

## ASX Announcement

# Quarterly Activities Report and Appendix 5B

31 December 2017

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## Highlights

- **Northern Territory Environment Protection Authority recommends environmental approval, key milestone for Nolans NdPr project**
- **First stage of Phase 4 pilot completed, batch paddle dryer equipment successfully demonstrates high NdPr recovery and acid bake process**
- **Planning well advanced for the completion of an expanded and final Phase 4 acid bake program**
- **NdPr price strengthens in December 2017**
- **Toyota and Ford announce significant changes in strategy to boost their commitment to EV production and investment in technology**
- **Cash position \$12.7 million at 31 December 2017, boosted by placement of \$3.175 million with institutional investors**

## Nolans Project

### Regulatory Approvals – Environmental Impact Assessment

The Northern Territory Environment Protection Authority (NT EPA) has completed its environmental impact assessment for the Nolans Neodymium-Praseodymium (NdPr) project and recommends environmental approval subject to conditions regarding appropriate operational controls.

The completion of the NT EPA's assessment is a key milestone in Nolans' advancement towards a final investment decision (FID). Rare earth projects are generally associated with thorium and other radioactive materials which can lead to greater complexity and scrutiny for the environmental approvals process. Arafura recognised the environmental approvals and the related community engagement process as being a significant step and perceived as a potential barrier to the development of Nolans. For these reasons the Company decided to track the environmental programs ahead of final piloting and engineering. Advancement through the environmental approvals process is a key enabler for the Company to meaningfully engage with potential off takers, project funders and other strategic parties.

**Quarterly Activities Report and Appendix 5B**

The NT EPA has issued its Environmental Impact Assessment Report and recommendations to the Northern Territory Government’s (NTG) Ministers for Environment and Natural Resources, and Primary Industry and Resources, for their consideration.

Concurrent with the release of this report to the NTG, the report is also issued to the Australian Government’s Department of the Environment and Energy for its assessment under the *Environment Protection and Biodiversity Conservation Act*. It is expected that this part of the assessment will be completed in February 2018.

The NT EPA and Australian Government environmental impact assessments together form the basis of the project’s final environmental approval by the NTG, which is expected during the current quarter.

**Figure 1: Nolans Environmental Approval Process**



## Quarterly Activities Report and Appendix 5B

### Acid Bake Piloting (Phase 4) NdPr Extraction Results

The first stage trials of sulfuric acid bake piloting were successfully concluded in October (*refer to ASX announcement 19 October 2017*). These trials produced NdPr-rich sulfated material from pre-leach residue (PLR) generated by the Phase 2 phosphate extraction pilot plant.

Arafura has now received preliminary metallurgical mass balance results and can report that rare earth extraction resulting from the dynamic acid bake trials using the Gouda paddle dryer exceeded that from concurrent static acid bake testwork.

**Table 1: Acid Bake Extraction Results**

<i>Rare Earths</i>	Static Testwork Extraction	Dynamic Acid Bake Extraction
<i>NdPr (and LRE)</i>	96.6%	<b>98.5%</b>
<i>SEG</i>	86.0%	<b>91.3%</b>
<i>HRE</i>	72.0%	<b>80.6%</b>

*LRE includes La, Ce, Pr and Nd. SEG includes Sm, Eu and Gd. HRE includes Tb, Dy, Ho, Er, Tm, Yb, Lu and Y.*

### Bulk Acid Bake Phase 4 Planning Advances

The Company expects to confirm the dynamic acid bake extraction results (Table 1) in the final and expanded acid bake pilot plant.

Arafura's extraction plant flowsheet achieves optimal hydrometallurgical performance using a low temperature bake (< 300°C) and therefore can use paddle dryer equipment in contrast to kiln-based equipment used by other rare earth projects, which operate at higher temperatures.

Discussions with equity financiers familiar with kiln-based equipment used by other rare earth projects indicate a preference to see Arafura further de-risk possible commissioning and operation of the acid bake process through an expanded program.

Following consultation between Arafura, equipment vendors and engineering groups, it was agreed to expand the Phase 4 program to acquire additional operational and design data for the project's Definitive Feasibility Study (DFS) and provide the opportunity to test alternative equipment to diversify supplier reliance.

