EL 27918 Sherwin Creek

Final Report

26 October 2010 to 02 January 2013

URAPUNGA 53-10 Mapsheet

A.W.Mackie

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Contents

SUMMARY

EL27918 comprising 313 sq km located 180km east of Mataranka occupies an area of alluvial plain wedged between the Flying Fox fault zone to the north and gently folded escarpment- forming upper Roper Group shallow marine/lacustrine sediments of the McArthur Basin succession to the south.

The northern and eastern escarpment hosting BHP oolitic iron deposits A, B, C, D and E within 1429Ma Sherwin Formation butt up to licence boundarys and as occurs with deposit E, passes into the licence area. A three RC drillhole program was undertaken testing for oolitic iron deposits beneath sandy alluvial floodplain between the eastern escarpment and Mt McMinn a mesa of upper Roper Group sediments rising 150m above the surrounding floodplain where 2m averaging 11.5% Fe was intersected at the top of SC001.

After a review of available data the licence was surrendered on 21 December 2012.

1. Introduction

EL27918 straddles the easterly flowing Roper River from near its source in the Elsie uplands, downstream for about 30km before meandering across low-lying areas of mangrove swamp into the Gulf of Carpentaria, some 475km southeast of Darwin. Murphy's iron occurrence near Roper Bar is the first documented iron discovery in the NT (1911) however interest in the prospect was short-lived. Only now is the areas iron ore potential being systematically evaluated.

2. Location and Access (Figure 1, 1a)

Access is south via the Stuart Highway from Darwin for 424km until the turnoff to Roper Bar is reached 5km south of Mataranka. The single strip, sealed Roper Highway goes to Roper Bar a distance of 210km, however Mt McMinn located in the north-east corner of EL 27918 is only 165km from the Stuart Highway. The Roper Highway traverses across the southern half of EL 27918 providing access. The northern areas are accessed by reasonably well maintained station tracks.

3. Tenure

EL 27918 Sherwin Creek comprising 101 graticular blocks (310km2) (325km2) was granted to A. W. Mackie on 26th October 2010 for 6 years. It was reduced to 50 blocks on 24 October 2012.

4. Previous Exploration (Figures 2, 3, 4)

The Roper Region is centred on the middle and lower reaches of Roper River comprising URAPUNGA and ROPER RIVER. The first significant NT-iron discovery was Murphy's prospect near Roper Bar in 1911.

Murphy's iron ore occurrence, the catalyst for the arrival of a BHP prospecting party in 1955 who planned to carry out geological mapping and channel sampling of ferruginous sandstones tentatively identified on aerial photographs during the previous off-season? Purportedly there were 200 million tonnes of ironstone averaging 40% Fe cropping out south of the Roper River within the McMinn sedimentary group? Five, 50kg iron samples were taken from 5 locations, for ore dressing and concentration tests. Unfortunately even after grinding to minus 14 mesh a large amount of silica remained locked in the concentrate. Microscopic investigation showed the ore comprised varying amounts crystalline hematite and microcrystalline quartz suggesting the rock was an oolitic ironstone.

The available iron ore in Gum Creek area, comprising deposits A, B, C were nearly half the 1955 reserve within 40km of Roper Bar wharf.

BHP bulk sampled the area on a nominal spacing of 300m along the outside escarpments of the range and edges of steep ravines. Faces were cleaned down by blasting,

BHP concluded the only ironstones in the Roper River region of potential economic interest occur within the McMinn Group (read Sherwin Formation Pzr, 2001) occurring near the top of a sedimentary succession where no fossils are found.

Two basins of McMinn Group rocks were mapped. The largest, covers 307000 sqkm, is rectangular shaped with a long axis trending northeast-southwest. Mt McMinn (located in northeast corner of EL 27918) is the furthest known exposure of "McMinn Group rocks" to the northeast while in the southwest, the northwest side of the rectangle bulges somewhat up the valley of the Roper River.

The larger basin is affected by north-south faulting and gentle folding towards the western margin. The north-east area of the larger basin is typically basinal with gently inward dipping sides. Here the main ironstone deposits are found. To the west another basin-shaped area centered on Roper Valley Station occurs where the main ironstones crop out towards the bottom of the sedimentary succession west of Hodgson Downs Homestead.

There are two main types of ironstone: namely a soft red pisolitic ore and a finer grain oolitic ferruginous grey sandstone generally occurring higher in the sequence.

The pisolitic beds of the Roper Valley – Hodgson Downs area are associated with sandstones occurring above siliceous shales at the base of the formation. The ironstones are all oolitic comprising ocherous hematitic oolites and rounded quartz grains with varying amounts of interstitial crystalline hematite and microcrystalline quartz.

The Gum Creek,(renamed Sherwin Creek) or north-eastern deposits namely A, B, C, D, E ironstone beds occur within two limbs of a range formed by synclinical folding of "McMinn Beds" (which plunge to the north-west) called the northern and eastern escarpments (12km and 8km long, respectively). Gum Creek, a tributary of the Roper, flows through the northern range halfway along providing main road access from Mataranka to Roper Bar through the gorge. All drainage off the gorges is down dip slopes into Gum Creek forming up to 30m deep ravines. The ravines on the dip slopes in conjunction with frontal escarpments provide ideal, regular sampling sites.

The main ironstones were initially mapped on an enlarged aerial photo (1:58,000scale) followed up by detailed mapping (1:3100) for ore reserve calculations.

Deposit A on the west side of the main road is small. The cropping out ferruginous sediments soon become too lower grade (2 bulk samples).

Deposits B and C are separated by the synclinical axis about which "McMinn" sediments are folded to form two ranges.

For practical purposes ironstones are assigned to one of three members. However over much of the area the middle bed comprises three ferruginous shale units which are sometimes included in sampling of middle bed.

Deposit C of the eastern range is exposed along the eastern escarpment for a strike length of 5.2km covering an area of about 800ha. A generalised section is:

shale sandstone overburden	12.2 m
upper ironstone	1 -3.65m

shale/sandstone	4.6 m
middle ironstone	3.65 - 12.2m
shales/thin sandstone	12 - 21 m
bottom ironstone	1 - 9.75m
shale	

Neither grade nor thickness of individual beds are uniform for any distance along strike or down dip. Generally grade improves from top to bottom.

The bottom bed is redder, softer, weathering more easily accentuating cross-beds, more uniform in grade and occasionally limonitic. It has a characteristic "holey" appearance with the odd flattened hematitic pellet and very little microcrystalline quartz. Its least exposed along the front of the escarpment.

The middle bed is the thickest of the three ironstone members, purplish-red to purplish-grey where it grades 40-50% Fe. As grade deteriorates it becomes much greyer as silica content increases. It's generally harder than the lower beds, eventually grading into poorly ferruginous sandstone down dip and along strike. The middle bed crops out over a much larger area than the bottom bed. The higher grade middle bed is generally thin (4.5m) with one or more interbedded shale horizons. An inverse relationship exists between grade and thickness i.e. higher the grade, the thinner the middle bed. The thickest sections occur in the middle of the range where good quality ironstone interbeds with ferruginous shales and siliceous ironstones. At both north and south ends ironstone grades into sandstone and quartzite. Solid ironstone ensures a steep cliff face whereas shale weathers back more readily to a sloping hillside. The upper bed may be up to 6m thick however it is generally between 1.2-2.4m cropping out near the top of ravines.

Deposit B – Northern Range

The same beds of the eastern range continue along the northern range however overburden is thicker and more extensive with few ravines incising dip slopes.

The bottom bed is exposed along the top of the escarpment for 1609m. Although in some areas it is soft, strongly cross-bedded and grading over 40% Fe, it lacks consistency along strike. The middle bed is split by shale interbeds into 3 ferruginous layers. Apart from shale dilution (0.5-1.2m thick) grade is consistently good on most faces. Thickness ranges between 4.6 and 10.7m. A reliable ore reserve estimate of the range is difficult because of the uncertainty of how far ore extends down dip.

In 1955 eleven sample sites were selected at 1600m intervals, samples were taken every 60cm down the cliff faces after cleaning by blasting. Five shafts were also sunk. Microscopic examination revealed several types of transitional ore where no one type occurs exclusively in one ironstone bed or area.

In 1956, 72 bulk samples were collected at 400m intervals over deposits A, B, and C. An ore reserve of 100 million tonnes was estimated. Disregarding overburden which for the most

part is less than 3 parts overburden to one part iron; reserves are nearly 200 million tons, the greater proposition of which occur in the middle and bottom beds i.e. 180 million tons of ironstone averaging 40.8% Fe in beds averaging 6.4m thickness.

To summarise, from 1955 – 1961. BHP assessed 27 iron ore prospects (seven on HODGSON DOWNS) west and southwest of Murphy's prospect. An extensive exploration program of mapping, drilling (31ddh's, 1793m) shaft sinking, sampling, and metallurgical testing was undertaken delineating several hundred million tonnes of iron ore from deposits near Hodgson Downs, Mt Scott, Mt Fisher and Sherwin Creek (formerly Gum Creek).

In 1961 Mt Isa Mines (CEC P/L) prospected north of Roper River from Roper Bar to Roper River Mission, on the Gulf of Carpentaria searching for northerly continuations of the Barney Creek Member which hosts the giant Clastic Dominated Pb-Zn HYC deposit(227Mt@13%Pb+Zn,40ppmAg) located on BAUHINIA DOWNS. CEC also investigated Kipper Creek oolitic ironstone deposit, discovered 6km north of Urapunga Homestead, extending eastward, 56km and westward for 16km,

A thin oolitic basal ironstone occurs in the Wadjeli Sandstone Member of Mainoru Formation (1493 Ma). A costean 1609m east of Kipper Creek revealed a true thickness of 2.6m comprising an upper ironstone (0.91m) overlying a green shale with minor fine grain hematite beds, also 0.91m thick and a basal oolitic hematite horizon (0.76m). Four shallow and eight stepped-out diamond drill holes tested the subsurface ironstone horizon. The upper pisoltitic layer assayed 31% Fe, the middle shale-hematite unit 16.1% Fe and the lower oolitic bed 40.4.5 Fe for an average iron content of 29.2%.

