ASX Announcement

Major Increase in Mine Life for the Nolans Project

11 March 2020

- **54% increase in Ore Reserves to 29.5 million tonnes**
- **Ore Reserves now support 33 years of production, an increase of 10 years on the DFS base case**
- **LOM schedule based on mining inventory of 39.9 million tonnes supports 39 years of production**
- **Significant reduction in OPEX for mining inventory schedule to less than US$24/kg of NdPr oxide**

Arafura Resources Limited (**ASX: ARU**) (**Arafura** or the **Company**) is pleased to provide an updated Ore Reserves estimate for its 100 per cent-owned Nolans Neodymium-Praseodymium (NdPr) Project in the Northern Territory.

The Ore Reserves and mining inventory tabled below exclude all mineralisation intersected in deep exploration drilling completed at Nolans Bore during 2019 *(refer to ASX announcement 9 March 2020)*.

The Ore Reserves estimate has been independently prepared by leading mining technical services provider Mining Plus Pty Ltd (Mining Plus). It incorporates the updated geometallurgical model derived from the results of beneficiation variability test work on mineralised material types that included samples from the 2019 drilling program at Nolans Bore *(refer to ASX announcements 17 and 18 December 2019)*.

The updated estimate of Ore Reserves for the Nolans Project is presented below.

Nolans Project Ore Reserves				
Classification	**Mt**	**TREO (%)**	**P_2O_5 (%)**	**NdPr Enrichment (%)**
Proved	5.0	3.0	13	26.2
Probable	24.6	2.8	13	26.5
Total	**29.5**	**2.9**	**13**	**26.4**

Note: Numbers may not compute due to rounding. "NdPr Enrichment" is the proportion of TREO comprising neodymium oxide Nd_2O_3 and praseodymium oxide Pr_6O_{11}.

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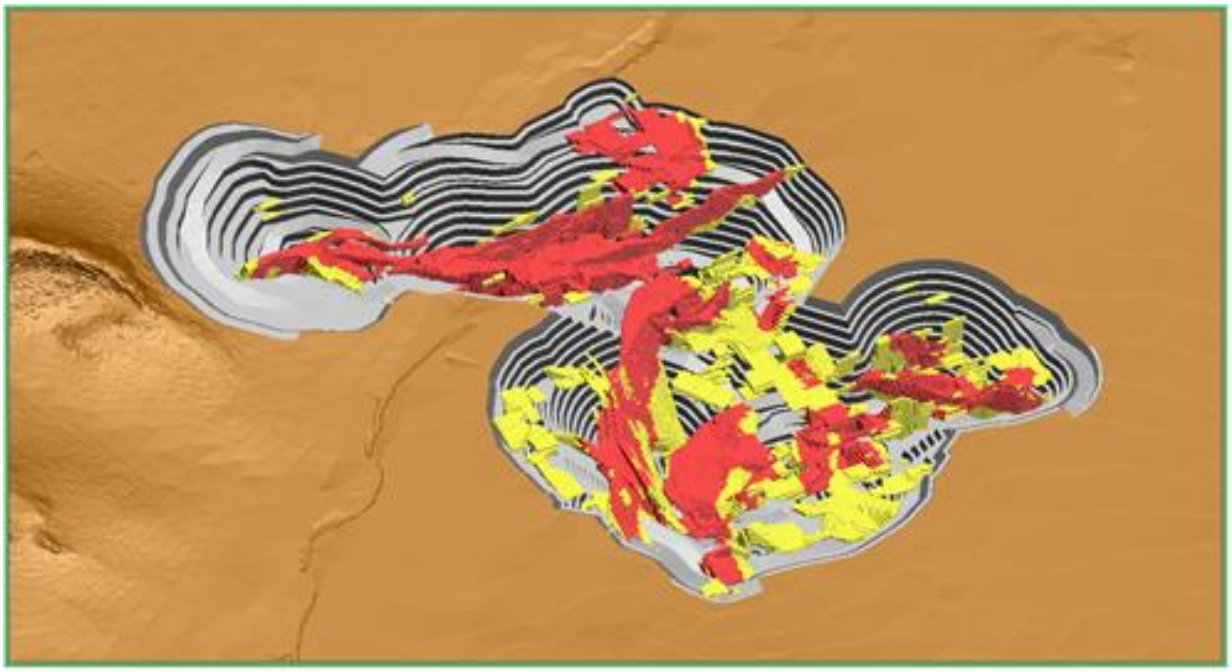
These Ore Reserves are based on the Project's Measured and Indicated Mineral Resources *(refer to ASX announcement 7 June 2017)* and on the pricing, processing and cost assumptions developed during the Definitive Feasibility Study (DFS) *(refer to ASX announcement 7 February 2019)*. Only the mine design and scheduling have been revised to reflect the updated geometallurgical model. Using the processing design envelope from the DFS the Ore Reserves support production over 33 years, an increase of 10 years over the 23-year base case in the DFS.

In addition to the updated Ore Reserves, Mining Plus has also prepared a production schedule based on the mining inventory, which includes some of the Project's Inferred Mineral Resources, predominately in the later years of mining and processing. This mining inventory consists of approximately 39.9 Mt grading 2.8% TREO and 12% P_2O_5. The figure below shows the updated preliminary pit design with the Ore Reserves (red) and Inferred Mineral Resources (yellow) included in the mining inventory.



Scheduling of the mining inventory, with some minor changes to the design envelope of the process plant, provides far superior financial outcomes over those delivered in the DFS base case. The mining inventory production schedule supports production over 39 years of an average of approximately 4,325 tonnes per annum of NdPr oxide at an operating cost of less than US$24/kg of NdPr oxide (net of phosphoric acid by-product credit). This operating cost estimate is based on the cost and pricing assumptions used in the DFS.

Arafura Managing Director Gavin Lockyer said, *"The reduction in operating costs cements Arafura as one of the lowest-cost NdPr producers in the world. The increase in Ore Reserves and mining inventory attests to the long-term potential of the Nolans Project and when read in conjunction with the recently announced deep drilling results, reinforces its standing as a world class NdPr development opportunity.*

"I challenge anyone to find a better fully permitted, fully costed NdPr-focused project outside China. It meets all the criteria to be a long term, sustainable supplier of critical minerals into clean energy

technologies, and will deliver intergenerational benefits in a part of Australia that is challenged by limited opportunities for genuine economic development."

Project development, product offtake and financing activities are continuing for the Nolans Project. These include:

- Finalising execution readiness and pre-front-end engineering and design (FEED) activities
- Tendering of the hydrometallurgical plant design and construction contract
- Engaging with potential NdPr product offtake partners in Japan, Europe, South Korea, the USA and China
- Engaging with the Australian Government's Critical Minerals Facilitation Office, Northern Australia Infrastructure Facility (NAIF) and Export Finance Australia (EFA), and with export credit agencies (ECA) in jurisdictions where the Company is targeting product offtake or capital equipment procurement opportunities
- Engaging with corporate and debt advisory groups.

