

# Open File Envelope

## No. 8108

**EL 1548**

**ROBERTSTOWN**

**PROGRESS, PARTIAL SURRENDER AND FINAL  
REPORTS TO LICENCE EXPIRY/SURRENDER FOR THE  
PERIOD 30/11/1988 TO 29/11/1989**

Submitted by  
BP Australia Gold Pty Ltd  
1989

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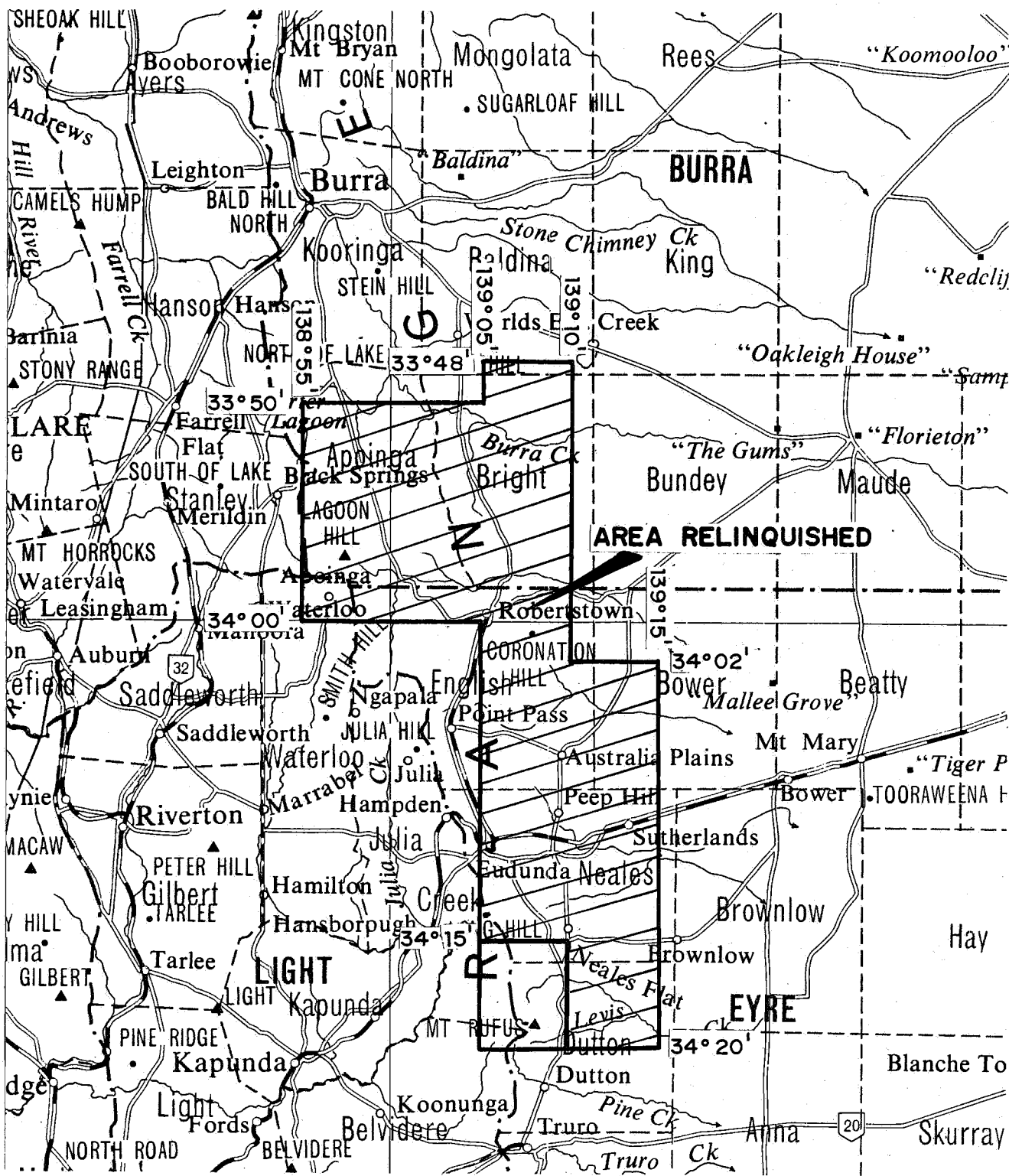
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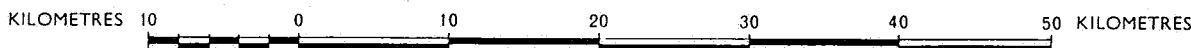


**Government of South Australia**  
**Primary Industries and Resources SA**



**SURRENDERED**

SCALE 1:500,000



APPLICANT: BP AUSTRALIA GOLD PROPRIETARY LIMITED

DM: 242/88

AREA: ~~995~~<sup>71</sup> square kilometres (approx.)

1:250 000 PLANS: ADELAIDE, BURRA

LOCALITY: ROBERTSTOWN AREA - Approx. 40 KM SOUTHEAST of BURRA

DATE GRANTED: 30.II.88

DATE EXPIRED: 29.II.89

EL No: 1548

CONTENTS ENVELOPE 8108

TENEMENT: E.L. 1548 - Robertson Area.

TENEMENT HOLDER: B.P. Australia Gold Pty. Ltd.

REPORT: 1st Quarterly Report E.L. 1548 For Period 30th November 1988 To 28th February 1989. Pgs. 3-12

PLANS: Adelaidean Gold Project Adelaide Geosyncline Burra Area Geology And Tenements. Drg. No. MEL 3109. Fig. 1. Pg. 7

REPORT: 2nd Quarterly Report E.L. 1548 For Period 1st March To 31st May 1989. Pgs. 13-22

APPENDIX 1: Analytical Results. Pgs. 23-29

PLANS: Adelaide Geosyncline Project Southern Group Tenement Locations. Drg. No. MEL 3149. Pg. 17

BLEG & Silt Stream Sediment Sample Locations & Assays. 8108-1  
Drg. No. MEL 3150. Fig. 1.

REPORT: 3rd Quarterly Report E.L. 1548 For Period 1st June To 31st August 1989. Pgs. 30-32

PLANS: Area To Be Relinquished E.L. 1548. Drg. No. MEL 3152. Pg. 33

REPORT: Partial Relinquishment Report E.L. 1548 September 1989. Pgs. 34-44

APPENDIX 1: Analytical Results. Pgs. 45-51

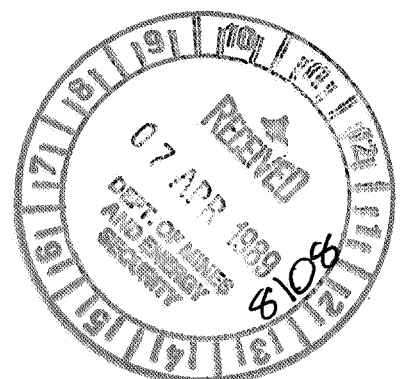
REPORT: Final Report E.L. 1548 October 1989. Pgs. 52-57

PLANS: Tenement Locations. Drg. No. MEL 3149. Fig. 1. Pg. 55

000003

**BP MINERALS AUSTRALIA  
EL 1548 'ROBERTSTOWN'  
FIRST QUARTERLY REPORT  
30TH NOVEMBER 1988 TO 28TH FEBRUARY 1989**

**M.D. WALKER  
MARCH 1989**



# CONTENTS

000004

	<u>Page No</u>
SUMMARY	
1 INTRODUCTION	1
2 LOCATION AND ACCESS	1
3 TARGET	1
4 TENEMENT	1
5 REGIONAL AND TENEMENT GEOLOGY	1
6 PREVIOUS EXPLORATION AND MINING	3
7 WORK COMPLETED THIS REPORT PERIOD	4
8 RESULTS	5
9 CONCLUSIONS AND RECOMMENDATIONS	5
10 EXPENDITURE	6
BIBLIOGRAPHY	7

## LIST OF FIGURES

<u>Figure No</u>	<u>Title</u>	<u>Plan No</u>
Fig 1	EL 1548 - Robertstown Location Map	MEL-3109

## TABLES

<u>Table No</u>	<u>Title</u>	<u>Page No</u>
Table 1	EL 1548, Robertstown, Summary Lithostratigraphy	2

**SUMMARY**

EL 1548, Robertstown, was granted to BP Australia Gold Proprietary Limited on 30th November 1988 for a period of 12 months. This report is the first quarterly report. The exploration target is a sediment hosted gold deposit.

Work carried out comprised; literature survey, and preparation for a BLEG survey using 5kg sample weights and a stream silt survey with analysis for As and Fe. Sample collection and landowner liaison is planned to commence in mid-March.

## 1 INTRODUCTION

EL 1548, Robertstown, is one of three contiguous EL's located in the Mount Lofty Ranges that were granted to BP Australia Gold Proprietary Limited (BP Gold) in late 1988 as part of a regional search for gold deposits. This report details the work carried out and results obtained during the first quarterly period. Maps showing the regional geology and sample locations will be available in the next quarter.

## 2 LOCATION AND ACCESS

EL 1548 is located approximately 120km north-northeast of Adelaide and lies dominantly between the towns of Dutton and Worlds End Creek in the Eudunda-Robertstown area (Fig 1). The closely settled nature of this region has resulted in abundant and easy access to almost all areas. The principal impediment is the large number of individual landowners who must be located and provided with notice of entry and to whom our activities must be explained.

The tenement is located on the Burra (I-54-5) and Adelaide (I-54-9) 250,000 sheet's and within the Eudunda (6729), Robertstown (6730) and Clare (6630) 100,000 sheets. Topographic maps at 1:50,000 scale showing cultural, topographic and land sub-division features, are available for the whole tenement.

## 3 TARGET

The exploration target is a gold deposit associated with a major structure and hosted by carbonate bearing rocks.