The lower bed is red-brown both on surface and in drill core comprising fine grain, limonitised hematite. Angular detrital quartz grains are enclosed by hematite. In core, abundant iron carbonate intergrows with hematite forming irregular layers and late stage discordant veins. Carbonate is clouded with limonitic inclusions. Pebbles up to 100mm wide comprised of oolitic hematite occur in the oolitic matrix. The thin iron-rich layer occurring within the overlying green shale horizon comprise angular detrital quartz grains within a fine grain haematitic matrix comprising 60% of the rock with accessory mica flakes and tourmaline grains. The upper ironstone horizon crops out as weathered earthy fragments of crystalline hematite and limonite. In drill core pisolites comprise fine grain quartz concentrically layered with elongated aggregates of iron carbonate within a matrix of recrystallised siderite enclosing angular detrital quartz grains.

The Kipper Creek ironstones are oolitic implying shallow aerated waters under turbulent conditions. The lower ironstone comprising primary hematite oolites are formed by direct precipitation of hematite concentrically around a "free rolling" nucleus in sea water supersaturated in iron. Interstitial siderite cement between oolites suggests transportation from a formational shallow water environment to deeper water where Eh conditions are compatible for the precipitation of siderite?

The shale horizon indicates detrital material entering the basin. The thin bands of detrital quartz within a haematitic matrix indicate precipitation of iron during shale deposition.

The pisolites of the upper ironstone, initially calcium carbonate in composition were transported and deposited in deeper water to be replaced by silica and/or siderite? Iron

saturation of oceanic waters, prerequisite for the precipitation of siderite and hematite will only occur if restrictive conditions exist and persist in the basin.

CEC inspected Murphy's low grade iron deposit comprising a series of quartz lenses 100m long by 7m wide comprising massive to disseminated hematite over 1000m of strike hosted by arkosic arenite of Mt Birch Sandstone, Pnb of Nathan Group (1614 Ma) at the unconformity with porphyritic rhyolite (Reid Volcanics 1847 Ma). Bulk sampling by BHP (1987) assayed 54% Fe over 5m and 51% Fe over 11m. CEC also investigated Mt Vizard. Pb, Zn, Cu prospect discovered by BHP in 1958 located 6km southeast of Ngukurr where traces of lead, zinc and copper mineralisation occur within silicified brecciated dolomite of the Walmudga Formation (1589 Ma).

In 1984 Stockdale Prospecting Ltd (SPL) commenced regional drainage sampling of the eastern half of URAPUNGA recovering anomalous pyrope garnet counts from two restricted areas. Subsequent drill testing intersected microdiamondiferous kimberlite at Packsaddle 1.

Anomalous value chromites were recovered from a small creek 9km south east of Packsaddle 1 leading to the discovery of a decomposed ferruginised ultramafic dyke of probable kimberlitic origin called Black Jack 1.Forty six RAB / RC drill holes tested Packsaddle 1 intersecting phlogopite-bearing, tan olivine clay over a strike length of 700m, up to 3m in thickness from which 46 microdiamonds were recovered. Both Packsaddle and Blackjack kimberlitic dykes are hosted by Roper Group Velkerri Formation sandstone within north trending regional faults. SPL enjoyed no further success relinquishing the area by 1992.

In 1990, after a hiatus of 30 years the Sherwin Creek iron ore deposits namely A, B, C, D and E were pegged by G. Fanning who believed new regional infrastructure development, updated iron and steel technology and anticipated emerging markets for value-added iron and steel products in southeast Asia heralded the beginning of a new era of rapidly escalating steel production, eventually requiring new/alternate sources of iron ore ? Fanning concluded the two upper ironstones of deposits B and C are ferruginous oolitic sandstones, low in grade, rich in silica with an estimated resource of 200 million tonnes averaging 27-33% Fe, and 40-45% silica (BHP). However the softer, rarely exposed lower ironstone is similar to those found at Hodgson Downs and Mt. Fisher i.e. a massive uniformly hematitic pisolite. According to Orridge/Fanning BHP collected ten lower bed bulk samples from deposits B and C averaging 45.8% Fe and 28.5% silica with an average thickness of 7.3m. If low grade is excluded by applying a 45% Fe cut-off, average grade is elevated to 52.3% Fe while average thickness is reduced to 5.1m.

The BHP estimated resource for the lower bed is 56.2 million tonnes, with a stripping ratio of 2.3 to 1 however applying a 45% Fe cut-off reduces estimated resource to 30 million tonnes.

Metallurgical test work by BHP on a composite sample averaging 45.8% Fe and 28.5% silica produced a concentrate averaging 64.9% Fe and 7.35% silica after roasting, wet magnetic separation, demagnetisation and classification. Orridge/Fanning concluded the best potential for commercial iron ore is the oxidised zone commencing from the surface to depths of 6m to 15m where primary siderite and chamosite is oxidised to hematite and ochreous limonite. Unoxidised ironstone comprises oolitic to pisolitic siderite and hematite with minor oolitic chamosite (hydrous aluminium iron silicate) cemented by siderite and specular hematite. Silica occurs as clastic quartz grain cores to oolites and as crypto-crystalline minutae in the matrix. Magnetite is sometimes present, however pyrite is rare.

Oxidised ironstone occurs at Hodgson Downs, Mt Fisher and Sherwin Creek. In 1992 the total inferred resource was 94 million tonnes averaging 46-55% Fe, 15-29% silica with low sulphur and phosphorus.

At the behest of G. Fanning the NTGS conducted an investigation of Hodgson Downs, Mt Fisher, Sherwin Creek and Mt Scott deposits from 1995 to 1997 undertaken by Metalliferous geologist P. Ferenzi, who concluded although iron ore occurrences are present at several stratigraphic levels within Roper Group sediments, the majority are hosted by ironstone members of the Sherwin Formation comprising interbedded oolitic sandy ironstone (chamositic and sideritic below the depth of oxidation), ripple marked, quartz sandstone, sandy mudstone, thinly interbedded shale, sandstone and oolitic/pisolitic hematite ironstone. At Sherwin Creek four ironstone units are present within an 88m thick sequence intruded by a dolerite sill. Massive ironstone beds are typically 1-4m thick often found near the tops of cliff faces of the northern and eastern escarpment. The bottom ironstone is of superior grade and quality i.e. ochreous red hematitic oolite and pisolite ore comprising closely packed oolites of ochreous red hematite and well rounded quartz grains. Below 30m ore comprises concentrically zoned hematitic oolites with dispersed quartz grains within a hematitic and/or sideritic cement. Quartz grains form the nuclei of hematitic oolites. The three upper, sandy ironstone beds contain less iron than soft oolitic bottom bed due to the presence of more siderite, greenalite and quartz in primary ore. Chalcedonic quartz replaces sideritic cement during diagenesis forming a siliceous, cellular textured rock after oolites have been weathered out. Upper ironstones are interbedded with coarse grain siderite and chamosite-bearing quartz sandstone, sandy shale/mudstone.
Ferenzi summarised Sherwin Creek A, B, C, D and E deposits as follows:

- Upper and middle ironstones are low grade (~38% Fe) with high silica (42%)
- Lower ironstone exposed along eastern side of deposit C averages 45.5% Fe over 7.3m, but only 33.6% Fe over 5m in drill intersections.
- High overburden to ore ratios (5 : 1) plus lower grade of lower ironstone make mining uneconomic.
- Soft oolitic ironstone exposed at deposit E and further south is higher in grade (48% Fe) but higher in silica (~23%) and phosphorous (~0.2%) relatively thin (1.7m) to mine.
- Canavan (1965) estimated a potential ore resource of 200 million tonnes averaging 27-33% Fe, 40% silica.

Ferenczi also concluded: There were several million tonnes of ironstone in the Roper area hosted by Mesoproterzoic Sherwin Formation ironstone members of which the soft hematitic oolite beds exposed at Hodgson Downs and Mt Fisher show the best economic potential where surface enrichment of iron is 20% higher than subsurface drill intersections.

Hodgson Down Deposit W is the most promising prospect with an inferred resource of 60 million tonnes averaging 40-50% Fe. More drilling is recommended to substantiate above resource and verify ore continuity, grade and thickness, as well as determining metallurgical viability of processing low grade iron ore.

After 1997 there was little oolitic iron ore exploration in the Roper Valley until 2009 when the Fanning Tenements were taken up by Batavia Mining. Western Desert Resources moved into the area of cropping out Sherwin Formation south of the old St Vidgeon Homestead in 2008, known as the smaller eastern basin, within Limmen National Park, where a global

resource of 1292 million tonnes averaging 45% Fe was estimated from Google Earth satellite imagery?

Batavia became Sherwin Iron Ltd (SHD) commencing drilling at Hodgson Down Deposit W in mid June 2010 through to the end of October, completing 467 RC drill holes for 13682m (average 26m) and 74 diamond drill holes for 979m (average 13m). Drilling resumed mid April 2011 at Sherwin Creek completing 381 RC drill holes for 13706m (average 35.9m) and 31 diamond drill holes for 897m (average 29m).

As of November 10, 2011 the following resources are delineated:

1. Sherwin Creek 320Mt a) 40.1% Fe, 34% Si, 0.04% P deposits A,B,C
2. Mt Fisher 15Mt a) 44% Fe 34% Si
3. Hodgson Downs 153Mt a) 45% Fe 20.5%Si deposits W ,X

Total 488 MT a) 41.7% Fe, 30% Si, 0,03% P
(at a cut-off grade 35% Fe)

Sherwin Creek resource extends along a large open folded mesa some 8km long by 2.5-3km wide coincident with BHP deposits A, B, C. Deposit E which butts up to the southern boundary of EL 27918 has also been drill tested on a 200m by 200m spacing however a resource is yet to be announced.

The Sherwin Creek resource is confined within two sandy oolitic ironstones dipping gently away from the mesa crest namely middle bed averaging 38.2% Fe and 5m thickness and lower bed which average 41.3% Fe and 6m thickness. Both the geology and metallurgy of Sherwin Creek iron formations are different from Hodgson Down deposit W and X.

