

QUARTERLY ACTIVITIES REPORT SEPTEMBER 2021

Maiden JORC Resource for Alpha Project on track for Q4, with hybrid solar/gas power solution incorporated in commercialisation strategy | Site works completed for maiden Georgina drilling

Highlights**Alpha Torbanite Project, QLD:**

- Updated commercialisation strategy delivered, incorporating a hybrid solar and gas-fired power station feeding into the local grid.
- The proposed 100MW power station introduces an important renewable energy aspect to the Project, enhancing its sustainability credentials.
- Sighter testing program nearing completion using the Greenvale Retort and a standard retort testing and asphaltene recovery procedure.
- Sighter testing results broadly align with historical reports and confirm the Alpha material is high yielding, with the torbanite yielding up to 65% synthetic hydrocarbons.
- Maiden JORC Mineral Resource on track to be delivered by late 2021, with Feasibility Study and Ore Reserve targeted for completion in Q1 2022.

Georgina Basin IOCG Project, NT:

- Extensive ground-based gravity program completed with excellent results.
- Large-scale IOCG drill targets at “Twin Peaks” refined following the modelling of coincident magnetic-gravity anomalies.
- Initial four-hole diamond drill program planned across the “Twin Peaks” with drilling set to commence in early November following a slight delay.
- High-resolution 12,618-line kilometre airborne radiometric and geophysical survey completed.

Corporate:

- Experienced mining and exploration executive Matthew Healy commenced as CEO, effective September 1st.
- Successful execution of sale of unmarketable shareholder parcels.
- Company remains in a strong financial position with cash holdings of \$9.1 million at quarter-end.

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Overview

Greenvale Mining Limited (ASX: **GRV**) (**GRV** or **the Company**) continued to progress development and exploration activities across both the Alpha Torbanite Project and Georgina Basin IOCG Project during the September Quarter, as well as welcoming highly experienced corporate executive Matt Healy as the Company's new CEO.

Mr Healy is an experienced geologist with a wealth of knowledge regarding IOCG deposits and he has already brought valuable insights to the Greenvale leadership team.

During the Quarter, the Company announced an updated commercialisation pathway for its unique Alpha Torbanite Project in Queensland. The commercialisation strategy was formulated based on encouraging preliminary results from the Company's sighter testing program, which support the historical data from Alpha and reinforce the high-yielding potential of the torbanite deposit.

One of the key changes to Greenvale's development strategy is a proposal to include a 100MW hybrid power station as part of the Project, powered 50% by gas and 50% by solar. This power generation component introduces an important renewable energy aspect to the Project, enhancing its sustainability credentials.

Importantly, the commercialisation and sighter test work completed to date has confirmed that Alpha can produce a range of synthesised and refined products for sale using proven, off-the-shelf technology including pyrolysis systems, refining and power generation equipment that can be sourced relatively easily. A maiden JORC Mineral Resource Estimate for Alpha is on-track to be delivered before year-end, ahead of a Feasibility Study and Ore Reserve in Q1 2022.

At the Georgina IOCG Project in the NT, site preparations for drilling have been completed and the Company's field team is in place. An extensive ground-based gravity program was completed during the Quarter, returning highly encouraging results that confirmed and strengthened the large-scale IOCG targets known as the "Twin Peaks", which will be targeted by the initial phase of drilling.

The Company also completed a vast airborne geophysical survey, comprising 12,618-line kilometres over tenement EL32283 and EL Applications 32284 and 32820. The survey consisted of high-resolution 100m line-spaced coverage that included magnetic, radiometric and Digital Elevation Model (DEM) methods. The survey was co-funded by the Northern Territory Geological Survey (NTGS) under the 'Resourcing the Territory' initiative, following Greenvale's successful exploration grant application submitted in the previous quarter.

On the corporate front, the Company further strengthened its technical team during the Quarter with the appointment of experienced Senior Project Geologist, Nicholas Ryan who, together with Greenvale's new CEO Matthew Healy, will be responsible for the ongoing drilling program at the Company's highly prospective Georgina Basin IOCG Project.

