



## ASX AND MEDIA ANNOUNCEMENT

14 May 2018

### **LEGACY METALLURGICAL TEST-WORK HIGHLIGHTS POTENTIAL STANDALONE SCANDIUM DEPOSIT FOR NSW ASSET**

- Due diligence on the Pacific Express project, which has already highlighted a 159ppm Sc<sup>1</sup> assay, uncovered legacy metallurgical results suggesting the Houston Mitchell prospect (within the tenure) could potentially be developed into a standalone scandium deposit<sup>2</sup>
- The determination was based on historic scandium leaching undertaken two decades ago by Jervois Mining (ASX: JRV) on high-grade samples (60ppm Sc) from the Houston Mitchell prospect which resulted in a 70% Sc recovery rate<sup>3</sup>
- In addition, JRV, in a collaborative joint-venture research and development initiative with the CSIRO, examined how scandium impacted aluminium alloys<sup>4</sup>
- Notably, a 2002 progress report on the joint-venture highlighted significant early interest by global aviation giant, Boeing (BA NYSE), in scandium alloys ability to mitigate against corrosion for a new aircraft design (Boeing's proposed sonic cruiser)<sup>4</sup>
- Sixteen years on, demand for scandium is set to grow significantly moving forward, with Boeing and Airbus potentially requiring up to 150tpa to make aluminium-scandium alloys to build up to 38,000 new aircraft over the next two decades<sup>5</sup> – these are lighter than current alloys and will facilitate moderating fuel usage
- Other test-work done on bulk samples from Hurl's Hill, which is just outside the tenure boundary but has similar geology sequences to prospective areas within Pacific Express, returned recovery rates up to 96% Co and 94% Ni, clearly highlighting the exploration upside<sup>6</sup>
- In addition, the Hurl's Hill bulk samples demonstrated the cobalt head-grade could be increased up to 4,500ppm Co by screening or sizing to separate the upper limonitic zone and rejecting the marginal ore to waste<sup>6</sup>
- Further, as part of the due diligence process, legacy data will be used to model the geology, with the intention of reporting mineral resources under the JORC (2012) code

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**MinRex Executive Director, Simon Durack commented:** *"Clearly, the due diligence team have uncovered a prospective game-changer for the Pacific Express project, with legacy metallurgical test-work verifying the potential to develop a standalone scandium deposit. Moreover, it is pleasing to note Boeing's early interest in scandium alloys, as the future take-up rate from the aviation industry is set to grow materially over the next two decades. While the Board looks forward to receiving the geology team's final report and recommendation, the legacy metallurgical evidence clearly confirms there is material exploration upside for the Pacific Express project."*

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**MinRex Resources Limited (ASX: MRR) (“MinRex” or “the Company”)** is pleased to provide shareholders an update on the pre-acquisition due diligence underway on the Pacific Express project in New South Wales. The core focus of the update is assessing the extent of scandium mineralisation in more detail, especially the prospect of developing a potential standalone deposit at the Houston Mitchell prospect, following the discovery of legacy metallurgical reports from circa 20 years ago.

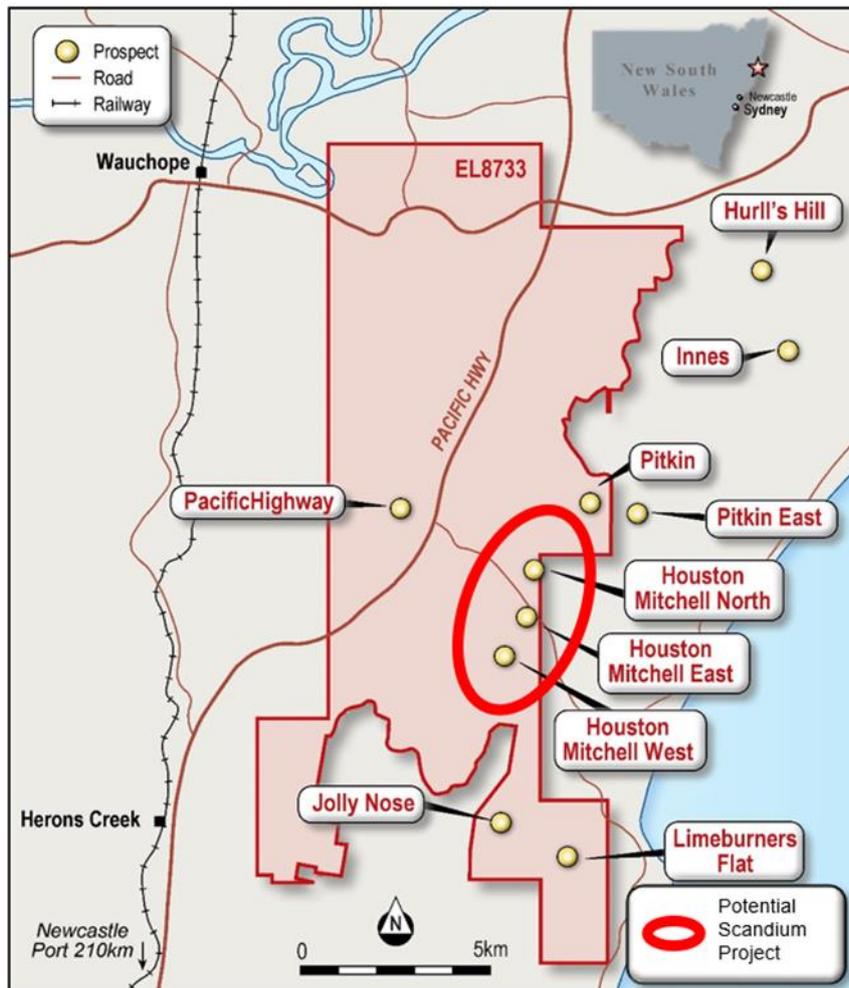
**LEGACY METALLURGICAL STUDIES**

Whilst reviewing the historical tenure reports related to the Pacific Express project, the geology team found extensive legacy metallurgical studies based on test-work from three laboratories that utilised different techniques and generated varying results. The test-work aimed to achieve the following outcomes:

- Identify preliminary physical separation methods for ore to materially increase the head grade which, in turn, would reduce the volume of material to be processed while enriching the mineral fed into the proposed processing plants to extract scandium, cobalt and nickel; and
- Vary chemical extraction methods to pin-point which technique resulted in recovering the highest proportions of scandium, cobalt and nickel, to enhance efficiency and maximise recovery.

