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EL 2224

PARATOO

ANNUAL AND FINAL REPORTS FOR THE PERIOD 4/11/96 TO JUNE 1998

Submitted by

Havilah Resources NL
1998

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PRIMARY INDUSTRIES AND RESOURCES SA

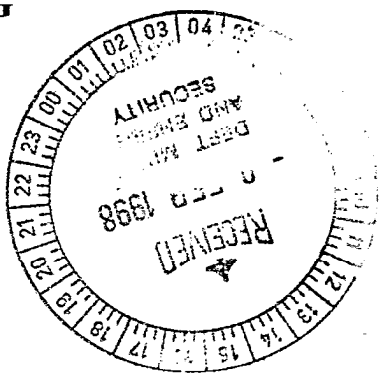
ANNUAL REPORT

FOR EL 2224

PARATOO

SOUTH AUSTRALIA

FOR THE YEAR ENDING
3 NOVEMBER 1997



Compiled by
Wanbanna Pty.Ltd
for M. Selga
and R. Jasper
January 1998

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1.0 INTRODUCTION

EL 2224 (Paratoo) was granted to M. Selga and R. Jasper for a period of one year commencing on 3 November 1996. The tenement covers an area of 300 square kilometres centred on Paratoo railway siding, roughly 60 kilometres northeast of the regional centre of Peterborough. The Barrier Highway bisects the tenement and provides convenient access via a series of station tracks.

The area was applied for owing to the historic occurrences of copper and gold, combined with the favourable domal structural setting, which was believed to be prospective for stratabound Telfer style gold deposits.

2.0 GEOLOGICAL SETTING

EL 2224 is underlain by weakly metamorphosed and folded Neoproterozoic sediments of the Adelaide Geosyncline. It lies in the region where the strike of the Adelaidean strata swings from a northeasterly direction to an east-northeast orientation, in a tectonic feature known as the Nackara Arc.

The oldest rock units, belonging to the Burra Group, are exposed in the centre of the Whydown Dome, which is an elongate doubly plunging anticlinal structure (Figure 1). The core of the Whydown Dome is disrupted by doleritic and dioritic intrusions and by brecciated sedimentary material interpreted as diapiric breccia. These rocks are overlain by an abnormally thin sequence of Umberatana Group sediments, which in turn are succeeded by predominantly quartzitic members of the Wilpena Group.

Several abandoned copper workings are found in the Whydown Dome, including the Robertson mine, Paratoo copper mine and Nob copper mine. All were discovered and worked on a small scale prior to the turn of the century. In general, the early miners dug malachite-rich supergene ore from narrow quartz-ironstone lodes that cut the country rocks. Erratic elevated gold values have been reported from some copper lodes.

A significant advance in understanding of the geology of the area has been provided by the SAEI aeromagnetic data which reveals that the central part of the Whydown Dome in the vicinity of the Paratoo copper mine is underlain by a large magnetic feature, which is believed to be a composite intrusive body (Figure 2). In addition, a prominent NW-SE trending discontinuity is observable in the magnetic data, which is believed to reflect a deep-seated structural feature that transects the Whydown Dome at almost right angles.

3.0 PREVIOUS EXPLORATION WORK

The area has been investigated by several organisations, chiefly for the copper potential. The former South Australian Mines Department carried out channel sampling in the vicinity of the old workings and obtained low grade copper in siltstone over moderate widths, including: 12 metres of 0.85% copper
15 metres of 0.66% copper
6 metres of 1.16% copper
(Nixon, 1965).

Kennecott Explorations (Australia) Pty. Ltd. in the same year showed that a marked copper soil anomaly (defined by a 150 ppm copper contour) extended for two kilometres northeast from the workings sampled by the Mines Department. Minor gold values were obtained in two of twenty nine drillhole samples analysed, although the significance is uncertain, owing to the assay techniques of the time.

Union Oil Development Corporation in 1969 undertook further geological mapping, sampling and percussion drilling of gossan targets about four kilometres northeast of the Paratoo copper mine, without notable success.
A widely spaced stream sediment sampling programme completed around the Whydown Dome by Utah Development Co. Ltd. between 1984-87 identified strong gold anomalism in streams draining from the vicinity of the folded closure in Appila Tillite at the southern end of the Whydown Dome. Substantial unrecorded gold workings in Appila Tillite over a strike length of 700 metres, termed the "Whydown workings", were considered the likely source of the gold anomaly.

Drilling programmes by Adelaide and Wallaroo Fertilizers in 1985-86 established a shallow oxide resource of about 100,000 tonnes of 1% copper in two separate mineralised zones in the vicinity of the abandoned Paratoo copper mine. The only work carried out in the Paratoo area since that time has been by Fairview Gold Pty.Ltd. whose consultants completed detailed mapping and sampling in the area. In particular, Curtis (1989) demonstrated the existence of a linear belt of jasperoidal silica bodies showing weak gold anomalism running roughly parallel to the copper soil anomaly defined by Kennecott Exploration's earlier work.

4.0 CURRENT EXPLORATION WORK

At the outset it was appreciated that there existed a considerable amount of data on the area that could be very usefully applied to the benefit of the current exploration programme. This comprised historic exploration data generated by the previous company exploration programmes as summarised above and also the new geophysical data generated by the SAEI. Consequently, major effort during the reporting period was focussed on compiling this data to assist with development of the geological models and in deciding on the most appropriate exploration methods.

Study of historical exploration data revealed several points of relevance to exploration:

1. The 2 kilometre long copper anomaly extending northeast from the Paratoo copper mine obtained by Kennecott's sampling, indicates a significant area of potentially mineralised rocks lying in the core of the Whydown Dome.

2. Work by all explorers to date has demonstrated widespread anomalous gold, mainly associated with quartzitic members of the Appila Tillite around the rim of the Whydown Dome. Erratic gold values up to 1.53 g/t and 3 g/t in gossanous lode material have been recorded in official reports from the Robertson and Nob copper mines, respectively.

3. The potential for an economically exploitable oxide copper deposit in the immediate vicinity of the old Paratoo mine has been downgraded by the quite intensive drilling work carried out by Adelaide and Wallaroo Fertilizers during 1984-87.

4. The central part of the Whydown Dome near the Paratoo copper mine is extensively disrupted by faulting, mafic intrusions and possible diapiric breccia. Curtis (1989) records a swarm of jasperoidal silica bodies within the breccia zone, associated in at least one case with weak gold anomalism.

The new SAEI geophysical data adds another dimension to the interpretation of the area, that was not previously available. It shows that :

1. Along the central axis of the Whydown Dome at its south-western end, there is a large composite magnetic body (Figure 1). Some local peaks in the aeromagnetic anomaly correspond exactly to known outcrops of intrusive dolerite, thus clearly indicating that a large, mostly concealed mafic intrusive body is the source of the anomaly.

2. The ellipsoidal shape of the Whydown Dome at surface is very apparent in the aeromagnetic contours. However, the dome is clearly bisected by a prominent NW-SE trending magnetic lineament, interpreted as a deep-seated fault structure. Southwest of this structure, the central portion of the dome is extensively disrupted by the mafic intrusive body and by associated brecciation.

It is particularly notable that the copper mineralisation at the Paratoo mine and the associated elevated copper soil anomalies lie on the northeast flank of the mafic intrusive body as interpreted from the aeromagnetic data. Thus, following Curtis (1989), it seems reasonable to propose a model in which the large intrusive body could have acted as a heat engine that mobilised or even contributed hydrothermal solutions. These fluids are postulated to have migrated up the permeable brecciated zone and the associated deep structures, to deposit in sedimentary horizons within the Whydown Dome that had favourable chemical and physical trapping properties.

5.0 ONGOING EXPLORATION WORK

In view of the above exploration model and the historically inadequate search for gold in the central core of the Whydown Dome, it was therefore decided to concentrate initial exploration effort in this region. At the date of this report, geological mapping, gold in soil geochemical sampling and computer modelling of the data is continuing with the ongoing objective of identifying optimum drilling targets. It is planned to complete first round drilling of the best targets arising from this work prior to the next six monthly reporting period.

6.0 REFERENCES

Curtis, J.L. (JLC Exploration Services), 1989. Paratoo project SA - Technical assessment. Unpublished report for Fairview Gold Pty Ltd (EL 1470)

Unpublished company reports held in Open File at PIRSA

1966	SML 88	Kennecott Explorations (Australia) Pty Ltd	Env 592
1969	SML 272	Union Oil Development Corp.	Env 1112
1971	var. ML's	Gold Copper Exploration Pty Ltd	Env 5367
1984-87	EL 1219	Adelaide & Wallaroo Fertilizers Ltd	Env 5476
1984-87	EL 1250	Utah Development Co. Ltd	Env 6411
1988-90	EL 1470	Fairview Gold Pty Ltd	Env 8049

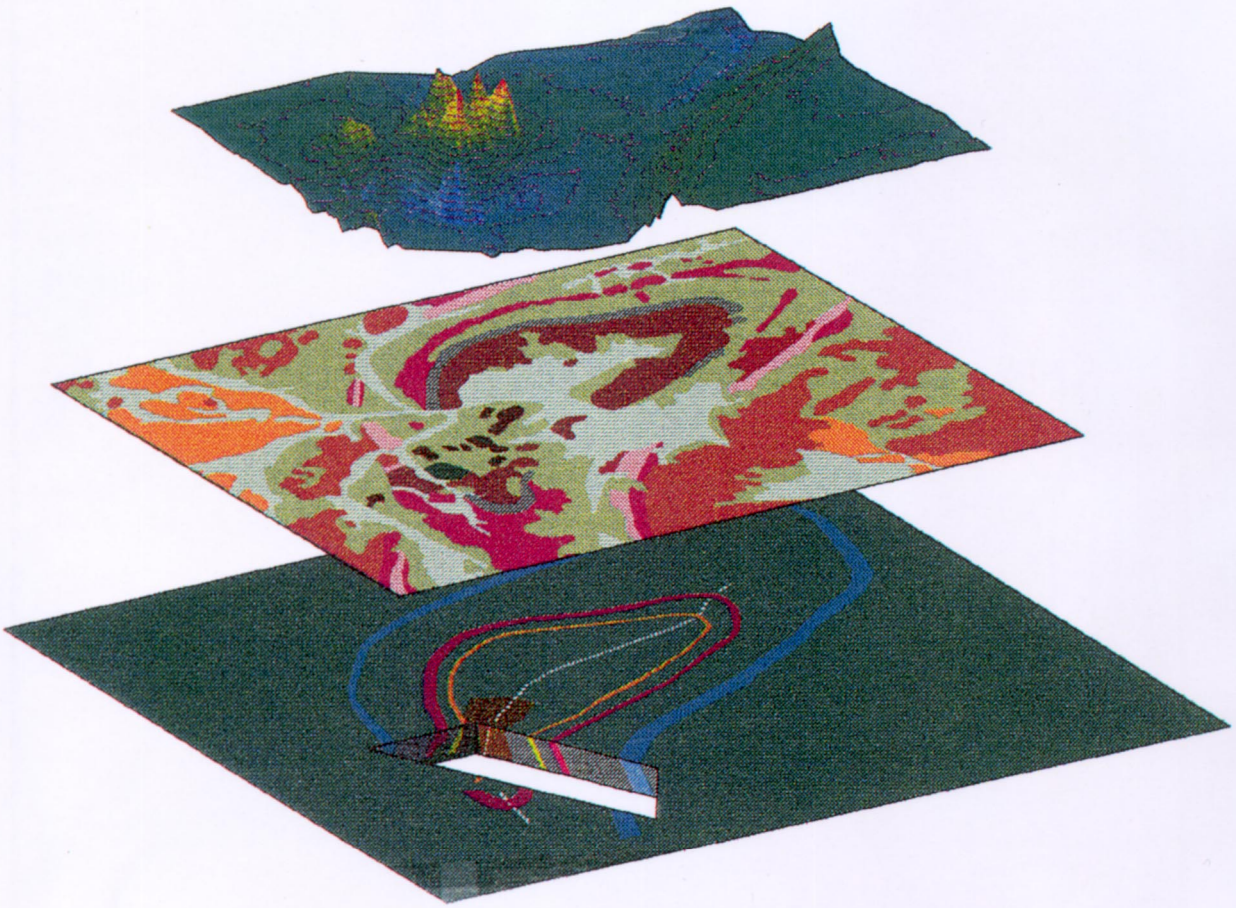

Figure 1 Composite Image showing:
aeromagnetics in relief (top)
geology (centre - outcropping dolerite in green)
3D interpretation (bottom)

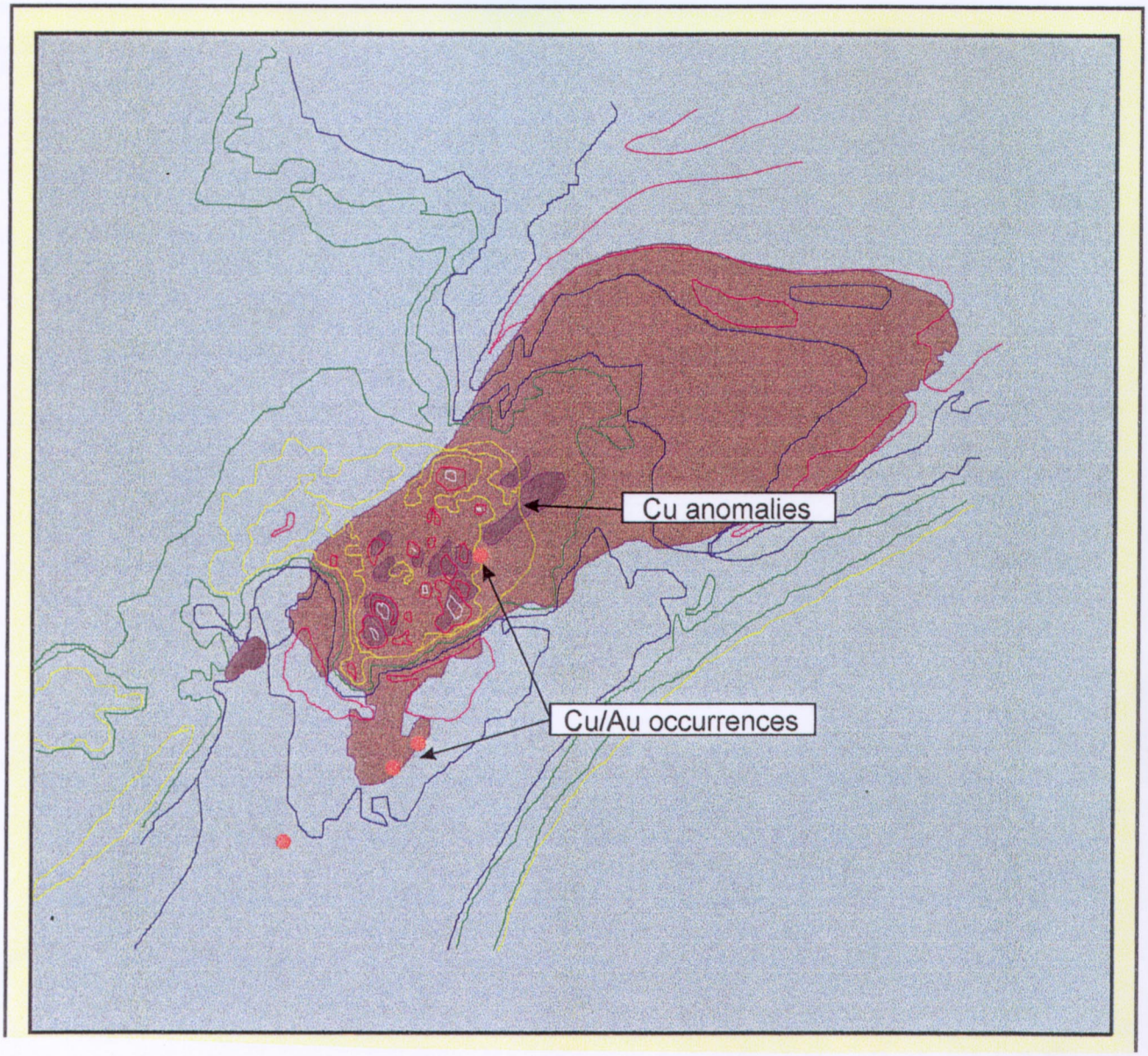

Figure 2 **Magnetics draped over geology:**
Purple magnetic contours clearly define Whydown Dome.
Inner yellow magnetic contour defines mafic intrusive body at depth