- ENDS -

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Company Secretary

COMPETENT PERSON'S STATEMENT

The information in this report that relates to Mineral Resources was released in an ASX announcement dated 7 June 2017 (Detailed Resource Assessment Completed) and was completed in accordance with the guidelines of the 2012 Edition of the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (JORC Code (2012)). Arafura Resources confirms that it is not aware of any new information or data that materially affects the information included in the original market announcement and that all material assumptions and technical parameters underpinning the Mineral Resources in the original market announcement continue to apply and have not materially changed. Arafura Resources confirms that the form and context in which the Competent Person's findings are represented have not been materially modified from the original market announcement.

The information in this report that relates to Ore Reserves is based on information compiled by Mr David Billington, BEng (Mining), a Competent Person who is a Member of the Australian Institute of Mining and Metallurgy (MAusIMM). Mr Billington is a full-time employee of Mining Plus Pty Ltd. Mr Billington 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 Billington consents to the inclusion in this report of the matters based on his information in the form and context in which it appears.

The information in this report that relates to metallurgy and operating costs 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.

UPDATED MINING STUDY

In order to update the Ore Reserves estimate for the Nolans Project an updated mining study was undertaken by Mining Plus. The key aspects of this updated mining study included:

- Determination of pit optimisation parameters, including the updated geometallurgical relationships as announced on 18 December 2019, carrying out updated pit optimisations and selection of optimal pit shells.
- Re-design of the final pit and intermediate phases as required, and re-calculation of mining physicals.
- Updating of mining and production schedules for the Ore Reserves and mining inventory.
- Revision of the mining cost model to match the campaign mining approach in the early years of mining and to match the extended life of mine.
- Estimation of Ore Reserves and reporting in accordance with the JORC Code (2012 Edition).

Mineral Resources

The updated mining study was based on the Mineral Resources as announced by Arafura on 7 June 2017 for the Nolans Bore deposit which is unchanged from the Mineral Resources used in the DFS (7 February 2019). These resources are classified according to the 2012 JORC Code guidelines and shown in the table below.

Statement of Mineral Resources for the Nolans Bore Rare Earth Deposit Announced 7 June 2017 – 1% TREO lower cut-off grade

Category	Tonnes (Mt)	TREO (%)	P_2O_5 (%)	NdPr Enrichment (%)
Measured	4.9	3.2	13	26.1
Indicated	30	2.7	12	26.4
Inferred	21	2.3	10	26.5
Total	**56**	**2.6**	**11**	**26.4**

Note: Numbers may not compute due to rounding. "NdPr Enrichment" is the proportion of TREO comprising neodymium oxide Nd_2O_3 and praseodymium oxide Pr_6O_{11}.

The stated TREO grade is based on the sum of the estimated grades for La_2O_3, CeO_2, Pr_6O_{11}, Nd_2O_3, Sm_2O_3, Eu_2O_3, Gd_2O_3, Tb_4O_7, Dy_2O_3, Ho_2O_3, Er_2O_3, Tm_2O_3, Yb_2O_3, Lu_2O_3 and Y_2O_3.

The Mineral Resources were further classified by geometallurgical material types based on logging and analysis. Details of the material classification are contained in the DFS Summary Report (7 February 2019).

Metallurgy

Following the completion of the DFS it was identified that some geological material types identified as non-preferred for the proposed processing at Nolans were able to be processed in the proposed beneficiation circuit. However, since sufficient metallurgical test work had not been carried out on these material types to provide the required level of confidence, they were excluded from the DFS base case and Ore Reserves estimate.

A further variability metallurgical test work program was undertaken on samples from the recent drilling at Nolans Bore, as well as samples selected from previously drilled diamond drill core. In all, across both variability programs, approximately 25 tests were carried out on material types 5A1 and 5A2 covering a range of grades and other characteristics. Analysis of the flotation results resulted in an update to the geometallurgical model as presented below.

Key Concentrate Composition Equations by Material Groups			
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	$6.4 \times e^{(0.0297 \times Fe2O3\ Recovery)}$		
MgO Recovery	$6.25 \times e^{(0.0291 \times Fe2O3\ Recovery)}$		
H_2SO_4 Consumption	828.7 kg/t concentrate		

Details of the additional metallurgical variability test work program were announced by Arafura on 18 December 2019.

Pit Optimisation

The geological resource model was re-optimised based on the updated geometallurgical model presented above. This included:

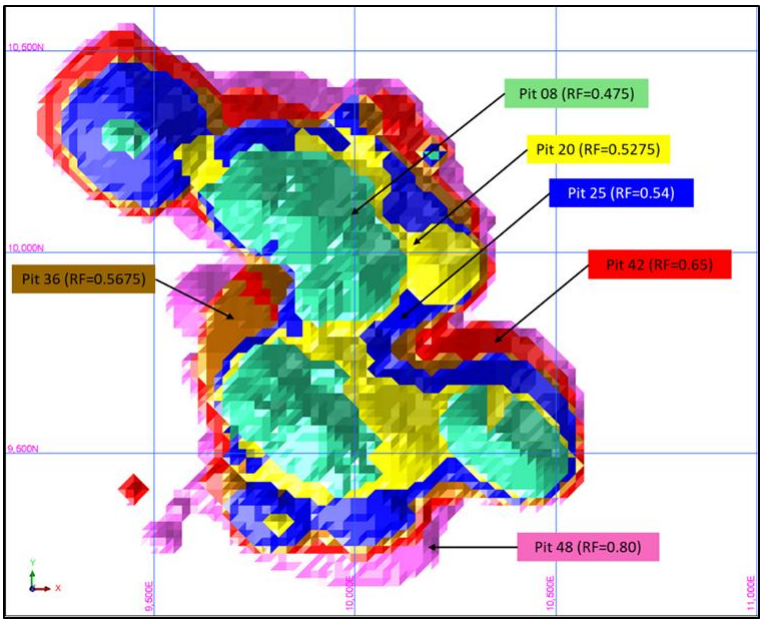
- Updating metallurgical recovery to reflect the geological and mineral associations and targets the dominant rare earth minerals in the deposit, which is based on differentiating phosphate-dominated mineralisation from calcsilicate-rich phosphate mineralisation.

- Since the material types are proportionally coded into the resource model such that any number of these material types could be present in any one resource block. Each of the three material groups (as indicated above) has different recovery equations and a number of changes to classification rules were defined in the geometallurgical equations, including:
    - Reclassification of >25% P_2O_5 as massive apatite mineralisation (types 1 and 2).
    - All material <5% P_2O_5 was re-classified as waste.
- The material proportions and multiple recoveries, the concentrate compositions, final product tonnages and elemental revenues were calculated for each ore type within each block and then the totalled revenue was utilised in the optimisations to determine the final pit shells. The mining and non-mining unit costs remain unaltered from the DFS.
- The unit revenues remain unaltered from the DFS.

