

2016

# ANNUAL REPORT

## EL 28081

PERIOD: 5/1/2015 TO 4/1/2016  
PLENTY RIVER REGION, NORTHERN TERRITORY

FAR RESOURCES Pty Ltd  
PO Box 96  
Palmerston  
NT 0831

### Plenty Rivers Project

1:100 000 Mapsheets: 5852 Delny, 5952 Dneiper  
1:250 000 Mapsheets: SF5310 Alcoota, SF5311 Huckitta  
Commodities: Cu, Pb, Zn, Mo, Au, Ag

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March 2016



**Abstract:**

EL 28081 forms part of FAR Resources Plenty Rivers Project which consists of 8 granted exploration licences covering 667km<sup>2</sup> in the Harts Range/ Plenty River area of the Northern Territory, see figure 1. The area is considered to be prospective for base metals, precious metals and industrial minerals. Work conducted in the fifth year consisted of a licence geological reconnaissance and surface soil and rock geochemical sampling program.

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Any information included in the report that originates from historical reports or other sources is listed in the "References" section at the end of the document.

This report may be released to open file as per Regulation 125(3)(a).

## **CONTENTS**

Abstract

Contact Details

1. Location
2. Title History
3. Physiography
  - i. Geomorphology
  - ii. Biogeography
  - iii. Hydrology
4. Access
5. Geological Setting
  - i. Regional Geology
  - ii. Licence Geology
6. Exploration/Mining History
7. Exploration Rationale
8. Exploration Index Map
9. Geological Activities
10. Remote Sensing
11. Geophysical Activities
12. Surface Geochemistry
13. Drilling
14. Geotechnical Studies
15. Resources and Reserve Estimation/Modelling
16. Conclusions and Recommendations
17. References

## **LIST OF FIGURES**

Figure 1	Location Map
Figure 2	Mineral Tenure
Figure 3	Relinquished Area
Figure 4	Real Property Tenure
Figure 5	Access
Figure 6	Regional Geological Setting
Figure 7	Regional Geology
Figure 8	Licence Geology – Area 1
Figure 9	Licence Geology – Area 2
Figure 10	Outcrop Stratigraphy
Figure 11	Geological Domains
Figure 12	Landsat 7 Photography
Figure 13	Radiometrics
Figure 14	Magnetics (1VD)
Figure 15	Sample Locations

## **LIST OF TABLES**

Table 1	Historical Exploration Licences and Open File Reports
Table 2	Historical Mines and Prospects

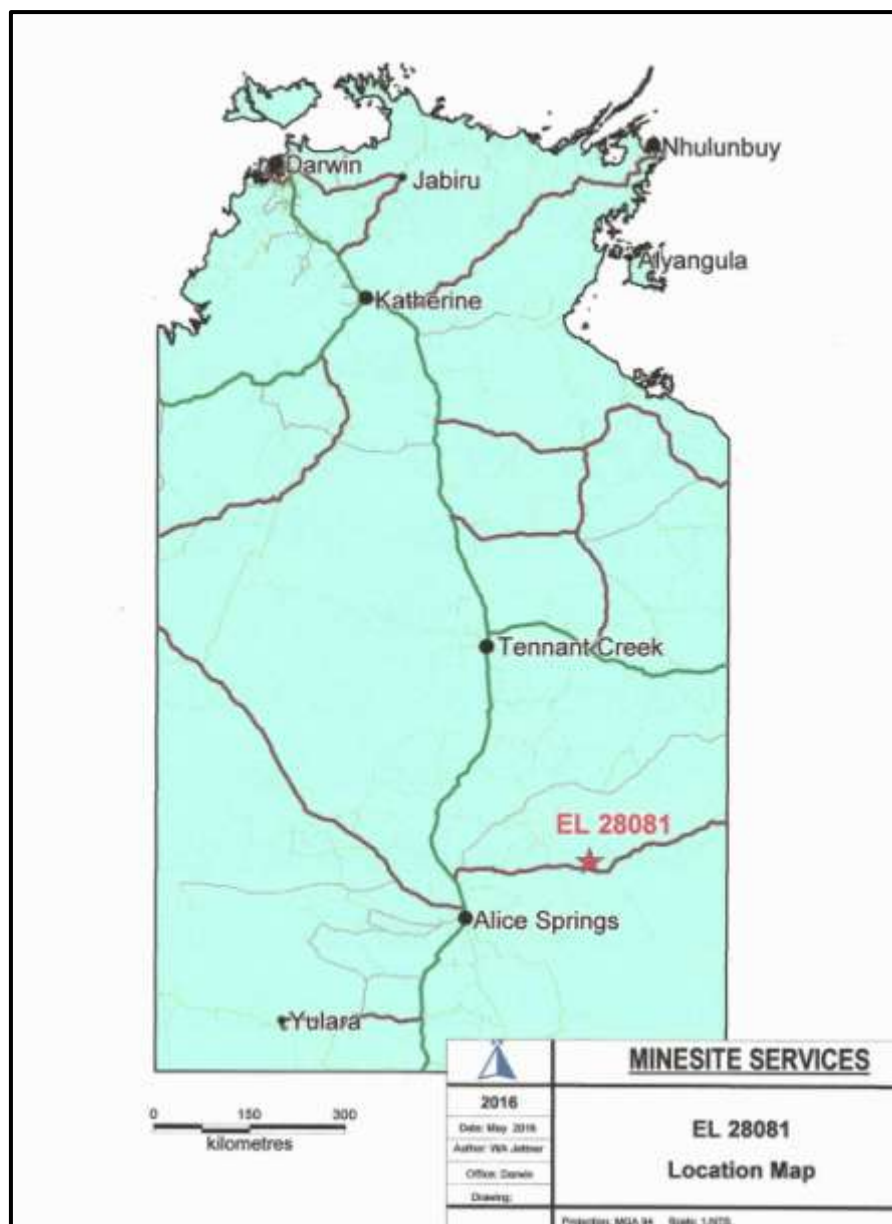
## **LIST OF APPENDICES**

Surface Geochemistry Metadata
Surface Geochemistry Data

## 1. LOCATION

EL 28081 is located some 150km to the northeast of Alice Springs in the Northern Territory. After mandatory relinquishment of 50% of the area at the end of the second year of tenure the licence has been split into two irregular shapes having an area of 60 subblocks, (Area 1) and 8 subblocks, (Area 2). These two areas were further reduced at the end of the fourth year when the licence underwent its second 50% mandatory reduction. A further 19 subblocks were voluntarily surrendered at the end of the fifth licence year.

The licence is located upon pastoral leases to the north of the Harts Range Police Station and Atitjre Community. The Plenty Highway traverses to the south of the licence and the Derry Downs Road provides access to the northern part of the licence.



## 2. TITLE HISTORY

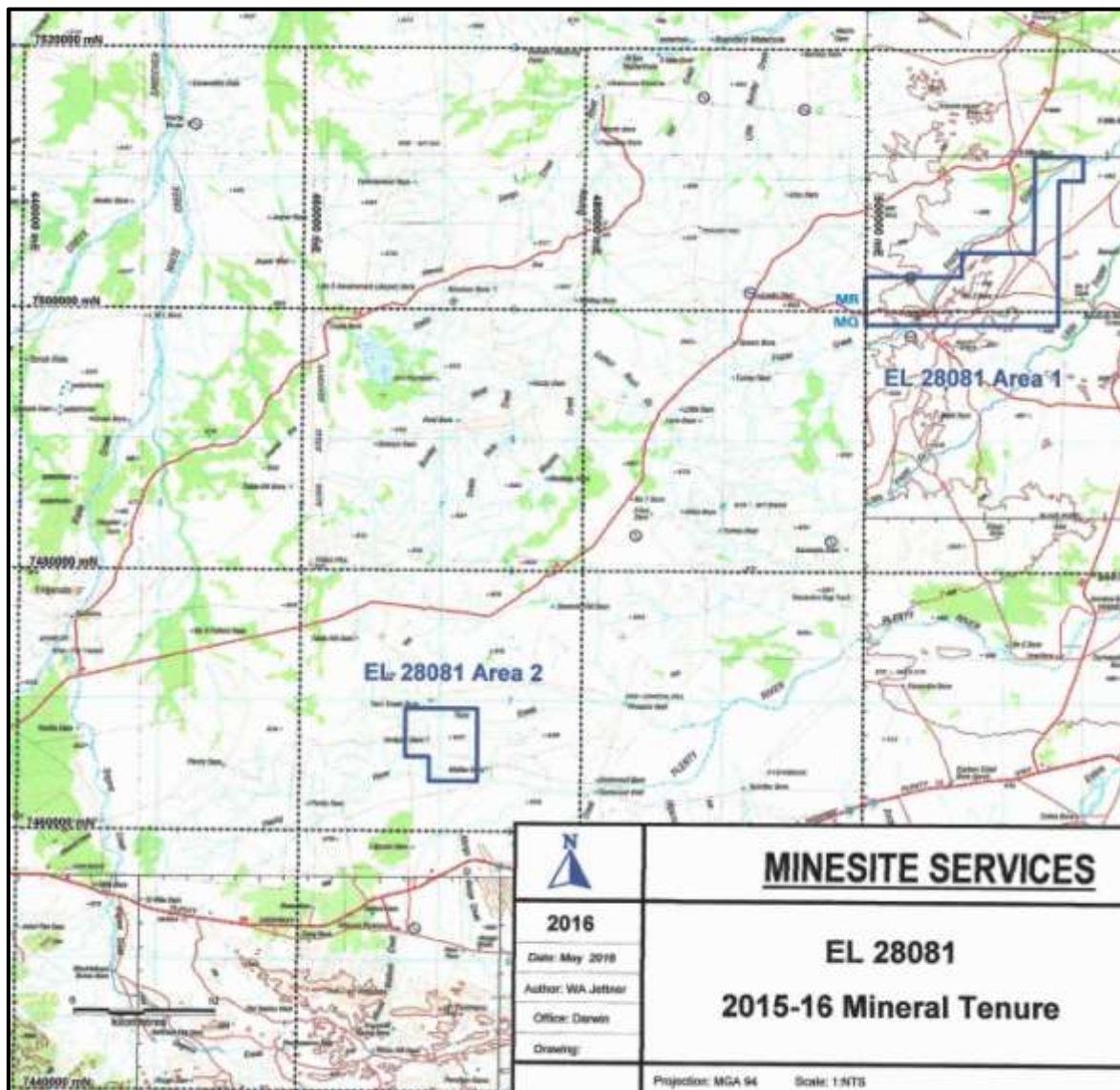
### Mineral Tenure

EL 28081 was granted on 5/01/2011 and this report is the Fifth Annual Technical Report which covers activities in the period 5/01/2015 to 4/01/2016, being the fifth year of tenure. During 2015 the licence currently had an area of 33 graticular blocks (102 km<sup>2</sup>).

