ABN 22 080 933 455

Report ARU-13/012

SECOND ANNUAL AND FINAL REPORT FOR YEAR ENDING 18th AUGUST 2013
CROWN CREEK PROJECT (EL28547)

By

Rodney Dean BSc(Hons)

Titleholder	Arafura Resources Limited
Operator (if different from above)	as above
Titles/tenements	EL28547
Tenement Manager	as above
Mine/Project Name	Crown Creek
Report Title	Second annual and final report for year ending 18th August 2013
Personal author(s)	Rodney Dean BSc(Hons)
Corporate author(s)	Arafura Resources Limited
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ABSTRACT

Exploration Licence 28547 (Crown Creek Project) was granted to Arafura Resources Limited on the 19th August 2011. The tenement was acquired to test the prospectivity of the region for rare earth element (REE) mineralisation. The region neighbouring and including the Crown Creek project has been historically explored for uranium, tin, tungsten, tantalum, niobium, gold, base metals and diamonds; however few explorers have looked at the potential for REE mineralisation. The geology of the project area is dominated by outcrop or sub-crop of the Wangala Granite and associated pegmatites. This Palaeoproterozoic igneous body has been reported to contain phases enriched in light rare earth elements (LREE) which are contained predominantly in the minerals monazite [(Ce,La,Nd,Th,Y)PO_4] and allanite[$(Ce,Ca,Y,La)_2(Al,Fe^{+3})_3$. It is also suspected that the mineral xenotime [$Y(PO_4)$] could be present within pegmatites and alteration zones within the granite. This mineral is of significant interest as it is a heavy rare earth element (HREE) bearing mineral. The HREEs are currently highly sort after due to their rarity and high commodity value. Exploration on the Crown Creek project area was focused on identifying alluvial concentrations of the dense REE-bearing minerals shed from the Wangala Granite and possible REE–bearing phases within the granite itself. First year investigations on EL28547 were confined to a desktop study of historical data and compilation of a GIS. Second year investigations consisted of a field program which was conducted over eight days and comprised reconnaissance with minor rock chip sampling and a stream sediment sampling survey. This survey included collection of 32 -2mm, 2kg samples and 6 -2mm, 50kg samples, which were collected for heavy mineral concentration. All of the stream sediment samples were assayed for REEs along with a suite of other important elements and three of the heavy mineral concentrates were selected for QEMSCAN (Quantitative Evaluation of Minerals by Scanning Electron Microscopy) to identify the REE-bearing minerals. The assay results from the sampling program indicated the presence of REE-bearing minerals in both the stream sediment and rock chip samples; however not in economic concentrations. Hence, Arafura has surrendered EL28547.

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INTRODUCTION

Background

Arafura Resources Limited (Arafura) acquired EL28547 (Crown Creek Project) to explore for rare earth element (REE) mineralisation to complement its nearby Nolans Bore project [total resource of 47Mt @ 2.6% REO, 11% P_2O_5 and 0.41lb/t U_3O_8 (ASX:ARU 8th June 2012)] The rational of exploration was to delineate heavy rare earth element (HREE) mineralisation which could be processed at the future Nolans Bore mine site. The Nolans Bore deposit is light rare earth element (LREE) enriched and Arafura is looking for a proximal source of additional REEs to feed into the processing stream.

Historically the region within and proximal to the Crown Creek Project has been explored for uranium, tin, tungsten, tantalum and gold however other mineral occurrences such as copper have been reported. Prior to the work undertaken by Arafura, the REE potential of the area had not been significantly investigated. Hussey (2003) had identified the Wangala Granite as being prospective based on minor occurrences of REE-bearing phases. These altered phases were found to be LREE enriched with monazite [$(Ce,La,Nd,Th,Y)PO_4$] and allanite[$(Ce,Ca,Y,La)_2(Al,Fe^{+3})_3$ being the primary REE bearing minerals. However it was postulated by Arafura that HREE bearing phases may be present within the granite and as concentrations of dense minerals within alluvial sediments shed from the granite. The primary HREE-bearing mineral of interest is Xenotime [$Y(PO_4)$] which has varying proportions of the HREEs, Gd, Tb, Dy, Ho, Er, Tm, Yb and Lu substituting into the mineral structure for Yttrium (Y).

This report outlines the exploration undertaken by Arafura on the Crown Creek Project over the two years of tenure and the results which have led to the exploration license being relinquished.

Location and access

The Crown Creek project was located approximately 235kms north-west of Alice Springs in the Northern Territory (figure 1). The project comprised one granted Exploration Licence (EL28547) which covered an area of 225.8km^2 (figure 1). Access to the project area is via the Stuart Highway, north from Alice Springs and the Pine Hill-Mount Denison road west from the Stuart highway. Access within the project area was via current and historical station tracks.

Topography and drainage

The Crown Creek project area is dominated by the Mau Hills in the north and west. These are a subdued range of granite hills with 10 to 20m relief. The remaining area is generally dominated by flat sandy spinifex and sparse shrub plains cut by numerous small streams.

The principal drainage within the project is Crown Creek which drains the Mau hills to the north and west and Ngalurbindi Hills to the south. Crown Creek flows into the Lander River to the north-east of the project area. All drainage in the project area is ephemeral.

