DEPARTMENT OF MINES AND ENERGY
SOUTH AUSTRALIA

REPORT BOOK NO. 91/19

KANMANTOO TROUGH GEOLOGICAL INVESTIGATIONS KARINYA SYNCLINE DETAILED GEOCHEMICAL SURVEYS

GEOLOGICAL SURVEY

by

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MINERAL RESOURCES

FEBRUARY 1991 DME 56/88

G02327

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FIGURES (cont.)

FIGURES (cont.)

Front Cover: Soil Sampling, Accommodation Hill Prospect (Photo No. 39274)

DEPARTMENT OF MINES AND ENERGY
SOUTH AUSTRALIA

REPT BK NO. 91/19
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KANMANTOO TROUGH GEOLOGICAL INVESTIGATIONS
KARINYA SYNCLINE
DETAILED GEOCHEMICAL SURVEYS

ABSTRACT

Results of regional soil sample traverses across Karinya Shale along with structural considerations identified three prospect areas, Frankton, The Gap and Accommodation Hill, for follow up mapping, soil sampling, ground magnetic, induced polarization and Sirotem surveys.

The detailed investigations showed several coincident Cu, Pb, Zn, As and Au soil anomalies with The Gap Prospect giving the best geochemical results, generally over the contact between basal calc-siltstone of Karinya Shale and underlying meta-sandstone of Backstairs Passage Formation. Mapping has refined the shape of secondary folding of Karinya Shale and Milendella Limestone Member. Induced polarization and Sirotem surveys outline the black shale of Karinya Shale which masks any possible response from mineralization and defines a possible ferruginised shear zone at the top of Milendella Limestone Member. Several lamprophyre dykes, termed minettes, have been identified and are generally associated with interpreted Landsat lineaments.

Two inclined diamond drill holes, to 250m depth, are proposed at Frankton Prospect to test Karinya Shale and upper Backstairs Passage Formation for possible base and precious metal mineralization and to obtain complete stratigraphic sections. Eight inclined reverse circulation drill holes, to 50m depth, are proposed at The Gap Prospect to test Karinya Shale and upper Backstairs Passage Formation for possible base and precious metal mineralization. Five

inclined reverse circulation drill holes, to 50m depth, are proposed at Accommodation Hill Prospect to test upper ferruginized margins of Milendella Limestone Member for base and precious metal mineralization.

INTRODUCTION

The lead-zinc task force identified the Karinya Syncline, at the northern extremity of the Cambrian Kanmantoo Trough, as prospective. The main target for possible stratiform and/or stratabound base and precious metal mineralization is the Karinya Shale, a dominantly pyritic-carbonaceous shale, equivalent to Talisker Calc-siltstone which hosts significant mineralization elsewhere in the Kanmantoo Trough.

A regional soil sampling programme over Karinya Shale was completed between February and May 1989 and results along with geological and Landsat imagery considerations defined three prospective areas for detailed investigations; Frankton, The Gap and Accommodation Hill (Morris, 1990).

Between September 1989 and March 1990 detailed soil sampling, mapping and geophysical surveys were completed at the three prospects. Surveying of grids, soil sampling and ground magnetometers surveys were undertaken by Technical Assistants P.P. Crettenden, S.J. Ewen, M.W. Flintoft, W.P. Fradd, A.J. Smith and students R. Collins, P. Fosdyke, D. Mallon, S. Tiainen and D. Webb. Soil samples were sieved on site and minus 60 mesh fraction sent to ANALABS Laboratories for pulverising and analysis for Cu, Pb, Zn, As and Fe by atomic absorption spectrometry and Au by arid digestion with carbon rod finish. Routine petrological descriptions were completed by AMDEL and Pontifex and Associates Pty Ltd and detailed descriptions were completed by M.G. Farrand (SADME petrologist).

LOCATION

The general area of investigation is approximately 80km northeast of Adelaide via the Sturt Highway (Fig. 1). The three prospect areas are shown on figure 2 with Frankton Prospect being 13km northeast of Truro and The Gap and Accommodation Hill Prospects being 6km and 8km east of Truro respectively.

REGIONAL GEOLOGY

The geology of the Karinya Syncline is shown on Truro 1:63 360 (Coats, 1959) and ADELAIDE 1:250 000 (Thomson, 1969a) and presented on figure 2. The Karinya Syncline is at the northern end of the Kanmantoo Trough (Fig. 1) and comprises Cambrian, Kanmantoo Group meta-sediments which are characteristically 'flysch' facies consisting of greywacke, quartz-mica schist, micaceous quartzite and phyllite with interbedded black pyritic shale and rare limestone deposited during the Waitpingan Subsidence (Thomson, 1969b). The region experienced four folding episodes and faulting during the Cambrian-Ordovician Orogeny (Mills, 1966). The Syncline was generated during the initial D^1 deformation, with associated slaty cleavage (Copper, 1989). D^2 folding is apparent in folded Karinya Shale at Frankton and The Gap (Fig. 2).

A stratigraphic column is shown on Table 1, rock units targeted for this investigation are:

- Milendella Limestone Member a grey-pink saccharoidal marble within siltstone and sandstone of Carrickalinga Head Formation.

- Backstairs Passage Formation comprising cross bedded medium to coarse grained meta-sandstone with siltstone and shale interbeds towards the base.

- Karinya Shale, equivalent to Talisker Calc-siltstone in the main Kanmantoo Trough, comprising black, pyritic, carbonaceous shale grading to banded calcareous siltstone towards the base. (Plate 1)

- Tapanappa Formation comprising grey siltstone and fine grained meta-sandstone.

Several lamprophyre (Plate 2) and dolerite dykes plus a lamprophyric diatreme have been identified in the area (Fig. 2).

TABLE 1

Stratigraphic Column

SOUTHERN KANMANTOO TROUGH		KARINYA SYNCLINE	
Top not exposed MIDDLETON SANDSTONE			
PETREL COVE FORMATION			
BALQUHIDDER FORMATION			
TUNKALILLA FORMATION			
TAPANAPPA FORMATION (with pyrite beds)		Top not exposed TAPANAPPA FORMATION	
TALISKER CALC-SILTSTONE (includes Nairne Pyrite member)		KARINYA SHALE	
BACKSTAIRS PASSAGE FORMATION		BACKSTAIRS PASSAGE FORMATION	
	CAMPANA CREEK MBR		CAMPANA CREEK MBR.
CARRICKALINGA HEAD FORMATION	BLOWHOLE CREEK SILTSTONE (B.C.S.) MBR	CARRICKALINGA HEAD FORMATION	B.C.S. MEMBER (includes Milendella Limestone Member)
	MADIGAN INLET MBR.		MADIGAN INLET MBR (equivalent)
NORMANVILLE GROUP		NORMANVILLE GROUP	

FRANKTON PROSPECT

Geology

The prospect area, on the eastern limb of the Karinya Syncline, is contained within a northwest trending Landsat linear corridor and comprises Karinya Shale folded to an anticlinal structure about 2km across (Figs. 2 and 3). The structure plunges about 25° north with well developed axial plane cleavage that strikes north-south and dips steeply west. Rock exposure is limited and mainly confined to creeks crossing the area but detailed mapping has modified the shape of the anticlinal structure depicted on Truro 1:63 360 with the fold axis moved 150m to the east. Several lamprophyre dykes, classed as minettes have been located (Appendix 6729 RS 1509, 1510, 3292, 3293, 3295 and 3296) (Farrand, 1990a and b). The dykes are up to 1.5m wide, strike either northwest or northeast and are traceable for up to 500m (Fig. 3).

Geochemistry

Thirteen west-east soil sample lines from 2425m to 2900m long at 200m spacing were sampled at 25m intervals (Fig. 4). Results are shown on figures 5, 6 and 7 and frequency distribution histograms and cumulative frequency curves are presented on figures 8 and 9. The data show log normal distributions and the median (Me) and lower limit of an anomaly ('A') values are shown on table 2.

TABLE 2

Geochemical Results - Frankton Prospect

	Me	'A'
Cu (ppm)	19	43
Pb (ppm)	11	35
Zn (ppm)	36	78
As (ppm)	6	18
Au (ppb)	1	2
Fe (%)	2.6	5

Pearson Correlation Coefficients

	Cu	Pb	Zn	As	Au	Fe
Cu	1.000	0.065	0.354	0.320	-0.003	0.525
Pb	0.065	1.000	0.151	0.114	-0.007	0.072
Zn	0.354	0.151	1.000	0.330	-0.032	0.308
As	0.320	0.114	0.330	1.000	-0.005	0.518
Au	-0.003	-0.007	-0.032	-0.005	1.000	-0.041
Fe	0.525	0.072	0.308	0.518	-0.041	1.000

Correlation coefficients (Table 2) show a good correlation for Cu-Zn-As-Fe indicating a scavenging effect of Fe in the soils. Interestingly Au has a slightly negative correlation with other elements. Overall geochemical results are low, anomalous values are plotted on figures 10 and 11 and show that anomalous Cu, Pb and Zn and to a lesser extent Au and As are generally associated with Karinya Shale. Coincident low order Pb (70 ppm), Zn (190 ppm), As (35 ppm) and Au (4 ppb) anomalies occur over Karinya Shale at about the 350m mark on Lines 7 and 8. There is a strong Pb (680 ppm) anomaly at 1050m on Line 8 and weakly anomalous Zn (85 ppm) and Cu (45 ppm) 200m to the north on Line 7.

Geophysics

A ground magnetic survey was conducted over the area with readings at 25m intervals on Lines 1 to 11 inclusive, results are shown on figure 12. The Karinya Shale is non-magnetic. Induced polarization (IP) and Sirotem surveys were conducted on Lines 6, 7, 8 and 9, a detailed report is presented by Dodds (1990) and a summary of results is presented on figure 13. The Karinya Shale gave distinctive IP and Sirotem anomalies providing a useful mapping aid.

THE GAP PROSPECT

Geology

The prospect area covers a secondary fold structure defined by Karinya Shale on the eastern limb of the Karinya Syncline and is crossed by a northeast trending Landsat linear corridor (Figs 2 and 14). Siltstone and shale of Tapanappa Formation and Karinya Shale are poorly exposed while meta-sandstone of Backstairs Passage Formation forms bold outcrop along the eastern flank. Where Karinya Shale is exposed it is a black shale (Plate 1) often with iron oxide and jarosite developed along cleavage, fracture and bedding planes. At the northern end of the prospect, on Lines 5 and 6, strongly ferruginised calcareous siltstone is observed at the base of Karinya Shale (Fig. 14). North-south trending, near vertical, axial plane cleavage is well developed. Several lamprophyre dykes, classed as minettes (Appendix 1, 6729 RS 1507) (Farrand, 1990a), are exposed in a disused quarry just south of the Sturt Highway (Fig. 14). The dykes, up to 60cm wide, intrude along northeast striking joint planes that dip 60° SE and cross meta-sandstone of Backstairs Passage Formation (Plate 2).

Geochemistry

Fourteen east-west soil sample lines 1000m long with a 200m spacing were sampled at 25m intervals and results are shown on figures 15, 16, 17 and 18. Frequency distribution histograms and cumulative frequency curves are presented on figures 19 and 20. The data show log normal distributions and the median (Me) and lower limit of anomaly ('A') values are shown on table 3.

TABLE 3

Geochemical Results - The Gap Prospect

	Me	'A'
Cu (ppm)	22	70
Pb (ppm)	13	73
Zn (ppm)	47	113
As (ppm)	7	61
Au (ppb)	1	3
Fe (%)	1.8	4.2

Pearson Correlation Coefficients

	Cu	Pb	Zn	As	Au	Fe
Cu	1.000	0.286	0.100	0.423	0.345	0.074
Pb	0.286	1.000	0.288	0.550	0.207	0.075
Zn	0.100	0.288	1.000	0.331	0.015	0.273
As	0.423	0.550	0.331	1.000	0.404	0.100
Au	0.345	0.207	0.015	0.404	1.000	0.133
Fe	0.074	0.075	0.273	0.100	0.133	1.000

Correlation coefficients (Table 3) show good correlation for Cu-Pb-As-Au and for Zn-Pb-As. Anomalous values are plotted on figures 21 and 22 and show Cu, Pb, Zn, As and Au anomalies are mainly associated with Karinya Shale. In particular elevated As values (>10 ppm) reflect underlying Karinya Shale and are a useful mapping tool in the area. Coincident Cu (80 ppm), Pb (635 ppm), Zn (520 ppm), As (120 ppm) and Au (4 ppb) anomalies occur on Line 6, between 400m and 650m, over the contact between ferruginous calc-siltstone of Karinya Shale and meta-sandstone of underlying Backstairs Passage Formation. A rock chip sample of the ferruginous calc-siltstone assayed 1.4% Cu, 2105 ppm Pb, 1557 ppm Zn, 3000 ppm As, 16.5 ppm Ag, 6 ppb Au, 235 ppm Co and 40 ppm Mo (sample 6729 RS 3306). Coincident Pb (400 ppm), As (67 ppm) and Au (13 ppb) anomalies occur on Line 8, between 600m and 650m, over a ferruginous black shale exposure.

Geophysics

An IP survey was conducted on lines 1, 3, 4 and 6, details of which are reported by Dodds (1990) and a summary of results is shown on figure 23. The Karinya Shale gave distinctive IP anomalies that were an important mapping aid.

ACCOMMODATION HILL PROSPECT

Geology

The prospect area covers a section of folded Milendella Limestone Member of Carrickalinga Head Formation on the eastern limb of the Karinya Syncline, and is crossed by a northeast trending Landsat linear corridor (Figs. 3 and 24). Milendella Limestone Member, within a sequence of meta-siltstone and meta-sandstone, is exposed in several small, disused aggregate quarries and is a grey to off white, saccharoidal marble that grades laterally to grey limestone and calcareous siltstone.

Massive ironstone up to 2m wide is patchily developed along the upper contact and rock chip samples assayed up to 1% Cu, 465 ppm Pb, 1545 ppm Zn, 2.5 ppm Ag and 0.5 ppm Au (samples 6729 RS 1516 - RS 1518).

A weathered lamprophyre dyke 50cm to 70cm wide is well exposed in the northern quarry (Fig. 24) where it has intruded along a northwest striking joint set that dips 15° to the east.

Geochemistry

Five west-east soil sample lines 1000m long with a 200m spacing were sampled at 25m intervals and results are shown on figures 25, 26, 27 and 28. Frequency distribution histograms and cumulative frequency curves are presented on figures 29 and 30. The data shows log normal distributions and the median (Me) and lower limit of anomaly ('A') values are shown on table 4.

TABLE 4

Geochemical Results - Accommodation Hill Prospect

	Me	'A'
Cu (ppm)	17	35
Pb (ppm)	13	61
Zn (ppm)	49	79
As (ppm)	7	22
Au (ppb)	1	2
Fe (%)	2.2	5.2

Pearson Correlation Coefficients

	Cu	Pb	Zn	As	Au	Fe
Cu	1.000	0.107	0.359	0.411	0.030	0.180
Pb	0.107	1.000	0.097	0.313	0.300	-0.362
Zn	0.359	0.097	1.000	0.554	-0.132	0.643
As	0.411	0.313	0.554	1.000	0.055	0.239
Au	0.030	0.300	-0.132	0.055	1.000	-0.372
Fe	0.180	-0.362	0.643	0.239	-0.372	1.000

Correlation coefficients (Table 4) show a good correlation for Cu-Zn-As, Pb-As and Pb-Au. Anomalous values are plotted on figures 31 and 32 and show Milendella Limestone Member to be anomalous for Cu, Pb, Zn, As and Au with coincident anomalies at the western end of adjacent sample lines 3 and 5.

Geophysics

An IP survey was conducted on lines 1, 2 and 3, details of which are reported by Dodds (1990) and a summary of results is shown on figure 33. A pronounced low resistivity zone along the western edge of the area is interpreted to be either a shear zone or a conductive geological horizon. The low resistivity zone coincides with geochemical anomalies and ironstone development at the top of the Milendella Limestone Member.

CONCLUSIONS

Frankton Prospect

- The area lies within a northwest trending Landsat linear corridor.

