

ALPHA TORBANITE PROJECT – DEVELOPMENT UPDATE

**GREENVALE APPOINTS HIGHLY REGARDED
INTERNATIONAL UNIVERSITY TO COMPLETE FINAL
PHASES OF ALPHA LIQUEFACTION TEST PROGRAM**

*University of Jordan to run the final two programs in the liquefaction test program,
paving the way for completion of the Alpha Project Prefeasibility Study*

Key Points:

- **University of Jordan engaged to run the pivotal liquefaction test programs 3 & 4.**
- **Test Program 3 already underway at the University with promising early results.**
- **Early observations from Test Program 3, indicate higher temperatures have improved liquefaction conversion without catalyst close to target values.**
- **Final results from Test Program 2 delayed due to a lack of appropriate laboratory capacity in Australia.**
- **A clear path for the liquefaction results exists for the delivery of the maiden Prefeasibility Study for the Alpha Project**
- **Alpha Prefeasibility Study now scheduled for delivery in Q2 2023.**

Early observations from Test Program 3, and the reported data from Test Program 2, indicate that increasing temperatures, varying catalysts and substituting carrier fluids do have a positive influence on the yields of heavy hydrocarbons (required for bitumen production) stemming from both the cannel coal and torbanite

Greenvale Energy Limited (ASX: **GRV**, “**Greenvale**” or “**the Company**”) is pleased to provide an update on recent progress with the ongoing liquefaction testing program for its flagship Alpha Torbanite Project in central Queensland.

The Company is pleased to advise that it has engaged the University of Jordan to undertake the liquefaction test work program as it works to complete the final key inputs to the Alpha Prefeasibility Study.

The University of Jordan is a world-class institution with significant expertise in geotechnical/chemical engineering, liquefaction studies and bituminous products specifically relevant to the Alpha Project.

The decision to engage the University of Jordan was made after taking into account the University of Jordan strong credentials and having regard to the ongoing delays experienced with Australian metallurgical laboratories due to either capacity constraints, people/expertise shortages or lack of appropriate equipment relevant to the highly specialised test work required for the Alpha Torbanite Project.

The Company is pleased to report that the University of Jordan has wasted no time in commencing Test Program 3 and is already making excellent progress, with encouraging early results.

Commenting on the appointment, Greenvale's CEO, Mark Turner said: *"The University of Jordan's involvement has been instrumental in helping to advance the test program and we are confident that this final phase of test work will deliver accurate and reliable results for the Alpha Feasibility Study."*

"We would like to thank the University of Jordan for their responsiveness and professionalism, and we look forward to continuing our collaboration with them."

"While the appointment of the University of Jordan is extremely positive, it does come off the back of slight delays to the delivery of Stage 2 of the test program. Unfortunately, the Company and its technical team have found that many labs in Australia do not have the required competencies in relation to the liquefaction process or experience with the unique properties of torbanite and the resultant bituminous materials that we are aiming to produce."

"This local knowledge gap has been a significant challenge for the Company. Given the nature of local crudes, we feel as though Australia has in some senses turned its back on bitumen production. Despite the vast resources available in Australia which could be processed to produce bitumen, there has been a lack of demand for investment and support in developing the skills, knowledge, and infrastructure required for the process and efficient laboratory testing, processing and refinement of a fully locally sourced bitumen product."

"That said, we are confident that we now have the right technical and strategic partner in place with the University of Jordan to complete the test work program and deliver the results we need."

"With bitumen being such a critical part of Australia's infrastructure future, we are looking forward to delivering a project that has the potential to be the country's sole domestic supplier of bitumen to help provide Australia with sustainable and safe roads!"

The delays experienced in Test Program 2 have been relatively minor and, with the appointment of the University of Jordan, the Company is confident that it has made up lost time with the change to the final test work program resulting in the delivery timing for the Company's maiden Pre-Feasibility Study being rescheduled to Q2 2023 (from late Q1).

Intertek in Australia has completed the laboratory tests component of Test Program 2. The program was focused on treatment conditions for the cannel coal, as Test Program 1 already demonstrated that the torbanite was amenable to liquefaction even at low temperatures. The preliminary results from the most recent test work indicate the cannel coal samples delivered conversions above what was observed in Test Program 1. The Company looks forward to releasing these results in more detail as soon as it receives the final interpretation and associated technical report.

Test Program 3 is well underway and early results indicating continued improvement at 400C to achieving target solubility of torbanite and cannel coal. The current lab work is still focused on the outcrop samples of both the torbanite and cannel coal. Table 1, below, describes the number and types of both samples and tests have been conducted to date.

Samples	Carrier Type	Reaction Tests	Hexane Wash	Toluene Wash	THF Wash
B (No Catalyst)	A	Completed	Completed	Completed	Completed
Blend (No Catalyst)	A	Completed	To be repeated	To be repeated	To be repeated
F (No Catalyst)	A	Completed	To be repeated	To be repeated	To be repeated
Blend (No Catalyst)	B	Completed	To commence	To commence	To commence
F (No Catalyst)	B	Completed	To commence	To commence	To commence
B (No Catalyst)	B	Completed	To commence	To commence	To commence

Table 1: Liquefaction Test Program 3 Progressalist

The University of Jordan team has completed six reaction tests over the past two weeks. The samples included in the tests were Cannel coal (B), Torbanite (F) and a 33/66 (F/B) BLEND sample. All the six samples were tested without adding catalyst. The tests were also run in two streams, testing the influence of different carrier types.

Similarly, the remaining samples (highlighted orange in Table 1) to be completed for the sequence wash of solvents. In addition, a cannel coal sample will be tested with catalyst and oil as carrier within the coming weeks, depending on how fast the team progress with the current load of laboratory work.

Data from the above laboratory tests will be reviewed and interpreted, along with further laboratory analyses to characterise the collected solids and liquids from the reaction tests. This interpretation and analysis will provide information for the Test Program 3 report.

In addition, core samples to initiate Test Program 4 will be provided, with a particular emphasis on sample preparation and shipment.

Early observations from Test Program 3, and the reported data from Test Program 2, indicate that increasing temperatures, varying catalysts and substituting carrier fluids has had a positive influence on the yields of heavy hydrocarbons (required for bitumen production) stemming from both the cannel coal and torbanite.

As the testing program has continued, the initial plant design has been simulated to better understand the processing flow. Variations of the initial process flows are being investigated to simplify the and better focus the design on achieving greater yields of the desired heavier hydrocarbon fractions.

The simulations are awaiting input from the results of Test Program 3 and 4 to better refine the plant design and processing flow. Simultaneously, simulation work to estimate likely emissions and overall balances will continue once data from the test program are received.

This simulation work will then better guide the Company's geothermal energy and offsetting strategy.

With the appointment of the University of Jordan, Greenvale now has a clear path to obtaining the liquefaction results necessary for the delivery of the maiden Feasibility Study for the Alpha Project.

Additionally, the breadth of knowledge and experience of the University of Jordan team is expected to be of significant benefit to the ultimate design and execution of the Alpha Project.

The Company looks forward to updating shareholders on the findings from Test Programs 2, 3 and 4 in the coming weeks.

Authorised for release

This announcement has been approved by the Board of Greenvale for release.

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