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EL 8883

Bluebush

FINAL REPORT

LICENSEE:
GIANTS REEF EXPLORATION PTY LTD
A.B.N.009 200 346
(A wholly owned subsidiary of Emmerson Resources Ltd)

20 March 2001 – 19 March 2011

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MAP SHEETS:

☐	TENNANT CREEK	SE53-14
☐	TENNANT CREEK	5758
☐	KELLY	5658
☐		1:100 000

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1. SUMMARY

This Final Report records exploration work done on EL 8883 between 20 March 2001 and 19 March 2011.

Although exploration activities had limited success within the licence area during the life of the licence, most recent work using the VRMI technology that identified the Red Bluff Area and the follow-up drill testing of these targets including Ella & Smokey were significant intersections of ironstone packages with potential to host mineralisation were located highlights the prospectivity of the licence area. This success has large implications for exploration within the Tennant Creek Field and other areas of EL 8883, therefore encouraging Emmerson to include the area covered by EL 8883 in its SEL Applications 28601 & 28602.

The licence area now forms part of SEL Application 28602.

The licence ceased on 19 March 2011.

2. INTRODUCTION

Exploration Licence 8883 BLUEBUSH is broken into two distinct areas, with one being a long thin tract of land located approximately 9km west of the Tennant Creek Township and a second, the larger bulk of the licence, is located approximately 30km west of Tennant Creek town. The Licence falls on the Kelly 1:100,000 scale map sheet (5658).

Figure 1 shows the location of EL 8883 and surrounding tenure.

This Final Report records exploration work done on EL 8883 between 20 March 2001 and 19 March 2011.

3. LOCATION

Exploration Licence 8883 BLUEBUSH is broken into two distinct areas, with one being a long thin tract of land located approximately 9km west of the Tennant Creek Township and a second, the larger bulk of the licence, is located approximately 30km west of Tennant Creek town. The Licence falls on the Kelly 1:100,000 scale map sheet (5658).

There are several access routes into the large area covered by EL 8883, but the principal one at present is the dirt road that leaves the Stuart Highway about 6km south of Tennant Creek Town and heads west, passing through EL 10402 and EL 8883, to the Kunayungku community. From along this road, a number of station tracks and the service route along the Amadeus Basin to Darwin gas pipeline, can be followed to most parts of the area.

Figure 1 shows the location of EL 8883 and surrounding tenure.

4. TENURE

EL 8883 was first granted to Giants Reef Exploration Pty Ltd on 20 March 2001, for a period of 6 years, a renewal for a further 2 years was granted in 2007 and a further 2 years was granted during 2009. The Licence initialled covered an area of two hundred and twenty four graticular blocks (598.4 km^2), following statutory reductions the tenement was reduced from two hundred and twenty four graticular blocks to one hundred and twelve graticular blocks at the end of the third year of tenure, a further reduction to fifty six graticular blocks (149.60 km^2) occurred at the end of the fourth year of tenure and a further reduction at the end of the fifth year of tenure to the current 28 graticular blocks (72.52km^2). As a consequence of the reductions EL 8883 formed two discreet areas, refer to figure 1. In January 2011 Emmerson submitted two SEL applications, one (SELA 28601) included the eastern portion of the licence (combining it with EL 22240) and the other application (SELA 28602) included the western portion of the licence (combined with

part of SEL 24979, which forms part of Emmerson's Western Project Area), both applications were accepted and registered in late January 2011.

EL8883 lies within NT Portion 494, Perpetual Pastoral Lease 1142, Tennant Creek station.

EL8883 is subject to an Indigenous Land Use Agreement (ILUA) signed in September 2000 between the Native Title holders of the Tennant Creek region, represented by the Central Land Council (CLC), and Giants Reef.

5. GEOLOGY

5.1 Regional Geology

The reader is referred to AusIMM Monograph 14 (Geology of the Mineral Deposits of Australia and Papua New Guinea), Volume 1, pp. 829-861, to gain a good introduction to the regional geology and styles of gold-copper mineralisation of the area.

In 1995 the Northern Territory Geological Survey released a geological map and explanatory notes for the Flynn 1:100,000 sheet, which covers the area of the licenses.

The rocks of the Warramunga Formation host most of the orebodies in the region and underlie most of the Exploration Licenses.

5.2 Local Geology

EL 8883 includes a number of lower Palaeoproterozoic inliers, which include both the Warramunga Formation (<2%) and the Junalki Formation (<5%), however these comprise less than 7% of the total geology of the EL. There are also a number of younger Palaeoproterozoic inliers and these include volcano-sedimentary units of the Ooradidgee Group. More than 70% of the EL includes granitic rocks of the Tennant Creek Granite, Cabbage Gum Granite or the Devil Suite granites. A number of prominent NW trending lineaments transgress all of these units.

Virtually all of the Exploration Licence is colluvium-covered, with a few minor areas of calcrete and some very isolated basement exposures. Using the regional magnetics it can be interpreted that rocks of the Palaeoproterozoic Warramunga Formation may underlie some of the northern portion of the EL.

In the central and southern areas, Cambrian and later sediments of the western fringe of the Wiso Basin form a concealed layer up to several tens of metres thick, lying on the older basement. Aquifers in this sequence are the source of the Tennant Creek town water supply.

The basement geology of the bulk of the area is barely known although the sparse drilling to date, including many Government test water bores and a number of previous company exploration holes, have revealed a variety of amphibolite-grade metamorphics, plus granites, intermediate and mafic intrusions and volcanics, throughout the area. In the northern part of EL 8883, dating of igneous and metamorphic drill cores has given early or lower Proterozoic ages. Many linear magnetic structures, which in some cases appear to be fault boundaries of identifiable lithological blocks, can be seen in the 1999 AGSO 200m line-spaced aeromagnetics over the region.

The west-central area of EL 8883 lies over a prominent and extensive regional gravity anomaly, which rises to a 19 Milligal peak in this area. This is referred to as the "Bluebush gravity anomaly" and is the focus of exploration in the area.

6. EXPLORATION

6.1 Targets and Concepts

Proterozoic Inliers world-wide, and particularly in Australia, are renowned for their iron-rich mineralisation and world class base metal deposits. For many years prominent geologists and researchers in the industry have pointed out the geological similarities that the broader Proterozoic Tennant Creek Inlier shares with the Gawler Craton, host to the Olympic dam deposit, and to the Eastern Succession of the Mt Isa Inlier that hosts the Ernest Henry and Selwyn deposits. These similarities, though recognised, had not been widely acted upon by the industry.

