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Report ARU-15/001

PARTIAL RELINQUISHMENT REPORT FOR YEAR ENDING 2nd JANUARY 2015, EL29509 (RYAN), NORTHERN TERRITORY, AUSTRALIA

By

Rodney A Dean BSc (Hons), GAIG

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Reporting Details

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Operator (if different from above)	as above
Titles/tenements	EL29509
Tenement Manager	as above
Mine/Project Name	Ryan
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Contact details	Rodney Dean rdean@arultd.com

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SUMMARY

This report documents exploration activities up to 1st of January 2015 for the recently relinquished area of Exploration Licence 29509 (Ryan tenement). The exploration licence was granted to Arafura Resources Limited (Arafura) on the 2nd of January 2013 for a period of six years. The licence area was acquired by Arafura to explore for Rare Earth Element (REE) mineralisation to compliment Arafura's nearby Nolans Bore REE deposit. It is one of six exploration licences surrounding the Nolans Bore deposit which make up Arafura's Aileron-Reynolds project. Although basement rocks within the licence are generally obscured by Cenozoic sediments of varied thickness; the tenement is deemed highly prospective for Nolans-style mineralisation due to its proximity to the deposit and favourable interpreted lithostructural characteristic.

The Ryan tenement is located in the Aileron Province of the Arunta Region. Its northern boundary is flanked by the Reynolds Range which is comprised of a sequence of Paleoproterozoic metasedimentary and metaigneous rocks. The majority of its southern margin borders the Neoproterozoic sedimentary rocks of the Ngalia Basin which are exposed as the subdued east-west trending Hann Range. The northern extent of the Hann Range is the thrust-faulted boundary between the Aileron Province and the Ngalia Basin. Between the two mountain ranges exists Cenozoic sedimentary basins comprised of alluvial, weakly consolidated, silty and gravelly sands and clays and surficial aeolian sands.

Work associated with EL29509 began with the acquisition of a 2.5m resolution satellite imagery over the Aileron-Reynolds project area in 2012. The imagery was used to aid reconnaissance and mapping of the region and for the subsequent groundwater exploration drilling program in the Cenozoic basins to the south of the Reynolds Range. Stage 1 drilling began in December 2012 and three bores were drilled on the relinquished area of the Ryan tenement.

Work in 2013 included a low level airborne geophysical survey which covered over half of the relinquished area of the Ryan tenement. The survey was flown at 100m spacing and the data was subsequently merged with previous Arafura-acquired data sets and open file regional data. The merged data obtained was used to model depth to magnetic basement under the Cenozoic basins (Southern Basins) of the groundwater exploration program area. The results of this modelling were not consistent with known basement depths from drill holes and no further work was undertaken.

The merged geophysical data was also used to create a lithostructural map of the Aileron-Reynolds project area and to generate REE and base metal targets, particularly those under Cenozoic cover as is the case in the relinquished area of EL29509. The magnetic data was also used for 3D inversion modelling to generate targets with Nolans-style geophysical signatures. The interpretation of the geophysics undertaken in 2013 did not identify any REE targets within the area of relinquishment of EL29509; however a low priority base metal target was identified. The target was deemed to be of low priority partly due to the depth of Cenozoic cover in the area and it was not considered further.

The disappointing results from the depth to magnetic basement modelling initiated a review of open file AEM surveys over the Southern Basins project area in an attempt to model the depth of the Cenozoic cover and hence potential groundwater storage. Arafura commissioned the reprocessing and merging of these surveys and the creation of conductivity and depth to basement maps which were used to identify a series of palaeochannels with potential for significant groundwater resources. Over the relinquished area of EL29503 a deep zone of Cenozoic sediments was identified and this location subsequently became the site for a groundwater exploration bore in Stage 2 drilling of the Southern Basins which commenced in 2014. Stage 2 drilling was followed by pump testing of all bores in the Southern Basins Project.

After two years of tenure EL29509 was reduced in size by half. The relinquished area comprises the southernmost half of the tenement and is regarded as being the least prospective for REE mineralisation.

INTRODUCTION

Background

Arafura Resources Limited (Arafura) acquired EL29509 (Ryan tenement) to explore for rare earth element (REE) mineralisation to complement its nearby Nolans Bore project [total resource 47Mt @ 2.6% REO, 11% P₂O₅ and 0.41 lb/t U₃O₈ (ASX: ARU 8th June 2012)]. The rationale of exploration is to identify Nolans-style or carbonatite-associated REE mineralisation under shallow Cenozoic cover. Past REE exploration undertaken by Arafura had been focused on identifying mineralisation at surface, primarily using airborne radiometric and hyperspectral data; however it is believed that this approach had been exhausted and exploration became focused on potential shallow mineralisation under cover. Arafura's work on EL29509 was focused on identifying regions with a favourable geophysical signature and generating targets for follow up work.

Historically the region proximal to the Ryan tenement has been explored for gold, uranium, tin, base metals, tungsten, diamonds and REEs; however no mineral occurrences are recorded within the project area. Prior to work undertaken by Arafura on EL29509, the REE potential of the area had not been investigated.

This report outlines the exploration undertaken by Arafura on the Relinquished area of the Ryan tenement over the 2 years of tenure.

Location and access

The Ryan tenement is located approximately 120 kilometres north of Alice Springs along the Stuart Highway (figure 1). The Stuart Highway and the Amadeus Basin - Darwin gas pipeline both pass through the tenement, whilst the Adelaide – Darwin Railway lies approximately 30km to the east.

The tenement is located within the Aileron pastoral lease and the Aileron Station homestead lies approximately 10km to the north of the tenement. Adjacent to the homestead is the Aileron Roadhouse where accommodation and fuel are available.

Access to the tenement is via the Stuart Highway and from there via the network of station roads and tracks. It is also possible for light vehicles to access the tenement via the service road alongside the NT Gas pipeline; however a permit must be obtained from NT Gas before using this road.

Topography and drainage

The Ryan tenement is flanked by the Reynolds Range to the north. The range forms a prominent barrier with mountains attaining heights over 400m above the flat-lying land of the tenement. Mount Freeling, which can be seen from the project area, has a height of 1006m above sea level. To the south the project area is flanked by the hills of the Hann Range, a more subdued east-west trending range which attains a height of approximately 100m above the surrounding flat-lying country.

The greater majority of the project area is underlain by Cenozoic sediments of varying thickness. The project area is mostly devoid of drainage, except for minor tributaries of Allungra Creek in the southeast corner of the tenement. The western part of the tenement is dominated by very minor drainages and regions of sheet flow which drain the Reynolds Range to the north.

