Open File Envelope No. 9603

EL 2520

MOUNT CRAIG

FINAL REPORT FOR THE PERIOD 5/6/98 TO JUNE 1999

Submitted by

Pima Mining NL
1999

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PRIMARY INDUSTRIES AND RESOURCES SA

Exploration Licence 2520 – Mount Craig Final Report

Period ending June 1999

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1 INTRODUCTION

Mount Craig exploration licence (EL) 2520 was acquired by Kelaray Pty Ltd (Kelaray: the operating subsidiary of Pima Mining NL) for the exploration of magnesite, gold and basemetal mineralisation within the Southern Flinders Ranges.

Exploration within 2520, Mount Craig focussed on the potential for a large scale, economic Magnesite Deposit surrounding the historical Yednalue Magnesite Deposit, located in Yednalue Creek, in the southern portion of the licence. The intention was to examine the deposit, which occurs in the Skillogalee dolomite, as a possible source of magnesite for a proposed magnesium metal plant in the upper Spencer Gulf region.

EL 2520 was considered a strategic acquisition by Pima Mining NL as it adjoined the western side of EL 2417, Holowilena. EL 2417 covers portions of the Worumba diapir and the Black Hill Dome in the north, which is similar in structural setting to the Bibliando Dome. Exploration also focussed on copper-gold mineralisation within the Worumba diapir and the Tapley Hill Formation, in particular the Tindelpina Shale. This was prompted by successful exploration by Minotaur Gold, on the Bibliando Dome: 26m @ 2.5g/t, 3m @ 18g/t, 11m @ 7.7g/t and 5m @ 6.7g/t.

Aeromagnetic data was used to identify possible structural targets and magnetic anomalies for a reconnaisance geochemical sampling program. The primary target in EL 2520 was the areas surrounding historical mine workings.

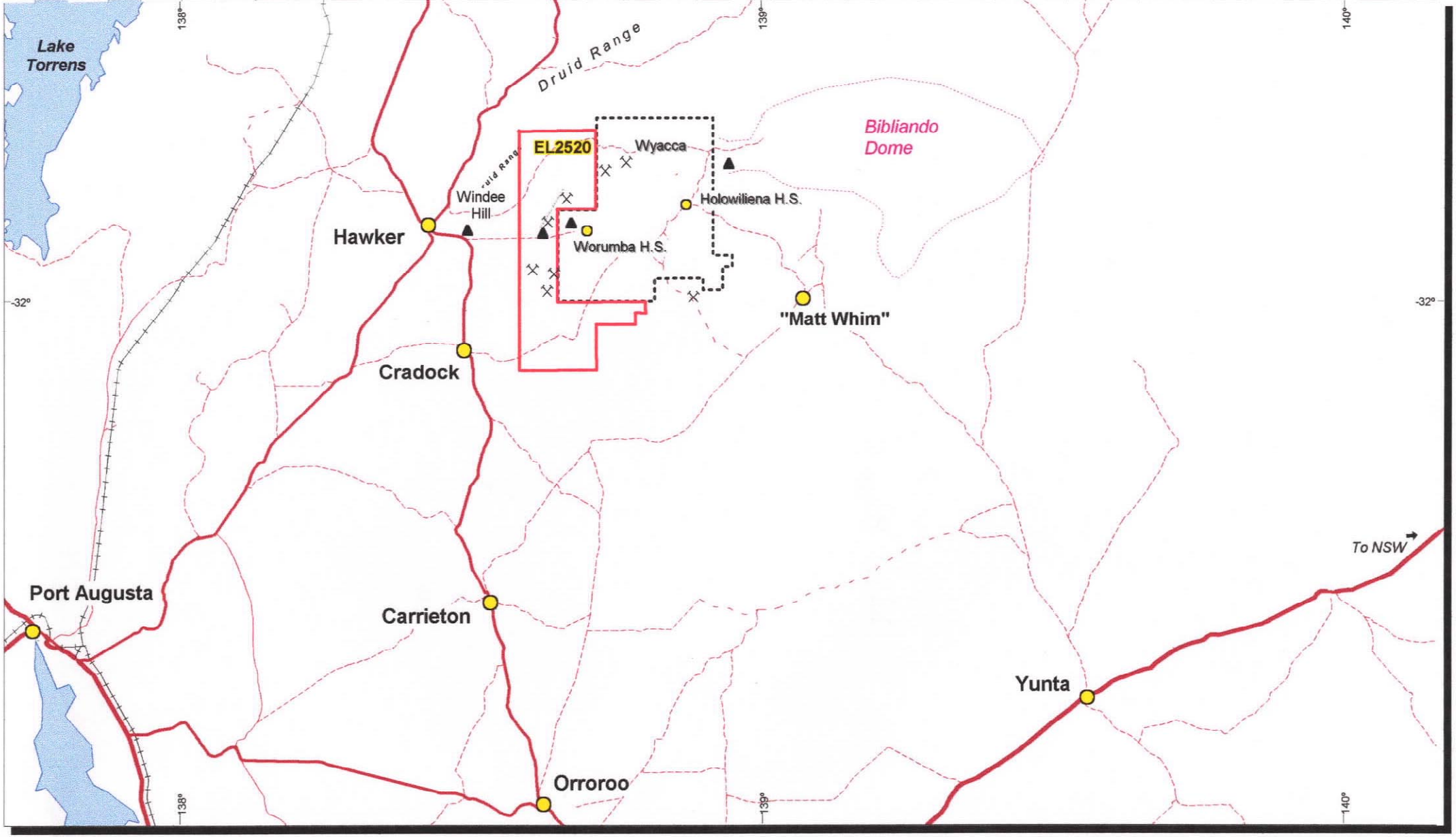
A preliminary reconnaisance geochemical sampling program failed to identify any gold or basemetal anomalism. An elevated MgO value was identified from geochemical sampling.

EL 2520 remains largely untested with the potential for possible large-scale economic copper mineralisation, in addition to the possibility of gold, diamond, uranium and magnesite deposits.

Pima Mining NL has decided to refocus its exploration and developments on magnesite deposits within the northern Flinders Ranges and has therefore surrendered EL 2520.

2 LOCATION and ACCESS

Exploration Licence (EL) 2520, Mount Craig is located 90 kilometres north of the township of Orroroo (266 kilometres north of Adelaide). Access to the lease is via the Carrieton-Hawker unsealed road to Windee Hill (8kms south east of Hawker), then 10 kilometres northeast via unsealed roads to Warcowie Homestead (Figure 1).



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EL 2520 - MOUNT CRAIG
Location of EL 2520 within the Flinders Ranges

EL2520 EL 2520 Boundary
EL 2417 Boundary
▲ Spot Height
⚒ Mine

NORTH

FIGURE 1

Alternative access tracks to EL 2520 run due east off the unsealed Carrieton-Hawker road to Worumba Homestead.