Samples were taken from the Houston Mitchell prospect (within in the tenure) and Hurll’s Hill (2-3km east) – refer to Figure 1.

**FIGURE 1: HOUSTON MITCHELL AND HURLL’S HILL PROSPECTS**



Sources: MRR geology team

## RESULTS AND SUMMARY CONCLUSIONS

Overall, there were four rounds of metallurgical tests conducted, with key findings summarised below:

### Houston Mitchell prospect samples (within Pacific Express project)

- Testing completed on a high-grade sample (60ppm Sc) to assess the recovery of scandium with encouraging early recovery results of up to 70%.<sup>3</sup>
- Based on these results, the view from the metallurgy report at the time was the Houston Mitchell prospect had the potential to be developed into a standalone scandium deposit.<sup>2</sup>
- MRR's geology team are currently evaluating occurrences of scandium-rich material. This potentially could result in scandium-rich mineral resources being defined separately to nickel-cobalt ones which dominate throughout the tenure.
- Further, the geology team have observed that scandium is enriched nearer to surface, while cobalt-nickel mineralisation is deeper within the laterite.
- Moving forward, the geology team aim to identify potential stand-alone scandium mineralised zones, which may partially or completely overlie deeper cobalt-nickel mineralised zones in the laterite.

### Hurll's Hill prospect samples (outside Pacific Express project)

- Possibility of increasing the head grade up to 4,500ppm Co by screening to separate by sizing the upper limonitic zone and rejecting the marginal ore to waste.<sup>6</sup> (Note, MRR's geology team consider prospects identified within the tenure to have the potential to be similarly upgraded though future exploration and bulk sampling)
- Chemical extractions of metals varied vertically and ranged up to 96% for cobalt and 94% for nickel.<sup>6</sup>
- A technical observation from the time is that Hurll's Hill has significant potential to be developed into a major scandium, cobalt, nickel laterite project.
- Pre-selected targets within the Pacific Express project have similar geology to Hurll's Hill, which indicates there is potential exploration upside to evaluate the prospects with modern exploration and assay methods.

### Boeing's long-term interest in scandium

A holder of previous historical tenures in the area, JRV, undertook research and development work through a collaborative joint-venture with CSIRO's Manufacturing Science and Technology division in Adelaide – the work focussed on scandium alloys and casting applications. Notably, global aviation giant Boeing (BA NYSE) showed significant early interest in scandium alloys, especially the ability to mitigate against corrosion for a future possible aircraft design (Boeing's sonic cruiser).<sup>4</sup>

Moving forward, the market dynamic has changed materially, with demand for scandium set to grow strongly over the next two decades. Potentially, if Boeing and Airbus predictions to build up to 38,000 new aircraft by 2040 are realised, the aviation industry alone may require 150tpa of scandium to make aluminium alloys.<sup>5</sup> (Note, aluminium alloys utilise scandium to make them lighter and stronger, reducing potential fuel costs for aircraft that are made with this material.<sup>5</sup>)

### Next steps

For the Houston Mitchell prospect, external consultants will thoroughly review all legacy metallurgical data and test-work then summarise key findings, as this project knowledge can materially aid fast-tracking future mining studies.

Incremental metallurgical testing will apply modern testing techniques to ensure maximum metal recovery from future lateritic exploration and/or bulk samples to boost confidence a potential viable standalone scandium deposit can be developed.

Commence work on modelling legacy data to ascertain if a mineral resource can be estimated for scandium-cobalt-nickel and reported to the JORC (2012) code.



**MINREX**  
RESOURCES

Design and formulate preliminary drilling campaigns for the most prospective scandium-cobalt-nickel target areas within the Pacific Express tenure.

For and on behalf of the Board

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#### References

- 1) New South Wales Resources & Energy Digs database systems Report No: GS1997/137 R00002517
- 2) New South Wales Resources & Energy Digs database systems Report No: GS1999/227 R00020880
- 3) JRV ASX Prospectus – 6 March 1998
- 4) New South Wales Resources & Energy Digs database systems DIGS Report No: GS2002/444 R00032854
- 5) CLQ ASX Presentation – 11 February 2015
- 6) JRV ASX Release – 26 November 1998

#### COMPETENT PERSON'S STATEMENT:

*The information in this report that relates to Geological Interpretation, Historical Exploration Results, or Historical Mineral Resources is based on information compiled by Nicholas Ryan, a Competent Person who is a Member of The Australasian Institute of Mining and Metallurgy. Mr Ryan has been a Member of the Australian Institute of Mining and Metallurgy for 12 years and is a Chartered Professional (Geology). Mr Ryan is employed by Xplore Resources Pty Ltd. Mr Ryan is the consulting Technical Manager for Clean Power Resources Pty Ltd. Mr Ryan 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'. Mr Ryan consents to the inclusion in the report of the matters based on his information and the form and context in which it appears.*