- Mapping has refined the shape of folded Karinya Shale.

- Geochemical results are generally low but some anomalous results are associated with the Karinya Shale:

  - coincident Pb, Zn, As and Au anomalies at about 350m on Lines 7 and 8.

  - Pb anomalies around 1050m on Line 8 with associated elevated values of Cu and Zn 200m to the north.

- Several lamprophyre dykes have been found, they appear to intrude along joint sets and indicate deep seated crustal weakness.

- IP and Sirotem surveys give characteristic anomalous responses over the pyritic-graphitic Karinya Shale that mask any possible base metal sulphide response.

The Gap Prospect

- The area is crossed by a northeast trending Landsat linear corridor.

- Several lamprophyre dykes intrude along joint sets in a quarry at the south-eastern corner of the prospect.

- Mapping has refined the shape of folded Karinya Shale.

- Karinya Shale has a higher geochemical response for Cu, Pb, Zn, As and Au than at the Frankton Prospect.

- As in particular is elevated over Karinya Shale and is a useful mapping tool.

- Significant coincident Cu, Pb, Zn, As and Au anomalies between 400m and 650m on Line 6 are associated with the contact between ferruginous calc-siltstone of Karinya Shale and meta-sandstone of underlying Backstairs Passage Formation.

- The IP survey gave characteristic anomalous responses over the pyritic-graphitic Karinya Shale that masks any possible base metal sulphide response.

Accommodation Hill Prospect

- The area is crossed by a northeast trending Landsat linear corridor.

- A lamprophyre dyke, exposed in a quarry, intrudes along a joint set.

- Milendella Limestone Member is anomalously high in Cu, Pb, Zn, As and Au particularly near the western margin where ironstone is developed.

- The IP survey indicates a possible north-south shear zone along the western edge of the area.

RECOMMENDATIONS

Frankton Prospect

Two 250m diamond drill holes inclined at 60° to the east are recommended to:

- test Karinya Shale and top of Backstairs Passage Formation for stratiform/stratabound Pb-Zn-Ag-Au mineralization.

- add to the stratigraphic knowledge of the Karinya Syncline.

The proposed holes are sited at 325m and 1050m on Line 8 on the western limb of folded Karinya Shale (Fig. 3).

The Gap Prospect

Eight reverse circulation drill holes to 50m depth and inclined 50° are proposed (Fig. 15).

Four holes are designed to test coincident Cu, Pb, Zn and As anomalies, between Lines 5 and 6, over the boundary between Karinya Shale and Backstairs Passage Formation. The remaining 4 holes are to test minor coincident Pb, Au and As anomalies in Karinya Shale on Lines 8 and 14.

Accommodation Hill Prospect

Five reverse circulation drill holes to 50m depth and inclined 50° are proposed to test the upper ferruginised margin of Milendella Limestone Member where coincident Cu, Pb, Zn, Au and As anomalies and a possible shear zone occur (Fig. 25).

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APPENDIX

Petrological Reports
(Amdel report G 8285/90; samples 6729 RS 1507, 1509 and 1510)
(Pontifex and Assoc. Pty Ltd Mineralogical Report 5682;
samples 6729 RS 3292, 3293, 3295 and 3296).

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15 November 1989

South Australian Department of Mines & Energy
PO Box 151
EASTWOOD SA 5063

ATT: B J MORRIS, MINERAL RESOURCES

REPORT G 8285/90

YOUR REFERENCE:	EX-908; 12/03/351 (Debit No. 88-000-T02-402-005)
IDENTIFICATION:	6729 RS1507-10; 5836 RS739-41
MATERIAL:	7 rock samples
LOCATION:	Kanmantoo Trough and Gawler Craton, S.A.
DATE RECEIVED:	25 October 1989
WORK REQUIRED:	Petrography (7 Code PET1.1.1)

Investigation and Report by: Frank Radke

Keith Henley

Dr Keith J Henley
Manager
Geological Services Section

bp

amdel

Sample No. (Thin Section No.) SAMPLE NAME	Major Mineralogy and Texture	Minor Minerals	Alteration	Comments
6729 RS1507 (TSC52358) MINETTE	Aligned biotite flakes in finely granular potash feldspar-rich matrix. Some plagioclase and minor quartz also in matrix.	Disseminated opaques	Incipient sericitisation of of groundmass feldspar. Biotite flakes have darker (?oxidised) margins.	Minette showing good alignment of biotite microphenocrysts.
6729 RS1508 (TSC52359) ALTERED MINETTE	Large muscovite flakes in a matrix of granular quartz and finely intergrown muscovite flakes.	Opaques and translucent iron oxides	Thought to be a completely altered rock in which biotite has been replaced by muscovite. Quartz also thought to be of metasomatic origin.	Probably a minette such as sample 6729 RS1507 which has been completely altered to a quartz-muscovite assemblage.
6729 RS1509 (TSC52360) DEGRADED MINETTE	Aligned biotite flakes in granular potash feldspar matrix. Locally potash feldspar forms coarser grained lath-shaped crystals.	Opaques, apatite	Strong development of limonite along fractures and marginal to biotite flakes.	Minette showing alteration to iron oxides possibly under weathering conditions.
6729 RS1510 (TSC52361) MINETTE	Aligned biotite flakes intergrown with potash feldspar which typically has a granular texture although locally it forms radiating prisms.	Disseminated opaques. Granular quartz intergrown with potash feldspar.	Localised development of weakly birefringent clay.	Fine-grained minette which lacks porphyritic texture typical of lamprophyres.

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MINERALOGICAL REPORT NO. 5682
by A.C. Purvis, PhD.

July 20th, 1990

TO :	Mr B.J. Morris S.A. Dept of Mines & Energy PO Box 151 EASTWOOD SA 5063
YOUR REFERENCE :	Order No. EX 999
MATERIAL :	16 samples, Kanmantoo Trough
IDENTIFICATION :	6729 RS 3254 to 6729 RS 3258 inclusive 6729 RS 3287 to 6729 RS 3297 inclusive
WORK REQUESTED :	Preparation of normal thin sections and petrographic description.
SAMPLES & SECTIONS :	Returned to you with this report.

Ian R. Pontifex
PONTIFEX & ASSOCIATES PTY LTD

6729 RS 3292

Flow textured quartz bearing minette cf. No. 3258.

Field Note : Lamprophyre dyke (surface sample) equivalent to RS 3258 in drill hole

Biotite	25%
Orthoclase	60-65%
Magnetite	3%
Leucoxene	5%
Quartz	2-3%
Clays	~1%
Apatite	~1%

This rock is similar to RS 3258, but is richer in biotite and poorer in quartz. The biotite flakes are 0.2-1mm long with a strong flow texture but the orthoclase is unoriented and granular to prismatic locally in subradiating bundles, with prisms to 1.5mm long. Fine oxidised and leucoxenised oxides are common and there is minor quartz and apatite.

6729 RS 3293

Flow textured quartz-bearing minette with porous carbonate veins cf. 3288.

Field Note: Lamprophyre dyke.

Biotite	20%
Orthoclase	70%
Oxides + limonite	7-10%
Apatite	<1%
Quartz	2-3%
Carbonate	trace

The biotite flakes in this rock are from 0.2 to 3mm long and strongly flow oriented. They are set in an orthoclase rich matrix which is locally spherulitic in texture with orthoclase crystals to 2mm long. Minor interstitial quartz is present and fine grained oxidised opaque oxides are common. Some of the limonite in this rock may have been derived from carbonate, but thin porous carbonate veins are present. There is minor accessory apatite.

6729 RS 3295

Flow textured porphyritic minette with secondary quartz.

Phlogopite	25%
Orthoclase + clay	60-65%
Quartz	5%
Magnetite + leucoxene	5-7%
Limonite	2-3%
Apatite	?<1%

The flow-oriented phlogopite flakes in this rock are from 0.4 to 2mm long, in a fine grained orthoclase rich groundmass with rare spherulites to 1.5mm diameter. Leucoxenised fine oxides are much more abundant than oxidised grains and a fine secondary porosity appears to represent leached out apatite grains. Patches of fine granular secondary quartz are common and there are diffuse patches of limonite.

6729 RS 3296

Patches of minette in spherulitic microsyenite.

Field Note : Lamprophyre dyke with coarse and fine grained phases.

	A minette	B microsyenite
Phlogopite	15%	-
Orthoclase	75%	90%
Leucoxene	7%	5%
Magnetite	1-2%	3%
Quartz	< 1%	2-3%
Apatite	1%	tr

This rock has diffuse lenses of minette, comparitively poor in phlogopite, passing gradationally into phlogopite free, spherulitic zones dominated by orthoclase. The minette areas contain zoned flakes of phlogopite to 2mm long set in subspherulitic orthoclase. Leucoxenised octahedral and skeletal oxide crystals are common and there is minor apatite rarely as microphenocrysts, and trace quartz.

The microsyenite areas are dominated by spherulites of orthoclase to 8mm diameter with leucoxenised octahedral and skeletal oxide grains most abundant close to the minette/microsyenite boundary. Minor late magmatic or secondary quartz is present between and within the spherulites. Rare cavities contain flakes of hematite.

Some of the leucoxene patches close to the edges of the minette may have been derived from titaniferous phlogopite flakes.

Plate 1. Karinya Shale exposed in road cutting on Sturt Highway, The Gap Prospect. Photo No. 39275

Plate 2. Lamprophyre dyke intruded along joint plane, note fine grained chilled margins. Plate No. 39276

Plate 1.

Plate 2.

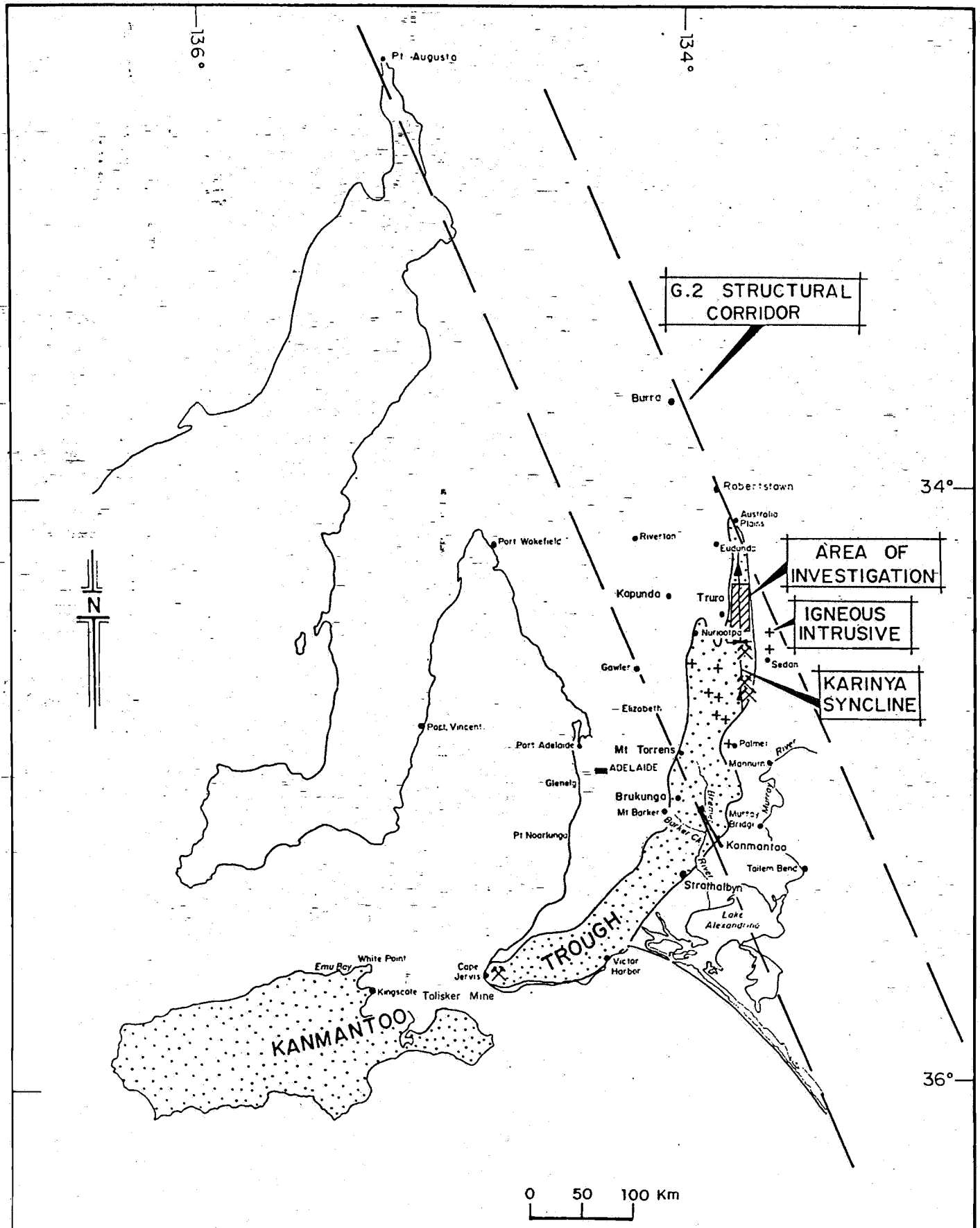


Figure. 1

DEPARTMENT OF MINES AND ENERGY SOUTH AUSTRALIA	COMPILED B. Morris	CDO 26-11-90 DATE
KANMANTOO TROUGH GEOLOGICAL INVESTIGATIONS KARINYA SYNCLINE LOCALITY PLAN	DRAWN D Simpson	SCALE 1:2 000 000
	DATE Aug 1990	PLAN NUMBER S21671
	CHECKED	

5080

139°10'

139°15'

34°20'

34°25'

Landsat Linear Corridor

T1 T2 T3 T4 T5 T6 T7 T8 T9 T10 T11 T12 T13 T14 T15 T16 T17

FRANKTON PROSPECT

THE GAP PROSPECT

ACCOMODATION HILL PROSPECT

Synclin

Karinya

Dutton

Diatreme

STURT HIGHWAY

TRURO

TO BLANCHETOWN

Ag,Pb

Cu

MURRAY BASIN

N

CAMBRIAN

KANMANTOO GROUP

Tapanappa Formation: grey siltstone and fine meta – sandstone

Karinya Shale (Talisker Calc-siltstone): carbonaceous shale and grey calcareous meta – siltstone

Backstairs Passage Formation: cross bedded medium to coarse feldspathic meta–sandstone.

Carrickalinga Head Formation: siltstone and sandstone with grey-pink saccharoidal marble (Milendella Limestone Member)

NORMANVILLE GROUP

Blue–black carbonaceous shale, siltstone quartzite and marble

Truro Volcanics

ADELAIDEAN

Undifferentiated

T1 Regional Soil Sampling Traverses

X Lamprophyre and dolerite intrusives

1 0 1 2 3 4 5

KILOMETRES

Note: Geology after Coats (1959)

Figure. 2

DEPARTMENT OF MINES AND ENERGY SOUTH AUSTRALIA

KANMANTOO TROUGH – GEOLOGICAL INVESTIGATIONS
KARINYA SYNCLINE

GEOLOGY & LOCATION OF PROSPECT AREAS

COMPILED	B.J. Morris
DRAWN	D. Simpson
DATE	July 1990
CHECKED	
CDO DATE	26.11.90
SCALE	1:50 000
PLAN NUMBER	91-163

5080

139°12'

139°13'

34°18'

34°19'

Quarry

Frankton

Farm buildings

Farm buildings

Frankton No 2

Frankton No1

L1

L2

L3

L4

L5

L6

L7

L8

L9

L10

L11

L12

L13

70° 85° 85° 73° 45° 80° 85° 70° 70° 70° 85° 70° 80° 55° 65° 70° 85° 60° 65° 85° 85° 25° 25° 55° 60°

0 500

METRES

Frankton No.1 — Proposed inclined diamond drillhole

High tension power line

Fence

Main road

Track

Creek

L2 — Soil sampling line

CAMBRIAN

KANMANTOO GROUP

Tapanappa Formation: grey metasiltstone and fine metasandstone.

