DEPARTMENT OF MINES
SOUTH AUSTRALIA

DRILLING COMPLETION REPORT

WILD HORSE PROSPECT

Eateringinna ALBERGA

by

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METALLIC MINERALS SECTION

Rept.Bk.No.74/110
G.S. No. 5428
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ABSTRACT

After the discovery of apparently syn-sedimentary copper sulphides at Kenmore II Copper Prospect, a programme of geochemical soil sampling was devised to locate deposits of a similar nature on Kenmore and Eateringinna.

An anomaly discovered by this programme at Wild Horse Prospect was investigated by mapping, induced polarisation, geochemical sampling and diamond drilling.

Drilling revealed the presence of finely disseminated sulphide, mainly pyrite, in basic granulite below the weathered surface, but quantities are not sufficient to be of economic significance.

INTRODUCTION

After the discovery of chrysoprase in outcropping jasper on Kenmore in 1967, two jasper capped bodies were investigated by geochemical sampling and induced polarisation. A diamond drilling programme on one of them (Kenmore I) revealed the presence of serpentinite, but no nickel sulphides were found. (Miller & Gerdes, 1970). The geochemical survey on the other body (Kenmore II) showed that anomalous amounts of copper occur in the soils flanking the jasper-capped ridge.

Detailed investigation in 1971-1972 revealed the presence of sulphide mineralization, mainly pyrite and chalcopyrite, beneath a zone of secondary oxidation containing chrysocolla, malachite and cupriferous biotite (Pain and Hiern 1973). The deposit is conformable, folded with the metasediments and is consequently believed to be syn-sedimentary.

In 1972 a programme of geochemical sampling was devised to locate additional deposits of a similar nature on Kenmore and Eateringinna. A copper anomaly from one of the soil sampling traverses which cross the area, was evaluated by the programme described in this report. (Pain 1973a).

LOCATION ACCESS AND TOPOGRAPHY

The prospect lies on Eateringinna in the eastern end of the Musgrave Ranges, in the far north of the State. It is 28 miles southwest of Victory Downs station, which in turn is 15 miles west of the main Adelaide-Alice Springs road at Mt. Cavenagh on the N.T. Border.

The most convenient access from Victory Downs is by 42 miles of station tracks to Kokatarra well and then 7 miles cross-country following an old cattle pad for part of the route.

Much of the Kenmore and Eateringinna areas consist of gently undulating sandy grass-covered plains cut by ridges of banded gneiss, and prominent dolerite dykes. An anatectic zone characterized by rounded hills of massive adamellite extends across the northeastern part of Kenmore.

The Marryat Shear is a broad zone up to two miles wide which extends across the southern margin of Kenmore in an ESE direction. The zone is composed of intensely fractured gneisses cut by dolerite dykes, mylonites, and pseudotachylites. These are resistant to erosion so that long ridges up to 50 feet high occur along the shear.

GEOLOGICAL SETTING

The area is underlain by a sequence of metamorphic rocks of upper amphibolite to lower granulite facies. These are referred to as the Mann Metamorphics (Thomson, 1970).

The rocks are described in Miller and Gerdes (1970) and have been the subject of a more intense study during the recent field mapping programme.

Quartz-feldspar-biotite gneisses predominate, but within the sequence interbands occur containing varying amounts of amphibole, pyroxene, garnet and sillimanite. Thin bands of pyroxene-quartzite and calc-silicate rocks also occur.

Basic Granulite (feldspar-pyroxene-hornblende granulite) is a fairly common rock type. It is typically a coarse-grained grey-green rock of gabbroic appearance with a granoblastic texture. Minor copper carbonate staining has been observed in exposures at Frazers Copper Prospect in the south-western corner of Kenmore (Barnes, Conor & Pain, 1971, Pain, 1973b), and at Wild Horse Prospect.

Some of the more mafic bands within the sequence have undergone deep weathering to form green clays which were subsequently silicified to form jasper. The ridge at Kenmore II Prospect is capped by siliceous jasper and dolomite and similar cappings have been drilled to the south-east of Kenmore II Prospect (Pain, 1973c).

A period of anatexis post-dates the granulite metamorphism; anatectic rocks, chiefly adamellite and gneissic granite, occur in a broad area a few miles north of the prospect. Swarms of basic dykes are common throughout the area.

The Marryat Shear zone strikes ESE and passes a few miles south of the prospect. It is apparently the result of brittle fracturing. Pseudotachylite, mafic dyke material and epidote alteration are associated with it.

Exposures of bedrock over much of the area are comparatively fresh, but in some places, particularly towards the south-east, the rocks are deeply weathered and bleached.

Areas of silcrete and ferricrete are common.

Most of the area is covered by aeolian sands, alluvial deposits, lake deposits, and transported soils (which are often deep and carry thick stands of mulga). Piedmont alluvium and modern talus slopes surround many of the ridges, thin freshwater limestones flank some of the drainage channels.

WILD HORSE PROSPECT

Geology

The prospect is situated near the south eastern edge of the broad, arcuate Kokatarra Shear. It is about twelve miles along strike from the western limb of the Kenmore II prospect. A major structural feature, the Marryat Shear, separates the two prospects, but this is thought to have formed by a bending or flexing mechanism rather than a large strike-slip movement, so lateral displacement along this structure is likely to be small.

Outcrop in the area is generally poor, but reasonable exposures occur at the prospect due to the presence of hard, dense dolerite dykes which are resistant to weathering.

Metasediments in the area consist predominantly of gneisses, but interbands of basic granulite occur, some of which have minor copper carbonate staining on joint and fracture surfaces. Gneissic banding in the metasediments at the prospects dips westerly at about 55^{0}.

The area in the immediate vicinity of the anomaly on the soil sample traverse was mapped at a scale of 1" rep. 100', but no mapping has yet been undertaken to trace this band along strike.

Geochemistry

Closely spaced geochemical sampling was carried out on a grid over the area, and results are shown on plan 73-19. Sampling was not extended far enough to close the anomaly at either end.

Geophysics

Induced polarization traverses were done on lines 00N, 800N & 1400N and in each case frequency effect anomalies of over 4% were detected at depths of around 100 feet. (Wightman & Taylor, 1973).

The I.P. anomalies appear to be displaced westwards from the geochemical anomaly; this is consistent with the 45^{0} to 65^{0} westerly dips measured in surface exposures (See plan 73-795).

Diamond Drilling

In view of the location of this area relative to the Kenmore II prospect, two diamond drill holes were sited as follows:

(a)	WHD1	1400N	550W	Inclined 45^{0}E	Depth: 389 ft
(b)	WHD2	800N	400W	Inclined 45^{0}E	Depth: 286 ft

The holes were drilled, between 29th September and 14th October, 1973, using a Mindrill F30 machine (No. 24) equipped with NQWL and BQWL core barrels.