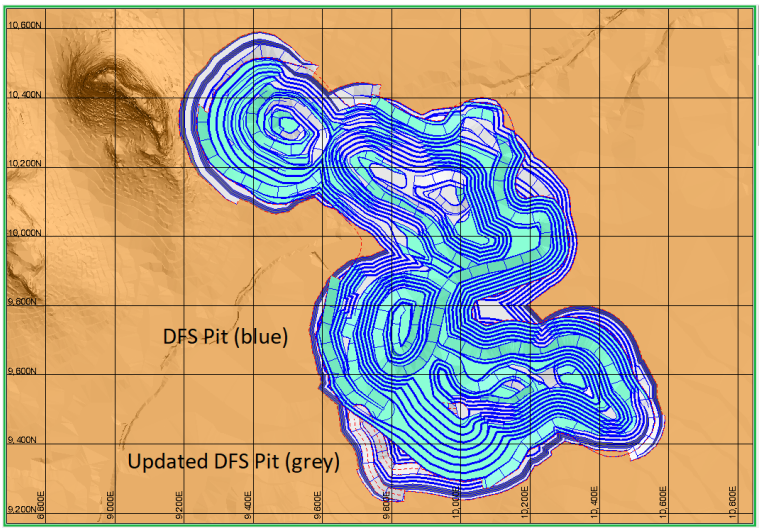
The optimisation results reflected the updated metallurgical recoveries, predominately related to 5A1 and 5A2 material types, which indicated an expansion of the existing pit outline and therefore required a redesign to several intermediate pit stages and the final pit compared to the DFS.

Mine Design

The physical mine design parameters used in the updated mining study have remained unchanged from those applied in the DFS. The physical mine design parameters have been applied to the revised optimisation shapes that are shown in the figure below.



The resultant updated pit design shows some minor expansions over that developed for the DFS with minor expansions to the south, north-east and north-west, as well as a minor deepening. This comparison in final pit geometry is show in the figure below.



The pit inventory for the updated mining study is given in the table below illustrating the increase in ore for processing of 10.3 Mt as well as an increase in the Inferred Mineral Resources contained in the pit for a relatively small increase in overall material movement from the pit.

Pit Inventory								
	Updated Mining Study			DFS			Difference	
	Mt	P_2O_5 (%)	TREO (%)	Mt	P_2O_5 (%)	TREO (%)	Mt	%
Ore for Processing	29.5	13	2.9	19.2	13	3.0	10.3	54%
Inferred to Stockpile	10.4	13	2.5	2.8	12	2.6	7.6	271%
Non-Preferred to Stockpile	1.0	11	3.6	9.7	12	2.7	-8.7	-90%
Waste	178.0			140.3			37.7	27%
Total	**218.9**			**172.0**			**46.9**	**27%**

Note: Numbers may not compute due to rounding.

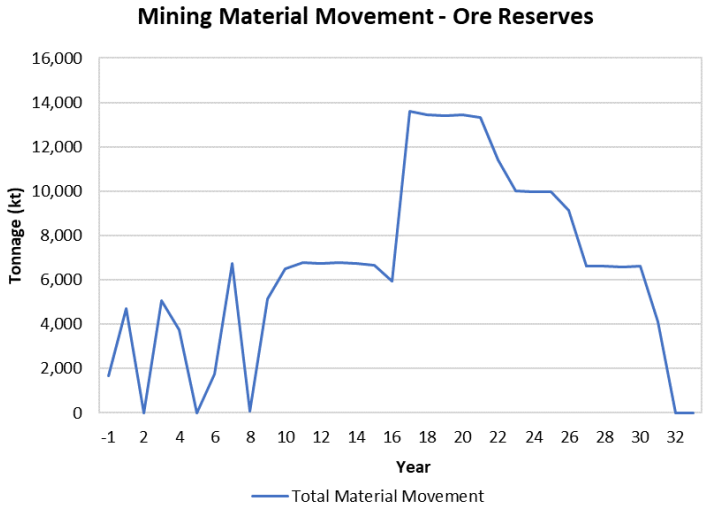
The comparison with the DFS shown above indicates the significance of the updated geometallurgical model based on the recent metallurgical test work giving an increase of 54% in ore for processing and a 271% increase in Inferred Mineral Resources within the pit at similar grades.

Production Scheduling

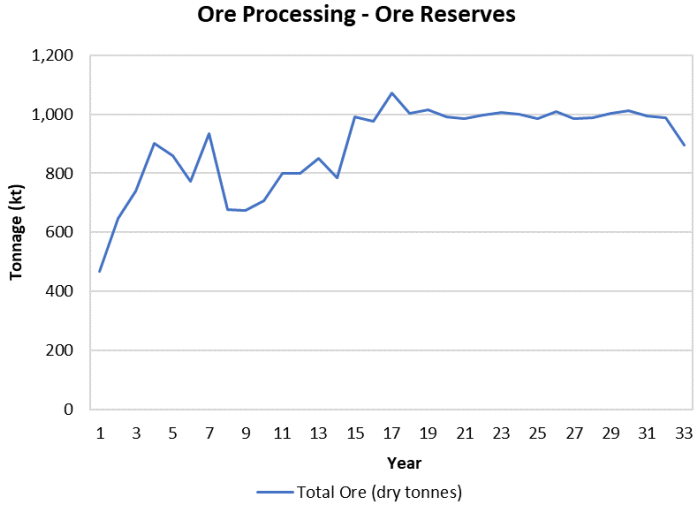
Ore Reserves

Scheduling of production for Measured and Indicated Mineral Resources in the pit inventory was carried out using the same methodology and constraints as those used in the DFS. The outcome of this scheduling is an ore-only production schedule of approximately 33 years with the results of the scheduling presented graphically below.

