

ASX ANNOUNCEMENT

16 September 2022

GREENVALE OUTLINES “DUAL-LANE” DEVELOPMENT ROADMAP FOR ALPHA TORBANITE & GEOTHERMAL PROJECTS

Strategy underpins Greenvale’s objective to become a sustainable Australian bitumen producer

Highlights:

- **Liquefaction testing program advancing for the Alpha Torbanite Project.**
- **Pre-Feasibility Study scheduled for delivery in Q1 2023.**
- **Anticipated grant of geothermal exploration permits (EPGs) in Q1/Q2 2023.**
- **Geothermal exploration drilling to commence in Q2 2023 in the Millungera Basin.**

Greenvale Mining (ASX: **GRV**) (**‘GRV’**, **‘Greenvale’** or **‘the Company’**) is pleased to provide an updated roadmap regarding the Company’s “dual-lane” development program for its Alpha Torbanite Project and the Company’s geothermal assets in Queensland.

It may seem that the two projects share little commonality. However, they are intrinsically linked and both integral to the Company fulfilling its long-term objective of becoming a sustainable producer of bituminous products to fulfil the infrastructure needs of Australia.

Greenvale’s CEO, Mark Turner, said: *“We are pleased to provide an updated roadmap and development timeline for our two key business streams which shows how they will dovetail over the next 2-3 years. The “dual-lane” development strategy of Alpha and our geothermal assets is a clear roadmap for the Company to achieve its goal of becoming a sustainable producer of bitumen to help provide Australians with ‘greener’ and safer sealed roads.”*

ALPHA TORBANITE PROJECT ROADMAP

On the 22nd September 2021, the Company released a proposed commercialisation strategy for the Alpha Torbanite Project incorporating a green energy solution aimed at creating offsets for the development and ongoing operation of Alpha. While this green energy strategy has not changed, it has significantly evolved since September in line with management’s deeper understanding of the Alpha deposit and broader community expectations regarding the development of hydrocarbon-based projects.

The Company’s original intention was to utilise a traditional retort method to extract the desired products. As part of this initial commercialisation strategy, Greenvale stated that ensuring energy efficiency and reducing emissions to acceptably low levels were key considerations of the retort test work and would be integral to the final process layout and design.

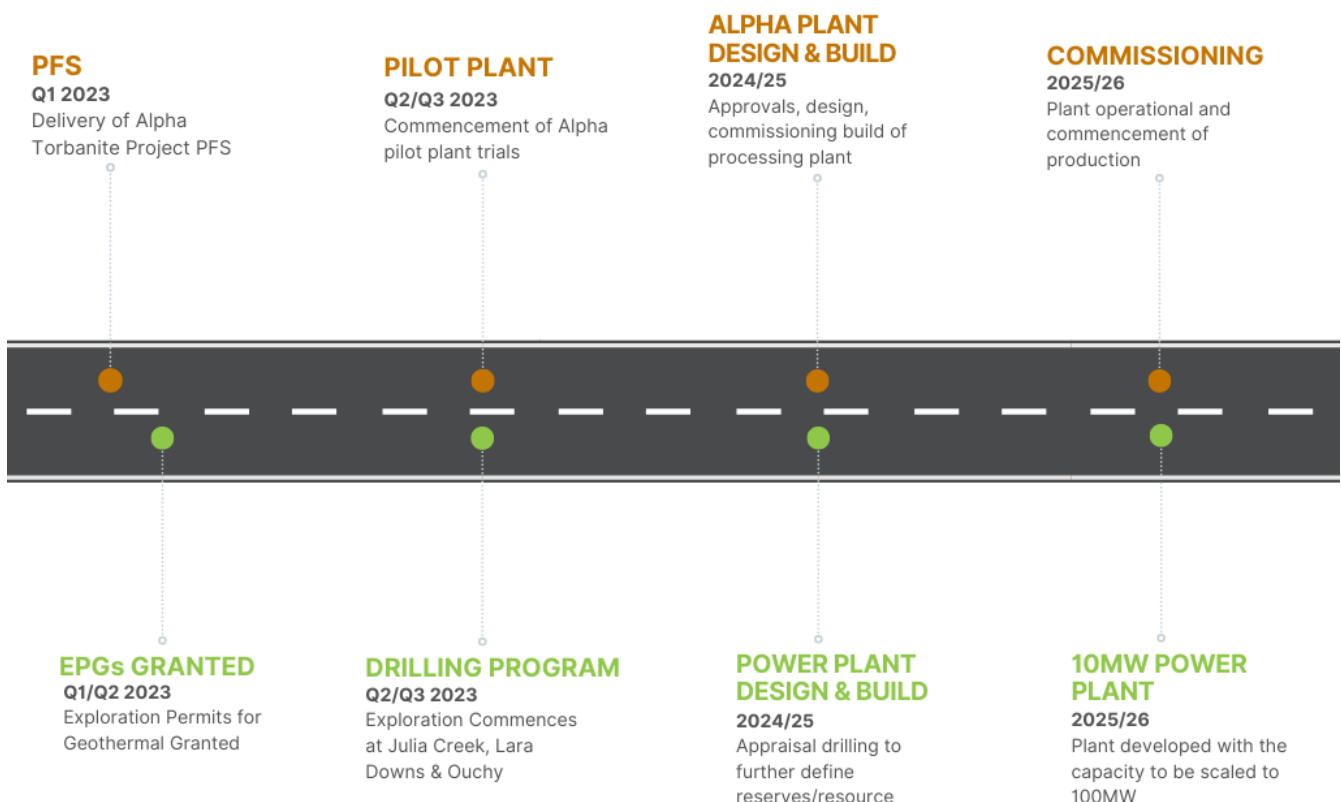
It became apparent during the extensive retort testing program that, while the results were in line with expectations, traditional retorting was not going to deliver the optimal product yields at the required level of energy efficiency and with the necessary emissions profile.