The Company acquired a second-hand paddle dryer (see Images 1 and 2) and it is currently being refurbished. A larger Gouda unit similar to the one successfully used in the first stage trials is also expected to arrive from Europe in February. The design requirements incorporate a pug mixer, heating paddle dryer and cooling paddle. Fabrication of the circuit is being completed at Bossong Engineering in Perth and the refurbished unit will be tested with synthetic material in January in advance of being moved to SGS Australia for use in the final acid bake pilot. A hazard identification study of the proposed plant has been undertaken resulting in appropriate controls being incorporated into plant design and construction.

Quarterly Activities Report and Appendix 5B

Image 1: Paddle dryer pilot skid with oil heater



Image 2: Paddle dryer pilot skid at Bossong Engineering in Perth for maintenance and modifications



## Quarterly Activities Report and Appendix 5B

### Beneficiation Variability Program

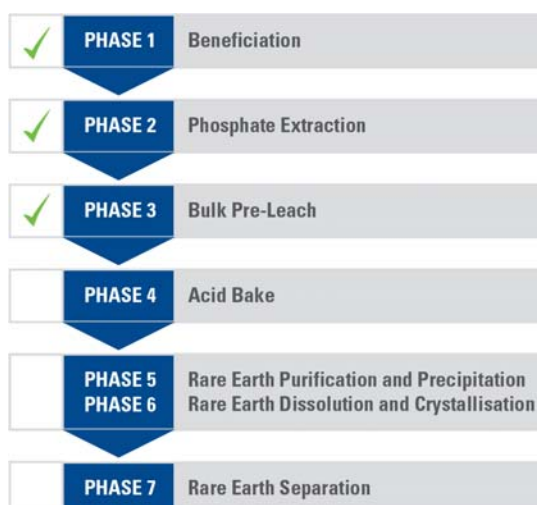
The beneficiation variability test work program is well advanced. The mine planning study by AMC Consultants (AMC) (*refer to ASX announcement 20 September 2017*) has guided the selection of 35 samples from Arafura's extensive core drilling and composite material inventory for a program to document the variation in metallurgical performance of run of mine (ROM) feed in the first ten years of operations. This program, scheduled for completion in February, will produce grade-recovery curves to help define strategic production schedules as the basis of the project's DFS.

### Phase 2 & 3 – Phosphoric Acid Recovery & Bulk Pre-leach

The results of Phases 2 and 3 of the pilot program were previously reported (*refer to ASX announcements 10 and 25 July, and 19 October 2017*). Draft reports from technical experts overseeing this work have confirmed the results from Phases 2 and 3. Assay laboratory capacity has delayed the close out of final reports to be used in the DFS; however, these are expected to confirm previous results and should be delivered to Arafura in the coming weeks.

The strength of Arafura's development program lies in the quality and quantity of engineering data collected from the pilot plant operation. This ensures that all key engineering and operational considerations are addressed prior to commissioning of the commercial facility. Arafura is targeting completion of all pilot programs by the middle of 2018 which, together with the DFS, will put the Company in a position to make a Final Investment Decision on the project by the end of 2018.

Figure 2: Nolans Pilot Program



## Exploration

### Jervois (Base and Precious Metals; Tungsten; Iron-Vanadium)

Rox Resources Ltd (Rox) holds a 51 per cent interest in the base and precious metal rights on Arafura's EL 29701, located 280 kilometres north-east of Alice Springs. Arafura holds the residual 49 per cent interest, and Rox had previously elected to earn 70 per cent by spending an additional \$1 million on the tenement to December 2017. Rox has informed Arafura that it will not complete the Stage 2 earn-in expenditure and in accordance with the Farm-in Agreement a joint venture (Rox 51%; Arafura 49%) is being negotiated.

