Minotaur A.C.N. 108 483 601

Minotaur Exploration Ltd
8 Beulah Rd, Norwood 5067, South Australia
Tel: +61 8 8132 3400 Fax: +61 8132 3499
Email: admin@minotaurexploration.com.au

ANNUAL TECHNICAL REPORT

EL 4981 (Lake Cadi)
SOUTH AUSTRALIA

FOR YEAR ENDING 30th AUGUST 2013

R.B. Flint

September 2013

1:250 000 Map reference	SH 53-3 WARRINA
1:100 000 Map reference	5940 Oolgelima 6040 Boorthanna
Date of grant :	31/08/2012
Period of validity:	2 years
DISTRIBUTION	Minotaur Exploration

ABSTRACT

A review of historical geological and geophysical data for tenement EL 4981 reveals the potential for both IOCG-style mineralization and Mg-sulphate salts.

Magnetite- and pyrite-rich alteration within drillhole NC9202 contains highly anomalous Rare Earth Elements Ce and La (up to13,600 ppm Ce and 11,900 ppm La) indicating IOCG-style hydrothermal fluids consistent in character with those further south within the Mt Woods Inlier. Discrete magnetic and gravity anomalies proximal to NW-trending faults should be the focus of detailed gravity surveys.

Significant quantities of Mg-sulphate salts were defined at Giddi Giddina Creek more than 25 years ago by CRA Exploration and form a geologically rare mineral deposit. Major minerals are bloedite ($MgSO_4Na_2SO_4.4H_2O$), epsomite ($MgSO_4.7H_2O$) and hexahydrite ($MgSO_4.6H_2O$) and it is likely that additional occurrences exist within the region.

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

1. INTRODUCTION

Tenement EL 4981 (Lake Cadi), encompassing an area of 786 km^2, was granted to Minotaur Operations on 31st August 2012 for a period of 2 years. It is located ~65 km east of the opal mining town of Coober Pedy and north of the Coober Pedy to William Creek road (Figure 1). The tenement is totally within the Green zone of the Woomera Prohibited Area (WPA) controlled by the Federal Department of Defence, thus special requirements apply for access. These include provisions that non-Defence users may be required to evacuate the WPA for up to 56 days per year with only 14 days notice.

Being on the northern portion of the Gawler Craton, the exploration target is Cu + Au mineralization and this report summarizes exploration activities by Minotaur Operations on tenement EL 4981 during the past 12 months and since grant on 31st August 2012.