# JORC Code, 2012 Edition – Table 1 report template

## Section 1 Sampling Techniques and Data

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

| Criteria                     | JORC Code explanation   | Commentary  |
|------------------------------|---|---|
| <i>Sampling techniques</i>   | <ul style="list-style-type: none"> <li><i>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.</i></li> <li><i>Include reference to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used.</i></li> <li><i>Aspects of the determination of mineralisation that are Material to the Public Report.</i></li> <li><i>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.</i></li> </ul> | <ul style="list-style-type: none"> <li>Samples were obtained from air-core drilling, with sampling and bagging of the air-core in 1m intervals, in order to obtain results for testing at an accredited laboratory. 7,567 samples were submitted for laboratory assay, this does not include duplicates.</li> <li>The competent person considers that industry standards and practices at the time the historical sampling and assaying were completed are appropriate to the historical estimation of a Mineral Resource, and the potential risks associated to be low for the type of air-core drilling, sampling and the lateritic style of mineralization.</li> </ul> |
| <i>Drilling techniques</i>   | <ul style="list-style-type: none"> <li><i>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).</i></li> </ul>  | <ul style="list-style-type: none"> <li>Air-core drilling had been utilized for the 506 drillholes with an outer drillhole diameter of 85mm.</li> </ul>  |
| <i>Drill sample recovery</i> | <ul style="list-style-type: none"> <li><i>Method of recording and assessing core and chip sample recoveries and results assessed.</i></li> <li><i>Measures taken to maximise sample recovery and ensure representative nature of the samples.</i></li> <li><i>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.</i></li> </ul>   | <ul style="list-style-type: none"> <li>Air Cores sampled every 1m for assay, the drill and sample logs do not appear to have any sample recovery recorded for the air-core drilling.</li> <li>7,567 samples were submitted for laboratory assay, this does not include duplicate samples.</li> <li>The competent person considers that the potential risks associated with sample loss to be low for the type of air-core drilling, sampling and the lateritic style of mineralization.</li> </ul>  |
| <i>Logging</i>               | <ul style="list-style-type: none"> <li><i>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.</i></li> </ul>  | <ul style="list-style-type: none"> <li>Qualitative lithological logging, no images, logged on a per metre or greater basis for similar lateritic bagged samples.</li> <li>Qualitative lithological logging includes lithology, lithological descriptions and colour taken every meter with approximately 7,567m of drilling logged.</li> </ul>  |

| Criteria  | JORC Code explanation   | Commentary   |
|---|---|--|
| <i>Sub-sampling techniques and sample preparation</i> | <ul style="list-style-type: none"> <li>• Whether logging is qualitative or quantitative in nature. Core (or costean, channel, etc) photography.</li> <li>• The total length and percentage of the relevant intersections logged.</li> <li>• If core, whether cut or sawn and whether quarter, half or all core taken.</li> <li>• If non-core, whether riffled, tube sampled, rotary split, etc and whether sampled wet or dry.</li> <li>• For all sample types, the nature, quality and appropriateness of the sample preparation technique.</li> <li>• Quality control procedures adopted for all sub-sampling stages to maximise representivity of samples.</li> <li>• 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.</li> <li>• Whether sample sizes are appropriate to the grain size of the material being sampled.</li> </ul> | <ul style="list-style-type: none"> <li>• Sampled material was obtained from air-core taken at 1m intervals. 7,567 samples were submitted for laboratory assay, this does not include duplicate samples sent for testing.</li> <li>• The historical tenure reports did not detail the sub-sampling techniques or preparation, the competent person considers that the potential risks associated with sub-sampling techniques and sample preparation to be appropriate for a historical estimate of Mineral Resources.</li> </ul>   |
| <i>Quality of assay data and laboratory tests</i>     | <ul style="list-style-type: none"> <li>• The nature, quality and appropriateness of the assaying and laboratory procedures used and whether the technique is considered partial or total.</li> <li>• 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.</li> <li>• 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.</li> </ul>  | <ul style="list-style-type: none"> <li>• The testing of the historical drilling had been completed at a professional accredited laboratory, AMDEL. ICP Emission Spectrometry (mass or atomic, dependent on year tested) had been completed on the submitted samples to be analyzed for Cobalt, Nickel, Chromium, Iron, Magnesium and Scandium.</li> <li>• Duplicate samples were submitted for testing and the quality control procedures appear to be appropriate for historical drilling and the subsequent historical estimate of a Mineral Resource.</li> <li>• Bulk sampling: 20kg composite sample or representative air core drilling samples for Houston Mitchel North and Hurl's Hill were tested by Metcon for metallurgical leach testing.</li> <li>• Bulk Sampling: Tests on all Metcon metallurgical leached material were undertaken by AMDEL (ICPOES method IC4E, for Sc), Becquerel (neutron activation assays for Sc), and ALS (Nickel and Cobalt assay method A102, Scandium assay method IC587 and MS587).</li> <li>• Bulk Sampling: International Project Development Services Pty Ltd (IPDS) advised Jervois and controlled the metallurgical work. The main metallurgical programmes were done by ALS, AMDEL and Becquerel laboratories. Becquerel neutron activation</li> </ul> |

| Criteria                                     | JORC Code explanation   | Commentary  |
|--|---|---|
|  |   | <p>method considered the best option or most representative for Sc recovery, as determined by IPDS.</p> <ul style="list-style-type: none"> <li>• Bulk Sampling: Metallurgical work by AMDEL reported a 96% recovery for Ni and Co using acid pressure leaching, with relatively low acid consumption.</li> </ul>  |
| <i>Verification of sampling and assaying</i> | <ul style="list-style-type: none"> <li>• <i>The verification of significant intersections by either independent or alternative company personnel.</i></li> <li>• <i>The use of twinned holes.</i></li> <li>• <i>Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols.</i></li> <li>• <i>Discuss any adjustment to assay data.</i></li> </ul>           | <ul style="list-style-type: none"> <li>• The review of the historical exploration reports indicated that in the Pitkin deposit twin holes attempted and did not succeed for penetrating through conglomerates to reach laterite from earlier historical auger drilling. In this instance the twinned drillholes did not succeed, the competent person considers this to be immaterial as it appears that the historical estimate did not include Mineral Resources at the twinned borehole location.</li> <li>• Data verification, data security, due care and data custody are expected to have followed leading practice at the time of each drilling campaign and in the submission of tenement reports, in the review of the available historical open source information the competent person has encountered no reason to have questioned this assumption.</li> </ul>   |
| <i>Location of data points</i>               | <ul style="list-style-type: none"> <li>• <i>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.</i></li> <li>• <i>Specification of the grid system used.</i></li> <li>• <i>Quality and adequacy of topographic control.</i></li> </ul>  | <ul style="list-style-type: none"> <li>• The drill hole location information for the historical exploration boreholes is sourced from the New South Wales Resources &amp; Energy (NSW R&amp;E) Minview geological and mining mapping application: <a href="https://minview.geoscience.nsw.gov.au">https://minview.geoscience.nsw.gov.au</a></li> <li>• The competent person considers the level of error associated with the borehole collar survey methods and the historical borehole spacing to be appropriate for the reporting of borehole locations relative to the tenure boundary.</li> <li>• A subset of the borehole collar data has been checked against borehole collars stated in historical tenure reports and significant anomalies were rectified as some NSW R&amp;E Data point projection MGA Zone 56 (GDA 94) appear to have been incorrectly translated from AMG 84 Zone 56.</li> <li>• Data point projection MGA 94 Zone 56 (GDA 94).</li> </ul> |
| <i>Data spacing and distribution</i>         | <ul style="list-style-type: none"> <li>• <i>Data spacing for reporting of Exploration Results.</i></li> <li>• <i>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.</i></li> <li>• <i>Whether sample compositing has been applied.</i></li> </ul> | <ul style="list-style-type: none"> <li>• The drillholes were laid out on local grids with spacings of 100m x 50m or 200m x 50m, dependent on the deposit.</li> <li>• The drillhole grids were laid out using theodolite and chain, using wooden pegs to mark the drill sites on a grid of 50m x 100m (Hurl's Hill &amp; Pacific Highway). Professional Surveyors were historically reported to have been engaged in the grid layout process.</li> <li>• The competent person considers that the data spacing and distribution to be</li> </ul>  |