## Corporate

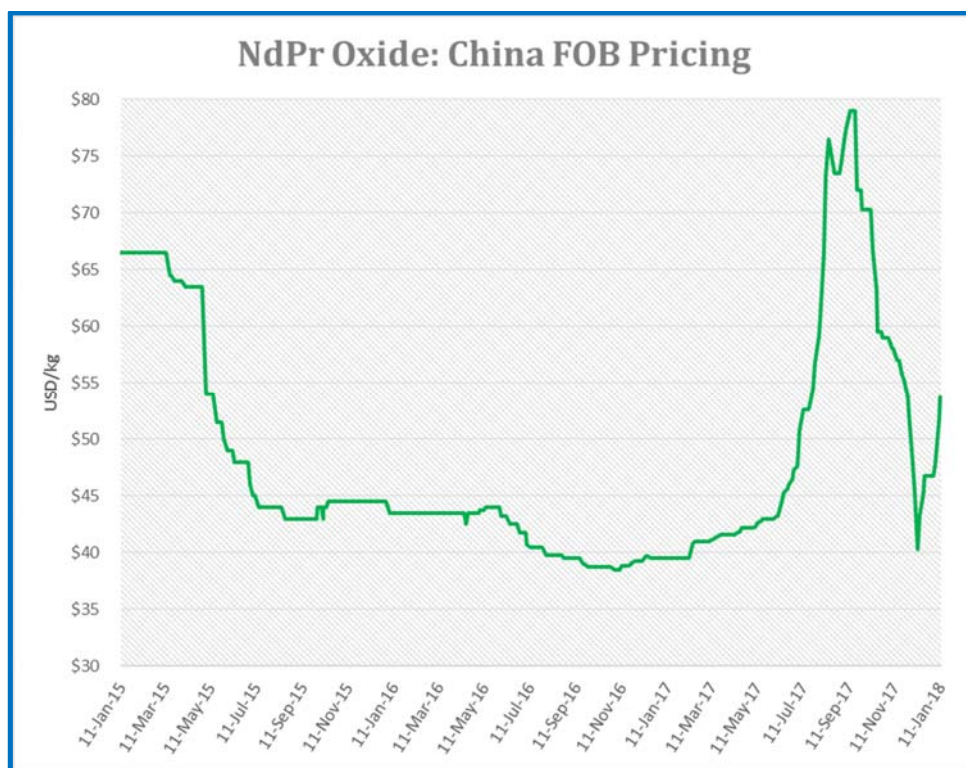
### NdPr Price Performance

The latest pricing information has NdPr oxide FOB China at US\$53.75/kg, an increase of 24% in the past month. In the September quarter NdPr prices surged as high as US\$79.00/kg. It appears the main driver for the September spike was tightening of supply resulting from environmental and other supply reforms in China plus traders may have been entering the market to ensure they were holding sufficient inventories to cover any downturn in NdPr production as China switched its focus to the National Congress of the Communist Party in October. With the benefit of hindsight, the rapid price appreciation in September was not sustainable and the less aggressive upward price trend experienced in the period from January to May 2017 looks more realistic.

In the period from October to December all of the September NdPr price gains were lost as the price reached its low point in the middle of December. In the second half of December NdPr prices commenced a recovery with this trend sustained through to the middle of January. The December 2017 and January 2018 price increases had been anticipated by most market commentators and are perhaps in part linked to the expected tapering of production over the (Chinese) Lunar New Year holiday period in February. Strengthening of NdPr prices to date can be attributed to the rare earth environmental and supply reforms in China. Future pricing pressure may also result from the widely forecast increase in NdPr demand for NdFeB magnets in wind turbines, robotics and electric vehicles (EV).



Figure 3: NdPr Oxide Price FOB US\$/kg



### Chinese EV Policy

Policy within China continues to target increased ownership of hybrid and electric vehicles at the expense of the internal combustion engine. According to the state news agency Xinhua, Chinese authorities plan to halt the production of 553 passenger vehicle models in 2018, on the basis they fail to meet prescribed fuel consumption standards. As a further incentive China has also agreed to extend the sales tax exemption on the purchase of EVs in the period from January 2018 to December 2020.

### Toyota & Ford EV Strategy

There have also been significant announcements by Toyota and Ford who are now refocusing their EV strategy.

In December Toyota announced it will strengthen its battery technology alliance with Panasonic for the purpose of targeting the EV market. Toyota and Panasonic have an existing strategic alliance for the supply of batteries used in Toyota's hybrid vehicles. Toyota plans to develop a solid-state battery for commercial production by 2020 in a quest for improved capacity and efficiency.

Historically Toyota has sought to exploit its technology advantage in the hybrid vehicle space at the expense of the purely battery powered EV. The expansion of the Toyota strategy to EVs is in reaction to the changing auto industry. In November Toyota announced changes to its executive management to better deal with "now or never" competition and "surviving a new era for the auto industry". Under

## Quarterly Activities Report and Appendix 5B

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the strategy unveiled by Toyota it plans to sell more than 10 EV models in the 2020s and have EV versions of every Toyota and Lexus model by 2025. Toyota also remains committed to its hydrogen fuel cell vehicle strategy.