Karinya Shale: black shale and grey calc–siltstone

Backstairs Passage Formation: crossbedded feldspathic metasandstone

Exposed lamprophyre dyke

Lamprophyre float

⊢70° Strike and dip of bedding

⊏70° Strike and dip of cleavage

●→25° Direction and strike of fold

KANMANTOO TROUGH
GEOLOGICAL INVESTIGATIONS

KARINYA SYNCLINE – FRANKTON PROSPECT

GEOLOGICAL PLAN

5022

SADME 91-146

FIG. 3

139°12'

139°13'

34°18'

34°19'

Frankton

Pit

Farm buildings

Farm buildings

L1 RS913 RS917 RS921 RS925 RS929 RS933 RS937 RS941 RS945 RS949 RS953 RS957 RS961 RS965 RS969 RS973 RS977 RS981 RS985 RS989 RS993 RS997 RS1001 RS1005 RS1009 RS1011 2450m

L2 RS1012 RS1016 RS1020 RS1024 RS1028 RS1032 RS1035 RS1039 RS1043 RS1047 RS1051 RS1055 RS1059 RS1063 RS1067 RS1071 RS1075 RS1079 RS1083 RS1087 RS1091 RS1095 RS1099 RS1103 RS1107 RS1111 RS1113 2550m

L3 NS RS1114 RS1118 RS1122 RS1126 RS1130 RS1134 RS1138 RS1142 RS1146 RS1150 RS1154 RS1158 RS1162 RS1166 RS1170 RS1174 RS1178 RS1182 RS1186 RS1190 RS1194 RS1198 RS1202 2500m

L4 NS RS1203 RS1207 RS1211 RS1215 RS1219 RS1223 RS1227 RS1231 RS1235 RS1239 RS1243 RS1247 RS1251 RS1255 RS1259 RS1263 RS1267 RS1271 RS1275 RS1279 RS1283 RS1287 RS1291 2500m

L5 NS RS1292 RS1296 RS1300 RS1304 RS1308 RS1312 RS1316 RS1320 RS1324 RS1328 RS1331 RS1925 RS1929 RS1933 RS1937 RS1941 RS1945 RS1948 RS1332 RS1336 RS1340 RS1344 RS1348 RS1352 RS1356 2500m

L6 NS RS1357 RS1361 RS1365 RS1369 RS1373 RS1377 RS1381 RS1385 RS1389 RS1393 RS1397 RS1401 RS1405 RS1409 RS1413 RS1417 RS1421 RS1425 RS1429 RS1433 RS1437 RS1440 2425m

L7 RS1441 RS1445 RS1449 RS1453 RS1457 RS1461 RS1465 RS1469 RS1473 RS1477 RS1481 RS1485 RS1489 RS1493 RS1497 RS1501 RS1674 RS1677 RS1681 RS1684 RS1525 RS1529 RS1533 RS1537 RS1541 RS1545 NS RS1548 RS1552 2500m

L8 RS1553 RS1557 RS1561 RS1565 RS1569 RS1573 RS1577 RS1581 RS1585 RS1589 RS1593 RS1597 RS1601 RS1605 RS1609 RS1612 RS1616 RS1620 RS1624 RS1628 RS1632 NS RS1635 RS1639 RS1643 RS1647 RS1651 2500m

L9 RS1652 RS1656 RS1660 RS1664 RS1668 RS1672 RS1673 RS1685 RS1687 RS1691 RS1695 RS1699 RS1703 RS1707 RS1711 RS1715 RS1719 RS1723 RS1727 RS1731 RS1735 RS1739 RS1743 RS1747 RS1751 RS1755 RS1759 RS1763 RS1767 RS1771 RS1775 2800m

L10 RS2000 RS2004 RS2008 RS2012 RS2016 RS2020 RS2024 RS2028 NS RS2031 RS2035 RS2039 RS2043 RS2047 RS2051 RS2055 RS2059 RS2063 RS2067 RS2071 RS2075 RS2079 RS2083 NS RS2086 RS2090 RS2094 RS2098 RS2102 RS2106 RS2110 RS2114 2900m

L11 RS1776 RS1780 RS1784 RS1788 RS1792 RS1796 NS RS1799 RS1802 NS NS RS1805 RS1809 RS1813 RS1817 RS1821 RS1825 RS1829 RS1833 RS1837 RS1841 RS1845 RS1849 RS1853 RS1857 RS1861 RS1865 RS1869 RS1873 RS1877 RS1881 RS1885 RS1889 2900m

L12 RS2115 RS2116 NS NS RS2117 NS RS2120 NS RS2123 RS2127 RS2131 RS2135 RS1803 RS2139 RS2143 RS2147 RS2151 RS2155 RS2159 RS2163 RS2167 RS2171 RS2175 RS2179 RS2183 RS2187 RS2191 RS2195 RS2199 RS2203 RS2207 RS2211 RS2215 2600m

L13 NS NS RS1890 RS1892 RS1896 RS1900 RS1904 RS1908 RS1912 RS1916 RS1920 RS1924 RS1949 RS1952 RS1956 RS1960 RS1964 RS1968 RS1972 RS1976 RS1980 RS1984 RS1988 RS1992 RS1996 RS1999 RS2216 RS2220 RS2224 RS2228 2600m

RS2102 RS2106 RS2110

Soil sample line with sample numbers (NB all RS numbers prefixed by 6729)

0 500 METRES

Fence

Main road

Track

Creek

KANMANTOO TROUGH
GEOLOGICAL INVESTIGATIONS

KARINYA SYNCLINE – FRANKTON PROSPECT

SOIL SAMPLE LOCATIONS & NUMBERS

SADME

SADME 91–34

FIG. 4

5022

139°12'

139°13'

34°18

L1

L2

L3

L4

L5

L6

L7

L8

L9

L10

L11

L12

L13

2450m

2550m

2500m

2500m

2500m

2425m

2500m

2500m

2800m

2900m

2900m

2600m

2600m

Frankton

Farm buildings

Farm buildings

Sample values of:

Zinc (ppm) — Lead (ppm)

78ppm — 35ppm

Lower limit of anomaly

0 500

METRES

Fence

Main road

Track

Creek

KANMANTOO TROUGH

GEOLOGICAL INVESTIGATIONS

KARINYA SYNCLINE – FRANKTON PROSPECT

SOIL SAMPLE RESULTS – Lead and Zinc

SADME

SADME 91-35

FIG. 5

5022

139°12'

139°13'

34°18'

34°19'

L1

L2

L3

L4

L5

L6

L7

L8

L9

L10

L11

L12

L13

2450m

2550m

2500m

2500m

2500m

2425m

2500m

2500m

2800m

2900m

2900m

2600m

2600m

Frankton

Farm buildings

Farm buildings

Sample values of:

Gold (ppb) — — — 2 ppb

Copper (ppm) — 43ppm

lower limit of anomaly

0 500

METRES

Fence

Main road

Track

Creek

KANMANTOO TROUGH

GEOLOGICAL INVESTIGATIONS

KARINYA SYNCLINE – FRANKTON PROSPECT

SOIL SAMPLE RESULTS – Copper and Gold

SADME

SADME 91-36

FIG. 6

5022

139°12'

139°13'

34°18'

34°19'

L1

L2

L3

L4

L5

L6

L7

L8

L9

L10

L11

L12

L13

2450m

2550m

2500m

2500m

2500m

2425m

2500m

2500m

2800m

2900m

2900m

2600m

2600m

Frankton

Pit

Farm buildings

Farm buildings

Sample values of:

Iron (%) 5%

Arsenic (ppm) 18ppm

Lower limit of anomaly

0 500

METRES

Fence

Main road

Track

Creek

KANMANTOO TROUGH

GEOLOGICAL INVESTIGATIONS

KARINYA SYNCLINE – FRANKTON PROSPECT

SOIL SAMPLE RESULTS – Arsenic and Iron

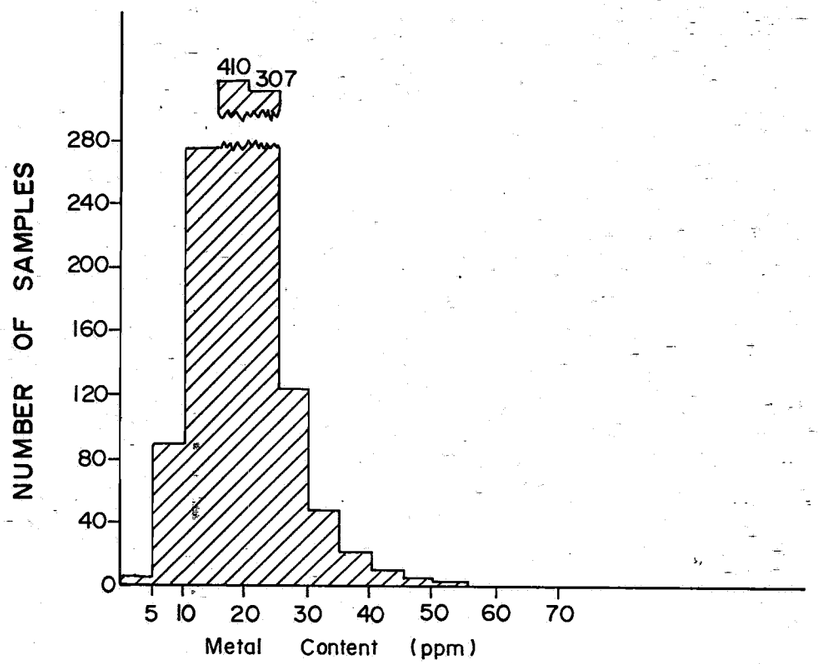
SADME

SADME 91-37

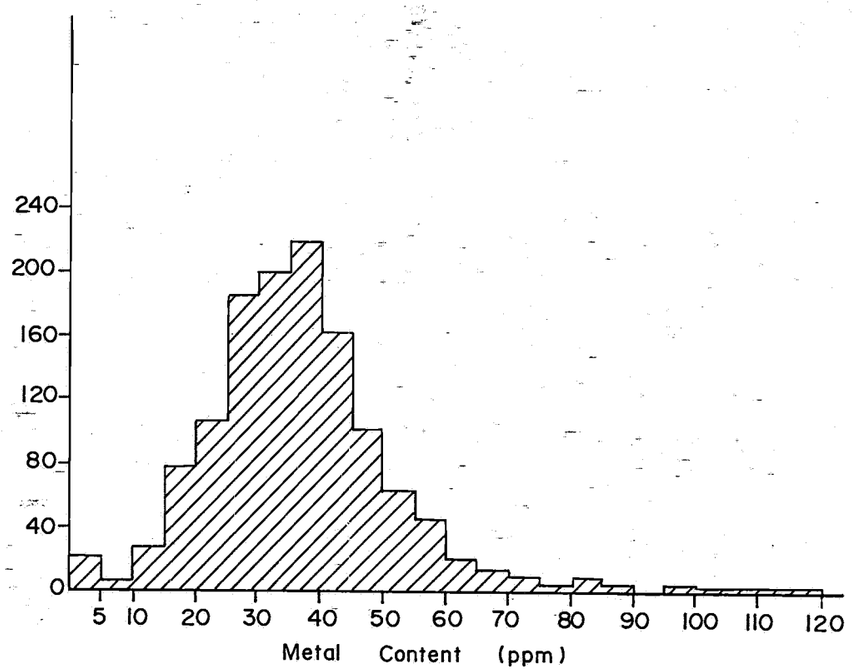
FIG. 7

5022

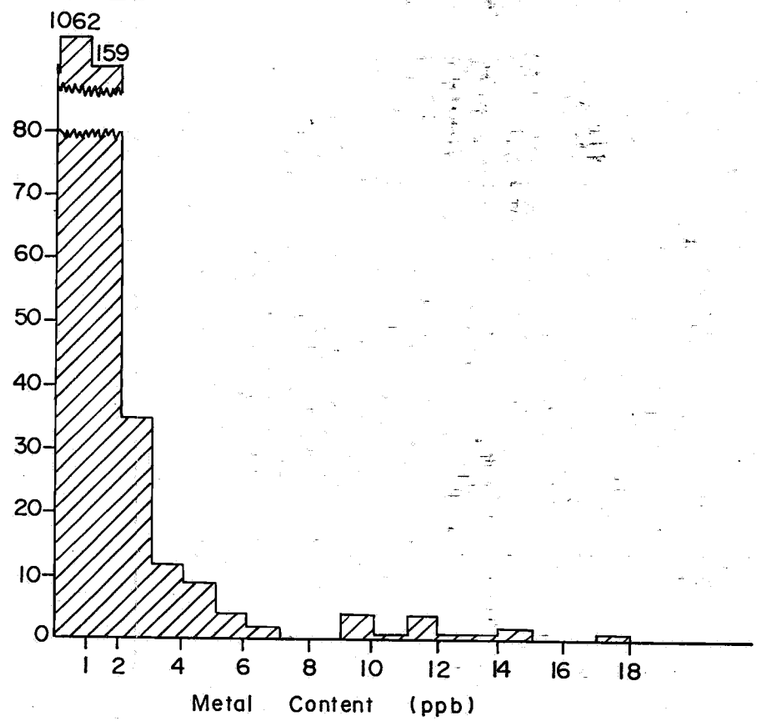
COPPER



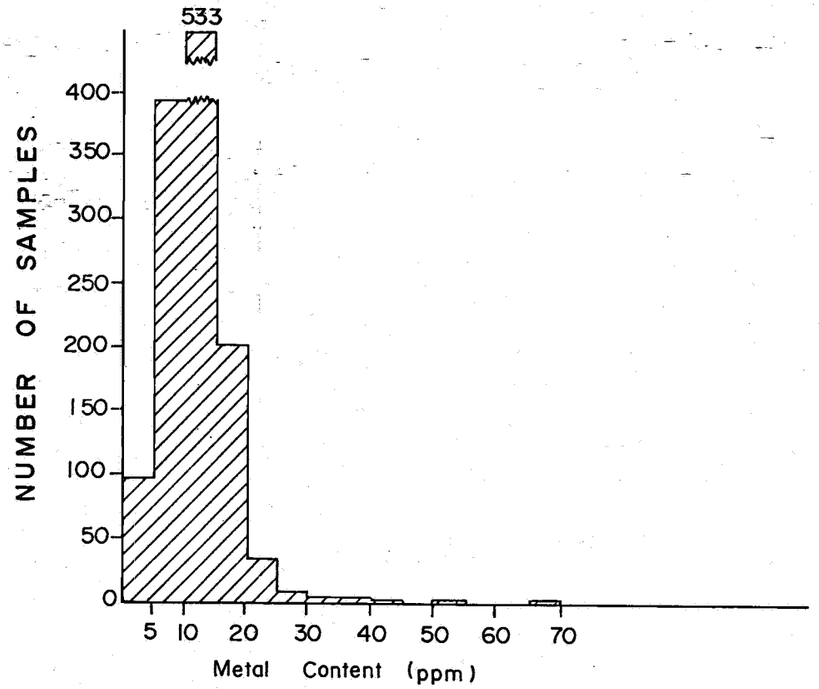
ZINC



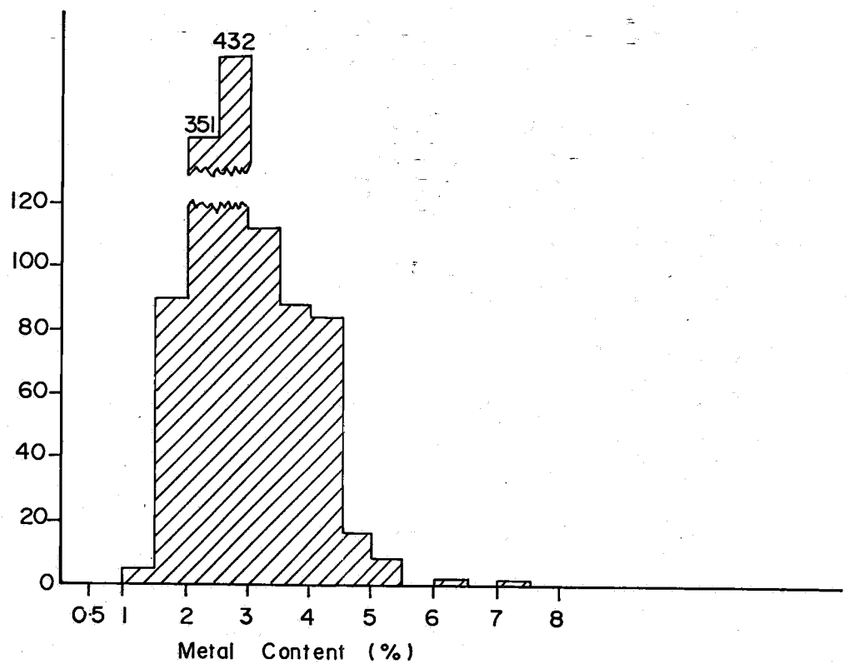
GOLD



LEAD



IRON



ARSENIC

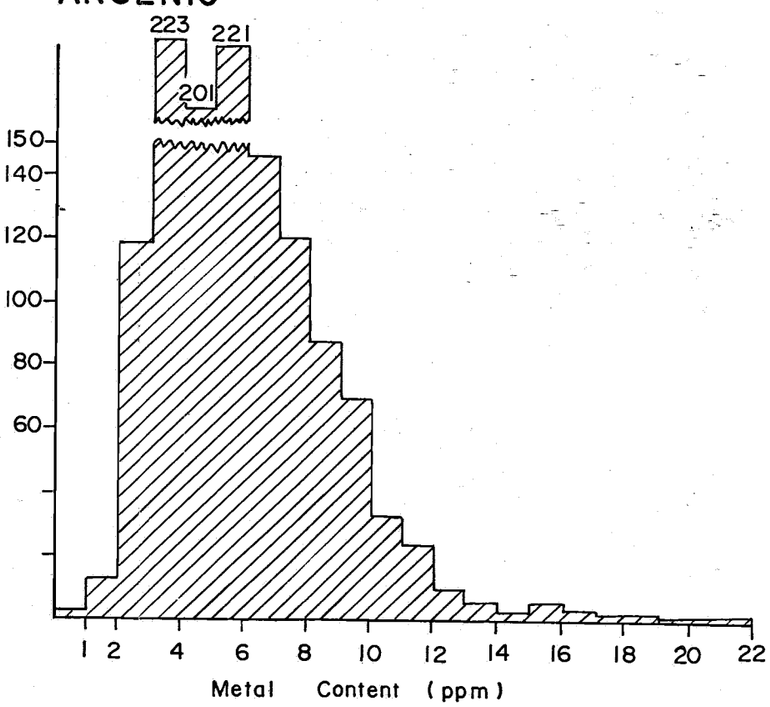
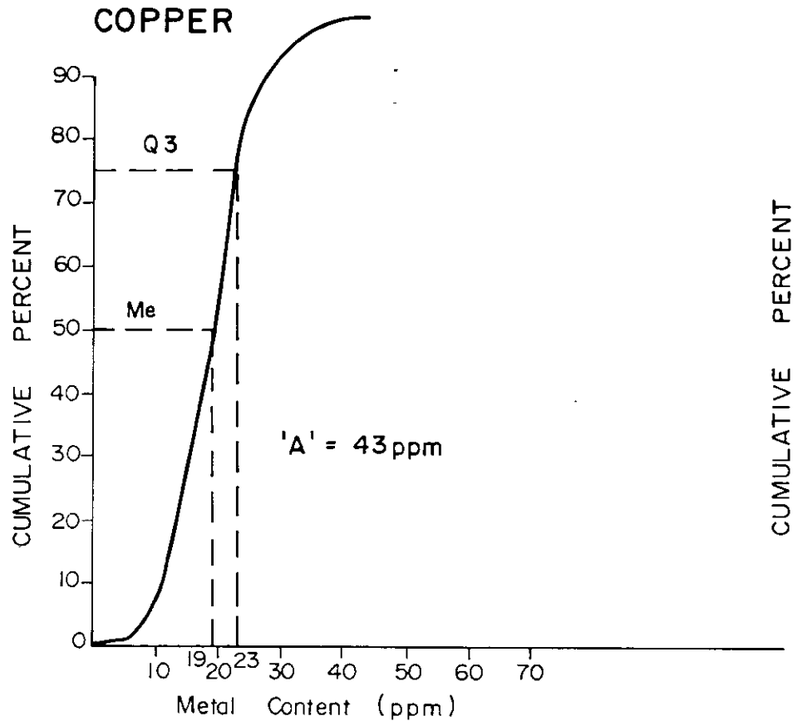
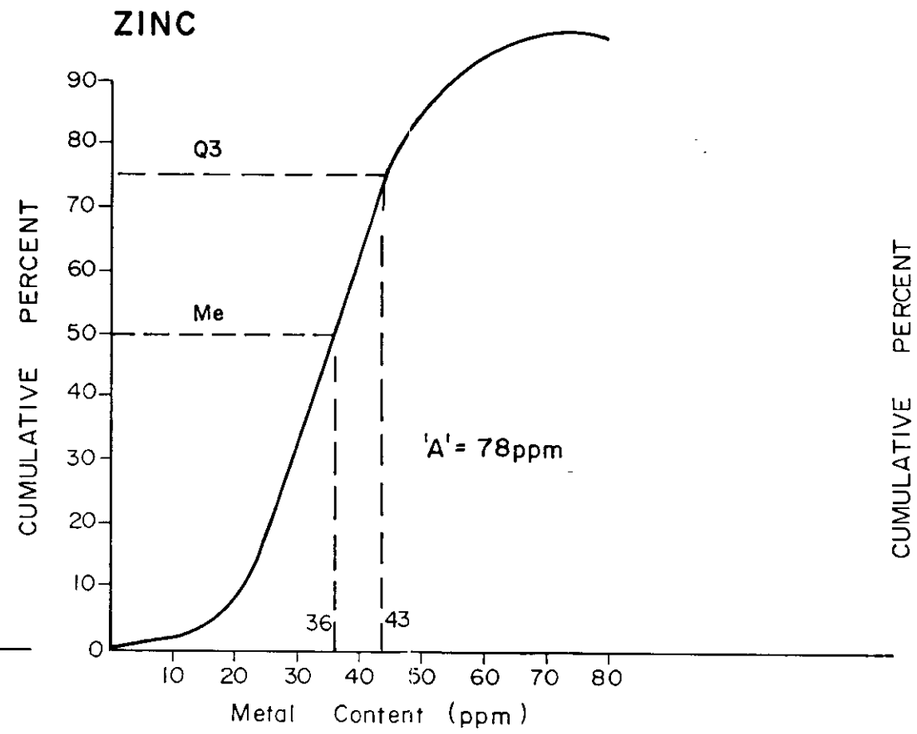


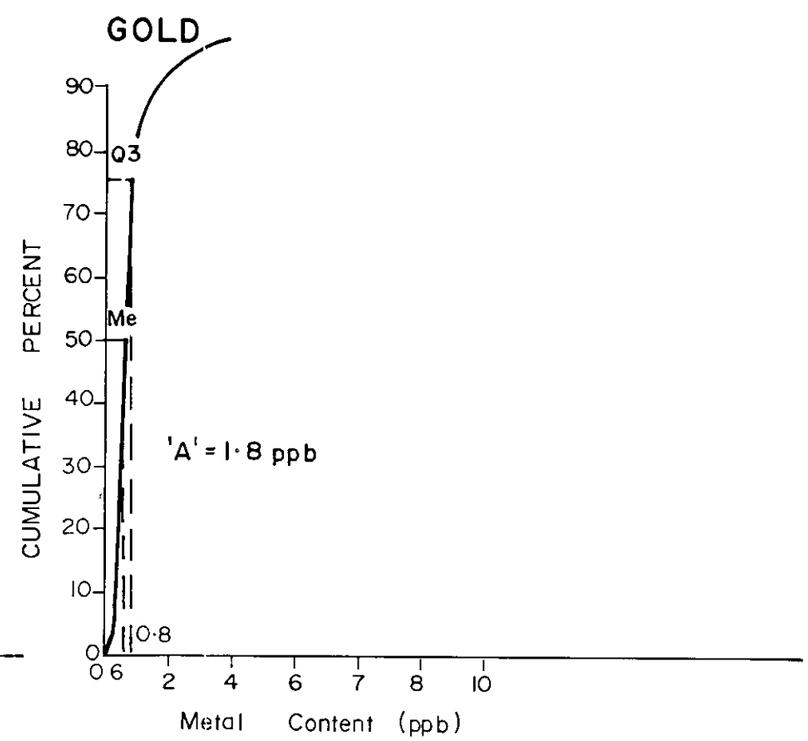
Figure. 8

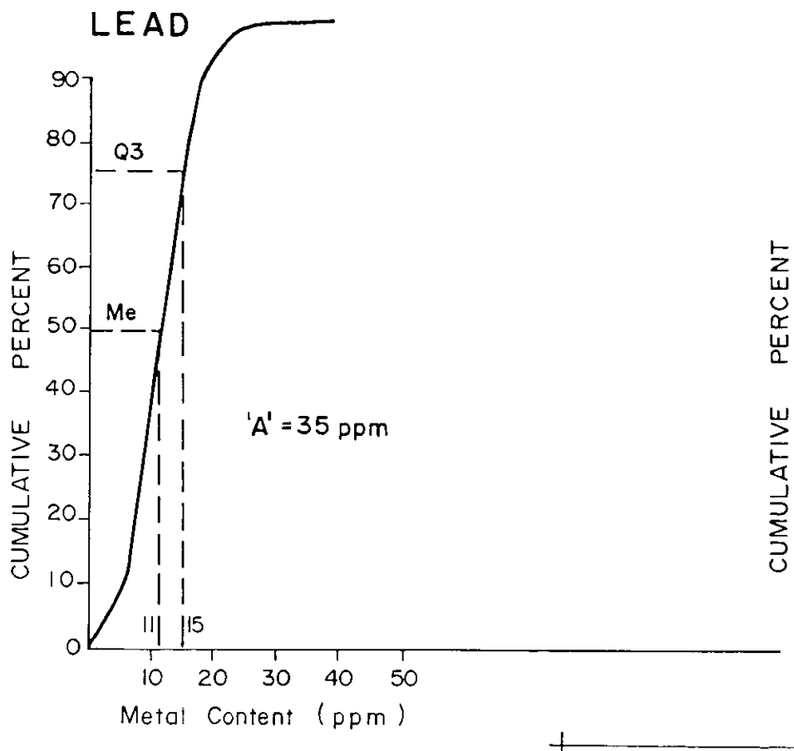
DEPARTMENT OF MINES AND ENERGY SOUTH AUSTRALIA	COMPILED B.J.Morris		
KANMANTOO TROUGH GEOLOGICAL INVESTIGATIONS	DRAWN D.Simpson	SCALE	
KARINYA SYNCLINE – FRANKTON PROSPECT	DATE Dec. 1990	PLAN NUMBER	
FREQUENCY DISTRIBUTION HISTOGRAMS	CHECKED	91-38	

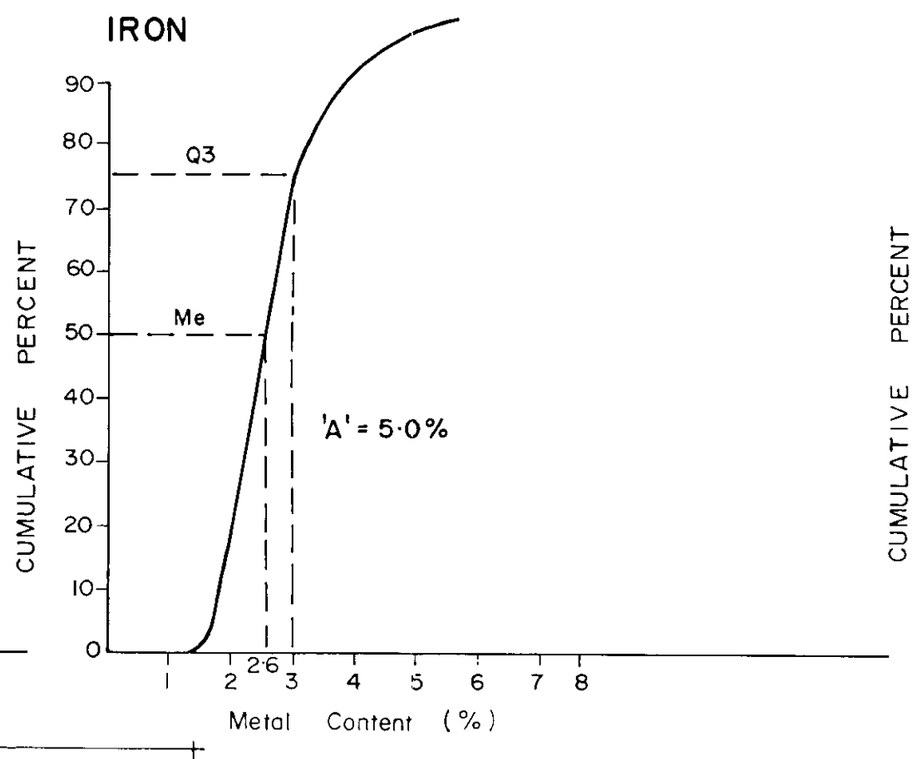
5022

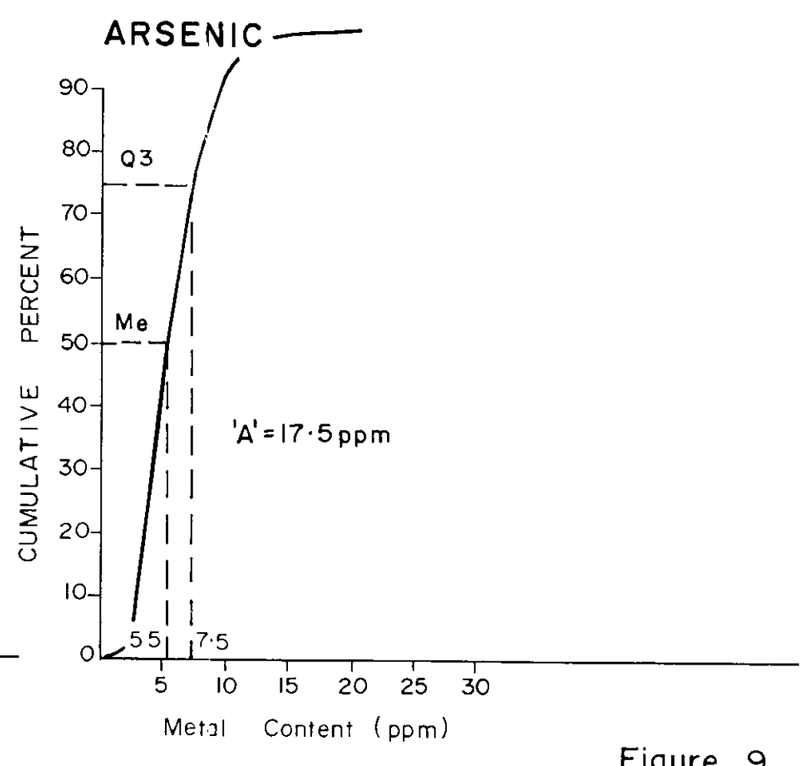












'A'	. .. Me + 6(Q3 - Me)
'A'	. Lower limit of anomaly
Me	.... Median
Q3	. 75 percentile

Figure. 9

DEPARTMENT OF MINES AND ENERGY
SOUTH AUSTRALIA

KANMANTOO TROUGH GEOLOGICAL INVESTIGATIONS
KARINYA SYNCLINE – FRANKTON PROSPECT
CUMULATIVE FREQUENCY CURVES

B J. Morris
D. Simpson
Dec 1990

91-39

5022

139°12'

139°13'

34°18'

L1

L2

L3

L4

L5

L6

L7

L8

L9

L10

L11

L12

L13

Quarry

Frankton

KARINYA

SHALE

Farm buildings

Farm buildings

0 500

METRES

Fence

Main road

Track

Creek

SOIL SAMPLE ANOMALIES

Zn (>78ppm)

Pb (>35ppm)

Cu (>43ppm)

34°19'