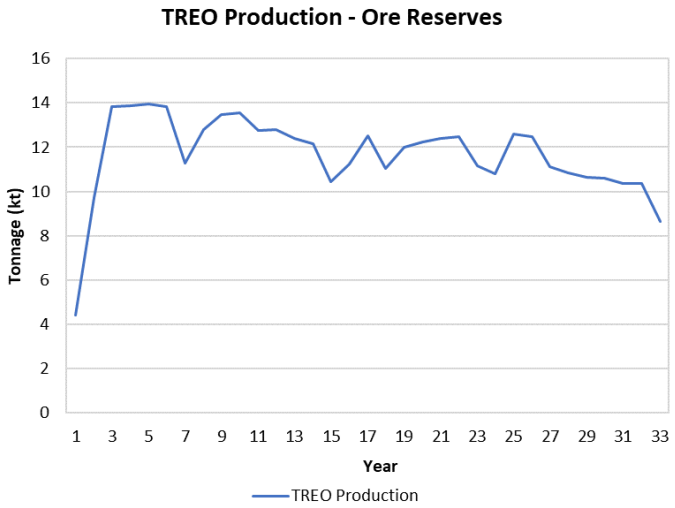
The mining material movement shows the three campaign mining periods during the first ten years of mining with continuous mining being carried out from year nine onwards. This approach results in a reduction in the mining costs over the first ten years of approximately $97 million compared to the DFS using the same cost basis for mining.



The ore processing shows that production is constrained by milling rate from approximately year 15 onwards as ore grades fall in later years of mining.



Production resulting from ore processing will meet the design capacity of the process plant through until approximately year six of production after which production declines and is constrained by both ore milling capacity and concentrate processing capacity.



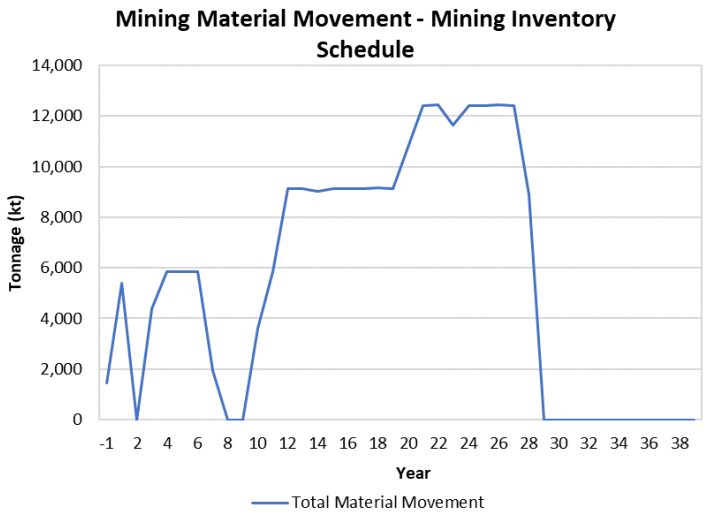
The resultant NdPr oxide production from ore only, excluding ramp up and the partial final production year, averages 3,923 tonnes per annum over the 33-year production schedule, a reduction from the average production from the DFS over 23 years of 4,357 tonnes per annum.

Mining Inventory

Based on this reduced production using the design constraints from the DFS it was determined to investigate the impact of minor changes to the ore and concentrate constraints when scheduling the mining inventory schedule, which includes Inferred Mineral Resources contained in the mining inventory. The changes to the production constraints adopted for the mining inventory schedule were:

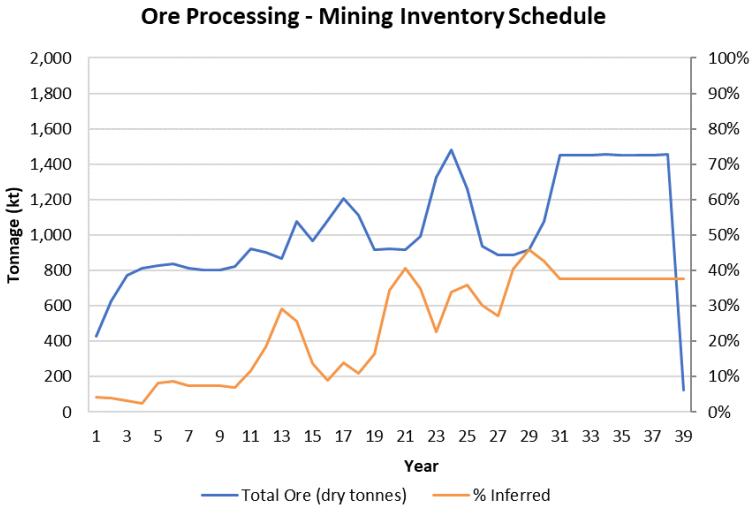
- Increase in concentrate processing capacity of 10% from 300,000 tpa to 330,000 tpa which is likely to only require minor changes to the pre-leach, acid bake and rare earth sulphate circuits.
- Increase in ore milling and beneficiation capacity to 1.2 Mtpa, from 1.0 Mtpa, from year 14 of production with a further increase to 1.5 Mtpa from year 23 with these increases likely to be able to be accommodated through inclusion of pebble and or secondary crushing and the addition of flotation and tailings thickening capacity.

Using these updated scheduling constraints, and the application of additional stockpiling to defer processing of lower grade material it is anticipated that mining would be completed by year 29 of production. The mining schedule, as shown below, still incorporates campaign mining in the early years, however it is reduced to two campaigns rather than three. The acceleration of mining in the earlier years to facilitate stockpiling for production results in a slight increase during early years in mining costs over the schedule presented above, however still represents a saving over the first ten years of production of approximately $65 million compared with the DFS.

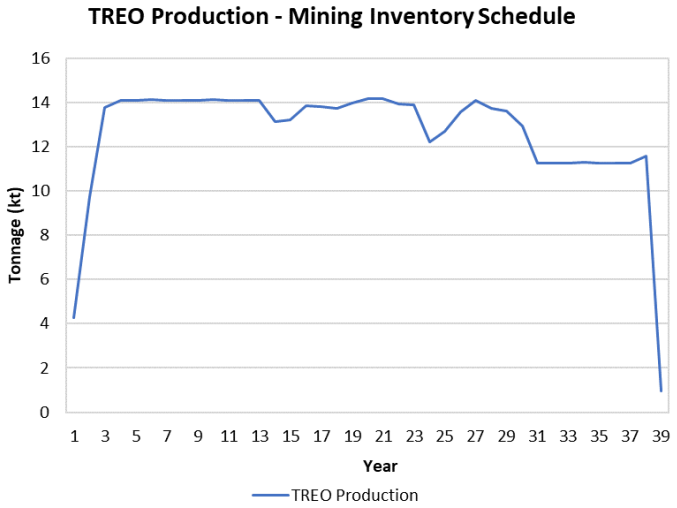


Ore processing for the mining inventory schedule presented below shows the increase to approximately 1.2 Mtpa from year 13 followed by the increase to 1.5 Mtpa from year 23 onwards. This increase in ore processing rate allows the beneficiation plant to maintain production of 330,000 tpa in later years of the production schedule.

The graph below also presents the proportion of Inferred Mineral Resources included in the pit inventory. This shows that the average percentage of inferred material is only 6% for the first ten years, rising to 18% for years 10 to 20.



