Titleholder: Rum Jungle Resources Ltd
Operator: Rum Jungle Resources Ltd
Tenement Manager: Complete Tenement Management
Tenement: EL 27933
Project Name: Angas Downs Potash
Report Title: Third annual report for EL 27933, Wollunga Well, period ended 26/10/2013
Author: John Dunster
Corporate Author: Rum Jungle Resources Ltd
Target Commodity: Potash
Date of Report: 08/11/2013
Datum/Zone: GDA94/ Zone 53
250K map sheet: Henbury SG53-01
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# Contents

LOCATION, ACCESS AND LAND USE ........................................................................................................... 4
HISTORY OF TENURE, JOINT VENTURES AND DME ADMINISTRATION .................................................. 5
EXPLORATION AND PROJECT RATIONALE ............................................................................................... 5
GEOLOGICAL AND HYDROLOGICAL SETTING ...................................................................................... 5
WORK BY PREVIOUS OPERATORS ........................................................................................................ 6
PREVIOUS WORK BY RUM JUNGLE RESOURCES ................................................................................... 6
  Year One .................................................................................................................................................. 6
  Year Two ............................................................................................................................................... 7
  Remote Sensing ...................................................................................................................................... 7
  Waterbore Studies ................................................................................................................................. 13
CURRENT EXPLORATION .......................................................................................................................... 14
  Exploration Year 3 .................................................................................................................................. 14
  Expenditure Year 3 ................................................................................................................................... 15
PLANNED EXPLORATION YEAR FOUR ....................................................................................................... 15
PLANNED EXPENDITURE YEAR FOUR ....................................................................................................... 15
CONCLUSIONS AND RECOMMENDATIONS ............................................................................................. 15
SUMMARY

Exploration within Rum Jungle Resources’ Karinga Creek Lakes Project is targeting potassium-, magnesium- and sulfate-salts in subsurface salt lake brines to eventually produce potassium sulfate (SOP) and potassium magnesium sulfate (schoenite) fertiliser probably using solar evaporation ponds. This project has a JORC Inferred Brine resource of 5,500,000 tonnes of sulfate of potash (SOP). EL 27933 is 80 km north of, and peripheral to, the main Karinga Creek Project, but is covered by the same Authorisation under the Mining Management Act. EL 27933 is contiguous with Rum Jungle Resources’ EL 28885 (granted 6/03/2012) and it is hoped to work the two together as the Angas (also spelt Angus) Downs Potash Project. This project covers a palaeo-salt lake system, rather than active lakes at Karinga Creek. It is not yet known to what extent basement aquifers are involved; if brine is being discharged from the Amadeus Basin sedimentary rocks; if pooled brine or bedded evaporites exist in the subsurface; or if Amadeus Basin evaporite diapirs are affecting the Angas Downs project area. EL 27933 was pegged to target potash and other evaporites. Uranium is specifically excluded as a target. Angas Downs is an Indigenous Protected Area under Commonwealth legislation and this has made it difficult to get permission to access the land. During the first year, a long awaited AAPA site survey was finally completed and the CLC were contacted twice, but no agreement was reached. Further approaches were made to the CLC during year two; again without success. An on-country meeting was finally held 14/03/2013. Verbal assurances from both the TOs and the CLC field officers at the meeting were that there was no impediment and that a formal agreement should be entered into as soon as possible to enable appropriate on-ground clearances and field work to be undertaken in the 2013 field season. As of 07/11/2013, and after several more approaches to various levels in the CLC, no agreement had been forthcoming. Rum Jungle Resources Ltd can only conclude that the CLC are deliberately delaying progress. Rum Jungle Resources Ltd is now withholding any further payments to the CLC concerning the Angas Downs project. If an agreement is not forthcoming before the start of the 2014 field season, Rum Jungle Resources will be forced to review the viability of exploring in this area and instead would concentrate on its similar grassroots potash exploration in Western Australia.
LOCATION, ACCESS AND LAND USE
EL 27933 covers 78 sub-blocks or 243.38 km$^2$. The larger, contiguous, EL 28885 is also held by Rum Jungle Resources Ltd and these two ELs make up the Angas (also less correctly spelt Angus) Downs Potash Project. EL 27933 is just south of Wallara (also spelt Wallera) Ranch. That station’s airstrip is on the northern boundary of the EL (Figure 1). EL 27933 is bisected by the partly-formed Luritja Road. This and a few poorly-maintained station tracks to bores are the only other existing access.