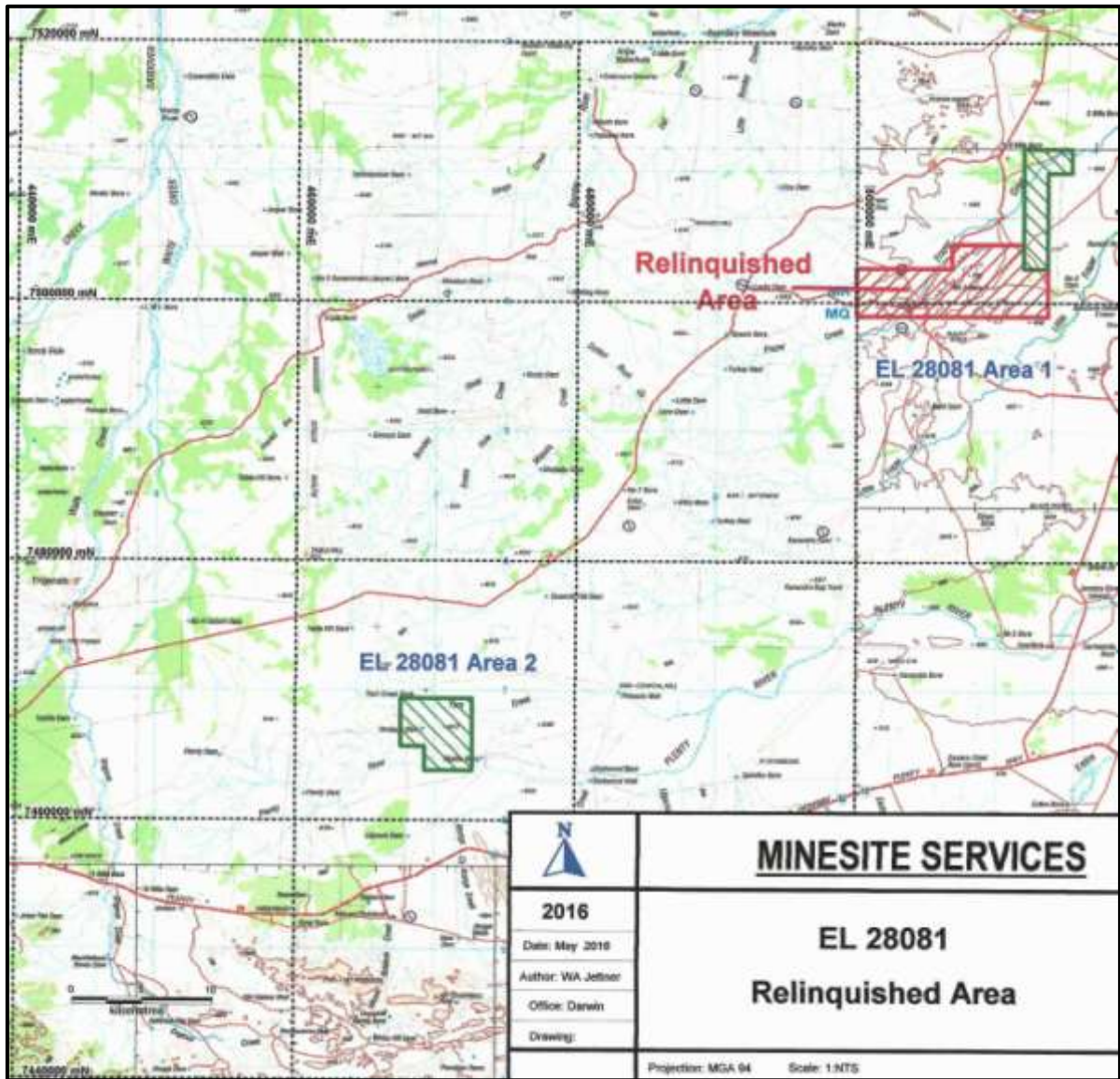
EL 28081 forms part of the Plenty Rivers Project which consists of 8 granted exploration licences covering a total area of 210 graticular blocks (667km<sup>2</sup>)

The licence area has a mineral exploration history going back to the 1880s when the Harts Range garnet and mica fields were found and exploited by small scale miners.

At the end of the fifth year the licence underwent a voluntary reduction, the map below shows the area relinquished and the areas retained for year 6.







Real Property

EL 28081 is located on 2 separate real property parcels, these are:

NT PPL 1116 “MacDonald Downs Station” which is owned by MM Chalmers (PMB 81 Alice Springs NT), NT PPL 989 “Mt Riddock Station” which is owned by Harts Range Pty Ltd (PMB 43 Alice Springs NT).



Other Stakeholders

Other stakeholders in the area, (but not on the licence), are the Harts Range Police Station and the Atitjere aboriginal community to the south of EL 28081, the Irriliree aboriginal community to the east and the Mt Riddock outstation to the west of the EL.



### **3. PHYSIOGRAPHY**

#### **i. Geomorphology**

##### Jinka Domain

The geomorphology of the Jinka Domain consists of low rounded hills that are desiccated by drainage systems heading north into the Georgina Basin. The number and frequency of these hills are much less than that found in the Kananadra Domain to the south. This licence mainly is located on the fan-like anastomosing drainage systems due to its irregular shape.

##### Kanandra Domain

The Kanandra Domain primarily consists of low angular and rounded hills that are incised by numerous drainage lines forming a fenestral pattern. Erosion along these drainage lines can give rise to quite steep slopes on occasion.

##### Harts Range Domain

The Harts Range Domain contains wide open sandy plains in the areas on the southern edge of the licence along the Plenty Highway. To the north of this area east-west trending rocky hills consisting of Harts Range Group rocks occur. Areas of low ridges with incised drainage lines are formed upon rocks of the Tertiary Waite Formation.

#### **ii. Biogeography**

##### Jinka Domain

In this domain three vegetation types occur in the licence area, they are: low open woodlands consisting of Coolibah low-open woodland with an open-grassland understorey in the main drainage systems, a mixed species low-open woodland consisting of Ironwood and Whitewood low open woodland with a open grassland understorey, and thirdly a tall open scrubland containing a Mulga tall open scrubland with a Woolly-butt open grassland understorey.

##### Kanandra Domain

The vegetation in this domain may be classified as a mixed species low open woodlands containing Ironwood and Whitewood with a low open grassland understorey in areas on soils derived from the Tertiary Waite Formation. In other areas along drainage lines the Melaleuca and Eucalypt species increase in numbers to a woodland regime.

##### Harts Range Domain

The vegetation in this domain may be classified as a mixed species low open woodland containing Ironwood and Whitewood with a low open grassland understorey in areas on soils derived from the Tertiary Waite Formation. In other more sandy areas an Acacia dominated very open woodland with an open grass understorey is present.

### **iii. Hydrology**

The surface hydrology is very limited in this arid area of central Australia. Seasonal rains fall during the northern wet season, (depending on the year), and quickly runoff. The licence area is held under real property tenure as cattle stations whose main pursuit is open range cattle grazing. For the majority of the year water is supplied by bores, either to earth dams (turkeys nests) or to sealed tanks and dispensed to the cattle via regulated cattle troughs. The ground water regimes of the three domains are described here:

#### Jinka Domain

The groundwater of the Jinka Domain consists of locally fractured rocks based around the known shear zones. Bores drilled in this area generally give the best flows of the three domains. Flow rates are greater than 0.5 l/s.

#### Kanandra Domain

The groundwater of the Kanandra Domain consists of locally fractured rocks based around shear zones and faults. They have flow rates of between 0.05 and 0.5l/s and generally higher salinities.