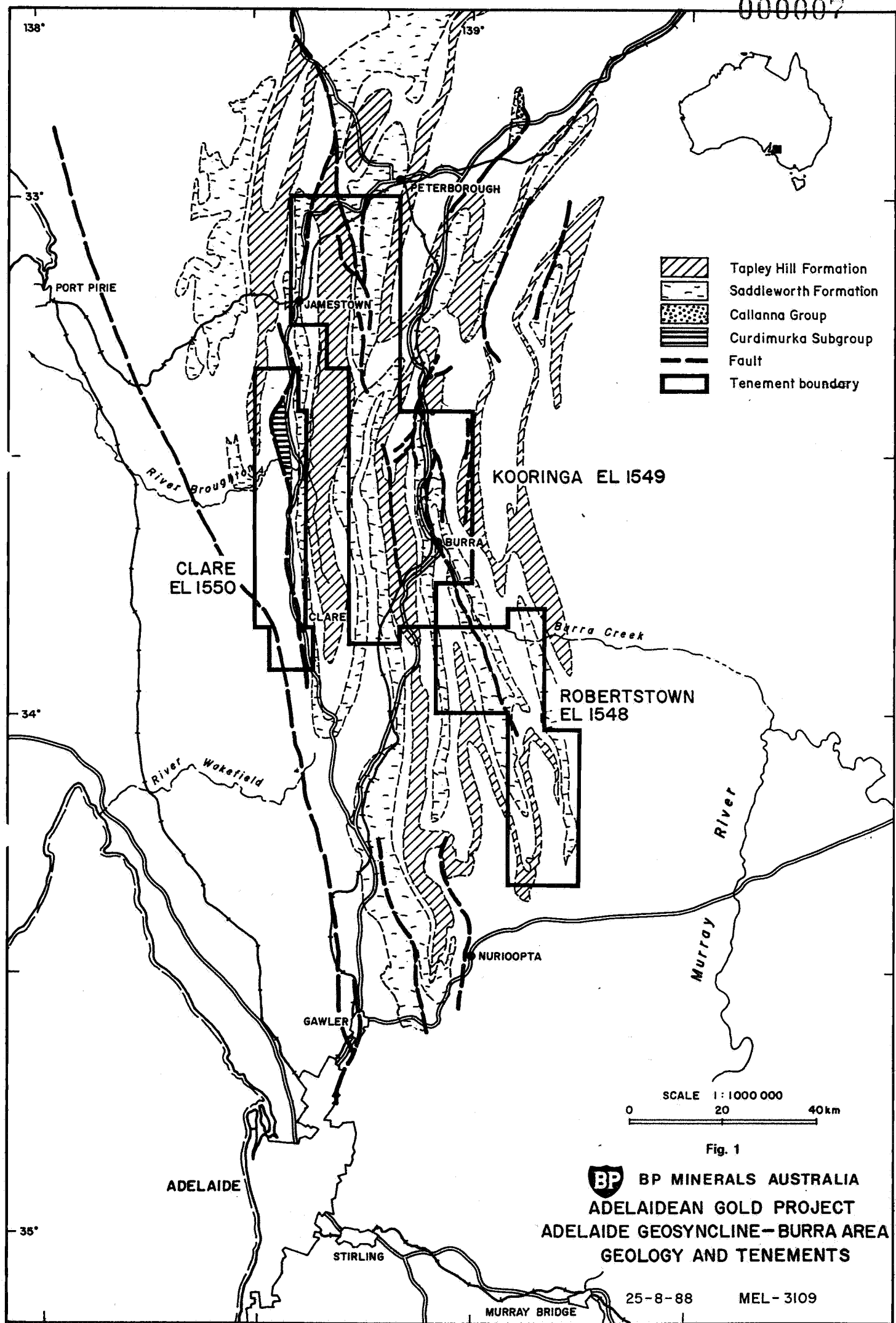
## 4 TENEMENT

EL 1548, Robertstown, comprising approximately 995 km<sup>2</sup> was granted to BP Gold on the 30th November 1988 for a period of 12 months. The tenement is not encumbered by pre-existing mining titles.

## 5 REGIONAL AND TENEMENT GEOLOGY

The tenement is underlain dominantly by Adelaidean age sediments of the Adelaide Geosyncline with subordinate Cambrian age deposits laid down in the Kanmantoo Trough. In contrast to the more complex folding in the Central Mount Lofty Ranges east of Adelaide, folding in the tenement area comprises relatively simple open folds with approximately north-south or northwest-southeast axial planes dominant. Regionally significant fault structures include the Burra Fault and the northern section of the Palmer Fault. Sediments of the Burra Group and the Umberatana Group dominate the regional succession, with subordinate representatives from the unconformably overlying Kanmantoo Group. The tenement lies within the biotite-greenschist-grade metamorphic zone, but is located outside and to the north of the area defined by the Survey as exhibiting pronounced metamorphism.

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The simplified lithostratigraphy of the tenement, taken from Mirams (1964) and Thomson (1969), is summarised in Table 1. The primary target units are those containing calcareous or dolomitic members; secondary targets are carbonaceous or pyritic units. Massive sandstone units, greywackes, turbidites, siltstones or tillites have not been targeted for sampling.

TABLE 1  
EL 1548, ROBERTSTOWN, SUMMARY LITHOSTRATIGRAPHY

Lower to Middle Cambrian	K			
	A			
	N	G		greenschist grade siltstone -
	M	r		greywacke and arkosic siltstone
	A	o		and turbidites with minor calc-
Lower Cambrian	N	u		silicates and shales
	T	p		
	O			
	O			
			E	
Lower Cambrian			q	
	H	G	u	
	A	r	i	
	W	o	v	Truro Volc.
	K	u	a	trachyte and metabasalt
Marinoan	E	p	l	
	R		e	
			n	
			t	
	W			Ulupa Siltstone
Marinoan	I	G		green-grey shales with uneven
	L	r		cleavage
	P	o		Yerina Subgroup
	E	u		and
	N	p		Tarcowie Siltstone
Sturtian	A			
	U			Tapley Hill F.
	M			laminated slate becoming more
	B			calcareous upwards
	E	G		Tindelpina Mem.
Sturtian	R	r		laminated carbonaceous and
	A	o		pyritic shale
	T	u		Appila Tillite
	A	p		massive boulder tillite
	N			Mintaro Shale
T O R R E N S I A N	A			fluvioglacial siltstone and
				quartzite (Gilbert Range
				Quartzite)
	B			Saddleworth F.
	u			Grey-green calcareous siltstone
T O R R E N S I A N	r			(includes Auburn Dolomite).
	r			Minor black slate, locally
	a			pyritic and carbonaceous.
	G			Skillogalee Dol.
	r			dolomitic shale, dolomite and
T O R R E N S I A N	o			marble.
	u			
	p			

## 6 PREVIOUS EXPLORATION AND MINING

The northern boundary of the tenement lies 20km south of the exhausted Burra open-pit copper mine. However, no significant deposits lie within the tenement, although several small deposits of copper (St. Elmo, Edelweiss) asbestos or phosphatic minerals have been discovered. Minor quartz vein occurrences are known between Eudunda and Coronation in the Australia Plains region. Small Cu, Mn, Fe or quartz vein occurrences in the Kanmantoo Group are common in the Mt. Rufus area at the southern limit of the tenement. No significant gold occurrences have been reported.

Previous exploration is dominated by the search for Cu deposits. In 1972 Burra Ridge Pty Ltd (Env. 1431) completed an extensive and detailed stream silt sediment survey with analysis for Cu and V. This work culminated in the sinking of 3 percussion drill holes in Skillogalee Dolomite at the Edelweiss Mine prospect, but no economic resource was defined. Prior to this, in 1966, Australian Geophysical had sought Cu with associated Zn and V using stream silt sampling and finally IP and Resistivity surveys over the Edelweiss (Cu, Ag, V) and St. Elmo (Cu) prospects. However, no targets were drill tested.

Australian Aquitaine sought porphyry-style copper deposits in 1972 (Env. 1995) using Cu, Pb and Zn analysis of stream silts, but no drill targets were defined.

In 1969 the Fairview phosphate deposit located 5km east of Worlds End, and hosted in faulted Auburn Dolomite, was investigated by SADME with two diamond drill holes.

In 1976 SADME carried out a high density stream silt survey of the Truro 1:63,360 sheet (Robertson, 1976) including part of the current licence. Minus 80 mesh silt samples were collected from a depth of 20cm at a sample density averaging 3.6 samples per square kilometre. Samples were analysed by AAS for Cu, Pb, Zn and Au (detection limit 0.05ppm). Gold values were considered to be unreliable. A zone exceeding 5km in strike length between Mt Rufus and Dutton returned enhanced Cu, Pb, Zn and sporadic Au values associated with a specific stratigraphic horizon, the upper Sturt Tillite basal Tapley Hill Formation boundary. Four soil lines were run and gold at the detection limit was reported on the southern line. Two km east of Mt Rufus, a rock chip of ferruginous Tarcowie Siltstone returned 0.73% Zn and 0.18% Pb.

Eberhard (1976) completed a survey similar to Robertson's but covering the Riverton and Eudunda 1:63,360 sheets at a sample density of one sample per kilometre squared. Four samples located within EL 1548 returned detectable Au (0.05ppm); one west of Coronation, two east of Coronation in a zone covered by Quaternary deposits and one in the northeast corner of the EL, again in an area of Quaternary deposits.

Robertson and Martin of SADME (1978) followed up the stream silt anomaly in the Mt Rufus area with soil sampling traverses across the Sturt Tillite - Tapley Hill Formation boundary, albeit on a regional scale. However, analysis was limited to Cu, Pb and Zn; no gold. The widely spaced soil lines detected a pronounced Cu-Zn anomaly immediately north of Mt Rufus.

The northern 20% of EL 947, Mt Karinya, covers the southern part of EL 1548. However, CRA did very little work in the EL 1548 zone; detailed mapping, geochemistry, geophysics and limited drilling was confined to the Cambri, Kanappa and Schneider Gasson prospects south of EL 1548. A detailed aeromagnetic survey was flown over EL 947 and data is available covering the southern portion of EL 1548. CRA recognised several aeromagnetic features of possible exploration interest and one of these lies within EL 1548. However, CRA did not investigate this particular aeromagnetic feature.

Carpentaria Gold lodged ELA 224/87 and then completed a reconnaissance roadside rock chip and stream silt sampling programme. All samples returned below detection limit (0.01ppm) Au and therefore the application was withdrawn.

## 7 WORK COMPLETED THIS REPORT PERIOD

The major elements of the work programme this quarter were:

- literature research
- planning for a BLEG and stream silt sample programme
- familiarisation with geology
- report writing

## 8 RESULTS

The results of the literature survey are reported in the sections on geology and past exploration.