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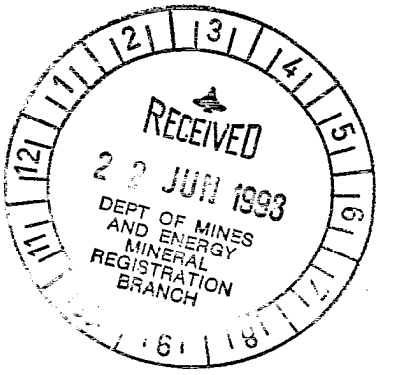
EL 2224

PARATOO PROJECT

ANNUAL REPORT
JULY 1997 - JUN 1998

June 1998



Report prepared
by
Joseph Ogierman

ENV 9278

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1.0 SUMMARY

Geological mapping and interpretation of SAEI aeromagnetic data has outlined two important structural trends within the Whydown Dome. The largest structure is a NW-SE trending structural corridor which bisects the dome and has localised a large dolerite intrusion and associated diapirism and sediment deformation.

The second important trend is parallel to the axial trend of the dome and appears to have focused several, small, occurrences of low-grade Cu mineralisation with anomalous Au. The intersection of these two trends is the location of the largest Cu resource in the Whydown Dome - Paratoo (~100,000t @ 1% Cu).

Mapping has shown that the mineralisation is controlled by both structural and lithological features. At least four different vein sets observed in the open cuts carry Cu mineralisation. Three of these are discordant to lithology and carry no anomalous Au. The fourth vein type is sulphide-rich and parallel to lithology, limited sampling has indicated anomalous Au mineralisation (0.93 g/t Au). The relationship of this vein type with the two intersections obtained by Kennecott is unknown at this stage.

Soil sampling has outlined two low grade Au anomalies trending NE-SW. This trend could reflect either a lithological influence to underlying mineralisation or a structure which is parallel to the axial plane of the northern anticline.

Widespread quartz stockwork veining, +/- pyrite, was mapped over 200strike meters of the Minburra Quartzite in the southern anticline of the Whydown Dome. Although the sequence is strongly sulphide mineralised there is no anomalous gold.

In general, the low gold values obtained by the present work accord with the similarly low gold vales encountered by all previous explorers. In light of this, it is considered unlikely that an economically viable gold deposit exists in the area, in spite of the favourable structural setting.

2.0 INTRODUCTION

EL 2224 (Paratoo) was granted to M. Selga and R. Jasper for a period of one year commencing on 3 November 1996. Selga and Jasper entered into an option agreement with Havilah Resources in mid - 1997 and subsequently renewed for a further six months om 3 November 1997.

The tenement covers an area of 300 square kilometres centred on Paratoo railway siding, roughly 60 kilometres north-east of the regional centre of Peterborough (Fig 1). The Barrier Highway bisects the tenement and provides convenient access via a series of station tracks.

Work undertaken during the 12 month period included;

i) a literature search of all old mines records and company exploration reports.

ii) examination and re-sampling of selective intervals of diamond drill hole DDH-1 drilled by Kennecott.

iii) Geological mapping and rock chip sampling at 1:40,000 scale over the Whydown Dome.

iv) Processing and interpretation of aeromagnetic data from the SAEI

v) Completion of a grid-controlled soil sampling program over an area of 1.6km x 1km in the vicinity of the Paratoo Cu Mine, The aim of the program was to duplicate a large Cu anomaly attained by Kennecott in 1965 and see if there was an associated Au anomaly.

3.0 GEOLOGICAL SETTING

3.1 Lithology (Fig. 3)

EL 2224 is underlain by weakly metamorphosed and folded Neoproterozoic sediments of the Adelaide Geosyncline. It lies in the region where the strike of the Adelaidean strata swings from a northeasterly direction to an east-northeast orientation, in a tectonic feature known as the Nackara Arc.

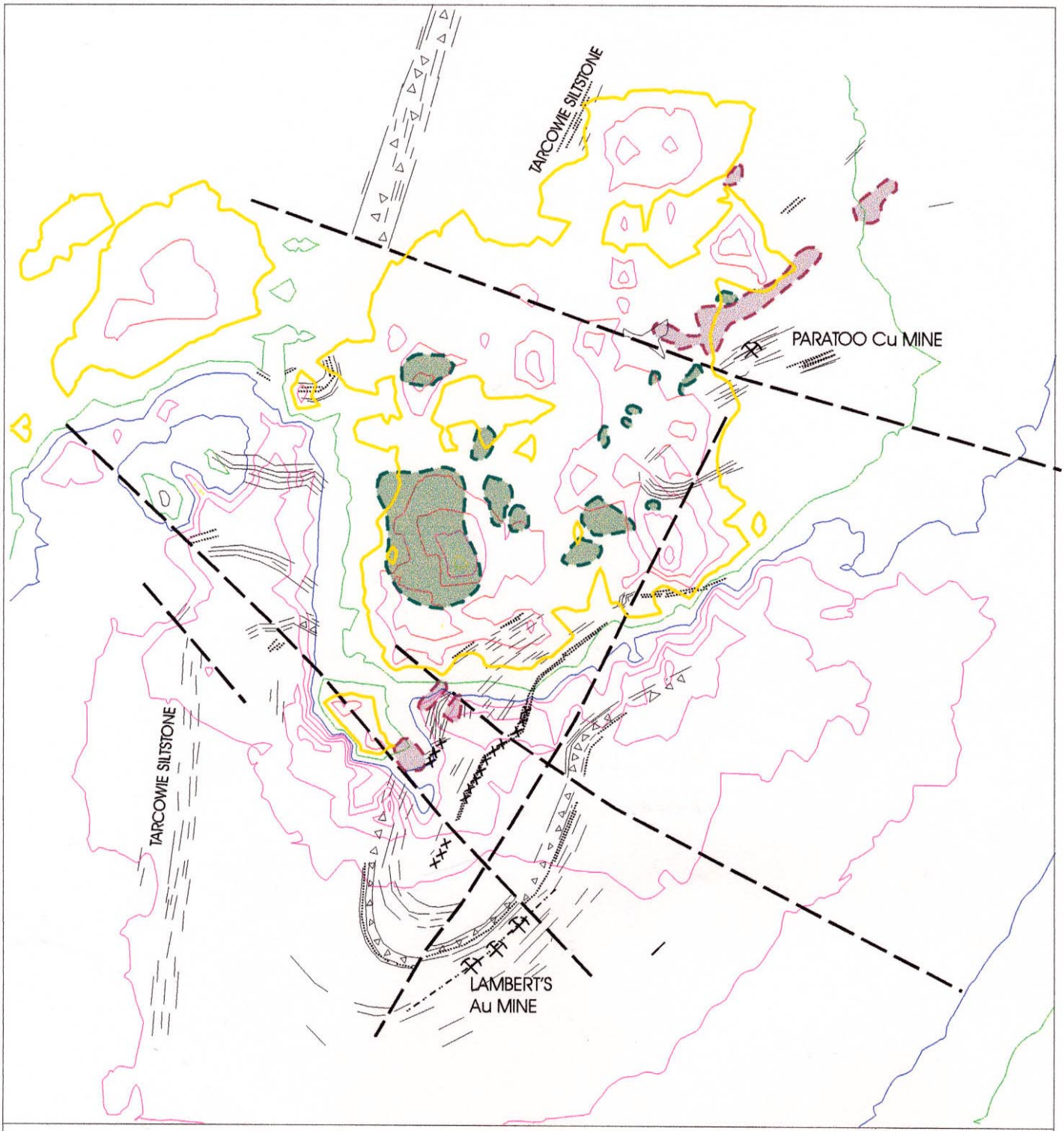
The oldest rock units, belonging to the Burra Group, are exposed in the centre of the Whydown Dome (Fig 3) whose dominant rock types include siltstones of the Saddleworth Formation and the Nackara and Auburn Dolomites. The Burra Group is unconformably overlain by sediments of the Umberatana Group including two thin tillite units, argillaceous sediments of the Tapley Hill Formation and the Tindelpina Shale, and several thin arenaceous units (eg. Grampus Quartzite). The Umberatana Group sediments are in turn succeeded by predominantly quartzitic members of the Wilpena group.

The Whydown Dome is an elongate, doubly plunging anticlinal structure (Fig 1). The core of the Whydown Dome is disrupted by several doleritic intrusions and by brecciated sedimentary material interpreted as diapiric breccia. Bedding in the sedimentary sequence becomes quite contorted in the immediate vicinity of the doleritic intrusions/diapiric material.

SAEI aeromagnetic data shows that the discrete, outcropping dolerite bodies are underlain by a large magnetic feature which is interpreted to represent a much larger, underlying, intrusive complex measuring approx. 6km x 7km (see Fig 4).

The aeromagnetic data also reveals two prominent NW-SE trending discontinuities that bisect the core of the Whydown Dome. They probably represent deep seated structures, which have created a structural corridor that focused igneous and diapiric activity. Mapping has shown that the core of the Whydown Dome between the two NW-SE trending structures is strongly deformed and marked by contorted bedding, diapiric brecciation and silicification.

Several abandoned copper and gold workings, including the Robertson, Lambert's, Nob and Paratoo mines, are found in the Whydown Dome. All were discovered and worked on a small scale prior to the turn of the century.



LEGEND

- DOLERITE
- DIAPIR (Breccia)
- TILLITE
- Lithological trends
- Zones of Quartz Stockworking
- FAULT

Aeromagnetic contours

contour showing approximate limit of dolerite intrusion at depth

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EL 2224

AEROMAGNETIC CONTOURS AND DOLERITE OUTCROP

NOT TO SCALE

FIG. 4

DATE : 20 MAY 1998 REF : PAR-DOL.CDR

Although some of the mines were gold only operations, most of the copper workings also reported erratic, elevated gold values.

3.2 Structure

The prominent NW-SE trending dislocation observable in the aeromagnetic data is expressed in outcrop as a corridor of dislocated sediments, diapirism and dolerite intrusion bounded by at least two faults. There has been minor displacement along the zone with north block displaced to the east. Displacement is more pronounced on the western limb of the dome with the Pepuarta Tillite south of the corridor being laterally offset by 1km to the west (see Fig 3).

The corridor varies from 5-7km in width. Within the corridor, sediments are often disrupted, varying from minor folding up to strongly contorted. Adjacent to the dolerite outcrops there are zones of brecciation with associated silicification hosted by dolomite matrix, typical of diapirism in the Adelaide Geosyncline.

Another prominent structural direction trends ENE-WSW and parallels the axial plane of the Whydown Dome. A fault parallel to the axial plane cuts the sedimentary sequence in the southern anticline. Lateral displacement along this fault is minor.

Another, smaller, fault zone, trending NE-SW, hosts several old shallow pits and shafts along the Lambert's line of gold workings close to the southern anticlinal fold closure in the Appila Tillite unit.

Further along the main structural corridor, 30km to the NW of EL 2224, there is significant displacement of up to 5-6km of the sedimentary sequence. A strong magnetic high lies along the structure at this point which has similarities to the magnetic signature associated with the dolerite in the Whydown Done suggesting the possibility of a similar intrusion 30km to the west of the Whydown Dome.

3.3 Alteration / Mineralisation

There are many occurrences of former small-scale mining operations in the general area of the Whydown Dome (see Sec 4.0 for details). The majority of these mines have attempted to work copper mineralisation eg., Paratoo, Robertson's, Nob, Dares Hill, there are also several old gold mines eg. Lambert's, Nackara Reward. Production form both the copper and gold mines was in all cases insignificant by modern standards.