A good supply of water for drilling was obtained from Kokatarra bore, seven miles WSW of the drill sites.

Locations of the holes are shown on plan 73/790; cross sections showing drill holes, geochemical profiles and Induced Polarization Frequency Effect profiles are shown on plan 73/795.

The lithologies and sulphide minerals intersected are similar to those at Frazers Copper Prospect 14 miles to the north-west (Pain, 1973b).

At Wild Horse Prospect, thick intersections of basic granulite bounded by acid gneiss were found. This granulite, a feldspar-pyroxene-hornblende rock, is typically a medium to coarse-grained grey-green rock with a granoblastic texture.

The basic granulite grades locally through intermediate granulite to acid gneiss with decrease in mafic mineral content.

Fine disseminated interstitial pyrite occurs throughout most of the basic granulite and in places in the intermediate granulite and acid gneiss.

Sulphide concentrations however are low; generally only trace amounts (less than ¼% visible sulphides) are present, with rare local concentrations of up to 1%-2% over intervals of a few centimetres. Some of the richer intersections were split and submitted to Amdel for analysis, but copper contents were found to be low. (See logs in Appendix I).

Six selected pieces of this core with various sulphide and magnetite contents were submitted to McPhar Geophysics Pty. Ltd. for direct determination of frequency effects. In general these were found to be consistent with the apparent frequency effects measured in the field, confirming that the drill holes intersected the source of the I.P. anomaly. (Wightman W.E. pers. comm.) (See Appendix II).

The comparatively high effects are probably explained by the finely disseminated nature of the pyrite and the highly resistive nature of the host rock, rather than by large concentrations of sulphides.

SUMMARY AND CONCLUSIONS

Diamond Drilling of coincident induced polarisation and geochemical anomalies at Wild Horse Prospect revealed the presence of fine interstitial pyrite and chalcopyrite, generally in very low concentrations, disseminated throughout intersections of basic granulite.

Testing of cores has shown that the small quantity of disseminated sulphide present is sufficient to account for the frequency effect anomaly, probably because of its finely disseminated nature.

Copper assays were found to be low, but the rocks contain sufficient disseminated sulphide to account for the geochemical anomaly.

The petrology and the nature of the mineralization are very similar to Frazers Copper Prospect, 14 miles to the northwest. This prospect has already been investigated by geochemistry and induced polarisation (Barnes, Conor & Pain, 1971) and by rotary-percussion and diamond drilling (Pain,

1973b), but only minor amounts of sulphide were found.

Work on the Kenmore II Copper Prospect has indicated that the sulphides are strata-bound. It is thought that sulphide mineralization associated with bands of basic granulite such as those at Frazers and Wild Horse Copper Prospects is also syn-sedimentary.

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9th May, 1974
AMP:IA

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A P P E N D I X I

Logs of Diamond Drill Holes

WHD1 and WHD2

HOLE NO. WHD2 | SURVEY DATA | PLAN REFERENCE | DATE COMMENCED 9/10/73

TYPE OF HOLE DIAMOND DRILL | ASSAY REFERENCE | DATE COMPLETED 14/10/73

MACHINE NO. 24 | INCLINATION 45° | DRILLER D. WHITE

BORE SERIAL NO. 627/74 | AZIMUTH 090° from grid North | COORDINATES 800N 400W | LOGGED BY A.M. PAIN

D.M. No. 1273/71 | DEPTH 286.1 feet | ELEVATION

CORE RECOVERY LOG				LOG OF DRILL HOLE			ASSAYS					
FROM	TO	INTERVAL	RECOVERY	FROM	TO	LITHOLOGICAL DESCRIPTION	FROM	TO	Cuppm	Ni ppm	Mo ppm	S%
0.0	8.1	8.1	0.0	0.0	8.1	NO CORE RECOVERY.						
8.1	12.0	3.9	3.5	8.1	13.0	ACID GNEISS. Medium to coarse-grained feldspar-quartz rock with some pyroxene and biotite. Faint banding. Core weathered, rubbly, broken. Some brown iron staining.						
12.0	14.1	2.1	1.7									
				13.0	14.1	BASIC GRANULITE. Medium to coarse-grained dark grey-green to black feldspar-pyroxene rock with minor biotite. Equigranular texture. Faint foliation due to orientation of pyroxene grains. F//75° @ 13 ft. Rock is weathered. Core rubbly, broken.						
14.1	18.5	4.4	4.3	14.1	23.8	ACID GNEISS. Weathered. As for interval 8.1-13.0 but banding is slightly more prominent.						
18.5	23.8	5.3	4.7									
23.8	31.0	7.2	0.0	23.8	31.1	NO CORE RECOVERY						
31.0	34.8	3.8	3.4	31.1	38.6	BANDED GNEISS. Medium-grained feldspar-quartz-pyroxene-biotite rock with prominent foliation. Grades locally to intermediate granulite with increase in content of mafics.						
34.8	38.4	3.6	3.4									
38.4	38.6	0.2	0.2									
38.6	39.9	1.3	0.0	38.6	39.9	NO CORE RECOVERY						
39.9	44.8	4.9	4.7	39.9	41.0	INTERMEDIATE GRANULITE. A coarse-grained feldspar-pyroxene rock. F//70° @ 40.7 ft.						
				41.0	44.8	BASIC GRANULITE. A coarse-grained dark grey-green feldspar-pyroxene rock with minor biotite. Equigranular texture. Faint foliation.						
44.8	48.1	3.3	0.0	44.8	48.1	NO CORE RECOVERY						