## 9 CONCLUSIONS AND RECOMMENDATIONS

The tenement should be retained for the second quarterly period pending receipt and assessment of the analytical results from the sampling programme planned to commence in March 1989.

**10 EXPENDITURE**

The exploration undertaken and work carried out resulted in an expenditure of \$7,811 subdivided as follows:

Salaries	\$ 2,669
Logistics	\$ 1,728
Services	\$ 100
Tenements	\$ 2,635
Drilling	\$ 0
Administration and Depreciation	<u>\$ 679</u>
TOTAL	\$ 7,811 =====

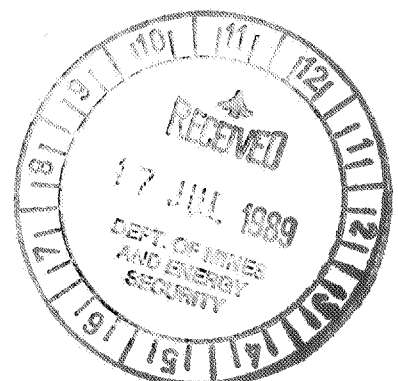
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000013

BP MINERALS AUSTRALIA  
EL 1548 'ROBERTSTOWN'  
SECOND QUARTERLY REPORT  
1ST MARCH 1989 TO 31ST MAY 1989

M.D. WALKER  
JUNE 1989



## C O N T E N T S

		<u>Page No</u>
	SUMMARY	
1	INTRODUCTION	1
2	LOCATION AND ACCESS	1
3	TARGET	1
4	TENEMENT	1
5	REGIONAL AND TENEMENT GEOLOGY	2
6	PREVIOUS EXPLORATION AND MINING	2
7	WORK COMPLETED THIS REPORT PERIOD	2
8	RESULTS	3
9	CONCLUSIONS AND RECOMMENDATIONS	3
10	EXPENDITURE	5
	BIBLIOGRAPHY	6

## LIST OF FIGURES

<u>Figure No</u>	<u>Title</u>	<u>Plan No</u>
Fig 1	EL 1548 Robertstown BLEG and Silt Stream Sediment Sample Locations and Assays	MEL-3150

## APPENDIX

Appendix 1	Analytical Results
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**SUMMARY**

EL 1548, Robertstown, was granted to BP Australia Gold Proprietary Limited on 30th November 1988 for a period of 12 months. This report is the second quarterly report. The exploration target is a sediment hosted gold deposit.

Work carried out comprised; a 42 site BLEG survey using 5kg sample weights and a stream silt survey with analysis for As and Fe. Analytical results are to hand and 3 anomalous values are recognised all in the Mt. Rufus area. Follow-up of the Mt. Rufus anomaly is recommended. The remainder of the licence should be surrendered.

## 1 INTRODUCTION

EL 1548, Robertstown, is one of three contiguous EL's located in the Mount Lofty Ranges that were granted to BP Australia Gold Proprietary Limited (BP Gold) in late 1988 as part of a regional search for gold deposits. This report details the work carried out and results obtained during the second quarterly period.

## 2 LOCATION AND ACCESS

EL 1548 is located approximately 120km north-northeast of Adelaide and lies dominantly between the towns of Dutton and Worlds End Creek in the Eudunda-Robertstown area (Fig 1). The closely settled nature of this region has resulted in abundant and easy access to almost all areas. The principal impediment is the large number of individual landowners who must be located and provided with notice of entry and to whom our activities must be explained.

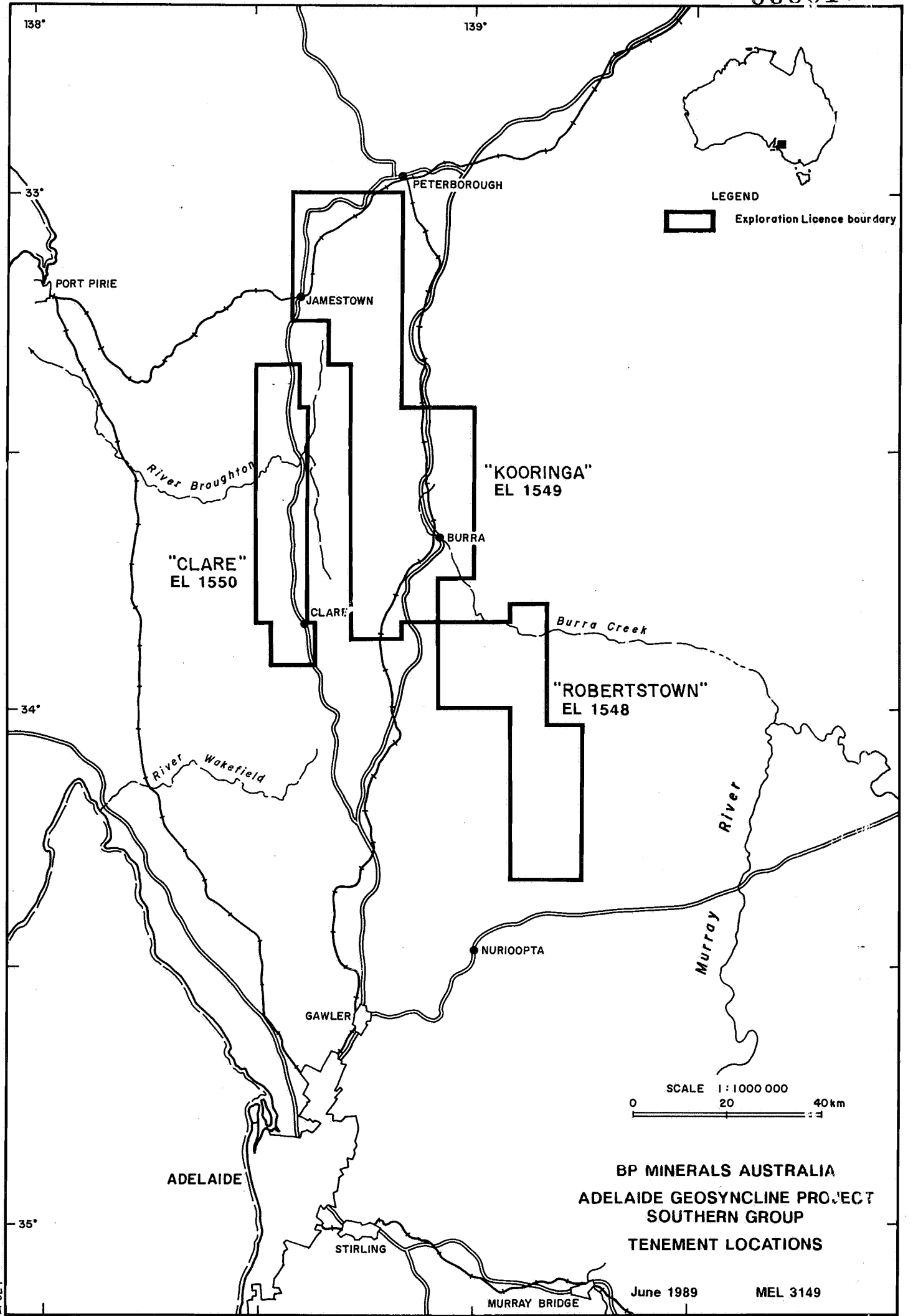
The tenement is located on the Burra (I-54-5) and Adelaide (I-54-9) 250,000 sheet's and within the Eudunda (6729), Robertstown (6730) and Clare (6630) 100,000 sheets. Topographic maps at 1:50,000 scale showing cultural, topographic and land sub-division features, are available for the whole tenement.

## 3 TARGET

The exploration target is a gold deposit associated with a major structure and hosted by carbonate bearing rocks.

## 4 TENEMENT

EL 1548, Robertstown, comprising approximately 995 km<sup>2</sup> was granted to BP Gold on the 30th November 1988 for a period of 12 months. The tenement is not encumbered by pre-existing mining titles.



BP MINERALS AUSTRALIA  
ADELAIDE GEOSYNCLINE PROJECT  
SOUTHERN GROUP  
TENEMENT LOCATIONS

June 1989

MEL 3149

EP 52-1



## 5 REGIONAL AND TENEMENT GEOLOGY

See first quarterly report for data on this topic.

## 6 PREVIOUS EXPLORATION AND MINING

See first quarterly report for information on this topic.

## 7 WORK COMPLETED THIS REPORT PERIOD

The major elements of the work programme this quarter were:

- completion of a Bleg and stream silt sediment survey directed at specific structural lithological targets
- assessment of results.

BLEG samples were collected in the following manner:

- 5kg of -1.6mm sediment collected by on site sieving
- in most cases material was collected from only one or two places within the creek because of the generally poor creek development, very hard ground or tendency for drainage channels to be partly choked, or completely destroyed, by agriculturally induced erosion.

Samples were analysed by Comlabs in Adelaide in the following way:

- sample dried and a measured amount of dilute sodium cyanide added
- sample tumbled for approximately 24 hours
- gold extracted from cyanide solution and determined by AAS
- detection limit is 0.05ppb Au.

A minus 80 mesh stream silt sample was collected at each BLEG site and analysed for As and Fe by AAS in BP's Welshpool (WA) Laboratory using a perchloric-nitric-hydrofluoric acid digestion. Detection limits were As (1ppm), Fe (5ppm).

The drainage survey sample sites were selected to cover the target structures and lithologies at a sample density of approximately 1 sample per 2km<sup>2</sup>. However, actual catchments sampled varies from less than 1km<sup>2</sup> to as much as 4km<sup>2</sup> depending on logistical or technical factors at specific sites.

## 8 RESULTS

Analytical results are presented in Appendix 1 and sample locations and analytical values are shown on Fig. 1. Bleg samples returned three anomalous values from two sites in the Mt. Rufus area at the southern end of the licence (Fig. 1). Site L21279, 281, 283 comprised duplicate samples and a blank (L21283). The blank returned <0.05ppb and L21279-280 returned 1.9ppb and 1.1ppb respectively, each well above the 0.5ppb threshold for this area. Sample L21269, located 1km south of L21279, returned 0.90ppb.

Arsenic values are generally less than 12ppm, but peak at 30ppm in L21276.