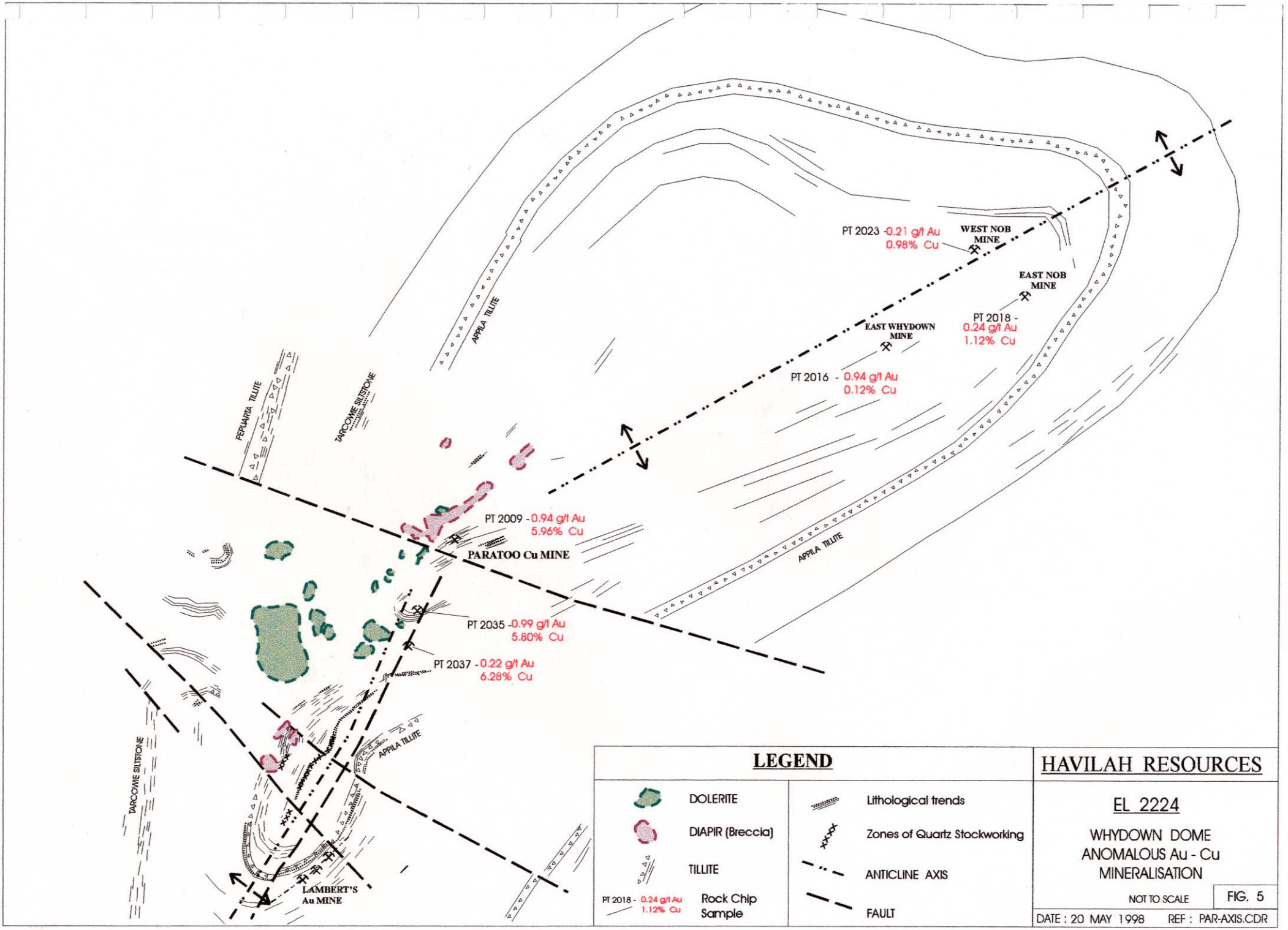
The most significant copper mineralisation occurs at the Paratoo mine where Adelaide Wallaroo Fertilizers in the mid 1980s established a shallow oxide resource of about 100,000 tonnes of 1% copper in two separate mineralised zones in the vicinity of the old mines. Mineralisation is hosted by quartz veinlets and dolomitic siltstones.

All the other old copper mines worked small veins in sediments consisting of quartz with minor siderite +/- coarse grained specular hematite. Copper typically occurs as secondary minerals (malachite, azurite, chysocolla) from the oxidation of chalcopyrite.

Most of these copper occurrences lie along structures associated with the axial plane of the Whydown Dome eg. Nob, Paratoo, East Whydown in addition to several smaller pits and areas of veining between these mines. Paratoo Mine is located at the intersection of the main axial plane parallel structure with one of the northern, bounding faults of the ESE-WNW structural corridor (fig 5).

Most of the copper occurrences have associated anomalous gold mineralisation. For example at Robertson's 5t of ore reportedly yielded 9 g/t Au and samples from the Nob mines assayed up to 3 g/t Au. Diamond drilling at the Paratoo Mine in the 1960s reportedly returned two gold intersections, although the significance is uncertain, owing to unreliable gold assaying techniques at the time.

Zones of diapirism with breccias comprising sedimentary clasts hosted by a dolomitic matrix, are often observed adjacent to the dolerite intrusions particularly in the low ridges just north of the Paratoo Mine. The clasts are often silicified and occasionally have a jasperoidal appearance. A high content of iron oxides in some of the clasts indicates original sulphides.


PT 2023 -0.21 g/t Au
0.98% Cu
WEST NOB MINE
EAST NOB MINE
PT 2018 -
0.24 g/t Au
1.12% Cu
EAST WHYDOWN MINE
PT 2016 - 0.94 g/t Au
0.12% Cu
APPILA TILLITE
PERIUARTA TILLITE
TARCOWIE SILTSTONE
PT 2009 - 0.94 g/t Au
5.96% Cu
PARATOO Cu MINE
PT 2035 -0.99 g/t Au
5.80% Cu
PT 2037 - 0.22 g/t Au
6.28% Cu
LAMBERT'S Au MINE
LEGEND
DOLERITE
DIAPIR (Breccia)
TILLITE
PT 2018 - 0.24 g/t Au
1.12% Cu
Rock Chip Sample
Lithological trends
Zones of Quartz Stockworking
ANTICLINE AXIS
FAULT
HAVILAH RESOURCES
EL 2224
WHYDOWN DOME
ANOMALOUS Au - Cu
MINERALISATION
NOT TO SCALE
FIG. 5
DATE : 20 MAY 1998
REF : PAR-AXIS.CDR

Weathering of the matrix dolomite has resulted in the preferential concentration of the harder silicified clasts at the base of the low ridge at Paratoo giving the appearance of an underlying, linear zone of silicification and sulphide mineralisation. Sampling of this material has generally encountered only very weakly anomalous Au mineralisation (PT 2001 - <0.02 ppm, PT 2055 - 0.03 ppm) and sampling by previous workers has also encountered only weakly anomalous samples (up to 75 ppb Au).

A large gossanous zone which was the focus of exploration by Union Oil in 1969-70 is located about 3 km NNE the Paratoo Mine and is probably the northern extension of this "jasperoidal zone". Anomalous Cu was obtained at surface but drilling did not encounter any significantly anomalous Zn, Pb, Zn or Au values.

The dolerite intrusion has caused weak, localised contact metamorphic effects in the host sediments, resulting in mildly hornfelsed siltstones in places. Low-grade hydrothermal assemblages are also spatially associated with the dolerite. In the two road metal quarries the dolerite is cut by veinlets containing retrograde assemblages of epidote, feldspar and sericite.

The relationship of the dolerite intrusion to Cu mineralisation at Paratoo is uncertain. Although the association of Cu mineralisation with dolerites has been documented at several mines in the world there is insufficient evidence at this stage to attribute all the Cu +/- Au mineralisation in the Whydown Dome to the dolerite intrusion. A single sample of retrograde altered dolerite was taken from one of the road metal quarries (PT 2036). The sample contained no visible primary or secondary Cu mineralisation but returned as strongly anomalous Cu assay - 0.18% Cu but negligible Au (<0.02 ppm).

4.0 PREVIOUS MINING ACTIVITY

As mentioned in Section 3.2 there are several areas of previous mining activity throughout the EL and along the eastern and southern boundaries. Mining activity concentrated on gold and copper mineralisation although recent open cut mining for ballast was undertaken by the SA Railways in a doleritic intrusion in the middle of the EL.

4.1 Gold Mining

4.1.1 Lambert's (HYL Brown) / (Young Australia ?- Gold Copper Expl.)

Described as a gold area at "Paratoo, 7 miles NE of Nackara". Consists of five shafts, the deepest being 30m. Free gold could be observed in a reef up to 1.5m wide. The lode consisted of ferruginous quartz and ironstone. An Inspector of mines report (May 1894) states that the country was "auriferous for miles around". There are no details of production.

Samples taken from the Young Australia prospect by Gold Copper Exploration Ltd. were assayed for Cu, Co, Ag, Pb and Zn with only selected samples assayed for Au. 14 rock chip and 4 dump grab samples were taken, and all were strongly anomalous in Cu with 6 samples >0.5% Cu and a peak value of 1.35% Cu from a sample of vein quartz.

4.1.2 Royston Robert's Leases (HYL Brown) / ("Old Whydown" - Gold Copper Exploration; "Whydown Prospect" - BHP)

Described as "adjoining Lambert's Mine at Paratoo, 8 miles NE of Nackara". The Inspector of Mines states that there are several lodes from 1.5 m to cms width which have been worked by several shafts of 30m, 26m, 20m and 40m depth. No details of production.

15 rock chip and dump samples were taken by Gold Copper Exploration Ltd. and assayed for Cu, Co, Ag, Pb, Zn, Au and a suite of minor and rare earth elements. None of these samples appear to be anomalous in any elements

4.1.3 Old Whydown and Young Australia Prospects

It is likely that Lambert's and Royston Roberts Mines were the workings which have been erroneously named the Old Whydown and Australia Prospects by previous explorers. These names were used by Gold Copper Exploration Ltd. In 1971 to describe a group of shallow workings a few kms to the north of Robertson's Mine. There is no reference as to where they

obtained these names but the term Whydown (not Old Whydown) was also used by BHP in 1986 for the same workings which they unexpectedly came across during stream sediment surveying of the area.

BHP describe the mines as "A rather extensive group of workings 3km W of the Paratoo Railway Siding. The workings consist of many shafts and various trenches which extend for 700m in a NE direction. Various smaller scratchings to the NE and SW of the main workings **extend the horizon over a distance of about 3.5km**. The lode horizon occurs close to the Appila Tillite/Tapley Hill Formation contact. Dip is 55° to the SE."

4.1.4 Old Whydown

There are, several small workings along the western side of low hills approx. 500 meters E of Old Whydown station. Although there is no record of these diggings in HYL Brown, they appear to have been gold workings as there is no evidence of copper mineralisation in surface dump material. Gold Copper Exploration took 14 samples from workings in this area and assays for several base metal and trace elements returned uniformly low values.

4.1.5 Nackara Reward

This old mine is located just to the west of the western boundary of EL 2224. It is located "6 Miles E of Paratoo railway siding on the prominent, N-S trending, Hog Back Ridge". The reference in Brown (1908) reports a strong quartzite outcrop (Ulupa Siltstone?) with small veins and leaders of quartz. On the east side of the range a tunnel was driven in 77m in length, through sandstone and quartzite, at a point 45m below a quartz vein outcrop on the hilltop. There does not appear to have been any main lode intersected but there is mention of several veinlets, irregular in strike, which returned traces of gold. Small amounts of pyrite occur in the rock from the 52m mark. A bulk sample (8t) of material from the surface treated at Peterborough assayed 7.5 g/t Au. This appears to be a gold only occurrence, there is no mention of Cu mineralisation.

Gold Copper Exploration examined the prospect in 1971 and sampled both the veins exposed at surface and host quartzite. Two samples from the vein

returned <0.5 g/t Au while 2 samples from surrounding quartzite assayed at 1.1 g/t Au. Small irregular veins associated with the main vein system, carry up to 3.1 g/t Au.

4.2 Copper Mining

4.2.1 Paratoo Copper Mine

Copper was exploited by shallow shafts in fractured and mineralised Burra Group siltstones and dolomitic siltstones in the 1890s but production was limited. Secondary copper mineralisation, hosted by sediments was discovered in the vicinity of the old Paratoo workings, in the mid-1960s.

A small company attempted to mine the near-surface secondary copper mineralisation by shallow open cuts in the mid 1960s but was not successful. Drilling by Adelaide Wallaroo Fertilizers in the mid 1980s established a shallow oxide resource of about 100,000 tonnes of 1% copper in two separate mineralised zones in the vicinity of the old mines. Mining of this resource was never undertaken.

4.2.2 Robertson's Mine (termed Nackara Propriety in HYL Brown, 1908)

A copper mine located about 6km NW of Nackara, near the southern boundary of the EL. The workings consist of several shafts and pits along a NNW-trending, W-dipping, lode hosted by calcareous and argillaceous siltstones and sandstones. The lode averaged approx. 0.5 meters in width but copper mineralisation appears to have been patchy. Old records show that the copper mineralisation was accompanied by Au and Ag as follows; "Five tons of ore from the 170' level were treated at Petersburg and gave a yield of 5dwts. 8grs (~9 g/t Au) of gold per ton."

4.2.3 Nob Copper mine

The Nob workings consist of two areas approx. 1 km apart (the East Nob and West Nob workings) at the NE closure of the Whydown Dome.

Mineralisation consists of several NNE-trending lodes hosted by calcareous siltstones (Saddleworth Formation). Workings were generally shallow, from 2 - 8 meters depth. Old records state that the ore was rich in copper with "a trace of gold" with the No.1 shaft assaying 2 dwts (3 g/t Au) of gold to the ton.

Another area of shallow copper workings lies approx. 500 meters east of East Whydown homestead with the style of mineralisation very similar to that seen at the Nob mines.

4.2.4 Wheal Basset

Located SW of EL 2224, 5kms south from the Nackara Railway Station, just to the east of the main road. These are copper workings hosted by black Tindelpina Shale along a NE striking shear. By 1892, 4 shafts had been sunk on a calcareous, mullocky vein, with No.1 shaft to 50 meters depth and the others from 12 - 15 meters depth. The lode does not appear to be a single well-defined vein, but consists of segregated veins with secondary copper staining (malachite).

5.0 PREVIOUS EXPLORATION HISTORY

5.1 SADME

The Paratoo area has been investigated by several organisations, chiefly for the copper potential, particularly during the time of the copper boom of the 1960s and early 1970s.

The former South Australian Mines Department carried out channel sampling in the vicinity of the old Paratoo copper workings and obtained low grade copper in siltstone over moderate widths (Nixon, 1965) for example;

12 meters @ 0.85% Cu
15 meters @ 0.66% Cu
6 meters @ 1.16% Cu

5.2 Kennecott Explorations (Australia) Pty. Ltd (1965 - 1967).

In the same year (1965) Kennecott outlined a significant copper soil anomaly (>150ppm Cu) extending for 2kms NE from the Paratoo copper workings and varying from 200 to 600 meters in width. Five short, vertical percussion holes were drilled within the area of the copper soil anomaly. Samples were taken at 25' (7.55 m) intervals with best intersections of;

9m @ 0.62% Cu (stratigraphic thickness)
33.29m @ 0.41% Cu (stratigraphic thickness)

The results were considered sufficiently encouraging to warrant drilling a single diamond drill hole to intersect the higher grade material below the water table. This hole, DD1, at 60° incline, was completed in mid 1966. The best intersection obtained was;

34.8m @ 0.19% Cu incl. **5.9m @ 0.57% Cu.**

Several samples from the zone of best mineralisation were taken for petrographic analysis.

During the initial percussion drilling program 29 representative samples were also assayed for gold. Two of these samples returned assays of **3 g/t Au** and **2.18 g/t Au** respectively. The Kennecott report indicated that the gold was associated with "some of the quartz vein material occurring in the sediments".

5.3 Union Oil Development Corporation (1969-1970)

Union's principal area of interest was located about 3-4 kms NE of the Paratoo Mine amongst scattered outcrops of gossanous and jasperoidal material, interpreted as being diapiric dolomite. Surface sampling of this material which trends essentially north along a strike distance of 1.5 km encountered weakly anomalous Cu (up to 0.15%) and Zn (up to 0.17%) but no anomalous Au (all samples <0.5 g/t).