| Criteria   | JORC Code explanation  | Commentary  |
|--|--|---|
| <i>Orientation of data in relation to geological structure</i> | <ul style="list-style-type: none"> <li>• Whether the orientation of sampling achieves unbiased sampling of possible structures and the extent to which this is known, considering the deposit type.</li> <li>• 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.</li> </ul> | <p>appropriate for a historical estimate of Mineral Resources.</p> <ul style="list-style-type: none"> <li>• The historical aircore drilling from Jervois occurred on a grid to intersect aero-magnetic lateritic mineralization features, that had previously been followed up with soil samples. The competent person considers it appropriate given the resource delineation focus of the drilling for the definition of a historical Mineral Resource.</li> </ul>  |
| <i>Sample security</i>   | <ul style="list-style-type: none"> <li>• The measures taken to ensure sample security.</li> </ul>  | <ul style="list-style-type: none"> <li>• From 1996 - 1999 7,567 samples were submitted for laboratory assay, this does not include duplicates.</li> <li>• Sample security, due care and chain of custody are expected to have followed leading practice at the time of each drilling campaign, in the review of the available historical open source information the competent person has encountered no reason to have questioned this assumption.</li> </ul>  |
| <i>Audits or reviews</i>                                       | <ul style="list-style-type: none"> <li>• The results of any audits or reviews of sampling techniques and data.</li> </ul>  | <ul style="list-style-type: none"> <li>• Jervois Mining Limited did not state if a formal audit of the collected technical information had been completed, for either their drillhole database or historical estimate of Mineral Resources by an Independent Third party.</li> <li>• Nickel Online Pty Ltd (holder of partially overlapping EL8924, relinquished on the 30-06-2009) indicated that their tenure review work of the historical Jervois tenures (1996-2001) included a review of the previous tenure work and the generation of a Mineral Resource to the JORC code (unstated version, presumed 2004) during the 31 October 2007 – 31 October 2008 tenure period. No material anomalies were reported for the drillhole information or the Jervois historical estimate. Nickel Online did not provide any further details other than the Mineral Resource table and the name of their competent person that calculated the Nickel Online historical estimate. The Nickel Online historical estimate can be in viewed in DIGS report: GS2009/715 R0037775. Due to the lack of disclosure on the methodology utilized in the Nickel Online historical estimate the competent person considers it to be immaterial to the Jervois historical estimates deposit locations with the boundary of the Pacific Express project due to the lack of transparency in reporting of the mineral resource methodology in the Nickel Online historical estimate.</li> <li>• Bulk Sampling: International Project Development Services Pty Ltd (IPDS) advised Jervois and controlled the metallurgical work. The main metallurgical programmes were done by ALS, AMDEL and Becquerel laboratories. Becquerel neutron activation method considered the best option or most representative for Sc recovery, as determined by IPDS.</li> </ul> |

## Section 2 Reporting of Exploration Results

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

| Criteria                                       | JORC Code explanation  | Commentary   |
|--|--|--|
| <i>Mineral tenement and land tenure status</i> | <ul style="list-style-type: none"> <li>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.</li> <li>The security of the tenure held at the time of reporting along with any known impediments to obtaining a license to operate in the area.</li> </ul> | <ul style="list-style-type: none"> <li>The mineral tenement referred to in this announcement are held by clean Power Resources Pty Ltd and are as follows: <ul style="list-style-type: none"> <li>NSW – Pacific Express Project Exploration License Application EL 8733 consisting of 36 sub blocks, granted for a period of 6 years until 29-Mar-2024.</li> </ul> </li> </ul>   |
| <i>Exploration done by other parties</i>       | <ul style="list-style-type: none"> <li>Acknowledgment and appraisal of exploration by other parties.</li> </ul>  | <ul style="list-style-type: none"> <li>Cobaltiferous manganese oxide (“wad”), chromium oxide and laterite have been identified in the region. Historical records indicate that Cobaltiferous manganese oxide (“wad”), chromium oxide exploited previously by small scale historical workings.</li> <li>In 1962 Carpentaria Exploration Company Pty Ltd (“CEC”) negotiated an option over PML 5 owned by Mr N J Hurl and situated 6 km SW of Port Macquarie. They carried out channel sampling, auger drilling and metallurgical testing. In total they drilled 35 auger holes on a 60m grid for a total of 641m. Sampling interval was based on flute length (6 feet or 1.52m). CEC noted five layers from the weathered basement or saprock to a surface soil. The higher Ni-Co values were found to be associated with the ironstone layers above a saprolitic (clay) zone. They concluded that an in-situ resource of 10-20 million tonnes @ approximately 40% Fe and 0.6% Ni was possible as a flat lying sheet about 18m thick. A metallurgical test by the Australian Mineral Development Laboratories (AMDEL) indicated that the ore could not be substantially improved by physical means to a “shippable” concentrate. AMDEL recommended acid leaching by sulphuric acid as an option for producing a pre-smelter concentrate. CEC relinquished its option in 1966.</li> <li>Nickel Leach Exploration held EL 77 over the Port Macquarie area, excluding PML 5. Its JV partner Placer Prospecting conducted a stream sediment survey over the area. Placer noted the correlation between serpentinites and high nickel values. Placer withdrew from the JV in 1966.</li> <li>VAM Ltd, the parent company of Nickel Leach Exploration took out an Authority to Prospect No 3434 over the known nickel resources in 1967. They carried out metallurgical investigations at the University of NSW and gridded an area over Lakes Swamp to measure ground magnetics and conduct drilling, b boggy conditions prevented the work. In 1970 VAM Ltd carried out a seismic survey over three areas and concluded that previous drilling may not have</li> </ul> |

