Titleholder: Territory Phosphate Pty Ltd
Operator: Rum Jungle Resources Ltd
Tenement Manager: Complete Tenement Management
Tenement: EL 29374
Project Name: Ammaroo Phosphate
Report Title: Partial relinquishment report for EL 29374, Ammaroo Phosphate Project, 07/09/2012 to 27/04/2016
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Target Commodity: Rock Phosphate
Date of Report: 03/05/2016
Datum/Zone: GDA94/ Zone 53
250K map sheet: Frew River SF 53-03, Elkedra 53-07
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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, including on EL 29374. An updated Ammaroo Phosphate Project prefeasibility has been announced and higher tenure applied for.

EL 29374 was originally granted to NuPower Resources Limited on 07/09/2012 over 193 blocks (6,187 km²) for uranium exploration. After Rum Jungle Resources found phosphate nearby, NuPower became Central Australian Phosphate and swapped target commodities. During 2013, Rum Jungle Resources took over Central Australian Phosphate and acquired EL 29374. In 2015, EL 29374 was transferred to another wholly owned subsidiary – Territory Phosphate Pty Ltd. EL 29374 is located in the northeastern part of the Ammaroo Phosphate project area held by Territory Phosphate and operated by Rum Jungle Resources. A third voluntary partial relinquishment, this time of 32 blocks, is being made, taking EL 29374 to 125 blocks. The relinquished blocks are various combinations of Areas of Conservation Significance, areas sterilised by creeks and rivers, floodouts, shallow aquifers, shallow basement intersected in a waterbore and other small areas of shallow basement or basement outcrop that are not considered prospective for phosphate. 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 29374 is located in northeastern part of the Ammaroo Phosphate Project on the Elkedra and Frew River 250K sheets.

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. There are poorly-maintained station tracks through EL 29374 and some unmapped rough four-wheel-drive access along fencelines in the far west in the area being relinquished (see Figure 6). The latter would not be suitable for a drill rig without grading. Furthermore, several of the blocks being relinquished have no existing ground access what-so-ever and may be difficult to reach even by driving cross-country. The CLC said that if they were required to scout the area for site-clearances, they would only access parts of the area by helicopter.
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).
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 29374 is on Elkedra pastoral lease, parcel 3431.

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 29374. EL 29374 has been brought into an existing agreement with the CLC. This agreement necessitates site-specific clearances by the CLC. Such site-specific clearances for proposed drilling on EL 29374 and other contiguous ELs were requested in 2014, but the CLC was unable to undertake the work at reasonable cost in time for the 2014 field season. All on-ground work on EL 29374 was deferred indefinitely, until sufficient funds became available. Rum Jungle Resources has not pursued the site clearances and these are yet to be undertaken.

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 29374 was granted to NuPower Resources Limited on 07/09/2012 for 193 blocks (6,187 km²), originally for uranium exploration. After Rum Jungle Resources found phosphate nearby, NuPower became Central Australian Phosphate Limited and swapped target commodities. During 2013, Rum Jungle Resources took over Central Australian Phosphate which gave Rum Jungle Resources control of the contiguous Central Australian Phosphate titles which were incorporated into the Ammaroo Project. Central Australian Phosphate was delisted and became Central Australian Phosphate Pty Ltd which is a wholly-owned subsidiary of Rum Jungle Resources Ltd.

In August 2014, 22 blocks which contain AAPA sites were voluntarily partially relinquished from EL 29374, with 171 blocks retained.

As a result of a DME mistake, EL 29374 disappeared from STRIKE on 17/04/2015 and took several weeks to reappear.

EL 29374 was transferred to Territory Phosphate which is a wholly-owned subsidiary of Rum Jungle Resources and EL 29374 was bought into the GR380 reporting group.

On 05/10/2015, a second voluntary relinquishment of 14 blocks was made to reduce EL 29374 to 157 blocks.

The third voluntary partial relinquishment, described here, further reduces EL 29374 by 32 blocks to 125. It appeared on STRIKE on 02/05/2016, backdated to 27/04/2016.

EL 29374 is contiguous with other ELs in Rum Jungle Resources’ Ammaroo Project and remains so even after this partial relinquishment.

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 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). 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.

The area of EL 29374 being relinquished is almost entirely under Cenozoic cover and contains a significant amount of modern alluvial material which is a shallow aquifer. This would be an impediment to exploration. It is also subject to flooding. There are several very small areas of economic basement (Ph) which are not considered prospective for phosphate.

There are no significant mapped outcrops of the Arthur Creek Formation which is believed to host the phosphate to the west southwest. It is not yet known if this formation would be present under cover in the area being relinquished, but other logistic impediments sterilize the relinquished ground anyway.
WORK ON RELINQUISHED AREA

In mid 2013, Central Australian Phosphate made preliminary plans for soil sampling on EL 29374. These plans were abandoned after the takeover by Rum Jungle Resources and prioritisation of work elsewhere in the Ammaroo Project. Rum Jungle Resources proposed reconnaissance drilling EL 29374 in 2014, but the on-site clearances were not undertaken by the CLC and the work has now been postponed until funds become available.

During early 2016, all available data from the registered waterbores in and near EL 29374 was sourced and evaluated. The logs for waterbore RN000929 (Elkedra No2 Bore) showed that the standing water level is 36.5 m which would not preclude phosphate exploration. However, Rum Jungle Resources’ interpretation is that this bore penetrated economic basement for phosphate almost at surface. The lithology was described by the driller as “red slate”. This interpretation contributed to the decision to relinquish the adjacent blocks.
Figure 7. Waterbores with logs examined in the study.

There has been no on-ground work what-so-ever on the blocks being relinquished.

**BLOCKS RELINQUISHED**

The partial relinquishment is shown in detail on the block ID map below.
CONCLUSION AND RECOMMENDATIONS

The relinquished blocks are various combinations of a Site of Conservation Significance, shallow economic basement or sterilised by rivers, creeks, floodouts or shallow aquifers.