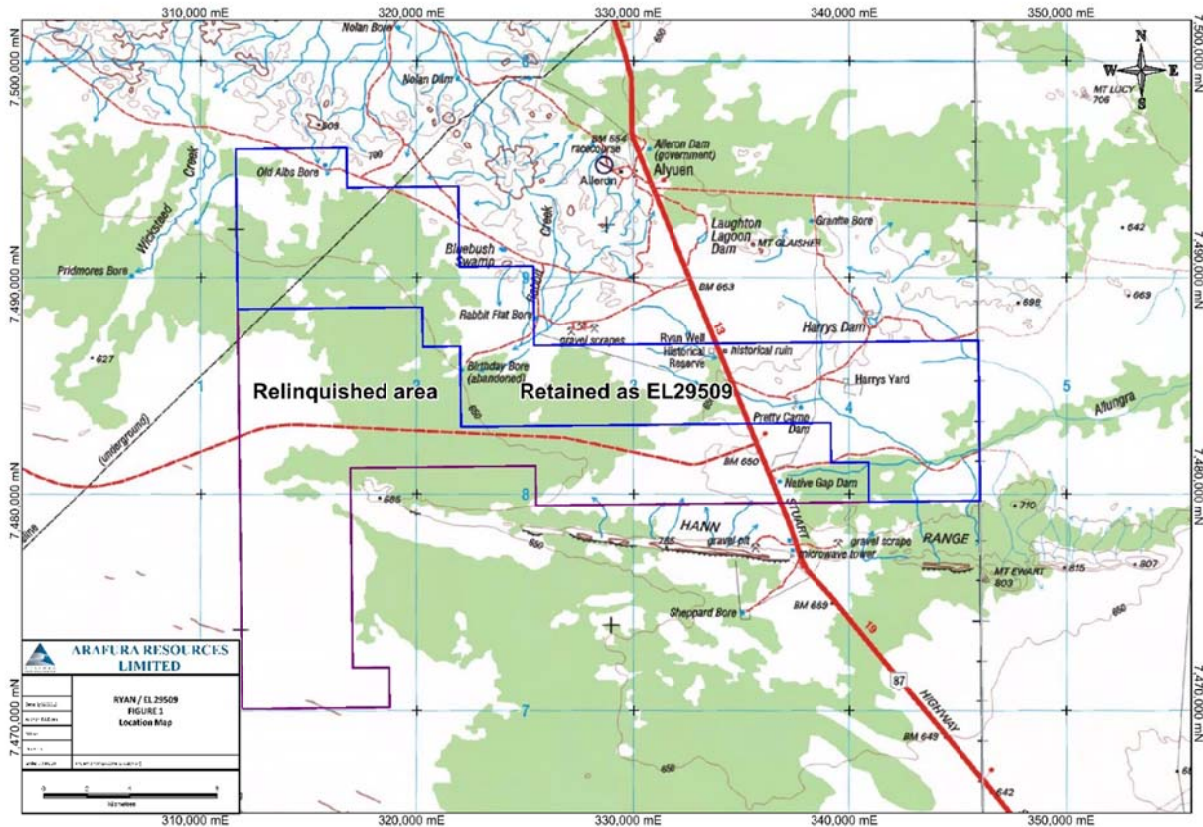


Figure 1. Location of EL29509 (Ryan) and topography.

Climate and Vegetation

The region has a semi-arid continental climate, characterised by long hot summers when temperatures regularly exceed 40°C, and short mild winters. Average annual rainfall for the Aileron region taken from the Territory Grape Farm Bureau of Meteorology weather station is 305.4mm, most of which falls in the November to February period. Average minimum and maximum temperatures in summer are 21.7°C and 37.6°C while the corresponding winter average temperatures are 4.9°C and 22.3°C.

Vegetation throughout the license is dominated by large swaths of thick mulga stands. Elsewhere, particularly in the south of the relinquished area the vegetation is dominated by spinifex with interspersed shrubbery.

TENURE

Mining/Mineral Rights

Exploration Licence 29509 (Ryan) was granted 100% to Arafura Resources Limited (ACN 080 993 455) as 122 sub-blocks on the 2nd January 2013 for a period of six years. After 2 years of tenure a reduction by half of the exploration licence was undertaken and this report covers the two years of tenure over the relinquished area of EL29509.

Land Tenure

EL29509 lies within the area of Aileron Pastoral Lease (PPL 1097)

- Aileron Station, PPL 1097 - NT parcel 00703 is owned by Mr Garry Dann of Aileron Station (Waite River Holdings Pty Ltd), (phone 08 8956 9705, fax 08 8956 8535).

Native Title & Site Clearances

An application for a determination on a Native Title Claim which covers most of the Aileron Station coincides with the Ryan tenement. An inspection of the Aboriginal Areas Protection Authority (AAPA) Register of Sacred Sites was undertaken before ground work was commenced. Identified sacred sites were avoided during subsequent exploration.

GEOLOGY

Regional Geology

The Ryan tenement is located in the Arunta Region, a complex basement inlier which has undergone a prolonged history of sedimentation, magmatism and tectonism extending from the Palaeoproterozoic to the Palaeozoic (Shaw et al., 1984). The Arunta Region covers more than 200 000 km² of the southern Northern Territory and can be subdivided into three, largely fault bounded geological provinces; the Aileron, Warumpi and Irindina Provinces. The Arunta Region is unconformably overlain by unmetamorphosed sedimentary rocks of the Neoproterozoic to mid-Palaeozoic Amadeus, Georgina, Ngalia and Wiso Basins (Walters et al., 1995). The Ryan Project area is predominantly located within the Aileron Province of the Arunta Region (figure 2); however a small portion of the area is underlain by the Ngalia Basin.



Figure 2. Map of the Arunta and surrounding regions, their provinces, and the Neoproterozoic to mid-Palaeozoic sedimentary basins. Adapted from Claoué-Long et al, (2008).

The Aileron Province predominantly comprises Palaeoproterozoic greenschist to granulite facies metamorphosed sedimentary and igneous rocks. The oldest observed rocks within the province, the Lander Package, which the Aileron and Weldon Metamorphics are now considered to be contemporaneous with, are a widespread sequence of clastic sediments, now at various metamorphic grades (Pietsch, 2001). This meta-sedimentary sequence is affected by numerous tectonic and thermal events. The earliest of these is the ca.1810-1800 Ma Stafford Event. During this event bimodal magmatism intruded and metamorphosed the pre-existing sedimentary sequence (Claoué-Long et al., 2008). These intrusions during the Stafford Event impose a minimum age on the Lander Package and earlier tectonism. Bimodal magmatism of the ca.1790-1770 Ma Yambah Event is believed to be responsible for pervasive low-grade fabrics across much

of the province (Scrimgeour, 2003).

The observed top of the Lander Package is a regional angular unconformity. Above this unconformity lies the Reynolds Package which is a shallow marine and intertidal succession of psammites and pelites with minor calc-silicate rock (Scrimgeour, 2003). Metamorphic grade of the Reynolds Package in the Reynolds Range varies from greenschist facies in the northwest to granulite facies in the south-east. The high grade metamorphism in the southeast is related to the ca. 1600-1570Ma Chewings Orogeny. Elsewhere throughout the Aileron Province metamorphic effects from the ca.1740-1690 Ma Strangways Orogeny are observed within the Reynolds Package.

Unconformably overlying the rocks of the Aileron Province in the vicinity of the Ryan tenement is the sedimentary sequence of the Ngalia Basin. This package of rocks was deposited between the Neoproterozoic to the late Carboniferous (Wells & Moss, 1983). Ngalia Basin sedimentary rocks form the east west trending hills of the Hann Range to the south of the tenement and are interpreted to exist under Cenozoic cover in the west of the area and to a very minor extent in the east. The Ngalia sequence is composed of sandstone, siltstone, quartzite, conglomerate and minor clay (Stewart, 1982). The boundary between the Ngalia Basin and the Aileron Province in the vicinity of the tenement is a south direct shallow thrust fault, much of which is under cover.

The Arunta region was subjected to a long-lived event from 450-300 Ma. The Alice Springs Orogeny is expressed in the Aileron Province as west-north-west trending greenschist to upper amphibolite shear zones. Large scale fluid flow during the Alice Springs Orogeny was responsible for Winnecke-style gold mineralisation and pegmatite associated REE mineralisation (Scrimgeour, 2003).

To the south of the Reynolds Range an extensive area of Quaternary red soils, alluvial sands and gravels and aeolian sand along with Quaternary calcrete blanket the low lying areas including most of the Ryan tenement. This unconsolidated transported cover conceals Cenozoic sediments which form part an extensive basin and range province covering much of the southern part of the Northern Territory. Groundwater drilling by Arafura and mineral exploration drilling by Nu Power Resources into these basins has defined a Cenozoic succession that can be subdivided into three recognisable units (Hussey, 2014). Tertiary Unit 3 (T3) is the basal unit and varies considerably from massive, well-developed greasy reduced to black (carbonaceous) clays through to clayey and clean, angular sands and gravels. Sands within this unit are composed almost entirely of quartz and kaolinite. Tertiary Unit 2 (T2) varies considerably from massive, well-developed, greasy, occasionally micaceous, kaolinitic clays through kaolinitic to clean, angular sands and gravels containing prominent kaolinite chips and fragments. Tertiary Unit 1 (T1) is an alluvial fan deposit and is characteristically oxidised and feldspathic and is largely derived from the stripping of weathered regolith of the Reynolds and Anmatjira Ranges. These units have not been formally recognised.

