

Arafura Resources Limited

ABN: 22 080 933 455

ANNUAL TECHNICAL REPORT

EXPLORATION LICENCE 31097

25 AUGUST 2016 – 24 AUGUST 2017

Titleholder	Arafura Resources Limited
Project Operator	Arafura Resources Limited
Titles/Tenements	EL 31097
Tenement Manager/Agent	AMETS Pty Ltd
Mine/Project Name	Sheppard
Personal author(s)	Holly Edgar
Company reference number	N/A
Target Commodity or Commodities	Rare Earth Elements
Date of report	19 October 2017
Datum/Zone	GDA94/Zone 53
250 000 K Mapsheet	Hermannsberg SF5313 Napperby SF5309
100 000 K Mapsheet	Anburla 5551 Aileron 5552
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1. Abstract

Exploration Licence 31097 is located approximately 90km north west of Alice Springs and has area of 351.08 square km.

The licence sits within the highly prospective Aileron Province. The area is known to host various commodities, which include uranium, rare earth elements (REE), base metals, gold, tungsten and vermiculite.

During the reporting period, Arafura Resources conducted geological and geophysical assessment in relation to the Nolans Bore Project EIS groundwater investigations. Groundwater monitoring was also conducted, as part of the Nolans Bore Project.

2. Copyright

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3. Location and Access

Exploration Licence 31097 is located approximately 90 kilometres north west of Alice Springs.

Access to the licence from Alice Springs is via the Stuart Highway.

The location of the licence is shown in Figure 1.

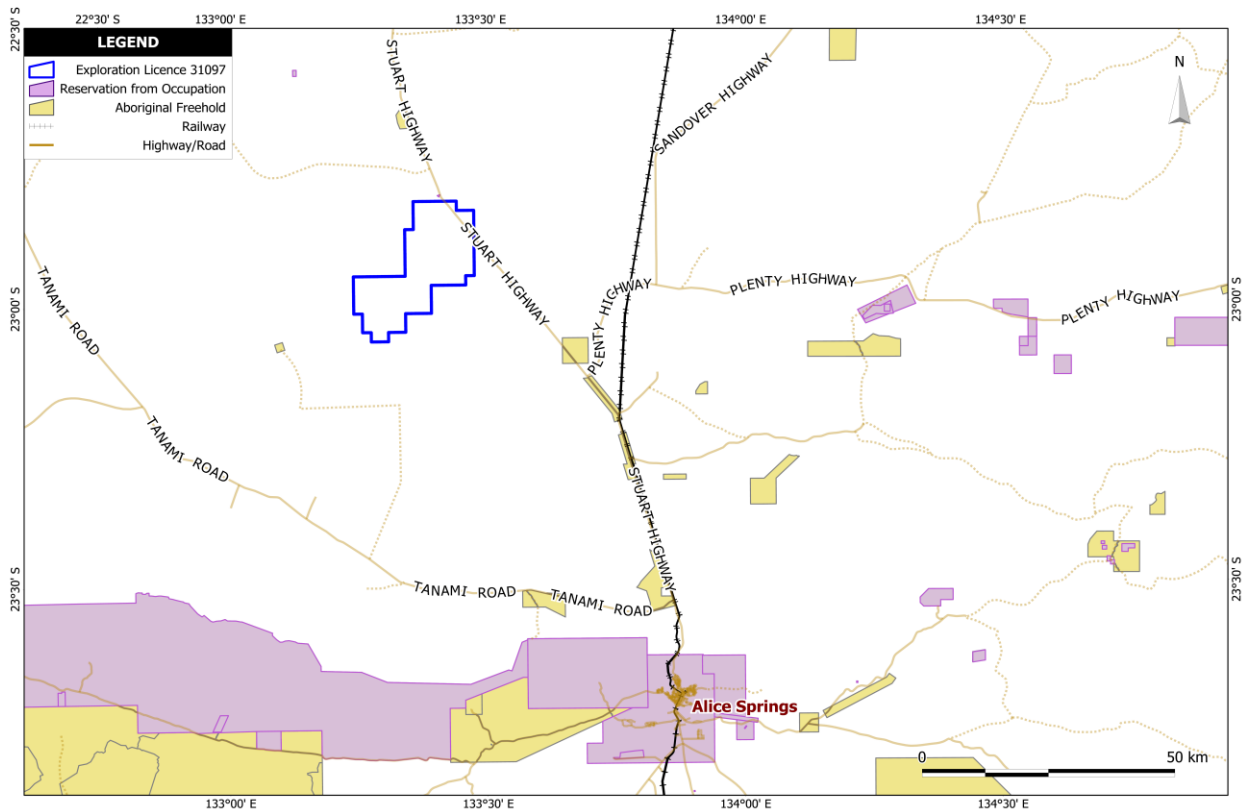


Figure 1- Location Map

4. Tenure and Land Use

The licence covers pastoral portions of land. The below table shows the details of the licence.