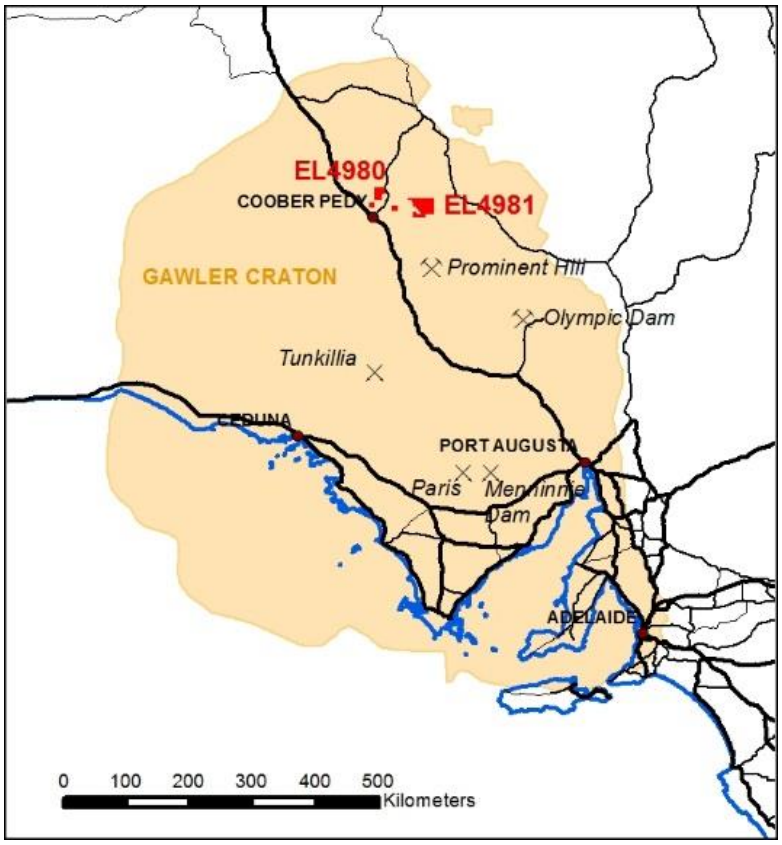

Figure 1: Regional location plan of tenement EL 4981

2. GEOLOGICAL AND TECTONIC SETTING

There are no basement exposures on EL 4981 (Lake Cadi) as crystalline basement is concealed by ~50–100 m thick sedimentary cover within the Carboniferous–Permian Arckaringa Basin (Boorthanna, Stuart Range and Mount Toondina Formations) and/or Mesozoic Eromanga Basin (Algebuckina Sandstone, Cadna-owie Formation and Bulldog Shale) (Figures 2–3) (Ambrose and Flint, 1981; Rogers and Freeman, 1996; Drexel and Preiss, 1995).

The Gawler Craton has been subdivided into a series of domains, based on geophysical, geological and geochronological evidence as to delineate regions of similar lithological and structural associations (Figure 5) (Daly and Fanning, 1993; Flint, 1993; Parker, 1993; Daly et al, 1998; Fanning et al, 2007).

The oldest rocks within the Gawler Craton are the weakly metamorphosed Devils Playground Volcanics in the central-northern Gawler Craton, which crystallised at 2553 ± 9 Ma (Cowley and Fanning, 1991). These volcanics form part of the variably metamorphosed bimodal volcano-sedimentary sequences of the Mulgathing and Sleaford Complexes, which together define the late Archaean to early Palaeoproterozoic ‘core’ of the Gawler Craton.

The late Archaean rocks of the craton are flanked and overlain by a series of Palaeoproterozoic volcanosedimentary basins. These basins comprise a significant proportion of the Gawler Craton and include the Hutchison Group, Wallaroo Group, Price Metasediments and Tarcoola Formation. Metasedimentary rocks are also present in the Mt Woods and Peake and Denison inliers, the Fowler Domain and also form the bulk of the Coober Pedy Ridge Domain and the Nawa Domain, the latter of which includes the Mabel Creek Ridge and the Moondrah Gneiss (Figures 4–5).

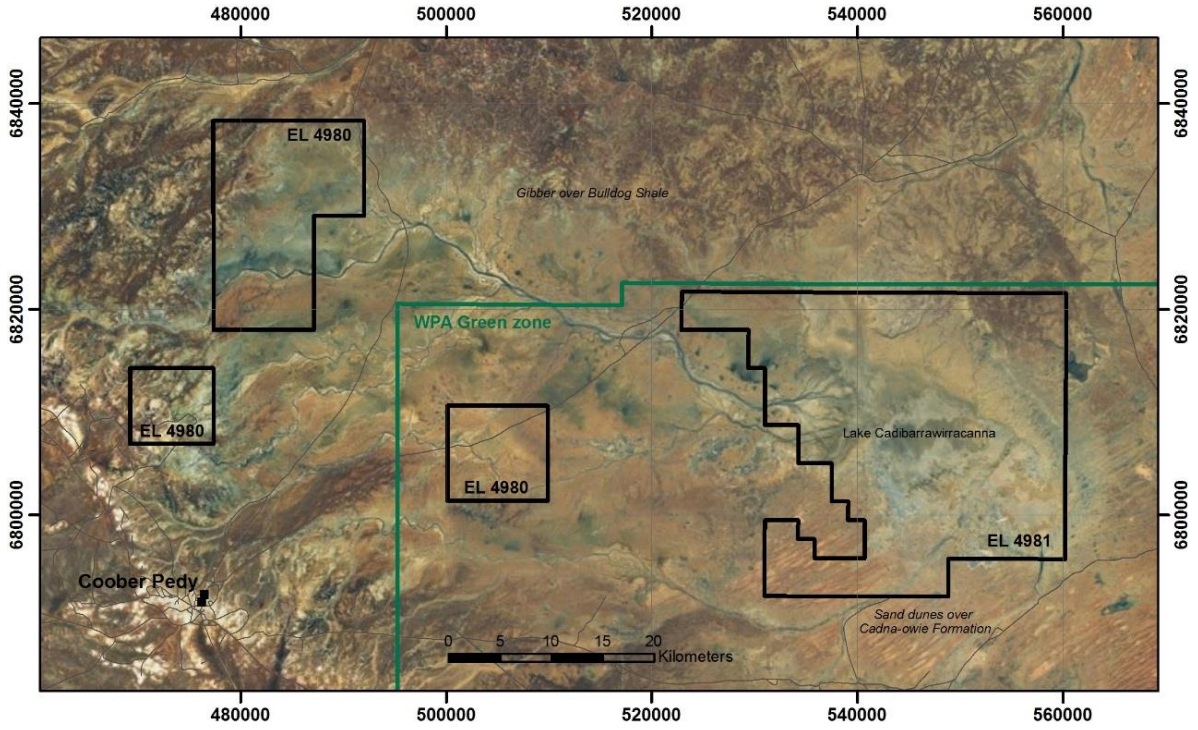

Figure 2: Base map for the Coober Pedy area showing escarpment near Coober Pedy and drainage towards Lake Cadibarrawirracanna.