CORE RECOVERY LOG feet				LOG OF DRILL HOLE			ASSAYS						
FROM	TO	INTERVAL	RECOVERY	FROM	TO	LITHOLOGICAL DESCRIPTION	FROM	TO	Cu ppm	Ni ppm	Mo ppm	S%	
48.1	50.0	1.9	1.6	48.1	107.9	BASIC GRANULITE. Medium to coarse-grained feldspar-pyroxene rock, biotitic in places. Minor chlorite on some fracture surfaces. Dark grey-green colour, equigranular texture. Mafic content varies from 60% to 20%, generally becoming felsic towards base of interval. Some thin zones to 2 cm wide contain coarse feldspar grains. 74.5-75.7 ft. coarse-grained feldspathic zone with coarse pyroxene grains and ¼% pyrite as disseminated grains. Pyrite traces of fine interstitial grains throughout. Weathered crumbly biotitic zones from 99.3 - 99.7, 104.2-105.3, 106.8-107.5 ft. Faint foliation F//70° @ 66ft.; F//75° @ 92 ft.	74.5	75.70	170	22	3	0.53	
50.0	50.7	0.7	0.6										
50.7	60.9	10.2	6.7										
60.9	70.7	9.8	9.5										
70.7	81.0	10.3	10.1										
81.0	90.8	9.8	9.8										
90.8	99.3	8.5	8.3										
99.3	109.0	9.7	9.6										
109.0	114.0	5.0	5.0	107.9	112.6	INTERMEDIATE GRANULITE. Coarse-grained pale grey feldspar-quartz-pyroxene rock. Similar to above but mafic content generally about 10%, with some slightly more mafic bands and patches. Some thin irregular mylonite veins becoming more common towards base of interval.							
114.0	124.3	10.3	10.3	112.6	115.3	DOLERITE DYKE. Fine grained dense dark grey rock with minor thin irregular mylonite veinlets.							
124.3	134.3	10.0	10.0	115.3	125.3	ACID GNEISS. Medium to coarse-grained pale grey feldspar-quartz rock with some irregular black mylonite veins from 120.4-127.3 ft. Rare pyrite specks. Gradational contact with basic granulite below.							
				125.3	127.4	BASIC GRANULITE. Dark grey-green coarse-grained pyroxene-feldspar rock. Pyrite traces as fine interstitial grains.							
				127.4	130.4	ACID GNEISS. Pale to medium grey feldspar-quartz-pyroxene rock with minor thin black mylonite veinlets.							
134.3	144.4	10.1	10.0	130.4	151.5	BASIC GRANULITE. Medium to coarse-grained dark grey-green feldspar-pyroxene rock with equigranular texture and some banding.							
144.4	154.6	10.2	10.2			Mafic minerals generally constitute 40-50% of rock, but some more felsic patches with only 20% mafics occur. Grades locally to intermediate granulite in upper part of interval. Coarse grained feldspathic zone with some coarse pyroxene grains from 142.8-143.2; 147.0-147.8. Pyrite trace, fine interstitial grains disseminated throughout interval. ½% visible interstitial grains and specks from 135.0-136.6 and 2% interstitial grains from 139.8-146.5.	135.0	136.6	630	95	4	2.08	

HOLE NO. WHD2 PROJECT

CORE RECOVERY LOG				LOG OF DRILL HOLE			ASSAYS					
FROM	TO	INTERVAL	RECOVERY	FROM	TO	LITHOLOGICAL DESCRIPTION	FROM	TO	Cu ppm	Ni ppm	Mo ppm	S%
				151.5	153.3	LEUCOCRATIC ZONE. Very coarse-grained white feldspathic zone with some medium-sized hornblende grains.						
154.6	165.0	10.4	10.4	153.3	232.6	BASIC GRANULITE. Medium to coarse-grained dark grey-green feldspar-pyroxene rock with equigranular texture and some banding. Mafic minerals generally constitute 40-60% of the rock but some zones occur with only 20%. Minor biotite. Some chlorite on fracture surfaces. Thin black mylonite veins from 169.3-169.6. Pyritic traces of fine interstitial grains throughout. 156.2-156.7 Pyrite ¼% angular interstitial grains, visible 202.1-202.2 " ½% " " " " 206.0-206.4 " ½% " " " " Faint banding at 70° to core axis @ 164 feet. 75° " " " @ 194 feet. 65° " " " @ 230 feet.	156.2	156.7	3100	120	3	1.38
165.0	169.0	4.0	4.0									
169.0	179.1	10.1	10.1									
179.1	189.1	10.1	10.1									
189.2	199.5	10.3	10.3									
199.5	209.7	10.2	10.2									
209.7	219.8	10.2	10.1									
219.8	230.1	10.3	10.3									
230.1	240.2	10.1	10.1									
				232.6	234.9	BRECCIA ZONE. Consists predominantly of black fine grained mylonite fragments of feldspar and epidotized basic granulite.						
240.2	250.3	10.1	10.1	234.9	244.2	BASIC GRANULITE. As for interval 153.3-232.6. From 220.3 to 220.6 recrystallized zone with feldspar grains to 2 cm and pyroxene grains to 1 cm diameter. Pyrite trace of fine interstitial grains disseminated throughout 235.3-235.9 ¼% visible pyrite interstitial grains and small specks.	235.3	235.9	1560	220	3	0.7
250.3	259.8	9.5	9.5	244.2	282.2	ACID GNEISS. Medium-grained pale grey feldspar-quartz-pyroxene gneiss with minor biotite. Grades locally to intermediate granulite. Thin basic granulite bands from 281.2-281.8 and 268.9-269.5 Faint banding at 75° to core axis @ 262 ft. Some black mylonite in thin veins near base of interval. Rare pyrite specks near top of interval.						
259.8	269.9	10.1	10.1									
269.9	280.2	10.2	10.2									
280.2	286.1	5.9	5.9									
				282.8	284.7	DOLERITE DYKE. Fine grained, dense, dark grey rock.						
				284.7	286.1	ACID GNEISS. As for interval 243.5 - 282.8.						
						END OF HOLE 286.1 FEET						

HOLE NO. WHD1 | SURVEY DATA - | PLAN REFERENCE | DATE COMMENCED 29.9.73
TYPE OF HOLE Diamond Drill | | ASSAY REFERENCE | DATE COMPLETED 8.10.73
MACHINE NO. 24 | INCLINATION 45° | | DRILLER D. WHITE
BORE SERIAL NO. 626/74 | AZIMUTH 090°(Grid Nth) | COORDINATES 1400N 550W | LOGGED BY A.M. PAIN
D.M. No. 1273/71 | DEPTH 388.9 ft | ELEVATION -

CORE RECOVERY LOG				LOG OF DRILL HOLE			ASSAYS					
FROM	TO	INTERVAL	RECOVERY	FROM	TO	LITHOLOGICAL DESCRIPTION	FROM	TO	Cu ppm	Ni ppm	Mo ppm	S %
0.0	16.4	16.4	0.0	0.0	16.4	NO CORE RECOVERY						
16.4	17.3	0.9	0.8	16.4	17.3	ACID GNEISS. Weathered, medium grained feldspar - quartz - hornblende (biotite) rock with faint foliation. Core rubbly, broken. Some faint brown iron staining . Some white carbonate veining, partly silicified.						
17.3	17.8	0.5	0.0	17.3	17.8	NO CORE RECOVERY						
17.8	23.5	5.7	5.4									
23.5	27.8	4.3	4.2	17.8	33.1	ACID GNEISS. Weathered, medium to coarse grained feldspar-quartz-hornblende-biotite rock with some brown ferruginous staining. Minor white carbonate on fractures. Minor Magnetite. Faint foliation at 50° to core axis at 24.0 ft.						
27.8	43.0	15.2	14.4									
				33.1	35.8	BASIC GRANULITE. A medium grained feldspar - pyroxene rock with minor biotite. Equigranular texture with faint lineation due to orientation of pyroxene grains. Some coarse feldspar grains & patches. (Gradational to acid gneiss in places). Rock is weathered with some faint brown iron-staining.						
				35.8	36.3	ACID GNEISS. Weathered. As for interval 17.8 to 33.1.						
				36.3	38.1	INTERNEDIATE GRANULITE. Medium grained feldspar - quartz - hornblende - biotite rock with equigranular texture. Slightly weathered. Grades to coarse-grained in places.						
43.0	56.8	13.8	13.5	38.1	50.6	ACID GNEISS. A coarse-grained equigranular feldspar - quartz rock with minor amounts of pyroxene and biotite. Becoming less weathered with depth. Minor magnetite grains.	47.6	48.0	12	12	3	0.03
				50.6	50.9	BASIC GRANULITE. As for interval 33.1 - 35.8 but much less weathered.						
				50.9	51.8	FELDSPATHIC ZONE. Very coarse-grained pale grey feldspathic zone with some coarse pyroxene grains to 5 mm diameter.						