Licence	Titleholder	Grant Date	Area (km2)	Cadastre
EL31097	Arafura Resources Limited (100%)	25/08/2016	351.08	NT Portion 4443, Perpetual Pastoral Lease- Amburla Station
				NT Portion 703, Perpetual Pastoral Lease- Aileron Station
				NT Portion 641, Perpetual Pastoral Lease- Yamba Station

5. Topography & Hydrology

The topography within the area is dominantly low, with limited outcrops. The Stuart Highway intersect the licences and small creeks also flow through the licence after rainfall events.

The topography of the licence is shown in Figure 2.

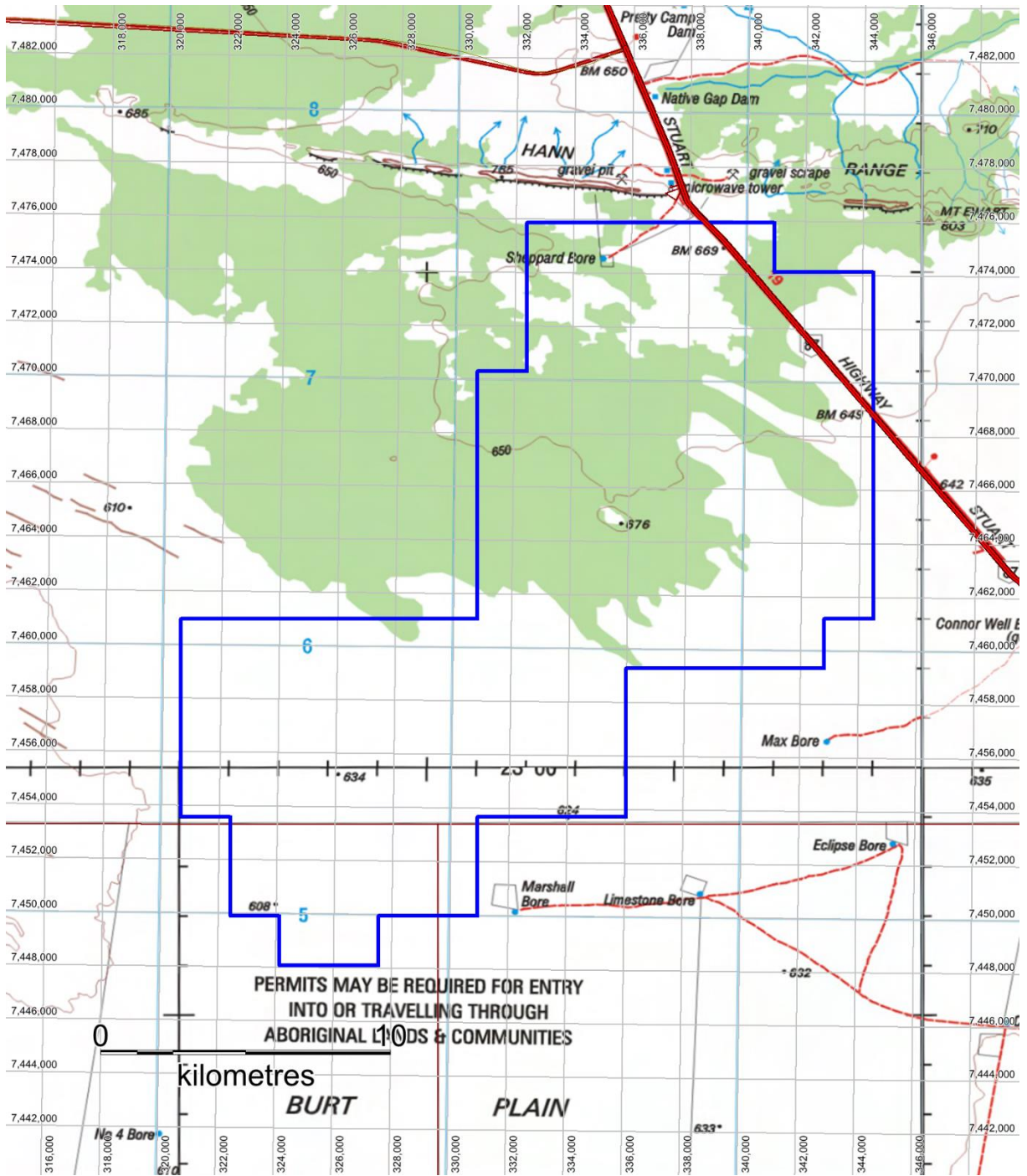


Figure 2 - Topography Map

6. Geology

The licence is situated entirely within the Aileron Province of the Arunta Region. The Aileron Province is unconformably overlain by the Ngalia, Amadeus, Georgina and Eromanga Basins.