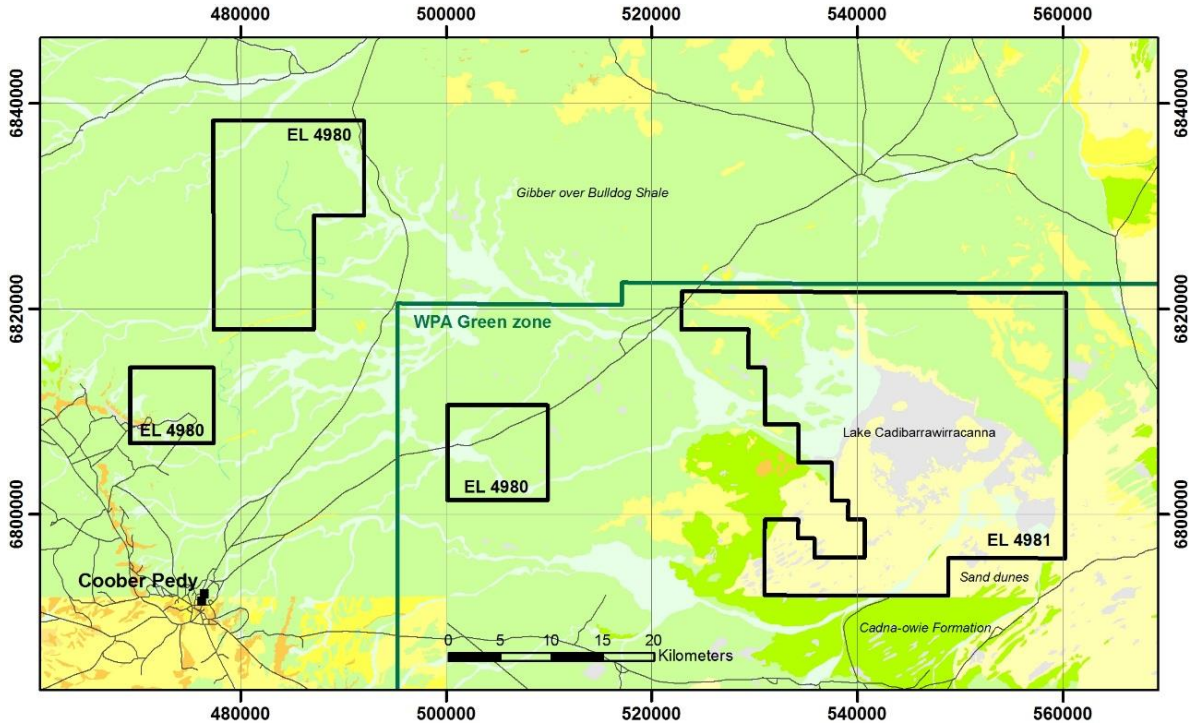

Figure 3: Outcrop geology of the Coober Pedy area (from Ambrose & Flint, 1981; Rogers & Freeman, 1996)

Palaeoproterozoic magmatism is a significant component of the Gawler Craton and comprises a range of rock suites that include:

- the ~2000 Ma Miltalie Gniess,
- the ~1850 Ma Donington Suite,
- a number of Palaeoproterozoic volcano-sedimentary sequences across the craton with ages between ~1790 Ma (Myola Volcanics and Tidnamurkuna Volcanics),
- 1760 Ma (Wallaroo Group), ~1745 Ma (McGregor Volcanics), ~1715 Ma (Eba Formation) and ~1650 Ma (Ward Volcanics),
- syn-Kararan Orogeny magmatism of the Ifould Complex, which includes the 1690–1670 Ma Tunkillia Suite and ~1620–1608 Ma Nuyts Volcanics and St Peter Suite.

