deposits could present a value proposition for the Company. The iron ore deposits have JORC (2004) Resources and well understood metallurgical properties with open mineralisation. The cobalt-copper project has its own story to tell given the recent demand spike for cobalt-containing lithium batteries in the car sector. The Project had 105 diamond drill holes dating back to 1970s (approximately 90 of them are still available) and are undersampled as <70% of the core was tested for cobalt-copper and gold.

We highlight that all of the above projects are 100% owned TLG projects and deposits located in Northern Sweden which could provide substantial synergies for future development. Furthermore, the projects are within a mining region, close to existing bulk infrastructure, available power and have a locally trained workforce. The full extent of the geological potential of TLG's ground is yet to be understood giving the high conductivity of iron ore (magnetite), sulphides and graphites. Exploration to date has demonstrated that targeting graphite and intercepted breccia-hosting sulphides that host cobalt-copper has merits.

INVESTMENT RISKS

The key investment risks include, but are not limited to, the following:

Immature Graphene Market - The market for graphene products is in its infancy, and commercial scale applications requiring bulk volumes of the product may not eventuate in a reasonable investment timeframe.

Commodity price risk - The market for graphite exhibits price volatility as with every other commodity and therefore holds commodity price risk. The market price for graphene is potentially inflated at current levels and would likely decline to a level that better reflects the economic reality of bulk commercial applications. This level may be dramatically lower than currently estimated.

Geological risk - The actual production characteristics of an ore body may be significantly different from original interpretations and expectations, particularly in TLG's case given the unique processing route intended.

Capital Expenditure and operating risk - The risk that the capital and operating costs exceed budget and/or exhaust the available funding due to unforeseen circumstances before project completion, and reduce the profitability and free cash generation of the project.

Exchange rate risk - TLG's product sales are likely to be in US$, its costs may be in multiple currencies, and it currently reports in A$, leading to exchange rate risk.

Liquidity risk - The ability of TLG to pay its creditors from its cash balances or cash generation when the payment is due. Given that TLG had A$6.8m in cash as at 31 March 2017, we see this as a low probability risk in the near-term.

BOARD OF DIRECTORS

Terry Stinson - Non-Executive Chairman

Mr Stinson has over 35 years of international experience in engineering and technology commercialisation and management across the automotive, aerospace, defence, maritime, industrial products, mining and manufacturing sectors. Previous roles include Vice-President and General Manager Siemens VDO, former CEO and Board Member Synerject LLC and Vice-President Manufacturing for Outboard Marine.

Mr Stinson has a Bachelor of Business Administration, majoring in Operations Management from Marian University in Wisconsin, US and is a former National Young Manufacturing Engineer of the Year for the North American-based Society of Manufacturing Engineers. He is a Fellow of the Australian Institute of Company Directors and currently serves as CEO and Managing Director of Orbital Corporation Ltd (ASX:OEC).

Mark Thompson – Managing Director

Mr Thompson has more than 20 years industry experience in mineral exploration and mining management, working extensively on major resource projects throughout Australia, Africa and South America. He is a member of the Australian Institute of Geoscientists and the Society of Economic Geologists and holds the position of Guest Professor in Mineral Exploration Technology at both the Chengdu University of Technology and the Southwest University of Science and Technology in China.

Mr Thompson founded and served on the Board of ASX listed Catalyst Metals Ltd and is a Non-Executive Director of POZ Minerals Ltd.

Grant Mooney – Non-Executive Director

Mr Mooney has a wealth of experience in resources and technology markets that should assist the Company as it proceeds with the Company's dual graphene/graphite project development at its world-class deposits in Sweden. Mr Mooney serves as Director to several ASX listed companies and is a member of the Institute of Chartered Accountants in Australia.

Stephen Lowe – Non-Executive Director

Mr Lowe is an experienced public company director. He was actively involved in managing the recapitalisation and re-listing of the former Croesus Mining NL shell into Sirius Resources NL and then served for four years as Non-Executive Chairman and Non-Executive Director through the discovery, and partially through the development phase, of the Nova/Bollinger nickel-copper deposits. He also serves as a Non-Executive Director (ex-Chairman) of ASX listed base metal explorer Windward Resources Limited and iron ore exploration and project developer, Corizon Resources Limited. He has spent the last eight years as Business Manager to the Creasy Group.

Mt Lowe holds a Bachelor of Business (Accounting), a Post Graduate Diploma in Advanced Taxation, and a Masters of Taxation from the UNSW. He is a Fellow of the Taxation Institute of Australia and a Member of the Australian Institute of Company Directors.

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