The area consists of Palaeoproterozoic sedimentary and igneous rocks that have undergone greenschist to granulite facies metamorphism. The lithology largely consists of metamorphic clastic sediments, calc-silicates, dolerite, granite, meta volcanics and mafics.

A deformation zone from interpreted geophysical data intersects the northern portion of the licence.

The regional geology is shown in Figure 3.

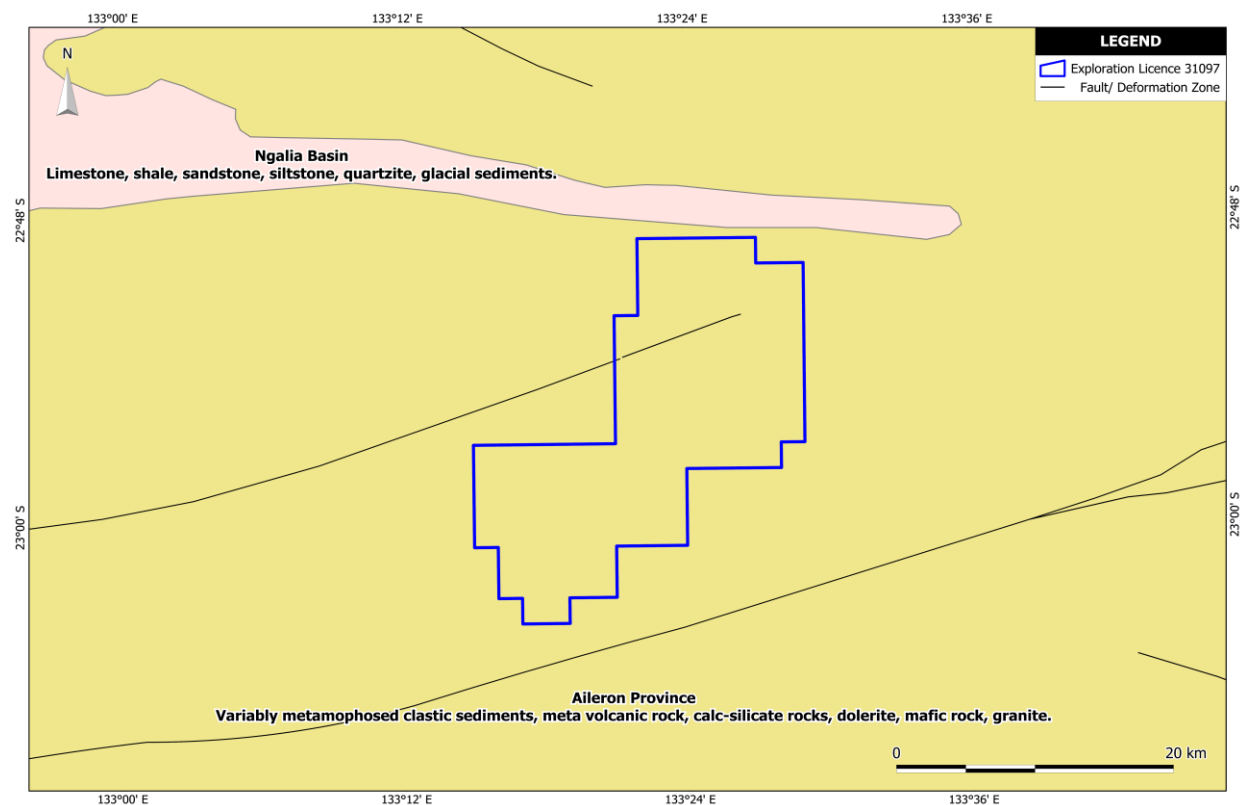


Figure 3- Geology Map

7. Exploration Rationale

The licence is within the highly prospective Aileron Province, is known to host various commodities, which include rare earth elements, uranium, base metals, gold, tungsten and vermiculite.

