

# ASX Announcement

## Ore Reserves Increase on track as Drilling & Metallurgical Program Validates Additional Material



18 December 2019

---

### (Updated) Includes Competent Person's Statement & JORC Table 1

- Recent drilling at Nolans Bore targets samples to expand metallurgical variability program
- Flotation variability tests validate beneficiation performance of additional mineralized material previously excluded from Nolans Ore Reserves
- Ore Reserves to be updated in Q1 CY2020

**Arafura Resources Limited (ASX: ARU) (Arafura or the Company)** is pleased to announce the results and potential implications of a flotation variability program on mineralized material types that included material types found in samples from recently completed infill resource definition drilling at its 100 per cent-owned Nolans Bore Neodymium-Praseodymium (NdPr) deposit in the Northern Territory.

The metallurgical and drilling programs were highlighted in the use of funds from the recently completed fully underwritten \$23.2 million entitlement offer (*refer to ASX announcement 20 June 2019*). The primary objective of these programs is to increase the mine life of the Nolans Project beyond 23 years.<sup>1</sup>

Drill core samples from three of the five shallow holes drilled across the Southeast Zone of the deposit augmented samples selected from previous diamond core drilling campaigns as the basis of the flotation variability program which was undertaken at the Nagrom mineral processing facility in Perth during October. In all, 14 samples of mineralized Material Type 5A2, for which an insufficient number of flotation tests had previously been completed to enable this material to be classified as ore and included in the project's Ore Reserves, were tested in the current and previous programs. In addition, 11 samples of Material Type 5A1 (already classified as ore) were also tested across both programs to

---

<sup>1</sup> Information in relation to the mine life included in this announcement is extracted from an ASX announcement dated 7 February 2019 (Nolans Project Definitive Feasibility Study). Arafura Resources confirms that all material assumptions underpinning the mine life set out in the announcement released on 7 February 2019 continue to apply and have not materially changed.

## Ore Reserves Increase on track as Drilling & Metallurgical Program Validates Additional Material

---

increase the confidence level in the prediction of beneficiation performance from the geometallurgical model.

The flotation tests performed in line with expectations from a phosphate ( $P_2O_5$ ) flotation perspective. This, together with an evaluation of rare earth (TREO) recovery and impurity (Fe, Al, Mg) deportment data, gives the Company the required confidence to adjust the project's geometallurgical model to now include 5A2 material. The updated geometallurgical model will now be the foundation of a new estimate of Ore Reserves for the Nolans Project. This outcome is expected to be reported during Q1 CY2020.

The implication of the success of the flotation variability program is that a substantial proportion of the 8.7 million tonnes of 5A2 material that was forecast in the project's Definitive Feasibility Study (DFS) to be stockpiled during mining has the potential to be processed. This scenario was described in the DFS (*refer to ASX announcement 7 February 2019 and the Nolans Definitive Feasibility Study Summary Report*) as an upside case production schedule which could extend the processing life of the project and improve project economic outcomes.

### COMPETENT PERSON'S STATEMENT

The information in this report that relates to Metallurgical Test Work Results is based on information compiled by Mr Stewart Watkins (BEng Chemical (Hons)), a Competent Person who is a Fellow of the Australasian Institute of Mining and Metallurgy (FAusIMM). Mr Watkins is a full-time employee of Arafura Resources Limited. Mr Watkins has sufficient experience that is relevant to the style of mineralisation and processing techniques 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 Watkins consents to the inclusion in this report of the matters based on his information in the form and context in which it appears.

## Ore Reserves Increase on track as Drilling & Metallurgical Program Validates Additional Material

---

Drilling hole NBDH1105 at Nolans Bore (top L). 5A2 drill core sample for flotation variability program (top R).  
Flotation test at Nagrom (bottom).



