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EL 546

CARRIETON EAST

**PROGRESS, ANNUAL AND FINAL REPORTS FOR THE
PERIOD 14/11/79 TO 13/11/81**

Submitted by

**Swan Resources Ltd
1981**

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**PRIMARY INDUSTRIES
AND RESOURCES SA**

ENVELOPE 3704

TENEMENT: EL 546, Orroroo

TENEMENT HOLDER: Swan Resources Limited and Freeport of Australia Incorporated

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SEPARATELY HELD DATA

TRANSPARENCIES

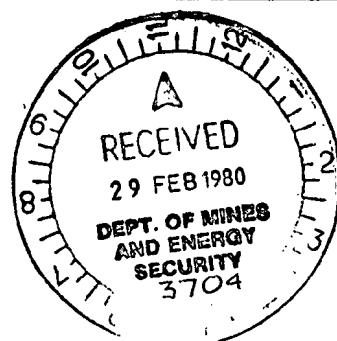
Transparencies (indicated by +T) held in Cylinder 3704/1.

QUARTERLY REPORT ON EXPLORATION LICENCE 546

ORROROO REGION, SOUTH AUSTRALIA

FOR QUARTER ENDED 13TH FEBRUARY, 1980

R.W. Mosig
Swan Resources Ltd
51 Colin Street
West Perth WA 6005



1. INTRODUCTION

Swan Resources Ltd. has carried out two reconnaissance stream sampling programmes in the Orroroo and Port Augusta 1:250,000 sheet areas. The aim of both programmes was to identify possible kimberlitic indicator minerals from the heavy mineral fractions of the stream samples.

Following encouraging results from the first sampling programme carried out in March 1979, two Exploration Licences were applied for to the Department of Mines and Energy, South Australia.

In October 1979 a further sampling programme was carried out and on the 13th November 1979 two Exploration Licences, Nos. 546 and 558, were granted.

This report covers results of all previous work in the region by Swan Resources Ltd. as well as exploration activities carried out during the first quarter of occupancy rights within E.L. 546.

2. LOCATION AND ACCESS

Exploration Licence 546 is located in part on the Port Augusta and Orroroo 1:250,000 sheet areas (refer Fig. 1). The region occupies part of the southernmost portion of the Flinders Ranges as well as the flat region enclosing the Willochra Plain. A series of sealed and unsealed roads provide good access within the licence areas. Reasonable access is also available in the Flinders Ranges section where a bulldozed track was made by previous E.L. holders, Utah Development Co.

The licence areas are nearby to Port Augusta, a major industrial town and railway terminal.

3. TITLE

Exploration Licence 546 (1304 square kilometres) was granted on the 13th November 1979 for a one year period. Title has been granted to explore for diamonds, uranium, copper, nickel, lead, zinc, gold and platinum.

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4. REGIONAL GEOLOGICAL AND GEOPHYSICAL ASPECTS

The area is within the Adelaide Geosyncline and contains Proterozoic sediments of the Adelaide System.

Shallow-water sedimentation in the gradually-sinking, Adelaide geosynclinal trough resulted in the deposition of more than 50,000 feet of Proterozoic sediments. During the late-Cambrian to Ordovician the geosyncline was subjected to the Delamerian orogeny, accompanied by metamorphism and intrusion of granites, and became transformed into a complex fold belt. Subsequently this region became part of a relatively rigid, stable block and has remained relatively inactive up to the present day, apart from certain adjustments along old fault lines.

As kimberlites are not usually found in active orogenic or geosynclinal areas, it is possible that the time of emplacement of the kimberlites was post-Ordovician by which time the region had become stabilised. In an address to the Western Australian division of the Geological Society of Australia on the 7th February 1972 entitled "Australian Seismicity and Plate Tectonics", Dr. Hugh Doyle referred to the Adelaide seismic zone which passes northwards through the Terowie region and may continue north-westwards towards Cambridge Gulf. Southwards from Adelaide this seismic zone appears to link up with a cross-fracture displacing the mid-ocean ridge south of Australia. He thought that this seismic zone may separate Australia into two plates of different rigidity marked by different rates of propagation of seismic waves, the waves travelling faster in the western half of Australia. The fact that the seismic zone passes near Carrieton may be indicative of a deep, fundamental link between variations in the mantle, upwelling convection currents in the mantle beneath the mid-ocean ridge, and the location of intrusions of kimberlite.

5. LOCAL GEOLOGICAL ASPECTS

Both areas are characterised by folded and faulted sediments, principally of the Adelaide System, ranging in age from Willouran to Lower Cambrian. A north north-easterly structural trend is consistent throughout both areas. Structurally, the area is dominated by a series of such trending synforms and antiforms. The rock units present in the two areas are predominantly shales, siltstones, quartzites and associated sediments with minor limestones and dolomites.

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Stratigraphy: Adelaide (Willouran) System

River Wakefield Group - Rock units of this group only outcrop in the south-western portion of E.L. 558. The River Wakefield Group (Callana Beds?) consists predominantly of quartzite, siltstone, arkosic quartzite interbeds. It has been proposed that sediments of this group comprise much of the material noted in the Diapiric breccias which outcrop in both areas.

Burra Group (Torrensian, Lower Sturtian) - The Burra Group conformably overlies the River Wakefield Group, and consists predominantly of interbedded quartzites, siltstones and dolomites.

Umberatana Group (Upper Sturtian, Lower Marinoan) - The basal member of this group is a boulder tillite and the lower contact with the underlying Burra Group is mapped throughout most of the area as a stratigraphic discordance. The unit consists predominantly of interbedded shales, sandstones, siltstones, limestones with minor dolomite and minor tillites near the top of the group as well as the base.

Wilpena Group (Marinoan) - This group consists predominantly of interbeds of mainly siltstone with minor quartzite and dolomite. The Wonoka formation which is predominantly a calcereous siltstone exhibits local sedimentary discordances.

CAMBRIAN

Hawker Group (Lower Cambrian) - The Hawker Group outcrops only in E.L. 558 in the vicinity of Mt. Ragless, and consists predominantly of interbeds of siltstone, limestone and sandstone.

Diapiric Breccia - This unit outcrops in both areas and consists of rafts of contorted sediments in a carbonate matrix. These rafts are thought to be from the Callana Beds (River Wakefield Group).

6. PREVIOUS EXPLORATION ACTIVITY

A literature survey is currently being carried out via retrieval of information from the South Australian Department of Mines and Energy Bibliographic index system.

As far as is known, Utah Development Co. previously held portion of E.L.s 546 and 558. Subsequent exploration for copper mineralisation using geophysical, geochemical and geological mapping failed to indicate the presence of an economic deposit and the areas were relinquished in 1978.

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Further evaluation of previous exploration activity will be reported upon completion of the literature survey.

7. PREVIOUS EXPLORATION BY SWAN RESOURCES LTD.

In March and October 1979 Swan carried out reconnaissance stream sampling over the major drainage channels dissecting the Exploration Licences.

Approximately 20kg of stream gravel from a suitable heavy mineral trap site in the drainage channel was collected. Only $\frac{1}{4}$ inch stream gravel was collected and locations are shown in Plan 1. Samples were despatched to two laboratories in Perth for Wilfley tabling and Tetrabromoethane (TBE) concentration. Twenty-eight samples were collected in this first stage programme and details of certain indicator minerals found are reported in Appendix 1.

In October 1979, a further thirty-eight samples were collected.

After laboratory concentration of the heavy mineral fraction the samples were examined under a binocular microscope for kimberlite indicator minerals. Results of investigations are reported in Appendix 1.

8. EXPLORATION ACTIVITIES CARRIED OUT DURING FIRST QUARTER OF OCCUPANCY RIGHTS ON E.L.s 546 & 558.

A proposed six week field programme commenced on the 10th February 1980. Details of results will be reported in the second quarterly report due 13th May 1980.

Essentially, work carried out on the project consisted of detailed aerial photo interpretation. From this work further stream sample sites were selected and numerous photoanomalous features were noted for field examination during the current programme

Aerial photo examination of regions where kimberlite indicator minerals were located were also evaluated.

It was noted that no obvious structural control was evident near the indicator mineral occurrences. Further information will be reported in the second quarterly report.

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9. PROPOSED WORK PROGRAMME

A two phase exploration programme has been planned for February.

(a) Phase 1: Further Reconnaissance Sampling

It is proposed to collect further samples over the Exploration Licence areas to give a sample density of one sample per two square kilometres.

(b) Phase 2: Anomaly Follow-Up

It is proposed that Phase 2 will consist of the following:-

- (a) Confirmation of samples previously found to have kimberlitic indicator minerals.
- (b) Grid loading of areas around samples previously found to have kimberlitic indicator minerals.
- (c) Ground magnetometry of gridded areas.
- (d) Field investigation of photoanomalous features.

10. CONCLUSIONS

A suite of anomalous possibly kimberlitic indicator minerals has been found from a regional stream sampling programme. Further work is recommended to determine the ultimate derivation of these minerals by further sampling, grid loading and magnetometry. In addition, further reconnaissance sampling from the two Exploration Licences is recommended.

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11. EXPENDITURE (Calculated to 13th February, 1980)

Contract Work	780.92
Employee Rations	123.00
Freight and Cartage	279.95
Consumable Items - Geological	49.00
Hire of Vehicles	822.96
Assays	1,970.66
Rents on Tenements	1,307.00
Travel Expenses	1,823.54
Maps and Photographs	32.40
Consultant Fees	7,630.00
Office and Administration Fees	1,750.00

\$16,569.43

 $\frac{\$}{2} = \$8,285$

* Expense for E.L. 546 & 558

LIST OF ACCOMPANYING PLANS, FIGURES AND APPENDICES

Figure 1 - Location Diagram, E.L.s 546 & 558

- Map 1 - Boundary details and drainage, E.L.s 546, 558
- Map 2 - 1:50,000 Map Wilkatana - sample locations
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Appendix 1 Description and location of certain indicator minerals.

Appendix 2 Heavy mineral analysis sheets.

Appendix 3 Geochemical analyses results.

APPENDIX.1

DESCRIPTION AND LOCATION OF CERTAIN

INDICATOR MINERALS

<u>Sample No.</u>	<u>Indicator Mineral(s) Present</u>	<u>Size</u>	<u>Remarks</u>
M-20	1 x picroilmenite	+40 Mesh	Rounded grain. SEM scan indicated 10% MgO wt. %
	1 x chromite	+40 Mesh	Rounded non-magnetic grains.
M-22	2 x picroilmenite	+40 Mesh	Rounded, non-magnetic grains.
M-23	2 x picroilmenite	+40 Mesh	Fresh/worn non-magnetic grain.
M-24	1 x picroilmenite	+40 Mesh	Rounded non-magnetic grain.
M-30	1 x picroilmenite	+40 Mesh	Rounded non-magnetic grain.
	3 x clinopyroxene	+40 Mesh	Light green, elongate. Fresh? chrome diopside
M-34	1 x picroilmenite	+40 Mesh	Fresh/worn weakly magnetic grain.
M-42	10 x rutile	+20, +40 Mesh	Blocky subhedral grain possibly derived from rutile-eclogite

APPENDIX 2HEAVY MINERAL ANALYSIS SHEETS

HEAVY MINERAL ANALYSIS SHEET

SAMPLE M 20Port Augusta
SHEET ~~000000~~TOTAL WEIGHT 49g
(220kg)1:250,000 COORDINATES 598006

(0.22% heavies)

Mineral	+16# Weight 12g		+20# Weight 12g		+40# Weight 25g		-40# Weight	Remarks
	Mag	N M	Mag	N M	Mag	N M		
Quartz		Tr		Tr		Tr		
Goethite		100		90		40%		most abundant mineral - pisolites,
Magnetite	Tr				/			
Limonite	Tr					Tr		
Rutile								
Epidote								
Tourmaline				Tr		Tr		
Anatase								
Garnet								
Ilmenite								
Pyroxene								
Leucosene						Tr		porcellanous luche
Zircon						Tr		
Mica						Tr		
apatite								
Gypsum								
Calcite								
Barite								
rock fragments								shale
Porcellanite						1 grain		Rounder mature grain
TOTAL								

HEAVY MINERAL ANALYSIS SHEET

SAMPLE M 21

SHEET Port Augusta

TOTAL WEIGHT 12 g

1:250,000 COORDINATES 601 007

(20 S)

(0.015% heavies)

Mineral	+16# Weight <u>6g</u>		+20# Weight <u>1g</u>		+40# Weight <u>5g</u>		-40# Weight	Remarks
	Mag	N M	Mag	N M	Mag	N M		
Quartz		Tr				Tr		
Goethite		90%				Tr		Most abundant mineral
Magnetite	Tr							
Limonite						Tr		
Rutile								
Epidote								
Tourmaline						Tr		
Anatase								
Garnet								
Ilmenite						Tr		
Pyroxene								
Leucoxene								
Zircon						Tr		clear euhedral grains
Mica						Tr		fine muscovite
apatite								
Gypsum								
Calcite						Tr		
Barite								
Rock fragments								
TOTAL								

HEAVY MINERAL ANALYSIS SHEET

SAMPLE M 22SHEET Port AugustaTOTAL WEIGHT 14541:250,000 COORDINATES 592 005

19.4 kg

(0.75% heaviest)

Mineral	+16# Weight 11g		+20# Weight 10g		+40# Weight 12g		-40# Weight	Remarks
	Mag	N M	Mag	N M	Mag	N M		
Quartz	Tr	Tr		Tr		Tr		
Goethite		90				Tr		
Magnetite								
Limonite								
Rutile								
Epidote								
Tourmaline				Tr		Tr		
Anatase								
Garnet								
Ilmenite				Tr				
Pyroxene								
Leucosene						Tr		
Zircon						Tr		
Mica						Tr		
apatite								
Gypsum								
Calcite								
Barite								
Picrochromite					2 grams			Worn pitted grains characteristic lustre.
Rock Fragments	5	50						Shale (micaceous fragments).
TOTAL								

HEAVY MINERAL ANALYSIS SHEET

SAMPLE M 23

SHEET Port Augusta

TOTAL WEIGHT 16g

1:250,000 COORDINATES S94 012

15.4ug (0.087% heavies)

Mineral	+16# Weight 5g		+20# Weight 1g.		+40# Weight 10g		-40# Weight	Remarks
	Mag	N M	Mag	N M	Mag	N M		
Quartz		Tr				Tr		
Goethite	10			90				
Magnetite	10	90						
Limonite						Tr		
Rutile						Tr		
Epidote								
Tourmaline	Tr					Tr		
Anatase								
Garnet						Tr		Trace almandine
Ilmenite				Tr				
Pyroxene								
Leucosene						Tr		
Zircon						Tr		
Mica								
Apatite								
Gypsum								
Calcite								
Barite								
2 picroilmenite						Tr		Fresh brown pitted NM lustrous grains
TOTAL								

HEAVY MINERAL ANALYSIS SHEET

SAMPLE M 24

SHEET Port Augusta

TOTAL WEIGHT 644

1:250,000 COORDINATES 594 029

20.8 kg (0.3% heavies)

Mineral	+16# Weight 104		+20# Weight 34		+40# Weight 514		-40# Weight	Remarks
	Mag	N M	Mag	N M	Mag	N M		
Quartz		Tr		Tr		Tr		
Goethite		90				Tr		
Magnetite						Tr		
Limonite								
Rutile						Tr		
Epidote								
Tourmaline						Tr		
Anatase								
Garnet								
Ilmenite						Tr		
Pyroxene								
Leucosene						Tr		
Zircon						Tr		
Mica								
Apatite								
Gypsum								
Calcite								
Barite								
Microcline						Tr		rounded worn N.M. grain
TOTAL								

HEAVY MINERAL ANALYSIS SHEET

SAMPLE M 25

SHEET Port Augusta

TOTAL WEIGHT 53g.

1:250,000 COORDINATES 597 049

20.5kg (10.3% heavies)

Mineral	+16# Weight 4g		+20# Weight 4g		+40# Weight 4.5g		-40# Weight	Remarks
	Mag	N M	Mag	N M	Mag	N M		
Quartz						Tr		
Goethite		100		100		90		
Magnetite								
Limonite						Tr		
Rutile								
Epidote								
Tourmaline						Tr		
Anatase								
Garnet						Tr		Tare abundant
Ilmenite								
Pyroxene								
Leucosene						Tr		
Zircon								
Mica								
Apatite						Tr		
Gypsum								
Calcite								
Barite								
TOTAL								

PAGE TWO OF APPENDIX 3

Sample No.	Nature of Sample	Location 1:50,000 Map	Reference	Pb	Ni	Co	Sr	Sn	P	Cr	Nb	Local Bedrock
M233	Stream	Carrieton	138° 34'E, 32° 17'S	19	31	11	<5	33	0.025	94	8	Ulupa siltstone
M234	Stream	Carrieton	138° 34'E, 32° 17'S	19	31	13	6	8	0.030	86	5	Ulupa siltst
M235	Stream	Carrieton	138° 34'E, 32° 17'S	11	27	11	<5	20	0.023	138	6	Ulupa siltst
M236	Stream	Carrieton	138° 33'E, 32° 17'S	14	25	11	<5	11	0.038	175	14	Ulupa siltst
M237	Stream	Carrieton	138° 33'E, 32° 19'S	14	30	13	<5	17	0.035	168	13	Ulupa siltstone /Elatina F'm
M238	Stream	Carrieton	138° 38'E, 32° 16'S	18	27	13	<5	6	0.032	184	12	Ulupa siltstone
M239	Stream	Moockra	138° 20'E, 32° 18'S	19	26	15	25	15	0.049	222	13	Tarcowie siltstone
M240	Stream	Moockra	138° 21'E, 32° 19'S	19	27	12	11	12	0.029	275	7	Tarcowie siltstone
M241	Stream	Moockra	138° 22'E, 32° 19'S	16	26	8	<5	45	0.035	241	11	Brachina F'm
M242	Stream	Moockra	138° 23'E, 32° 17'S	18	30	13	<5	20	0.037	177	<5	Brachina F'm
M243	Stream	Moockra	138° 20'E, 32° 16'S	20	32	18	8	9	0.038	235	7	Tapley Hill F'm
M244	Stream	Moockra	138° 24'E, 32° 16'S	232	39	16	<5	30	0.037	253	12	Brachina F'm
M245	Stream	Moockra	138° 28'E, 32° 16'S	590	44	18	20	39	0.037	189	15	Tapley Hill F'm
M246	Stream	Moockra	138° 29'E, 32° 18'S	37	25	12	24	18	0.030	126	11	Tapley Hill F'm
M247	Stream	Moockra	138° 26'E, 32° 18'S	23	26	16	<5	10	0.030	131	6	Brachina F'm
M248	Stream	Moockra	138° 26'E, 32° 17'S	29	39	22	22	16	0.042	164	13	Brachina F'm

HEAVY MINERAL ANALYSIS SHEET

SAMPLE M 26

SHEET PORT AUGUSTA

TOTAL WEIGHT 78g

200kg (0.39% heavies)

1:250,000 COORDINATES 599 027

Mineral	+16# Weight <u>20g</u>		+20# Weight <u>6g</u>		+40# Weight <u>52g</u>		-40# Weight	Remarks
	Mag	N M	Mag	N M	Mag	N M		
Quartz								
Goethite								
Magnetite		<u>100</u>		<u>100</u>		<u>Tr</u>		
Limonite						<u>Tr</u>		
Rutile						<u>Tr</u>		
Epidote						<u>Tr</u>		
Tourmaline						<u>Tr</u>		
Anatase						<u>Tr</u>		
Garnet						<u>Tr</u>		
Ilmenite						<u>Tr</u>		
Pyroxene						<u>Tr</u>		
Leucoxene						<u>Tr</u>		
Zircon						<u>Tr</u>		
Mica						<u>Tr</u>		
Apatite						<u>Tr</u>		
Gypsum								
Calcite						<u>Tr</u>		
Barite								<u>clear rhombs</u>
TOTAL								

HEAVY MINERAL ANALYSIS SHEET

SAMPLE M 28

SHEET Port Augusta

TOTAL WEIGHT 19g

1:250,000 COORDINATES 603028

~~10.2g~~ 4.2kg (0.13% heavies)

Mineral	+16# Weight <u>7g</u>		+20# Weight <u>6g</u>		+40# Weight <u>6</u>		-40# Weight	Remarks
	Mag	N M	Mag	N M	Mag	N M		
Quartz						3		clear anhedral
Goethite		100		100				
Magnetite						Tr		
Limonite								
Rutile								
Epidote								
Tourmaline						Tr		
Anatase								
Garnet						Tr		
Ilmenite								
Pyroxene								
Leucosene								
Zircon								
Mica						Tr		
Apatite								
Gypsum								
Calcite								
Barite								
TOTAL								

HEAVY MINERAL ANALYSIS SHEET

SAMPLE M 29SHEET 0RR0200TOTAL WEIGHT 171 g.1:250,000 COORDINATES 614 032

18.5 kg (0.9% heavies)

Mineral	+16# Weight <u>63</u>		+20# Weight <u>23</u>		+40# Weight <u>85</u>		-40# Weight	Remarks
	Mag	N M	Mag	N M	Mag	N M		
Quartz								
Goethite		<u>100</u>		<u>100</u>		<u>3</u>		
Magnetite						<u>60</u>		
Limonite								
Rutile								
Epidote								
Tourmaline						<u>Tr</u>		
Anatase								
Garnet						<u>Tr</u>		
Ilmenite						<u>Tr</u>		
Pyroxene								
Leucosene								
Zircon								
Mica								
apatite								
Gypsum								
alcite								
Barite								
Rock Frags.								<u>Milaceous shale</u>
TOTAL								

HEAVY MINERAL ANALYSIS SHEET

SAMPLE M 30

SHEET ORROROO

TOTAL WEIGHT 318

1:250,000 COORDINATES 620049

182kg (1.75% heavies)

Mineral	+16# Weight <u>204</u>		+20# Weight <u>58</u>		+40# Weight <u>56</u>		-40# Weight	Remarks
	Mag	N M	Mag	N M	Mag	N M		
Quartz						10		
Goethite		100		100		60		
Magnetite								
Limonite								
Rutile						Tr		
Epidote								
Tourmaline						Tr		
Anatase								
Garnet								
Ilmenite						Tr		
Pyroxene								
Leucosene						Tr		
Zircon								
Mica								
Apatite								
Gypsum								
Calcite								
Barite								
Kyanite						Tr		blue antedote
Rock Frags								
TOTAL								

HEAVY MINERAL ANALYSIS SHEET

SAMPLE M 31SHEET ORROROOTOTAL WEIGHT 330g1:250,000 COORDINATES 633 033189kg (1.75% heavies)

Mineral	+16# Weight <u>120</u>		+20# Weight <u>98</u>		+40# Weight <u>112</u>		-40# Weight	Remarks
	Mag	N M	Mag	N M	Mag	N M		
Quartz						Tr		
Goethite		<u>100</u>		<u>100</u>		<u>90</u>		
Magnetite								
Limonite								
Rutile						Tr		<u>rounded worn anhedral</u>
Epidote								
Tourmaline						Tr		
Anatase								
Garnet						Tr		<u>pink almandine</u>
Ilmenite						Tr		
Pyroxene								
Leucosene						Tr		
Zircon						Tr		
Mica								
Apatite								
Gypsum								
Calcite						Tr		
Barite								
TOTAL								

HEAVY MINERAL ANALYSIS SHEET

SAMPLE M 32SHEET ORROROOTOTAL WEIGHT 791:250,000 COORDINATES 621 026

22.1kg (0.35% heavies.)

Mineral	+16# Weight <u>26</u>		+20# Weight <u>13</u>		+40# Weight <u>40</u>		-40# Weight	Remarks
	Mag	N M	Mag	N M	Mag	N M		
Quartz						Tr		
Goethite		100		100		100		
Magnetite								
Limonite								
Rutile								
Epidote								
Tourmaline						Tr		
Anatase								
Garnet								
Ilmenite						Tr		
Pyroxene								
Leucosene								
Zircon								
Mica								
Apatite								
Gypsum								
Calcite								
Barite								
TOTAL								

HEAVY MINERAL ANALYSIS SHEET

SAMPLE M 33

SHEET ORROROO

TOTAL WEIGHT 74g
215 kg (0.34% heavier)

1:250,000 COORDINATES 631 025

Mineral	+16# Weight <u>24</u>		+20# Weight <u>12</u>		+40# Weight <u>38</u>		-40# Weight	Remarks
	Mag	N M	Mag	N M	Mag	N M		
Quartz						Tr		
Goethite		<u>100</u>		<u>100</u>		<u>90</u>		
Magnetite								
Limonite								
Rutile						Tr		
Epidote								
Tourmaline						Tr		
Anatase								
Garnet						Tr		
Ilmenite						Tr		
Pyroxene								
Leucosene								
Zircon						Tr		
Mica						Tr		
Apatite								
Gypsum								
Calcite						Tr		
Barite								
TOTAL								

HEAVY MINERAL ANALYSIS SHEET

SAMPLE M 34

SHEET ORROROO

TOTAL WEIGHT 65.

1:250,000 COORDINATES 639 027

185 kg (0.35% heavy)

Mineral	+16# Weight 11		+20# Weight 6		+40# Weight 48		-40# Weight	Remarks
	Mag	N M	Mag	N M	Mag	N M		
Quartz								
Goethite								
Magnetite								
Limonite								
Rutile								
Epidote								
Tourmaline								
Anatase								
Garnet								
Ilmenite								
Pyroxene								
Leucosene								
Zircon								
Mica								
Apatite								
Gypsum								
Calcite								
Barite								
TOTAL								

HEAVY MINERAL ANALYSIS SHEET

SAMPLE M 35

SHEET CR00000

TOTAL WEIGHT

175 kg

1:250,000 COORDINATES 646 009

Mineral	+16# Weight		+20# Weight		+40# Weight		-40# Weight	Remarks
	Mag	N M	Mag	N M	Mag	N M		
Quartz		Tr				Tr		
Goethite		100		100		40		
Magnetite								
Limonite								
Rutile								
Epidote								
Tourmaline						Tr		
Anatase								
Garnet						Tr		trace almandine
Ilmenite						Tr		
Pyroxene								
Leucosene								
Zircon						Tr		
Mica						Tr		
Apatite								
Gypsum								
Calcite						Tr		
Barite								
TOTAL								

HEAVY MINERAL ANALYSIS SHEET

SAMPLE M 36

SHEET CRROBOO

TOTAL WEIGHT

1:250,000 COORDINATES 652009

19.1 kg

Mineral	+16# Weight		+20# Weight		+40# Weight		-40# Weight	Remarks
	Mag	N M	Mag	N M	Mag	N M		
Quartz								
Goethite		100		100	100			
Magnetite								
Limonite								completely pisolitic goethite fragments
Rutile								
Epidote								
Tourmaline								
Anatase								
Garnet								
Ilmenite								
Pyroxene								
Leucosene								
Zircon								
Mica								
Apatite								
Gypsum								
Calcite								
Barite								
TOTAL								

HEAVY MINERAL ANALYSIS SHEET

SAMPLE M 37

SHEET 659005

TOTAL WEIGHT

15.7 kg

1:250,000 COORDINATES

Mineral	+16# Weight		+20# Weight		+40# Weight		-40# Weight	Remarks
	Mag	N M	Mag	N M	Mag	N M		
Quartz		10				Tr		
Goethite		90		100		90		
Magnetite								
Limonite								
Rutile								
Epidote								
Tourmaline						Tr		
Anatase						Tr		
Garnet						Tr		
Ilmenite						Tr		
Pyroxene						Tr		
Leucosene						Tr		
Zircon						Tr		
Mica						Tr		
Apatite						Tr		
Gypsum								
Calcite								
Barite								
TOTAL								

HEAVY MINERAL ANALYSIS SHEET

SAMPLE M38

SHEET 000000

TOTAL WEIGHT

19.2 kg

1:250,000 COORDINATES 152996

Mineral	+16# Weight		+20# Weight		+40# Weight		-40# Weight	Remarks
	Mag	N M	Mag	N M	Mag	N M		
Quartz						Tr		
Goethite		100		100		90		
Magnetite								
Limonite								
Rutile								
Epidote								
Tourmaline						Tr		
Anatase								
Garnet								
Ilmenite								
Pyroxene								
Leucoxene								
Zircon								
Mica								
Apatite								
Gypsum								
Calcite								
Barite								
Rock Fragm.						10		
TOTAL								

HEAVY MINERAL ANALYSIS SHEET

SAMPLE M 39

SHEET 0R2000

TOTAL WEIGHT

185 kg

1:250,000 COORDINATES 159002

Mineral	+16# Weight		+20# Weight		+40# Weight		-40# Weight	Remarks
	Mag	N M	Mag	N M	Mag	N M		
Quartz								Sample completely consisting of iron oxide fragments.
Goethite		100		100		100		
Magnetite								
Limonite								
Rutile								
Epidote								
Tourmaline								
Anatase								
Garnet								
Ilmenite								
Pyroxene								
Leucosene								
Zircon								
Mica								
Apatite								
Gypsum								
Calcite								
Barite								
TOTAL								

HEAVY MINERAL ANALYSIS SHEET

SAMPLE M40

SHEET 0000000

TOTAL WEIGHT

1:250,000 COORDINATES 155010

20.9kg

Mineral	+16# Weight		+20# Weight		+40# Weight		-40# Weight	Remarks
	Mag	N M	Mag	N M	Mag	N M		
Quartz						10		
Goethite		100		100		70		
Magnetite								
Limonite						Tr		
Rutile								
Epidote								
Tourmaline						1		
Anatase								
Garnet						Tr		
Ilmenite								
Pyroxene						Tr		
Leucosene						Tr		
Tricon						Tr		
ica						Tr		
apatite								
Gypsum								
Calcite								
Barite								
Rock frags						Tr		
TOTAL								

HEAVY MINERAL ANALYSIS SHEET

SAMPLE M 41

SHEET 0000000

TOTAL WEIGHT

1:250,000 COORDINATES 168996

20.0 kg

Mineral	+16# Weight		+20# Weight		+40# Weight		-40# Weight	Remarks
	Mag	N M	Mag	N M	Mag	N M		
Quartz								
Goethite		100		100				
Magnetite								
Limonite								
Rutile								
Epidote								
Tourmaline								
Anatase								
Garnet								
Ilmenite								trace anhedral almandine
Pyroxene								
Leucosene								
Tricon								
Mica								
apatite								
Gypsum								
Calcite								
Barite								
Other Fragments								
TOTAL								

HEAVY MINERAL ANALYSIS SHEET

SAMPLE M42

SHEET 000000

TOTAL WEIGHT

1:250,000 COORDINATES 184992

189kg

Mineral	+16# Weight		+20# Weight		+40# Weight		-40# Weight	Remarks
	Mag	N M	Mag	N M	Mag	N M		
Quartz								
Goethite								
Magnetite								
Limonite								
Rutile								
Epidote								
Tourmaline								
Anatase								
Garnet								
Ilmenite								
Pyroxene								
Leucosene								
Zircon								
Mica								
Apatite								
Gypsum								
Calcite								
Barite								
TOTAL								

0035

HEAVY MINERAL ANALYSIS SHEET

SAMPLE M43

SHEET 0020000

TOTAL WEIGHT

19.1kg

1:250,000 COORDINATES 183914

Mineral	+16# Weight		+20# Weight		+40# Weight		-40# Weight	Remarks
	Mag	N M	Mag	N M	Mag	N M		
Quartz						Tr		
Goethite		100		100		90		
Magnetite								
Limonite								
Rutile								
Epidote								
Tourmaline						Tr		
Anatase								
Garnet								
Ilmenite								
Pyroxene								
Leucoxene						Tr		
Zircon								
Mica								
Apatite								
Gypsum								
Calcite								
Barite								
TOTAL								

HEAVY MINERAL ANALYSIS SHEET

SAMPLE M 44

SHEET 0220200

TOTAL WEIGHT

17.9 kg

1:250,000 COORDINATES 191005

Mineral	+16# Weight		+20# Weight		+40# Weight		-40# Weight	Remarks
	Mag	N M	Mag	N M	Mag	N M		
Quartz								
Goethite								
Magnetite		100		100		100		100% iron oxide fragments
Limonite								
Rutile								
Epidote								
Tourmaline								
Anatase								
Garnet								
Ilmenite								
Pyroxene								
Leucosene								
Zircon								
Mica								
Apatite								
Gypsum								
Calcite								
Barite								
TOTAL								

0037

HEAVY MINERAL ANALYSIS SHEET

SAMPLE M45

SHEET 000000

TOTAL WEIGHT

1:250,000 COORDINATES 196 000

196kg

Mineral	+16# Weight		+20# Weight		+40# Weight		-40# Weight	Remarks
	Mag	N M	Mag	N M	Mag	N M		
Quartz						Tr		
Goethite		100		100		90		
Magnetite								
Limonite								
Rutile						Tr		
Epidote								
Tourmaline						Tr		
Anatase								
Garnet						Tr		
Ilmenite						Tr		
Pyroxene								
Leucoxene						Tr		
Zircon						Tr		
Mica								
Apatite								
Gypsum								
Calcite								
Barite								
TOTAL								

HEAVY MINERAL ANALYSIS SHEET

SAMPLE M 46

SHEET 000000

TOTAL WEIGHT

1:250,000 COORDINATES 193 24

204 kg

Mineral	+16# Weight		+20# Weight		+40# Weight		-40# Weight	Remarks
	Mag	N M	Mag	N M	Mag	N M		
Quartz		10				Tr		
Goethite		90		100		90		
Magnetite								
Limonite								
Rutile						Tr		
Epidote								
Tourmaline						Tr		
Anatase								
Garnet								
Ilmenite								
Pyroxene								
Leucosene								
Zircon								
Mica								
Apatite								
Gypsum								
Calcite								
Barite								
Rock Frags						10		
TOTAL								

HEAVY MINERAL ANALYSIS SHEET

SAMPLE M 47

SHEET 0000001

TOTAL WEIGHT

1:250,000 COORDINATES 189977

15.0 kg

Mineral	+16# Weight		+20# Weight		+40# Weight		-40# Weight	Remarks
	Mag	N M	Mag	N M	Mag	N M		
Quartz						Tr		
Goethite		100		100		90		
Magnetite								
Limonite								
Rutile						Tr		
Epidote								
Tourmaline						Tr		
Anatase								
Garnet								
Ilmenite						Tr		
Pyroxene								
Leucoxene								
Zircon								
Mica								
Apatite								
Gypsum								
Calcite								
Barite								
TOTAL								

HEAVY MINERAL ANALYSIS SHEET

SAMPLE NUMBER: M211
 HEAD WEIGHT: 17.7 Kg
 HEAVIES WEIGHT: 491.61g

PROJECT NUMBER: 1113
 1:250,000 SHEET: PORT AUGUSTA / ORROROO
 1:250,000 COORDS:

MINERAL	+16		+20		+40		-40		REMARKS	
	wt.....wt%.....		wt.....wt%.....		wt.....wt%.....		wt.....wt%.....			
	Mag wt %	N. Mag wt %	Mag wt%	N. Mag wt%	Mag wt%	N. Mag wt%	Mag	N. Mag		
Quartz			✓	✓	✓	✓	✓	✓	Rutile - quite fresh Pseudomorphs of magnetite in the Non. Mags	
Geothite			✓	TR	✓	TR	✓	TR		abundant
Magnetite			TR		✓		✓	TR		abundant
Limonite			✓		✓		✓			
Rutile						1 GR		TR		
Epidote										
Tourmaline								TR		
Anatase										
Garnet					TR		TR			
Ilmenite					TR		✓			
Pyroxene										
Amphibole										
Leucosene										
Zircon								TR		
Mica										
Apatite										
Gypsum										
Calcite										
Barite										
Corundum										
Sulphide										
Gold										
Sapphire										
Cassiterite										
Spinal										
Kyanite										
Sulphate				TR		✓		✓		
TOTAL										

0041

0041

HEAVY MINERAL ANALYSIS SHEET

SAMPLE NUMBER: M212
 HEAD WEIGHT: 18.6Kg
 HEAVIES WEIGHT: 801.8g

PROJECT NUMBER: 1113
 1:250,000 SHEET: PORT AUGUSTA / CRRORCO
 1:250,000 COORDS:

MINERAL	+16		+20		+40		-40		REMARKS	
	wt.....wt%.....		wt.....wt%.....		wt.....wt%.....		wt.....wt%.....			
	Mag wt %	N. Mag wt %	Mag wt%	N. Mag wt%	Mag wt%	N. Mag wt%	Mag	N. Mag		
Quartz			✓	✓	✓	TR	✓	✓	In N Mag +40 sample, black octahedral grains could be Spinel or Ilmenite.	
Geothite			✓	TR	✓	✓	✓			abundant
Magnetite			✓		✓	1GR	✓			
Limonite			✓		✓		✓		abundant	
Rutile								TR		
Epidote					2 GR			2GR		
Tourmaline					2 GR	TR		TR		
Anatase										
Garnet					5 GR					
Ilmenite					✓		✓		abundant	
Pyroxene										
Amphibole										
Leucosene										
Zircon					1GR	1GR		TR		
Mica										
Apatite										
Gypsum										
Calcite										
Barite										
Corundum										
Sulphide						1GR				
Gold										
Sapphire										
Cassiterite										
Spinal										
Kyanite										
Carbonate				✓		✓		✓		
TOTAL										

0042

0042

HEAVY MINERAL ANALYSIS SHEET

SAMPLE NUMBER: M213
 HEAD WEIGHT: 18.6 Kg
 HEAVIES WEIGHT: 22.86g

PROJECT NUMBER: 1113
 1:250,000 SHEET: PORT AUGUSTA / ORROROO
 1:250,000 COORDS: _____

MINERAL	+16		+20		+40		-40		REMARKS
	wt.....	wt%.....	wt.....	wt%.....	wt.....	wt%.....	wt.....	wt%.....	
	Mag wt %	N. Mag wt %	Mag wt%	N. Mag wt%	Mag wt%	N. Mag wt%	Mag	N Mag	
Quartz			TR	16R	TR	16R	TR		
Geothite			✓	TR	✓	✓	✓	✓	abundant
Magnetite			✓		✓		✓	TR	
Limonite			✓		✓		✓		abundant
Rutile								TR	
Epidote							TR		
Tourmaline					TR	TR	TR	TR	
Anatase									
Garnet					16R		TR		
Ilmenite							✓		
Pyroxene									
Amphibole									
Leucovene									
Zircon								✓	
Mica									
Apatite									
Gypsum									
Calcite									
Barite									
Corundum									
Sulphide								16R	
Gold									
Sapphire									
Cassiterite									
Spinal									
Kyanite									
Sulphate			TR	✓	TR	✓		✓	
TOTAL									
Carbonate				✓		✓		✓	

0043

HEAVY MINERAL ANALYSIS SHEET

SAMPLE NUMBER: M214
 HEAD WEIGHT: 20.0 Kg
 HEAVIES WEIGHT: 66.76g

PROJECT NUMBER: 1113
 1:250,000 SHEET: PORT AUGUSTA | ORREROO
 1:250,000 COORDS:

MINERAL	+16		+20		+40		-40		
	wt.....wt%.....		wt.....wt%.....		wt.....wt%.....		wt.....wt%.....		
	Mag wt %	N. Mag wt %	Mag wt%	N. Mag wt%	Mag wt%	N. Mag wt%	Mag.	N. Mag	
Quartz			TR		TR		TR		
Geothite			✓	✓	✓	✓	✓	✓	abundant
Magnetite			✓		✓		✓		
Limonite			✓		✓		✓		abundant
Rutile								TR	
Epidote									
Tourmaline					TR	TR	TR	TR	
Anatase									
Garner					26R		TR		
Ilmenite							✓		
Pyroxene									
Amphibole									
Leucosene									
Zircon								TR	
Mica								✓	
Apatite									
Gypsum									
Calcite									
Barite									
Corundum									
Sulphide									
Gold									
Sapphire									
Cassiterite									
Spinal									
Kyanite									
Sulphate			16R	✓		✓		✓	
TOTAL									

HEAVY MINERAL ANALYSIS SHEET

SAMPLE NUMBER: M215
 HEAD WEIGHT: 22.7Kg
 HEAVIES WEIGHT: 51.15g

PROJECT NUMBER: 1113
 1:250,000 SHEET: PORT AUGUSTA TERRACE
 1:250,000 COORDS: _____

MINERAL	+16		+20		+40		-40		REMARKS
	wt.....	wt%.....	wt.....	wt%.....	wt.....	wt%.....	wt.....	wt%.....	
	Mag wt %	N. Mag wt %	Mag wt%	N. Mag wt%	Mag wt%	N. Mag wt%	Mag	N. Mag.	
Quartz			16R		TR	16R			
Geothite			✓		✓	✓	✓	✓	abundant
Magnetite			TR		✓		✓		
Limonite			✓		✓		✓		abundant
Rutile								TR	
Epidote					16R		TR	26R	
Tourmaline							TR	TR	
Anatase								26R	
Garner					✓		✓	1 Alm.	
Illmenite							✓		
Pyroxene									
Amphibole									
Leucosene									
Zircon								TR	
Mica						TR		✓	
Apatite									
Gypsum									
Calcite									
Barite									
Corundum									
Sulphide									
Gold									
Sapphire									
Cassiterite									
Spinal									
Kyanite									
Sulphate						✓		✓	
TOTAL									

HEAVY MINERAL ANALYSIS SHEET

SAMPLE NUMBER: M216
 HEAD WEIGHT: 19.5Kg
 HEAVIES WEIGHT: 36.58g

PROJECT NUMBER: 1113
 1:250,000 SHEET: RPT AUGUSTA 10RRORCO
 1:250,000 COORDS:

MINERAL	+16		+20		+40		-40		REMARKS
	wt.....wt%.....		wt.....wt%.....		wt.....wt%.....		wt.....wt%.....		
	Mag wt %	N. Mag wt %	Mag wt%	N. Mag wt%	Mag wt%	N. Mag wt%	Mag	N. Mag	
Quartz					TR	1GR	TR		
Geothite			✓		✓	✓	✓	✓	abundant
Magnetite			TR		✓	36R	✓	1GR	
Limonite			✓		✓		✓		abundant
Rutile							1GR	TR	
Epidote									
Tourmaline					1GR	2GR	✓	TR	
Anatase								1GR	
Garnet							TR		
Ilmenite							✓		
Pyroxene							2GR		
Amphibole									
Leucosene								1GR	
Zircon							1GR	✓	
Mica									
Apatite									
Gypsum									
Calcite									
Barite									
Corundum									
Sulphide							2GR	TR	
Gold								1GR	
Sapphire									
Cassiterite									
Spinal									
Kyanite									
Sulphate						✓		✓	
TOTAL									