Mount Craig is located on the Parachilna (SH 54-13) and Orroroo (SI 54-1) 1:250 000 scale map sheets and Wilpena and Carrieton (6634, 6633) 1:100 000 scale map sheets.

3 MINERAL and LAND TENURE

EL 2520 was granted to Kelaray Pty Ltd by The Minister for Mines and Energy under Section 28 of the Mining Act 1971, for the term of one year commencing on the fifth day of June 1998 (Figure 2 & 3).
EL 2520 is 100% owned by Kelaray, the operating subsidiary of Pima Mining NL.

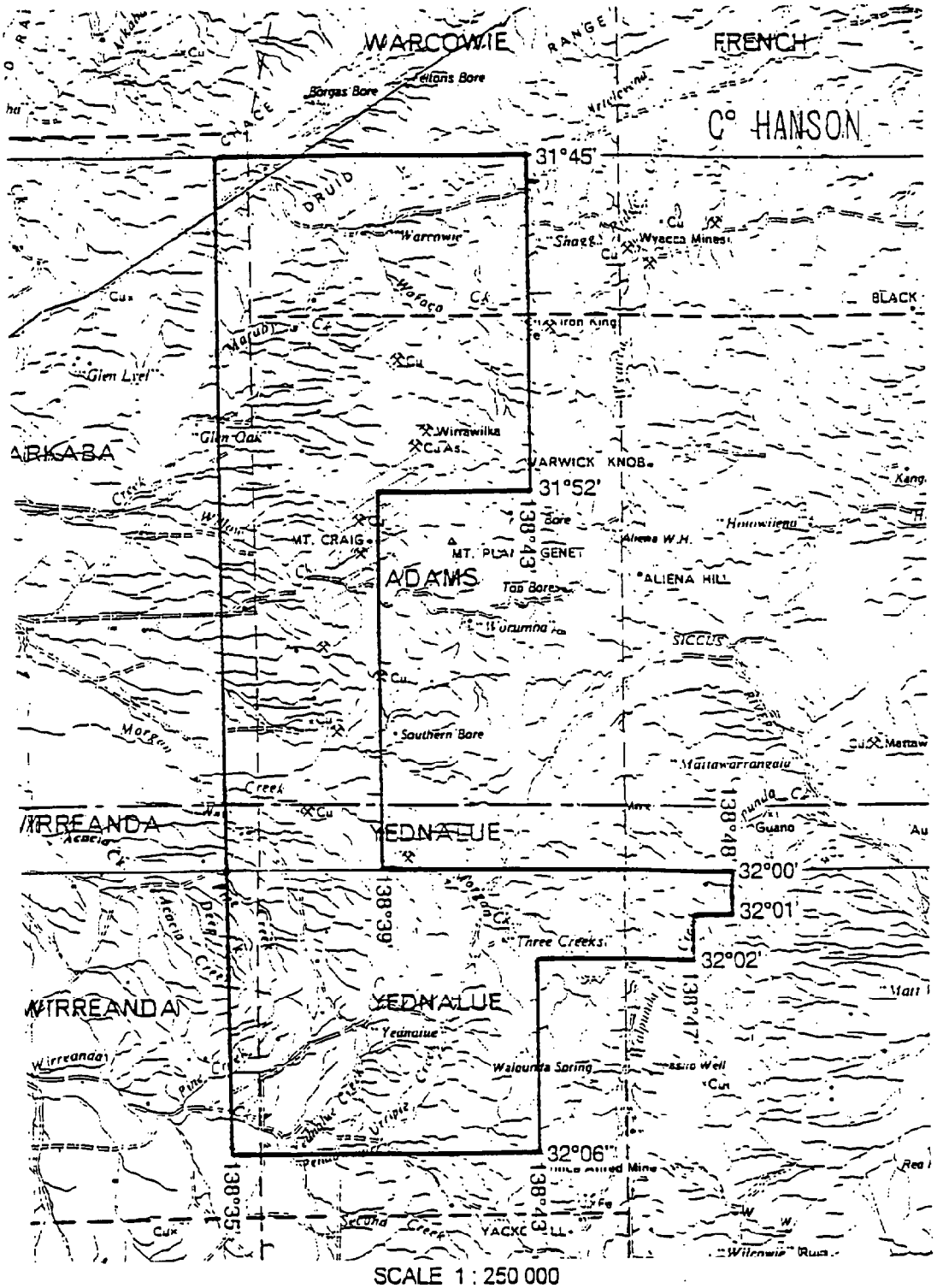
Native title claimants covering EL 2520 include SC95/4 Kuyani #2, SC96/4 Barngarla, SC97/1 Anderson/Adnyamathanha and SC97/2 Adnyamathanha.

Exploration licence 2417 is located on the Shaggy Ridge, Holowilena South, Worumba, Three Creeks and Black Hill Pastoral Leases.

4 PHYSIOGRAPHY

4.1 Climate

Climatic conditions within the region are classes as semi-arid. Hot dry conditions prevail in the summer months with average temperatures exceeding 33°C. Mean maximum daily temperatures range from 33.2°C in January to 16.1°C in July. The mean annual temperature is between 17°C and 20°C (Specht, 1972).
Mean annual rainfall is less than 350mm in comparison to the mean winter rainfall, which is less than 80mm within the region. Mean summer rainfall is generally between 50-60mm. The lowest annual rainfall of 85mm was recorded in 1940, and the highest annual rainfall recorded in 1920 was 677mm in the Hawker region (Schwerdtfeger & Curran, 1996).
Mean annual evaporation between 2400mm and 2700mm (Preiss, 1985) significantly exceeds annual rainfall. Subsequently there are no naturally occurring permanent surface waters in the region.