Projects

Alpha Project, Queensland

Background

The Alpha Torbanite Project is located approximately 50km south of the town of Alpha in Central Queensland. The Alpha torbanite deposit consists of two seams, an upper seam of mostly lower-grade mineralisation with an average thickness of 1.12m and a lower seam containing lenses of torbanite up to 1.9m thick.

The Project has been subject to extensive exploration and laboratory testing since its initial discovery in 1939.

During 2019, SRK Consulting Pty Ltd (“SRK”) was engaged to reassess the project’s commercialisation strategy. SRK’s report set out a potential new development strategy based on the production of a diversified suite of value-added products.

SRK noted that, in contrast with typical oil shale deposits, the Alpha torbanite deposit is exceptionally high-grade, containing up to 650 litres of hydrocarbons per tonne of torbanite, and can produce high-value bitumen, light crude oil and activated carbon.

The upper and lower bituminous shales also produce similar products, albeit at lower yields of 110-140 litres per tonne. Additionally, the torbanite and bituminous shales can deliver high-quality value-added products through appropriate investment in processing infrastructure.

SRK was engaged to undertake a staged work program to assist in evaluating the commercial viability of the project.



Figure 1: Alpha Senior Field Manager, Rob Carlos, with a sample of torbanite.

Activities during the September Quarter

During the September Quarter, the Company announced an updated commercialisation strategy for the Alpha Project that proposed incorporating an innovative solar and gas-fired hybrid power station feeding into the local power grid.

Additionally, sighter test work on the bulk sample extracted late last year continued throughout the reporting period, with results supporting historical data that demonstrated the high-yielding nature of the Alpha deposit.

During the Quarter, the Company was able to synthesise a sufficient quantity of asphaltene material (bitumen) for testing by potential downstream customers and for independent laboratory validation.

In addition, three composite liquid samples produced from the sighter testing (two from torbanite horizons and one from the lower seam) plus several gas samples were sent to Petrolab Australia Pty Ltd for fingerprint analysis and hydrocarbon sampling, with results expected to be announced in the December Quarter.



Figure 2: Display bottles of various products derived from the sighter testing program.

Core logging has been completed, with assay results awaited from Stratum Reservoir Australia prior to final Resource modelling. Stratum Reservoir has been engaged to undertake the assay program, including the completion of the mineralogical, elemental, petrological and petrographic analyses and oil yield test work.

A maiden JORC Mineral Resource Estimate for the Alpha Project is expected to be published during the December 2021 Quarter.

An updated commercialisation strategy for the Project has been developed incorporating a “green” power generation model, with Alpha aiming to become a long-term provider of power via a 100MW solar and gas-fired hybrid power station.

Greenvale plans to generate electricity from the gas and short chain hydrocarbons and use the resulting waste heat to power the pyrolysis process. The base case evaluation at this stage for the Alpha Project includes the development of a 50MW solar farm to be included with the project. It is anticipated that, over the life of the project, the solar farm power generation will enable the project to be carbon-neutral.

Preliminary commercial evaluation suggests that approximately 85% of the raw material is likely to be converted into refined products with Greenvale’s research indicating that a system capable of processing between 250,000 and 500,000 tonnes per year can be sourced, installed, and commissioned using off-the-shelf components. Figure 1 below is a simplified schematic of the potential process plant layout, as per the updated commercialisation strategy.

