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Operator: Rum Jungle Resources Ltd
Tenement Manager: Complete Tenement Management
Tenement: EL 30520
Project Name: Ammaroo Phosphate
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250K map sheets: Elkedra 53-07
100K map sheets: George Creek 6055
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SUMMARY

The Ammaroo Phosphate Project is located 240 km southeast of Tennant Creek. The project area contains the 40 km-long billion-tonne Ammaroo Phosphate Deposit, which is currently Australia’s largest undeveloped JORC phosphate resource, the satellite Ammaroo South resource, the Rockhole Prospect on northern EL 30520, and significant greenfields potential in the east. The overall Ammaroo Phosphate Project prefeasibility has been announced and higher tenure applied for. EL 30520 is in two parts. The southern part of sixteen blocks is being voluntarily relinquished because the geology is considered unsuitable to host phosphate. The Supplejack Creek base metals-barite occurrence occurs in this area being relinquished. Rum Jungle Resources does not consider it worth pursuing in isolation.
INTRODUCTION
The Ammaroo Phosphate Project is located 280 km northeast of Alice Springs and 240 km southeast of Tennant Creek, on the Barrow Creek SF53-06, Elkedra SF53-07, Bonney Well SF53-02 and Frew River SF53-03 1:250,000 mapsheets. Rum Jungle Resources has been exploring for Cambrian rock phosphate in this area since 2009 resulting in the discovery of Barrow Creek 1 deposit and the Ammaroo South Prospect. Rum Jungle Resources also acquired the Araganara Phosphate deposit, which is contiguous with Barrow Creek 1, by taking over Central Australian Phosphate. The flagship deposits have been combined and extended into Australia’s largest undeveloped JORC rock phosphate resource now called Ammaroo Phosphate and the satellite Ammaroo South deposit has been elevated to Inferred Resource status.

EL 30520 is in two parts: the northern one contains the Rockhole Phosphate Prospect and the southern one, being relinquished here, has a minor basement base metal occurrence called Supplejack or Supplejack Creek.

LOCATION, ACCESS AND LAND USE

Location
EL 30520 is located in the central northeastern part of the Ammaroo Phosphate Project on the Elkedra 250K, George Creek 100K sheets.

Figure 1. The Ammaroo project area showing EL 30520 in two parts in the central - northeast of the project area. The area being relinquished, outlined in pink, contains the Supplejack Creek base metal occurrence.
Access and Logistics

Access to the project area is via the sealed Stuart Highway and the partly sealed Plenty and unsealed Sandover Highways from the south and the Taylors Road / Murray Downs road from the north (Figure 1). The 20-person Rum Jungle Resources’ Ammaroo base camp and fly-camps are used for exploration. Bores are used for drinking water. A medical clinic is located at the Ampilatwatja Aboriginal Community. Fuel is carted from Alice Springs on an as-needs basis. The nearest airstrips are at Ampilatwatja and Ali Curung. The Rum Jungle Resources’ Ammaroo base camp has an emergency helipad and JetA1 and AvGas.

There are no passable tracks to, or in, the area being relinquished.

Climate

The climate is described as arid tropical by Baker et al 2005. The year is notionally divided into two main seasons, a short, hot summer featuring the bulk of the annual rainfall and a longer mild to cold and dry winter. These two dominant seasonal patterns are separated by short (1-2 month) transitional periods. The summer rains are somewhat influenced by the monsoonal rain patterns from the north and particularly those cyclones which cross the Western Australian coast. Rainfall is highly variable and unpredictable and annual records range from 86.4 mm to 914 mm. As shown below, January 2007, much of 2010 and the start of 2011 were atypically wet while the rainfall since has been more typical (Figure 2).

![Average rainfall for the project area](image)

The average monthly relative humidity at 9 am (derived from the previous 16 years) fluctuates between 31 to 52 percent with an average of 42 percent (Figure 3). The average monthly relative humidity at 3 pm is about 11-21 percent lower than the 9 am recorded humidity.
Average summer temperatures can fluctuate between 21 and 38 degrees Celsius and the winter temperatures can flux between 7 and 27 degrees Celsius. Sub-zero temperatures occur occasionally during July and August and there have been instances of surface water freezing at night. During the 2014 field season, maximum temperatures exceeded 40 degrees Celsius. Figure 4 shows the mean monthly maximum and minimum temperatures recorded at Ali Curung from 1988 to 2014.
Physiography, Land Systems, Flora and Fauna

Figure 1 (previous) shows the physiography.