The lower bed is thickest and highest in grade in the central part of the mesa and remains open down dip (within 40m of surface). The middle bed is the thickest in deposit B and highest grade at the southern end of deposit C.

Density separation without grinding of 45% Fe, 27% silica ore resulted in upgrading to 53% Fe and 16% silica.

Further test work involving a single pass magnetic separation delivered a product averaging 61% Fe, 6% silica and 2% alumina increasing concentrate yield from 56% to 65%.

5. Local Geology(Figures 5,9,10)

The northern boundary of the irregularly shaped licence area is more or less the east south east –trending Flying Fox fault of the Urapunga Tectonic Ridge, a linear, regional structure separating McArthur Basin, Arnhem shelf from Bauhinia shelf. Outcrop is scarce comprising about 15% of total area. The top half of Mesoproterozoic Roper Group is present indicated by cropping out 1492Ma Munyi Member, Corcoran Formation in the east through to the 1429 Ma Kyalla Formation in the west , extensively intruded by 1324 Ma Derim Derim Dolerite.

Mt McMinn located on the southside of the Roper Highway about 5km from the eastern boundary of the licence area is a 2km by 1km mesa, rising 150m above the surrounding sand plain comprising Velkerri Formation laminated silt/mudstone at its base conformably overlain by Moroak Sandstone subsequently intruded by Derim Derim Dolerite at the contact

of overlying Sherwin Formation. All three oolitic iron beds of Sherwin Formation namely upper, middle and bottom are present cropping out around a circular escarpment forming Mt McMinn (a declared Aboriginal site of significance).

BHP oolitic iron deposit E butts up to and probably continues northward over the southern boundary into the licence area 9km west of Mt McMinn likewise the north north west extension of BHP deposit A-hosting Sherwin Formation, cropping out for 10km to northern licence boundary. The western licence area is dominated by alluvial deposits of the Roper River draining uplands of extensively cropping out Derrim Derrim Dolerite intruding Kyalla Formation interbedded silt/mud/very fine grain quartz sandstone whether prospective Sherwin Formation underlies areas of cropping out Kyalla Formation remains uncertain.

The northwest-trending anticlinal exposure of Corcoran Formation, Munyi Member located in the southeast corner of the licence area may also be prospective for oolitic iron? ie pisolitic oolites were intersected over 1.1m at a depth of 25.7m and also from 33.5 – 34.5m in a stratigraphic corehole namely Urapunga 5 collared 5km to the north slightly east of the licence area.

6. EXPLORATION PROGRAM (Figures 8, 9, 10, 12, 15)

2011

- literature search/database compilation

- acquisition, image processing, modelling and interpretation of 500m l.s.1994 NTGS Urapunga Geophysical located digital data. (TMI and Radiometrics).

-regional geological reconnaissance of licence area.

- 120m RC drill program comprising 3 x 40m vertical drillholes testing for easterly extensions of Sherwin Formation oolitic iron deposits beneath the low-lying sand plain east of the main escarpment towards Mt McMinn. All drillholes were backfilled with drillspoil and capped while the remaining spoil was thinly spread over the collar area. (Refer Rehab Photos 1 & 2)

2012

All available data acquired from 2011 program was reviewed after which licence was surrendered.

7. EXPENDITURE

2011

Literature search	$4000.00
Database compilation	$4000.00
Reprocessing data	$7000.00

Computer modelling	$5500.00
Drilling	$15000.00
Geological Time 22days@$1000/day	$22000.00
Administration	$3000.00
TOTAL	$60500.00

2012

Data Review	$2000.00
Reporting	$1500.00
Administration	$ 525.00
TOTAL	$4025.00
GRAND TOTAL	$64525.00

8. CONCLUSIONS and RECOMMENDATIONS

EL27918 occupies a low-lying area comprising mainly alluvial deposits thickening westwards bounded to the south by a gently folded upper Roper Group escarpment hosting BHP oolitic iron deposits A, B, C, D and E and to the north, by the east southeast-trending Flying Fox fault zone purportedly part of the regional Urapunga Tectonic Ridge. A three RC drillhole program was undertaken testing beneath the sandy plain east of the escarpment for oolitic iron deposits. A best result of 11.5% Fe over 2m from 3-5m in SC 001 was intersected however friable, dark brown/black material obstensively pulverised oolites of hematitic iron intersected from 8 – 10m assayed 3-4% Fe only? The remainder of the drillhole comprised grey to black shale likewise SC004 and SC005 from 2m to 40m.

The drill program downgraded the iron ore potential of the licence considerably.

Comprehensive geophysical modelling and interpretation show little undercover oolitic ironstone potential within the licence area.

Apart from oolitic iron ore potential the upper Roper Group 1440 – 1400Ma is essentially devoid of other mineralisation or more specifically clastic dominated Pb-Zn deposits such as HYC on neighbouring BAUHINIA DOWNS hosted by 1640Ma Barney Creek Formation, black shale assigned to the McArthur Group. The worldclass Sullivan CD Pb-Zn deposit in southwestern Canada is the only known mineralising event of middle to upper Roper Group age in the Global rock record unfortunately the late intrusion of the 1324Ma Derim Derim Dolerite combined with relatively shallow water sedimentation negate the possibility of a Roper Group-hosted Sullivan lookalike.

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EL 27918_ ATR FINAL APPENDIX 3

Rehab Photo 1- accumulated RC drill spoil

Rehab Photo 2 – dispersed RC drill spoil

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Project:

P.O. No.:

This report is for 6 Percussion samples submitted to our lab in Alice Springs, NT, Australia on 10-FEB-2011.

The following have access to data associated with this certificate:

ALISTAIR MACKIE		

SAMPLE PREPARATION

ALS CODE	DESCRIPTION
WEI-21	Received Sample Weight
LEV-01	Waste Disposal Levy
LOG-22	Sample login - Rcd w/o BarCode
PUL-24	Pulv Sample - Split/Discard
PUL-QC	Pulverizing QC Test

ANALYTICAL PROCEDURES

ALS CODE	DESCRIPTION	INSTRUMENT
ME-ICP61	33 element four acid ICP-AES	ICP-AES
ME-XRF11b	Iron Ore by Fusion XRF	XRF
ME-GRA05	H2O/LOI by TGA furnace	TGA

To: **HAYMAC PROSPECTING PTY LTD**
ATTN: ALISTAIR MACKIE
PO BOX 3470
ALICE SPRINGS NT 0871

This is the Final Report and supersedes any preliminary report with this certificate number. Results apply to samples as submitted. All pages of this report have been checked and approved for release.

Signature: 

Wayne Abbott, Operations Manager, Western Australia

Australian Laboratory Services Pty. Ltd.

32 Shand Street
Stafford
Brisbane QLD 4053
Phone: +61 (7) 3243 7222 Fax: +61 (7) 3243 7218
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CERTIFICATE OF ANALYSIS AS11019751

Sample Description	Method / Analyte / Units / LOR	WEI-21 Recvd Wt. kg 0.02	PUL-QC Pass75um % 0.01	ME-XRF11b Al2O3 % 0.01	ME-XRF11b As % 0.001	ME-XRF11b Ba % 0.001	ME-XRF11b CaO % 0.01	ME-XRF11b Cl % 0.001	ME-XRF11b Co % 0.001	ME-XRF11b Cr2O3 % 0.001	ME-XRF11b Cu % 0.001	ME-XRF11b Fe % 0.01	ME-XRF11b K2O % 0.01	ME-XRF11b MgO % 0.01	ME-XRF11b MnO % 0.001	ME-XRF11b Mn % 0.001
SC010-6		2.36	91.0	12.00	0.005	0.028	0.04	0.007	<0.001	0.004	0.007	11.55	1.33	0.72	0.023	0.018
SC016-10		1.93		12.85	0.003	0.050	0.09	0.010	<0.001	0.008	0.030	3.95	3.36	1.31	0.014	0.011
SC0110-15		1.77		12.45	0.003	0.023	0.75	0.010	<0.001	0.002	0.007	3.22	3.69	2.09	0.020	0.016
SC0115-20		2.09		11.75	<0.001	0.030	0.99	0.011	<0.001	0.006	0.008	2.68	3.33	1.98	0.033	0.026
SC0120-25		3.20		10.50	<0.001	0.027	1.20	0.015	<0.001	0.012	0.013	2.36	2.95	1.88	0.021	0.016
SC0125-30		2.26		10.50	0.006	0.013	1.62	0.019	<0.001	0.007	0.002	2.06	2.70	2.13	0.041	0.032

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CERTIFICATE OF ANALYSIS AS11019751

Sample Description	Method	ME-XRF11b	ME-XRF11b	ME-XRF11b	ME-XRF11b	ME-XRF11b	ME-XRF11b	ME-XRF11b	ME-XRF11b	ME-XRF11b	ME-XRF11b	ME-XRF11b	ME-XRF11b	ME-XRF11b	ME-GRA05	ME-ICP61
	Analyte	Na2O	Ni	P	Pb	S	SiO2	Sn	Sr	TiO2	V	Zn	Zr	Total	LOI	Ag
	Units	%	%	%	%	%	%	%	%	%	%	%	%	%	%	ppm
	LOR	0.001	0.001	0.001	0.001	0.001	0.01	0.001	0.001	0.01	0.001	0.001	0.001	0.01	0.01	0.5
SC010-6		0.002	<0.001	0.092	0.001	0.045	62.6	<0.001	0.005	0.55	0.039	0.002	0.018	99.98	5.73	<0.5
SC016-10		0.052	0.002	0.160	0.002	0.792	66.1	0.001	0.004	0.58	0.040	0.007	0.012	99.95	7.39	1.1
SC0110-15		0.029	0.007	0.247	<0.001	1.930	59.5	<0.001	<0.001	0.47	0.024	0.039	0.012	99.96	10.83	0.9
SC0115-20		0.037	0.008	0.274	<0.001	1.515	64.3	<0.001	<0.001	0.44	0.024	0.041	0.013	100.05	8.76	0.8
SC0120-25		0.035	0.017	0.323	0.002	1.415	64.6	<0.001	<0.001	0.36	0.029	0.047	0.012	100.00	10.59	1.0
SC0125-30		0.034	0.006	0.337	<0.001	1.250	68.4	<0.001	<0.001	0.36	0.010	0.013	0.010	99.93	7.22	0.5