| Criteria       | JORC Code explanation  | Commentary  |
|----------------|--|---|
|                |  | <p>reached basement and some potential laterite zones were not tested. They drilled 17 percussion holes at Hurl's Hill, 3 at Muston's Quarry and 2 in the Vineyards Area. Diamond core tails were drilled 3 to 6m into basement. In 1980 Western Mining Corporation Ltd produced a resource estimate mainly based on data from VAM. (At Hurl's Hill approximately 6MT @ 0.7 Ni and 2.75MT @ 0.2% Co, and at Lake Innes Estate 15MT @0.7% Ni and 7Mt @ 0.2% Co). In 1981 VAM Ltd carried out a magnetometer survey. They interpreted the magnetic highs to be lenses of serpentinite up to 200m wide, with other pods along strike. The areas outlined by the VAM magnetics surveys are shown below in Figure 3. Note the location of Hurl's Hill and Muston's Quarry. VAM upgraded their resource estimate, using the magnetic interpretation to estimate a potential resource of 15MT @ 0.7% Ni and 0.2% Co.</p> <ul style="list-style-type: none"> <li>• Jervois Mining Limited (ASX: JRV) The JRV historical exploration tenure annual reporting typically covers a single regional reporting structure for three (3) mineral tenures: EL4964, 5185, &amp; 5315. JRV had three (3) historical exploration tenures near the Pacific Express project, targeted laterites for the elements of Co, Sc, &amp; Ni, held from 24-03-1998 to 18-09-2001.</li> <li>• Jervois completed a regional drilling program that completed 506 drillholes in drilling campaigns that occurred between 1996 and 1999. The 506 drillholes were completed over nine (9) separate areas of nickel laterite development: <ul style="list-style-type: none"> <li>➤ Pitkin Prospect</li> <li>➤ Pitkin Prospect East</li> <li>➤ Innes Prospect</li> <li>➤ Hurl's Hill Extended</li> <li>➤ Houston Mitchell East</li> <li>➤ Houston Mitchell West</li> <li>➤ Limeburners Flat</li> <li>➤ Jolly Nose</li> </ul> </li> <li>• Nickel Online Pty Ltd's EL6924 (Port Macquarie Nickel Laterite Project targeted Ni &amp; Co laterite, held from 31-10-2007 to 30-06-2009. Nickel Online Pty Ltd relinquished this tenure due to financial conditions related to the Great Financial Crisis.</li> <li>• Australia Hualong Pty Ltd EL7668 (Port Macquarie Project) completed historical tenure reports and aimed to develop a DSO laterite deposit, this did not progress, and the exploration tenure relinquished.</li> </ul> |
| <i>Geology</i> | <ul style="list-style-type: none"> <li>• <i>Deposit type, geological setting and style of mineralisation.</i></li> </ul> | <ul style="list-style-type: none"> <li>• Regionally the rocks hosting the laterite bodies are part of the Port Macquarie (PM) Block, a fault melange of Carboniferous and Permian rock units. The PM</li> </ul>   |

## Criteria

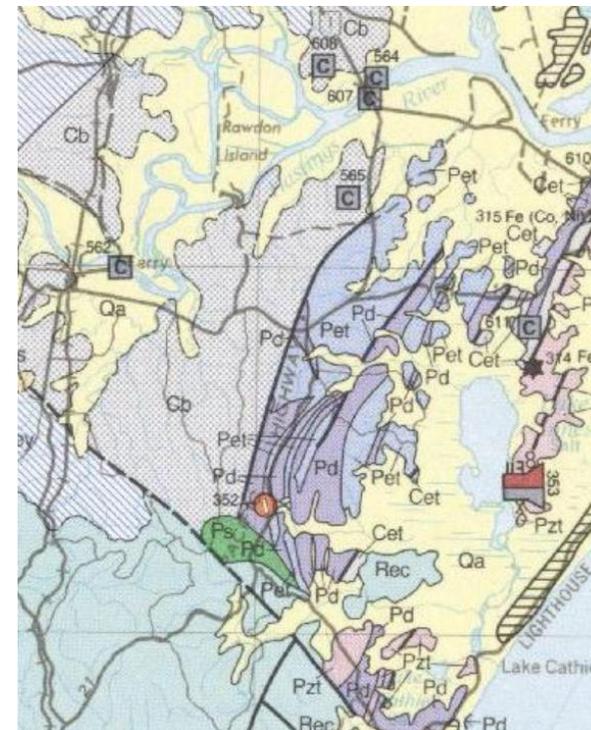
## JORC Code explanation

## Commentary

Block abuts the Triassic units of the Lorne Basin. The rock units of the Port Macquarie Block include:

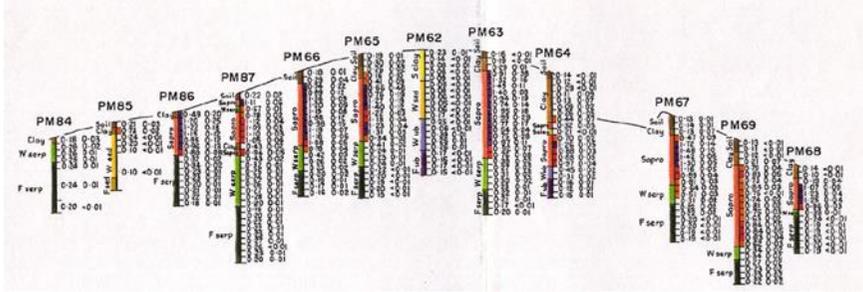
- Pd - Fault Zone Complex dolerite, gabbro, diorite, keratophyre, basalt chert, jasper
- Ps - Fault Zone Complex ultramafic rocks
- Pzt - Watonga Formation mostly fine oceanic shales with rare basalts
- Pet - Thrumster Slate shelf deposits of slate, sandstone, conglomerate
- Cet - Touchwood Formation shelf deposits, siltstone, sandstones, paraconglomerate, rare andesite

