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ASX: JRL

Jindalee Resources Limited

POSITIVE METALLURGICAL TEST RESULTS FROM PROSPECT RIDGE

- **Initial metallurgical test work program on Arthur River deposit complete.**
- **High grade material (>90% MgO) can be produced.**
- **Recommendations for future work programs.**
- **Search commences for suitable partner to progress project further.**

Jindalee Resources Limited ('Jindalee' or 'Company') is pleased to announce the results of initial metallurgical testwork at its Prospect Ridge magnesite project located in north west Tasmania (Figure 1).

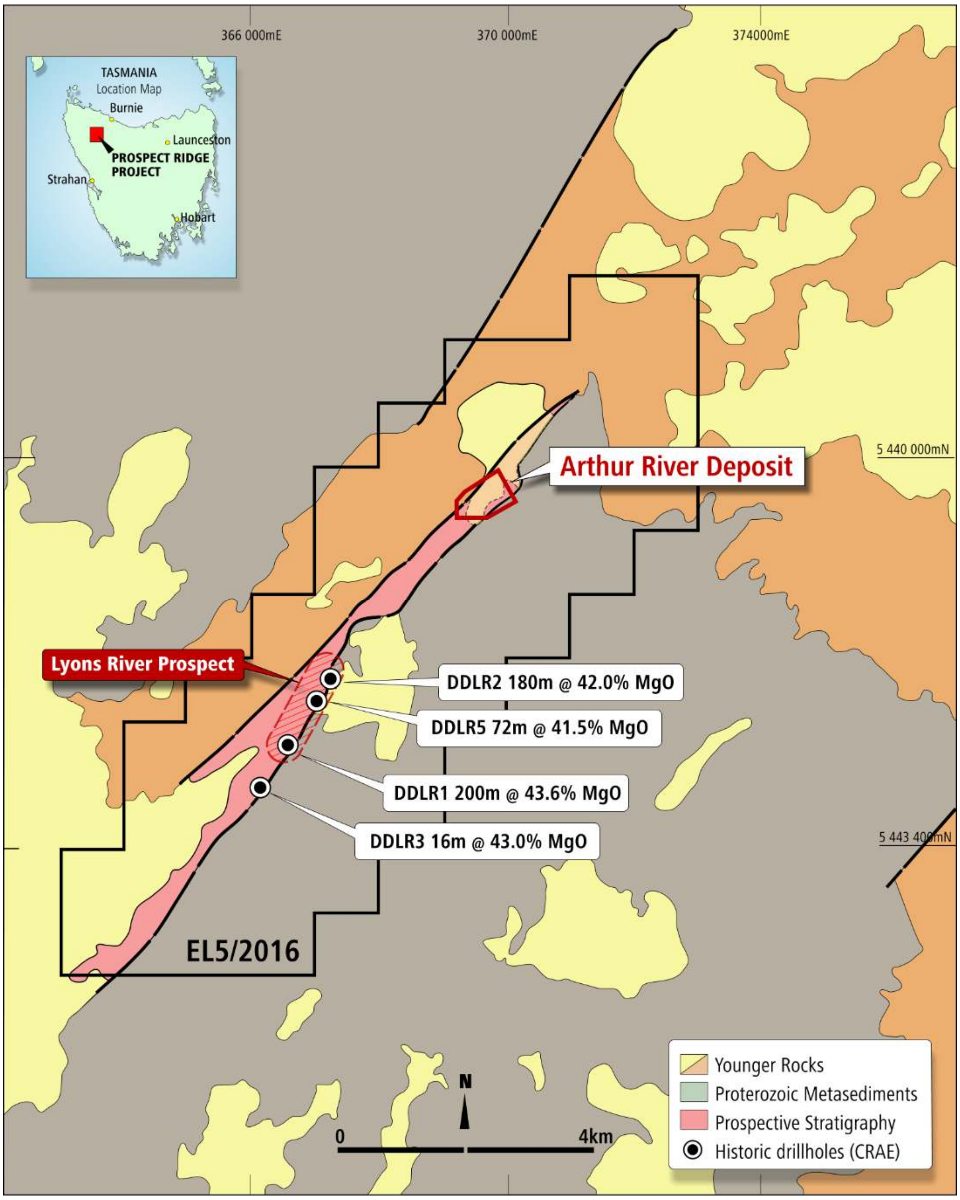

Figure 1 – Location of Jindalee's Prospect Ridge project.