CORE RECOVERY LOG (feet)				LOG OF DRILL HOLE			ASSAYS						
FROM	TO	INTERVAL	RECOVERY	FROM	TO	LITHOLOGICAL DESCRIPTION	FROM	TO	Cu ppm	Ni ppm	Mo ppm	S %	
				51.8	56.2	BASIC GRANULITE. Dark grey-green medium-grained feldspar-pyroxene rock with biotite. Occasional coarse feldspar grains and patches up to 12 mm diameter. Faint foliation due to orientation of pyroxene grains. F/75^{0} @ 52.5 ft.							
56.8	66.9	10.1	10.1	56.2	59.3	ACID GNEISS. A medium-grained equigranular feldspar - quartz rock with minor hornblende. Minor Magnetite.							
				59.3	62.0	DOLERITE DYKE. Fine grained, dense, dark grey rock.							
				62.0	64.0	ACID GNEISS. Medium-grained feldspar - quartz rock with some hornblende grains. Some thin black mylonite veining.							
66.9	77.1	10.2	10.2	64.0	73.6	INTERMEDIATE GRANULITE. Medium-grained equigranular grey-green rock composed of feldspar, pyroxene and hornblende. Faint banding in places due to thin (<2 inch) bands with coarse feldspar grains. Pyrite traces interstitial grains in upper 1.6 ft of interval. Composition intermediate between acid gneiss and basic granulite.							
77.1	87.2	10.1	10.1	73.6	79.5	BASIC GRANULITE. A coarse-grained feldspar - pyroxene rock with equigranular texture. Dark grey-green colour with up to 45^{0} mafic minerals including biotite. Some thin feldspathic patches up to one inch wide. F//80^{0} @ 75 ft. Pyrite traces; disseminated interstitial grains. Very small concentrations of pyrite @ 73.5 ft and 75.0 ft. Slightly magnetic.	73.8	74.3	35	42	3	0.14	
				79.5	86.8	ACID GNEISS. Fine to medium-grained, hard, white feldspar - quartz rock. Traces Pyrite with ¼% visible from 79.5 - 83.8 and 85.0 - 86.8. Slightly more basic band 83.8 - 86.7 with no pyrite. Non magnetic.	79.5	80.9	320	20	3	1.30	
							80.9	81.3	220	< 5	3	0.82	
87.2	97.3	10.1	10.1	86.8	91.1	INTERMEDIATE GRANULITE. As for interval 64.0 - 73.6. Gradational contact near top of interval . Thin mylonite veins @ 90.3 feet. Minor traces pyrite. 90.4 - 90.7 Mafic band with 1% pyrite interstitial grains visible.	90.4	90.7	8	230	3	0.24	
				91.1	95.5	ACID GNEISS. Fine to medium-grained, hard, white feldspar - quartz rock. Some thin irregular mylonite veins to 4 mm thick. Pyrite traces dissem. spks. Traces magnetite.							
				95.5	98.4	DOLERITE DYKE. Fine grained, dark grey, hard, dense rock with some black mylonite in irregular veins near the contacts.							

CORE RECOVERY LOG				LOG OF DRILL HOLE			ASSAYS						
FROM	TO	INTERVAL	RECOVERY	FROM	TO	LITHOLOGICAL DESCRIPTION	FROM	TO	Cu ppm	Ni ppm	Mo ppm	S %	
97.3	107.5	10.2	10.0	98.4	99.5	BASIC GRANULITE. Medium to coarse-grained dark grey-green equigranular feldspar - pyroxene rock with some biotite.							
107.5	117.5	10.0	10.0	99.5	112.0	ACID GNEISS. Medium-grained, off-white feldspar - quartz - pyroxene gneiss. Becomes more mafic with depth, grading to basic granulite.							
						Coarse mafic (Pyroxene - hornblende) patch @ 103.8 - 104.1 With ½% interstitial pyrite grains visible.	109.5	110.5	220	38	3	1.85	
						Pyrite as Traces disseminated interstitial grains from 105.9 - 112.0. Local concentrations of 2% Pyrite from 105.6 - 105.7, 106.3 - 106.4, 106.8 - 106.9, 106.5 - 106.6.							
117.5	127.6	10.1	10.1	112.0	137.0	BASIC GRANULITE. Medium to coarse dark grey -green rock composed of feldspar and pyroxene. Equigranular texture.							
127.6	137.8	10.2	10.2			Faint banding due to some thin (<½ inch) feldspathic bands and orientation of pyroxene grains (65° @ 111 ft).							
						Occasional very mafic bands occur. Rock becomes paler, more feldspathic in places, e.g. around 123 - 125 ft.							
						Minor thin mylonite veins, and some chlorite on partings (e.g. 130.2 - 131 ft).							
						Pyrite. Traces of interstitial grains disseminated throughout, with concentration reaching ½% visible from 118.3 - 120.3.	118.3	120.3	210	28	<3	0.41	
							129.5	130.0	360	60	<3	1.35	
137.8	147.5	9.7	9.7	137.0	141.5	DOLERITE DYKE. Fine grained, dark grey rocks with some black mylonite near margins.							
147.5	157.5	10.0	10.0										
157.5	167.5	10.0	10.0										
167.5	177.6	10.1	10.1										
177.6	187.7	10.1	10.1	141.5	261.4	BASIC GRANULITE. As for interval 112.0 - 137.0 but rock is slightly less mafic around 208.3-216.5 feet							
187.7	197.6	9.9	9.9										
197.6	207.8	10.2	10.2			F//70° @ 164 ft F//70° @ 184 ft F//70° @ 197 ft	201.5	202.0	50	18	<3	0.48	
207.8	217.9	10.1	10.1			F//70° @ 229 ft F//60° @ 246 ft	242.7	243.7	2760	210	3	0.67	
217.9	227.8	9.9	9.9			Pyrite Trace of interstitial grains disseminated throughout							
227.8	237.8	10.0	10.0			with small local concentrations of ½% from 242.8 - 243.4	243.7	244.2	7200	410	4	0.60	
237.8	247.7	9.9	9.9			and 1% from 243.7 - 244.2, 259.8 - 259.9 ft.							
247.7	257.7	10.0	10.0	261.4	301.3	BASIC & INTERMEDIATE GRANULITE. As above but becomes more							
257.7	267.7	9.9	9.9			feldspathic, lighter in colour, and grades to Acid gneiss							
267.6	277.6	10.0	10.0			with decrease in mafic minerals.							
277.6	287.6	10.0	10.0			Thin irregular black mylonite veins to 6 mm wide from							
287.6	297.6	10.0	10.0			312 ft to base of interval.							
297.6	307.7	10.1	10.1			F//55° @ 262 ft F//70° @ 295 ft.							
307.7	317.7	10.0	10.0			Pyrite. Traces of interstitial grains disseminated throughout, with small local concentrations (e.g. 262.3 - 262.4 1-2%).							
				301.3	321.7	INTERMEDIATE GRANULITE. Fine to medium-grained feldspar-quartz pyroxene rock. Faint banding at 75° @ 315.0 ft.							
						Irregular black mylonite veins and patches throughout.							