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CERTIFICATE OF ANALYSIS AS11019751

Sample Description	Method	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61
	Analyte	Al	As	Ba	Be	Bi	Ca	Cd	Co	Cr	Cu	Fe	Ga	K	La	Mg
	Units	%	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	%	ppm	%	ppm	%
	LOR	0.01	5	10	0.5	2	0.01	0.5	1	1	1	0.01	10	0.01	10	0.01
SC010-6		6.31	60	350	2.1	2	0.03	<0.5	11	79	109	11.80	20	1.01	40	0.42
SC016-10		6.52	52	510	1.8	<2	0.07	<0.5	6	51	347	4.25	20	2.51	50	0.73
SC0110-15		7.27	48	350	2.7	<2	0.58	4.3	17	40	155	3.87	20	3.18	50	1.37
SC0115-20		5.97	29	390	2.4	<2	0.73	5.1	10	35	158	2.88	20	2.67	40	1.16
SC0120-25		5.07	29	270	2.5	2	0.84	5.8	10	32	207	2.55	20	2.37	40	1.06
SC0125-30		5.79	271	200	2.0	<2	1.16	0.7	7	23	98	2.65	20	2.20	40	1.30

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CERTIFICATE OF ANALYSIS AS11019751

Sample Description	Method	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61
	Analyte	Mn	Mo	Na	Ni	P	Pb	S	Sb	Sc	Sr	Th	Ti	Tl	U	V
	Units	ppm	ppm	%	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm
	LOR	5	1	0.01	1	10	2	0.01	5	1	1	20	0.01	10	10	1
SC010-6		211	46	0.03	42	910	51	0.05	6	16	67	<20	0.36	10	10	375
SC016-10		115	63	0.05	52	1500	57	0.78	12	15	97	<20	0.32	<10	10	394
SC0110-15		193	49	0.05	163	2670	38	2.48	10	12	59	<20	0.30	<10	10	271
SC0115-20		297	39	0.05	113	2810	29	1.79	9	9	47	<20	0.27	<10	<10	246
SC0120-25		174	46	0.05	134	3320	30	1.80	10	8	42	<20	0.23	<10	<10	301
SC0125-30		329	14	0.04	62	3480	32	1.75	9	8	41	<20	0.23	<10	<10	114

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CERTIFICATE OF ANALYSIS AS11019751

Sample Description	Method	ME-ICP61	ME-ICP61
	Analyte	W	Zn
	Units	ppm	ppm
	LOR	10	2
SC010-6		<10	33
SC016-10		<10	93
SC0110-15		<10	477
SC0115-20		<10	464
SC0120-25		<10	537
SC0125-30		<10	173

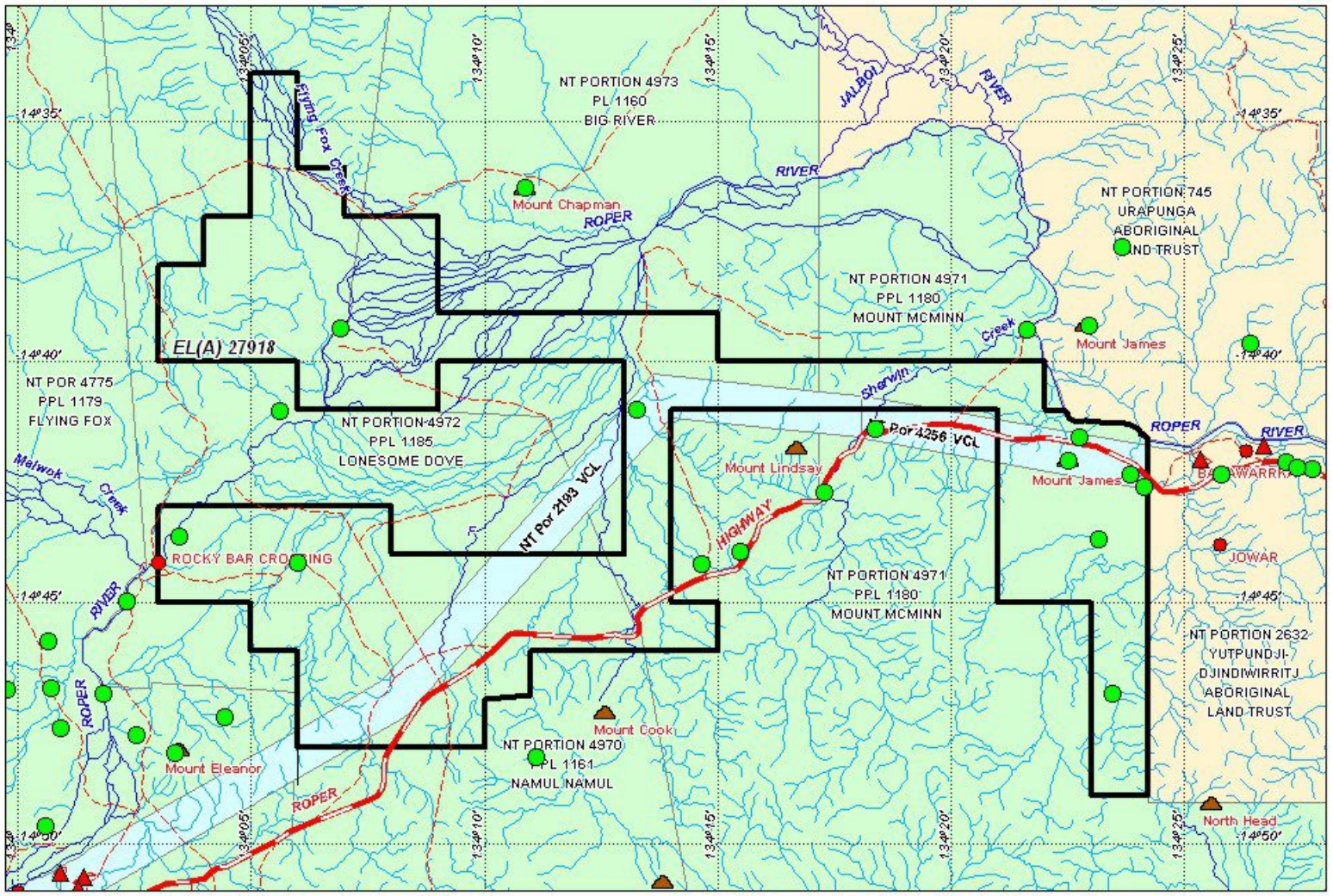
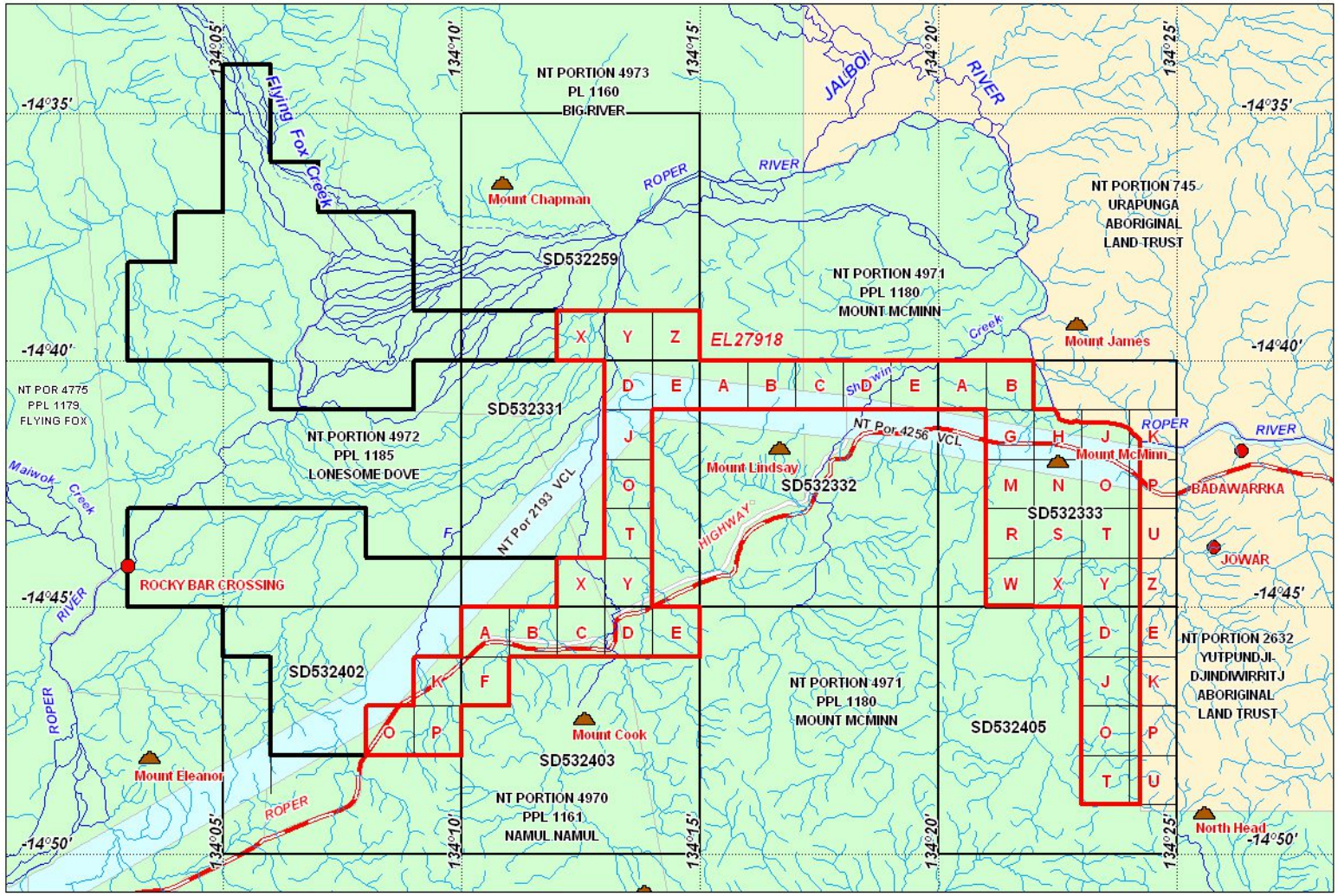