Exploration was aimed at discovering large deposits of base metals along with substantial gold and/or silver, probably accompanied or hosted by large volumes of iron oxide minerals.

Giants Reef's target model iron oxide-rich lithologies and are therefore likely to be associated with regional or district-scale gravity anomalies, and potentially coincident with a magnetic anomaly.

The discovery of the haematite-magnetite Chariot deposit in 1998 has shown the potential for variations on the classic magnetite ironstone hosted gold +/- copper deposits, where lower order magnetic anomalies, plus gravity methods can define new targets. Discoveries by Giants Reef of mineralisation such as at Malbec West, Marathon and Billy Boy further support this. Giants Reef considers the potential for the discovery of mineralisation in hematite dominant ironstones in the relinquished group is limited.

6.2 Exploration Undertaken – 20 March 2001 to 19 March 2011

Exploration work completed during Giants Reef's first tenure year was composed of:

- Reconnaissance rock sampling – this included a number of rock chip samples which were collected from the few basement outcrops in EL 8883 during reconnaissance trips at various times prior to the grant of the Licence. The rock chip samples were mostly from along an east-west ridge of silicified quartz-veined sediments centred at approximately 387000E 7807800N, but include some samples found around the collars of old drillholes, and two from an old bulldozer costean dug into a low banded iron formation outcrop in the northern (BMR3 Area) part of EL 8883. Sample numbers 450001 to 450007, 422190 to 422198, and 450057 to 450066 (total 26) were assigned to the rock chips collected. The samples were analysed for Au, Ag, As, Bi, Cd, Co, Cr, Cu, Fe, Mn, Mo, Ni, Pb, P, Sb, Zn, Ca and Mg. No outstanding anomalous results were noted in these batches, apart from some low ppb-level gold readings.

- Sampling of BMR3 Area old drill cores. In the 1960's and 1970's, a number of diamond holes were drilled in what was referred to as the "BMR3 Area", in the northern part of what is now EL 8883. This drilling is recorded in Northern Territory Geological Survey report GS79/32 "Results of diamond drilling in the vicinity of BMR 3 Area, southwest of Tennant Creek, NT" by J P Howard, 1979. The cores sampled were from the following holes:

Hole No.	Drilling information	Approximate AGD84co-ordinates		Angle, azimuth and depth
DDH 158	Drilled by Australian Development NL, 1961. Core size AX.	385090E	7817260N	-65 to south, 1305.5 feet (397.92m)
DDH 169	Drilled by Northern Territory Mines Branch, probably in 1962.	381163E	7822300N.	-50 to south, 780.0 feet (237.75m)

DDH 158 intersected various metamorphic rocks, including biotite-feldspar-garnet gneisses, feldspar-chlorite porphyry, quartz-actinolite-magnetite-(garnet-chlorite) gneiss, biotite schist and amphibolite schist, and dolerite in the last 24m of the hole. The core from DDH 158 was located at Normandy's Warrego yard, and is now stored at Giants Reef's TC8 mine. The upper and lower sections are missing. The section recovered consisted of 34 trays, from 315 feet to 1137 feet (the hole ended at 1305.5 feet). Minor disseminated sulphides, mostly pyrite, were visible in places, and very little sampling had been done. Twenty-four samples (422646-422669) were cut for gold assays and for Fe, Mn, Cr, Ca, K, Mg, Na, Ag, As, Bi, Cd, Ce, Co, Cs, Cu, Ga, In, La, Mo, Nb, Ni, Pb, Rb, Se, Sr, Te, Th, Ti, V, and P, by ALS method MS587. Zinc was accidentally omitted from the list and not assayed.

The highest assay results included 237 ppm Cu, 841 ppm Pb, and 0.17 g/t Au. The second highest Au result was 6.1 ppb. This low order anomalism may just possibly suggest other, perhaps more intense, mineralisation somewhere in the general vicinity.

DDH 169 had been stored by the Government, and Giants Reef was able to inspect and sample it at the DBIRD core library in Alice Springs. This hole had also drilled through a range of predominantly metamorphic rocks, including mafic biotite gneiss, hornblende feldspar gneiss, leucocratic biotite gneiss, chlorite schist, quartz-feldspar-hornblende-biotite schist, hornblende amphibolite, and muscovite-biotite-quartz-feldspar gneiss, and a 4m-interval of hornblende diorite. Giants Reef photographed the core trays and cut 20 core samples (74563 to 74382) from DDH 169 The sampling was biased towards intervals carrying minor sulphides. None of the core had been cut and sampled before, apart for some short lengths for age-dating. The hole is marked out in feet and inches, and all the assay samples were three feet long half-core. They were analysed for gold and the same elements as for DDH 158, with the addition of zinc and uranium. The first sample in the batch assayed 5.5 ppm silver, but this may have been contamination. There were no other obvious anomalous values in the rest of the results.

- Groundwater geochemistry - Groundwater samples were taken from fourteen old exploration drillholes and Government test water bores in EL 8883, other samples were taken at the same time (mid-2000) from adjoining EL's 8882 and 9309. This work was carried out prior to the granting of the two Licences, but is included in this report to complete the record of the exploration work done. The sampling was aimed at finding indications of mineralisation in the and around the regional Bluebush gravity anomaly. The sampling and analytical techniques used have been developed over many years by the CSIRO, in particular by Senior Principal Research Scientist Angela Giblin, who visited Giants Reef's Tennant Creek offices to discuss the project. Giants Reef's field work was conducted under her guidance.

  An initial step was to find out the locations of all old bores and drillholes in the Bluebush area. This was done by visits to the Water Resources Section of the NT Government Department of Lands, Planning and Environment in Alice Springs, where a database on disk was obtained, and photocopies made of a large number of geological logs of all the relevant drillholes and bores. Locating the old bores and drillholes in the field proved difficult, as many were overgrown and virtually invisible, while others were dry or had caved in and could not be sampled. However, in the end a reasonably even distribution of sample points over the Bluebush gravity anomaly was achieved.

  Sampling involved making readings at each site for ambient and sample temperature, acidity, conductivity, water depth, sample depth, GPS location and remarks on the water quality. The sample bottles were sent to the CSIRO's laboratory at North Ryde, NSW for the sensitive analysis work. Results indicated that several of the sample sites, in the central part of the Bluebush gravity anomaly, were anomalous for one or other of the base metals or for gold, and the chemistry

for some of them suggested the presence of magnetite-chlorite in the sources of their waters.

The fact that the ground waters of the gravity anomaly area carried anomalous metals contents gave (as hoped) added encouragement for the drilling in EL 8883 (Section 5.7), although geophysics and geological considerations were the prime factors in deciding where the drilling would be done.