The zone was drill tested by 21 rotary drillholes ranging from 5m to 92m depthfor a total of 492 meters. The drilling did not encounter anomalous Cu mineralisation but indicated the gossaneous material was derived from mainly low-grade pyritic mineralisation.

5.4 Gold-Copper Exploration (1970-1971)

This company undertook an extensive program of mapping and sampling of historical mining locations in the SW half of the Whydown Dome, including the Robertson, Old Whydown and Australis workings. Samples from the three localities were assayed for Cu, Ag, Pb, Zn, Co but only those from Old Whydown were also assayed for Au. Encouraging Cu assays at Robertson prompted a recommendation for further investigation, which was never undertaken. No further work was recommended for Australis or Old Whydown.

5.5 Utah Development Co. Ltd. (1984-1987)

A widely spaced stream sediment sampling program conducted by Utah around the Whydown Dome between 1984 - 1987 identified strong gold anomalism in streams draining from the vicinity of the folded closure in the Appila Tillite. This was traced to an area of workings over a strike length of 700 meters termed the "Whydown workings" by Utah. However, study o old mining records shows these workings are actually the old Lambert's and Royston Roberts workings as described by Brown (1908). No follow up work was undertaken other than limited rock chip sampling.

5.6 Adelaide and Wallaroo Fertillizers (1985-86)

Quite extensive drilling programs by Adelaide and Wallaroo Fertilizers in 1985-86 established a shallow oxide resource of about 1000,000 tonnes of 1% Cu in two separate mineralised zones in the vicinity of the abandoned Paratoo copper mine.

5.7 Fairview Gold Pty. Ltd. (1987-89)

Fairview Gold consultants have completed detailed mapping and sampling in the area. In particular, Curtis (1989) demonstrated the existence of a linear belt of jasperoidal silica bodies with areas of weak Au anomalism running roughly parallel to the copper soil anomaly defined by Kennecott Exploration. The jasperoidal zone appears to be a southern expression of the siliceous, gossanous, diapiric material mapped and drilled by Union Oil in 1970.

5.8 Selga and Jasper

Employed a consultant who compiled the considerable amount of data on the area involving historic exploration data and recent, high quality, geophysical data generated by SAEI. Important conclusions reached by this work were;

1. Recognition from the SAEI aeromagnetics of a much larger underlying doleritic intrusive than indicated by the scattered dolerite outcrops in the aera to the south of the Paratoo workings.

2. The ellipsoidal shape of the Whydown Dome is shown in the aeromagnetics to be clearly bisected by a prominent NW-SE trending magnetic lineament, interpreted as a deep-seated fault structure.

3. Southwest of this fault structure, the central portion of the dome is extensively disrupted by the mafic intrusive body and by associated brecciation / diapirism.

6.0 CURRENT EXPLORATION WORK

6.1 Re-logging Kennecott drill hole (DDH-1)

The Kennecott drilling program in mid 1960s only assayed selective intervals for Au in addition to Cu. Unfortunately the majority of drill holes were by percussion method and no samples remain. They also completed a single diamond drill hole (DDH-1) to test the down-dip extension of the best

copper interval obtained from the initial percussion drilling (BH-4 : **52m @ 0.41% Cu**). Drillcore for this hole is still available in the MESA core library facility in Thebarton.

Although the hole was successful in intersection the down dip extension of copper mineralisation the grade was lower (**34.8m @ 0.19% Cu incl. 16m @ 0.28%**) than in the overlying percussion hole and none of the intervals were assayed for Au.

A request was granted to Havilah to re-log and re-sample, for Au, the relevant intervals of DDH-1. Available Kennecott reports contained in MESA archives give geological logs of the drill hole down to 723' (218m). A request to lengthen the hole to 1300' (393m) is contained in the available report but no follow up reports could be located. Inspection of the core revealed that the hole had indeed been lengthened to 1300'. No assay data could be located for the additional core.

Several representative samples were taken of different styles of mineralisation and assayed for Au and Cu from the downdip intersection of the anomalous copper mineralised zone intersected in percussion hole BH-4. **None of the samples returned anomalous Au values.**

6.2 MAPPING and ROCK CHIP SAMPLING

Aerial photo-scale mapping (1:40,000) was carried out in the central and southern portions of the Whydown Dome, (Fig 4) Emphasis was placed on defining the structural and/or lithological controls of mineralisation in the Paratoo Mine area and the relationship of this mineralisation to the broader, regional structural framework as outlined in section 3.1. Rock chip sampling was carried out of various types of mineralisation in the Whydown Dome in order to gain an understanding of possible gold mineralisation associations. A total of 70 rock chip samples were taken and submitted for Au and Cu analysis at Analabs laboratory in Adelaide. Results and sample descriptions are contained in Appendix 1.

As part of this exercise, detailed mapping and sampling was undertaken in the open cuts at Paratoo to determine whether the gold mineralisation was associated with any of the obvious styles of copper mineralisation seen at

surface. The gold intersections obtained in previous Kennecott drilling were hosted by two different lithologies (grey siltstone and black pyritic shale) suggesting that structural control may be more important in localising gold mineralisation than lithologic, which appears to be an important control on the copper mineralisation.

Recent workers have suggested a zone of silicification +/- sulphide mineralisation (the "Jasperoid Zone"), trending NNE-SSW, extends northwards from just west of the Paratoo mine. Mapping and sampling of this zone was also undertaken in order to understand its significance to mineralisation in the region.

6.3 MAPPING - Results

Details of mineralisation encountered during the mapping is discussed below with reference to the 1:40,000 scale geological map (Fig 3).

Detailed mapping/sampling in the Paratoo open cuts has shown that there are at least four distinct vein sets associated with the Cu mineralisation. The vein sets are as follows;

No.	AZIM	DIP	WIDTH	Au (ppm)	Cu	Mineral
V1	010°-025°	40° to W	1 - 5cm	0.02	0.1%-1.6%	Qtz>FeOx>Mal
V2	060°-070°	40° to NW	1 - 10cm	0.04	0.8%-1.4%	Qtz>FeOx>Mal
V3	350°	85° to W	1 - 10cm	0.04	1.09%	FeOx
V4	060°-070°	60° to S	1 - 2cm	0.93	5.96%	FeOx>Mal>Qtz

Note: Au and Cu values represent quite limited selective sampling of the veins eg. V4 is only represented by one sample.

V1 is parallel to the axial plane of the southern anticline of the Whydown Dome while V2 and V4 are parallel to the axial plane of the northern anticline. V3 does not appear to represent any of the major observable structural trends.

Much of the malachite seen at surface appears to suggest there is a strong lithological control of the original sulphide mineralisation. The majority of mineralisation however is structurally controlled. The quartz + chalcopyrite

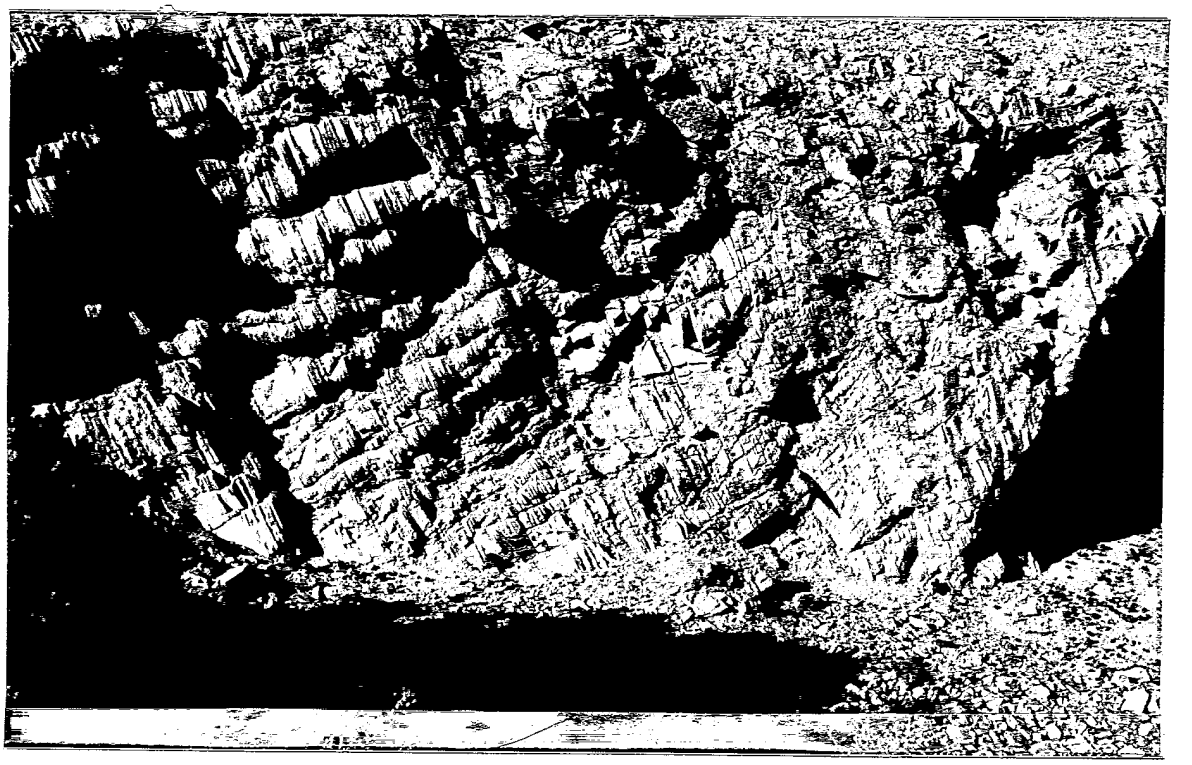


Photo 1. Paratoo open cut #3, steeply dipping Burra Group dolomitic siltstones with discordant V1 quartz veins (just above hammer).

Photo 2. Close up of above showing V1 quartz + malachite vein. Malachite extends from vein into favourable lithological horizon to RHS of hammer.

Photo 3. Paratoo open cut #1, Burra Group siltstones with discordant V1 quartz + malachite vein.

Photo 4. Northern wall of open cut #1 - Paratoo showing zone of V2 - type veins with associated malachite staining.

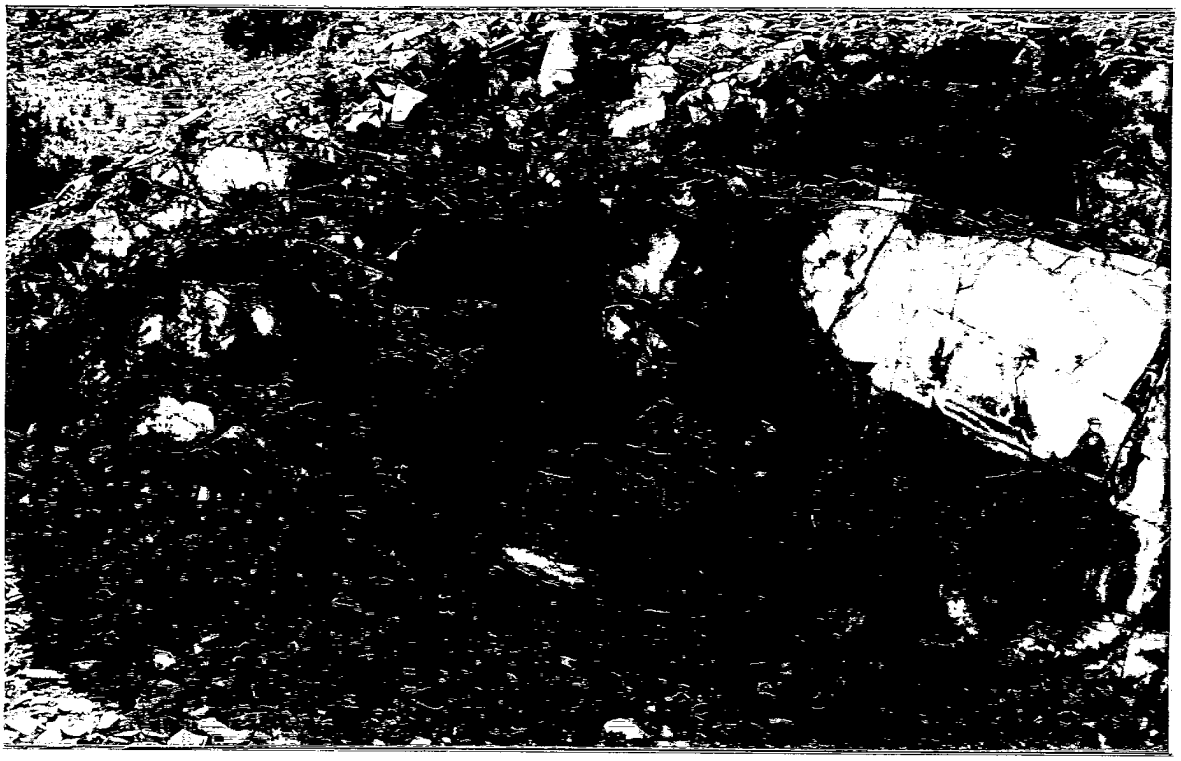


Photo 5. Paratoo open cut #5, Burra Group siltstones with discordant V2 quartz + malachite vein. Note malachite staining extending down from vein but not upwards.

Photo 6. Close up of above, showing malachite staining extending down from V2 vein.

(malachite) veinlets are believed to represent feeder zones with mineralisation travelling along these zones and then spreading laterally along favourable lithological horizons encountered (photo 1).

The first three vein sets (V1-V3) are discordant to lithological bedding (photos 1 &2). V1 veins are the most abundant veins in the pit just north of the old manager's hut at Paratoo where they form a zone 2-3 meters in width. V2 are the predominant veins in the major pit 50 meters east of the hut forming a zone up to 20 meters in width (photo 3)

Although there is an element of lithological influence on mineralisation much of the malachite staining at surface is misleading, its distribution resulting from downward leaching of copper from the V1 and V2 vein sets. This can best be seen in pits to the north and east of the manager's hut where malachite staining is abundant in sediments directly below V2 veins (photo 3, 4 & 5). Vein types V1-V3 show almost no significant gold values.

V4 is the only vein type which is reasonably concordant to bedding. The veins vary from concordant to sub-parallel to lithology. Individual veinlets range from 5mm - 20mm and are composed predominantly of oxidised sulphides (chalcopyrite >pyrite?) with only minor vein quartz. The limited sampling suggests that this may be the most important vein type in terms of gold mineralisation. Sample PT-2009 from the main pit, east of the hut, returned an assay of 0.93 g/t Au and 5.96% Cu.

The distribution of V4 veins and their relationship to other veins is not clear at this stage; these veins are difficult to trace within the open cuts because they are concordant to bedding. The gold content of V4 veins is based on only a single sample so additional sampling would be required to demonstrate whether these vein types have consistently anomalous gold.