FIGURE 1

ALISTAIR MACKIE		
Exploration Licence Application EL 27918 "SHERWIN CREEK" Cadastre, Topographic & ELA Location		
Drawn: CAPRICORN	**Datum:** GDA94	**Ref:** SD5310
Scale: 1:250,000	**Date :** JAN 2010	**Plan No:** MAC083



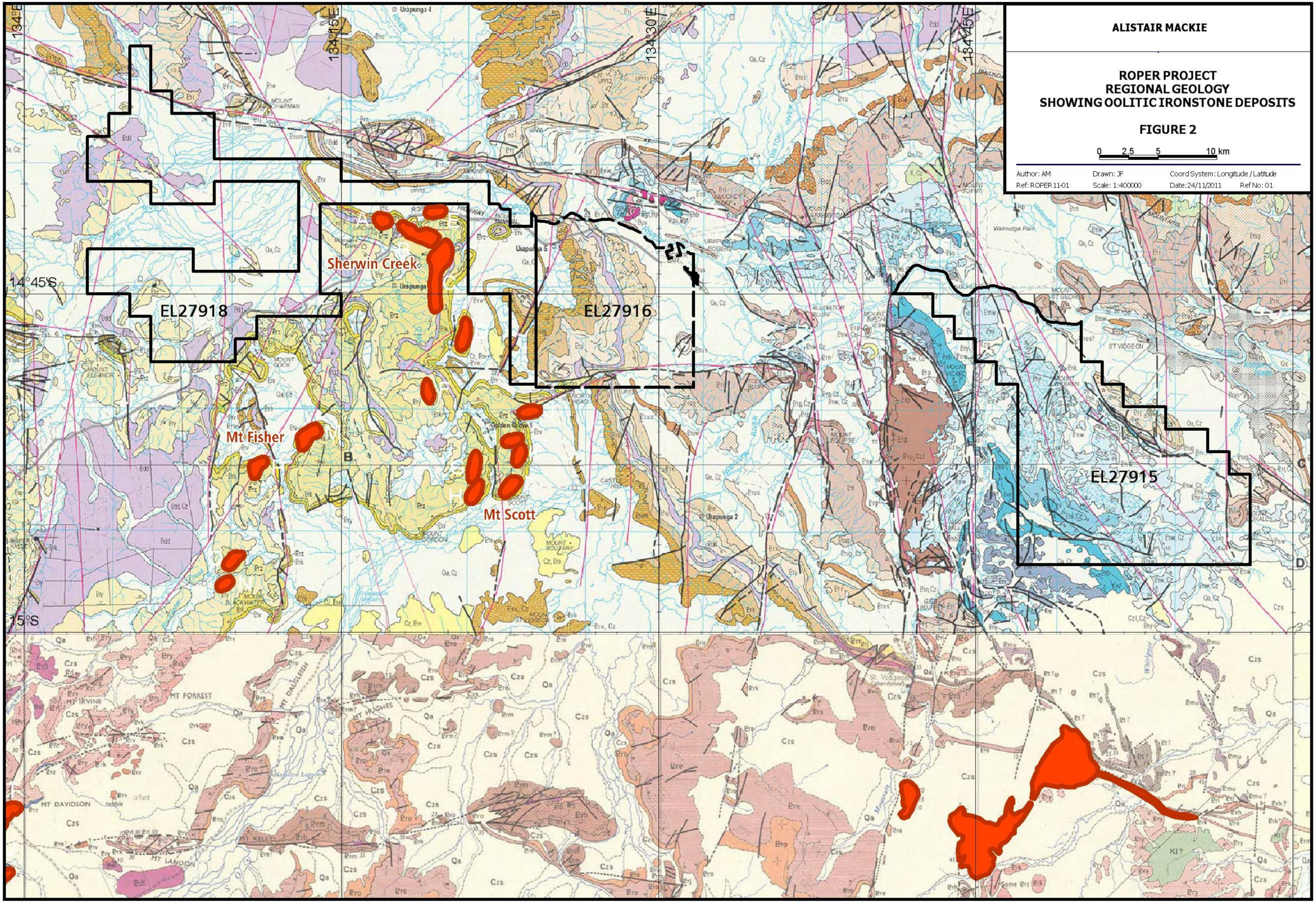
Retained Area: 50 sub blocks
Actual Area: 143.9 sq km

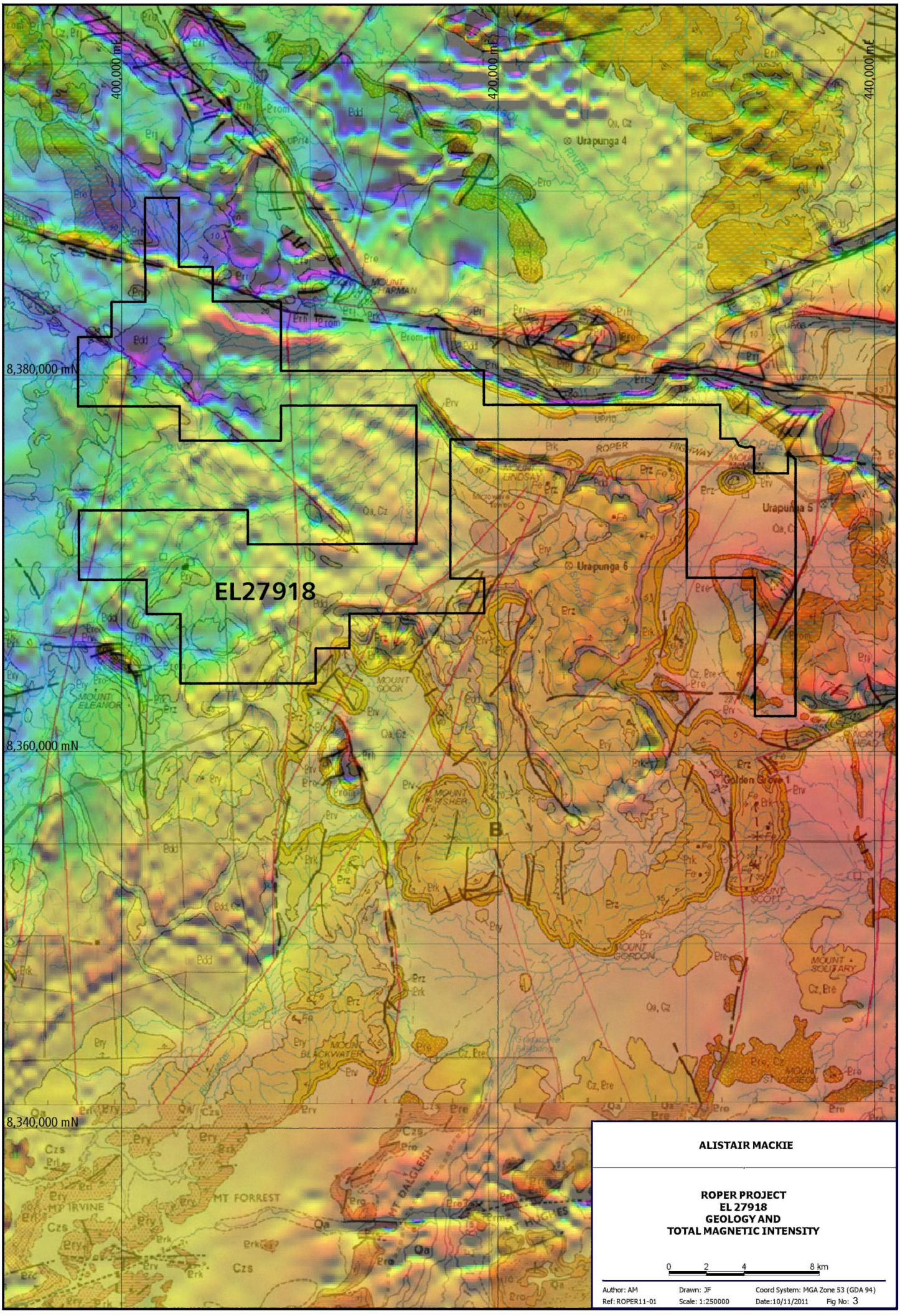
Retained Area
Previous Boundary
A Sub Block (letter)
Block (number)