The regional geology of the surrounding project area is illustrated in Figure 3. Geological details are drawn from digital copies of the Napperby (SF 53-9) and Alcoota (SF 53-10) 1:250,000 Geological Series published by the Bureau of Mineral Resources, BMR (now Geoscience Australia). Lithological units and labelling is derived from the published maps and the reader is referred to the published map legends and explanatory notes for additional details.

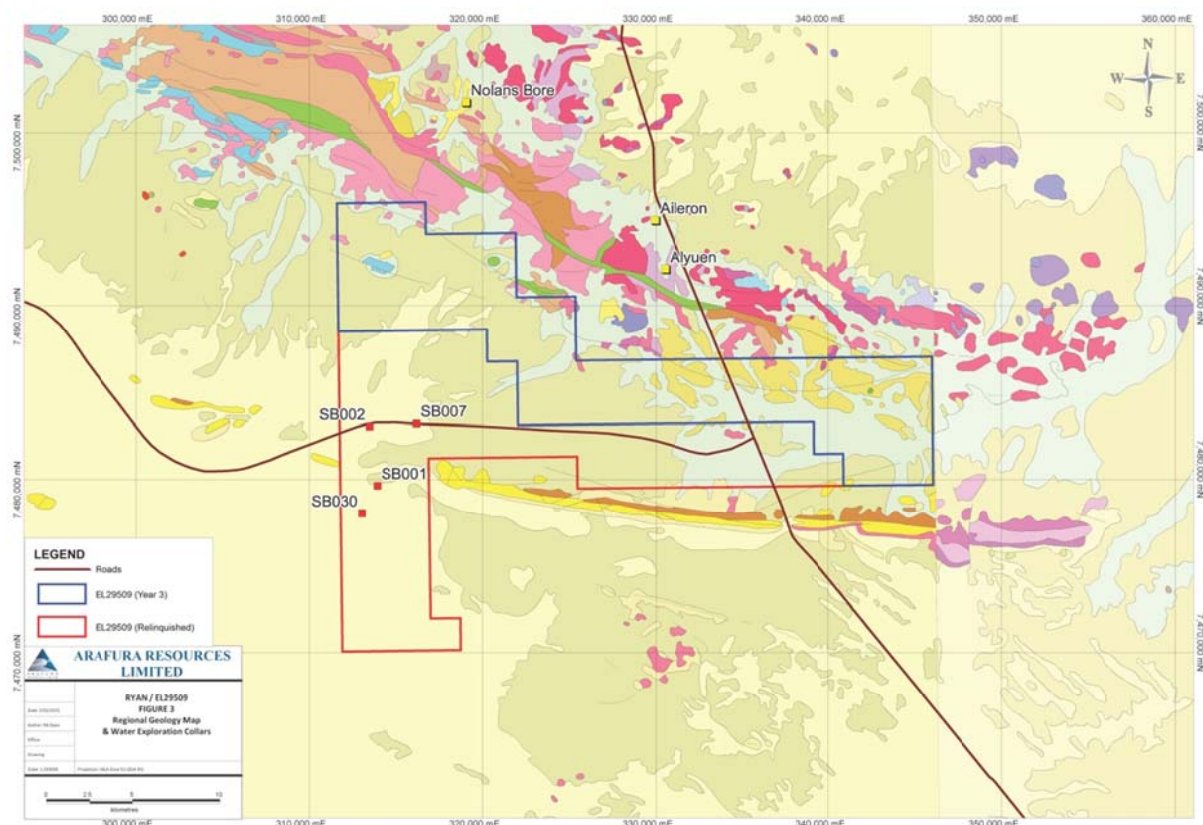


Figure 3. Ryan project area regional geology. Notice almost the entire relinquished area is underlain by Quaternary sediments. Water exploration drill collars are also shown on the map.

Local Geology

The oldest unit within EL29509 is the quartz-rich metasediment and cordierite gneiss which occurs as very minor outcrop in the east of the tenement. It was assigned to the Aileron Metamorphics of Division One by Stewart (1982), but is now considered to be contemporaneous with parts of the Lander Package. In the north of EL29509 area there is very minor outcrop of Mount Freeling Schist (Lander Package). This unit comprises schist, gneiss and quartz-rich metasediment. Minor outcrop of Wickstead Creek beds, which comprise calc-silicate rock, marble, gneiss and schist, occurs in the northwest of the project area and is considered by Stewart (1982) to be contemporaneous with the Mount Freeling Schist. Both of these units were intruded by the Napperby gneiss and other undifferentiated granites of the Napperby Suite.

Unconformably overlying the Paleoproterozoic rocks of the Aileron province within the Ryan tenement there is a narrow wedge of Neoproterozoic sedimentary rocks of the Ngalia basin. Only a very minor amount of the Vaughn Springs Quartzite, a thickly bedded and in places ferruginous unit, outcrops in the east of the project area; however it is interpreted to underlie Cenozoic sediments in the west of the project area, along with the white sandstone and siltstone of the Truer Member (Stewart, 1982).

The greater majority of the Ryan tenement area is dominated by a thin veneer of Quaternary aeolian sand, red earth, alluvium and minor calcrete. Underlying these Quaternary units, the Cenozoic sequence, known only from drilling, is comprised of oxidised, weakly consolidated and poorly sorted sands, silts and gravels of T1, kaolinitic sandstone and clay of T2 and the clean to kaolinitic coarse sands and gravel of T3. Basement was only intersected in one hole, SB007, and was identified as a highly weathered granitic unit at a depth of 105m.

PREVIOUS INVESTIGATIONS

Taken from Hussey & Dean (2014) and refers to all previous exploration over greater Aileron-Reynolds Project area of which EL29509 comprises a part of.

Records of systematic exploration in the Reynolds Range date back as early as 1948 (Thevisen 1995) but most investigations date from about 1965 (Stewart 1982). Base metals, tin and tungsten were mainly targeted prior to 1973 when uranium exploration gathered momentum. This commodity dominated the exploration in the area for the next 15 years, both in the metamorphic and granitic rocks of Reynolds Range and also in the sandstones of the Ngalia Basin to the south. After 1990, with the advent of the BLEG geochemical technique more attention was directed towards gold exploration though some uranium exploration activity still persisted.

In 1979, minor phosphate in apatite-mica schist was reported from Quartz Hill, 17 kilometres northwest of Napperby Station towards the western end of the adjacent Yalirimbi Range; and REEs (+20% REE) were reported from a small lens (2x0.5 metres) of garnet-monazite rock in biotite gneiss at Mt Finniss, 6 kilometres north of Pine Hill Station (Stewart 1982).

The historic exploration activities have been reviewed for the Aileron-Reynolds project area and are summarised in Table 1 and briefly described further below.