Climate

The climate is characterised by long hot summers and short mild winters. Temperatures regularly exceed 40°C in summer with rare frosts in winter. The region is relatively arid with an average annual rainfall of about 280mm, most of which falls between December and March when occasional remnant monsoonal tropical lows and cyclones can pass across the area and deposit hundreds millimetres of rain in a few days. Otherwise the area relies on intermittent summer storm rain.

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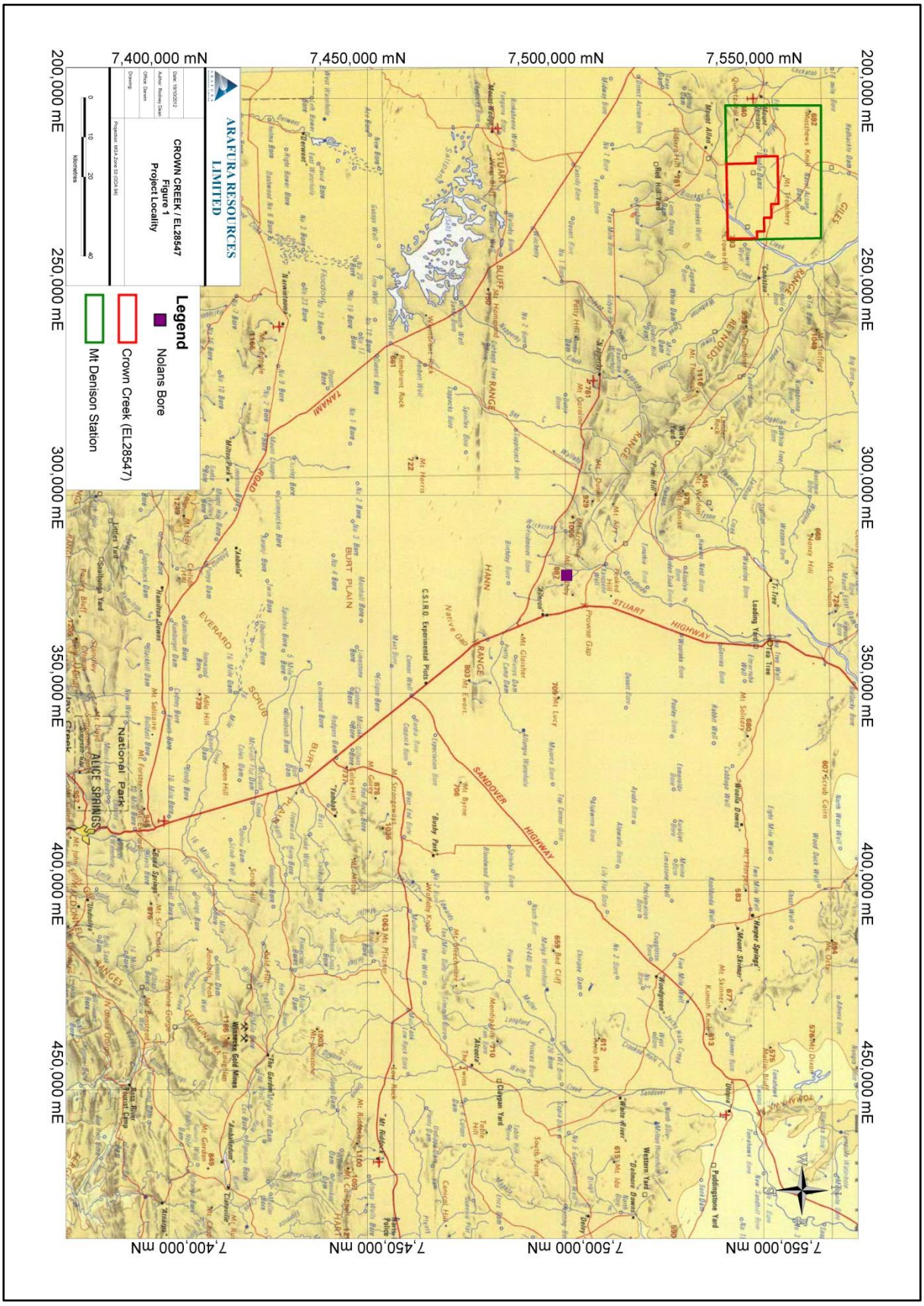

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TENURE

Mining/Mineral Rights

Exploration Licence EL28547 was 100% held by Arafura Resources Limited (ACN 080 993 455). The tenement comprised 71 sub-blocks and was granted on 19th August 2011 for a period of six years; however the exploration licence was relinquished at the end of the second year and this report covers the second and final year of tenure for EL28547.

Land Tenure

EL28547 is entirely within Mount Denison Pastoral Lease (PPL 1110; Figure 1).

- Mount Denison Station, PPL 1110 – NT parcel 00312 is owned by Mr. David Martin of Mount Denison Station (Mount Denison Proprietors Pty Ltd), (phone 08 8956 4028).

Native Title

There are no registered Native Title Claims over the project area.

Site Clearances

Arafura Resources Limited has obtained an abstract of registered and recorded sacred sites within the project area from the Aboriginal Areas Protection Authority (AAPA). The abstract identified recorded sacred sites within EL28547 and no work was undertaken within these areas.

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GEOLOGICAL SETTING

Regional Geology

The project area 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 km^2 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 project area is located within the Aileron Province of the Arunta Region (figure 2).

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, 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.

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).

