ASX ANNOUNCEMENT

6 April 2023

RE-RELEASE OF ANNOUNCEMENT 30 MARCH 2023

Greenvale Energy Limited (ASX: **GRV**, "**Greenvale**" or "the **Company**") refers to its announcement dated 30 March 2023 titled "*Outstanding Results for Alpha Test Program Two*" ("**Announcement**").

Following a review of the Announcement, further commentary concerning Sections 1 and 2 of the JORC Code (Table 1) reporting was considered to be necessary (**Amended Announcement**). A copy of the Amended Announcement has been enclosed.

With the exception of the above, no further changes have been made within the Amended Announcement.

AUTHORISED FOR RELEASE:

This announcement has been approved by Kurt Laney, Joint Company Secretary, for release.

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ASX ANNOUNCEMENT **6 April 2023**

ALPHA TEST PROGRAM TWO DELIVERS OUTSTANDING RESULTS, FURTHER ENHANCING YIELDS AND BITUMEN PRODUCTION POTENTIAL

Testwork confirms the potential of a novel liquefaction process to recover increased amounts of heavy oil fractions and asphaltenes from cannel coal, without excessive gas generation or the production of light boiling liquids.

HIGHLIGHTS

- **Alpha Liquefaction Test Program Two complete: focused on a staged enhanced recovery from the cannel coal component of the Alpha Project Resource at increased temperature, but still lower than the optimal.**

- **Results indicate improved bitumen producing potential from the Alpha deposit, with:**
  - **Substantially improved yields of heavy oil fractions from cannel coal.**
  - **Conversion included of up to 6.5wt% asphaltenes from cannel coal.**
  - **Continued trend of low production of light ends and gas when compared to traditional pyrolysis.**

- **Cannel coal currently accounts for ~76% of the total Alpha Resource, reinforcing the strategic importance of these positive results from Alpha Test Program Two.**

- **Test Program Three is underway and progressing well, building upon the exciting observations from Test Program Two.**

Greenvale Energy Limited (ASX: **GRV**, “**Greenvale**” or “the **Company**”) is pleased to advise that the latest liquefaction testwork program from the Alpha Torbanite Project in Queensland has delivered exceptional results, returning significantly enhanced outcomes across key metrics for the Cannel Coal compared with the first round of liquefaction testing.

The Alpha Test Program Two, was focused on progressively more severe treatment conditions for the cannel coal component of the Alpha Project Resource. Alpha Test Program One has already demonstrated that the torbanite component of the Resource is amenable to liquefaction even at 25 Centigrade degrees low temperatures (see ASX Announcement 24 August 2022).

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Test Program Two delivered outstanding outcomes for the cannel coal, including:

1. Significantly increased yields of the desired heavy oil fractions.
2. A greater percentage of asphaltenes.
3. Increased heavy oil yields with little evidence of additional gas.

The results indicate that for a mild increase in temperature, together with fractional changes to other variables, the Greenvale technical team and its partners can deliver greatly improved yields of the desired outputs from the cannel coal samples, while continuing to produce low amounts of gas. Thus, enforcing the suitability of liquefaction over pyrolysis when attempting to produce the target oil.

The cannel coal seams currently account for approximately 76% of the Alpha deposit's total estimated Mineral Resource of 18.6Mt (see ASX Announcement 10 March 2022), meaning the significance of the increase in yields observed from Test Program Two cannot be understated.

A comparison between the cannel coal test results derived from Test Program One and Test Program Two indicates a 57% increase in conversion from solids to oil and gas. Test Program One achieved a conversion of approximately 24.8wt% at 340ºC, 3500 kPa and 1.5wt% catalyst. The recently completed Test Program Two however achieved a maximum of 39.0wt% (avg. 34.9wt%) conversion at 365ºC, 3500 kPa and 6wt% (average 4 wt%) of catalyst.

The second encouraging observation from the latest round of test work was the increase in percentage of asphaltenes derived from the cannel coal samples. Test Program One returned a total cannel coal conversion of 24.9wt%, comprising 22.4wt% oil and gas and 2.5wt% asphaltenes. Test Program Two saw the percentage of asphaltenes jump to a maximum of 6.5wt%, with an average of 4wt%.

