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EL 862

HAMLEY BRIDGE

PROGRESS AND FINAL REPORTS TO LICENCE SURRENDER FOR THE PERIOD 27/7/1981 TO 26/4/1982

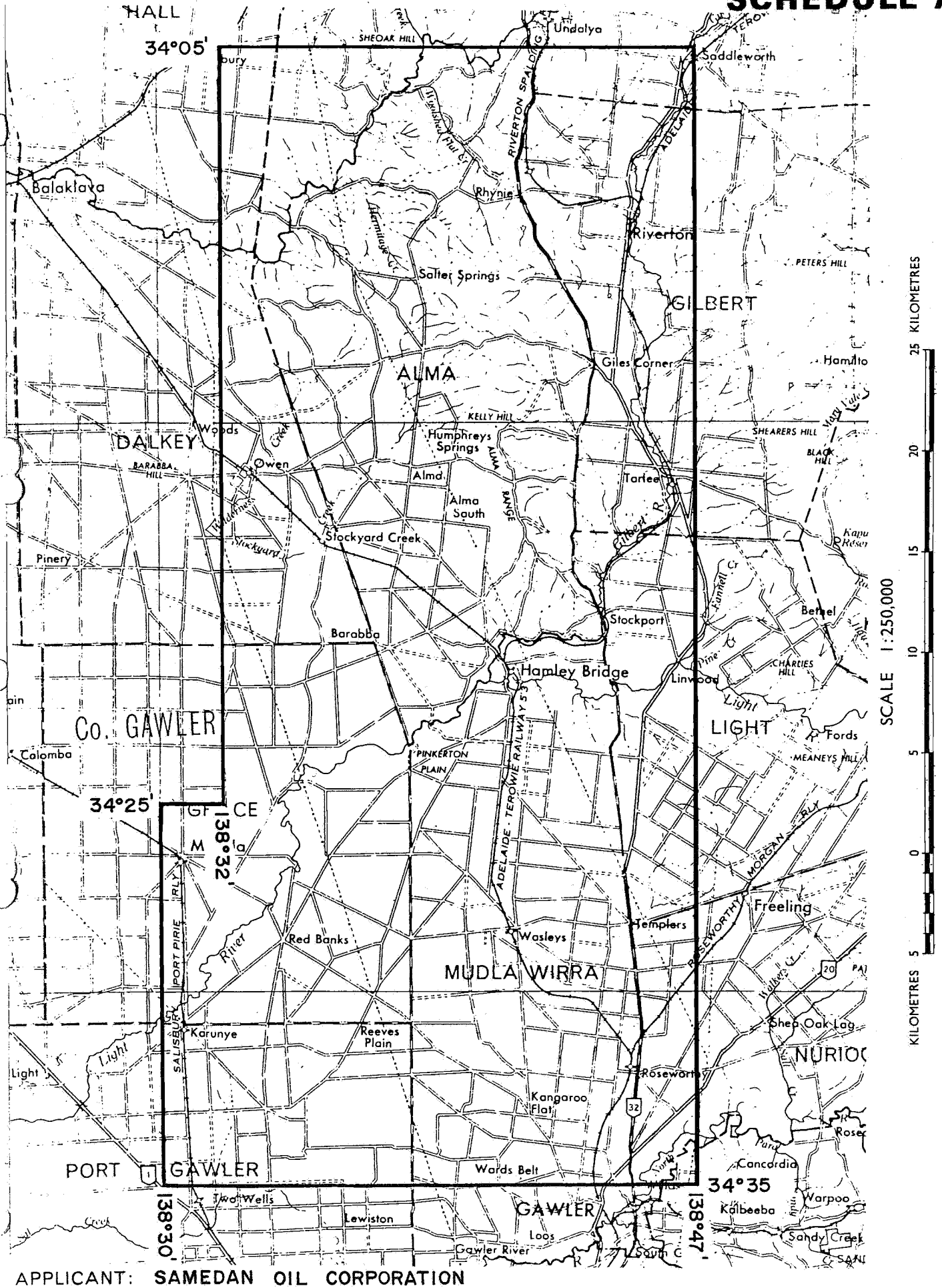
Submitted by
Samedan Oil Corp. of Australia
1982