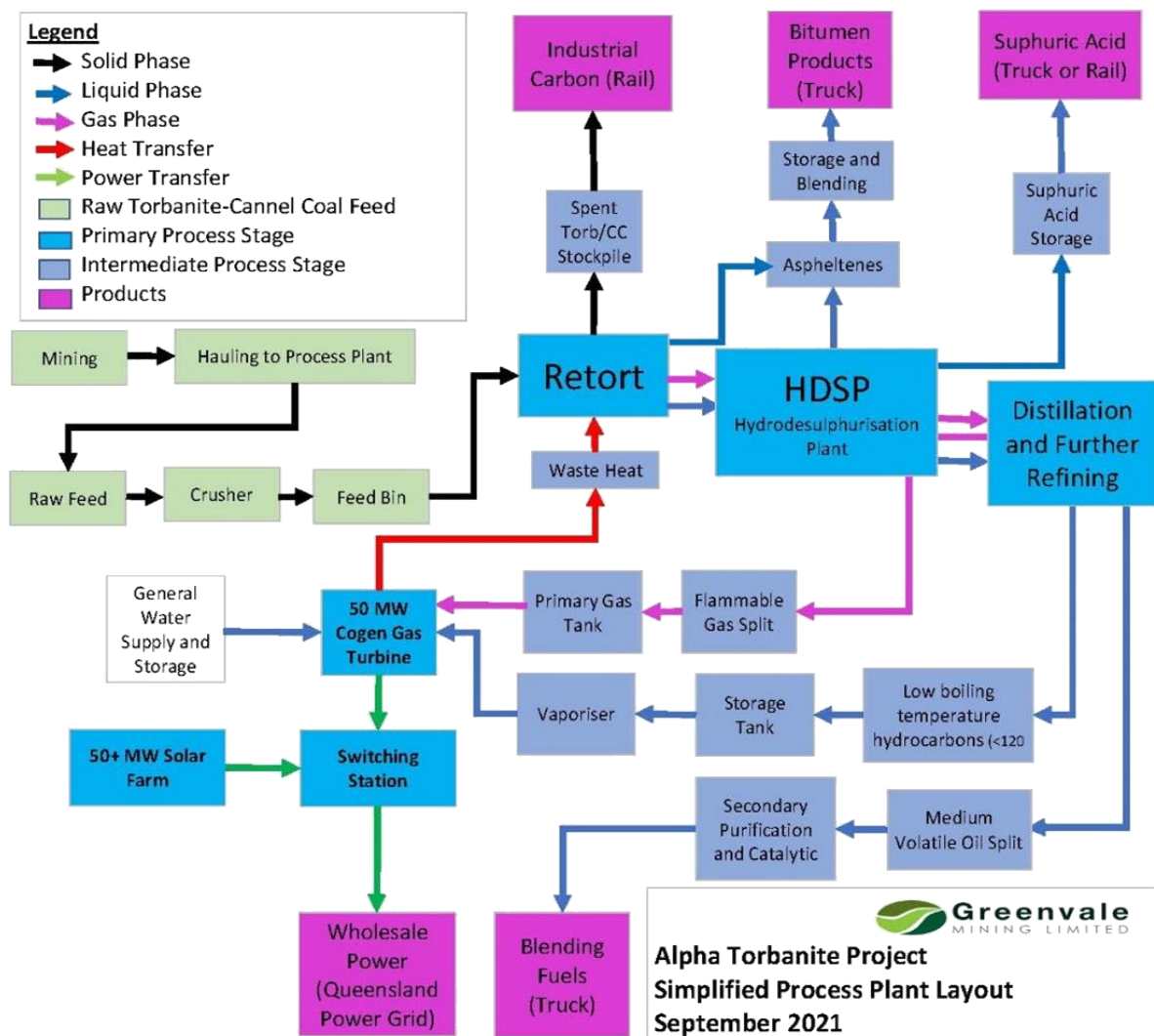


Figure 3: Alpha Torbanite Project – Simplified Process Plant Layout.

Activities planned for the December 2021 Quarter

The main focus for the Company in the forthcoming Quarter is the delivery of Alpha's final geological model and the announcement of the Company's maiden JORC Mineral Resource.

In parallel with the geological modelling, the next quarter will see the conclusion of the sighter test work and associated assaying. Synthetic solids testing is already underway with ALS, as is the previously mentioned basic oil and gas testing with Petrolab.

Next stages will include the validation of internal laboratory results, as well as an extensive product categorisation and confirmation process, including fingerprint chromatography and synthesis correlation of raw to synthetic products.

The Company is also undertaking extensive environmental analysis, including vegetation studies for the proposed mining area.

Greenvale remains confident that it will be able to deliver the maiden JORC Mineral Resource by the end of the December 2021 Quarter and the DFS in early 2022.



Figure 4: Greenvale Mining Managing Director, Neil Biddle, in the field at the Alpha Torbanite Project.

Georgina Basin IOCG Project, Northern Territory

Background

The Georgina Basin Project, held by Greenvale's wholly-owned subsidiary Knox Resources Pty Ltd, has provided a low-cost entry into one of Australia's most significant emerging green fields exploration regions.