The most metallogenically significant magmatic unit within the Gawler Craton is the 1595–1575 Ma Hiltaba Suite. The co-magmatic Gawler Range Volcanics form one of the world's largest felsic volcanic provinces and, together with the Hiltaba Suite, are associated with significant portion of the Gawler Craton's total metal endowment. In particular, this Mesoproterozoic magmatic event is credited with formation of numerous iron-oxide-copper-gold (IOCG) and gold-only deposits and prospects within the Olympic Domain, including Olympic Dam and Prominent Hill Mines.

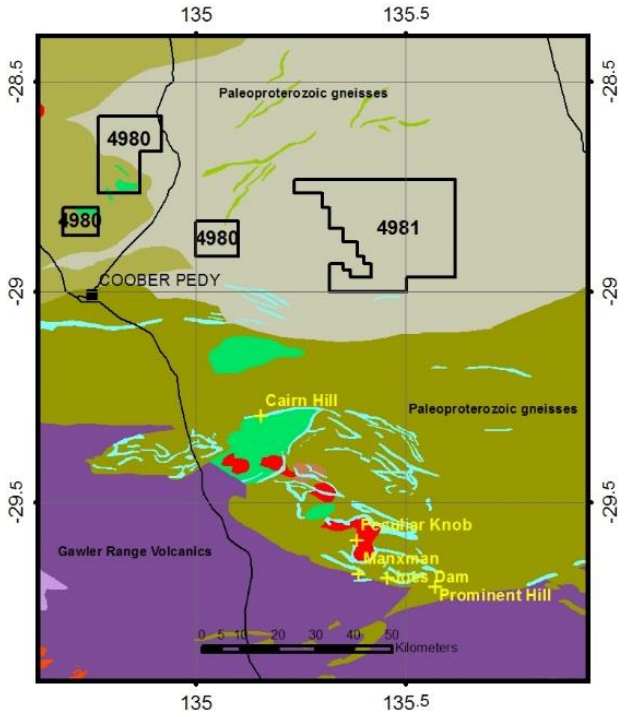

Figure 4: Regional solid geology map for the Coober Pedy area

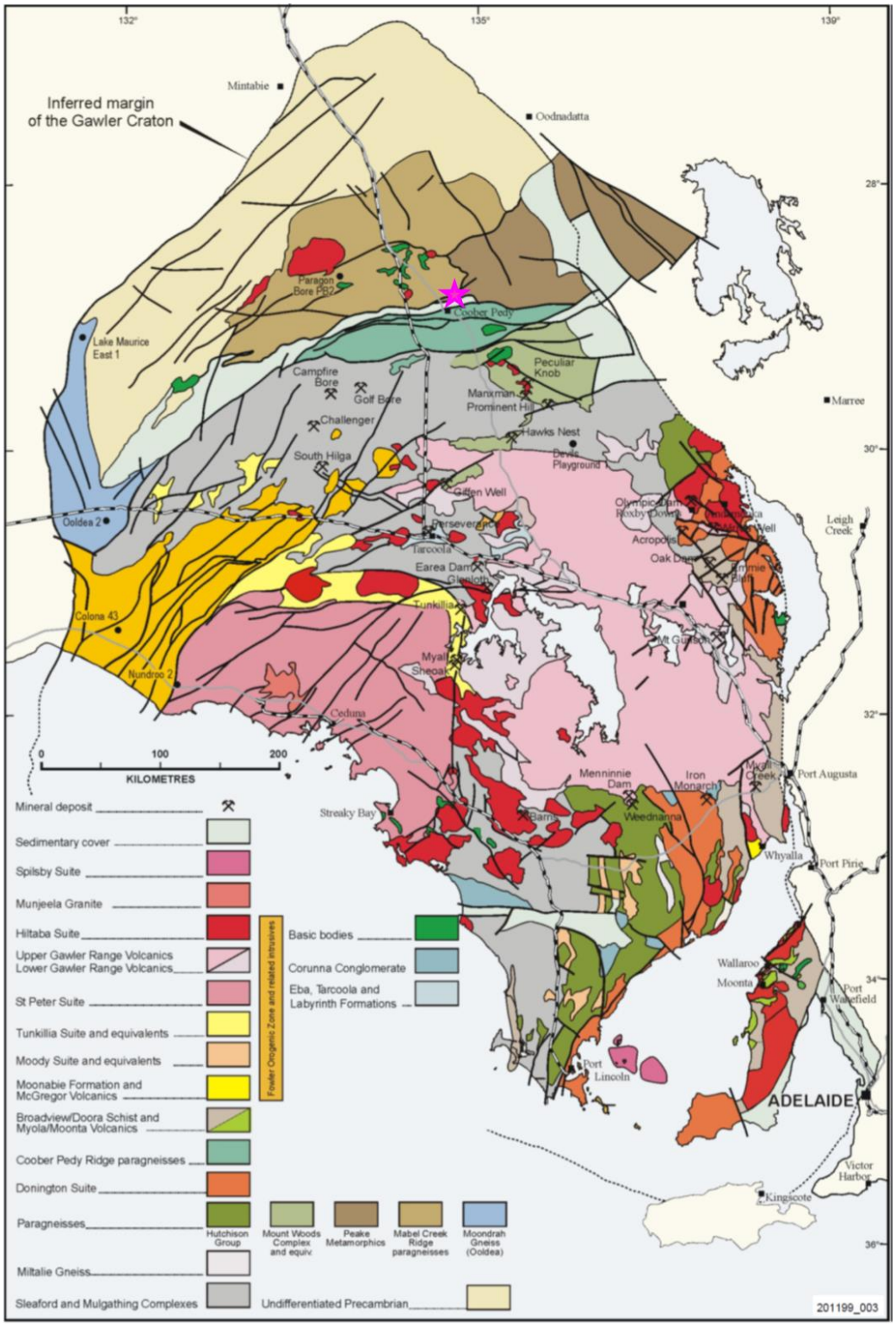

Figure 5: Regional geology and tectonic map of the Gawler Craton (from Daly et al, 1998). Location for EL 4981 (Lake Cadi) shown by purple asterisk

3. PREVIOUS INVESTIGATIONS

Exploration for mineralization, including drilling, within basement units northeast of Coober Pedy in the vicinity of tenements EL 4980 and EL 4981 are restricted to programs by CRA Exploration (1983) and BHP (1992–1994). Depth to basement is shallowest in BHP drillhole NC9304 at only 42 m and to the northwest only marginally deeper at ~70–90 m. However to the east, the thickness of sedimentary cover increases dramatically to more than 400 m, especially across a series of NW-trending faults. To the east, magnetic and gravity anomalies are broad and poorly defined (Figures 6–7).

Intersected lithologies were predominantly quartz +feldspar +biotite gneiss, pegmatite, foliated granite and gneissic granite. Quartz +feldspar +biotite gneiss in hole NC9304 was also graphitic and pyritic (Figure 6). Intersected in drillhole NC9202 was a magnetite-bearing skarn with abundant pyrite, within which was recorded highly anomalous Rare Earth Elements Ce and La, as exemplified by 13,600 ppm Ce and 11,900 ppm La (though modest Cu at 730 ppm) within the interval 150–152 m.

Hole NC9202 along with some other holes drilled by BHP in 1992–1993 (e.g. NC9303 & NC9304) targeted a series of discrete positive coincident magnetic and gravity anomalies aligned proximal to a NW-trending fault located near the western boundary of EL 4981. The nature of the lithologies and anomalous REE abundances indicate high-temperature IOCG-style alteration as occurring further south within the Mt Woods Inlier.