- Magnetics interpretation - Giants Reef's consultant geophysicist Frank Lindeman, of Lindeman Geophysics Pty Ltd, Melbourne, carried out an interpretation of the 1999 AGSO aeromagnetic data covering the regional Bluebush gravity anomaly. He produced models of a large number of magnetic sources in the area and defined many magnetic structures visible in the data. Later, this work contributed to the process of drill site selection after the gravity survey (Section 5.5) was completed.

- Clearances from Native Title holders - Under the terms of Giants Reef's Indigenous Land Use Agreement with the Native Titleholders of the Tennant Creek region, it was necessary to obtain clearances from the Native Title holders before the field party for the planned gravity survey could enter the area. Assisted by the CLC, field visits were made to the survey area, and the necessary clearances were given. One proviso was that the survey field party would stay away from salt lakes, clay pans and other natural depressions, which have special significance for the local people. In the event, this condition did not present any real difficulties for the field operations. A later clearance was obtained in the same manner for the construction of tracks and drill sites, once the results of the gravity survey had been received and target spots chosen.

  At the end of the year a work program had been submitted to the CLC for clearances to permit the drilling of 7 drillholes within EL 8883.

- Gravity survey - A detailed helicopter-borne gravity survey was carried out in June 2001 over the Bluebush gravity anomaly. The whole survey, on a nominal grid spacing of 1km x 1km, totalled 648 stations. The survey commenced on 2nd June and finished on 6th June, 2001.

  The gravity survey was carried out by Daishsat Pty Ltd of Murray Bridge, South Australia, using a Bell 47 G5 helicopter (VH-TZW) hired from Heli-Muster Pty Ltd at Victoria River Downs, NT. Two Scintrex CG-3 gravity meters were used for the gravity data acquisition. Each loop started and ended at the Tennant Creek airport gravity base station. For horizontal and vertical GPS control, four GPS receivers (two Leica GPS and two Ashtech Z12's) were used. One point (station 1) was set up on top of one of the Giants Reef transportable office buildings in Tennant Creek, and the other (station 2) was a short star picket in the paddock between Giants Reef's yard and the Tennant Creek airport.

Navigation in the field between stations was done using Garmin GPS II+ instruments. Generally, the reading points were within 100m of their planned round-number co-ordinates, although inevitably some stations had to be read further away from the intended locations because of ground features such as mulga thickets preventing helicopter landings at the optimal positions. Within EL 8883, there were 243 helicopter reading points, plus approximately 80 ground stations that were read later using a Toyota 4WD truck. The ground stations were read at 200m intervals along two 8km-long north-south profile traverses over two selected residual anomalies.

Giants Reef's consultant geophysicist Frank Lindeman was on hand in Tennant Creek to supervise the survey on a day-by-day basis.

The detailed survey over the Bluebush gravity anomaly re-shaped the anomaly, and decisions on where to conduct the deep drilling were largely based on residual anomalies derived by Lindeman Geophysics Pty Ltd from the new information. Used in conjunction with the aeromagnetic data, an initial five sites were selected for drillholes in EL 8883.

All the information gained from the gravity survey over EL 8883 and adjacent EL's has been put into the public domain, as part of the NTGS/AGSO gravity database covering all of the Tennant Creek 1:250,000 sheet and parts of some the adjoining 1:250,000 sheets that was released in late 2001.

- Drilling - Five sites were selected for deep vertical drillholes in EL 8883. Only three of the five were completed in the first year of EL 8883. Drilling statistics are as follows:

Hole	Easting (AGD84)	Northing (AGD84)	Azimuth	RC Pre-collar	NQ2 core to end of hole	Notes
BBRD-001	382000E	7810500 N	vertical	0-233m	233m-606m	Also a water bore (RC) to 29m. Adequate water supply.
BBRD-002	380025E	7805105 N	vertical	0-300m	300m-564.4m	Also a water bore (RC) to 24m, and a false start (abandoned) RC pre-collar to 42m. Adequate water supply.
BBRD-003	382000E	7822000 N	vertical	0-370m	370m-561.7m	Also an attempted water bore (RC) to 29m. No water flow.

Total NQ2 core drilling was 1,732.1 metres. The total amount of reverse circulation drilling, including the water bores at each site and the failed first attempt at the RC

pre-collar of BBRD-002, came to 1,027 metres. The drilling contractor was Stanley Drilling Co, of Wanneroo, WA, using a newly-built convertible reverse circulation and diamond Hydco 1500 rig mounted on a ten-wheel drive Oshkosh (ex-US military rocket launcher) truck. The two support trucks (booster compressor truck and rod truck/water tanker) were eight-wheel drive Oshkosh platforms. The rig was equipped with hydraulic rod handling operated by a manual remote control.

During the drilling of BBRD-001 and BBRD-002, there were problems with water flows from the overburden, leading to the RC pre-collars being stopped at depths well before the hoped-for 400 metres. In-flow of overburden sands into the holes from under the HW casing also caused problems. The high water table at these sites, at around 12m to 15m, contributed to the troubles, despite the powerful air supply on the rig. The drilling program turned out to be greatly more expensive than anticipated. Core recovery was very good throughout. All three holes were vertical, and down-hole camera surveys indicated that there was very little deviation.

Hole BBRD-001 was sited on a residual gravity anomaly. Apart from the top 46m, which may have been Cambrian Wiso Basin sediments but possibly much younger, the hole drilled a long sequence of non-foliated of diorite-gabbro-norite intrusives.

Summary Log of BBRD-001

From (m)	To (m)	Lithology
0	46	Sand, silcrete, sandstone, gravel, clays (overburden)
46	51	(top of basement): Very weathered. Igneous? and/or metamorphic?
51	233.00	(RC pre-collar) All microgabbro, gabbro, norite or and/or diorite
233.00	241.27	(start of coring) Norite
241.27	245.90	Microgabbro
245.90	280.05	Mafic quartz diorite
280.05	280.40	Microgabbro
280.40	283.18	Diorite
283.18	331.50	Mafic quartz diorite with short intervals of microdiorite and microgabbro
331.50	341.20	Norite, minor diorite
341.20	375.90	Mafic quartz diorite
375.90	384.22	Quartz gabbro
384.22	416.60	Mafic quartz diorite
416.60	460.30	Microgabbro

460.30	472.97	Mafic quartz diorite
472.97	484.50	Microgabbro
484.50	606.00	Mafic quartz diorite. (End of hole)

The core showed very variable orange to red haematite alteration as haloes to quartz-carbonate veins. The quartz-carbonate veining usually included epidote, minor chlorite and occasional pyrite. Thin section descriptions were made of a number of core samples, as recorded in Petrology section. The RC pre-collar was sampled for geochemical analysis in 6-metre 'speared' composite samples. Half-metre samples were cut at regular 5-metre intervals for the cored section of the hole. The samples were assayed for Au by AMDEL method FA3, and for Cu, Bi, Fe, Ag, As, Cd, Co, Mn, Mo, Ni, Pb, Zn, Cr, P, Sb, and V, by AMDEL method IC2E. No obvious anomalies were observed in the results.