The project is located in the Tanami Bioregion south of the Davenport Ranges. This bioregion is comprised mainly of red sand plains with underlying rock strata occasionally exposed as hills and ranges. The sand plains are vegetated with mixed shrublands of Acacia, Eucalyptus or Hakea over Triodia hummock grasslands. On the ranges, Acacia shrublands occur over hummock grasses. This bioregion contains many plant taxa that are endemic to the region or the Northern Territory and several flora and fauna species that are of conservation significance.

Using the system devised by Perry, the area contains two major land systems; the Alinga and Singleton. The Alinga Land System can generally be described as a system of undulating plains interspersed by low rounded ridges with shallow stony soils, red earths and red clayey sands. The land system is dominated by Acacia aneura (Mulga) or Acacia georginae (Gidgee) woodlands over short grasses and forbs. On shallow stony soils, sparse shrublands occur over Triodia sp (Spinifex). The Singleton land system includes red sands forming undulating plains and sand rises, separated by moderately wide, flat swales. Alluvial flats and drainage floors may also be present. Vegetation is dominated by sparse shrublands over Triodia (Spinifex), with Acacia woodlands also being present.

The project has been the subject of several baseline fauna and flora surveys commissioned by Rum Jungle Resources. These, a Threatened Species Report, and a report on weed species have been provided with MMPs and are not repeated here.

Habitation and Land Use

The area is sparsely settled. The largest permanent habitations are the indigenous communities at Ampilatwatja (population approx. 500) and Ali Curung (population quoted variously as 960 or 535 of which over 95% are Indigenous persons). The dominant Aboriginal languages spoken are Warlpiri and Alyawarr with English as a second or third language.

EL 30520 is on Elkedra Station perpetual pastoral lease, NT Portion 3431, PPL 1000, via Alice Springs, NT 0870. Cattle are run in the area of EL 30520.

Aboriginal Sites of Cultural Significance

NuPower and Arafura Resources who each had held the area of what is now EL 30520 had completed AAPA Register searches which have been passed on to Rum Jungle Resources. These searches are as early as 2008/2009 and each showed the same single point AAPA site, southeast of Rockhole Prospect, in what is now northern EL 30520. A significant named site exists just southwest of, but outside of, the area being relinquished.

An Exploration Agreement between NuPower Resources Ltd and the Central Land Council (representing the Native Title Holders of the land) was signed 11/07/2008. This agreement covered EL 25664 and EL 24726 in what was then NuPower’s Arganara Project area. Only selected site clearances were undertaken as part of that agreement, but NuPower did get a site specific clearance over the Rockhole Prospect before the creation of EL 30520 from EL 24726. There was no CLC clearance undertaken over the area being relinquished.

As the original AAPA Register searches were quite old, a new Register search was undertaken during 2015 in the hope that it might resolve the apparent discrepancy between CLC and AAPA locations in the northern retained portion of EL 30520. The 2015 Register search confirmed the AAPA locations given previously.

Heritage Sites

A search of the NT Heritage Register held by NRETAS shows no Declared Heritage Sites in the area covered by this report.
HISTORY OF TENURE

EL 30520 was formerly part of EL 24726.

Exploration licence EL 24726, originally called “Arganara”, was applied for by Arafura Resources Limited on 12th May 2005 and granted on 1st April 2008 as 1,374 km². It was part of their Ni-PGE-Au exploration portfolio around the Kurinelli Goldfield. EL 24726 was transferred to NuPower Resources Limited on 3rd April 2008 as a result of the demerger of certain uranium assets from Arafura and the formation of the new company. NuPower was targeting uranium, but had done little on the ground until late 2010 when Rum Jungle Resources announced the discovery of phosphate on the adjacent title. NuPower then swapped to phosphate exploration. EL 24726 was reduced in 2010 and again in 2011, to 294 sub-blocks or 939.6 km². It was then in three parts. An ML application covers part of EL 24726 over the current JORC Ammaroo Phosphate Resource.

NuPower became Central Australian Phosphate (CEN). During 2013, Rum Jungle Resources took over Central Australian Phosphate which became a wholly owned subsidiary and gave RUM control of the contiguous CEN titles in the Ammaroo Project.

As part of the renewal of EL 24726, it had to be reduced to less than or equal to 250 sub-blocks and/or split into two or more. The larger part of the previous three, which contains the JORC resource, was retained as EL 24726 with the voluntary partial relinquishment of 11 sub-blocks. The remaining two portions became EL 30520 which then totalled 43 sub-blocks or 137.59 km². The expiry date is 31/03/2016.

