



**Titleholder:** Reward Minerals Ltd and Rum Jungle Resources Ltd (50%)

**Operator:** Rum Jungle Resources Ltd

**Tenement Manager:** Ross McColl

**Tenement:** EL 28205

**Project Name:** Karinga Creek Potash

**Report Title:** [First annual report for EL 28205](#)

**Author:** Nigel Doyle and John Dunster

**Corporate Author:** Rum Jungle Resources Ltd

**Target Commodity:** Potash

**Date of Report:** 04/04/2012

**Datum/Zone:** GDA94/ Zone 52

**250K map sheet:** Kulgera/Ayers Rock

**Address:** PO Box 775, Darwin NT 0801

**Phone:** 8942 0385

**Fax:** 8942 0318

**Contact Email:** [jdunster@rumjungleresources.com.au](mailto:jdunster@rumjungleresources.com.au)

#### Copyright Statement

This document, the data it contains and its attachments are submitted under the NT [Mineral Titles Act](#) or NT [Mining Management Act](#). As such, the copyright normally reserved by Rum Jungle Resources Ltd is controlled by those Acts as well as the Commonwealth Copyright Act, as may be applicable. This statement authorises the NT Department of Resources to copy, store and distribute this document, data and attachments subject to the confidentiality restrictions of the relevant NT Acts.

## Contents

SUMMARY .....	3
LOCATION AND ACCESS .....	4
HISTORY OF TENURE .....	4
EXPLORATION RATIONALE .....	4
GEOLOGICAL AND HYDROLOGICAL SETTING .....	4
PREVIOUS EXPLORATION .....	5
CURRENT EXPLORATION AND RESULTS .....	5
PLANNED EXPLORATION YEAR 2 .....	7
PLANNED EXPENDITURE YEAR 2 .....	7
CONCLUSIONS AND RECOMMENDATIONS .....	7

## SUMMARY

Exploration is targeting subsurface potassium-, magnesium- and sulfate-salts in dry salt lakes brines to eventually produce potassium sulfate (SOP) and potassium magnesium sulfate (schoenite) fertiliser, probably using solar evaporation ponds. During the first year of tenure of EL 28205, nine air core drill holes were drilled for 210 metres with 12 brine samples assayed. Brackish water suitable for stock use was sampled in hole KPAC034, with all other holes producing salt water varying from relatively high to mostly low grade in potassium magnesium sulfate salts.

Expenditure for the year was \$35,682 against a covenant of \$16,000.

## LOCATION AND ACCESS

EL 28205 is located 300 km southwest of Alice Springs on the Ayers Rock and Kulgera 1:250 000 map sheets. Access is from the Lasseter Highway which runs east-west south of the project area. The EL is also serviced by a main station track running north from Curtin Springs Roadhouse. Curtin Springs Station and roadhouse was used as logistic bases.