An alternate processing route using liquefaction was therefore investigated with considerable success. As announced on 24th August 2022, the liquefaction process delivered the desired heavy oil fractions needed to produce bituminous products with an improved emissions footprint.

An expanded liquefaction program is currently underway, run by the Company's technical consultants PROCOM Consulting. The expanded liquefaction program will demonstrate a range of processing details that will set the foundation of the Preliminary Feasibility Study and eventual Pilot Plant trials scheduled for delivery in 2023.

Data derived from the operation of the pilot plant as well as a range of support studies will then be applied to the design of the production facility and to refine project costs. The Company targets a commissioning date in late 2025 or early 2026.

ALPHA PROJECT



GEOTHERMAL

Figure 1: Greenvale Mining's Dual Lane Roadmap for the Alpha Torbanite & Geothermal assets

GEOTHERMAL ENERGY ROADMAP

In 2021, Greenvale began investigating several renewable energy solutions for offsetting at the Alpha Project. As part of these preliminary investigations, the Company applied to the Queensland Department of Natural Resources Mines and Energy for four geothermal licences. On the 16th June 2022, the Company announced three new geothermal applications in the exciting Millungera Basin region in North-West Queensland.

The Company evaluated geothermal power as being truly dispatchable in nature, better environmentally, possessing a potentially smaller physical footprint and enjoying a longer plant life when compared to other renewable energy alternatives.

By October 2022, all of Greenvale's Exploration Permits for Geothermal (EPG's) will have had their Native Title Section 29 notices advertised, providing a reliable pathway to grant. The approvals process is currently anticipated to take six months to complete, allowing the EPGs to be granted in the first half of 2023.

As announced on the 6th September 2022 a geothermal exploration drilling program is currently in the planning stages with a target commencement of Q2 2023, once the relevant permits are granted and Queensland's traditional wet season is over.

Based on current understanding, the program will target depths in the region of 2km and a modelled temperature range of 90-150°C. The priority of the drilling program will be to determine the stratigraphic and lithological properties of the basin. A heat flow profile across the entire well section will be produced, along with an investigation of the initial producibility of the penetrated formations.

The results from the drilling program will provide critical data inputs to refine the working geological and commercial models and provide a basis for further development approval.

Based on the drilling results, it is anticipated that a 10MW power plant would be developed at Julia Creek to provide Carbon Credits/Renewable Energy Certificates to offset the Alpha Torbanite Project and prove the commerciality of geothermal energy in Queensland. Noting, 1MWh of electricity equates to 1 Renewable Energy Certificate.

Greenvale has engaged the services of Stantec, a highly experienced engineering consultancy with a proven track record in the geothermal space. They have been tasked with preparing the conceptual design for a 10MW power plant option, including capital and operating cost estimates.

Once commerciality has been demonstrated, the Company expects that future plans would see this geothermal facility expand from 10MW to 100MW at Julia Creek, with the potential for two additional 100MW plants in the wider Millungera Basin.

Management believes that, in the near term, the Company's geothermal assets will allow for the offsetting of development and production at Alpha. However, in the longer term, Greenvale's geothermal capabilities could potentially present a considerable opportunity and allow Greenvale to become a significant player in the renewable energy sector within Queensland.