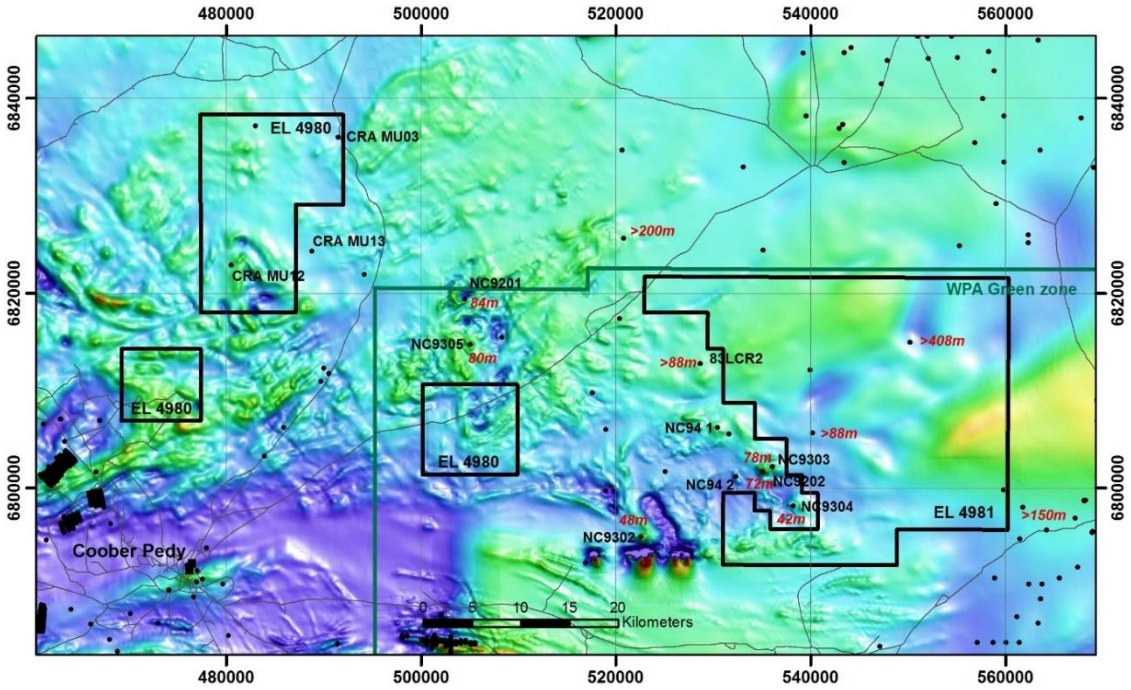

Figure 6: TMI-RTP magnetic image for the region northeast of Coober Pedy showing historical drillholes (black dots) and depth to basement (red font)

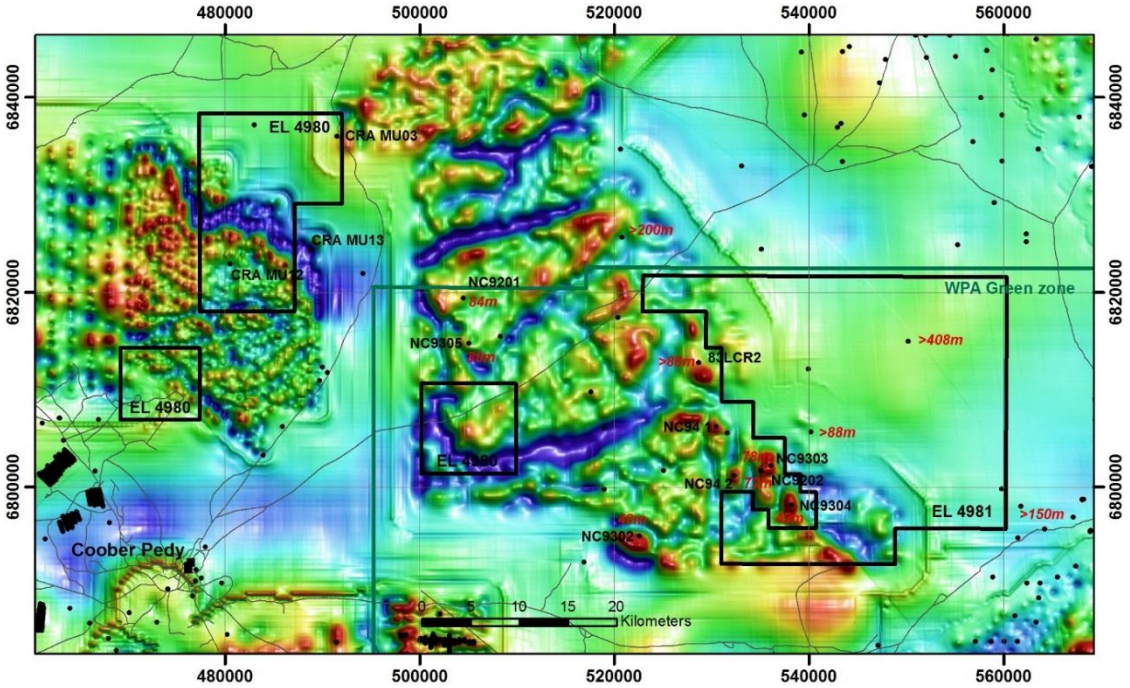

Figure 7: 1VD gravity image for the region northeast of Coober Pedy showing historical drillholes (black dots) and depth to basement (red font)

During the early to mid-1980's, CRA Exploration defined a surficial zone in basal sediments of the Cretaceous Bulldog Shale west of Lake Cadibarrawirracanna which was rich in Mg-sulphates. This zone is extremely variable in thickness and quality and averages ~1 thick and contains 10–15% water-soluble sulphates, predominantly bloedite ($MgSO_4Na_2SO_4.4H_2O$) with minor epsomite ($MgSO_4.7H_2O$) and hexahydrite ($MgSO_4.6H_2O$). The presence of sulphates was thought to relate to groundwater movement and subsequent drilling in the Lake Cadibarrawirracanna area encountered brines within the Cadna-owie Formation containing up to 55,400 ppm dissolved salts (85% NaCl and 10% $MgSO_4$ in hole CRA 83LCR1) with a general eastward trend of increasing salt content in subsurface brines (Rogers and Freeman, 1996) (Figure 7).