- An extract from the Tamworth Metallogenic map to show the above rock units:



- The serpentinites occur in the Fault Zone Complex and are part of an oceanic block that moved inboard and collided with the continent possibly in the late Permian/early Triassic. The exposed and shallow buried serpentinites were affected by regolith processes and became lateritised during the Tertiary. At

| Criteria                               | JORC Code explanation   | Commentary   |
|--|---|--|
|  |   | <p>that time the climate supported a temperate rainforest with excess groundwater.</p> <ul style="list-style-type: none"> <li>The Pacific Express Project in New South Wales targets laterites that contain elevated levels of cobalt, scandium or Nickel. Exposed at the surface of the fresh serpentine basement is a rarity. The lateritic profile is stated in historical tenure reports to generally range in thickness from 10 to 30m, with profiles consisting of hematite clay, limonite clay, saprolite, and weathered serpentinite overlaying a fresh serpentinite basement.</li> </ul>  |
| <p><i>Drill hole Information</i></p>   | <ul style="list-style-type: none"> <li>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: <ul style="list-style-type: none"> <li>easting and northing of the drill hole collar</li> <li>elevation or RL (Reduced Level – elevation above sea level in metres) of the drill hole collar</li> <li>dip and azimuth of the hole</li> <li>down hole length and interception depth</li> <li>hole length.</li> </ul> </li> <li>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.</li> </ul> | <ul style="list-style-type: none"> <li>The historical drillhole information in this section is publicly accessible from New South Wales MinView and Digs database systems. As this is information from historical reports accessible as open access data, the following material information is provided: <ul style="list-style-type: none"> <li>Digs Report No: GS2003/312 R00047959</li> <li>Digs Report No: GS2002/444 R00032854</li> <li>Digs Report No: GS2002/316 R00030091</li> <li>Digs Report No: GS2000/446 R00019300</li> <li>Digs Report No: GS1999/227 R00020880</li> <li>Digs Report No: GS1998/312 R00020395</li> <li>Digs Report No: GS1997/138 R00002518</li> <li>Digs Report No: GS1997/137 R00002517</li> </ul> </li> <li>The 506 historical drillholes were completed in a number of drilling campaigns between 1996 and 1999.</li> <li>The Competent Person considers the reference locations to the drillhole information to be sufficient, in consideration that the associated Mineral Resources are historical estimates reported to the JORC (1996) code, a competent person has not done sufficient work to classify the historical estimate in accordance with the JORC (2012) code, it is uncertain that following a future planned evaluation and/or additional exploration that the historical estimate is equivalent to reporting of mineral resources under the JORC (2012) Code.</li> <li>The drillhole grids were laid out using theodolite and chain, using wooden pegs to mark the drill sites on a grid of 50m x 100m or 50m x 200m (Hurl's Hill &amp; Pacific Highway). Professional Surveyors were historically reported to have been engaged in the grid layout process.</li> </ul> |
| <p><i>Data aggregation methods</i></p> | <ul style="list-style-type: none"> <li>In reporting Exploration Results, weighting averaging techniques, maximum and/or minimum grade truncations (e.g. cutting of high grades) and cut-off grades are usually Material and should be stated.</li> <li>Where aggregate intercepts incorporate short lengths of high grade</li> </ul>  | <ul style="list-style-type: none"> <li>No data aggregation occurred prior to the historical sampled interval testing, all grades were reported as certified by the laboratory for the sample length as taken in the field, with the exception of aggregated data shown in TABLE 1 section 2, sub section Balanced reporting.</li> </ul>  |

| Criteria  | JORC Code explanation   | Commentary   |
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|   | <p>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.</p> <ul style="list-style-type: none"> <li>The assumptions used for any reporting of metal equivalent values should be clearly stated.</li> </ul>  |  |
| <p><i>Relationship between mineralisation on widths and intercept lengths</i></p> | <ul style="list-style-type: none"> <li>These relationships are particularly important in the reporting of Exploration Results.</li> <li>If the geometry of the mineralisation with respect to the drill hole angle is known, its nature should be reported.</li> <li>If it is not known and only the down hole lengths are reported, there should be a clear statement to this effect (e.g. 'down hole length, true width not known').</li> </ul> | <ul style="list-style-type: none"> <li>The historical drilling related to the geological intersections is considered vertical with no deviations reported. The drilling information summaries must indicate azimuth or declination set at the time the boreholes were drilled, except for a single borehole in the Pacific Highway prospect.</li> <li>Only one borehole has been found to be set at a specific azimuth and declination for the Pacific Highway prospect. At present it is not transparent in the historical tenure reporting why this occurred in an isolated instance.</li> <li>Historical tenure reports have reported 'down hole length' from the drilling results, as the competent person considers that this is reflective of the 'true mineralized intersection width' from the air-core drilling method and the shallow lateritic style of deposit.</li> </ul> |
| <p><i>Diagrams</i></p>  | <ul style="list-style-type: none"> <li>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.</li> </ul>  | <ul style="list-style-type: none"> <li>Sectional views of the drill hole intercepts are available for the Historical Drilling in the open file reports. A typical drillhole cross section from Jervois (assay results are Ni%, Co% or in some sections Nickel Equivalent):</li> </ul>    |
| <p><i>Balanced reporting</i></p>  | <ul style="list-style-type: none"> <li>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.</li> </ul>   | <ul style="list-style-type: none"> <li>The competent person notes there is the expected range of assay variance occurs in the historical assays associated with the historical estimate, the observed variance appears as expected for a lateritic Mineral Resource.</li> <li>Magnetic separation testing conducted by AMDEL in 1996 did not appear to upgrade the resulting Co or Ni content of the tested samples.</li> <li>Drillholes within or near the MRR tenure EL8733 that have significant mineralized aggregated intercepts that have been</li> </ul>  |