KANMANTOO TROUGH
GEOLOGICAL INVESTIGATIONS

KARINYA SYNCLINE — FRANKTON PROSPECT

SOIL SAMPLE ANOMALIES — Cu, Pb, Zn

SADME 91-40

FIG. 10

5022

139°12'

139°13'

34°18'

34°19'

L1

L2

L3

L4

L5

L6

L7

L8

L9

L10

L11

L12

L13

Quarry

Frankton

Farm buildings

Farm buildings

KARINYA

SHALE

0 500

METRES

Fence

Main road

Track

Creek

SOIL SAMPLE ANOMALIES

Au (>2 ppb)

As (>18ppm)

Fe (>5%)

KANMANTOO TROUGH

GEOLOGICAL INVESTIGATIONS

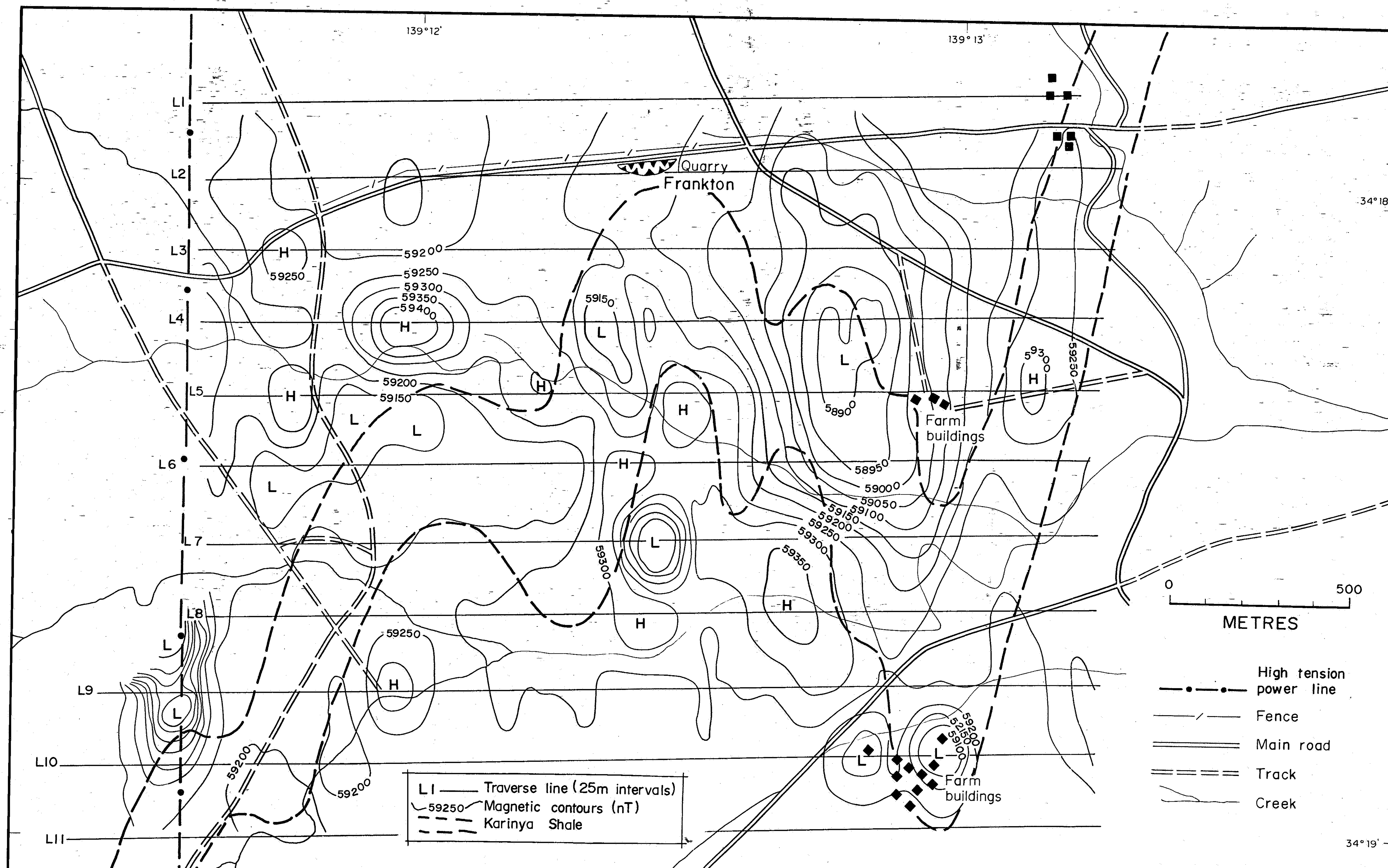
KARINYA SYNCLINE — FRANKTON PROSPECT

SOIL SAMPLE ANOMALIES — Au, As, Fe

SADME 91-41

FIG. 11

5022



KANMANTOO TROUGH
GEOLOGICAL INVESTIGATIONS

KARINYA SYNCLINE – FRANKTON PROSPECT

GROUND MAGNETIC SURVEY

SADME 91-42

FIG.12

139°12'

139° 13'

34°18'

34°19'

L1

L2

L3

L4

L5

L6

L7

L8

L9

L10

L11

L12

L13

Quarry

Frankton

Farm buildings

Farm buildings

KARINYA

SHALE

Fixed loop 2

Fixed loop 1

0 500

METRES

Induced Polarization traverse with anomalous zone

Sirotem moving loop survey

Sirotem fixed loop survey with loop number

Sirotem Fixed Loop

Conductor location

Karinya Shale

Fence

Main road

Track

Creek

KANMANTOO TROUGH
GEOLOGICAL INVESTIGATIONS

KARINYA SYNCLINE — FRANKTON PROSPECT

INDUCED POLARIZATION
SIROTEM SURVEYS

SADME 91-43

FIG. 13

5022

KARINYA SHALE

139°11'

139°12'

34° 23'

34° 24'

1000m L13

1000m L12

1000m L6

TG3 TG4 TG2 TG5

1000m L5

1000m L4

1000m L11

Farm buildings

1000m L10

1000m L9

1000m L8

TG1

1000m L7

1000m L3

1000m L2

1000m L1

STURT HIGHWAY

To Truro

THE GAP

1000m

TG8 TG6 TG7 L14 Quarry

CAMBRIAN

KANMANTOO GROUP

Tapanappa Formation: grey siltstone and fine meta-sandstone.

Karinya Shale (Talisker Calc-siltstone): carbonaceous shale and grey calcareous meta-siltstone

Backstairs Passage Formation: cross bedded medium to coarse feldspathic meta-sandstone.

Lamprophyre dyke

High tension power line

Fence

Main road

Track

Creek

Proposed inclined rotary drillhole. TG9

Soil sample line showing every second sample site 1000m L2

0 1 KILOMETRE

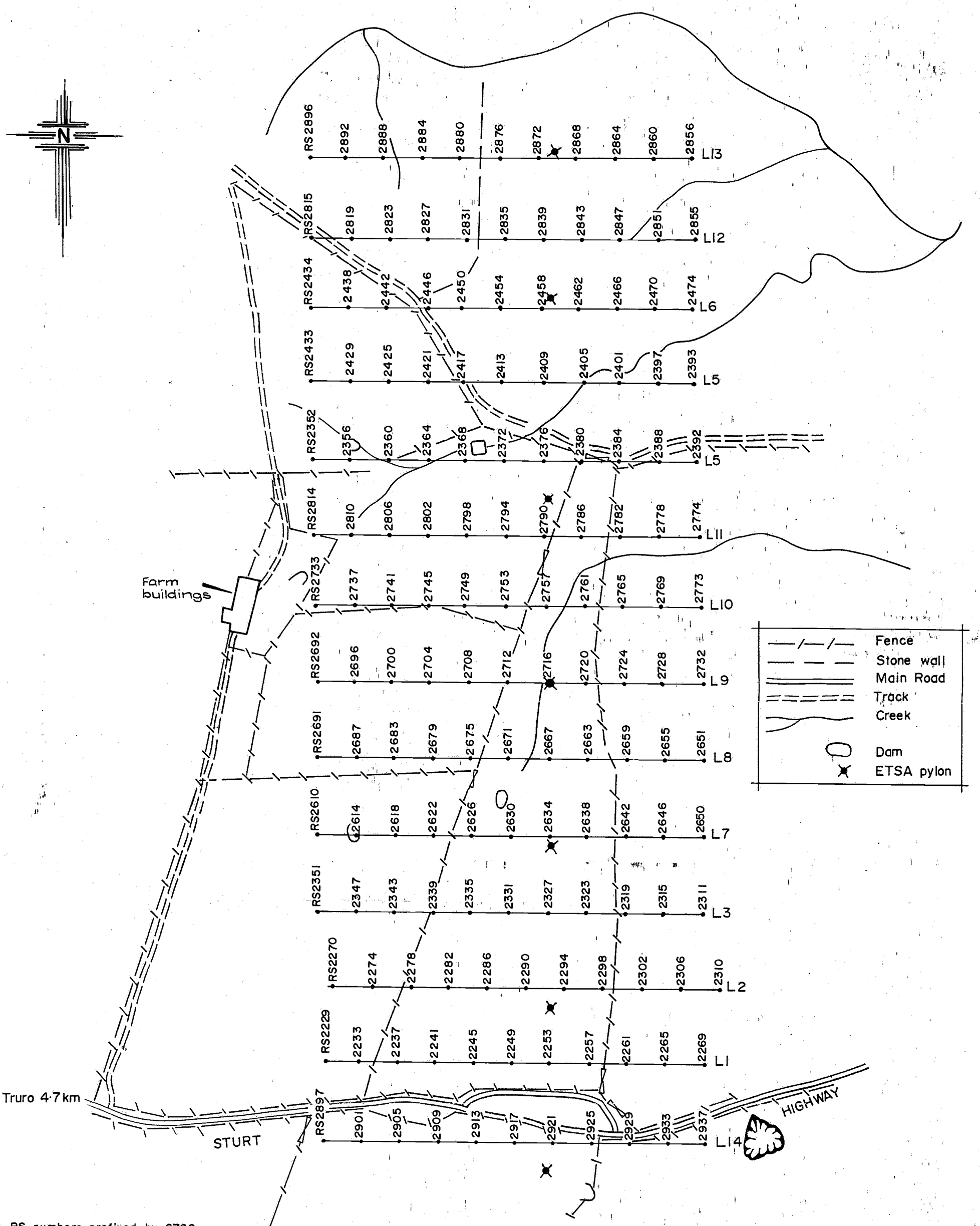
KANMANTOO TROUGH GEOLOGICAL INVESTIGATIONS

KARINYA SYNCLINE-THE GAP PROSPECT GEOLOGICAL PLAN

SADME 91-44

FIG. 14

5022



Note : all RS numbers prefixed by 6729

Figure. 15

DEPARTMENT OF MINES AND ENERGY SOUTH AUSTRALIA

KANMANTOO TROUGH
GEOLOGICAL INVESTIGATIONS

KARINYA SYNCLINE—THE GAP PROSPECT

SOIL SAMPLE LOCATIONS AND NUMBERS

COMPILED	B.Morris
DRAWN	D.Simpson
DATE	Dec.1990
CHECKED	
C.D.O. DATE	18.2.91
SCALE	1:10000
PLAN NUMBER	91-45

139°11'

139°12'

34° 23'

34° 24'

1000m OL13

1000m OL12

1000m OL6

1000m OL5

1000m OL4

1000m OL11

1000m OL10

1000m OL9

1000m OL8

1000m OL7

1000m OL3

1000m OL2

1000m OL1

1000m OL14

Farm buildings

THE GAP

STURT HIGHWAY

To Truro

Quarry

Fence

Main road

Track

Creek

Sample values of:

Zinc (ppm) 113 ppm Lower limit of anomaly

Lead (ppm) 73 ppm Lower limit of anomaly

0 1 KILOMETRE

KANMANTOO TROUGH GEOLOGICAL INVESTIGATIONS

KARINYA SYNCLINE – THE GAP PROSPECT

SOIL SAMPLE RESULTS - Zn, Pb,

SADME 91-46 FIG. 16

5022

139°11'

139°12'

34° 23'

34° 24'

1000m OL13

1000m OL12

1000m OL6

1000m OL5

1000m OL4

1000m OL14

Farm buildings

1000m OL10

1000m OL9

1000m OL8

1000m OL7

1000m OL3

1000m OL2

1000m OL1

THE GAP

STURT

HIGHWAY

To Truro

1000m OL14

Quarry

Fence

Main road

Track

Creek

Sample values of:

Gold(ppb) Copper (ppm)

3ppb Lower limit of anomaly

70ppm Lower limit of anomaly

0 KILOMETRE 1

KANMANTOO TROUGH
GEOLOGICAL INVESTIGATIONS

KARINYA SYNCLINE—THE GAP PROSPECT

Soil sample results_ Copper and gold

SADME 91—47

FIG. 17

5022

139°12

34° 23

1000m OL13

1000m OL12

1000m OL6

1000m OL5

1000m OL4

1000m OL11

Farm buildings

1000m OL10

1000m OL9

1000m OL8

1000m OL7

1000m OL3

1000m OL2

THE GAP

34° 24

1000m OL1

STURT HIGHWAY

To Truro

1000m OL14

Quarry

Fence

Main road

Track

Creek

Sample values of :