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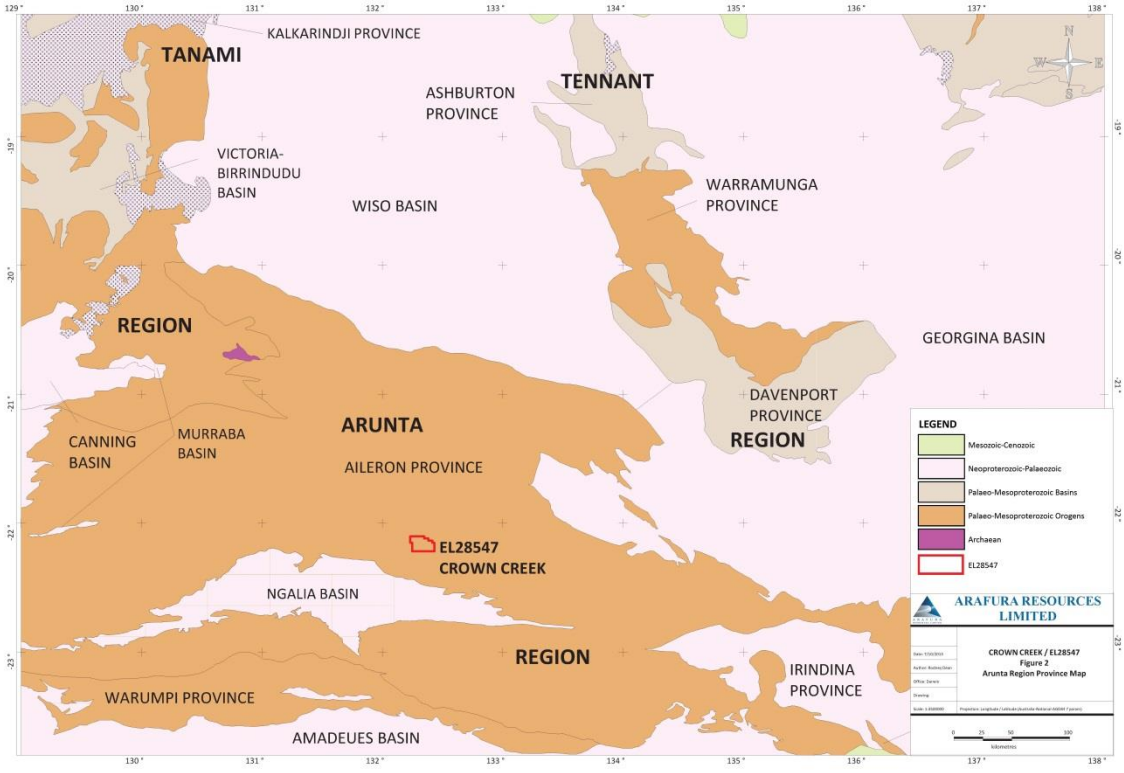

Figure 2. Map of the Arunta and surrounding regions, their provinces, and the Neoproterozoic to mid-Palaeozoic sedimentary basins. Adapted from Claoué-Long et al, (2008).

Local Geology

The Crown Creek project area is dominated almost entirely by outcrop and subcrop of the Wangala Granite (figure 3). The granite intrudes rocks of the Lander and Reynolds Packages (Shaw et al., 1980). It is inferred by Beyer et al., (2012), to be an S-type composite batholith, comprising numerous phases of variably fractionated, crustally contaminated LREE-enriched granite. It is comprised of four main phases being dominated by two-mica equigranular to porphyritic granite in the west and equigranular muscovite-tourmaline leucogranite in the east.

Recent LA-ICPMS U-Pb zircon dating of the granite yielded a weighted mean age of 1777 ± 6 Ma for zircon cores; this was interpreted as the magmatic crystallization age of the granite and suggests emplacement during the 1790-1770 Ma Yambah Event. Thick (>100 µm) uranium-rich overgrowths on cores yielded an age of 1565 ± 31 Ma which is broadly consistent with metamorphism associated with the Chewings Orogeny (Beyer et al., 2012).

The Wangala Granite contains minor schistose zones comprised of biotite (75%) and apatite (25%) which have been interpreted by Beyer et al., (2012) to be discrete zones of hydrothermally altered or greisenised Wangala granite or pegmatite. The presence of fluorite and topaz in the schist-granite contact zone indicates fluid interaction across the interface and whole-rock geochemical data suggests these fluids were rich in F, U, Th and REE. The age of this hydrothermal event is believed to coincide with the Chewings Orogeny.

The northern part of the Wangala Granite contains zones of discrete greisenisation, large roof pendants and smaller rafts of altered country rock, quartz-hematite veins, localised intrusions of dacitic porphyries, tungsten bearing pegmatites and trace occurrences of Cu and Ta in porphyritic granite (Beyer et al., 2012). The greisens are often strongly silicified and are comprised of quartz, K-

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feldspar, muscovite, leucoxene ± hematite, plagioclase, chlorite, opaque oxides and apatite. It has been suggested by Beyer et al., (2012) that the northern part of the Wangala Granite could be prospective for IOCG-style mineralisation; however it was noted that the hydrothermal event had not caused significant brecciation and the greisens have been largely stripped of any elements of interest.