It is not clear if drillhole BBRD-001 explained the target gravity anomaly, as there is no information available on the density of the surrounding rocks to indicate whether there is a sufficient density contrast to provide an explanation.

Hole BBRD-002 was also sited on a residual gravity anomaly, approximately 5.4km SSW of BBRD-001. As with BBRD-001, the material overlying the basement may have been Cambrian, but alternatively could have been much younger sediments. The basement consisted mostly of amphibolitised metabasalts, interspersed with felsic porphyries and sediments.

Summary Log of BBRD-002		
From (m)	To (m)	Lithological Interpretation
0	34	Sands, minor calcrete, gravel, clay (overburden)
34	46	Altered ?rhyolite (top of basement)
46	56	Amphibolitised mafic volcanics
56	58	?Rhyolite
58	88	Amphibolitised mafic to ultramafic volcanics, incl former ankaramite or picrite
88	92	Black fine-grained sediments

92	115	Amphibolitised mafic (basaltic) volcanics
115	120	?Hornfels
120	144	Amphibolitised mafic volcanics
144	178	Amphibolitised mafic tuff
178	208	Amphibolitised mafic (basaltic)volcanics
208	217	?Dacite tuff
217	333.30	Amphibolitised mafic (basaltic) volcanics (coring starts at 300m)
333.30	343.00	Graphite-chlorite matrix fault breccia with dissem pyrite; chert, shale & igneous clasts.
343.00	355.00	Amphibolitised mafic volcanics with quartz-carbonate and haematite veins
355.00	401.40	Altered, fractured, banded, dark fine-gr metapelite. Graphite, chlorite, dissem pyrite.
401.40	425.10	Altered porphyritic dacite
425.10	467.50	Amphibolitised mafic vitric tuff
467.50	479.60	Altered porphyritic dacite
479.60	488.20	Altered porphyritic rhyolite or rhyodacite.
488.20	535.20	Altered porphyritic dacite
535.20	564.40	Alternating greywacke and fine to cherty siltstone beds

The former mafic volcanics are generally strongly altered to amphibolitic assemblages including tremolite, clinozoisite, albite, chlorite, epidote and sphene. The graphitic fault zone separates an upper sequence almost entirely consisting of mafic and some ultramafic volcanics from a lower zone containing some of the same rocks but also a variety of porphyritic rhyolite to dacite and sediments. Disseminated pyrite with lesser chalcopyrite and arsenopyrite occurs in the graphitic fault zone and in the rocks below it. The graphite-chlorite fault zone matrix may be of hydrothermal origin. The RC pre-collar was sampled in 6-metre ‘speared’ composite samples, and almost all of the cored section was cut for assay. Analytical methods and the elements chosen were the same as for BBRD-001. Assay results of BBRD-002 core samples show anomalous gold in two intervals of the hole. The upper interval has relatively high assays of gold and arsenic at the top, with a long interval of weak but anomalous levels of these elements extending below it:

Sample Nos.	From	To	Au	As	Geology

	(m)	(m)			
424764	378	380	0.077 g/t	1950 ppm	Brecciated graphitic & chloritic siltstone with quartz & carbonate veins
424765	380	382	0.51 g/t Au	1.22% As	
424766	382	384	0.105 g/t	3600 ppm	
424767 to 424788	384	428	Av 16ppb Au over 42m	Av 96 ppm over 42m	Siltstone, dacite, mafic tuff

The upper gold mineralisation occurs in brecciated and altered sediments between volcanic units. Disseminated arsenopyrite was noted at this location. A second, weaker gold-arsenic anomalous interval occurs from 470m to 488m:

Sample Nos.	From (m)	To (m)	Au	As	Geology
424810 to 424819	470	488	Av 14ppb Au over 18m	Av 84ppm As over 18m	Altered porphyritic dacite and rhyodacite

The anomalism in the above table is confined to gold and arsenic. Other metal levels were not elevated in these zones. Elsewhere in the hole there were a few individual samples or pairs of samples with low-ppb gold levels, e.g., 6m composite samples 80550 and 80551, over the interval 246m to 258m. These assayed 2 and 4 ppb Au, and 76 and 100 ppm As respectively. Using 6m composite samples may have suppressed some of these very low grade anomalies. The intersections in BBRD-002 of visible mineralisation and strong alteration were viewed as very encouraging, and further holes in this locality were planned for the second year of the licence.

BBRD-003 was drilled 11.5km north of BBRD-001, in the northern part of EL referred to as the “BMR3 Area”. Like the other two, it was positioned to test a residual gravity anomaly. Basement was reached at 4m depth, after which metamorphics were drilled to the end of the hole.

Summary Log of BBRD-003		
From (m)	To (m)	Lithological Interpretation

0	4	Sand, gravel and silcrete. (overburden)
4	15	Very weathered, probably amphibolite. (basement)
15	94	Amphibolite, green.
94	99	Aplite dyke.
99	155	Amphibolite: dark green-grey, with possible gneissic textures (percussion chips).
155	158	Aplite or granite dyke.
158	295	Amphibolite: dark amphibole-feldspar-quartz-phlogopite rock.
295	378	Amphibolite: dark colours, frequent carbonate alteration. (end of RC pre-collar)
378	474.6	Amphibolite: strong compositional banding, mostly near-vertical. (cored section)
474.6	561.7	Amphibolite: less banding; annealed breccia textures, some mineral alignment.

A 29m water bore (not logged or sampled) was drilled before BBRD-003 was commenced, but was found to be dry. Drilling water was therefore pumped from an old abandoned station bore (Registered No. 10760) near the Kunayungku road, about 4km SE from BBRD-003, using a submersible electric pump with a generator, and a plastic tank. The water was carted to the drill site in the rod and fuel truck, and this arrangement proved satisfactory. The lack of water-bearing overburden, in contrast to the situations at BBRD-001 and BBRD-002, was the main reason that the RC pre-collar of BBRD-003 was able to reach 378m, the deepest of the three pre-collars, before coring began.