Iron (%) 2.3 2.1 2.2 2.3 2.2 2.4 2.1 2.2 2.2

Arsenic (ppm) 7 6 7 7 6 7 6 5 6

61 ppm

Lower limit of anomaly

0 1

KILOMETRE

KANMANTOO TROUGH GEOLOGICAL INVESTIGATIONS

KARINYA SYNCLINE – THE GAP PROSPECT

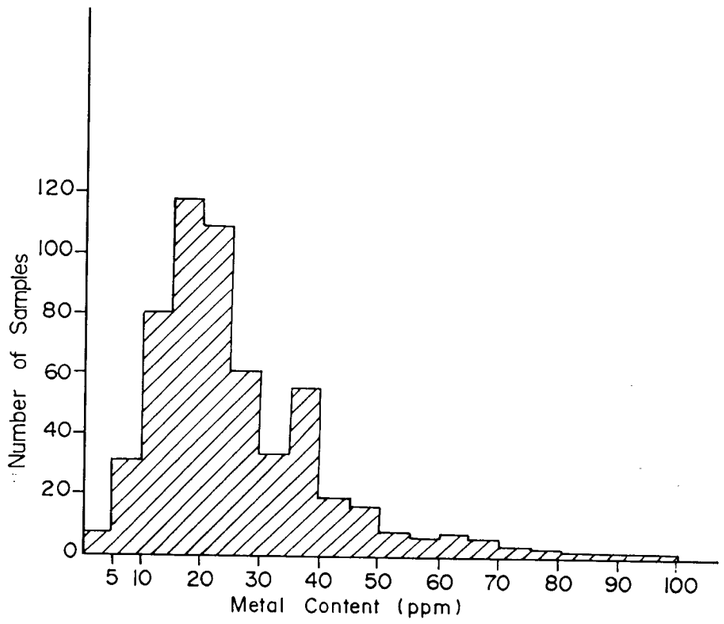
SOIL SAMPLE RESULTS - As, Fe,

SADME 91-48

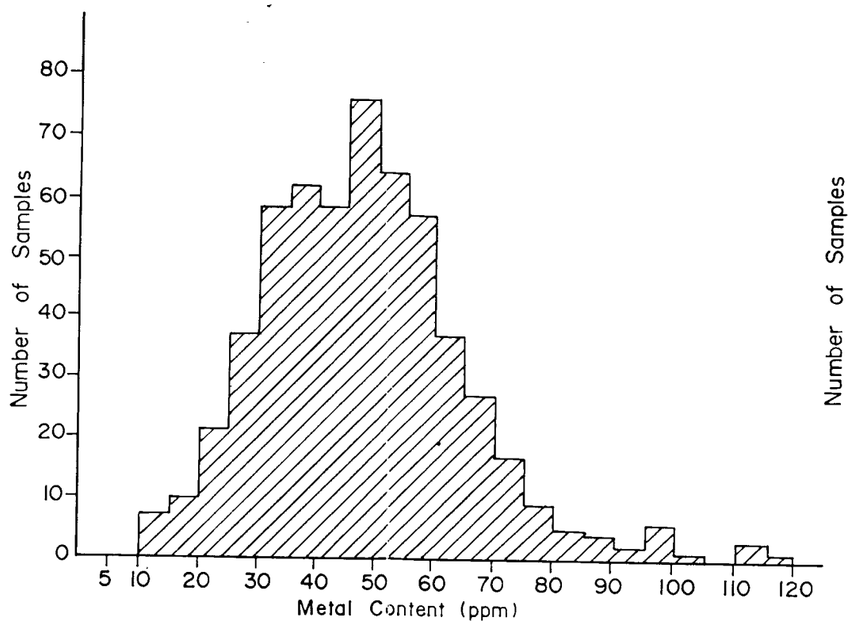
FIG. 18

5022

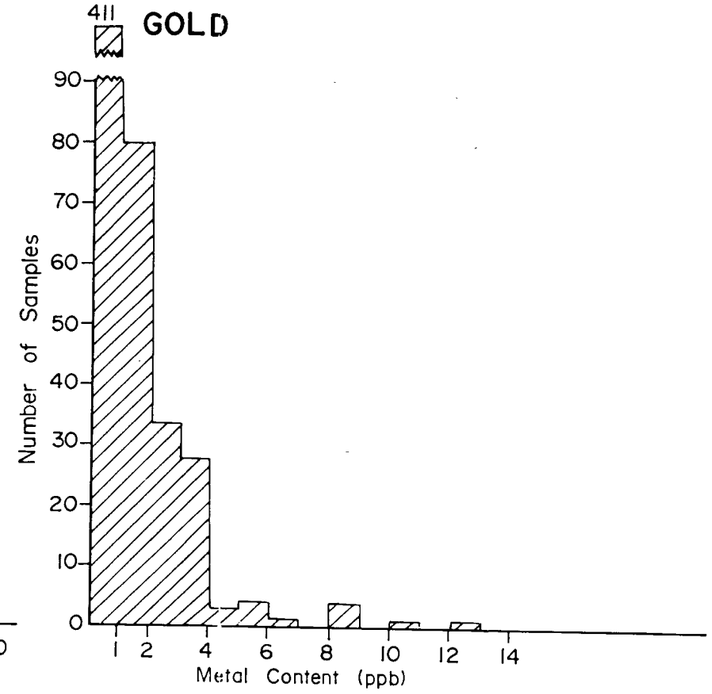
COPPER



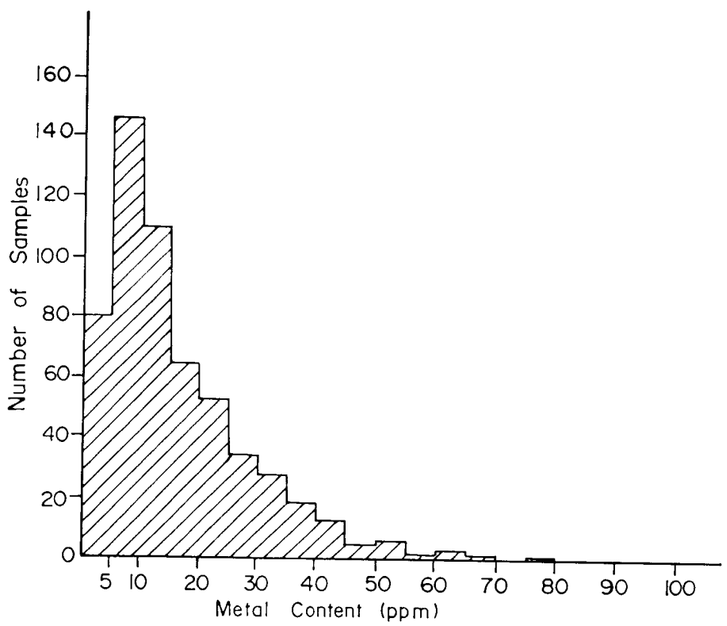
ZINC



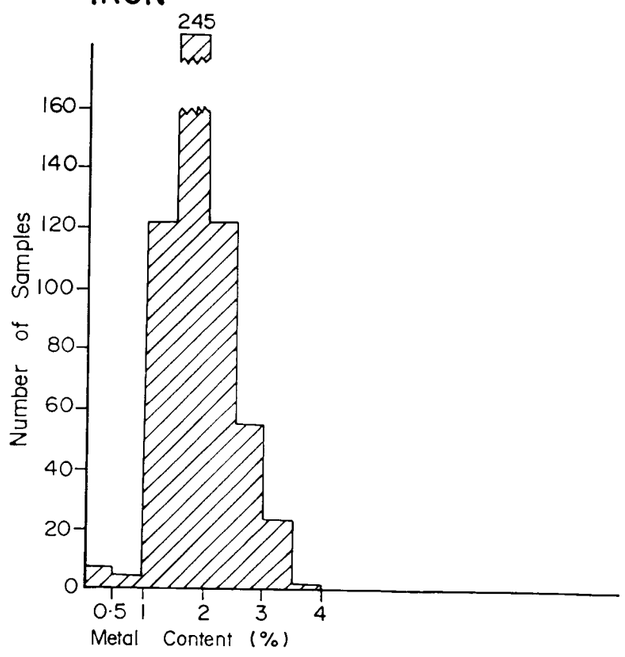
GOLD



LEAD



IRON



ARSENIC

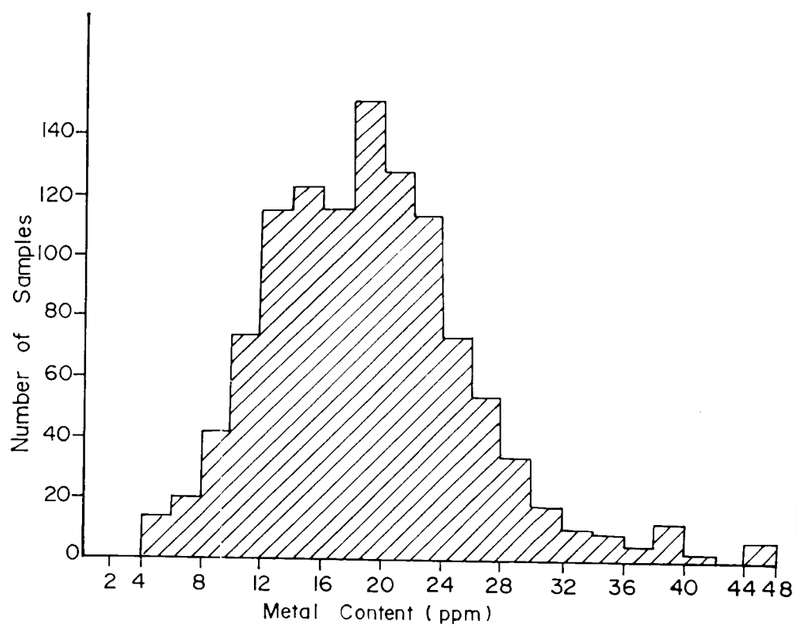


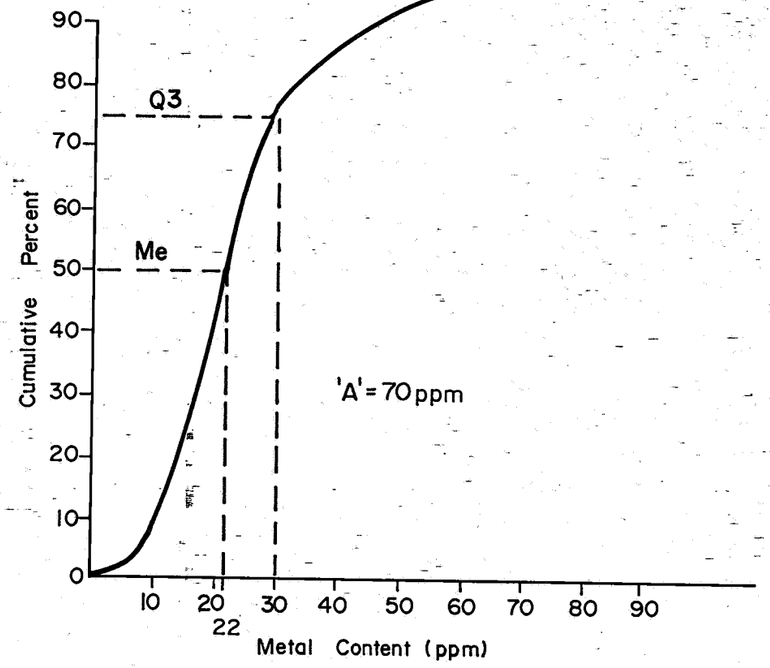
Figure. 19

DEPARTMENT OF MINES AND ENERGY
SOUTH AUSTRALIA

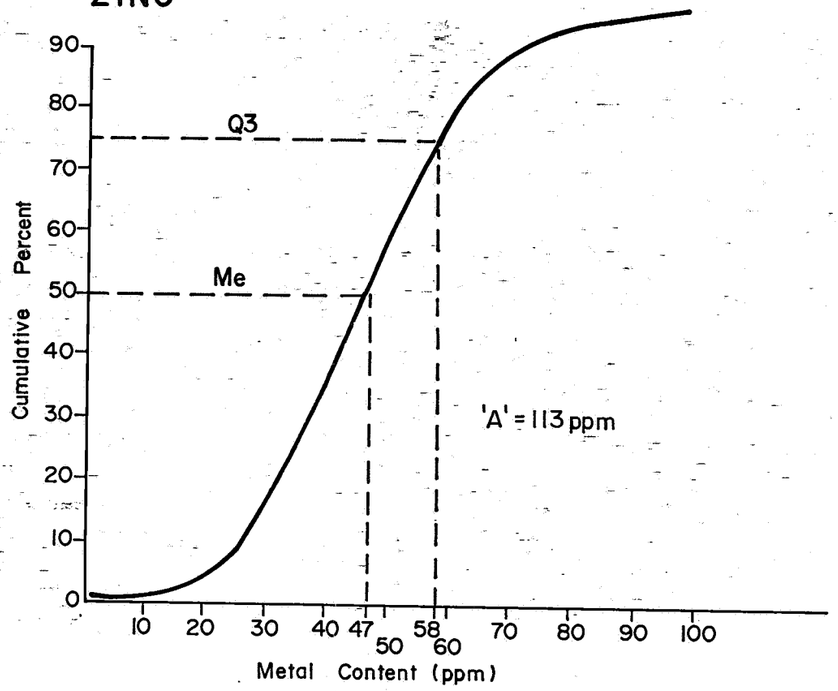
KANMANTOO TROUGH GEOLOGICAL INVESTIGATION
KARINYA SYNCLINE—THE GAP PROSPECT
FREQUENCY DISTRIBUTION HISTOGRAMS

DRAWN B. Morris	18. 2. 91 DATE
DRAWN D. Simpson	SCALE
DATE Nov. 1990	PLAN NUMBER 91-49
CHECKED	

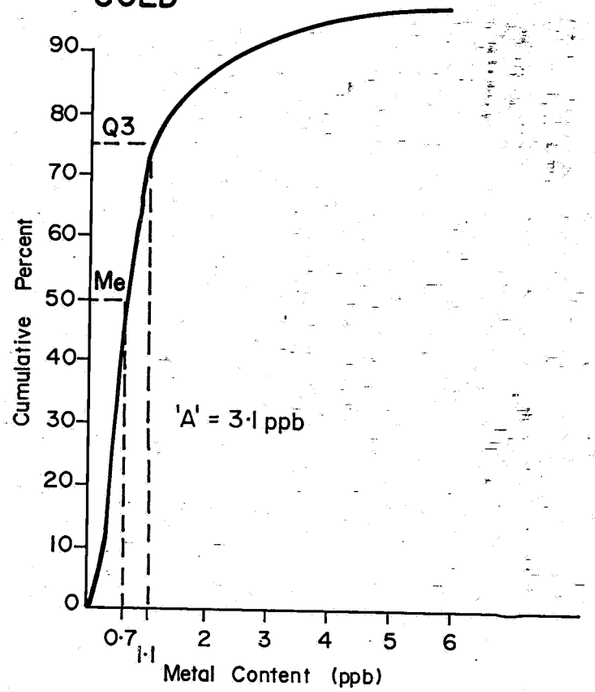
COPPER



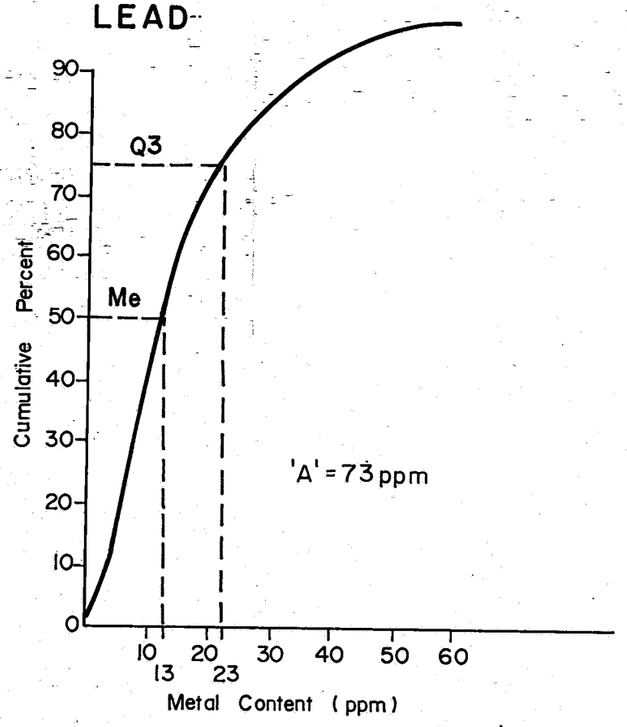
ZINC



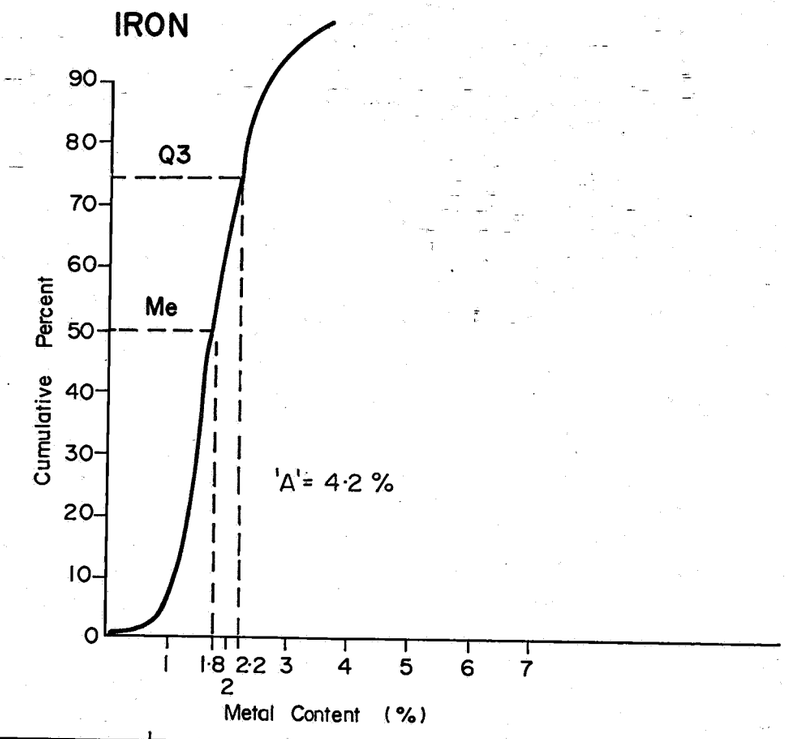
GOLD



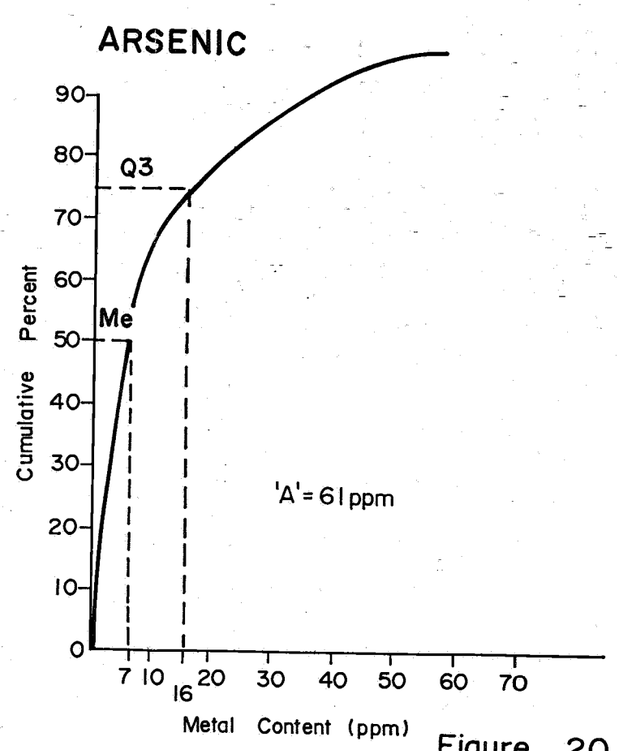
LEAD



IRON



ARSENIC



'A'.....Me + 6 (Q_3-Me)
'A'.....Lower limit of anomaly
Me.....Median
Q_3.....75 percentile