## 9 CONCLUSIONS AND RECOMMENDATIONS

A reconnaissance Bleg survey and associated stream silt survey has returned anomalous gold values of up to 1.9ppb in the Mt. Rufus area. Arsenic values of up to 30ppm occur in the same area. The Mt. Rufus area returned anomalous gold and base metal values in a stream silt survey conducted by Robertson (1976) but the gold potential of the Mt. Rufus area was not investigated in detail. The elevated metal values may be related to a specific lithostratigraphic unit near the Sturt Tillite - Tapley Hill Formation boundary.

The Mt. Rufus zone should be followed up with detailed Bleg, rock chips and soil surveys accompanied by prospecting and reconnaissance geological mapping.

The exploration undertaken and work carried out resulted in an expenditure of \$11,245 subdivided as follows:

Salaries	\$ 3,846
Logistics	\$ 3,302
Services	\$ 2,947
Tenements	\$ 0
Drilling	\$ 0
Administration and Depreciation	<u>\$ 1,150</u>
TOTAL	\$11,245 =====

Total expenditure on this tenement to date is \$16,556.<sup>?</sup>  
19 056



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000023

## **APPENDIX 1**

### **Analytical Results**

GEOCHEMICAL  
ANALYSIS  
SHEET

STATE	PROJECT CODE	PROJECT	PROSPEC	COST CODE
PROJECT	SA	EP 52-1	AO ELAIDEAN	ROBERTSTOWN
NATMAP 1 : 250 000 SHEET NO.	PHOTOGRAPHY/TRAVERSE	GRID	SAMPL TYPE	REPLICATE CODE
SAMPLE LOCATION	SI	54-5	SSS	RDM160389
DRILLHOLE DATA	HOLE I.D.	COLLAR N	COLLAR E	AZIMUTH
ANALYSIS	DETAILS OF ANALYSIS REQUIRED	DATE	DIP	COLLAR R.L.
AA <sub>2</sub>	As, Fe,	P5		

SAMPLE NO.	DEPTH FROM	DEPTH TO	GEOCODE
	OR NORTHING	OR EASTING	
1 L 21252	6201600	337200	
2 L 21254	6201700	337850	
3 L 21256	6204350	329600	
4 L 21258	6204650	328350	
5 L 21260	6205200	330450	
6 L 21262	6201700	337850	
7 L 21264	6204850	336100	
8 L 21266	6203300	336050	
9 L 21268	6199500	330000	
10 L 21270	6200150	329250	
11 L 21272	6202500	330300	
12 L 21274	6203000	330100	
13 L 21276	6203800	330150	
14 L 21278	6201650	330200	
15 L 21280	6201200	329200	
16 L 21282	6201200	329200	
17 L 21284	6201200	329200	
18 L 21286	6200600	330000	
19 L 21288	6199000	329200	
20 L 21290	6199050	326100	

BOX NO.

57013

DATE TO SAMPLE PREP

DATE TO LAB.

DATE COMPLETED

DATE ENTERED

## ELEMENT

TUBE No.	As	% Fe			
1 21	1	10	3.9		
2	2	<1	2.9		
3	3	6	3.8		
4	4	22	5.8		
5	5	10	3.5		
6	6	4	2.6		
7	7	12	3.7		
8	8	10	3.2		
9	9	<1	2.8		
10	10	10	4.5		
11	11	17	4.9		
12	12	10	3.6		
13	13	30	2.6		
14	14	10	6.1		
15	15	12	3.1		
16	16	6	3.2		
17	17	9	2.7		
18	18	10	3.3		
19	17	4	3.6		
20	20	6	2.8		
21	21	<1	<0.5		
22	22	9	3.5		
23	23	25	14.3		
METHOD					
ANALYST					
DATE					
AA <sub>2</sub>					
XT					
4.4.89					
3.4.89					

207908

GEOCHEMICAL  
ANALYSIS  
SHEET

PROJECT

STATE	PROJECT CODE	PROJECT	PROSPECT	COST CODE
SA	EP52-1	ADELAIDEAN	ROBERTSTOWN	520

SAMPLE  
LOCATION

NATMAP 1:250 000 SHEET NO.	PHOTOGRAPHY/TRAVERSE	GRID	SAMPLE TYPE	DUPLICATE CODE	SAMPLED BY	DATE
S154-S			SSS		RDM	16.03.89

DRILLHOLE  
DATA

HOLE I.D.	COLLAR N	COLLAR E	AZIMUTH	DIP	COLLAR R.L.

ANALYSIS

DETAILS OF ANALYSIS REQUIRED
AA2 As, Fe, PS

SAMPLE NO.	DEPTH FROM	DEPTH TO	GEOCODE
	OR NORTHING	OR EASTING	
1 L 21292	6201750	325550	
2 L 21294	6203850	327000	
3 L 21296	6259700	324700	
4 L 21298	6258600	324850	
5 L 21300	6258100	325100	
6 L 21302	6257200	325450	
7 L 21304	6256600	325100	
8 L 21306	6256600	325700	
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			

BOX NO.

57014

DATE TO SAMPLE REP.

DATE TO LAB.

DATE COMPLETED

DATE ENTERED

## ELEMENT

TUBE No.	As	Fe			
1 24	6	2.4			
2 25	12	3.3			
3 26	2	2.8			
4 27	6	2.9			
5 28	10	3.9			
6 29	6	3.0			
7 30	10	3.5			
8 31	6	1.5			
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
32	11	2.2			
33	22	13.7			
METHOD	AA2	AA2			
ANALYST	XT	XT			
DATE	4.4.89	3.4.89			

207912

GEOCHEMICAL  
ANALYSIS  
SHEET

PROJECT

STATE PROJECT CODE PROJECT ROBERTSTOWN PROSPECT 000026 COST CODE  
SA E P 52-1 ADELAIDEAN ROBERTSTOWN 520SAMPLE  
LOCATIONNATMAP 1 : 250 000 SHEET NO. PHOTOGRAPHY/TRAVERSE GRID SAMPLE TYPE REPLICATE CODE SAMPLED BY DATE  
S1 54-5 SSS ROM 060489DRILLHOLE  
DATA

HOLE I.D. COLLAR N COLLAR E AZIMUTH DIP COLLAR R.L.

ANALYSIS

DETAILS OF ANALYSIS REQUIRED  
Fe, As, PS

SAMPLE NO.	DEPTH FROM	DEPTH TO	GEOCODE
	OR NORTHING	OR EASTING	
1 L 21308	6255250	325750	
2 L 21310	6254450	326200	
3 L 21312	6252050	326300	
4 L 21314	6249800	328000	
5 L 21316	6250000	327050	
6 L 21318	6251300	327300	
7 L 21320	6248700	319800	
8 L 21322	6250400	318950	
9 L 21324	6250500	318800	
10 L 21326	6252500	317500	
11 L 21328	6252850	317050	
12 L 21330	6252100	317100	
13 L 21332	6251250	317400	
14 L 21334	6250050	317200	
15 L 21336	6248000	317800	
16 L 21338	6248000	317800	
17 L 21340	6248000	317800	
18 L 21342	6247700	317300	

## ELEMENT

TUBE No.	% Fe	As			
1 46	3.9	7			
2 47	3.1	6			
3 48	2.6	<1			
4 49	2.0	4			
5 50	2.8	2			
6 4/1	1.9	4			
7 2	1.0	1			
8 3	1.0	2			
9 4	1.5	3			
10 5	2.2	6			
11 6	2.1	7			
12 7	1.8	6			
13 8	1.6	2			
14 7	1.4	4			
15 10	1.6	4			
16 11	1.6	1			
17 12	2.2	4			
18 13	2.5	9			

BOX NO.

57201

DATE TO SAMPLE PREP.

DATE TO LAB.

DATE COMPLETED

DATE ENTERED

METHOD

ANALYST

DATE

16	<0.5	<1			
17	4.0	6			
18	11.5	128			
METHOD		AA2	AA2		
ANALYST		XT	MY		
DATE		22.5.89	22.5.89		

207914



ANALYTICAL REPORT

000027

SAMPLE	Au
L 21251	0.40
L 21253	0.40
L 21255	0.20
L 21257	0.15
L 21259	0.10
L 21261	0.25
L 21263	0.20
L 21265	0.10
L 21267	<0.05
L 21269	0.90
L 21271	0.10
L 21273	0.15
L 21275	<0.05
L 21277	0.10
L 21279	1.90
L 21281	1.10
L 21283	<0.05
L 21285	<0.05
L 21287	0.15
L 21289	0.10
L 21291	0.25
L 21293	0.25
L 21295	0.15
L 21297	0.10
L 21299	0.15
UNITS	ppb
SCHEME	BLEG2



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ANALYTICAL REPORT

000026

SAMPLE	Au
L 21301	0.25
L 21303	0.15
L 21305	<0.05
UNITS	ppb
SCHEME	BLEG2



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ANALYTICAL REPORT

000029

SAMPLE	Au
L21307	0.15
L21309	0.10
L21311	<0.05
L21313	0.15
L21315	<0.05
L21317	0.10
L21319	0.05
L21321	0.05
L21323	<0.05
L21325	<0.05
L21327	0.30
L21329	<0.05
L21331	0.20
L21333	0.25
L21335	0.05
L21337	0.10
L21339	0.25
L21341	<0.05
L21343	0.35

UNITS           ppb  
SCHEME       BLEG2



000030

BP MINERALS AUSTRALIA  
EL 1548 "ROBERTSTOWN"  
THIRD QUARTERLY REPORT  
1ST JUNE TO 31ST AUGUST 1989

M D WALKER  
SEPTEMBER 1989



THIRD QUARTERLY REPORT, EL 1548, ROBERTSTOWN, S.A.  
PERIOD 1ST JUNE TO 31ST AUGUST 1989

Details of tenement location, access, tenure, regional geology and previous exploration and mining are presented in the first and second quarterly reports.

