



**Titleholder:** Tyson Resources Pty Ltd

**Operator:** Rum Jungle Resources Ltd

**Tenement Manager:** Ross McColl

**Tenement:** EL 25080

**Project Name:** Karinga Creek Potash

**Report Title:** Second partial relinquishment report  
for EL 25080, Lake Amadeus, 2011

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**Target Commodity:** Potash

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**Datum/Zone:** GDA94/ Zone 52 and Zone 53

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

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## SUMMARY

Exploration on EL 25080 is targeting potassium-, magnesium- and sulfate-salts in salt lakes brines to eventually produce potassium sulfate (SOP) and potassium magnesium sulfate (schoenite) fertiliser probably using solar evaporation ponds.

No exploration work has been conducted on the relinquished portion of the tenement.

## LOCATION AND ACCESS

EL 25080, "Lake Amadeus", is located 210 km southwest of Alice Springs on the Kulgera and Ayers Rock 1:250 000 map sheets. Access is from the Lasseter Highway which runs east-west through the project area and crosses EL 25080. The EL is also serviced by numerous station tracks. Curtin Springs Station and roadhouse was used as a logistic base. Access on the salt lakes themselves requires specialist equipment. Quad bikes were only partly successful and it was necessary to purchase tracked AWD amphibious vehicles and a trailer with a ground footprint of less than one psi. Helicopter support and equipment lift was also necessary.

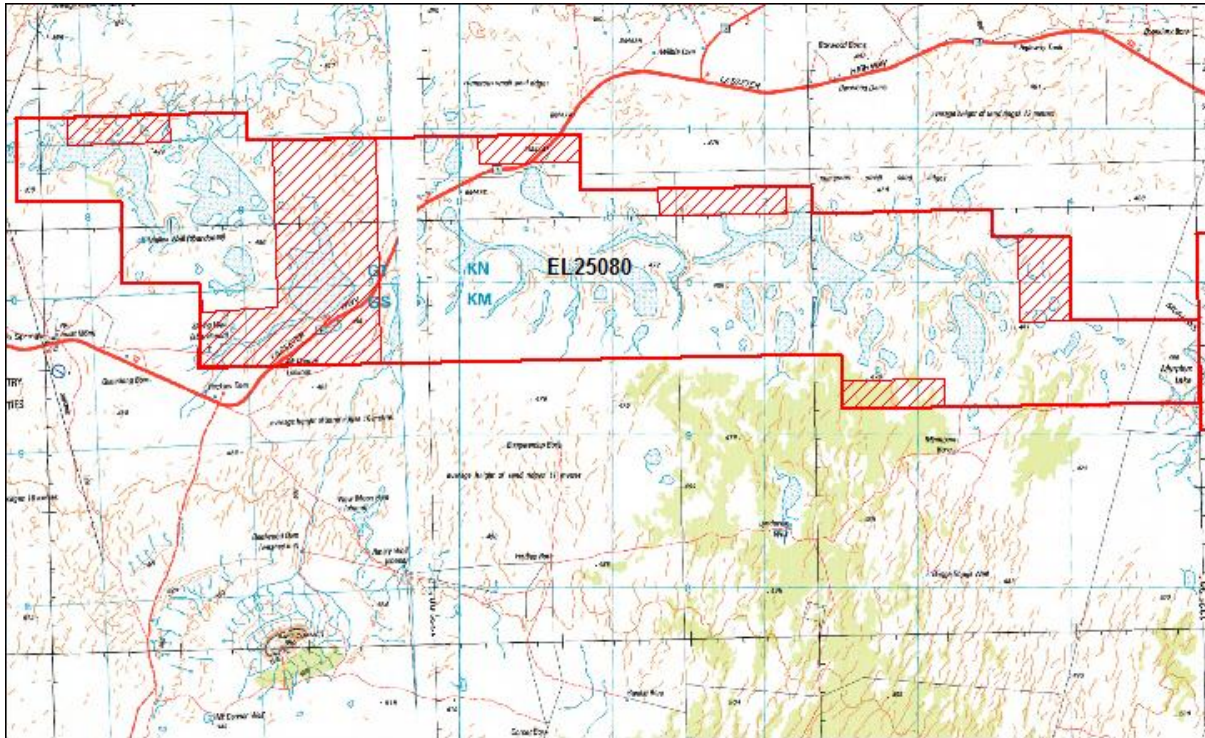


Figure 1. Location map of EL 25080 with relinquished areas in red

## HISTORY OF TENURE AND JOINT VENTURES

EL 25080 is one of several ELs in Rum Jungle Resources' Karinga Lakes Potash Project which various JVs under Rum Jungle Resources' operatorship. EL 25080 was applied for on 01/12/2005 and was granted to Tyson Resources Pty Ltd for a period of six years on 09/10/2006. Tyson Resources is a company related to Reward Minerals which is a JV partner with Rum Jungle Resources in this project. During the fourth year of tenure, a deal between (then) Rum Jungle Uranium Ltd and Tyson Resources gave Rum Jungle Resources the rights to operate the tenement. Tyson Resources / Reward Minerals has elected not to contribute financially and their share is being diluted. However, they continue to provide technical advice. In September 2009, a reduction of 132 blocks was completed, leaving an area of 888.63 km<sup>2</sup>. On 11/10/2011, 81 sub-blocks were relinquished and the EL was reduced to 699 km<sup>2</sup> or 225 sub-blocks (figure 1). It covers 80 km east-west.

## EXPLORATION RATIONALE

EL 25080's 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 fertilizer 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 25080 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 highly enriched in K, Mg and SO<sub>4</sub>.

## **EXPLORATION ON RELINQUISHED PORTION**

No exploration was carried out on the relinquished portion of the tenement.

## **CONCLUSIONS**

The relinquished portion of the tenement generally contains areas that do not have salt lakes of interest or salt lakes we are not allowed to access.