| Criteria | JORC Code explanation | Commentary |
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validated are displayed in the table below (the raw data be viewed in the DIGS reports):

| Hole ID | Easting | Northing | From | To   | Ni%  | Co%  | Sc(ppm) | DIGS Report # |
|---------|---------|----------|------|------|------|------|---------|---------------|
| PM66    | 480239  | 6513063  | 7.0  | 8.0  | 1.86 | 0.12 | 33      | GS1997/137    |
| PM138   | 480244  | 6513166  | 0.0  | 18.0 | 0.86 |      |         | GS2003/312    |
| PM63    | 480358  | 6512971  | 0.0  | 26.0 |      | 0.11 |         | GS1997/137    |
| PM138   | 480244  | 6513166  | 7.0  | 8.0  | 1.8  | 0.08 | 24      | GS2003/312    |
| PM79    | 480328  | 6513108  | 10.0 | 11.0 | 0.61 | 0.63 | 49      | GS1997/138    |
| PM65    | 480274  | 6513025  | 5.0  | 6.0  | 0.66 | 0.46 | 75      | GS1997/137    |
| PM192   | 484065  | 6512587  | 6.0  | 7.0  | 0.1  | 0.05 | 131     | GS1998/312    |
| PM192   | 484065  | 6512587  | 7.0  | 8.0  | 0.51 | 0.12 | 159     | GS1998/312    |
| PM154   | 482441  | 6510105  | 18.0 | 19.0 | 0.3  | 0.07 | 128     | GS2003/312    |
| PM56    | 487747  | 6517507  | 13.0 | 14.0 | 0.6  | 1.32 | 78      |               |

- Drillhole PM45 in the Hurl's Hill prospect outside of the MRR tenure EL8733 have validated 1m sampled and assayed information displayed in the table below:

| Hole ID | Easting | Northing | From | To | Ni%  | Co%   | Sc(ppm) |
|---------|---------|----------|------|----|------|-------|---------|
| PM56    | 487747  | 6517507  | 0    | 1  | 0.22 | <0.01 | 8.3     |
| PM56    | 487747  | 6517507  | 1    | 2  | 0.15 | <0.01 | 32.5    |
| PM56    | 487747  | 6517507  | 2    | 3  | 0.13 | <0.01 | 33.4    |
| PM56    | 487747  | 6517507  | 3    | 4  | 0.22 | 0.01  | 47      |
| PM56    | 487747  | 6517507  | 4    | 5  | 0.28 | 0.01  | 58      |
| PM56    | 487747  | 6517507  | 5    | 6  | 0.36 | 0.02  | 74      |
| PM56    | 487747  | 6517507  | 6    | 7  | 0.37 | 0.01  | 59      |
| PM56    | 487747  | 6517507  | 7    | 8  | 0.39 | 0.02  | 55      |
| PM56    | 487747  | 6517507  | 8    | 9  | 0.45 | 0.17  | 55      |
| PM56    | 487747  | 6517507  | 9    | 10 | 0.42 | 0.13  | 71      |
| PM56    | 487747  | 6517507  | 10   | 11 | 0.35 | 0.04  | 55      |

|      |        |         |    |    |      |       |    |
|------|--------|---------|----|----|------|-------|----|
| PM56 | 487747 | 6517507 | 11 | 12 | 0.46 | 0.22  | 57 |
| PM56 | 487747 | 6517507 | 12 | 13 | 0.57 | 0.73  | 61 |
| PM56 | 487747 | 6517507 | 13 | 14 | 0.6  | 1.32  | 78 |
| PM56 | 487747 | 6517507 | 14 | 15 | 0.49 | 0.26  | 54 |
| PM56 | 487747 | 6517507 | 15 | 16 | 0.21 | 0.02  | -  |
| PM56 | 487747 | 6517507 | 16 | 17 | 0.2  | <0.01 | -  |

- Drillhole PM79 in the Pacific Highway prospect inside of the MRR tenure EL8733 have validated 1m sampled and assayed information displayed in the table below:

| Hole ID | Easting | Northing | From | To | Ni%  | Co%  | Sc(ppm) |
|---------|---------|----------|------|----|------|------|---------|
| PM79    | 480328  | 6513108  | 0    | 1  | 0.29 | 0.04 | 25.9    |
| PM79    | 480328  | 6513108  | 1    | 2  | 0.54 | 0.02 | 31      |
| PM79    | 480328  | 6513108  | 2    | 3  | 0.78 | 0.08 | 27      |
| PM79    | 480328  | 6513108  | 3    | 4  | 0.8  | 0.02 | 27      |
| PM79    | 480328  | 6513108  | 4    | 5  | 0.66 | 0.01 | 21      |
| PM79    | 480328  | 6513108  | 5    | 6  | 0.92 | 0.01 | 28      |
| PM79    | 480328  | 6513108  | 6    | 7  | 0.88 | 0.02 | 21      |
| PM79    | 480328  | 6513108  | 7    | 8  | 0.84 | 0.03 | 18      |
| PM79    | 480328  | 6513108  | 8    | 9  | 0.91 | 0.06 | 32      |
| PM79    | 480328  | 6513108  | 9    | 10 | 1.02 | 0.08 | 36      |
| PM79    | 480328  | 6513108  | 10   | 11 | 0.61 | 0.63 | 45      |
| PM79    | 480328  | 6513108  | 11   | 12 | 0.54 | 0.17 | 41      |
| PM79    | 480328  | 6513108  | 12   | 13 | 0.75 | 0.03 | 27      |
| PM79    | 480328  | 6513108  | 13   | 14 | 0.43 | 0.02 | 31.9    |
| PM79    | 480328  | 6513108  | 14   | 15 | 0.46 | 0.02 | 33.7    |
| PM79    | 480328  | 6513108  | 15   | 16 | 0.32 | 0.02 | -       |
| PM79    | 480328  | 6513108  | 16   | 17 | 0.3  | 0.02 | -       |
| PM79    | 480328  | 6513108  | 17   | 18 | 0.25 | 0.02 | -       |