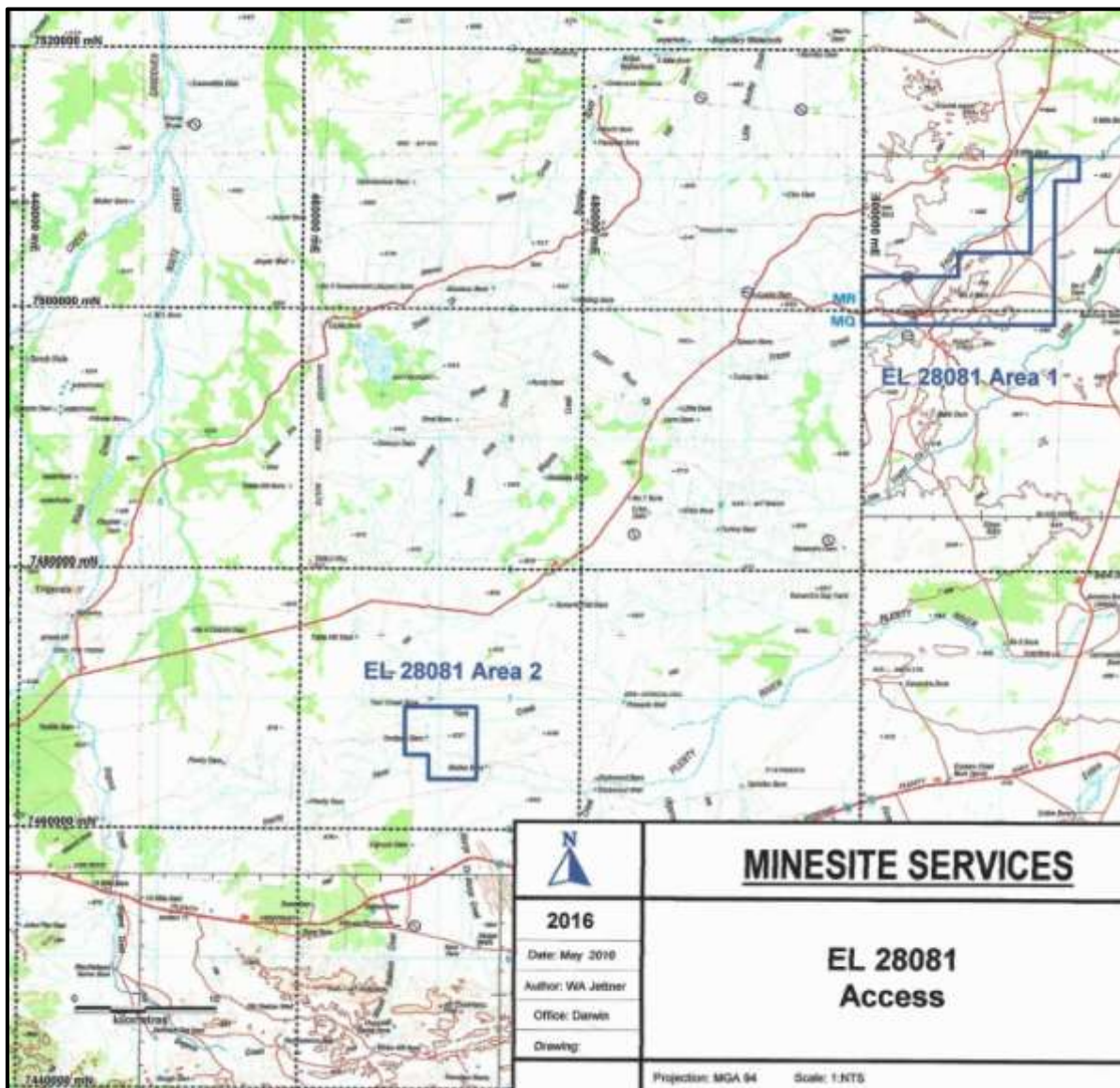
#### Harts Range Domain

The groundwater of the Harts Range Domain is again based on localised fracturing associated with structural elements and have low flowrates (0.05-0.5l./s) and high salinities (>1500mg/l).

#### 4. ACCESS

Access to the exploration licence from Alice Springs is northwards along the Stuart Highway for 68km to the intersection of the Plenty Highway then 166 km along the Plenty Highway to the Harts Range Police Station, then another 22km to the Derry Downs turnoff. Traversing 30km northwards along the Derry Downs road to the Mt Swan turnoff then 20km in to the Mt Swan Station homestead. This is located within the northern section of the licence area. Access throughout the remainder of the licence is via the Delny Station and MacDonald Downs Station roads and fence lines.

Access to the southern area of the licence is via Mt Riddock station roads to the Mallee Bore and Undippa Dam localities.



## 5. GEOLOGICAL SETTING

The exploration licence is located in a northeast-southwest traverse across the Aileron Province from the Georgina Basin in the north to the Irindina Province in the south.

### Georgina Basin

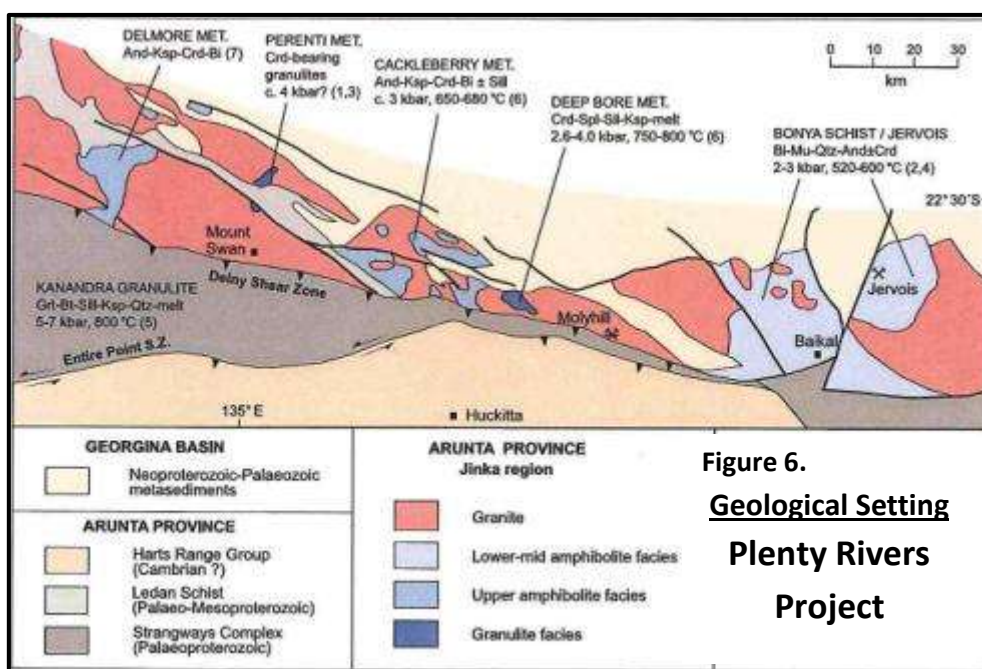
The Georgina Basin is a Palaeoproterozoic sedimentary basin that contains dolostone, limestone, sandstone, siltstone and shale. It is a widespread intracratonic basin that was initiated as part of the Centralian Superbasin and extends east into Queensland. It unconformably overlies the Aileron Province, Tennant Region, Murphy Inlier, McArthur and south Nicholson Basins and Lawn Hill Platforms. It is interpreted to be contiguous at depth with the Wiso and Daly Basins and conformably overlies the Kalkarinji Province.

### Aileron Province

The Aileron Province is a Palaeoproterozoic metamorphic and igneous terrain containing variably metamorphosed sediments, meta-volcanic rock, calc-silicate rocks, dolerite, mafic rocks and granites. It forms part of the Arunta Region and is a poly-deformed and metamorphosed basement terrain along the southern margin of the North Australian Craton. It is unconformably overlain by the Ngalia, Amadeus, Murraba, Georgina and Eromanga Basins and has largely faulted relationships with the Wurumpi and Irindina Provinces.

### Irindina Province

The Irindina Province is characterised by a Neoproterozoic metamorphic terrain that contains metasedimentary gneiss, quartzite, mafic amphibolite and felsic migmatites. It forms part of the Arunta Region and is a fault bounded metasedimentary and igneous province that formed a deep depocentre within the Centralian Superbasin and was metamorphosed in the Ordovician. It is fault contacted with the Aileron Province to the north and unconformably overlain by the Eromanga Basin to the south.



## **i. Regional Geology**

The regional geology can be divided into 3 main tectonic elements, separated by west trending shear systems. The southernmost of these elements, the Harts Range Domain, comprises upper amphibolite to granulite facies metasediments belonging to the Harts Range Group. Dominant lithologies include migmatite, metapelite, metabasite, garnet-biotite gneiss and subordinate calc-silicate rock marble and quartzite. The Harts Range Group underwent peak metamorphism during the Larapinta Event at 480-460 Ma.

To the north of the Harts Range Domain is the Kanandra Domain, this contains the Kanandra Granulite which belongs to the palaeoproterozoic Strangways Metamorphic Complex. The Kanandra Granulite forms part of a 150-200km long, west trending belt of intermittently outcropping belt of pelitic and mafic granulites that includes the Bleechmore Granulite to the west. This domain comprises felsic and mafic granulites with garnet-bearing pelitic and semi-pelitic migmatite and rare calc-silicate rock, intruded by deformed granite.

The third major geological element in the licence area is located to the north of the Kanandra Granulite, and is termed the Jinka Domain.

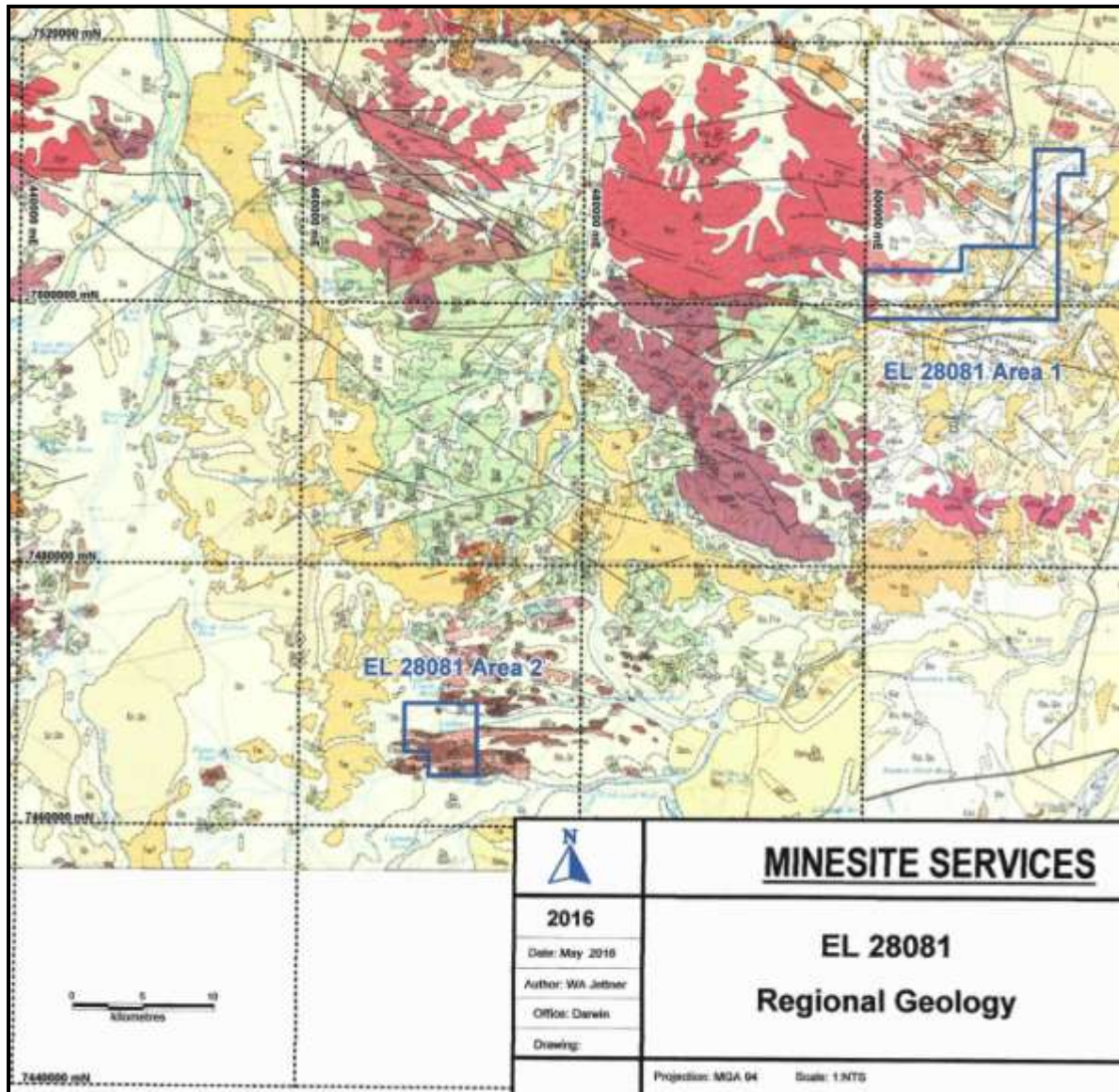
This comprises a narrow (5-25km wide) belt of low-pressure amphibolite to granulite facies metasediments intruded by extensive granites. It extends from the Perenti Metamorphics in the west to the Jervois Range in the east, a total distance of more than 100km.