Enquiries: Customer Services Branch
Minerals and Energy Resources
7th Floor
101 Grenfell Street, Adelaide 5000

Telephone: (08) 8463 3000
Facsimile: (08) 8204 1880

Government of South Australia
Primary Industries and Resources SA

SCHEDULE A ✓



APPLICANT: **SAMEDAN OIL CORPORATION**

DM: **95/81**

AREA: **1333** square kilometres

1:250000 PLANS: **ADELAIDE**

LOCALITY: **HAMLEY BRIDGE AREA - Immediately north of Gawler**

DATE GRANTED: **27·7·81**

DATE EXPIRED: **26·7·81**

SURRENDERED

EL No: **862**

CONTENTS ENVELOPE 4333

TENEMENT: E.L. No. 862 - HAMLEY BRIDGE.

TENEMENT HOLDER: Samedan Oil Corporation.

SAMEDAN OIL CORPORATION

FIRST QUARTERLY PROGRESS REPORT

EXPLORATION LICENCE 862

HAMLEY BRIDGE (NORTH ADELAIDE PLAINS)

SOUTH AUSTRALIA

Period Ending October 26, 1981

by G.R. Baglin,
Senior Geologist

CONTENTS

LIST OF FIGURES

INTRODUCTION

Exploration Licence 862, Hamley Bridge, was applied for to explore for heavy mineral beach sands following the announcement of the Golden Grove deposit 25 kilometres north-east of Adelaide, Figs. 1 and 2.

The Golden Grove occurrence is a low tonnage and low grade accumulation of mainly rutile, ilmenite and zircon. The concentration of heavy minerals occurs in Middle Eocene sands which are equivalent to the North Maslin Sands of the Willunga Embayment, Fig. 3.

B.J. Morris stated "... all areas of Tertiary sedimentation (on particularly the eastern Eyre Peninsula and the south-east coast of South Australia) are prospective" (for heavy minerals).

Samedan completed a study of borehole data from several sub-basins within the St. Vincent Basin, Fig. 4. Borehole data in the North Adelaide Plains sub-basin are sparse and contain little information. This sub-basin was selected for exploration partly because of this lack of information and partly because of its similarity and proximity to the Adelaide sub-basin which contains the Golden Grove occurrence.

EXPLORATION

Approval for a reconnaissance stratigraphic drilling programme has been obtained from the South Australian Department of Mines and Energy.

The purpose of this initial drilling programme is to test for the presence of Maslin Sands or their equivalent and to obtain depth and thickness information as well as possible heavy mineral content, in particular rutile, ilmenite and zircon.

Correspondence with landholders within the proposed drilling areas has been initiated in order to obtain access to the properties for the drilling rig. Drilling is expected to commence during February following stripping of crops and prior to cultivation for winter crops.

We propose to percussion drill about eleven vertical holes to depths of approximately 50 metres to test the stratigraphic section. The proposed sites are marked on Figure 2.