- ENDS -

**For further information contact:**

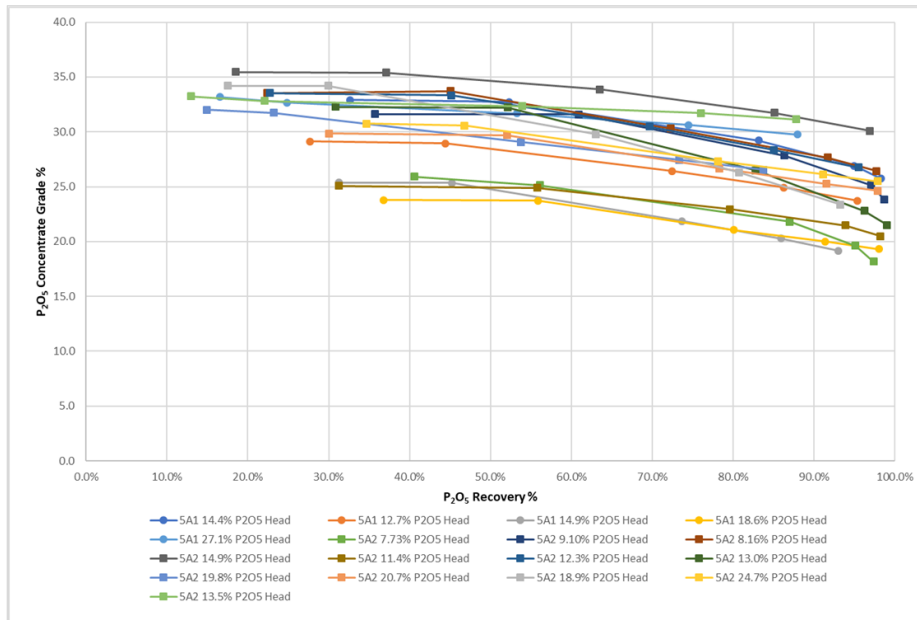
Gavin Lockyer  
Managing Director  
T: +61 8 6210 7666

**Media enquiries:**

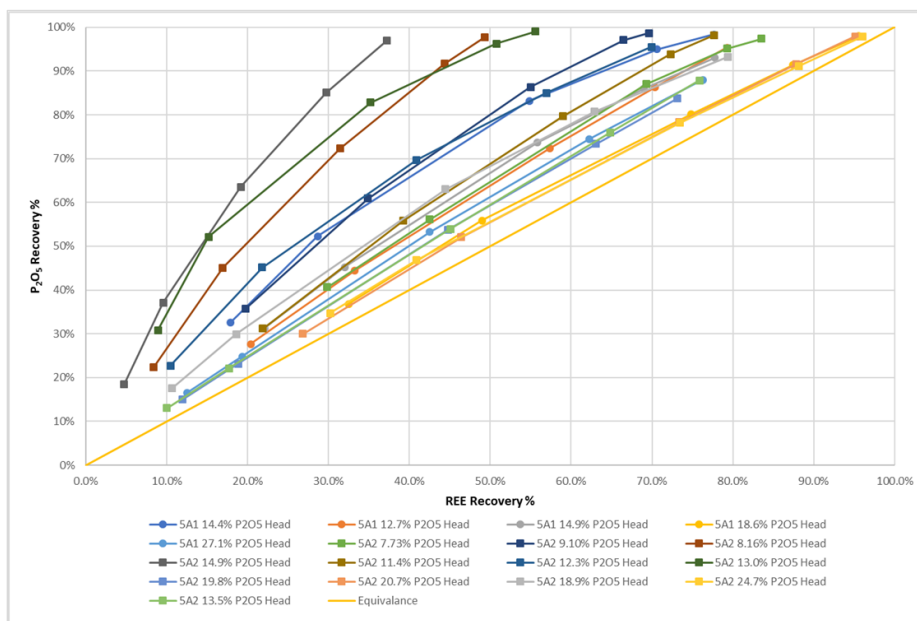
Luke Forrestal  
Media & Capital Partners  
M: +61 411 479 144

## Appendix

### Summary of Flotation Variability Program Results



Phosphate ( $P_2O_5$ ) grade recovery curves for the current variability program shows parallel performance with only a slight change in concentrate grade with increasing recovery. These results are similar to those from 5A1 samples tested in an earlier variability program which were included in the DFS geometallurgical model.