The resultant production from the mining inventory schedule based on the mining inventory, presented below, has the total production staying close to design production for approximately the first 23 years production during the 39-year production schedule. The resultant NdPr oxide production from pit inventory, excluding ramp up and the partial final production year, averages 4,325 tonnes per annum over the 39-year production schedule, approximately matching the production forecast from the DFS.



In addition to the production, the overall operating costs for the mining inventory schedule were estimated, using all the assumptions adopted in the DFS, to be US$23.82 per kg of NdPr oxide net of phosphoric acid by-product credits.

Ore Reserves

The Project's financial model was prepared by Arafura during the preparation of the DFS and was updated using inputs from the updated mining schedule cost model while leaving all other cost inputs the same as those documented in the DFS. Mining Plus reviewed the cash flow model with Arafura to confirm that the Project has a positive cash flow outcome.

The updated Ore Reserves estimate is shown in the table below.

Nolans Project Ore Reserves				
Classification	**Mt**	**TREO (%)**	**P_2O_5 (%)**	**NdPr Enrichment (%)**
Proved	5.0	3.0	13	26.2
Probable	24.6	2.8	13	26.5
Total	**29.5**	**2.9**	**13**	**26.4**

Note: Numbers may not compute due to rounding. "NdPr Enrichment" is the proportion of TREO comprising neodymium oxide Nd_2O_3 and praseodymium oxide Pr_6O_{11}.

The Ore Reserves include mining factors of 5% for ore-loss and 15% for dilution which leads to the marginal increase in Proved Reserves from Measured Resources.

Mining Plus utilised the mining costs derived from contractor submissions provided during the DFS and processing costs and other information from other consultants as documented in the DFS. Whittle software was used to derive a number of economic pit shells for each deposit. The shell that produces the maximum DCF was selected as the basis for open pit work.

Pit designs were undertaken using Surpac software, allowances were made for the recommended pit wall angles, and pit ramps suitable for the selected mining equipment were incorporated. As the final pit designs were derived, Inferred Resources were included within the mining inventory. This material is excluded from the Ore Reserves and from mill feed in the ore processing schedule for reporting purposes.

The Project, and the pit designs developed by Mining Plus, do not rely on the inclusion of Inferred Mineral Resources as mill feed in order to be feasible.

1 Appendix A: JORC CODE, 2012 EDITION – TABLE 1

Section 4 Estimation and Reporting of Ore Reserves

(Criteria listed in section 1, and where relevant in sections 2 and 3, also apply to this section.)

CRITERIA	JORC CODE EXPLANATION	COMMENTARY
Mineral Resource Estimate for conversion to Ore Reserves	*Description of the Mineral Resource estimate used as a basis for the conversion to an Ore Reserve.* *Clear statements as to whether the Mineral Resources are reported additional to, or inclusive of, the Ore Reserves.*	The Measured and Indicated component of the Mineral Resources estimated and reported to the ASX by Arafura Resources on 7 June 2017 following the guidelines of the JORC Code 2012 has been used as the basis for Ore Reserves. The Mineral Resources are reported inclusive of the Ore Reserves.
	Comment on any site visits undertaken by the Competent Person and the outcome of those visits.	A site visit to the project site was undertaken during the period 24-27 July 2018 by David Billington, Principal Mining Consultant with Mining Plus (Competent Person). All relevant areas of the Project were visited including an inspection of relevant drill core from the Project stored off-site. Site visits have been conducted by all relevant technical professionals including geological, geotechnical, hydrological, mining, engineering, and environmental disciplines who are contributors to both the study and assessment of the Modifying Factors applicable to these Ore Reserves.
	If no site visits have been undertaken indicate why this is the case.	See above.
Study Status	*The type and level of study undertaken to enable Mineral Resources to be converted to Ore Reserves.*	The Ore Reserves (JORC 2012) were updated and announced 7 February 2019, as a result of the December 2018 Definitive Feasibility Study (DFS). There have been further material changes to Modifying Factors relating to the metallurgical recovery for some of the geological material types used for the 2018 Ore Reserves, making a comparison to these Ore Reserves not material for JORC reporting purposes.

CRITERIA	JORC CODE EXPLANATION	COMMENTARY
		The Mining section of the DFS has been updated to reflect these modifying factors in February 2020.
	The code requires that a study to at least Pre-Feasibility Study level has been undertaken to convert Mineral Resource to Ore Reserves. Such studies will have been carried out and will have determined a mine plan that is technically achievable and economically viable, and that material modifying factors have been considered.	All work has been completed to Feasibility Study (FS) level (±15%). The studies to date have considered material Modifying Factors and have determined the mine plan to be technically achievable and economically viable at the time of reporting. The mine plan involves the application of conventional open pit mining methods and mineral processing technologies that are utilised in Australia and overseas.
Cut-off parameters	*The basis of the cut-off grade(s) or quality parameters applied.*	Cut-off grade is calculated in consideration of the following parameters: - Rare earth prices - Mining factors including ore loss and dilution - Process recovery - Operating costs - General and administration costs - Royalties The cut off parameters were estimated from profit algorithms provided by Arafura which utilised the processing recoveries (based on metallurgical test work), costs (based on the DFS cost estimates) and revenues (based on independent marketing reports) for each ore type. Only material that generated a profit was considered as potential ore.
Mining factors or assumptions	*The method and assumptions used as reported in the Pre-Feasibility or Feasibility Study to convert the Mineral Resource to an Ore Reserve (i.e. either by application of appropriate factors by optimisation or by*	The resource model which formed the basis for estimation of the Ore Reserves was used in an open pit optimisation process using Whittle 4X software to produce a range of pit shells using operating costs and other inputs derived from all the above-mentioned studies. Mining costs were generated from mining contractor pre-qualification tender submissions and recent study work. Pit slope design parameters were based on core logging and material property data collected from geotechnical drilling. The