Following the establishment of government funding programs aimed at boosting mineral exploration in northern Australia, significant work was undertaken by the Northern Territory Geological Survey and Geoscience Australia to progress initiatives aimed at unlocking the resource potential of the Barkly and Gulf regions (which includes the Georgina Basin) by upgrading geophysical coverage and data accessibility to assist in understanding the potential for large-scale IOCG mineral systems within the Georgina Basin.

IOCG deposits are an important and highly valuable global source of copper, gold and uranium as well as having the potential to host other minerals including silver, bismuth, molybdenum, cobalt and rare earth elements.

Knox was a successful applicant under an open tender for nine Exploration Licences over four distinct locations, covering a total area of 4,475km² situated between the historical IOCG provinces of Tennant Creek and Mount Isa.

On 23 September 2020, Knox was granted Exploration Licences over seven of the areas, with the remaining two being subject to negotiation with the indigenous freehold landowners.

Activities during the September Quarter

During the September Quarter, an extensive ground-based gravity program was completed at the Georgina Project by Atlas Geophysics Pty Ltd. Greenvale's technical team was very impressed by the quality of data collected, with a preliminary evaluation of the results highlighting several strong coincident or partially offset gravity anomalies which have been observed around numerous previously identified magnetic targets.

The program has significantly improved the resolution of data available to the exploration team within EL32282 and EL32296, with Atlas acquiring a total of 870 gravity stations at a spacing of 1km x 1km and 1,879 gravity stations at a spacing of 200m x 200m within the project area.

The initial data received from the gravity survey has highlighted the presence of various major structures and stratigraphic trends which support the prospectivity of the Georgina Project to host large-scale IOCG deposits.

The results from the gravity program have been incorporated into the Company's initial drill targeting, providing increased confidence in the holes planned for the previously identified "Twin Peaks" targets.

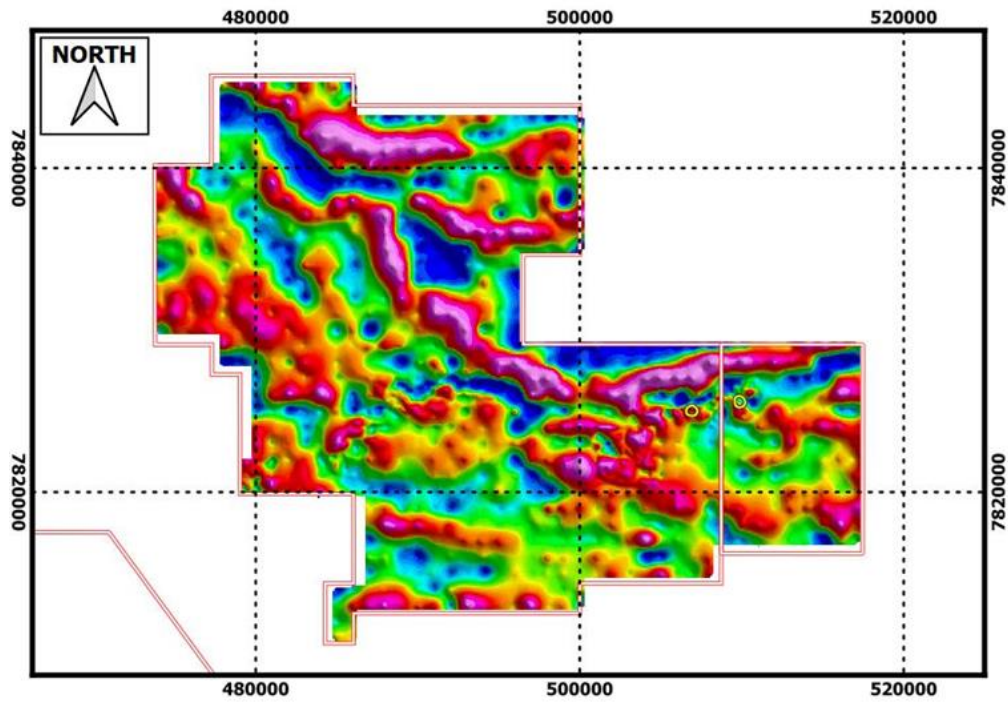


Figure 5: 5km High Pass Filtered Gravity Image of EL32282 & EL32296 – “Twin Peaks” circled in yellow.