In the south-east of the project area an outcrop of unmetamorphosed Neoproterozoic sediments is exposed. The Central Mount Stuart Formation consists of sediments from a transitional marine to continental deltaic or glacial environment (Stewart, 1982). The prominent Crown Hill (786m) on the southern boundary of the project area is comprised of Central Mount Stewart Formation non-conformably overlying undifferentiated Proterozoic granite (figure 3). Quaternary cover which encompasses a large proportion of the project area is comprised predominantly of alluvium and minor zones of calcrete (figure 3).

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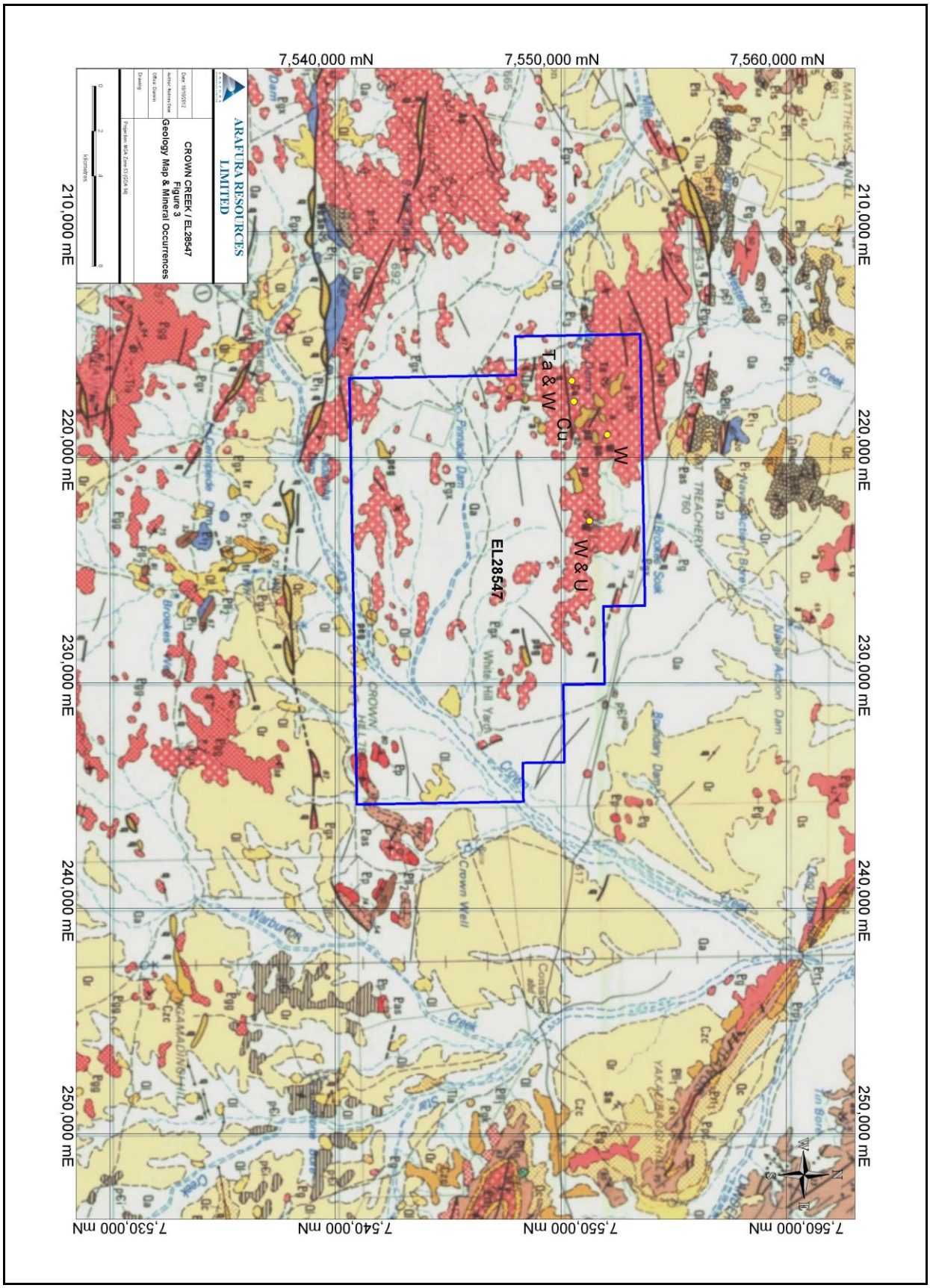

Figure 3. Red with white crosses is Wangala Granite, Light brown with dark brown spots is Central Mount Stuart Formation, light blue is alluvium and bright yellow is calcrete (Stewart, 1982).

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PREVIOUS INVESTIGATIONS

Other Parties

Significant exploration has been conducted over the Crown Creek Project area with the focus being primarily on the prospectivity of the region for uranium, tin, tungsten, tantalum, gold and diamonds. Production however, has been negligible with minor historical workings of copper, cassiterite, wolframite and tantalite reported within the project area southwest of Brookes Soak. Powell (1982) indicated that only 174kg of tantalite/tapiolite was recovered at one alluvial show.

The region was geologically mapped by the Bureau of Mineral Resources in 1968 for the production of the Napperby 1:250 000 Sheet. The area was re-mapped in the mid 1970's which resulted in the second (and current) edition Napperby Sheet (Stewart, 1982). The Napperby sheet was covered by a reconnaissance airborne radiometric survey in 1958 and later in 1976 on behalf of the Bureau of Mineral Resources.