"Jasperoidal Zone"

The so-called "jasperoidal zone" just to the north of the Paratoo Mine most likely represents a preferential enrichment of clasts of silicified siltstones and sandstones which are left behind due to removal by weathering of the more reactive dolomitic host in diapiric breccias. The clasts form lag

deposits at the base of a low range of hills comprising the diapiric breccias to the NNW of the Paratoo mine.

A high content of iron oxides in some of the clasts indicate a high original sulphide (pyrite) content. Coarse grained specular hematite is common. Sampling of this material has generally encountered only very weakly anomalous Au mineralisation (PT 2001 - <0.02 ppm, PT 2055 - 0.03 ppm) and sampling by previous workers has also encountered weakly anomalous samples (up to 75 ppb Au).

Southern Anticline

The southern anticline of the Whydown Dome is much tighter than the northern anticline and there are two areas of historical gold workings (Lambert's, Old Whydown) as opposed to none in the north. Mapping focused on searching for evidence of possible Telfer-style mineralisation, particularly in the fold closures of the more competent rock units i.e. sandstone, tillite.

Mapping confirmed that stream sediment anomalies obtained by Utah/BHP on the eastern flank of the dome were due to a fault controlled-line of old quartz vein lode gold workings (Lambert's). The workings are quite extensive over a strike length of 200-300 meters with at least 11 shallow shafts, a similar number of pits and a couple of trenches.

Sampling of vein dump material returned reasonable gold grade (eg. PT 2026 - 2.32 g/t Au). However, channel sampling of the lode zone exposed at surface in several pits and shafts returned only moderately anomalous values and indicated that higher gold values are probably patchy (eg. 2m @ 0.19 g/t Au, 1m @ 0.35 g/t Au and 2m @ 0.15 g/t Au) .

A thin quartzite unit (Minburra Quartzite ?) lying close to the fold axial plane is tightly folded. Intense quartz stockwork veining can be observed at surface along much of the outcrop length of the quartzite. Veining generally consists of white, milky, tension quartz veins but there are zones which contain hematite staining and strong development of coarse, euhedral, oxidised pyrite crystals. The quartzite can be traced along the eastern limb of

the southern anticline but pinches out as it approaches the fold hinge. No historical workings were observed within the areas of quartz veining.

It is thought likely that the veining is due to an axial plane -parallel structure. Sampling of the quartz veins with and without sulphides did not return any anomalous Au or Cu values.

Other

Other zones of tensional quartz stockwork veining were also mapped and sampled, particularly within the structural corridor which bisects the Whydown Dome. The veining is generally similar to that observed in the Minburra Quartzite described above with quartz veins containing pyrite pseudomorphs. Zones of quartz veining are also common in the disturbed / contorted Tarcowie Siltstone to the west of the main dolerite intrusion. However, none of the samples taken contained anomalous Au or Cu (eg. PT-2057-2061).

All other known areas of historical workings within the Whydown Dome were sampled eg. West and East Nob, East Whydown, Dares Hill etc. Sampling of selected vein material from several of the old mines showed a possible association of Au with Cu. eg;

Sample No.	Location	Au (ppm)	Cu
PT 2014	Mt. Dares	**2.27**	8.48%
PT 2016	East Whydown	**0.94**	0.12%
PT 2018	East Nob	**0.24**	1.12%
PT 2023	West Nob	**0.21**	0.98%
PT 2035	1.2km sth. of Paratoo Mine	**0.99**	5.80%
PT 2037	2km sth. of Paratoo Mine	**0.22**	6.28%

The host rock type is very similar for all these samples consisting of vein material with quartz +/- siderite +/- specular hematite + malachite (from oxidised chalcopyrite) + Fe oxides. The veins are often vughy and constituent minerals are generally coarse grained.

Conclusion

All of the above samples, aside from PT 2014, are from areas of mineralisation which **lie on or adjacent to the axial plane of the Whydown Dome** in the central or northern portions of the dome (see Fig 6). The Paratoo Mine also lies along this trend. The only known occurrence of Au-Cu mineralisation in the southern portion of the dome is at Robertson's Mine. The data suggests there is a **possible genetic relationship between Cu mineralisation, with anomalous Au values, and structures influenced by the axial plane of the Whydown Dome.**

It is important to note that the largest Cu resource in the Whydown Dome, namely at Paratoo, lies at the intersection of the axial plane and one of the north-bounding structures of the large WNW-ESE trending structural corridor. It would appear to be a very favourable site to focus any Cu-Au mineralised fluids associated with the axial plane.

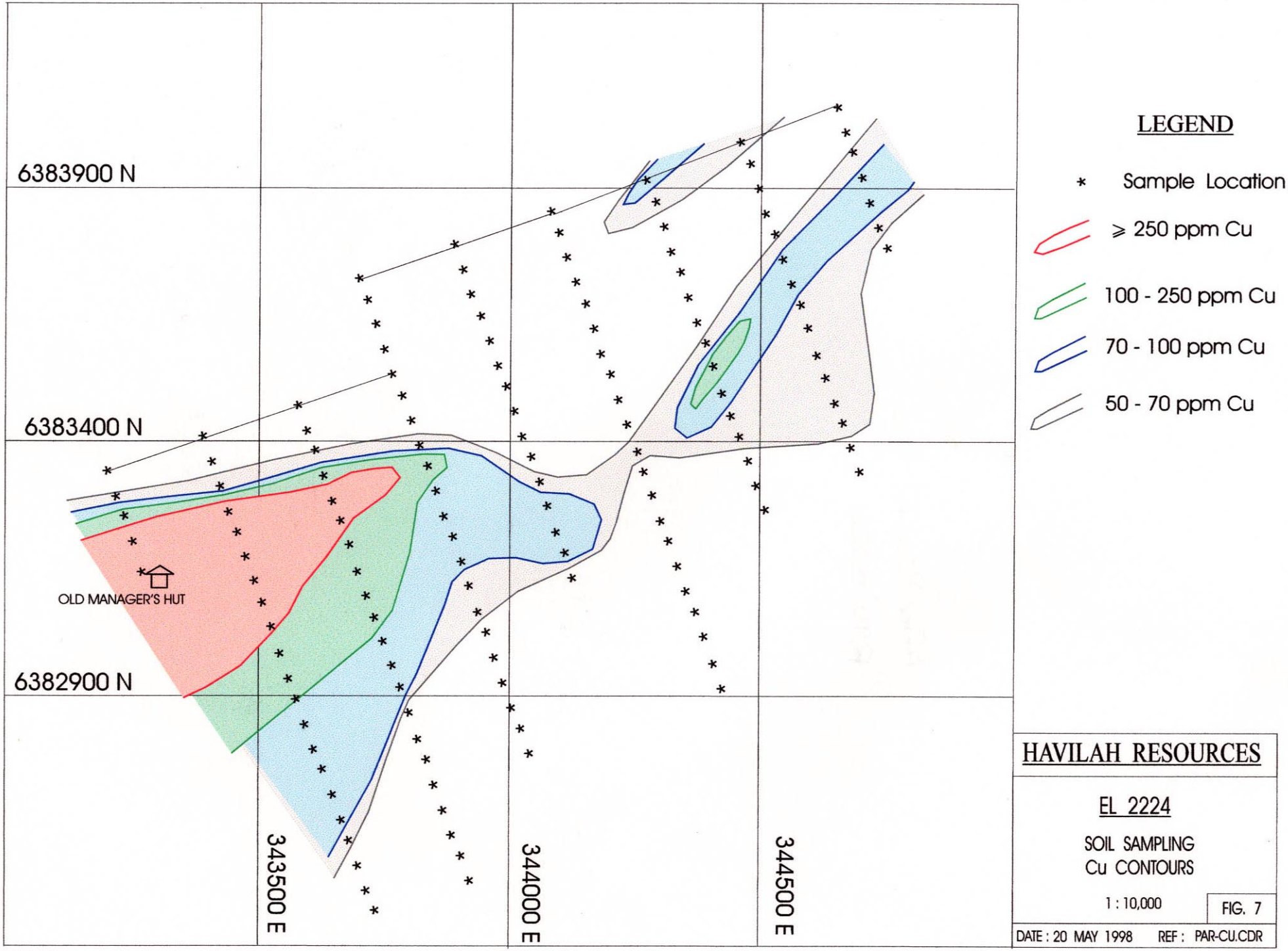
6.5 SOIL SAMPLING - Work done

A program of grid-controlled soil sampling, was designed to duplicate the area of soil sampling undertaken by Kennecot. Grid lines were at 200 meter spacing with samples taken along grid lines at 50 meter intervals. The grid covered an area of approx. 1.6 km x 1 km.

Samples were taken at a depth of from 10 - 15 cms below surface and were sieved with the <2mm fraction collected. A total of 141 samples were taken and assayed for Au and Cu.

6.6 SOIL SAMPLING - Results

Soil sampling confirmed the presence of the large, elongated Cu anomaly (Fig 7), obtained by Kennecott. The anomaly is strongest in the vicinity of the small open cuts and old mine shafts and decreases to the NE. This is consistent with results from the original Kennecott survey. Kennecott stated that soil cover increases to the NE causing them the revert to auger drill sampling with samples taken at 1m - 2m depth. The current program reached


6383900 N
6383400 N
6382900 N
OLD MANAGER'S HUT
343500 E
344000 E
344500 E
LEGEND
Sample Location
⩾ 250 ppm Cu
100 - 250 ppm Cu
70 - 100 ppm Cu
50 - 70 ppm Cu
HAVILAH RESOURCES
EL 2224
SOIL SAMPLING
Cu CONTOURS
1 : 10,000
FIG. 7
DATE : 20 MAY 1998
REF : PAR-CU.CDR

the position of the start of Kennecott auger drilling but did not proceed further.

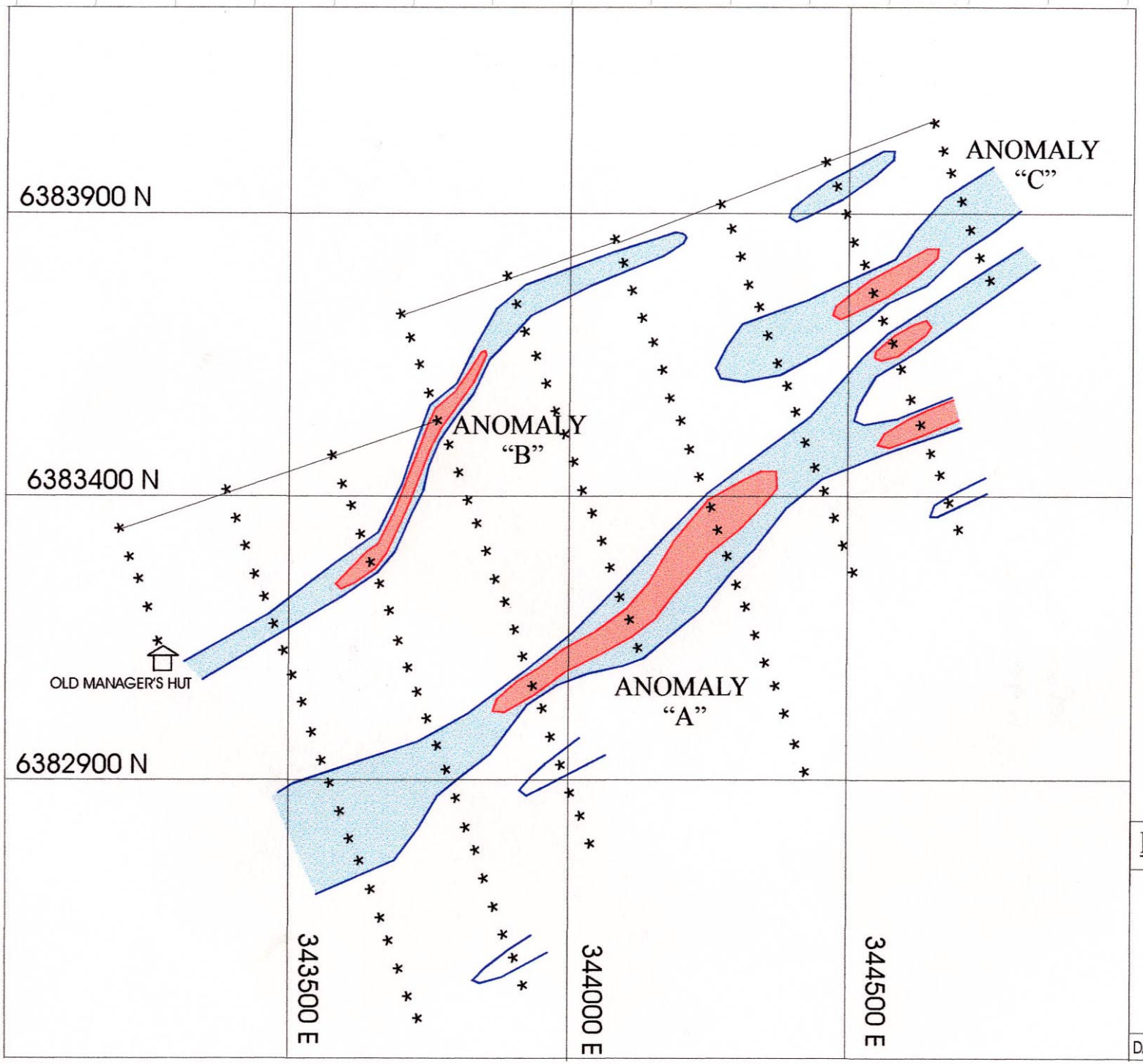
Only weakly anomalous Au assays were returned from the soil sampling with a peak of 11ppb near some old shafts. Two main, roughly sub-parallel anomalous Au (>3 ppb) zones were outlined (Fig 8). The southernmost zone (Anomaly A) corresponds with the large Kennecott Cu anomaly. The second, thinner, of the two anomalies (Anomaly B), lies approx. 300m - 400m to the north.

The southern anomaly can be traced for just under 2km, with a 100 - 200 meters width, is open to both the east and west and appears to be becoming wider to the east. The northern anomaly is 1.2km in length but only 20m wide and open to the west. A third anomalous area (Anomaly C) lies at the NE limit of the grid, is 50-100 meters wide, 700 meters in length, open to the east, and is possibly related to Anomaly A

Au values do not show the same variability along strike as does Cu and appears to be of a consistent level throughout the anomaly regardless of depth of soil cover.

The Au and Cu anomalies run NE-SW, which is the predominant strike orientation of the underlying, host, sedimentary sequence. It is also parallel to the orientation of the axial plane of the northern anticline of the Whydown Dome. The influence of this axial-plane structural direction on other the main mineralisation occurrences in this northern anticline (eg. Nob, East Whydown, Paratoo) suggests that the anomalies reflect underlying, structurally-controlled mineralisation. The influence of favourable lithologies to hosting such structural mineralisation has also been shown to be important in the southern anticline.