CORE RECOVERY LOG				LOG OF DRILL HOLE			ASSAYS						
FROM	TO	INTERVAL	RECOVERY	FROM	TO	LITHOLOGICAL DESCRIPTION	FROM	TO	Cu ppm	Ni ppm	Mo ppm	S %	
317.7	327.6	9.9	9.9	321.7	322.2	DOLERITE DYKE. Fine-grained, dense, dark grey rock with some irregular black mylonite veins.							
				322.2	322.5	ACID GNEISS. As for interval 301.3 to 321.7.							
327.6	337.8	10.2	10.2	322.5	332.4	DOLERITE DYKE. Fine-grained, dense, dark grey rock with some irregular black mylonite veins.							
				332.4	338.9	INTERMEDIATE GRANULITE. As for interval 64.0 - 73.6.							
				338.9	341.2	BASIC GRANULITE. A coarse-grained feldspar - pyroxene rock with equigranular texture. Faint banding. Pyrite traces as interstitial grains disseminated throughout interval.							
				341.2	347.4	ACID GNEISS. Pale to medium grey feldspar-quartz rock with some pyroxene. F//60° @ 341 ft. Thin black irregular mylonite veins 341.9 - 343.3 and 346.1 - 347.4.							
337.8	347.8	10.0	10.0	347.4	348.1	BASIC GRANULITE. As for interval 112.04 - 137.01.							
347.8	358.9	10.1	10.1	348.1	352.6	ACID GNEISS. Pale grey to off-white fine grained feldspar-quartz rock with minor pyroxene. Thin irregular mylonite veins throughout.							
				352.6	355.1	DOLERITE DYKE. Fine grained hard, dense grey rock with irregular black mylonite veinlets.							
				355.1	355.7	ACID GNEISS. Rock has irregular black mylonite veinlets to 10 mm wide.							
				355.7	358.5	DOLERITE DYKE. With black irregular mylonite veinlets.							
358.9	368.5	9.6	9.6	358.5	378.0	ACID GNEISS. Fine to medium grained pale grey feldspar-quartz rock with some pyroxene grains. Thin black mylonite veins. Weakly magnetic.							
368.5	378.8	10.3	10.3	378.0	378.9	DOLERITE DYKE.							
378.8	388.9	10.1	10.1	378.9	388.9	ACID GNEISS. As for 358.5 - 378.0.							
						END OF HOLE 388.9 FEET							

A P P E N D I X I I

Induced Polarisation Measurements on Core Samples from Wild Horse Prospect

Induced Polarisation Measurements on Core Samples from Wild Horse Prospect

Induced polarisation measurements were obtained on 6 core specimens from Wild Horse Prospect. The values were obtained by McPhar Geophysics Pty. Ltd.

Samples for measurement were chosen according to the following specifications:

1. Magnetite with no sulphides (Acid gneiss)
2. No magnetite, no sulphides (Barren basic Granulite)
3.)
4.) Representative 'average' samples of granulite with accessory
5.) sulphides.
6. Maximum visible sulphides (1-2%) in basic granulite.

After determination of frequency effects the core was split and analysed for sulphur, to give an indication of sulphide content. Results are presented on the accompanying table.

Drilling at Wild Horse has indicated that sulphides occur at depths below 50 ft. and the horizontal width of the sulphide bearing zone is about 250-300 ft.

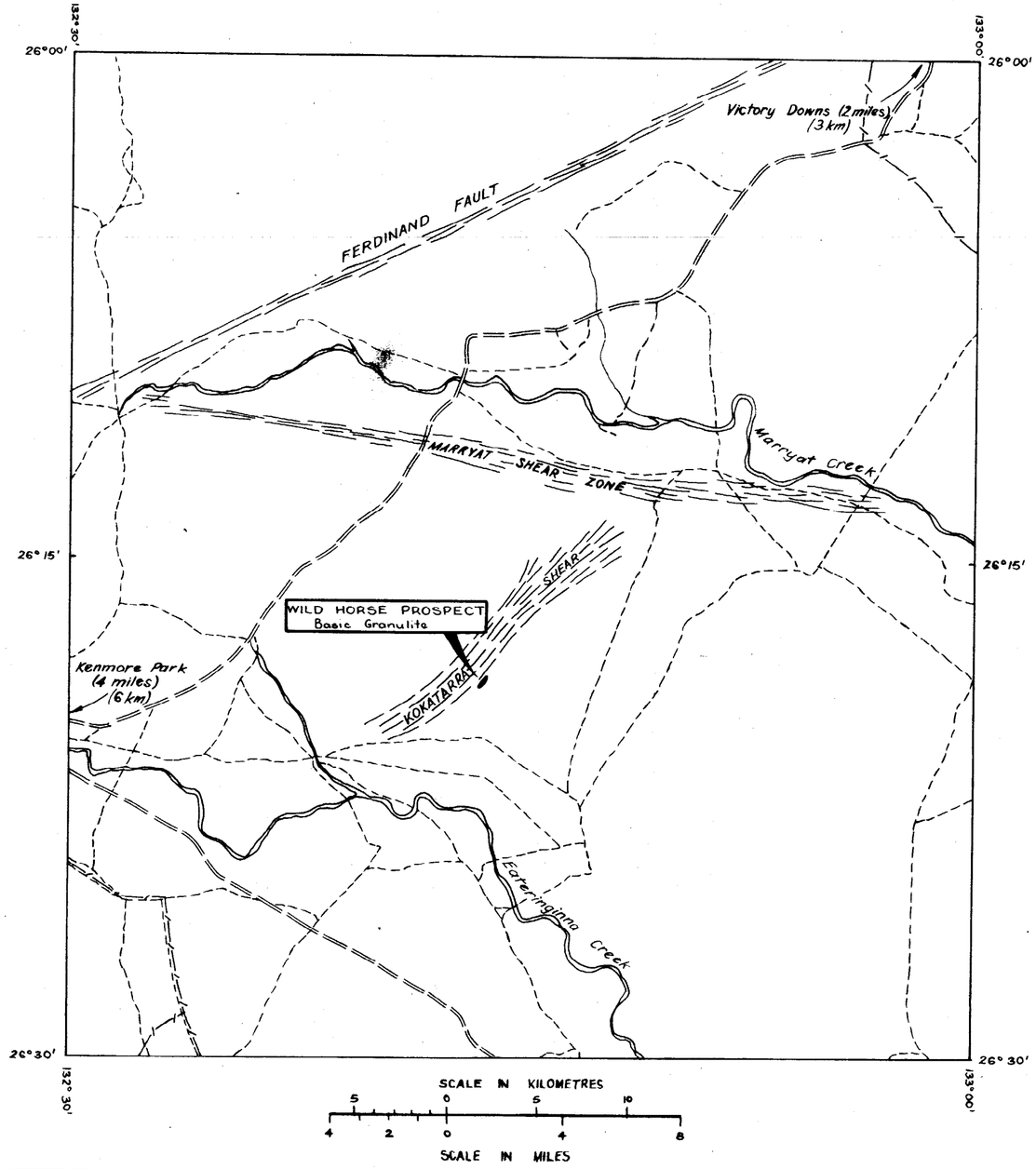
Samples 3, 4 and 5 indicate the true frequency effect of the body to be about 8%. The apparent frequency effects measured at the surface are about 4% using a 50 ft dipole spacing. Since this is the order of frequency effect to be expected from a body having the above parameters it is assumed that the anomaly source has been located.