During 1970, Central Pacific Minerals conducted a water sampling program over large parts of the Napperby and Mount Doreen sheet areas. All samples were analysed for uranium. A maximum value of 700 ppb was obtained from Mt Denison and 8 Mile Bores which are located just to the west of the project area (Green, 1978).

Table 1 outlines the exploration undertaken on historic tenements that intersect the Crown Creek Project area (EL28547) and the following section briefly describes the work which was undertaken in each case.

Table 1: Summary of historic exploration

Years	Tenement(s)	Exploration Company	Exploration Targets/Commodities	NT Department of Mines & Energy Open File Company Report(s)
1972	AP3169	Tanganyika Holdings Ltd	Base Metals, Precious Metals, Uranium, Gold, Rare Earths	CR1972-0005
1973-1974	EL749	Tanganyika Holdings Ltd	Base Metals, Precious Metals, Uranium, Gold, Rare Earths	CR1973-0005 CR1973-0068 CR1973-0153 CR1974-0019
1973	EL784	Indian Pacific Mining and Exploration Pty Ltd	Tin	CR1973-0123
1978	EL1316	Central Pacific Minerals NL	Tungsten, Tin, Uranium & Tantalum	CR1978-0108
1978	EL1317	Central Pacific Minerals NL	Tungsten, Tin, Uranium & Tantalum	CR1978-0109

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1979	EL1316 EL1317	Australia and New Zealand Exploration Company	Tungsten & Uranium	CR1979-0103
1982	EL2500	CRA Exploration Pty Ltd	Tin, Tantalum, Niobium, Uranium & Gold	CR1982-0168
1982	EL2602	Jays Exploration Pty Ltd	Tin & Tantalum	CR1982-0256
1989	EL5986	Stockdale Prospecting Ltd	Diamonds	CR1989-0625
1995	EL8420	Posgold Ltd	Gold	CR1995-0847
1997	EL8420	Normandy Gold Pty Ltd	Gold	CR1997-0120 CR1997-0303
2003-2004	EL10248	Gutnick Resources NL	Gold & Base Metals	CR2003-0062 CR2004-0166
2008	EL25875	Latrobe Magnesium Ltd	Uranium, Copper, Tantalum & Tungsten	CR2008-0745
2009-2010	EL25875	Gold Mines of W.A. Pty Ltd	Uranium, Copper, Tantalum & Tungsten	CR2009-1098 CR2010-1050

Tanganyika Holdings Ltd

AP3169 which later became EL749 of Tanganyika Holdings intersected the upper east section of the project area. Tanganyika was exploring the region for base metals, uranium, precious metals and rare earth elements (Davies, 1973a, 1973b; Davy, 1973; Paltridge, 1973; Wells, 1972). Their work in the region included an aerial photograph survey, interpretation of B.M.R. flown airborne radiometric data, a ground radiometric survey, heavy mineral stream sediment sampling, rock chip sampling and bore water sampling.

Within the project area, one significant radiometric anomaly was identified. A reading of 4000 c.p.m. was obtained with a uranium reading of 610 c.p.m. The anomalous reading was located at one point along a 1.3km long shear zone within the Wangala granite (Davies, 1973b), located at approximately 218900E, 7550300N.

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A heavy mineral stream sediment sampling program identified anomalous tantalum, niobium and tungsten within one sample, DN15, located at approximately 219742E, 7551307N. An absence of strontium within the heavy mineral fraction indicated that the rare earth elements present are likely to be from a granitic rather than a carbonatitic origin (Davies, 1973b).

Indian Pacific Mining and Exploration Pty Ltd

EL784 of Indian Pacific Mining and Exploration Pty Ltd intersected the lower west section the project area. They were exploring the region for tin mineralisation and were particularly interested in the Mount Allen tin prospect which lies to the south west of the project area (McColl, 1973). No apparent work was undertaken on the section of EL784 which intersects EL28547.

Central Pacific Minerals NL

EL1316 and EL1317 of Central Pacific Minerals NL, combined, intersected the entirety of the project area, with EL1316 covering approximately the top quarter of EL28547 and EL1317 covering the remainder of the area. Central Pacific minerals were exploring the region for tungsten, tin, uranium and tantalum (Green, 1978a, 1978b). Exploration over both tenements within the Crown Creek project area included a ground radiometric survey and field mapping. Field work also included rock chip sampling over a radiometric anomaly on EL1317 (named the Crown Anomaly), and sampling of wolframite and tantalite prospects identified in the south of EL1316. Rock chip sample 3129 within the Crown anomaly (approximately 224608E, 7546091N) assayed 0.29% U and 240ppm Th.

A sample of concentrates from the Double Dams Wolfram Prospect (approximately 216610E, 7550480N) was analysed with the following results:

Mn	WO_3	CaO	As	Sb	Sn	Cu	Bi	Fe
2.78%	73.51%	2.92%	0.06%	0.01%	<0.05%	<0.01%	<0.05%	12.81%

A sample of alluvium “slugs” from the Double Dams Tantalite Prospect (approximately 222829E, 7551270N) was analysed by x-ray diffraction and was found to be mixture of tapiolite ($FeTaO_6$), cassiterite (SnO_2) and microlite [$(Ca,Na\ Fe)_2Ta_2(O,OH,F)_7$]. The sample was further analysed for tantalum and tin by x-ray fluorescence giving 35.4% Ta and 18.5% Sn.