Phosphate ( $P_2O_5$ ) recovery versus rare earth (REE) recovery demonstrates the variability of rare earth deportment between phosphate and silicate minerals (with only rare earths contained in phosphate minerals able to be recovered).

## Ore Reserves Increase on track as Drilling & Metallurgical Program Validates Additional Material

| Key Concentrate Composition Equations by Material Type |   |   |  |
|--|---|---|--|
| Parameter  | Type 1 & 2  | Type 3B                                       | Type 4A, 5A1 & 5A2                                   |
| P <sub>2</sub> O <sub>5</sub> Recovery                 | 99%   | $0.63 \times P_2O_5 + 87.24$<br>(max 99%)     | 80%  |
| P <sub>2</sub> O <sub>5</sub> Grade                    | $0.9651 \times P_2O_5 + 1.6389$<br>(min 27%)              | $0.2162 \times P_2O_5 + 27.276$               | 26.7%  |
| TREO Recovery  | $0.29 \times TREO + 95.96$                                | $71.27 \times (TREO)^{0.2382}$<br>(max 97.5%) | $76.23 - 57.66 \times (Fe_2O_3/P_2O_5)$<br>(max 80%) |
| Fe <sub>2</sub> O <sub>3</sub> Recovery                | $9.95 \times (Fe_2O_3/P_2O_5)^{-0.606}$                   |   |  |
| Al <sub>2</sub> O <sub>3</sub> Recovery                | $6.4 \times e^{(0.297 \times Fe_2O_3 \text{ Recovery})}$  |   |  |
| MgO Recovery   | $6.25 \times e^{(0.291 \times Fe_2O_3 \text{ Recovery})}$ |   |  |
| H <sub>2</sub> SO <sub>4</sub> Consumption             | 828.7 kg/t concentrate                                    |   |  |

Updated geometallurgical model includes results from the current round of variability testing and Material Type 5A2. The previous DFS geometallurgical model shown as Table 14 in the [DFS Summary Report](#) excluded 5A2 material.

# 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  |
|-----------------------|---|---|
| Sampling techniques   | <ul style="list-style-type: none"> <li>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.</li> <li>Include reference to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used.</li> <li>Aspects of the determination of mineralisation that are Material to the Public Report.</li> <li>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.</li> </ul> | <ul style="list-style-type: none"> <li>All samples are from previously announced diamond drilling programs.</li> <li>Information on sampling techniques for samples from the 2019 drilling program are as per announcement of drilling results 17 December 2019.</li> <li>Information on sampling techniques from previous drilling programs are as per the information contained in the Mineral Resources announced on 7 June 2017.</li> </ul> |
| Drilling techniques   | <ul style="list-style-type: none"> <li>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).</li> </ul>   | <ul style="list-style-type: none"> <li>Drilling techniques for all samples tested were diamond core.</li> <li>Drilling methodology for samples from the 2019 drilling program are as per announcement of drilling results 17 December 2019.</li> <li>Drilling methodology for other samples are as per the information contained in the Mineral Resources announced on 7 June 2017.</li> </ul>  |
| Drill sample recovery | <ul style="list-style-type: none"> <li>Method of recording and assessing core and chip sample recoveries and results assessed.</li> <li>Measures taken to maximise sample recovery and ensure representative nature of the samples.</li> <li>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.</li> </ul>  | <ul style="list-style-type: none"> <li>Drill sample recovery for samples from the 2019 drilling program are as per announcement of drilling results 17 December 2019.</li> <li>Drill sample recovery for other samples are as per the information contained in the Mineral Resources announced on 7 June 2017.</li> </ul>   |
| Logging               | <ul style="list-style-type: none"> <li>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.</li> <li>Whether logging is qualitative or quantitative in nature. Core (or costean,</li> </ul>  | <ul style="list-style-type: none"> <li>Drill logging for samples from the 2019 drilling program are as per announcement of drilling results 17 December 2019.</li> <li>Drill logging for other samples are as per the information contained in the</li> </ul>   |