The southern Au anomaly corresponds to a low ridge just to the south of the open cuts and mine dumps. The hill consists of finely laminated, dark grey siltstones with bands of siliceous quartzite +/- fine-grained disseminated pyrite and occasional zones of stockwork quartz veining. Rock chip sampling of these rocks (PT 2002, 2003) did not return any anomalous gold or copper values. Between lines 5 and 7 this sulphide-rich siltstone becomes brecciated and a small (~20 meters) outcrop of the resultant breccia has similarities to the diapiric breccias 500-700 meters further north.



LEGEND

* Sample Location

⩾ 4 ppb Au

3 - 4 ppb Au

HAVILAH RESOURCES

EL 2224

SOIL SAMPLING
Au CONTOURS

1 : 10,000

FIG. 8

DATE : 20 MAY 1998 REF : PAR-AU.CDR

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Unpublished

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Morris, B.J. and Horn, C.M. 1989 Review of gold mineralisation in the Nackara Arc. *Report Book No. 89/16, MESA*

Nixon, L.G.B., 1965. The Paratoo copper deposit. *MESA Publication Ref. No. D.M. 675/65*

Unpublished Company Reports held in Open File at MESA

MESA Envelope	Company	Year	Tenement
592	Kennecott Explorations (Australia)	1966	SML 88
1112	Union Oil development Corp.	1969	SML 272
5367	Gold Copper Exploration Pty. Ltd.	1971	various MLs
5476	Adelaide & Wallaroo Fertilizers Ltd	1984-87	EL 1219
6411	Utah Development Co. Ltd.	1984-87	EL 1250
8049	Fairview Gold Pty Ltd and others	1988-90	EL 1470

APPENDIX 1

ROCK SAMPLES - ASSAYS and DESCRIPTIONS

BUDUK - ROCK SAMPLE DESCRIPTIONS

Sample No.	TYPE	Line	Station	Easting	Northing	Au(av.) ppb	Au1 ppb	Au2 ppb	Au3 ppb	Cu ppm	As ppm
PT 1001	Soil	1	200	343271	6383150	<1	<1			137	<25
PT 1002	Soil	1	150	343254	6383200	<1	<1			172	<25
PT 1003	Soil	1	100	343237	6383250	<1	<1			56	<25
PT 1004	Soil	1	50	343220	6383290	<1	<1	<1		40	<25
PT 1005	Soil	1	0	343203	6383340	<1	<1			19	<25
PT 1006	Soil	3	0	343392	6383410	<1	<1			30	<25
PT 1007	Soil	3	50	343409	6383360	<1	<1			27	<25
PT 1008	Soil	3	100	343426	6383310	<1	<1			43	<25
PT 1009	Soil	3	150	343443	6383260	2	2			469	<25
PT 1010	Soil	3	200	343460	6383220	<1	<1			148	<25
PT 1011	Soil	3	250	343478	6383170	3	3	3		200	<25
PT 1012	Soil	3	300	343495	6383120	<1	<1			134	<25
PT 1013	Soil	3	350	343512	6383080	<1				123	<25
PT 1014	Soil	3	400	343529	6383030	2	<1			163	<25
PT 1015	Soil	3	450	343546	6382980	<1	2			72	<25
PT 1016	Soil	3	500	343563	6382940						
PT 1017	Soil	3	550	343580	6382890	7	8	6	7	73	<25
PT 1018	Soil	3	600	343597	6382840	4	4			57	<25
PT 1019	Soil	3	650	343614	6382790	3	3			66	<25
PT 1020	Soil	3	700	343631	6382750	3	3			61	<25

BUDUK - ROCK SAMPLE DESCRIPTIONS

Sample No.	TYPE	Line	Station	Easting	Northing	Au(av.) ppb	Au1 ppb	Au2 ppb	Au3 ppb	Cu ppm	As ppm
PT 1021	Soil	3	750	343649	6382700	<1	<1			61	<25
PT 1022	Soil	3	800	343666	6382650	<1	<1			51	<25
PT 1023	Soil	3	850	343683	6382610	1	1			37	<25
PT 1024	Soil	3	900	343700	6382560	<1	<1			31	<25
PT 1025	Soil	3	950	343717	6382510	<1	<1			23	<25
PT 1026	Soil	3	1000	343734	6382470	<1	<1			20	<25
PT 1027	Soil	5	1000	343923	6382530	2	2			26	<25
PT 1028	Soil	5	950	343906	6382580	3	3	3		38	<25
PT 1029	Soil	5	900	343889	6382620	<1	<1			38	<25
PT 1030	Soil	5	850	343872	6382670	<1	<1			26	<25
PT 1031	Soil	5	800	343855	6382720	<1	<1			24	<25
PT 1032	Soil	5	750	343838	6382770	<1	<1			27	<25
PT 1033	Soil	5	700	343820	6382810	2	2			35	<25
PT 1034	Soil	5	650	343803	6382860	2	2			37	<25
PT 1035	Soil	5	600	343786	6382910	3	3			56	<25
PT 1036	Soil	5	550	343769	6382950	3	3			57	<25
PT 1037	Soil	5	500	343752	6383000	<1	<1			63	<25
PT 1038	Soil	5	450	343735	6383050	2	2			75	<25
PT 1039	Soil	5	400	343718	6383090	<1	<1			62	<25
PT 1040	Soil	5	350	343701	6383140	<1	<1			79	<25
PT 1041	Soil	5	300	343684	6383190	<1	<1			98	<25
PT 1042	Soil	5	250	343667	6383240	2	2			135	<25

BUDUK - ROCK SAMPLE DESCRIPTIONS

Sample No.	TYPE	Line	Station	Easting	Northing	Au(av.) ppb	Au1 ppb	Au2 ppb	Au3 ppb	Cu ppm	As ppm
PT 1043	Soil	5	200	343649	6383280	9	11	8	9	414	<25
PT 1044	Soil	5	150	343632	6383330	2	2			70	<25
PT 1045	Soil	5	100	343615	6383380	<1	<1			29	<25
PT 1046	Soil	5	50	343598	6383420	<1	<1			23	<25
PT 1047	Soil	5	0	343581	6383470	<1	<1			24	<25
PT 1048	Soil	7	0	343702	6383720	<1	<1			24	<25
PT 1049	Soil	7	50	343719	6383680	2	2			43	<25
PT 1050	Soil	7	100	343736	6383630	<1	<1			29	<25
PT 1051	Soil	7	150	343753	6383580	2	2			23	<25
PT 1052	Soil	7	200	343770	6383540	4	4			22	<25
PT 1053	Soil	7	250	343788	6383490	2	2			25	<25
PT 1054	Soil	7	300	343805	6383440	<1	<1			23	<25
PT 1055	Soil	7	350	343822	6383390						
PT 1056	Soil	7	400	343839	6383350	<1	<1			78	<25
PT 1057	Soil	7	450	343856	6383300	<1	<1			49	<25
PT 1058	Soil	7	500	343873	6383250	<1	<1			54	<25
PT 1059	Soil	7	550	343890	6383210	2	2			64	<25
PT 1060	Soil	7	600	343907	6383160	<1	<1			53	<25
PT 1061	Soil	7	650	343924	6383110	2	2			47	<25
PT 1062	Soil	7	700	343941	6383070	4	4			41	<25
PT 1063	Soil	9	700	344130	6383130	3	3			35	<25
PT 1064	Soil	9	650	344113	6383180	6	6			65	<25

BUDUK - ROCK SAMPLE DESCRIPTIONS

Sample No.	TYPE	Line	Station	Easting	Northing	Au(av.) ppb	Au1 ppb	Au2 ppb	Au3 ppb	Cu ppm	As ppm
PT 1065	Soil	9	600	344096	6383220	3	3			53	<25
PT 1066	Soil	9	550	344079	6383270	2	2			52	<25
PT 1067	Soil	9	500	344062	6383320	2	2			35	<25
PT 1068	Soil	9	450	344045	6383370	2	2			31	<25
PT 1069	Soil	9	400	344028	6383410	<1	<1			38	<25
PT 1070	Soil	9	350	344011	6383460	2	2			26	<25
PT 1071	Soil	9	300	343994	6383510	<1	<1			20	<25
PT 1072	Soil	9	250	343977	6383550	<1	<1			27	<25
PT 1073	Soil	9	200	343959	6383600	2	2			24	<25
PT 1074	Soil	9	150	343942	6383650	<1	<1			24	<25
PT 1075	Soil	9	100	343925	6383690	2	2			26	<25
PT 1076	Soil	9	50	343908	6383740	3	3			29	<25
PT 1077	Soil	9	0	343891	6383790	<1	<1			29	<25
PT 1078	Soil	7	750	343959	6383020	2	2			31	<25
PT 1079	Soil	7	800	343976	6382970	2	2			34	<25
PT 1080	Soil	7	850	343993	6382920	6	6	6		34	<25
PT 1081	Soil	7	900	344010	6382880	2	2			32	<25
PT 1082	Soil	7	950	344027	6382830	<1	<1			27	<25
PT 1083	Soil	7	1000	344044	6382780	<1	<1			20	<25
PT 1084	Soil	11	1000	344422	6382910	<1	<1			23	<25
PT 1085	Soil	11	950	344405	6382960	<1	<1			24	<25
PT 1086	Soil	11	900	344388	6383010	1	<1	2		24	<25

BUDUK - ROCK SAMPLE DESCRIPTIONS

Sample No.	TYPE	Line	Station	Easting	Northing	Au(av.) ppb	Au1 ppb	Au2 ppb	Au3 ppb	Cu ppm	As ppm
PT 1087	Soil	11	850	344371	6383060	<1	<1			25	<25
PT 1088	Soil	11	800	344354	6383100	2	2			33	<25
PT 1089	Soil	11	750	344337	6383150	2	2			35	<25
PT 1090	Soil	11	700	344319	6383200	<1	<1			31	<25
PT 1091	Soil	11	650	344302	6383240	1	<1	2		28	<25
PT 1092	Soil	11	600	344285	6383290	3	3			36	<25
PT 1093	Soil	11	550	344268	6383340	5	6	4		39	<25
PT 1094	Soil	11	500	344251	6383380	4	4			46	<25
PT 1095	Soil	11	450	344234	6383430	<1	<1			39	<25
PT 1096	Soil	11	400	344217	6383480	2	2			34	<25
PT 1097	Soil	11	350	344200	6383530	1	<1		2	39	<25
PT 1098	Soil	11	300	344183	6383570	2	2			26	<25
PT 1099	Soil	11	250	344166	6383620	<1	<1			22	<25
PT 1100	Soil	11	200	344148	6383670	<1	<1			20	<25
PT 1101	Soil	11	150	344131	6383710	2	2			20	<25
PT 1102	Soil	11	100	344114	6383760	2	2			31	<25
PT 1103	Soil	11	50	344097	6383810	3	3			26	<25
PT 1104	Soil	11	0	344080	6383850	<1	<1			26	<25
PT 1105	Soil	13	0	344268	6383920	2	2			53	<25
PT 1106	Soil	13	50	344285	6383880	2	2			43	<25
PT 1107	Soil	13	100	344302	6383830	2	2			28	<25
PT 1108	Soil	13	150	344319	6383780	2	2			26	<25

BUDUK - ROCK SAMPLE DESCRIPTIONS

Sample No.	TYPE	Line	Station	Easting	Northing	Au(av.) ppb	Au1 ppb	Au2 ppb	Au3 ppb	Cu ppm	As ppm
PT 1109	Soil	13	200	344336	6383730	<1	<1			29	<25
PT 1110	Soil	13	250	344354	6383690	3	3			35	<25
PT 1111	Soil	13	300	344371	6383640	3	3			38	<25
PT 1112	Soil	13	350	344388	6383590	2	2			50	<25
PT 1113	Soil	13	400	344405	6383550	2	2			72	<25
PT 1114	Soil	13	450	344422	6383500	3	3			52	<25
PT 1115	Soil	13	500	344439	6383450	3	3			42	<25
PT 1116	Soil	13	550	344456	6383410	2	2			53	<25
PT 1117	Soil	13	600	344473	6383360	2	2		2	35	<25
PT 1118	Soil	13	650	344490	6383310	<1	<1			28	<25
PT 1119	Soil	13	700	344507	6383260	<1	<1			28	<25
PT 1120	Soil	15	700	344695	6383330	1	<1	2		25	<25
PT 1121	Soil	15	650	344678	6383380	4	4			35	<25
PT 1122	Soil	15	600	344661	6383430	1	<1	2		47	<25
PT 1123	Soil	15	550	344644	6383470	2	2			42	30
PT 1124	Soil	15	500	344627	6383520	4	4			43	<25
PT 1125	Soil	15	450	344610	6383570	2	2	1		41	<25
PT 1126	Soil	15	400	344593	6383620	2	2			49	25
PT 1127	Soil	15	350	344576	6383660	4	4	3		49	<25
PT 1128	Soil	15	300	344559	6383710	2	2			53	<25
PT 1129	Soil	15	250	344542	6383760	4	4			61	<25
PT 1130	Soil	15	200	344524	6383800	2	2			42	<25

BUDUK - ROCK SAMPLE DESCRIPTIONS

Sample No.	TYPE	Line	Station	Easting	Northing	Au(av.) ppb	Au1 ppb	Au2 ppb	Au3 ppb	Cu ppm	As ppm
PT 1131	Soil	15	150	344507	6383850	<1	<1			36	<25
PT 1132	Soil	15	100	344490	6383900	2	2			29	<25
PT 1133	Soil	15	50	344473	6383940	3	3			30	<25
PT 1134	Soil	15	0	344456	6383990	2	2			46	<25
PT 1135	Soil	17	0	344644	6384060	2	2			28	<25
PT 1136	Soil	17	50	344661	6384010	2	2			35	<25
PT 1137	Soil	17	100	344678	6383970	2	2			44	<25
PT 1138	Soil	17	150	344695	6383920	3	3			53	<25
PT 1139	Soil	17	200	344712	6383870	4	3	5		70	<25
PT 1140	Soil	17	250	344730	6383820	2	2			37	<25
PT 1141	Soil	17	300	344747	6383780	3	3			39	<25