There were two main lithological divisions apparent in the cored section, from 378m to 561.7m. The upper section was a banded or streaked amphibolite, with the lineations mostly in steep to vertical orientations. Below 475m, the rock has a less lineated appearance. Mineralogical Report 8158 (refer section 5.8) suggests different origins for the two amphibolites. In brief, the interpretation was that the upper streaky amphibolites are possibly derived from sediments, while the lower samples may be of “mafic igneous origin”. The different styles of metamorphism (pro-grade above, retrograde below) suggest that the overall sequence may represent an older igneous basement sitting (unconformably) beneath a younger sedimentary cover sequence. Minor pyrite and chalcopyrite could be seen in places, and the petrological work also identified pyrrhotite, but there was no sulphide mineralisation of any significance. This was confirmed by the geochemical assay samples, which were collected in 6m ‘speared’ composites for all of the RC pre-collar to 378m, and one-metre split core samples at regular 5m intervals through the cored section. No outstanding results were noted. Sample 424877 (501-502m) assayed 850 ppm Cu, with the next highest result of 230 ppm Cu. Au was mostly between <1 and 2 ppb, with a highest of 7 ppb Au.

- Petrography - During and after the drilling described above, three batches of half-core samples were sent for petrographic study to Ian Pontifex and Associates Pty Ltd, Adelaide, for rock identification and description. Nine specimens were examined from BBRD-001, 15 from BBRD-002 and 6 from BBRD-003.

  From the petrography and the overall geochemistry, it was interpreted that the rocks examined in BBRD-001 and BBRD-002 are from an in-plate, extensional environment, with the BBRD-001 samples having a relatively more tholeiitic character, and those from BBRD tending to be more alkaline.

Exploration work completed during the second year of tenure by Giants Reef included the following:

- Assessment of Drilling at Bluebush in 2001 - A great deal of exploration was carried out on EL 8883 leading up to and during the first year. Three deep vertical RC/diamond holes (total depths 606m, 564.4m and 561.7m) were drilled in EL 8883 (BBRD-001, BBRD-002 and BBRD-003). BBRD-001 intersected diorite-gabbro-norite intrusives, and BBRD-003 intersected amphibolite grade metamorphics. The most interesting findings were from BBRD-002, in the southern part of the Bluebush gravity anomaly, which drilled a sequence of mafic and ultramafic volcanics, interspersed with rhyolitic to dacitic porphyries and sediments, and showing amphibolitic, chloritic and carbonate alteration and disseminated pyrite over considerable intervals. This was accompanied in some sections by low order gold anomalism and arsenopyrite mineralisation. The highest individual gold and arsenic assays were 2m @ 0.51 g/t Au and 1.22% As, from 380m depth in brecciated graphitic and chloritic siltstone with quartz and carbonate veins.

- Drill Target Selection - At the end of the first year of tenure a work program had been submitted to the Central Land Council (CLC) for clearances to permit the drilling of 7 Reverse Circulation (RC) drillholes within EL 8883 Due to the great expense of the three diamond drill holes drilled in the first year of tenure Giants Reef decided to drill more, shallower reverse circulation holes in 2002 to identify and geochemically sample the bedrock at the chosen targets. The alteration, mineralisation and lithologies found in BBRD-002 were considered very encouraging. Follow up reverse circulation holes were planned with 4 holes at 200m distance to the north (BB), south (DD), east (CC) and west of BBRD-002. The proposed western most hole targeting BBRD-002 was collared in Giants Reef's EL 8882 that directly adjoins EL8883. Assessment of the AGSO aeromagnetics revealed a sharp-looking anomaly approximately 700m east north-east of BBRD-002. This magnetic anomaly appeared to be of shallow origin and was suspected to relate geologically to the ultramafic rocks in BBRD-002. A reverse circulation drill hole was proposed at this location to test this anomaly, and another drill hole along the gravity/magnetic structure from it. A drill hole close to Lake Surprise (AA) was proposed where there is a cluster of gravity highs. This site was pegged and given CLC clearance in the previous tenure year, however it was not drilled due to early rains. The seventh proposed hole in EL 8883 near the Kunayungku road (D) was proposed in the first tenure year but did not get drilled.

- Clearances from Native Title holders - Under the terms of Giants Reef's Indigenous Land Use Agreement (ILUA) with the Native Titleholders of the Tennant Creek region, it was necessary to obtain clearances from the Native Title holders before the field party for the planned RC drilling could enter the area. A work program was submitted to the CLC which outlined the work Giants Reef proposed to undertake over EL 8883 at the end of the first tenure year. The Central Land Council representing the Traditional Aboriginal owners of the land approved the proposed drilling activities in May 2002. One proviso was that access tracks must be constructed so as to avoid exclusion zones. The approvals were given by the CLC on the basis of the results of site clearances carried out last year in response to work programs for EL 8883.

- NT Geological Survey Visit - Two geologists from the NT Geological Survey (NTGS), Mr Nigel Donnelland and Mr Mike Green, arrived on the 14th May to take petrography and possible age-dating samples from the cores of the three Bluebush diamond holes (BBRD-001, 002 & 003) that were drilled in 2001. They collected about 15 core specimens for further work, and were given all relevant data, including drill logs, assays and the petrology reports with the thin sections. It appears that the NTGS regards the intrusives and volcanics in these holes as belonging to the Flynn Sub-group. The NTGS have since indicated that they will not do age-dating on the samples, which is disappointing considering that the samples are from the deepest holes drilled to date in the area. Mr Michael Green from the NTGS informally commented on the rocks intersected in BBRD-002 and recommended further exploration at this target.

- Clearing of Tracks and Drill Pads - The clearing of tracks and 8 drill pads was completed in June 2002. In EL 8883 the existing track running south east from the Kunayungku road was diverted to the east around the 2km x 2km CLC exclusion zone centred around Lake Surprise. Tracks used last year to access BBRD-001 and BBRD-002 were re-cleared and smoothed over.

- Petrography - In order to understand the original constituents and alteration assemblages of the metamorphosed basement rocks in the Bluebush gravity anomaly seven samples were sent to Ian Pontifex and Associates Pty Ltd, Adelaide, for rock identification and description in July 2002. Five of the specimens were from an old BMR or Australian Development Limited diamond drill hole called DDH169, located in the same general area of Proterozoic rocks southwest of Tennant Creek. The other two samples are chips from around the collars of old exploration holes in the same district.