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Jindalee commenced metallurgical test work on the Arthur River deposit in June 2017, utilising drill core sourced from programs undertaken by the previous operator. Test work was undertaken predominantly at ALS Laboratories in Burnie, with intermediate steps undertaken at ALS Perth, under the supervision of metallurgist and magnesite industry expert, Dr John Canterford of Process Technologies Australia.

The testwork program consisted of three main components:

- Calcination to establish the temperature required to thermally decompose magnesite to crude reactive magnesia, coupled with acid dissolution tests on selected crude magnesia products to establish their chemical reactivity.
- Physical beneficiation by screening and froth flotation of selected oxide and fresh samples (including a high purity sample), both before and after calcination.
- Determination of the Bond Ball Work Index as an indication of the energy input required for comminution.

Calcination

Small samples (typically 100-150 g) of selected drill core samples with variable magnesite contents were crushed to 100% passing -2mm and calcined at temperatures between 500°C and 1000°C for 1 hour in a laboratory muffle furnace in a static atmosphere. Weight loss, size distribution, chemical assay and chemical reactivity data indicated an operating temperature of 800-850°C yielded a suitably reactive caustic calcined magnesia (CCM). Depending on the initial sample, the MgO contents of the products were in the range 80-92%. The main contaminants were chemically analysed as CaO, Fe_2O_3 and SiO_2.

All of the data generated indicated that a chemically reactive calcine could in principle be produced. However, a target MgO content of +95% was not routinely achieved, mainly because of the lack of any physical beneficiation steps and the mineralogical characteristics of the feedstock.

Flotation

Two larger composite samples were prepared from selected samples of split drill core (Table 1). One sample nominally termed "fresh composite" corresponded to a realistic average sample, the other "oxide composite" or "weathered composite" that clearly had a higher gangue (talc, iron oxide) content that represented a non-ideal (worst case) sample. The "fresh composite" had a higher dolomite content, as indicated by the higher CaO content.

Table 1 – Composition of Fresh and Oxide composite samples selected for flotation tests.

Sample	CaO%	Fe_2O_3%	MgO%	SiO_2%
Fresh Composite Feed	2.14	1.11	44	4.15
Oxide Composite Feed	0.83	2.94	42.6	6.36

Flotation tests designed to remove the silica-rich (talc) gangue were carried out using several different combinations of hydrochloric acid for pH adjustment, sodium phosphate for slimes dispersant, copper sulphate as activator, and methyl isobutynol carbinol (MIBC) as frother. The flotation reagent regime was not optimised, but as would be expected, a somewhat higher degree of silica rejection could be achieved using a rougher/cleaner flotation configuration rather than a conventional single stage circuit.

The flotation tests were carried out with both "fresh" and "oxide" composites and their 850°C calcines, and showed that:

- a significant portion of the silica-rich gangue can be removed by flotation although the MgO recovery is diminished;

- removal of the silica-rich gangue from the calcine is less efficient with lower MgO recoveries;
- flotation of the “oxide” composite is technically more challenging than the “fresh” composite;
- lowering the silica content has no overall significant effect on the iron content of the flotation products.

Although flotation was able to enhance the quality of CCM derived from the Arthur River deposit, the results also demonstrated that a higher silica/magnesite selectivity is required to ensure that the overall MgO recovery in the end product is not compromised.

Further tests were undertaken on a “high purity” sample of split drill core subjected to calcination at 850°C with results summarised in Table 2 (below).

Table 2 – Composition of the original selected feed and the calcined product.