9300

HEAVY MINERAL ANALYSIS SHEET

SAMPLE NUMBER: M217
 HEAD WEIGHT: 19.1 kg
 HEAVIES WEIGHT: 39.44g

PROJECT NUMBER: 1113
 1:250,000 SHEET: PORT AUGUSTA 1 DRACROU
 1:250,000 COORDS:

MINERAL	+16		+20		+40		-40		REMARKS
	wt.....wt%.....		wt.....wt%.....		wt.....wt%.....		wt.....wt%.....		
	Mag wt %	N. Mag wt %	Mag wt%	N. Mag wt%	Mag wt%	N. Mag wt%	Mag	N. Mag	
Quartz					TR	26R	TR		
Geothite			✓		✓	✓	✓	✓	abundant
Magnetite					TR		TR		
Limonite			✓		✓		✓		abundant
Rutile								TR	
Epidote									
Tourmaline						16R	✓	TR	
Anatase								✓	
Garnet					TR		TR		
Ilmenite							✓		
Pyroxene									
Amphibole									
Leucosene									
Zircon								✓	
Mica									
Apatite									
Gypsum									
Calcite									
Barite									
Corundum									
Sulphide									
Gold									
Sapphire									
Cassiterite									
Spinal									
Kyanite									
Sulphate						✓		✓	
TOTAL									

0047

0047

HEAVY MINERAL ANALYSIS SHEET

SAMPLE NUMBER: M218
 HEAD WEIGHT: 20.06g
 HEAVIES WEIGHT: 34.99g

PROJECT NUMBER: 1113
 1:250,000 SHEET: PORT AUGUSTA / OAROCRO
 1:250,000 COORDS:

MINERAL	+16		+20		+40		-40		REMARKS
	wt.....wt%.....		wt.....wt%.....		wt.....wt%.....		wt.....wt%.....		
	Mag wt %	N. Mag wt %	Mag wt%	N. Mag wt%	Mag wt%	N. Mag wt%	Mag.	N. Mag.	
Quartz			TR		TR		TR		Mags (-40) TR micaceous Hematite Micaceous Rock Fragment TR
Georhite			✓	TR	✓	TR	✓	TR	
Magnetite					TR		✓		abundant
Limonite			✓		✓		✓		
Rutile								TR	
Epidote							16R		
Tourmaline					TR	TR		TR	
Anatase								TR	
Garner					TR		TR		
Ilmenite							✓		
Pyroxene									
Amphibole									
Leucosene						16R			
Zircon							TR	TR	
Mica									
Apatite									
Gypsum									
Calcite									
Barite									
Corundum									
Sulphide								TR	
Gold									
Sapphire									
Cassiterite									
Spinal								TR	
Kyanite									
Sulphate				✓		✓		✓	
TOTAL									

8300

0048

HEAVY MINERAL ANALYSIS SHEET

SAMPLE NUMBER: M219

HEAD WEIGHT: 20.0 kg

HEAVIES WEIGHT: 40.44g

PROJECT NUMBER: 113

1:250,000 SHEET: Port Augusta / ORACRGO

1:250,000 COORDS:

MINERAL	+16		+20		+40		-40		REMARKS
	wt.....wt%		wt.....wt%		wt.....wt%		wt.....wt%		
	Mag wt %	N. Mag wt %	Mag wt%	N. Mag wt%	Mag wt%	N. Mag wt%	Mag	N. Mag	
Quartz			TR		TR	TR	TR		Abundant
Geothite			✓		✓	✓	✓	✓	
Magnetite			✓		✓		✓		
Limonite								TR	Abundant
Rutile									
Epidote					TR	TR	TR	✓	
Tourmaline									
Anatase									
Garnet					TR		TR		
Ilmenite							TR		
Pyroxene									
Amphibole									
Leucosene								16R	
Zircon						16R		TR	
Mica									
Apatite									
Gypsum									
Calcite									
Barite									
Corundum									
Sulphide									
Gold									
Sapphire									
Cassiterite									
Spinal									
Kyanite						✓		✓	
Sulphate									
TOTAL									

0049

0049

HEAVY MINERAL ANALYSIS SHEET

SAMPLE NUMBER: M220
 HEAD WEIGHT: 16.8 Kg
 HEAVIES WEIGHT: 69.29g

PROJECT NUMBER: 1113
 1:250,000 SHEET: PERT AUGUSTA / OARROU
 1:250,000 COORDS:

MINERAL	+10		+20		+40		-40		REMARKS	
	wt.....wt%.....		wt.....wt%.....		wt.....wt%.....		wt.....wt%.....			
	Mag wt %	N. Mag wt %	Mag wt%	N. Mag wt%	Mag wt%	N. Mag wt%				
Quartz			TR		TR	1GR	TR	TR	Non-Mag - a TR of non-mag iron oxide grains - A TR of Malachite - Octahedral black grains which could be spinel or p. lim.	
Geothite			/		/	/				abundant
Magnetite			/		/		/			
Limonite			/		/		/		abundant	
Rutile								TR		
Epidote										
Tourmaline					TR		TR	TR		
Anatase										
Garnet						1GR	1GR			
Ilmenite							/			
Pyroxene								2GR		
Amphibole										
Leucosene								TR	Very fine grains of zircon	
Zircon						TR	1GR	/		
Mica				1GR						
Apatite										
Gypsum										
Calcite										
Barite										
Corundum										
Sulphide								1GR		
Gold										
Sapphire										
Cassiterite										
Spinal					/			/		
Kyanite										
Sulphate			TR	/	1GR	/	TR	/		

0050

HEAVY MINERAL ANALYSIS SHEET

SAMPLE NUMBER: M221
 HEAD WEIGHT: 16.4 kg
 HEAVIES WEIGHT: 77.96g

PROJECT NUMBER: 1113
 1:250,000 SHEET: POST AUGUSTA (ORRORO)
 1:250,000 COORDS:

MINERAL	+16		+20		+40		-40		REMARKS
	wt.....wt%.....		wt.....wt%.....		wt.....wt%.....		wt.....wt%.....		
	Mag wt %	N. Mag wt %	Mag wt%	N. Mag wt%	Mag wt%	N. Mag wt%	Mag	N. Mag	
Quartz			TR		TR		TR	16R	TR of Malachite in Mag & N. Mag. abundant Pseudomorphs of Magnetite in N. Mag abundant.
Geothite			✓	TR	✓	✓	✓	✓	
Magnetite			✓		✓	TR	✓	TR	
Limonite			✓		✓		✓		
Rutile								TR	
Epidote			✓		✓	TR	✓	TR	
Tourmaline									
Anatase									
Garnet									
Ilmenite					✓	16R	✓		
Pyroxene									
Amphibole									
Leucosene									
Zircon						16R		✓	
Mica									
Apatite									
Gypsum									
Calcite									
Barite									
Corundum									
Sulphide				16R				TR	
Gold									
Sapphire									
Cassiterite							16R		
Spinal									
Kyanite									
Sulphate			TR	✓	TR	✓		✓	
TOTAL									

0051

0051

HEAVY MINERAL ANALYSIS SHEET

SAMPLE NUMBER: M222
 HEAD WEIGHT: 18.6 Kg
 HEAVIES WEIGHT: 41.53 g

PROJECT NUMBER: 1113
 1:250,000 SHEET: Bar Aleutia / Chukotka
 1:250,000 COORDS:

MINERAL	+16		+20		+40		-40		REMARKS	
	wt.....wt%.....		wt.....wt%.....		wt.....wt%.....		wt.....wt%.....			
	Mag wt %	N. Mag wt %	Mag wt%	N. Mag wt%	Mag wt%	N. Mag wt%	Mag	N. Mag		
Quartz			TR		TR		TR		Muscovite TR in N. Mag. and Mag. Unidentified brown mineral in +40 N. Mag Sillimanite in N. Mag Shiny black octahedral grains in N. Mag could be uilm?	
Geothite			✓	✓	✓	TR	✓	✓		abundant
Magnetite			✓		✓		✓			
Limonite			✓		✓		✓		abundant	
Rutile						TR		TR	Rutile is fresh in N. Mag	
Epidote					✓		✓	TR		
Tourmaline								TR		
Anatase										
Garnet							TR			
Ilmenite					✓		✓	TR		
Pyroxene										
Amphibole										
Leucosene								TR		
Zircon								✓		
Mica										
Apatite										
Gypsum										
Calcite										
Barite										
Corundum										
Sulphide								TR		
Gold										
Sapphire										
Cassiterite										
Spinal										
Kyanite										
Carbonate				✓		✓		✓		
TOTAL										
Sulphate				✓		✓	TR	✓		

0052

0052

HEAVY MINERAL ANALYSIS SHEET

SAMPLE NUMBER: M223
 HEAD WEIGHT: 16.4 Kg
 HEAVIES WEIGHT: 36.9g

PROJECT NUMBER: 1113
 1:250,000 SHEET: Port Augusta / ORACROU
 1:250,000 COORDS:

MINERAL	+16		+20		+40		-40		REMARKS
	wt.....wt%.....		wt.....wt%.....		wt.....wt%.....		wt.....wt%.....		
	Mag wt %	N. Mag wt %	Mag wt%	N. Mag wt%	Mag wt%	N. Mag wt%	Mag	N. Mag	
Quartz			16R		TR		TR		
Geothite			/	TR	/	TR	/		abundant
Magnetite			/		/		/	TR	Pseudomorphs of Magnetite in N. Mag
Limonite			/		/		/		abundant
Rutile								TR	
Epidote							TR	26R	
Tourmaline						16R			
Anatase									
Garner					16R				
Ilmenite							/		
Pyroxene									
Amphibole									
Leucosene								16R	
Zircon								/	
Mica									
Apatite									
Gypsur									
Calcite									
Barite									
Corundum									
Sulphide									
Gold									
Sapphire									
Cassiterite									
Spinal									
Kyanite									
Sulphate				/		/		/	
TOTAL									
carbonate				TR		TR			

0053

HEAVY MINERAL ANALYSIS SHEET

SAMPLE NUMBER: M224
 HEAD WEIGHT: 20.0 Kg
 HEAVIES WEIGHT: 15.15g

PROJECT NUMBER: 103
 1:250,000 SHEET: PART AUGUSTA 1 ORANGE
 1:250,000 COORDS:

MINERAL	+16		+20		+40		-40		REMARKS
	wt.....	wt%.....	wt.....	wt%.....	wt.....	wt%.....	wt.....	wt%.....	
	Mag wt %	N. Mag wt %	Mag wt%	N. Mag wt%	Mag wt%	N. Mag wt%	Mag	N. Mag	
Rock Fragments			✓	✓	✓	✓			Micaceous Rock Fragments abundant
Quartz			✓		✓	✓			
Geothire									
Magnetite									
Limonite									
Rutile									
Epidote									
Tourmaline									
Anatase									
Garnet									
Ilmenite									
Pyroxene									
Amphibole									
Leucoxene									
Zircon									
Mica									
Apatite									
Gypsum									
Calcite									
Barite									
Corundum									
Sulphide									
Gold									
Sapphire									
Cassiterite									
Spinal									
Kyanite									
Carbonate		✓	✓	✓	✓				Calcite
TOTAL									

0054

HEAVY MINERAL ANALYSIS SHEET

SAMPLE NUMBER: M 225

HEAD WEIGHT: 18.0 Kg

HEAVIES WEIGHT: 42.34g

PROJECT NUMBER: 1113

1:250,000 SHEET: PORT AUGUSTA / OREORCO

1:250,000 COOPDS:

MINERAL	+16		+20		+40		-40		REMARKS
	wt.....	wt%.....	wt.....	wt%.....	wt.....	wt%.....	wt.....	wt%.....	
	Mag wt %	N. Mag wt %	Mag wt %	N. Mag wt %	Mag wt %	N. Mag wt %	Mag wt %	N. Mag wt %	
Quartz			TR		TR		TR		
Geothite			✓		✓	/	✓	✓	abundant
Magnetite			✓		✓		✓		
Limonite			✓		✓		✓		abundant
Rutile							TR	TR	fresh Rutile
Epidote								TR	
Tourmaline							TR	TR	
Anatase								26R	
Garnet					TR		TR	16R	
Ilmenite							✓		
Pyroxene									
Amphibole									
Leucosene									
Zircon							TR	✓	
Mica									
Apatite									
Gypsum									
Calcite									
Barite									
Corundum									
Sulphide								TR	
Gold									
Sapphire									
Cassiterite									
Spinal									
Kyanite									
Sulphate					TR	/		✓	
TOTAL									

0055

HEAVY MINERAL ANALYSIS SHEET

SAMPLE NUMBER: M226
 HEAD WEIGHT: 7.3 kg
 HEAVIES WEIGHT: 2.41 g

PROJECT NUMBER: 1113
 1:250,000 SHEET: PORT AUGUSTA 1 CR 4000
 1:250,000 COORDS:

MINERAL	+16		+20		+40		-40		REMARKS
	wt.....wt%.....		wt.....wt%.....		wt.....wt%.....		wt.....wt%.....		
	Mag wt %	N. Mag wt %	Mag wt%	N. Mag wt%	Mag wt%	N. Mag wt%	Mag	N. Mag	
Quartz					TR		TR		
Geothite					/	/	/	/	
Magnetite									
Limonite					/		/		
Rutile								TR	
Epidote						16R	TR		
Tourmaline									
Anatase									
Garnet					TR	16R	/		
Ilmenite					/		/		abundant
Pyroxene									
Amphibole									
Leucosene								TR	
Zircon								/	
Mica									
Apatite									
Gypsur									
Calcite									
Barite									
Corundum									
Sulphide							16R	16R	
Gold									
Sapphire									
Cassiterite							16R		
Spinal									
Kyanite									
Sulphate						/		/	
TOTAL									

HEAVY MINERAL ANALYSIS SHEET

SAMPLE NUMBER: M227
 HEAD WEIGHT: 19.5Kg
 HEAVIES WEIGHT: 15.98g

PROJECT NUMBER: 103
 1:250,000 SHEET: PORT AUGUSTA / ORACREO
 1:250,000 COORDS: _____

MINERAL	+16		+20		+40		-40		REMARKS
	wt.....wt%.....		wt.....wt%.....		wt.....wt%.....		wt.....wt%.....		
	Mag wt %	N. Mag wt %	Mag wt%	N. Mag wt%	Mag wt%	N. Mag wt%	Mag	N. Mag	
Rock Fragments	/	/	/	/	/	/			abundant
Quartz	/	/	/	/	/	/			
Geothite	/		/		/				
Magnetite					/				
Limonite	/		/		/				
Rutile									
Epidote									
Tourmaline									
Anatase									
Garnet									
Ilmenite									
Pyroxene									
Amphibole						TR			
Leucosene						TR			
Zircon						TR			
Mica						TR			
Apatite									
Gypsum									
Calcite						TR			
Barite									
Corundum									
Sulphide									
Gold									
Sapphire									
Cassiterite									
Spinal									
Kyanite									
Carbonate									
TOTAL									

0057

0057

HEAVY MINERAL ANALYSIS SHEET

SAMPLE NUMBER: M228
 HEAD WEIGHT: 16.4 Kg
 HEAVIES WEIGHT: 53.5 g

PROJECT NUMBER: 1113
 1:250,000 SHEET: Porto Augusta / Cnrcrcu
 1:250,000 COORDS:

MINERAL	+10		+20		+40		-40		REMARKS
	wt.....	wt%.....	wt.....	wt%.....	wt.....	wt%.....	wt.....	wt%.....	
	Mag wt %	N. Mag wt %	Mag wt %	N. Mag wt %	Mag wt %	N. Mag wt %	Mag wt %	N. Mag wt %	
Quartz			/		/		/	TR	
Geothite			/		/	/	/	/	
Magnetite			/		/		/		
Limonite			/		/		/		Abundant
Rutile								TR	
Epidote							TR		
Tourmaline								TR	
Anatase									
Garnet					IGR		TR		
Ilmenite					TR		/		Abundant
Pyroxene									
Amphibole									
Leucosene								TR	
Zircon								/	
Mica									
Apatite									
Gypsum									
Calcite									
Barite									
Corundum									
Sulphide							IGR		
Gold									
Sapphire									
Cassiterite									
Spinel									
Kyanite									
Sulphate						/		/	
TOTAL									

HEAVY MINERAL ANALYSIS SHEET

SAMPLE NUMBER: M229
 HEAD WEIGHT: 21.8 Kg
 HEAVIES WEIGHT: 41.75g

PROJECT NUMBER: 1113
 1:250,000 SHEET: PORT AUGUSTA / DARRICO
 1:250,000 COORDS:

MINERAL	+16		+20		+40		-40		REMARKS
	wt.....wt%.....		wt.....wt%.....		wt.....wt%.....		wt.....wt%.....		
	Mag wt %	N. Mag wt %	Mag wt%	N. Mag wt%	Mag wt%	N. Mag wt%			
Quartz			TR	TR	TR	TR	TR		
Geothite			✓	26R	✓	TR	✓	✓	abundant
Magnetite			✓		✓		✓	16R	
Limonite			✓		✓		✓		abundant
Rutile								TR	
Epidote					26R		TR	TR	
Tourmaline					TR		TR	TR	
Anatase									
Garnet							TR		
Ilmenite							✓		
Pyroxene									
Amphibole									
Leucosene									
Zircon								✓	
Mica									
Apatite									
Gypsum									
Calcite									
Barite									
Corundum									
Sulphide							16R	TR	
Gold									
Sapphire									
Cassiterite									
Spinal									
Kyanite									
Carbonate			TR		TR	TR	TR	✓	
TOTAL									
Sulphate					✓			✓	

Malachite Li -40 Non Mag.

abundant

abundant

0059

0059

HEAVY MINERAL ANALYSIS SHEET

SAMPLE NUMBER: M230
 HEAD WEIGHT: 18.2 Kg
 HEAVIES WEIGHT: 51.49g

PROJECT NUMBER: 1113
 1:250,000 SHEET: PRT AUSTRIA / ORRONG
 1:250,000 COORDS:

MINERAL	+16		+20		+40		-40		REMARKS
	wt.....wt%.....		wt.....wt%.....		wt.....wt%.....		wt.....wt%.....		
	Mag wt %	N. Mag wt %	Mag wt%	N. Mag wt%	Mag wt%	N. Mag wt%	Mag	N. Mag	
Quartz			TR	1GR	TR		TR		TR of Malachite in N. Mag & Mag TR of Rock Fragments in N. Mag
Geothite			✓	TR	✓	TR	✓	TR	
Magnetite			✓		✓		✓		abundant
Limonite			✓		✓		✓		
Rutile								FRESH 1GR	
Epidote					1GR				
Tourmaline							TR		
Anatase									
Garnet					2GR		1GR		
Ilmenite					✓		✓		abundant
Pyroxene									
Amphibole									
Leucosene									
Zircon								Pink Zircon	
Mica									
Apatite									
Gypsum									
Calcite									
Barite									
Corundum									
Sulphide						1GR		1GR	
Gold									
Sapphire									
Cassiterite									
Spinal									
Kyanite									
Carbonate				✓		✓	✓		
TOTAL									

0900

0060

HEAVY MINERAL ANALYSIS SHEET

SAMPLE NUMBER: M231
 HEAD WEIGHT: 15.0 kg
 HEAVIES WEIGHT: 57.75g

PROJECT NUMBER: 1113
 1:250,000 SHEET: Port Augusta / ORANGE
 1:250,000 COORDS:

MINERAL	+10		+20		+40		-40		REMARKS	
	wt.....wt%.....		wt.....wt%.....		wt.....wt%.....		wt.....wt%.....			
	Mag wt %	N. Mag wt %	Mag wt%	N. Mag wt%	Mag wt%	N. Mag wt%	Mag	N. Mag		
Quartz			TR		TR		TR		2. Grains of Malachite in Mags and in N. Mag. TR Rock Fragments	
Geothite			/	TR	✓	TR	✓	/		unknown Octahedral black grains in W. Mag
Magnetite			/		✓		/			
Limonite			/		✓		/		abundant	
Rutile										
Epidote										
Tourmaline						16R	TR	TR		
Anatase										
Garner										
Ilmenite					✓		/		Abundant	
Pyroxene										
Amphibole										
Leucosene										
Zircon								/	Red Zircon?	
Mica										
Apatite										
Gypsum										
Calcite										
Barite										
Corundum										
Sulphide							16R	16R		
Gold										
Sapphire										
Cassiterite										
Spinal										
Kyanite										
Sulphate			/		/			✓		
TOTAL										

0061

HEAVY MINERAL ANALYSIS SHEET

SAMPLE NUMBER: 1232
 HEAD WEIGHT: 15.5Kg
 HEAVIES WEIGHT: 41.22g

PROJECT NUMBER: 1113
 1:250,000 SHEET: PART AVENUE / ONRCOLL
 1:250,000 COORDS:

MINERAL	+16		+20		+40		-40		REMARKS
	wt.....wt%.....		wt.....wt%.....		wt.....wt%.....		wt.....wt%.....		
	Mag wt %	N. Mag wt %	Mag wt%	N. Mag wt%	Mag wt%	N. Mag wt%	Mag.	N. Mag	
Quartz			TR		TR		TR		TR of Malachite in +40 N. Mag Pseudomorphs of Magnetite in N Mag
Geothite			✓	TR	✓	TR	✓	TR	
Magnetite			✓		✓	TR	✓		
Limonite			✓		✓		✓		
Rutile									abundant
Epidote									
Tourmaline								TR	
Anatase									
Garner							26R Alm.		
Ilmenite					✓		✓	16R	abundant
Pyroxene									
Amphibole									
Leucosene									
Zircon								✓	
Mica									
Apatite									
Gypsum									
Calcite									
Barite									
Corundum									
Sulphide						16R Pyrite		16R	
Gold									
Sapphire									
Cassiterite									
Spinal									
Kyanite									
TOTAL				✓		✓		✓	

0062

0062

HEAVY MINERAL ANALYSIS SHEET

SAMPLE NUMBER: M233
 HEAD WEIGHT: 16.4 Kg
 HEAVIES WEIGHT: 82.67g

PROJECT NUMBER: 1113
 1:250,000 SHEET: Part AUGUSTA / ORROROCO
 1:250,000 COORDS:

MINERAL	+16		+20		+40		-40		REMARKS
	wt.....wt%.....		wt.....wt%.....		wt.....wt%.....		wt.....wt%.....		
	Mag wt %	N. Mag wt %	Mag wt%	N. Mag wt%	Mag wt%	N. Mag wt%	Mag	N. Mag	
Quartz			TR		16R		26R	16R	
Geothite			✓		✓	✓	✓	✓	abundant
Magnetite			✓		✓		✓		
Limonite			✓		✓		✓		abundant
Rutile									
Epidote									
Tourmaline								TR	
Anatase									
Garnet									
Ilmenite							✓	26R	
Pyroxene									
Amphibole									
Leucosene								16R	
Zircon								TR	
Mica									
Apatite									
Gypsum									
Calcite									
Barite									
Corundum									
Sulphide								16R	
Gold									
Sapphire									
Cassiterite								16R	
Spinal									
Kyanite									
Sulphate					16R	TR		✓	
TOTAL									

TR of Green Rock Fragments in N. Mag

0063

0063

HEAVY MINERAL ANALYSIS SHEET

SAMPLE NUMBER: M234
 HEAD WEIGHT: 18.2Kg
 HEAVIES WEIGHT: 105.3g

PROJECT NUMBER: 1113
 1:250,000 SHEET: Port Augusta 1000000
 1:250,000 COORDS:

MINERAL	+16		+20		+40		-40		REMARKS
	wt.....wt%.....		wt.....wt%.....		wt.....wt%.....		wt.....wt%.....		
	Mag wt %	N. Mag wt %	Mag wt%	N. Mag wt%	Mag wt%	N. Mag wt%	Mag	N. Mag	
Quartz			TR			16R	TR	TR	90% Shale Rock Fragments in N. Mag. Very little Quartz TR of non-magnetic Iron-oxide fragment in N. Mag. abundant Pseudomorphs of Magnetite abundant
Geothite			✓		✓		/	TR	
Magnetite					✓		✓	TR	
Limonite			✓		✓		/		
Rutile									
Epidote									
Tourmaline							TR		
Anatase									
Garnet					16R		TR		
Ilmenite									
Pyroxene									
Amphibole									
Leucosene								16R	
Zircon								TR	
Mica			16R						
Apatite									
Gypsum									
Calcite									
Barite									
Corundum									
Sulphide									
Gold									
Sapphire									
Cassiterite									
Spinal									
Kyanite									
TOTAL									

0064

HEAVY MINERAL ANALYSIS SHEET

SAMPLE NUMBER: M 235
 HEAD WEIGHT: 16.8 Kg
 HEAVIES WEIGHT: 170.29g

PROJECT NUMBER: 1113
 1:250,000 SHEET: Port Augusta / ORRICO
 1:250,000 COORDS: _____

MINERAL	+16		+20		+40		-40		REMARKS
	wt.....wt%.....		wt.....wt%.....		wt.....wt%.....		wt.....wt%.....		
	Mag wt %	N. Mag wt %	Mag wt%	N. Mag wt%	Mag wt%	N. Mag wt%	Mag	N. Mag	
Quartz			TR		TR		TR		
Geothite			✓		✓	✓	✓	✓	abundant
Magnetite			✓		✓		✓		
Limonite			✓		✓		✓		abundant
Rutile									
Epidote									
Tourmaline									
Anatase									
Garnet							TR		
Ilmenite							✓		
Pyroxene									
Amphibole									
Leucosene									
Zircon						16R		TR	
Mica									
Apatite									
Gypsum									
Calcite									
Barite									
Corundum									
Sulphide								16R	
Gold									
Sapphire									
Cassiterite									
Spinal									
Kyanite									
Sulphate						TR		✓	
TOTAL									

0065

0065

HEAVY MINERAL ANALYSIS SHEET

SAMPLE NUMBER: M236
 HEAD WEIGHT: 17.3kg
 HEAVIES WEIGHT: 127.21g

PROJECT NUMBER: 1113
 1:250,000 SHEET: Pear Augusta 1000000
 1:250,000 COORDS: _____

MINERAL	+10		+20		+40		-40		REMARKS
	wt.....	wt%.....	wt.....	wt%.....	wt.....	wt%.....	wt.....	wt%.....	
	Mag wt %	N. Mag wt %	Mag wt%	N. Mag wt%	Mag wt%	N. Mag wt%	Mag	N. Mag	
Quartz							TR	✓	TR Rock Fragments in N Mag Micaceous shale in N Mag.
Geothite			/		✓	✓	/	/	
Magnetite			/		✓		✓		Abundant
Limonite			/		/		✓		Abundant
Rutile								TR	Coarse Rutile
Epidote								1GR	
Tourmaline							TR	TR	
Anatase									
Garnet							TR		Red & Pink Garnet
Ilmenite							✓	2GR	
Pyroxene									
Amphibole									
Leucoxene								1GR	
Zircon								TR	
Mica									
Apatite									
Gypsum									
Calcite									
Barite									
Corundum									
Sulphide									
Gold									
Sapphire									
Cassiterite									
Spinel									
Kyanite									
Sulphate						TR		TR	
TOTAL									

HEAVY MINERAL ANALYSIS SHEET

SAMPLE NUMBER: M237
 HEAD WEIGHT: 17.7 Kg
 HEAVIES WEIGHT: 4.82g

PROJECT NUMBER: 1113
 1:250,000 SHEET: PORT AUGUSTA / OROORO
 1:250,000 COORDS:

MINERAL	+16		+20		+40		-40		REMARKS
	wt.....wt%.....		wt.....wt%.....		wt.....wt%.....		wt.....wt%.....		
	Mag wt %	N. Mag wt %	Mag wt%	N. Mag wt%	Mag wt%	N. Mag wt%	Mag	N. Mag	
Quartz									
Geothire						TR			
Magnetite									
Limonite						TR			
Rutile									
Epidote									
Tourmaline								TR	
Anatase									
Garnet							TR		Almandine (mag)
Ilmenite									
Pyroxene									
Amphibole									
Leucosene								TR	
Zircon								TR	
Mica									
Apatite									
Gypsum									
Calcite									
Barite									
Corundum									
Sulphide									
Gold									
Sapphire									
Cassiterite									
Spinal									
Kyanite									
Rock Fragments									
TOTAL								Micaceous	

0067

HEAVY MINERAL ANALYSIS SHEET

SAMPLE NUMBER: M238 (1)
 HEAD WEIGHT: 19.1kg
 HEAVIES WEIGHT: 221.7g

PROJECT NUMBER: 1113
 1:250,000 SHEET: R23 AUGUST / OKROKOT
 1:250,000 COORDS:

MINERAL	+10		+20		+40		-40		REMARKS	
	wt.....wt%.....		wt.....wt%.....		wt.....wt%.....		wt.....wt%.....			
	Mag wt %	N. Mag wt %	Mag wt%	N. Mag wt%	Mag wt%	N. Mag wt%	Mag	N. Mag		
Quartz					TR	TR		TR	Micaceous shale in N. Mag (90%) Rock fragments in N. Mag.	
Geothite			/	/	/	/	/	/		abundant
Magnetite			/	16R	/	16R	/			
Limonite			/		/		/		abundant	
Rutile										
Epidote										
Tourmaline								16R		
Anatase								TR		
Garner								46R		
Ilmenite										
Pyroxene							/			
Amphibole										
Leucosene										
Zircon										
Mica								TR		
Apatite										
Gypsum										
Calcite										
Barite										
Corundum										
Sulphide										
Gold										
Sapphire										
Cassiterite										
Spinal										
Kyanite										
Sulphate						TR				
TOTAL										

HEAVY MINERAL ANALYSIS SHEET

SAMPLE NUMBER: M239
 HEAD WEIGHT: 14.1 Kg
 HEAVIES WEIGHT: 103.69g

PROJECT NUMBER: 1113
 1:250,000 SHEET: Post Augusta 100000
 1:250,000 COORDS:

MINERAL	+10		+20		+40		-40		REMARKS
	wt.....	wt%.....	wt.....	wt%.....	wt.....	wt%.....	wt.....	wt%.....	
	Mag wt %	N. Mag wt %	Mag wt %	N. Mag wt %	Mag wt %	N. Mag wt %	Mag wt %	N. Mag wt %	
Quartz					TR	TR	TR	TR	
Geothite			✓	TR	✓	TR	✓	✓	abundant
Magnetite			✓		✓		✓		
Limonite			✓		✓		✓		abundant
Rutile								TR	
Epidote							162		
Tourmaline								TR	
Anatase									
Garnet						0	TR		Pink & Orange Garnets
Ilmenite					TR		✓	TR	
Pyroxene									
Amphibole									
Leucosene								TR	
Zircon								✓	
Mica									
Apatite									
Gypsum									
Calcite									
Barite									
Corundum									
Sulphide									
Gold									
Sapphire									
Cassiterite									
Spinal									
Kyanite									
Carbonate			✓			✓		✓	
TOTAL								✓	

6900

HEAVY MINERAL ANALYSIS SHEET

SAMPLE NUMBER: M240
 HEAD WEIGHT: 18 g
 HEAVIES WEIGHT: 3.2g

PROJECT NUMBER: 113
 1:250,000 SHEET: Port Augusta / Deception
 1:250,000 COORDS:

MINERAL	+16		+20		+40		-40		REMARKS
	wt.....wt%.....		wt.....wt%.....		wt.....wt%.....		wt.....wt%.....		
	Mag wt %	N. Mag wt %	Mag wt%	N. Mag wt%	Mag wt%	N. Mag wt%	Mag	N. Mag	
Quartz					TR				Micaceous Rock Fragments in Mags and in N. Mag. - 90%
Geothite			/		/	/	✓	/	
Magnetite			/		/		✓		
Limonite			/		/		✓		
Rutile								TR	Weathered and fresh Rutile
Epidote									
Tourmaline							TR	26R	
Anatase									
Garnet					16R Alm.		TR	16R Alm.	16R. Calcium Rich Garnet
Ilmenite							✓		
Pyroxene								16R	
Amphibole									
Leucosene								26R	
Zircon								✓	
Mica									
Apatite									
Gypsum									
Calcite									
Barite									
Corundum									
Sulphide									
Gold								16R	
Sapphire									
Cassiterite									
Spinal									
Kyanite									
Carbonate						✓		✓	
TOTAL									

0070

HEAVY MINERAL ANALYSIS SHEET

SAMPLE NUMBER: M241
 HEAD WEIGHT: 16.4 Kg
 HEAVIES WEIGHT: 35.79 g

PROJECT NUMBER: 1113
 1:250,000 SHEET: Port Augusta / Orkney
 1:250,000 COORDS:

MINERAL	+16		+20		+40		-40		REMARKS
	wt.....wt%.....		wt.....wt%.....		wt.....wt%.....		wt.....wt%.....		
	Mag wt %	N. Mag wt %	Mag wt%	N. Mag wt%	Mag wt%	N. Mag wt%	Mag	N. Mag	
Quartz							TR	TR	abundant Rock fragments (Muscovite) in Mag & N. Mag.
Geothite			/		/	TR	/	/	
Magnetite			/		/		/		
Limonite			/		/		/		abundant
Rutile								TR	fresh Rutile
Epidote									
Tourmaline								TR	fresh Tourmaline
Anatase									
Garner									
Ilmenite							/	TR	
Pyroxene									
Amphibole									
Leucosene								16R	
Zircon								TR	
Mica									
Apatite									
Gypsum									
Calcite									
Barite									
Corundum									
Sulphide									
Gold									
Sapphire									
Cassiterite									
Spinal									
Kyanite									
Carbonate						TR		/	
TOTAL									

0071

0071

HEAVY MINERAL ANALYSIS SHEET

SAMPLE NUMBER: M242
 HEAD WEIGHT: 14.5 Kg
 HEAVIES WEIGHT: 96 Tg

PROJECT NUMBER: 1113
 1:250,000 SHEET: PORT AU PRINCE / ORANGE
 1:250,000 COORDS:

MINERAL	+16		+20		+40		-40		REMARKS
	wt.....	wt%.....	wt.....	wt%.....	wt.....	wt%.....	wt.....	wt%.....	
	Mag wt %	N. Mag wt %	Mag wt %	N. Mag wt %	Mag wt %	N. Mag wt %	Mag	N. Mag	
Quartz						16R	16R	TR	abundant Rock Fragments (massive) in Mags and in Non Mags.
Geothite			✓		✓	✓	✓	TR	
Magnetite			✓		✓		✓		
Limonite			✓		✓		✓		
Rutile								26R	
Epidote									weakened Rutile
Tourmaline							TR fresh	26R	
Anatase									
Garnet									
Ilmenite							✓	TR	
Pyroxene								TR	
Amphibole									
Leucosene								16R	
Zircon					16R			✓	
Mica									
Apatite									
Gypsum									
Calcite									
Barite									
Corundum									
Sulphide								16R	
Gold									
Sapphire									
Cassiterite									
Spinel									
Kyanite									
Carbonate						✓		✓	
TOTAL									
Sulphate						TR			

0072

HEAVY MINERAL ANALYSIS SHEET

SAMPLE NUMBER: M 243
 HEAD WEIGHT: 18.2 Kg
 HEAVIES WEIGHT: 292.2g

PROJECT NUMBER: 1113
 1:250,000 SHEET: Pact Augusta (ORRORE)
 1:250,000 COORDS:

MINERAL	+10		+20		+40		-40		REMARKS
	wt.....wt%.....		wt.....wt%.....		wt.....wt%.....		wt.....wt%.....		
	Mag wt %	N. Mag wt %	Mag wt%	N. Mag wt%	Mag wt%	N. Mag wt%	Mag	Non Mag	
Quartz		/	TR	TR		TR	TR	TR	Rock fragments present.
Geothite			✓	TR	✓	TR	/	TR	
Magnetite			✓		✓	TR	✓	TR	
Limonite			/		/		✓		
Rutile									Pseudomorphs of magnetite abundant
Epidote									
Tourmaline					26R		TR	TR	
Anatase									
Garnet					TR Alm				abundant
Ilmenite					TR		✓	TR	
Pyroxene									
Amphibole									
Leucosene									
Zircon								TR	
Mica									
Apatite									
Gypsum									
Calcite									
Barite									
Corundum									
Sulphide							16R		
Gold									
Sapphire									
Cassiterite									
Spinal									
Kyanite									
Carbonate			26R	✓	TR	✓		✓	
TOTAL									
Sulphate								✓	

0073

0073

HEAVY MINERAL ANALYSIS SHEET

SAMPLE NUMBER: M244
 HEAD WEIGHT: 16.4 Kg
 HEAVIES WEIGHT: 107.83g

PROJECT NUMBER: 1013
 1:250,000 SHEET: Port Augusta 102200
 1:250,000 COORDS:

MINERAL	+16		+20		+40		-40		REMARKS
	Wt.....	Wt%.....	Wt.....	Wt%.....	Wt.....	Wt%.....	Wt.....	Wt%.....	
	Mag Wt %	N. Mag Wt %	Mag Wt %	N. Mag Wt %	Mag Wt %	N. Mag Wt %	Mag Wt %	N. Mag Wt %	
Rock Fragment			✓	✓	✓	✓	✓	✓	abundant
Quartz			2GR	TR		TR	TR	TR	
Geothite			✓	TR	✓	✓	✓	✓	abundant
Magnetite			TR		✓	TR	✓	TR	Pseudomorphs of Magnetite
Limonite			✓		✓		✓		abundant
Rutile								TR	fresh Rutile
Epidote									
Tourmaline								TR	
Anatase									
Garner									
Ilmenite							✓		
Pyrroxene									
Amphibole									
Leucosene								2GR	
Zircon								TR	
Mica									
Apatite									
Gypsum									
Calcite									
Barite									
Corundum									
Sulphide									
Gold								1GR	
Sapphire								1GR	
Cassiterite									
Spinel									
Kyanite									
Sulphate			✓		✓		✓		
TOTAL									

0074

HEAVY MINERAL ANALYSIS SHEET

SAMPLE NUMBER: M245
 HEAD WEIGHT: 18.61g
 HEAVIES WEIGHT: 274.16g

PROJECT NUMBER: 1113
 1:250,000 SHEET: Port Augusta / Orroroo
 1:250,000 COORDS:

MINERAL	+10		+20		+40		-40		REMARKS
	wt.....	wt%.....	wt.....	wt%.....	wt.....	wt%.....	wt.....	wt%.....	
	Mag wt %	N. Mag wt %	Mag wt %	N. Mag wt %	Mag wt %	N. Mag wt %	Mag wt %	N. Mag wt %	
Quartz			TR	16R	TR	/	TR	/	abundant Rock fragments in N Mag and in Mag.
Geothite			/	TR	/	TR	/	TR	
Magnetite			/		/	TR	/	TR	Pseudomorphs of Magnetite
Limonite			/		/		/		
Rutile								TR	Fresh Rutile
Epidote							16R		
Tourmaline								TR	
Anatase									
Garnet									
Ilmenite			TR		/	16R	/	TR	abundant
Pyroxene									
Amphibole									
Leucosene						16R		TR	Pink Zircon
Zircon								/	
Mica									
Apatite									
Gypsum									
Calcite									
Barite									
Corundum									
Sulphide								TR	
Gold									
Sapphire									
Cassiterite									
Spinel									
Kyanite									
Carbonate				/		/		/	
TOTAL									

HEAVY MINERAL ANALYSIS SHEET

SAMPLE NUMBER: M246
 HEAD WEIGHT: 16.4 Kg
 HEAVIES WEIGHT: 130.87g

PROJECT NUMBER: 1113
 1:250,000 SHEET: PART AUGUSTA / ORRERO
 1:250,000 COORDS:

MINERAL	+16		+20		+40		-40		REMARKS
	wt.....wt%.....		wt.....wt%.....		wt.....wt%.....		wt.....wt%.....		
	Mag wt %	N. Mag wt %	Mag wt%	N. Mag wt%	Mag wt%	N. Mag wt%	Mag	Non Mag	
Quartz									
Geothite									
Magnetite									
Limonite									
Rutile						TR			
Epidote									
Tourmaline						TR			
Anatase									
Garnet									
Ilmenite						TR			
Pyroxene									
Amphibole									
Leucosene						TR			
Zircon									
Mica						TR			
Apatite									
Gypsur									
Calcite		TR		TR		TR		TR	subhedral grains
Barite									
Corundum									
Sulphide		TR				TR		TR	? Chalcopyrite
Gold									
Sapphire									
Cassiterite						TR			
Spinal									
Kyanite									
TOTAL									

HEAVY MINERAL ANALYSIS SHEET

SAMPLE NUMBER: M247
 HEAD WEIGHT: 19.1 Kg
 HEAVIES WEIGHT: 101.26g

PROJECT NUMBER: 1013
 1:250,000 SHEET: PART ADULTA / CROCOD
 1:250,000 COORDS:

MINERAL	+16		+20		+40		-40		REMARKS
	wt.....wt%.....		wt.....wt%.....		wt.....wt%.....		wt.....wt%.....		
	Mag wt %	N. Mag wt %	Mag wt%	N. Mag wt%	Mag wt%	N. Mag wt%	Mag	N. Mag	
Quartz			TR		TR	2GR	TR	TR	
Geothite			✓	TR	✓	TR	✓	TR	abundant
Magnetite			✓		✓	TR	✓	TR	Pseudomorphs of Magnetite
Limonite			✓		✓		✓		abundant
Rutile								TR	fresh Rutile
Epidote									
Tourmaline							TR		
Anatase									
Garner									
Ilmenite							✓	TR	
Pyroxene									
Amphibole									
Leucosene									
Zircon								TR	
Mica									
Apatite									
Gypsum									
Calcite									
Barite									
Corundum									
Sulphide								2GR	
Gold									
Sapphire									
Cassiterite									
Spinal									
Kyanite									
Carbonate									
TOTAL									

0077

HEAVY MINERAL ANALYSIS SHEET

SAMPLE NUMBER: M248
 HEAD WEIGHT: 15.5 Kg
 HEAVIES WEIGHT: 106.12g

PROJECT NUMBER: 1113
 1:250,000 SHEET: Port Augusta / Oaracoon
 1:250,000 COORDS:

MINERAL	+16		+20		+40		-40		REMARKS
	wt.....	wt%.....	wt.....	wt%.....	wt.....	wt%.....	wt.....	wt%.....	
	Mag wt %	N. Mag wt %	Mag wt %	N. Mag wt %	Mag wt %	N. Mag wt %	Mag	N. Mag	
Quartz							TR	TR	
Geothite			✓	TR	✓	TR	✓	TR	abundant
Magnetite			✓		✓	26R	✓	TR	Pseudomorphs of Magnetite
Limonite			✓		✓		✓		abundant
Rutile								TR	Fresh Rutile
Epidore									
Tourmaline								WR TR	
Anatase									
Garner					16R		TR Alm.		
Ilmenite							✓	TR	
Pyroxene								16R	
Amphibole									
Leucosene									
Zircon								✓	
Mica									
Apatite									
Gypsum									
Calcite									
Barite									
Corundum									
Sulphide									
Gold								TR	
Sapphire									
Cassiterite									
Spinal									
Kyanite									
Carbonate									
TOTAL									
Sulphate						TR			

0078

APPENDIX 3BASE METAL ANALYSES

<u>Sample No.</u>	<u>Anomaly</u>	<u>Reason</u>
M211	Sn(120) Nb(34) Cr(346)	Tantalite mineralisation present. Cr unexplained.
M215	Cr(307)	Chromite present as discrete grains.
M221	Sr(106)	Carbonate grains present.
M222	Sr(63) P(0.046%)	As for M221.
M223	Sr(35) P(0.064%)	As for M221.
M226	P(0.048%)	Unexplained.
M231	Nb(11)	Possible tantalite mineralisation.
M239	P(0.049%) P(222) Nb(13)	Possible tantalite mineralisation. Possible chromite grains present. Some carbonate present.
M244	Pb(232) Cr(253)	Anomaly unexplainable from examination of concentrate.
M245	Pb(590)	As for M244.
M248	P(0.042%)	Unexplained.