Table 1: Summary of historic exploration

Years	Tenement	Exploration Company	Exploration Targets/Commodities	NT Department of Mines & Energy Open File Company Report(s)
1971	AP 2617	CRA Exploration Pty Ltd	Base Metals & Uranium	CR1971-0134
1971-1973	AP 3447	CRA Exploration Pty Ltd	Uranium	CR1973-0031
1973	EL 753	CRA Exploration Pty Ltd	Uranium	CR1973-0121
1973-1974	EL 256	Central Pacific Minerals NL	Uranium	CR1973-0137 CR1974-0035 CR1974-0080
1978	EL 1384	Central Pacific Minerals NL	Base Metals, Tin-Tungsten & Uranium	CR1978-0009 CR1978-0099
1982-1983	EL 2942	BHP Ltd	Diamonds	CR1983-0015 CR1983-0289
1989-1990	EL 5511	Colchis Mining Pty Ltd	Gold & Base Metals	CR1989-0020 CR1990-0366

1989	EL 5289	MacMahon Construction Pty Ltd	Gold	CR1989-0055
1989	EL 5557	Range Resources Ltd	Gold & Base Metals	CR1989-0356
1989	EL 5901	Tracks Minerals Pty Ltd	Gold & Base Metals	CR1989-0704
1992-1993	EL 7344	Poseidon Gold Ltd	Gold & Base Metals	CR1992-0238 CR1993-0410
1994	EL 8117	Tidegate Pty Ltd	Gold, Platinum & Base Metals	CR1994-0589
1995-1996	EL 8411	PNC Exploration Pty Ltd	Uranium	CR1995-0266 CR1996-0187
1998-2002	EL 9672	Homestake Gold of Australia Pty Ltd	Gold	CR1997-0791 CR1998-0817 CR1999-0031 CR2002-0350
2003-2204	EL 10251 EL 10252	Gutnick Resources NL	Gold & Base Metals	CR2003-0061 CR2003-0351 CR2004-0166
2006	EL 24287	Imperial Granite & Minerals Pty Ltd	Base Metals, Gold & Uranium	CR2006-0016 CR2007-0190
2008	EL 24287	Atom Energy Ltd	Uranium & Base Metals	CR2008-0064
2008-2010	EL 24287	NuPower Resources Ltd	Uranium	CR2009-0112 CR2009-0351 CR2010-0138
2011-2012	EL 24287	Excelsior Gold Ltd	Gold, Base Metals & Uranium	CR2011-0106 CR2012-0308
2011-2013	EL 28111	Greywolf Resources Ltd	Gold	CR2011-1043 CR2013-0373
2004-2011	EL 23571	Arafura Resources Ltd	REEs	CR2009-1113

CRA Exploration Pty Ltd

AP 2617 ran the entire length of the Reynolds Range and CRA Exploration was exploring the region for base metals and uranium (Tham 1971). Operations included field reconnaissance and investigation of geophysical anomalies, a helicopter-borne drainage geochemistry survey for base metal mineralisation, bore water investigation for uranium and the drilling of 10 shallow auger holes to test for uranium mineralisation in areas covered by consolidated sand. Two stream sediment samples were collected. No mineralisation of economic significance was identified in these or any samples and AP 2617 was surrendered.

AP 3447 (which later became EL 753) intersects the very southern portion of the project area. The authority to prospect was acquired to explore the region for sedimentary hosted uranium mineralisation after secondary mineralisation was discovered to the west of AP 3447 (O'Sullivan 1972; Hughes 1973). Exploration was confined to a single airborne radiometric traverse over the Mount Harris outcrop in the west of AP 3447 and rock chip sampling of outcropping Proterozoic granitic rocks on EL 753 near Sheppard Bore (Hughes 1973). Quartz-haematite+/-pyrite veins were identified, however, the anomalous radioactivity is associated with the granitic gneiss, and not the veins. The reported U and Th contents are typically of granitic rocks in the area. The rock chip assays indicated uranium concentrations below the level of economic interest, and geological mapping failed to identify favourable host sedimentary formations. This led to EL 753 being surrendered.

Central Pacific Minerals NL

EL 256 of Central Pacific Minerals intersects the western portion of the project area. It was acquired in 1972 to explore the region for sedimentary uranium mineralisation in the Ngalia Basin (Anon 1973, 1974a, 1974b). Exploration work included geological reconnaissance, an airborne radiometric survey and a vehicle-borne radiometric survey. Investigations failed to identify significant exploration targets and the ground was surrendered.

EL 1384 was acquired to explore the region for carbonate hosted base metal mineralisation, tin-tungsten skarns, and uranium vein and skarn mineralisation in the Reynolds Range Group (Green 1977, 1978b). Field work included a stream sediment survey, rock chip sampling and minor ground radiometrics. The results were disappointing and the ground was surrendered.

EL 1658 intersects the western part of the project area and was acquired to explore the Cainozoic basin sediments of the Ngalia Basin for secondary uranium mineralisation (Green 1978a). Exploration activities included an airborne and vehicle-borne radiometric survey and geological mapping. No anomalous radioactivity or favourable geological units, principally the Mount Eclipse Sandstone, were identified within the tenement and the ground was relinquished.

BHP Ltd

BHP explored the region covered by EL 2942 for diamonds. Work included a helicopter-borne heavy mineral concentrate stream sediment survey for assay and kimberlitic indicator mineral assessment (Anon 1982, 1983). BHP surrendered the tenement after no kimberlitic indicator minerals or anomalous assays were identified.

Colchis Mining Corporation Pty Ltd

Colchis Mining was explored EL 5511 for gold and base metal mineralisation based on similarities of the

geological setting of the Arunta Region to the Granites-Tanami and Tennant Creek regions (Jockel 1988; Wilkinson, 1990). Exploration comprised ground reconnaissance and mapping, a rock-chip and stream sediment survey and structural interpretation of Landsat imagery. Stream sediment samples were collected but did not show elevated gold or base metal values were found. The tenement was subsequently surrendered.

MacMahon Construction Pty Ltd

EL 5289 of MacMahon Construction was acquired to explore for gold in the area around the historic Aileron Reefs, a small working which produced negligible gold in the 1930's. Two rock chip samples obtained from the quartz reefs returned elevated but not anomalous gold values and the tenement was subsequently relinquished (Anon 1989).

Range Resources Ltd

EL 5557 of Range Resources is coincident with the Hann Range. It was acquired to search the region for gold and base metals targeting hematitic quartz reefs, however no work was undertaken on ground and the tenement was surrendered (Marshall 1989).

Track Minerals Ltd

EL 5901 of Track Minerals was acquired to test the region for gold and base metal mineralisation in magnetite-rich units of the Aileron Metamorphics (Dashlouty 1989). Exploration included a stream sediment and rock chip survey. No assays from EL 5901 returned elevated values for gold or base metals and the tenement was subsequently surrendered.

Poseidon Gold Ltd

EL 7345 of Poseidon Gold intersects all but the very western tip of the Conical Hill tenement and a small portion in the northwest of the Ryan tenement. Poseidon Gold was targeting structurally controlled base metals and gold mineralisation (Price 1992, 1993). On ground work included a regional stream sediment and rock chip sampling survey; however none were collected within the Ryan-Conical Hill Project area. No samples highlighted targets which required follow-up and hence the ground was surrendered.

Tidegate Pty Ltd

EL 8117 was acquired to investigate the possibility of gold, platinum and base metal mineralisation associated with metamorphosed ultramafic rocks at the Native Gap Ni-Cr prospect and the "Harry's Yard" amphibolite and the Aileron gold reefs (Fraser 1994).

The Native Gap Ni-Cr prospect is located about 2.5km east of the Stuart Highway, approximately 20km south of Aileron. The prospect was discovered in the 1960's and further explored by NTGS geologist Jim Morlock in 1973. Assays of rock chip samples collected by Morlock showed highly anomalous Ni and Cr values in a circular body of amphibolite (500m diameter) intruded by pegmatite (no gold assaying was done). Interpretation of AGSO (BMR) regional airborne magnetic data speculates that the amphibolite is part of a large ultramafic intrusion on the southern side of the Hann Range. Tidegate collected nine loam BLEG samples, nine soil / sediment samples and five rock chip samples from the amphibolites and surrounding contacts. Gold values in BLEG ranged up to 1.05ppb Au with moderately anomalous Ni and Cr values. Tidegate dropped the ground after these disappointing results.

The Harry's Yard amphibolite body was found to be mainly sheared and altered meta-gabbro with possible komatiite "Spinifex" textures, intruded by pegmatite and quartz veins on the perimeter. Nineteen loam BLEG, nineteen soil / sediment samples and three rock chip samples were collected on the intrusion, however, gold

values were considered not to be anomalous and no further work was recommended.

