Titleholder: Territory Phosphate Pty Ltd
Operator: Rum Jungle Resources Ltd
Tenement Manager: Complete Tenement Management
Tenement: EL 28402
Project Name: Ammaroo Phosphate
Report Title: Partial relinquishment report for EL 28402, Ammaroo Phosphate Project, 20/06/2011 to 27/04/2016
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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 JORC resource, the Rockhole Prospect and significant greenfields potential in the east. An updated Ammaroo Phosphate Project prefeasibility has been announced and higher tenure applied for. EL 28402 is located in the central part of the project area. A voluntary partial relinquishment of 9 blocks from 31 is being made. The relinquished blocks are either modern alluvial material which is a shallow aquifer locally and is subject to flooding or potential host rocks that are probably too patchy, too thin and too weathered to contain economic phosphate. Some of the relinquished area is also a Zone of Conservation Significance. There has been no on-ground work what-so-ever on the blocks relinquished.
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INTRODUCTION
The Ammaroo Phosphate Project tenements are located 280 km northeast of Alice Springs and 240 km southeast of Tennant Creek. Rum Jungle Resources has been exploring for Cambrian rock phosphate in this area since 2009, resulting in the discovery of the main Ammaroo Phosphate Resource and the satellite Ammaroo South Resource.

LOCATION, ACCESS AND LAND USE

Location
Figure 1 is a map of the greater Ammaroo Phosphate Project. EL 28402 is located in central part of the Ammaroo Phosphate Project on the Elkedra and Frew River 250K sheets.

Figure 1. Ammaroo Phosphate Project titles showing the areas of EL 28402 (labelled in red) being relinquished outlined in red, along with other relinquishments in this round. All drilling in the Ammaroo Project (including areas now relinquished) is plotted. JORC resources outlined in purple. Independent exploration targets outlined in light blue. ML applications in pink.

Access and Logistics
Access to the project area is via the sealed Stuart Highway and the sealed Plenty and unsealed Sandover Highways from the south or the Taylors Road / Murray Downs road from the north (Figure 1). The centre of the main Ammaroo Resource is approximately 90 km from the Central Australian Railway. Access within the project area is limited to various station and exploration tracks.

A Zone of Conservation Significance impinges on the northern part of EL 28402 (see Figure 7).

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).

![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.

![Figure 3. Mean monthly relative humidity (%) at 9am and 3pm at Ali Curung, NT (BOM 2015).](image)

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.

![Figure 4. Mean maximum and minimum monthly temperatures (°C) at Ali Curung, NT (BOM 2015).](image)

**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 28402 is on Derry Downs pastoral lease, parcel 1289.

The area supports an active beef cattle industry and stocking numbers vary seasonally.

**Aboriginal Sites of Cultural Significance and Agreements**

An AAPA register search has been undertaken over EL 28402. EL 28402 has been brought into an existing agreement with the CLC. This agreement necessitates site-specific clearances by the CLC. Rum Jungle Resources has not pursued any more site-specific clearances on EL 28402 since 2012.

**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 AND REPORTING**

EL 28402 was originally only 31 blocks or 99.02 km² and was surrounded by other titles in the greater Ammaroo Phosphate Project, including one flagship EL. EL 28402 was granted on 20/06/2011 and has not been reduced until now, although all the surrounding ELs have.

The partial relinquishment being reported here appeared on STRIKE on 05/05/2016, backdated to 27/04/2016.

EL 28402 is contiguous with other ELs in Rum Jungle Resources’ Ammaroo Project and remains so even after this partial relinquishment.

EL 28402 is normally reported under the Mineral Titles Act as part of GR380.

**EXPLORATION AND PROJECT RATIONALE**

The Ammaroo Project is being explored for rock phosphate, principally within the putative Arthur Creek Formation which hosts the Ammaroo and Ammaroo South Phosphate Resources. 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 (potentially flanking the palaeo-coastline, around islands and 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 drilling.

The Ammaroo Project has a World-class JORC resource with a significant portion in the Measured category. This would allow for decades of mine production. An updated prefeasibility study has been completed.

**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 is contiguous with the Wiso Basin to the west.

The southern Georgina Basin includes a thick sequence of Cambro-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). This area is prospective for sedimentary phosphate mineralisation.

![Figure 5. Simplified Cambrian lithostratigraphy of the southern Georgina Basin, from NTGS.](image)

Cambrian sediment outcrop is 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 there is some mis-mapping on published maps, particularly the Elkedra 250K sheet.

**Local Geology**

The local geology of the areas being relinquished has not been tested by drilling.

As shown in Figure 6, the area of EL 28402 being relinquished is mostly under Cenozoic cover and contains a significant amount of modern alluvial material which is a shallow aquifer locally. This would be an impediment to exploration. It is also subject to flooding.

There are several very small mapped (Phk?) and unmapped areas of economic basement which are not considered prospective for phosphate. The red stippled areas mapped in Figure 6 are interpreted by Rum Jungle Resources to be Neoproterozoic basement. Note that in the opinion of Rum Jungle Resources, much of this to the east of EL 28402 is mismapped on the published Elkedra 250K.

The only mapped outcrops of the target Arthur Creek Formation (solid red in Figure 6) within the relinquished area are probably too patchy, too thin and too weathered to contain economic phosphate. It is not known if this formation would be present under cover elsewhere in the area being relinquished.
Figure 6. Local geology over EL 28402 based on published mapping.

BLOCKS RELINQUISHED
The partial relinquishment is shown in detail on the block ID map below.

Figure 7. Block ID map showing the nine blocks being dropped from EL 28402 outlined in red and the Site of Conservation Significance stippled in pink.
WORK ON RELINQUISHED AREA BY OTHERS
Carpentaria Gold previously held part of the relinquished area, ostensibly for base metal exploration. NuPower previously held part of the ground for uranium exploration.

WORK ON RELINQUISHED AREA BY CURRENT OPERATOR
Rum Jungle Resources has drilled three holes in the retained portion of EL 28402 and one on the EL boundary with contiguous EL 25183. There have been no on-site clearances undertaken by the CLC since then and all work has been postponed until funds become available. There has been no on-ground work what-so-ever on the blocks being relinquished.

CONCLUSION AND RECOMMENDATIONS
The relinquished blocks are either:
- in a zone of Conservation Significance
- modern alluvial material which is a shallow aquifer locally. This would be an impediment to exploration. It is also subject to flooding
- economic basement
- potential host rocks that are probably too patchy, too thin and too weathered to contain economic phosphate.