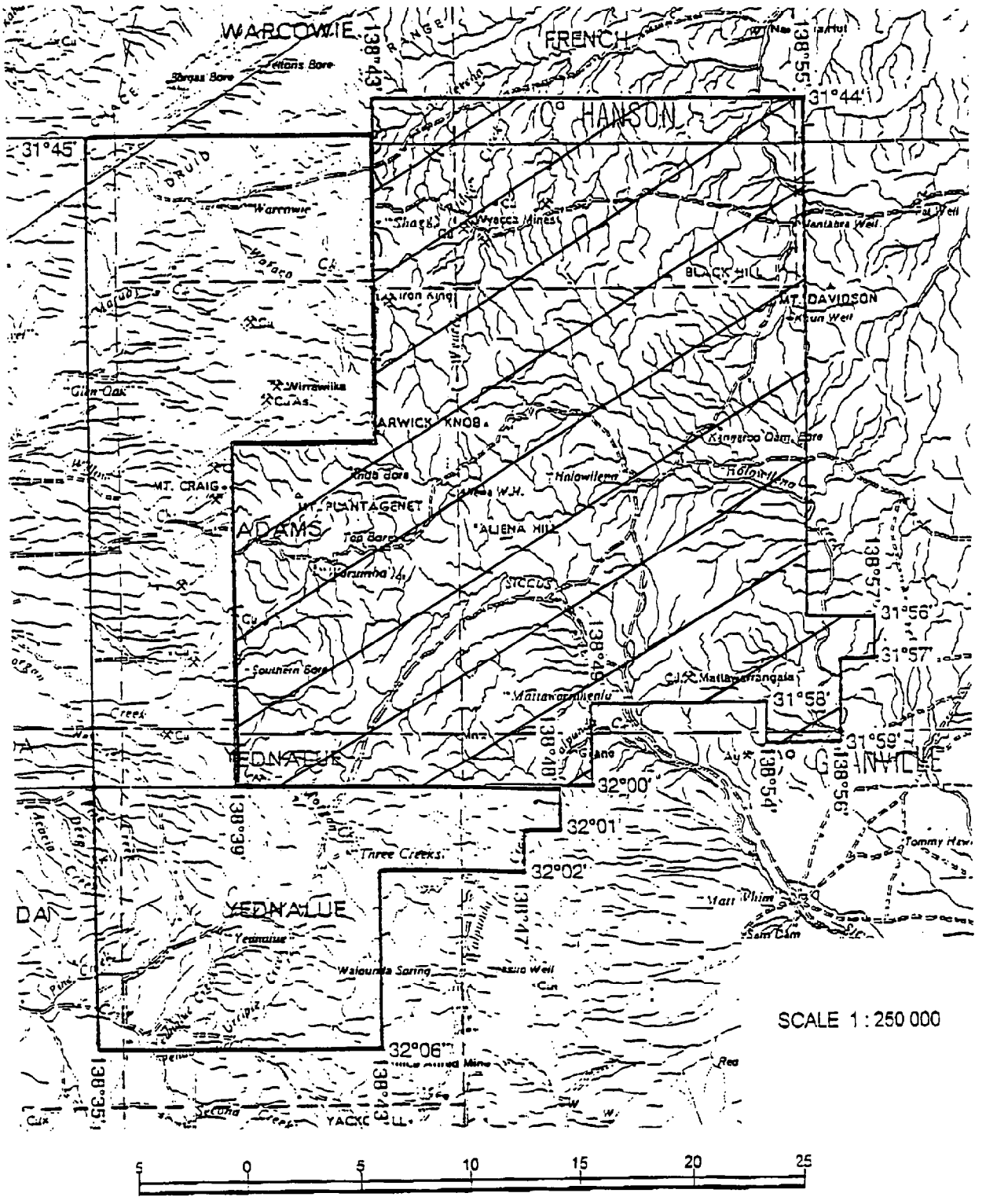
NOTE: There is no warranty that the boundary of this Exploration Licence is correct in relation to the other features on the map. The boundary is to be ascertained by reference to the Australian Geodetic Datum.

FIGURE 2

PIMA MINING N.L.

Boundary of EL 2520 - MOUNT CRAIG
Granted by the Minister of Mines and Energy

NORTH



NOTE: There is no warranty that the boundary of this Exploration Licence is correct in relation to the other features on the map. The boundary is to be ascertained by reference to the Australian Geodetic Datum.

FIGURE 3

PIMA MINING N.L.

Boundary of EL 2520 - MOUNT CRAIG
with adjacent EL 2417
Granted by the MInister of Mines and Energy

EL 2520 EL 2417 NORTH

4.2 Landform

Out crop of the Worumba Anticline forming a prominent ridge transects the central and eastern regions over the length of the licence. Minor Quaternary sedimentation has filled intervening valleys, and in some areas recent talus and downwash cover the Willouran Units. Significant relief surrounds areas of outcrop and dissipates into a distal alluvial fan to the west.

In the northwest the licence is transected by the northeast-southwest striking Druid Range. Mature, white, flat-bedded quartzite, often with wavy disrupted cryptalgal laminations dominates the ridge.

4.3 Soils

Soils covering the ranges within the region are typically shallow, reddish dense loamy soils with weak pedologic development. Intervening undulating hills are dominated by shallow, reddish, powdery, calcareous loam with outcropping shale and quartzite. Foot slopes are of hard, pedal duplex soils with low-angle scree and talus deposits of unconsolidated angular rock fragments, grit, sand and silt.

Quaternary soils of alluvium: cobbles, gravel, sand, silt and clay are often poorly sorted. Consolidated and dissected terrace and distal sand deposits may have incipient soil horizons, often with gibber spreads and gypseous materials. Flood plains of deep crusty, loamy soils with red-clayey subsoils are found in the west flanking bedrock outcrops. Soils are typically poorly sorted and bouldery to gravelly proximal to the source.

4.4 Drainage

Drainage systems within the region "flow" west-northwest into Lake Torrens. Major tributaries include Wonoka Creek, Morgan Creek and Wirreanda Creek.

Drainage systems are semipermanent, flowing episodically in response to occasional and irregular rains rather than seasonally.

4.5 Vegetation

Plant communities containing semi-succulent shrubs of *Acacia sowdenii* (Myall) are common in calcareous desert soils within the region. Low shrub land communities of *Atriplex vesicaria* (Bladder saltbush), *Kochia brevifolia* and *Kochia sedifolia* (Bluebush) are associated with both stony desert tableland soils and calcareous desert soils (Specht, 1972).

5 PREVIOUS INVESTIGATIONS

Previous exploration over the current Mount Craig exploration licence (2520) is summarised below. Information was obtained through Primary Industries and Resources South Australia, open file envelopes.

5.1 PIRSA Open File Env. 9144

BHP Minerals Pty Ltd – Final Report for the Period Ending 15th November 1997 (M.W. Rennison & A.J. Rutley).

Mount Craig Exploration Licence 2085 (523km^2) was granted to BHP Minerals Pty Ltd on the 16th May 1995. Exploration focussed on copper oxide and sulphide mineralisation associated with diapirs in the Adelaide Geosyncline. Exploration was directed towards a supergene enriched Cu oxide/sulphide blanket developed on a Cu mineralised raft within the Callanna Beds.

A total of 270line kms was flown in an east-west orientation, with TEM readings taken every 500m. Four anomalies were selected for follow up with ground loop TEM. 52 line kms of TEM by Solo Geophysics detected magnetic sources between 15 and 95m, with susceptibilities ranging from 0.031SI to 0.37SI.

116 soil samples were taken from four east west orientated lines centered over magnetic anomalies. 2kg samples of –2mm meshy fraction were collected every 100m and sent to Analabs in Perth. Samples were analysed for Cu, Pb, Zn and Cd. Small Cu anomalies were detected, and three samples were collected for petrology.

One RC hole of 148m was drilled by Frank Walsh Drilling over anomaly W18. Four metre composite samples were sent to Amdel Laboratories and analysed for Cu, Pb, Zn, Ag, Al, As, Ca, Cd, Co, Fe, K, Mg, Mn, Mo, Na, P, Pb, Ti by ICP and Au by AA. No anomalous geochemical results were detected.

5.2 PIRSA Open File Env. 4572

UTAH Development Company – Final Report on Exploration EL 956, Worumba (Jarvis et al).