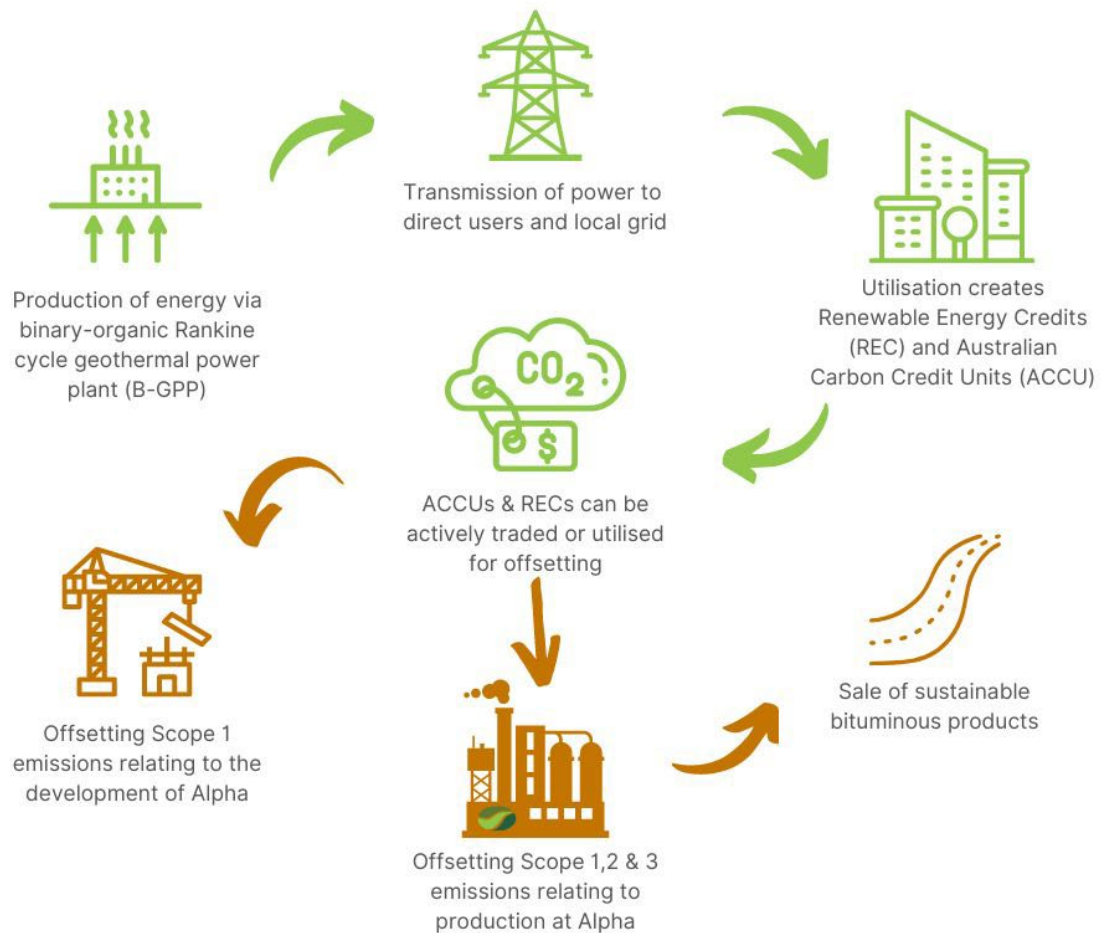


Figure 2: Greenvale Mining's Geothermal and Alpha Projects ACCU & REC production and utilisation

Authorised for release

This announcement has been approved by the Board for release.

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About PROCOM

“Since 2005, PROCOM Consultants P/L has been providing innovative engineering solutions and commissioning support to various industries including the oil shale and new energy developments such as oil shale technology selection, biofuels, biodiesel, and gasification of biomass to maximise hydrogen production.

“The founders and key members of the team spent over 20 years developing technology for pyrolysis of oil shale in a range of technologies covering Australia, USA, China, Jordan, and Estonia. First-hand experience in operating a large pilot plant focused on coal liquefaction was also a core experience for the group.

“With this experience, PROCOM is pursuing lessons learned from liquefaction and pyrolysis avenues to maximise the utilisation of the Alpha Oil shale resource to produce bitumen, ensuring our expertise gathered over the past 30 years in oil shale processing is brought to the selection of a suitable technology to rapidly progress towards production.

“Initial trials to produce heavy oil from torbanite are very promising and work is continuing in improving yields and quality at reduced operating severity.”

About Stantec

“For over 40 years, Stantec has been actively involved in the geothermal energy industry globally, and Greenvale is pleased to have engaged Stantec in the development of our geothermal assets, with their Brisbane office working in conjunction with the Geothermal Centre of Excellence in Pasadena, California.

“The Pasadena office brings to Greenvale Mining broad geothermal industry experience and has performed numerous studies, due diligence, engineering and design, construction, and operation of binary cycle and steam flash geothermal power plants from 1MW to 180MW generation output.

“Consistently ranked in the top 10 Global Design Firms by Engineering News Record (2021), Stantec offers full-service consulting engineering and construction phase services around the world. We have over 27,000 employees across 400+ locations and a reputation for setting standards in quality, value, and innovation.”