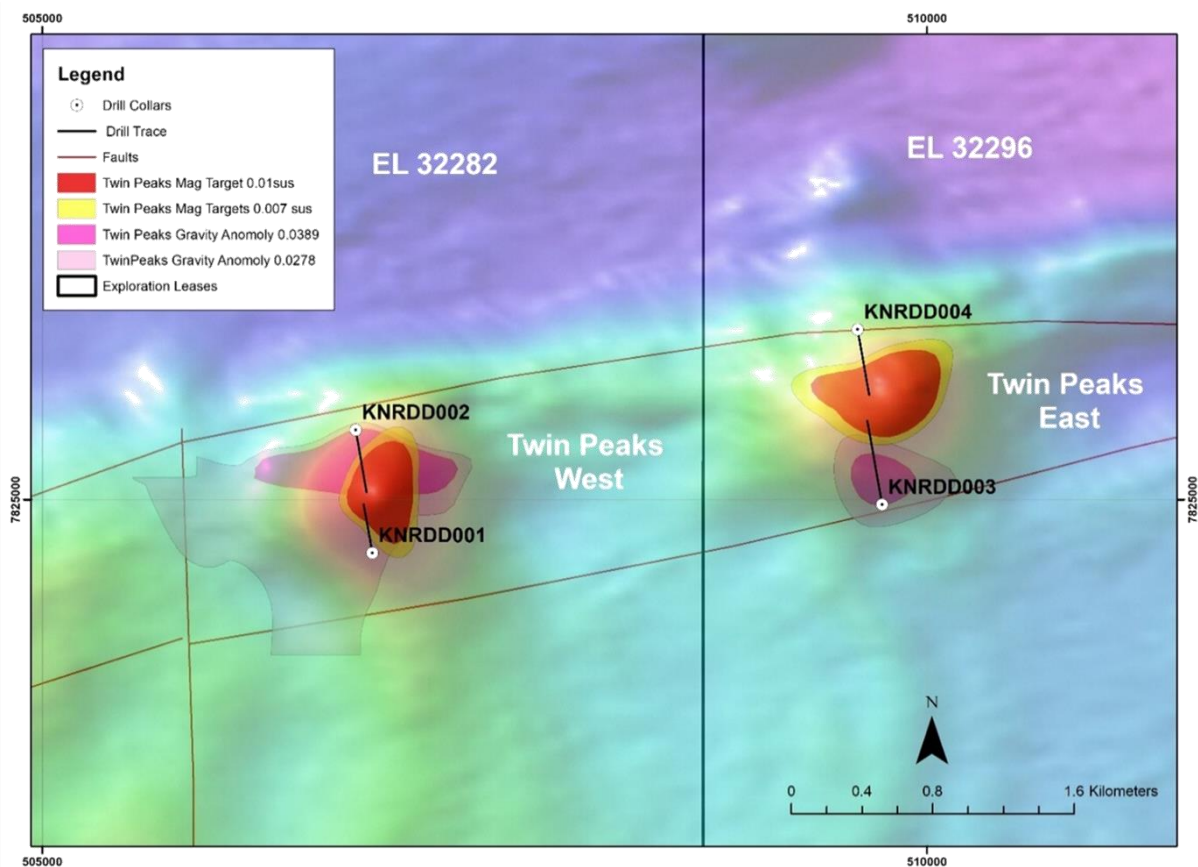


Figure 6: Overlay of Interpreted Gravity on “Twin Peaks” Magnetic Anomalies

Figures 7 and 8 shows two 3D inversion models of the “Twin Peaks” targets, with the magnetic anomalies indicated in orange and the gravity anomalies indicated in red.

