

## TALGA GRAPHENE PARTNERSHIP WITH GERMAN BATTERY GROUP

### Talga Resources Ltd

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### Corporate Information

ASX Code **TLG, TLGOA**

Shares on issue **181.9m**

Options (listed) **44.9m**

Options (unlisted) **36.2m**

### Company Directors

#### Keith Coughlan

Non-Executive Chairman

#### Mark Thompson

Managing Director

#### Grant Mooney

Non-Executive Director

#### Stephen Lowe

Non-Executive Director

Advanced materials company, Talga Resources Ltd (ASX: TLG or “Talga”), is pleased to advise that it has signed a Collaboration Agreement (“Agreement”) with JenaBatteries GmbH (“JenaBatteries”) to jointly explore use of Talga’s graphene products in flow batteries.

Under the Agreement, Talga will formulate and supply graphene for testing in components producing JenaBatteries’ patented polymer flow battery, a type of redox flow battery suitable for commercial scale and grid applications.

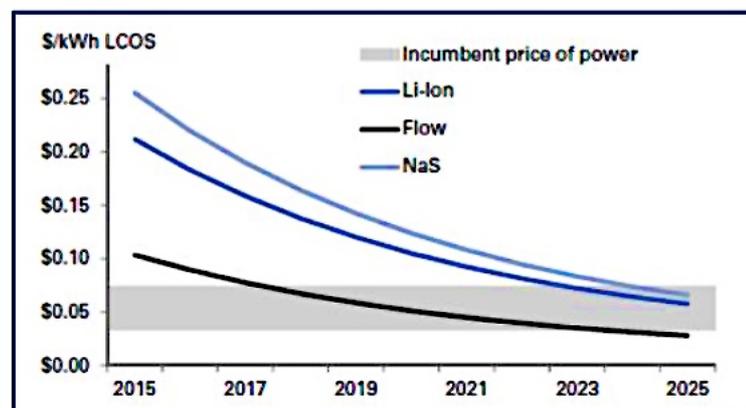
Talga’s graphene will aim to reduce manufacturing costs and increase the performance and longevity of the flow battery components by utilising graphene’s renowned properties of conductivity, chemical inertness and impermeability.

The collaboration provides a platform for Talga’s graphene to be introduced to the large stationary energy storage sector, using variants of its graphene already developed for mobile energy applications. Each company will contribute it’s own intellectual property and products to the collaboration and can share jointly in any new technologies resulting from the collaboration.

JenaBatteries is a German-based technology company that is commercialising its globally patented metal-free redox flow battery. By using a new class of energy storage polymers (‘plastics’) instead of vanadium and other metal-ions, JenaBatteries aims to utilise the well-established global production capacity of the plastics industry to produce batteries in the megawatt/megawatt-hour (MW/MWh) range.

JenaBatteries is supported by Wirthwein AG, a leading international plastic components manufacturer with a strong focus on the energy business segment.

**Figure 1** Levelised cost of storage (LCOS) for Flow batteries compared to Li-ion and sodium sulphur batteries. Source: *The Great Battery Race, Goldman Sachs*<sup>1</sup>.



### **Talga Managing Director Mark Thompson commented:**

*“We are delighted to formally advance another industry partnership and commercialisation opportunity. This Agreement supports our recently announced graphene products strategy and highlights the growing applications for our graphene in the energy storage sector. JenaBatteries are an innovative company, who like us, are targeting the more industrial scale applications for our respective technologies. We very much look forward to sharing joint success with Olaf and his team”.*

### **JenaBatteries Managing Director Olaf Conrad commented:**

*“Fuel cells share many parallels with flow batteries and thus we are very interested to see how publicised graphene results in fuel cells can translate into an industrial scale setting with our redox flow batteries. The components of our energy storage systems can potentially benefit from the unique properties of materials like graphene with regard to longevity, performance and cost and we are excited to be collaborating with Talga on this joint program”.*

### **Flow Batteries**

A flow battery, or redox flow battery, is a type of rechargeable battery where rechargeability is provided by two chemical components dissolved in liquids and separated by a membrane. Energy is stored in the liquid electrolyte in external tanks (rather than in the battery cell).

Flow batteries are technically similar to fuel cells and are targeted at large scale energy storage solutions from homes (kW/kWh range) to the MW/MWh range for industrial sites or grid service installations.

Grid connected energy storage is seen as a multi-hundred billion dollar market opportunity by groups such as Goldman Sachs<sup>2</sup>. They estimate that some types of redox flow batteries obtain a 50% lower levelised cost of storage than lithium-ion batteries<sup>1</sup> (Fig 1). According to Navigant Research<sup>3</sup>, flow batteries are expected to make up almost 20% of global energy storage markets by 2025.

The global market for energy storage is being driven by larger installations of renewable energy sources such as wind and solar. China alone is targeting 250GW of wind and 150-200GW of solar by 2020 with energy storage now included in the 13th Five-Year Plan 2016-2020<sup>4</sup>.

Flow batteries have economics and performance that suit these applications, including but not limited to:

- 20+ year lifetimes, matching the energy generation equipment;
- Almost unlimited charge-discharge cycles and to full depth of discharge;
- Many hours of energy duration/storage suits connection to power grids;
- Low levels of heat generation;
- Low environmental footprint and high recyclability; and
- Highly expandable and flexible to scale to optimum system size.

For further information, visit [www.talgaresources.com](http://www.talgaresources.com) or contact:

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1 *The Great Battery Race*, Goldman Sachs, October 18, 2015.

2 *Equity Investor’s Guide to a Low Carbon World 2015-25*, Goldman Sachs, November 2015.

3 *Next-Generation Advanced Batteries: Global Market Analysis and Forecasts*, Navigant, July 2016.

4 *China push into solar, wind power to heat up global copper markets*, Reuters, September 2015.

## About Talga

**Talga Resources Ltd** ("Talga") (ASX: TLG) is an industrial minerals company developing graphene and micrographite products for the advanced materials market.

Target markets include coatings, energy storage, construction products and composites, with Talga products having significant potential advantages in value and application range - owing to unique ore and patent pending process technology.

Talga sources graphite ore from its 100% owned deposits in Sweden, with pilot test processing at the Company's pilot test facility in Germany. Construction of commercial scale mining operations and on site processing plant in Sweden will commence post mine permitting and completion of commercial supply agreements. Collaborative testing is underway with a range of corporations including industrial conglomerate Tata and UK listed Haydale.