EXPENDITURE - to 31st October, 1981

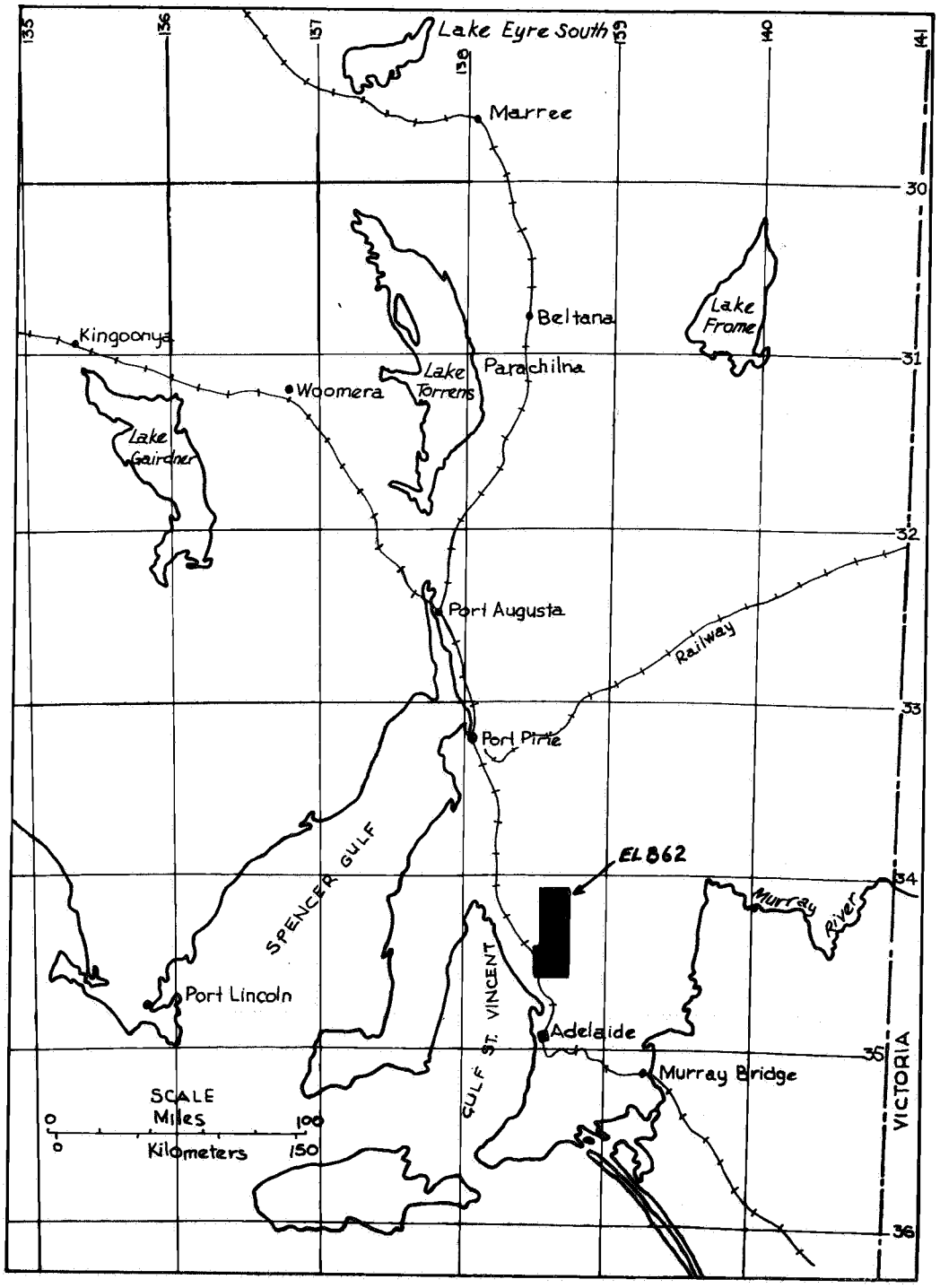
	$A
Exploration Licence Fees	~~1,003.75~~
Salaries	6,915.39
Publications and Maps	79.10
Vehicle Expenses	35.00
Travel and Accommodation	1,008.35
Stationery, Postage & Telephone	1.76
	$9,043.35
	$039.60

REFERENCES

Ludbrook, N.H., 1980 — A Guide to the Geology and Mineral Resources of South Australia.

McCallum, W.S. & Morris, B.J., 1980 — Heavy Mineral Sands Investigation, Golden Grove, South Australia. Mineral Resour., Rev., S. Aust., 148: 46-60.