Drilling and costeaning by CRA Exploration revealed that the Mg-bearing sulphate salts, along with gypsum, occurred within the upper 3 m of the soil section and dessicated black shales. Two deposits were defined at Giddi Giddina Creek (Figure 7). A central resource* was estimated to be 36 Mt of in situ shale containing 3.4 Mt $MgSO_4$ with a grade of 9.6% $MgSO_4$ whereas a surrounding resource* of lower concentration was estimated to be 94 Mt of in situ shale containing 7.0 Mt $MgSO_4$ at a grade of 7.4% $MgSO_4$ (Seymore et al, 1986). These resource estimates were classified at the time by CRA Exploration as "somewhere between Inferred and Indicated categories" as recommended by the AIMM and AMIC Joint Committee on Ore Reserves (1981). However, the resource estimates are based upon historical data compiled before establishment of the current JORC Code (2004) and should not be misconstrued as an estimate of Resources as defined by the JORC Code (2004). The Giddi Giddina Creek deposit represents a geologically rare and significant occurrence of Mg-sulphate salts.

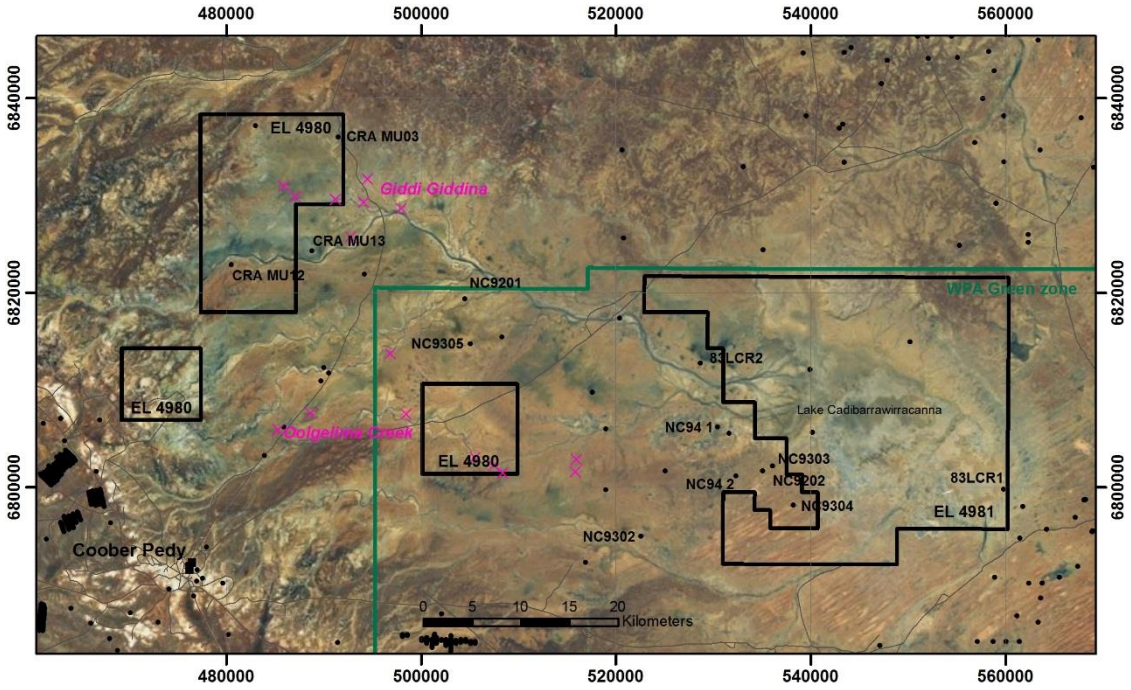

Figure 8: Epsomite mineral occurrences in the Coober Pedy area

4. CONCLUSIONS

Significant quantities of Mg-sulphate salts were defined at Giddi Giddina Creek more than 25 years ago by CRA Exploration and form a geologically rare mineral deposit. Major minerals are bloedite ($MgSO_4Na_2SO_4.4H_2O$), epsomite ($MgSO_4.7H_2O$) and hexahydrite ($MgSO_4.6H_2O$) and it is likely that additional occurrences exist within the region.