APPENDIX 3

ORROROO SAMPLES - BASE METAL ANALYSES

Sample No.	Nature of Sample	Location 1:50,000 Map	Reference	Pb	Ni	Co	Sr	Sn	P	Cr	Nb	Local Bedrock
M211	Stream	Augusta	137° 53'E, 32° 24'S	<5	15	<5	<5	120	0.020	346	34	Pbr
M212	Stream	Augusta	137° 52'E, 32° 25'S	5	12	5	<5	72	0.018	245	26	Qrt
M213	Stream	Augusta	137° 54'E, 32° 24'S	6	11	<5	<5	34	0.012	235	5	Pbr
M214	Stream	Augusta	137° 54'E, 32° 23'S	7	8	<5	16	45	0.013	253	18	Pbr
M215	Stream	Augusta	137° 59'E, 32° 21'S	9	22	5	<5	32	0.020	307	12	Puw
M216	Stream	Augusta	137° 59'E, 32° 23'S									Qrt
M217	Stream	Augusta	137° 59'E, 32° 19'S	<5	14	<5	<5	82	0.013	229	45	Puw
M218	Stream	Augusta	137° 59'E, 32° 17'S	20	25	12	<5	63	0.026	163	7	Puw
M219	Stream	Augusta	138° 0'E, 32° 16'S	14	24	9	<5	19	0.029	99	<5	Puw
M220	Stream	Augusta	137° 56'E, 32° 16'S	18	16	9	23	18	0.026	183	15	Pc/Pb contact
M221	Stream	Augusta	137° 56'E, 32° 16'S	17	17	7	106	20	0.032	120	24	Put
M222	Stream	Augusta	137° 57'E, 32° 16'S	32	23	15	63	22	0.046	117	9	Puo
M223	Stream	Augusta	137° 58'E, 32° 16'S	10	23	12	35	25	0.064	91	7	Puw
M224	Stream	Augusta	137° 58'E, 32° 18'S	<5	18	9	<5	14	0.025	137	<5	Pwr
M225	Stream	Augusta	137° 56'E, 32° 20'S	8	22	12	<5	34	0.027	210	<5	Puw
M226	Stream	Augusta	137° 56'E, 32° 19'S	5	25	8	<5	23	0.048	118	6	Pbk/Pb contact
M227	Stream	Augusta	137° 57'E, 32° 19'S	<5	24	9	<5	27	0.022	147	7	Pwa
M228	Stream	Augusta	137° 49'E, 32° 21'S	<5	14	6	<5	10	0.016	198	<5	Pc/Pbr contact
M229	Stream	Augusta	137° 55'E, 32° 18'S	41	13	<5	16	8	0.017	153	6	Qrt
M230	Stream	Pt. Augusta	137° 55'E, 32° 17'S	8	20	10	<5	23	0.036	181	<5	Qrt
M231	Stream	Pt. Augusta	137° 55'E, 32° 23'S	9	23	11	<5	9	0.033	120	11	Put
M232	Stream	Pt. Augusta	137° 55'E, 32° 24'S	21	23	10	7	20	0.027	178	5	Puw/Puo contact

QUARTERLY REPORT ON EXPLORATION LICENCE 546

ORROROO REGION, SOUTH AUSTRALIA

FOR QUARTER ENDED 13TH MAY, 1980

R.W. Mosig
Swan Resources Ltd
51 Colin Street
WEST PERTH WA 6005



EXPLORATION LICENCE 546ORROROO AREA SOUTH AUSTRALIASECOND QUARTERLY REPORT1. INTRODUCTION

The end of the second quarter saw the continuation of geological evaluation of the M-34 and M-42 anomalous sites. A certain amount of reconnaissance sampling was also taken.

2. DETAILED PROSPECTING PROGRESS

A seven-week field programme was carried out during the quarter. Essentially exploration activities consisted of a comprehensive reconnaissance stream sampling programme. Thirty-three 20kg stream samples were collected (refer plans 1 to 4). A further confirmatory sample was collected from the M-42 site where abundant coarse rutile had previously been recorded.

No further sampling at the M-34 site has been carried out.

3. RESULTS

Reconnaissance samples have been sent to the company's contracting laboratory for TBE concentration of the heavy mineral fraction. Microscopic investigation on these heavy mineral fractions is currently being carried out and will be reported in the next quarter.

4. FORWARD PROGRAMME

Two grids are proposed for the M-34 and M-42 sites. Once established, a comprehensive loam sampling programme will be undertaken to establish the significance of the indicator minerals reported in the first quarterly report.

Microscopy will be carried out on the heavy mineral fraction of all samples collected, and it is anticipated that after the collection of some 100 further stream reconnaissance samples that the prospecting programme by Swan will be near completion.

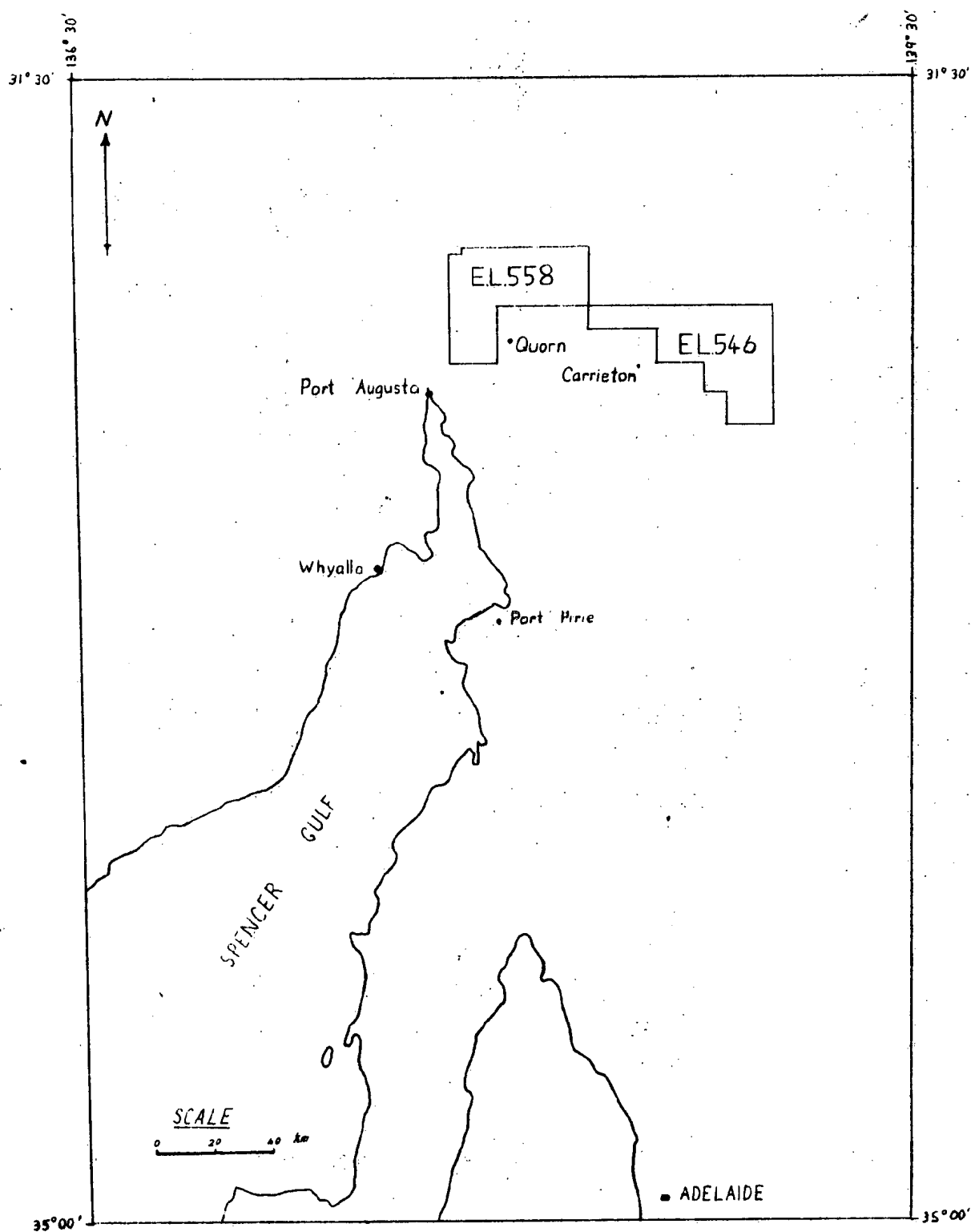
Page 2.

5. EXPENDITURE

	<u>1st</u> <u>Quarter</u>	<u>2nd</u> <u>Quarter</u>	<u>Total</u>
Contract Work	390.46	691.04	1,081.50
Employee Rations	61.50	220.50	282.00
Freight and Cartage	140.00	397.50	537.50
Consumable Items - Geological	24.50	125.50	150.00
Hire of Vehicles	411.48	1,622.52	2,034.00
Assays	985.33	984.67	1,970.00
Rents on Tenements	653.50	-	653.50
Travel Expenses	911.77	1,304.23	2,216.00
Maps and Photographs	16.20	300.80	317.00
Consultant Fees	3,815.00	8,230.00	12,045.00
Office & Administration Costs	875.00	875.00	1,750.00
Sundry Expenses	-	335.50	335.50
Motor Vehicle Expenses	563.50	-	563.50
Telephone	-	25.00	25.00
Geological Equipment	-	36.50	36.50
			\$23,997.00

6. LIST OF ACCOMPANYING PLANS

Plan 1	Location Diagram EL 546
2	1:50,000 Plan Mookra Sample Site Locations
3	1:50,000 Plan Carrieton Sample Site Locations
4	1:50,000 Plan Minburra Sample Site Locations
5	1:50,000 Plan Yalpara Sample Site Locations



LOCATION DIAGRAM : EXPLORATION LICENCES 546 , 558
OROROO AREA , SOUTH AUSTRALIA

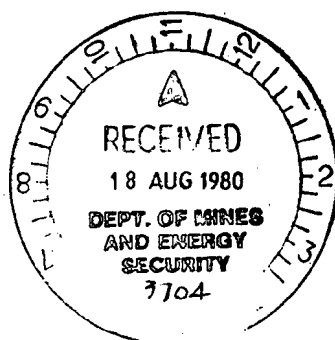
PLAN 1

QUARTERLY REPORT ON EXPLORATION LICENCE 546

ORROROO REGION, SOUTH AUSTRALIA

FOR QUARTER ENDED 13TH AUGUST, 1980

R.W. Mosig
S. Elliott
Swan Resources Ltd
51 Colin Street
West Perth WA 6005



EXPLORATION LICENCE 546
ORROROO AREA, SOUTH AUSTRALIA
THIRD QUARTERLY REPORT

1. INTRODUCTION

The end of the third quarter saw the completion of the major fieldwork activities over the title in spite of heavy rains restricting the mobility of field operations.

2. EXPLORATION ACTIVITIES

↻
Certain reconnaissance samples have been collected and further details will be furnished in the next quarterly report. Grid loaming and further stream sampling was completed over the M-34 anomalous area.

Field examination of the M-42 area failed to show the presence of any kimberlitic indicator minerals other than possibly kimberlitic rutile. Accordingly, it was decided not to carry out any grid loaming over this area. Further stream tributary sampling was carried out over the M-42 region and results are expected to be available in the next quarterly report.

3. RESULTS

Fieldwork required to make a preliminary assessment of the tenement has been completed during the quarter. A full examination and assessment of the data is now required.

4. FORWARD PROGRAMME

Microscopic investigations are planned for the next quarter. The results of these investigations will ultimately determine the further avenues of exploration required.

5. EXPENDITURE

(a) Expenditure to the end of 2nd Quarter - \$23,997.00.

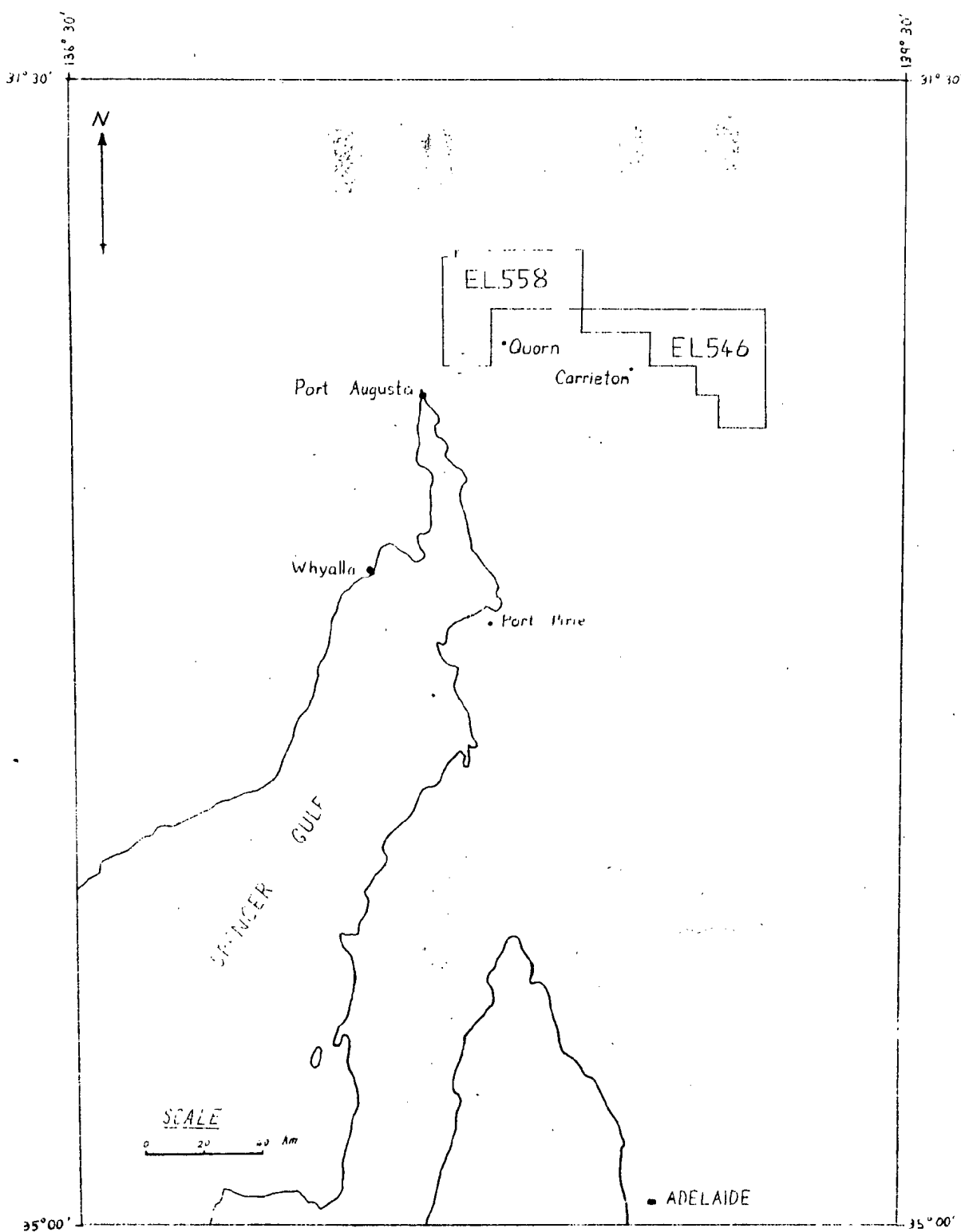
(b) Expenditure for this quarter:-

Page 2.

Contract work	1,020
Employee rations	948
Freight and cartage	461
Consumable items -	
geological	45
Hire of vehicles	280
Assays	2,378
Travel expenses	4,280
Maps and photographs	164
Consultant fees	10,965
Office and administration	
fees	250
Sundry expenses	10
Motor vehicle expenses	744
Legal costs	25
Geological equipment	507
Hire of plant and equipment	676

\$22,753
6. LIST OF ACCOMPANYING PLANSPlan 1 - Location diagram E.L. ⁵⁴⁶558.

Same as for 558
freely!



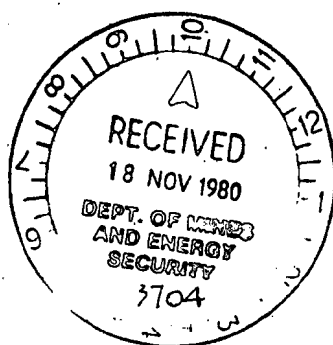
LOCATION DIAGRAM : EXPLORATION LICENCES 546 558
 ORROROO AREA , SOUTH AUSTRALIA

PLAN 1

FIRST ANNUAL REPORT ON EXPLORATION LICENCE 546

ORROROO REGION, SOUTH AUSTRALIA

FOR YEAR ENDED 12TH NOVEMBER, 1980



R.W. Mosig
E. Elliott

Swan Resources Limited
51 Colin Street
West Perth, W.A. 6005

FIRST ANNUAL REPORT FOR E.L. 546 FOR YEAR ENDING 13TH NOVEMBER, 19801. INTRODUCTION

E.L. 546 was tenemented in conjunction with E.L. 558 in the Orroroo region of South Australia. For more specific information regarding the reasons for tenementing these Exploration Licences, the reader is referred to the First Annual Report for E.L. 558 by Swan Resources Limited. Exploration Licence locations are shown in Figure 1.

2. TITLE

Exploration Licence 546 covering approximately 1,304 sq. Km was granted on the 12th November, 1979 for a one year period to explore for diamonds, uranium, copper, nickel, lead, zinc, gold and platinum.

Application for a further twelve months' occupancy right has been lodged with the Department of Mines and Energy.

3. EXPLORATION ACTIVITIES

For details of anomalies 1 to 5 (incl.), the reader is referred to report on E.L. 558. Locations of anomalies are shown in Plan 1.

3.1 Anomaly 6 (M-34) Moockra 1:50,000 Sheet Area

Gridding & Loaming: A 300m x 300m interval grid has been erected over the Boolcunda Creek immediately upstream of sample site M-34. The grid covers an area approximately 2 Km x 2 Km. Due to the nature of soils in the area, a hand-auger could not be used so 10kg samples were collected from the top one foot of soil or adjacent creeks. Forty-nine such samples were collected.

Geophysics (Refer Plan 2): A ground-borne magentic survey has been completed over the grid area with readings taken at 300m intervals. The results from this survey were interpreted to construct the accompanying magnetic intensity map with a contour interval of ten gammas. The instrument used in this survey was a Scintrex hand-held proton-precession magnetometer. A number of magnetic highs and lows were delineated by this survey. The nature of these anomalies was not evident in the field and is thus yet to be established.

Physiography & Geology (Refer Plan 3): Anomalous sample M-34 is situated on the Boolcunda Creek. The main creek has numerous tributaries often deeply incised into Proterozoic

bedrock. The area on both sides of the Boolcunda Creek consists of low rounded hills of fossil gravel and Proterozoic outcrop.

Proterozoic sediments outcropping in the area are siltstones, limestones and sandstones of the Tapley Hill formation. These sediments exhibit minor folding and faulting and are often intruded by narrow carbonate veins. Several gravel phases are also present in the area ranging in age from Upper-Tertiary or Lower Quaternary to Recent.

Heavy mineral concentrates from follow-up stream samples and loam samples are yet to be examined. No results are available at the time of writing.

3.2 Anomaly 7 (M-42) Minburra 1:50,000 Sheet Area (Plan 4)

Field examination of the M-42 region failed to show the presence of any kimberlite indicator minerals, other than 'possibly' kimberlite rutile. Accordingly, it was decided not to carry out any grid loaming over this area. Further stream tributary sampling was carried out and results are expected to be available in the next quarterly report.

3.3 Reconnaissance Sampling

Further reconnaissance samples collected during the third quarter of occupancy have not yet been examined. Details should be available in the next quarterly report.

4. RESULTS

A full examination and assessment of the samples collected during the last twelve months remains to be carried out.

5. EXPENDITURE

Expenditure to the end of third quarter\$46,750.

6. LIST OF ACCOMPANYING PLANS

Figures

Figure 1 - Location diagram, Exploration Licences 546, 558, 689 and 690, Orroroo Area, South Australia.

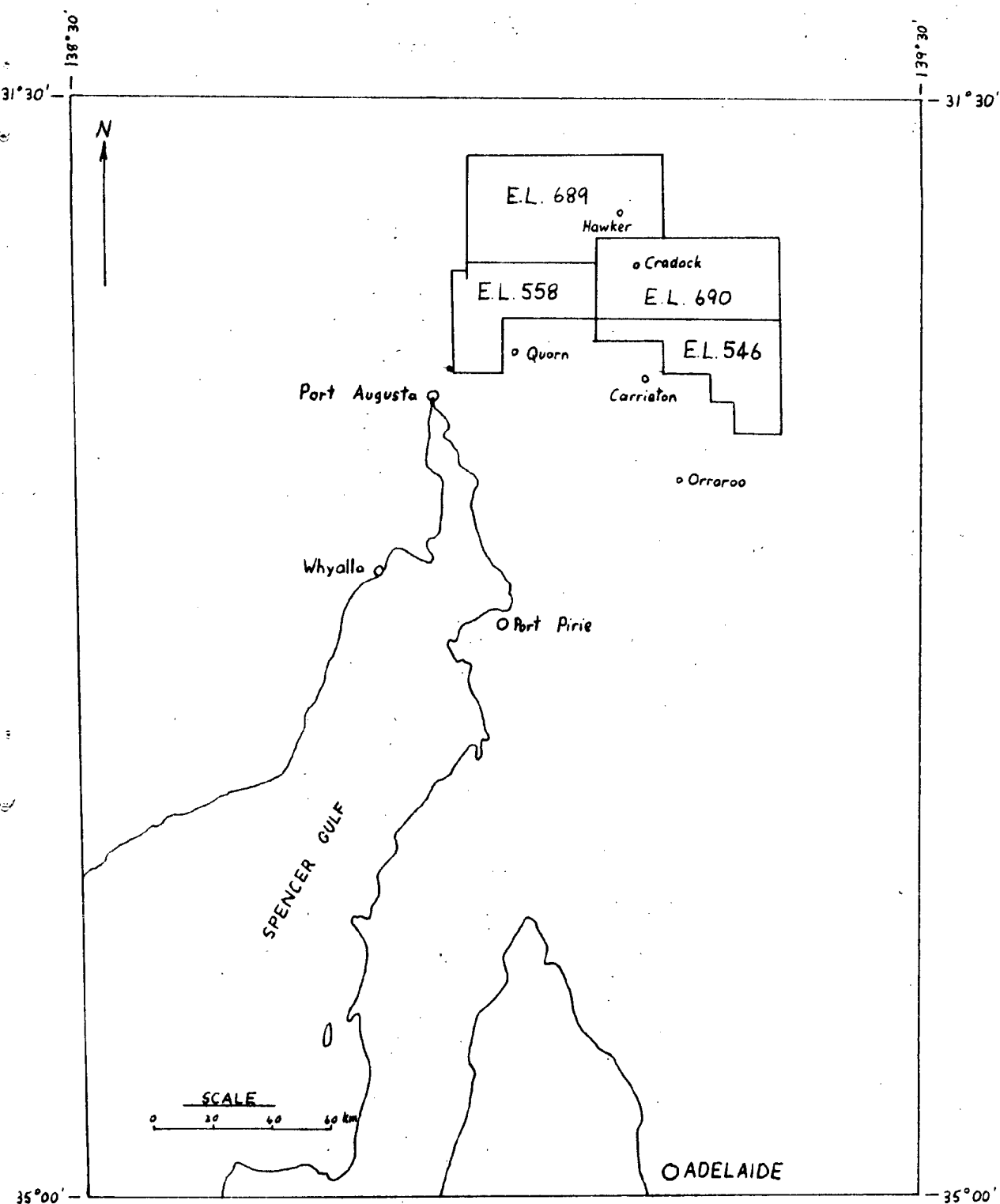
Plans

Plan 1 - Exploration Licences, 546, 558, 689 and 690.
 Plan 2 - E.L. 689, E.L. 546 Total magnetic intensity map, Anomaly 6.
 Plan 3 - E.L. 689, E.L. 546, Geology and Grid Loam Sample locations, Anomaly 6.

3.

6. LIST OF ACCOMPANYING PLANS (contd.)Plans

- Plan 4 - Minburra 1:50,000 Sheet Area, Stream Sample Locations.
- Plan 5 - Moockra 1:50,000 Sheet Area, Stream Sample Locations.
- Plan 6 - Carrieton 1:50,000 Sheet Area, Stream Sample Locations.
- Plan 7 - Yalpara 1:50,000 Sheet Area, Stream Sample Locations.



LOCATION DIAGRAM : EXPLORATION LICENCES
546, 558, 689, 690.

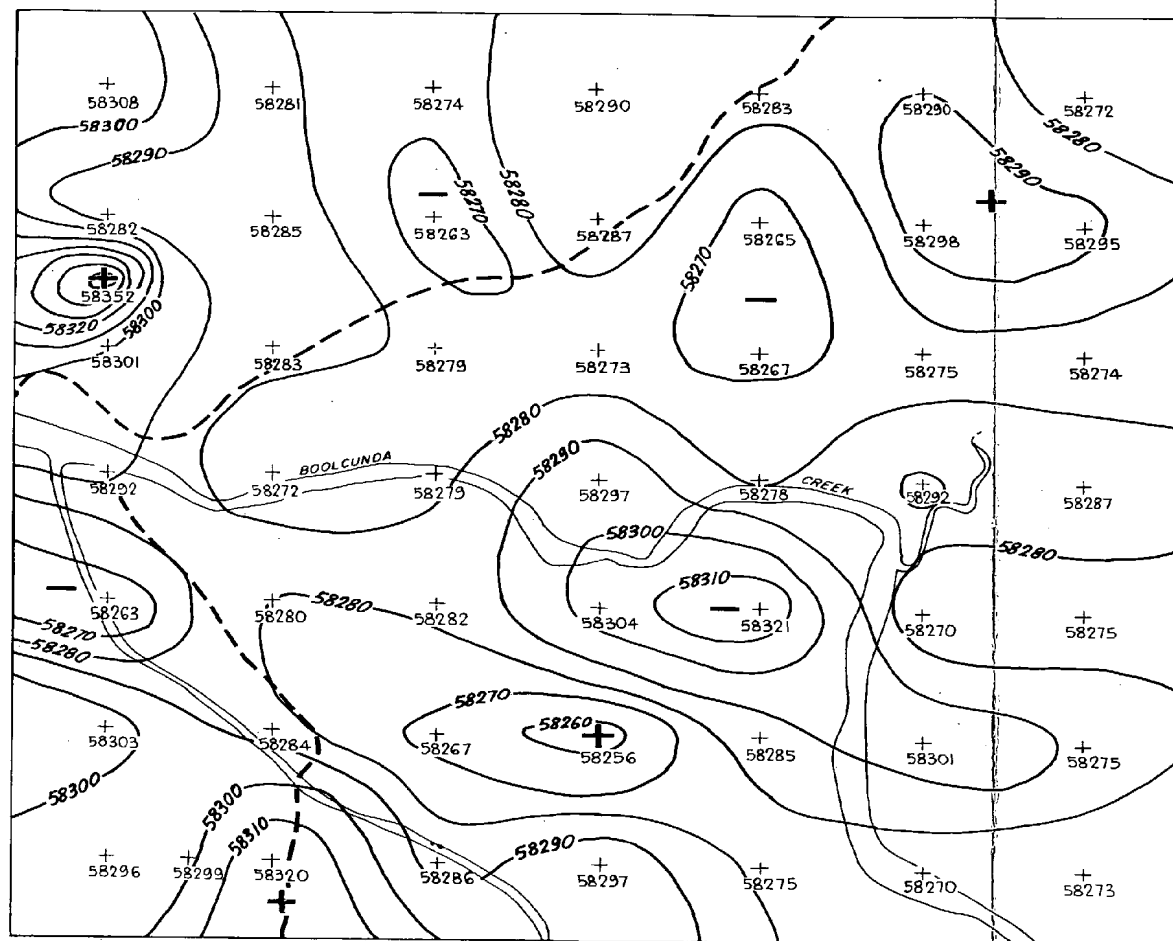
ORROROO AREA - SOUTH AUSTRALIA.

EXPENDITURE E.L. 546(ANNUAL EXPENDITURE FOR YEAR ENDED 13TH NOVEMBER, 1980)

(A) Total expenditure for first three quarters of occupancy - \$46,844.98.

(B) Expenditure for last quarter of occupancy.

	\$
Contract Work	906.50
Employee Rations	299.75
Freight and Cartage	6,168.50
Consumable Items - Geological	82.25
Hire of Motor Vehicles	1,239.75
Assays	4,893.00
Rents on Tenements	1,722.75
Travel Expenses	466.75
Maps and Photographs	2.25
Consultant Fees	4,051.25
Office and Administration Fees	187.50
Motor Vehicle Expenses	507.50
Geological Equipment	132.00
Hire of Plant and Equipment	280.00
TOTAL	\$20,939.75
	=====
<u>PLUS</u> Expenditure for first three quarters	\$46,844.98
	=====
<u>TOTAL ANNUAL EXPENDITURE</u>	\$67,784.73c
	=====



REFERENCE

- + Reading location
 58720 Magnetic intensity contours
 + Magnetic 'High'
 - Magnetic 'Low'

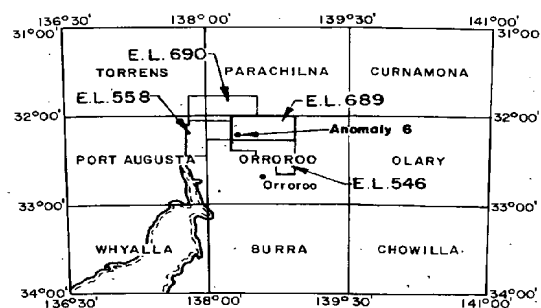
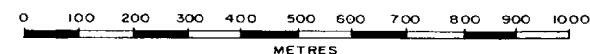
Total magnetic intensity in gammas (δ)
 Contour interval -10 gammas (δ)