Morris, B.J., 1980 — Heavy Mineral Sands. A Resume of South Australian Occurrences. Mineral Resour., Rev., S. Aust., 148: 26-40.

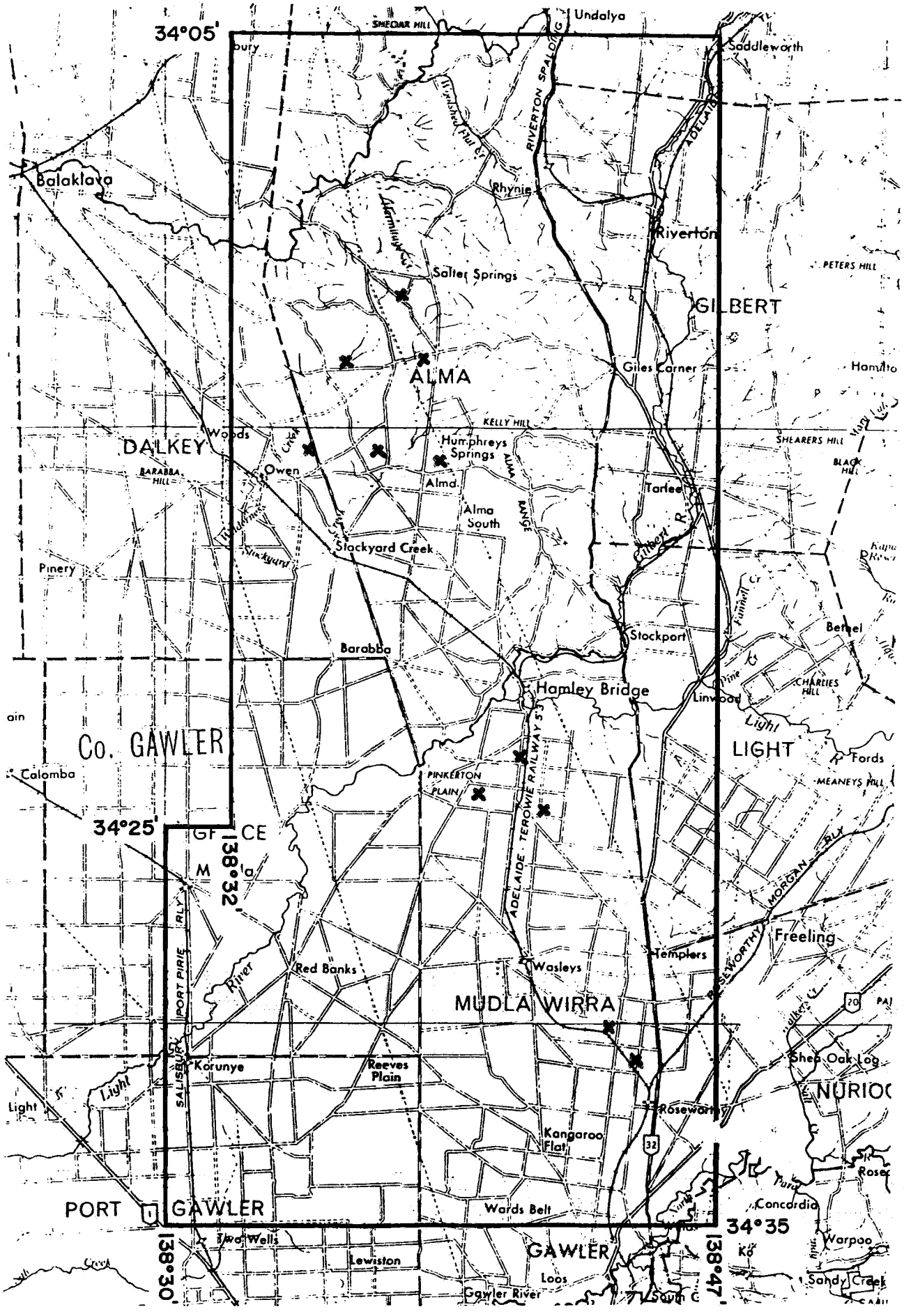


LOCALITY MAP EL 862
SOUTH AUSTRALIA

FIG. 1

FIGURE 2.