| Criteria                                       | JORC Code explanation  | Commentary  |
|--|--|---|
|  | <ul style="list-style-type: none"> <li>channel, etc) photography.</li> <li>The total length and percentage of the relevant intersections logged.</li> </ul>  | Mineral Resources announced on 7 June 2017.   |
| Sub-sampling techniques and sample preparation | <ul style="list-style-type: none"> <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>Core was sampled by cutting to geological or material type boundaries.</li> <li>Half or quarter core samples were cut from 2019 drill core or collected from core trays stored in the company's core storage facility in Darwin.</li> <li>Samples were bagged individually and labeled with drill hole and interval information by qualified and experienced Arafura geological personnel.</li> <li>Upon receipt at the metallurgical test facility all samples were crushed 100% passing 3.35mm before splitting on a riffle splitter to create sub-samples.</li> <li>Sub samples were stage ground with a closing screen size of 180 microns prior to splitting into individual flotation test charges.</li> </ul> |
| Quality of assay data and laboratory tests     | <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 assay methods are appropriate for this style of mineralization and consistent with those used for the current Mineral Resources estimate and previous metallurgical test work.</li> <li>Assaying was carried out using standard industry methodology at Nagrom Pty Ltd.</li> </ul>   |
| Verification of sampling and assaying          | <ul style="list-style-type: none"> <li>The verification of significant intersections by either independent or alternative company personnel.</li> <li>The use of twinned holes.</li> <li>Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols.</li> <li>Discuss any adjustment to assay data.</li> </ul>  | <ul style="list-style-type: none"> <li>As per standard industry practice for metallurgical test work no validation of individual assays were carried out.</li> <li>In instances where test results were considered unusual or unexpected a repeat test was carried out as required.</li> </ul>  |
| Location of data points                        | <ul style="list-style-type: none"> <li>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.</li> <li>Specification of the grid system used.</li> <li>Quality and adequacy of topographic control.</li> </ul>  | <ul style="list-style-type: none"> <li>Samples for the metallurgical test work were taken from diamond drill holes that range spatially throughout the Mineral Resources (as announced on 7 June 2017) and Ore Reserves (as announced on 7 February 2019).</li> <li>Samples were selected across a range of P<sub>2</sub>O<sub>5</sub> grades from the selected geological material types as logged by the geologists at the time of drilling or subsequently as reported previously.</li> <li>Sources of MT5A1 and 5A2 samples collected for the metallurgical test work program, whether included in the analysis referenced in the associated announcement or not, are included in the table below.</li> </ul>   |

| Criteria   | JORC Code explanation  | Commentary   |
|--|--|--|
| <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>• Not Applicable</li> </ul>   |
| <i>Orientation of data in relation to geological structure</i> | <ul style="list-style-type: none"> <li>• <i>Whether the orientation of sampling achieves unbiased sampling of possible structures and the extent to which this is known, considering the deposit type.</i></li> <li>• <i>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.</i></li> </ul> | <ul style="list-style-type: none"> <li>• Not Applicable.</li> </ul>  |
| <i>Sample security</i>   | <ul style="list-style-type: none"> <li>• <i>The measures taken to ensure sample security.</i></li> </ul>   | <ul style="list-style-type: none"> <li>• Samples were bagged individually and labeled with drill hole and interval information by qualified and experienced Arafura geological personnel.</li> <li>• Samples were unbagged and labeled individually at the metallurgical test facility (Nagrom Pty Ltd) by qualified technicians.</li> </ul> |
| <i>Audits or reviews</i>                                       | <ul style="list-style-type: none"> <li>• <i>The results of any audits or reviews of sampling techniques and data.</i></li> </ul>   | <ul style="list-style-type: none"> <li>• No external audits or reviews have been done on this data.</li> </ul>   |