- Road
 ~~~ Creek

TN, MN, GN



SCALE 1:11943



SWAN RESOURCES LTD

PROJECT III3, ORROROO, SOUTH AUSTRALIA

E.L. 689, E.L. 546

TOTAL MAGNETIC INTENSITY MAP

ANOMALY N° 6

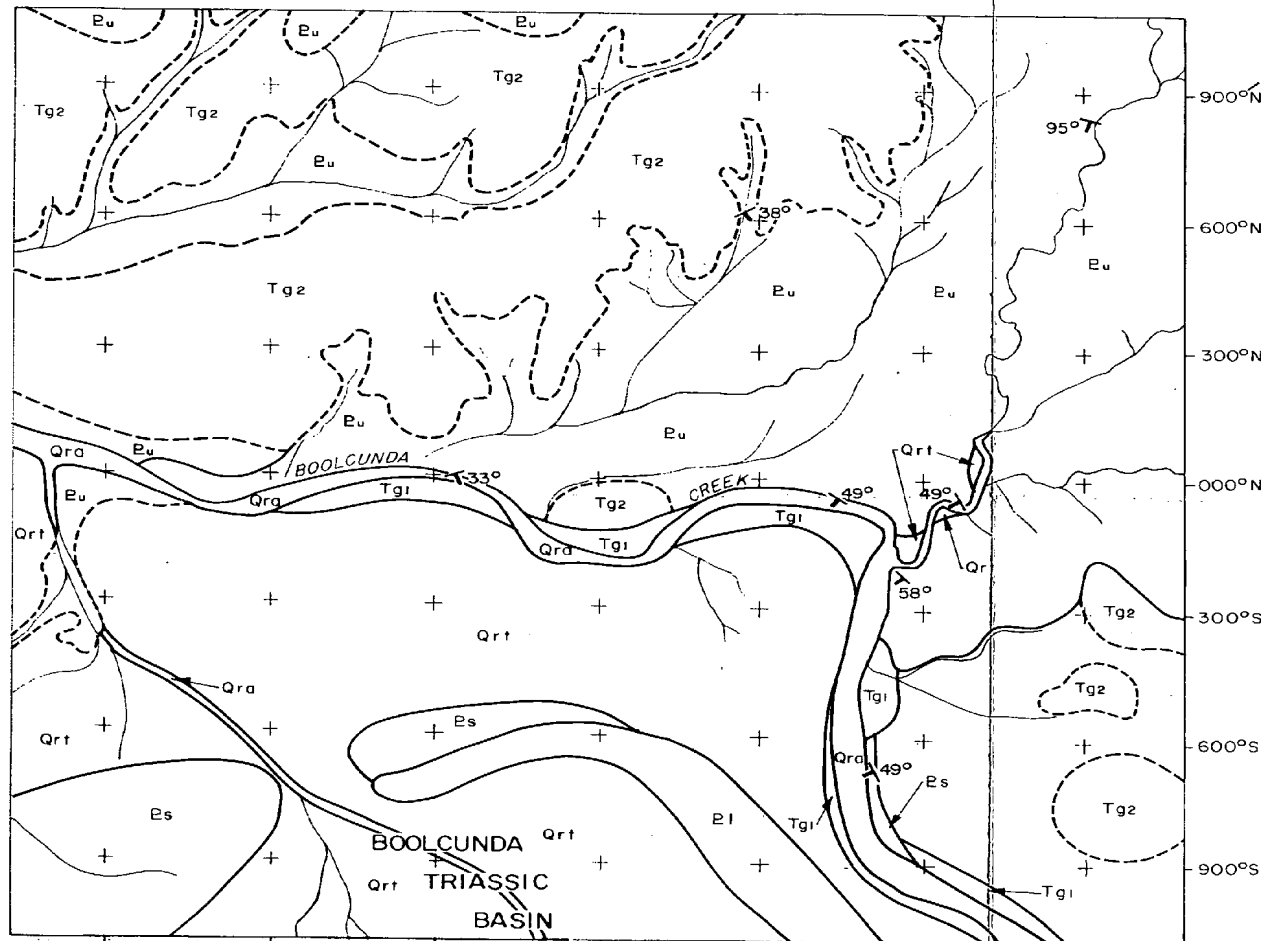
INSTRUMENT USED: Scintrex Hand-Held  
 Proton-Precession Magnetometer

DRAWN: S. Young

DATE: 8-9-80

GEOLOGY: S. Elliot

MAP N°: 2



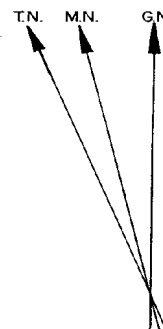
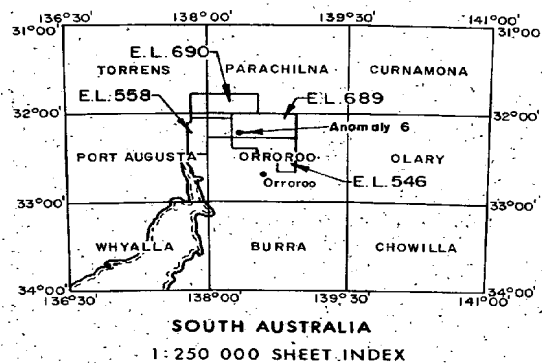
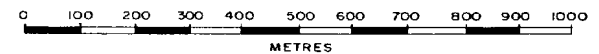
## REFERENCE

- + Grid Loam Sample Locations
- Geological Boundary - Accurate
- - - Geological Boundary - Approximate
- 60° Dip and Strike
- ~ Creek

## GEOLOGY

- |                   |     |                                                                                                                 |
|-------------------|-----|-----------------------------------------------------------------------------------------------------------------|
| TERTIARY RECENT   | Qra | Recent Alluvium - Gravel- Sand- Silt                                                                            |
|                   | Qrt | Low Angle Slope Deposits and Alluvium<br>Includes Floats of Tg1 and Tg2                                         |
|                   | Tg1 | Cemented, Competent, River Gravels and Sands                                                                    |
|                   | Tg2 | Fossil Gravels, Occasionally Cemented.<br>Lithologies: Quartzite, Quartz, Haematite,<br>Minor Siltstone         |
| UPPER PROTEROZOIC | Eu  | TAPLEY HILL FORMATION: Flaggy, well<br>laminated blue grey Siltstone. Calcareous<br>with interbedded Limestones |
|                   | E1  | Grey white massive Limestone member                                                                             |
|                   | Es  | Ferruginous Sandstone member                                                                                    |

SCALE 1:11943



SWAN RESOURCES LTD.

PROJECT III3, ORROROO, SOUTH AUSTRALIA

E.L. 689, E.L. 546

GEOLOGY &amp; GRID LOAM SAMPLE LOCATIONS

RECEIVED

18 NOV 1980

DEPT. OF MINES  
AND ENERGY  
SECURITY

S.J. ELIOT

ANOMALY N° 6

DRAWN: S. Young.

DATE: 16.9.80

MAP N°: 3

QUARTERLY REPORT EXPLORATION LICENCE 546

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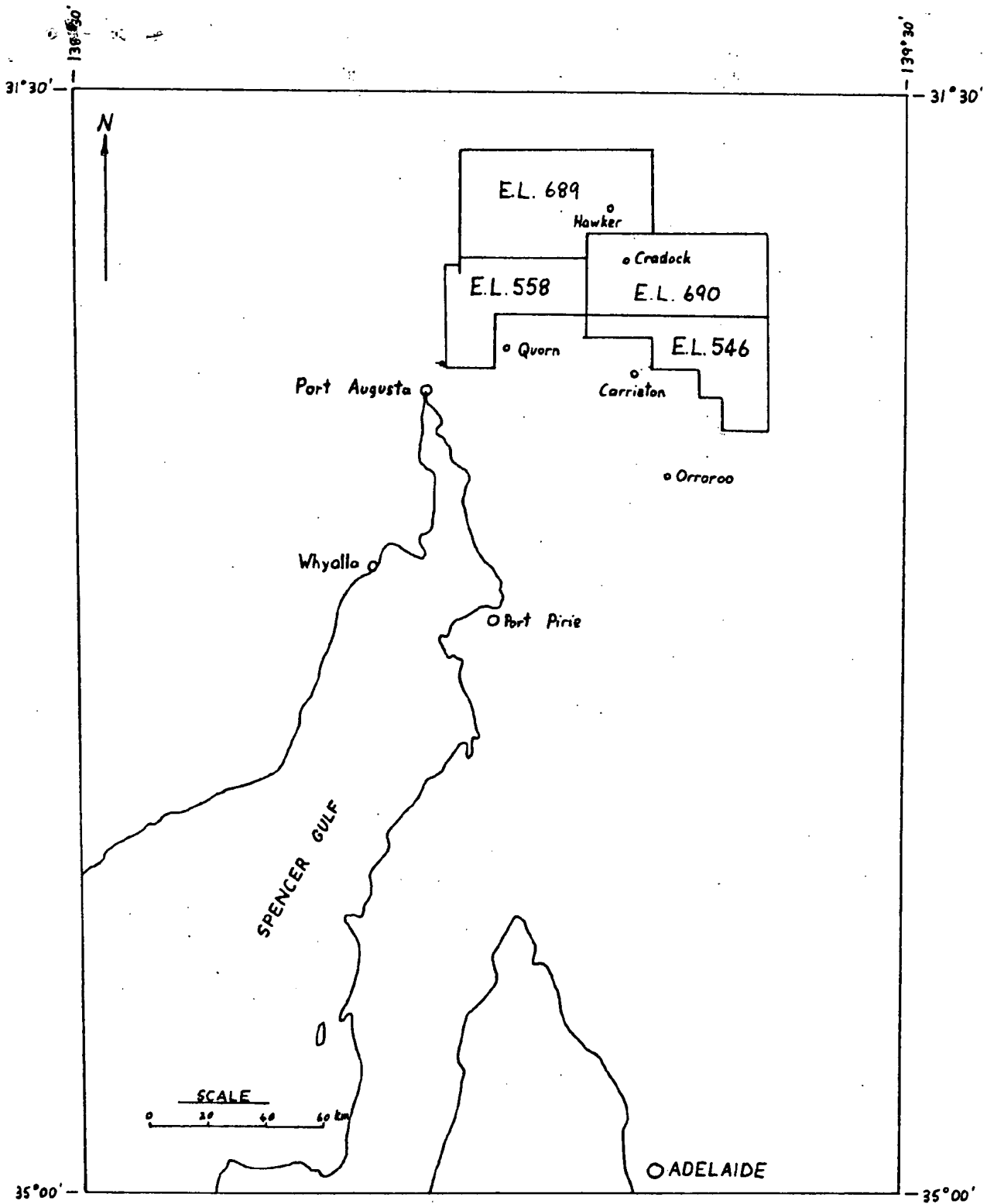
ORROROO REGION, SOUTH AUSTRALIA

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FOR THE QUARTER ENDED 13 FEBRUARY 1981

R.W. MOSIG  
SWAN RESOURCES LTD.  
51 COLIN STREET  
PERTH WA 6005





LOCATION DIAGRAM : EXPLORATION LICENCES  
546, 558, 689, 690.

ORROROO AREA - SOUTH AUSTRALIA.

FIGURE 1

ORROROO REGION, SOUTH AUSTRALIA  
FIRST QUARTERLY REPORT FOR THE SECOND YEAR OF  
OCCUPANCY

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1. INTRODUCTION

The contents of this quarterly report contain details of the binocular microscope investigations carried out on concentrates from the numerous reconnaissance samples collected.

2. TITLE

Exploration Licence 546 was granted on the 12th November 1979 to Swan Resources Limited for a one-year period to explore for diamonds, uranium, copper, lead, gold and platinum.

A further twelve month occupancy was granted on the 12th November 1980 to Swan Resources Ltd. and Freeport of Australia Inc.

3. RESULTS OF EXPLORATION ACTIVITIES

For details of anomalies 1 - 5 (incl.) the reader is referred to report on E.L. 558. Locations of anomalies are shown in Plan 1.

3.1. ANOMALY 6 (M-34) MOOCKRA 1:50,000 SHEET AREA

Heavy mineral concentrates from follow-up stream samples are still being examined and further details should be available next quarter.

### 3.2. ANOMALY 7 (M-42) MINBURRA 1:50,000 SHEET AREA

Exploration activities have ceased on this region after results electron probe microanalyses on the rutile grains found in several samples. All rutiles showed low Nb<sub>2</sub>O<sub>5</sub> contents unlike their kimberlitic counterparts which generally show relatively high (0.3 wt%) Nb<sub>2</sub>O<sub>5</sub> content. The low niobium in conjunction with the lack of any kimberlitic mineral has negated further exploration on this area.

## 4. FURTHER WORK

A full examination and assesment of samples collected during the last twelve months remains to be carried out.

## 5. EXPENDITURE

Expenditure for the first year (12/11/79 - 12/11/80) was

\$65,395.75

### EXPENDITURE FOR THIS QUARTER

|                                   |            |
|-----------------------------------|------------|
| Consulting fees .....             | \$1,942.50 |
| Contract work .....               | 160.50     |
| Freight .....                     | 1.50       |
| Consumable Field Items .....      | 7.00       |
| Hire of Motor Vehicle .....       | 24.00      |
| Legal Fees .....                  | 74.75      |
| Assays .....                      | 1,856.50   |
| Motor Vehicle Expenses .....      | 7.25       |
| Travel Expenses .....             | 254.50     |
| Mineral Observation - Wages ..... | 388.75     |
| Maps and Photographs .....        | 113.75     |
| Geological Equipment .....        | 61.00      |
| Field Expenses .....              | 31.25      |
|                                   | <hr/>      |
|                                   | \$4,923.25 |

## 6. LIST OF ACCOMPANYING FIGURES, PLANS AND APPENDICES

### FIGURES

Fig. 1 Location Diagram, Exploration Licences 546, 558, 689 and 690, Orroroo Area, South Australia

### PLANS

Plan 1 Exploration Licences 546, 558, 689 and 690

### APPENDIX

Appendix 1 Heavy Mineral Analyses Sheets, EL 546.

102A.

P L A N 1

---

A P P E N D I X    1

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# HEAVY MINERAL ANALYSIS SHEET

SAMPLE NUMBER S-17  
 HEAD-WEIGHT 14.5 kg  
 HEAVIES WEIGHT 169.55 grams  
 TYPE OF SAMPLE Stream

E.L. 546

PROJECT NUMBER 1113  
 MAP REFERENCE SHEET Moockra  
 COORDINATES \_\_\_\_\_

-40

| MINERAL SPECIES | MESH SIZE |    | MESH SIZE |    | MESH SIZE |    | MESH SIZE |    | MESH SIZE |    | REMARKS                      |
|-----------------|-----------|----|-----------|----|-----------|----|-----------|----|-----------|----|------------------------------|
|                 | MAG       | NM | MAG       | NM | MAG       | NM | MAG       | NM | MAG       | NM |                              |
| QUARTZ          |           | 2  |           |    |           |    |           |    |           |    |                              |
| GOETHITE        |           | 2  |           |    |           |    |           |    |           |    |                              |
| MAGNETITE       |           |    |           |    |           |    |           |    |           |    |                              |
| LIMONITE        |           | 2  |           |    |           |    |           |    |           |    |                              |
| RUTILE          |           | Tr |           |    |           |    |           |    |           |    |                              |
| EPIDOTE         |           |    |           |    |           |    |           |    |           |    |                              |
| TOURMALINE      |           | Tr |           |    |           |    |           |    |           |    |                              |
| ANATASE         |           |    |           |    |           |    |           |    |           |    |                              |
| GARNET          |           |    |           |    |           |    |           |    |           |    |                              |
| ILMENITE        |           | Tr |           |    |           |    |           |    |           |    |                              |
| PYROXENE        |           |    |           |    |           |    |           |    |           |    | Crichtonite                  |
| AMPHIBOLE       |           |    |           |    |           |    |           |    |           |    |                              |
| LEUCOXENE       |           | Tr |           |    |           |    |           |    |           |    |                              |
| ZIRCON          |           | Tr |           |    |           |    |           |    |           |    |                              |
| MICA            |           |    |           |    |           |    |           |    |           |    | Some pink, mostly colourless |
| APATITE         |           |    |           |    |           |    |           |    |           |    |                              |
| GYP SUM         |           |    |           |    |           |    |           |    |           |    |                              |
| CALCITE         |           | Tr |           |    |           |    |           |    |           |    |                              |
| BARITE          |           | Tr |           |    |           |    |           |    |           |    |                              |
| CORUNDUM        |           |    |           |    |           |    |           |    |           |    |                              |
| SULPHIDE        |           | Tr |           |    |           |    |           |    |           |    |                              |
| GOLD            |           |    |           |    |           |    |           |    |           |    | Pyrite                       |
| SAPPHIRE        |           |    |           |    |           |    |           |    |           |    |                              |
| CASSITERITE     |           | Tr |           |    |           |    |           |    |           |    |                              |
| SPINEL          |           |    |           |    |           |    |           |    |           |    |                              |
| KYANITE         |           |    |           |    |           |    |           |    |           |    |                              |
| ROCK FRAGMENTS  |           |    |           |    |           |    |           |    |           |    |                              |

A.....ABUNDANT  
 3.....MINERAL FRAGMENTS IN ABUNDANCE OF 50% TO 90% BY VOLUME  
 2.....MINERAL FRAGMENTS IN ABUNDANCE OF 20% TO 50% BY VOLUME  
 1.....MINERAL FRAGMENTS IN ABUNDANCE OF 2% TO 20% BY VOLUME  
 Tr.....TRACE ONLY

0104

# HEAVY MINERAL ANALYSIS SHEET

SAMPLE NUMBER S-18  
 HEAD WEIGHT 15.5 kg  
 HEAVIES WEIGHT 77.04 grams  
 TYPE OF SAMPLE Stream

E.L. 546

PROJECT NUMBER 1113  
 MAP REFERENCE SHEET Moockra  
 COORDINATES \_\_\_\_\_

| MINERAL SPECIES | MESH SIZE |    | MESH SIZE |    | MESH SIZE |    | MESH SIZE |    | MESH SIZE |    | REMARKS         |
|-----------------|-----------|----|-----------|----|-----------|----|-----------|----|-----------|----|-----------------|
|                 | MAG       | NM | MAG       | NM | MAG       | NM | MAG       | NM | MAG       | NM |                 |
| QUARTZ          |           | 2  |           |    |           |    |           |    |           |    |                 |
| GOETHITE        |           | Tr |           |    |           |    |           |    |           |    |                 |
| MAGNETITE       |           |    |           |    |           |    |           |    |           |    |                 |
| LIMONITE        |           | Tr |           |    |           |    |           |    |           |    |                 |
| RUTILE          |           | Tr |           |    |           |    |           |    |           |    |                 |
| EPIDOTE         |           |    |           |    |           |    |           |    |           |    |                 |
| TOURMALINE      |           | Tr |           |    |           |    |           |    |           |    |                 |
| ANATASE         |           |    |           |    |           |    |           |    |           |    |                 |
| GARNET          |           |    |           |    |           |    |           |    |           |    |                 |
| ILMENITE        |           |    |           |    |           |    |           |    |           |    |                 |
| PYROXENE        |           |    |           |    |           |    |           |    |           |    |                 |
| AMPHIBOLE       |           |    |           |    |           |    |           |    |           |    |                 |
| LEUCOXENE       |           | Tr |           |    |           |    |           |    |           |    |                 |
| ZIRCON          |           | 1  |           |    |           |    |           |    |           |    |                 |
| MICA            |           |    |           |    |           |    |           |    |           |    |                 |
| APATITE         |           |    |           |    |           |    |           |    |           |    |                 |
| GYPSUM          |           |    |           |    |           |    |           |    |           |    |                 |
| CALCITE         |           | Tr |           |    |           |    |           |    |           |    |                 |
| BARITE          |           | Tr |           |    |           |    |           |    |           |    |                 |
| CORUNDUM        |           |    |           |    |           |    |           |    |           |    |                 |
| SULPHIDE        |           |    |           |    |           |    |           |    |           |    |                 |
| GOLD            |           | Tr |           |    |           |    |           |    |           |    |                 |
| SAPPHIRE        |           |    |           |    |           |    |           |    |           |    | Few grains only |
| CASSITERITE     |           | Tr |           |    |           |    |           |    |           |    |                 |
| SPINEL          |           |    |           |    |           |    |           |    |           |    |                 |
| KYANITE         |           |    |           |    |           |    |           |    |           |    |                 |
| ROCK FRAGMENTS  |           |    |           |    |           |    |           |    |           |    |                 |

Purple mineral

A.....ABUNDANT

3.....MINERAL FRAGMENTS IN ABUNDANCE OF 50% TO 90% BY VOLUME

2.....MINERAL FRAGMENTS IN ABUNDANCE OF 20% TO 50% BY VOLUME

1.....MINERAL FRAGMENTS IN ABUNDANCE OF 2% TO 20% BY VOLUME

Tr.....TRACE ONLY

Micaceous purple book of flakes.

# HEAVY MINERAL ANALYSIS SHEET

SAMPLE NUMBER S-19  
 HEAD WEIGHT 14.5  
 HEAVIES WEIGHT 33.99 grams  
 TYPE OF SAMPLE Stream

E.L. 546

PROJECT NUMBER 1113  
 MAP REFERENCE SHEET Moochra  
 COORDINATES \_\_\_\_\_

-40

| MINERAL SPECIES | MESH SIZE |    | MESH SIZE |    | MESH SIZE |    | MESH SIZE |    | MESH SIZE |    | REMARKS |
|-----------------|-----------|----|-----------|----|-----------|----|-----------|----|-----------|----|---------|
|                 | MAG       | NM | MAG       | NM | MAG       | NM | MAG       | NM | MAG       | NM |         |
| QUARTZ          |           | 2  |           |    |           |    |           |    |           |    |         |
| GOETHITE        |           | Tr |           |    |           |    |           |    |           |    |         |
| MAGNETITE       |           |    |           |    |           |    |           |    |           |    |         |
| LIMONITE        |           | Tr |           |    |           |    |           |    |           |    |         |
| RUTILE          |           | Tr |           |    |           |    |           |    |           |    |         |
| EPIDOTE         |           |    |           |    |           |    |           |    |           |    |         |
| TOURMALINE      |           | Tr |           |    |           |    |           |    |           |    |         |
| ANATASE         |           |    |           |    |           |    |           |    |           |    |         |
| GARNET          |           |    |           |    |           |    |           |    |           |    |         |
| ILMENITE        |           | Tr |           |    |           |    |           |    |           |    |         |
| PYROXENE        |           |    |           |    |           |    |           |    |           |    |         |
| AMPHIBOLE       |           |    |           |    |           |    |           |    |           |    |         |
| LEUCOXENE       |           | Tr |           |    |           |    |           |    |           |    |         |
| ZIRCON          |           | Tr |           |    |           |    |           |    |           |    |         |
| MICA            |           |    |           |    |           |    |           |    |           |    |         |
| APATITE         |           |    |           |    |           |    |           |    |           |    |         |
| GYPSUM          |           |    |           |    |           |    |           |    |           |    |         |
| CALCITE         |           | Tr |           |    |           |    |           |    |           |    |         |
| BARITE          |           | Tr |           |    |           |    |           |    |           |    |         |
| CORUNDUM        |           |    |           |    |           |    |           |    |           |    |         |
| SULPHIDE        |           |    |           |    |           |    |           |    |           |    |         |
| GOLD            |           |    |           |    |           |    |           |    |           |    |         |
| SAPPHIRE        |           |    |           |    |           |    |           |    |           |    |         |
| CASSITERITE     |           | Tr |           |    |           |    |           |    |           |    |         |
| SPINEL          |           |    |           |    |           |    |           |    |           |    |         |
| KYANITE         |           |    |           |    |           |    |           |    |           |    |         |
| ROCK FRAGMENTS  |           |    |           |    |           |    |           |    |           |    |         |

A.....ABUNDANT  
 3.....MINERAL FRAGMENTS IN ABUNDANCE OF 50% TO 90% BY VOLUME  
 2.....MINERAL FRAGMENTS IN ABUNDANCE OF 20% TO 50% BY VOLUME  
 1.....MINERAL FRAGMENTS IN ABUNDANCE OF 2% TO 20% BY VOLUME  
 Tr.....TRACE ONLY

## HEAVY MINERAL ANALYSIS SHEET

SAMPLE NUMBER S-20  
 HEAD WEIGHT 17.3 kg  
 HEAVIES WEIGHT 95.73 grams  
 TYPE OF SAMPLE Stream

E.L. 546

PROJECT NUMBER 1113  
 MAP REFERENCE SHEET Moockva  
 COORDINATES \_\_\_\_\_

-40

| MINERAL SPECIES | MESH SIZE |    | MESH SIZE |    | MESH SIZE |    | MESH SIZE |    | MESH SIZE |    | REMARKS                       |
|-----------------|-----------|----|-----------|----|-----------|----|-----------|----|-----------|----|-------------------------------|
|                 | MAG       | NM | MAG       | NM | MAG       | NM | MAG       | NM | MAG       | NM |                               |
| QUARTZ          |           | Tr |           |    |           |    |           |    |           |    |                               |
| GOETHITE        |           | 2  |           |    |           |    |           |    |           |    |                               |
| MAGNETITE       |           |    |           |    |           |    |           |    |           |    |                               |
| LIMONITE        |           | 2  |           |    |           |    |           |    |           |    |                               |
| RUTILE          |           | Tr |           |    |           |    |           |    |           |    |                               |
| EPIDOTE         |           |    |           |    |           |    |           |    |           |    |                               |
| TOURMALINE      |           |    |           |    |           |    |           |    |           |    |                               |
| ANATASE         |           |    |           |    |           |    |           |    |           |    |                               |
| GARNET          |           |    |           |    |           |    |           |    |           |    |                               |
| ILMENITE        |           |    |           |    |           |    |           |    |           |    |                               |
| PYROXENE        |           |    |           |    |           |    |           |    |           |    |                               |
| AMPHIBOLE       |           |    |           |    |           |    |           |    |           |    |                               |
| LEUCOXENE       |           | Tr |           |    |           |    |           |    |           |    |                               |
| ZIRCON          |           | 1  |           |    |           |    |           |    |           |    |                               |
| MICA            |           |    |           |    |           |    |           |    |           |    | Some pink, mostly colourless. |
| APATITE         |           |    |           |    |           |    |           |    |           |    |                               |
| GYPSUM          |           |    |           |    |           |    |           |    |           |    |                               |
| CALCITE         |           |    |           |    |           |    |           |    |           |    |                               |
| BARITE          |           |    |           |    |           |    |           |    |           |    |                               |
| CORUNDUM        |           |    |           |    |           |    |           |    |           |    |                               |
| SULPHIDE        |           |    |           |    |           |    |           |    |           |    |                               |
| GOLD            |           |    |           |    |           |    |           |    |           |    |                               |
| SAPPHIRE        |           |    |           |    |           |    |           |    |           |    |                               |
| CASSITERITE     |           | Tr |           |    |           |    |           |    |           |    |                               |
| SPINEL          |           |    |           |    |           |    |           |    |           |    |                               |
| KYANITE         |           |    |           |    |           |    |           |    |           |    |                               |
| ROCK FRAGMENTS  |           |    |           |    |           |    |           |    |           |    |                               |

Brown mineral

Tr

?

A.....ABUNDANT

3.....MINERAL FRAGMENTS IN ABUNDANCE OF 50% TO 90% BY VOLUME

2.....MINERAL FRAGMENTS IN ABUNDANCE OF 20% TO 50% BY VOLUME

1.....MINERAL FRAGMENTS IN ABUNDANCE OF 2% TO 20% BY VOLUME

Tr.....TRACE ONLY

0107

## HEAVY MINERAL ANALYSIS SHEET

SAMPLE NUMBER S-22  
 HEAD WEIGHT 12.3 kg  
 HEAVIES WEIGHT 17.65 grams  
 TYPE OF SAMPLE Stream

E.L. 546

PROJECT NUMBER 1113  
 MAP REFERENCE SHEET Carrieton  
 COORDINATES \_\_\_\_\_

-40

| MINERAL SPECIES | MESH SIZE |    | MESH SIZE |    | MESH SIZE |    | MESH SIZE |    | MESH SIZE |    | REMARKS     |
|-----------------|-----------|----|-----------|----|-----------|----|-----------|----|-----------|----|-------------|
|                 | MAG       | NM | MAG       | NM | MAG       | NM | MAG       | NM | MAG       | NM |             |
| QUARTZ          |           | 2  |           |    |           |    |           |    |           |    |             |
| GOETHITE        |           | 2  |           |    |           |    |           |    |           |    |             |
| MAGNETITE       |           |    |           |    |           |    |           |    |           |    |             |
| LIMONITE        |           | 2  |           |    |           |    |           |    |           |    |             |
| RUTILE          |           |    |           |    |           |    |           |    |           |    |             |
| EPIDOTE         |           |    |           |    |           |    |           |    |           |    |             |
| TOURMALINE      |           |    |           |    |           |    |           |    |           |    |             |
| ANATASE         |           |    |           |    |           |    |           |    |           |    |             |
| GARNET          |           |    |           |    |           |    |           |    |           |    |             |
| ILMENITE        |           | Tr |           |    |           |    |           |    |           |    |             |
| PYROXENE        |           |    |           |    |           |    |           |    |           |    | Crichtonite |
| AMPHIBOLE       |           |    |           |    |           |    |           |    |           |    |             |
| LEUCOXENE       |           | Tr |           |    |           |    |           |    |           |    |             |
| ZIRCON          |           | Tr |           |    |           |    |           |    |           |    |             |
| MICA            |           |    |           |    |           |    |           |    |           |    |             |
| APATITE         |           |    |           |    |           |    |           |    |           |    |             |
| GYPSUM          |           |    |           |    |           |    |           |    |           |    |             |
| CALCITE         |           | Tr |           |    |           |    |           |    |           |    |             |
| BARITE          |           | Tr |           |    |           |    |           |    |           |    |             |
| CORUNDUM        |           |    |           |    |           |    |           |    |           |    |             |
| SULPHIDE        |           | Tr |           |    |           |    |           |    |           |    |             |
| GOLD            |           |    |           |    |           |    |           |    |           |    | Pyrite      |
| SAPPHIRE        |           |    |           |    |           |    |           |    |           |    |             |
| CASSITERITE     |           | Tr |           |    |           |    |           |    |           |    |             |
| SPINEL          |           |    |           |    |           |    |           |    |           |    |             |
| KYANITE         |           |    |           |    |           |    |           |    |           |    |             |
| ROCK FRAGMENTS  |           |    |           |    |           |    |           |    |           |    |             |

A.....ABUNDANT  
 3.....MINERAL FRAGMENTS IN ABUNDANCE OF 50% TO 90% BY VOLUME  
 2.....MINERAL FRAGMENTS IN ABUNDANCE OF 20% TO 50% BY VOLUME  
 1.....MINERAL FRAGMENTS IN ABUNDANCE OF 2% TO 20% BY VOLUME  
 Tr.....TRACE ONLY

0108

SAMPLE NUMBER S-25  
 HEAD WEIGHT 10.9kg  
 HEAVIES WEIGHT 341.01 grams  
 TYPE OF SAMPLE Stream

# HEAVY MINERAL ANALYSIS SHEET

E.L. 546

PROJECT NUMBER 1113  
 MAP REFERENCE SHEET Mooakra  
 COORDINATES \_\_\_\_\_

-40

| MINERAL SPECIES | MESH SIZE |    | MESH SIZE |    | MESH SIZE |    | MESH SIZE |    | MESH SIZE |    | REMARKS      |
|-----------------|-----------|----|-----------|----|-----------|----|-----------|----|-----------|----|--------------|
|                 | MAG       | NM | MAG       | NM | MAG       | NM | MAG       | NM | MAG       | NM |              |
| QUARTZ          |           | 2  |           |    |           |    |           |    |           |    |              |
| GOETHITE        |           | 2  |           |    |           |    |           |    |           |    |              |
| MAGNETITE       |           |    |           |    |           |    |           |    |           |    |              |
| LIMONITE        |           | 1  |           |    |           |    |           |    |           |    |              |
| RUTILE          |           |    |           |    |           |    |           |    |           |    |              |
| EPIDOTE         |           |    |           |    |           |    |           |    |           |    |              |
| TOURMALINE      |           | Tr |           |    |           |    |           |    |           |    |              |
| ANATASE         |           |    |           |    |           |    |           |    |           |    |              |
| GARNET          |           |    |           |    |           |    |           |    |           |    |              |
| ILMENITE        |           |    |           |    |           |    |           |    |           |    |              |
| PYROXENE        |           |    |           |    |           |    |           |    |           |    |              |
| AMPHIBOLE       |           |    |           |    |           |    |           |    |           |    |              |
| LEUCOXENE       |           |    |           |    |           |    |           |    |           |    |              |
| ZIRCON          |           | 1  |           |    |           |    |           |    |           |    |              |
| MICA            |           |    |           |    |           |    |           |    |           |    |              |
| APATITE         |           |    |           |    |           |    |           |    |           |    |              |
| GYP SUM         |           |    |           |    |           |    |           |    |           |    |              |
| CALCITE         |           |    |           |    |           |    |           |    |           |    |              |
| BARITE          |           |    |           |    |           |    |           |    |           |    |              |
| CORUNDUM        |           |    |           |    |           |    |           |    |           |    |              |
| SULPHIDE        |           | Tr |           |    |           |    |           |    |           |    |              |
| GOLD            |           | Tr |           |    |           |    |           |    |           |    | Pyrite       |
| SAPPHIRE        |           |    |           |    |           |    |           |    |           |    | 1 flake only |
| CASSITERITE     |           | Tr |           |    |           |    |           |    |           |    |              |
| SPINEL          |           |    |           |    |           |    |           |    |           |    |              |
| KYANITE         |           |    |           |    |           |    |           |    |           |    |              |
| ROCK FRAGMENTS  |           |    |           |    |           |    |           |    |           |    |              |

A.....ABUNDANT  
 3.....MINERAL FRAGMENTS IN ABUNDANCE OF 50% TO 90% BY VOLUME  
 2.....MINERAL FRAGMENTS IN ABUNDANCE OF 20% TO 50% BY VOLUME  
 1.....MINERAL FRAGMENTS IN ABUNDANCE OF 2% TO 20% BY VOLUME  
 Tr.....TRACE ONLY

# HEAVY MINERAL ANALYSIS SHEET

SAMPLE NUMBER 5-26  
 HEAD WEIGHT 14.1 kg.  
 HEAVIES WEIGHT 105.21 grams  
 TYPE OF SAMPLE Stream

E.L. 546

PROJECT NUMBER 1113  
 MAP REFERENCE SHEET Carrieton  
 COORDINATES \_\_\_\_\_

| MINERAL SPECIES | -40 |    | +40 |    | +20 |    | +16 |    |     |    | REMARKS                    |
|-----------------|-----|----|-----|----|-----|----|-----|----|-----|----|----------------------------|
|                 | MAG | NM | MAG | NM | MAG | NM | MAG | NM | MAG | NM |                            |
| QUARTZ          |     | 2  | Tr  |    | Tr  |    | Tr  |    |     |    | Ferruginous rock fragments |
| GOETHITE        | 2   |    | 1   |    | 2   |    | 2   |    |     |    |                            |
| MAGNETITE       |     |    | 2   |    | 1   |    | 1   |    |     |    |                            |
| LIMONITE        |     |    | 1   |    | 1   |    | 1   |    |     |    |                            |
| RUTILE          |     | Tr |     |    |     |    |     |    |     |    |                            |
| EPIDOTE         |     |    |     |    |     |    |     |    |     |    |                            |
| TOURMALINE      |     |    |     |    |     |    |     |    |     |    |                            |
