Titleholder: Territory Phosphate Pty Ltd  
Operator: Rum Jungle Resources Ltd  
Titles Agent: Complete Tenement Management  
Tenement: EL 24724  
Project Name: Patanella Phosphate Project  
Report Title: Partial relinquishment report for EL 24724, Patanella Phosphate Project  
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Target Commodity: Rock Phosphate  
Date of Report: 21/09/2015  
Datum/Zone: GDA94/ Zone 53  
250K map sheets: Huckitta SF53-11  
100K map sheets: Jervois Range 6152  
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CONTENTS
CONTENTS .......................................................................................................................... 2

SUMMARY .......................................................................................................................... 3

PHYSIOGRAPHY, ACCESS AND LOGISTICS ........................................................................ 4
Location .................................................................................................................................. 4
Habitation and Land Use ......................................................................................................... 5
Access and Logistics .............................................................................................................. 5
Climate ................................................................................................................................. 5

HISTORY OF TENURE ........................................................................................................ 6

EXPLORATION AND PROJECT RATIONALE .................................................................... 6

GEOLOGICAL SETTING ...................................................................................................... 6
Regional Geology .................................................................................................................. 6
Local Geology ...................................................................................................................... 7

WORK BY PREVIOUS OPERATORS .................................................................................. 7

WORK BY RUM JUNGLE RESOURCES ON RELINQUISHED PORTION ......................... 7

BLOCK BEING RELINQUISHED ....................................................................................... 8

CONCLUSION AND RECOMMENDATIONS ...................................................................... 8
SUMMARY

Rum Jungle Resources refers to work on contiguous ELs 24724 and 24716 as the Patanella Phosphate Project which contains the prospect of the same name on the latter EL. An Exploration Target of around 50 to 100 Mt at 10% to 17% P₂O₅ at a cut off grade of 5% P₂O₅ and 20 to 50 Mt at 15% to 20% P₂O₅ at a cut off of 10% P₂O₅ has been independently estimated at Patanella Prospect. Soil sampling indicates that phosphate is also present on EL 24724. As part of an overall partial reduction of the Patanella titles, a single block is being voluntarily relinquished from EL 24724, reducing it to 15 blocks. The block is mapped as faulted economic basement for phosphate. A helicopter flyover of the project did not indicate any prospectivity for phosphate or any other commodity in this block. No on-ground work was conducted on the area being relinquished and there is no expectation of rock phosphate being present in the area relinquished.
PHYSIOGRAPHY, ACCESS AND LOGISTICS

Location

Exploration Licences 24716 and 24724 are located on the Huckitta 250K mapsheet, approximately 280 km east northeast of Alice Springs in the Jervois region of NT (Figure 1).

Figure 1. Regional location and access map for the Patanella Phosphate Project, showing road and track access from Alice Springs.

Figure 2. EL 24724 is the western EL in the Patanella Phosphate Project. Partial relinquishments (outlined in pink) are being made to both ELs. Only a single block is being relinquished from EL 24724. The coloured dots are those drillholes captured to date in Rum Jungle Resources’ database. These drillholes were used to define the Patanella Exploration target.
Habitation and Land Use

The Patanella Project covers parts of Jervois and Lucy Creek PPL pastoral stations, as follows:
- Lucy Creek Station, NT Portion 686, PPL 1007
- Jervois Station, NT Portion 366, PPL 962.

EL 24724 is entirely on Jervois Station. The land is being used by the pastoral lease owners for natural grazing purposes. There is no Aboriginal Land Trust involved and there are no parks or reserves within the area. There have not been, and there are not currently, extractive mining activities, communities or townships within the Project area.

![Figure 3. Cadastre over the Patanella Project showing the pastoral leases.](image)

Access and Logistics

Road access is via the well formed but unsealed Plenty Highway that turns west from the Stuart Highway 68 km north of Alice Springs (see Figure 1). This highway passes to the south of the tenements. The Plenty Highway can be closed to all traffic or have weight restrictions applied following heavy rain. Well formed, but only sporadically maintained, dirt roads connect the Plenty Highway to Jinka, Jervois and Lucy Creek Stations and the Baikal Community. These tracks provide access to the general Patanella Project area. Further vehicular access across the low country within the project area is then via station tracks servicing bores and fence lines. The more elevated country in the project area is generally not accessible by vehicle and a helicopter fly-over has been undertaken by Rum Jungle Resources.