Sample	CaO%	Fe_2O_3%	MgO%	SiO_2%
Selected Composite Feed	0.98	0.74	45.6	0.6
Calcined Composite	1.96	1.34	92.5	1.4

The MgO content of the calcine indicates it could be marketable as a CCM product without any further beneficiation. However, it is important to highlight that this material has been selectively chosen, and domaining and characterisation of the current resource from a geological and mineralogical perspective would be required to understand the potential this may represent.

Bond Ball Work Index

Test determined that Bond Ball Work Indices of 11.7 kWh/t and 7.0 kWh/t for the “fresh” and “oxide” composite samples respectively, classifying them as “medium” and “soft” respectively. This data would be required to specify the design criteria of any future comminution circuit.

Discussion and Recommendations for Future Work

The availability of material from historic core enabled rapid progress to occur initially but the quantity available, and potentially also the spatial distribution (Appendix 1) limited some of the outcomes able to be achieved.

Metallurgical testing of a section of the Arthur River deposit has demonstrated the potential for a high-grade product to be produced, but significant additional work will be required to confirm the nature and scale of this opportunity.

Jindalee will now commence a search for a suitable partner with the requisite technical and marketing expertise to assist in progressing the project.

Based on the test work completed to date the following recommendations for further work were made by Dr Canterford:

- Geological and mineralogical domaining of the existing resource with particular emphasis on identification of regions of high grade/low gangue ore.
- Use of the domaining outcomes to identify targets for in-fill drilling, characterisation of selected samples, and subsequently facilitate potential mine planning as well as provision of bulk samples for testing and end-product evaluation.
- Complete integrated pilot scale crushing-grinding-flotation-calcination testwork programs to produce realistic masses (0.5 – 1t) of CCM end products at different grades for market evaluation.

About Magnesite

Magnesite or magnesium carbonate ($MgCO_3$) is the primary source of magnesia (MgO). Annual production of magnesia is approximately 9.4Mt with about 90% of this produced from magnesite feedstock and the balance from seawater and magnesia rich brines. There are three main types of magnesia: caustic calcined magnesia (CCM), deadburned magnesia (DBM) and electrofused magnesia (EFM). CCM is used as a chemical in a number of markets including agriculture (fertiliser and feedstock), mineral processing, pulp and paper manufacture and water treatment. DBM and EFM are used mainly in the refractory industry as a kiln liner and so are essential for the production of steel, cement and glass.

Magnesia and magnesium brines are also used to make magnesium metal (Mg). Magnesium (atomic number 12) is the lightest useful metal and is commonly alloyed with aluminium to create a light, high-strength and corrosion-resistant alloy which is widely used in the aerospace and automotive industries. Magnesium is also being increasingly used in the electronics industry, in both primary and rechargeable batteries and in superconductors. In May 2016 the Toyota Research Institute announced a breakthrough which could lead to magnesium eventually replacing lithium as a safer, more energy dense option for rechargeable batteries.

The strong forecast growth in demand for magnesium, together with increasing concentration of supply, has seen the European Commission include magnesium in their latest list of 27 EU Critical Materials, published September 2017 (refer www.ec.europa.eu).

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About Jindalee

Jindalee Resources Limited (ASX: JRL) is an exploration company with direct and indirect exposure to gold, base and strategic metals, iron ore, uranium and magnesite through projects generated by the Company's technical team. Jindalee has a track record of rewarding shareholders, including priority entitlements to several successful IPO's and payment of a special dividend.

Jindalee's strategy is to acquire prospective ground, add value through low cost exploration and, where appropriate, either introduce partners to assist in funding further progress, or fund this activity via a dedicated company in which Jindalee retains a significant interest. At 30 June 2018 Jindalee held cash and marketable securities worth $5M which, combined with the Company's tight capital structure (only 34.9M shares on issue), provide a strong base for leverage into new opportunities.

