

## COMPANY UPDATE

### Investment Highlights

- Talga Resources (TLG) has ownership of five graphite projects in Sweden, and represents a unique play on the anticipated commercialisation of large scale graphene and ultra-thin graphite applications. In addition to the ongoing product evaluation, feedback, and product optimisation being performed by a range of companies around the globe, the Company continues to test the scalability of its liberation process at its pilot test work facility in Germany. Commissioning of Phase 2 equipment and testing is underway. We maintain our Speculative Buy recommendation on the stock.**
- Operations Update** – TLG commenced commissioning (6 April 2016) of its Phase 2 processing equipment at its pilot processing facility in Rudolstadt, Germany. The new production cells have the capacity to accept 50kg blocks of ore, a significant increase on the 10kg capacity in Phase 1. The increased capacity allows the Company to produce larger and/or multiple samples for different applications and end user requirements, while at the same time, completing its primary goal to further optimise the scalability of the process technology.
- Vittangi Graphite Mineral Resource Upgrade** – TLG announced (30 May 2016) that it had updated the Mineral Resource at Vittangi from JORC 2004 to 2012 status, and in addition, that the total size and grade had increased. The JORC 2012 Total Indicated and Inferred Mineral Resource is 9.8Mt grading 25.3% TGC for 2.4Mt of contained graphite (using a 10% TGC low cut-off). The updated Mineral Resource represents a 29% increase in total tonnes and an increase in grade from 24.4% to 25.3% graphite.
- Appointment of Chief Technology Officer** – TLG appointed Dr Siva Bohm as the Company's Chief Technology Officer, based in Rudolstadt at the pilot test facility. Dr Bohm is a recognised global expert in the fields of industrial graphene applications and graphite synthesis. His responsibilities include leading the market strategy, as well as, development and execution of TLG's graphene and graphite processing technology, products and applications.
- Battery test work update** - TLG announced that a new program has commenced at the University of Warwick Energy Innovation Centre, in the UK. This program differs from previous and concurrent German testing in that the work is at industrial, rather than laboratory, scale. This program has thus far used TLG's material to produce Li-ion coin cell batteries. Performance testing will commence shortly to test the batteries over up to 1,000 charge-discharge cycles.
- Catalysts** – The clear short term catalyst for TLG is the successful demonstration of large scale, low cost graphene and graphite production at its pilot test facility through the various phases. Furthermore, we expect the relationships developed with end-users to deliver near term commercial scale applications of graphene and ultra-thin nanographite and micrographite. While the Company is currently providing samples free of charge, 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.

31 May 2016

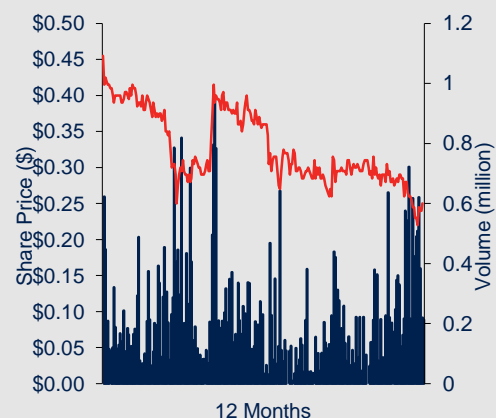
12mth Rating	Speculative Buy	
Price	A\$	0.245
RIC: <b>TLG.AX</b>	BBG: <b>TLG AU</b>	
Shares o/s	m	146.3
Free Float	%	89.8
Market Cap.	A\$m	35.8
Net Debt (Cash)	A\$m	(3.82)
3m Av. D. T'over	A\$m	0.08
52wk High/Low	A\$	0.475/0.20

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**Disclosure: The Chairman of Talga Resources, Keith Coughlan, is also an employee of Patersons Securities Ltd, Mr Coughlan has had no input into this report.**

**An investment in this company should be considered speculative and note assumptions employed are contingent on broader market conditions being 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 25.3%), with high rock competence and highly conductive particle morphology. This allows for the unique outcome of liberating graphitic carbon products (graphene and ultra-thin graphite) directly from the graphite ore using a one-step electrochemical exfoliation processing route (no crushing or grinding required).

TLG has recently commenced Phase 2 commissioning and processing at its pilot test work facility in Germany. The Phase 2 exfoliation cells entail the use of 50kg blocks of ore that had previously been mined from its Vittangi deposit in Sweden (as part of a trial mining program). The Company has recently updated its JORC (2012) Total Mineral Resource (Indicated and Inferred) at Vittangi to 9.8Mt grading 25.3% TGC for 2.4Mt of contained graphite (using a 10% TGC low cut-off). The updated Mineral Resource represents a 29% increase in total tonnes and an increase in grade from 24.4% to 25.3% graphite.

The Company's marketing strategy is to provide early commercial sample volumes of graphitic products in order to develop strong customer relationships and bridge the gap in availability of supply as R&D is conducted into new commercial applications. The pilot plant provides these samples, while also providing an opportunity to optimise the process and prove its scalability.

We consider TLG as well placed to provide a low-cost bulk graphene and ultra-thin graphite supply into existing and new growth markets. We maintain a Speculative Buy recommendation.

Figure 1: Location of graphite projects in Sweden



Source: Talga Resources

## COMPANY UPDATE

### Operations

TLG commenced commissioning (6 April 2016) of its Phase 2 processing equipment at its pilot processing facility in Rudolstadt, Germany. The new production cells have the capacity to accept 50kg blocks of ore (Figure 2), a significant increase on the 10kg capacity in Phase 1.