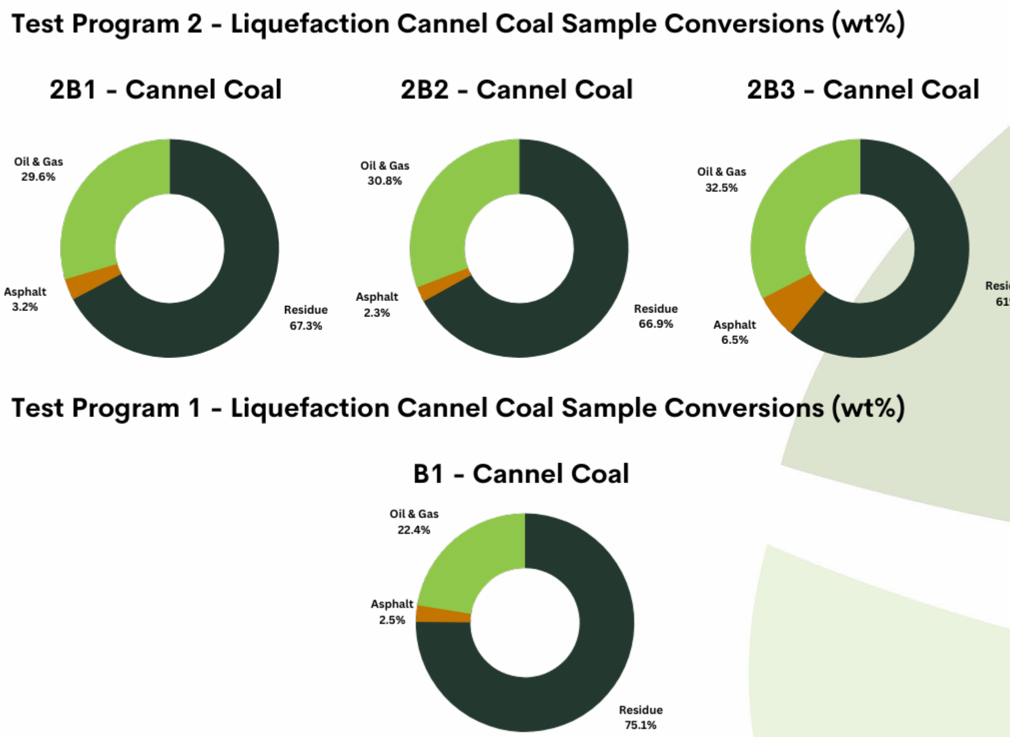

Figure 1: *Cannel Coal Sample Conversion Comparisons*

Bituminous products typically contain 5-25% asphaltenes[1] , with the asphaltenes blended with heavy oil fractions in varying ratios to produce a wide variety of products. Theoretically, the greater the amount of preserved asphaltenes, the greater the potential output of bituminous products. The ability to produce commercial quantities of asphaltenes via liquefaction from the cannel coal could significantly enhance the value of the Alpha Project.

Thirdly, the liquefaction process continues to primarily produce liquids with very little, less than 1%, converting to gas. Further analysis regarding the gaseous material produced from the cannel coal samples will be conducted in Test Program Four, however it is anticipated that these gases will primarily be used to supplement as fuel.

Overall, the results observed from Test Program Two have the potential to greatly enhance the Alpha Project's overall economic returns. Importantly, the positive outcomes seen in Test Program Two were generated through a modest 25°C increase in temperature, with the potential to further enhance the performance metrics under the upcoming Test Program Three, where various temperatures up to 450oC are being tested, starting with a base hydrogen pressure of 7MPa.

Commenting on the positive test work results, Greenvale CEO, Mark Turner, said: *"The entire Greenvale team has been really buoyed by the results from this Liquefaction Test Program Two. We demonstrated the great potential of the torbanite for producing heavy oil fractions likely suitable for bitumen production from the first round of tests. However, with cannel coal seams constituting over 76% of the Alpha deposit, we're delighted to now have confirmation of the very strong liquefaction characteristics of this second component of the Resource. These results have the potential to greatly enhance the already robust economic profile of the Alpha Project."*

"I would like to thank our technical team, PROCOM and laboratory partners, Intertek, who have persevered to complete the tests and analyses. I must reiterate that the highly technical and novel nature of the applied liquefaction process and the accompanying laboratory analyses requires special consideration and effort. We are investing significantly in perfecting the liquefaction process conditions and subsequent scale up, as we truly believe it will enhance not only the Alpha Project's economics, but also its emissions profile. This process is the key to unlocking the great value of the Alpha deposit and ensuring that Greenvale can become Australia's only domestic producer of bituminous products to help build safe, sustainable, sealed roads."