## Section 2 Reporting of Exploration Results

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

| Criteria                                       | JORC Code explanation  | ommentary   |
|--|--|---|
| <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 licence to operate in the area.</li> </ul> | <ul style="list-style-type: none"> <li>The Nolans Bore deposit is located wholly within Exploration Licence (EL) 28473 which is 100% owned by Arafura Resources Limited. The deposit lies within Mineral Lease (ML) application 26659 which is 100% owned by Arafura Rare Earths Pty Ltd., a wholly owned subsidiary of Arafura Resources Limited. Mineral Lease applications 30702, 30703 and 30704 have been lodged over the proposed processing site and accommodation village. These are also 100% owned by Arafura Rare Earths Pty Ltd. Arafura Resources Limited also has 100% ownership of ELs which cover all proposed project infrastructure, including the bore field (ELs 28498, 29509, 31224, 31284 and 31957)</li> <li>The deposit is situated on Pastoral Land with known mineralisation spanning the boundary between Aileron (PPL 1097) and Pine Hill (PPL 1030) Stations. All stated Mineral Resources and Ore Reserves lie on Aileron.</li> <li>Arafura Resources has executed an Exploration Agreement with the Central Land Council (CLC) on behalf of the Native Title Holders for this tenement. The Nolans project is subject to Native Title claims and Arafura is currently in the process of completing a Mining Agreement with the Native Title Holders.</li> <li>Arafura was issued Sacred Site Clearance Certificates which provides clearance for the exploration and drilling activities conducted at Nolans Bore. A comprehensive clearance has recently been issued for the project area.</li> <li>Arafura Rare Earths Pty Ltd has also applied for a water abstraction licence to support the development of this project.</li> <li>At the time of reporting, there are no known impediments to obtaining a license to operate in the area and the tenement is in good standing.</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>PNC Exploration (Australia) Pty Ltd explored the project area in 1994-1996. They discovered the Nolans Bore prospect by following up a substantial airborne radiometric anomaly. PNC completed ground radiometric surveys and they sampled and assayed the surface outcrops. No other exploration work has been done at Nolans Bore by other parties.</li> </ul>   |
| <i>Geology</i>                                 | <ul style="list-style-type: none"> <li>Deposit type, geological setting and style of mineralisation.</li> </ul>  | <ul style="list-style-type: none"> <li>The Nolans Bore REE-P-U deposit is a complex, 3D stockwork vein-style deposit which occurs in the Aileron Province of the Arunta Region in the Northern Territory, Australia. Small isolated parts of the deposit crop out, but most of it is concealed beneath a thin layer of alluvial and colluvial</li> </ul>  |

| Criteria | JORC Code explanation | Commentary  |
|----------|-----------------------|---|
|          |                       | <p>transported cover.</p> <ul style="list-style-type: none"> <li>• The deposit is characterised by massive fluorapatite mineralisation which ranges from discrete narrow fine-grained veins to wide intervals of massive coarse-grained zones and breccias. The massive fluorapatite-rich rocks contain up to about 95% fluorapatite and typically contain abundant fine-grained REE-bearing mineral inclusions, such as monazite group minerals, allanite, thorite and numerous other REE phosphates, silicates and carbonates. The fluorapatite itself contains variable amounts of REE but a higher proportion of REE is hosted in the fine-grained mineral inclusions. The associated calcsilicate style of mineralisation can contain fluorapatite and other REE-bearing minerals and is typically dominated by pyroxene, amphibole, epidote-allanite, carbonate, quartz, plagioclase, zeolites, garnet, scapolite and titanite. The calcsilicate rocks are strongly associated with the massive fluorapatite mineralisation but tend to be lower grade where mineralised.</li> <li>• The Nolans Bore deposit is hosted by metamorphosed Palaeoproterozoic igneous and sedimentary rocks of the Aileron Province. Some of these host rocks also contain low grade REE mineralisation (e.g. the coarse-grained to pegmatitic granitoids and granitic gneisses in the area commonly contain up to 0.3% REE and can locally exceed 1% REE, present as metamorphic monazite) but these rock types and REE grades and mix markedly contrast with the typical Nolans Bore mineralisation and have not been included in the resource estimate.</li> <li>• The metamorphosed Palaeoproterozoic sedimentary and igneous rock units that host the deposit have undergone high-grade metamorphism during the 1600-1525Ma Chewings Orogeny and are interpreted to be parts of the Aileron Metamorphics, Lander Rock beds and the Boothby Orthogneiss as mapped in nearby outcrops. Large intrusive bodies of coarse-grained to pegmatitic granitoid form a major component of the host country rocks at Nolans Bore. These units can be traced as coherent bodies (dykes and sills) and can be differentiated from the other host rocks and mineralisation. As such, these rocks form important marker units. The interpreted geological distribution suggests these granitoid bodies are mutually exclusive of mineralisation. However, drill core relationships clearly indicate the mineralisation postdates the granitoids. The currently favoured geological model suggests that mineralisation is preferentially formed in strain zones within the country rock gneisses and schists adjacent to the more competent, massive coherent coarse-grained to pegmatitic granitoid bodies. This</li> </ul> |