Toyota President Akio Toyoda, the 61-year old grandson of founder Kiichiro Toyoda, said at a December news conference in Tokyo, “Our cooperation (with Panasonic) represents the intention of two Japan-born companies to lead the next era of electrified cars” and “Electrification is a major part of the once-a-century transformation taking place in the auto industry now”.

Ford has also recently announced an increased commitment to its existing EV and hybrid vehicle strategy by increasing its planned investment in electrified vehicles from USD 4.5 billion to USD 11 billion in the period to 2022. The planned investment will result in the introduction of 16 EVs and 23 hybrids and plug-in hybrids. Ford’s strategy has been implemented in expectation of greater customer acceptance of EVs, enabled through battery technology providing improved range, lower battery costs and increased availability of charging stations.

It is significant that these profound strategic changes are being implemented by the direct descendants of their respective company’s founders: Akio Toyoda at Toyota and Bill Ford at Ford Motor Company (executive Chairman and great-grandson of Henry Ford). Whilst EV vehicles to date do not dominate sales figures, the changes implemented by Ford and Toyota signal that these companies now acknowledge the tipping point for EVs.

### Private Placement

In October the Company completed a placement with institutional and sophisticated investors. The placement was completed by two tranches to raise total funds of \$3.175 million at \$0.11 per share (*refer to ASX announcements 24 October 2017 and 25 October 2017*) and the combined placements resulted in the issue of 28,859,547 shares.

In the period leading up to the placement the Company’s investor relations activities confirmed there was significant interest in the Nolans NdPr project from domestic and international parties. Due to the quality of the parties willing to participate and the quantity of funding available, the Company actioned the placement to secure this funding which was sourced from new and existing investors. The placement proceeds further strengthened Arafura’s balance sheet and will be used for the DFS, including the definition stage engineering, and working capital.

### Annual General Meeting

The Company held its Annual General Meeting (AGM) on 16 November 2017. All five resolutions tabled at the meeting were passed unanimously on a show of hands.

As result of the strong financial support from investors in the October capital raisings, Resolution No. 6 – Approval of 10% placement capacity under ASX listing rule 7.1A was withdrawn (*refer to ASX announcement 26 October 2017*) and not put to a shareholder vote at the AGM.





Quarterly Activities Report and Appendix 5B

Cash Position and Timetable

The Company had \$12.7 million in cash reserves at 31 December 2017, placing it in a strong position to continue to advance the Nolans NdPr project. In 2018 significant work programs are underway and the Company’s targets include:

- Finalising flowsheet piloting;
- Securing environmental approvals;
- Advancing NdPr offtake arrangements;
- Completing the DFS and definition stage engineering; and
- Engaging with strategic partners for capital equipment procurement and project funding.

Figure 4: Pilot & DFS Program Timeline



## Quarterly Activities Report and Appendix 5B

### Nameplate Production

Measured and Indicated Mineral Resources at Nolans support the project's nameplate production target of 14,000 tonnes per annum of TREO equivalent. The Mineral Resources were estimated and reported by the Company (*refer to ASX announcement 7 June 2017*) following the guidelines of the JORC Code 2012. Classification of Total Mineral Resources at Nolans into Measured, Indicated and Inferred, using a 1.0% TREO cut-off grade, is shown below.

Mineral Resources	Tonnes (Millions)	Rare Earths (% TREO)	Phosphate (% P <sub>2</sub> O <sub>5</sub> )	NdPr Enrichment (%)
<b>Measured</b>	4.9	3.2	13	26.1
<b>Indicated</b>	30	2.7	12	26.4
<b>Inferred</b>	21	2.3	10	26.5
<b>Total</b>	<b>56</b>	<b>2.6</b>	<b>11</b>	<b>26.4</b>

*Note: Numbers may not compute due to rounding. "NdPr Enrichment" is the proportion of TREO comprising Nd<sub>2</sub>O<sub>3</sub> and Pr<sub>6</sub>O<sub>11</sub>.*

### Competent Persons Statement

The information in this report that relates to Exploration Results and Mineral Resources is based on information compiled by Mr Kelvin Hussey, a Competent Person who is a Member of the Australian Institute of Geoscientists. Mr Hussey is a full-time employee of Arafura Resources Limited. Mr Hussey 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 (JORC Code 2012). Mr Hussey consents to the inclusion in the report of the matters based on his information in the form and context in which it appears.