While the results from Test Program Two have been positive, the substantial delay in the delivery of these results has had a knock-on effect on the timing of Test Programs Three and Four and, ultimately, on the delivery of the Alpha Project Pre-Feasibility Study (PFS). Greenvale remains confident the lessons have been learned and the delays to test programs and laboratory analyses have been resolved. An update regarding the delivery of the PFS will be provided with the results of Test Program Three.

Mark Turner said that, while regrettable, the delay provided the best opportunity for the Company to perfect the liquefaction process to maximise the Project's economic outcomes.

[1] Kalinowska-Ozgowicz, M., Zofka, A., & Szydlowski, C. (2019). Analysis of influence of bitumen composition on the properties represented by empirical and viscosity test. Archives of Civil Engineering, 65(1), 113-128. https://doi.org/10.24425/ace.2019.126074

"While we're disappointed to delay the completion of the Alpha Project PFS, I am confident this is the best outcome for shareholders. Due to the scientific nature of the test program, Greenvale's technical team is constantly developing their understanding of both the unique Alpha deposit and its potential under liquefaction."

"As evidenced from the results of Test Program Two, the more time our technical team can spend perfecting the processing during these stages of the PFS program, the greater our potential to optimise the Project returns."

TEST PROCEDURES

The liquefaction reactions were carried out in a Parr Reactor vessel with a capacity of 7 litres. In a typical experiment, powdered oil shale samples and the iron-based catalyst were mixed with the carrier oil and then charged into the reactor (Table 1). After loading, the reactor was first purged to replace air using nitrogen and pressurised with hydrogen to 3500 kPa at room temperature and checked for leaks.

Table 1: *Summary of the experiment tests and conditions*

No	Items	Samples (g)	Carrier Oil (l)	Catalyst (g)	Catalyst/Shale (wt%)
1	2B1- Cannel	409	2	14	3.4
2	2B2- Cannel	500	1.8	12.5	2.5
3	2B3- Cannel	372	1.8	22.7	6.1

The charged Parr Reactor was heated to a temperature of 365^{0}C. Once the target temperature was reached, the temperature was held for half an hour before forced cooling was commenced. At the end of each run, the reactor rig is cooled to room temperature by pumping water through cooling coils in the jackets around the reaction vessel and left overnight. The samples were collected at the start of the new day prior to loading for subsequent tests.

No gas samples were taken under this testing program. The final gas pressure once the unit was cooled was equal to the starting pressure. Negligible amount of gas evolution was detected from Test Program One and the gas analyses did not vary substantially between the equivalent samples. Further testing of off-gas is anticipated to be conducted in the yield tests eventually conducted on the core samples in Test Program Four.

Table 2 summarises results of the Parr Reactor experiment of the samples.

Under this Test Program Two, the cannel coal sample 2B3 achieved the highest conversion and aligns with the highest catalyst concentration (6.1wt%) compared to samples 2B1 (3.4wt%) and 2B2 (2.5wt%). Under Section 3, the remaining solid samples are further characterised using standard laboratory analyses.

Table 2: Test Program 2 oil shale liquefaction results of conversion and yield products of cannel coal samples

Samples	Oil Shale Feed (g)	Conversion (wt%)	Oil + Gas (wt%)	Asphalt (wt%)	Residue (wt%)
2B1- Cannel	409	32.74	29.56	3.18	67.26
2B2- Cannel	500	33.06	30.80	2.26	66.94
2B3- Cannel	372	**39.03**	32.55	6.48	60.97