- Reverse Circulation Drilling - The drilling contractor was Johannsen Drilling, of Port Lincoln, South Australia. The total amount of reverse circulation drilling by Johannsen Drilling in EL 8883 was 245m. Of the 7 planned holes, 5 were attempted but only 3 reached basement. Running sands propelled by lots of shallow groundwater meant that 2 holes in EL 8883 were abandoned (BBRC-017 and BBRC-019), as the rods got bogged and there was a real risk of losing the hammer and rod string. Loose sand formation was much more widespread than anticipated,

occurring from the Explorer 15 area in the north west of the project area (EL 8882) down to the projects southern limit around BBRD-002. The rig used was an Edson 2000HD. The rig's air compressor (quoted at 1,000 cfm @ 360 psi and therefore theoretically adequate for the projects relatively shallow holes) had a major failure. Giants Reef then decided to seek out a larger rig to complete the drilling program. For the second phase of the drilling program, the drilling contractor was Gomex Drilling, of Dry Creek, South Australia using a larger rig and compressor. Gomex Drilling completed the drilling program. The total amount of reverse circulation drilling by Gomex Drilling in EL 8883 was 460m. Abandoned holes BBRC-017 and BBRC-019 were redrilled by Gomex Drilling (BBRC-031 and BBRC-032 respectively), reaching basement rock with no further problems.

Samples collected during the drilling were riffle split in metre intervals. A total of 278 1-metre split and 92 3-metre speared composite samples were collected and sent to AMDEL for analysis. All samples were assayed for Au by AMDEL method FA3, and for Cu, Bi, Fe, Ag, As, Cd, Co, Mn, Mo, Ni, Pb, Zn, Cr, P, Sb, and V, by AMDEL method IC2E. No significant geochemical anomalies were observed in the results however low order base metal anomalism was present in a couple of the holes.

Although most of the drill holes were targeting residual gravity anomalies, several had coincident magnetic anomalies. Consultant Geophysicist Frank Lindeman of Lindeman Geophysics Pty Ltd, Melbourne recommended measuring the magnetic susceptibility of all drill chips, which subsequently has been carried out and recorded on all drill chip logs using a Kappameter KT-5 Magnetic Susceptibility Meter.

Geological logging was completed on site, using a Hewlett Packard 200LX palmtop computer and downloaded in the evenings. Downloaded geology data was then validated and printed out as separate log sheets and then loaded into a Micromine database, along with collar, survey and assay data.

Detailed drilling statistics are summarised in Table 1:

Drilling statistics for EL 8883 are as follows:

Hole ID	Drill Date	Pre drill name	Easting	Northing	Azimuth	Depth (m)	Drill Company
BBRC-010	30/07/02	D	380959	7819061	Vertical	60	Johannsen
BBRC-015	4/08/02	BB	380025	7805309	Vertical	72	Johannsen
BBRC-016	5/08/02	CC	380228	7805108	Vertical	54	Johannsen
BBRC-017	5/08/02	DD	380023	7804904	Vertical	48	Johannsen
BBRC-019	7/08/02	FF	383999	7805999	Vertical	11	Johannsen

BBRC-030	14/09/02	DD	380028	7804897	Vertical	94	GOMEX
BBRC-031	15/09/02	FF	383996	7806022	Vertical	124	GOMEX
BBRC-032	16/09/02	EE	382901	7806004	Vertical	124	GOMEX
BBRC-033	17/09/02	AA	391005	7807915	Vertical	118	GOMEX

No substantial mineralisation was found in the drilling, but there were several areas where geochemically anomalous results were found. These are described below.

Nickel Anomaly: Hole BBRC-033, near Lake Surprise - This single hole on a gravity residual intersected a nickel-bearing interval in the weathered top zone of the basement, which starts 11m below surface. The overlying material is recent clays and gravels, and the basement is mafic or ultramafic volcanic, but not recognisable until approximately 30m. From 16m to 26m the samples are red clays for about 4m (possibly a laterite) then very weathered, saprolitic mafic or ultramafic. This 10m interval averages 0.186% Ni (max 0.32%), 900 ppm Cr and 200 ppm Co. Less anomalous levels of these elements extend for several metres below 26m. The interval from 16m to 26m was chosen because all the Ni values here were >1,000 ppm Ni. This anomaly may indicate the fringe of a buried laterite nickel occurrence, however the site requires further drilling to confirm and delineate.

BBRD-002 Area - None of the assay results in the holes along this trend (BBRC-015, 016, 019, 019, 030 and 031) suggested that the gold-arsenic mineralisation comes to shallow depths. High phosphorus assays (max 3.25% P) were found in the Cambrian upper parts of many holes but were assumed to represent sedimentary basial phosphate occurrences which are common in the Georgina Basin, and possibly also the Wiso Basin (Bluebush).

- Petrography - During and after the drilling described above, several RC chip basement samples were sent for petrographic study to Ian Pontifex and Associates Pty Ltd, Adelaide, for rock identification and description. At least one thin section specimen had been taken from all the holes drilled in EL 8883, except for the two abandoned holes. Rocks from around the BBRD-002 area were identified as dacite porphyry, tonalite and porphyritic basalts that “may relate to the more pyroxene-rich picrites and ankaramites” described in thin sections of cores in BBRD-002 (Report MR 8256). From the petrography and the overall geochemistry, it is interpreted that the basement rocks examined in EL 8883 are from an intraplate, extensional environment.

- Groundwater Geochemistry - Groundwater samples were collected from five (5) exploration RC drill holes that were drilled during the reporting period within EL 8883. Other samples were collected at the same time (August 2002) from adjoining Exploration Licence 8882. The sampling was aimed at finding indications of mineralisation in the and around the regional Bluebush gravity anomaly as well as the two discrete magnetic features in the north of EL 8882 known as Explorer’s 15 and 81. The sampling and analytical techniques used have been developed over

many years by CSIRO, in particular by Senior Principal Research Scientist Angela Giblin, who visited Giants Reef's Tennant Creek offices to discuss the project in 2000. Giants Reef's fieldwork was conducted under her guidance. Sampling involved collection of readings at each sample site for ambient and sample temperature, acidity, conductivity, water depth, sample depth, GPS location and remarks on water quality. Cyanide and activated carbon satchels were added to each sample bottle and the bottles were sent to the CSIRO's laboratory at North Ryde, NSW for sensitive analytical work.

Groundwater chemistry analysis supported the results of the groundwater geochemistry undertaken last year on samples from government test water bores. The ground waters of the gravity anomaly area carried anomalous metal contents, and discrete zones coinciding with the zone of high residual gravity was able to be delineated. The coincident geochemical and gravity anomaly may constitute a groundwater geochemical signature for the source of the gravity anomaly in the Bluebush project region.