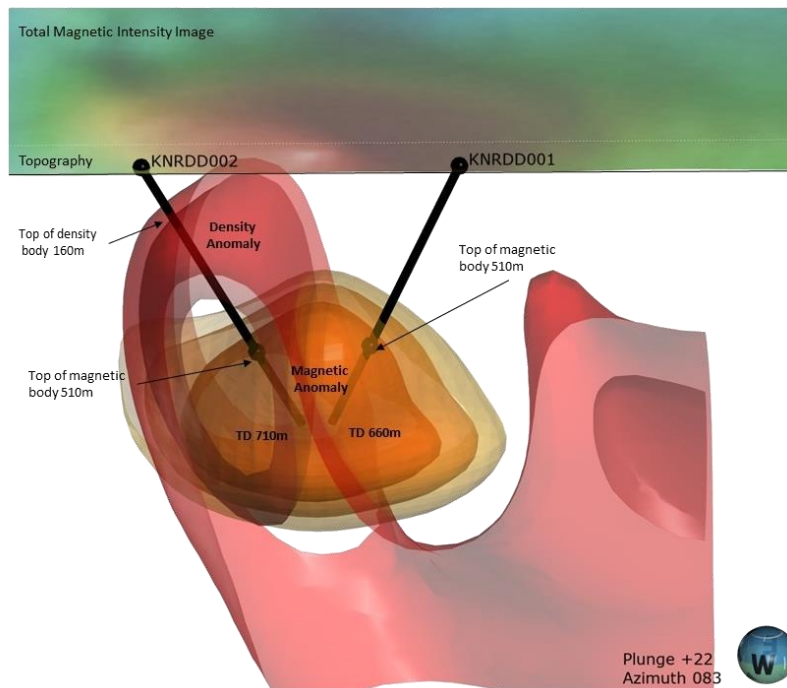


Figure 7: 3D Inversion Model of "Twin Peaks" West

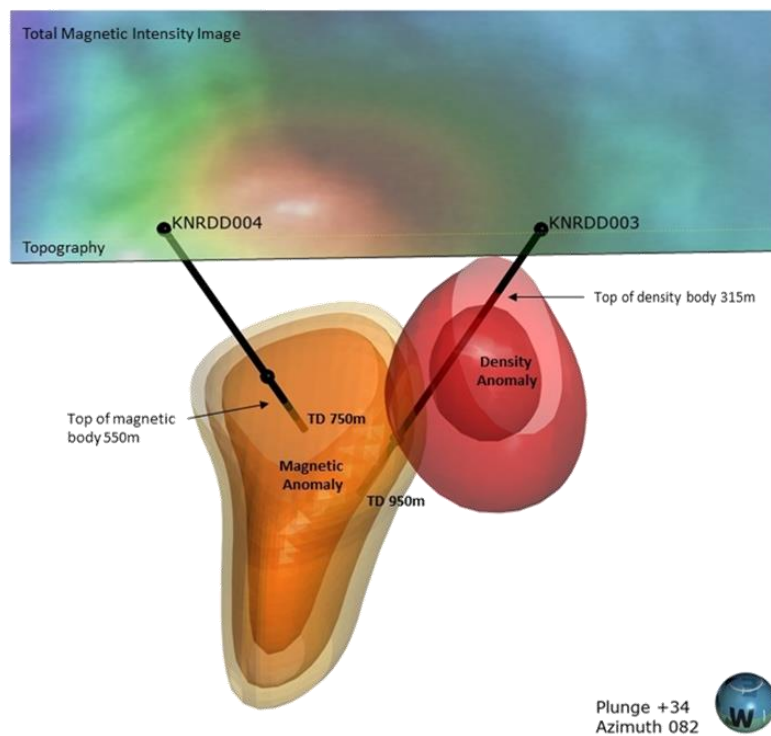


Figure 8: 3D Inversion Model of "Twin Peaks" East

Figure 7 demonstrates that the Western magnetic anomaly is partially associated with an East-West orientated gravity anomaly and has a depth to the top of the magnetic body of approximately 510m. The Eastern magnetic anomaly (Figure 8) is associated with an offset gravity anomaly. The depth to the top of the Eastern magnetic body resolved by the unconstrained magnetic inversion is approximately 550m below surface.

As previously outlined, the “Twin Peaks” magnetic anomalies are a strategic priority for the Company, with a series of four diamond core holes to be drilled across the Western and Eastern targets during the December Quarter.

The holes will be drilled at an angle designed to intersect both the magnetic anomalies and the coincident/offset gravity anomalies, for a target depth of between 450m and 600m per hole. The proposed total meterage of the preliminary drilling campaign is approximately 3,000m.