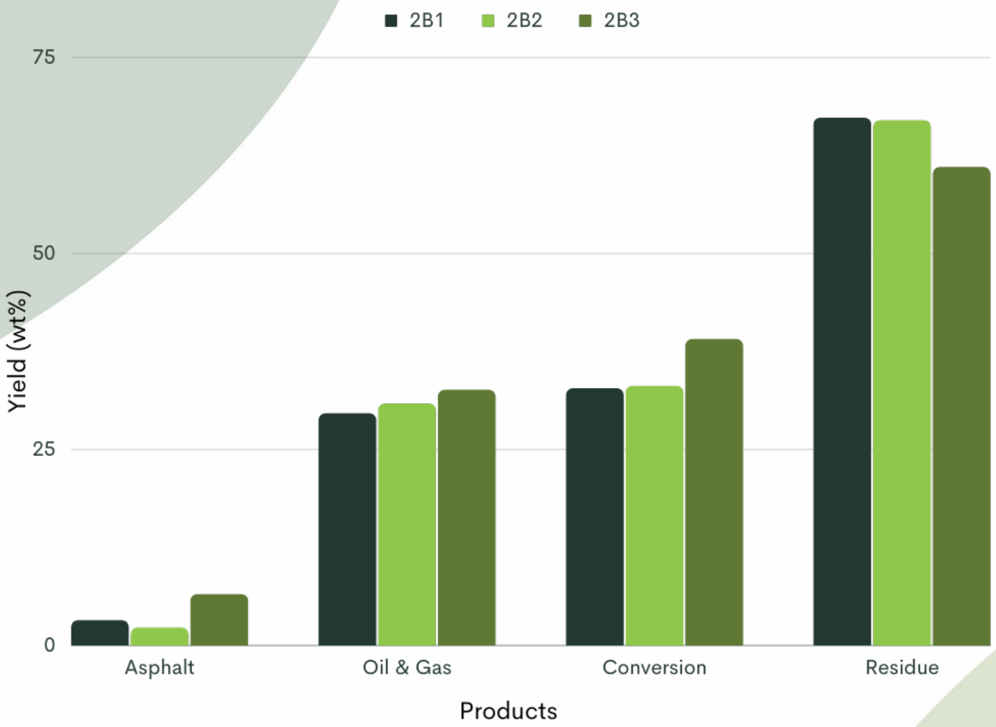

***Figure 2:** Product distribution for the samples under Test Program Two*

CONCLUSIONS

The program concentrated on the performance of cannel coal under liquefaction at lower-than-optimal temperatures (as limited by the test facility), as torbanite was shown to process well with increased temperature in the first program. This program demonstrates good progress in converting cannel coal by liquefaction. While oil and gas in combination are reported as a fraction of the conversion, there is no evidence of increased gas yield which remains <1% wt (typically up to 30% is lost to gas in pyrolysis reactions at the referenced conversions).

The hexane washed samples from Test Program One were subjected to a toluene wash to recover adsorbed asphaltenes. This was to demonstrate the proposition that the solid material from the early program had a different structure, which was demonstrated by a reduction in temperature required to volatilise the remaining hydrocarbons. This additional washing step demonstrated that asphaltenes had adhered to and were recoverable from the remaining solids after a liquefaction processing step. This washing step was added to subsequent test programs.

The three cannel coal results did provide consistent results which conformed to expectation and demonstrated the impacts of increased catalyst. The consistent results add to the confidence in the program and the liquefaction process.

Test Program Two demonstrates the potential of liquefaction to successfully recover increased amounts of heavy oil and asphaltenes from cannel coal without the loss of excessive amounts of gas or the production of light boiling material (<360^{0}C). Thus, liquefaction is preferred over a normal pyrolysis process.

Under this testing program, the cannel coal samples provided higher conversion (39 wt%) of solids to liquids with increased temperatures from 340^0 to 365^{0}C and increased catalyst concentrations compared to the cannel coal sample from the previous testing program where conversions were limited to approximately 22%.

Increasing catalyst concentration has a positive impact on the conversion and asphaltene content, hence optimisation of catalyst content will continue into the future trials. TGA analysis of the remaining solids shows that there is more organic material available for conversion under the correct conditions.

The amount of extractable asphaltenes as a proportion of the liquefied solid can be increased by variation of catalyst and temperature, hence the program going forward will concentrate on impact of these variables across all seams in the deposit.

Conversion of approximately 39wt% was achieved, and approximately 17% of the oil produced is asphaltenes with the remainder heavy oils, most of which may also be usable in the production of bitumen. The application of the oils produced will be studied in subsequent programs using the expertise of bitumen technology experts.

While it is important to understand the impact of reaction conditions on both torbanite and cannel coal, the future work will also look at the impacts of the blended materials as the feed, and the mix of minerals in the seams, will also have impacts on the reactions. Future tests will also concentrate on core samples which will translate into results for the Pre-Feasibility Study.