The Aileron shear zone was discovered in 1939 and prospecting was abandoned in 1940 after the recovery of a single ounce from quartz-pyrite veins. Veins form lenticular bodies up to 30m long and 1.5m wide. McMahon Construction Pty Ltd and Lindsay Johannsen in 1990 briefly explored the prospect and sent a small consignment to Tennant Creek for processing (no data for gold grades or recovery). Tidegate collected four grab samples in January, 1994 from quartz vein and sheared granite with fresh sulphides, however, all gold results were below detection (0.008ppm Au) and no significant As, Ag or base metal values were detected (except Co, up to 104ppm). A reconnaissance BLEG loam and drainage survey was carried out along the shear zone westerly from Stuart Highway. Results were below level of interest in reasonably well-exposed country and the land was dropped.

PNC Exploration Pty Ltd

EL 8411 of PNC Exploration intersects the north western part of the project area. PNC Exploration explored the Reynolds Range for various styles of uranium mineralisation including Mary Kathleen-style uranium occurrences hosted by metasomatised calc-silicate gneiss (Thevissen 1994, 1995). Using detailed airborne radiometrics, PNC located the Nolans Bore REE-P-U prospect and explored in some detail, three significant U prospects - at Mt Dunkin, 22 kilometres west-northwest of Nolans Bore; at Napperby Creek, 50 kilometres west-northwest of Nolans Bore; and at Mt Freeling, 15 kilometres west of Nolans Bore (Figure 1). They withdrew from the area in early 1996.

The Nolans Bore fluorapatite-hosted REE-P-U prospect which was deemed by PNC to be too low grade with respect to uranium to be viable is now recognised as a world class REE deposit and is of monumental importance to Arafura Resources.

PNC also sampled a minor occurrence of 'apatite' (reportedly similar to the Nolans Bore apatite) hosted by orthogneiss at their MB05 anomaly, 7 kilometres north of Nolans Bore. The sample assayed 3.9% P, 1.9% Ba, 2.1% La, 4.6% Ce, and 1.8% Nd but only 1.0% Ca which suggests that monazite rather than apatite hosts the REE.

Homestake Gold of Australia Pty Ltd

Homestake Gold, the partner in the joint venture with McCleary Investments on EL 9672, was exploring the region for gold with a secondary interest in base metals (Stewart 1997, Lindsay-Park 1998, Rea 1998). Exploration activities included an extensive regional BLEG stream sediment sample survey with an approximate density of one sample per 10 km². Only one sample returned an anomalous value for gold. A follow-up and infill BLEG stream sediment sampling survey was undertaken the following year but no anomalous gold was detected. Minor rock chip sampling was also undertaken with slightly elevated base metals detected in three samples. These results were very disappointing to Homestake Gold and the company ended its interest in EL 9672.

Gutnick Resources NL

EL 10251 and EL 10252 intersects the project area. Together they comprised a part of Gutnick Resources Rand project which was targeting gold and base metals mineralisation (Washburn 2003a, 2003b, Bower 2003). Their exploration rationale was based on a new hydrothermal model for mineralisation in the Witwatersrand, and exploring sedimentary basins with similar structural and stratigraphic styles such as the Amadeus and Ngalia Basins. On ground work included a BLEG stream sediment survey and a rock chip survey. Only one sample (a rock chip sample on EL 10251 just to the north of the Conical Hill tenement) was

collected during the field work over both tenements. It returned background assay results, and both EL 10251 and EL 10252 were subsequently surrendered.

Imperial Granite & Minerals Pty Ltd

EL 24287 of Imperial Granite and Minerals intersects the entire Ryan tenement. Imperial Granite and Minerals acquired the ground to explore for base metals, gold and uranium (Benger 2006a, 2006b). A field reconnaissance trip was conducted in 2006 in which two rock chip sample were taken. Neither returned anomalous results for any metals.

Atom Energy Ltd

Atom Energy Ltd purchased EL 24287 from Imperial Granite and Minerals to explore for uranium and base metals (Hackett 2008); however only desktop studies were undertaken.

NuPower Resources Ltd

NuPower Resources entered in a joint venture with Atom Energy Ltd to explore EL 24287 for uranium (Rafferty 2009a, 2009b, 2010). Exploration activities included coverage of EL 24287 as part of a larger regional airborne electromagnetic (AEM) survey to identify palaeochannel systems as potential host rocks for secondary mineralisation and a bore water sampling survey. It also included and a 409 station 2km x 2km infill gravity survey as part of the Geoscience Australia - NTGS Central Arunta Gravity Survey and minor biogeochemical sampling. NuPower Resources withdrew from the farm-in agreement in 2010.

Excelsior Gold Ltd (formally Atom Energy Ltd)

Excelsior Gold retained 100% interest in EL 24287 and following retrieval of all exploration data from NuPower, a review of exploration activities was undertaken (Hamlyn 2011, 2012). The exploration highlighted potential for mineralised channels within the tenement and an application for extension of term of EL 24287 was lodged to enable ongoing assessment of the palaeodrainage system; however no more work was undertaken and the ground was surrendered in 2012.

Greywolf Resources NL

Greywolf Resources was intending to explore the region for gold; however they did not undertake any field work on EL 28111. (Hall 2011, Qian 2013).

Arafura Resources Limited

Arafura Resources exploration efforts in the Aileron-Reynolds project area have principally focussed on Nolans Bore, described separately below. Arafura's non-Nolans Bore exploration activities on EL 23571 and SEL 23671 and EL 29227 have principally focussed on REE exploration. Activities have included some uranium exploration and the acquisition of an extensive HyMap hyperspectral survey with follow up reconnaissance sampling of prospective targets (Hallenstein and Goulevitch 2009, 2010; Hussey 2009, 2010). This led to the discovery of greisens and altered granites with anomalous Sn-W-Bi values but no significant REE. Systematic HMC samples were collected across drainages sources the ranges in the project area. Elevated REE were found in the HMC samples but the amounts in the primary samples were typically low. Follow-up sampling in EL 29227 found monazite and xenotime but these samples were to low grade and

there was not enough volume to be a viable resource (Dean 2013). Arafura also participated in the Geoscience Australia - NTGS Central Arunta Gravity Survey with 2km x 2km infill gravity stations over the project area at that time.

NTGS

Detailed airborne magnetic and radiometric surveys were completed over the Reynolds Range area in 1997 as part of a more extensive survey which included all of the Napperby 1:250 000 Sheet area as well as the northern half of the adjacent Hermannsburg 1:250 000 Sheet to the south. All primary data and gridded data as well as some plotted products from this survey are available free of charge from the Northern Territory Geological Survey (NTGS). The survey over the Reynolds Range was flown at a line spacing of 400 metres and a mean terrain clearance of 60 metres.

A total count radiometric anomaly over the Nolans Bore fluorapatite deposits is clearly evident in the data as is a discrete magnetic low over the western half of the deposit.

INVESTIGATIONS BY ARAFURA RESOURCES

2012

Satellite Imagery

Arafura acquired a 2.5m resolution SPOTMaps satellite image over the greater Aileron-Reynolds project area. This gave 100% coverage over the Ryan tenement area and constituted approximately 12% of the total coverage. This was used to identify areas of recessive outcrop for reconnaissance and to aid in the production of maps for the Southern Basins groundwater exploration project.

Water Drilling

In December 2012 Arafura initiated a groundwater exploration drilling program in the Southern Basins to attempt to establish a long-term sustainable water supply to support the nearby Nolans Project. Three of the RAB holes drilled during this program are within the relinquished section of the EL29509. Details of these holes are outline in table 1 and the collar locations can be seen in figure 3. Three metre samples were collected and the chips for each were logged at the rig. The site data, lithology logs and the relevant excerpts from the final report (Ride, 2013) can be found in appendix 2.

Table 1. Stage 1 groundwater exploration holes drilled by Arafura over the relinquished area of EL29509.