Figure 20

DEPARTMENT OF MINES AND ENERGY
SOUTH AUSTRALIA

KANMANTOO TROUGH GEOLOGICAL INVESTIGATION
KARINYA SYNCLINE – THE GAP PROSPECT
CUMULATIVE FREQUENCY CURVES

COMPILED B. Morris	CDO	18. 2. 91 DATE
DRAWN D. Simpson	SCALE	
DATE Nov. 1989	PLAN NUMBER	91 – 50
CHECKED		

139°11'

KARINYA SHALE

139°12'

L13

L12

L6

34° 23'

L5

L4

L11

Farm buildings

L10

L9

L8

L7

Zinc (>113 ppm)
Lead (>73 ppm)
Copper (>70ppm)

L3

L2

THE GAP

34° 24'

L1

STURT

HIGHWAY

To Truro

L14

Quarry

Fence

Main road

Track

Creek

0

1

KILOMETRE

KANMANTOO TROUGH GEOLOGICAL INVESTIGATIONS

KARINYA SYNCLINE – THE GAP PROSPECT

SOIL SAMPLE ANOMALIES – Zn, Pb, Cu

SADME 91-51

FIG. 21

5022

139°11'

139°12'

KARINYA SHALE

L13

L12

L6

34 23'

L5

L4

L11

Farm buildings

L10

L9

L8

L7

L3

Gold (>3 ppb)
Arsenic (>61 ppm)

L2

THE GAP

34° 24'

L1

STURT

HIGHWAY

To Truro

L14

Quarry

Fence

Main road

Track

Creek

0

1

KILOMETRE

KANMANTOO TROUGH GEOLOGICAL INVESTIGATIONS

KARINYA SYNCLINE – THE GAP PROSPECT

SOIL SAMPLE ANOMALIES – Au, As,

SADME 91 – 52

FIG. 22

5022

139°11'

139°12'

34° 23'

34° 24'

L13

L12

L6

L5

L4

L11

L10

L9

L8

L7

L3

L2

L1

L14

Farm buildings

STURT HIGHWAY

To Truro

THE GAP

Quarry

High tension power line

Fence

Main road

Track

Creek

Induced polarization traverse with anomalous zones

strong weak

Karinya shale

0 1

KILOMETRE

KANMANTOO TROUGH GEOLOGICAL INVESTIGATIONS

KARINYA SYNCLINE—THE GAP PROSPECT INDUCED POLARIZATION SURVEY

SADME 91—53

FIG. 23

5022

139°12'

139°13'

L5 0m

L3 0m

L2 0m

L1 0m

L4 0m

1000m

AH1

AH2

AH3

AH4

AH5

85°

80°

50°

45°

75°

70°

60°

STURT

THE GAP

ACCOMODATION HILL

34°24'

HIGHWAY

CAMBRIAN

KANMANTOO GROUP

Backstairs Passage Formation: crossbedded medium to coarse feldspathic meta-sandstone

Carrickalinga Head Formation: siltstone and sandstone with grey-pink saccharoidal marble (Milendella Limestone Member)

Lamprophyre dyke

Vein quartz

Ironstone

L2 0m ——— 1000m Soil sampling line showing every second sample site

Fence

Main road

Track

Creek

AH3 Proposed inclined rotary drillhole

70° Dip and strike of bedding

0 1

KILOMETRE

KANMANTOO TROUGH
GEOLOGICAL INVESTIGATIONS
KARINYA SYNCLINE-ACCOMODATION HILL PROPECT

GEOLOGICAL PLAN

SADME 91-54

FIG. 24

5022

139°12'

139°13'

RS2979 2983 2987 2995 2991 2999 3003 3007 3011 3015 3019 L5

RS2557 2561 2565 2569 2573 2577 2581 2585 2589 2593 2597 L3

RS2556 2552 2548 2544 2540 2536 2532 2528 2524 2520 2516 L2

RS2475 2479 2483 2487 2491 2495 2499 2503 2507 2511 2515 L1

RS2938 2942 2946 2950 2954 2958 2962 2966 2970 2974 2978 L4

STURT

THE GAP

ACCOMODATION HILL

HIGHWAY

34°24'

Soil sample line

Fence

Main road

Track

Creek

Note: all RS numbers prefixed by 6729

0 1

KILOMETRE

KANMANTOO TROUGH
GEOLOGICAL INVESTIGATIONS

ACCOMODATION HILL PROSPECT
SOIL SAMPLE LOCATIONS AND SAMPLE NUMBERS

SADME 91-55

FIG. 25

5022

139°12'

139°13'

L5 0m — 1000m

L3 0m — 1000m

L2 0m — 1000m

L1 0m — 1000m

L4 0m — 1000m

STURT

THE GAP

ACCOMODATION HILL

HIGHWAY

34°24'

Fence

Main road

Track

Creek

Sample values of:

Zinc (ppm) | Lead (ppm)

30 20
30 25
25 30
30 30
40 40
60 25
50 35
10 40

79 ppm

61 ppm

Lower limit of Anomaly

0 1

KILOMETRE

SADME

KANMANTOO TROUGH GEOLOGICAL INVESTIGATIONS

KARINYA SYNCLINE–ACCOMODATION HILL PROSPECT

Soil sample results–Lead and zinc

SADME 91–56

FIG. 26

5022

139°12'

139°13'

L5 0m

1000 m

L3 0m

1000m

L2 0m

1000m

L1 0m

1000m

L4 0m

1000m

STURT

THE GAP

34°24'

ACCOMODATION HILL

HIGHWAY

Fence

Main road

Track

Creek

Sample values of:

Gold(ppb) Copper (ppm)

2 ppb

35ppm

Lower limit of Anomaly

0

1

KILOMETRE

SADME

KANMANTOO TROUGH
GEOLOGICAL INVESTIGATIONS

KARINYA SYNCLINE-ACCOMODATION HILL PROSPECT

Soil sample results- Copper and gold

SADME 91-57

FIG. 27

5022

139°12'

139°13'

L5 0m

1000 m

L3 0m

1000m

L2 0m

1000m

L1 0m

1000m

L4 0m

1000m

STURT

THE GAP

ACCOMODATION HILL

34°24'

HIGHWAY

Fence

Main road

Track

Creek

Sample values of :

Iron (%)

Arsenic (ppm)