ABORIGINAL LAND ISSUES
EL 27933 is entirely on private NT Por 620 held by Angas Downs as Perpetual Pastoral Lease. This Station is an Indigenous Protected Area under Commonwealth legislation (Figure 2) granted as part of the Australian Government’s Caring for our Country scheme on 10 June 2009. The property forms part of Australia’s National Reserve System.
Parts of the station are a fenced conservation reserve to restock traditional Aboriginal game species such as emus. The property runs 300-400 head of cattle, restricted to a 266 km² paddock in the southeast. Tourists can join tours to Angas Downs led by members of the Imanpa community to learn about the pastoral, cultural and natural history of the property.

Dealing with access issues on this landholding have complicated and delayed exploration to date. An on-country meeting was held 14/03/2013 and attended by Rum Jungle Resources Ltd Chief Geologist. Verbal assurances from both the TOs (particularly the women) and the consensus of the CLC field officers at the meeting were that there was no impediment and that a formal agreement should be entered into as soon as possible to enable appropriate on-ground clearances and field work to be undertaken in the 2013 field season. As of 07/11/2013, and after several approaches to various levels in the CLC, no agreement had been forthcoming.

The March on-country meeting was held in conjunction with SANTOS who was seeking permission for seismic line clearing and the drilling of a petroleum well. Rum Jungle Resources notes that the much more invasive SANTOS work program was approved in time for the 2013 field season, while Rum Jungle Resources’ work was not.

Rum Jungle Resources Ltd can only conclude that the CLC are deliberately delaying progress. Rum Jungle Resources Ltd is now withholding any further payments to the CLC concerning the Angas Downs project.

**HISTORY OF TENURE, JOINT VENTURES AND DME ADMINISTRATION**

EL 27933 was applied for in February 2010 and granted 27/10/2010 for six years. It is 100% held by Rum Jungle Resources Ltd. The area south of EL 27933 is also held by Rum Jungle Resources as EL 28885 which was granted 06/03/2012.

EL 27933 was included in Rum Jungle Resources’ Karinga Creek Potash Authorisation 565-02. A drilling program has been approved under this Authorisation and carried forward on each revision of the MMP.

**EXPLORATION AND PROJECT RATIONALE**

The emphasis on EL 27933 is exploring the palaeo-salt lakes and any associated drainages. Rum Jungle Resources is targeting evaporite minerals within the palaeo-salt lake system and any residual brines. After a desktop study, and to respect the attitudes of the Traditional Owners, palaeochannel uranium is specifically excluded as a target.

**GEOLOGICAL AND HYDROLOGICAL SETTING**

Most of EL 27933 is covered by gypsiferous clay flats and sand ridges and dunes up to 15 m high. There is no outcrop.

EL 27933 contains an evaporitic palaeo-salt lake system (Figure 3) manifest as gypsum sands, outcropping gypsum mounds and salt crusts in open flats. Rum Jungle Resources believe that the EL also contains a previously unrecognized palaeo-drainage system. The palaeo-lakes and palaeo-channels may contain economic quantities of rock evaporites or highly evolved brines suitable for potash production.

EL 27933 overlies rocks of the Amadeus Basin. The Amadeus Basin covers approximately 150,000 km² and extends into Western Australia. It is comprised of a Neoproterozoic to mid-Paleozoic succession of predominantly shallow marine sedimentary rocks and attains a thickness of up to 14,000 m. The Amadeus Basin contains evaporites which form diapirs and piercement structures. At surface, these structures produce localized halite and gypsum and highly salty groundwater. Evaporite diapirs are visible on some seismic lines in the vicinity of EL 27933. However, it is not known as yet, what relationship, if any, there is between the palaeo-salt lakes on EL 27933 and a possible Amadeus Basin evaporite source.
Further south, the siltstones of the central Amadeus Basin have weathered into a topographic low which contains the Karinga Creek Lakes. These lakes are feed by subsurface discharge from the Central Australian Groundwater Discharge Zone. To date, these modern lakes have been the main focus of Rum Jungle Resources’ potash project. EL 27933 is about 80 km north of the main Rum Jungle ELs over the active Karinga Creek Lakes. EL 27933 and EL 28885 (the Angas Downs Potash Project) are regarded as an adjunct to the Karinga Creek Lakes Project and are testing a similar model, but in a more geologically-evolved setting. The Angas Downs Lakes are mapped as an “inactive” groundwater discharge zone on AGSO (1992) work. It is not yet known if any basement aquifers are involved or, indeed, if brine is being or has been discharged from the Amadeus Basin sedimentary rocks in the Angas Downs project area at all. Systematic drilling and water testing will be required.

**Figure 3. Interpreted palaeo-salt lakes on EL 27933 and EL 28885.**

**WORK BY PREVIOUS OPERATORS**

The area of EL 27933 has been included in some evaporite exploration by other operators as described in previous annual reports. It has also been the subject of petroleum exploration, including historic and recent seismic acquisition.