## Appendix 5B

### Mining exploration entity and oil and gas exploration entity quarterly report

Introduced 01/07/96 Origin Appendix 8 Amended 01/07/97, 01/07/98, 30/09/01, 01/06/10, 17/12/10, 01/05/13, 01/09/16

**Name of entity**

Arafura Resources Ltd	<b>Quarter ended ("current quarter")</b>
<b>ABN</b>	
22 080 933 455	31 December 2017

Consolidated statement of cash flows	Current quarter \$A'000	Year to date (6 months) \$A'000
<b>1. Cash flows from operating activities</b>		
1.1 Receipts from customers	-	-
1.2 Payments for		
(a) exploration & evaluation	(1,610)	(3,068)
(b) development	-	-
(c) production	-	-
(d) staff costs	(380)	(764)
(e) administration and corporate costs	(423)	(787)
1.3 Dividends received (see note 3)	-	-
1.4 Interest received	70	147
1.5 Interest and other costs of finance paid	(2)	(3)
1.6 Income taxes paid	-	-
1.7 R&D refund - Non Capitalised Portion	-	660
1.8 Other (provide details if material)	-	-
<b>1.9 Net cash from / (used in) operating activities</b>	<b>(2,345)</b>	<b>(3,815)</b>
<b>2. Cash flows from investing activities</b>		
2.1 Payments to acquire:		
(a) property, plant and equipment	(123)	(145)
(b) tenements (see item 10)	-	-
(c) investments	-	-
(d) other non-current assets	-	-
2.2 Proceeds from the disposal of:		
(a) property, plant and equipment	-	-
(b) tenements (see item 10)	-	31

## Quarterly Activities Report and Appendix 5B

<b>Consolidated statement of cash flows</b>		<b>Current quarter \$A'000</b>	<b>Year to date (6 months) \$A'000</b>
	(c) investments	-	-
	(d) other non-current assets	-	-
2.3	Cash flows from loans to other entities	-	-
2.4	Dividends received (see note 3)	-	-
2.5	Other (R&D Refund – Capitalised Portion)	-	1,174
<b>2.6</b>	<b>Net cash from / (used in) investing activities</b>	<b>(123)</b>	<b>1,060</b>
<b>3.</b>	<b>Cash flows from financing activities</b>		
3.1	Proceeds from issues of shares	3,174	3,174
3.2	Proceeds from issue of convertible notes	-	-
3.3	Proceeds from exercise of share options	-	-
3.4	Transaction costs related to issues of shares, convertible notes or options	(198)	(198)
3.5	Proceeds from borrowings	-	-
3.6	Repayment of borrowings	-	-
3.7	Transaction costs related to loans and borrowings	-	-
3.8	Dividends paid	-	-
3.9	Other (provide details if material)	-	-
<b>3.10</b>	<b>Net cash from / (used in) financing activities</b>	<b>2,976</b>	<b>2,976</b>
<b>4.</b>	<b>Net increase / (decrease) in cash and cash equivalents for the period</b>		
4.1	Cash and cash equivalents at beginning of period	12,185	12,472
4.2	Net cash from / (used in) operating activities (item 1.9 above)	(2,345)	(3,815)
4.3	Net cash from / (used in) investing activities (item 2.6 above)	(123)	1,060
4.4	Net cash from / (used in) financing activities (item 3.10 above)	2,976	2,976
4.5	Effect of movement in exchange rates on cash held	-	-
<b>4.6</b>	<b>Cash and cash equivalents at end of period</b>	<b>12,693</b>	<b>12,693</b>

## Quarterly Activities Report and Appendix 5B

<b>5.</b>	<b>Reconciliation of cash and cash equivalents</b> at the end of the quarter (as shown in the consolidated statement of cash flows) to the related items in the accounts	<b>Current quarter \$A'000</b>	<b>Previous quarter \$A'000</b>
5.1	Bank balances	11,500	10,800
5.2	Call deposits	1,193	1,385
5.3	Bank overdrafts	-	-
5.4	Other (provide details)	-	-
<b>5.5</b>	<b>Cash and cash equivalents at end of quarter (should equal item 4.6 above)</b>	<b>12,693</b>	<b>12,185</b>

<b>6.</b>	<b>Payments to directors of the entity and their associates</b>	<b>Current quarter \$A'000</b>
6.1	Aggregate amount of payments to these parties included in item 1.2	(203)
6.2	Aggregate amount of cash flow from loans to these parties included in item 2.3	-
6.3	Include below any explanation necessary to understand the transactions included in items 6.1 and 6.2	

Salaries, fees and superannuation of Directors of the Company.