The nearest active unsealed airstrips are located near the Jinka, Jervois and Lucy Creek homesteads and near the MolyHi Mine and Baikal. An airstrip is also located at the Jervois mine site.

Climate

The climate is mainly dry all year round with hot summers and cool to cold winters. Based on records from the nearest Bureau of Meteorology weather station at Jervois, average annual rainfall is 290 mm, of which about two-thirds falls in the December to March period. Average minimum and maximum temperatures in summer are 22°C and 38°C degrees while corresponding winter average minimum and maximum temperatures are 5°C and 22°C. Night-time frosts are common in winter.
HISTORY OF TENURE

EL 24724 was applied for by Arafura Resources NL on 11 May 2005, principally targeting uranium. The title was granted 02 December 2005 for a period of six years. It comprised 96 blocks covering an area of 304.40 km². On 15 January 2009, the EL was reduced to 80 blocks covering 253.68 km². The EL was transferred to NuPower Resources Ltd during the demerger by Arafura of certain uranium assets. In 2010, a further 11 blocks were relinquished leaving a retained area of 69 blocks. The EL was renewed for a period of two years over 104.65 km². After NuPower became Central Australian Phosphate, they moved from uranium exploration to phosphate. Central Australian Phosphate was then taken-over by Rum Jungle Resources. The second renewal was during the take-over. After consultation between Central Australian Phosphate and Rum Jungle Resources, EL 24716 was significantly reduced to only 16 blocks or 50.74 km² at renewal.

The current voluntary relinquishment being reported here will further reduce EL 24724 to only 15 blocks, or 15.6% of the original grant.

EXPLORATION AND PROJECT RATIONALE

The ELs cover the Patanella Phosphate Prospect and its likely extensions along strike and down-dip from surface outcrop. The full areal extent of the phosphate and the consequences of faults and some locally steep surface dips need to be better evaluated. Whilst the Patanella Project is a good fit within Rum Jungle Resources’ portfolio, it is also remote from other phosphate ELs and from logistics generally. Non-phosphate commodities are no longer seen as targets at Patanella.

GEOLOGICAL SETTING

Regional Geology

The Patanella Phosphate Project tenements are underlain mostly by sediments of the Georgina Basin with elements of the basement Arunta / Aleron Province through the south (see geology map and map codes in Figure 2).

The earliest sediments of the Georgina Basin represented in the project area are laminated to thinly bedded, fine grained, quartz arenite to siliharenite with minor thin to thickly bedded, coarse grained, quartz arenite of the Grant Bluff Formation (Pag) in the eastern flanks of the Jervois and Johanssen Ranges. This is overlain by recessive, micaceous, very thin to very thickly bedded, siltstone, laminated mudstone and medium grained quartz arenite of the Elker Formation (Pak). In the Jervois Range this formation contains a stromatolitic dolostone unit near the top of the formation that is capped with a lenticular very thickly-bedded, feldspathic, pebbly orthoquartzite. Mild tectonism (Huckitta Movement) followed the Elker Formation so that it is overlain unconformably by the Mount Baldwin Formation (Clb) comprising thin to very thickly bedded, frequently cross bedded, fine-medium grained, quartz arenite forming prominent ridges in both ranges.

Red Heart Dolostone (former Errarra Formation Cla) disconformably overlies Mount Baldwin Formation. Locally it is believed to consist of basal sandstone (which may or may not strictly be Red Heart Dolostone) grading upwards through silty shale to a white dolostone-silty dolostone unit typically about 23 m thick. This is overlain by a silty sandstone to siltstone unit 36 m thick that is topped by a 67 m thick limestone and dolostone unit containing sandy carbonate. This formation, containing phosphorite, outcrops along the base of the eastern flank of the Jervois Range, and is locally indurated by Cenozoic laterite and silcrete as observed in the Patanella Project area. The Red Heart Dolostone lenses out and is locally absent from the northwestern flank of the Jervois Range and part of the northern flank of the Johanssen Range where Arthur Creek Formation appears to rest directly on Mount Baldwin Formation. The Patanella ELs originally covered the known strike of the Red Heart Dolostone in the area.