The overall result is promising and demonstrates the need to conduct the next series of tests to support and more clearly define operating conditions which enhance production of heavy oil and asphaltenes in a commercial plant.

FUTURE WORK

Past problems associated with equipment limiting the temperature and pressure of test work and laboratory analyses issues have been addressed for the upcoming tests and results are being delivered in a shortened controlled timeframe relative to previous programs when analyses were conducted in Australia. The next rounds of tests are well underway.

PROCOM has worked closely with associates in Jordan to develop a program using its equipment, and a dedicated team has been established to progress the program and make up for lost time.

The subsequent Test Program Three, including high-pressure temperature reactor tests, has been arranged with the University of Jordan, located in Amman, Jordan. The University of Jordan will deliver both the reaction tests and other standard laboratory tests.

Under Test Program Three, a minimum of twelve tests are proposed under different experiment conditions to expand the observation window to determine the best conditions to enhance bitumen products recovery. The program reactor volume is 100 millilitres. This limited capacity is convenient for testing but is not suited to making large samples of product at the defined conditions for subsequent testing with bitumen laboratories. Steps are being undertaken to cover the production of larger-scale batches here in Australia with fall back options.

This program is well underway with the experimental program and instructions agreed, the samples shipped, and initial tests showing good results. The team has already made great progress on the reaction tests. The maximum experiment condition of this program is initially set to hydrogen pressure of 7 MPa and a maximum temperature of 450^{o}C.

Progressive and transforming experiment conditions are also proposed under this testing program to investigate the effects of different temperature, oil/water carriers and catalyst on oil shale conversions. These future results will provide data to allow development of a commercialisation process concept at an optimal operating and capital cost.

The outcomes of Test Program Three will provide a targeted basis to develop the subsequent laboratory Test Program Four of core samples, which will also be conducted in Jordan, subject to continued encouraging results. These results will support yield and cost assumptions for the Pre-Feasibility Study.

AUTHORISED FOR RELEASE:

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

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COMPETENT PERSON'S STATEMENT:

The information in this report that relates to Metallurgical Results is based on information compiled by David Cavanagh, a Competent Person who is a Member of The Australasian Institute of Mining and Metallurgy AusIMM Member number 112318

David Cavanagh is a full-time employee of Core Resources.

David Cavanagh has sufficient experience that is relevant to the style of mineralisation and type of deposit under consideration and to the activity being undertaken to qualify as a Competent Person as defined in the 2012 Edition of the 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves'.

David Cavanagh consents to the inclusion in the report of the matters based on his information in the form and context in which it appears.

JORC Code, 2012 Edition – Table 1 Report

Section 1 Sampling Techniques and Data

(Criteria in this section apply to all succeeding sections.)

Criteria	JORC Code explanation	Commentary
Sampling techniques	• *Nature and quality of sampling (e.g. cut channels, random chips, or specific specialised industry standard measurement tools appropriate to the minerals under investigation, such as down hole gamma sondes, or handheld XRF instruments, etc). These examples should not be taken as limiting the broad meaning of sampling.* • *Include reference to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used.* • *Aspects of the determination of mineralisation that are Material to the Public Report.* • *In cases where 'industry standard' work has been done this would be relatively simple (e.g. 'reverse circulation drilling was used to obtain 1 m samples from which 3 kg was pulverised to produce a 30 g charge for fire assay'). In other cases more explanation may be required, such as where there is coarse gold that has inherent sampling problems. Unusual commodities or mineralisation types (e.g. submarine nodules) may warrant disclosure of detailed information.*	• An outcrop sample has been collected using basic channel sample protocols. • An electric jackhammer was required to cut a vertical section (approximately 30cm x 30cm) with samples typically being taken in 30cm to 60cm intervals and interval boundaries being defined by a visual change in material type or the presence of bedding. • All reasonable attempts were made to sample a uniform vertical cross section. • The purpose of the outcrop sampling has been to provide sufficient material for sighter testing only.
Drilling techniques	• *Drill type (e.g. core, reverse circulation, open-hole hammer, rotary air blast, auger, Bangka, sonic, etc) and details (e.g. core diameter, triple or standard tube, depth of diamond tails, face-sampling bit or other type, whether core is oriented and if so, by what method, etc).*	• Not applicable to the outcrop sampling.