<b>7.</b>	<b>Payments to related entities of the entity and their associates</b>	<b>Current quarter \$A'000</b>
7.1	Aggregate amount of payments to these parties included in item 1.2	-
7.2	Aggregate amount of cash flow from loans to these parties included in item 2.3	-
7.3	Include below any explanation necessary to understand the transactions included in items 7.1 and 7.2	

N/A.

<b>8.</b>	<b>Financing facilities available</b> <i>Add notes as necessary for an understanding of the position</i>	<b>Total facility amount at quarter end \$A'000</b>	<b>Amount drawn at quarter end \$A'000</b>
8.1	Loan facilities	-	-
8.2	Credit standby arrangements	-	-
8.3	Other (please specify)	-	-
8.4	Include below a description of each facility above, including the lender, interest rate and whether it is secured or unsecured. If any additional facilities have been entered into or are proposed to be entered into after quarter end, include details of those facilities as well.		

N/A

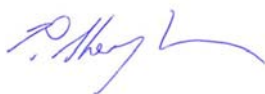
## Quarterly Activities Report and Appendix 5B

9. Estimated cash outflows for next quarter		\$A'000
9.1	Exploration and evaluation	1,920
9.2	Development	-
9.3	Production	-
9.4	Staff costs	390
9.5	Administration and corporate costs	414
9.6	Other (provide details if material)	-
<b>9.7</b>	<b>Total estimated cash outflows</b>	<b>2,724</b>

10.	Changes in tenements (items 2.1(b) and 2.2(b) above)	Tenement reference and location	Nature of interest	Interest at beginning of quarter	Interest at end of quarter
10.1	Interests in mining tenements and petroleum tenements lapsed, relinquished or reduced	See Appendix A below.			
10.2	Interests in mining tenements and petroleum tenements acquired or increased	See Appendix A Below.			

### Compliance statement

- 1 This statement has been prepared in accordance with accounting standards and policies which comply with Listing Rule 19.11A.
- 2 This statement gives a true and fair view of the matters disclosed.



Sign here: .....  
(Company secretary)

Date: 31 January 2018.

Print name: Peter Sherrington

### Notes

1. The quarterly report provides a basis for informing the market how the entity's activities have been financed for the past quarter and the effect on its cash position. An entity that wishes to disclose additional information is encouraged to do so, in a note or notes included in or attached to this report.
2. If this quarterly report has been prepared in accordance with Australian Accounting Standards, the definitions in, and provisions of, AASB 6: Exploration for and Evaluation of Mineral Resources and AASB 107: Statement of Cash Flows apply to this report. If this quarterly report



**Quarterly Activities Report and Appendix 5B**

has been prepared in accordance with other accounting standards agreed by ASX pursuant to Listing Rule 19.11A, the corresponding equivalent standards apply to this report.

3. Dividends received may be classified either as cash flows from operating activities or cash flows from investing activities, depending on the accounting policy of the entity.

**Appendix A – Mining Tenements Held as at 31 December 2017**

Tenement reference	Project	Holder	Nature of interest (note (2))	Interest at beginning of quarter	Interest at end of quarter	Notes
ML 26659	Nolans, NT	Arafura Rare Earths Pty Ltd	Mineral Lease	100%	100%	Application Lodged
ML 30702				100%	100%	Application Lodged
ML 30703				100%	100%	Application Lodged
ML 30704				100%	100%	Application Lodged
EL 28473 EL 28498 EL 29509 EL 31095 EL 31096 EL 31097 EL 31224 EL 31284	Aileron–Reynolds, NT	Arafura Resources Ltd	Exploration Licence	100% 100% 100% 100% 100% 100% 100% 100%	100% 100% 100% 0% 100% 100% 100% 100%	Surrendered
EL 29701	Jervois, NT	Arafura Resources Ltd	Exploration Licence	100%	100%	Rox Resources Ltd (RXL) has acquired 51% of the base and precious metal rights. A joint venture (JV) to explore and develop the base and precious metal rights will now be formed between RXL (51%) and Arafura (49%). RXL will manage the JV.