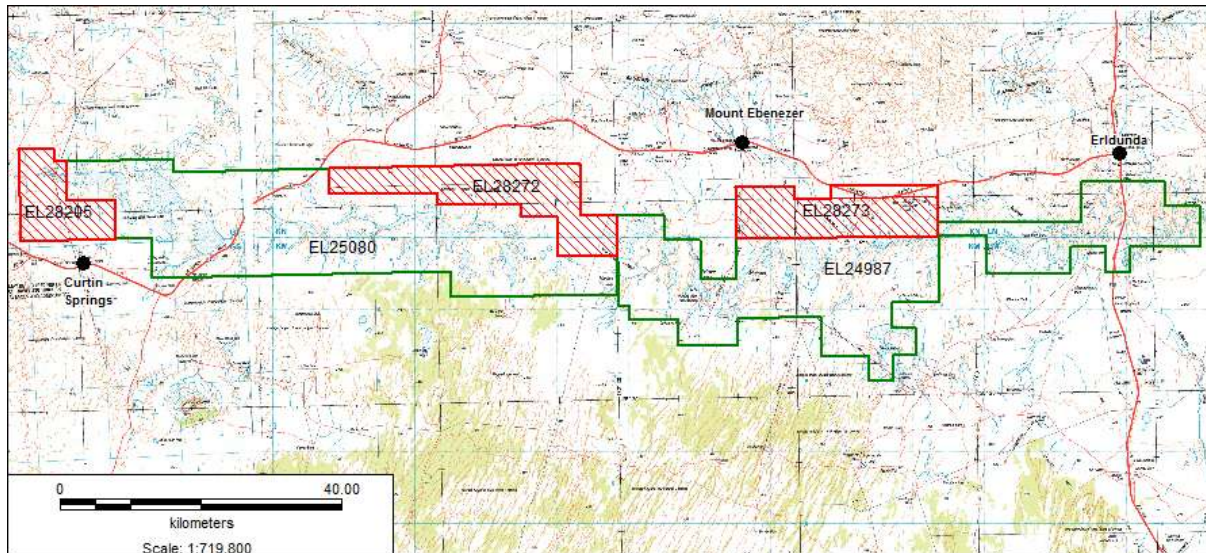


Figure 1. Location map of EL 25080 and other joint venture tenements

## HISTORY OF TENURE

The exploration licence was granted to Rum Jungle Resources Ltd (50%) and Reward Minerals (50%) on March 9, 2011 for a period of six years. The tenement covers 39 sub-blocks or 121.2 square kilometres. The Rum Jungle/Reward Minerals joint venture at the Karinga Creek Potash Project has six granted tenements along a string of salt lakes from Curtin Springs to Erldunda.

## EXPLORATION RATIONALE

EL 28205 salt lakes and sub-surface aquifers are being explored for potassium- and magnesium-rich sulfate brines. It is hoped to produce potash and/or schoenite fertiliser by solar evaporation and/or other onsite treatments. Australia has no producing potash mines. Around 350,000 tonnes of potash is imported into Australia annually from Canada and is worth around \$200 million.

## GEOLOGICAL AND HYDROLOGICAL SETTING

EL 28205 overlies the southwestern sector of the Amadeus Basin in the Northern Territory. The Amadeus Basin covers approximately 150 000 km<sup>2</sup> 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 siltstones of the central Amadeus Basin have weathered into a topographic low. This depression contains a chain of Cenozoic playa salt lakes. The sediments in these modern lakes and their palaeo-drainages contain brines formed by the evaporation of surface and near-surface water from infrequent and largely unpredictable rain and flooding events.

The Devonian Horseshoe Bend Shale forms low mesas around many of the lakes and constitutes the lake "floor". Where it is fractured and/or deeply weathered, the Horseshoe Bend Shale is a brine

aquifer in its own right. There are variable degrees of mixing with the brine within the lake sediments. The Horseshoe Bend Shale was/is evaporitic, containing sulfate and chloride evaporites. It also contains locally abundant detrital biotite. The evaporites have been leached out over geological time and have almost certainly contributed to the brine, both within the shale and within the lake sediments. These brines have liberated potassium from the weathering biotite.

Quaternary sand dunes, up to 30 m high, encroach onto the depression. The dunes are mostly vegetated and stable. The playas presently occupy only the lowermost topographic depressions in swales between dunes. Quaternary calcrete and silcrete duricrusts (of vadose origin) are characteristically superimposed on Amadeus Basin outcrops, forming escarpments several meters high along the margins of some of the playa lakes. Low-relief gypsum-sand "islands" are also present in some of the playas.

Groundwater in the Cenozoic calcretes and associated sediments of the study area is generally in the range of 1.5-9.7 g/l total dissolved solids. The fresher ground waters (1.5-4.8 g/l TDS) in the study area are recorded mainly from the bedrock hilly areas and in the perched calcrete aquifers, which are away from direct influence of playa brines. Down the local hydrologic gradients, the groundwaters become increasingly saline, reaching salinities up to 15.7 g/l TDS. In the playa marginal areas, the brines become Cl-SO<sub>4</sub> dominant, and Na is the major cation. Within the playas, intense evaporative concentration of near-surface solutions initially give rise to precipitation of gypsum at concentration above 100g/l TDS. As a result, the playa brines in the general area of Lake Amadeus and Karinga Creek are commonly Na-Cl waters and locally highly enriched in K, Mg and SO<sub>4</sub>.

## **PREVIOUS EXPLORATION**

No previous exploration has been carried out on EL 28205. Water Resources have drilled some holes looking for fresh water.

## **CURRENT EXPLORATION AND RESULTS**

During the first year of tenure, nine air core drill holes were drilled for 210 metres. Drilling was conducted along the Main North Road which is a station track running north from Curtin Springs Roadhouse. This was reconnaissance exploration to find the depth to the water table and to collect spot water samples. Drilling tested the dry salt lake and areas to the north and south of the lake. It also tested for the presence of sub-surface palaeochannel feeders. Brine samples were air lifted using the rig and sent to NTEL for routine water assay. Of the brine intervals intersected, only 12 warranted assay.

Results are typical of some salt water aquifers in the region but are not as high as concentrated brines beneath active salt lakes elsewhere in the project area. This tends to downgrade the area of EL 28205 tested by drilling so far, but further work will be required to test the potential for potash production and to explore elsewhere on the EL. Only one sample would be suitable as stock water.

Hole locations, drill logs, and assays are appended to this report in raw data files and in formats as best as possible that can be generated by MRT software.