Hole ID	Registration No	MGA94_53E (m)	MGA94_53N (m)	End Depth (m)
SB001	18869	313937	7479620	93.95
SB002	18870	313476	7483037	75.00
SB007	18875	316208	7483218	111.00

2013

Airborne Geophysics

Arafura acquired a multi-tenement low-level detailed airborne magnetic and radiometric survey in 2013. A total of 8,915 line kilometres were acquired via a fixed wing aircraft in January-February 2013 using 100-metres spaced north-south flight lines 30 metres above the land surface. This survey covered all but the southernmost part of EL29509 and approximately 44% of the survey area was flown over EL 29509 (Hussey & Dean, 2014). The specifications and details of the Aileron East survey data are provided in Hussey (2013).

The Aileron East airborne survey was merged with Arafura's Aileron and Sheppard surveys to provide a seamless detailed dataset. These surveys were also merged with the regional NTGS data to gain a more regional view.

A reduced to pole magnetic intensity and a first vertical derivative magnetic intensity map along with a ternary radiometric map of the relinquished area of EL29509 are shown in figure 4, 5 and 6 respectively.

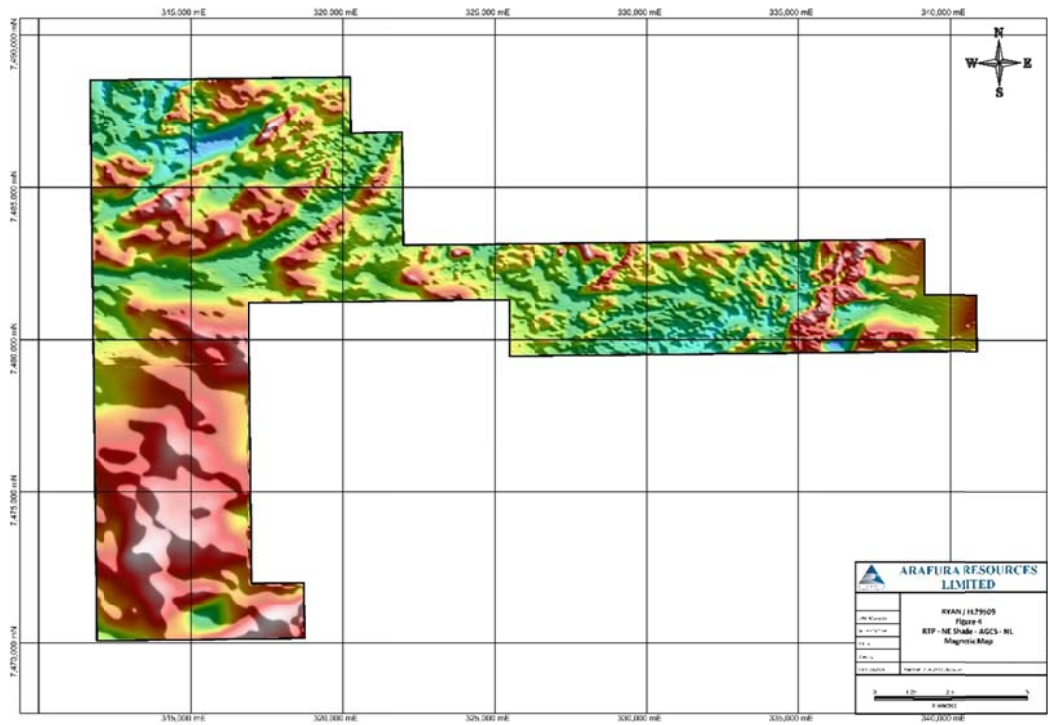


Figure 4. Reduced to pole magnetic intensity map of the relinquished area of EL29509 with a north east shade and a non-linear stretch.

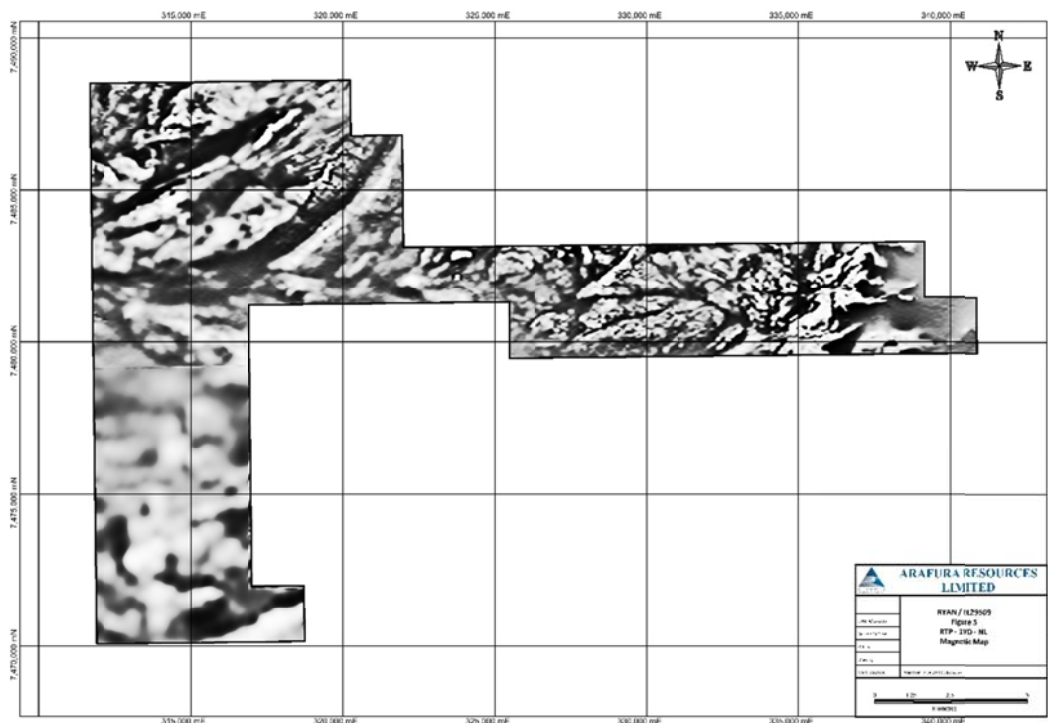


Figure 5. Reduced to pole first vertical derivative magnetic map of the relinquished area of EL29509 with a non-linear stretch.

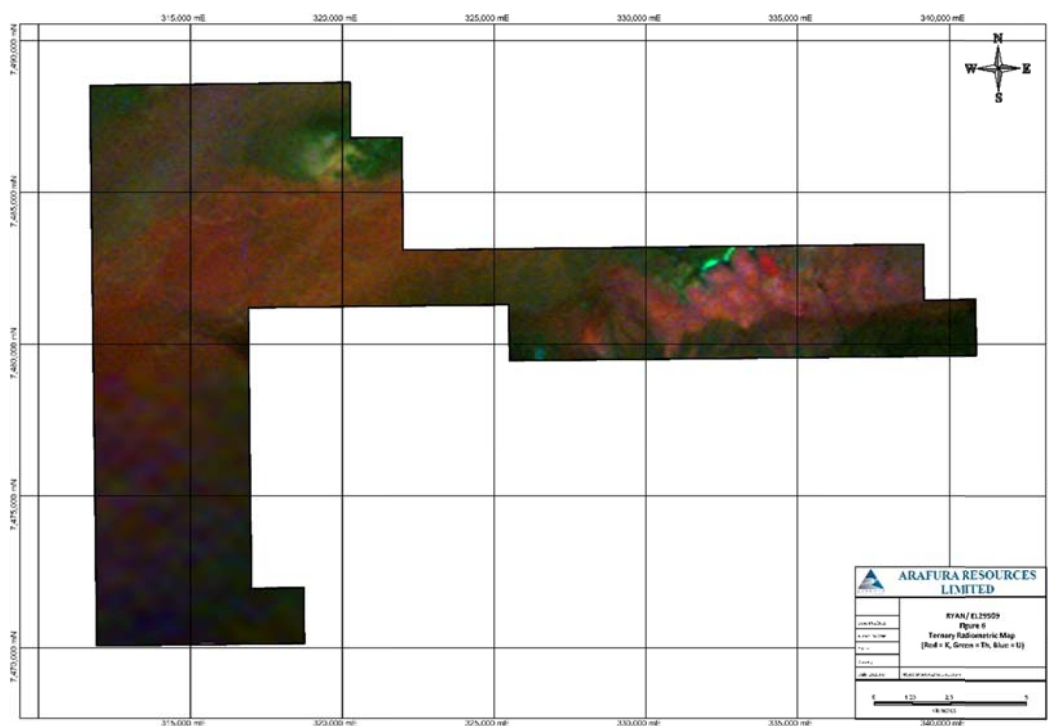


Figure 6. Ternary radiometric map of the relinquished area of EL29509.