| Criteria                 | JORC Code explanation   | Commentary   |
|--------------------------|---|--|
|                          |   | <p>structural relationship was first proposed in 2006 and is still supported.</p> <ul style="list-style-type: none"> <li>Nolans Bore-type mineralisation and its associated alteration is geologically and geochemically distinct from the surrounding host rocks and clearly post-dates the high-grade metamorphism in the host rocks. Large parts of the deposit remain relatively undeformed however some (all) parts are overprinted by the Devonian-Carboniferous Alice Springs Orogeny. Cainozoic weathering and oxidation also occurs. Despite localized overprinting effects, the geochemistry of the mineralisation is similar throughout. Hence the mineralisation is defined by an enveloping surface which encompasses all Nolans Bore-type mineralisation at a cut-off of &gt;0.5% TREO.</li> <li>Systematic drilling indicates the widespread presence of mineralised veins up to tens of metres in thickness and hundreds of metres in length, extending below 250 m drilled depth across parts of the deposit. The extent of the deposit is yet to be fully outlined.</li> <li>Nolans Bore-type mineralisation and associated alteration has been recognised in exploration drilling and surface exposures over an area of about 4 km x 3 km.</li> </ul> |
| Drill hole Information   | <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>Drill hole information for samples from the 2019 drill program are as per announcement of drilling results 17 December 2019.</li> <li>Drill hole information for other samples are as per the information contained in the Mineral Resources announced on 7 June 2017.</li> </ul>   |
| Data aggregation methods | <ul style="list-style-type: none"> <li>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.</li> <li>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</li> </ul>   | <ul style="list-style-type: none"> <li>Not Applicable.</li> </ul>  |

| Criteria   | JORC Code explanation   | Commentary  |
|--|---|---|
|  | <p><i>in detail.</i></p> <ul style="list-style-type: none"> <li>The assumptions used for any reporting of metal equivalent values should be clearly stated.</li> </ul>  |   |
| Relationship between mineralisation widths and intercept lengths | <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 (eg 'down hole length, true width not known').</li> </ul> | <ul style="list-style-type: none"> <li>Not Applicable.</li> </ul>   |
| Diagrams   | <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>Diagrams for samples from the 2019 drill program are as per announcement of drilling results 17 December 2019.</li> <li>Diagrams for other samples are as per the information contained in the Mineral Resources announced on 7 June 2017.</li> </ul>  |
| Balanced reporting   | <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>Not Applicable.</li> </ul>   |
| 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>Arafura has drilled 548 RC and diamond core holes into Nolans Bore between 2001 and 2013, for a total of 87,081 metres. These holes together with data from 9 costeans (1,112m) have been used to outline and define the identified Mineral Resources at Nolans Bore. In addition to these Arafura has drilled 48 wide-diameter (780mm) holes (1,658m) into the deposit and excavated a number of small pits for exploration and geotechnical purposes in and around Nolans Bore. Additional drilling has been done to the N, SE and SW of the deposit.</li> <li>Arafura acquired a detailed low-level, 50m spaced N-S airborne magnetic and radiometric survey over Nolans Bore and surrounds in 2008. Additional adjoining 100m spaced N-S regional airborne surveys were acquired across other parts of the Aileron-Reynolds project area in 2011 and 2013.</li> <li>A detailed airborne hyperspectral survey was acquired over most of the Aileron-Reynolds project area in 2008. This survey covers the Nolans Bore and surrounds and was used to explore the regional for similar mineralogy.</li> <li>Arafura acquired aerial photography over the deposit in 2008. This resulted in a detailed orthophoto coincident with a professionally surveyed detailed DEM over most of ML26659. This detailed DEM has been updated and revised several times based on new survey data.</li> </ul> |