Two major shear zones separate the three tectonic elements in this region: the Entire Point Shear Zone which separates the Harts Range Domain from the Kanandra Domain and the Delny Shear Zone which separates the Kanandra Domain from the Jinka Domain.

The Entire Point Shear Zone trends east-northeast, dips steeply south and merges with the east-southeast striking Delny Shear Zone in the Plenty Rivers Project area.

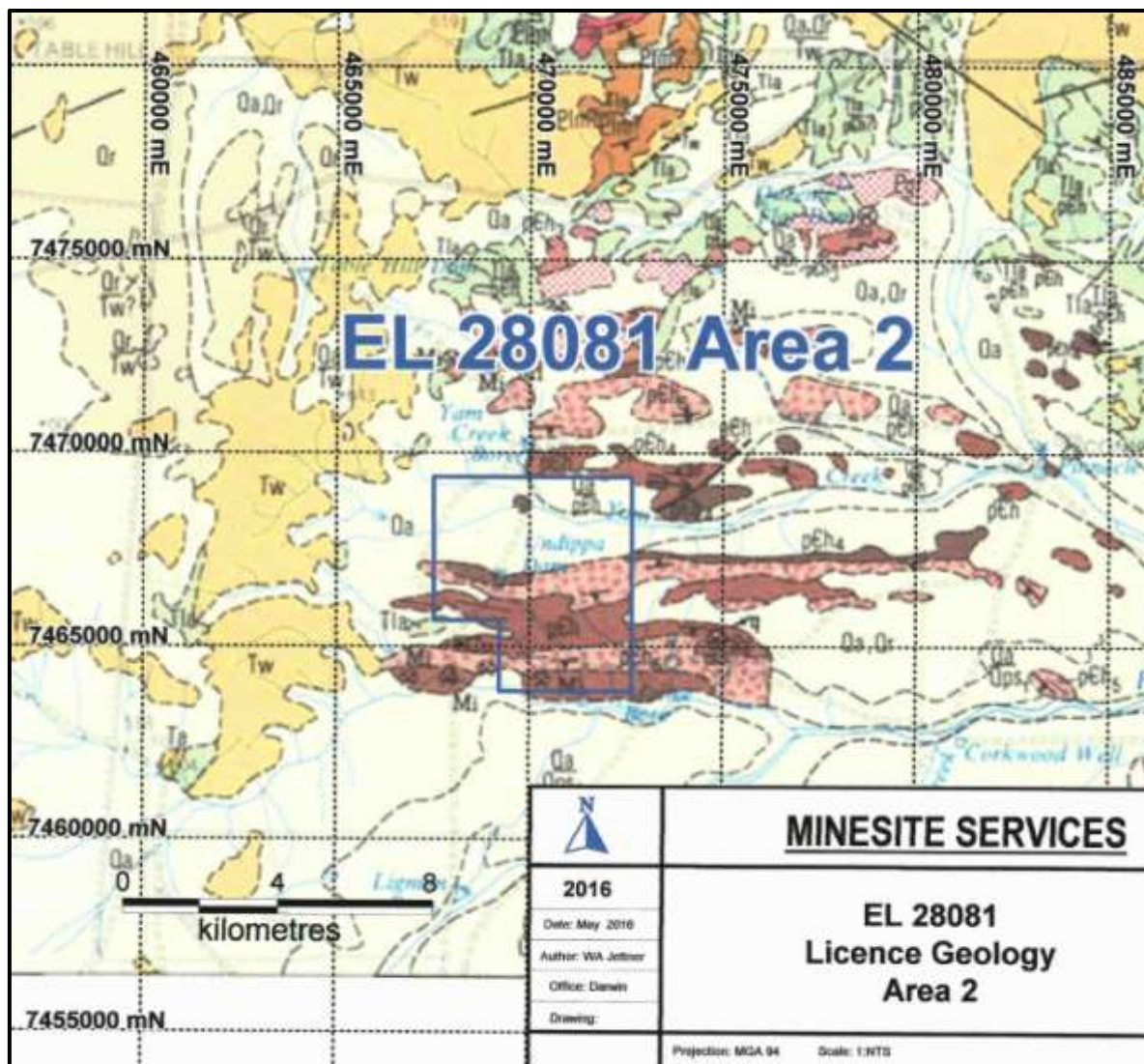
The Delny-Mt Sainthill Shear Zone is a major east-southeast striking structure more than 150km in length and is locally up to 3km wide. A substantial gravity gradient is evident across the shear zone, implying it is a major crustal feature.











In the northern portion of the licence the Jinka Domain occurs and comprises metasedimentary rocks intruded by granites. Metamorphism occurred at amphibolite to granulite facies and low pressures during the Strangways Event. The rocks of the Jinka Domain in the licence area include the following:

- Eklera Formation, (Pak); micaceous siltstone to sandstone, dolostone horizons some of which are stromatolitic.
- Grant Bluff Formation, (Pag); fine-grained fissile quartz arenite to quartz-wacke, cross bedded and ripple marked grey quartz arenite.
- Ledan Schist, (Pln); two-mica schist with minor metaconglomerate.
- Dneiper Granite, (Pgd); Grey biotite granite, grading into orthogneiss locally hornblende bearing or quartz deficient.
- Mt Swan Granite, (Pgs); Pink porphyritic hornblende biotite granite.



The Jinka Domain is separated from the Kanandra Domain by the Delny-Mt Sainthill Shear zone

The Delny Shear Zone is a steeply south-dipping shear zone locally up to 3km wide.

The central tectonic element is the Kanandra Domain, and consists of:

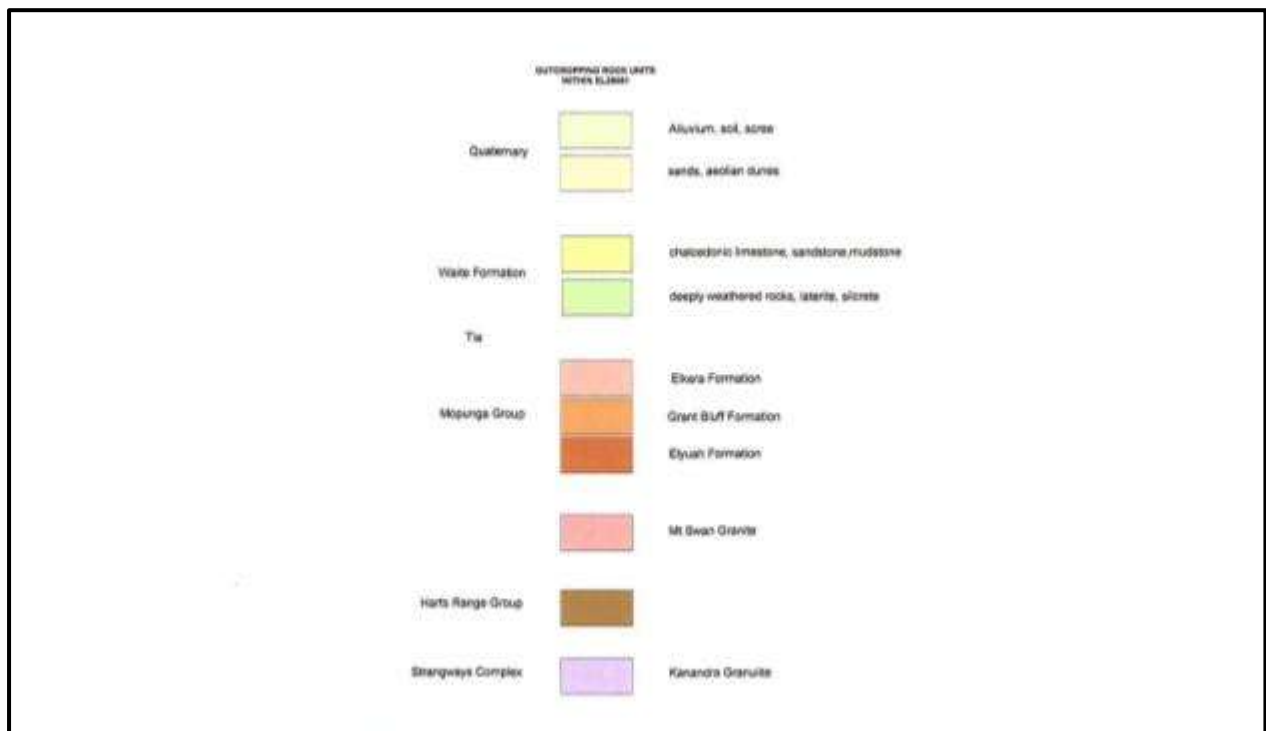
- Kanandra Granulite, (P6k); quartzo-feldspathic schist containing local retrograde shear zones.