Australian and New Zealand Exploration Company

In mid-1978 Australia and New Zealand Exploration Company entered into an agreement with Central Pacific Minerals NL to explore EL1316 and EL1317 for uranium and tungsten (Davies & Lockhart, 1979). Their work included petrographic and probe examination of Central Pacific Minerals rock chip sample 3129 to determine the uranium mineralogy. The secondary uranium mineral was identified as a uranyl phosphate of the autunite family, containing Ti and Fe as cations rather than Ca. Other work included the digging of two trenches to bedrock (depth of about 1.5m) across the Crown radiometric anomaly. Radiometric readings indicated that uranium was concentrated in nodular calcrete above bedrock and not associated with a rock type or structure. It was deemed that the potential for economic concentrations of uranium at the Crown anomaly was minimal.

Australia and New Zealand Exploration Company undertook a heavy mineral sampling program over EL1316 and EL1317. Samples were studied under ultra-violet light for scheelite, grain-counted and assayed for tungsten. A tungsten anomaly was identified to the south of Brookes Soak. Follow-up ground reconnaissance identified a long narrow pegmatite-quartz vein which was thought to be the source, however the failure to find suitable alteration and its limited extent preclude it from economic potential.

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CRA Exploration Pty Ltd

EL2500 of CRA Exploration Pty Ltd intersected approximately the eastern half of the project area. CRA were exploring the region for tin, tantalum, niobium, uranium and gold (Fraser & Harvey, 1982). Their work in the region involved a reconnaissance geochemical drainage survey with various mesh fractions and heavy mineral concentrates being assayed.

Weakly anomalous tin values were reported in the minus 80 fraction with sample 812476 (approximately 226639E, 7543256N) having 55ppm Sn and samples 812481 (approximately 232002E, 7542700N) having 50ppm Sn. Sample 812476 was followed up by sediment sample 827524 (approximately 226482E, 7543082N) which reported no significant tin values however the heavy mineral concentrate of gravel sample 823623 at the same location reported greater than 1% Sn. Sample 812481 was followed up by sediment sample 827503 at the same location. It reported 95ppm Sn and also reported 184ppm in the minus 40 fraction.

Other anomalous samples were follow-up sample 969418 (approximately 225716E, 7542614N) which reported 2.1% Sn in the gravel fraction and follow-up sample 823602 (approximately 231698E, 7542802N) which reported 1.2% Sn in the heavy mineral concentrate.

Anomalous gold was reported in many of the follow-up samples (823 and 827 series) which were assayed by AAS. Further follow-up sediment and gravel samples (969 series) were collected and assayed for gold using fire assay (20gm). The anomalous gold values of the 823 and 827 follow-up series were deemed to be an analytical error. Following this work EL2500 was relinquished.

Jays Exploration Pty Ltd

EL2602 of Jays Exploration Pty Ltd intersected approximately the western half of the project area. They investigated the tin and tantalite potential of the region, principally from an alluvial perspective but also the potential of the pegmatite host rocks (Powell, 1982). Their work in the region included stream sediment, soil and rock chip sampling, however only the rock chip assays were reported. Sample P2 (approximately 216588E, 7550663N) reported 95 ppm Y.

Stockdale Prospecting Ltd

EL5986 of Stockdale Prospecting captured the whole of the project area. Stockdale prospecting was exploring the region for diamonds (Smith, 1982). Their work involved regional loam, stream and barrage sampling. The results of this investigation were that only non-kimberlitic garnets and spinels were observed. As no evidence of kimberlite or lamproite was detected no further work was undertaken and the licence was relinquished.

Normandy Gold Pty Ltd (Posgold Ltd)

EL8420 of Normandy Pty Ltd intersected approximately the upper 80% of the project area. Normandy Pty Ltd was exploring the region for structurally controlled gold mineralisation (Price, 1995; Worland, 1997; Worland & Price, 1997). Their work included an airborne magnetic and radiometric survey at 400m spacing, soil sampling at 500m spacing, rotary air blast drilling at 500m spacing with two samples being collected from each hole (a palaeosol and bedrock sample), and vacuum drilling at 500m spacing with two samples being collected from each hole; a palaeosol and bedrock sample.

No anomalous gold values were reported from the soil sampling and the anomalous gold values reported from the drilling are well outside the Crown Creek project area. A portion of EL8420 which entirely covered the project area was relinquished at the end of the second year of tenure.

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Gutnick Resources NL

EL10248 captured the whole of the project area. Gutnick Resources was exploring the region for gold and base metals; however no work, aside from desktop studies was undertaken on EL10248 (Washburn, 2004).

Latrobe Magnesium Ltd

EL25875 was identical to the EL28547 (Crown Creek). Latrobe Magnesium Ltd was exploring the region for uranium, copper, tantalum and tungsten; however no work aside from desktop studies was undertaken on EL25875 (Kastellorizos, 2008).

Gold Mines of W.A. Pty Ltd

Gold Mines of W.A. Pty Ltd acquired EL25875 from Latrobe Magnesium Ltd. They were exploring the region for uranium, copper, tantalum and tungsten; however only reconnaissance fieldwork and radiometric target generation was completed (Maynard, 2010a, 2010b).

INVESTIGATIONS BY ARAFURA RESOURCES

First Year Investigations

First year investigations on the Crown Creek project (EL28547) included desktop research of open file historical company reports and compilation of a GIS which can be sourced from Appendix 1 of Dean (2012). The GIS includes historic sampling locations which have been estimated through rectification of maps from the historical reports. These maps were often hand drawn or traced and the accuracy of the locations can be as great as 500m.