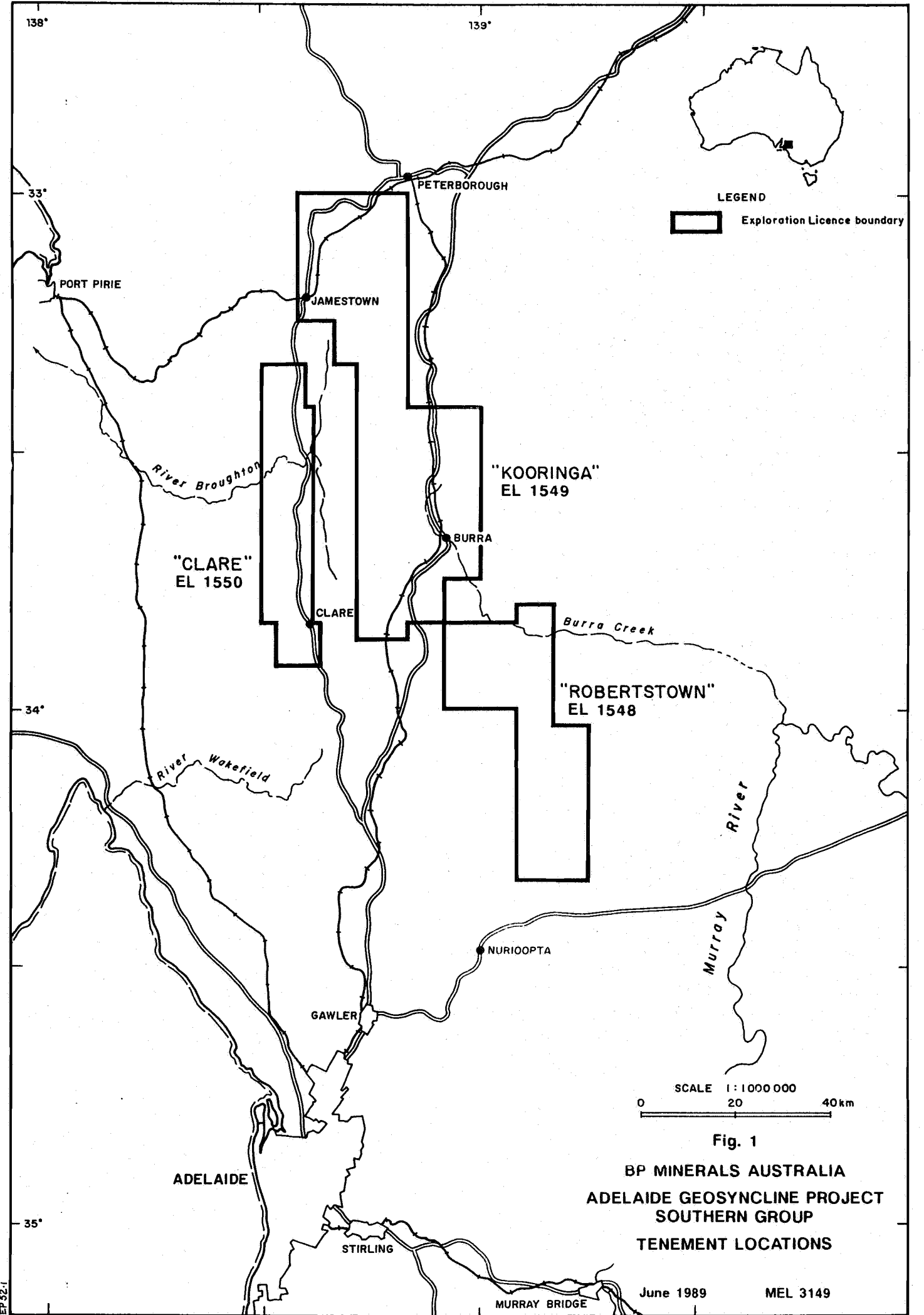
No field work has been carried out this period. A large, approximately 97%, partial relinquishment was effected during the period. Fig. 1 shows the location of the tenement and Fig. 2 the retained area.

A programme of soil sampling, gridding, mapping, rock chip sampling, trenching and/or RAB drilling is proposed to further investigate the anomalous zones.

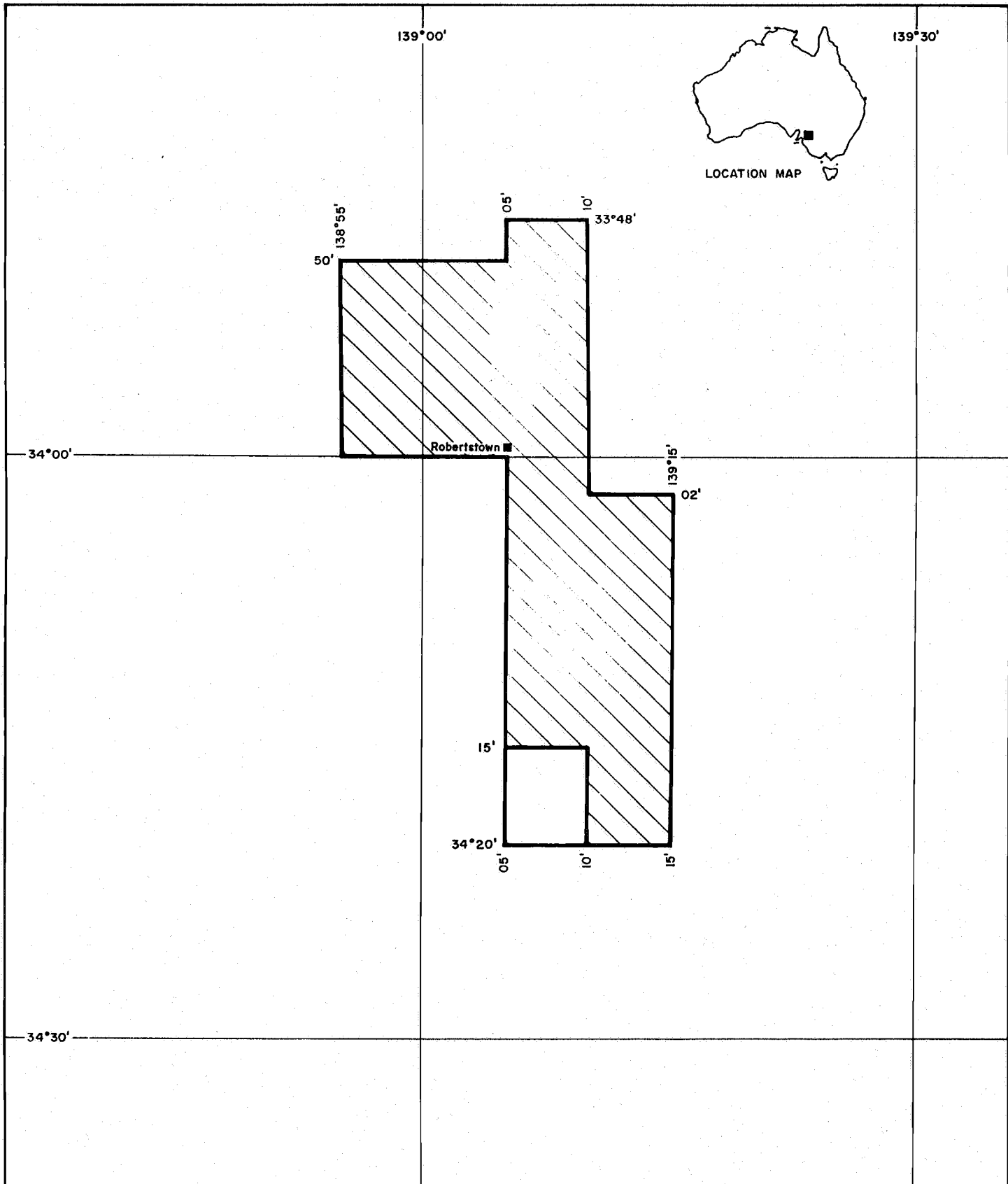
Expenditure in the report period amounts to \$4,894 sub-divided as follows:



Salaries	2,497
Logistics	1,961
Services	-
Tenement	-
Administration	<u>436</u>
TOTAL	<u>4,894</u>

Total expenditure on this tenement to date is \$21,450.



EP 32-1



 AREA TO BE RELINQUISHED  
 AREA TO BE RETAINED

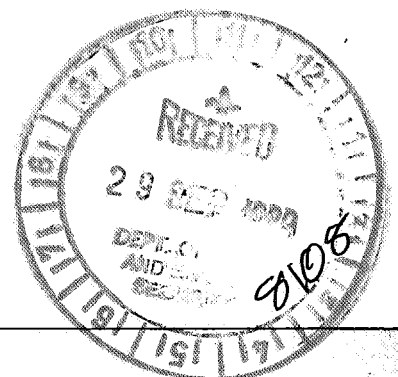
SCALE 1:500000  
0 10 20km

BP MINERALS AUSTRALIA  
ADELAIDE GEOSYNCLINE PROJECT  
EL 1548 - ROBERTSTOWN  
AREA TO BE RELINQUISHED

000034

BP AUSTRALIA GOLD PTY LTD  
EL 1548 'ROBERTSTOWN'  
PARTIAL RELINQUISHMENT REPORT

M.D. WALKER  
SEPTEMBER 1989



## C O N T E N T S

	<u>Page No</u>
SUMMARY	
1 INTRODUCTION	1
2 LOCATION AND ACCESS	1
3 TARGET	1
4 TENEMENT	1
5 REGIONAL AND TENEMENT GEOLOGY	1
6 PREVIOUS EXPLORATION AND MINING	3
7 WORK COMPLETED	4
8 RESULTS	5
9 CONCLUSIONS AND RECOMMENDATIONS	5
10 EXPENDITURE	6
BIBLIOGRAPHY	7

## LIST OF FIGURES

<u>Figure No</u>	<u>Title</u>	<u>Plan No</u>
Fig 1	EL 1548 - Robertstown Location Map	MEL-3150 Duplicate 8108-1 See S.A.D.M.B. contents sheet

## TABLES

<u>Table No</u>	<u>Title</u>	<u>Page No</u>
Table 1	EL 1548, Robertstown, Summary Lithostratigraphy	2

## SUMMARY

EL 1548, Robertstown, was granted to BP Australia Gold Proprietary Limited on 30th November 1988 for a period of 12 months. The exploration target is a sediment hosted gold deposit. This report documents the work completed on the area lodged for relinquishment on the 29th August 1989.

Work carried out comprised; literature survey, and preparation for a BLEG survey using 5kg sample weights and a stream silt survey with analysis for As and Fe.