Exploration Licence 956 was granted to UTAH Development Company on the 8th of January 1983. Exploration focussed on gold and base metals with initial detailed ground geological mapping the focus.

An aeromagnetic survey by BRM in 1965, was followed up with a heliborne regional gravity survey in 1970.

In total 2124 geochemical samples from 4 regions were sampled in 10m and 25m intervals and analysed for Cu, Pb, Zn, Co, V, Ag, Au by AAS and As by XRF. 29 samples were sent for petrography. 5 diamond drill holes for 937.1m and 8 percussion drill holes for 768m were drilled over the anomalous areas. There were minor Cu, Pb, Zn and Co anomalies with anomalous Zn zones within the Kirwan siltstone. Twenty nine 20kg heavy mineral stream sediment samples were analysed by Comlabs for As, Ba, La, Ce, Nb, Zr, Cu, Pb, Zn, Ni, Co and Cr. No kimberlitic indicator minerals were identified. 72 vertical profile traverses were geochemically samples at 25m intervals, no anomalous results were recorded.

5.3 PIRSA Open File Env. 3970

Dampier Mining Company Ltd – Exploration Licence 727 Mount Aleck, South Australia (P.J. Anthony and A. McGain).

EL 727 was granted to Dampier Mining Company Limited (BHP Minerals Limited) on the 21st September 1980. Exploration focussed on Cu-Pb-Zn mineralisation in Lower Cambrian carbonate rocks, with the potential for possible diamonds. Thirteen gravel samples (2 of which are within EL 2520) were analysed for kimberlitic indicator minerals. Samples were also analysed for Cu, Pb, Zn and Co by AAS and Sn, W, U and Nb by XRF.

464 stream sediment samples of –6 fraction were sent to Analabs and analysed for Cu, Pb and Zn by AAS. An additional 628 stream sediment samples were take within the Druid and Chase synclines to the north of EL 2520. Samples were sent to Comlabs and analysed for Cu, Pb, Zn and Co by AAS. No significant anomalies were detected.

Exploration in the Vanessa prospect focussed on Mississippi style carbonate hosted Pb-Zn mineralisation. 147 rock chip samples in the north of the prospect were sampled in 50m intervals on a 1000 by 300m grid. Samples were sent to Comlabs and assayed for Cu, Pb and Zn n by AAS. Minor anomalism was identified, Cu 710ppm, Pb 60ppm and Zn 650ppm.

5.4 PIRSA Open File Env. 4799

Freeport of Australia Incorporated & Swan Resources Ltd – Exploration Licence 992 Orroroo Region, South Australia – Relinquishment Report (W.T. Marx).

Exploration Licence 992 (146km^2) was granted to Freeport of Australia Inc. and Swan Resources Ltd on the 12th of April, 1982. 7, 25kg stream sediment samples of –1/4" material were analysed by microprobe analysis. Three samples are located along Morgan Creek and two to the southeast of Kirwan Mine. No kimberlitic minerals were found

5.5 PIRSA Open File Env. 3921 & 3920

Freeport of Australia Incorporated & Swan Resources Ltd – Report on Exploration Licence 690, Orroroo Region of South Australia (R.W. Mosig).

Exploration Licence 690 was granted to Freeport of Australia Incorporated and Swan Resources Ltd on the 11th of August 1980. Exploration focussed on diamonds, U, Cu, Ni, Pb, Zn, Au and Pn. This area covers the southern portion of EL 2520.
85, 20kg stream gravel samples were analysed for U, Cu, Ni, Pb, Zn, Au and Pn by Amdel Laboratories. A reconnaissance follow up program of 54, 20kg samples showed no anomalous results.
Two 200kg stream sediment samples in Wirreanda Creek found no traces of kimberlitic minerals.
An aeromagnetic survey over the Yednalue region found 2 strong magnetic anomalies. 19 stream sediment samples were collected over this area and analyses for Au, Ag, Sb, Cu, Zn, As and W. No kimberlitic minerals were identified.
Stream sediment sampling, loam sampling and bulk sampling along Boolcunda Creek, south of EL 2520 identified kimberlitic minerals. In total 66 diamonds were found in the basal conglomerate of the Triassic Springfield Basin.

5.6 PIRSA Open File Env. 1341 & 1590

Gold Copper Exploration Ltd – Special Mining Lease Number 376. Progress Reports on Mount Plantagenet, South Australia (Rowan I.S. & Brown A.G.).

Exploration focused on the examination of old workings with the potential for copper gold mineralisation. Initial work included 4772 stream sediment samples (23 samples per square mile). All samples were analysed for Cu, Pb, Zn, Mn, Ba and Ag by AAS. 106 stream sediment samples were analysed for 26 elements, no data is available on these samples.
A total of 13 costeans were dug at 60m intervals and samples of the limestone were taken within the Wirrawilka area. Follow up work of 8 percussion drill holes produced

a maximum value of 0.39% Cu for 3.7m. Drilling results were found not to correlate with surface mineralisation.

In total 17 percussion drill holes were drilled with results indicating that mineralisation is disseminated chalcopyrite within limestone, and malachite within shales.

A detailed examination of the old workings including Napoleon Mine and Wirrawilka mine is given in detail, including the type and extent of mineralisation, including rock chip samples.

5.7 PIRSA Open File Env. 1094

CAMS Leases Pty Ltd – Worumba Diapir area. Progress report for the period 1/12/68 – 30/11/69 (P.R. Donovan et al).

SML 140, Worumba was granted to CAM Leases Pty Ltd in 1966 (1629km^2). Exploration was aimed at the search for a large base metal deposit in the shales of the Tapley Hill Formation.

Outcrop samples were analysed for Cu, Pb, Zn, Co, Ni and Ag at Iron King (7 samples), Wirrawilka (9 samples), Mount Craig (12 samples) and New Burra (5 samples). All anomalies were traced back to recognisable surface exposures containing secondary Cu mineralisation, thus representing little opportunity for the development of sizeable disseminated deposits of Cu.

5.8 PIRSA Open File Env. 0954

CAMS Leases Pty Ltd – Worumba Stream Sediment Survey. Progress Report for the Period ending 1st December 1966 – 1st June 1967 SML 140 Worumba (R.W. Fidler).

SML 140 - Worumba was granted to CAM Leases Pty Ltd in 1966 (1629km^2). Exploration was aimed at the search for a large base metal deposit in the shales of the Tapley Hill Formation. 130, -80 mesh stream sediment samples were analysed for Cu, Pb and Zn, over 12m^2 covering the north of EL 2520. 8 anomalous Cu values and 1 anomalous Pb value was detected. An IP survey over anomalous zones was carried out by M^{c}Phar Geophysics.

5.9 PIRSA Open File Env. 0620

Metals Exploration NL – Blinman , Worumba and Oraparrina Copper Prospects (P.J. Anthony et al).