- Potable Water - A number of the holes drilled in EL 8883 found shallow (9m to 15m depth) drinkable water over wide areas. This information was provided to local Aboriginal people and also the pastoral lease holders.

- CLC Liaison Committee Meeting - A liaison committee meeting was held at Alekerenge Community in October 2002. The purpose of the meeting was to inform the Traditional Owners of the status of exploration in the Bluebush Project area including EL 8883. This included the main areas of interest for Giants Reef, drilling results, and expected future exploration over the project area. The CLC representatives, 17 Aboriginal Owners, and Giants Reef representatives were present. Giants Reef's Exploration Manager, Mr Peter Simpson gave a presentation about the exploration activities that had been carried out on the Land. The minor copper occurrence in BBRC-006 (EL 8882), the minor nickel show in BBRC-033 (EL 8883) and the drinkable water that was found in many of the holes was reported. The Traditional Owners showed considerable interest in the prospect of drinkable water and expressed interest in the possibly of setting up a water bore near the Kunayungku Community.

- Tenement Review - An internal review of the Giants Reef tenement portfolio and a classification of exploration opportunities in September 2002 assessed the future exploration potential of EL 8883 and the prospects within the Licence. Assessment of the EL recognised that that the Licence contains magnetic anomalies which are indicative of Tennant Creek style gold-copper occurrences (but which are not BHP Billiton targets). The review recommended that Giants Reef substantially reduce the tenement holding of EL 8883 to retain only the areas covering the targets which may still hold potential for Tennant Creek style shallow or substantial gold mineralisation. At the end of the second tenure year Giants Reef reduced EL 8883 from 224 to 112 graticular blocks. The northern portion of the tenement was retained, being the location of the traditional Tennant Creek style gold-copper anomalies that have been identified within the Licences.

- Alliance Meeting - A technical meeting was held between Giants Reef and BHP Billiton in Melbourne on the 2nd December 2002. The meeting focussed on recent drilling results from the Bluebush Project Area. Information was presented to BHP Billiton representatives. The results from the Bluebush exploration program conducted over the last two years was assessed. It was concluded that no significant geochemical intersections were identified in the drilling and no substantial mineralisation had been found in the Bluebush project area. In summary the findings from the drilling were disappointing and not of sufficient interest to the Alliance to consider any follow up exploration. Recommendations were made by BHP Billiton and Mr Frank Lindeman that the Falcon airborne gradiometer may be a useful application in the Bluebush area by identifying structures not already identified. There was no suggestion however, that any airborne gravity survey would be conducted under the Alliance. The minutes from the meeting were accepted as accurate, and were signed on the 16th December 2002 by Giants Reef and BHP Billiton.

During the third year of tenure no on-ground exploration was conducted over the Licence area.

During Giants Reef's fourth tenure year EL 8883 was included within a package of tenements which were subject to a combined quantitative/qualitative ranking, based on geological, geophysical & geophysical characteristics and other parameters covering work status, target type, land status and economics. The tenement was down graded to "Non-Core B" which includes areas comprising only limited Warramunga Formation, weak or no magnetic anomalies and no proven corridors of mineralisation. Although the review identified a number of magnetic anomalies within the EL which are indicative of Tennant Creek style gold-copper occurrences, the prospectivity of the EL to host economic gold/copper mineralisation was downgraded for the following reasons;

- Geological re-assessment of the EL demonstrates that less than 5 km2 of the 325.2 km2 contains the prospective Warramunga Formation, with the remainder including geology which has not been found to host significant mineralisation in the region. These include granites of the Tennant Creek Super suite, volcanic-sedimentary successions of the Ooradidge Group and volcanic-sedimentary sequences of the Junalki Formation. The area proposed for reduction is believed to contain no Warramunga Formation.

- Drill testing of the Bluebush gravity anomalies in the first two tenure years of the Licence (BHP Billiton Alliance) downgraded the potential of the gravity anomaly. A review of the drilling and geophysical data suggests that the source to the gravity anomalies is either: i) Intrusive complexes, considerably higher in density than the surrounding host rocks, or ii) Deeper source that has not been intersected by drilling to date, however likely to be at depths between 1000 to > 2000m (refer to attached memorandum M. Cooper, 2005).

Work during the remainder of the six year term included a literature search and review of all previous exploration undertaken in the Licence area. As part of this review all available

exploration data was documented, in preparation for validation and integration in the Company's database and GIS.

Exploration conducted on EL 8883 during its final years was related to exploration activities in the Red Bluff Area. Red Bluff is predominately located within Emmerson's SEL 24979, but a prospect termed 'Parker' is located on the northern boundary of EL 8883 with SEL 24979. Exploration involved the drilling of 39 RAB holes (RBRB0233 – RBRB0271) for 1,588m and no anomalous results were returned.

Other work included the application of the Vector Residual Magnetic Intensity (VRMI) technology, which has been further developed by Emmerson and its contract geophysicists from Western Geoscience. The VRMI identified the Red Bluff Area, including the Parker prospect as a highly prospective area for ironstone location. Although initial RAB drilling at Parker was not encouraging drilling at other Red Bluff targets, including Ella & Smokey have intersected significant ironstone packages with potential as a Tier 1, this success has large implications for exploration within the Tennant Creek Field other areas of EL 8883, therefore Emmerson included the area covered by EL 8883 in SEL Applications 28601 & 28602.

7. REHABILITATION

The dominant proportion of exploration conducted in EL 8883 was limited to non-invasive geological, geophysical and geochemical reassessments and reviews. Rehabilitation for ALL drilling conducted by Emmerson was completed during the 2010 field season. Previous drilling by other holders of the licence has been completed to Emmerson's best knowledge. All rehabilitation completed abided by the rehabilitation set out in the governing Mining Management Plan (MMP); Authorisation 0475 – 02 Southern Project Area.

8. CONCLUSIONS

Although exploration activities had limited success within the licence area during the life of the licence, most recent work using the VRMI technology that identified the Red Bluff Area and the follow-up drill testing of these targets including Ella & Smokey were significant intersections of ironstone packages with potential to host mineralisation were located highlights the prospectivity of the licence area. This success has large implications for exploration within the Tennant Creek Field and other areas of EL 8883, therefore encouraging Emmerson to include the area covered by EL 8883 in its SEL Applications 28601 & 28602.