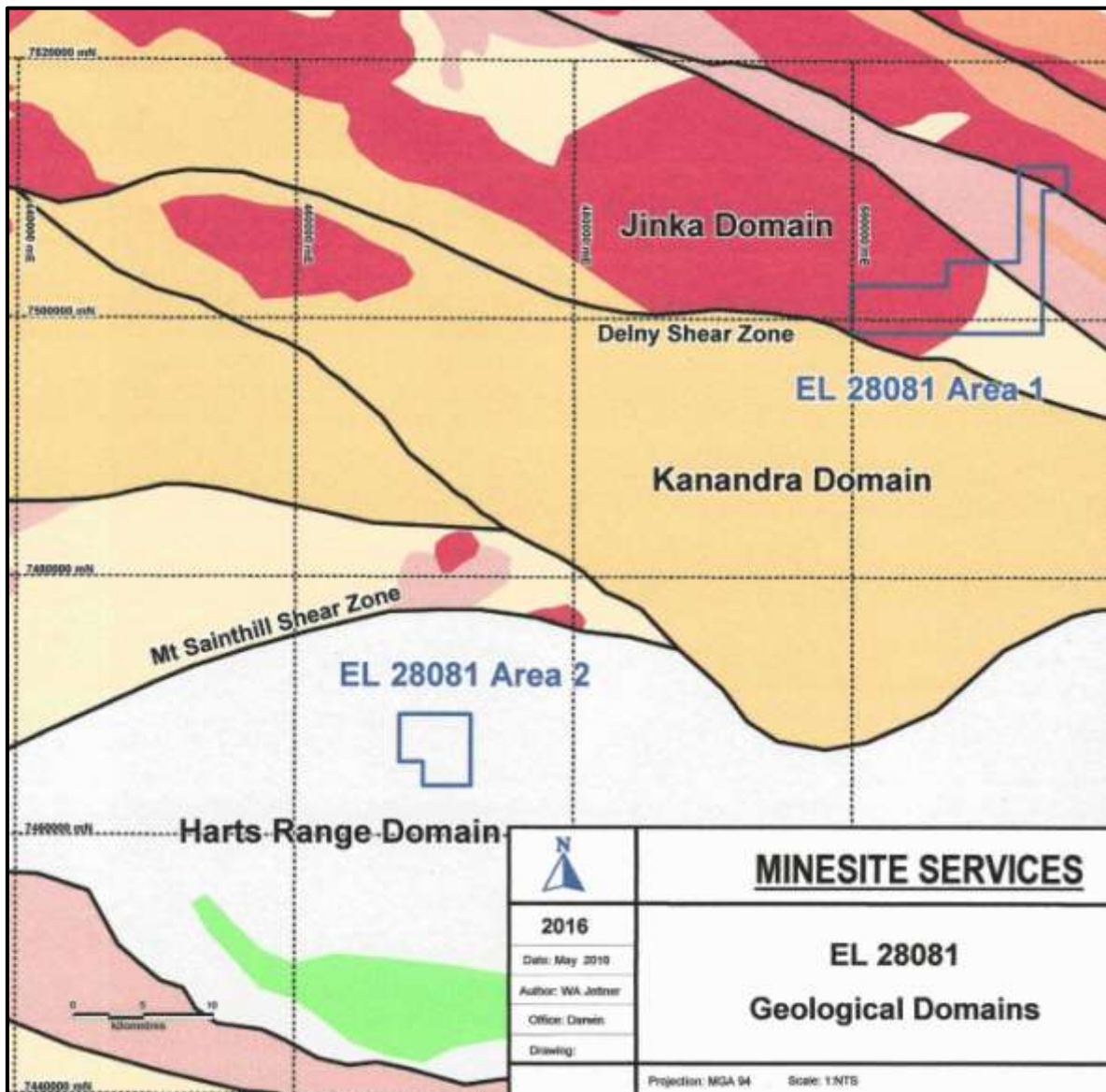
The Kanandra Domain is separated from the Harts Range Domain by the Entire Point Shear Zone.

The Entire Point Shear Zone is a steeply south dipping upper amphibolite shear zone.

The southern tectonic element in the licence is the Harts Range Domain which consists of the following:

- pCh; Pelitic, calcareous and psammitic and felsic gneisses, leucocratic gneiss, quartzites and amphibolites.
- pCh<sub>5</sub>; quartz and garnet bearing amphibolite, minor plagioclase-hornblende gneiss.
- pCh<sub>4</sub>; meta-calc silicate rock, flaggy quartzite, biotite quartzite, rare calcite-bearing gneiss
- pCh<sub>3</sub>; leucocratic biotite-quartz-feldspar gneiss.





## 6. EXPLORATION AND MINING HISTORY

### Exploration

**Table 1. Historical Exploration Licences and Open File Reports**

Licence No	Licence Holder	Tenure Period		Open File Company Reports
		From	To	
AP 1726	Central Pacific Minerals	7/04/1967	6/04/1969	CR1969-0010
AP 2587	Kratos Uranium	27/01/1970	26/01/1972	CR1971-0040
EL 32	Neptide Mineral Exploration	21/03/1972	20/03/1973	CR1973-0208
EL 1861	Alcoa of Australia	22/05/1979	21/05/1981	CR1980-0126
				CR1981-0180
EL 2498	CRAE	12/09/1981	11/09/1982	CR1982-0042
EL 2788	CRAE	16/02/1981	15/02/1983	CR1982-0169
				CR1983-0298
EL 2789	CRAE	16/02/1981	15/02/1982	CR1982-0195
				CR1983-0107
				CR1983-0294
EL 3311	Union Oil Corp.	5/03/1982	4/03/1983	CR1983-0243
EL 5188	CRAE	13/08/1987	21/07/1988	CR1988-0402
EL 5902	Track Minerals	20/06/1988	2/06/1989	CR1989-0705
EL 7993	PNC Exploration	26/03/1993	24/03/1995	CR1994-0325
				CR1995-0298
				CR1995-0475
EL 8808	Roebuck Resources	15/12/1993	19/01/1996	
EL 9190	JW Bengier	15/08/2005	14/08/2005	CR1996-0836
				CR1998-0829
				CR1998-0857
				CR1996-0024
				CR2000-0026
				CR2000-0389
				CR2001-0316
				CR2002-0233
				CR2004-0441
EL 9373	Helix Resources	12/12/1996	20/09/1999	CR1998-0115
				CR1999-0038
				CR1999-0117
				CR1999-0460
EL 22897	Rio Tinto Exploration	19/04/2002	26/07/2004	CR2003-0156
				CR2004-0530
EL 22917	Tanami Exploration	10/07/2002	9/08/2006	CR2004-0504
EL 24379	NJ Paspaley	14/09/2005	4/11/2005	CR2005-0417

Exploration activities have been conducted in the licence area for a number of years by a large number of exploration companies, a brief summary of each is presented here:

#### AP 1796

In 1968 Central Pacific Minerals explored Authority to Prospect (AP) No. 1726 (jointly held with Magellan Petroleum (NT) Pty Ltd) covering the western part of the Plenty River project area following up reports of previous prospecting and uranium mineralisation. A small tungsten show was found 7km NE of Delny Homestead in thin quartz veins in garnetiferous gneiss along a contact with the Mount Swan Granite. Several workings (including a 4m deep shaft) extend for about 900m along the contact. Several other small workings were reported which may be mica shows developed in muscovite pegmatite intruded into the Arunta Complex. A weakly anomalous phosphate value of 750ppm P<sub>2</sub>O<sub>5</sub> was recorded from the Arltunga Beds in the eastern part of the AP.

#### AP 2587

Kratos Uranium explored AP 2587 in 1970-1971 for uranium in joint venture with Pechiney (Australia) Exploration Pty Ltd and completed an airborne radiometric survey. The AP extends from Delny Homestead south to the Harts Range Police Station and extends eastward over Mt Swan with about 50% within the Plenty River Project area. Fifteen anomalies were identified; only 1 was in the Mt Swan Granite and the remainder within basement rocks or Tertiary or Quaternary sediments. Ground follow-up of the 4 best anomalies was made with detailed descriptions, spectrometer readings and colorimetric assays of various samples, and cross section sketches and photographs at each locality. No anomalous U was found.

#### EL 32

In 1973 Neptune Mineral Exploration completed limited reconnaissance rockchip sampling on EL 32 and assayed for a range of elements including base metals. Sample MC1 assayed 1000ppm Cu and 2000ppm Pb. Samples MC24 and MTS5 assayed 1000ppm Cr. Samples JV1 assayed 100ppm Cu, 2500ppm Pb, 1500ppm Cr and 2000ppm Ni, and JV2 assayed 0.2% Cu, 1000ppm Pb and 1000ppm Zn. The exact location of the MC, MTS and JV series samples are not specified in the reports with the maps showing only the numbers.

#### EL 1861

In 1979-1980 Alcoa explored for sedimentary uranium deposits hosted in fluvial sand units in the Tertiary Waite and Huckitta Basins in the Mt Riddock (EL 1861) and Huckitta (EL 2399) Areas overlying the Arunta Complex. The exploration target was mineralising oxidising solutions moving down the palaeochannels oxidising the permeable sand units and mineralising the adjacent carbonaceous clay units.

Field work included photogeological mapping, ground resistivity surveying, and drilling of rotary-mud holes. In 1979 33 holes (for 2909m) were drilled on EL 1861, in 1980 38 holes (for 3351m) on EL 1861 (635m) and EL 2399 (2716m), and a follow-up programme later in 1980 of 4 holes (for 674m) on EL 2399 (Figure 24). All holes were gamma logged, with U<sub>3</sub>O<sub>8</sub> and Au assays obtained from geologically/geophysically prospective intervals. Drilling into the Waite Basin on EL 1861 identified a shallow basin of mainly



clays and sandy clays without the more porous sandy lithologies, so exploration focused on the larger (60km long by 20km wide) Huckitta Basin to the east covered by EL 2399. Drilling failed to intersect any reduced sands and Alcoa concluded that no significant uranium mineralisation was likely to be present in the Tertiary sequences.

#### ELs 2498, 2788 & 2789

In 1981-1983 CRA Exploration explored for base metals and kimberlitic rocks by completing reconnaissance geochemical drainage surveys, with follow up ground magnetometer surveys, rock chip sampling, auger soils and heavy mineral-gravel sampling, in the Delmore Downs (EL 2498), Frazer Creek (EL 2788), and the MacDonald Downs (EL 2789) areas.