Special Mining Lease 86, granted to Metals Exploration covers the eastern boundary of exploration licence 2520. An IP survey conducted by McPhar Geophysics identified 5 anomalous zones. An in fill magnetometer orientated survey of 24.2 grid line miles, of 276 readings was conducted by McPhar Geophysics.
281 geochemical samples were analysed for Cu, Pb, Zn and Co by Australian Mineral Development Laboratories. No anomalous results were detected.

6 REGIONAL GEOLOGY

Stratigraphy

The northwest extension of the Adelaide Geosyncline comprises inliers of folded and fractured Proterozoic sedimentary rocks (Forbes, 1989). The Adelaidean is divided into four chronostratigraphic units: Willouran, Torrensian, Sturtian and Marinoan. The oldest rocks of the Adelaide Geosyncline, the Callanna Group, are subdivided in to the Arkaroola and Curdimurka Subgroups. Exposure of these units can be seen in the center of the tenement: as the Worumba Anticline.

In the Worumba Anticline the stratigraphy of the Curdimurka Subgroup is largely intact, with the succession totalling 1950m. The Wirrawilka Beds, Niggly Gap Beds, Arkaba Hill Beds, Kirwan Siltstone, Waraco Limestone and Worumba Dolomite Beds form the main stratigraphic sequence (Figure 4). Widespread small scale copper mineralisation is associated with the Curdimurka Subgroup. Copper mineralisation within the Kirwan Siltstone (Kirwan Mine) in the central region of the tenement is associated with carbonaceous siltstone, deposited under reducing conditions. Other copper occurrences are found within the Niggly Gap Beds and Dunn Mines Limestone, equivalent to the Wirrawilka Beds. Preiss (1993) suggests minor copper mineralisation is also associated with some dolerite bodies, especially near their contacts with diapiric breccia.

Deposition of the Burra Group during the Torrensian was confined to a wider rift zone compared to the Callanna Group. Out crop of the Burra Group is restricted to units of Skillogalee Dolomite and Yednalue Quartzite in the central and southern region of the tenement (Figure 4 & 5). Fault blocks of the Burra Group were locally tilted up to 90° and eroded to various stratigraphic levels forming the current topography. The Burra Group is host to some significant mineral deposits, including gold, silver-lead, micaceous haematite, magnesite, talc, clay and dolomite and quartzite aggregate.

Stratigraphic Units of EL 2520

Age/ Group	Stratigraphic Unit	Lithology Description
Early Cambrian — HAWKER Group	Mernmerna Formation	Dark-grey, fine-grained, nodular to mottled, well bedded limestone and shaly limestone. Slumped turbidite couplets of lime, silt and mud in lower part grade up to dominantly grain-flow deposits.
	Wirrapowie Limestone	Dark grey, laminated to mottled lime-mudstone and fine-grained limestone with tongues of cross-bedded oolite, and numerous stromatolite, columnar thrombolite and archaeocyath-bioherms.
MARINOAN — WILPENA GROUP	Rawnsley Quartzite	Mature medium-grained sandstone with intervals of trough cross-bedding and wavy, disrupted cryptalgal lamination; planar and cross-bedded sandstone.
	Wonoka Formation	Storm-dominated mixed carbonate-siliciclastic sequence. *Lower Unit*: interbedded maroon mudstone and sharp-based, fine-grained calcareous and dolomitic sandstone, commonly with sole marks, graded bedding, combined-flow ripples and hummocky cross-stratification. *Middle Unit:* finely laminate reddish calcareous mudstone with varying proportions of thinly bedded cyclic, micritic limestone. *Upper Unit:* finely laminated green siltstone, medium to thickly bedded limestone and calcareous sandstone with planar bedding, hummocky cross-stratification and climbing ripples.
	Bunyeroo Formation	Brick-red shale with thin, light green bands and reduction spots. 10-30mm thick layer with subrounded fragments of felsic volcanics, ~60m above base.
	ABC Range Quartzite	White, heavy-mineral laminated cross-bedded quartzite with ripple marks, mudcracks and mud clasts. Prograding, diachronous, shallow marine sequence which commonly consists of four or five upward-coarsening cycles capped with orthoquartzite.
	Brachina Formation	Red-brown and grey-green siltstone and sandstone.
	Nuccaleena Formation	Laminated to well-bedded pink, cream to buff-yellow, fine-grained dolomicrite. Cyclic purple shale interbeds in upper part. Disconformable base.
STURTIAN — UMBERATANA Group	Elatina Formation	Red-brown medium-grained arkosic sandstone and red, pebbly, sandy siltstone of glacial origin. Lower slumped sandstone with granule trains; a middle siltstone with dropstones and common interbeds of dropstone diamictite, and an upper ripple cross-laminated sandstone and current reworked diamictite. Cobble to boulder-size clasts, occasionally glacially smoothed and striated; clasts of altered basalt, dolerite, crystal tuff and dolomite. Disconformable base.
	Trezona Formation	Cycles of laminated greenish grey calcareous shale and siltstone grading to pale red and grey, fine-grained stromatolitic, oolitic and intraclastic harsh breccia limestone.
	Etina Formation	Cycles of thick, grey, oolitic and stromatolitic limestone with intervening grey-green siltstone. Limestone is commonly sandy with trough cross bedding.
	Sunderland Formation	Grey-green calcareous siltstone and fine to medium-grained sandstone with coarse-grained to pebbly sandstone and/or oolitic limestone, commonly conglomeratic with large clasts of stromatolitic limestone and siltstone, overlying basal disconformity. Slumping and flaser bedding common in upper part.
	Tapley Hill Formation	Finely laminated grey-green siltstone to fine lithic sandstone cycles
	Wilyerpa Formation	Green siltstone. Lower third is fine grained and includes intervals of glacial dropstones; middle unit is medium to coarse-grained sandstone; upper unit is siltstone with minor sandstone. Included discrete dropstone intervals and storm derived thick sandstone and glacial conglomerate.
	Holowilena Ironstone	Dark red, thinly laminated iron-rich siltstone; includes medium to coarse-grained gritty sandstone and glacially derived pebbly siltstone
TORRENSIAN — BURRA Group	Skillogalee Dolomite	*Lower Member*: grey-green siltstone, pale grey to pink dolomite and feldspathic sandstone; ripple marks, mudcracks. *Upper Member:* blue-grey dolomite, partly stromatolitic, with black chert; magnesite conglomerate; dolomitic siltstone and sandstone; mudcracks, intraclasts
	Yednalue Quartzite	White, medium to coarse-grained feldspathic quartzite; siliceous siltstone. Cross bedding, ripple marks and mudcracks.
CALLANNA	Worumba Dolomite Beds	Upper and lower members of pale grey to buff, cryptalgal-laminated dolomite separated by middle member of dark grey, thinly laminated carbonaceous siltstone.
	Waraco Limestone	Pale grey to cream stromatolitic dolomite and calcitic and dolomitic marble overlying blue-grey, flaggy to massive limestone with black chert and slumped stromatolites; dark grey, partly laminated siltstone at top.
	Kirwan Siltstone	Dark grey to black, finely laminated carbonaceous siltstone; locally silicified