CRITERIA	JORC CODE EXPLANATION	COMMENTARY
	preliminary or detailed design).	overall pit slope angles in the final stage of pit design vary between 34° and 45°, including allowances for pit access ramps. The resultant optimal pit shells were then used as a basis for detailed pit and stage designs for the deposit. The Ore Reserves are the Measured and Indicated Resources within the final pit designs for the deposit.
	The choice, nature and appropriateness of the selected mining method (s) and other mining parameters including associated design issues such as pre-strip, access, etc.	The mining method selected is open cut utilising conventional hydraulic excavator and haul truck fleets. Selective mining of the ore has been assumed for determining the selective mining unit (SMU) block size, ore loss and dilution assumptions, equipment selection, operational mining methods to be employed and mine schedule assumptions. The open pits will be developed using multiple stage pit designs, all of which have been completed to a FS standard. Ramps are designed at 1 in 10 gradient, 30m wide except for lower pit levels and small sub-pits where the ramps are designed at 21m wide.
	The assumptions made regarding geotechnical parameters (e.g. pit slopes, stope sizes, etc), grade control and pre-production drilling *The major assumptions made, and the Mineral Resource model used for pit and stope optimisation (if appropriate).*	Geotechnical studies have been completed to a FS level by AMC Consultants based on detailed analysis and test work of drill core from a dedicated geotechnical drilling campaign carried out in 2011. The resultant recommended pit design parameters have been used to determine the overall pit slope angle in the pit optimisations and the wall angles in the pit designs. Grade control will be based on additional RC drilling, pit mapping and production blasthole sampling. Grade control has been allowed for in the pit optimisation input costs and financial modelling.
	The mining dilution factors used *The mining recovery factors used* *Any mining widths used.*	Regularisation analyses of the geological block models used as a basis for Ore Reserves indicated a global ore loss of 5% and a dilution of 15%, which are representative of the expected mining methods and ore definition. A minimum mining width of 40m has been used for the bottom of pits and for minimum cutback width.
	The manner in which Inferred Mineral Resources are utilised in mining studies and the sensitivity of the outcome to their inclusion.	Inferred Resources within the pit designs have not been considered in the Ore Reserves. However, the study identified 10.4Mt of Inferred Resources within the pit. These Inferred Resources have been assumed to be stockpiled in the calculation of the Ore Reserves.

CRITERIA	JORC CODE EXPLANATION	COMMENTARY
	The infrastructure requirements of the selected mining methods.	The proposed mine plan will include waste rock dumps, ROM pads, surface haul roads to the processing plant, pumping infrastructure, work shop facilities, technical and administration facilities, explosives storage facilities and associated mine and processing infrastructure.
Metallurgical factors or assumptions	*The metallurgical process proposed and the appropriateness of that process to the style of the mineralisation.*	The metallurgical process consists of the following general stages: • Beneficiation by flotation to produce a high phosphate concentrate containing the majority of the rare earth elements (REE). • Pre-leaching of the high phosphate concentrate with phosphoric acid to produce an REE-rich pre-leach residue (PLR). • Regeneration of the spent phosphoric acid for use in the pre-leach and production of a phosphoric acid by-product. • Acid bake of the PLR with sulphuric acid followed by water leaching and precipitation of a rare earth sulphate. • Purification of the rare earths by dissolution of the rare earth sulphate and various stages of hydroxide precipitation and selective leaching with hydrochloric acid to produce a high purity rare earth chloride liquor and a cerium hydroxide product. • Processing of the rare earth chloride liquor using solvent extraction (SX) to produce separated SEG/HRE oxide and NdPr oxide. The process flowsheet is specifically designed to complement the ore characteristics and the style of mineralisation.
	Whether the metallurgical process is well-tested technology or novel in nature.	Aspects of the metallurgical process are “industry standard”, particularly the following: • Beneficiation. • Phosphoric acid pre-leach, regeneration and phosphoric acid production. • Water leach. • Separation of REEs by SX. Other aspects of the process are novel and have been specifically developed and extensively tested and demonstrated for the Project in the test work and piloting programs completed.

CRITERIA	JORC CODE EXPLANATION	COMMENTARY
	The nature, amount and representativeness of metallurgical test work undertaken, the nature of the metallurgical domaining applied and the corresponding metallurgical recovery factors applied.	A significant metallurgical test work program has been undertaken on all aspects of the flowsheet including batch, variability and pilot plant testing. All metallurgical test work has been undertaken at commercial laboratories under the management of Arafura and with independent assessment of the results and conclusions. A detailed beneficiation variability program has been undertaken based on the geological domaining developed as part of the geological resource modelling. Each geological material type, and resource classification, has been tested separately and as part of various blends, using samples from drill core and bulk sampling, across a range of grades, and other attributes to assess performance in the beneficiation process. Following the DFS it was identified that additional geological material types may be suitable for processing however there was not sufficient beneficiation variability test work to provide sufficient confidence in prediction of beneficiation performance. Based on this an additional program of beneficiation variability testing was undertaken on these geological material types across a range of grades and other attributes to provide additional performance data. The data from the previous and most recent beneficiation variability test work has been used to update recovery factors for valuable and deleterious elements to concentrate from that developed for the DFS. Recovery of valuable minerals to payable products has been modelled through the hydrometallurgical process on the basis of batch, variability and pilot test work and is applied subsequent to the beneficiation recovery.
	Any assumptions or allowances made for deleterious elements.	Variability testing has investigated key deleterious elements and their deportment through the process and rejection and blending criteria have been included into the geometallurgical model used for development of the mining schedule.
	The existence of any bulk sample or pilot scale test work and the degree to which such samples are considered representative of the orebody as a whole.	Feed samples for the bulk and pilot scale test work have been generated from a bulk sampling program carried out in 2010 using a Bauer wide diameter drill. Bulk samples were derived from Measured and Indicated Resources and coincide with the initial mining area. Representative bulk samples of the host rocks from this area were also included to simulate dilution. Two large bulk samples (~10t and ~14t) were produced by a commercial laboratory following detailed preparation and compositing

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		instructions from Arafura. The two bulk samples differed in grade but they are considered representative of the typical material types that are proposed to be processed in the deposit.
	For minerals that are defined by the specification, has the ore reserve estimation been based on the appropriate mineralogy to meet the specifications?	The products from the proposed operation are separated or mixed rare earth oxides and a standard specification merchant grade phosphoric acid.
Environmental	*The status of studies of potential environmental impacts of the mining and processing operation. Details of waste rock characterisation and the consideration of potential sites, status of design options considered and, where applicable, the status of approvals for process residue storage and waste dumps should be reported.*	The Project received Northern Territory EPA (NTEPA) approval in December 2017, followed by Federal Government environmental approval in May 2018. These approvals are the primary environmental approvals required for the Project to be developed. A Section 14A variation under the Northern Territory *Environmental Assessment Administrative Procedures* was prepared to reflect modifications to the project configuration that have resulted from DFS and metallurgical piloting. This variation was approved by the NTEPA in September 2019. No variation process is required for the Federal Government approval.
Infrastructure	*The existence of appropriate infrastructure: availability of land for plant development, power, water, transportation (particularly for bulk commodities), labour, accommodation; or the ease with which the infrastructure can be provided or accessed.*	The Project is located in Australia's Northern Territory. Applications have been lodged with the relevant Northern Territory Government authority for the Mineral Leases (MLs) over the mine site, process plant, residue storage and accommodation village areas, as well as for easements for infrastructure. Water supply for the Project will be from a local borefield which has been subject to extensive exploration and investigation drilling, pump testing and modelling to demonstrate the capacity of the aquifer to support the Project. A water abstraction permit has been lodged with the relevant Northern Territory Government authority. There are reasonable grounds to expect that all remaining government approvals will be received within the timeframes for project financing and construction. Power for the project will be generated on site with fuel from the adjacent Amadeus Gas Pipeline.