EL 2498 Delmore Downs is located across the southern parts of Plenty River EL 28081. Weakly anomalous uranium values were followed up by further drainage sampling and ground radiometric traverses. Thorium was found elevated relative to uranium in rock and drainage samples throughout the area. The geology consists of Tertiary sediments and weathering products overlying amphibolite, gneiss and calc-silicate of the Lower Proterozoic Harts Range Group.

EL 2788 Frazer Creek is located mostly across the gap from EL 28081 in the west to EL 28190 and EL 27639 in the east. Weakly anomalous lead and thorium were related to Tertiary sediments and weathering profile. The geology consists of extensive Tertiary silcrete, sandstone, siltstone and ferricrete on highly weathered Lower Proterozoic (Arunta) metasediments.

EL 2789 MacDonald Downs is located immediately north of CRAE EL 2788 and covers part of Plenty River EL 28081. In 1981, follow up drainage anomalies included detailed drainage, soil and rock chip sampling, reconnaissance geological mapping and a ground magnetometry survey. Geochemical methods did not indicate large scale mineralisation, although a high order lead anomaly was identified which was not substantiated by detailed follow-up. The geology consists of extensive Tertiary sediments and weathering surfaces developed on various granites and gneisses of the Arunta metamorphic complex and onlapping Upper Proterozoic to Palaeozoic sediments of the Georgina Basin.

#### EL 3311

In 1982-1983 Union Oil carried out exploration for tungsten on EL 3311 located south of and slightly overlapping Plenty River EL 28081, within the Strangeways Metamorphic Complex and Harts Range Group. Initial work involved a helicopter supported stream sediment sampling programme (with heavy mineral counts for scheelite and assays for W). Follow-up stream sediment sampling and ground sampling and mapping located primary scheelite mineralisation in amphibolite within the Strangeways metamorphic Complex. The Iridina Gneiss was mapped which is the main muscovite producing member related to pegmatite intrusions.

#### EL 5188

In 1987-1988 CRAE explored EL 5188 Plenty Dam for a possible Roxby Downs style Cu-Au-U target. A regional gravity and magnetics survey was completed following the

identification of a discrete gravity high. The survey showed there is no discrete coincident magnetic and gravity high, and the gravity high is part of a much larger, EW trending regional feature that does not have a related magnetic high.

#### EL 5902

In 1989 Track held EL 5902, and completed stream sediment sampling, geological traverses and rockchip sampling, which failed to locate any signs of gold or base metal mineralisation. The EL is centred on Delmore Downs on the Bunday River, in the north western part of the Plenty River project area (EL 28081).

#### EL 7993

PNC Exploration within the Arunta Province focused primarily for unconformity-related uranium mineralisation, in addition to pegmatite-related, skarn-related and fault controlled styles, possibly related to highly uraniferous granites in the orogen. PNC discovered the Yambla prospect in 1992, which is located 45km south of EL 28081. It is included to illustrate this style of mineralisation in the Hart Range belt which extends into the Plenty River Project area. Trenching and drilling by PNC in 1993-1995 across the main zone of surface uranium mineralisation (uraninite) showed that the hydrothermal mineralisation is relatively narrow (50m wide) over a strike length of one kilometre.

#### EL 8088

Roebuck Resources explored EL8088 and 8165 (Molyhil West Project) in 1992-1995 which covers part of the central and eastern Plenty Rivers Project area. The area was considered prospective for volcanogenic base metal-gold deposits, gold-molybdenum-tungsten skarns, replacement and vein style base metal and gold deposits. The Molyhil West Project is part of the Box Hill-Molyhil group of tenements that includes the Bruce's Copper Prospect and Molyhil Mine to the east of the Plenty River project area.

On EL 8088 they completed magnetic and non-magnetic lag geochemical sampling over magnetic anomalies and stream sediment sampling over the Delny-Mt Sainthill Lineament in the east. Roebuck interpreted the area of high magnetic susceptibility (Figure 30) to be the Strangways Metamorphic Complex, a bimodal volcanic and volcanoclastic sequence. In the NE of the EL, the Delny-Mt Sainthill Fault Zone follows a series of granites intruded in a WNW trending deep crustal fracture, which have updomed the Arunta sequence to expose felsic volcanics and thermally metamorphosed volcanoclastic and carbonate sediments.

#### EL 9190

During 1995-1998 Bengel explored EL 9190 for industrial garnet resources in joint venture with Olympia Resources NL and Kajar Pty Ltd. These tenements cover the Plenty River drainage and the Yam Creek tributary west of the Chambigne ELs (ELs 8176, 8342, 8473), and just outside the western Plenty River project area tenements. Garnet shedding from the Riddock Amphibolite was targeted.

EL 9373

The licence was evaluated by a first pass regional geochemical program of stream sediment and lag sampling. Results indicated some low level anomalism in gold with peak values being 1.2ppb. There were 431 lag, 417 stream and 17 rock chip samples taken. Two low lwwvl Ni-Co anomalies were identified in the tenement which were not coincident with any significant Au anomalism.

EL 22897

Exploration included an airborne TEM survey, surface sampling, ground magnetic survey, drilling and rehabilitation. Two geophysical anomalies were identified and tested by drilling, but results were not encouraging and no further work was warranted. EL22897 was transferred to Southern Cross (80%) and Bohuon Resources Pty Ltd (20%) in 2003. However, the licence was cancelled due to delays in getting approvals from the Central Lands Council.

EL 22917

Exploration completed by Tanami Exploration included regional mapping, sampling included soil, lag, stream sediment and rock chipping. The initial target identified was Pt-Pd-Au mineralisation associated with the Florence Creek shear Zone.

EL 24379

Paspaley explored a circular physiographic feature testing the theory that it was intrusive related and prospective for diamonds. Ground magnetics were captured and showed no significant anomalism, samples taken were identified as gabbroic and it was concluded that the feature was not the expression of a diamond bearing kimberlite or lamproite pipe.

Mining

**Table 2. Historical Mines and Prospects**

<b>Mine/Prospect Name</b>	<b>Modat Site Id</b>	<b>Mineral Field</b>	<b>Commodity</b>	<b>Orebody Type</b>
Undippa 12	142	Undippa South	Mica	Pegmatite

Mining in the licence area has been predominantly for mica sourced from pegmatites in the Undippa Mineral fields (Undippa North field and Undippa South field).

The prospect Undippa 12, part of the Undippa South field, is located within EL 28081. It consists of 2 small pits on a tabular outcrop of Silurian pegmatite some 20m long. The other pegmatite and abandoned mines of the Undippa South field are located immediately to the west of the licence.

## 7. EXPLORATION RATIONALE

EL 28081 forms an integral part of the Plenty Rivers Project which consists of 11 exploration licences now having an aggregate area of 1,973km<sup>2</sup>. This licence traverses the entire project area from north to south in an irregular shape.

The northern part of the Plenty River Project area comprising the Metamorphic-Granite Complex (Jinka Belt) is prospective for volcanic hosted Cu-Pb-Zn-Ag-Au deposits and Cu-W-Au-Mo skarns and other replacement deposits, stockwork vein gold occurrences, and granite hosted Sn-Ta-W deposits. The southern and western areas of the tenements cover an uplifted block of Strangways Metamorphics (the Kanandra Granulite), which contains rocks that elsewhere are known to consist of acid and basic volcanogenic rocks and immature sediments which host iron formations, Cu-Pb-Zn-Au mineralization, and are usually metamorphosed to granulite facies. Basement rocks exposed are quartz-feldspar granulites, basic granulites, magnetite bearing amphibolites and other calc-silicates. Float shows massive magnetite and hematite and suggests iron formation occurs beneath cover. Basement is also intruded by ultramafic dunite-serpentinite and granite bosses which are fracture related. Fracturing, volcanism and igneous intrusion began in Lower Proterozoic time and extended to the Carboniferous (Alice Springs Orogeny). Isolated patches of Ledan Schist are present northeast of Mount Swan. The Ledan Schist is considered to be prospective for quartz-vein-hosted Au-only mineralisation, as it has a low metamorphic grade and is situated close to the NW-SE trending Delny Shear Zone structure.

Specific mineralisation models are:

1. Nickel-copper-cobalt in serpentinitised ultramafics interpreted to be intrusive gabbro-peridotite-dunite bodies. Maximum nickel value is 1.2% Ni, 240ppm Cu and 300ppm Co in a lateritised serpentinite dunite south of No. 4 Dam. Another serpentinitised ultrabasic body is at the Hammer Prospect near No. 1 Dam (also called Middle Dam) with 4700ppm Ni and 750ppm Cu. Several other ultrabasic bodies have been reported (Figure 16). The ultramafic bodies occur both in the central Kanandra Granulite and the Metamorphic-Granite Complex to the north. Those within the Kanandra Granite have been compared with Alpine-type (ophiolitic) serpentinites. However, the No. 4 Dam occurrence is in the Metamorphic-Granite Complex Belt. This sequence is located to the north of the major east-west orientated retrograde shear zone, the Delny-Mt Sainthill Fault Zone. This shear transects the tenement, separating granites to the north from (previously Irindina Metamorphics) to the south. It flanks the southern margin of a west-northwest trending deep crustal fracture which has been the locus for series of granite intrusions. Rocks within the fault zone appear to be lower units of the Strangways Metamorphic Complex and/or younger felsic volcanics updomed by granitic intrusion. Deep crustal fracturing is supported by extensive barite-

fluorite veining in the vicinity of the fault and deep sourced ultramafic intrusions.

2. Orogenic shear zone hosted gold mineralisation. Gold has been discovered in gossanous sulphidic quartz vein breccias along the DMSFZ 4km east of the tenement at Bruces Copper Prospect with maximum values up to 53g/t Au. The breccias are either copper-rich or copper-poor:

- Gossanous sulphidic copper poor breccia veins associated with Type 2 quartz veins, possibly focused on straights rather than jogs.
- Gossanous copper rich veins in Type 2 shears. Pyritic veins that may be related to reverse movement on the Type 3 faults.

Geochemical sampling along the DMSFZ in the eastern part of the Plenty River project area in the Halfway Dam area has reported some anomalous gold in stream sediments and silicified ridges and quartz veins that require systematic sampling.