No anomalous values were obtained in the relinquished area. It was determined that a large part of the relinquished area is underlain by rocks which are not considered potential host rocks to gold mineralisation. These areas of low prospectivity were not sampled during the reconnaissance Bleg campaign.

## 1 INTRODUCTION

EL 1548, Robertstown, is one of three contiguous EL's located in the Mount Lofty Ranges that were granted to BP Australia Gold Proprietary Limited (BP Gold) in late 1988 as part of a regional search for gold deposits. This report details the work carried out and results obtained from the area lodged for relinquishment on the 29th July 1989.

## 2 LOCATION AND ACCESS

EL 1548 is located approximately 120km north-northeast of Adelaide and lies dominantly between the towns of Dutton and Worlds End Creek in the Eudunda-Robertstown area (Fig 1). The closely settled nature of this region has resulted in abundant and easy access to almost all areas. The principal impediment is the large number of individual landowners who must be located and provided with notice of entry and to whom our activities must be explained.

The tenement is located on the Burra (I-54-5) and Adelaide (I-54-9) 250,000 sheet's and within the Eudunda (6729), Robertstown (6730) and Clare (6630) 100,000 sheets. Topographic maps at 1:50,000 scale showing cultural, topographic and land sub-division features, are available for the whole tenement.

## 3 TARGET

The exploration target is a gold deposit associated with a major structure and hosted by carbonate bearing rocks.

## 4 TENEMENT

EL 1548, Robertstown, comprising approximately 995 km<sup>2</sup> was granted to BP Gold on the 30th November 1988 for a period of 12 months. The tenement was not encumbered by pre-existing mining titles. An approximately 95% partial relinquishment was lodged on the 29th July 1989. The area to be relinquished is shown on Fig. 1.

## 5 REGIONAL AND TENEMENT GEOLOGY

The tenement is underlain dominantly by Adelaidean age sediments of the Adelaide Geosyncline with subordinate Cambrian age deposits laid down in the Kanmantoo Trough. In contrast to the more complex folding in the Central Mount Lofty Ranges east of Adelaide, folding in the tenement area comprises relatively simple open folds with approximately north-south or northwest-southeast axial planes dominant. Regionally significant fault structures include the Burra Fault and the northern section of the Palmer Fault. Sediments of the Burra Group and the Umberatana Group dominate the regional succession, with subordinate representatives from the unconformably overlying Kanmantoo Group. The tenement lies within the biotite-greenschist-grade metamorphic zone, but is located outside and to the north of the area defined by the Survey as exhibiting pronounced metamorphism.



2..

The simplified lithostratigraphy of the tenement, taken from Mirams (1964) and Thomson (1969), is summarised in Table 1. The primary target units are those containing calcareous or dolomitic members; secondary targets are carbonaceous or pyritic units. Massive sandstone units, greywackes, turbidites, siltstones or tillites have not been targeted for sampling.

TABLE 1  
EL 1548, ROBERTSTOWN, SUMMARY LITHOSTRATIGRAPHY

Lower to Middle Cambrian	K A N M A N T O O	G r o u p			greenschist grade siltstone - greywacke and arkosic siltstone and turbidites with minor calc- silicates and shales
Lower Cambrian	H A W K E R	G r o u p E q u i v a l e n t	Truro Volc.		trachyte and metabasalt
Marinoan	W I L P E N A	G r o u p	Ulupa Siltstone		green-grey shales with uneven cleavage
			Yerina Subgroup		Pepuarta Tillite plus
			and		siltstones and minor
			Tarcowie Siltstone		sandstone
Sturtian	U M B E R A T A N A	G r o u p	Tapley Hill F.		laminated slate becoming more calcareous upwards
			Tindelpina Mem.		laminated carbonaceous and pyritic shale
			Appila Tillite		massive boulder tillite
			Mintaro Shale		fluvioglacial siltstone and quartzite (Gilbert Range Quartzite)
T O R R E N S I A N	B u r r a G r o u p		Saddleworth F.		Grey-green calcareous siltstone (includes Auburn Dolomite). Minor black slate, locally pyritic and carbonaceous.
			Skillogalee Dol.		dolomitic shale, dolomite and marble.

## 6 PREVIOUS EXPLORATION AND MINING

The northern boundary of the tenement lies 20km south of the exhausted Burra open-pit copper mine. However, no significant deposits lie within the tenement, although several small deposits of copper (St. Elmo, Edelweiss) asbestos or phosphatic minerals have been discovered. Minor quartz vein occurrences are known between Eudunda and Coronation in the Australia Plains region. Small Cu, Mn, Fe or quartz vein occurrences in the Kanmantoo Group are common in the Mt. Rufus area at the southern limit of the tenement. No significant gold occurrences have been reported.

Previous exploration is dominated by the search for Cu deposits. In 1972 Burra Ridge Pty Ltd (Env. 1431) completed an extensive and detailed stream silt sediment survey with analysis for Cu and V. This work culminated in the sinking of 3 percussion drill holes in Skillogalee Dolomite at the Edelweiss Mine prospect, but no economic resource was defined. Prior to this, in 1966, Australian Geophysical had sought Cu with associated Zn and V using stream silt sampling and finally IP and Resistivity surveys over the Edelweiss (Cu, Ag, V) and St. Elmo (Cu) prospects. However, no targets were drill tested.

Australian Aquitaine sought porphyry-style copper deposits in 1972 (Env. 1995) using Cu, Pb and Zn analysis of stream silts, but no drill targets were defined.

In 1969 the Fairview phosphate deposit located 5km east of Worlds End, and hosted in faulted Auburn Dolomite, was investigated by SADME with two diamond drill holes.

In 1976 SADME carried out a high density stream silt survey of the Truro 1:63,360 sheet (Robertson, 1976) including part of the current licence. Minus 80 mesh silt samples were collected from a depth of 20cm at a sample density averaging 3.6 samples per square kilometre. Samples were analysed by AAS for Cu, Pb, Zn and Au (detection limit 0.05ppm). Gold values were considered to be unreliable. A zone exceeding 5km in strike length between Mt Rufus and Dutton returned enhanced Cu, Pb, Zn and sporadic Au values associated with a specific stratigraphic horizon, the upper Sturt Tillite basal Tapley Hill Formation boundary. Four soil lines were run and gold at the detection limit was reported on the southern line. Two km east of Mt Rufus, a rock chip of ferruginous Tarcowie Siltstone returned 0.73% Zn and 0.18% Pb.

Eberhard (1976) completed a survey similar to Robertson's but covering the Riverton and Eudunda 1:63,360 sheets at a sample density of one sample per kilometre squared. Four samples located within EL 1548 returned detectable Au (0.05ppm); one west of Coronation, two east of Coronation in a zone covered by Quaternary deposits and one in the northeast corner of the EL, again in an area of Quaternary deposits.

Robertson and Martin of SADME (1978) followed up the stream silt anomaly in the Mt Rufus area with soil sampling traverses across the Sturt Tillite - Tapley Hill Formation boundary, albeit on a regional scale. However, analysis was limited to Cu, Pb and Zn; no gold. The widely spaced soil lines detected a pronounced Cu-Zn anomaly immediately north of Mt Rufus.

The northern 20% of EL 947, Mt Karinya, covers the southern part of EL 1548. However, CRA did very little work in the EL 1548 zone; detailed mapping, geochemistry, geophysics and limited drilling was confined to the Cambri, Kanappa and Schneider Gasson prospects south of EL 1548. A detailed aeromagnetic survey was flown over EL 947 and data is available covering the southern portion of EL 1548. CRA recognised several aeromagnetic features of possible exploration interest and one of these lies within EL 1548. However, CRA did not investigate this particular aeromagnetic feature.

Carpentaria Gold lodged ELA 224/87 and then completed a reconnaissance roadside rock chip and stream silt sampling programme. All samples returned below detection limit (0.01ppm) Au and therefore the application was withdrawn.

## 7 WORK COMPLETED

The major elements of the work programme were:

- literature research
- reconnaissance BLEG and stream silt sampling programme
- familiarisation with geology

BLEG samples were collected in the following manner:

- 5kg of -1.6mm sediment collected by on site sieving
- in most cases material was collected from only one or two places within the creek because of the generally poor creek development, very hard ground or tendency for drainage channels to be partly choked, or completely destroyed, by agriculturally induced erosion.

Samples were analysed by Comlabs in Adelaide in the following way:

- sample dried and a measured amount of dilute sodium cyanide added
- sample tumbled for approximately 24 hours
- gold extracted from cyanide solution and determined by AAS
- detection limit is 0.05ppb Au

A minus 80 mesh stream silt sample was collected at each BLEG site and analysed for As and Fe by AAS in BP's Welshpool (WA) Laboratory using a perchloric-nitric-hydrofluoric acid digestion. Detection limits were As (1ppm), Fe (5ppm).

The drainage survey sample sites were selected to cover the target structures and lithologies at a sample density of approximately 1 sample per 2km<sup>2</sup>. However, actual catchments sampled varies from less than 1km<sup>2</sup> to as much as 4km<sup>2</sup> depending on logistical or technical factors at specific sites.

## 8 RESULTS

Analytical results are presented in Appendix 1 and plotted on Fig 1. A Bleg Au threshold of 0.5ppb was determined and all samples in the relinquished area returned less than 0.5ppb Au. The maximum As value obtained in stream sediments was 10ppm.

## 9 CONCLUSIONS AND RECOMMENDATIONS

It is recommended that an approximately 95% partial relinquishment is lodged.

000043

7..