The primary target and commodity of interest for Arafura is Nolans Bore type REE.

Open file Airborne Electromagnetic (AEM) data has allowed for the identification of shallow basement areas to be followed up. Target zones are shown in Figure 4.

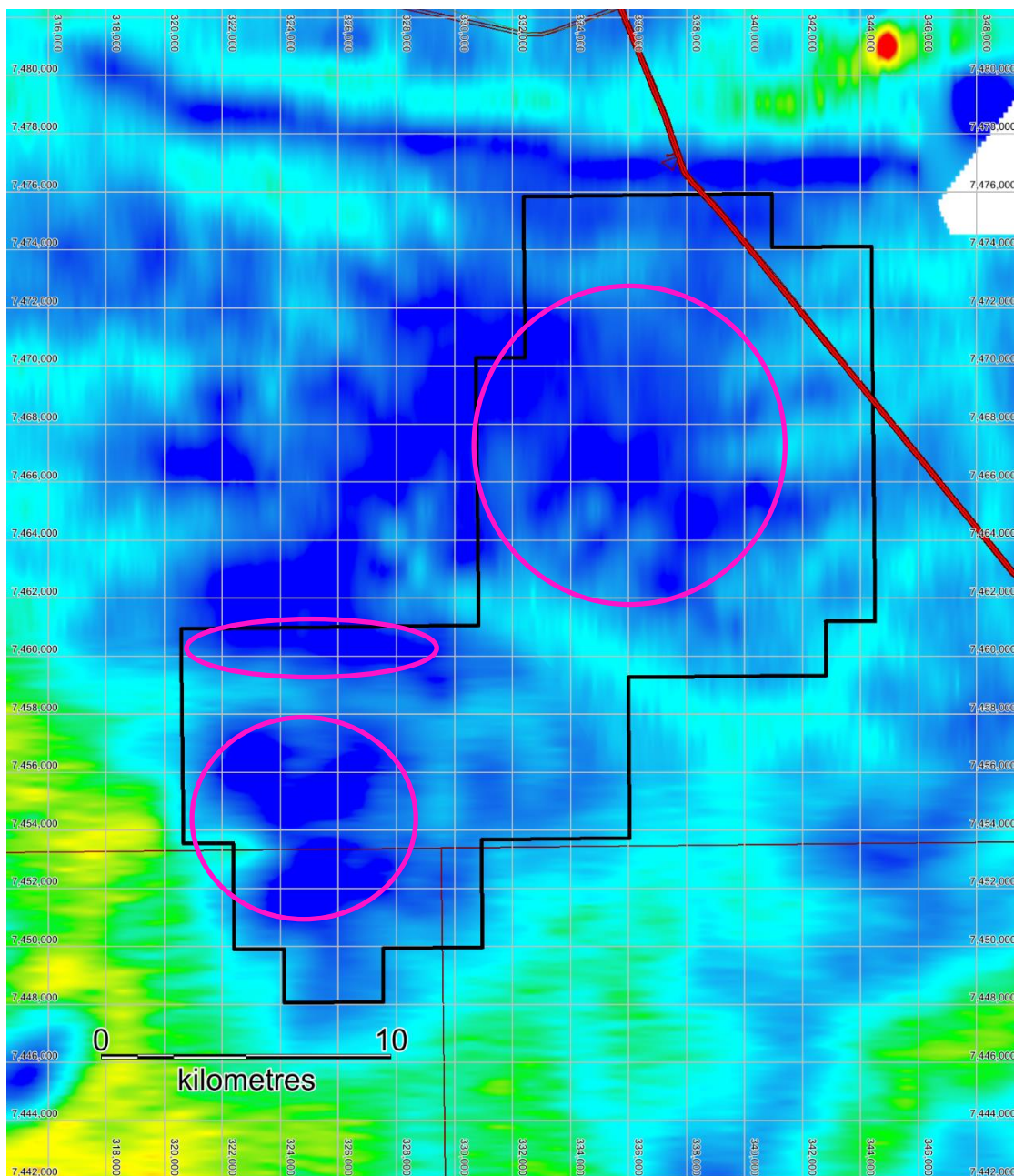


Figure 4 – Airborne Electromagnetic Map

Other commodities will be evaluated if found.

