

## **Extension of Definitive Feasibility Study to Incorporate Sunlands Co. Joint Venture**

### **High Temperature Testwork and Thermal Storage Media Market Study**

The Company announces today an extension to its 2019/2020 definitive feasibility study (DFS) to incorporate its share of the joint venture with The Sunlands Co. Pty Ltd (Sunlands Co.).

Under the terms of the joint venture, the Company is entitled to 50% of the return from the joint venture's thermal storage media manufacturing business. The main raw material for the manufacture of thermal storage media is Uley 2 flake graphite. All production of thermal storage media will be sold to Sunlands Co. for assembly within its thermal energy storage (TES) cells.

To determine the contribution of the joint venture to the Uley 2 project the Company has commissioned two discrete studies.

### **High Temperature Testwork**


The first study consists of high temperature test work on various specifications of Uley 2 flake. The objective of this testwork is confirmation of the optimum Uley 2 flake specification, including thermodynamic criteria, for the advanced processing of the flake to produce the thermal storage media. Importantly, this work will be performed beyond the benchscale testwork previously completed by the Company and the joint venture. The results of this work will enable the Company to estimate the costs of manufacture of this media and thereby determine the unit contribution to the Company of every tonne of media sold to Sunlands Co.

The Company has previously announced plans to undertake this study but has been delayed mainly by disruptions caused by the pandemic to schedules of specialist high temperature metallurgical laboratories. The Company has now appointed thermal process engineers, ProTherm Systems ([www.protherm.co.za](http://www.protherm.co.za)) to supervise the testwork jointly with Lycopodium Minerals ([www.lycopodium.com](http://www.lycopodium.com)) to be conducted by Lycopodium Minerals' preferred laboratory.


### **National Electricity Market Study**

The second study is directed at estimating the Australia's National Electricity Market (NEM) requirement for long duration energy storage and specifically the type of long storage solution offered by Sunlands Co. The results of this study will provide the data essential for the determination of the quantity of thermal storage media to be manufactured by the joint venture and thereby the estimated level of Uley 2 flake production to be supplied by the Company.

The Company has appointed Macroeconomics Advisory ([macroeconomics.com.au](http://macroeconomics.com.au)) to undertake this study which will include a NEM specific model of the potential market for long duration energy storage. The principals of Macroeconomics Advisory have extensive experience in studies of the NEM including the modelling of the impacts of various transition options available to the NEM for the reduction of CO<sup>2</sup> emissions within the existing grid network. Their work is regularly covered in the national media and recent work in this area is available at Energy – Macroeconomics.



**MACROECONOMICS**  
**ADVISORY**

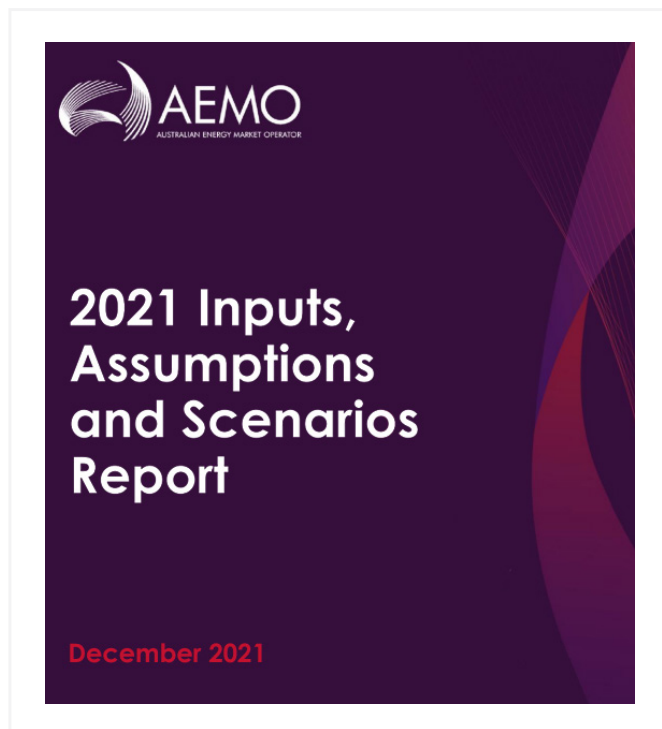


**Electricity generation and emissions reduction in Australia.**

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#### **ABOUT QUANTUM GRAPHITE LIMITED**

QGL is the owner of the Uley flake graphite mineral deposits located south-west of Port Lincoln, South Australia. The company's Uley 2 project represents the next stage of development of the century old Uley mine, one of the largest high-grade natural flake deposits in the world. For further information, [qgraphite.com](http://qgraphite.com).



The scope of the study has been agreed by the parties and the key terms of the engagement are summarised below:

- (a) The market will be limited to the NEM even though the Sunlands Co. long duration storage solution has global application;
- (b) Adoption of market data and assumptions as published by the Australian Energy Market Operator (AEMO), its consultants and various other State and Federal Government agencies;
- (c) Deployment of the technology will be generally confined to:
  - (i) Long duration and very long duration applications (ie. a storage duration of at least 6 hours);
  - (ii) Certain NEM segments that will benefit most from the technology. Benefits will include promotion of a more rapid transition to emissions reduction whilst enhancing grid stability and mitigating the significant investment in transmission and distribution infrastructure required by the large-scale/distributed installation of renewables including pumped hydro; and
- (d) Larger scale applications that exploit the scalability advantages of the technology.

Based on this scope, one of the major NEM segments targeted will be retrofitting existing coal fired power stations with the Sunlands Co. technology. This represents a significant segment within the NEM and a very large global market. Current retrofitting technologies aimed at coal fired power stations have tended to be limited to carbon capture and storage technologies. Whilst these technologies have demonstrated technical efficacy, cost and scalability remain significant challenges.

In contrast, the Sunlands Co. technology can eliminate the need to use coal as the fuel source and its TES cells are uniquely capable of driving utility scale steam turbines such as those installed at our coal fired power stations in Victoria's La Trobe Valley and NSW's Hunter Valley.

Company Director, David Trimboli commented that *"an important aspect of these studies is quantification of the downstream value-add delivered by the joint venture to Uley 2 flake supplied by the Company. Not only does this provide us with an estimate of the return we should expect from the joint venture but it will demonstrate our participation in the emerging energy market segment of long duration storage."*

Chairman, Bruno Ruggiero also commented, *"I'm very pleased to have put most of the pandemic disruptions to our testwork programs behind us. We've assembled a first class team and look forward to a New Year and results which will reinforce Uley 2's status as the pre-eminent flake graphite project globally"*.

**FOR FURTHER INFORMATION CONTACT:**

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