Depth to Magnetic Basement Modelling

As part of the groundwater exploration program in the Southern Basins, Arafura commissioned Southern Geoscience Consultants to model depth to crystalline basement using the magnetic features in the detailed and regional airborne magnetic datasets of the Aileron-Reynolds project area. Southern Geoscience Consultants provided a very large number of modelled solutions using a number of different methods. These are presented in Hussey (2013) and the report produced is located in appendix 2. The Euler automatic depth estimation solutions for the relinquished area of EL29509 are shown in figure 7. The results were contrasted with known depth to basement from water and mineral bores drilled in the area and were deemed to be very poor. Hence no further work was done in attempting to define the depth of Cenozoic sediments in the Southern Basins using the magnetic data. The report outlining this work can be found in appendix 3.

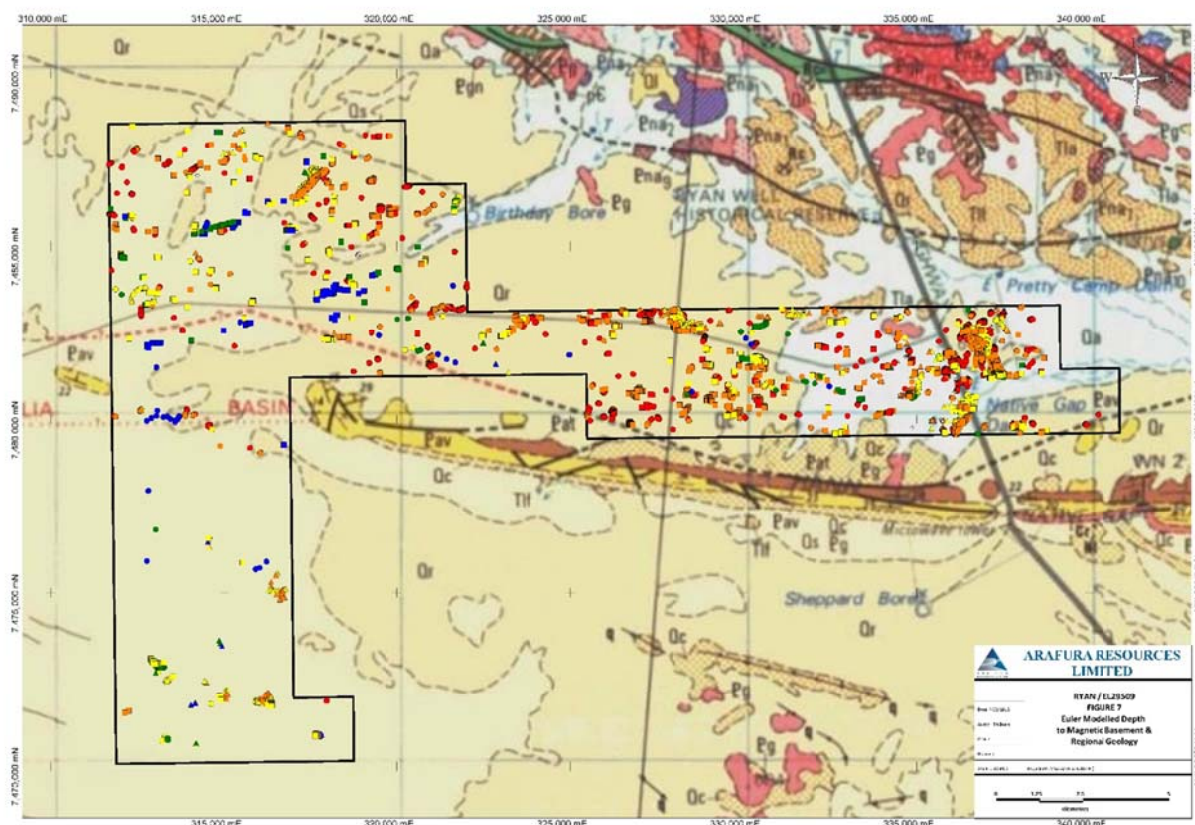


Figure 7. Euler modelled depth to magnetic basement and regional geology. The point data are based on solutions with >95% confidence limits using S10, S11, EQ2. Each method is presented as a circle, square and triangle, respectively (see appendix 2 for details) with modelled depths as follows: red 0-50m; orange 50-100m; yellow 100-200m; green 200-300m; and blue > 300m.

Interpretation of Airborne Magnetic Geophysical Data

Southern Geoscience Consultants were commissioned to undertake an interpretation of the Arafura acquired and regional geophysics covering the Aileron-Reynolds project area. The interpretation was undertaken at 1:50,000 scale and focussed on the mapping of magnetic stratigraphy and structure. The lithostructural map produced for the area of relinquished area is shown in figure 8. REE and base metal targets were generated from the lithostructural map based on interpreted structures, rheology contrasts, magnetic and radiometric response and depth of cover. No REE targets were generated in the relinquished area of EL29509; however one low priority base metal target was identified (figure 8). The base metal target is likely to at a depth of cover greater than 50m and is deemed to be too deep for any follow-up work.

The merged magnetic dataset was then used for Geosoft Voxi 3D inversion modelling in an attempt to highlight regions, primarily under cover, which have a similar magnetic signature to the Nolans Bore deposit. Numerous magnetic susceptibility values were modelled and shells for each were created. No major magnetic susceptibility targets were identified on EL29509; however very minor zones of favourable modelled magnetic susceptibility isosurfaces (plan view projection) can be seen in figure 8.