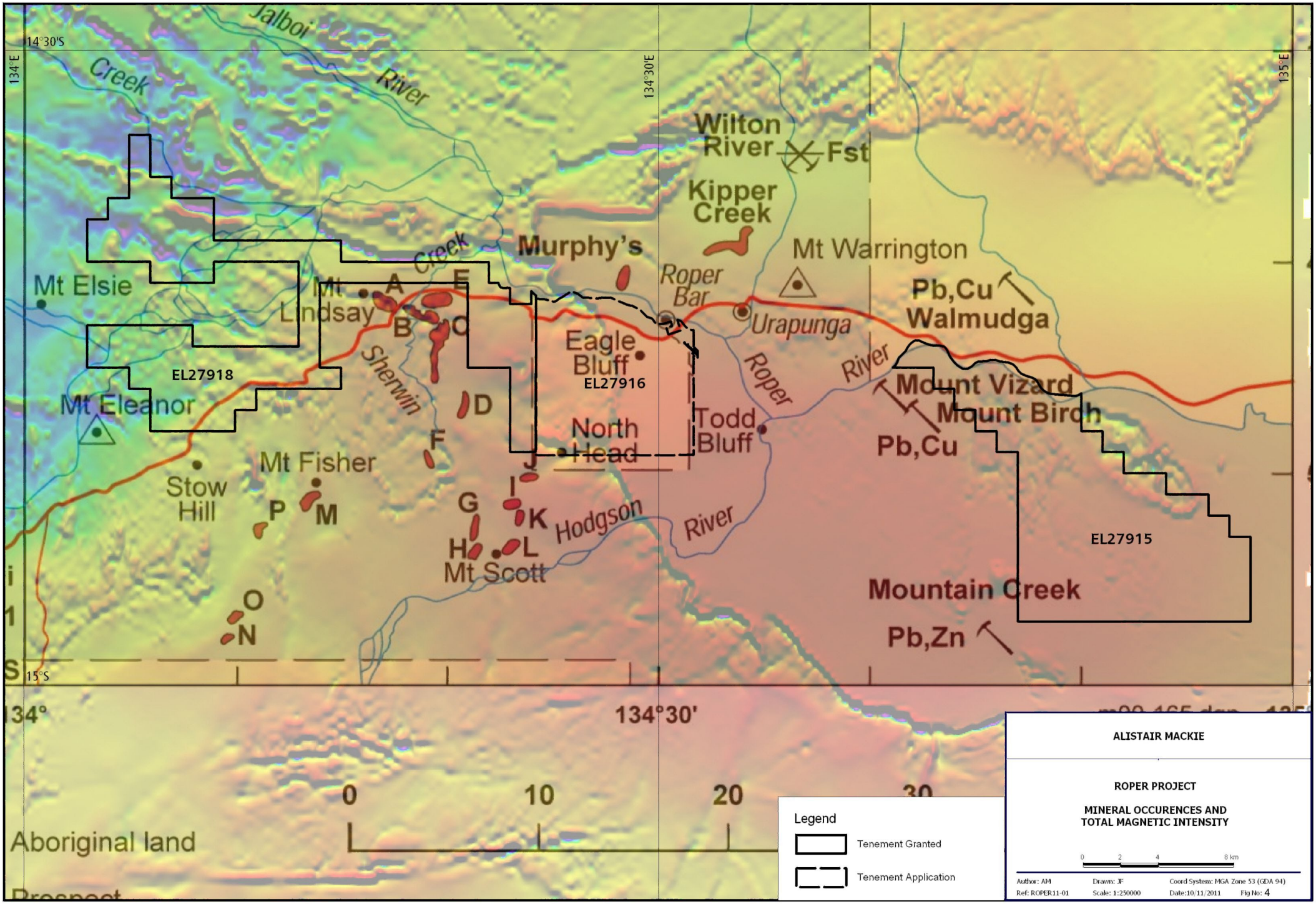
Crown Lease Perpetual
Aboriginal Freehold Land
Perpetual / Pastoral Lease
Vacant Crown Land
NT Freehold Land

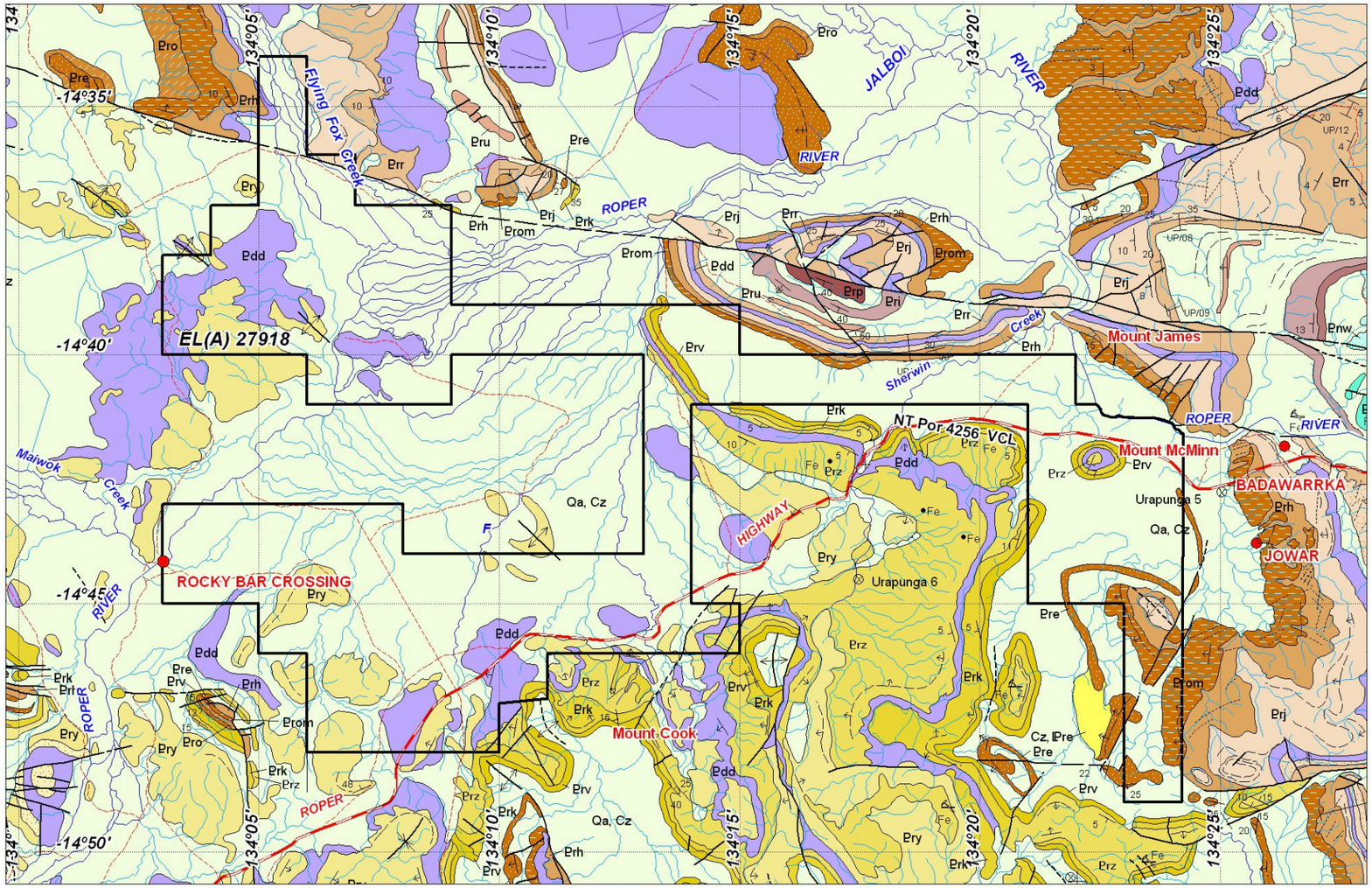
Minor Road
Road
Highway
Creek or River
Topographic Location

GEMPART (NT) PTY LTD		
Retained Area **EL27918 "SHERWIN CREEK"** **Cadastre, Topographic & EL Location**		
Drawn: CAPRICORN	**Datum:** GDA94	**Ref:** SD5310
Scale: 1:250,000	**Date :** OCT 2012	**Plan No:** MAC114


ALISTAIR MACKIE
ROPER PROJECT
REGIONAL GEOLOGY
SHOWING OOLITIC IRONSTONE DEPOSITS
FIGURE 2
0 2.5 5 10 km
Author: AM
Drawn: JF
Coord System: Longitude / Latitude
Ref: ROPER 11-01
Scale: 1:400000
Date: 24/11/2011
Ref No: 01
134°E
134°15'E
134°30'E
134°45'E
14°45'S
15°S
EL27918
EL27916
EL27915
Sherwin Creek
Mt Fisher
Mt Scott


400,000 mE
420,000 mE
440,000 mE
8,380,000 mN
8,360,000 mN
8,340,000 mN
EL27918
Urapunga 4
Urapunga 5
Urapunga 6
Golden Grove 1
MOUNT CHAPMAN
MOUNT LINDSAY
MOUNT ELEANOR
MOUNT GOOK
MOUNT FISHER
MOUNT GORDON
MOUNT SCOTT
MOUNT SOLITARY
MOUNT BLACKWATER
MT FORREST
MT IRVINE
MT DALGLEISH
ROPER HIGHWAY
ROPER RIVER
B
ALISTAIR MACKIE
ROPER PROJECT
EL 27918
GEOLOGY AND
TOTAL MAGNETIC INTENSITY
0 2 4 8 km
Author: AM
Drawn: JF
Coord System: MGA Zone 53 (GDA 94)
Ref: ROPER11-01
Scale: 1:250000
Date:10/11/2011
Fig No: 3


14°30'S
15°S
134°E
134°30'E
135°E
134°
134°30'
Jalboi Creek
River
Wilton River
Fst
Kipper Creek
Murphy's
Mt Warrington
Mt Elsie
Mt Lindsay
Creek
A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
P
Roper Bar
Urapunga
Pb,Cu
Walmudga
Eagle Bluff
EL27916
EL27918
Sherwin
Roper
River
Mount Vizard
Mount Birch
Pb,Cu
Mt Eleanor
North Head
Todd Bluff
Mt Fisher
Stow Hill
Hodgson
River
Mt Scott
EL27915
Mountain Creek
Pb,Zn
Aboriginal land
Prospect
0
10
20
30
Legend
Tenement Granted
Tenement Application
ALISTAIR MACKIE
ROPER PROJECT
MINERAL OCCURENCES AND
TOTAL MAGNETIC INTENSITY
0
2
4
8 km
Author: AM
Drawn: JF
Coord System: MGA Zone 53 (GDA 94)
Ref: ROPER11-01
Scale: 1:250000
Date:10/11/2011
Fig No: 4



Fault; mapped, approximate

Fault; concealed

Fault interpreted from aeromagnetics

Strike and dip of strata

Mineral Occurrence

Drill Hole

Exploration Licence Application

Road

Highway

Creek or River

Topographic Location

Qa,Cz — Unit Age: Quaternary/Rock: Sedimentary
Lith. Desc.: Undifferentiated alluvium and colluvium: unconsolidated gravel and sand of drainage channels, mud-rich sediments and soils of adjacent floodplains.