**PREVIOUS WORK BY RUM JUNGLE RESOURCES**

**Year One**

Desktop studies were undertaken, including checking previous petroleum reports for the area. Two Rum Jungle Resources’ geologists and a field technician undertook a reconnaissance from existing tracks with the permission of the Station Manager. The extensive gypsum mounds and salt crusts located are shown below. Research into two water bores named Wollunga Well and Abe’s Folly in the project area highlighted salt water close to surface with potentially elevated potassium levels. A 20 hole air core drill program was proposed and was approved in a Mine Management Plan for this tenement but due to lack of permission for access, no drilling could be undertaken in year one.
Year Two
Despite several attempts to expedite an access agreement via the CLC, no permission was forthcoming. The drilling program approved by DME had to be carried over once more. Consequently, year two activities were once again restricted to desk-top and remote sensed studies.

Remote Sensing
A major remote sensed study was conducted during year 2. Landsat-742 (Figure 6) was obtained and compared to the false colour ASTER image (Figure 7) gratis from NTGS.
Neither of these images was satisfactory, so Rum Jungle Resources acquired much higher resolution stitched rectified SPOT 5 imagery (Figure 7) from GeoImage for the whole project area. In accordance with the standard SPOT users’ agreement, the data itself will be kept in-house. GeoImage also provided experimental night-time thermal ASTER images for part of the Angas Downs Project but there was insufficient coverage of EL 27933 to be of any use.
Other ASTER mineral maps and derived images were obtained gratis from NTGS. All these images and SPOT5 were used in a remote-sensing study conducted across the whole Angas Downs Project during August 2012. This is part of on-going studies aimed at better remotely predicting palaeo-salt lake characteristics and prospectivity. Unfortunately, many of the ASTER mineral maps and derived images proved to be of limited use at Angas Downs. The most useful, shown in the figures below, were ratioed and combined using selectively transparent overlays between them in the hope of better mapping the palaeo-salt lakes and any palaeo-channels. It was disappointing that the experimental ASTER gypsum index (courtesy of Roger Clifton, NTGS) over the Angas Downs Project (Figure 13) failed to detect actual gypsum exposed at the surface.
Figure 10. ASTER ferric oxide index over the Angas Downs Project area with interpreted palaeo-salt lakes superimposed.

Figure 11. ASTER regolith ratios over the Angas Downs Project area with interpreted palaeo-salt lakes superimposed.
Figure 12. ASTER silica index over the Angas Downs Project area with interpreted palaeo-salt lakes superimposed.

Figure 13. It was disappointing that the experimental ASTER gypsum index over the Angas Downs Project area failed to detect actual gypsum exposed at the surface. Only a small fraction was detected in eastern EL 27933.

The total count radiometric image and the various component channels are shown below.
Figure 14. Total count radiometrics over the project area with interpreted palaeo-salt lakes superimposed.

Figure 15. K channel radiometrics over the project area with interpreted palaeo-salt lakes superimposed. Note the higher response in EL 28885 than EL 27933.
Figure 16. Th channel radiometrics over the project area with interpreted palaeo-salt lakes superimposed.

Figure 17. U channel radiometrics over the project area with interpreted palaeo-salt lakes superimposed. There is little indication of palaeo-channel uranium.

**Waterbore Studies**

During Year two, considerable effort was put into researching the producing and failed waterbores in the project area. There are only two registered bores on EL 27933. They are plotted with their RN numbers on the map below (Figure 18).
Assays are tabled below. Wollunga Well (RN010296) is drawing from a shallow aquifer that had originally been tapped by a hand dug well from which the bore obtained its name. Although somewhat anomalous in K and SO\textsubscript{4}, the absolute K ppm and K/SO\textsubscript{4} ratios are below those of brines in the Karinga Creek Project. RN013978, also called the Angas Downs Road Bore, is drawing from a much deeper Amadeus Basin aquifer. The absolute SO\textsubscript{4} and K values are slightly lower than Wollunga and RN013978 has much higher relative Na and Mg, which suggests that it may be less suitable for potash production. Neither bore was logged by the drillers as having intersected bedded evaporites or as having lost circulation or voids that might indicate their presence.

<table>
<thead>
<tr>
<th>RN</th>
<th>Common Names</th>
<th>Sample</th>
<th>TD (m)</th>
<th>SWL (m)</th>
<th>FLOW (L/s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>RN010296</td>
<td>Wollunga Well, Olunga Well</td>
<td>drill</td>
<td>13.7</td>
<td>4.3</td>
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<td>RN010296</td>
<td>Wollunga Well, Olunga Well</td>
<td>discharge</td>
<td>na</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RN010296</td>
<td>Wollunga Well, Olunga Well</td>
<td>discharge</td>
<td>na</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RN013978</td>
<td>Road Bore Angas Downs Station</td>
<td>drill</td>
<td>73</td>
<td>50.6</td>
<td>2.25</td>
</tr>
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</table>

Table 1. Waterbore details, EL 27933.