| ANATASE         |     |    |     |    |     |    |     |    |     |    |                            |
| GARNET          |     |    |     |    |     |    |     |    |     |    |                            |
| ILMENITE        |     |    |     |    |     |    |     |    |     |    |                            |
| PYROXENE        |     |    |     |    |     |    |     |    |     |    |                            |
| AMPHIBOLE       |     |    |     |    |     |    |     |    |     |    |                            |
| LEUCOXENE       |     | Tr |     |    |     |    |     |    |     |    |                            |
| ZIRCON          |     | 1  |     |    |     |    |     |    |     |    |                            |
| MICA            |     |    |     |    |     |    |     |    |     |    |                            |
| APATITE         |     |    |     |    |     |    |     |    |     |    |                            |
| GYPSUM          |     |    |     |    |     |    |     |    |     |    |                            |
| CALCITE         |     |    |     |    |     |    |     |    |     |    |                            |
| BARITE          |     |    |     |    |     |    |     |    |     |    |                            |
| CORUNDUM        |     |    |     |    |     |    |     |    |     |    |                            |
| SULPHIDE        |     |    |     |    |     |    |     |    |     |    |                            |
| GOLD            |     |    |     |    |     |    |     |    |     |    |                            |
| SAPPHIRE        |     |    |     |    |     |    |     |    |     |    |                            |
| CASSITERITE     |     |    |     |    |     |    |     |    |     |    |                            |
| SPINEL          |     |    |     |    |     |    |     |    |     |    |                            |
| KYANITE         |     |    |     |    |     |    |     |    |     |    |                            |
| ROCK FRAGMENTS  |     |    |     |    |     |    |     |    |     |    |                            |

A.....ABUNDANT  
 3.....MINERAL FRAGMENTS IN ABUNDANCE OF 50% TO 90% BY VOLUME  
 2.....MINERAL FRAGMENTS IN ABUNDANCE OF 20% TO 50% BY VOLUME  
 1.....MINERAL FRAGMENTS IN ABUNDANCE OF 2% TO 20% BY VOLUME  
 Tr.....TRACE ONLY

# HEAVY MINERAL ANALYSIS SHEET

SAMPLE NUMBER 5-27  
 HEAD WEIGHT 11.8 kg  
 HEAVIES WEIGHT 18.21  
 TYPE OF SAMPLE Stream

E.L. 546

PROJECT NUMBER 1113  
 MAP REFERENCE SHEET Carrieton  
 COORDINATES \_\_\_\_\_

| MINERAL SPECIES | -40 |    | +40 |    | +20 |    | +16 |    |     |    | REMARKS |
|-----------------|-----|----|-----|----|-----|----|-----|----|-----|----|---------|
|                 | MAG | NM | MAG | NM | MAG | NM | MAG | NM | MAG | NM |         |
| QUARTZ          |     | Tr | Tr  |    | Tr  |    | Tr  |    |     |    |         |
| GOETHITE        |     | Tr | 2   |    | 2   |    | 2   |    |     |    |         |
| MAGNETITE       |     |    | 2   |    | 2   |    | 2   |    |     |    |         |
| LIMONITE        |     | Tr | 2   |    | 2   |    | 2   |    |     |    |         |
| RUTILE          |     |    |     |    |     |    |     |    |     |    |         |
| EPIDOTE         |     |    |     |    |     |    |     |    |     |    |         |
| TOURMALINE      |     |    |     |    |     |    |     |    |     |    |         |
| ANATASE         |     |    |     |    |     |    |     |    |     |    |         |
| GARNET          |     |    |     |    |     |    |     |    |     |    |         |
| ILMENITE        |     |    |     |    |     |    |     |    |     |    |         |
| PYROXENE        |     |    |     |    |     |    |     |    |     |    |         |
| AMPHIBOLE       |     |    |     |    |     |    |     |    |     |    |         |
| LEUCOXENE       |     | Tr |     |    |     |    |     |    |     |    |         |
| ZIRCON          |     | 1  |     |    |     |    |     |    |     |    |         |
| MICA            |     |    |     |    |     |    |     |    |     |    |         |
| APATITE         |     |    |     |    |     |    |     |    |     |    |         |
| GYPSUM          |     |    |     |    |     |    |     |    |     |    |         |
| CALCITE         |     |    |     |    |     |    |     |    |     |    |         |
| BARITE          |     |    |     |    |     |    |     |    |     |    |         |
| CORUNDUM        |     |    |     |    |     |    |     |    |     |    |         |
| SULPHIDE        |     |    |     |    |     |    |     |    |     |    |         |
| GOLD            |     |    |     |    |     |    |     |    |     |    |         |
| SAPPHIRE        |     |    |     |    |     |    |     |    |     |    |         |
| CASSITERITE     |     | Tr |     |    |     |    |     |    |     |    |         |
| SPINEL          |     |    |     |    |     |    |     |    |     |    |         |
| KYANITE         |     |    |     |    |     |    |     |    |     |    |         |
| ROCK FRAGMENTS  |     |    |     |    |     |    |     |    |     |    |         |

A.....ABUNDANT  
 3.....MINERAL FRAGMENTS IN ABUNDANCE OF 50% TO 90% BY VOLUME  
 2.....MINERAL FRAGMENTS IN ABUNDANCE OF 20% TO 50% BY VOLUME  
 1.....MINERAL FRAGMENTS IN ABUNDANCE OF 2% TO 20% BY VOLUME  
 Tr.....TRACE ONLY

# HEAVY MINERAL ANALYSIS SHEET

SAMPLE NUMBER 5-28  
 HEAD WEIGHT 14.1 kg  
 HEAVIES WEIGHT 32.28 grams  
 TYPE OF SAMPLE Stream

E.L. 546

PROJECT NUMBER 1113  
 MAP REFERENCE SHEET Carrieton  
 COORDINATES \_\_\_\_\_

-40

| MINERAL SPECIES | MESH SIZE |    | MESH SIZE |    | MESH SIZE |    | MESH SIZE |    | MESH SIZE |    | REMARKS                                |
|-----------------|-----------|----|-----------|----|-----------|----|-----------|----|-----------|----|----------------------------------------|
|                 | MAG       | NM | MAG       | NM | MAG       | NM | MAG       | NM | MAG       | NM |                                        |
| QUARTZ          |           | Tr |           |    |           |    |           |    |           |    |                                        |
| GOETHITE        |           | Tr |           |    |           |    |           |    |           |    |                                        |
| MAGNETITE       |           |    |           |    |           |    |           |    |           |    |                                        |
| LIMONITE        |           |    |           |    |           |    |           |    |           |    |                                        |
| RUTILE          |           |    |           |    |           |    |           |    |           |    |                                        |
| EPIDOTE         |           |    |           |    |           |    |           |    |           |    |                                        |
| TOURMALINE      |           |    |           |    |           |    |           |    |           |    |                                        |
| ANATASE         |           |    |           |    |           |    |           |    |           |    |                                        |
| GARNET          |           |    |           |    |           |    |           |    |           |    |                                        |
| ILMENITE        |           |    |           |    |           |    |           |    |           |    |                                        |
| PYROXENE        |           |    |           |    |           |    |           |    |           |    |                                        |
| AMPHIBOLE       |           |    |           |    |           |    |           |    |           |    |                                        |
| LEUCOXENE       |           |    |           |    |           |    |           |    |           |    |                                        |
| ZIRCON          |           | Tr |           |    |           |    |           |    |           |    |                                        |
| MICA            |           |    |           |    |           |    |           |    |           |    | Rounded clear grains                   |
| APATITE         |           |    |           |    |           |    |           |    |           |    |                                        |
| GYPSUM          |           |    |           |    |           |    |           |    |           |    |                                        |
| CALCITE         |           |    |           |    |           |    |           |    |           |    |                                        |
| BARITE          |           |    |           |    |           |    |           |    |           |    |                                        |
| CORUNDUM        |           |    |           |    |           |    |           |    |           |    |                                        |
| SULPHIDE        |           | Tr |           |    |           |    |           |    |           |    | ? Silvery sulphide 1gr.                |
| GOLD            |           |    |           |    |           |    |           |    |           |    |                                        |
| SAPPHIRE        |           |    |           |    |           |    |           |    |           |    |                                        |
| CASSITERITE     |           |    |           |    |           |    |           |    |           |    |                                        |
| SPINEL          |           |    |           |    |           |    |           |    |           |    |                                        |
| KYANITE         |           |    |           |    |           |    |           |    |           |    |                                        |
| ROCK FRAGMENTS  |           | Tr |           |    |           |    |           |    |           |    | Numerous shaley / micaceous fragments. |

A.....ABUNDANT  
 3.....MINERAL FRAGMENTS IN ABUNDANCE OF 50% TO 90% BY VOLUME  
 2.....MINERAL FRAGMENTS IN ABUNDANCE OF 20% TO 50% BY VOLUME  
 1.....MINERAL FRAGMENTS IN ABUNDANCE OF 2% TO 20% BY VOLUME  
 Tr.....TRACE ONLY

# HEAVY MINERAL ANALYSIS SHEET

SAMPLE NUMBER S-29  
 HEAD WEIGHT 11.4 kg  
 HEAVIES WEIGHT 47.49 grams  
 TYPE OF SAMPLE Stream

E.L. 546

PROJECT NUMBER 1113  
 MAP REFERENCE SHEET Moockra  
 COORDINATES \_\_\_\_\_

-40

| MINERAL SPECIES | MESH SIZE |    | MESH SIZE |    | MESH SIZE |    | MESH SIZE |    | MESH SIZE |    | REMARKS |
|-----------------|-----------|----|-----------|----|-----------|----|-----------|----|-----------|----|---------|
|                 | MAG       | NM | MAG       | NM | MAG       | NM | MAG       | NM | MAG       | NM |         |
| QUARTZ          |           | 2  |           |    |           |    |           |    |           |    |         |
| GOETHITE        |           | Tr |           |    |           |    |           |    |           |    |         |
| MAGNETITE       |           |    |           |    |           |    |           |    |           |    |         |
| LIMONITE        |           | Tr |           |    |           |    |           |    |           |    |         |
| RUTILE          |           | Tr |           |    |           |    |           |    |           |    |         |
| EPIDOTE         |           |    |           |    |           |    |           |    |           |    |         |
| TOURMALINE      |           | Tr |           |    |           |    |           |    |           |    |         |
| ANATASE         |           |    |           |    |           |    |           |    |           |    |         |
| GARNET          |           |    |           |    |           |    |           |    |           |    |         |
| ILMENITE        |           |    |           |    |           |    |           |    |           |    |         |
| PYROXENE        |           |    |           |    |           |    |           |    |           |    |         |
| AMPHIBOLE       |           |    |           |    |           |    |           |    |           |    |         |
| LEUCOXENE       |           | Tr |           |    |           |    |           |    |           |    |         |
| ZIRCON          |           | 1  |           |    |           |    |           |    |           |    |         |
| MICA            |           |    |           |    |           |    |           |    |           |    |         |
| APATITE         |           |    |           |    |           |    |           |    |           |    |         |
| GYPSUM          |           |    |           |    |           |    |           |    |           |    |         |
| CALCITE         |           | Tr |           |    |           |    |           |    |           |    |         |
| BARITE          |           |    |           |    |           |    |           |    |           |    |         |
| CORUNDUM        |           |    |           |    |           |    |           |    |           |    |         |
| SULPHIDE        |           | Tr |           |    |           |    |           |    |           |    |         |
| GOLD            |           |    |           |    |           |    |           |    |           |    |         |
| SAPPHIRE        |           |    |           |    |           |    |           |    |           |    |         |
| CASSITERITE     |           | Tr |           |    |           |    |           |    |           |    |         |
| SPINEL          |           |    |           |    |           |    |           |    |           |    |         |
| KYANITE         |           |    |           |    |           |    |           |    |           |    |         |
| ROCK FRAGMENTS  |           |    |           |    |           |    |           |    |           |    |         |

Octahedral mineral

Tr

1 grain. Clear, as in M31

A.....ABUNDANT  
 3.....MINERAL FRAGMENTS IN ABUNDANCE OF 50% TO 90% BY VOLUME  
 2.....MINERAL FRAGMENTS IN ABUNDANCE OF 20% TO 50% BY VOLUME  
 1.....MINERAL FRAGMENTS IN ABUNDANCE OF 2% TO 20% BY VOLUME  
 Tr.....TRACE ONLY

0113

# HEAVY MINERAL ANALYSIS SHEET

SAMPLE NUMBER 5-40  
 HEAD WEIGHT 10.0 kg  
 HEAVIES WEIGHT 3.76 grams  
 TYPE OF SAMPLE Stream

E.L. 546

PROJECT NUMBER 1113  
 MAP REFERENCE SHEET Valpara  
 COORDINATES \_\_\_\_\_

| MINERAL SPECIES | MESH SIZE |    | MESH SIZE |    | MESH SIZE |    | MESH SIZE |    | MESH SIZE |    | REMARKS |
|-----------------|-----------|----|-----------|----|-----------|----|-----------|----|-----------|----|---------|
|                 | MAG       | NM | MAG       | NM | MAG       | NM | MAG       | NM | MAG       | NM |         |
| QUARTZ          |           | 2  |           |    |           |    |           |    |           |    |         |
| GOETHITE        |           | Tr |           |    |           |    |           |    |           |    |         |
| MAGNETITE       |           |    |           |    |           |    |           |    |           |    |         |
| LIMONITE        |           | Tr |           |    |           |    |           |    |           |    |         |
| RUTILE          |           | Tr |           |    |           |    |           |    |           |    |         |
| EPIDOTE         |           |    |           |    |           |    |           |    |           |    |         |
| TOURMALINE      |           | Tr |           |    |           |    |           |    |           |    |         |
| ANATASE         |           |    |           |    |           |    |           |    |           |    |         |
| GARNET          |           |    |           |    |           |    |           |    |           |    |         |
| ILMENITE        |           |    |           |    |           |    |           |    |           |    |         |
| PYROXENE        |           |    |           |    |           |    |           |    |           |    |         |
| AMPHIBOLE       |           |    |           |    |           |    |           |    |           |    |         |
| LEUCOXENE       |           | Tr |           |    |           |    |           |    |           |    |         |
| ZIRCON          |           | 2  |           |    |           |    |           |    |           |    |         |
| MICA            |           |    |           |    |           |    |           |    |           |    |         |
| APATITE         |           |    |           |    |           |    |           |    |           |    |         |
| GYPSUM          |           |    |           |    |           |    |           |    |           |    |         |
| CALCITE         |           | Tr |           |    |           |    |           |    |           |    |         |
| BARITE          |           |    |           |    |           |    |           |    |           |    |         |
| CORUNDUM        |           |    |           |    |           |    |           |    |           |    |         |
| SULPHIDE        |           |    |           |    |           |    |           |    |           |    |         |
| GOLD            |           |    |           |    |           |    |           |    |           |    |         |
| SAPPHIRE        |           | Tr |           |    |           |    |           |    |           |    |         |
| CASSITERITE     |           |    |           |    |           |    |           |    |           |    |         |
| SPINEL          |           |    |           |    |           |    |           |    |           |    |         |
| KYANITE         |           |    |           |    |           |    |           |    |           |    |         |
| ROCK FRAGMENTS  |           |    |           |    |           |    |           |    |           |    |         |

A.....ABUNDANT  
 3.....MINERAL FRAGMENTS IN ABUNDANCE OF 50% TO 90% BY VOLUME  
 2.....MINERAL FRAGMENTS IN ABUNDANCE OF 20% TO 50% BY VOLUME  
 1.....MINERAL FRAGMENTS IN ABUNDANCE OF 2% TO 20% BY VOLUME  
 Tr.....TRACE ONLY

# HEAVY MINERAL ANALYSIS SHEET

SAMPLE NUMBER S-41  
 HEAD WEIGHT 10.9 kg  
 HEAVIES WEIGHT 662.21 grams  
 TYPE OF SAMPLE Stream

E.L. 546

PROJECT NUMBER 1113  
 MAP REFERENCE SHEET Yalpara  
 COORDINATES \_\_\_\_\_

- 40

| MINERAL SPECIES | MESH SIZE |    | MESH SIZE |    | MESH SIZE |    | MESH SIZE |    | MESH SIZE |    | REMARKS                                                     |
|-----------------|-----------|----|-----------|----|-----------|----|-----------|----|-----------|----|-------------------------------------------------------------|
|                 | MAG       | NM | MAG       | NM | MAG       | NM | MAG       | NM | MAG       | NM |                                                             |
| QUARTZ          |           | 2  |           |    |           |    |           |    |           |    |                                                             |
| GOETHITE        |           |    |           |    |           |    |           |    |           |    |                                                             |
| MAGNETITE       |           |    |           |    |           |    |           |    |           |    |                                                             |
| LIMONITE        |           |    |           |    |           |    |           |    |           |    |                                                             |
| RUTILE          |           |    |           |    |           |    |           |    |           |    |                                                             |
| EPIDOTE         |           |    |           |    |           |    |           |    |           |    |                                                             |
| TOURMALINE      |           | Tr |           |    |           |    |           |    |           |    |                                                             |
| ANATASE         |           |    |           |    |           |    |           |    |           |    |                                                             |
| GARNET          |           |    |           |    |           |    |           |    |           |    |                                                             |
| ILMENITE        |           |    |           |    |           |    |           |    |           |    |                                                             |
| PYROXENE        |           |    |           |    |           |    |           |    |           |    |                                                             |
| AMPHIBOLE       |           | Tr |           |    |           |    |           |    |           |    |                                                             |
| LEUCOXENE       |           |    |           |    |           |    |           |    |           |    |                                                             |
| ZIRCON          |           | 2  |           |    |           |    |           |    |           |    |                                                             |
| MICA            |           |    |           |    |           |    |           |    |           |    | Translucent, rounded grains                                 |
| APATITE         |           |    |           |    |           |    |           |    |           |    |                                                             |
| GYP SUM         |           |    |           |    |           |    |           |    |           |    |                                                             |
| CALCITE         |           |    |           |    |           |    |           |    |           |    |                                                             |
| BARITE          |           |    |           |    |           |    |           |    |           |    |                                                             |
| CORUNDUM        |           |    |           |    |           |    |           |    |           |    |                                                             |
| SULPHIDE        |           | 2  |           |    |           |    |           |    |           |    |                                                             |
| GOLD            |           |    |           |    |           |    |           |    |           |    | 4 gr. Molybdenite. Abundant pyrite/pyrrhotite/? Arsenopyrit |
| SAPPHIRE        |           |    |           |    |           |    |           |    |           |    |                                                             |
| CASSITERITE     |           |    |           |    |           |    |           |    |           |    |                                                             |
| SPINEL          |           |    |           |    |           |    |           |    |           |    |                                                             |
| KYANITE         |           |    |           |    |           |    |           |    |           |    |                                                             |
| ROCK FRAGMENTS  |           |    |           |    |           |    |           |    |           |    |                                                             |

A.....ABUNDANT  
 3.....MINERAL FRAGMENTS IN ABUNDANCE OF 50% TO 90% BY VOLUME  
 2.....MINERAL FRAGMENTS IN ABUNDANCE OF 20% TO 50% BY VOLUME  
 1.....MINERAL FRAGMENTS IN ABUNDANCE OF 2% TO 20% BY VOLUME  
 Tr.....TRACE ONLY

# HEAVY MINERAL ANALYSIS SHEET

SAMPLE NUMBER S-42  
 HEAD WEIGHT 16.8 kg  
 HEAVIES WEIGHT 645.56 grams  
 TYPE OF SAMPLE Stream

E.L. 546

PROJECT NUMBER 1113  
 MAP REFERENCE SHEET Yalpara  
 COORDINATES \_\_\_\_\_

-40

| MINERAL SPECIES | MESH SIZE |    | MESH SIZE |    | MESH SIZE |    | MESH SIZE |    | MESH SIZE |    | REMARKS                  |
|-----------------|-----------|----|-----------|----|-----------|----|-----------|----|-----------|----|--------------------------|
|                 | MAG       | NM | MAG       | NM | MAG       | NM | MAG       | NM | MAG       | NM |                          |
| QUARTZ          |           | 2  |           |    |           |    |           |    |           |    |                          |
| GOETHITE        |           | Tr |           |    |           |    |           |    |           |    |                          |
| MAGNETITE       |           |    |           |    |           |    |           |    |           |    |                          |
| LIMONITE        |           | Tr |           |    |           |    |           |    |           |    |                          |
| RUTILE          |           | Tr |           |    |           |    |           |    |           |    |                          |
| EPIDOTE         |           | Tr |           |    |           |    |           |    |           |    |                          |
| TOURMALINE      |           | Tr |           |    |           |    |           |    |           |    | Elongate euhedra. Coarse |
| ANATASE         |           | Tr |           |    |           |    |           |    |           |    |                          |
| GARNET          |           | Tr |           |    |           |    |           |    |           |    | Blue-yellow subhedra     |
| ILMENITE        |           | Tr |           |    |           |    |           |    |           |    | Light pink almandine     |
| PYROXENE        |           |    |           |    |           |    |           |    |           |    | ? Crichtonite            |
| AMPHIBOLE       |           |    |           |    |           |    |           |    |           |    |                          |
| LEUCOXENE       |           | Tr |           |    |           |    |           |    |           |    |                          |
| ZIRCON          |           | 2  |           |    |           |    |           |    |           |    |                          |
| MICA            |           |    |           |    |           |    |           |    |           |    | Some coarse pink zircon  |
| APATITE         |           |    |           |    |           |    |           |    |           |    |                          |
| GYP SUM         |           |    |           |    |           |    |           |    |           |    |                          |
| CALCITE         |           | Tr |           |    |           |    |           |    |           |    |                          |
| BARITE          |           |    |           |    |           |    |           |    |           |    |                          |
| CORUNDUM        |           |    |           |    |           |    |           |    |           |    |                          |
| SULPHIDE        |           |    |           |    |           |    |           |    |           |    |                          |
| GOLD            |           |    |           |    |           |    |           |    |           |    |                          |
| SAPPHIRE        |           |    |           |    |           |    |           |    |           |    |                          |
| CASSITERITE     |           | Tr |           |    |           |    |           |    |           |    |                          |
| SPINEL          |           |    |           |    |           |    |           |    |           |    |                          |
| KYANITE         |           |    |           |    |           |    |           |    |           |    |                          |
| ROCK FRAGMENTS  |           |    |           |    |           |    |           |    |           |    |                          |

A.....ABUNDANT  
 3.....MINERAL FRAGMENTS IN ABUNDANCE OF 50% TO 90% BY VOLUME  
 2.....MINERAL FRAGMENTS IN ABUNDANCE OF 20% TO 50% BY VOLUME  
 1.....MINERAL FRAGMENTS IN ABUNDANCE OF 2% TO 20% BY VOLUME  
 Tr.....TRACE ONLY

# HEAVY MINERAL ANALYSIS SHEET

SAMPLE NUMBER S-13  
 HEAD WEIGHT 14.1 kg  
 HEAVIES WEIGHT 748.69 grams  
 TYPE OF SAMPLE Stream

E.L. 546

PROJECT NUMBER 1113  
 MAP REFERENCE SHEET Yalpara  
 COORDINATES \_\_\_\_\_

- 40

| MINERAL SPECIES | MESH SIZE |    | MESH SIZE |    | MESH SIZE |    | MESH SIZE |    | MESH SIZE |    | REMARKS                           |
|-----------------|-----------|----|-----------|----|-----------|----|-----------|----|-----------|----|-----------------------------------|
|                 | MAG       | NM | MAG       | NM | MAG       | NM | MAG       | NM | MAG       | NM |                                   |
| QUARTZ          |           | 2  |           |    |           |    |           |    |           |    | Abundance of angular grains.      |
| GOETHITE        |           | Tr |           |    |           |    |           |    |           |    |                                   |
| MAGNETITE       |           |    |           |    |           |    |           |    |           |    |                                   |
| LIMONITE        |           | Tr |           |    |           |    |           |    |           |    |                                   |
| RUTILE          |           | Tr |           |    |           |    |           |    |           |    |                                   |
| EPIDOTE         |           |    |           |    |           |    |           |    |           |    |                                   |
| TOURMALINE      |           |    |           |    |           |    |           |    |           |    |                                   |
| ANATASE         |           | Tr |           |    |           |    |           |    |           |    | Trace of subhedra. Yellow -> Blue |
| GARNET          |           |    |           |    |           |    |           |    |           |    |                                   |
| ILMENITE        |           |    |           |    |           |    |           |    |           |    |                                   |
| PYROXENE        |           |    |           |    |           |    |           |    |           |    |                                   |
| AMPHIBOLE       |           | Tr |           |    |           |    |           |    |           |    |                                   |
| LEUCOXENE       |           | Tr |           |    |           |    |           |    |           |    |                                   |
| ZIRCON          |           | 1  |           |    |           |    |           |    |           |    |                                   |
| MICA            |           |    |           |    |           |    |           |    |           |    |                                   |
| APATITE         |           |    |           |    |           |    |           |    |           |    |                                   |
| GYPSUM          |           |    |           |    |           |    |           |    |           |    |                                   |
| CALCITE         |           | Tr |           |    |           |    |           |    |           |    |                                   |
| BARITE          |           |    |           |    |           |    |           |    |           |    |                                   |
| CORUNDUM        |           |    |           |    |           |    |           |    |           |    |                                   |
| SULPHIDE        |           | Tr |           |    |           |    |           |    |           |    | Few grains of pyrite              |
| GOLD            |           |    |           |    |           |    |           |    |           |    |                                   |
| SAPPHIRE        |           |    |           |    |           |    |           |    |           |    |                                   |
| CASSITERITE     |           | Tr |           |    |           |    |           |    |           |    |                                   |
| SPINEL          |           |    |           |    |           |    |           |    |           |    |                                   |
| KYANITE         |           |    |           |    |           |    |           |    |           |    |                                   |