8. Previous Exploration

The project area has been actively explored by previous titleholders, in search of various commodities.

Years	Tenement(s)	Exploration Company	Exploration Targets/ Commodities
1972	AP3382	CRA Exploration	Uranium
1972	EL441	CRA Exploration	Uranium
1973	AP3447	CRA Exploration	Uranium
1973	EL753	CRA Exploration	Uranium
1989	EL5557	Rage Resources	Gold
2003	EL10252	Gutnick Resources	Gold
2003- 2005	EL22922	Tanami Gold	Base Metals, Gold
2005- 2012	EL24287	Excelsior Gold	Gold, Base Metals, Uranium
2006- 2012	EL24956	Central Australian Phosphate	Uranium, Phosphate
2009- 2012	EL27338	Crossland Nickel	Uranium, REE, Gold, Base Metals
2012- 2014	EL29085	NT Minerals	Base Metals, Ni-Cu, Uranium, Magnetite, REE, Gold
2014	EL30011, EL30524	Western Opals	Gold, Base Metals

A recent explorer of the area was Excelsior Gold (Excelsior). Excelsior acquired Exploration Licence 24287 over the area to explore for gold, base metals and uranium. Regional airborne electromagnetic (AEM) surveys by NuPower during 2007 and 2008 have successfully identified extensive Cainozoic palaeochannel systems and fault-controlled trough systems with thick sequences of unconsolidated sediments correlated with the Hale and Waite Formations. (Hamlyn, 2012) Excelsior was able to define numerous uranium targets within EL24287, however a series of less than successful tenement agreements with third parties has resulted in the targets remaining untested and the surrender of the licence.

NuPower Resources Ltd (NuPower) held EL24956 over the area to explore for uranium. NuPower carried out an airborne electromagnetic (AEM) survey in 2007, which showed that the Tertiary palaeodrainage beneath Burt Plain is far more extensive and better developed than previously thought and forms part of an extensive regional palaeodrainage system, bounded by basement highs of the Hann Range to the north, the Strangways Ranges to the

east and the MacDonnell Ranges to the south. (Davey, 2012) EL24956 was relinquished, as NuPower decided to focus on phosphate exploration and did not have the funds to further explore the area for uranium.

Another previous titleholder of the area was Crossland Nickel Pty Ltd (Crossland) for EL27338. Crossland's commodities of interest were uranium, REE, gold and base metals. In addition to desk top studies, Crossland conducted geological mapping, field reconnaissance, an airborne EM survey and the collection of 20 stream sediment samples. Due to economic factors Crossland was forced to re-evaluate its position on EL 27338 and elected to forgo any on-ground exploration within the final years of the licence. (Buskas, 2014)

9. Exploration During Reporting Period

During the reporting period, three field trips to the licence were conducted to carry out groundwater monitoring, as part of the regional baseline studies for the Nolans Bore Project Environmental Impact Statement (EIS). This data is provided in the Nolans project EIS Supplement Report, which has been submitted to the Environmental Protection Authority (EPA) for consideration and will be provided to NTGS once it is publicly available.

Preliminary geological and geophysical assessments in relation to the Nolans Bore Project EIS groundwater investigations were also conducted. The groundwater investigations to support the development of the Nolans project have demonstrated that the licence has a substantial amount of near surface shallowly covered resistive basement rocks. Arafura's modelling indicates these are within explorable depths.

10. Conclusions and Recommendations

During the next reporting period (25 August 2017 to 24 August 2018), Arafura intends to conduct a detailed airborne geophysical survey, to assist with REE target generation and the ongoing exploration of this tenement.

Future programs will also include initial reconnaissance and detailed aeromagnetic survey and geological analysis to identify Nolans Bore-like targets. Satellite imagery also indicates unmapped basement outcrops, which is considered a greenfield area and worthy of further investigation.

11. References

Davey, G. Aileron Project EL24956 Burt Plain Final Report and Annual Report For Period Ending 6th September 2012. NuPower Resources Ltd. 2012

Buskas, M. EL27338 Aileron Project Final Report 24 December 2009 to 8 January 2014. Crossland Nickel Pty Ltd. 2014

Hamlyn, D. EL 24287 Native Gap Combined 2012 Annual Report and Final Technical Report. Excelsior Gold Limited. 2012