-Prr — Unit Age: Calymmian to ?Ectasian/Rock: Sedimentary / Group:Roper Group, Collara Subgroup/ Unit Name:Hodgson Sandstone
Lith. Desc.: Sandstone: fine-grained, thick-bedded, swaley cross-stratified, red-brown, glauconitic; thinly interbedded very fine-grained sandstone and siltstone: ripple cross-lamination, micro hummocky cross-stratification, tool marks, glauconitic;
minor parallel laminated mudstone.

-Prh — Unit Age: Calymmian to ?Ectasian/Rock: Sedimentary / Group:Roper Group, Collara Subgroup/ Unit Name:Crawford Formation
Lith. Desc.: Quartz sandstone: grey to pink, mostly fine- to medium-grained, medium-bedded, trough cross-stratified, ripple-marks, mud rip-up clasts.

-Prj — Unit Age: Calymmian to ?Ectasian/Rock: Sedimentary / Group:Roper Group, Collara Subgroup/ Unit Name:Jalboi Formation
Lith. Desc.: Thin-bedded fine-grained sandstone and red-brown siltstone: flute casts, synaeresis cracks, toroids; sandstone: structureless to trough cross-stratified, medium- and locally coarse-grained in units up to 2 m thick;basal red laminated siltstone; cobble conglomerate on erosional basal contact present locally.

-Prom — Unit Age: Calymmian to ?Ectasian/Rock: Sedimentary / Group:Roper Group, Maiwok Subgroup/ Member: Munyi Member
Lith. Desc.: Ferrugenous siltstone and fine-grained sandstone: thin-bedded, desiccation cracks, iron oxide pisolites; cross-bedded medium-grained sandstone; basal erosion suface veneered by quartz-pebble conglomerate.

-Prus — Unit Age: Calymmian to ?Ectasian/Rock: Sedimentary / Group:Roper Group, Collara Subgroup/ Member: Showell Member
Lith. Desc.: Laminated calcareous and non-calcareous mudstone; medium bedded laminated limestone with minor thin interbeds of glauconitic siltstone and sandstone.

-Pre — Unit Age: Calymmian to ?Ectasian/Rock: Sedimentary / Group:Roper Group, Maiwok Subgroup/ Unit Name: Bessie Creek Sandstone
Lith. Desc.: Quartz sandstone: fine-, medium- and locally coarse-grained, trough cross-stratification, ripple-marks.

-Pdd — Unit Age: Calymmian to ?Ectasian/Rock: Igneous / Unit Name: Derim Derim Dolerite
Lith. Desc.: Dolerite: medium- to coarse-grained, variably altered; composition dominated by plagioclase, clinopyroxene and Fe-Ti oxides.

-Pri — Unit Age: Calymmian to ?Ectasian/Rock: Sedimentary / Group:Roper Group, Collara Subgroup/ Unit Name: Limmen Sandstone
Lith. Desc.: Quartz sandstone: thick to very thick bedded, fine- to very coarse-grained, granule-to pebble-rich towards base, planar and trough cross-bedded, current ripples; minor micaceous siltstone.

-Prz — Unit Age: Calymmian to ?Ectasian/Rock: Sedimentary / Group:Roper Group, Maiwok Subgroup/ Unit Name: Sherwin Formation
Lith. Desc.: Interbedded fine-grained sandstone, siltstone and mudstone; pisolitic ironstone.

-Prk — Unit Age: Calymmian to ?Ectasian/Rock: Sedimentary / Group:Roper Group, Maiwok Subgroup/ Unit Name: Moroak Sandstone
Lith. Desc.: Quartz sandstone: thin- to medium-bedded, fine-grained, trough cross-bedded, ripple-marks; interbedded siltstone and mudstone.

-Prv — Unit Age: Calymmian to ?Ectasian/Rock: Sedimentary / Group:Roper Group, Maiwok Subgroup/ Unit Name: Velkerri Formation
Lith. Desc.: Mudstone and siltstone: variably grey to black, locally high organic carbon content, minor interbeds of glauconitic fine sandstone.

5 0 5 10 15
Kilometers

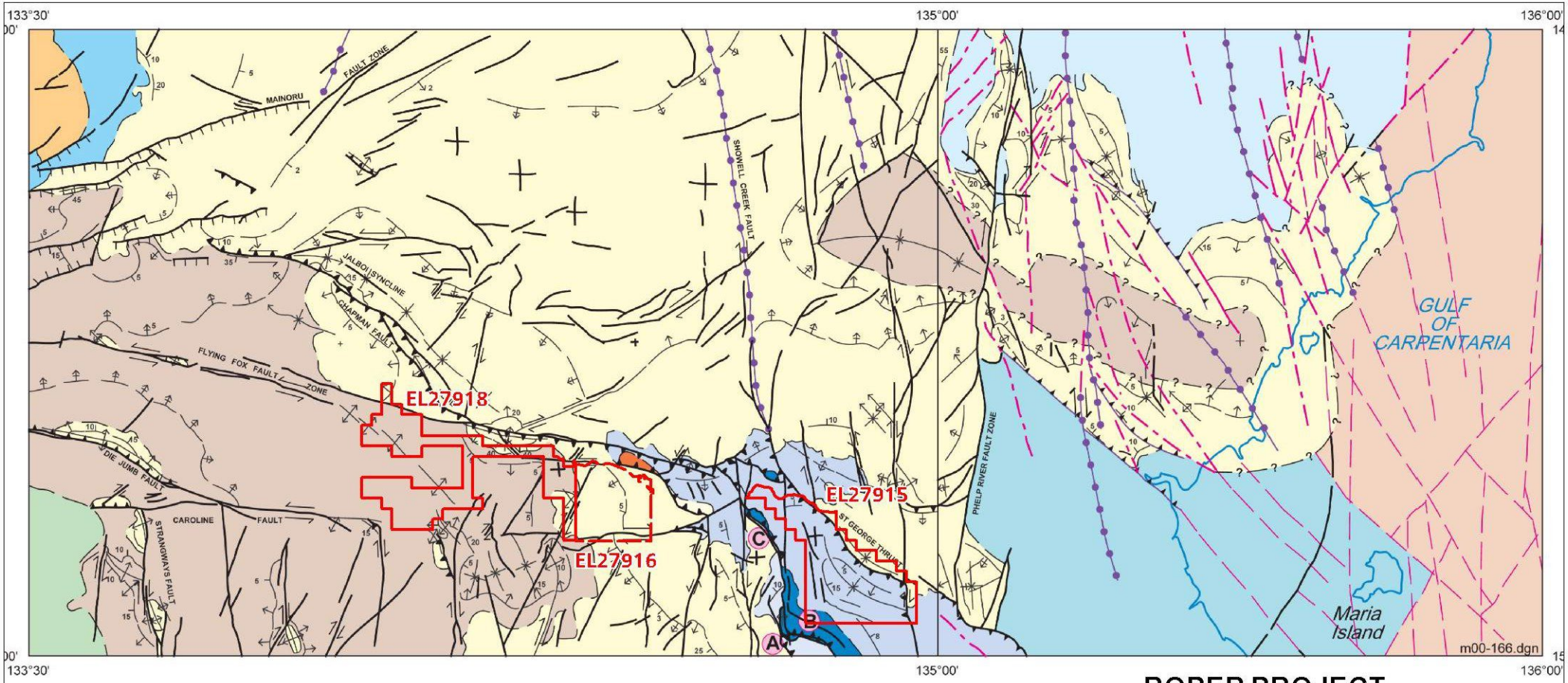
Scale: 1:200,000

FIGURE 5

ALISTAIR MACKIE

Exploration Licence Application
EL 27918 "SHERWIN CREEK"
GEOLOGY

Drawn: CAPRICORN	**Datum:** GDA94	**Ref:** SD5310
Scale: 1:200,000	**Date :** OCT 2011	**Plan No:** MAC096



ROPER PROJECT STRUCTURAL SETTING

0 10 20 30 40 50km

- Geological boundary
- Fault (interpreted from magnetic data)
- Fault
- Thrust fault
- Strike-slip fault
- Fault (direction of downthrown block)

- A Gibb Thrust
- B Nagi Thrust
- C Vizard Thrust
- Lineament (interpreted from magnetic data)
- Dyke
- Anticline
- Syncline
- Strike and dip of strata
  - <5°
  - >5°

- Antrim Plateau Volcanics
- Maiwok Subgroup
- Collara Subgroup
- Undivided Nathan, Vizard and McArthur Groups
- Undivided Nathan and Balma Groups.
- Nathan Group
- Mount Rigg Group
- Vizard Group
- Katherine River Group
- Urapunga Granite and Mt Reid Rhyolite
- Thin Proterozoic cover on shallow basement