Drill sample recovery	• *Method of recording and assessing core and chip sample recoveries and results assessed.* • *Measures taken to maximise sample recovery and ensure representative nature of the samples.* • *Whether a relationship exists between sample recovery and grade and whether sample bias may have occurred due to preferential loss/gain of fine/coarse material.*	• Not applicable to the outcrop sampling.
Logging	• *Whether core and chip samples have been geologically and geotechnically logged to a level of detail to support appropriate Mineral Resource estimation, mining studies and metallurgical studies.* • *Whether logging is qualitative or quantitative in nature. Core (or costean, channel, etc) photography.* • *The total length and percentage of the relevant intersections logged.*	• Detailed logging was not undertaken at the outcrop sample location as it was not possible to expose the full horizon. • The outcrop sampling of material has only been used for sighter testing with all Mineral Resource estimation, mining, and metallurgical studies to be developed based evaluation of the core sample material. • Photographic records have been taken which shows each horizon sampled and the weight of samples taken from each sample location has been recorded.
Sub-sampling techniques and sample preparation	• *If core, whether cut or sawn and whether quarter, half or all core taken.* • *If non-core, whether riffled, tube sampled, rotary split, etc and whether sampled wet or dry.* • *For all sample types, the nature, quality and appropriateness of the sample preparation technique.* • *Quality control procedures adopted for all sub-sampling stages to maximise representivity of samples.* • *Measures taken to ensure that the sampling is representative of the in situ material collected, including for instance results for field duplicate/second-half sampling.* • *Whether sample sizes are appropriate to the grain size of the material being sampled.*	• The bulk sample was taken in substantial quantities of over 50 kilograms and of both torbanite and cannel coal portions of the subcrop. Samples were held by Stratum and Subsampling for this exercise was undertaken by Stratum Laboratories. • Splits of approximately 400 grams were cut from subsamples obtained from Stratum splits of the subcrop samples. Smaller samples were used in the program to facilitate subsequent processing in the laboratory. • The splits were pulverised to sub 200 micron undertaken immediately prior to the tests being conducted.
Quality of assay data and	• *The nature, quality and appropriateness of the assaying and laboratory procedures used and whether the technique is considered partial or total.* • *For geophysical tools, spectrometers, handheld XRF*	• The subsamples had been held in refrigeration below zero in sealed bags. • Post pulverisation the samples used immediately

laboratory tests	*instruments, etc, the parameters used in determining the analysis including instrument make and model, reading times, calibrations factors applied and their derivation, etc.* • *Nature of quality control procedures adopted (e.g. standards, blanks, duplicates, external laboratory checks) and whether acceptable levels of accuracy (i.e. lack of bias) and precision have been established.*	
Verification of sampling and assaying	• *The verification of significant intersections by either independent or alternative company personnel.* • *The use of twinned holes.* • *Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols.* • *Discuss any adjustment to assay data.*	• Outcrop sample has been observed by multiple personnel including Engineers, Geologists and Greenvale employees have been involved in the sample acquisition.
Location of data points	• *Accuracy and quality of surveys used to locate drill holes (collar and down-hole surveys), trenches, mine workings and other locations used in Mineral Resource estimation.* • *Specification of the grid system used.* • *Quality and adequacy of topographic control.*	• The sample was taken from a subcrop of Torbanite and Cannel coal in a tributary known as 'Mine Gully'. Although yet to be formally surveyed, the approximate location of 483520 E and 7333321 N in Coordinate system MGA55 GDA94 datum is expected to be accurate to +/- 30m
Data spacing and distribution	• *Data spacing for reporting of Exploration Results.* • *Whether the data spacing and distribution is sufficient to establish the degree of geological and grade continuity appropriate for the Mineral Resource and Ore Reserve estimation procedure(s) and classifications applied.* • *Whether sample compositing has been applied.*	• Not relevant to the outcrop sample and retort test work.
Orientation of data in relation to geological structure	• *Whether the orientation of sampling achieves unbiased sampling of possible structures and the extent to which this is known, considering the deposit type.* • *If the relationship between the drilling orientation and the orientation of key mineralised structures is considered to have introduced a sampling bias, this should be assessed and reported if material.*	• Not relevant to the outcrop sample and retort test work.

Sample security	• *The measures taken to ensure sample security.*	• Samples have been stored in dedicated freezers from the time the sample was acquired.
Audits or reviews	• *The results of any audits or reviews of sampling techniques and data.*	• No audits have been undertaken.