Further information on the Company can be found at www.jindalee.net

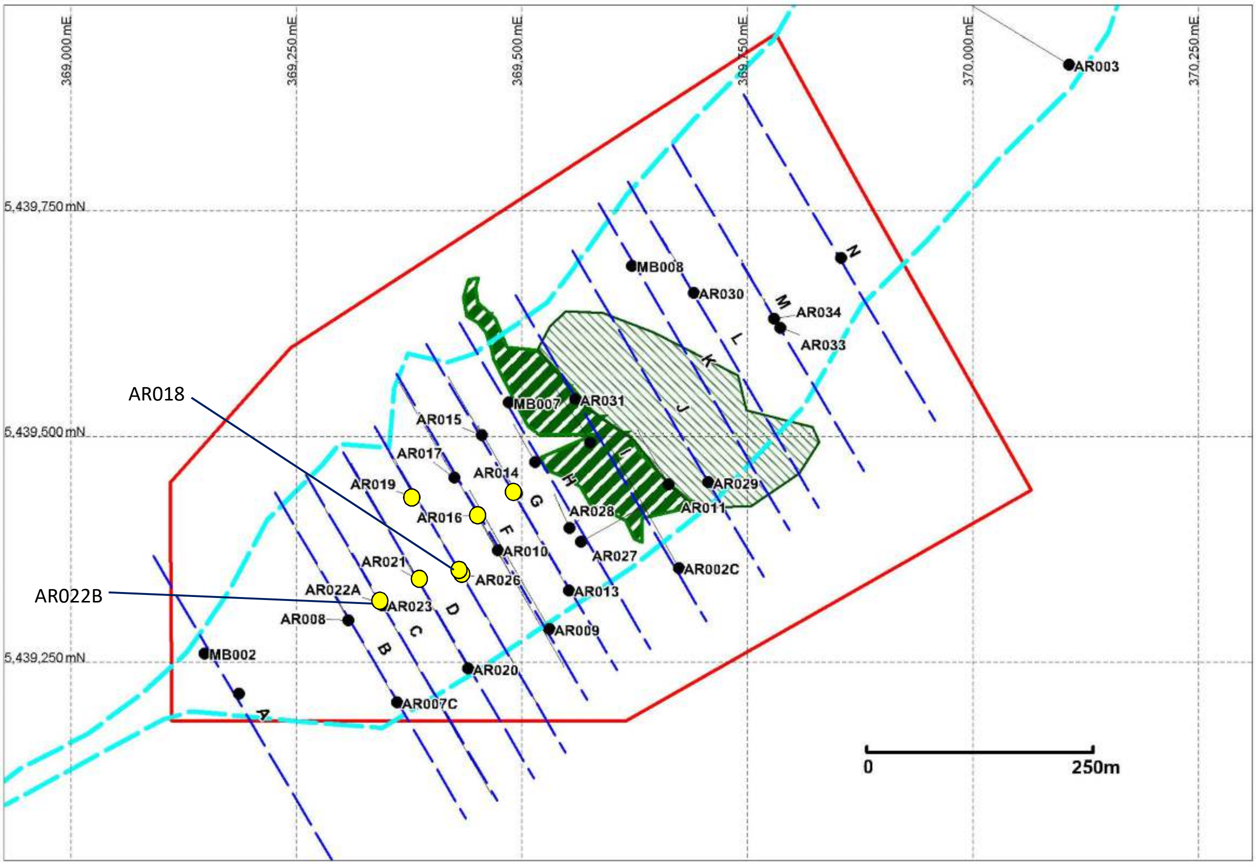
Competent Persons Statement:

The information in this report that relates to Exploration Results is based on information compiled or reviewed by Mr Pip Darvall and Mr Lindsay Dudfield. Mr Darvall is an employee of the Company and Mr Dudfield is a consultant to the Company. Both Mr Darvall and Mr Dudfield are Members of the Australasian Institute of Mining and Metallurgy and Members of the Australian Institute of Geoscientists. Both Mr Darvall and Mr Dudfield have sufficient experience of relevance to the styles of mineralisation and types of deposit under consideration and to the activities undertaken, to qualify as a Competent Person as defined in the 2012 Edition of the Joint Ore Reserves Committee (JORC) Australasian Code for Reporting of Exploration Results, Minerals Resources and Ore Reserves. Both Mr Darvall and Mr Dudfield consent to the inclusion in the report of the matters based on their information in the form and context in which it appears.