## 10 EXPENDITURE

The exploration undertaken and work carried out in the relinquished area resulted in an expenditure of \$10,725 subdivided as follows:

Salaries	\$ 4,506
Logistics	\$ 3,495
Services	\$ 1,524
Tenements	\$ 68
Drilling	\$ 0
Administration and Depreciation	\$ 1,132
TOTAL	\$10,725 =====

## BIBLIOGRAPHY

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- EBERHARD, B.A. (1976) Geochemical Exploration of the Riverton and Eudunda 1:63,360 sheets. SADME RB 76/134
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- ROBERTSON, R.S. AND MARTIN, M. (1978) Geochemical Sampling of the Sturt Tillite and Basal Tapley Hill Formation : Adelaide 1:250,000 sheet. RB 78/147.
- SADME (1969) Worlds End Phosphate Investigation Quart.Geol note/31
- SADME, Metallic Resources Division, Burra Sheet, Metallic Exploration Index Series (SI-54-5). November 1978.
- THOMSON, B.P. (1969) Geology of The Adelaide Map Sheet (1:250,000)

000045

APPENDIX 1

ANALYTICAL RESULTS



GEOCHEMICAL  
ANALYSIS  
SHEET

STATE	PROJECT CODE	PROJECT	PROSPECT	COST CODE
SA	EP 52-1	ADELAIDEAN	ROBERTSTOWN	520
NATMAP 1 : 250 000 SHEET NO.		PHOTOGRAPHY/TRAVERSE	GRID	SAMPLE TYPE
SI 54-5				SSS
REPLICATE CODE		SAMPLED BY		
RDM160389				
DATE				
HOLE I.D.		COLLAR N	COLLAR E	AZIMUTH
DIP		COLLAR R.L.		
DETAILS OF ANALYSIS REQUIRED				
ANALYSIS AA2, As, Fe, PS				

SAMPLE NO.	DEPTH FROM	DEPTH TO	GEOCODE
	OR NORTHING	OR EASTING	
21252	6201600	337200	
21254	6201700	337850	
21262	6201700	337850	
21264	6204850	336100	
21266	6203300	336050	

ELEMENT			
TUBE No.	As	% Fe	
21 1	10	3.9	
21 2	<1	2.9	
6	4	2.6	
7	12	3.7	
8	10	3.1	

BOX NO.
57013
DATE TO SAMPLE PREP.

DATE TO LAB.
DATE COMPLETED

DATE ENTERED

21	<1	<0.5		
22	9	3.5		
23	25	14.3		
METHOD	AA2	AA2		
ANALYST	XT	XT		
DATE	4.4.89	3.4.89		

207908



# GEOCHEMICAL ANALYSIS SHEET

STATE	PROJECT CODE	PROJECT	PROSPECT	COST CODE
PROJECT	SA	EP 52-1	ADELAIDEAN	ROBERTSTOWN
				520
NATMAP 1 : 250 000 SHEET NO.	PHOTOGRAPHY/TRAVERSE	GRID	SAMPLE TYPE	REPLICATE CODE
S1 54-5			SSS	
				RDM 16.03.89
HOLE I.D.	COLLAR N	COLLAR E	AZIMUTH	DIP
COLLAR R.L.				
DETAILS OF ANALYSIS REQUIRED				
ANALYSIS	AA <sub>2</sub> As, Fe, PS			

[illegible]



BP MINERALS AUSTRALIA

# GEOCHEMICAL ANALYSIS SHEET

PROJECT

SA

PROJECT CODE

E P 52-1

PROJECT

ADELALDEAN

PROSPECT

ROBERTSTOWN

COST CODE

520

SAMPLE  
LOCATION

S1 S4-S

NATMAP 1 : 250 000 SHEET NO.

PHOTOGRAPHY/TRAVERSE

GRID

SAMPLE TYPE

REPLICATE CODE

SAMPLED BY

DATE

SSS

ROM 060489

DRILLHOLE  
DATA

HOLE I.D.

COLLAR N

COLLAR E

AZIMUTH

DIP

COLLAR R.L.

DETAILS OF ANALYSIS REQUIRED

ANALYSIS

Fe, As

PS

## ELEMENT

SAMPLE NO.	DEPTH FROM	DEPTH TO	GEOCODE
	OR NORTHING	OR EASTING	
1 L 21308	6255250	325750	
2 L 21310	6254450	326200	
3 L 21312	6252050	326300	
4 L 21314	6249800	328000	
5 L 21316	6250000	327050	
6 L 21318	6251300	327300	
7 L 21320	6248700	319800	
8 L 21322	6250400	318950	
9 L 21324	6250500	318800	
10 L 21326	6252500	317500	
11 L 21328	6252850	317050	
12 L 21330	6252100	317100	
13 L 21332	6251250	317400	
14 L 21334	6250050	317200	
15 L 21336	6248000	317800	
16 L 21338	6248000	317800	
17 L 21340	6248000	317800	
18 L 21342	6247700	317300	

TUBE No.	% Fe	As			
1 46	3.9	7			
2 47	3.1	6			
3 48	2.6	<1			
4 49	2.0	4			
5 50	2.8	2			
6 4/1	1.9	4			
7 2	1.0	1			
8 3	1.0	2			
9 4	1.5	3			
10 5	2.2	6			
11 6	2.1	2			
12 7	1.8	6			
13 8	1.6	2			
14 7	1.4	4			
15 10	1.6	4			
16 11	1.6	1			
17 12	2.2	4			
18 13	2.5	9			

BOX NO.	DATE TO LAB.	DATE COMPLETED	DATE ENTERED
57201			
DATE TO SAMPLE PREP.			

16	<0.5	<1		
17	4.0	6		
18	11.5	128		
METHOD	AA2	AA2		
ANALYST	XT	MY		
DATE	22.5.89	22.5.89		

207914



ANALYTICAL REPORT

000049

SAMPLE	Au
L 21251	0.40
L 21253	0.40

---

L 21261	0.25
L 21263	0.20
L 21265	0.10

---

L 21291	0.25
L 21293	0.25
L 21295	0.15
L 21297	0.10
L 21299	0.15

UNITS	ppb
SCHEME	BLEG2



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ANALYTICAL REPORT

000080

SAMPLE	Au
L 21301	0.25
L 21303	0.15
L 21305	<0.05
UNITS	ppb
SCHEME	BLEG2

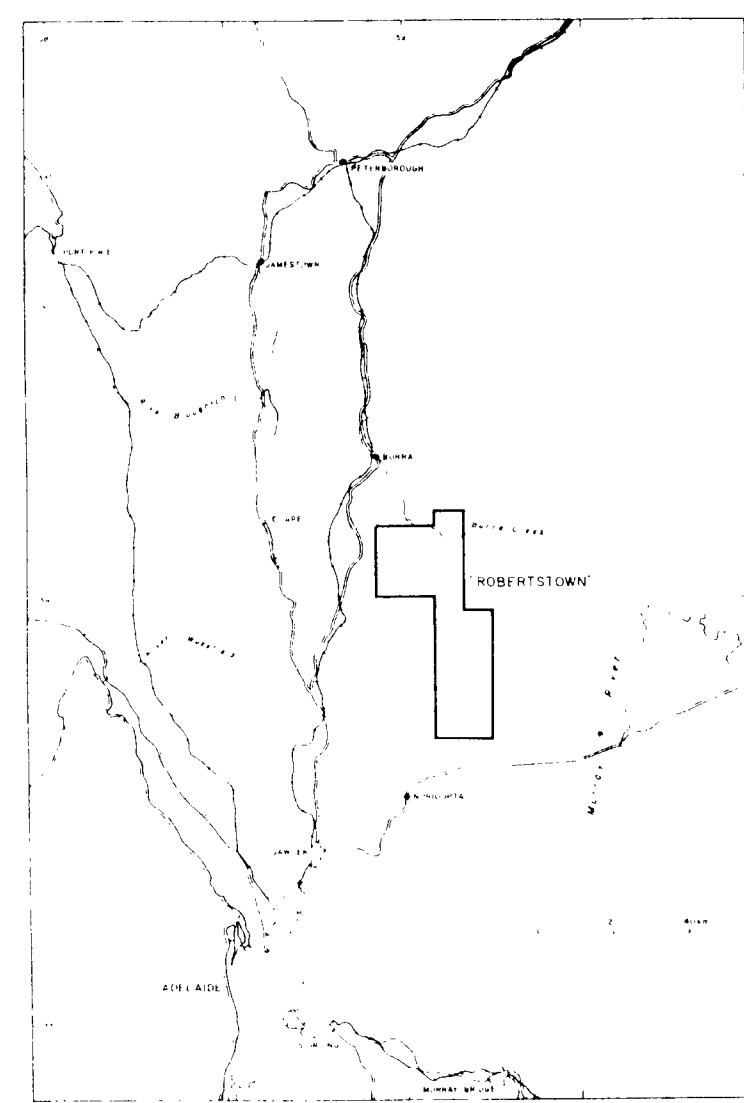
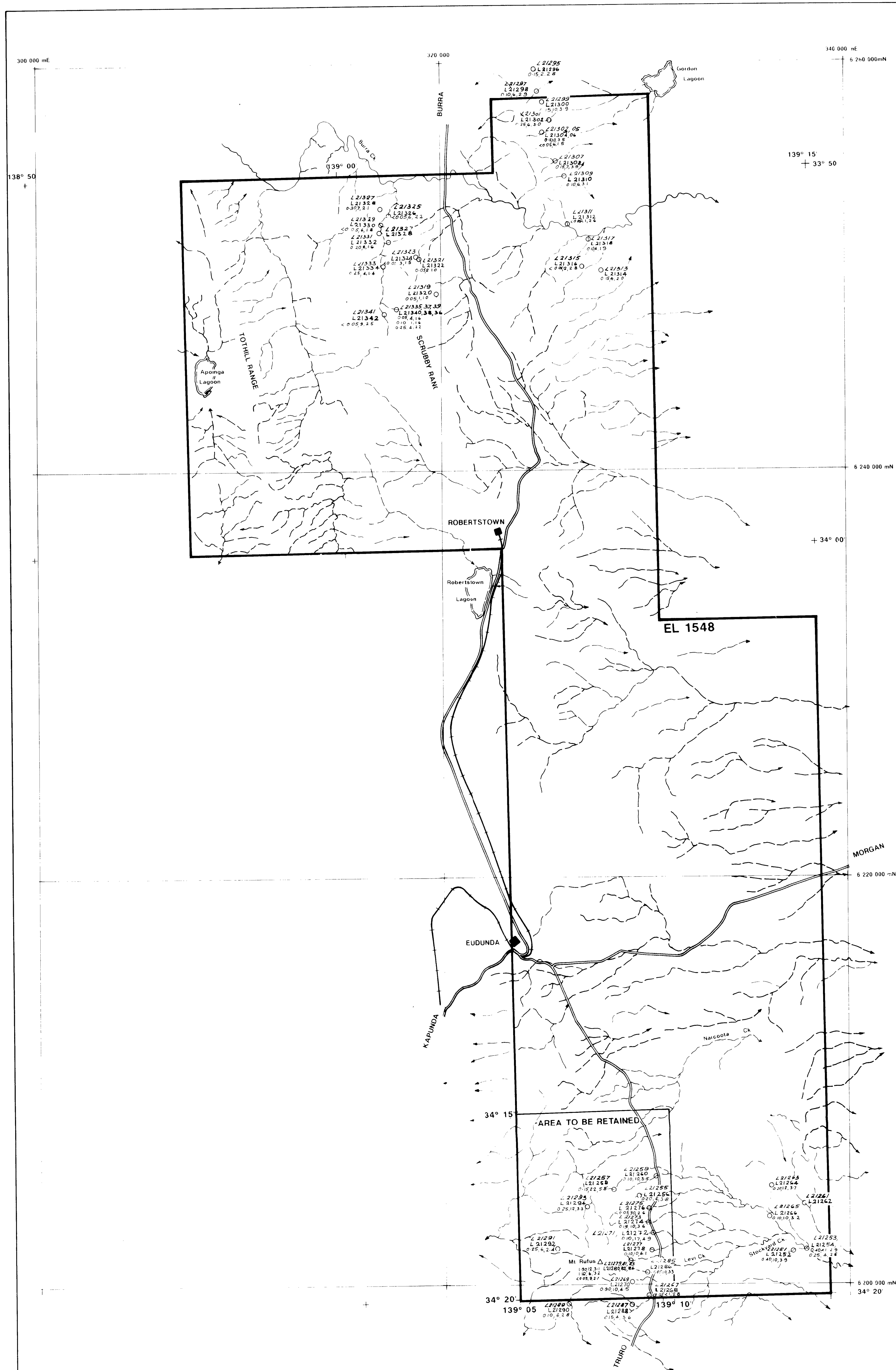