WILLOURAN GROUP	Arkaba Hill Beds	Laminated stromatolitic dolomite and limestone, local fenestral fabrics and gypsum pseudomorphs; interbedded micaceous siltstone, fine sandstone. Dark grey, laminated, carbonaceous, locally silicified siltstone in lower part.
	Niggly Gap Beds	Grey, micaceous siltstone and fine-grained sandstone partly with halite casts, heavy-mineral-laminated sandstone, minor dolomite; locally cupriferous
	Wirrawilka Beds	Pale grey to buff laminated dolomitic limestone overlying dark grey, finely laminated siltstone, locally silicified.
	Siltstone	Undifferentiated micaceous siltstone with minor dolomite, shale and sandstone; abundant salt casts; tuffaceous in part. Largely equivalent to the Niggly Gap Beds.
	Dolomite	Commonly cryptalgal laminated or stromatolitic, with dolomitic siltstone interbeds.
	Shale	Khaki-green to light grey, finely laminated micaceous shale and fine dolomitic mudstone; rare pseudomarphs after halite and occasional mudcracks.
	Sandstone	Medium to coarse-grained sandstone and clean, mature quartzite. Well bedded, commonly with heavy-mineral lamination, occasional ripples and micro-trough cross bedding, halite casts and rare rosettes possibly pseudomorphing barite. Minor interbedded siltstone dolomite.
	Unnamed Volcanics	Altered dark purple to grey-green, haematitic amygdaloidal basalt.
	Undifferentiated Basic Intrusives	Fine to coarse-grained, dark green, uralitised dolerite, locally intrusive into the Callanna Group
	Diapiric Breccia	Massive to flow-banded, pink to buff, carbonate-cemented breccia with wide size range of dolomite, siltstone and micaceous sandstone clasts

Figure 4 Stratigraphic units of the Mount Craig Exploration Licence 2520.

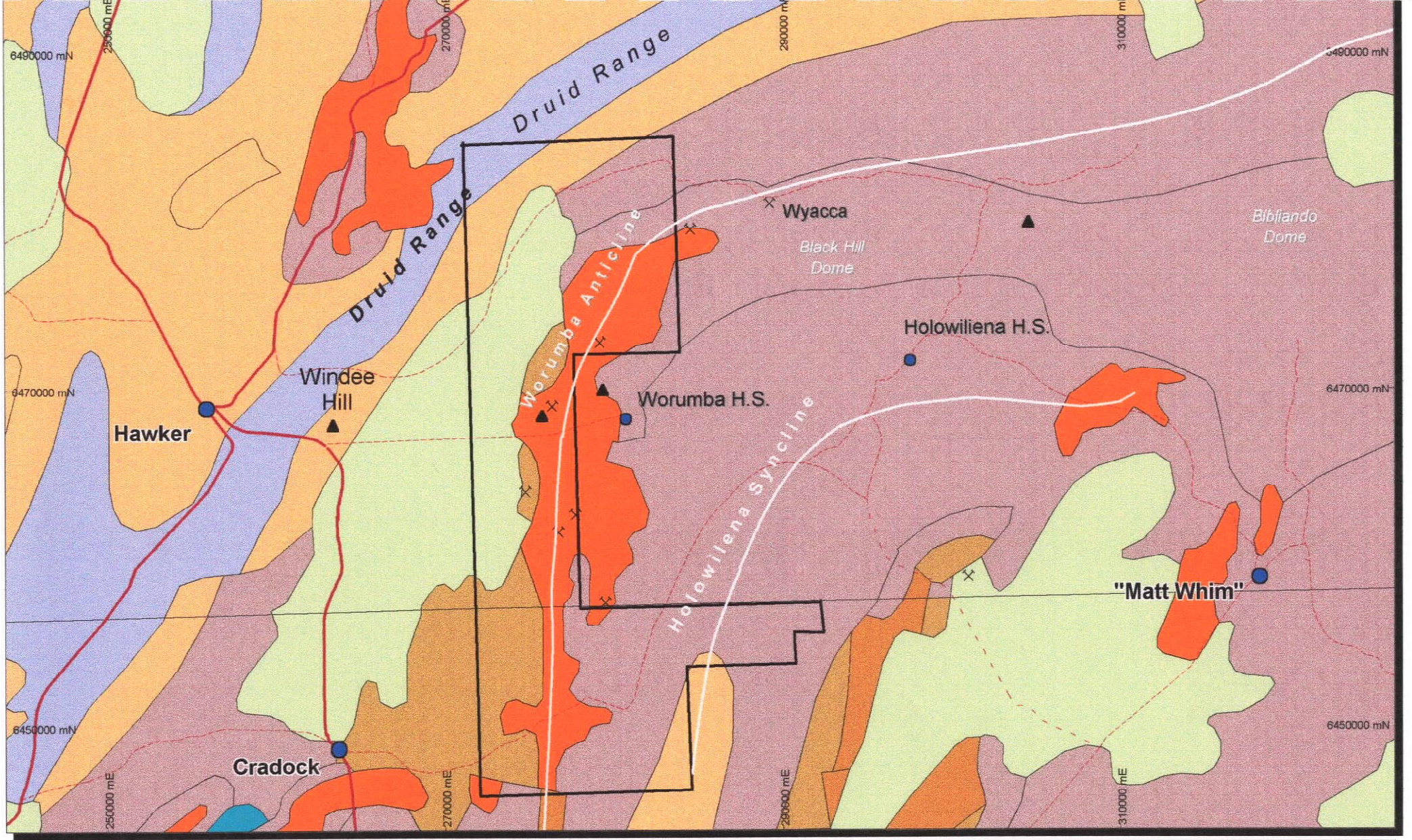
Skillogalee Dolomite of the Burra Group is typically dark-grey with repetitive lithologies of intraformational carbonates (magnesite and dolomite), algal laminated carbonates and argillaceous siltstones and sandstones (Belperio, 1998). Dolomite mudstone is the prevalent facies, minor dolomite facies present include intraclastic, ooid, and oncoid grainstones, and stromatolitic dolomite (Uppill, 1989).

The formation of magnesite beds within the Skillogalee Dolomite is thought to be the result of the following processes:

Magnesite Mudstone

Evaporation of water in a closed environment resulted in an increase in pH and CO_3^{2-} concentration in a Mg rich/Ca poor solution. Magnesite was then precipitated as a primary magnesite mudstone rather than from dolomite replacement (Uppill, 1989). The lack of detrital influx indicates a very low energy environment.

Magnestite mudstone commonly overlies dolomite mudstone representing a period of low energy precipitation. Teepee structures in unconsolidated magnesite mud indicate possible upwelling of ground water during compaction. Rip-up structures on the upper surface indicate a high-energy erosional event before lithification and burial. Aeolian deflation or subsequent flooding may have removed saline materials exposing the mudflats (Uppill, 1989).