The title was transferred to Territory Phosphate which is a wholly owned subsidiary of Rum Jungle Resources.

This is the first reduction from EL 30520 as such.

EXPLORATION AND PROJECT RATIONALE

The Ammaroo Project is mainly being explored for rock phosphate. Exploration is directed at locating phosphate where it is shallow (low strip ratios), not entirely weathered (predictable rock properties amenable to mining), and highest grade and thickest (palaeo-coast and potentially draped over palaeo-highs). Rum Jungle Resources’ approach, which has worked successfully to date, is to initially undertake reconnaissance RC or air core drilling on existing tracks and fences. Samples are analysed in the field with a handheld XRF and potential phosphate is sent for laboratory analysis. Depending on success, follow-up drilling usually involves cleared drill lines and/or grid RC drilling.

Since the discovery of economic grades of phosphate in 2010, Rum Jungle Resources has moved to rapidly prove them up to JORC 2012 standard including a significant component in the Measured category. The company has also completed a Scoping Study and a Prefeasibility Study.

Northern EL 30520 contains the Rockhole Phosphate Prospect and southern EL 30520 contains the Supplejack base metal occurrence. To date, Rum Jungle Resources has put most emphasis on EL 30520 on phosphate prospectivity.

GEOLOGICAL SETTING

Regional Geology

The Ammaroo Project is located in the Georgina Basin which contains the largest sedimentary rock phosphate deposits in Australia. The Georgina Basin includes rocks of Neoproterozoic to Devonian age, with Cambrian platform carbonate rocks dominating basin fill.
The southern Georgina Basin includes a thick sequence of Cambrian-Ordovician sediments, deposited within the Dulcie Trough and on the adjoining Elkedra Shelf. Work by previous explorers and NTGS identified an extensive area of shelf-facies marine carbonate and clastic sediments of the Middle Cambrian Arthur Creek Formation within the southern Georgina Basin (Figure 5).

Cambrian sedimentary rock outcrop is generally restricted to the north of the project area, along the flanks of the Davenport Range. Several formations contain very similar carbonate and recessive shale units that can be very difficult to tell apart without palaeontology and some published maps show incorrect formation assignation. Indeed, the outdated Elkedra published 250K map shows the Arthur Creek Formation (Cma) as being partially laterally equivalent to the Chabalowe Formation and partially underlying it, whereas the actual Chabalowe Formation is laterally equivalent to the younger Arrinthrunga Formation not the Arthur Creek Formation. The Chabalowe Formation can directly and conformably overlie the Arthur Creek Formation, but they are distinctly different ages, and this should be the relationship on the Elkedra mapsheet. The former Errarra Formation shown on published maps is now recognised as Red Heart Dolostone. In addition, it has now been recognised that the so-called Thorntonia Limestone mapped over large areas of the Northern Territory is actually than the Queensland type section.

Alluvial, aeolian and residual sediments of Cenozoic age blanket most of the remaining project area.

**Local Geology and Prospectivity of the Relinquished Area**

The published local geology within the area of EL 30520 being relinquished is shown below. Cma is the target Cambrian sedimentary Arthur Creek Formation. There are only minor outcrops of putative Arthur Creek Formation which is believed to host the phosphate to the southwest. These areas are limited in aerial extent, too patchy and too thin and weathered to be considered prospective for phosphate.

The rest of the outcrop consists of Arabulja Volcanics, Kudinga Basalt, Frew River Formation, Andagera Formation clastics and other Proterozoic rocks.
Known Prospects and Mineral Occurrences in the Relinquished Area

Supplejack Creek Base Metals

Supplejack Creek is a minor basement copper occurrence similar to many others in the area to the west of EL 30520. It reportedly consists of veins of barite with anomalous copper, cobalt and zinc. These were sampled by previous explorers in 1983/1984 with a best result of 9,300 ppm Cu from 2.25% barite. Rum Jungle Resources has not visited the location but, based on previous work by others, does not consider that the Supplejack Creek occurrence is worth pursuing in isolation.

WORK BY RUM JUNGLE RESOURCES ON THE RELINQUISHED PORTION

Rum Jungle Resources has not visited the area being relinquished.

CONCLUSION AND RECOMMENDATIONS

The sixteen blocks being relinquished are not considered prospective for phosphate and the Supplejack Creek base metal occurrence is not worth pursuing.