Arthur Creek Formation (Cma) overlies Red Heart Dolostone (and Mount Baldwin Formation where the Red Heart Dolostone is absent). It contains a lower sequence of recessive, fossiliferous, variably organic-rich, laminated, pyritic, calcareous siltstone the upper part of which contains very thick limestone beds, overlain by calcareous quartz
arenite to quartzose limestone. It is not known if the Arthur Creek Formation in the project area contains the distinctive anoxic black shale as is does elsewhere in the basin. Arrinhrunga Formation conformably overlies Arthur Creek Formation in the central and western part of the project area. Arrinhrunga Formation contains a thick well-bedded sequence of dolostone and limestone with minor siliciclastic rocks. It is known to host base metal occurrences elsewhere. Eight interringing lithofacies have been recognized; one of which is the Eurowie Sandstone Member. This is the youngest formation of the Georgina Basin represented in the region. The Arthur Creek and Arrinhrunga Formations are believed to underlie most of the central and western parts of the project area but are covered by extensive Quaternary alluvium from Arthur Creek and its tributaries.

**Local Geology**

Based on limited reconnaissance mapping in the tenement during 2006, the deeply weathered and silicified interval that contains phosphate-rich units (predominantly expressed as wavellite but also including minor turquoise at surface) occurs above a red-brown mudstone/siltstone package in Red Heart Dolostone. Apart from one possible archeocyathid, no other fossils were identified within this unit. Fossils are essential for definitive stratigraphic assignment. These units occur at the top of a fining-upwards cycle above the Mount Baldwin Formation. These units were mapped as Errarra Formation by Freeman and Freeman but have since been assigned to the Red Heart Dolostone by Dunster et al 2006. This name “Errarra Formation” is now discontinued and has been subsumed by Red Heart Dolostone (note that previous reports by NuPower and Central Australian Phosphate still continued to refer to the Errarra Formation). Some of the silicified laminated chert/mudstone/siltstone units that overlie this unit could be Thorntonia Limestone, as defined by Dunster et al (2006) in Huc 1, rather than Arthur Creek Formation (*sensu* Freeman 1986; Freeman et al 1989).

**Figure 4** below shows the interpreted extensions of the host stratigraphy.

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**Figure 4. Simplified interpreted distribution of target host facies as interpreted by Rum Jungle Resources.**

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**WORK BY PREVIOUS OPERATORS**

There is no documented work by others on the block being relinquished during the life of EL 24724.

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**WORK BY RUM JUNGLE RESOURCES ON RELINQUISHED PORTION**

The block being relinquished has not been sampled or tested by drilling by Rum Jungle Resources.
Desk-top studies and remote-sensing based on publically available data have been undertaken on the block being relinquished. Based on the published map, the block appears to be outcropping faulted economic basement. Hence, there is no expectation that rock phosphate would be present in the area being relinquished.

A Rum Jungle Resources helicopter fly-over of the whole project included this area. It did not indicate any prospectivity for phosphate or any other commodity.

**BLOCK BEING RELINQUISHED**

A major rationalisation of the titles in the Patanella Phosphate Project has been undertaken. In conjunction with reduction of the contiguous EL 24716, a single block, shown below on a block ID map, is being voluntarily relinquished from EL 24724.

![Diagram of EL 24724 block being relinquished](image)

*Figure 5. The block being relinquished from EL 24724 outlined in pink.*

**CONCLUSION AND RECOMMENDATIONS**

Remote sensing studies, desk-top studies and a helicopter fly-over failed to identify any potential for rock phosphate or any other commodity in the area of EL 24724 being relinquished.