FIGURE 7

SC001 EL27918

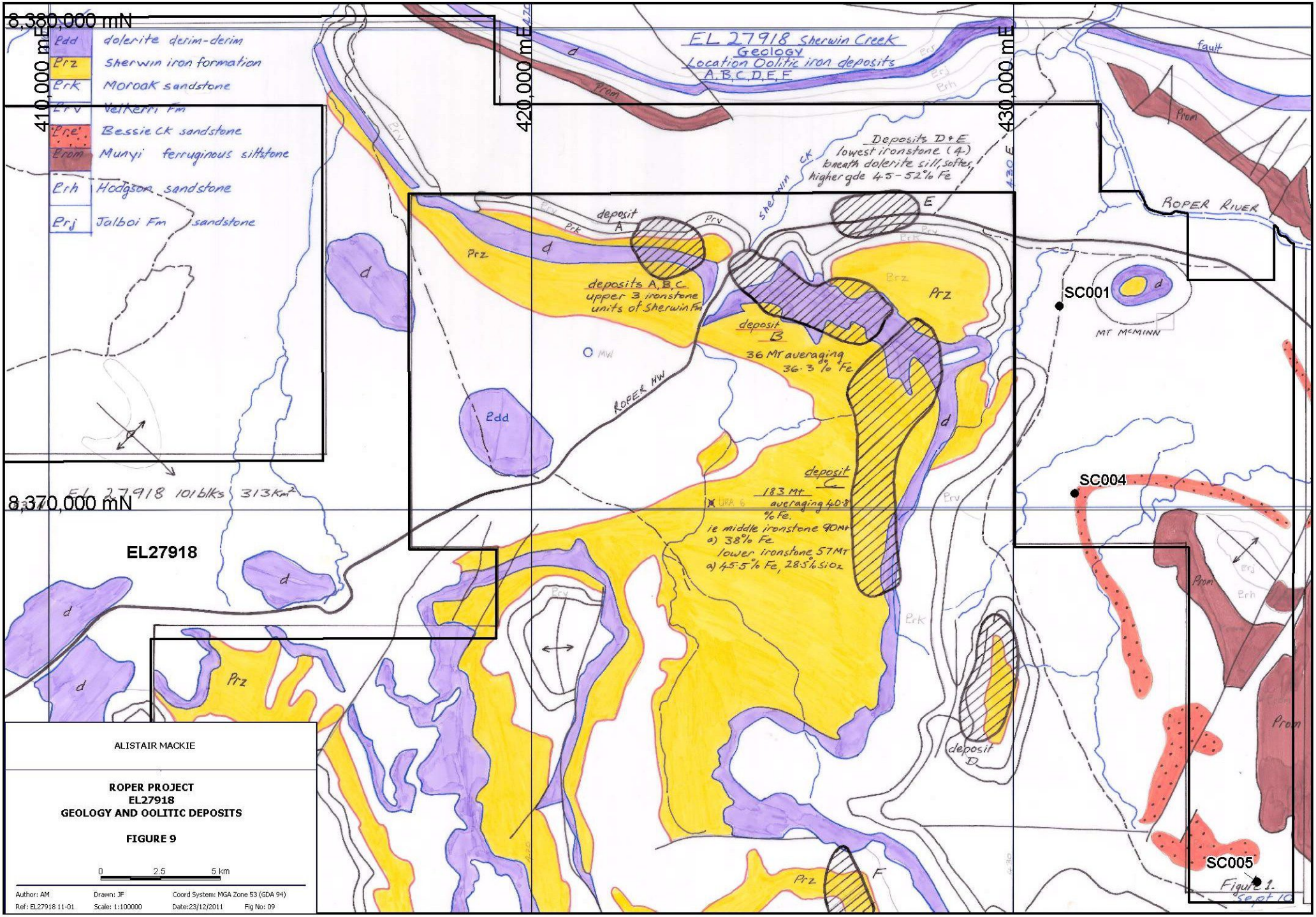
SC004 Drill Logs

SC005

Fe 0 11.5%

	SC001	SC004	SC005
0	alluvium	clay	br clay
1	alluvium	clay	br clay
2	alluvium	clay	br clay
3	clay red sst	clay	br clay
4			
5	clay red sst	brown shale	red grey sh
6	purple shale	" "	" " "
7	purple shale	" "	" " "
8	purple shale	" "	" " "
9	black friable oolitic ironst?	" "	" " "
10	black friable oolitic ironst?	" "	" " "
11	dk purple shale	" "	" " "
12	" " "	" "	" " "
13	" " "	" "	" " "
14	" " "	" "	" " "
15	" " "	" "	grey shale
16	black shale	" "	" "
17	" "	" "	" "
18	" "	" "	" "
19	" "	grey shale	" "
20	" "	" "	" "
21	" "	" "	" "
22	" "	" "	" "
23	" "	" "	" "
24	" "	" "	" "
25	" "	" "	" "
26	" "	" "	" "
27	" "	" "	" "
28	grey shale	" "	" "
29	" "	" "	" "
30	" "	" "	" "
31	" "	" "	" "
32	" "	" "	" "
33	" " Water table	" "	" "
34	" "	" "	" "
35	" "	" "	" "
36	" "	" "	" "
37	" "	" "	" "
38	" "	" "	" "
39	" "	" "	" "
40	" "	" "	" "

Figure 8.


8,380,000 mN
8,370,000 mN
410,000 mE
420,000 mE
430,000 mE
Pdd dolerite derim-derim
Prz Sherwin iron formation
Prk Moroak sandstone
Prv Velkerri Fm
Prb Bessie Ck sandstone
Prom Munyi ferruginous siltstone
Prh Hodgson sandstone
Prj Jalboi Fm sandstone
EL 27918 Sherwin Creek
Geology
Location Oolitic iron deposits
A, B, C, D, E, F
Deposits D+E
lowest ironstone (4)
beneath dolerite sill, softer,
higher grade 45-52% Fe
deposit A
deposits A, B, C
upper 3 ironstone
units of Sherwin Fm
deposit B
36 Mt averaging
36.3 % Fe
deposit C
183 Mt
averaging 40.8
% Fe.
ie middle ironstone 90Mt
a) 38% Fe
lower ironstone 57Mt
a) 45.5% Fe, 28.5% SiO2
deposit D
E
F
EL 27918 101 blks 313 km²
EL27918
SC001
SC004
SC005
MT McMINN
ROPER RIVER
ROPER HWY
Sherwin Ck
fault
MW
ALISTAIR MACKIE
ROPER PROJECT
EL27918
GEOLOGY AND OOLITIC DEPOSITS
FIGURE 9
0 2.5 5 km
Author: AM
Drawn: JF
Coord System: MGA Zone 53 (GDA 94)
Ref: EL27918 11-01
Scale: 1:100000
Date:23/12/2011
Fig No: 09
Figure 1.
Sept 12

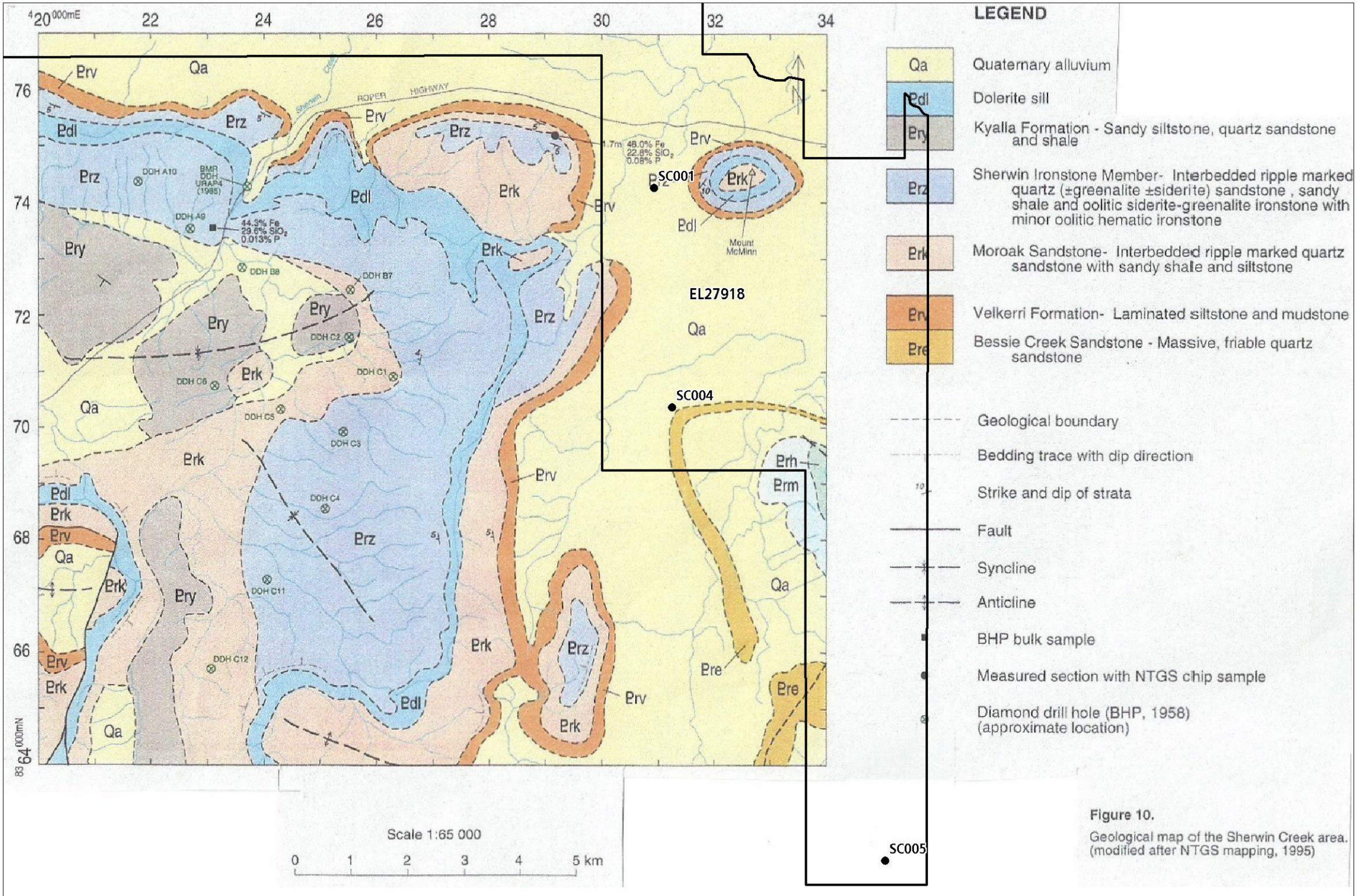


Figure 10.

Geological map of the Sherwin Creek area. (modified after NTGS mapping, 1995)

EL27918

8,370,000 mN

8,380,000 mN

430,000 mE

420,000 mE

410,000 mE

400,000 mE

ALISTAIR MACKIE

EL 27918

TOTAL MAGNETIC INTENSITY

FIGURE 12

0 1.5 3 km

Author: AM Drawn: JF Coord System: MGA Zone 53 (GDA 94)
Ref: EL27918ATR11 Scale: 1:100000 Date: 23/12/2011 Fig No: 12

ALISTAIR MACKIE

EL 27918

RADIOMETRICS
TOTAL COUNT

FIGURE 15

0 1.5 3 km

Author: AM | Drawn: JF | Coord System: MGA Zone 53 (GDA 94)
Ref: EL27918ATR11 | Scale: 1:100000 | Date:23/12/2011 | Fig No: 15

400,000 mE

410,000 mE

420,000 mE

430,000 mE

8,380,000 mN

8,370,000 mN

EL27918