Magnetite- and pyrite-rich alteration within drillhole NC9202 containing highly anomalous Rare Earth Elements Ce and La (up to13,600 ppm Ce and 11,900 ppm La) indicate IOCG-style hydrothermal fluids consistent in character with those further south within the Mt Woods Inlier. Discrete magnetic and gravity anomalies proximal to NW-trending faults should be the focus of future investigations for Cu +Au mineralization and detailed gravity surveys are recommended to determine if haematite-rich (+Cu, Au, REE) alteration is also present.

5. EXPENDITURE

Total expenditure for activities on EL 4981 (Lake Cadi) for the year ending 30th August 2013, the first year of tenure, was $34,358.84 (Table 1).

Communications	$	29.46
Computer Expenses	$	815.00
Field General	$	5,633.78
Major Equipment Hire	$	520.00
Motor Vehicle Operational	$	1,411.47
Salaries	$	14,355.00
Tenement Licensing	$	8,470.60
Admin 10%	$	3,123.53
TOTAL	**$**	**34,358.84**

Table 1: Summary of exploration expenditure for EL 4981 (Lake Cadi) for the year ending 30th August 2013

6. REFERENCES

Ambrose, G.J. and Flint, R.B., 1981. BILLA KALINA. South Australia, Sheet SH53-7. South Australia. Geological Survey. 1:250 000 Series – Explanatory Notes.

Daly, S.J. and Fanning, C.M., 1993. Archaean. *In:* Drexel, J.F., Preiss, W.V. and Parker, A.J. (Eds), The geology of South Australia. Vol. 1, The Precambrian. *South Australia. Geological Survey. Bulletin,* 54:32–49.

Daly, S.J., Fanning, C.M. and Fairclough, M.C., 1998. Tectonic development and exploration potential of the Gawler Craton, South Australia. *Australian Geological Survey Organisation, Journal*, 17(3):145–168.

Drexel, J.F. and Preiss, W.V., 1995. The geology of South Australia. Vol 2 — the Phanerozoic. *South Australia. Geological Survey. Bulletin,* 54.

Drexel, J.F., Preiss, W.V. and Parker, A.J., 1993. The geology of South Australia. Vol 1 — the Precambrian. *South Australia. Geological Survey. Bulletin,* 54.

Fanning, C.M., Reid, A.J. and Teale, G.S., 2007. A geochronological framework for the Gawler Craton, *South Australia. Geological Survey. Bulletin*, 55.

Flint, R.B., 1993. Mesoproterozoic. *In:* Drexel, J.F., Preiss, W.V. and Parker, A.J. (Eds), The geology of South Australia. Vol. 1, The Precambrian. *South Australia. Geological Survey. Bulletin,* 54:107–169.

Parker, A.J., 1993. Palaeoproterozoic. *In:* Drexel, J.F., Preiss, W.V. and Parker, A.J. (Eds), The geology of South Australia. Vol. 1, The Precambrian. *South Australia. Geological Survey. Bulletin,* 54:51–105.

Rogers, P.A. and Freeman, P.J., 1996. WARRINA, South Australia, sheet SH53-3. *South Australia. Geological Survey. 1:250 000 Series — Explanatory Notes.*

Seymore, D.L., Scott, A.K., Howard, J.P., Finch, I.D., Sugden, S.P. and Aminco & Associates Pty Ltd., 1986. Progress and Final reports for the Lake Cadi potash project. *South Australia. Department of Mines and Energy. Envelopes* 4823, 5250 & 5646 (unpublished).

MINOTAUR OPERATIONS PTY LTD

Level 1, 8 Beulah Road, Norwood 5067 South Australia
Tel: +61 8 8132 3400 Fax: +61 8 8132 3499
Website www.minotaurexploration.com.au
Email admin@minotaurexploration.com.au
A.C.N. 108 925 284

10 October 2014

Executive Director
Department of State Development
Mineral Resources Division
Mineral Tenements Program
GPO Box 320
Adelaide, SA 5001

Sent by email DSD.Exploration@sa.gov.au

Dear Sir/Madam,

RE: Annual Technical Report EL 4981 (Lake Cadi)

I refer to the Annual Technical Report for Exploration Licence 4981 (Lake Cadi) for the year ending the 30th August 2014.

No new technical investigations were undertaken by Minotaur Operations Pty Ltd on this tenement during the reporting period; hence this letter represents the Annual Technical Report and Final Report for EL 4981.

Should you require any further information please contact me on 8132 3423 or alternatively at pcronin@minotaurexploration.com.au

Yours sincerely

Phil Cronin
Tenement Manager
Minotaur Operations Pty Ltd