Other work undertaken included the assessment of the project area for carbonate to supply the Nolans Bore Project. Calcrete targets were identified within EL28547; however alternative carbonate sources closer to Nolans Bore were explored.

Second Year Investigations

During the second year of tenure Arafura undertook a field program which consisted of geological reconnaissance, a 32-sample stream sediment survey using the -2mm fraction, a 6 sample heavy mineral concentrate (HMC) stream sediment survey using the -2mm fraction and 2 rock chip samples selected for assay during reconnaissance (figure 4). Table 2 outlines the sample locations and sampling methods and the reader is directed to Appendix 1 for further information on the heavy mineral concentrate sampling. The samples were assayed for all of the REEs and a suite of other elements. The assay results are listed in Appendix 2.

During this program Arafura Resources employees were accommodated at Aileron Roadhouse (approximately 150km to the east of the project area) and drove to site each day. For all but the first day of field work, two employees were involved; Senior Field Supervisor Jeremy Grose and Geologist Rodney Dean. On the first day of field work Principal Geologist, Kelvin Hussey also took part in field activities.

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Table 2: Sample locations

Sample Id	MGA94_53E	MGA94_53N	Sample Type	QEMSCAN
ARA5001	217146	7552077	Rock Chip	No
ARA5002	217138	7552079	Rock Chip	No
ARA5004	222684	7552779	Stream sediment -2mm	No
ARA5003	222524	7553551	Heavy Mineral Conc. -2mm	No
ARA5005	222309	7552722	Stream sediment -2mm	No
ARA5006	224774	7552427	Stream sediment -2mm	No
ARA5007	224830	7552349	Stream sediment -2mm	No
ARA5008	225638	7552208	Stream sediment -2mm	No
ARA5009	227748	7550337	Stream sediment -2mm	No
ARA5010	228141	7550438	Stream sediment -2mm	No
ARA5011	227144	7549619	Stream sediment -2mm	No
ARA5012	224997	7548977	Stream sediment -2mm	No
ARA5013	235082	7548189	Heavy Mineral Conc. -2mm	Yes
ARA5014	224972	7545644	Heavy Mineral Conc. -2mm	Yes
ARA5015	230056	7546205	Stream sediment -2mm	No
ARA5016	228690	7546260	Stream sediment -2mm	No
ARA5017	228561	7546233	Stream sediment -2mm	No
ARA5018	233188	7545717	Heavy Mineral Conc. -2mm	No
ARA5019	223305	7546732	Stream sediment -2mm	No
ARA5020	217392	7545427	Stream sediment -2mm	No
ARA5021	220179	7545733	Stream sediment -2mm	No
ARA5022	226018	7543523	Stream sediment -2mm	No
ARA5023	226198	7542750	Stream sediment -2mm	No
ARA5024	228948	7543317	Heavy Mineral Conc. -2mm	No
ARA5025	235205	7547027	Stream sediment -2mm	No
ARA5026	231672	7542732	Stream sediment -2mm	No
ARA5027	231672	7542732	Stream sediment -2mm	No
ARA5028	232041	7542772	Stream sediment -2mm	No
ARA5029	218219	7546699	Stream sediment -2mm	No
ARA5030	217915	7548384	Stream sediment -2mm	No
ARA5031	217915	7548384	Stream sediment -2mm	No
ARA5032	218059	7548805	Stream sediment -2mm	No
ARA5033	218222	7548905	Stream sediment -2mm	No
ARA5034	220267	7549518	Stream sediment -2mm	No
ARA5035	214988	7549939	Heavy Mineral Conc. -2mm	Yes
ARA5036	214613	7550441	Stream sediment -2mm	No
ARA5037	215564	7550444	Stream sediment -2mm	No
ARA5038	215897	7550576	Stream sediment -2mm	No
ARA5039	215972	7550499	Stream sediment -2mm	No
ARA5040	215218	7549985	Stream sediment -2mm	No

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The field work was conducted over six days from the 4th to the 9th of September 2012. During a subsequent field trip to Aileron, two days (the 10th and 11th of October 2012) were spend panning the bulk HMC samples at the Arafura office at Aileron. Two staff members, Kelvin Hussey and Rodney Dean, were involved in this process.

Reconnaissance fieldwork involved numerous traverses over the Wangala Granite outcrop in the north west of the project area in an attempt to locate the historic workings and mineral occurrences and map any alteration zones within the granite. None of the mineral occurrences or old workings were identified during these traverses. However, one alteration zone was identified and was rock chip sampled at 2 proximal locations. The alteration zone was about 12m in length, dark and dense with unknown mineralogy. The host granite was pink-orange, porphyritic with tabular K-feldspars up to 40mm. The samples were sent to NTEL laboratory, Darwin, for assaying. The two assays indicated elevated lithium, tin and tungsten, but background REE concentrations.