3. Base metal mineralisation. Within the Arunta Province, significant Zn-Cu-Pb (Ag-Au) mineralisation is restricted to the SE Aileron Province (1810-1800 Ma and 1765 Ma) and the Warumpi Province (1620-1610Ma) (Hussey, Huston and Claoué-Long, 2005; Huston, Hussey and Frater, 2006). The Perenti Copper Prospect is the most advanced copper prospect in the Plenty River project area. Copper mineralisation occurs in a quartz-filled shears which cut across the Mount Swan Granite. Chalcopyrite varies from 2 to 4% in the host rock, but one hole drilled by Central Pacific in 1970 intersected 11.9m at 0.6% Cu (with Pb and Zn >50ppm, and Au and Ag <0.5 dwt/ton). The target was 18km shear zone along which quartz veins with disseminated boxwork and weak copper had been recorded.

4. Tungsten-molybdenum mineralisation. At the Delmore Downs wolfram prospect (Delny 1 and 2), wolframite occurs in pegmatite veins close to a granite contact. Eluvial wolframite occurs in this area (1.32t WO<sub>3</sub> concentrate, 0.6t WO<sub>3</sub> concentrate). Small quantities of tantalite have been produced from the Bunday River prospect and from the Utopia prospect; in both situations, the tantalite occurs within pegmatite. Scheelite has been discovered at Anomaly C38 and a location 3.5km to the north; Anomaly C38 assayed 2.65% W in calc-silicate rock near a pegmatite dyke.

5. Fluorite-barite mineralisation is recorded to the east of the Plenty River project area along major crustal fractures mentioned above within the northern Metamorphic-Granite Complex. Examples of fluorite/barite occurrences within the easternmost Plenty River EL include:

1. NTGS Site 1531 - fluorite/barite, breccia fill
2. NTGS Site 1532 - fluorite/barite, breccia fill
3. NTGS Site 2003 - barite

4. NTGS Site 2004 – barite/fluorite
5. NTGS Site 2005 - barite

6. Plenty River Mica Field. Multiple mica workings in pegmatite occur throughout the southern part of the tenement within the Harts Range Group. Most of these were exploited in the 1950s.

## **8. EXPLORATION INDEX MAP**

There has been no exploration index map constructed at this time.

## **9. GEOLOGICAL ACTIVITIES**

### Office Studies.

During the fifth licence year data collected during field visits was incorporated into the GIS data set under annual revision by the licence holders.

### Field Studies

Field work conducted during the year consisted of 1 site visit, this was a geological reconnaissance with a soil and rock geochemical sampling program. 10 x A horizon soil samples were taken with a Niton Portable XRF machine and 25 rock samples were analysed with the same machine. The results obtained are displayed in the section Surface Geochemistry.

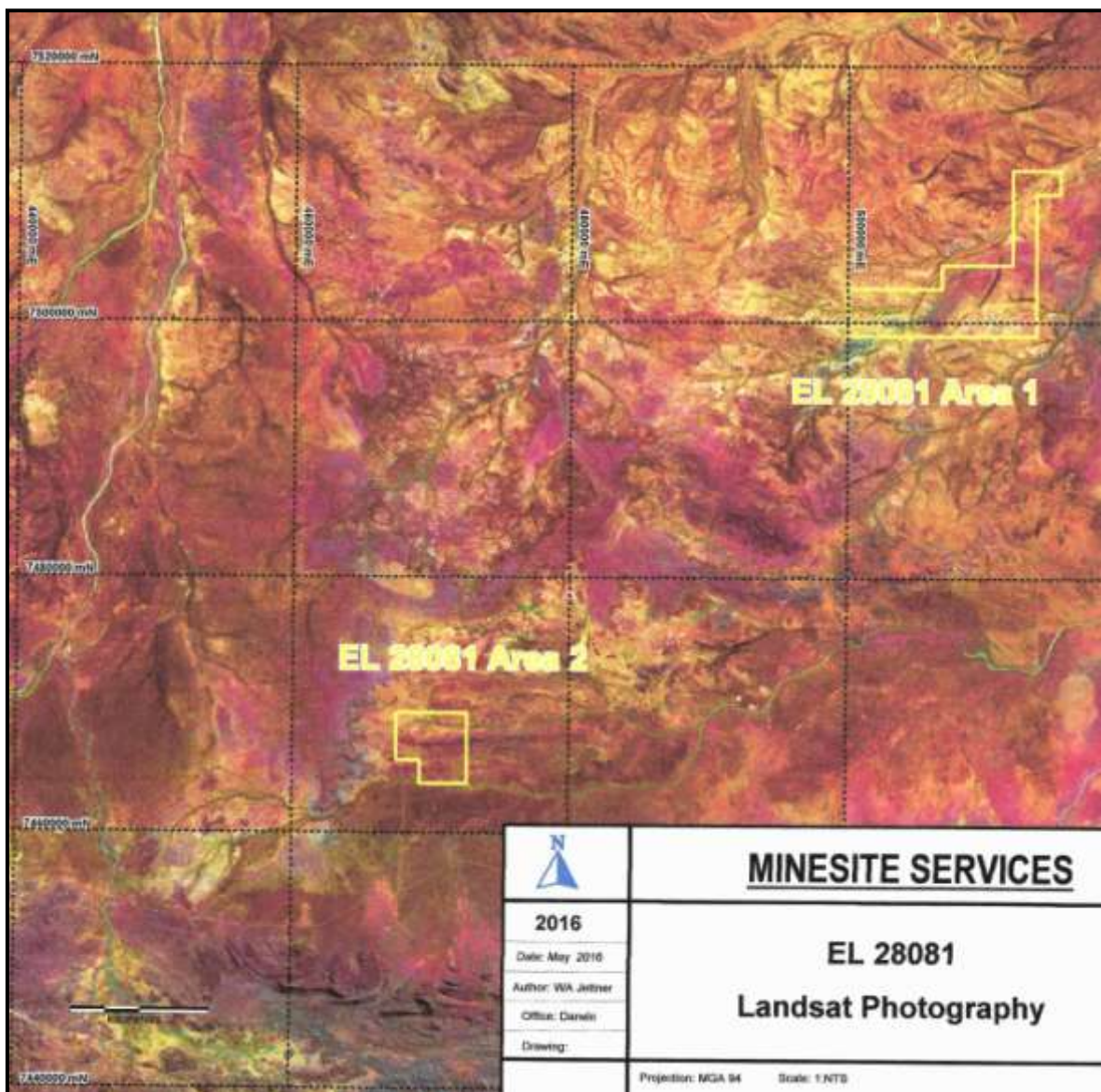


## 10. REMOTE SENSING

There were no remote sensing surveys done during the year.

Included below is an image taken from the DME DIP008 dataset, LANDSAT 7.

The tiles are: Landsat 7 Run W2, Paths 101 and 102, Row 76, Acquisition date 1999.



(After DME DIP008 Dataset)

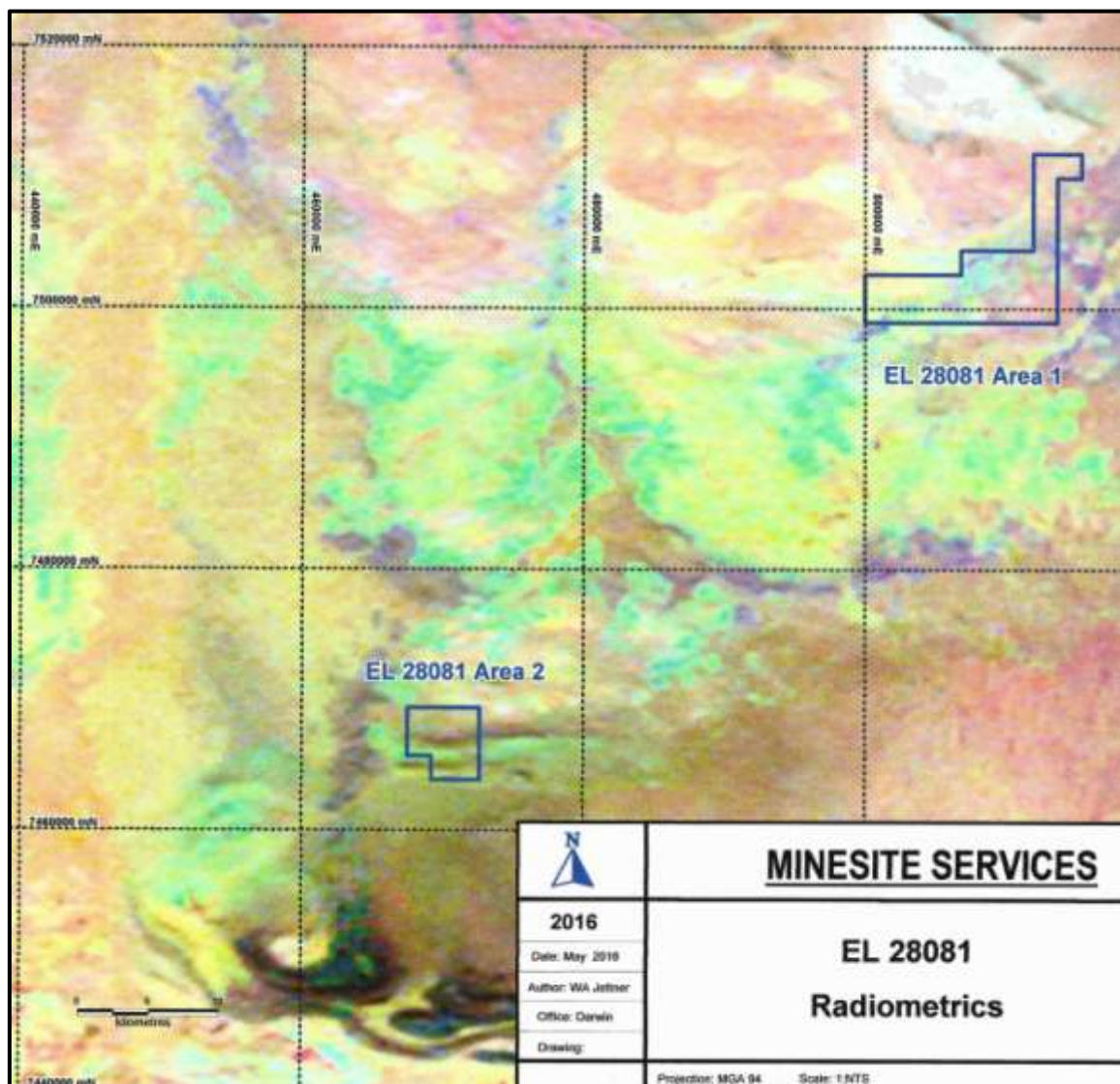
## 11. GEOPHYSICAL ACTIVITIES

### Radiometrics

There have been no radiometric surveys conducted during the year.