| Criteria                           | JORC Code explanation   | Commentary  |        |         |    |    |      |       |   |
|------------------------------------|---|---|--------|---------|----|----|------|-------|---|
|                                    |   | PM79  | 480328 | 6513108 | 18 | 19 | 0.31 | 0.02  | - |
|                                    |   | PM79  | 480328 | 6513108 | 19 | 20 | 0.19 | <0.01 | - |
|                                    |   | PM79  | 480328 | 6513108 | 20 | 21 | 0.17 | <0.01 | - |
|                                    |   | PM79  | 480328 | 6513108 | 21 | 22 | 0.17 | <0.01 | - |
|                                    |   | PM79  | 480328 | 6513108 | 22 | 23 | 0.19 | <0.01 | - |
|                                    |   | PM79  | 480328 | 6513108 | 23 | 24 | 0.17 | <0.01 | - |
| Other substantive exploration data | <ul style="list-style-type: none"> <li>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.</li> </ul> | <ul style="list-style-type: none"> <li>Jervois had an airborne geophysical contractor complete a magnetometer survey and a spectral detection survey on the 26-28 October 1996. Traverse spacing of 200m with 1000m tie line spacing. The magnetometer survey detected anomalies not identified by a 1980 NSW DMR airborne survey due to the Jervois survey designed for the detection of localised magnetic anomalies.</li> <li>Jervois conducted ground magnometer surveys (Scintrex MP-2, proton Precession Magnometer), taking readings every 10 meters, total of 62,900 meters. Completed 2-9 December 1996.</li> <li>The Geological Survey of New South Wales Aeromagnetic Survey Data - Total Magnetic Intensity Reduced to Pole (TMI RTP) was accessed via the MinView portal. <a href="http://minview.geoscience.nsw.gov.au/">http://minview.geoscience.nsw.gov.au/</a></li> <li>Metcon metallurgical leach tests on Houston Mitchell North material produced a head assay result of Sc 60ppm, Ni 456ppm, Co 133ppm. The sampled bulk material material had been sourced from 4 air-core holes at Houston Mitchell North: PM152 to PM155. The bulk sample was made up of approximately 40x 1m air core samples collected over a start depth of 8-12m to an end depth of 20-22m. Assay results from Becquerel (neutron activation assays for Sc), and ALS (Nickel and Cobalt assay method A102).</li> <li>Metcon metallurgical leach tests on Hurlll's Hill material produced a head assay result of Sc 40ppm, Ni 950ppm, Co 255ppm, shows that Hurlll's hill appears to have different leach characteristics to the Houston Mitchell North Material. Assay results from Becquerel (neutron activation assays for Sc), and ALS (Nickel and Cobalt assay method A102).</li> <li>Tests on all Metcon metallurgical leached material were undertaken by AMDEL (ICPOES method IC4E, for Sc), Becquerel (neutron activation assays for Sc), and ALS (Nickel and Cobalt assay method A102, Scandium assay method IC587 and MS587).</li> </ul> |        |         |    |    |      |       |   |

| Criteria     | JORC Code explanation   | Commentary  |
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|              |   | <ul style="list-style-type: none"> <li>• International Project Development Services Pty Ltd (IPDS) advised Jervois and controlled the metallurgical work. The main metallurgical programmes were done by ALS, Amdel and Becquerel laboratories. Becquerel neutron activation method considered the best option for Sc recovery.</li> <li>• Metallurgical work by AMDEL reported a 96% recovery for Ni and Co using acid pressure leaching, with relatively low acid consumption.</li> <li>• GS1999/227: Four samples of laterite representing a cross section of the major ore zones. Program conducted between 23/10/97-2/3/98. The AMDEL laboratory test work results are as follows: <ul style="list-style-type: none"> <li>➢ Hematitic Clay: containing 0.33% Ni, 0.03% Co, 0.58% MgO, 6.6% Al<sub>2</sub>O<sub>3</sub> and 34 gpt Sc.</li> <li>➢ Limonitic Clay: containing 0.50% Ni, 0.21% Co, 0.76% MgO, 8.8% Al<sub>2</sub> O<sub>3</sub> and 66 gpt Sc.</li> <li>➢ Saprolite: containing 0.98% Ni, 0.08% Co, 11.6% MgO, 4.3% Al<sub>2</sub> O<sub>3</sub> and 31 gpt Sc.</li> <li>➢ Weathered Serpentinite: containing 0.73% Ni, 0.05% Co, 21.9% MgO, 3.5% Al<sub>2</sub> O<sub>3</sub> and 24 gpt Sc</li> </ul> </li> <li>• The JRV mettallurgical testwork information is extracted from the following New South Wales Resources &amp; Energy Digs database systems historical tenure report numbers: <ul style="list-style-type: none"> <li>➢ GS1997/137 R00002517</li> <li>➢ GS1999/227 R00020880</li> <li>➢ GS2002/444 R00032854</li> </ul> </li> </ul> |
| Further work | <ul style="list-style-type: none"> <li>• <i>The nature and scale of planned further work (eg tests for lateral extensions or depth extensions or large-scale step-out drilling).</i></li> <li>• <i>Diagrams clearly highlighting the areas of possible extensions, including the main geological interpretations and future drilling areas, provided this information is not commercially sensitive.</i></li> </ul> | <ul style="list-style-type: none"> <li>• A desktop study has commenced for the Pacific Express project in order to review all historical exploration data and open source data available in the region.</li> <li>• The exploration work program intends to develop a mineral database from the historical drillhole data, then interrogated for suitability to utilize and geologically model the drillhole data in order to estimate and report of mineral resources in accordance with the JORC (2012) code.</li> <li>• Metallurgical consultants are in the process of being short listed for engagement.</li> <li>• Metallurgical consultants review will aim to identify from the historical metallurgical data and test-work, suitable modern techniques that can be utilised to potentially economically process the laterite ores. Future metallurgical testing will build on the previous extensive metallurgical test work undertaken on the laterites within and adjacent to the MRR's mineral tenure EL8733. In addition, future metallurgical testing will apply modern</li> </ul>   |

| Criteria | JORC Code explanation | Commentary   |
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|          |                       | testing techniques to ensure maximum metal recovery from the future lateritic exploration samples and/or bulk samples in order to boost confidence that a potential viable standalone scandium deposit can be developed. |