The information in this report that relates to metallurgy is based on information compiled or reviewed by Dr John Canterford who is an employee of Process Technologies Australia P/L and is a consultant to the Company. Dr Canterford is a Fellow of the Australasian Institute of Mining and Metallurgy. Dr Canterford has sufficient experience of relevance to the style of mineralisation and type of deposit under consideration and to the activities undertaken, to qualify as a Competent Person as defined in the 2012 Edition of the Joint Ore Reserves Committee (JORC) Australasian Code for Reporting of Exploration Results, Minerals Resources and Ore Reserves. Dr Canterford consents to the inclusion in the report of the matters based on their information in the form and context in which it appears.

Forward-Looking Statements:

This document may include forward-looking statements. Forward-looking statements include but are not limited to statements concerning Jindalee Resources Limited's (Jindalee) planned exploration program and other statements that are not historical facts. When used in this document, the words such as "could", "plan", "estimate", "expect", "intend", "may", "potential", "should", and similar expressions are forward-looking statements. Although Jindalee believes that its expectations reflected in these forward-looking statements are reasonable, such statements involve risks and uncertainties and no assurance can be given that actual results will be consistent with these forward-looking statements.



Appendix 1 – Drill hole collar locations at the Arthur River deposit, holes sampled as part of this study are highlighted in yellow.

Annexure A:
JORC Code, 2012 Edition – Table 1
Section 1 Sampling Techniques and Data

Criteria	JORC Code explanation	Commentary
Sampling techniques	• *Nature and quality of sampling (eg 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 (eg '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 (eg submarine nodules) may warrant disclosure of detailed information.*	The "fresh" sample comprised a composite of the following intervals: DDAR018: 61.4-65.4m; 70-74.9m DDAR019: 71.5-76.2m DDAR021: 22-22.8m; 54-57m; 66-73m DDAR022B: 53.8-58m; 61-64m; 70-73m DDAR026: 49-51.6m; 64.9-72m; 72-77.6m The "oxide" sample comprised a composite of the following intervals: DDAR018: 15-20m; 34-37.7m; 42.7-44.1m; 50.8-53.4m; 55-56.6m DDAR019: 24-29m; 39.2-43m; 46.4-50.8m The "high purity" sample comprised a composite of the following intervals: DDAR014 74.8-76.3m; 96.1-97.7m DDAR016 104.6-106.1m DDAR026 121.1-122.6m Collar locations are highlighted in Appendix 1 above.
Drilling techniques	• *Drill type (eg core, reverse circulation, open-hole hammer, rotary air blast, auger, Bangka, sonic, etc) and details (eg 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).*	• Samples were all sourced from NQ and HQ core drilled by previous project owners Beacon Hill Resources Plc and stored at the Mineral Resources Tasmania core library.
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.*	• Core recovery recorded by the geologists at the time of drilling was 100% for the fresh intervals with less in the oxidised zones, especially where karst fill was encountered.
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*	• Lithological descriptions were recorded by the field geologists during sample collection.

Criteria	JORC Code explanation	Commentary
	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.*	
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.*	• Quarter core was taken from the selected intervals. • The selected intervals were composited to comprise fresh and oxide samples considered representative of material likely to be encountered in open pit mining of the deposit
Quality of assay data and laboratory tests	• *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 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 (eg standards, blanks, duplicates, external laboratory checks) and whether acceptable levels of accuracy (ie lack of bias) and precision have been established.*	• Samples were tested and assayed by ALS Laboratories in Perth and Burnie, Tasmania. • Apart from standard ALS Laboratory processes, no additional QAQC procedures were applied.
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.*	• Assay results were reported directly to Jindalee and the third party consultant. No adjustments to assay data were made.