| Criteria | JORC Code explanation | ommentary   |
|----------|-----------------------|---|
|          |                       | <ul style="list-style-type: none"> <li>• Arafura acquired detailed World View 2 satellite imagery (0.5m pixel resolution) over Nolans Bore in 2012. Additional regional and less detailed SPOT5 satellite imagery (2.5m pixel resolution) was also purchased over the project area in 2012 for the project's Environmental Impact Statement (EIS) studies and regional exploration. Arafura also acquired additional World View imagery covering the proposed developments to the S and SE of Nolans Bore in 2013.</li> <li>• Arafura acquired detailed imagery via a drone survey with an associated DEM over the main project area in 2018.</li> <li>• Arafura has collected extensive geological, geotechnical and metallurgical data from the Nolans Bore deposit and surrounds in support of its exploration and resource definition programs.</li> <li>• Arafura has collected a substantial biogeochemical dataset over the Nolans Bore deposit and surrounds and has used this to assist in targeting exploration in areas of cover (e.g. Mulga prospect ASX: ARU 8/11/2013).</li> <li>• Arafura discovered substantial ground water resources to the S and SW of Nolans Bore and has applied for a water abstraction licence (ASX: ARU 22/10/2014).</li> <li>• Arafura's EIS for the Nolans project gained regulatory approval from the Northern Territory Environment Protection Authority (NTEPA) in December 2017 and from the Australian Government's Department of Environment and Energy in May 2018. Amendments to the project configuration were also approved by the NTEPA in September 2019.</li> <li>• Arafura has acquired onsite environmental data since 2008 (dust and weather information). Arafura has also routinely collected baseline groundwater information since 2010. Additional baseline environmental data (chemical and radiation) was collected from 25 sites during EIS studies.</li> <li>• Arafura investigated the sulfide content of the waste rocks during the EIS completed AMD studies. As expected, the results were very low however twelve representative samples have been subjected to barrel leach test work to satisfy the Northern Territory Department of Primary Industry and Resources (NTDPIR) and NTEPA.</li> <li>• Arafura obtained additional representative whole rock assays and updated the material types and Mineral Resources in 2016-18.</li> <li>• Arafura completed detailed metallurgical and mining studies resulting in a Definitive Feasibility Study (DFS) and updated Ore Reserves for the Nolans project in 2019 (ASX: ARU 07/02/19).</li> </ul> |

| Criteria     | JORC Code explanation   | ommentary  |
|--------------|---|--|
| 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>Assay for the remainder of 2019 drill program are in progress.</li> <li>Mine planning and the updating of Ore Reserves for the project are planned in 2020.</li> <li>Arafura is intending to mine and process this world-class rare earth deposit with additional work likely as the project develops.</li> </ul> |