It is worth noting that, within resistive rocks, fairly small quantities of sulphides can give rise to appreciable frequency effects. As the resistivity of the host rock is lowered, more current is able to by-pass the sulphide grains which give rise to the frequency effects, thus lowering its magnitude. It is also known that grain size influences frequency effects, in general a small grain (say .1 mm) giving the optimum values.

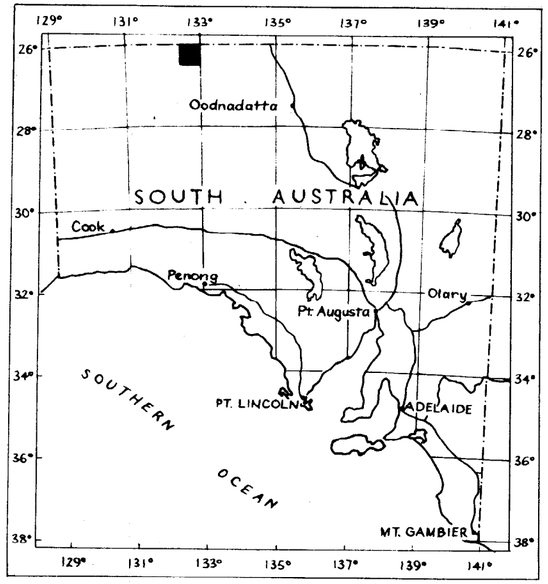
The relationship between sulphide (or sulphur) content and measured frequency effect is not a simple one. (See accompanying table). This probably reflects the importance of mode in which the sulphide occurs; i.e. grain size differences, or sulphides occurring in veinlets or disseminated grains. The measured frequency effect of 3.7% from sample No. 1 which contains accessory magnetite but virtually no sulphide is also worthy of note.

W.E. WIGHTMAN
EXPLORATION GEOPHYSICS SECTION

SAMPLE NO.	HOLE NO.	DEPTH(FT)	ROCK TYPE	Cu(ppm)	S (%)	FREQUENCY EFFECT	METAL FACTOR
1	WHD1	47.6 to 48.0	ACID GNEISS with accessory magnetite	12	0.03	3.7 %	7.4
2	WHD1	73.8 to 74.3	BASIC GRANULITE with no visible magnetite and only rare fine pyrite-specks.	35	0.14	0.5 %	0.6
3	WHD1	80.9 to 81.3	ACID GNEISS with disseminated pyrite specks.	220	0.82	3.6 %	5.5
4	WHD1	129.5 to 130.0	BASIC GRANULITE with disseminated pyrite specks.	360	1.35	8 %	9.9
5	WHD1	201.5 to 202.0	BASIC GRANULITE with disseminated pyrite.	50	0.48	10 %	75
6	WHD1	243.7 to 244.2	BASIC GRANULITE with disseminated pyrite.	7200	0.60	16 %	83