Section 2 Reporting of Exploration Results

(Criteria listed in the preceding section also apply to this section.)

<table>
<tr><th>Criteria</th><th>JORC Code Explanation</th><th>Commentary</th></tr>
<tr><td>Mineral tenement and land tenure status</td><td>Type, reference name/number, location and ownership including agreements or material issues with third parties such as joint ventures, partnerships, overriding royalties, native title interests, historical sites, wilderness or national park and environmental settings.
The security of the tenure held at the time of reporting along with any known impediments to obtaining a licence to operate in the area.</td><td>Mineral Development Lease (MDL) 330 was granted to Alpha Resources Pty Ltd on the 27th of August 2007 and an extension of a further five years has now been granted ending 31/01/2027.
MDL 330 covers an area of 1,904.5 ha.</td></tr>
<tr><td>Exploration done by other parties</td><td>Acknowledgment and appraisal of exploration by other parties.</td><td>Refer to Table 1 below which shows there has been appraisal and evaluation undertaken since 1939.
Held by Alpha Resources Pty Limited since 2002.
<table>
<tr><th>Asset Name</th><th>License Holder</th><th>License Type</th><th>Date</th></tr>
<tr><td>Anderson</td><td>H Anderson</td><td>EPM 134</td><td>1939</td></tr>
<tr><td>Anderson & other</td><td>H Anderson & others</td><td>EPM 137</td><td>1940</td></tr>
<tr><td>Anderson</td><td>H Anderson</td><td>ML 90-95</td><td>1941 - 1942</td></tr>
<tr><td>IMC Alpha</td><td>International Mining Corporation</td><td>EPM 2240</td><td>1979 - 1982</td></tr>
<tr><td rowspan="3">Alpha Oil Shale Project</td><td rowspan="3">Greenvale Mining & Esperance Minerals</td><td>EPM 2203</td><td>1978 -1985</td></tr>
<tr><td>EPM 4023</td><td>1985 - 1996</td></tr>
<tr><td>MDL 211</td><td>1996 -2001</td></tr>
<tr><td>Alpha Torbanite Project</td><td>Alpha Resources Limited</td><td>MDL 330</td><td>2002 - present</td></tr>
</table></td></tr>
<tr><td>Geology</td><td>Deposit type, geological setting, and style of mineralization.</td><td>The deposit is a Torbanite and Cannel coal formation which is formed in a sedimentary environment;
The Alpha deposit lies within the axis of the Glen Avon Syncline, a southwest plunging fold structure that occurs on the eastern flank of the Galilee Basin;</td></tr>
</table>

		• The deposit is part of the Permian Colinlea Sandstone, which contains 150 m of cross-bedded sandstones with minor conglomerates, siltstones and mudstones.
Drill hole Information	• *A summary of all information material to the understanding of the exploration results including a tabulation of the following information for all Material drill holes:* o *easting and northing of the drill hole collar* o *elevation or RL (Reduced Level – elevation above sea level in metres) of the drill hole collar* o *dip and azimuth of the hole* o *down hole length and interception depth* o *hole length.* • *If the exclusion of this information is justified on the basis that the information is not Material and this exclusion does not detract from the understanding of the report, the Competent Person should clearly explain why this is the case.*	• Not applicable to this announcement

Data aggregation methods	• *In reporting Exploration Results, weighting averaging techniques, maximum and/or minimum grade truncations (eg cutting of high grades) and cut-off grades are usually Material and should be stated.* • *Where aggregate intercepts incorporate short lengths of high grade results and longer lengths of low grade results, the procedure used for such aggregation should be stated and some typical examples of such aggregations should be shown in detail.* • *The assumptions used for any reporting of metal equivalent values should be clearly stated.*	• Not applicable as reporting outcrop sampling only.
Relationship between mineralisation widths and intercept lengths	• *These relationships are particularly important in the reporting of Exploration Results.* • *If the geometry of the mineralisation with respect to the drill hole angle is known, its nature should be reported.* • *If it is not known and only the down hole lengths are reported, there should be a clear statement to this effect (eg 'down hole length, true width not known').*	• Not applicable as reporting outcrop sampling only.
Diagrams	• *Appropriate maps and sections (with scales) and tabulations of intercepts should be included for any significant discovery being reported These should include, but not be limited to a plan view of drill hole collar locations and appropriate sectional views.*	• Not applicable as reporting outcrop sampling only.
Balanced reporting	• *Where comprehensive reporting of all Exploration Results is not practicable, representative reporting of both low and high grades and/or widths should be practiced to avoid misleading reporting of Exploration Results.*	• Not applicable as reporting outcrop sampling only. • Comprehensive reporting of drilling results will be reported separately in future.
Other substantive exploration data	• *Other exploration data, if meaningful and material, should be reported including (but not limited to): geological observations; geophysical survey results; geochemical survey results; bulk samples – size and method of treatment; metallurgical test results; bulk density, groundwater, geotechnical and rock*	• Supported by a base lube oil free or additives and then jointly subjected to pressure and one temperature under a hydrogen atmosphere with varying amounts of an industry standard catalyst. The program focussed on three subsamples of cannel coal.