<table>
<thead>
<tr>
<th>RN</th>
<th>Sample</th>
<th>Na</th>
<th>K</th>
<th>Ca</th>
<th>Mg</th>
<th>Fe</th>
<th>SiO\textsubscript{2}</th>
<th>Cl</th>
<th>SO\textsubscript{4}</th>
<th>NO\textsubscript{3}</th>
<th>HCO\textsubscript{3}</th>
<th>F</th>
<th>PO\textsubscript{4}</th>
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<tr>
<td>RN010296</td>
<td>drill</td>
<td>100</td>
<td>122</td>
<td>590</td>
<td>58</td>
<td>&lt;0.1</td>
<td>41</td>
<td>119</td>
<td>1800</td>
<td>68</td>
<td>121</td>
<td>2</td>
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<tr>
<td>RN010296</td>
<td>discharge</td>
<td>97</td>
<td>116</td>
<td>601</td>
<td>60</td>
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<td>43</td>
<td>88</td>
<td>1790</td>
<td>37</td>
<td>113</td>
<td>2.5</td>
<td></td>
</tr>
<tr>
<td>RN010296</td>
<td>discharge</td>
<td>97</td>
<td>104</td>
<td>601</td>
<td>47</td>
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<td>40</td>
<td>96</td>
<td>1700</td>
<td>5</td>
<td>112</td>
<td>1.5</td>
<td></td>
</tr>
<tr>
<td>RN013978</td>
<td>drill</td>
<td>893</td>
<td>99</td>
<td>439</td>
<td>215</td>
<td>&lt;0.1</td>
<td>42</td>
<td>1750</td>
<td>1580</td>
<td>45</td>
<td>160</td>
<td>1.6</td>
<td></td>
</tr>
</tbody>
</table>

Table 2. Water assays from bores on EL 27933 in ppm.

CURRENT EXPLORATION

Exploration Year 3
Despite the positive on-country meeting in March 2013 and numerous approaches since, the CLC are yet to provide Rum Jungle Resources with a formal agreement. No on-ground work was possible in year 3 because of the lack of an agreement with the CLC and TOs. This was flagged with DME during a meeting on 07/11/2012.
**Expenditure Year 3**
The only admissible expenditure is tabulated below:

<table>
<thead>
<tr>
<th></th>
<th>Amount</th>
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<tbody>
<tr>
<td>H. Office Studies</td>
<td>2,824.52</td>
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<tr>
<td>I. Overheads (not to exceed 15% of the sum of A to H above)</td>
<td>423.68</td>
</tr>
<tr>
<td>K. Total Expenditure Claimed</td>
<td>$3,248.20</td>
</tr>
</tbody>
</table>

**PLANNED EXPLORATION YEAR FOUR**
Rum Jungle Resources will continue to attempt to get an agreement with the CLC and TOs and to undertake the drilling program originally planned.

**PLANNED EXPENDITURE YEAR FOUR**
Rum Jungle Resources Ltd plans to carry forward the same proposed program from last year.

<table>
<thead>
<tr>
<th>ACTIVITY DETAILS FOR THE NEXT REPORTING PERIOD</th>
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</thead>
<tbody>
<tr>
<td>Admissible Expenditure</td>
</tr>
<tr>
<td>------------------------</td>
</tr>
<tr>
<td>A. Geological Activities and Prospecting</td>
</tr>
<tr>
<td>B. Geochemical Activities</td>
</tr>
<tr>
<td>C. Geophysical and Remote Sensing Activities</td>
</tr>
<tr>
<td>D. Drilling</td>
</tr>
<tr>
<td>E. Bulk Sampling and Earthworks</td>
</tr>
<tr>
<td>F. Rehabilitation</td>
</tr>
<tr>
<td>G. Pre-feasibility inc. Metallurgical and Environmental</td>
</tr>
<tr>
<td>H. Office Studies</td>
</tr>
<tr>
<td>I. Overheads (not to exceed 15% of the sum of A to H above)</td>
</tr>
<tr>
<td>J. Covenant for next reporting period</td>
</tr>
</tbody>
</table>

**CONCLUSIONS AND RECOMMENDATIONS**
On-ground work cannot proceed without a CLC agreement. Despite a positive on-country meeting with the TOs in March 2013, there is still no agreement. If an agreement is not forthcoming before the start of the 2014 field season, Rum Jungle Resources will be forced to review the viability of exploring in this area and instead would concentrate on its similar grassroots potash exploration in Western Australia.