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EL 2520 - MOUNT CRAIG
Generalised Geology and location points of geochemical sampling

Qpa	Scree and talus deposits	Nu	Umberatana Group
Eo3	Hawker Group	Nb	Burra Group
Nw	Wilpena Group	Nb	Emeroo Subgroup
Nsa	ABC Range Quartzite	Nc6	Callanna Group

EL 2520
Anticline/syncline
Sample locations
Spot Heights
Mine locations

NORTH

FIGURE 5

Intraclastic Magnesite

Magnesite facies within the Skillogalee Dolomite are most commonly represented as discrete beds of clastic reworked magnesite mudstone. During storm events, soft, recently precipitated magnesite muds are "ripped-up" and reworked forming intraclastic conglomerates. Clasts range in size, sorting, roundness and sphericity. Well-sorted, spherical magnesite sands represent prolonged, uniform-energy events, whilst large (10-50mm), angular, elongate, "ripped-up" magnesite mud-clasts with a sandy matrix, represent high-energy events.

Nodular Magnesite

Nodular magnesite consists of micritic magnesite of botryoidal and folded appearance. Nodular magnesite forms by the replacement of magnesite mudstone and intraclasts, during periods of subaerial exposure. Mosaic textures are a result of nodular growth on magnesite intraclasts.

Overlying the Burra Group, the Umberatana Group, encompasses glacial deposits of Sturtian to early Marinoan age. The thickness of the Umberatana Group is usually about 4000m, but increases to around 9000m in the Mount Painter region. Units of Holowilena Ironstone, Wilyerpa Formation, Tapley Hill Formation, Sunderland Formation, Etina Formation, Trezona Formation and Elatina Formation outcrop in the north and southeast corner of the tenement (Figure 5). In the northern part of the Worumba Anticline, the Umberatana Group unconformably overlies disrupted Callanna Group and intrusive carbonate breccia (Preiss, 1985). The Curdimurka Subgroup was folded and overturning as well as the formation of diapiric breccia.

Lemon (1996) however, has described the Worumba Anticline as a 'fossil' diapir: insoluble remnants brought to the surface by low density, halite-rich evaporite sequences separated from the salt by surface dissoloution. Some of the features core large anticlines, such as the Worumba Anticline, which show growth during the deposition of surrounding sediments.

Delamerian Orogeny

The early Palaeozoic age of the major deformation of the Proterozoic and Cambrian rocks of the Adelaide Geosyncline is known as the Delamerian Orogeny. Two separate events are recognised in the Flinders Ranges. Linear north-south folds were produced by an early east-west compressional event. A later stage of dominantly north-south compression produced strong east-west folds.

Generally, only mild, very low-grade metamorphism accompanies the Delamerian folding. Low-pressure, intermediate to high-temperature metamorphism, generally not exceeding greenschist facies is exhibited in the rocks within the licence area.

Mineralisation

Sulphides are commonly disseminated throughout the Willouran units in the core complex of the Worumba Anticline. Pyrite, the most common sulphide, is observed in dark thinly laminated siltstone of the Wirrawilka Beds, lower Arkaba Hill Beds, Kirwan Siltstone and Worumba Dolomite Beds, either as microscopic framboids or as euhedral crystals (Preiss, 1985). The presence of copper-bearing sulphides in many carbonate horizons is suggested by the widespread malachite staining on joint planes and disrupted zones in which copper was concentrated, possibly during conditions of subaerial weathering.

Mineralisation within the Worumba area was described in general terms by Spry. Barite was recorded along the great north-south fault west of Worumba and at Morgan Well. He considered the sedimentary magnesite of the Skillogalee Dolomite and the Wirreanda Dolomite, as being insufficient for economic exploitation.

Mines and Mineral Occurrences within the Region.

Name	***Easting***	***Northing***	***Mineral***
Willow Creek Workings	275000	6468300	Malachite
Kirwan Mine	275960	6462490	Malachite, Azurite
Mine in block of Niggly Gap Beds	275180	6465740	Malachite
Cupriferous dolomite in Niggly Gap Beds	275180	6465740	Dolomite, Pyrite
Mine in Arkaba Hill Beds	277770	6462810	Dolomite
Mine in Wirrawilka Beds	277680	6464920	Copper
Mine in block of Wirrawilka Beds	277300	6465930	Malachite
Pit in dolerite	273950	6465940	Malachite, copper
Mine in ironstone	274390	6466840	No mineralisation seen
Napoleon Mine	276610	6470130	Malachite, Azurite
Mount Craig Mines	277000	6471000	Feldspar-rich dolerite
Wirrawilka Workings	278700	6473900	Chalcopyrite
Mine in Warcowie Dolomite Member	279370	6470400	Malachite
Shafts in Wilyerpa Formation	280880	6467180	Manganese
Iron King Mine	284650	6478250	Gold, Silver, Copper,

			Nickel, Lead, Zinc
Bottle Dump Prospect	278380	6476970	Chalcopyrite
Copper prospect near Morgan Creek	278360	6457200	Malachite, Cuprite, Copper

Preiss (1985)

7 EXPLORATION ACTIVITIES and RESULTS

The following exploration by Pima Mining NL focussed on the potential for gold mineralisation within the Flinders Ranges.