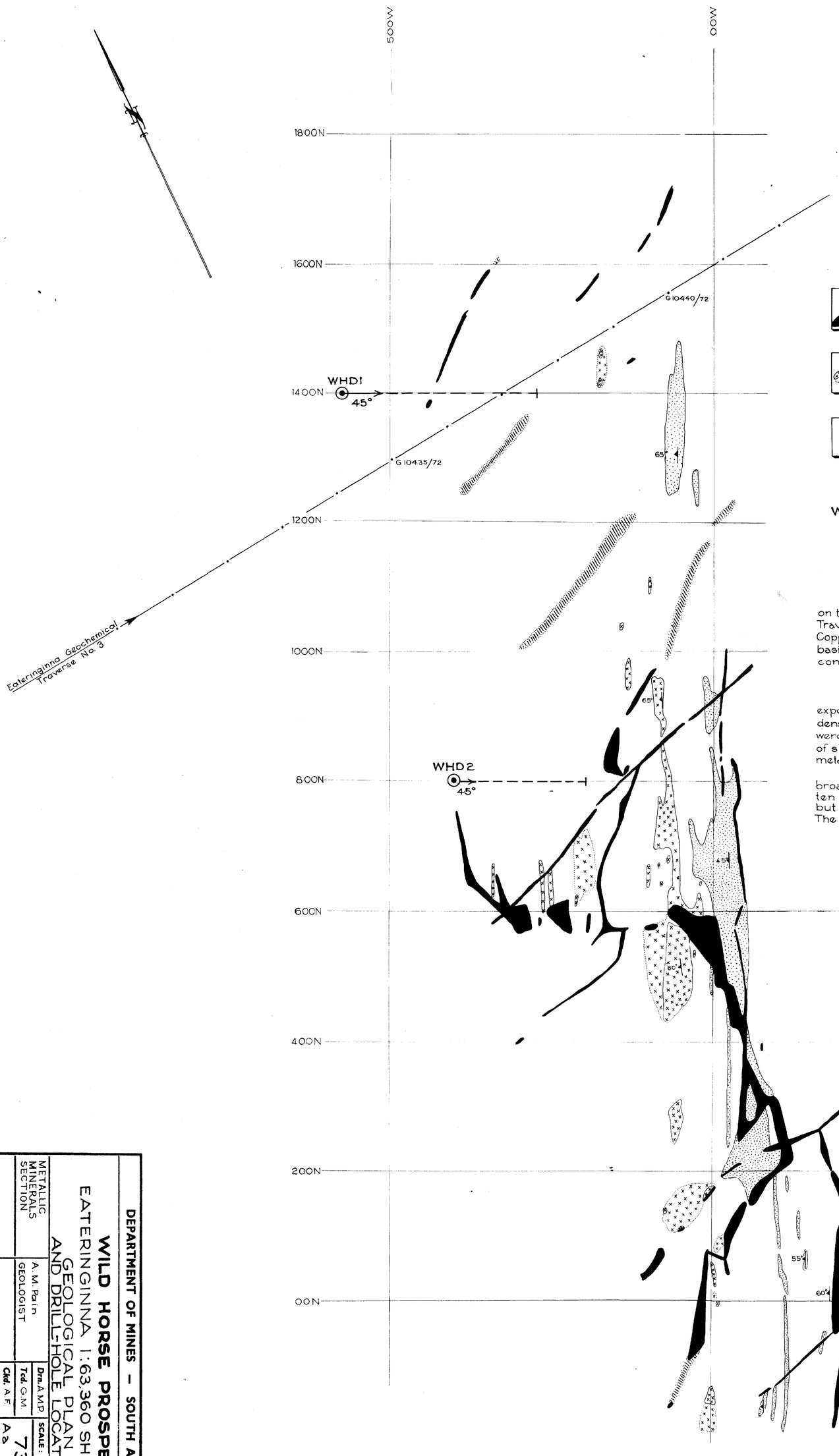


LOCALITY



EXPLORATION GEOPHYSICS SECTION	**DEPARTMENT OF MINES — SOUTH AUSTRALIA**	Scale: 1:250,000
Compiled: A.M.P.	WILD HORSE PROSPECT	Date: 26th Nov 1973
Drn. M.S. | Ckd. A.F.	LOCALITY PLAN	Drg. No. 73-795 Aa

1M—2,70 A1811



LEGEND

Dolerite Dyke Outcrop and rubbly float
A hard dense dark grey to black rock

Basic Granulite Outcrop and float
A coarse-grained pyroxene-amphibolite-feldspar-rock

Quartzo-feldspathic gneiss outcrop

65° Strike and dip of (faint) gneissic banding

WHD1 45° Diamond drill-hole location and inclination

GEOLOGICAL SUMMARY

"The Wild Horse" Prospect was discovered by sampling on the Eateringinna Regional Geochemical Soil Sample Traverse No. 3.
Copper carbonate staining found in weathered outcrops of a basic granulite interbedded in a folded Proterozoic sequence consisting predominantly of acid gneisses of granulite facies.

Outcrop in the area is generally poor but reasonable exposures occur at the prospect due to the presence of hard dense dolerite dykes which are resistant to weathering. They were injected into brittle fractures, probably at a late stage in the period of shearing and fracturing which post-dates the granulite metamorphism.

The prospect is situated near the eastern edge of the broad arcuate Kokatarra Shear. It is (perhaps fortuitously) ten miles S.S.W. along strike from the Kenmore II prospect, but is separated from it by a major structural feature, The Marryat Shear.

Stadia Survey R. Harris
Geology A.M. Pain

DEPARTMENT OF MINES — SOUTH AUSTRALIA

WILD HORSE PROSPECT

EATERINGINNA 1:63,360 SHEET AREA

GEOLOGICAL PLAN AND DRILL-HOLE LOCATIONS

METALLIC MINERALS SECTION

A. M. Pain, GEOLOGIST

Drn. A.M.P. | Trd. G.M. | Ckd. A.F. | Exd.