| ROCK FRAGMENTS  |           |    |           |    |           |    |           |    |           |    |                                   |

A.....ABUNDANT  
 3.....MINERAL FRAGMENTS IN ABUNDANCE OF 50% TO 90% BY VOLUME  
 2.....MINERAL FRAGMENTS IN ABUNDANCE OF 20% TO 50% BY VOLUME  
 1.....MINERAL FRAGMENTS IN ABUNDANCE OF 2% TO 20% BY VOLUME  
 Tr.....TRACE ONLY

# HEAVY MINERAL ANALYSIS SHEET

SAMPLE NUMBER S-44  
 HEAD WEIGHT 15.9 kg  
 HEAVIES WEIGHT 175.82 grams  
 TYPE OF SAMPLE Stream

E.L. 546

PROJECT NUMBER 1113  
 MAP REFERENCE SHEET Minburra  
 COORDINATES \_\_\_\_\_

| MINERAL SPECIES | -40 |    | +40 |    | +20 |    | +16 |    |     |    | REMARKS                                     |
|-----------------|-----|----|-----|----|-----|----|-----|----|-----|----|---------------------------------------------|
|                 | MAG | NM | MAG | NM | MAG | NM | MAG | NM | MAG | NM |                                             |
| QUARTZ          |     | 2  | 1   |    | 1   |    | 1   |    |     |    |                                             |
| GOETHITE        |     | Tr | 2   |    | 2   |    | 1   |    |     |    |                                             |
| MAGNETITE       |     |    |     |    |     |    |     |    |     |    |                                             |
| LIMONITE        |     | Tr | 2   |    | 2   |    | 2   |    |     |    |                                             |
| RUTILE          |     | Tr |     |    |     |    |     |    |     |    |                                             |
| EPIDOTE         |     |    |     |    |     |    |     |    |     |    |                                             |
| TOURMALINE      |     |    |     |    |     |    |     |    |     |    |                                             |
| ANATASE         |     |    |     |    |     |    |     |    |     |    |                                             |
| GARNET          |     |    |     |    |     |    |     |    |     |    |                                             |
| ILMENITE        |     |    |     |    |     |    |     |    |     |    |                                             |
| PYROXENE        |     |    |     |    |     |    |     |    |     |    |                                             |
| AMPHIBOLE       |     |    |     |    |     |    |     |    |     |    |                                             |
| LEUCOXENE       |     | Tr |     |    |     |    |     |    |     |    |                                             |
| ZIRCON          |     | 2  |     |    |     |    |     |    |     |    |                                             |
| MICA            |     |    |     |    |     |    |     |    |     |    |                                             |
| APATITE         |     |    |     |    |     |    |     |    |     |    |                                             |
| GYP SUM         |     |    |     |    |     |    |     |    |     |    |                                             |
| CALCITE         |     |    |     |    |     |    |     |    |     |    |                                             |
| BARITE          |     |    |     |    |     |    |     |    |     |    |                                             |
| CORUNDUM        |     |    |     |    |     |    |     |    |     |    |                                             |
| SULPHIDE        |     | Tr |     |    |     |    |     |    |     |    |                                             |
| GOLD            |     |    |     |    |     |    |     |    |     |    | Traces of molybdenite / pyrite / pyrrhotite |
| SAPPHIRE        |     |    |     |    |     |    |     |    |     |    |                                             |
| CASSITERITE     |     | Tr |     |    |     |    |     |    |     |    |                                             |
| SPINEL          |     |    |     |    |     |    |     |    |     |    |                                             |
| KYANITE         |     |    |     |    |     |    |     |    |     |    |                                             |
| ROCK FRAGMENTS  |     |    |     |    |     |    |     |    |     |    |                                             |

A.....ABUNDANT  
 3.....MINERAL FRAGMENTS IN ABUNDANCE OF 50% TO 90% BY VOLUME  
 2.....MINERAL FRAGMENTS IN ABUNDANCE OF 20% TO 50% BY VOLUME  
 1.....MINERAL FRAGMENTS IN ABUNDANCE OF 2% TO 20% BY VOLUME  
 Tr.....TRACE ONLY

# HEAVY MINERAL ANALYSIS SHEET

SAMPLE NUMBER S-45  
 HEAD WEIGHT 15.9 kg  
 HEAVIES WEIGHT 306.18 grams  
 TYPE OF SAMPLE Stream

E.L. 546

PROJECT NUMBER 1113  
 MAP REFERENCE SHEET Minburra  
 COORDINATES \_\_\_\_\_

-40

| MINERAL SPECIES | MESH SIZE |    | MESH SIZE |    | MESH SIZE |    | MESH SIZE |    | MESH SIZE |    | REMARKS              |
|-----------------|-----------|----|-----------|----|-----------|----|-----------|----|-----------|----|----------------------|
|                 | MAG       | NM | MAG       | NM | MAG       | NM | MAG       | NM | MAG       | NM |                      |
| QUARTZ          |           | 2  |           |    |           |    |           |    |           |    |                      |
| GOETHITE        |           | Tr |           |    |           |    |           |    |           |    |                      |
| MAGNETITE       |           |    |           |    |           |    |           |    |           |    |                      |
| LIMONITE        |           | Tr |           |    |           |    |           |    |           |    |                      |
| RUTILE          |           | Tr |           |    |           |    |           |    |           |    |                      |
| EPIDOTE         |           |    |           |    |           |    |           |    |           |    |                      |
| TOURMALINE      |           | Tr |           |    |           |    |           |    |           |    |                      |
| ANATASE         |           | Tr |           |    |           |    |           |    |           |    |                      |
| GARNET          |           |    |           |    |           |    |           |    |           |    |                      |
| ILMENITE        |           | Tr |           |    |           |    |           |    |           |    |                      |
| PYROXENE        |           |    |           |    |           |    |           |    |           |    | Trace of Crichtonite |
| AMPHIBOLE       |           |    |           |    |           |    |           |    |           |    |                      |
| LEUCOXENE       |           | Tr |           |    |           |    |           |    |           |    |                      |
| ZIRCON          |           | 2  |           |    |           |    |           |    |           |    |                      |
| MICA            |           |    |           |    |           |    |           |    |           |    |                      |
| APATITE         |           |    |           |    |           |    |           |    |           |    |                      |
| GYPSUM          |           |    |           |    |           |    |           |    |           |    |                      |
| CALCITE         |           | Tr |           |    |           |    |           |    |           |    |                      |
| BARITE          |           |    |           |    |           |    |           |    |           |    |                      |
| CORUNDUM        |           |    |           |    |           |    |           |    |           |    |                      |
| SULPHIDE        |           | Tr |           |    |           |    |           |    |           |    | Pyrite               |
| GOLD            |           |    |           |    |           |    |           |    |           |    |                      |
| SAPPHIRE        |           |    |           |    |           |    |           |    |           |    |                      |
| CASSITERITE     |           | Tr |           |    |           |    |           |    |           |    |                      |
| SPINEL          |           |    |           |    |           |    |           |    |           |    |                      |
| KYANITE         |           |    |           |    |           |    |           |    |           |    |                      |
| ROCK FRAGMENTS  |           |    |           |    |           |    |           |    |           |    |                      |

A.....ABUNDANT  
 3.....MINERAL FRAGMENTS IN ABUNDANCE OF 50% TO 90% BY VOLUME  
 2.....MINERAL FRAGMENTS IN ABUNDANCE OF 20% TO 50% BY VOLUME  
 1.....MINERAL FRAGMENTS IN ABUNDANCE OF 2% TO 20% BY VOLUME  
 Tr.....TRACE ONLY

# HEAVY MINERAL ANALYSIS SHEET

SAMPLE NUMBER S-46  
 HEAD WEIGHT 15.9 kg  
 HEAVIES WEIGHT 870.9 grams  
 TYPE OF SAMPLE Stream

E.L. 546

PROJECT NUMBER 1113  
 MAP REFERENCE SHEET Minburra  
 COORDINATES \_\_\_\_\_

| MINERAL SPECIES | MESH SIZE |    | MESH SIZE |    | MESH SIZE |    | MESH SIZE |    | MESH SIZE |    | REMARKS                    |
|-----------------|-----------|----|-----------|----|-----------|----|-----------|----|-----------|----|----------------------------|
|                 | MAG       | NM | MAG       | NM | MAG       | NM | MAG       | NM | MAG       | NM |                            |
| QUARTZ          |           | 2  |           |    |           |    |           |    |           |    | Abundant angular grains    |
| GOETHITE        |           |    |           |    |           |    |           |    |           |    |                            |
| MAGNETITE       |           |    |           |    |           |    |           |    |           |    |                            |
| LIMONITE        |           |    |           |    |           |    |           |    |           |    |                            |
| RUTILE          |           |    |           |    |           |    |           |    |           |    |                            |
| EPIDOTE         |           |    |           |    |           |    |           |    |           |    |                            |
| TOURMALINE      |           |    |           |    |           |    |           |    |           |    |                            |
| ANATASE         |           |    |           |    |           |    |           |    |           |    |                            |
| GARNET          |           |    |           |    |           |    |           |    |           |    |                            |
| ILMENITE        |           | Tr |           |    |           |    |           |    |           |    | Few grains crichtonite     |
| PYROXENE        |           |    |           |    |           |    |           |    |           |    |                            |
| AMPHIBOLE       |           |    |           |    |           |    |           |    |           |    |                            |
| LEUCOXENE       |           |    |           |    |           |    |           |    |           |    |                            |
| ZIRCON          |           | Tr |           |    |           |    |           |    |           |    |                            |
| MICA            |           |    |           |    |           |    |           |    |           |    |                            |
| APATITE         |           |    |           |    |           |    |           |    |           |    |                            |
| GYPSUM          |           |    |           |    |           |    |           |    |           |    |                            |
| CALCITE         |           | Tr |           |    |           |    |           |    |           |    |                            |
| BARITE          |           |    |           |    |           |    |           |    |           |    |                            |
| CORUNDUM        |           | Tr |           |    |           |    |           |    |           |    |                            |
| SULPHIDE        |           |    |           |    |           |    |           |    |           |    |                            |
| GOLD            |           | Tr |           |    |           |    |           |    |           |    | Small, fine. ?Chalcopyrite |
| SAPPHIRE        |           |    |           |    |           |    |           |    |           |    |                            |
| CASSITERITE     |           |    |           |    |           |    |           |    |           |    |                            |
| SPINEL          |           |    |           |    |           |    |           |    |           |    |                            |
| KYANITE         |           |    |           |    |           |    |           |    |           |    |                            |
| ROCK FRAGMENTS  |           |    |           |    |           |    |           |    |           |    |                            |

A.....ABUNDANT  
 3.....MINERAL FRAGMENTS IN ABUNDANCE OF 50% TO 90% BY VOLUME  
 2.....MINERAL FRAGMENTS IN ABUNDANCE OF 20% TO 50% BY VOLUME  
 1.....MINERAL FRAGMENTS IN ABUNDANCE OF 2% TO 20% BY VOLUME  
 Tr.....TRACE ONLY

# HEAVY MINERAL ANALYSIS SHEET

SAMPLE NUMBER 5-47  
 HEAD WEIGHT 14.1 kg  
 HEAVIES WEIGHT 297.15  
 TYPE OF SAMPLE Stream

E. L. 546

PROJECT NUMBER 1113  
 MAP REFERENCE SHEET Yalpara  
 COORDINATES \_\_\_\_\_

-40 +20 + 16

| MINERAL SPECIES | MESH SIZE |    | MESH SIZE |    | MESH SIZE |    | MESH SIZE |    | MESH SIZE |    | REMARKS                                     |
|-----------------|-----------|----|-----------|----|-----------|----|-----------|----|-----------|----|---------------------------------------------|
|                 | MAG       | NM | MAG       | NM | MAG       | NM | MAG       | NM | MAG       | NM |                                             |
| QUARTZ          |           | 2  | Tr        |    | Tr        |    |           |    |           |    |                                             |
| GOETHITE        |           | Tr | 2         |    | 2         |    |           |    |           |    |                                             |
| MAGNETITE       |           |    | 2         |    | 2         |    |           |    |           |    |                                             |
| LIMONITE        |           | Tr | 2         |    | 2         |    |           |    |           |    |                                             |
| RUTILE          |           | Tr |           |    |           |    |           |    |           |    |                                             |
| EPIDOTE         |           |    |           |    |           |    |           |    |           |    | Fine needles . Few grains of coarse euhedra |
| TOURMALINE      |           | Tr |           |    |           |    |           |    |           |    | Euhedra translucent.                        |
| ANATASE         |           |    |           |    |           |    |           |    |           |    |                                             |
| GARNET          |           |    |           |    |           |    |           |    |           |    |                                             |
| ILMENITE        |           |    |           |    |           |    |           |    |           |    |                                             |
| PYROXENE        |           |    |           |    |           |    |           |    |           |    |                                             |
| AMPHIBOLE       |           | Tr |           |    |           |    |           |    |           |    |                                             |
| LEUCOXENE       |           | Tr |           |    |           |    |           |    |           |    |                                             |
| ZIRCON          |           | 2  |           |    |           |    |           |    |           |    |                                             |
| MICA            |           |    |           |    |           |    |           |    |           |    |                                             |
| APATITE         |           |    |           |    |           |    |           |    |           |    |                                             |
| GYP SUM         |           |    |           |    |           |    |           |    |           |    |                                             |
| CALCITE         |           | Tr |           |    |           |    |           |    |           |    |                                             |
| BARITE          |           | Tr |           |    |           |    |           |    |           |    |                                             |
| CORUNDUM        |           |    |           |    |           |    |           |    |           |    |                                             |
| SULPHIDE        |           | Tr |           |    |           |    |           |    |           |    |                                             |
| GOLD            |           |    |           |    |           |    |           |    |           |    |                                             |
| SAPPHIRE        |           |    |           |    |           |    |           |    |           |    |                                             |
| CASSITERITE     |           | Tr |           |    |           |    |           |    |           |    |                                             |
| SPINEL          |           |    |           |    |           |    |           |    |           |    |                                             |
| KYANITE         |           |    |           |    |           |    |           |    |           |    |                                             |
| ROCK FRAGMENTS  |           |    |           |    |           |    |           |    |           |    |                                             |

A.....ABUNDANT  
 3.....MINERAL FRAGMENTS IN ABUNDANCE OF 50% TO 90% BY VOLUME  
 2.....MINERAL FRAGMENTS IN ABUNDANCE OF 20% TO 50% BY VOLUME  
 1.....MINERAL FRAGMENTS IN ABUNDANCE OF 2% TO 20% BY VOLUME  
 Tr.....TRACE ONLY

0121

# HEAVY MINERAL ANALYSIS SHEET

SAMPLE NUMBER F-48  
 HEAD WEIGHT 11.8 kg  
 HEAVIES WEIGHT 40.42 grams  
 TYPE OF SAMPLE Stream

E.L. 546

PROJECT NUMBER 1113  
 MAP REFERENCE SHEET Carrieton  
 COORDINATES \_\_\_\_\_

| MINERAL SPECIES | MESH SIZE |    | MESH SIZE |    | MESH SIZE |    | MESH SIZE |    | MESH SIZE |    | REMARKS      |
|-----------------|-----------|----|-----------|----|-----------|----|-----------|----|-----------|----|--------------|
|                 | MAG       | NM | MAG       | NM | MAG       | NM | MAG       | NM | MAG       | NM |              |
| QUARTZ          |           | 2  |           |    |           |    |           |    |           |    |              |
| GOETHITE        |           | Tr |           |    |           |    |           |    |           |    |              |
| MAGNETITE       |           |    |           |    |           |    |           |    |           |    |              |
| LIMONITE        |           | Tr |           |    |           |    |           |    |           |    |              |
| RUTILE          |           | Tr |           |    |           |    |           |    |           |    |              |
| EPIDOTE         |           | Tr |           |    |           |    |           |    |           |    |              |
| TOURMALINE      |           | Tr |           |    |           |    |           |    |           |    | 1 grain only |
| ANATASE         |           |    |           |    |           |    |           |    |           |    |              |
| GARNET          |           |    |           |    |           |    |           |    |           |    |              |
| ILMENITE        |           |    |           |    |           |    |           |    |           |    |              |
| PYROXENE        |           |    |           |    |           |    |           |    |           |    |              |
| AMPHIBOLE       |           |    |           |    |           |    |           |    |           |    |              |
| LEUCOXENE       |           | Tr |           |    |           |    |           |    |           |    |              |
| ZIRCON          |           | 2  |           |    |           |    |           |    |           |    |              |
| MICA            |           |    |           |    |           |    |           |    |           |    |              |
| APATITE         |           |    |           |    |           |    |           |    |           |    |              |
| GYPSUM          |           |    |           |    |           |    |           |    |           |    |              |
| CALCITE         |           | Tr |           |    |           |    |           |    |           |    |              |
| BARITE          |           | Tr |           |    |           |    |           |    |           |    |              |
| CORUNDUM        |           |    |           |    |           |    |           |    |           |    |              |
| SULPHIDE        |           | Tr |           |    |           |    |           |    |           |    |              |
| GOLD            |           |    |           |    |           |    |           |    |           |    |              |
| SAPPHIRE        |           |    |           |    |           |    |           |    |           |    |              |
| CASSITERITE     |           | Tr |           |    |           |    |           |    |           |    |              |
| SPINEL          |           |    |           |    |           |    |           |    |           |    |              |
| KYANITE         |           |    |           |    |           |    |           |    |           |    |              |
| ROCK FRAGMENTS  |           | Tr |           |    |           |    |           |    |           |    |              |

A.....ABUNDANT  
 3.....MINERAL FRAGMENTS IN ABUNDANCE OF 50% TO 90% BY VOLUME  
 2.....MINERAL FRAGMENTS IN ABUNDANCE OF 20% TO 50% BY VOLUME  
 1.....MINERAL FRAGMENTS IN ABUNDANCE OF 2% TO 20% BY VOLUME  
 Tr.....TRACE ONLY

0122

## HEAVY MINERAL ANALYSIS SHEET

SAMPLE NUMBER S-49  
 HEAD WEIGHT 10.5 kg  
 HEAVIES WEIGHT 35.96 grams  
 TYPE OF SAMPLE Stream

E. L. 546

PROJECT NUMBER 1113  
 MAP REFERENCE SHEET Carleton  
 COORDINATES \_\_\_\_\_

| MINERAL SPECIES | -40 |    | +40 |    | +20 |    | +16 |    |     |    | REMARKS                                     |
|-----------------|-----|----|-----|----|-----|----|-----|----|-----|----|---------------------------------------------|
|                 | MAG | NM | MAG | NM | MAG | NM | MAG | NM | MAG | NM |                                             |
| QUARTZ          |     | Tr | Tr  |    | Tr  |    | Tr  |    |     |    |                                             |
| GOETHITE        |     |    | 2   |    | 2   |    | 2   |    |     |    | Abundance of Pseudomorphs                   |
| MAGNETITE       |     |    | 2   |    | 2   |    | 2   |    |     |    |                                             |
| LIMONITE        |     | Tr |     |    | 2   |    |     |    |     |    | 1 grain only                                |
| RUTILE          |     |    |     |    |     |    |     |    |     |    |                                             |
| EPIDOTE         |     |    | 2   |    | 2   |    |     |    |     |    |                                             |
| TOURMALINE      |     |    |     |    |     |    |     |    |     |    |                                             |
| ANATASE         |     |    |     |    |     |    |     |    |     |    |                                             |
| GARNET          |     |    | Tr  |    |     |    |     |    |     |    | Trace of almandine and euhedral andradite   |
| ILMENITE        |     |    |     |    |     |    |     |    |     |    |                                             |
| PYROXENE        |     |    |     |    |     |    |     |    |     |    |                                             |
| AMPHIBOLE       |     |    |     |    |     |    |     |    |     |    |                                             |
| LEUCOXENE       |     | Tr |     |    |     |    |     |    |     |    |                                             |
| ZIRCON          |     | Tr |     |    |     |    |     |    |     |    | Rounded translucent anhedral. 2 pink grains |
| MICA            |     |    |     |    |     |    |     |    |     |    |                                             |
| APATITE         |     |    |     |    |     |    |     |    |     |    |                                             |
| GYPSUM          |     |    |     |    |     |    |     |    |     |    |                                             |
| CALCITE         |     |    |     |    |     |    |     |    |     |    |                                             |
| BARITE          |     |    |     |    |     |    |     |    |     |    |                                             |
| CORUNDUM        |     |    |     |    |     |    |     |    |     |    |                                             |
| SULPHIDE        |     | Tr |     |    |     |    |     |    |     |    | 5 grains. ? Pyrite                          |
| GOLD            |     |    |     |    |     |    |     |    |     |    |                                             |
| SAPPHIRE        |     |    |     |    |     |    |     |    |     |    |                                             |
| CASSITERITE     |     | Tr |     |    |     |    |     |    |     |    | 1 grain ? Chromite.                         |
| SPINEL          |     |    |     |    |     |    |     |    |     |    |                                             |
| KYANITE         |     |    |     |    |     |    |     |    |     |    |                                             |
| ROCK FRAGMENTS  |     |    |     |    |     |    |     |    |     |    |                                             |

A.....ABUNDANT

3.....MINERAL FRAGMENTS IN ABUNDANCE OF 50% TO 90% BY VOLUME

2.....MINERAL FRAGMENTS IN ABUNDANCE OF 20% TO 50% BY VOLUME

1.....MINERAL FRAGMENTS IN ABUNDANCE OF 2% TO 20% BY VOLUME

Tr.....TRACE ONLY

## HEAVY MINERAL ANALYSIS SHEET

SAMPLE NUMBER S-50HEAD WEIGHT 12.3 kgHEAVIES WEIGHT 30.16 gramsTYPE OF SAMPLE Stream

E.L. 546

PROJECT NUMBER 1113MAP REFERENCE SHEET Camden

COORDINATES \_\_\_\_\_

| MINERAL SPECIES | -40 |    | +40 |    | +20 |    | +16 |    | MESH SIZE |    | REMARKS                  |
|-----------------|-----|----|-----|----|-----|----|-----|----|-----------|----|--------------------------|
|                 | MAG | NM | MAG | NM | MAG | NM | MAG | NM | MAG       | NM |                          |
| QUARTZ          |     | 2  | Tr  |    | Tr  |    | Tr  |    |           |    |                          |
| GOETHITE        |     | Tr | 2   |    | 2   |    | 2   |    |           |    |                          |
| MAGNETITE       |     |    | 2   |    | 2   |    | 2   |    |           |    |                          |
| LIMONITE        |     | Tr | 2   |    | 2   |    | 2   |    |           |    |                          |
| RUTILE          |     | Tr |     |    |     |    |     |    |           |    |                          |
| EPIDOTE         |     |    |     |    |     |    |     |    |           |    |                          |
| TOURMALINE      |     | Tr |     |    |     |    |     |    |           |    |                          |
| ANATASE         |     | Tr |     |    |     |    |     |    |           |    |                          |
| GARNET          |     | Tr |     |    |     |    | Tr  |    |           |    |                          |
| ILMENITE        |     |    |     |    |     |    |     |    |           |    | Pink almandine R1 > 1.78 |
| PYROXENE        |     |    |     |    |     |    |     |    |           |    |                          |
| AMPHIBOLE       |     |    |     |    |     |    |     |    |           |    |                          |
| LEUCOXENE       |     | Tr |     |    |     |    |     |    |           |    |                          |
| ZIRCON          |     | 2  |     |    |     |    |     |    |           |    |                          |
| MICA            |     |    |     |    |     |    |     |    |           |    |                          |
| APATITE         |     |    |     |    |     |    |     |    |           |    |                          |
| GYPSUM          |     |    |     |    |     |    |     |    |           |    |                          |
| CALCITE         |     | Tr |     |    |     |    |     |    |           |    |                          |
| BARITE          |     | Tr |     |    |     |    |     |    |           |    |                          |
| CORUNDUM        |     |    |     |    |     |    |     |    |           |    |                          |
| SULPHIDE        |     | Tr |     |    |     |    |     |    |           |    |                          |
| GOLD            |     |    |     |    |     |    |     |    |           |    | Pyrite                   |
| SAPPHIRE        |     |    |     |    |     |    |     |    |           |    |                          |
| CASSITERITE     |     | Tr |     |    |     |    |     |    |           |    |                          |
| SPINEL          |     |    |     |    |     |    |     |    |           |    |                          |
| KYANITE         |     |    |     |    |     |    |     |    |           |    |                          |
| ROCK FRAGMENTS  |     |    |     |    |     |    |     |    |           |    |                          |

A.....ABUNDANT

3.....MINERAL FRAGMENTS IN ABUNDANCE OF 50% TO 90% BY VOLUME

2.....MINERAL FRAGMENTS IN ABUNDANCE OF 20% TO 50% BY VOLUME

1.....MINERAL FRAGMENTS IN ABUNDANCE OF 2% TO 20% BY VOLUME

Tr.....TRACE ONLY

0124

## HEAVY MINERAL ANALYSIS SHEET

SAMPLE NUMBER S-265  
 HEAD WEIGHT ~ 20 kg  
 HEAVIES WEIGHT \_\_\_\_\_  
 TYPE OF SAMPLE Stream

E.L. 546

PROJECT NUMBER 1113  
 MAP REFERENCE SHEET Minburra  
 COORDINATES \_\_\_\_\_

| MINERAL SPECIES | -40 |    | +40 |    | +20 |    |     |    |     |    | REMARKS              |
|-----------------|-----|----|-----|----|-----|----|-----|----|-----|----|----------------------|
|                 | MAG | NM | MAG | NM | MAG | NM | MAG | NM | MAG | NM |                      |
| QUARTZ          |     | Tr |     | Tr |     | Tr |     |    |     |    |                      |
| GOETHITE        | 1   |    | 1   |    | 2   |    |     |    |     |    |                      |
| MAGNETITE       |     |    |     |    |     |    |     |    |     |    |                      |
| LIMONITE        | 2   |    | 2   |    | 2   |    |     |    |     |    |                      |
| RUTILE          |     |    |     |    |     |    |     |    |     |    |                      |
| EPIDOTE         |     |    |     |    |     |    |     |    |     |    |                      |
| TOURMALINE      |     |    |     |    |     |    |     |    |     |    |                      |
| ANATASE         |     |    |     |    |     |    |     |    |     |    |                      |
| GARNET          |     |    | Tr  |    |     |    |     |    |     |    |                      |
| ILMENITE        |     |    |     |    |     |    |     |    |     |    | 5gr. pink almandine. |
| PYROXENE        |     |    |     |    |     |    |     |    |     |    |                      |
| AMPHIBOLE       |     |    |     |    |     |    |     |    |     |    |                      |
| LEUCOXENE       |     |    |     |    |     |    |     |    |     |    |                      |
| ZIRCON          |     |    |     |    |     |    |     |    |     |    |                      |
| MICA            |     |    |     |    |     |    |     |    |     |    |                      |
| APATITE         |     |    |     |    |     |    |     |    |     |    |                      |
| GYP SUM         |     |    |     |    |     |    |     |    |     |    |                      |