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		Infrastructure to be constructed includes roads, accommodation camp, reverse osmosis and waste water treatment plants, workshops, technical and administration offices and power station. The workforce will be made up of bus-in, bus-out (BIBO) and fly-in, fly-out (FIFO) staff. All personnel will fly into or reside in Alice Springs and be transported by bus to and from site. It is expected that flights will be made up of a mix of commercial and charter flights. Road infrastructure (Stuart Highway) is 15km from the Project site. Rail infrastructure (for incoming and outgoing transport) is available at Alice Springs (135km from site) which connects to the ports at Darwin and Adelaide.
Costs	*The derivation of, or assumptions made, regarding projected capital costs in the study.*	The mining capital cost estimate for the DFS has been developed by Mining Plus through the collation of a number of mining contractor submissions and the estimation of mining equipment fleet sizes. Project capital costs have been estimated by Hatch, the lead engineer appointed to undertake the DFS with support from other specialist consultants. The cost estimate has been prepared in line with the requirements of a Level 3 cost estimate on the basis of the designs developed through the DFS. All capital costs have been estimated to a FS level of confidence +/-15%.
	The methodology used to estimate operating costs.	Mining operating costs were estimated from mining contractor submissions as a schedule of rates, including mobilisation, clearing, drill and blast, load and haul of ore and waste, rehandle of ore to the process plant, supporting ancillary activities, rehabilitation and demobilisation. Processing operating cost estimates were developed on a 'first principle basis'. The main cost drivers are the required reagent consumption rates and costs, reagent and product transportation to and from site, labour costs and energy costs. The following basis has been used for the operating costs: • Reagent consumption from metallurgical test work and costs from multiple quotes or independent forward forecasts.

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		• Transport costs developed by independent study from logistics contractors. • Labour costs based on detailed organisation charts with rates from independent human resources study. • Energy consumption from detailed calculations and gas costs from an independent industry consultant. • General and administration and other minor costs from quotations, industry standard factors, standard consumption rates and pricing and minor allowances. All process and administration operating costs have been estimated to a FS level of confidence +/-15%.
	Allowances made for the content of deleterious elements.	No additional cost allowances have been made for deleterious elements as it is not applicable for the Project process flowsheet
	The source of exchange rates used in the study.	A USD:AUD exchange rate of 0.712 has been derived from corporate guidance and independent advice from reputable financial institutions. Financial modelling has been carried out using a forward forecast curve from an independent analyst.
	Derivation of transport charges.	Transportation costs have been estimated from an independent study undertaken by a logistics contractor. These costs incorporate all transport from either Darwin Port or Port Adelaide to site.
	The basis for forecasting or source of treatment and refining charges, penalties for failure to meet specification, etc.	The NdPr oxide product is a directly saleable product and attracts no treatment or refining charges. The cerium hydroxide product is an impure product and a 50% payable charge has been applied based on independent market research and advice. The mixed SEG/HRE oxide product is a mixed product which will require further separation and a 35% payable charge has been applied based on independent market research and advice. The phosphoric acid product is a directly saleable product and attracts no treatment or refining charges. Product transport from Darwin Port to the customer has been included in the determination of product pricing as part of the independent market assessments.

<table>
<tr><th>CRITERIA</th><th>JORC CODE EXPLANATION</th><th>COMMENTARY</th></tr>
<tr><td></td><td>The allowances made for royalties payable, both Government and private.</td><td>The Northern Territory Mineral Royalty Act imposes royalties on minerals extracted in the Northern Territory and has a hybrid mineral royalty system where the royalty payable is the greater of:

• 20% of the gross production revenue less direct operating costs; or
• 2.5% of the gross production revenue.

Gross production revenue is the point at which the mineral commodity is first capable of being sold into an available market. In the case of the Nolans Project the first saleable product includes cerium hydroxide, phosphoric acid and mixed rare earth chloride intermediate. Gross production revenue is reduced by notional marketing and transport costs. The royalty for the Project has been incorporated into the financial model based on this basis. No private royalties are payable for the Project.</td></tr>
<tr><td>Revenue Factors</td><td>The derivation of, or assumptions made regarding revenue factors including head grade, metal or commodity price(s) exchange rates, transportation and treatment charges, penalties, net smelter returns etc.</td><td>Production and recovery for revenue calculations are based on detailed mine schedules, mining factors and project cost estimates developed for the DFS.

<table>
<tr><th>Sale Price - Rare Earths</th><th>US$/kg</th><th>% Payable</th></tr>
<tr><td>Light REOs</td><td></td><td></td></tr>
<tr><td>Cerium Oxide</td><td>2.10</td><td>60%</td></tr>
<tr><td>Neodymium Oxide</td><td>89.70</td><td>100%</td></tr>
<tr><td>Praseodymium Oxide</td><td>89.70</td><td>100%</td></tr>
<tr><td>Middle REOs</td><td></td><td></td></tr>
<tr><td>Samarium Oxide</td><td>12.36</td><td>35%</td></tr>
<tr><td>Europium Oxide</td><td>12.36</td><td>35%</td></tr>
<tr><td>Gadolinium Oxide</td><td>12.36</td><td>35%</td></tr>
<tr><td>Heavy REOs</td><td></td><td></td></tr>
<tr><td>Dysprosium Oxide</td><td>68.04</td><td>35%</td></tr>
<tr><td>Terbium Oxide</td><td>68.04</td><td>35%</td></tr>
<tr><td>Yttrium Oxide</td><td>68.04</td><td>35%</td></tr>
<tr><td>Erbium Oxide</td><td>68.04</td><td>35%</td></tr>
<tr><td>Holmium Oxide</td><td>68.04</td><td>35%</td></tr>
<tr><td>Lutetium Oxide</td><td>68.04</td><td>35%</td></tr>
<tr><td>Thulium Oxide</td><td>68.04</td><td>35%</td></tr>
<tr><td>Ytterbium Oxide</td><td>68.04</td><td>35%</td></tr>
<tr><td>Cerium as Cerium Hydroxide</td><td>1.26</td><td>100%</td></tr>
<tr><td>Sale Price - Other</td><td>US$/tonne</td><td></td></tr>
<tr><td>Phosphate (P_2O_5) as 54% MGA</td><td>683.34</td><td>100%</td></tr>
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		The Project economics have been assessed using a financial model developed by independent consultants under the direction of Arafura incorporating all cost and revenue factors that influence the economic outcomes. The financial model has been used to evaluate the mine schedule used for these Ore Reserves.
	The derivation of assumptions made of metal or commodity price(s), for the principal metals, minerals and co-products.	Rare earth pricing was supplied by Arafura from a Roskill independent marketing report finalised in June 2019 and been used as the basis for the Ore Reserves. Revenue factors within the optimisation process were used to produce a range of nested optimisation pit shells to assist in the analysis and shell selection for pit design.
Market Assessment	*The demand, supply and stock situation for the particular commodity, consumption trends and factors likely to affect supply and demand into the future.*	The primary product for the Project is NdPr oxide which is used in the production of rare earth (NdFeB) permanent magnets. Current drivers on the consumption of NdFeB magnets, and consequently the demand for NdPr oxide, include increasing demand for electric vehicle drive trains in the expanding new energy vehicles (NEV) market. This market is anticipated to grow to a market penetration of 88% in 2030 which will drive very large demand growth. In addition, a restriction in China on polluting rare earth producers and the high cost of entry into the market will constrict supply.
	A customer and competitor analysis along with the identification of likely market windows for the product.	Around 85% of the worlds rare earth production is currently from China. The only sizeable non-Chinese producer of primary NdPr oxide is Lynas Corporation operating in Western Australia with downstream processing in Malaysia. Other projects currently under consideration include projects in Tanzania, Australia, Greenland and the USA. All of these projects are of comparable scale to the Nolans Project (approximately 5%-7% of current demand). Current forecasts have China moving from being a net exporter to a net importer of NdPr oxide sometime between 2020 and 2023.
	Price and volume forecasts and the basis for these forecasts.	The independent marketing report commissioned by Arafura for the DFS estimates global demand for rare earths to increase by a compound annual growth rate (CAGR) of 3.9% through to 2024 and then slow to 2.2% from 2025 to 2030. It is not believed that these assumptions have materially changed since the publication of the DFS.