SCHEDULE A

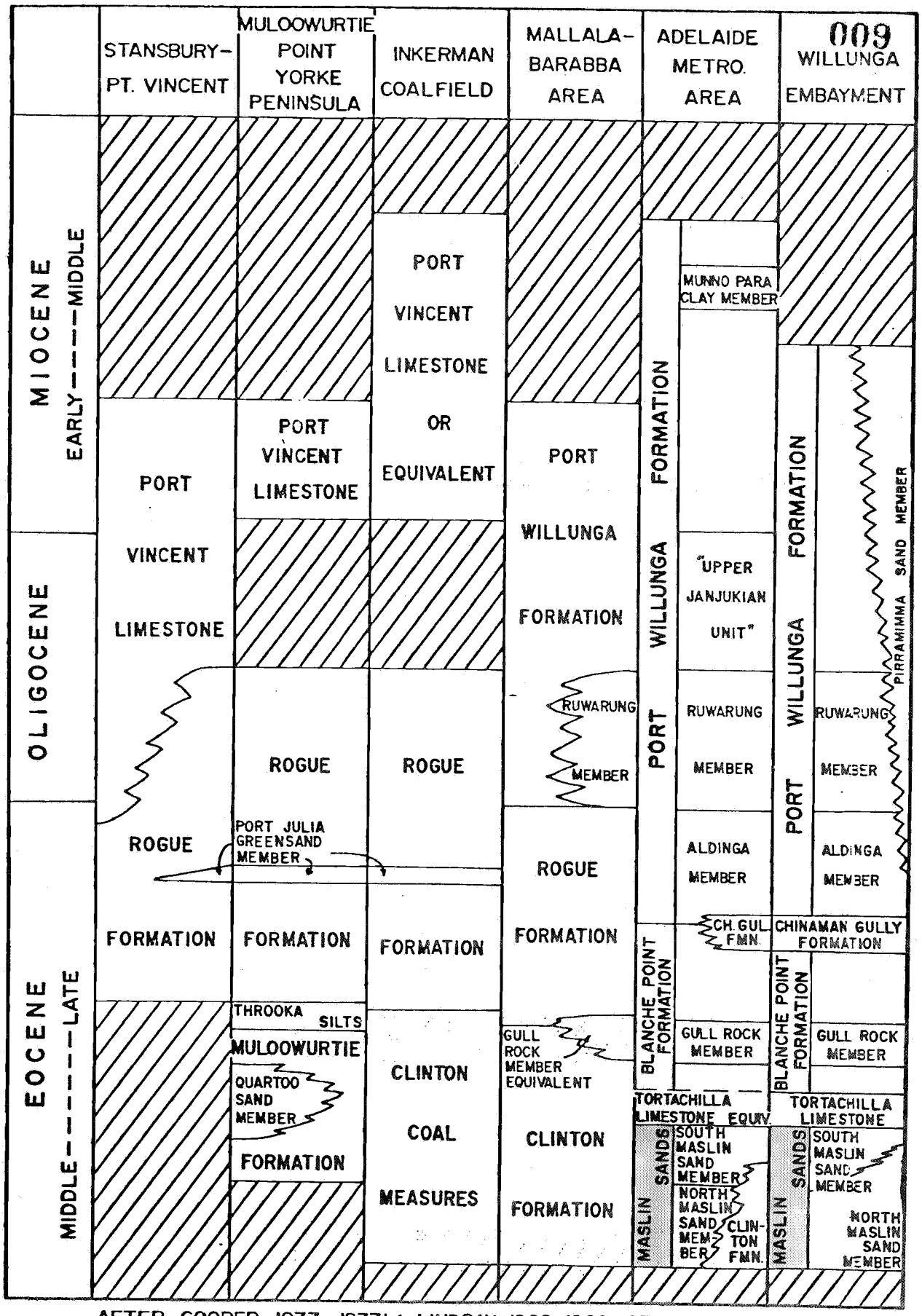


SCALE 1:250,000

KILOMETRES 5 0 5 10 15 20 25 KILOMETRES

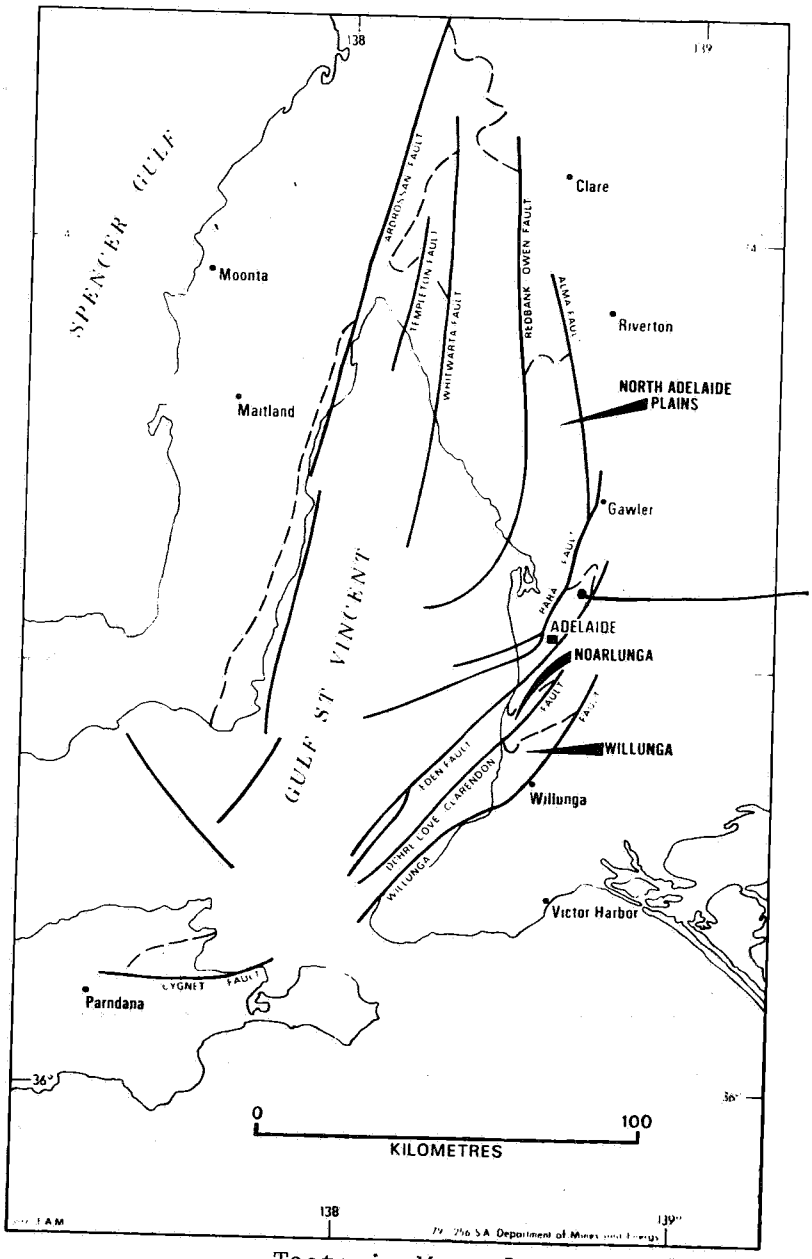
✕ - Proposed Drill sites

NOTE: There is no warranty that the boundary of this Exploration Licence is correct in relation to other features on the map. The boundary is to be ascertained by reference to the Australian Geodetic Datum.