	characteristics; potential deleterious or contaminating substances.	• The results showed that the cannel coal sample weight loss continues to increase at progressively higher temperatures, 365C, compared with the first test campaign at 348C and with a different catalyst at increasing catalyst concentration. • Cannel coal weight loss increased from about 22% (increased from 19% without toluene wash) to about 39% on the basis of tests including an additional wash of the resultant solids in toluene to remove adhered asphaltenes. • Weight loss due to gas evolution remains low.
Further work	• *The nature and scale of planned further work (eg tests for lateral extensions or depth extensions or large-scale step-out drilling).* • *Diagrams clearly highlighting the areas of possible extensions, including the main geological interpretations and future drilling areas, provided this information is not commercially sensitive.*	• The results build on the test program 1 at increased temperatures and demonstrated that the more refractory cannel coal liquefaction can be improved with increased temperature and by selective catalyst addition. The subsequent laboratory scale program is underway without limitations on temperature and pressure imposed by the current apparatus. Tests are being undertaken at the University in Jordan who have good experience in liquefaction of coal and oil shale at laboratory scale. The program is seeking the maximum required temperature to achieve desired conversion with high asphaltenes and heavy oils yields through to 450C • Tests will be conducted in a smaller scale reactor (100ml vs 4 litre) to facilitate the program and subsequent analytical work. • Trials on catalyst continue including with and without and varying concentrations with a view to optimising yields, • Increased focus on liquefaction at the deposit controlled blends of Torbanite and Cannel Coal using subcrop and subsequently core samples. • Establish quality of spent feed. • Eventual design of pilot plant.

Table 1: Historical exploration work undertaken at Alpha

Company	Work	Year	Remarks
Local Syndicates	Shaft	1939-1945	Prospecting, not systematic and not recorded
Queensland Department of Mines	Series QDM drilling	1942-1944	Government geological supervision; 15 holes
International Mining Corporation (IMC)	Series GA/ RDH drilling	1979-1981	McElroy Bryan & Associates; supervision 16 holes
JFH Murray & Associates	Survey	1980	Establish benchmarks and survey for drilling
Greenvale Esperance	GE 1-8	1980-1984	Resource definition with geological supervision
Queensland Nickel	Analyses	1981	Oil shale as chemical reductant in nickel ore processing
Petrobras Brasil	Analyses	1981	Retorting studies on 100 kg sample
Tosco USA	Analyses	1981	Retorting studies on 100 kg sample
BKS Surveys	Survey	1983	Benchmark survey and drill collars for ARL
Rankin & Hill	Resource estimation	1984	Engineering study
Greenvale Esperance	GE 9-38	1985-1987	Resource definition with geological supervision
Coal and Carbon Industries	Analyses	1987	Retorting studies produced gasoline, kerosene,
Bitumen Study	Market study	1987	Used for road surface, Alpha deposit could supply Queensland's Annual requirements
CSIRO	Analyses	1988	Bench-scale retort tests
Inland Oil Refineries	Microstill	1989	Mini refining concept for remote fuel supply
Daniel Madre	Open pit study	1990	10-year preliminary mine plan to produce 200,000 Barrels oil/year
Northlake Industries Inc.	Analyses	1992	Retorting tests
University of Kentucky	Analyses	1994	Production potential for activated carbon

Source: Madre, D A, 2016. EPM25795 Annual Report of Exploration Work from 22 December 2014 to 21 December 2015, report prepared for Alpha Resources Pty Ltd (internal report)