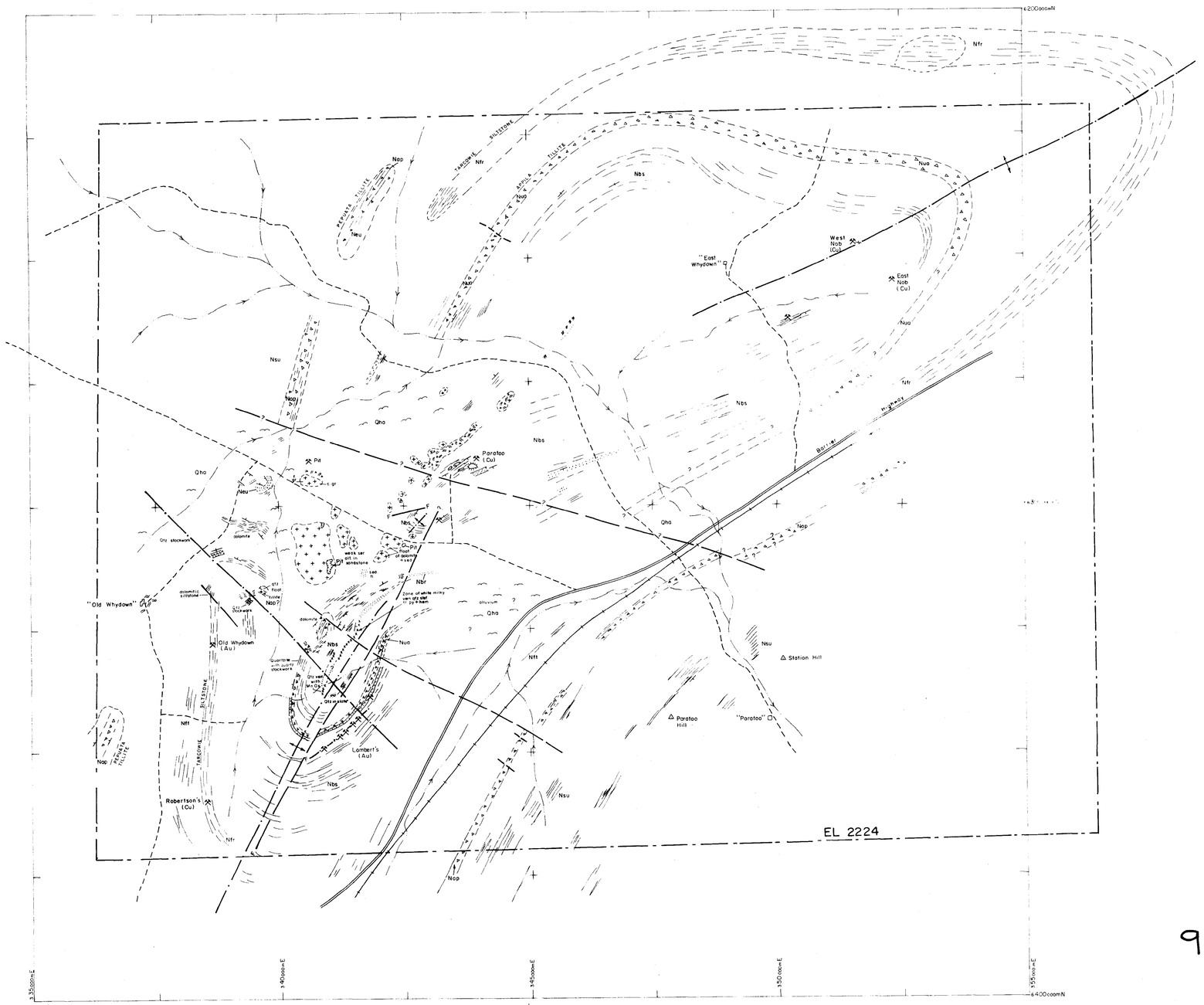
EL 2224 - PARATOO

Sample No.	TYPE	Location		AREA	Au(av.) ppm	Au1 ppm	Au2 ppm	Au3 ppm	Cu ppm	As ppm	Description
		East	North								
PT 2001	RO	343550	6383656	Paratoo E	**<0.02**	<0.02			377	<25	Diapir - breccia with clasts of siltstone. Dolomite matrix. Weakly silicified with FeOx psuedomorph after pyrite.
PT 2002	RO	343773	6382940	Paratoo E	**<0.02**	<0.02			141	<25	Quartzite - mod silicified, finely bedded with 5% f gr disseminated pyrite.
PT 2003	RO	343773	6382940	Paratoo E	**<0.02**	<0.02			82	<25	a.a with minor vein quartz and common FeOx after pyrite.
PT 2004	RO	345386	6382461	Paratoo E	**<0.02**	<0.02			30	40	Brecciated Quartz vein with minor hem staining.
PT 2005	DMP	344922	6383673	Paratoo E	**<0.02**	<0.02			324	25	Prospecting pits. Siltstone cut by thin calcite-filled veilets.
PT 2006		N/S									Not Sampled
PT 2007		N/S									Not Sampled
PT 2008	DMP			PIT #5 Paratoo Mine	**0.04**	0.04			2.66%	85	Siltstone-weakly brecciated with hem+lim matrix Minor malachite staining.
PT 2009	DMP			PIT #5 Paratoo Mine	**0.94**	0.92	0.95		5.96%	225	V4-type veins. Subparallel to bedding 2mm-15mm wide. Filled with abunadnt FeOx. Malachite staining
PT 2010	DMP			PIT #5 Paratoo Mine	**0.15**	0.15			4.25%	305	Large FeOx filled vein, (30mm) Sub-parallel to discordant to bedding. Radiating malachite xtals
PT 2011	DMP			PIT #5 Paratoo Mine	**<0.02**	<0.02			1.01%	190	V2 veins - 10mm wide quartz + FeOx + malachite. Discordant to bedding.
PT 2012	DMP			PIT #5 Paratoo Mine	**0.05**	0.05			1.43%	1395	V1 veins - 5mm wide quartz + FeOx + malachite. Discordant to bedding.
PT 2013	DMP	360836	6384103	Mt. Dare	**0.05**	0.05			1.99%	30	Laminated quartz vein. Qtz+hematite+siderite+ malachite. Slickenslides along one side.
PT 2014	DMP	360836	6384103	Mt. Dare	**2.27**	2.09	2.36	2.37	8.48%	195	Silicified, gossanous siltst. Cavities fillled with drusy qtz+malachite + FeOx.

Sample No.	TYPE	Location East	Location North	AREA	Au(av.) ppm	Au1 ppm	Au2 ppm	Au3 ppm	Cu ppm	As ppm	Description
PT 2015	DMP	350828	6386404	E Whydwn	**0.10**	0.10			0.99%	145	Silicified, gossanous siltst. Cavities fillled with
											drusy qtz+malachite + FeOx.
PT 2016	DMP	350712	6386455	E Whydwn	**0.94**	0.83	1.04		0.12%	280	Qtz vein + f.gr. chalcedonic qtz. Partially oxid
											pyrite
PT 2017	DMP	350712	6386455	E Whydwn	**0.14**	0.13	0.15		1.38%	<25	Qtz vein(10cm) in siltst. C.Gr. qtz + siderite +
											oxidised chalcopyrite. malachite staining
PT 2018	DMP	352964	6387802	E Nob	**0.24**	0.24			1.12%	85	Qtz vein(4cm) in siltst. C.Gr. qtz + abundant
											FeOx. Minor mal staining.
PT 2019	DMP	352964	6387802	E Nob	**0.06**	0.06			3.75%	<25	Qtz vein(5cm) in siltst. C.Gr. qtz + minor
											FeOx. Common malachite staining.
PT 2020	RO			PIT #1	**<0.03**	<0.03			0.11%	95	Oxid siltst with several this veinlets filled with
				Paratoo Mine							FeOx incl. boxworks. (V2 veins)
PT 2021	RO			PIT #1	**0.14**	1.14			0.57%	195	Fault zone. Bxa siltat + vein qtz. Minor FeOx
				Paratoo Mine							trace malachite.
PT 2022	RO			PIT #1	**<0.03**	<0.03			1.05%	105	V1 veins -10mm wide quartz + FeOx + Mal
PT 2023	DMP	351731	6387956	W Nob	**0.21**	0.21			0.98%	255	Vein qtz (dump) with c.gr. siderite+FeOx+mal
PT 2024	DMP	340462	6383335	Diapir	**0.09**	0.09			0.37%	<25	10mm qtz vein in silic siltst? Abundant spec hem
											Silceous material
PT 2025	RO	340462	6383335	Diapir	**<0.03**	<0.03			65	<25	Qtz vein with minor oxid sulph
PT 2026	DMP	341033	6377449	Lambert's	**2.32**	2.45	2.19		62	150	Dump sample - vein qtz, brecciated with abund
											FeOxides
PT 2027	RO	341033	6377449	Mt. Dare	**0.03**	0.03			376	25	10mm qtz vein in silic SST. Abundant spec hem
PT 2032	Chan	342867	6381841	Paratoo Sth	**<**	<			0.28%	80	1m channel sample across fractured and qtz +
											siderite+oxid FeOx veined structure in siltst
PT 2033	DMP	15m W of PT 2032		Paratoo Sth	**0.02**	0.02			521	110	Dump sample - siiceious/jasperoidal rock with
											carbonate psuedomorphs and part oxid pyrite
PT 2034	RO	342732	6382016	Paratoo Sth	**0.02**	0.02			66	<	Surface lag gravel of siliceous, ferruginous rock
PT 2035	DMP			Paratoo Sth	**0.99**	1.04	0.93		5.80%	125	Dump sample, Vein rock with c. gr. qtz+siderite+

Sample No.	TYPE	Location East	Location North	AREA	Au(av.) ppm	Au1 ppm	Au2 ppm	Au3 ppm	Cu ppm	As ppm	Description
											oxidised chalcopy.
PT 2036	RO	342358	6381348	Dolerite	<	<			0.18%	30	Dolerite With retrograde act+epid alteration.
PT 2037	DMP	342358	6381348	Dolerite	**0.22**	0.22			6.28%	30	siliceous, diapiric? rock with drusy/chalcedonic
											quatrz, specular hematite+malachite staining.
PT 2038	RO	343175	6383099	Pit #3	**0.03**	0.03			0.85%	100	V2 veins - 2-3cm wide quartz + FeOx + malach
PT 2039	RO	343338	6382915	Pit #3	**0.03**	0.03			1.61%	155	V1 veins - 2-3cm wide quartz + FeOx + malach
PT 2040	RO	343338	6382915	Pit #3	**0.04**	0.04			1.09%	295	V4-type veins. Subparallel to bedding 10mm
				Paratoo Mine							Qtz + FeOx
PT 2041	RO	340662	6380876	Pit #3	**0.02**	0.02			58	<	Dolerite with minor epidote+carb veining.
PT 2042	RO	338707	6380592	Diapir	**0.04**	0.05	0.03		20	30	Qtz stockwk, vuggy with minor FeOx
PT 2043	RO	338671	6381048	Diapir	**0.03**	0.03			20	30	Qtz vein stockwk with c.gr. oxid py xtals +/-
											siderite in dolomitic siltst
PT 2044	DMP			W Basset	**0.58**	0.53	0.64		16	35	Qtz vein
PT 2045	DMP	338101	6379310	Old Whydow	**0.07**	0.07			150	80	Dump samp - vein with c.gr. siderite, FeOx,
											Calcite + quartz
DMP	DMP	338101	6379310	Old Whydow	**0.23**	0.23			24	50	Dump samp - vein with c.gr. siderite, FeOx,
											Calcite + quartz
PT 2047	Chan	341033	6377449	Lambert's	**0.35**	0.35			63	255	1m channel sample across zone of sheared
											siltst with qtz veinlets. 0-1m
PT 2048	Chan	341033	6377449	Lambert's	**0.03**	0.03			79	245	1m channel sample across zone of sheared
											siltst with qtz veinlets. 1-2m
PT 2049	Chan			Lambert's	**0.11**	0.11			53	195	1m channel sample across zone of sheared
											siltst with qtz veinlets. 0-1m
PT 2050	Chan			Lambert's	**0.21**	0.21	0.21		19	145	0.5m channel sample across qtz vein
PT 2054	RO	343550	6383656	Jasper Zone	<	<					siliceous, diapiric? rock with drusy/chalcedonic
PT 2055	RO			Jasper Zone	**0.03**	0.03					Diapir - breccia with clasts of siltstone. Dolomite
											matrix. Weakly silicified with FeOx psuedomorph
											after pyrite.

Sample No.	TYPE	Location East	Location North	AREA	Au(av.) ppm	Au1 ppm	Au2 ppm	Au3 ppm	Cu ppm	As ppm	Description
PT 2056	RO				**NS**						Not Sampled
PT 2057	RO	341047	6379111	Sth Anti Axis	**<**	<					Qtz vein with minor FeOx and spec hematite
PT 2058	RO	341198	6379352	Sth Anti Axis	**0.08**	0.08					Qtz vein with minor FeOx after pyrite xtals.
PT 2059	RO			Sth Anti Axis	**<**	<					Qtzite with qtz stkwk veining, common FeOx
											after pyrite casts
PT 2060	RO			Sth Anti Axis	**0.03**	0.03					Qtz vein with minor FeOx after pyrite xtals.
PT 2061	RO			Sth Anti Axis	**0.03**	0.03					Qtz vein with minor FeOx after pyrite xtals.
PT 2062	RO	341198	6379352	Sth Anti Axis	**0.02**	0.02					Qtz stockwork veined quartzite (Buura Group)
PT 2063	RO	341047	6379111	Sth Anti Axis	**<**	<					Qtz stockwork veined quartzite (Buura Group)
											from shallow pit.
PT 2064	RO	340836	6378946	Sth Anti Axis	**<**	<					Vein quartz with limonitic vughs ex pyrite.
PT 2065	RO	340761	6378630	Sth Anti Axis	**0.08**	0.08					Vein quartz with abundant limonite ex pyrite
											from shallow pit.
PT 2066	RO	340687	6377045	Lambert's	**0.02**	0.02					Red ferruginous banded quartz-geothite material
											from dump at southern end of Lambert's.
PT 2067	RO			Lambert's	**0.10**	0.09	0.11				Vein quartz from small pit from tillite ridge above
											above Lambert's line of workings.
PT 2068	Chan			Lambert's	**0.11**	0.11					2m channel sample across lode zone at
											Central Lambert's.
PT 2069	Chan			Lambert's	**0.20**	0.21	0.2				As for 2068 - from pit 50m to north.
PT 2070	DMP			Lambert's	**1.14**	1.15	1.17	1.1			Exclusively hand picked vein quartz material from mine dump, N end of Lamberts. Vein is vughy, laminated with abundant limonite after pyrite. (left in piles by shaft - (concluded must be low grade stockpile).



LEGEND

	Qha	HOLOCENE Undifferentiated alluvial/fluvial sediments
WILPENA GROUP	Nsu	NEOPROTEROZOIC Ulupa Siltstone
	Nap	Pepuerta Tillite
	Neu	Gumbowie Arkose
UMBERATANA GROUP	Ntf	Tapley Hill Formation
	Ntr	Torcowie Siltstone
	Nua	Appila Tillite
	Nba	Auburn Dolomite
BURRA GROUP	Nbr	Minburra Quartzite
	Nbs	Saddleworth Formation

Terminology from PARATOO 1:100,000 Geological map, produced by S.A. Dept. of Mines; published in 1996.