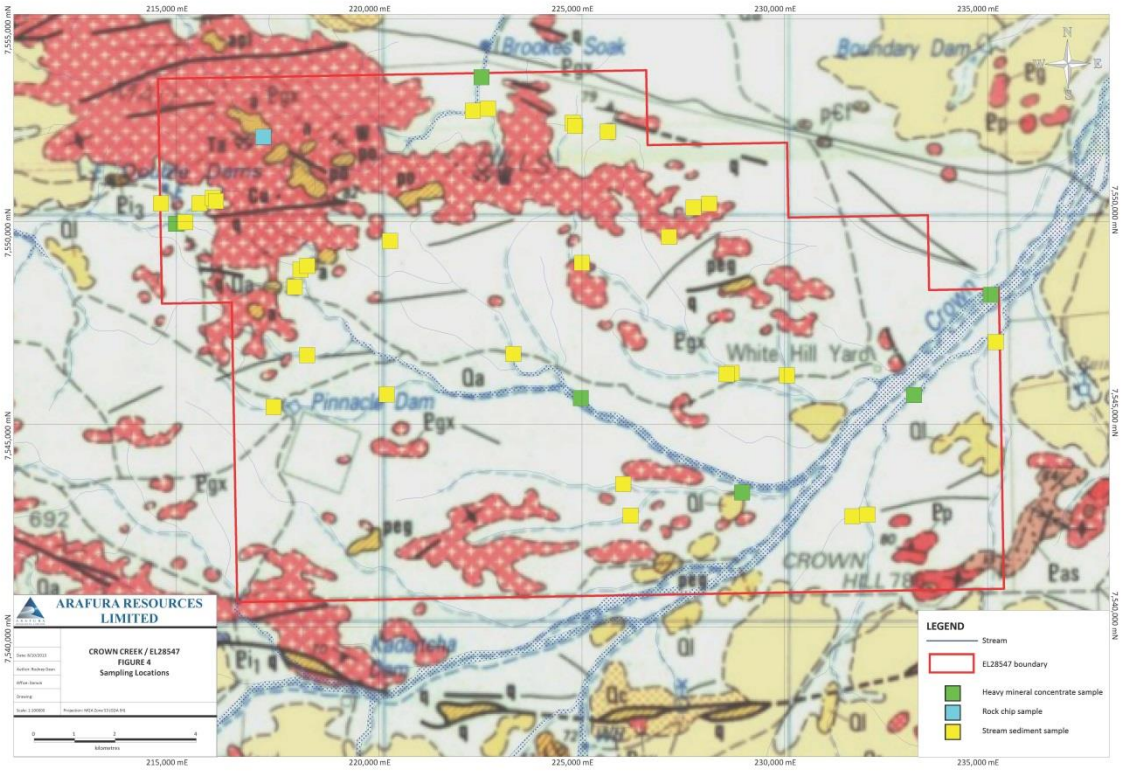

Figure 4. Location of stream sediment, heavy mineral concentrate and rock chip samples

The stream sediment survey involved sampling drainage of the Wangala Granite. Survey locations were selected throughout the project area in order to maximize the sampling of the source granite. The procedure for sampling was to sub sample the stream from 1-7 times (depending on the size of the drainage) across it's width to get a representative sample. The top 20cm of sediment in the stream bed was removed to avoid organic matter and the sub sample taken. The combined sample was sieved using a 2mm mesh and the minus fraction was retained for assay. Samples collected were approximately 2kg and were sent to NTEL laboratory, Darwin, for assaying. The assay results did not indicate any elevated or anomalous values for REEs or other elements.

The heavy mineral concentrate sample locations were selected on the basis of maximizing the representation of the source granite and to confirm the historic heavy mineral concentrate assay

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results of other commodities such as tin and tantalum. The procedure for sampling involved locating a trap site for the heavy minerals. This was the up-stream part of the trunk of a large gum tree in all instances. The top 20cm of stream sediment was scrapped away and the sediment was sampled in a profile downwards. A sample of around 50kg of -2mm fraction was obtained and this material was later weighed and panned down to heavy mineral concentrates of between 0.5 and 3kg. The panned concentrates were sent to ALS metallurgy laboratory, Perth for heavy liquid separation (HLS) at specific gravity of 2.96 using tetrabromoethane (TBE) and subsequent assay by ICPMS/ICPAES and XRF. On receipt of the assay results three of the six samples were identified as having elevated REE concentrations relative to the other samples and were selected for QEMSCAN® (Quantitative Evaluation of Minerals by Scanning Electron Microscopy), also at ALS metallurgy laboratory as part of a broader QEMSCAN® investigation.

The QEMSCAN® results indicated REE-bearing minerals, predominantly monazite, xenotime and zircon, to be present in the heavy mineral fraction of all three samples. ALS Metallurgy report MIN1536 outlines the QEMSCAN® procedure and results and is contained in Appendix 3. Chemical assay of the samples indicated that they were light rare earth element LREE enriched relative to total rare earth (TREE) concentration. The HMC sample ARA5014 had the highest TREE of 4.76% with a HREE + Y of 1.13%. This represents a calculated alluvial grade of 144.8ppm TREE and 34.4ppm HREE+Y. These grades are deemed too low to be economically viable for alluvial extraction.

CONCLUSIONS AND RECOMMENDATIONS

The alluvial grades of the stream sediment sampling program along with the high LREE/HREE ratio of the heavy mineral concentrates and the lack of high grade heavy mineral accumulations indicate that the Wangala granite drainage is not prospective for economic accumulations of alluvial REE-bearing minerals, and particularly HREE mineralisation. Furthermore, as no REE mineralised phases were identified within the granite and associated altered rocks, the Crown Creek Project area is believed to be non-prospective for significant REE mineralisation and the exploration license EL28547 was relinquished.

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