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.[1]

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

[1] *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.*

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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.

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

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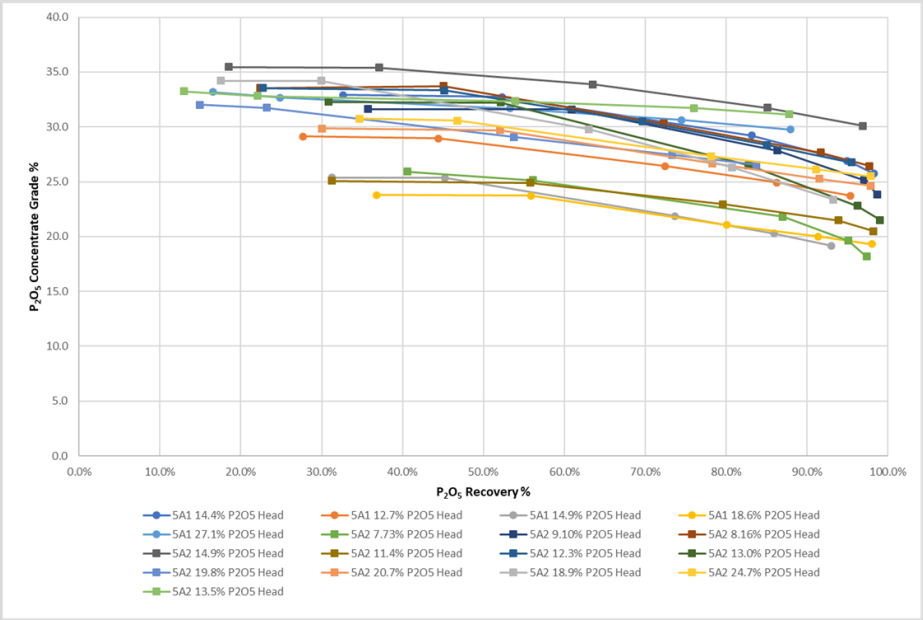
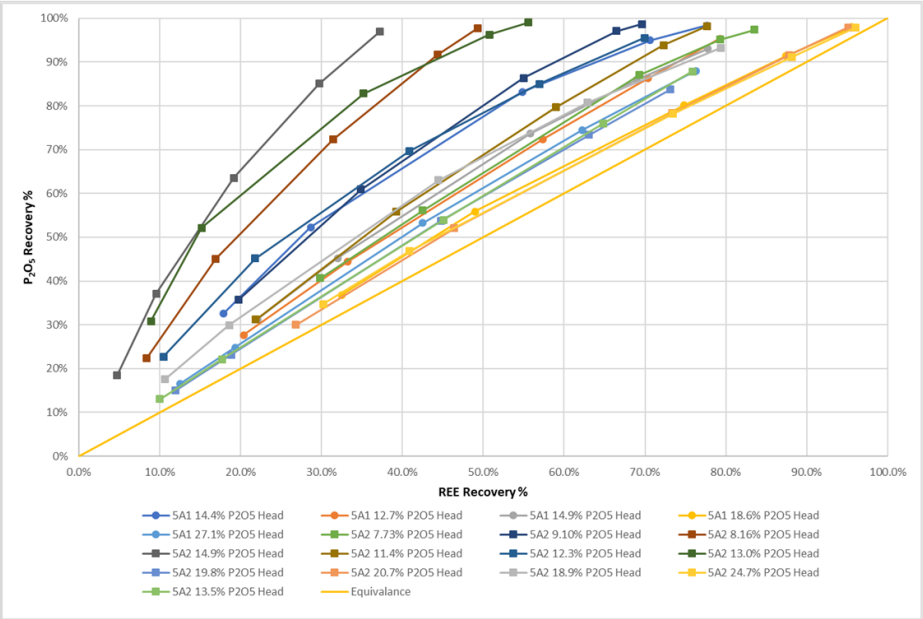
Appendix

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).

Key Concentrate Composition Equations by Material Type			
Parameter	**Type 1 & 2**	**Type 3B**	**Type 4A, 5A1 & 5A2**
P_2O_5 Recovery	99%	0.63 x P_2O_5 + 87.24 (max 99%)	80%
P_2O_5 Grade	0.9651 x P_2O_5 + 1.6389 (min 27%)	0.2162 x P_2O_5 + 27.276	26.7%
TREO Recovery	0.29 x TREO + 95.96	71.27 x $(TREO)^{0.2382}$ (max 97.5%)	76.23 - 57.66 x (Fe_2O_3/P_2O_5) (max 80%)
Fe_2O_3 Recovery	$9.95 \times (Fe_2O_3/P_2O_5)^{-0.606}$		
Al_2O_3 Recovery	$6.4 \times e^{(0.297 \times Fe2O3\ Recovery)}$		
MgO Recovery	$6.25 \times e^{(0.291 \times Fe2O3\ Recovery)}$		
H_2SO_4 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.