Criteria	JORC Code explanation	Commentary
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.*	• All samples were taken from historic core. Collar locations of the original drill holes had previously been verified for resource estimation purposes, and disclosed in the relevant release. Collar locations are highlighted in Appendix 1 above. • Composite samples representing oxide and fresh material were chosen without reference to location in the deposit.
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.*	• Spacing of sampling is adequate for the exploratory nature of the metallurgical testwork, but is confined to the southwestern half of the orebody. • A mineral resource estimate has previously been reported: ASX:JRL 10 October 2017, "Arthur River Magnesite Deposit – JORC (2012) Resource Estimate".
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.*	• Original sampling of the core was orientated to achieved unbiased results for resource estimation; no further orientation was undertaken for this composite sampling program
Sample security	• *The measures taken to ensure sample security.*	• Samples were collected and delivered to the freight company by Jindalee personnel or contractors for dispatch to ALS Laboratories. • All samples were received as expected by the laboratory with no missing or mis-labelled samples.
Audits or reviews	• *The results of any audits or reviews of sampling techniques and data.*	• None undertaken.

Section 2 Reporting of Exploration Results

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

Criteria	JORC Code explanation	Commentary
Mineral tenement and land tenure status	• *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.*	• The testwork was conducted on samples within the Arthur River deposit located on EL5/2015, Jindalee holds a 100% beneficial interest in the Project, with the consultant who introduced the Project to Jindalee retaining a 1% gross royalty.
Exploration done by other parties	• *Acknowledgment and appraisal of exploration by other parties.*	• The Arthur River magnesite deposit was first discovered in 1925 by the geologist B. P. Nye. In 1970, Mineral Holdings Australia Pty Ltd (MHA) was granted a large exploration license (EL43/70) over the area and carried out exploration in association with a number of joint venture partners. Between 1982 and 1988 MHA, in joint venture with CRAE, carried out geological mapping, gravity surveys, diamond drilling, metallurgical testing and feasibility and marketing studies. • CRAE completed 7 diamond drill holes on the Arthur River Project (AR001 to AR007) totalling 1,610m of drilling. This work delineated the magnesite body at the Arthur River, over 3,500 meters of strike length. In 1997, TMNL entered into an option agreement to purchase the Arthur River Project from MHA. Check and exploratory diamond drilling at Arthur River comprised seven holes totalling 1,254.3 meters (AR002C, AR007C and AR008 to AR012). Crest Magnesium/TMNL went on to complete a further 16 diamond drill holes, one test pumping bore and 5 monitoring bores totalling 4,226.1m of drilling. They initiated feasibility work, hydrogeological studies, and resource estimation. Beacon Hill Resources Plc through its wholly owned subsidiary Tasmania Magnesite NL (TMNL) completed a further 1,118m of drilling, environmental studies, hydrogeological studies, metallurgical test work, resource estimation and marketing studies which culminated in a scoping study
Geology	• *Deposit type, geological setting and style of mineralisation.*	• The Arthur River magnesite deposit is located within the Arthur Lineament, which is a NNW-striking belt of highly deformed metamorphic Pre-Cambrian rocks extending from just north of Granville Harbour on the west coast, to Wynyard on the north coast.

Criteria	JORC Code explanation	Commentary
		The deposit comprises a massive Magnesite body overlain by up to 20m of Holocene glacial sediments. The magnesite body forms a large pod approximately 2500m long by up to 400m wide, with drilling indicating it extends to at least a vertical depth of 290m.
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:* ○ *easting and northing of the drill hole collar* ○ *elevation or RL (Reduced Level – elevation above sea level in metres) of the drill hole collar* ○ *dip and azimuth of the hole* ○ *down hole length and interception depth* ○ *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.*	• Please refer to data previously published ASX:JRL 10 October 2017, “Arthur River Magnesite Deposit – JORC (2012) Resource Estimate” for a complete summary of all drill-hole information.
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.*	• None reported – metallurgical testwork 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’).*	• None reported – metallurgical testwork only.

Criteria	JORC Code explanation	Commentary
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.*	• See main body of announcement.
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.*	• Summary testwork results only have been reported.
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 characteristics; potential deleterious or contaminating substances.*	• See main body of announcement.
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.*	• See main body of announcement.