Table 1: Proposed hole locations and estimated drill target depths.

Name	Description	Easting	Northing	RL	Target Depth	DIP/AZI
KNRDD001	Twin Peaks West – 1	506865	7824699	250	460m	-65
KNRDD002	Twin Peaks West – 2	5067711	7825392	250	510m	-60
KNRDD003	Twin Peaks East – 1	509746	7824973	250	316m	-60
KNRDD004	Twin Peaks East – 2	509608	7825960	251	550m	-60

Site camp preparations, establishment of a water bore, all necessary equipment and the Greenvale field team are all in place on-site, ready for the commencement of the drill program. The program had been scheduled to commence late in the September Quarter, however the allocated drill rig was deemed unsuitable to safely negotiate the difficult road conditions to access the remote drill target locations.

The Company has since engaged a new drill contractor, Eagle Drilling NQ Pty Ltd (Eagle Drilling), who operate a track-mounted drill platform with extreme remote capabilities, more suited to the arid and sandy conditions at the Georgina Basin Project.

The team from Eagle Drilling will be on-site early November, with the change of contractor expected to delay the commencement of the drill program by 2-3 weeks.

Also during the Quarter, the Company completed an airborne geophysical survey over EL32283 and EL Applications 32284 and 32820, consisting of a high-resolution 100m line-spacing survey that included magnetic, radiometric and Digital Elevation Model (DEM) methods.

Flight lines were oriented north-south for EL32283 and 135° for EL32284 and EL32820, with perpendicular tie-line spacings of 1,000m, for a total of 12,618 line-kilometres and survey area coverage of 1,100km².

The survey was co-funded by the NTGS under the ‘Resourcing the Territory’ initiative, which awards approximately \$1 million in exploration grants annually for drilling and geophysical surveys in the NT.

The survey was undertaken by MAGSPEC Airborne Surveys Pty Ltd, with data processing performed by geophysical consultants Resource Potentials Pty Ltd.

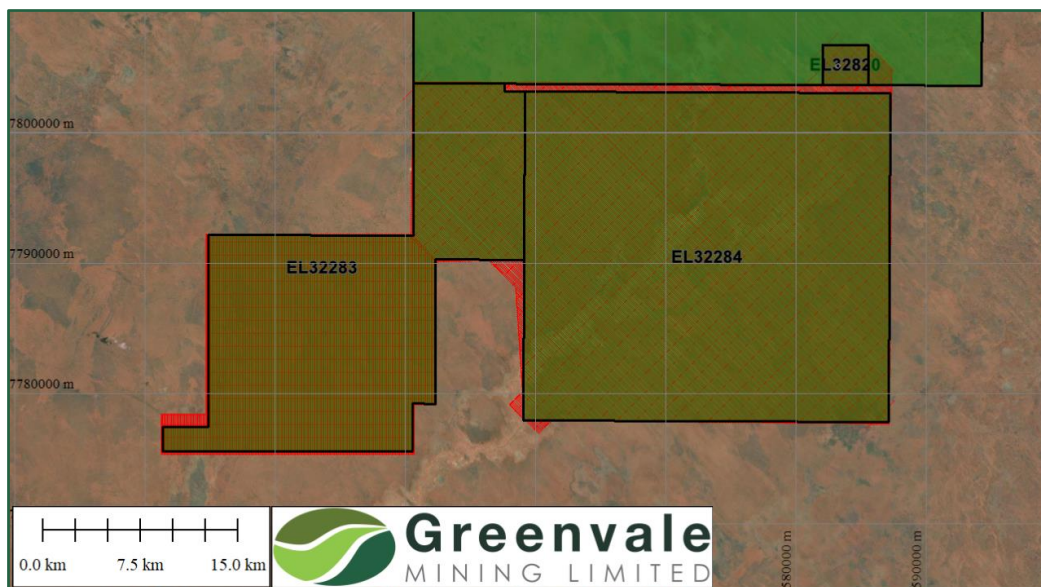


Figure 9: Airborne Geophysical survey flight lines (red) over Georgina Project tenements

Activities proposed for the December 2021 Quarter

With the new drill rig expected to be in place in early November 2021, the Company’s core focus for the December Quarter will be on safely completing as much of the planned drill program as possible before the onset of the northern wet season. The Company will provide further updates on progress once drilling has commenced.