- Geophysical interpretations
- 1 Stream Sediment Sample
- 4 Rock Chip Samples

7.1 Geophysics

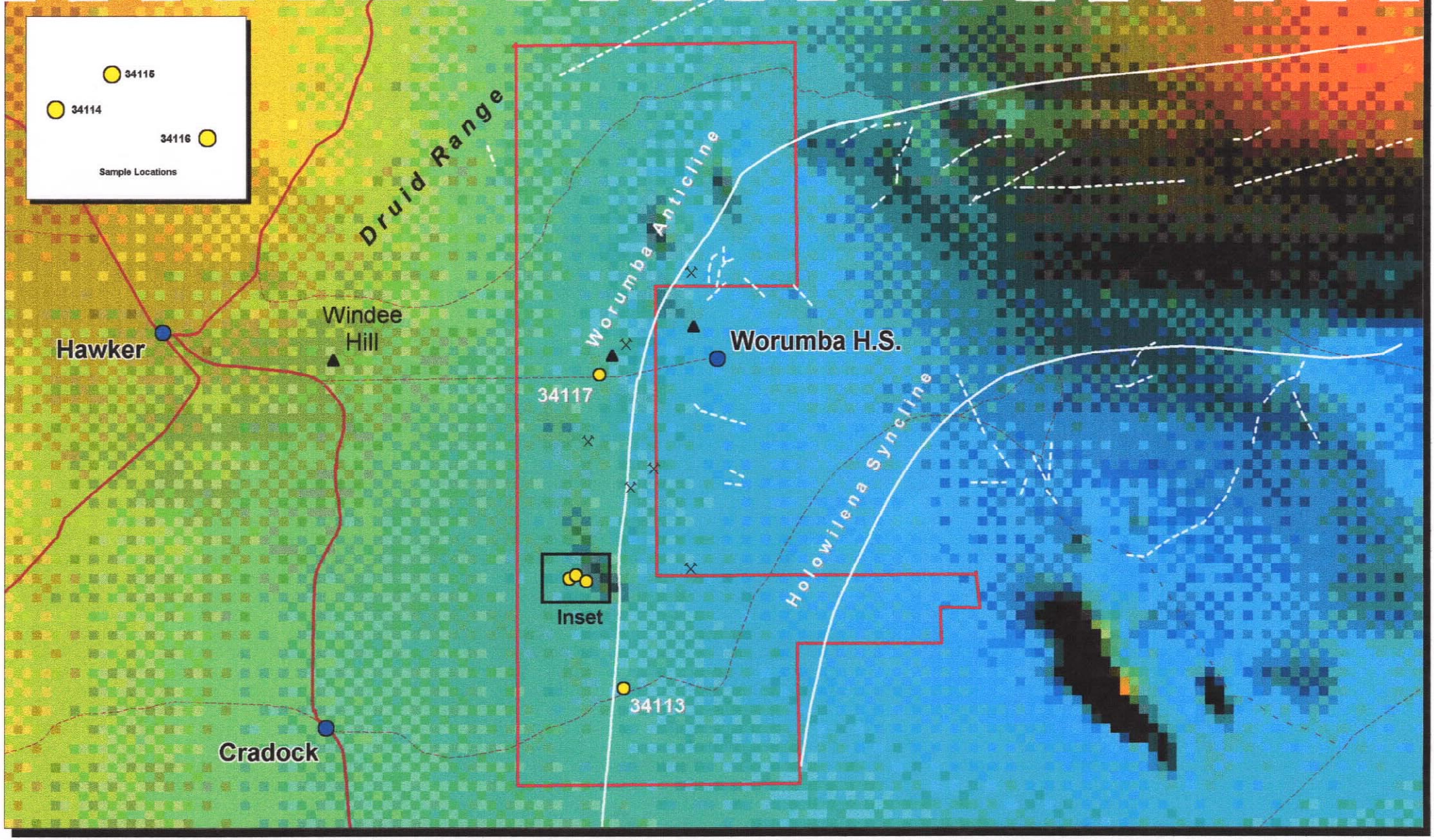
Aeromagnetic data was flown by World Geoscience Corporation on behalf of the South Australian Government as part of the South Australian Exploration Initiative (S.A.E.I.). Flight line direction was north south with a nominal spacing of 400m, and tie lines east west with a nominal spacing of 4000m. Mean terrain clearance was approximately 80m.

No significant, anomalous geophysical targets were identified from geophysical images. However more recent detailed aeromagnetic surveys conducted by AGSO may prove to be of value in identifying significant geophysical targets.

Previous investigations within the area identified magnetic anomalies south of EL 2520, coincident with the identification of kimberlitic indicator minerals. In total 66 diamonds were found in the basal conglomerate of the Triassic Springfield Basin south of EL 2520.

7.2 Geochemical Sampling

Four rock chip samples were collected in the south of the tenement for possible magnesium mineralisation within the Skillogalee dolomite (figure 6). Sample locations were positioned using a Garmin 45 Global Positioning System (GPS), with an accuracy ± 50m (Appendix 1).



PIMA MINING N.L.

EL 2520 - MOUNT CRAIG
Geochemical Results overlain
State SAEI TMI Aeromagnetic Image

SCALE?

Faults
Spot Heights
Sample locations
Mine locations
NORTH

FIGURE 6

1-2kg samples were collected and placed in calico bags. Each calico was subsequently placed in a plastic bag with an accompanying ticket number. All four plastic bags were placed into a single polyweave bag.
Samples were analysed at Amdel Laboratories in Adelaide for Al_2O^3, CaO, FeO^3, K_2O, MgO, MnO, Na_2O, P_2O^5, SiO_2, TiO_2 by Total Digest (Whole rock analysis-IC4) and LOI by Gravimetric Analysis (loss on ignition-GRAV7) (Appendix 1).

One stream sediment sample was taken in the central region of the prospect (Figure 6). The sample was positioned using a Garmin 45 Global Positioning System (GPS), with an accuracy ± 50m (Appendix 1).
A 1-2kg sample was collected and placed in a calico bag. This was subsequently placed in a plastic bag with an accompanying ticket number, and in to a single polyweave bag.
The sample was analysed at Amdel Laboratories in Adelaide for Au by aqua regia digest with a graphite finish (AA9) and Ag, As, Bi, Ca, Cd, Ce, Co, Cr, Cu, Fe, K, Mg, Mn, Mo, Na, Nb, Ni, P, Pb, Sr, Ti, V, Y and Zn by Optical-ICP (mixed acid digest) (Appendix 1).

No anomalous gold or basemetal mineralisation was identified from the single stream sediment sample. One whole rock sample showed an elevated MgO value of 43.8% and low CaO value of 1.34%.

8 CONCLUSIONS

Reconnaisance geochemical sampling failed to identify any significant gold or basemetal anomalism. EL 2520 remains largely untested, with significant potential for economic gold/basemetal mineralisation.

The tenement also has considerable potential for the discovery of economic deposits of magnesite. Reconnaisance geochemical sampling identified an anomalous magnesite target that warrants further infill geochemical sampling. The potential also exists for the discovery of kimberlitic indicator minerals which may lead to the discovery of diamond bearing kimberlite pipes, in the south of EL 2520.

While a number of targets were identified by Pima Mining NL, Pima was not prepared to undertake a detailed geochemical sampling program. Pima Mining NL has decided to refocus its exploration and developments on magnesite deposits within the northern Flinders Ranges, South Australia.

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Appendix

Sample locations and assay data

Sample No.	Easting	Northing	Au	Ag	As	Bi	Ca	Cd	Ce	Co	Cr	Cu	Fe	K	Mg	Mn
34117	275187	6467466	<1	<1	14	<5	2.03%	<2	55	10	120	41	3.11%	1.42%	3.14%	750

Sample No.	Easting	Northing	Mo	Na	Nb	Ni	P	Pb	Sr	Ti	V	Y	Zn
34117	275187	6467466	4	2050	<5	21	450	45	155	1600	91	12	160

Sample No.	Easting	Northing	Al_2O_3	CaO	Fe_2O_3	K_2O	MgO	MnO	Na_2O	P_2O_5	SiO_2	TiO_2	Loi
34113	276606	6451124	6.36	1.04	48.4	2.57	0.46	0.58	0.04	0.65	31.6	0.35	8.35
34114	274087	6456808	0.2	30	0.28	0.07	21.7	0.01	0.03	0.01	1.825	0.015	45.6
34115	274359	6456987	0.17	30.4	0.79	0.03	21.5	0.05	0.02	0.02	0.65	0.01	46.2
34116	274832	6456687	0.19	1.34	0.4	0.05	43.8	0.01	0.03	0.02	8.64	0.005	45.2