| CALCITE         |     | Tr |     | Tr |     | Tr |     |    |     |    |                      |
| BARITE          |     |    |     | Tr |     |    |     |    |     |    |                      |
| CORUNDUM        |     |    |     |    |     |    |     |    |     |    |                      |
| SULPHIDE        |     |    |     |    |     |    |     |    |     |    |                      |
| GOLD            |     |    |     |    |     |    |     |    |     |    |                      |
| SAPPHIRE        |     |    |     |    |     |    |     |    |     |    |                      |
| CASSITERITE     |     |    |     |    |     |    |     |    |     |    |                      |
| SPINEL          |     |    |     |    |     |    |     |    |     |    |                      |
| KYANITE         |     |    |     |    |     |    |     |    |     |    |                      |
| ROCK FRAGMENTS  |     |    |     |    |     |    |     |    |     |    |                      |

A.....ABUNDANT  
 3.....MINERAL FRAGMENTS IN ABUNDANCE OF 50% TO 90% BY VOLUME  
 2.....MINERAL FRAGMENTS IN ABUNDANCE OF 20% TO 50% BY VOLUME  
 1.....MINERAL FRAGMENTS IN ABUNDANCE OF 2% TO 20% BY VOLUME  
 Tr.....TRACE ONLY

# HEAVY MINERAL ANALYSIS SHEET

SAMPLE NUMBER S-269  
 HEAD WEIGHT ≈20kg  
 HEAVIES WEIGHT \_\_\_\_\_  
 TYPE OF SAMPLE Stream

E.L. 546

PROJECT NUMBER 1113  
 MAP REFERENCE SHEET Minburra  
 COORDINATES \_\_\_\_\_

-20 +40 +20

| MINERAL SPECIES | MESH SIZE |    | MESH SIZE |    | MESH SIZE |    | MESH SIZE |    | MESH SIZE |    | REMARKS               |
|-----------------|-----------|----|-----------|----|-----------|----|-----------|----|-----------|----|-----------------------|
|                 | MAG       | NM | MAG       | NM | MAG       | NM | MAG       | NM | MAG       | NM |                       |
| QUARTZ          |           |    |           | Tr |           | Tr |           |    |           |    |                       |
| GOETHITE        | 2         |    | 2         |    | 2         |    |           |    |           |    |                       |
| MAGNETITE       |           |    |           |    |           |    |           |    |           |    |                       |
| LIMONITE        | 2         |    | 2         |    | 2         |    |           |    |           |    |                       |
| RUTILE          |           | Tr |           |    |           |    |           |    |           |    |                       |
| EPIDOTE         |           |    |           | Tr |           | Tr |           |    |           |    | lgr. Red translucent. |
| TOURMALINE      |           |    |           |    |           |    |           |    |           |    |                       |
| ANATASE         |           |    |           |    |           |    |           |    |           |    |                       |
| GARNET          |           |    |           |    |           |    |           |    |           |    |                       |
| ILMENITE        |           |    |           |    |           |    |           |    |           |    |                       |
| PYROXENE        |           |    |           |    |           |    |           |    |           |    |                       |
| AMPHIBOLE       |           |    |           |    |           |    |           |    |           |    |                       |
| LEUCOXENE       |           |    |           |    |           |    |           |    |           |    |                       |
| ZIRCON          |           | Tr |           |    |           |    |           |    |           |    |                       |
| MICA            |           |    |           |    |           |    |           |    |           |    | lgr. colourless.      |
| APATITE         |           |    |           |    |           |    |           |    |           |    |                       |
| GYP SUM         |           |    |           |    |           |    |           |    |           |    |                       |
| CALCITE         |           | Tr |           | Tr |           | Tr |           |    |           |    |                       |
| BARITE          |           |    |           |    |           |    |           |    |           |    |                       |
| CORUNDUM        |           |    |           |    |           |    |           |    |           |    |                       |
| SULPHIDE        |           |    |           |    |           |    |           |    |           |    |                       |
| GOLD            |           |    |           |    |           |    |           |    |           |    |                       |
| SAPPHIRE        |           |    |           |    |           |    |           |    |           |    |                       |
| CASSITERITE     |           |    |           |    |           |    |           |    |           |    |                       |
| SPINEL          |           |    |           |    |           |    |           |    |           |    |                       |
| KYANITE         |           |    |           |    |           |    |           |    |           |    |                       |
| ROCK FRAGMENTS  |           | 2  |           | 2  |           | 2  |           |    |           |    |                       |

A.....ABUNDANT  
 3.....MINERAL FRAGMENTS IN ABUNDANCE OF 50% TO 90% BY VOLUME  
 2.....MINERAL FRAGMENTS IN ABUNDANCE OF 20% TO 50% BY VOLUME  
 1.....MINERAL FRAGMENTS IN ABUNDANCE OF 2% TO 20% BY VOLUME  
 Tr.....TRACE ONLY

0126

# HEAVY MINERAL ANALYSIS SHEET

SAMPLE NUMBER 5-272  
 HEAD WEIGHT ≈20kg  
 HEAVIES WEIGHT \_\_\_\_\_  
 TYPE OF SAMPLE Stream

E.L. 546

PROJECT NUMBER 1113  
 MAP REFERENCE SHEET Minburra  
 COORDINATES \_\_\_\_\_

| MINERAL SPECIES | -40 |    | +40 |    | +20 |    |     |    |     |    | REMARKS          |
|-----------------|-----|----|-----|----|-----|----|-----|----|-----|----|------------------|
|                 | MAG | NM | MAG | NM | MAG | NM | MAG | NM | MAG | NM |                  |
| QUARTZ          |     | Tr |     | Tr |     | Tr |     |    |     |    |                  |
| GOETHITE        | 2   |    | 2   |    | 2   |    |     |    |     |    |                  |
| MAGNETITE       |     |    |     |    |     |    |     |    |     |    |                  |
| LIMONITE        | 2   |    | 2   |    | 2   |    |     |    |     |    |                  |
| RUTILE          |     |    |     |    |     |    |     |    |     |    |                  |
| EPIDOTE         |     |    |     | Tr |     | Tr |     |    |     |    |                  |
| TOURMALINE      |     |    |     |    |     |    |     |    |     |    |                  |
| ANATASE         |     |    |     |    |     |    |     |    |     |    |                  |
| GARNET          |     |    |     |    |     |    |     |    |     |    |                  |
| ILMENITE        |     |    |     |    |     |    |     |    |     |    |                  |
| PYROXENE        |     |    |     |    |     |    |     |    |     |    |                  |
| AMPHIBOLE       |     |    |     | Tr |     |    |     |    |     |    |                  |
| LEUCOXENE       |     |    |     |    |     |    |     |    |     |    | 1 gr. Red-brown. |
| ZIRCON          |     |    |     |    |     |    |     |    |     |    |                  |
| MICA            |     |    |     |    |     |    |     |    |     |    |                  |
| APATITE         |     |    |     |    |     |    |     |    |     |    |                  |
| GYPSUM          |     |    |     |    |     |    |     |    |     |    |                  |
| CALCITE         |     | Tr |     | Tr |     |    |     |    |     |    |                  |
| BARITE          |     |    |     |    |     |    |     |    |     |    |                  |
| CORUNDUM        |     |    |     |    |     |    |     |    |     |    |                  |
| SULPHIDE        |     |    |     |    |     |    |     |    |     |    |                  |
| GOLD            |     |    |     |    |     |    |     |    |     |    |                  |
| SAPPHIRE        |     |    |     |    |     |    |     |    |     |    |                  |
| CASSITERITE     |     |    |     |    |     |    |     |    |     |    |                  |
| SPINEL          |     |    |     |    |     |    |     |    |     |    |                  |
| KYANITE         |     |    |     |    |     |    |     |    |     |    |                  |
| ROCK FRAGMENTS  |     | Tr |     | 1  |     | 2  |     |    |     |    |                  |

A.....ABUNDANT  
 3.....MINERAL FRAGMENTS IN ABUNDANCE OF 50% TO 90% BY VOLUME  
 2.....MINERAL FRAGMENTS IN ABUNDANCE OF 20% TO 50% BY VOLUME  
 1.....MINERAL FRAGMENTS IN ABUNDANCE OF 2% TO 20% BY VOLUME  
 Tr.....TRACE ONLY

# HEAVY MINERAL ANALYSIS SHEET

SAMPLE NUMBER G-304  
 HEAD WEIGHT ≈ 20 kg  
 HEAVIES WEIGHT \_\_\_\_\_  
 TYPE OF SAMPLE Stream

E.L. 546

PROJECT NUMBER 1113  
 MAP REFERENCE SHEET Carleton  
 COORDINATES \_\_\_\_\_

-40 +40 +20

| MINERAL SPECIES | MESH SIZE |    | MESH SIZE |    | MESH SIZE |    | MESH SIZE |    | MESH SIZE |    | REMARKS |
|-----------------|-----------|----|-----------|----|-----------|----|-----------|----|-----------|----|---------|
|                 | MAG       | NM | MAG       | NM | MAG       | NM | MAG       | NM | MAG       | NM |         |
| QUARTZ          |           | Tr |           | Tr |           |    |           |    |           |    |         |
| GOETHITE        | 2         |    | 2         |    | 1         |    |           |    |           |    |         |
| MAGNETITE       |           |    |           |    |           |    |           |    |           |    |         |
| LIMONITE        | 2         |    | 2         |    | 1         |    |           |    |           |    |         |
| RUTILE          |           |    |           |    |           |    |           |    |           |    |         |
| EPIDOTE         |           |    |           |    |           |    |           |    |           |    |         |
| TOURMALINE      |           |    |           |    |           |    |           |    |           |    |         |
| ANATASE         |           |    |           |    |           |    |           |    |           |    |         |
| GARNET          |           |    |           |    |           |    |           |    |           |    |         |
| ILMENITE        |           |    |           |    |           |    |           |    |           |    |         |
| PYROXENE        |           |    |           |    |           |    |           |    |           |    |         |
| AMPHIBOLE       |           |    |           |    |           |    |           |    |           |    |         |
| LEUCOXENE       |           |    |           |    |           |    |           |    |           |    |         |
| ZIRCON          |           |    |           |    |           |    |           |    |           |    |         |
| MICA            |           |    |           |    |           |    |           |    |           |    |         |
| APATITE         |           |    |           |    |           |    |           |    |           |    |         |
| GYPSUM          |           |    |           |    |           |    |           |    |           |    |         |
| CALCITE         |           | Tr |           | Tr |           | Tr |           |    |           |    |         |
| BARITE          |           |    |           |    |           |    |           |    |           |    |         |
| CORUNDUM        |           |    |           |    |           |    |           |    |           |    |         |
| SULPHIDE        |           |    |           |    |           |    |           |    |           |    |         |
| GOLD            |           |    |           |    |           |    |           |    |           |    |         |
| SAPPHIRE        |           |    |           |    |           |    |           |    |           |    |         |
| CASSITERITE     |           |    |           |    |           |    |           |    |           |    |         |
| SPINEL          |           |    |           |    |           |    |           |    |           |    |         |
| KYANITE         |           |    |           |    |           |    |           |    |           |    |         |
| ROCK FRAGMENTS  |           | 2  |           | 2  |           | 3  |           |    |           |    |         |

A.....ABUNDANT  
 3.....MINERAL FRAGMENTS IN ABUNDANCE OF 50% TO 90% BY VOLUME  
 2.....MINERAL FRAGMENTS IN ABUNDANCE OF 20% TO 50% BY VOLUME  
 1.....MINERAL FRAGMENTS IN ABUNDANCE OF 2% TO 20% BY VOLUME  
 Tr.....TRACE ONLY

# HEAVY MINERAL ANALYSIS SHEET

SAMPLE NUMBER 5-306  
 HEAD WEIGHT ≈20kg  
 HEAVIES WEIGHT \_\_\_\_\_  
 TYPE OF SAMPLE Stream

E.L. 546

PROJECT NUMBER 1113  
 MAP REFERENCE SHEET Minburra  
 COORDINATES \_\_\_\_\_

-40 +40 +20

| MINERAL SPECIES | MESH SIZE |    | MESH SIZE |    | MESH SIZE |    | MESH SIZE |    | MESH SIZE |    | REMARKS                         |
|-----------------|-----------|----|-----------|----|-----------|----|-----------|----|-----------|----|---------------------------------|
|                 | MAG       | NM | MAG       | NM | MAG       | NM | MAG       | NM | MAG       | NM |                                 |
| QUARTZ          |           | 1  |           | 1  |           | Tr |           |    |           |    |                                 |
| GOETHITE        | 1         |    | 1         |    | 2         |    |           |    |           |    |                                 |
| MAGNETITE       |           |    |           |    |           |    |           |    |           |    |                                 |
| LIMONITE        | 2         |    | 2         |    | 3         |    |           |    |           |    |                                 |
| RUTILE          |           | Tr |           |    |           |    |           |    |           |    |                                 |
| EPIDOTE         |           |    |           | Tr |           | Tr |           |    |           |    | 1 gram only                     |
| TOURMALINE      |           |    |           |    |           |    |           |    |           |    |                                 |
| ANATASE         |           |    |           |    |           |    |           |    |           |    |                                 |
| GARNET          | Tr        |    | Tr        |    |           |    |           |    |           |    |                                 |
| ILMENITE        |           |    |           |    |           |    |           |    |           |    | 4 grains almandine 2 andradite. |
| PYROXENE        |           |    |           |    |           |    |           |    |           |    |                                 |
| AMPHIBOLE       |           |    |           |    |           |    |           |    |           |    |                                 |
| LEUCOXENE       |           |    |           |    |           |    |           |    |           |    |                                 |
| ZIRCON          |           |    |           |    |           |    |           |    |           |    |                                 |
| MICA            |           |    |           |    |           |    |           |    |           |    |                                 |
| APATITE         |           |    |           |    |           |    |           |    |           |    |                                 |
| GYP SUM         |           |    |           |    |           |    |           |    |           |    |                                 |
| CALCITE         |           | Tr |           | Tr |           | Tr |           |    |           |    |                                 |
| BARITE          |           |    |           |    |           |    |           |    |           |    |                                 |
| CORUNDUM        |           |    |           |    |           |    |           |    |           |    |                                 |
| SULPHIDE        |           |    |           |    |           |    |           |    |           |    |                                 |
| GOLD            |           |    |           |    |           |    |           |    |           |    |                                 |
| SAPPHIRE        |           |    |           |    |           |    |           |    |           |    |                                 |
| CASSITERITE     |           |    |           |    |           |    |           |    |           |    |                                 |
| SPINEL          |           |    |           |    |           |    |           |    |           |    |                                 |
| KYANITE         |           |    |           |    |           |    |           |    |           |    |                                 |
| ROCK FRAGMENTS  |           | 1  |           | 1  |           | 1  |           |    |           |    |                                 |

A.....ABUNDANT  
 3.....MINERAL FRAGMENTS IN ABUNDANCE OF 50% TO 90% BY VOLUME  
 2.....MINERAL FRAGMENTS IN ABUNDANCE OF 20% TO 50% BY VOLUME  
 1.....MINERAL FRAGMENTS IN ABUNDANCE OF 2% TO 20% BY VOLUME  
 Tr.....TRACE ONLY

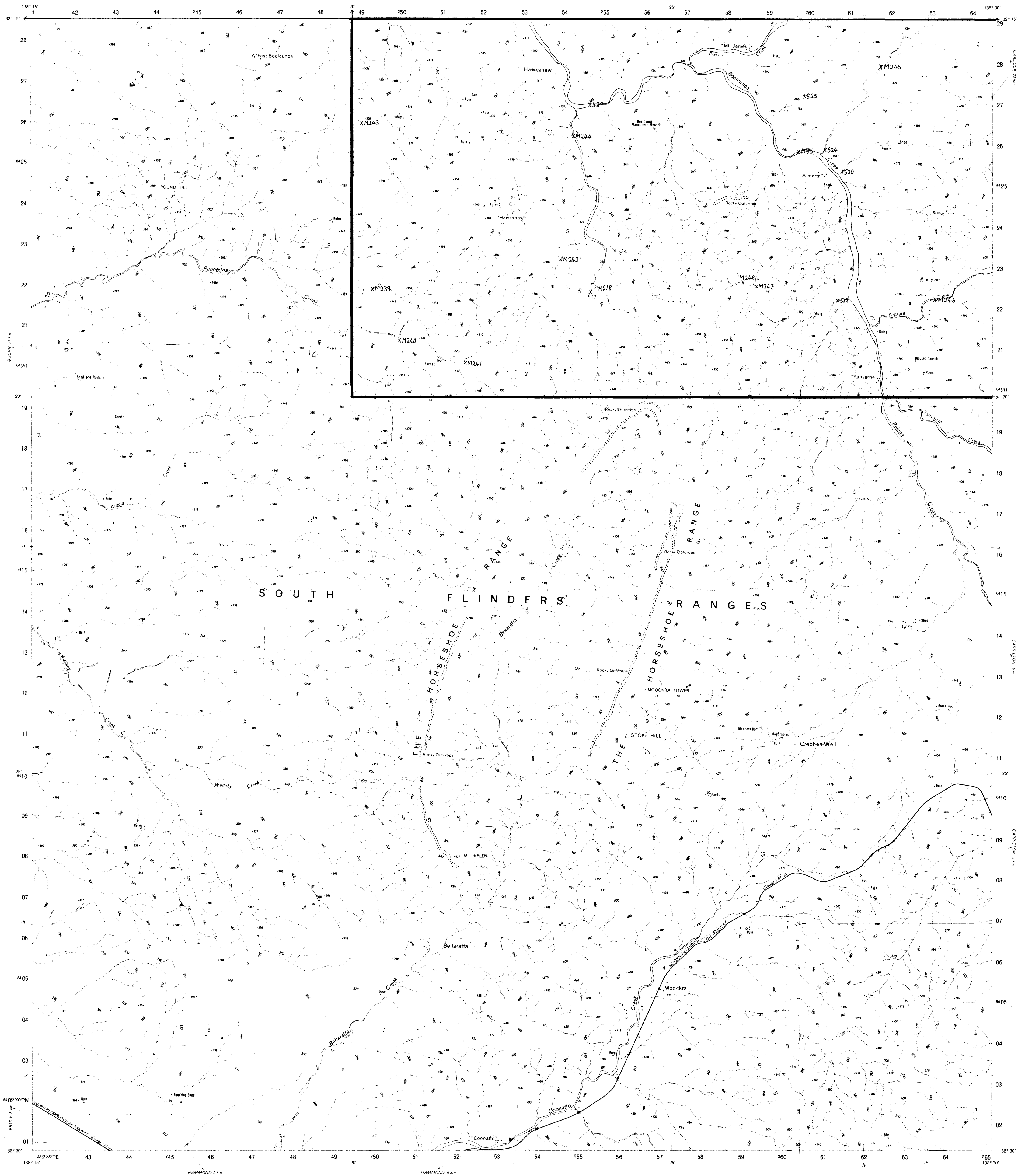
\* 1 clear grain bottled.

0129

1:50 000 TOPOGRAPHIC SERIES

MOOCKRA  
SOUTH AUSTRALIA

FIRST EDITION



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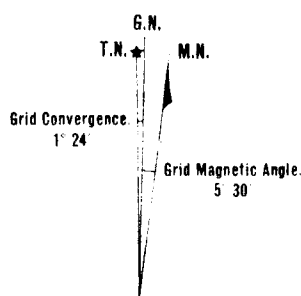
**PROJECTION** Australian Map Grid, Zone 54, Central Meridian 141°E.

**ELEVATION** Elevations in Metres, Australian Height Datum.

**CONTROL** Triangulation and Traverse by the Division of National  
Mapping, the Royal Australian Survey Corps and the South  
Australian Department of Lands.

**DETAIL** Aerial Photography, Svs S.A. 1332, October, 1971.

**PHOTOLITHOGRAPHY** A. B. James, Government Printer, 1974.



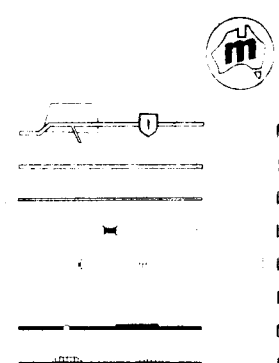
Built up area: National route marker.  
Road, sealed surface, two or more lanes.  
Road, sealed surface, one lane.  
Road, unsealed surface, two or more lanes.  
Road, unsealed surface, one lane.  
Gate.  
Cattle grid.  
Vehicular track.

Railway, multiple track: Station: Siding.  
Railway, single track: Cutting: Embankment.

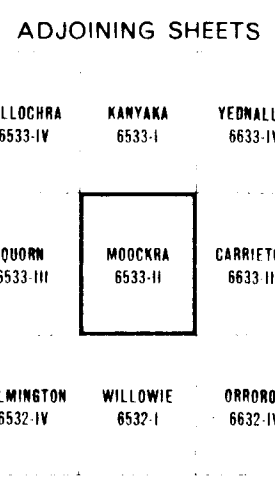
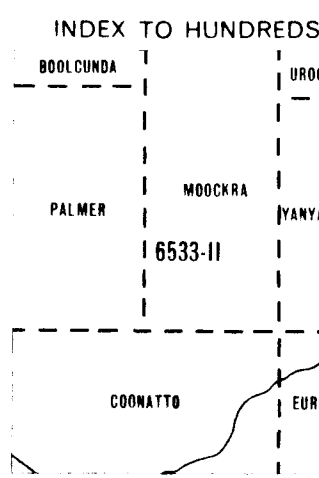
Building: Post office: Police station: School.  
Hospital: Church: Mine: Windmill.

Fence: Quarry.

SCALE 1:50 000  
METRES 1000 0 1 2 3 4 5 KILOMETRES  
CONTOUR INTERVAL 10 METRES



The representation of a road on this map is no evidence of the existence of a right of way.



FIRST EDITION



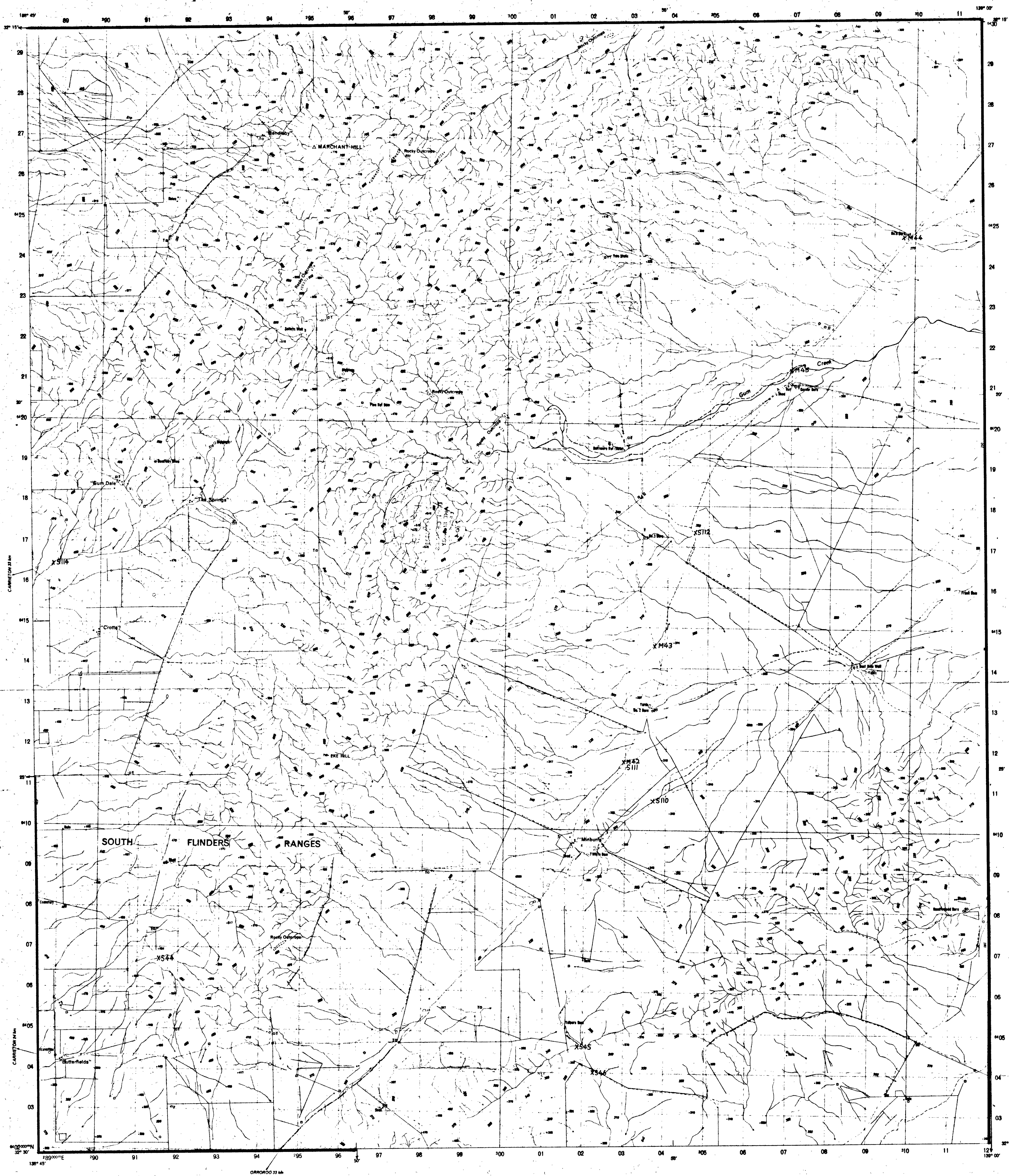
| Trial | Control (%) | MCI (%) | AD (%) |
|-------|-------------|---------|--------|
| 1     | 100         | 100     | 100    |
| 2     | 100         | 100     | 100    |
| 3     | 100         | 95      | 90     |
| 4     | 100         | 90      | 80     |
| 5     | 100         | 85      | 65     |

# MINBURRA

## SOUTH AUSTRALIA

1:50 000 TOPOGRAPHIC SERIES

FIRST EDITION



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**PRODUCTION** In compliance with National Mapping standards by the Department of Lands.  
**PROJECTION** Australian Map Grid, Zone 54, Central Meridian 141°E.  
**ELEVATION** Contours in metres. Australian Height Datum.  
**CONTROL** Triangulation and Traverse by the Division of National Mapping, the Royal Australian Survey Corps and the South Australian Department of Lands.  
**DETAIL** Aerial Photography, Ser. S.A. 1321 & 1322 October 1971.  
**PUBLISHED BY** A. B. Jones, Government Printer, 1972.



The relationship between True North, Grid North and Magnetic North is shown diagrammatically for the centre of this map. Magnetic Value is correct for 1970. Annual Change is 0.1 Eastward.

**Build-up area:** Different route marker.  
 Road, sealed surface, two or more lanes.  
 Road, sealed surface, one lane.  
 Road, unsealed surface, two or more lanes: Bridge.  
 Road, unsealed surface, one lane: Gate: Cattle grid.  
 Vehicular track.  
 Railway, multiple track: Station: Sidings.  
 Railway, single track: Cutting: Embankment.  
 Building: Post office: Police station: School.  
 Hospital: Church: Mine: Windmill.  
 Fence: Quarry.

SCALE 1:50 000

CONTOUR INTERVAL 10 METRES



**Power transmission line:** Lattice or built.  
**Major horizontal control point:** Bench mark: Spot elevation.  
 Lake, permanent: Watercourse.  
 Lake, intermittent: Shrub dam or waterhole on watercourse.  
 Lake, mainly dry: Land subject to occasional flooding.  
 Dune or well: Tank or small dam.  
 Contour: Depression contour.  
 Rock, bare or eroded: Reef.  
 Sand: Sand ridge.  
 Pine plantation: Orchard or vineyard.  
 Windbreak.

The reproduction of a road on this map is no evidence of the existence of a right of way.

## INDEX TO HUNDREDS

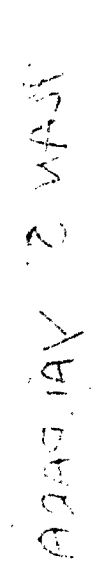
|                      |                   |         |
|----------------------|-------------------|---------|
| VERALLINE<br>6633-II | SECTION<br>6633-I | 6633-IV |
| DURLEY               | 6633-II           | 6633-IV |
| YALPABA              | 6633-I            | 6633-IV |

## ADJOINING SHEETS

|                      |                   |         |
|----------------------|-------------------|---------|
| VERALLINE<br>6633-II | SECTION<br>6633-I | 6633-IV |
| DURLEY               | 6633-II           | 6633-IV |
| YALPABA              | 6633-I            | 6633-IV |

## PRELIMINARY EDITION

1:50,000 TOPOGRAPHIC SERIES



METRES 1000 0 1 2 3 4 5 KILOMETRES

CONTOUR INTERVAL 10 METRES



|                                |                                                                                                                                                        |
|--------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|
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| <b>PRODUCTION</b>              | In accordance with National Mapping standards by the<br>Department of Lands                                                                            |
| <b>PROJECTION</b>              | Australian Map Grid, Zone 54, General Meridian 141°E.                                                                                                  |
| <b>ELEVATION</b>               | Ellipsoids to Merkurs, Datum: Mean Sea Level, Port Adelaide.                                                                                           |
| <b>CONTROL</b>                 | Triangulation and Traverses by the Division of National<br>Mapping, the Royal Australian Survey Corps and the South<br>Australian Department of Lands. |
| <b>DETAIL</b>                  | Aerial Photography, Ray, S.1296, 1958 October, 1976.                                                                                                   |
| <b>PUBLICATION/REPROGRAPHY</b> | H. J. Wall, Civil Lithographer, 1972.                                                                                                                  |

|                                            |                             |
|--------------------------------------------|-----------------------------|
| Build-up area:                             | Rational route marker       |
| Road, sealed surface, two or more lanes:   | Emb                         |
| Road, sealed surface, one lane:            | Emb                         |
| Road, unsealed surface, two or more lanes: | Emb                         |
| Road, unsealed surface, one lane:          | Emb                         |
| Vehicle track:                             | .....                       |
| Railway, multiple track:                   | Station;                    |
| Railway, single track:                     | Station with                |
| Building:                                  | Post office; Police station |
| Hospital:                                  | Church; Shop; V             |
| Fence:                                     | Barry.                      |

Power transmission line:      Lovers or bent.

Major horizontal contact point:      Beach marks:      Spot elevation.

Like, parallel:      Wet/dry:

Like, intermittent:      Small dots or waterholes on wet/dry/dry.

Like, mainly dry:      Lead subject to headlines.

Here or wall:      Turn or small dam.

Contours:      Depression contours.

Soak, bare or break:      Soak.

Sand:      Sand ridge.

Flow direction:      Gradient or viewpoint.

Windward

## INDEX TO HUNDREDS

|        |           |
|--------|-----------|
| YALPAC | WINDYBORN |
| ERKAGE | CAVERAGE  |

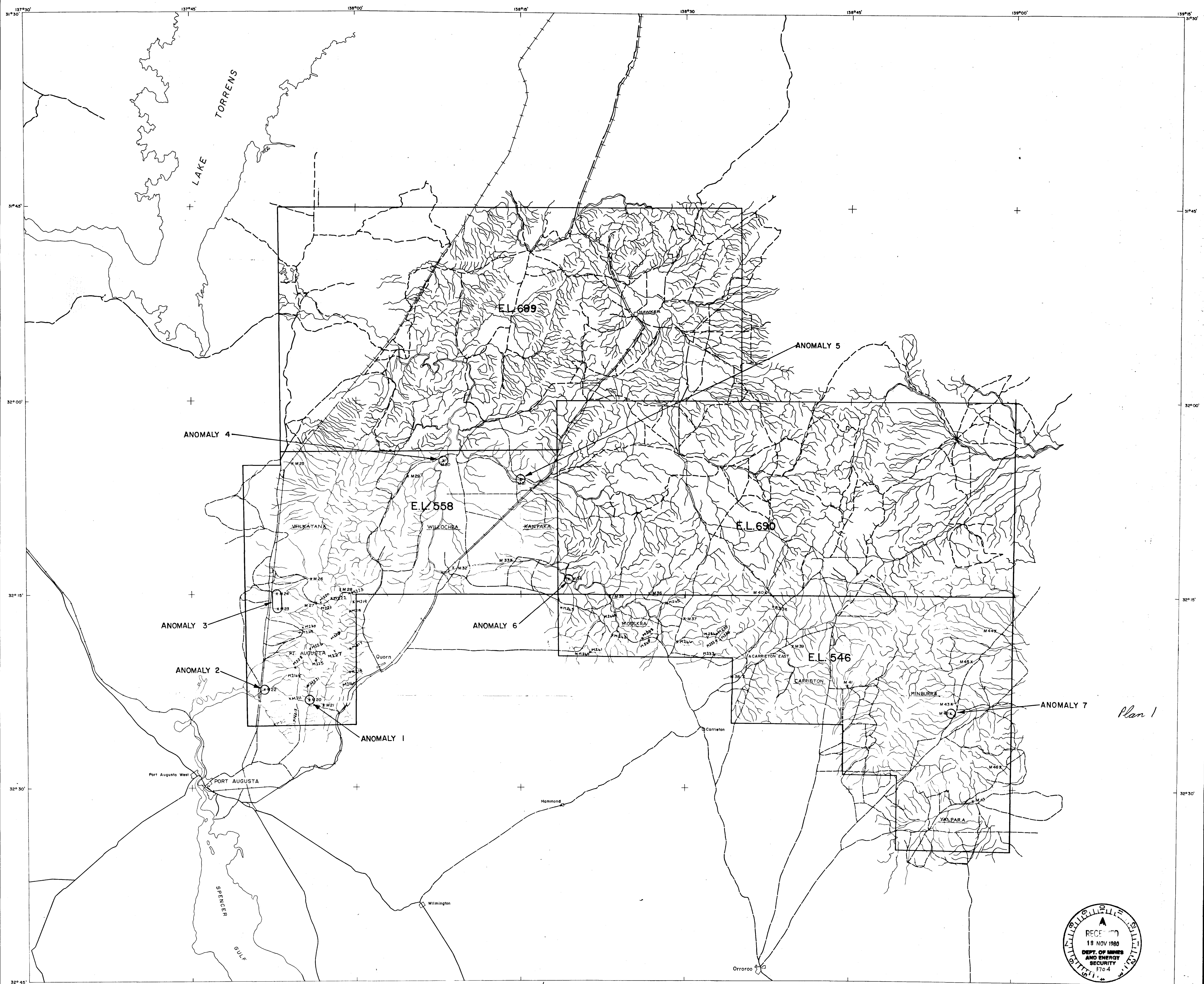
**ADJOINING SHEETS**

|                    |                         |                     |
|--------------------|-------------------------|---------------------|
| CANNON<br>0633-III | MINDORRA<br>0633-II     | CANNON<br>0730-III  |
| OMORON<br>0632-IV  | YALPANA<br>0632-I       | OMORRA<br>0732-IV   |
| PERNA<br>0602-III  | PETERBOROUGH<br>0632-II | NAPLANA<br>0732-III |

— 7 —

YALPARA  
6632-1

3704-4 YALPARA 6632-1



Plan 1



REFERENCE

- |       |                                          |   |                  |
|-------|------------------------------------------|---|------------------|
| —     | Exploration License application boundary | — | Road - secondary |
| x M26 | 20kg stream gravel sample and number     | — | Track            |
| □     | Town                                     | — | Railway line     |
| —     | Highway                                  | — | Watercourse      |



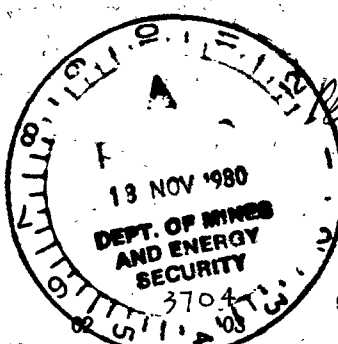
SWAN RESOURCES LIMITED  
ORROROO NORTH PROJECT III3  
SOUTH AUSTRALIA  
EXPLORATION LICENCES  
546, 558, 689 & 690

3704-5

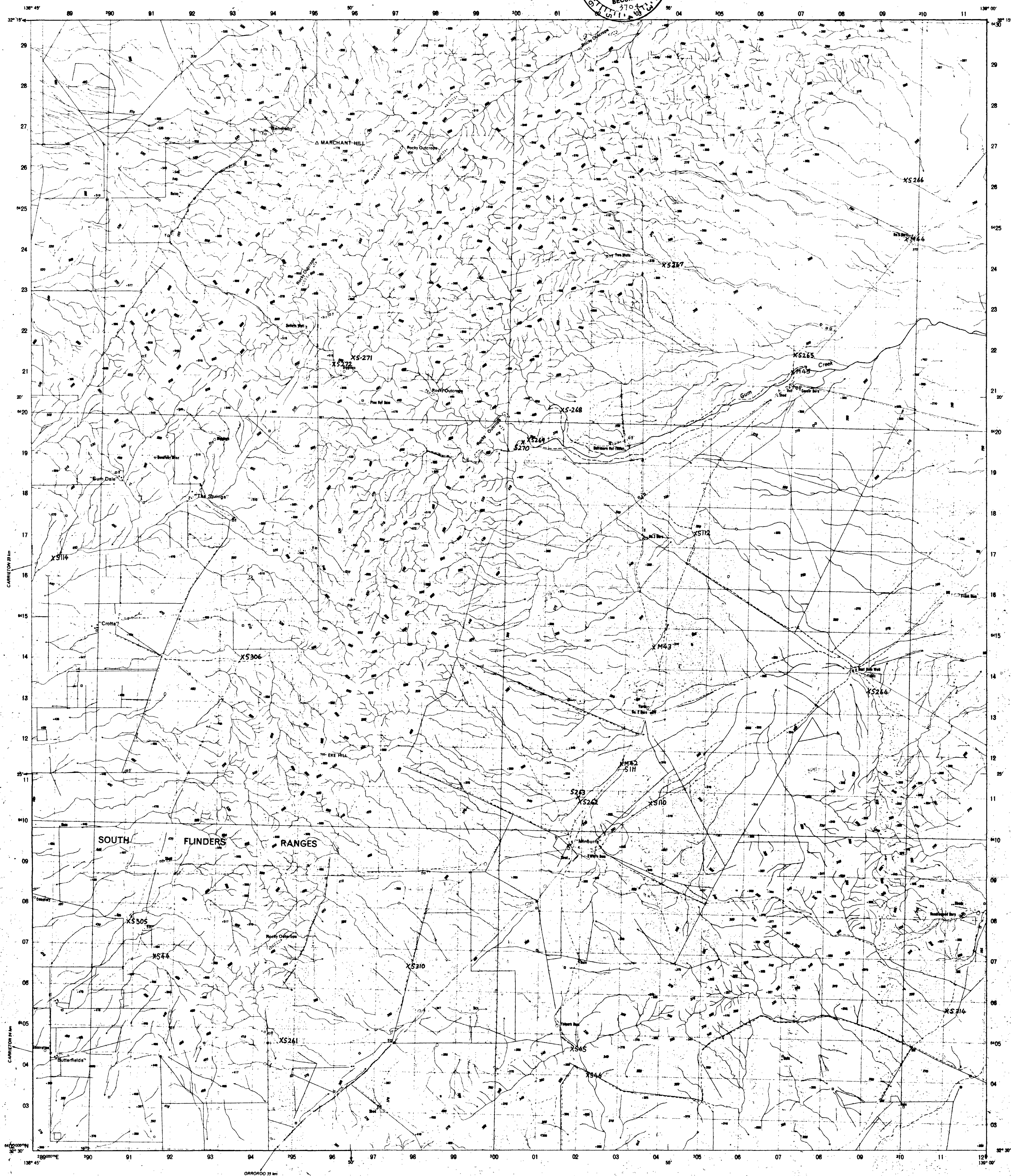
SCALE 1:250 000 DATE MARCH, 1979 MAP N°

Drawn by Trudy A. Duncan

1:50 000 TOPOGRAPHIC SERIES

MINBURRA  
SOUTH AUSTRALIA

FIRST EDITION



SCALE 1:50 000

METRES 1000 0 1 2 3 4 5 6 7 8 9 10

CONTOUR INTERVAL 10 METRES



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**PROJECTION** Australian Map Grid, Zone 54, Central Meridian 131°E.

**ELEVATION** Elevations in Metres, Australian Height Datum.

**CONTROL** Triangulation and Traversing by the Bureau of National Mapping, The Royal Australian Survey Corps and the South Australian Department of Lands.

**DETAIL** Aerial Photography, Pty. Ltd. 1331 & 1332 October 1975.

**PHOTOGRAPHY** A. & J. Jones, Government Printer, 1975.

**Grid Convergence** 1° 00'

**Grid Magnetic Angle** 6° 0'

The relationship between True North, Grid North and Magnetic North is shown diagrammatically for the centre of this map. Magnetic Value is correct for 1975. Annual Change is 01' Eastward.

**Built-up area:** Half-toned radii marker.

**Bank, scoured surface, two or more lanes:** [Symbol]

**Bank, scoured surface, one lane:** [Symbol]

**Road, unsurfaced surface, two or more lanes:** [Symbol]

**Road, unsurfaced surface, one lane:** [Symbol]

**Gate:** [Symbol]

**Buttle grid:** [Symbol]

**Vehicle track:** [Symbol]

**Railway, multiple track:** [Symbol]

**Railway, single track:** [Symbol]

**Station:** [Symbol]

**Subway:** [Symbol]

**Building:** [Symbol]

**Post office:** [Symbol]

**Police station:** [Symbol]

**School:** [Symbol]

**Disposal:** [Symbol]

**Church:** [Symbol]

**Mine:** [Symbol]

**Windmill:** [Symbol]

**Fence:** [Symbol]

**Quarry:** [Symbol]

**Power transmission line:** [Symbol]

**Lease or bank:** [Symbol]

**Major horizontal control point:** [Symbol]

**Spot elevation:** [Symbol]

**Watercourse:** [Symbol]

**Small dam or waterhole on watercourse:** [Symbol]

**Land subject to occasional flooding:** [Symbol]

**Tank or small dam:** [Symbol]

**Depression contour:** [Symbol]

**Rock, bare or porous:** [Symbol]

**Sand:** [Symbol]

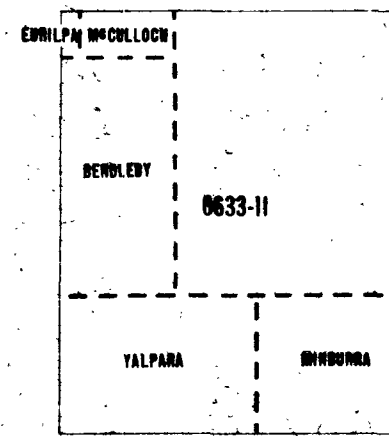
**Sand ridge:** [Symbol]

**Pine plantation:** [Symbol]

**Orchard or vineyard:** [Symbol]

**Windbreak:** [Symbol]

INDEX TO HUNDREDS



ADJOINING SHEETS

| TERMINAL            | SIGNS            | BOUNDARY         |
|---------------------|------------------|------------------|
| 6633-IV             | 6633-I           | 6733-IV          |
| CARRINGTON 6633-III | MINBURRA 6633-II | CARRICK 6733-III |
| ORROROO 6632-IV     | TALPARA 6632-I   | MINBURRA 6732-IV |

3704-6

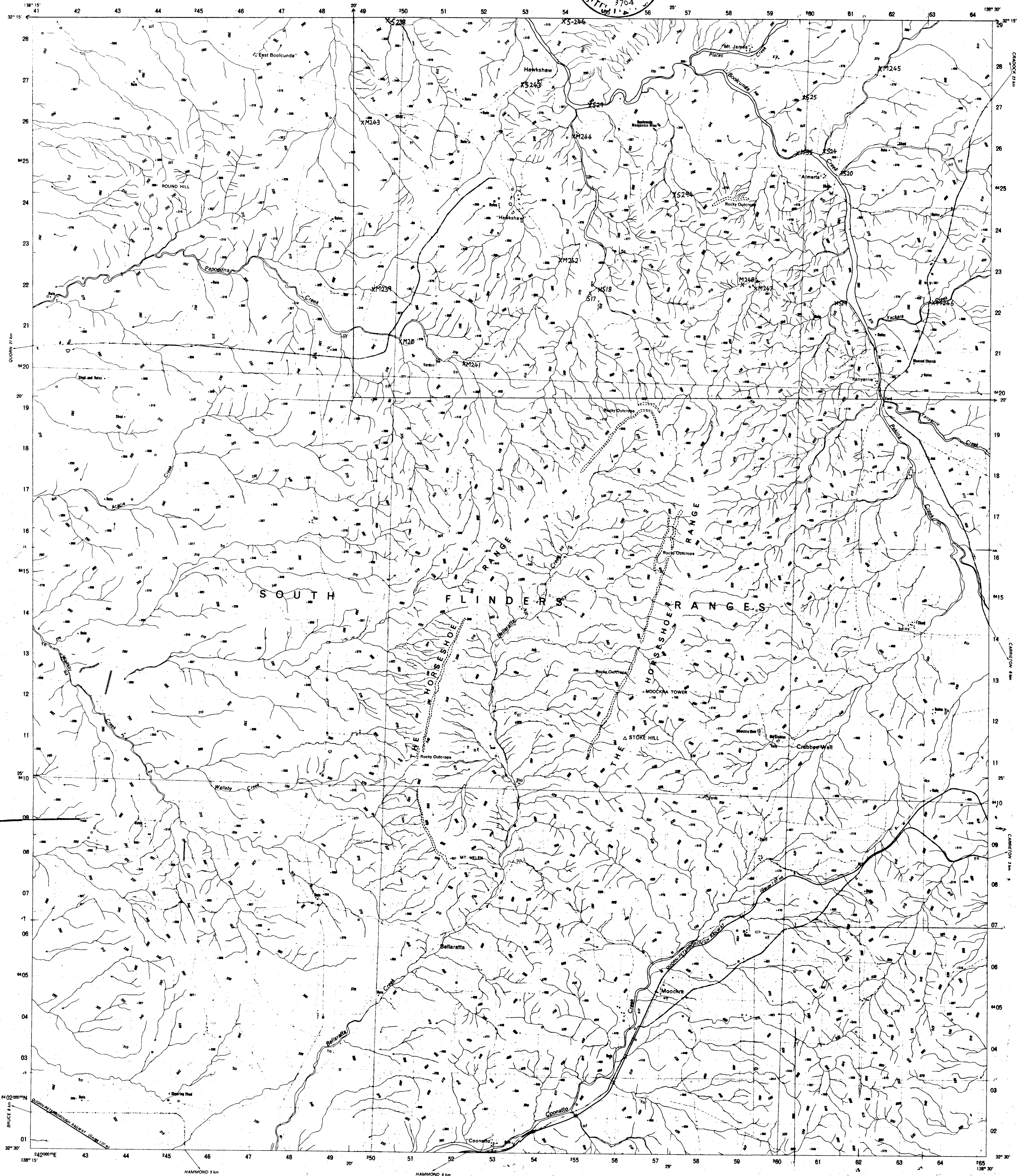
MOOCKRA  
SOUTH AUSTRALIA



Plan 5

1:50 000 TOPOGRAPHIC SERIES

FIRST EDITION



SCALE 1:50 000

CONTOUR INTERVAL 10 METRES

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**ELEVATION** Elevations in Metres, Australian Height Datum.

**CONTROL** Triangulation and Traverses by the Division of National  
Mapping, the Royal Australian Survey Corps and the South  
Australian Department of Lands.

**DETAIL** Aerial Photography, Dry, S.A. 1332, October, 1971.

**PHOTOGRAPHY** A. B. James, Government Printer, 1974.

Grid Convergence  
1° 24'

Grid Magnetic Angle  
0° 30'

The relationship between True North, Grid  
North and Magnetic North is shown diagram-  
matically for the centre of this map. Magnetic  
Value is correct for 1970. Annual Change is  
01° Eastward.

Built-up area: National route marker.  
Road, sealed surface, two or more lanes.  
Road, sealed surface, one lane.  
Road, unsealed surface, two or more lanes.  
Road, unsealed surface, one lane.  
Gate.  
Bottle grid.  
Vehicular track.  
Railway, multiple track.  
Station.  
Siding.  
Railway, single track.  
Cutting.  
Embankment.  
Building.  
Post office.  
Police station.  
School.  
Hospital.  
Church.  
Mine.  
Windmill.  
Fence.  
Quarry.

Power transmission line.  
Levee or bank.  
Survey beacon.  
Spot elevation.  
Lake, perennial.  
Watercourse.  
Lake, intermittent.  
Small dam or waterhole on watercourse.  
Lake, mainly dry.  
Land subject to occasional flooding.  
Bore or well.  
Tank or small dam.  
Ditch.  
Depression contour.  
Rock, bare or washed.  
Reef.  
Sand.  
Sand ridges.  
Pine plantation.  
Orchard or vineyard.  
Windbreak.

INDEX TO HUNDREDS

|          |         |
|----------|---------|
| BOBCORRA | OROWDA  |
| PALMER   | MOOCKRA |
| CONATTO  | CHIELIA |

ADJOINING SHEETS

|                      |                    |                       |
|----------------------|--------------------|-----------------------|
| WILLOCKRA<br>6533-IV | KANYARA<br>6533-I  | YERWALNE<br>6533-IV   |
| QUORN<br>6533-III    | MOOCKRA<br>6533-II | CORRIETON<br>6533-III |
| WILMINTON<br>6532-IV | WILLWIE<br>6532-I  | ORORON<br>6532-IV     |

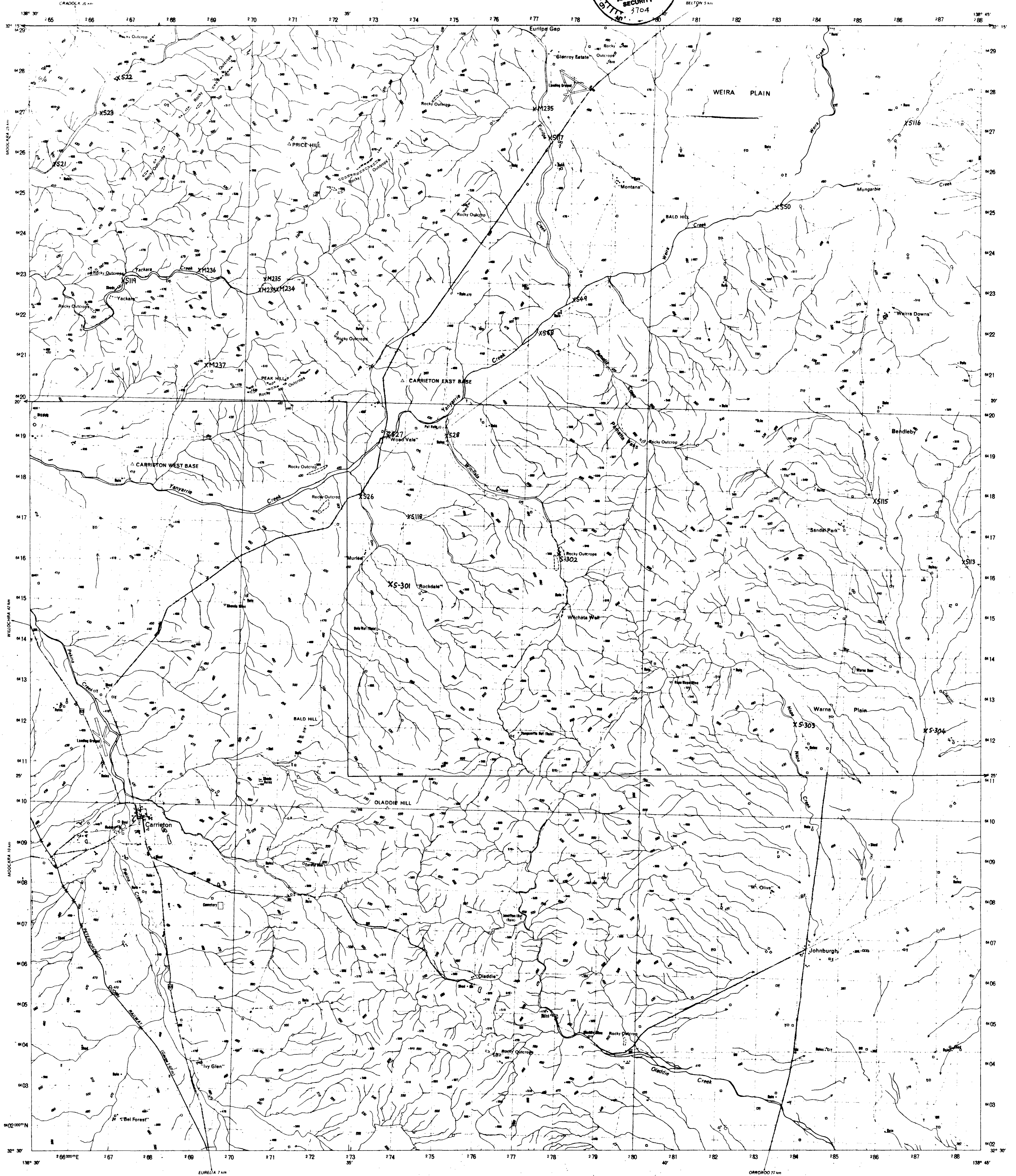
CARRIETON  
SOUTH AUSTRALIA



Plan 6

FIRST EDITION

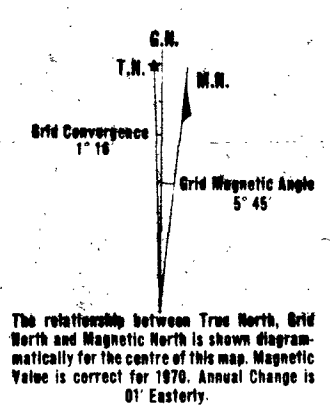
1:50 000 TOPOGRAPHIC SERIES



SCALE 1:50 000

CONTOUR INTERVAL 10 METRES

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**PROJECTION** Australian Map Grid, Zone 56, Central Meridian 131°E.  
**ELEVATION** Elevations in Metres, Australian Height Datum.  
**CONTROL** Triangulation and Traverse by the Division of National Mapping, the Royal Australian Survey Corps and the South Australian Department of Lands.  
**DETAIL** Aerial Photography, S.S. 1201 & 1322, Oct 1971  
**PHOTOGRAPHY** A. B. Jones, Government Printer, 1972.

**Built-up area:** Reflected spots marker.  
Road, sealed surface, two or more lanes.  
Road, sealed surface, one lane.  
Road, unsealed surface, two or more lanes.  
Road, unsealed surface, one lane.  
Gate.  
Cattle grid.  
Volunteer track.  
Railway, multiple track.  
Railway, single track.  
Ditching.  
Pasture.  
Police station.  
Suburb.  
Hospital.  
Church.  
Mines.  
Woolshed.  
Fence.  
Quarry.

**Power transmission line:** Lines or bank.  
Major horizontal control point.  
Beach mark.  
Spot elevation.  
Lake, perennial.  
Watercourse.  
Lake, intermittent.  
Swampy area or watercourse on watercourse.  
Lake, shallow dry.  
Land subject to inundation.  
Dune or wall.  
Thick or small dune.  
Outcrops.  
Depression contours.  
Bank, bare or eroded.  
Dune.  
Sand.  
Sand ridges.  
Pine plantations.  
Orchard or vineyard.  