Results and the subsequent interpretations from the recently-completed, high-resolution 12,618-line kilometre airborne, radiometric and geophysical survey over the Company’s central tenements are expected to be announced during the December Quarter, together with further target identification and details of an extended drill program for 2022.

Mineral Exploration Spending During the September Quarter

During the Quarter the Company expended some \$916,000 on exploration and evaluation activities.

This included \$557,000 on the Georgina project with respect to further geophysical analysis and interpretation of data with emphasis on determining priority targets for the proposed drilling program, aeromagnetic surveying, gravity surveying as well as drilling, site establishment and provision of on ground support facilities.

Key items of expenditure included aerial and ground survey costs of \$133,000, payroll and on costs of \$82,300, external technical consultants' fees of \$65,000, tenement rentals of \$40,000, drilling costs of \$76,000 and site works and supporting infrastructure of \$74,000.

The balance of \$359,000 was expended at the Company's Alpha Torbanite Project. The key items of expenditure included external technical consultants' fees of \$132,000, drilling costs of \$125,000 and tenement rentals of \$41,000.

No expenditure was incurred during the Quarter on mining production and development activities.

Corporate Activities

Personnel

On 16 July 2021, the Company announced the appointment of Mr. Matthew Healy, a highly skilled geologist and experienced Australian mining executive, as Chief Executive Officer.

Mr Healy has a Master of Science with first-class honours (Geology) from the University of Auckland and over 15 years of experience working at senior levels within major mining companies and a number of ASX-listed explorers.

For the past nine years, Mr Healy has held the position of Exploration Manager at Round Oak Minerals, a wholly owned subsidiary of Washington H. Soul Pattinson & Co Ltd. As Exploration Manager, he was responsible for the management of a multi-disciplinary team conducting exploration over a 104-tenement holding, covering an area of 3,200km² across four Australian jurisdictions and with an annual exploration budget of up to \$11 million.

Unmarketable Parcels

On 17 July 2021, the Company closed an unmarketable parcel sale facility. The total number of shareholders holding unmarketable parcels of shares who did not elect to retain their holding was 120 and they held a total of 52,339 Ordinary Shares. These shares were subsequently sold on market and the proceeds paid to these holders.

Funding

As detailed in the Appendix 5B lodged for the September 2021 Quarter, the Company's cash holdings decreased during the Quarter by \$759,000 to \$9.095 million at 30 September 2021.

During the Quarter, 3,000,000 options were exercised raising \$1,050,000 before costs.

All Tenement Details

Alpha Project, Queensland

Tenement	%age Ownership	Owned by	Status
MDL 330	99.99%	Alpha Resources Pty Ltd	Current to 31 January 2022
EPM 27718	99.99%	Alpha Resources Pty Ltd	Current to 14 February 2026

Georgina Basin Project, Northern Territory

Tenement	%age Ownership	Owned by	Status
EL 32281	100%	Knox Resources Pty Ltd	Current to 22 September 2026
EL 32282	100%	Knox Resources Pty Ltd	Current to 22 September 2026
EL 32283	100%	Knox Resources Pty Ltd	Current to 22 September 2026
EL 32285	100%	Knox Resources Pty Ltd	Current to 22 September 2026
EL 32286	100%	Knox Resources Pty Ltd	Current to 22 September 2026
EL 32296	100%	Knox Resources Pty Ltd	Current to 22 September 2026

Georgina Basin, Northern Territory

Tenement	%age Ownership Of Applicant	Applicant	Status
EL 32280	100%	Knox Resources Pty Ltd	Under Application
EL 32284	100%	Knox Resources Pty Ltd	Under Application

Related Party Payments

As per Section 6 of the Appendix 5B lodged with the ASX today, payments to related parties and associates totaled \$120,451. This included \$114,966 in respect of directors' fees, salaries and benefits as well as \$5,485 to Bardoc Gold Limited for office and support facilities. Bardoc Gold Limited is a related party as it shares some common directors with the Company.

Authorised for Release

This announcement and the accompanying Appendix 5B have been approved by the Board for release.

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Company Secretary
Contact

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