22ppm

Lower limit of Anomaly

0

1

KILOMETRE

SADME

KANMANTOO TROUGH
GEOLOGICAL INVESTIGATIONS

KARINYA SYNCLINE–ACCOMODATION HILL PROSPECT

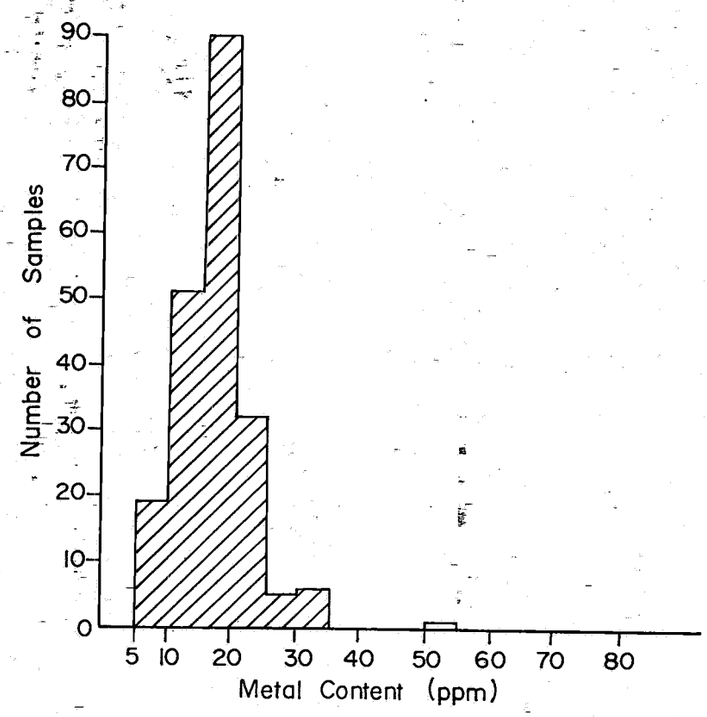
Soil sample results – Arsenic and iron

SADME 91–58

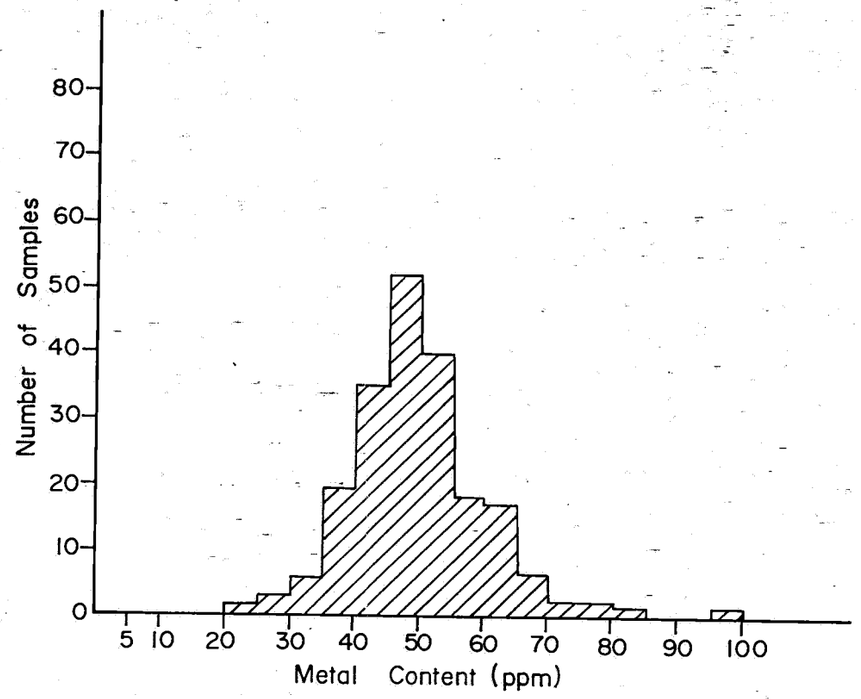
FIG. 28

5022

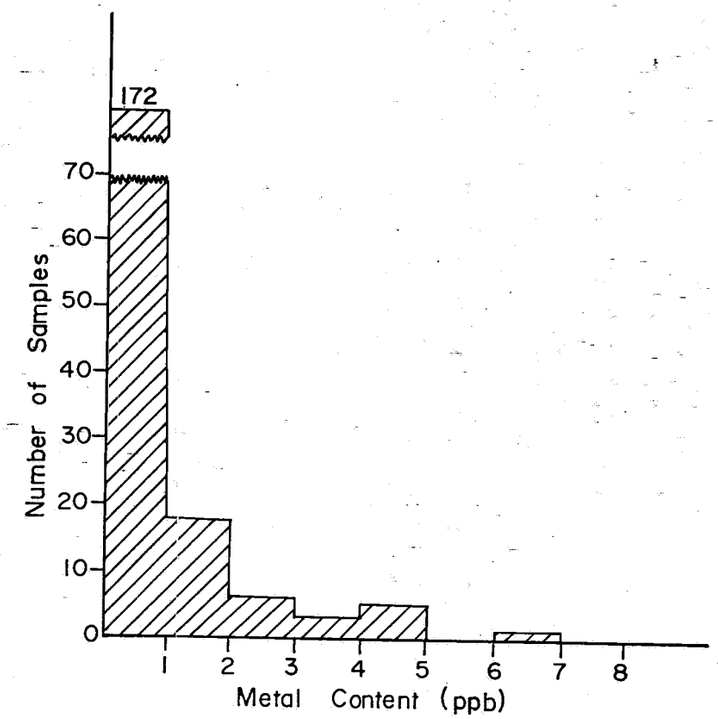
COPPER



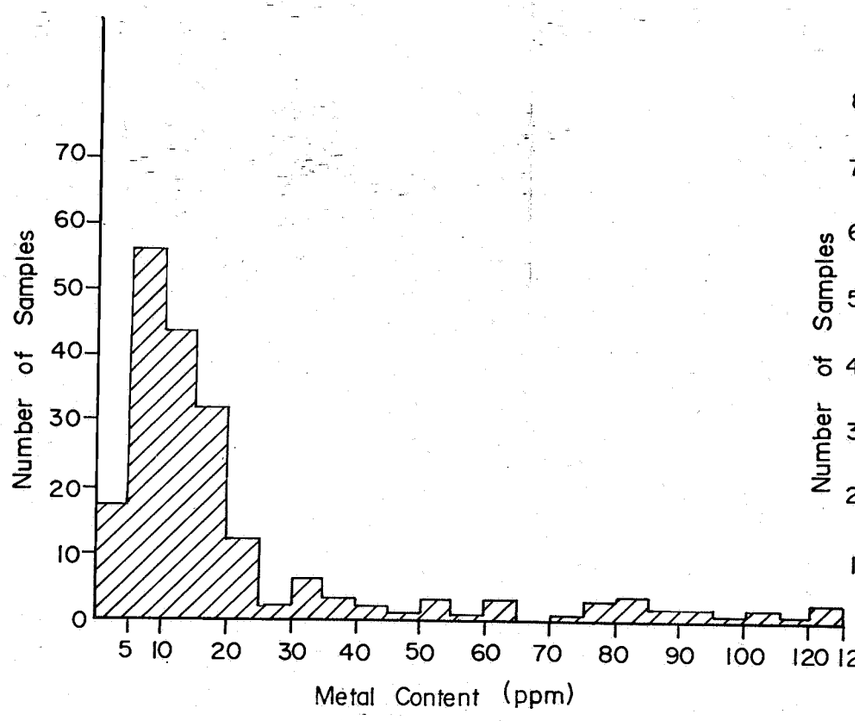
ZINC



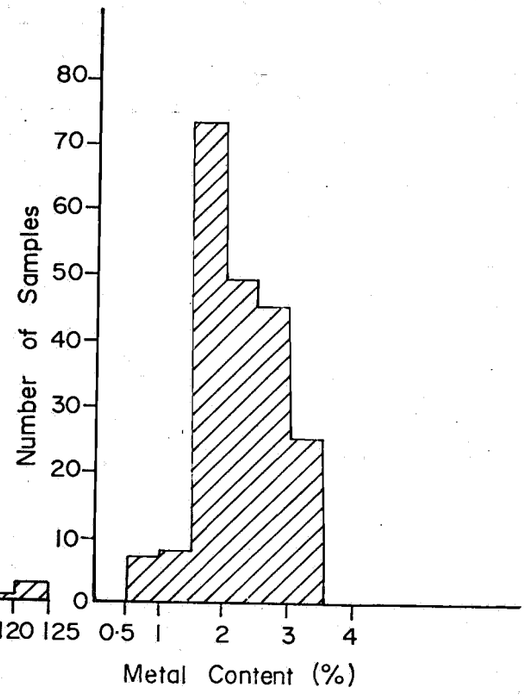
GOLD



LEAD



IRON



ARSENIC

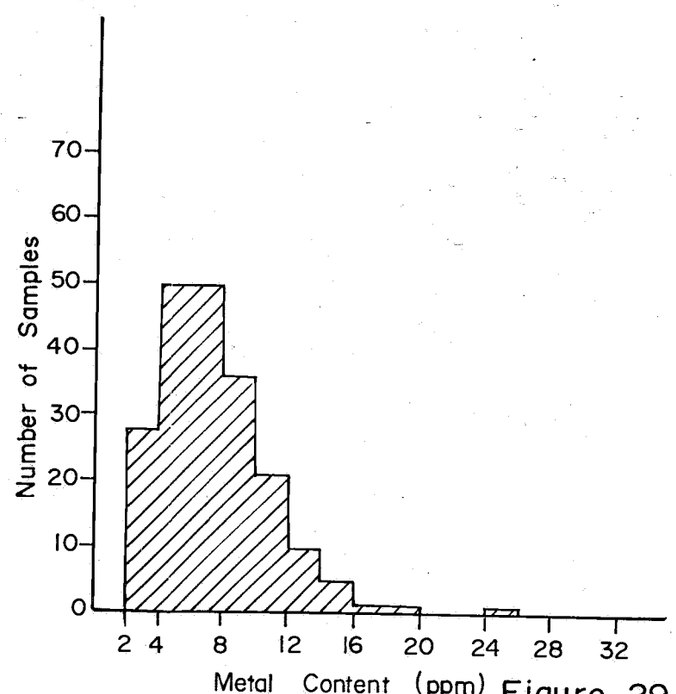


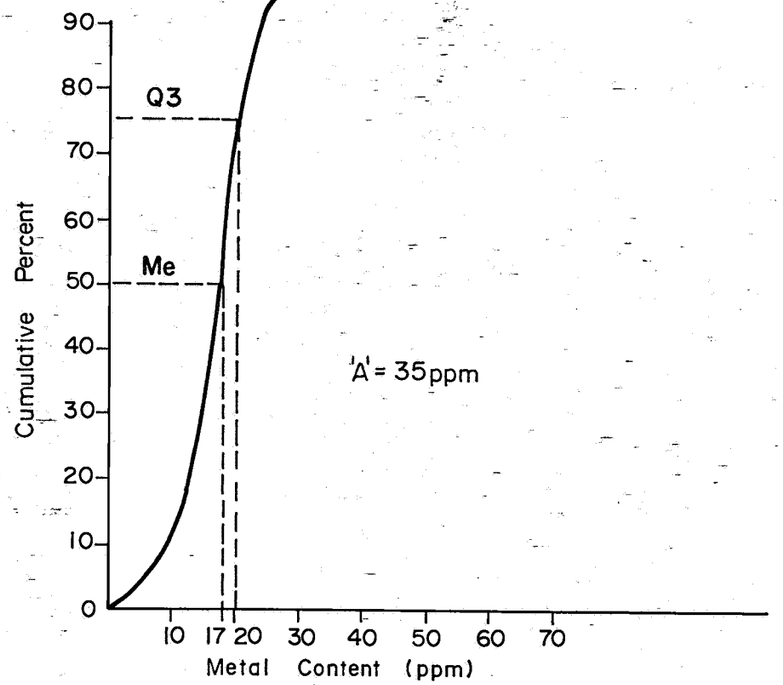
Figure. 29

DEPARTMENT OF MINES AND ENERGY
SOUTH AUSTRALIA

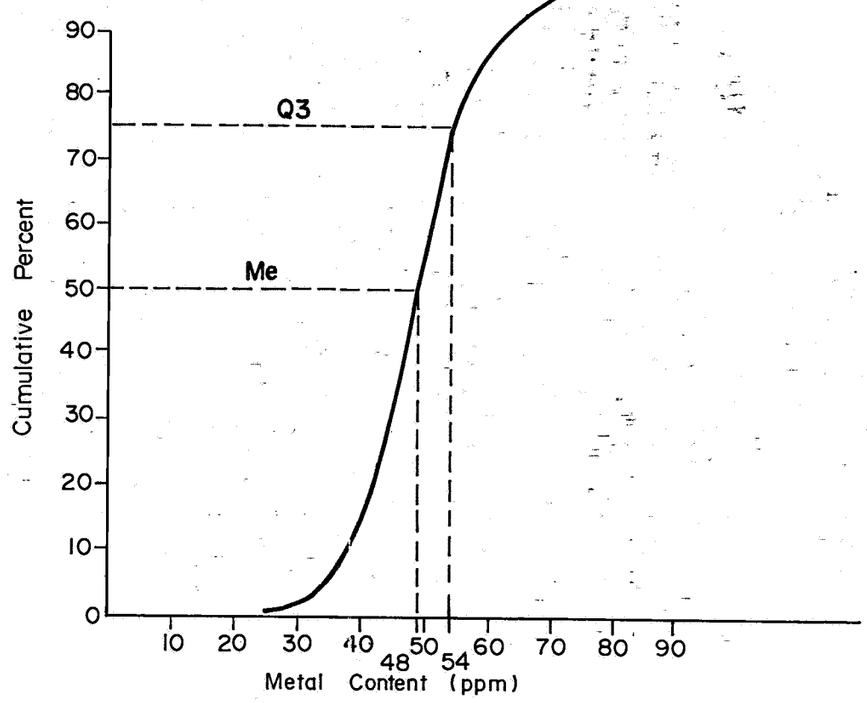
KANMANTOO TROUGH GEOLOGICAL INVESTIGATION
KARYNYA SYNCLINE – ACCOMODATION HILL PROSPECT
FREQUENCY DISTRIBUTION HISTOGRAMS

COMPILED: B.Morris	DES. 18.2.91 DATE
DRAWN: D.Simpson	SCALE
DATE: Nov. 1990	PLAN NUMBER: 91-59
CHECKED	

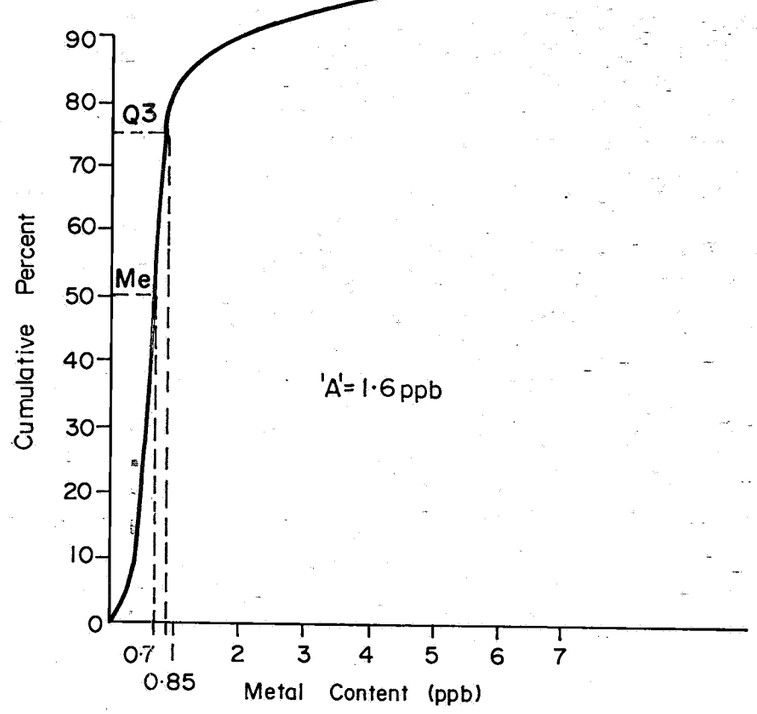
COPPER



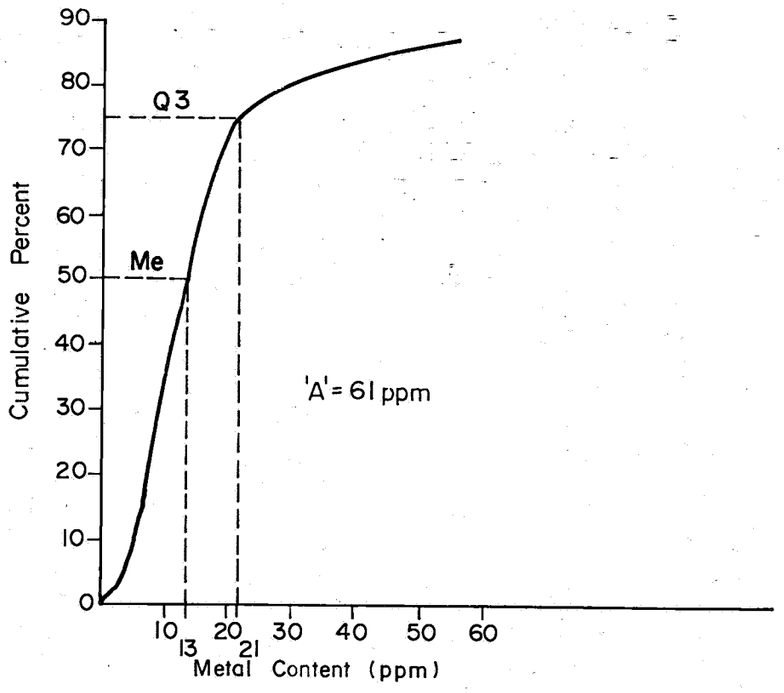
ZINC



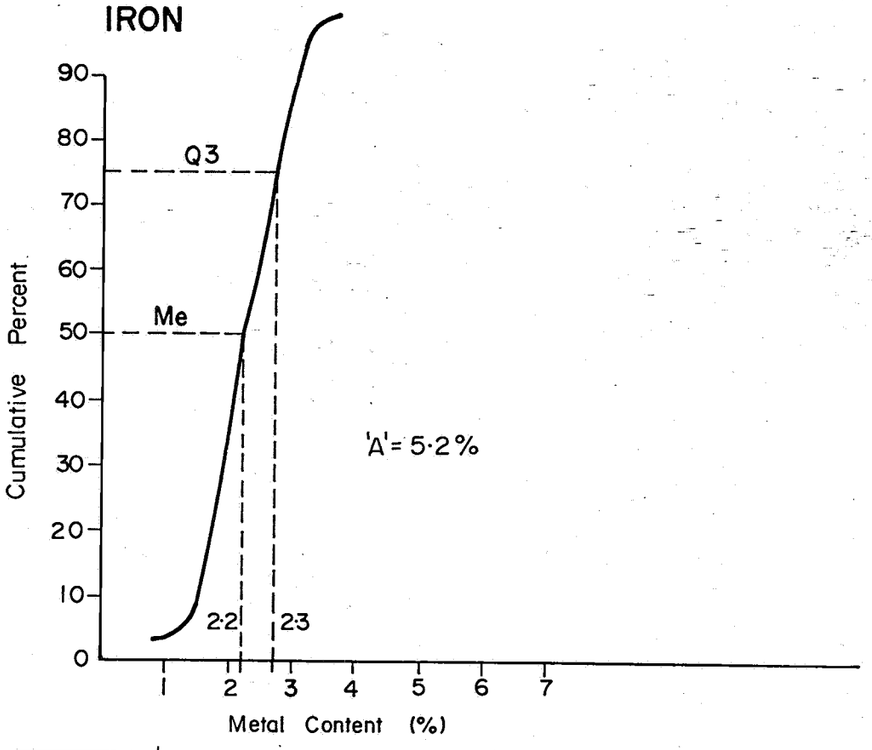
GOLD



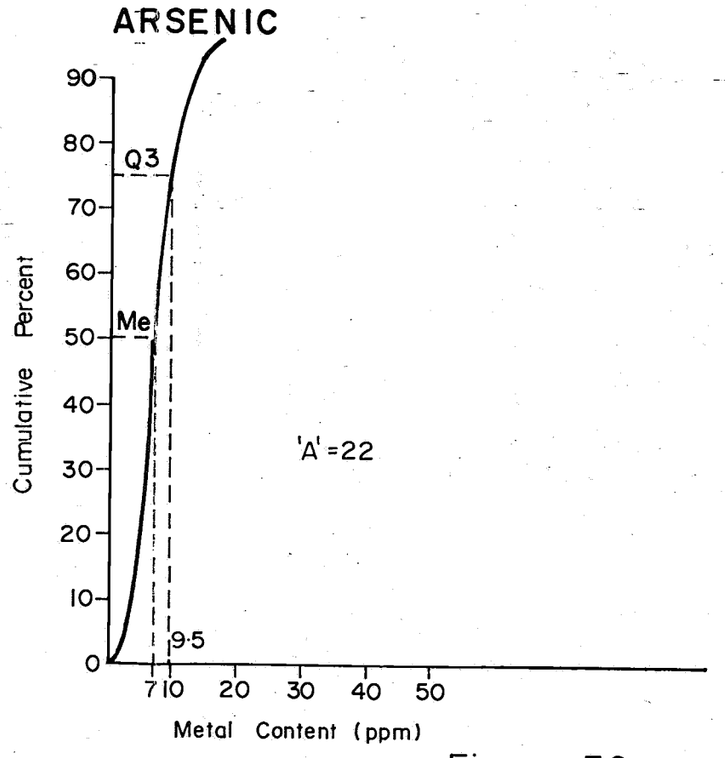
LEAD



IRON



ARSENIC



'A'.....Me + 6(Q3 − Me)
'A'.....Lower limit of anomaly
Me.....Median
Q3.....75 percentile

Figure. 30

DEPARTMENT OF MINES AND ENERGY
SOUTH AUSTRALIA

KANMANTOO TROUGH GEOLOGICAL INVESTIGATION
KARINYA SYNCLINE – ACCOMODATION HILL PROSPECT
CUMULATIVE FREQUENCY CURVES

DRAWN B.Morris	18.2.91 DATE
TRACED D.Simpson	SCALE as above
Nov 1990	PLAN NUMBER 91-60
CHECKED	

5080

139°12'

139°13'

L5 0m — 1000m

L3 0m — 1000m

L2 0m — 1000m

L1 0m — 1000m

L4 0m — 1000m

STURT

THE GAP

ACCOMODATION HILL

34°24'

HIGHWAY

Zinc (>79ppm)

Lead (>61ppm)

Copper (>35ppm)

Fence

Main road

Track

Creek

Milendella Limestone Member

xxxxxxxxx Ironstone

0 — 1

KILOMETRE

KANMANTOO TROUGH
GEOLOGICAL INVESTIGATIONS

KARINYA SYNCLINE – ACCOMODATION HILL PROSPECT
SOIL SAMPLE ANOMALIES – Zn, Pb, Cu

SADME 91-61

FIG. 31

5022

139°12'

139°13'

L5 0m

1000m

L3 0m

1000m

L2 0m

1000m

L1 0m

1000m

L4 0m

1000m

STURT

THE GAP

ACCOMODATION HILL

34°24'

HIGHWAY

Gold (>2ppb)

Arsenic (>22ppm)

Fence

Main road

Track

Creek

Milendella Limestone Member

xxxxxxxx Ironstone

0

1

KILOMETRE

KANMANTOO TROUGH
GEOLOGICAL INVESTIGATIONS

KARINYA SYNCLINE-ACCOMODATION HILL PROSPECT
SOIL SAMPLE ANOMALIES-Au,As

SADME 91-62

FIG. 32

5022

139°12'

139°13'

L5 0m — 1000m

L3 0m — 1000m

L2 0m — 1000m

L1 0m — 1000m

L4 0m — 1000m

STURT

THE GAP

ACCOMODATION HILL

34°24'

HIGHWAY

Fence

Main road

Track

Creek

Milendella Limestone Member

Induced Polarization Traverse with low resistivity anomaly

Ironstone

0 — 1 KILOMETRE

KANMANTOO TROUGH
GEOLOGICAL INVESTIGATIONS

KARINYA SYNCLINE - ACCOMODATION HILL PROSPECT
INDUCED POLARIZATION SURVEY

SADME 91-63

FIG. 33

5022