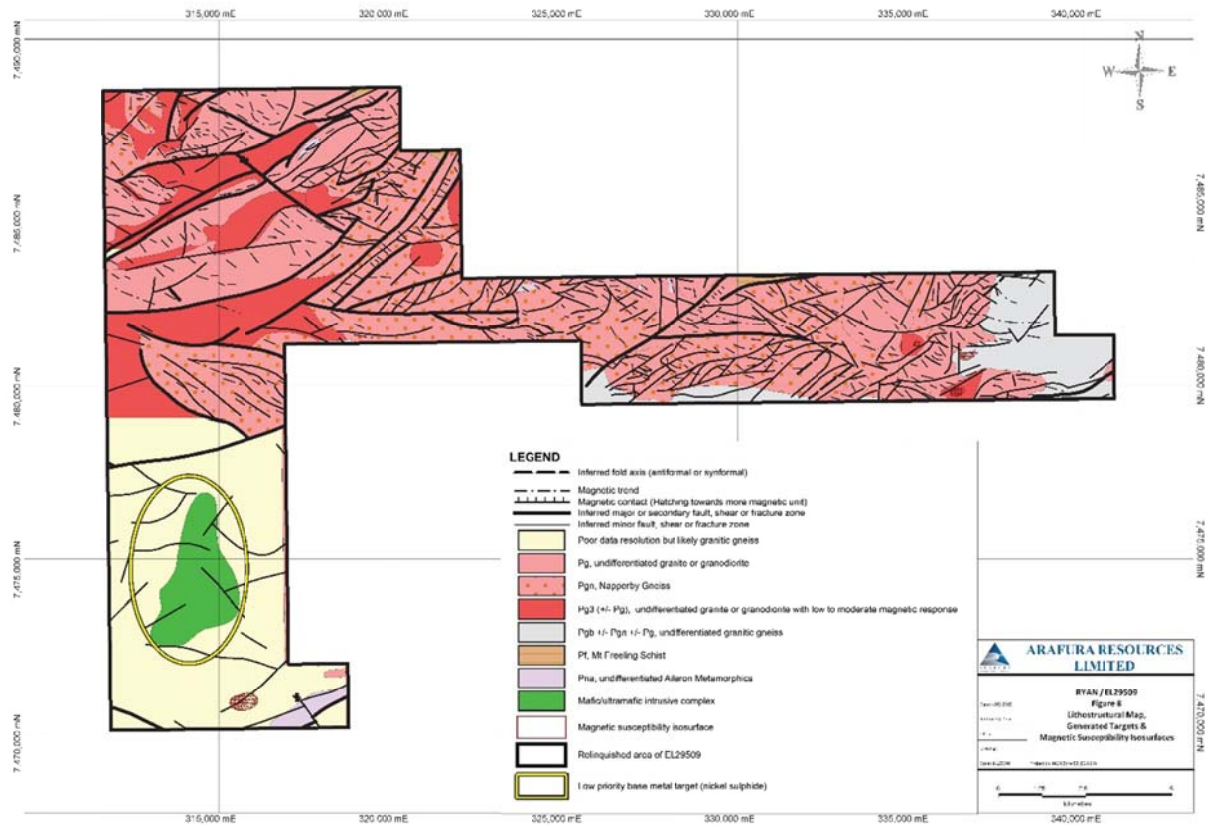


Figure 8. Lithostructural map of the relinquished area of EL29509 displaying generated base metal target & modelled magnetic susceptibility isosurfaces (brown).

AEM Reprocessing

As part of the groundwater exploration program in the Southern Basins, Arafura commissioned Montana GIS to reprocess open file airborne AEM data in the region. Numerous surveys were flown from 2007 to 2011 primarily to assist palaeochannel hosted uranium exploration and these were collated and reprocessed to produce a conductance maps over the Southern Basins area. The produced maps cover the whole of EL29509 and a conductance map over the relinquished part of EL29509 is displayed in figure 9.

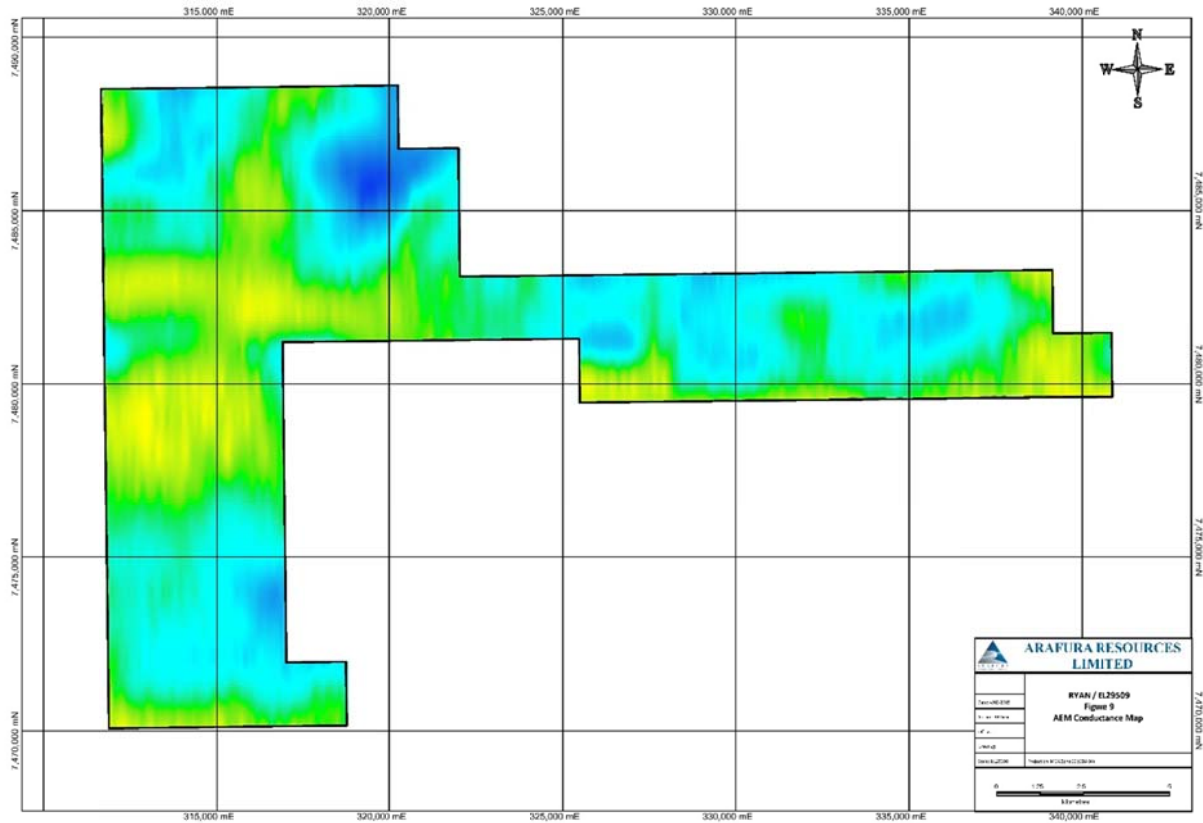


Figure 9. AEM conductance map of top 300m with histogram equalised stretch. Warm colours are areas of high conductance and hence interpreted to be areas of thick saturated Cenozoic sediments. Cool colours represent areas of lower conductance and hence are interpreted as zones of thinner saturated Cenozoic sediments.

2014

Water Drilling & Pump Testing

A second stage of groundwater exploration drilling was commenced in 2014 in the Southern Basins. One of the RAB holes drilled was located within the relinquished area of EL29509. Collar information for this is outlined in table 2 and the collar location can be seen in figure 3. Three metre samples were collected and the chips were subsequently logged. This geological log and other relevant data can be found in Appendix 1.

Table 2. Stage 2 groundwater exploration holes drilled by Arafura over the relinquished area of EL29509.

Hole ID	Registration No	MGA94_53E (m)	MGA94_53N (m)	End Depth (m)
SB030	18713	313039	7478033	125.0

CONCLUSION & RECOMMENDATIONS

Arafura Resources Limited acquired EL29509 (Ryan tenement) on the 2nd January 2013 for a period of six years to explore for REE mineralisation to complement its Nolans Bore REE deposit. After two years of tenure the exploration licence was reduced by half from 122 to 61 sub blocks. Work undertaken over the relinquished area of EL29509 includes the acquisition of 2.5m satellite imagery for use in field mapping and other on ground exploration activities and the acquisition of airborne magnetic and radiometric data which was merged with previously flown surveys over the Aileron-Reynolds project area. This geophysical dataset was used to model depth to magnetic basement for the purpose of defining the thickness of Cenozoic sediments in the Southern Basins during Arafura's groundwater exploration program, interpretation of magnetic and radiometric data to produce a solid geology map including REE and base metal targets and 3D inversion modelling of the greater Aileron-Reynolds project area to generate targets from the magnetic susceptibility isosurface shells. Finally due to the poor quality of the depth to magnetic basement modelling Arafura commissioned the reprocessing of AEM data collected over the Southern Basins region for modelling of Cenozoic basin sediments.

The 61 sub blocks of EL29509 which have been relinquished are deemed to be the least prospective for REE mineralisation due the lack of targets generated along with the estimated depth of cover to basement. The low priority base metal target identified by SGC within the relinquished area of EL29509 it is likely to have relatively thick Cenozoic cover.

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