ANALYTICAL REPORT

000051

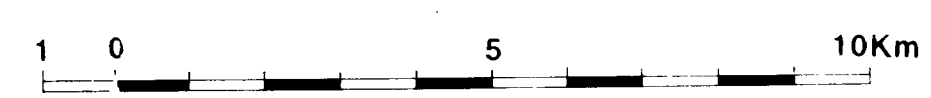
SAMPLE	Au
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L21309	0.10
L21311	<0.05
L21313	0.15
L21315	<0.05
L21317	0.10
L21319	0.05
L21321	0.05
L21323	<0.05
L21325	<0.05
L21327	0.30
L21329	<0.05
L21331	0.20
L21333	0.25
L21335	0.05
L21337	0.10
L21339	0.25
L21341	<0.05
L21343	0.35

UNITS           ppb  
SCHEME       BLEG2



14/1  
85-271  
85-272  
J.L. Smith

Scale 1 : 100 000



STREAM SEDIMENT SAMPLING  
L21251 BLEG sample (odd number)  
L21252 Silt sample (even number)  
0.15, 17, 24 Assay Au(ppb), As(ppm), Fe(%)

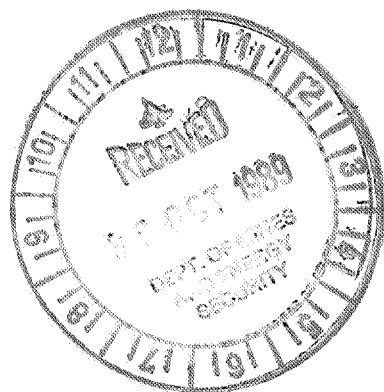
Fig.1

<b>BP MINERALS AUSTRALIA</b> EXPLORATION DIVISION			
<b>ADELAIDE GEOSYNCLINE PROJECT</b> <b>EL 1548 - ROBERTSTOWN</b> <b>BLEG &amp; SILT STREAM SEDIMENT</b> <b>SAMPLE LOCATIONS &amp; ASSAYS</b>			
DATE: 11/10/85 ADELAIDE and BURRA			
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BP MINERALS AUSTRALIA  
EL 1548 ROBERTSTOWN  
FINAL REPORT





## C O N T E N T S

	PAGE NO
1.0 INTRODUCTION	1
2.0 EXPLORATION BY BP MINERALS AUSTRALIA	1
2.1 Regional BLEG and Silt Stream Sediment Sampling	1
3.0 CONCLUSIONS AND RECOMMENDATIONS	2
4.0 EXPENDITURE	2
5. REFERENCES	3

## FIGURES

	PLAN NO
Fig 1 Adelaide Geosyncline Project Southern Group Tenement Locations	Mel-3149

## 1.0 INTRODUCTION

EL 1548, Robertstown, was granted to BP Australia Gold Pty Limited on 29 November, 1988. A partial surrender of 923km<sup>2</sup> was lodged on 29 August, 1989 (Fig 1).

The tenement is to be surrendered and this final report details all exploration undertaken.

The regional and tenement geology and a discussion of previous exploration was discussed in Walker (1989a)

## 2.0 EXPLORATION BY BP MINERALS AUSTRALIA

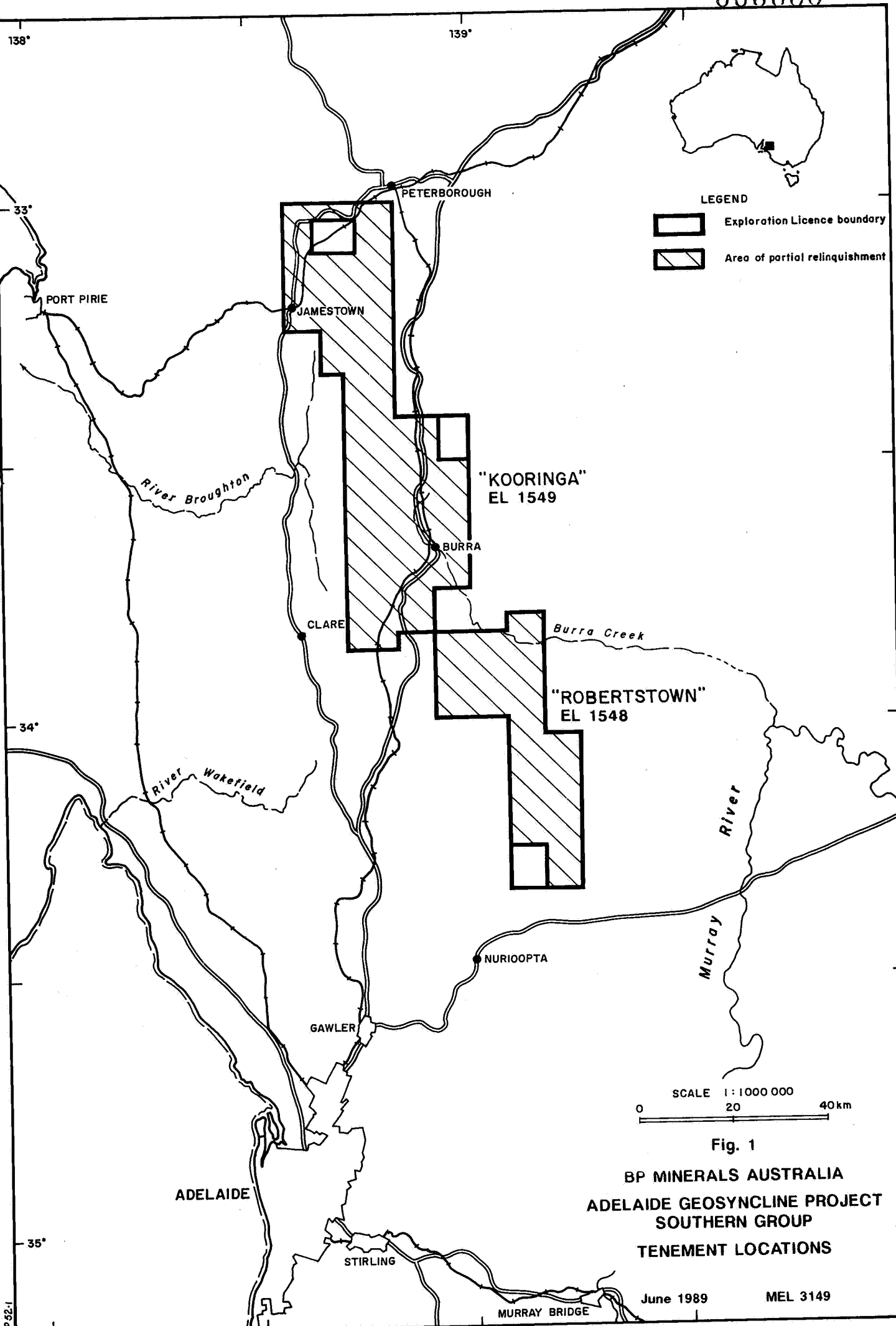
Exploration undertaken by BP Minerals during tenure of EL 1548 was:

- Literature research
- Regional BLEG and silt stream sediment sampling programme

### 2.1 Regional BLEG and Silt Stream Sediment Sampling

The stream sediment sampling technique and the results of that programme were presented in Walker (1989b).

Only three sample sites returned BLEG results greater than the 0.5ppb threshold, the highest value being 1.9ppb from the Mt Rufus area. Trace element geochemistry was generally low with the highest arsenic value being 30ppm from the Mt Rufus area.



### 3.0 CONCLUSIONS AND RECOMMENDATIONS

Regional stream sediment sampling of EL 1548 has highlighted the Mt Rufus area as being weakly anomalous in gold. The tenor of the geochemistry indicates that the source of the gold geochemistry is not a zone of major gold mineralisation.

It is therefore recommended that the licence be surrendered.

### 4.0 EXPENDITURE

The total amount spent for exploration in EL 1548 was \$ which is broken down as follows:

	\$
Salaries	9,888
Logistics	7,413
Services	3,047
Tenement Costs	2,635
Administration and Depreciation	2,371
	<hr/>
	25,354
	=====

## 5.0 REFERENCES

Walker M.D. 1989a. EL 1548 'Roberstown' First Quarterly Report  
30th November 1988 to 28th February 1989  
BP Minerals Australia.

- 1989b. EL 1548 'Roberstown' Second Quarterly Report  
1st March 1989 to 31st May 1989  
BP Minerals Australia