SCALE: 100 feet to 1 inch

73-790 Aa

DATE: 8th Jan. 1973

Director of Mines

LEGEND

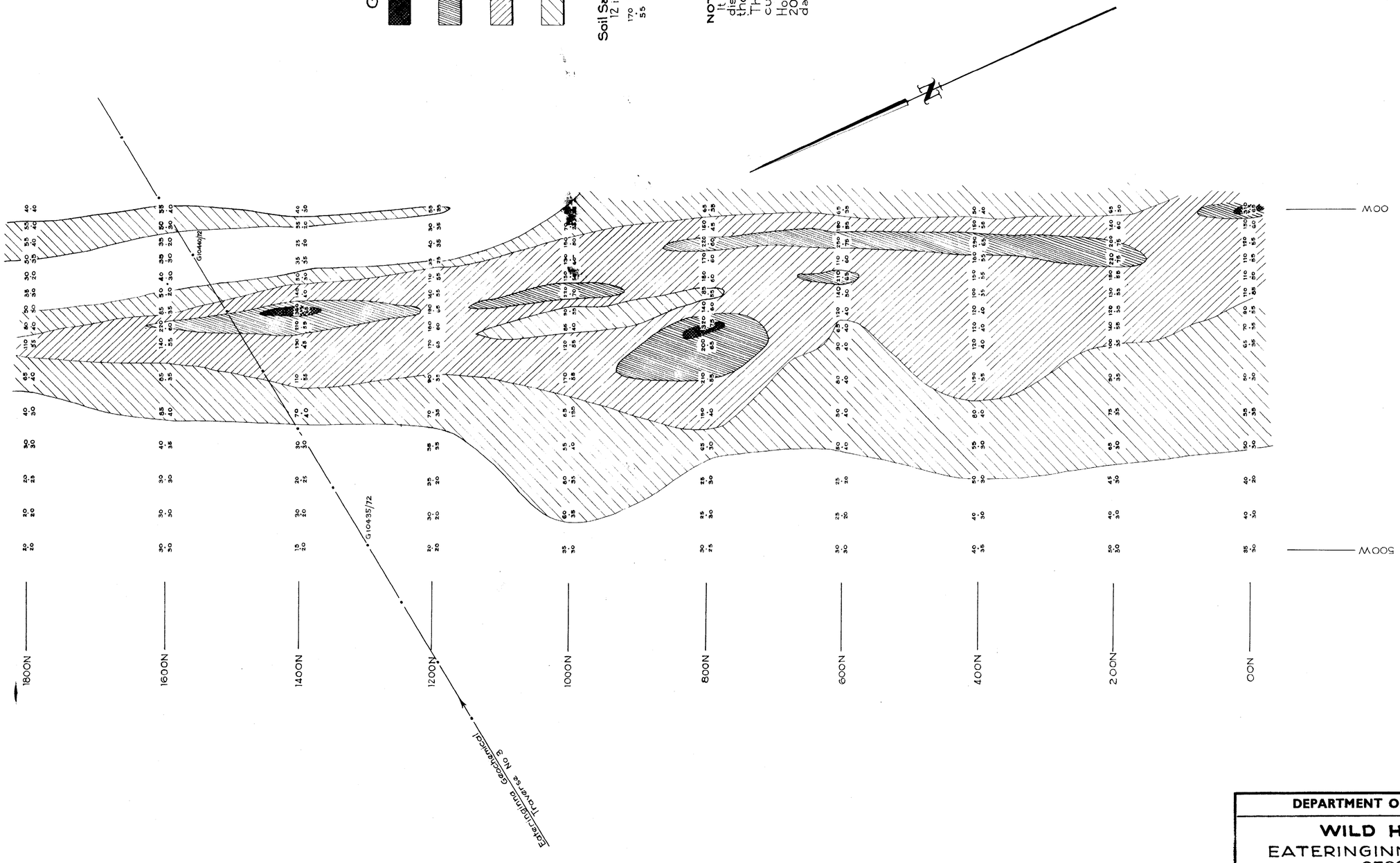
Geochemical Contours

- >300 ppm. Copper
- 200–299 ppm. Copper
- 100–199 p.p.m. Copper
- 50–99 p.p.m. Copper

Soil Samples – Minus 80 mesh fraction taken from 12 inches deep
170 Copper concentration in p.p.m.
55 Nickel concentration in p.p.m.

NOTE
It is possible that there has been some displacement of the contoured areas in the vicinity of lines 800N and 00N. These areas correspond with cross-cutting dykes (see geological plan) However, the lines were sampled 200 feet apart, so there is insufficient data to confirm this.

Geology : A.M. Pain

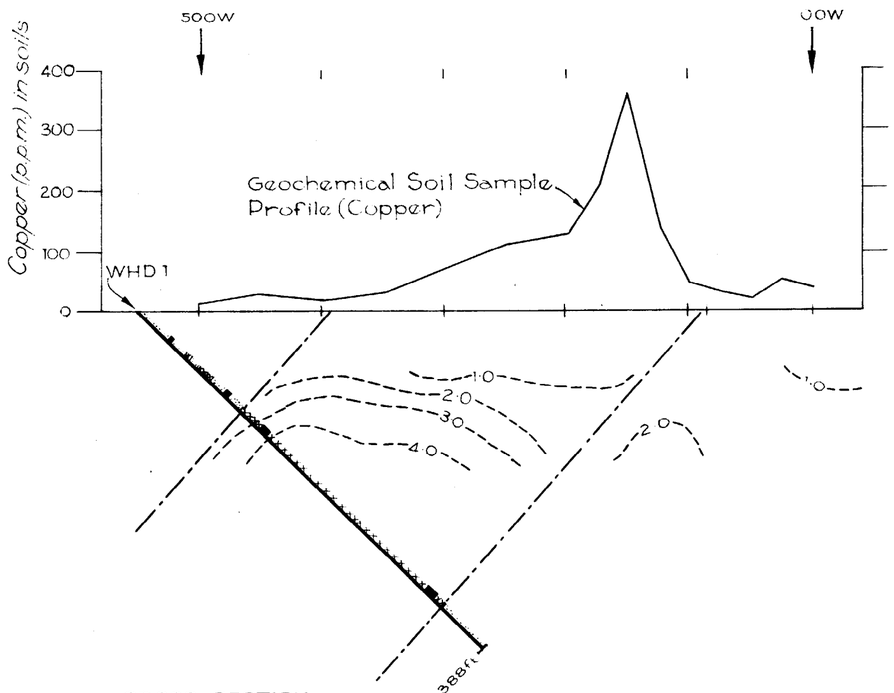


DEPARTMENT OF MINES — SOUTH AUSTRALIA

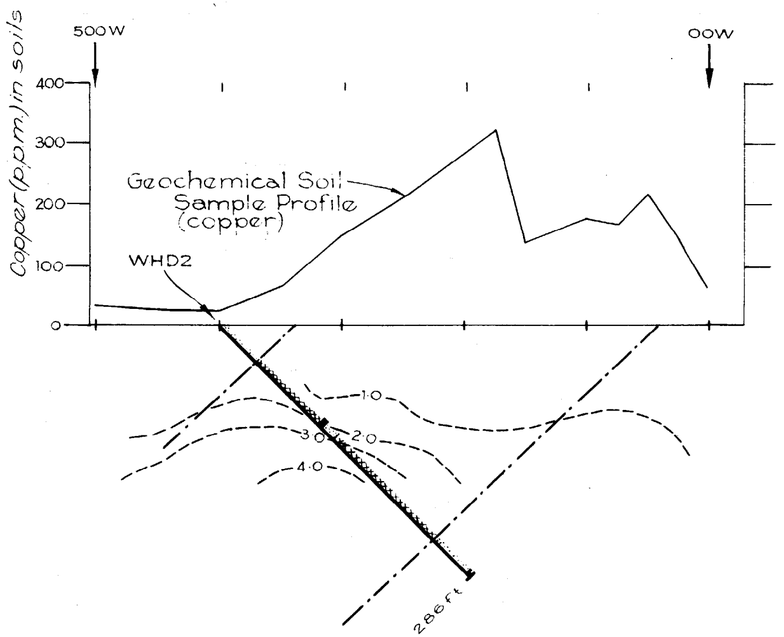
WILD HORSE PROSPECT

EATERINGINNA 1:63,360 SHEET AREA
GEOCHEMICAL PLAN
COPPER AND NICKEL IN SOIL SAMPLES

METALLIC MINERALS SECTION	A. M. Pain GEOLOGIST	Drn. A.M.P.	SCALE: 100 ft to 1 inch
		Tcd. G.M.	73-19 Aa
Director of Mines		Ckd.	
		Exd.	DATE: 11th Jan. 1973



CROSS SECTION
LINE 1400N



CROSS-SECTION LINE 800N

LEGEND

Acid Gneiss intersected in drillhole.

Basic and Intermediate granulite intersected in drillhole.

Dolerite intersected in drillhole.

WHD 1 Diamond drillhole location.

3·0 4·0 Induced Polarization frequency effect contours.

SCALE

100 0 100 200 FEET

50 0 500 METRES

	DEPARTMENT OF MINES – SOUTH AUSTRALIA	Scale: 1:1200
Compiled A.M.P Drn. G.M. Ckd	WILD HORSE PROSPECT EATERINGINNA 1:63360 SHEET AREA CROSS SECTIONS 800N & 1400N	Date: 9th Jan 1974 Drg. No. 74-31 A a