| Material Type | P <sub>2</sub> O <sub>5</sub> Head Grade % | Hole     | m East     | m North     | From m | To m   |
|---------------|--|----------|------------|-------------|--------|--------|
| MT5A1         | 12.1                                       | NBDH1092 | 319103.43  | 7501670.52  | 135    | 136    |
| MT5A1         | 16.4                                       | NBDH1092 | 319103.43  | 7501670.52  | 138    | 140    |
| MT5A1         | 17.0                                       | NBDH1097 | 319246.63  | 7501883.29  | 104    | 106    |
| MT5A1         | 18.6                                       | NBDH1097 | 319246.63  | 7501883.29  | 144    | 145    |
| MT5A1         | TBA  | NBDH1105 | 319293.413 | 7501886.790 | 99.22  | 100.95 |
| MT5A1         | 14.4                                       | NBDH388  | 318844.231 | 7502026.617 | 14     | 16     |
| MT5A1         | 15.9                                       | NBDH388  | 318844.231 | 7502026.617 | 47.5   | 49.2   |
| MT5A1         | 6.9  | NBDH834  | 318496.85  | 7502067.154 | 39.4   | 55     |
| MT5A1         | 11.5                                       | NBDH836  | 318833.701 | 7502199.376 | 30     | 40.4   |
| MT5A1         | 12.7                                       | NBDH836  | 318833.701 | 7502199.376 | 169    | 170.2  |
| MT5A1         | 14.9                                       | NBDH839  | 319039.125 | 7502175.159 | 65.4   | 67     |
| MT5A1         | 27.1                                       | NBDH876  | 319332.924 | 7501970.593 | 76     | 77     |
| MT5A2         | 14.9                                       | NBDH1068 | 318933.93  | 7501752.88  | 115.8  | 117.9  |
| MT5A2         | 8.7  | NBDH1092 | 319103.43  | 7501670.52  | 150    | 153    |
| MT5A2         | 7.2  | NBDH1093 | 318925.06  | 7501995.5   | 183    | 186    |
| MT5A2         | 18.9                                       | NBDH1095 | 318932.23  | 7501751.51  | 51     | 52     |
| MT5A2         | 8.2  | NBDH1095 | 318932.23  | 7501751.51  | 128    | 129    |
| MT5A2         | 13.0                                       | NBDH1095 | 318932.23  | 7501751.51  | 170    | 171    |
| MT5A2         | 19.4                                       | NBDH1097 | 319246.63  | 7501883.29  | 70     | 72     |
| MT5A2         | 15.0                                       | NBDH1097 | 319246.63  | 7501883.29  | 81     | 84     |
| MT5A2         | 20.7                                       | NBDH1097 | 319246.63  | 7501883.29  | 108    | 109    |
| MT5A2         | 11.4                                       | NBDH1097 | 319246.63  | 7501883.29  | 109    | 110    |
| MT5A2         | 24.7                                       | NBDH1097 | 319246.63  | 7501883.29  | 111    | 112    |
| MT5A2         | 19.8                                       | NBDH1097 | 319246.63  | 7501883.29  | 180    | 181    |
| MT5A2         | 5.6  | NBDH1098 | 318349.26  | 7502057.89  | 33     | 35     |
| MT5A2         | 10.7                                       | NBDH1098 | 318349.26  | 7502057.89  | 37     | 40     |
| MT5A2         | 3.4  | NBDH1103 | 319127.180 | 7501705.561 | 71.5   | 1.07   |
| MT5A2         | 3.0  | NBDH1104 | 319072.527 | 7501644.260 | 25.5   | 26.58  |
| MT5A2         | TBA  | NBDH1105 | 319293.413 | 7501886.790 | 19.78  | 21.1   |
| MT5A2         | 3.3  | NBDH831  | 318322.882 | 7502116.224 | 71     | 75     |
| MT5A2         | 7.7  | NBDH834  | 318496.85  | 7502067.154 | 12     | 13.8   |
| MT5A2         | 15.4                                       | NBDH836  | 318833.701 | 7502199.376 | 85     | 87     |
| MT5A2         | 13.5                                       | NBDH836  | 318833.701 | 7502199.376 | 123    | 125    |
| MT5A2         | 12.3                                       | NBDH837  | 318934.149 | 7502138.16  | 37.6   | 39     |