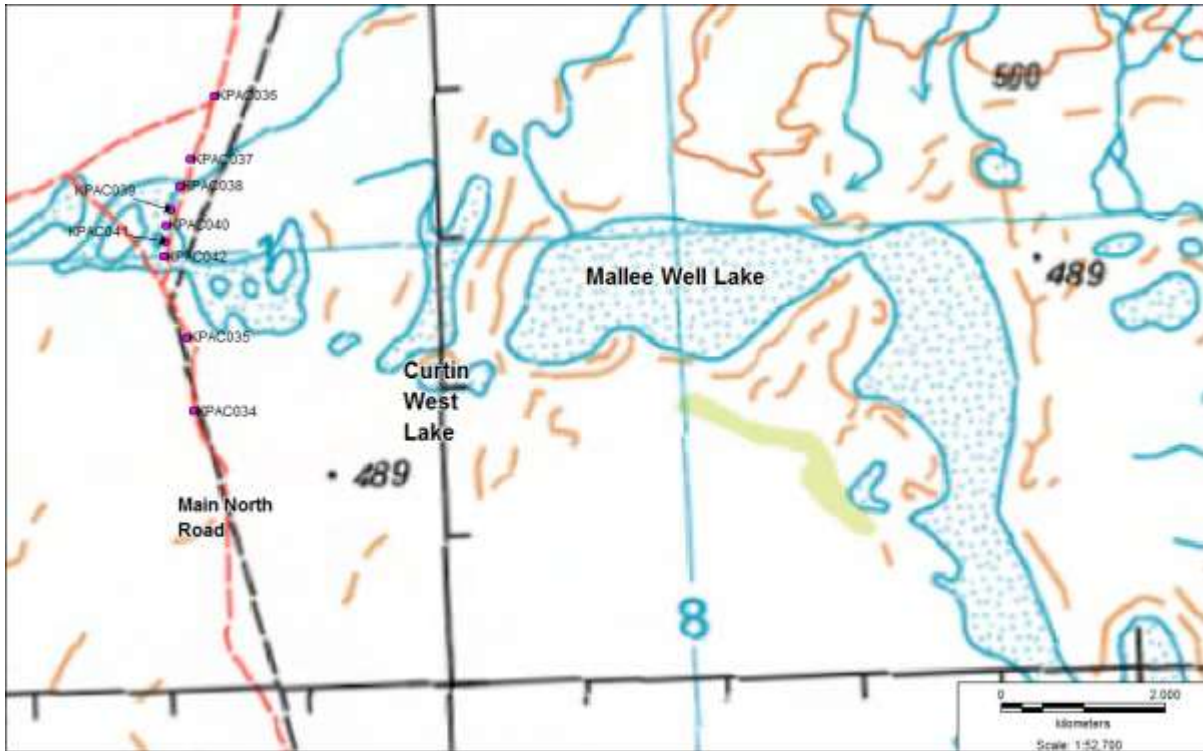


Figure 2. Location map of air core drillholes on Main North Road

Hole	Easting MGA	Northing MGA	Depth (m)	Water table (m)	Sample No	Sample depth (m)
KPAC034	774060	7208077	32	7	KPB21-23	18/25/32
KPAC035	774017	7209000	51	12	KPB24/25	21/51
KPAC036	774488	7211999	36	12		
KPAC037	774150	7211223	30			
KPAC038	774015	7210891	12	1.5	26/27	1 AND 9
KPAC039	773887	7210611	13	3	28	12
KPAC040	773834	7210415	6	3	29/30	4 AND 6
KPAC041	773824	7210214	9	2	31	9
KPAC042	773777	7210023	21	2	32/33	3 AND 21

Table 1. Drillhole collar table

## **PLANNED EXPLORATION YEAR 2**

During the second year of exploration, a review of all drilling on the six tenements which make up the Karinga Creek Potash Project will be undertaken. This will include prioritisation of areas for further work. Comparisons with elsewhere will determine if brines intersected so far in EL 28205 are high enough grade for economic production of potash/schoenite. A consultant will be engaged to model the aquifers. If justified by the review and modeling and after the results of the 2012 field season, two or three cased air core holes may be drilled to enable pump testing and recharge calculations of the salt water aquifer beneath the dry salt lake on Main North Road. Other areas of EL 28205 may warrant further exploration.

## **PLANNED EXPENDITURE YEAR 2**

Review of Drilling and Results	\$2500
Aquifer Modelling	\$1800
Air Core Drilling and bore hole construction	\$9000
Wages, vehicles, accommodation	\$7500
<b>Total</b>	<b>\$20 800</b>

## **CONCLUSIONS AND RECOMMENDATIONS**

Salt water brine has been found on EL 28205. It is not as higher grade as salt lakes on other tenements to the east, which has somewhat downgraded the prospectivity of the area drilled. Nevertheless, further investigations may be carried out in the area drilled and over the remainder of EL 28205 to determine the potential of aquifer(s) to produce brine for a potash/ schoenite mining operation.