As can be seen from the following image obtained from the DME DIP008 dataset, the radiometrics closely follow the modern drainage systems and the underlying geology.

The Kanadra Granulite has elevated levels of thorium, whilst the Jinka domain has elevated levels of potassium. Minor uranium is shown as the blue areas of which no substantial anomalies appear in the licence areas.

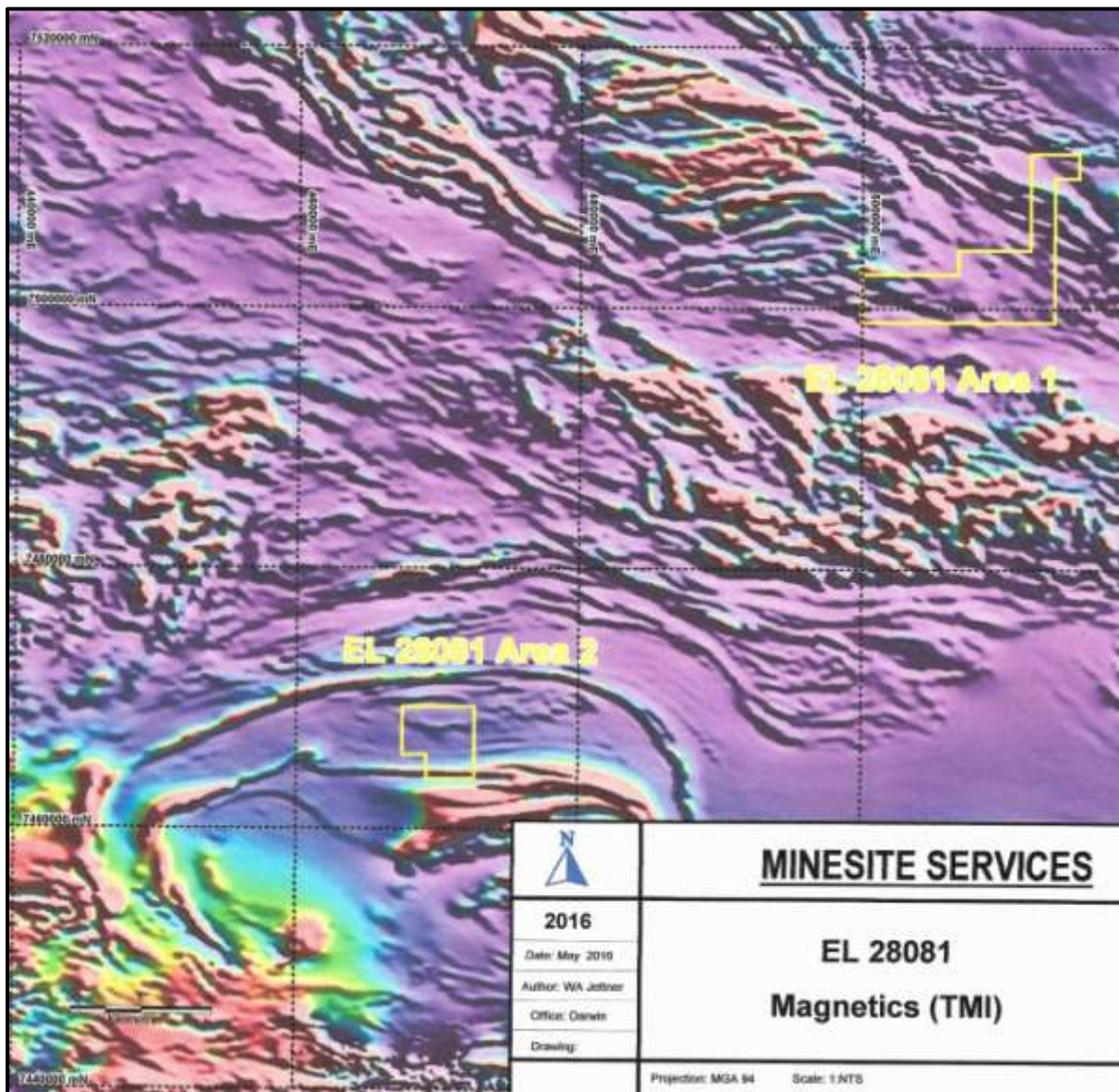


(After DME DIP008 dataset)



Magnetics

As can be seen from the image below (taken from the DME DIP008 dataset) the area encompassed by the Kanandra Granulite exhibits a generally higher magnetic signature than the two surrounding terrains to the north and south of this region. The bounding shear zones (Delny - Mt Sainthill SZ to the north and Entire Point SZ to the south) can also be picked quite clearly along with a number of other shear zones that can be inferred by the disruption to the overall magnetic signature.



(After DME DIP008 dataset)

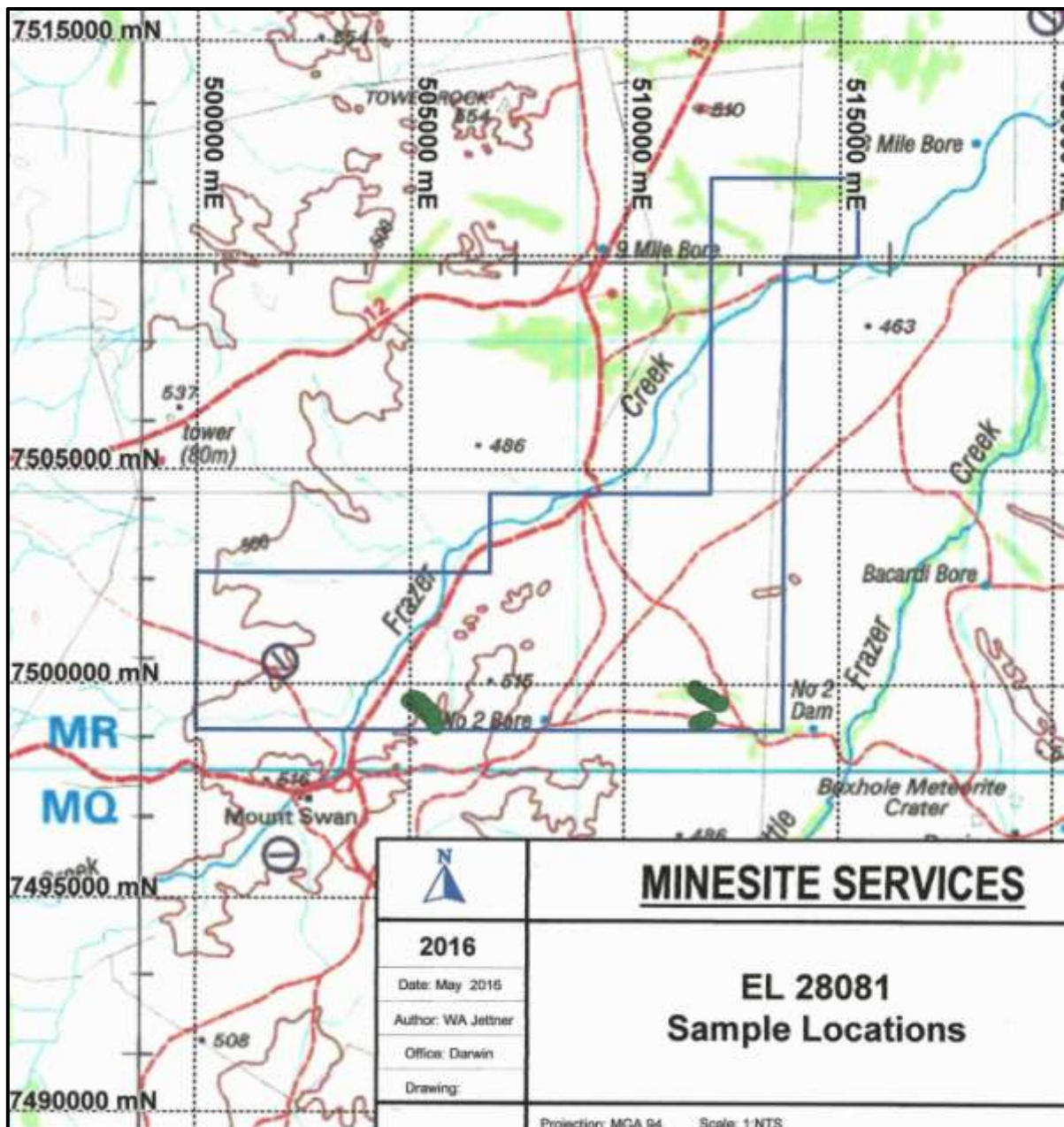
## 12. SURFACE GEOCHEMISTRY

There were 35 surface geochemical samples taken during the year.

These were: 10 A Horizon soil samples, and  
 25 rock samples

These samples were analysed with a Niton Portable XRF.

Their locations are indicated below:



### **13. DRILLING**

There were no drilling activities undertaken during the year.

### **14. GEOTECHNICAL STUDIES**

There were no geotechnical studies conducted during the year.

### **15. RESOURCES AND RESERVE ESTIMATION**

There were no resource or reserve estimations done during the year.

### **16. CONCLUSIONS AND RECOMMENDATIONS**

Exploration to date has not located any base metals mineralisation but only a small part of this extensive licence area has been examined in detail. Because of the long anastomosing nature of the licence, the area covers a number of potential mineralisation domains that will be investigated in the coming years. The area considered to be of lower exploration potential has been relinquished at the end of the fifth year of tenure.

During the sixth year of tenure exploration work will concentrate on the platinum anomaly located in the south-western corner of the EL.

It is recommended that active exploration continue in the coming year.

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