Woolshed.

INDEX TO HUNDREDS

|          |          |
|----------|----------|
| OROROO   | EDRILPA  |
| YARRARIE | HEMULEBY |
| 6633-III |          |
| EDRILPA  | YARRARIE |

ADJOINING SHEETS

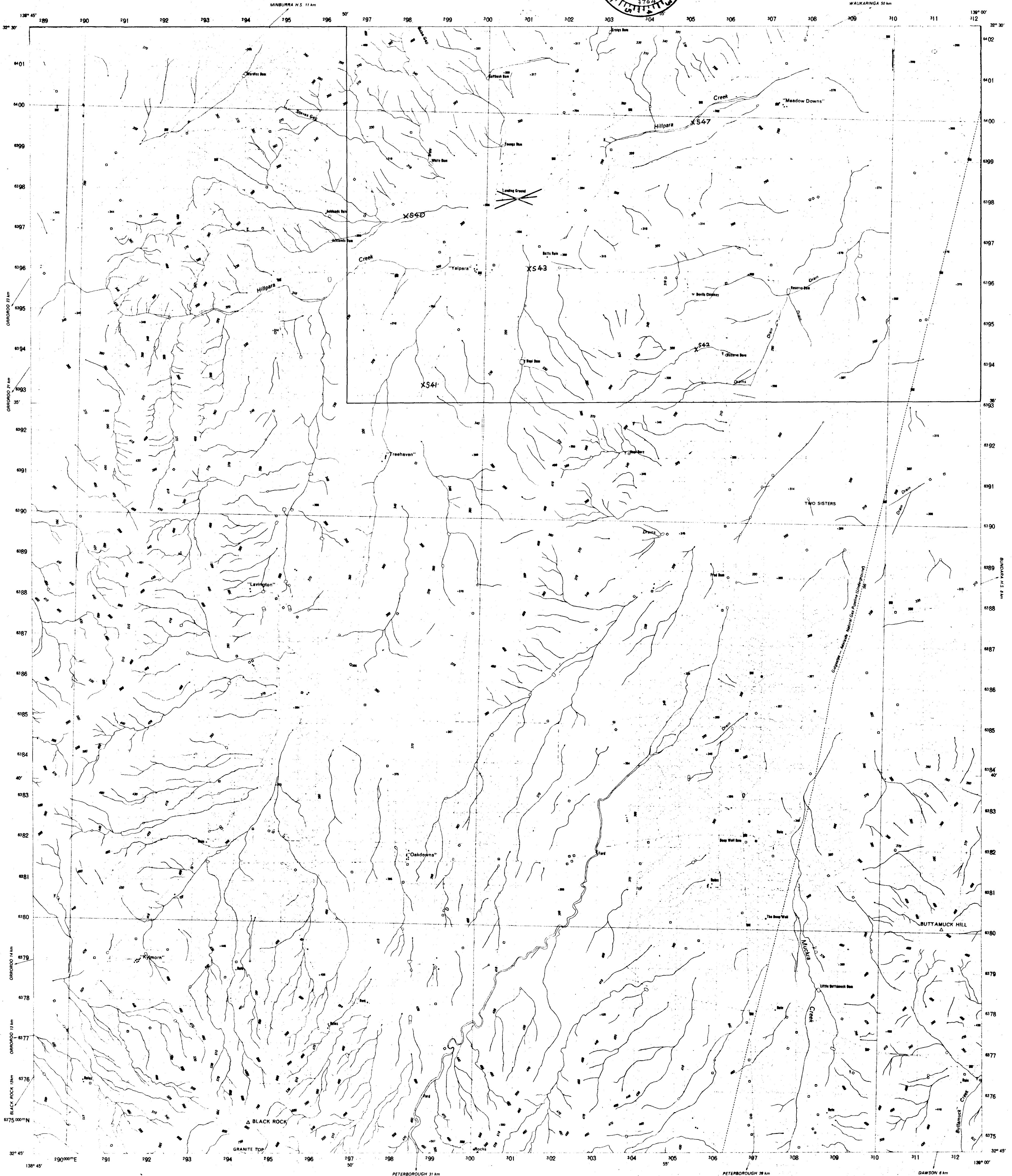
|                    |                       |                     |
|--------------------|-----------------------|---------------------|
| KARYAKA<br>6633-I  | YERRALIE<br>6633-IV   | SIDRUP<br>6633-I    |
| MOORAKA<br>6633-II | CARRIETON<br>6633-III | MURROORA<br>6633-II |
| WILLOWIE<br>6632-I | OROROO<br>6632-IV     | YALPAPA<br>6632-I   |

1:50,000 TOPOGRAPHIC SERIES

YALPARA  
SOUTH AUSTRALIA



PRELIMINARY EDITION



**AUTHORITY** Issued under the authority of the Minister of Lands.  
Produced under the direction of the Surveyor General.  
Crown Copyright Reserved.

**PRODUCTION** In compliance with National Mapping standards by the  
Department of Lands.

**PROJECTION** Australian Map Grid, Zone 54, Central Meridian 141°E.

**ELEVATION** Elevations in Metres. Datum: Mean Sea Level, Port Adelaide.

**CONTROL** Triangulation and Traverse by the Division of National  
Mapping, the Royal Australian Survey Corps and the South  
Australian Department of Lands.

**DETAIL** Aerial Photography, Svy. S.A. 1258, 1259 October, 1970.

**PHOTOGRAPHY** H. J. Wall, Chief Lithographer, 1972.

**G.M.**  
Grid Convergence  
1° 00'

**M.M.**  
Grid Magnetic Angle  
8° 30'

The relationship between True North, Grid  
North and Magnetic North is shown diagram-  
matically for the centre of this map. Magnetic  
Value is correct for 1965. Annual Change is  
65 East.

Built-up area: National route marker.  
Road, sealed surface, two or more lanes: Cutting.  
Road, sealed surface, one lane: Embankment.  
Road, unsealed surface, two or more lanes: Bridge.  
Road, unsealed surface, one lane.  
Vehicular track.  
Railway, multiple track: Station: Siding.  
Railway, single track: Station with siding.  
Building: Post office: Police station: School.  
Hospital: Church: Mine: Windmill.  
Fence: Quarry.

Power transmission line: Levee or bank.  
Major horizontal control point: Bench mark: Spot elevation.  
Lake, perennial: Watercourse.  
Lake, intermittent: Small dam or waterhole on watercourse.  
Lake, mainly dry: Land subject to inundation.  
Bore or well: Tank or small dam.  
Contours: Depression contours.  
Rock, bare or snow: Reef.  
Sand: Sand ridges.  
Pine plantation: Orchard or vineyard.  
Windbreak.

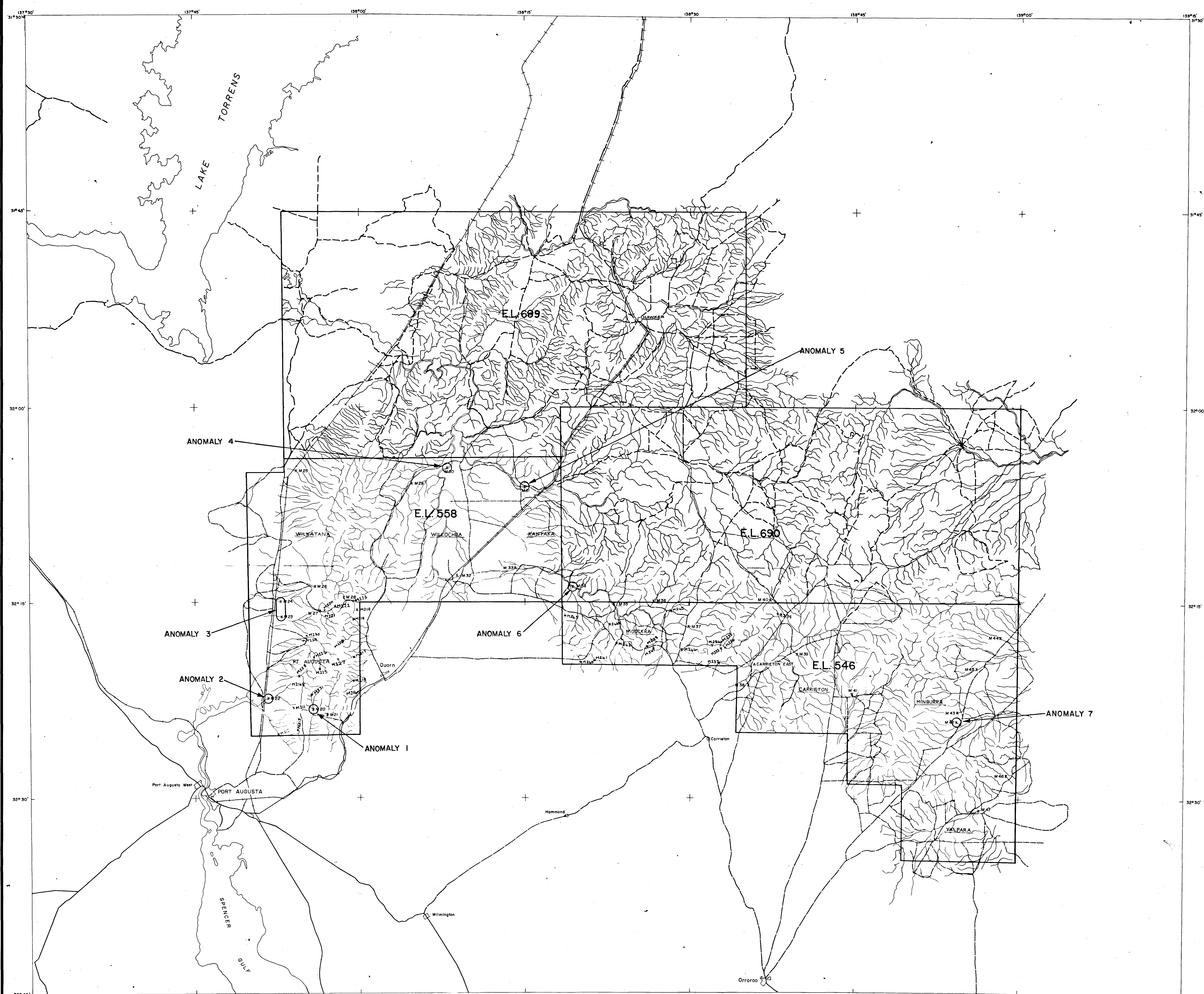
INDEX TO HUNDREDS

|         |           |
|---------|-----------|
| YALPARA | MINDURRA  |
| ERSKINE | CARRIVAGH |
|         | COULIN    |

ADJOINING SHEETS

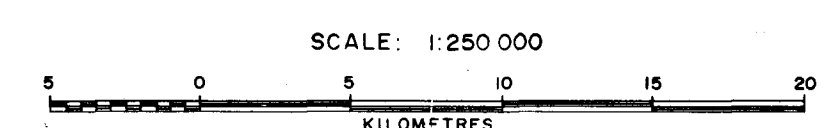
|                       |                         |                     |
|-----------------------|-------------------------|---------------------|
| CARRIVAGH<br>6633-III | MINDURRA<br>6633-II     | CARRICK<br>6733-III |
| ORRWOOD<br>6632-IV    | YALPARA<br>6632-I       | MINDURRA<br>6732-IV |
| PEKINA<br>6632-III    | PETERBOROUGH<br>6632-II | NACKARA<br>6732-III |

3704-9



REFERENCE

- |  |                                          |  |                  |
|--|------------------------------------------|--|------------------|
|  | Exploration License application boundary |  | Road - secondary |
|  | 20kg stream gravel sample and number     |  | Track            |
|  | Town                                     |  | Railway line     |
|  | Highway                                  |  | Watercourse      |



SWAN RESOURCES LIMITED  
 ORROROO NORTH PROJECT III/3  
 SOUTH AUSTRALIA  
 EXPLORATION LICENCES  
 546, 558, 689 & 690

3704-10

SCALE 1:250 000  
 DATE MARCH, 1979  
 MAP No.  
 Drawn by Trudy A. Duncan

# QUARTERLY REPORT ON EXPLORATION LICENCE 546

## ORROROO REGION, SOUTH AUSTRALIA

(FOR QUARTER ENDING 13TH MAY, 1981)

### 1. EXPLORATION ACTIVITIES DURING THE QUARTER

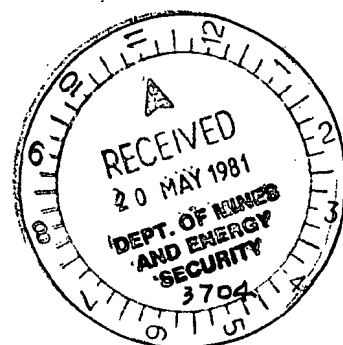
Microscopy on the backlog of stream gravel samples collected during previous quarters of occupancy continued.

### 2. RESULTS AND FURTHER WORK

A full examination and assessment of samples collected during the last twelve months remains to be carried out.

### 3. EXPENDITURE

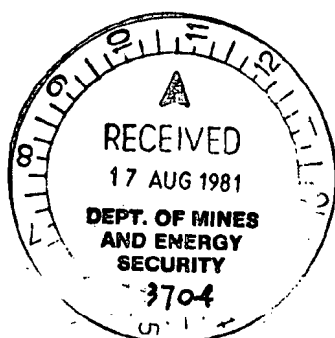
Expenditure for this quarter was \$ 24,777.



QUARTERLY REPORT EXPLORATION LICENCE 546

ORROROO REGION, SOUTH AUSTRALIA

FOR THE QUARTER ENDED 12 AUGUST 1981



S.J. ELLIOTT  
SWAN RESOURCES LTD.  
51 COLIN STREET  
WEST PERTH 6005  
WESTERN AUSTRALIA

ORROROO REGION, SOUTH AUSTRALIATHIRD QUARTERLY REPORT FOR SECOND YEAR OF OCCUPANCYE.L. 546INTRODUCTION

No field programme was carried out on the Exploration Licence during the last quarter of occupancy. Work was therefore restricted to microscopic examination of heavy mineral concentrates obtained from previously conducted stream sediment sampling programmes.

Follow-up stream sediment sampling has also been previously completed on two anomalous stream sediment samples (Anomaly 6 - M-34 and Anomaly 7 - M-42). Anomaly 6 has subsequently been discounted and microscopic examination of heavy mineral concentrates from follow-up stream sediment samples is currently in progress for Anomaly 6.

TITLE

Exploration Licence 546 was granted on the 12th November, 1979 to Swan Resources Ltd. for a one year period to explore for diamonds, uranium, copper, lead, gold and platinum.

A further twelve months' occupancy was granted on the 12th November, 1980 to Swan Resources Ltd. and Freeport of Australia Inc.

The location of Exploration Licence 546 which has an area of 1304 square kilometres is shown in Figure 1.

RESULTS OF EXPLORATION ACTIVITIES

Some 456 stream sediment samples have previously been collected from E.L.'s 546, 558, 689 and 690 held by Swan Resources Ltd. and Freeport of Australia Inc.

Of these samples, seventy-eight were collected from E.L. 546.

Initial reconnaissance stream sediment sampling in the first year of occupancy delineated two anomalous areas on E.L. 546 (Anomaly 6 and Anomaly 7). A stream sediment sample from Anomaly 7 was originally thought to contain kimberlitic rutile although this was subsequently proved to be probably non-kimberlitic. This in conjunction with the lack of indicator mineral negated the need for further follow-up in the area and the anomaly has been abandoned.

Heavy mineral concentrates from follow-up stream sediment samples in the Anomaly 6 area are currently being examined. Although anomalous sample site M - 34 does not fall within the E.L. it is included here as much of the drainage of the relevant stream falls in this region.

No further kimberlite indicator mineral has been found in the region.

Results obtained to date from microscopic analysis of heavy mineral concentrates are given in Appendix A.

#### FORWARD PROGRAMME

A full examination and assessment of samples collected during the last twenty-one months remains to be carried out.

#### EXPENDITURE

Total expenditure for first year of occupancy of E.L. (12/11/79 - 12/11/80)  
= \$ 65,395.75.

Expenditure for quarter ended 12th August, 1981 - see next page.

Expenditure for quarter ended 12th August, 1981:

|                           | <u>12/5/81 - 12/8/81</u> |
|---------------------------|--------------------------|
| Consultancy Fees          | \$ 6,176.25              |
| Contract Work             | -                        |
| Employee Rations          | 89.50                    |
| Geological Equipment      | 135.80                   |
| Freight/Cartage           | 249.65                   |
| Consumable Field Items    | 49.00                    |
| Vehicle Hire              | 650.90                   |
| Plant/Equipment Hire      | 309.75                   |
| Legal Costs               | 6.25                     |
| Assays                    | 3,252.65                 |
| Vehicle Expenses          | 341.40                   |
| Rents on Tenements        | -                        |
| Travel Expenses           | 1,990.00                 |
| Administration            | 169.75                   |
| Wages (Mineral Observers) | -                        |
| Maps/Photographs          | 189.75                   |
| Sundry                    | 114.60                   |
|                           | <u>\$ 13,725.25</u>      |

#### LIST OF ACCOMPANYING PLANS & FIGURES

Figure 1. - Location Map Exploration Licences 546, 558, 689 and 690.

Plan 1. - Stream Sediment Sample sites Location Map - Moockra 1:50,000 Sheet  
 Plan 2. - " " " " " " - Carrieton 1:50,000 Sheet  
 Plan 3. - " " " " " " - Minburra 1:50,000 Sheet  
 Plan 4. - " " " " " " - Yalpara 1:50,000 Sheet.

APPENDIX A

STREAM SEDIMENT SAMPLE HEAVY MINERAL CONCENTRATES

ANALYSIS SHEETS







| SAMPLE<br>NUMBER |         |        |                 |          |             |               |            |         |               |           |           |         |           |        |         |             |               |          |          |         |        |          |      |         |           |          |         |           |          |           |      |               |        |          |        |        |        |          |       |            |        |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  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SAMPLE  
NUMBER

- DIAMOND
- PYROPE
- CHROME DIOPSIDE
- CHROMITE
- KIM. ZIRCON
- ORTHOPYROXENE
- PHLOGOPITE
- OLIVINE
- PICROILMENITE
- ALMANDINE
- AMPHIBOLE
- ANATASE
- ANDRADITE
- BARITE
- CALCITE
- CASSITERITE
- CHROME SPINEL
- CORUNDUM
- DIOPSIDE
- EPIDOTE
- GARNET
- GOETHITE
- GOLD
- GYPSUM
- HAEMATITE
- ILMENITE
- KYANITE
- LEUCOXENE
- LIJMONITE
- MAGNETITE
- MICA
- PSEUDO-PYRITE
- PYRITE
- PYROXENE
- QUARTZ
- RUTILE
- SPINEL
- SULPHIDE
- TOPAZ
- TOURMALINE
- ZIRCON
- STAUROLITE

S - 59/5

59/6

59/7

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S - 66

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S - 75

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S - 80

J.

✓

✓

✓

✓

✓

✓

✓

0141

SAMPLE  
NUMBER

STREAM SED. &amp; LOAM SAMPLE - MINERALOGY

PROJECT

| DIAMOND | PYROPE | CHROME DIOPSIDE | CHROMITE | KIM. ZIRCON | ORTHOPYROXENE | PHLOGOPITE | OLIVINE | PICROILMENITE | ALMANDINE | AMPHIBOLE | ANATASE | ANDRADITE | BARITE | CALCITE | CASSITERITE | CHROME SPINEL | CORUNDUM | DIOPSIDE | EPIDOTE | GARNET | GOETHITE | GOLD | GYPSUM | HAEMATITE | ILMENITE | KYANITE | LEUCOXENE | LIMONITE | MAGNETITE | MICA | PSEUDO-PYRITE | PYRITE | PYROXENE | QUARTZ | RUTILE | SPINEL | SULPHIDE | TOPAZ | TOURMALINE | ZIRCON | TIN. | MALACHITE |
|---------|--------|-----------------|----------|-------------|---------------|------------|---------|---------------|-----------|-----------|---------|-----------|--------|---------|-------------|---------------|----------|----------|---------|--------|----------|------|--------|-----------|----------|---------|-----------|----------|-----------|------|---------------|--------|----------|--------|--------|--------|----------|-------|------------|--------|------|-----------|
|---------|--------|-----------------|----------|-------------|---------------|------------|---------|---------------|-----------|-----------|---------|-----------|--------|---------|-------------|---------------|----------|----------|---------|--------|----------|------|--------|-----------|----------|---------|-----------|----------|-----------|------|---------------|--------|----------|--------|--------|--------|----------|-------|------------|--------|------|-----------|

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K.W.

**SAMPLE  
NUMBER**

0142

STREAM SED. & LOAM SAMPLE - MINERALOGY

[illegible]







0146

STREAM SED. & LOAM SAMPLE - MINERALOGY

[illegible]









0151

SAMPLE  
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S-350

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|-----------------|
| DIAMOND         |
| PYROPE          |
| CHROME DIOPSIDE |
| CHROMITE        |
| KIM. ZIRCON     |
| ORTHOPYROXENE   |
| PHLOGOPITE      |
| OLIVINE         |
| PICROILMENITE   |
| ALMANDINE       |
| AMPHIBOLE       |
| ANATASE         |
| ANDRADITE       |
| BARITE          |
| CALCITE         |
| CASSITERITE     |
| CHROME SPINEL   |
| CORUNDUM        |
| DIOPSIDE        |
| EPIDOTE         |
| GARNET          |
| GOETHITE        |
| GOLD            |
| GYP SUM         |
| HAEMATITE       |
| ILMENITE        |
| KYANITE         |
| LEUCOXENE       |
| LI MONITE       |
| MAGNETITE       |
| MICA            |
| PSEUDO-PYRITE   |
| PYRITE          |
| PYROXENE        |
| QUARTZ          |
| RUTILE          |
| SPINEL          |
| SULPHIDE        |
| TOPAZ           |
| TOURMALINE      |
| ZIRCON          |
| FLORENCITE      |

STREAM SED. &amp; LOAM SAMPLE - MINERALOGY

PROJECT

J.  
K.W.



0153

SAMPLE  
NUMBER

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|-----------------|
| DIAMOND         |
| PYROPE          |
| CHROME DIOPSIDE |
| CHROMITE        |
| KIM. ZIRCON     |
| ORTHOPYROXENE   |
| PHLOGOPITE      |
| OLIVINE         |
| PICROILMENITE   |
| ALMANDINE       |
| AMPHIBOLE       |
| ANATASE         |
| ANDRADITE       |
| BARITE          |
| CALCITE         |
| CASSITERITE     |
| CHROME SPINEL   |
| CORUNDUM        |
| DIOPSIDE        |
| EPIDOTE         |
| GARNET          |
| GOETHITE        |
| GOLD            |
| GYPSUM          |
| HAEMATITE       |
| ILMENITE        |
| KYANITE         |
| LEUCOXENE       |
| LJMONITE        |
| MAGNETITE       |
| MICA            |
| PSEUDO-PYRITE   |
| PYRITE          |
| PYROXENE        |
| QUARTZ          |
| RUTILE          |
| SPINEL          |
| SULPHIDE        |
| TOPAZ           |
| TOURMALINE      |
| ZIRCON          |

STREAM SED. &amp; LOAM SAMPLE - MINERALOGY

PROJECT

J.  
K.W.

EXPLORATION LICENCE 546  
ORROROO REGION, SOUTH AUSTRALIA

FINAL REPORT

Freeport of Australia Incorporated  
and  
Swan Resources Limited

W.T. MARX  
Senior Geologist

October, 1981

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| 4.0 CONCLUSION             | 4               |
| 5.0 EXPENDITURE            | 5               |

APPENDICES

Figure 1 Location Diagram of Exploration Licences

Plan 1 Exploration Licences 546, 558, 689 & 690

Carrieton 1:50,000 Sample Locations

Minburra 1:50,000 Sample Locations

Yalpara 1:50,000 Sample Locations

1.0

INTRODUCTION

Exploration has been carried out on the Exploration Licence since it was granted on the 12th November, 1979. This work involved stream sediment and loam sampling and magnetometer surveys.

The results of this work have indicated that no economic diamond deposits exist in the south-eastern portion (covering 928km<sup>2</sup>) of the Exploration Licence. On this basis, it has been decided to relinquish this south-eastern portion, and to apply for an Exploration Licence over the north-western portion, covering 376km<sup>2</sup>.

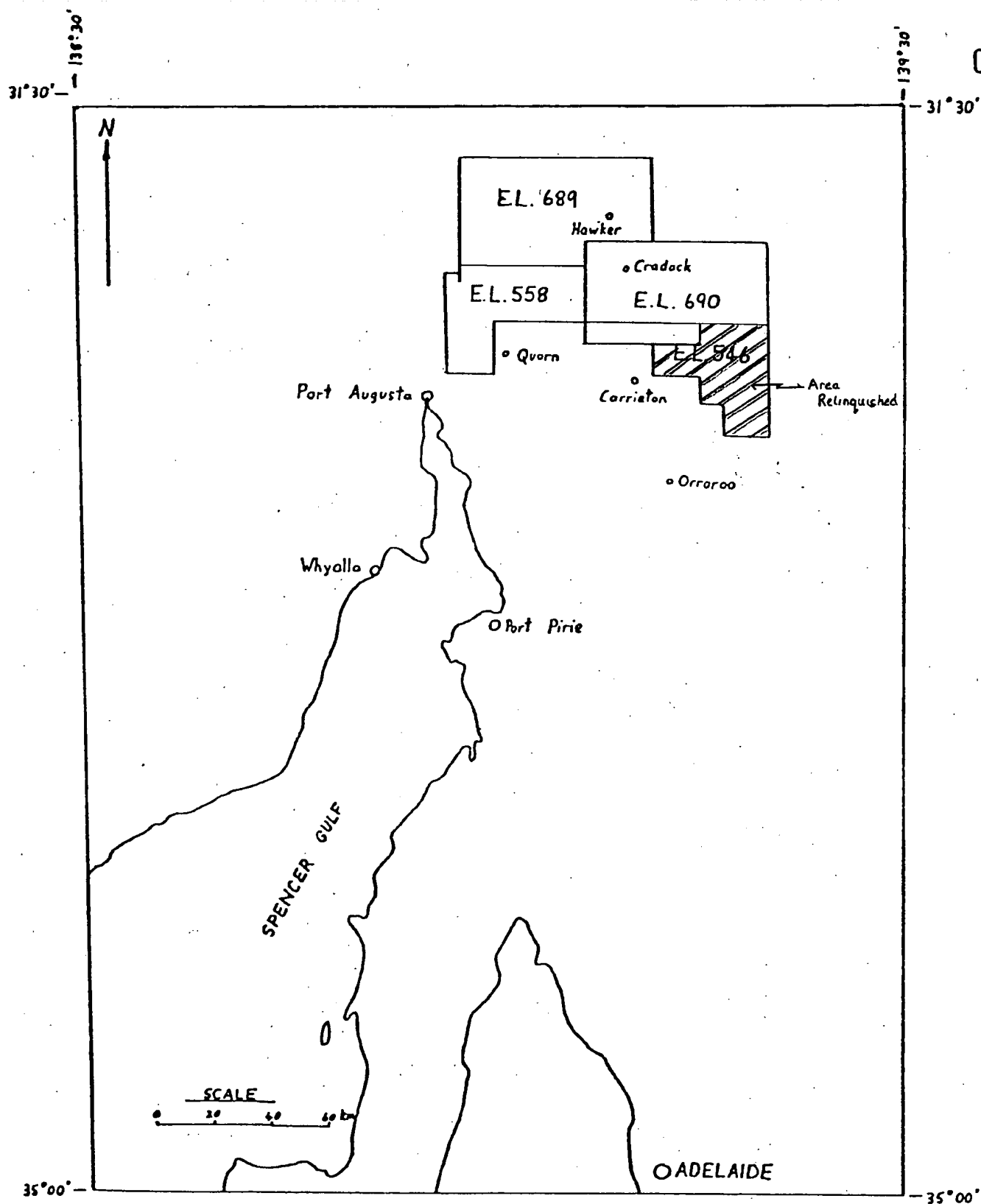
2.0

TITLE

Exploration Licence 546 was granted on the 12th November, 1979, to Swan Resources Limited, for a one year period to explore for diamonds, uranium, copper, lead, gold and platinum.

A further twelve months' occupancy was granted on the 12th November, 1980, to Swan Resources Limited and Freeport of Australia Incorporated.

The location of Exploration Licence 546, which has an area of 1,304km<sup>2</sup>, and the portion which has been relinquished, is shown on Figure 1 and Plan 1.



LOCATION DIAGRAM - EXPLORATION LICENCES  
546, 558, 689, 690.

ORROROO AREA - SOUTH AUSTRALIA.

FIGURE 1

3.0

EXPLORATION ACTIVITIES

Reconnaissance sampling in the south-eastern portion of Exploration Licence 546 revealed the presence of possibly kimberlitic rutile in an area of the Orroroo 1:250,000 Sheet. The location of this anomalous sample (M42) is shown on the Minburra 1:50,000 Sheet.

As a result of this, further stream sediment sampling was conducted in the vicinity on the Minburra, Yalpara and Carrieton 1:50,000 Sheets. 45 samples of 20kg each were collected at a density of approximately  $10\text{km}^2$  per sample.

The heavy mineral fractions of the samples were examined microscopically and found to be barren of any kimberlitic minerals.

4.0

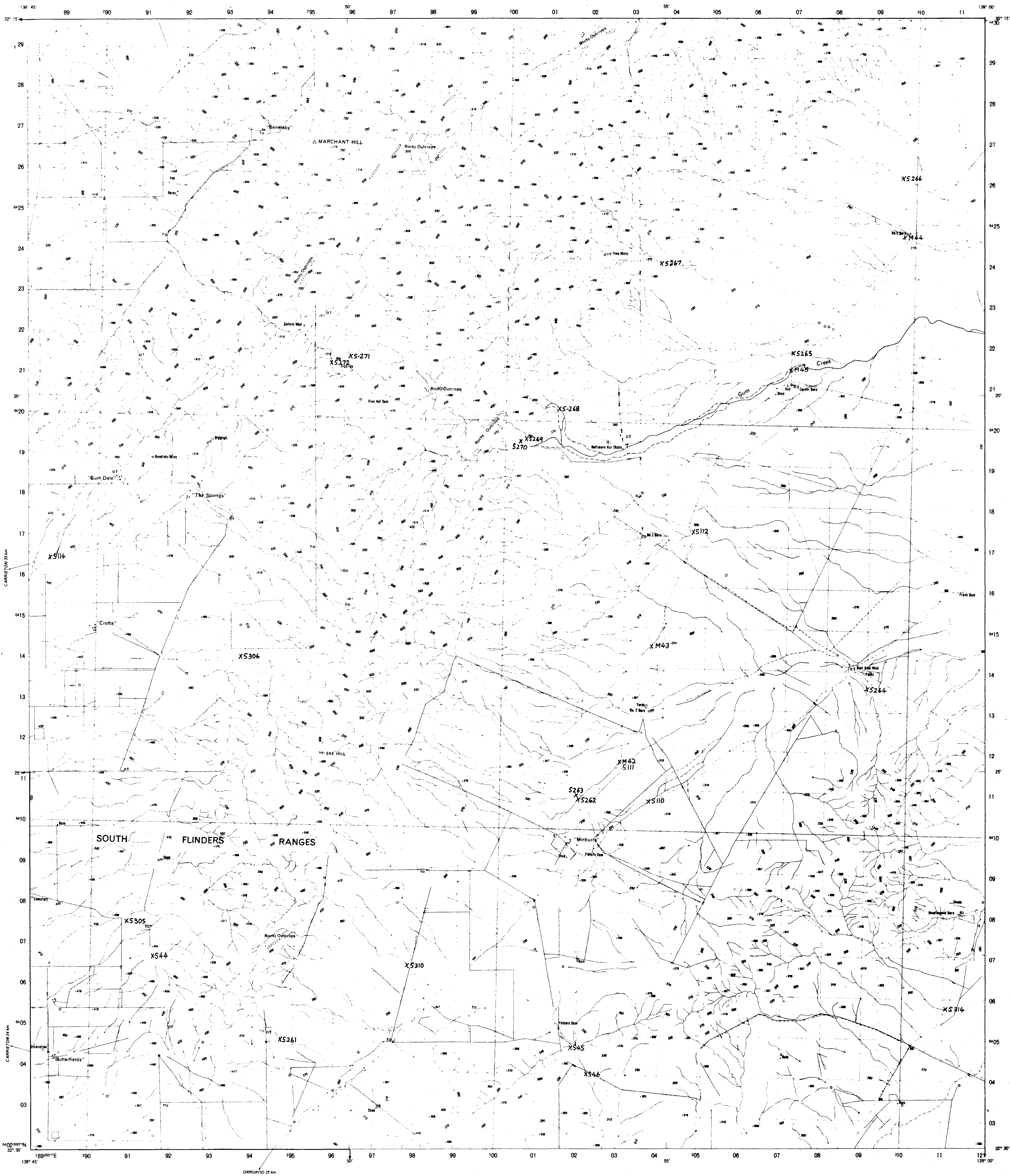
CONCLUSION

Exploration in the south-eastern portion of E.L. 546 has failed to reveal the occurrence of an economic deposit of the minerals sought. This portion has, therefore, been relinquished while work is continuing in the north-western portion.

1:50 000 TOPOGRAPHIC SERIES

MINBURRA (PLAN 3)  
SOUTH AUSTRALIA

FIRST EDITION



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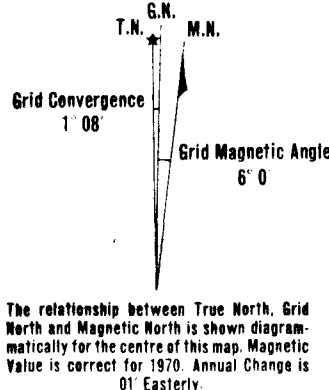
**PROJECTION** Australian Map Grid, Zone 54, Central Meridian 141° E.

**ELEVATION** Elevations in Metres, Australian Height Datum.

**CONTROL** Triangulation and Traverse by the Division of National  
Mapping, the Royal Australian Survey Corps and the South  
Australian Department of Lands.

**DETAIL** Aerial Photography, Srs. S.A. 1331 & 1332 October 1971.

**PHOTOGRAPHY** A. B. James, Government Printer, 1973.



Built-up area: National route marker.  
Road, sealed surface, two or more lanes.  
Road, sealed surface, one lane.  
Road, unsealed surface, two or more lanes.  
Road, unsealed surface, one lane.  
Gate.  
Cattle grid.  
Vehicular track.  
Railway, multiple track.  
Station.  
Siding.  
Railway, single track.  
Cutting.  
Embankment.  
Building.  
Post office.  
Police station.  
School.  
Hospital.  
Church.  
Mine.  
Windmill.  
Fence.  
Quarry.

SCALE 1:50 000

METRES 0 1 2 3 4 5 KILOMETRES

CONTOUR INTERVAL 10 METRES



Power transmission line: Levee or bank.  
Major horizontal central point: Bench mark.  
Spot elevation.  
Lake, perennial: Watercourse.  
Lake, intermittent: Small dam or waterhole on watercourse.  
Lake, mainly dry: Land subject to occasional flooding.  
Bore or well: Tank or small dam.  
Contours: Depression contours.  
Rock, bare or awash: Reef.  
Sand: Sand ridges.  
Pine plantation: Orchard or vineyard.  
Windbreak.

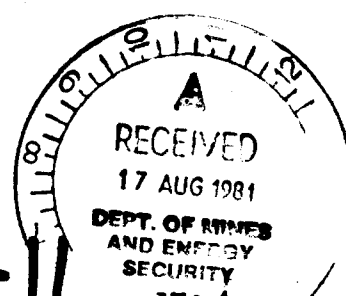
The representation of a road on this map is an evidence of the existence of a right of way.

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| YALPANA  |
| MINBURRA |

ADJOINING SHEETS

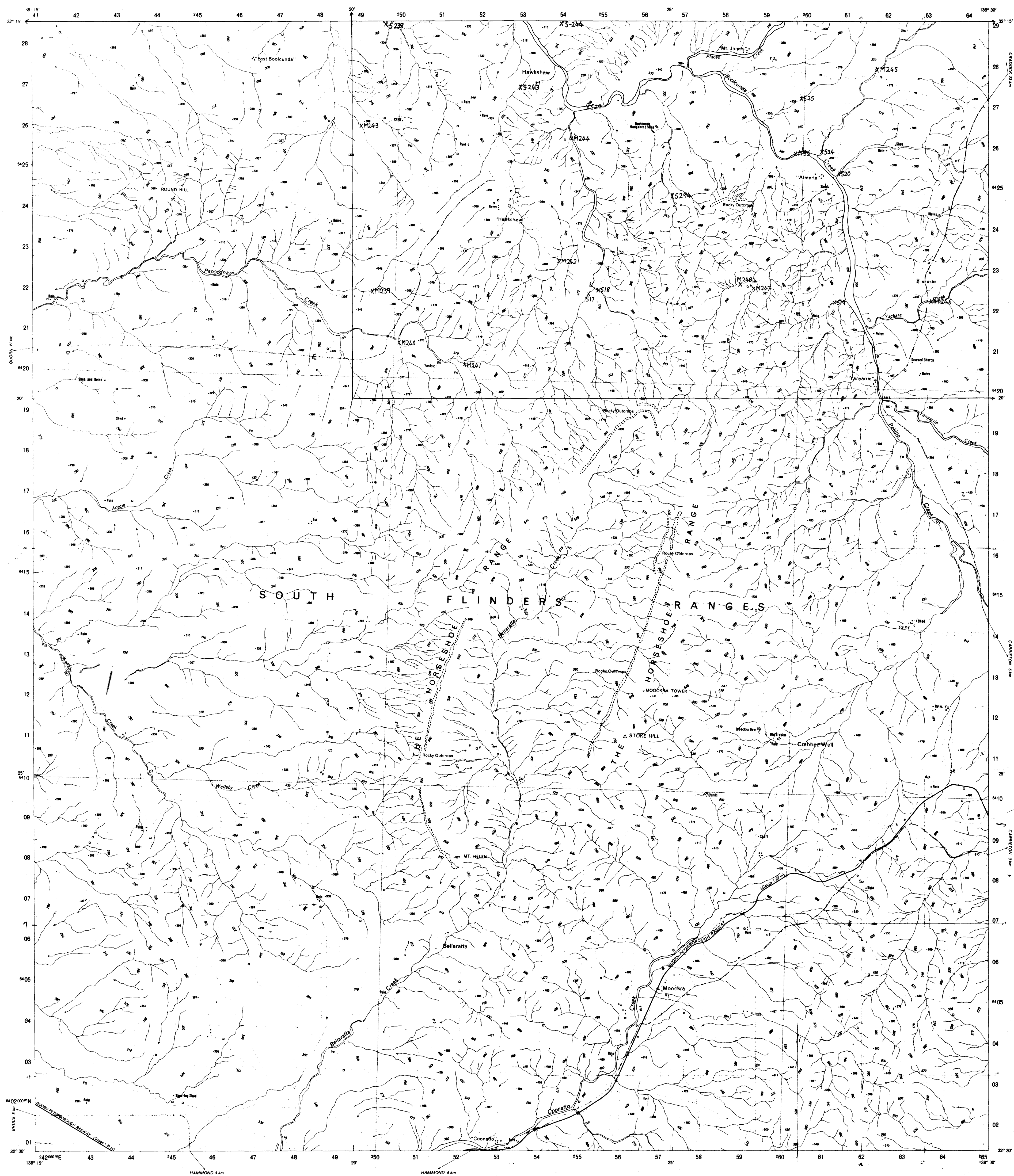
|                      |                     |                    |
|----------------------|---------------------|--------------------|
| YERALUE<br>6633-IV   | SICUS<br>6633-I     | ORAMA<br>6733-IV   |
| CARNETON<br>6633-III | MINBURRA<br>6633-II | CARNER<br>6733-III |
| ORROROO<br>6632-IV   | YALPANA<br>6632-I   | BUNDARA<br>6732-IV |



# MOOCKRA (PLAN 1) SOUTH AUSTRALIA

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**ELEVATION** Elevations in Metres, Australian Height Datum.

**CONTROL** Triangulation and Traverse by the Division of National  
Mapping, the Royal Australian Survey Corps and the South  
Australian Department of Lands.

**DETAIL** Aerial Photography, S.A. 1332, October, 1971.

**PHOTOGRAPHY** A. B. Jones, Government Printer, 1974.

**G.M.**  
T.M.  
M.M.

Grid Convergence  
1° 24'

Grid Magnetic Angle  
5° 30'

The relationship between True North, Grid  
North and Magnetic North is shown diagram-  
matically for the centre of this map. Magnetic  
Value is correct for 1970. Annual Change is  
0° East.

Built-up area: National route marker.  
Road, sealed surface, two or more lanes.  
Road, sealed surface, one lane.  
Road, unsealed surface, two or more lanes.  
Road, unsealed surface, one lane.  
Gate: Cattle grid.  
Vehicular track.  
Railway, multiple track: Station: Siding.  
Railway, single track: Cutting: Embankment.  
Building: Post office: Police station: School.  
Hospital: Church: Mine: Windmill.  
Fence: Quarry.

Power transmission line: Levee or bank.  
Survey beacon: Spot elevation.  
Lake, perennial: Watercourse.  
Lake, intermittent: Small dam or waterhole on watercourse.  
Lake, mostly dry: Land subject to occasional flooding.  
Bore or well: Tank or small dam.  
Contours: Depression contours.  
Rock, bare or swash: Reef.  
Sand: Sand ridges.  
Pine plantation: Orchard or vineyard.  
Windbreak.

SCALE 1:50 000  
METRES 1000 0 1 2 3 4 5 KILOMETRES  
CONTOUR INTERVAL 10 METRES

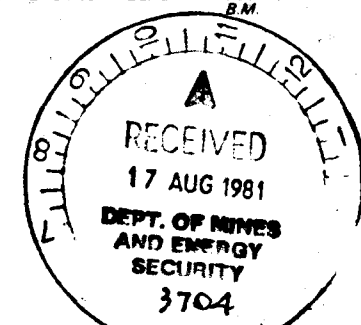
The representation of a road on this map is no evidence of the existence of a right of way.

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| ROOLCUNDA | MOOCKRA | YANKARRIE |
| PALMER    | 6533-II |           |
| COONATTI  |         | EURELIA   |

## ADJOINING SHEETS

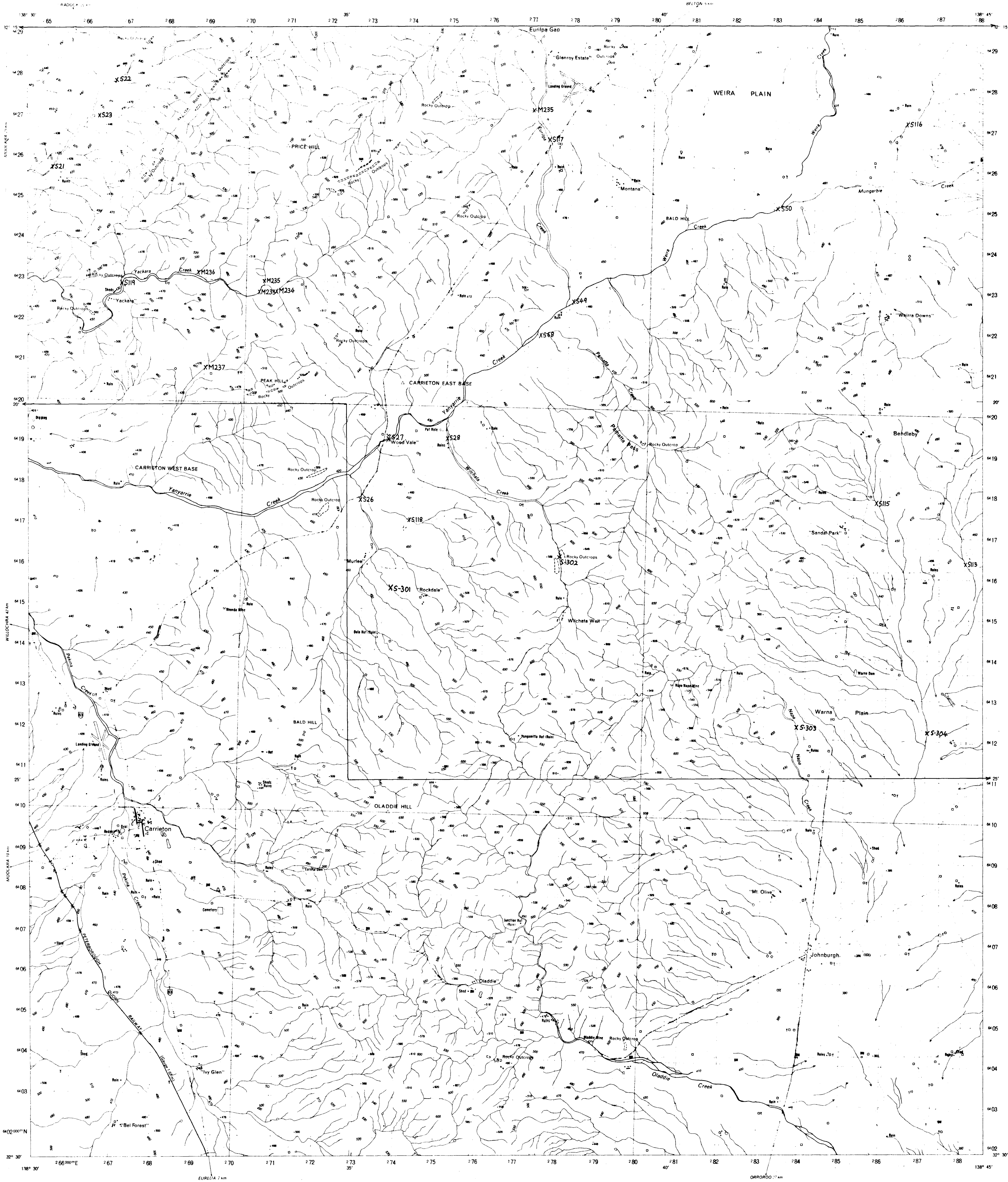
|                       |                    |                        |
|-----------------------|--------------------|------------------------|
| WILLOCHRA<br>6533-IV  | KANYAKA<br>6533-I  | YEMALDE<br>6533-IV     |
| QUORN<br>6533-III     | MOOCKRA<br>6533-II | CARRINGTON<br>6533-III |
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CARRINGTON (PLAN 2)  
SOUTH AUSTRALIA

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**ELEVATION** Elevations in Metres, Australian Height Datum.

**CONTROL** Triangulation and Traverse by the Division of National  
Mapping, the Royal Australian Survey Corps and the South  
Australian Department of Lands.

**DETAIL** Aerial Photography, S.A. 1331 & 1332, Oct 1971

**PHOTOGRAPHY** A. B. James, Government Printer, 1973.

**G.M.**  
T.M.  
M.N.

Grid Convergence  
1° 18'

Grid Magnetic Angle  
5° 45'

The relationship between True North, Grid  
North and Magnetic North is shown diagram-  
matically for the centre of this map. Magnetic  
Value is correct for 1970. Annual Change is  
01° Easterly.

Built-up areas: National route marker:  
Road, sealed surface, two or more lanes:  
Road, sealed surface, one lane:  
Road, unsealed surface, two or more lanes:  
Road, unsealed surface, one lane:  
Gale:  
Cattle grid:  
Vehicular track:  
Railway, multiple track:  
Station:  
Siding:  
Railway, single track:  
Cutting:  
Embankment:  
Building:  
Post office:  
Police station:  
School:  
Hospital:  
Church:  
Mine:  
Windmill:  
Fence:  
Quarry:

SCALE 1:50 000  
METRES 1000 2000 3000 4000 5 KILOMETRES  
CONTOUR INTERVAL 10 METRES



Power transmission line: Lattice or bank:  
Major horizontal control point: Bench mark: Spot elevation:  
Lake, perennial: Watercourse:  
Lake, intermittent: Small dam or waterhole on watercourse:  
Lake, mainly dry: Land subject to inundation:  
Dere or well: Tank or small dam:  
Contours: Depression contours:  
Rock, bare or washed: Reef:  
Sand: Sand ridges:  
Pine plantation: Orchard or vineyard:  
Windbreak:

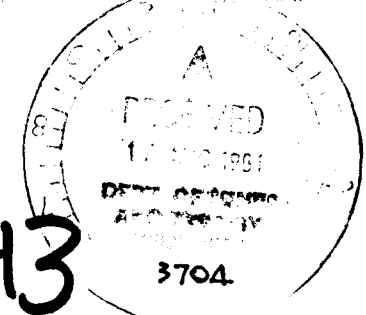
The representation of a road on this map is no evidence of the existence of a right of way.

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| ADJOINING SHEETS   |                        |                     |
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| WILLOWIE<br>6632-I | OROROO<br>6632-IV      | YALPARA<br>6632-I   |

G.M.H. M.F.W.

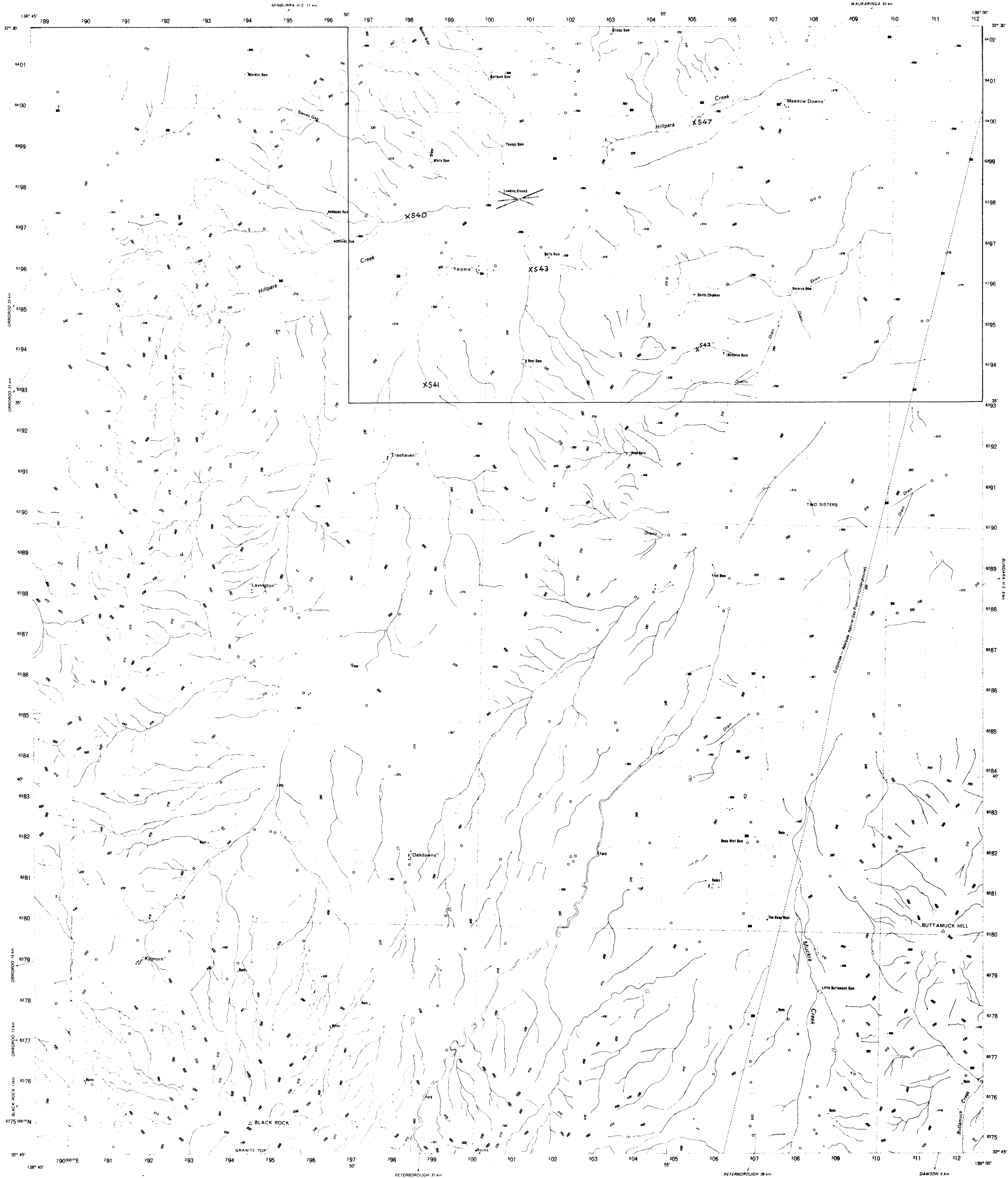
3704-13



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YALPARA (PLAN 4)  
SOUTH AUSTRALIA

PRELIMINARY EDITION



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**ELEVATION** Elevations in Metres, Datum: Mean Sea Level, Port Adelaide.

**CONTROL** Triangulation and Traverse by the Division of National  
Mapping, the Royal Australian Survey Corps and the South  
Australian Department of Lands.

**DETAIL** Aerial Photography, Svy. S.A. 1254, 1256 October, 1970.

**PHOTOGRAPHY** R. J. Wall, Chief Lithographer, 1972.

G.M.  
T.R. M.L.  
Grid Convergence  
1 00  
Grid Magnetic Angle  
6° 30'

The relationship between True North, Grid  
North and Magnetic North is shown diagram-  
matically for the centre of this map. Magnetic  
Value is correct for 1960. Annual Change is  
0.5° Easterly.

Built-up area: National route marker  
Road, sealed surface, two or more lanes: Cutting.  
Road, sealed surface, one lane: Embankment.  
Road, unsealed surface, two or more lanes: Bridge.  
Road, unsealed surface, one lane:  
Vehicular track.  
Railway, multiple track: Station: Siding.  
Railway, single track: Station with siding.  
Building: Post office: Police station: School.  
Hospital: Church: Mine: Windmill.  
Fence: Quarry.

Power transmission line: Levee or bank.  
Major horizontal control point: Bench mark: Spot elevation.  
Lake, perennial: Watercourse.  
Lake, intermittent: Small dam or waterhole on watercourse.  
Lake, mainly dry: Land subject to inundation.  
Bore or well: Tank or small dam.  
Contours: Depression contours.  
Rock, bare or awash: Reef.  
Sand: Sand ridges.  
Pine plantation: Orchard or vineyard.  
Windbreak.

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| ERSSINE<br>6632-IV  | CAVENAGH<br>6632-I   |
|                     | COELIN<br>6632-V     |

ADJOINING SHEETS

|                       |                         |                       |
|-----------------------|-------------------------|-----------------------|
| CARRISTON<br>6632-III | MINIBURRA<br>6632-II    | CARRISTON<br>6632-III |
| ORROROO<br>6632-IV    | YALPARA<br>6632-I       | BUNDARA<br>6632-IV    |
| PEKINA<br>6632-III    | PETERBOROUGH<br>6632-II | NACARA<br>6632-III    |

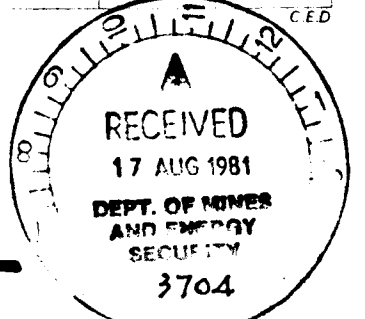
This map has been prepared without complete field examination in order to expedite publication.  
The representation of a road on this map is no evidence of the existence of a right of way.

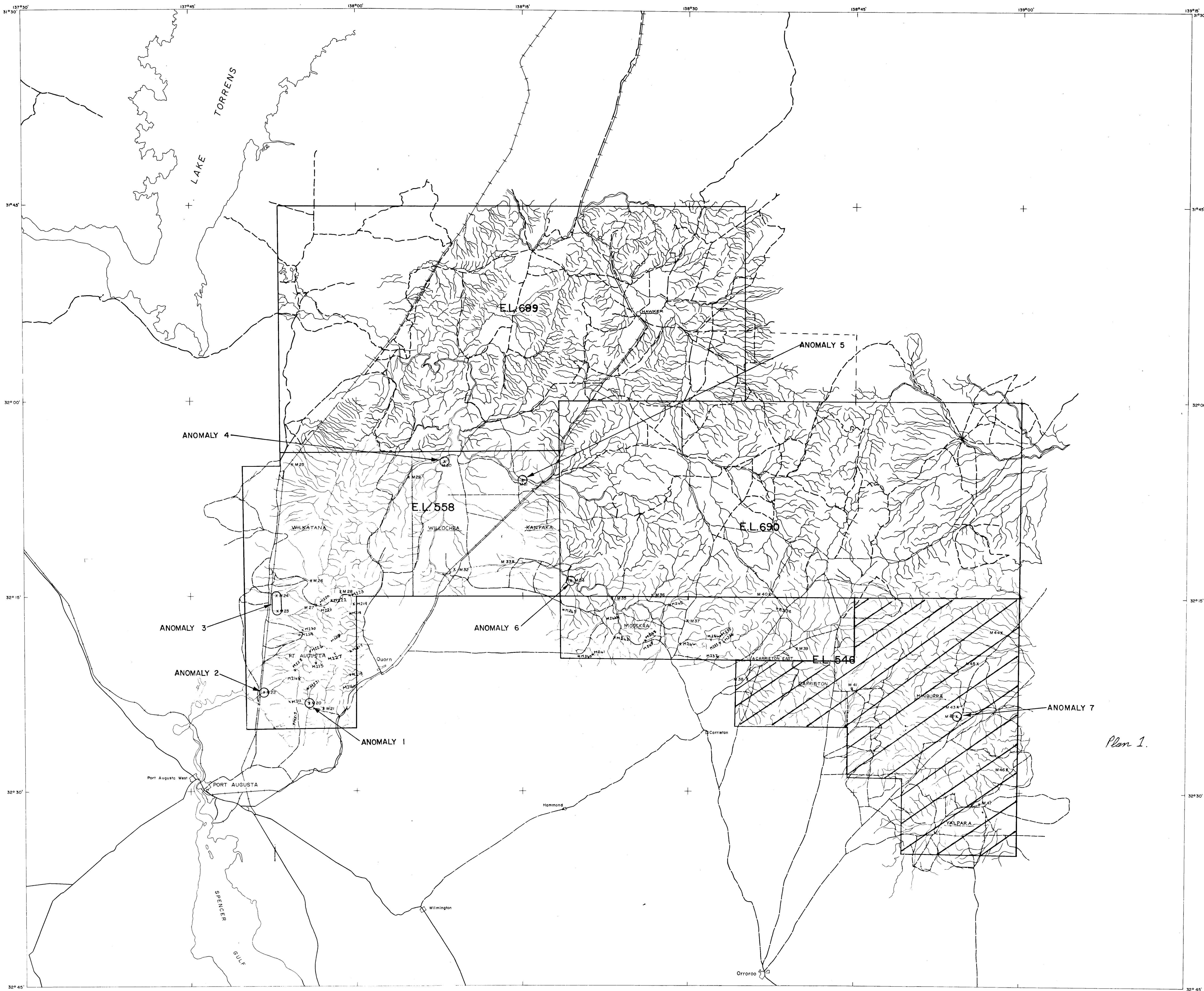
SCALE 1:50,000

METRES 1000 2000 3000 4000 5 KILOMETRES

CONTOUR INTERVAL 10 METRES

3704-14

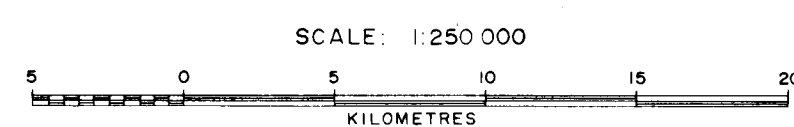




Plan 1.

REFERENCE

- |  |                                          |  |                  |  |                   |
|--|------------------------------------------|--|------------------|--|-------------------|
|  | Exploration License application boundary |  | Road - secondary |  | Area Relinquished |
|  | 20kg stream gravel sample and number     |  | Track            |  |                   |
|  | Town                                     |  | Railway line     |  |                   |
|  | Highway                                  |  | Watercourse      |  |                   |



SWAN RESOURCES LIMITED  
 ORROROO NORTH PROJECT 1113  
 SOUTH AUSTRALIA  
 EXPLORATION LICENCES  
 546, 558, 689 & 690

3704-15

SCALE 1:250 000  
 DATE MARCH, 1979  
 MAP No.

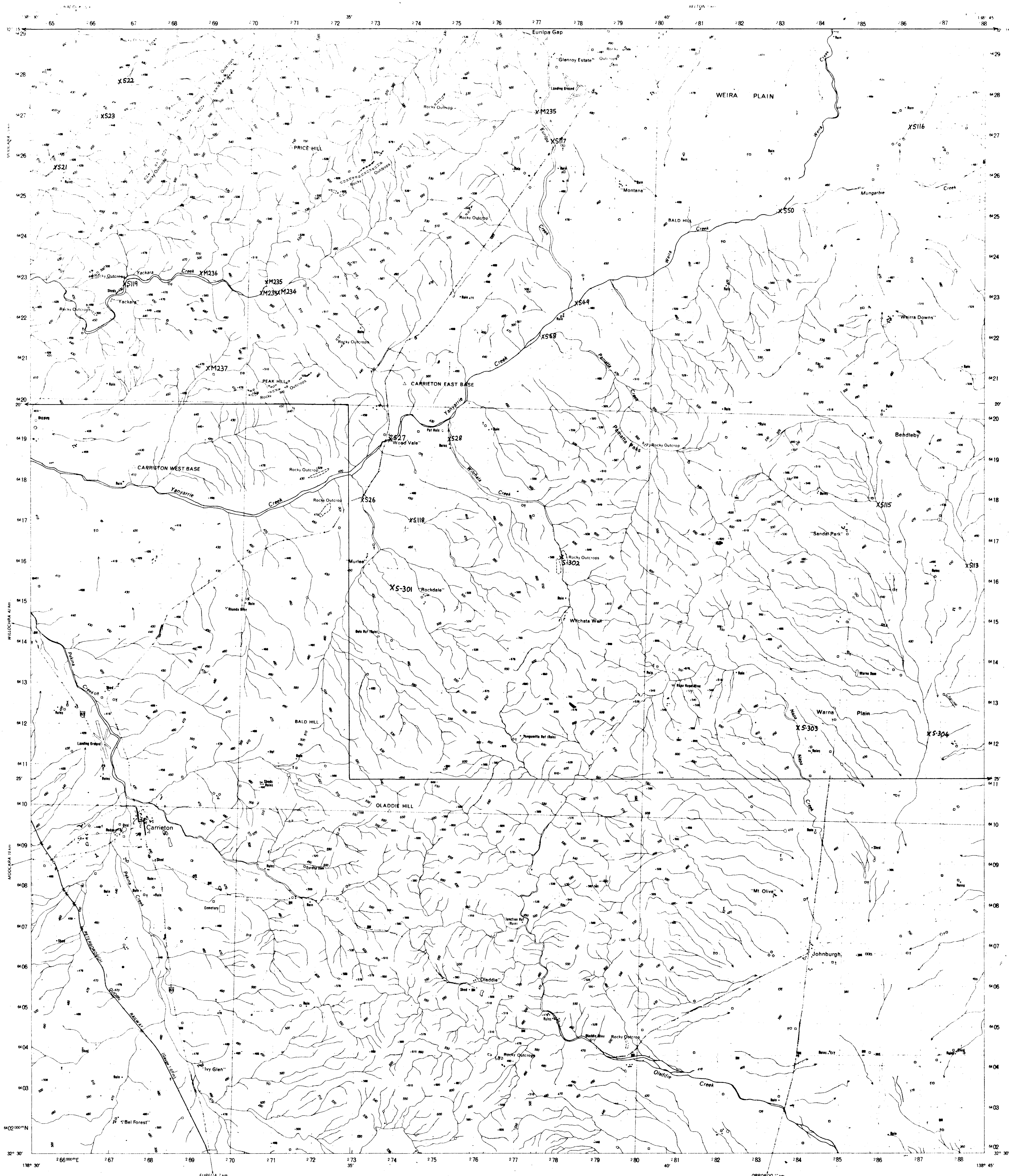
Drawn by Trudy A. Duncan

1:50 000 TOPOGRAPHIC SERIES

# CARRIETON

SOUTH AUSTRALIA

FIRST EDITION



SCALE 1:50 000

METRES 1000 0 1 2 3 4 5 KILOMETRES

CONTOUR INTERVAL 10 METRES



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**ELEVATION** Triangulation and Traverses by the Division of National  
Mapping, the Royal Australian Survey Corps and the South  
Australian Department of Lands.

**CONTROL** Aerial Photography, Svy. S.A. 1331 & 1332, Oct. 1971

**DETAIL** A. B. James, Government Printer, 1973.

**G.M.**  
T.N. +  
M.N.

Grid Convergence  
1 16

Grid Magnetic Angle  
5 45

The relationship between True North, Grid  
North and Magnetic North is shown diagram-  
matically for the centre of this map. Magnetic  
Value is correct for 1970. Annual Change is  
01' Easterly.

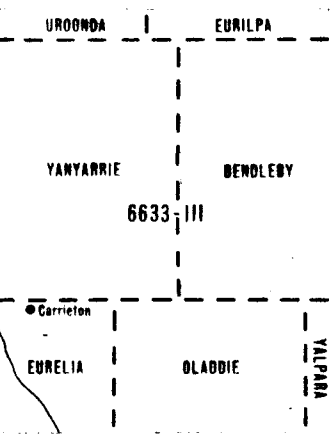
Built-up area: National route marker.  
Road, sealed surface, two or more lanes.  
Road, sealed surface, one lane.  
Road, unsealed surface, two or more lanes.  
Road, unsealed surface, one lane.  
Vehicle track.  
Railway, multiple track.  
Railway, single track.  
Building: Post office.  
Hospital: Church.  
Fence: Quarry.

Bridge.  
Gate.  
Cattle grid.  
Stallion.  
Siding.  
Cutting.  
Embarkment.  
Police station.  
School.  
Windmill.

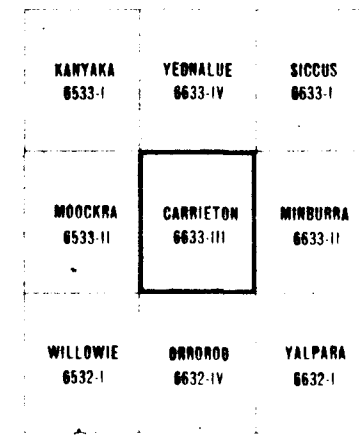
Power transmission line: Levee or bank.  
Major horizontal central point: Bench mark.  
Lake, perennial: Watercourse.  
Lake, intermittent: Small dam or waterhole on watercourse.  
Lake, mainly dry: Land subject to inundation.  
Dams or weirs: Tank or small dam.  
Contours: Depression contours.  
Rock, bare or awash: Reef.  
Sand: Sand ridges.  
Pine plantation: Orchard or vineyard.  
Windbreak.

The representation of a road on this map is no evidence of the existence of a right of way.

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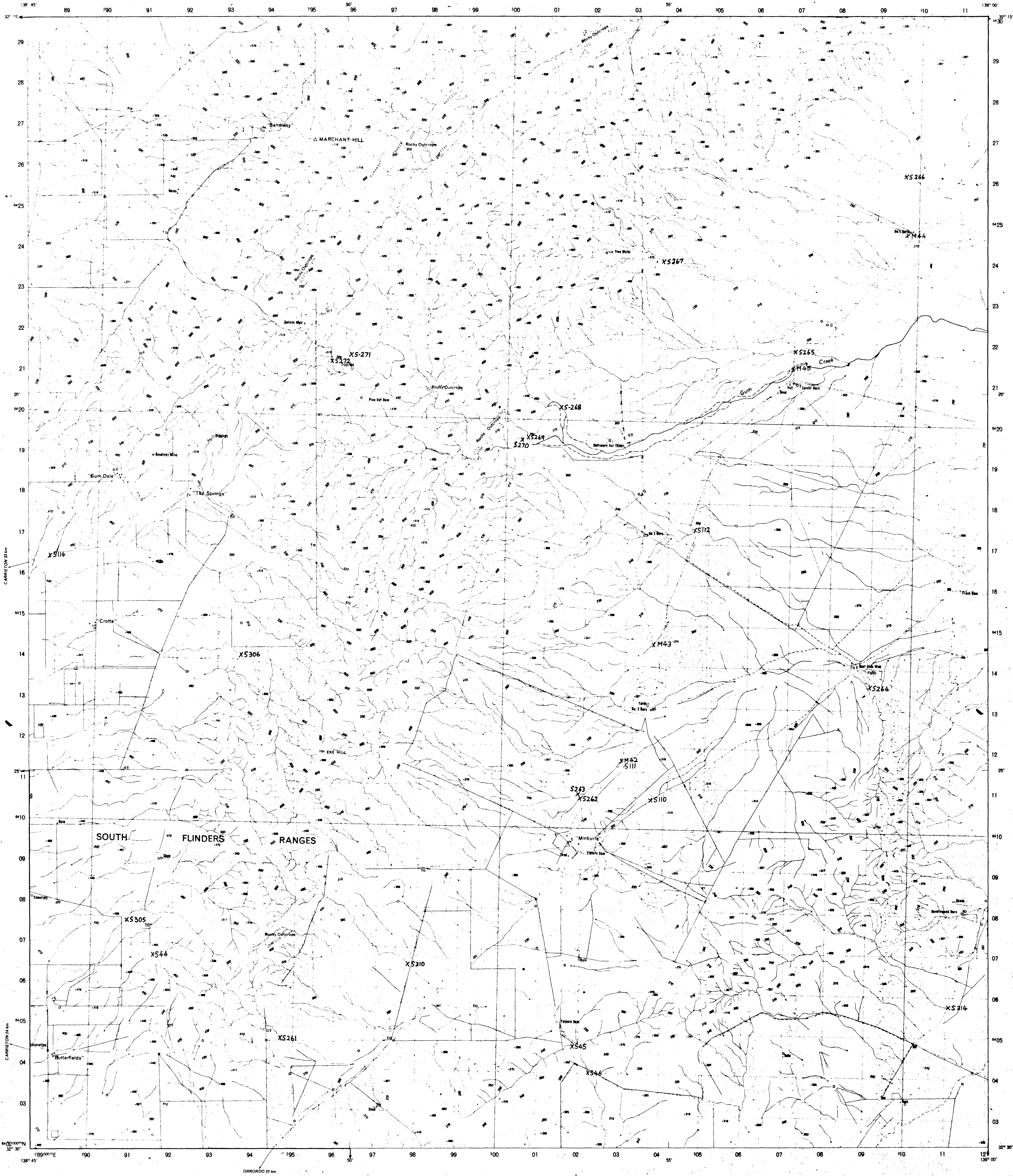
ADJOINING SHEETS



MINBURRA  
SOUTH AUSTRALIA

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Australian Department of Lands.

**DETAIL** Aerial Photography, Svy. S.A. 1331 & 1332 October 1971.

**PHOTOLITHOGRAPHY** A. B. James, Government Printer, 1973.

**Grid Convergence** 1° 00'

**Grid Magnetic Angle** 6° 0'

The relationship between True North, Grid  
North and Magnetic North is shown diagram-  
matically for the centre of this map. Magnetic  
Value is correct for 1970. Annual Change is  
01' Eastern.

Built-up area: National route marker.  
Road, sealed surface, two or more lanes.  
Road, sealed surface, one lane.  
Road, unsealed surface, two or more lanes.  
Road, unsealed surface, one lane.  
Gate: Cattle grid.  
Vehicular track.  
Railway, multiple track: Station. Siding.  
Railway, single track: Cutting. Embankment.  
Building: Post office: Police station: School.  
Hospital: Church: Mine: Windmill.  
Fence: Quarry.

SCALE 1:50 000

CONTOUR INTERVAL 10 METRES



Power transmission line: Leases or bank.  
Major horizontal control point: Bench mark: Spot elevation.  
Lake, perennial: Watercourse.  
Lake, intermittent: Small dam or waterhole on watercourse.  
Lake, mainly dry: Land subject to occasional flooding.  
Bore or well: Tank or small dam.  
Contours: Depression contours.  
Rock, bare or swash: Reef.  
Sand: Sand ridges.  
Pine plantation: Orchard or vineyard.  
Windbreak.

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| 6633-IV | 6633-V  | 6633-VI  |

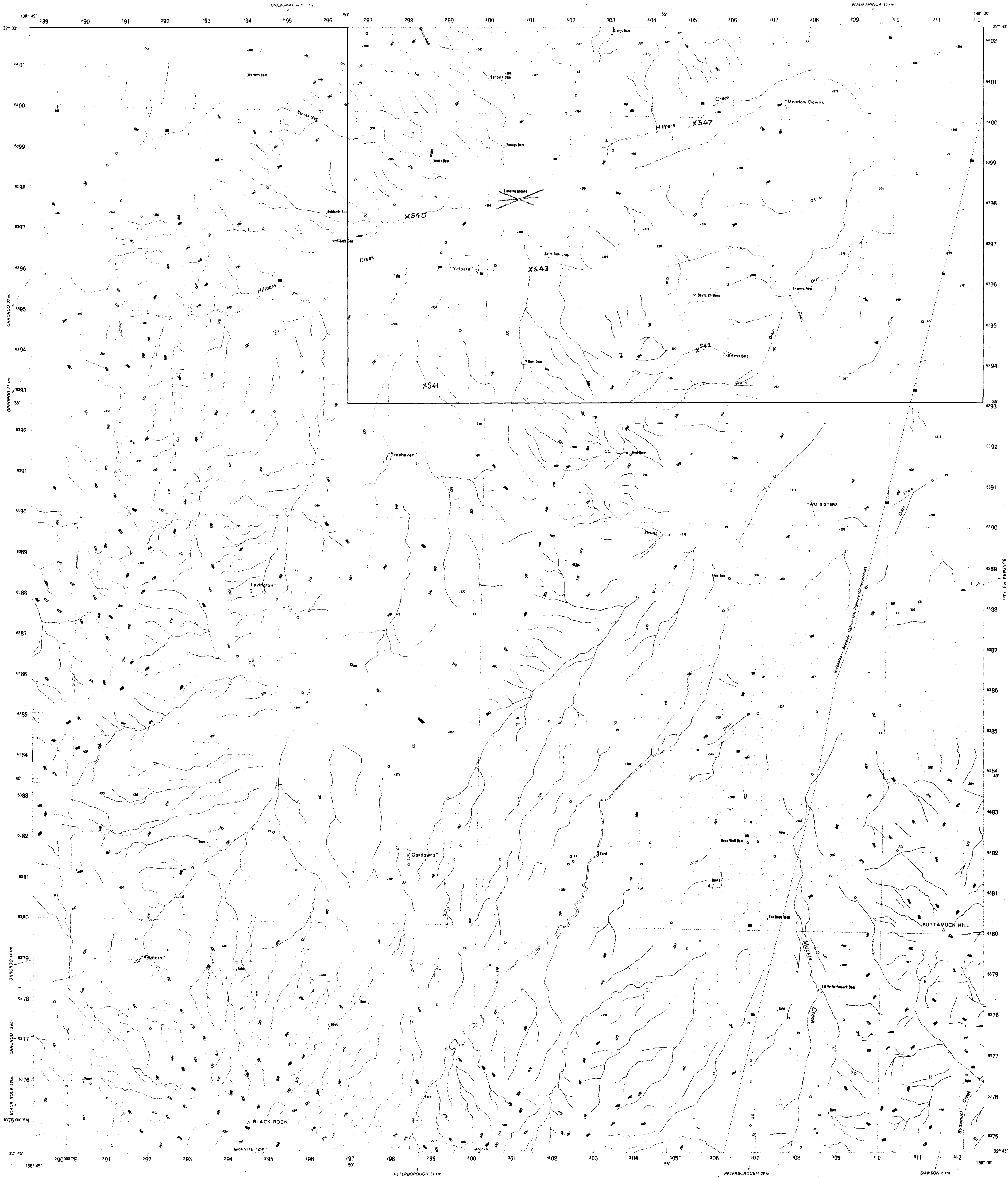
ADJOINING SHEETS

|                        |                     |                     |
|------------------------|---------------------|---------------------|
| YERBULUE<br>6633-IV    | SICCUS<br>6633-I    | ORARA<br>6733-IV    |
| CARRINGTON<br>6633-III | MINBURRA<br>6633-II | CARRICK<br>6733-III |
| ORRORO<br>6632-IV      | YALPARA<br>6632-I   | BURDARA<br>6732-IV  |

YALPARA  
SOUTH AUSTRALIA

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**CONTROL** Triangulation and Traverse by the Division of National  
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**DETAIL** Aerial Photography, Svy. S.A. 1258, 1259 October, 1970.

**PHOTOGRAPHY** H. J. Wall, Chief Lithographer, 1972.

G.N.  
T.M. & M.N.  
Grid Convergence  
1 09  
Grid Magnetic Angle  
6 30  
The relationship between True North, Grid  
North and Magnetic North is shown diagram-  
matically for the centre of this map. Magnetic  
Value is correct for 1965. Annual Change is  
03 Eastward.

Built up area: National route marker  
Road, sealed surface, two or more lanes: Cutting  
Road, sealed surface, one lane: Embankment  
Road, unsealed surface, two or more lanes: Bridge  
Road, unsealed surface, one lane  
Vehicular track  
Railway, multiple track: Station: Siding  
Railway, single track: Station with siding  
Building: Post office: Police station: School  
Hospital: Church: Mine: Windmill  
Fence: Quarry

SCALE 1:50,000  
METRES 1000 0 1 2 3 4 5 KILOMETRES  
CONTOUR INTERVAL 10 METRES



Power transmission line: Levee or bank  
Major horizontal control point: Bench mark: Spot elevation  
Lake, perennial: Watercourse  
Lake, intermittent: Small dam or waterhole on watercourse  
Lake, mainly dry: Tank or small dam  
Bare or well: Land subject to inundation  
Contours: Depression contours  
Rock, bare or awash: Reef  
Sand: Sand ridges  
Pine plantation: Orchard or vineyard  
Windbreak

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| ERSKINE | CAVENAGH  |
| CUSLIN  |           |

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| ORROROO<br>6632 (H)      | YALPARA<br>6632 (H)      | BUNDARA<br>6732 (H) |
| PETERBOROUGH<br>6632 (H) | PETERBOROUGH<br>6632 (H) | WACKARA<br>6732 (H) |

CED