- Tillite
- Argillaceous sediments
- Arenaceous sediments
- Dolerite
- Contorted Dolomite Breccia — Diapir
- Silicification/Jasperoid
- Zone of Quartz stockwork veining
- Inferred geological boundary
- Outcrop
- Fault
- Fold Axis
- Strike/dip bedding
- Old Mine
- Homestead
- Drainage
- Road — bitumen
- Road — gravel
- Railway

9278-1

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EL 2224 - PARATOO PROJECT

GEOLOGY

SCALE 1:40,000

Km 1 0 1 2 3 Km

Fig. 3

LEGEND

	Qha	HOLOCENE Undifferentiated alluvial / fluvial sediments
WILPENA GROUP	Nau	NEOPROTEROZOIC Ulupa Siltstone
	Nap	Pepuarta Tillite
	Neu	Gumbowie Arkose
UMBERATANA GROUP	Nft	Tapley Hill Formation
	Ntr	Tarcowie Siltstone
	Nua	Appila Tillite
	Nba	Auburn Dolomite
BURRA GROUP	Nbr	Minburra Quartzite
	Nbs	Saddleworth Formation

Terminology from PARATOO 1:100,000 Geological map, produced by S.A. Dept. of Mines; published in 1996.

- Tillite
- Argillaceous sediments
- Arenaceous sediments
- Dolerite
- Contorted Dolomite Breccia — Diapir
- Silicification / Jasperoid
- Zone of Quartz stockwork veining
- Infered geological boundary
- Outcrop
- Fault
- Fold Axis
- Strike/dip bedding
- Old Mine
- Homestead
- Drainage
- Road — bitumen
- Road — gravel
- Railway

x PT 2069 (0·20) ROCK SAMPLE NUMBER WITH GOLD AVERAGE PPM IN BRACKETS

x PT 2013 (0·05)
PT 2014 (2·27)

9278-2

Havilah Resources NL

EL 2224 – PARATOO PROJECT

ROCK SAMPLING LOCATION MAP

SCALE 1:40,000

Km 1 0 1 2 3 Km

Fig. 6

A N A L A B S

Our reference : AD018282
Your reference : 97228/1
Project code :
Report date : 27/03/98
Report Number : 00003399
Report status : Final
Page : 1 of 2

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ANALYTICAL DATA

Sample	Au	Au:R	Au:S	As	Cu	
PT1001	<1	--	--	<25	137.1	
PT1002	<1	--	--	<25	171.7	
PT1003	<1	--	--	<25	55.7	
PT1004	<1	<1	--	<25	39.6	
PT1005	<1	--	--	<25	18.9	
PT1006	<1	--	--	<25	29.8	
PT1007	<1	--	--	<25	27.3	
PT1008	<1	--	--	<25	42.7	
PT1009	2	--	--	<25	468.8	
PT1010	<1	--	--	<25	148.3	
PT1011	3	3	--	<25	199.6	
PT1012	<1	--	--	<25	134.2	
PT1014	<1	--	--	<25	123.2	
PT1015	2	--	--	<25	163.3	
PT1016	<1	--	--	<25	72.0	
PT1017	8	6	7	<25	72.9	
PT1018	4	--	--	<25	56.9	
PT1019	3	--	--	<25	65.5	
PT1020	3	--	--	<25	61.4	
PT1021	<1	--	<1	<25	60.8	
PT1022	<1	--	--	<25	50.9	
PT1023	1	--	--	<25	37.3	
PT1024	<1	--	--	<25	30.7	
PT1025	<1	--	--	<25	23.4	
PT1026	<1	--	--	<25	20.0	
PT1027	2	--	--	<25	26.4	
PT1028	3	3	--	<25	38.1	
PT1029	<1	--	--	<25	37.6	
PT1030	<1	--	--	<25	25.5	
PT1031	<1	--	--	<25	24.4	
PT1032	<1	--	--	<25	27.3	
PT1033	2	--	--	<25	34.9	
PT1034	2	--	--	<25	37.0	
PT1035	3	--	--	<25	56.1	
PT1036	3	<1	--	<25	56.9	
PT1037	<1	--	--	<25	62.6	
PT1038	2	--	--	<25	74.6	
PT1039	<1	--	--	<25	62.2	
PT1040	<1	--	--	<25	78.7	
PT1041	<1	--	<1	<25	98.0	
PT1042	2	--	--	<25	135.4	
PT1043	11	8	9	<25	413.6	
PT1044	2	--	--	<25	70.2	
PT1045	<1	--	--	<25	29.1	
PT1046	<1	--	--	<25	22.6	
PT1047	<1	--	--	<25	23.8	
PT1048	<1	--	--	<25	23.5	
PT1049	2	--	--	<25	43.1	
PT1050	<1	--	--	<25	28.5	
PT1051	2	--	--	<25	23.4	
Method	GG334	GG334	GG334	GA115	GA115	
Units	ppb	ppb	ppb	ppm	ppm	
Detection Limit	1	1	1	25	0.5	

Notes: N.A. = not analysed, -- = element not determined, I.S. = insufficient sample, L.N.R. = listed not received

A N A L A B S

Our reference : AD018282
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Report date : 27/03/98
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Page : 2 of 2

Analabs Pty. Ltd.
ACN 004 591 664
16 Sunbeam Road, Glynde
South Australia 5070
Telephone : (08) 8336 5099
Facsimile : (08) 8336 5564

ANALYTICAL DATA

Sample	Au	Au:R	Au:S	As	Cu
PT1052	4	--	--	<25	22.2
PT1053	2	--	--	<25	25.4
PT1054	<1	--	--	<25	22.6
PT1056	<1	--	--	<25	77.5
PT1057	<1	--	--	<25	48.8
PT1058	<1	--	--	<25	53.5
PT1059	2	--	--	<25	64.4
PT1060	<1	--	--	<25	52.5
PT1061	2	--	--	<25	46.7
PT1062	4	--	3	<25	41.4
PT1063	3	--	--	<25	35.2
PT1064	6	--	--	<25	64.6
PT1065	3	--	--	<25	53.4
PT1066	2	--	--	<25	51.5
PT1067	2	1	--	<25	35.2
PT1068	2	--	--	<25	31.0
PT1069	<1	--	--	<25	38.4
PT1070	2	--	--	<25	26.2
PT1071	<1	--	--	<25	20.1
PT1072	<1	2	--	<25	26.7
PT1073	2	--	--	<25	23.5
PT1074	<1	--	--	<25	23.9
PT1075	2	--	--	<25	25.8
PT1076	3	--	--	<25	28.8
PT1077	<1	--	--	<25	29.2
Method	GG334	GG334	GG334	GA115	GA115
Units	ppb	ppb	ppb	ppm	ppm
Detection Limit	1	1	1	25	0.5

Notes: N.A. = not analysed, -- = element not determined, I.S. = insufficient sample, L.N.R. = listed not received

ANALABS

Our reference : AD018357
Your reference : 97229/1
Project code :
Report date : 09/04/98
Report Number : 00003456
Report status : Final
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ANALYTICAL DATA

Sample	Au	Au:R	Au:S	As	Cu
PT1078	2	--	--	<25	31.0
PT1079	2	--	--	<25	33.7
PT1080	6	6	--	<25	34.4
PT1081	2	--	--	25	31.8
PT1082	<1	--	--	<25	26.7
PT1083	<1	--	--	<25	20.3
PT1084	<1	--	--	<25	23.3
PT1085	<1	--	--	<25	24.1
PT1086	<1	2	--	<25	23.5
PT1087	<1	--	--	<25	25.0
PT1088	2	--	--	<25	33.4
PT1089	2	--	--	<25	34.9
PT1090	<1	--	--	<25	31.0
PT1091	<1	2	--	<25	28.5
PT1092	3	--	--	<25	36.1
PT1093	6	4	--	<25	39.2
PT1094	4	--	--	<25	45.7
PT1095	<1	--	--	<25	39.3
PT1096	2	--	--	<25	33.9
PT1097	<1	--	2	<25	38.9
PT1098	2	--	--	<25	26.4
PT1099	<1	--	--	25	22.4
PT1100	<1	--	--	<25	20.1
PT1101	2	--	--	<25	19.6
PT1102	2	--	--	<25	30.6
PT1103	3	--	--	<25	26.1
PT1104	<1	--	--	<25	25.6
PT1105	2	--	--	<25	53.3
PT1106	2	--	--	<25	42.6
PT1107	2	--	--	<25	28.1
PT1108	2	--	--	<25	26.2
PT1109	<1	--	--	<25	29.0
PT1110	3	--	--	<25	35.3
PT1111	3	--	--	<25	37.5
PT1112	2	--	--	<25	49.6
PT1113	2	--	--	<25	71.5
PT1114	3	--	--	<25	52.0
PT1115	3	--	--	<25	42.2
PT1116	2	--	--	<25	52.5
PT1117	2	--	2	<25	34.5
PT1118	<1	--	--	<25	28.1
PT1119	<1	--	--	<25	27.7
PT1120	<1	2	--	<25	24.6
PT1121	4	--	--	<25	34.6
PT1122	<1	2	--	<25	46.8
PT1123	2	--	--	30	41.7
PT1124	4	--	--	<25	43.2
PT1125	2	1	--	<25	40.9
PT1126	2	--	--	25	48.5
PT1127	4	3	--	<25	48.9
Method	GG334	GG334	GG334	GA115	GA115
Units	ppb	ppb	ppb	ppm	ppm
Detection Limit	1	1	1	25	0.5

Notes: N.A. = not analysed, -- = element not determined, I.S. = insufficient sample, L.N.R. = listed not received

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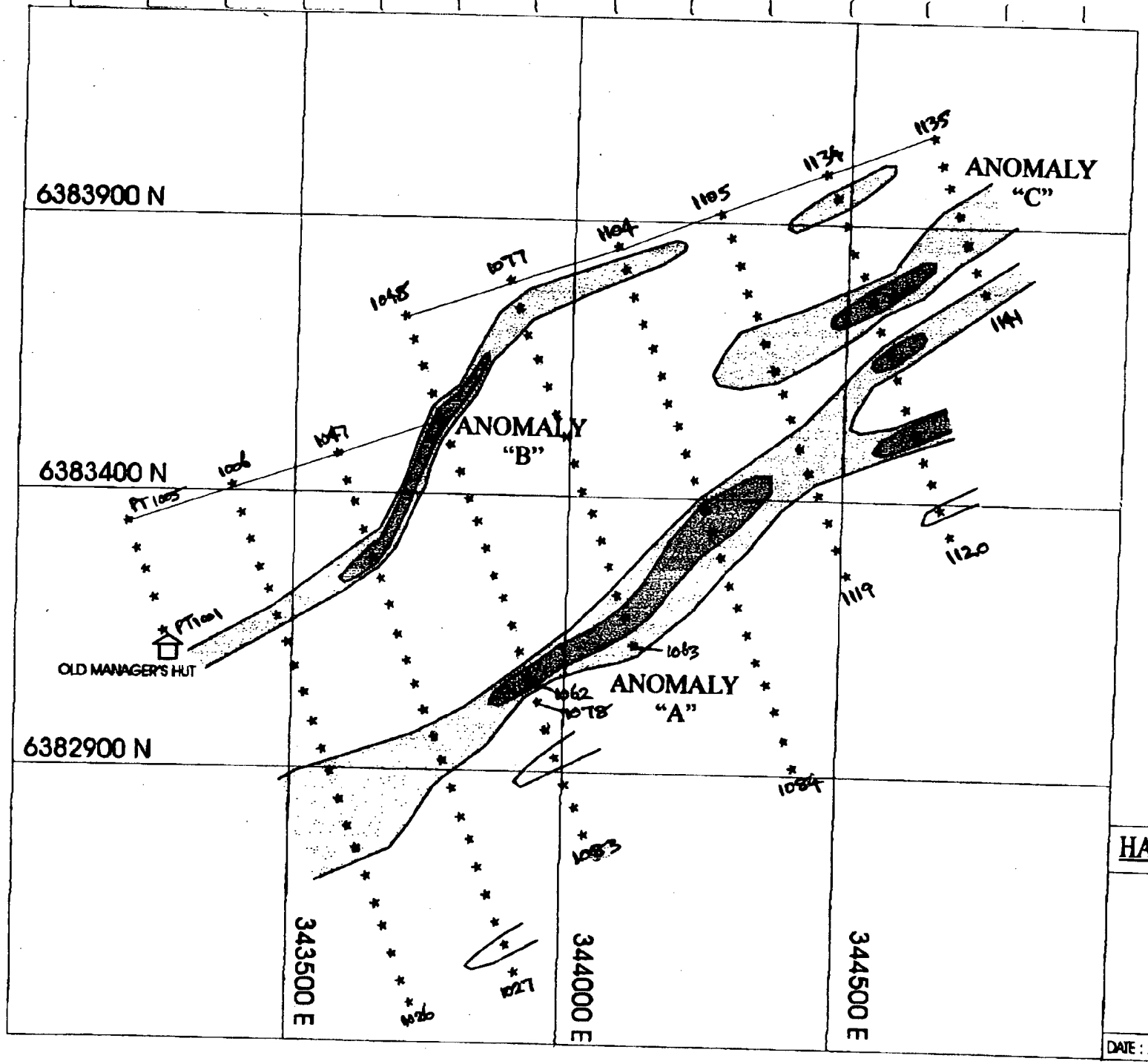
ANALYTICAL DATA

Sample	Au	Au:R	Au:S	As	Cu
PT1128	2	--	--	<25	52.7
PT1129	4	--	--	<25	61.4
PT1130	2	--	--	<25	42.4
PT1131	<1	--	--	<25	35.7
PT1132	2	--	--	<25	28.6
PT1133	3	--	--	<25	30.2
PT1134	2	--	--	<25	46.4
PT1135	2	--	--	<25	27.8
PT1136	2	--	--	<25	35.0
PT1137	2	--	<1	<25	43.9
PT1138	3	--	--	<25	52.6
PT1139	3	5	3	<25	69.8
PT1140	2	--	--	<25	36.8
PT1141	3	--	--	<25	38.5
Method	GG334	GG334	GG334	GA115	GA115
Units	ppb	ppb	ppb	ppm	ppm
Detection Limit	1	1	1	25	0.5

Notes: N.A. = not analysed, -- = element not determined, I.S. = insufficient sample, L.N.R. = listed not received



LEGEND

- Sample Location
- ≥ 4 ppb Au
- 3 - 4 ppb Au

HAVILAH RESOURCES

EL 2224

SOIL SAMPLING
Au CONTOURS

1 : 10,000

FIG. 8

DATE : 20 MAY 1998 REF : PAR-AU.CDR