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	For industrial minerals the customer specification, testing and acceptance requirements prior to a supply contract.	Not applicable.
Economic	*The inputs to the economic analysis to produce the net present value (NPV), the source and confidence of these economic inputs estimated inflation, discount rate, etc.*	These Ore Reserves are based on the DFS financial model with inputs for mining, processing, sustaining capital and contingencies scheduled and costed.
	NPV ranges and sensitivity to variations in the significant assumptions and inputs.	The Ore Reserves returns a positive NPV based on assumed commodity price and the Competent Person is satisfied that the Project economics that make up the Ore Reserves retains a suitable profit margin against reasonable future commodity price movements.
Social	*The status of agreements with key stakeholders and matters leading to social licence to operate.*	Following extensive negotiation with the Central Land Council (CLC) and presentation of the draft agreement to native title holders in February 2020 Arafura has reached an in-principle Indigenous Land Use Agreement (ILUA) with the native title holders under relevant Australian and Northern Territory legislation. It is anticipated that this ILUA will be finalised and executed in April 2020 at the next full council meeting of the CLC. Execution of this agreement will allow the granting of the Project's primary ML.
Other	*To the extent relevant, the impacts of the following on the project and/or on the estimation and classification of the Ore Reserves:* *Any identified material naturally occurring risks.*	No naturally occurring material risks have been identified.
	The status of material legal agreements and marketing arrangements.	Arafura has currently executed two non-binding MOUs for NdPr oxide offtake, one non-binding MOU for cerium hydroxide offtake, and one non-binding MOUs for phosphoric acid offtake. There are reasonable grounds to anticipate that commercially competitive contract terms will be achieved. No other material legal agreements exist.

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	The status of governmental agreements and approvals critical to the viability of the project, such as mineral tenement status, and government and statutory approvals. There must be reasonable grounds to expect that all necessary government regulations will be received within the timeframe anticipated in the Pre-feasibility or Feasibility study. Highlight and discuss the materiality of any unresolved matter that is dependent on a third party on which extraction of the reserve is contingent.	The exploration licenses pertaining to the Project are in good standing. The Project's MLs are under application and require an ILUA to be concluded with the native title holders prior to issue by the relevant Northern Territory Government authority. These are anticipated to be granted in mid-2020. Granting of an authorisation to mine is required prior to commencement of site works. The pre-requisite for this is the approval of the proponent's Mining Management Plan, which is currently under preparation by Arafura. It is anticipated that the authorisation to mine will be granted following grant of the MLs in 2020. All remaining primary and secondary approvals are anticipated to be granted in line with requirements of the development timeframe.
Classification	*The basis for the classification of the Ore Reserves into varying confidence categories.*	It is the opinion of the Competent Person for Ore Reserves that the results are an appropriate reflection of the deposit. Measured and Indicated Mineral Resources within the final pit design (which has been derived by applying appropriate Modifying Factors as described above) have been classified as Proved and Probable Ore Reserves, respectively.
	Whether the result appropriately reflects the Competent Person's view of the deposit.	
	The proportion of Probable Ore Reserves that have been derived from Measured Mineral Resources (if any).	
Audits or reviews	*The results of any audits or reviews of Ore Reserve estimates.*	No audits or reviews of the Ore Reserves have been conducted to date.

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Discussion of relative accuracy / confidence	*Where appropriate a statement of the relative accuracy and confidence level in the Ore Reserve estimate using and approach or procedure deemed appropriate by the Competent Person. For example, the application of statistical or geostatistical procedures to quantify the relative accuracy of the reserve within stated confidence limits, or, if such an approach is not deemed appropriate, a qualitative discussion of the factors which could affect the relative accuracy and confidence of the estimate.*	The Ore Reserves are based on the following key elements: • The Project's Mineral Resources with 100% of the plant feed inventory tonnage inside the final pit designs being Measured or Indicated. • Geotechnical assessment is considered sufficient for a FS. • The mine planning and scheduling assumptions are based on current industry practice, which are seen as globally correct at this level of study; with further work in the next level of study to understand any periodic cost fluctuations. • The cost estimates and financial evaluation have been estimated by Arafura with specialist consultants, which are considered sufficient to support this level of study. The accuracy of the cost estimate is +/-15% and is in line with a Class 3 estimate under AACE International Cost Estimate Classification guidelines. It is not believed that these estimates have materially changed since the publication of the DFS. • As part of the DFS, Arafura engaged with potential contractors to confirm construction, mining and logistics costs and it is not believed that these costs have materially changes since the publication of the DFS. • There are no unforeseen Modifying Factors at the time of this statement that will have any material impact on the Ore Reserves.
	The statement should specify whether it relates to global or local estimates, and if local, state the relevant tonnages, which should be relevant to technical and economic evaluation. Documentation should include assumptions made and the procedures used.	
	Accuracy and confidence discussions should extend to specific discussions of any applied Modifying Factors that may have a material impact on Ore Reserve viability, or for which there are remaining areas of uncertainty at the current study stage.	

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	It is recognised that this may not be possible or appropriate in all circumstances. These statements of relative accuracy and confidence of the estimate should be compared with production data, where available.	