9. EXPENDITURE

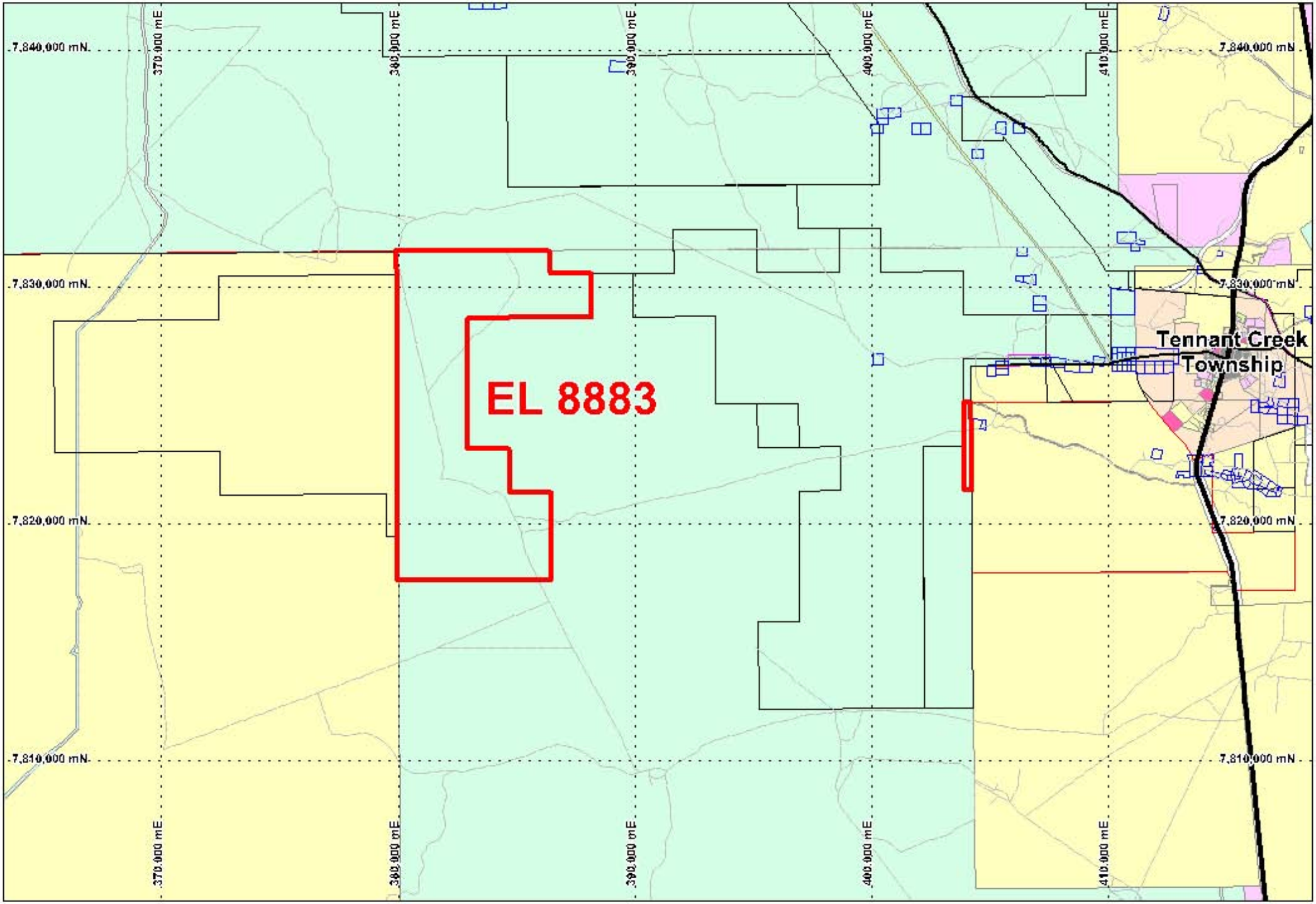
Expenditure for the term of the tenure for EL 8883 is as follows:

ITEM	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6	YEAR 7	YEAR 8	YEAR 9	YEAR 10	TOTAL
Geology	$28,561	$9,089	$4,993	$10,114	$5,112.54	$1,254	$	$4,915	$4,960	$18,833	
Geophysics	$59,635	$4,894			$1,158.46			$37,942.52		$2,521.50	
Geochemistry	$21,972	$10,996								$1,050	
Surveying	2,002	$884			$964.80					$675	
Data Integration	$3,647	$1,072	$185	$224	$1,453.52		$	$1,035	$1,589	$1,200	
Drafting					$916.27	$209					
Analytical	$11,209									$1,703	
Drilling	$283,380	$40,091			$854.23					$16,374	
Tenure Admin	$10,500	$8,195	$350	$2,287	$1,192	$836	$	$1,035	$1,050	$1,020	
Administration and Overheads	$10,668	$9,370	$956	$207	$371.51	$209	$	$470.21	$105	$210	
Rehabilitation	$221	$4,094									
TOTAL	**$431,795**	**$88,685**	**$6,494**	**$12,832**	**$12,330.35**	**$2,508**	**$3,609**	**$45,397.73**	**$7,704**	**$43,946.50**	**$655,301.58**

EMMERSON RESOURCES LTD

HARD COPY REPORT META DATA FORM

REPORT NAME:	EL 8883 BLUEBUSH FINAL REPORT 20 MARCH 2001 TO 19 MARCH 2011
PROSPECT NAMES(s):	
GROUP PROSPECT NAME:	
TENEMENT NUMBERS(s):	EL 8883
ANNIVERSARY DATE:	20 MARCH
OWNER/JV PARTNERS:	GIANTS REEF EXPLORATION PTY LTD
AUTHOR(s):	ADAM WALTERS
COMMODITIES:	GOLD, COPPER, LEAD, ZINC, SILVER, BISMUTH
MAPS 1:250 000:	TENNANT CREEK SE53-14
MAPS 1:100 000:	KELLY 5658; TENNANT CREEK 5758
MAPS 1:50 000	
TECTONIC UNIT(s):	TENNANT CREEK INLIER,
STRATIGRAPHIC NAME(s)	WARRAMUNGA FORMATION, CAMBRIAN WISO BASIN
AMF GENERAL TERMS:	
AMF TARGET MINERALS:	GOLD, COPPER, LEAD, ZINC.
AMF GEOPHYSICAL:	.
AMF GEOCHEMICAL:	
AMF DRILL SAMPLING:	
HISTORIC MINES:	
DEPOSITS:	
PROSPECTS:	
KEYWORDS:	BLUEBUSH, EL 8883, BHP JOINT VENTURE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EL 8883
Tennant Creek
Township