The increased capacity allows the Company to produce larger and/or multiple samples for different applications and end user requirements, while at the same time, completing its primary goal to further optimise the scalability of the process technology.

Figure 2: Blocks of mined ore cut into 50kg electrodes for feeding exfoliation cells



Source: Talga Resources

### Vittangi Graphite Mineral Resource Upgrade

TLG announced (30 May 2016) that it had updated the Mineral Resource at Vittangi from JORC 2004 to 2012 status, and in addition, that the total size and grade had increased. The JORC 2012 Total Indicated and Inferred Mineral Resource is 9.8Mt grading 25.3% TGC for 2.4Mt of contained graphite (using a 10% TGC low cut-off). The updated Mineral Resource represents a 29% increase in total tonnes and an increase in grade from 24.4% graphite to 25.3% graphite. The detailed breakdown of the Resource between the Indicated and Inferred categories is illustrated in Figure 3.

Figure 3: Vittangi JORC 2012 Mineral Resource

Resource Category	Tonnes	Graphite (%Cg)	Contained Graphite (t)
Indicated	6,900,000	24.2	1,669,800
Inferred	2,900,000	28.1	814,900
<b>Total</b>	<b>9,800,000</b>	<b>25.3</b>	<b>2,403,500</b>

Source: Talga Resources

The updated Resource at Vittangi is in addition to existing Resources at two of TLG's other graphite projects, 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.

### Appointment of Chief Technology Officer

TLG appointed Dr Siva Bohm as the Company’s Chief Technology Officer, based in Rudolstadt at the pilot test facility. Dr Bohm is a recognised global expert in the fields of industrial graphene applications and graphite synthesis. Dr Bohm has a Diploma in Chemical Engineering and a Masters in Applied Chemistry from the Hahn Meitner Institute, in Berlin, and a PhD in Chemistry/Electrochemistry from the University of Bath, UK. He is a chartered Chemist, a Member of The Royal Society of Chemistry, and Fellow of both the Technical Surface Coating and Oil and Colour Chemist Associations.

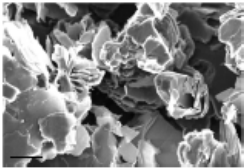
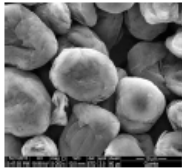
His responsibilities include leading the market strategy, as well as, development and execution of TLG’s graphene and graphite processing technology, products and applications.

### Battery test work update

In February 2016, TLG announced the results of independent test work performed on its Vittangi graphite ore, in processing it into refined natural graphite, for use in producing the anode used in lithium-ion batteries. The findings indicate that commercial grade energy capacity in Li-ion battery anodes can be delivered, without the need for milling, purification, spheronisation, or coating (Figure 4). The Company reports that this demonstrates the advantage of Vittangi graphite ore, in making multiple high value products (alongside graphene) as part of its advanced technology materials strategy.

In May 2016, TLG announced that a new program has commenced at the University of Warwick Energy Innovation Centre, in the UK. This program differs from previous and concurrent German testing in that the work is at industrial rather than laboratory scale. This program has thus far used TLG’s material to produce Li-ion coin cell batteries. Performance testing will commence shortly to test the batteries over up to 1,000 charge-discharge cycles.

**Figure 4: Processing steps required compared to peers**

Talga Graphite	Spheronised Graphite
Talga Processing Steps	Peer Processing Steps
Exfoliate	Crush
↓	Grind Stages
Concentrator single stage	Flotation stages
↓	Micronisation
↓	Purification (chemical/thermal)
↓	Shaping (spheronisation)
↓	Coating
Mix binder and dispersant	Mix binder and dispersant
	
<b>Battery average capacity ~360 mAh/g</b>	<b>Battery average capacity ~360 mAh/g</b>

Source: Talga Resources

### CATALYSTS

The clear short term catalyst for TLG is the successful demonstration of large scale, low cost graphene and graphite production at its pilot test work facility through the various phases, combined with the relationships developed with end-users developing near term commercial scale applications of graphene and ultra-thin nanographite and micrographite.

While the Company is currently providing samples free of charge, 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.

## BOARD OF DIRECTORS

### **Keith Coughlan – Non-Executive Chairman**

Mr Coughlan has almost 30 years of experience in stockbroking and funds management where he has been largely involved in the funding and promoting of resource companies listed on the ASX, AIM and TSX. He has advised various companies on the identification and acquisition of resource projects and was previously employed by one of Australia's then largest funds management organisations.

Mr Coughlan is a current executive director of ASX listed European Metals Holdings Limited.

### **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 Phosphate Australia Ltd.

### **Grant Mooney – Non-Executive Director**

Mr Mooney has a wealth of experience in resources and technology markets that should assist Talga 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 including, Barra Resources Ltd, Carbine Resources Ltd, Phosphate Australia Ltd and Wild Acre Metals Limited. Mr Mooney 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.

Mr 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.



## INVESTMENT RISKS

TLG is subject to a number of investment risks. The key investment risks include, but are not limited to, the following:

**Fledgling Graphene Market** - The market for graphene products is in its infancy and commercial scale applications requiring bulk volumes of 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 initial 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 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.



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