AFTER COOPER, 1977a, 1977b; LINDSAY, 1968, 1969, STUART, 1970

GEOPHYSICS DIVISION	DEPARTMENT OF MINES – SOUTH AUSTRALIA	SCALE –
COMPILED C D COCKSHELL	NORTHERN ADELAIDE PLAINS GAS STORAGE STUDY	DATE 12-12-77
DRN. K.W / CKD. C.D.C.	TERTIARY CORRELATION CHART	PLAN NUMBER S13152



Tectonic Map of
St. Vincent Basin and sub-basins (from Ludbrook)

SAMEDAN OIL CORPORATION

Second Quarterly Progress Report

EXPLORATION LICENCE 862

HAMLEY BRIDGE (NORTH ADELAIDE PLAINS)
SOUTH AUSTRALIA

Period Ending January 26, 1982

by B.G. Taylor,
Geologist

CONTENTS

LIST OF PLANS

1. INTRODUCTION

Exploration Licence 862 was tenured for exploration for stranded beach equivalents to the fluviatile Golden Grove mineral sands deposit.

During the mid-upper Eocene eras an apparent northerly long shore drift situation existed in conjunction with a period of marine transgression. It was hoped that mineral sands accumulations could occur in marine embayments bounded by Adelaidean rocks in the Owen, Hamley Bridge and Roseworthy areas (see Plan 1).

If antithetic faulting, typical of the western margin of the Adelaidean in the Adelaide area, applied to the fault block bounded by the Alma and Owen-Redbank Faults, it was considered likely that comparatively thick Maslin Sands equivalents would be preserved in the central-eastern portion of the embayments (see Plan 2).

A recent water bore drilled near the St. Peter's Girls School (Stonyfell area), proximal to the Eden Fault, passed through 275 metres of unconsolidated Tertiary sediments before intersecting Adelaidean quartzites (D. Armstrong, S.A.D.M.E., pers. comm.). The thickness of this Tertiary sequence indicates some fault movement contemperaneous with Tertiary sedimentation.

It was hoped that a similar or even less dramatic Tertiary succession would be preserved marginal to the Alma Fault in the embayments investigated.

A programme of eleven drill holes was proposed to test the embayments for mineral sands accumulations.

2. DRILLING

Appended are plans indicating drill hole positions, drill hole logs and details on intervals sampled (see Plans 3 to 7).

Of the eleven holes proposed, ten holes were completed. The remaining hole was not drilled due to landholder opposition. NAP.7 (North Adelaide Plains 7) was resited after drilling 6 metres due to lost circulation and an additional hole 500 metres west of NAP.4 was also abandoned due to lost circulation.

Thompson Drilling, using a 21 ton Mayhew truck-mounted rig (drag bit - water sample return), completed the drilling on 13th January, 1982. Drilling took 2½ days ex Adelaide and return and totalled 195 metres.

All holes were terminated in Adelaidean basement.

Sand samples were panned on site and stored at the Glenside Core Library without any further analytical work being conducted. No heavy minerals were noted, apart from rare limonite pisoliths in the upper section of some holes.

Sand or sandy intervals were intersected in holes NAP.6, NAP.7 and NAP.10 in the Owen embayment and NAP.5 in the Hamley Bridge area. The sandy intervals vary rapidly in character both laterally and down hole from rare clean white quartz sands (NAP.7 and NAP.10) to clay-grits (NAP.5 and NAP.6).

An indurated crust is characteristic of the upper sand section in the area around NAP.10. This feature was noted in drilling and is also evident in quarries and exposures in the vicinity of NAP.10. (The indurated upper section of the sands was the source of sandstone blocks used by the pioneer settlers for house construction.) Below the indurated section the sands are unconsolidated.

The sands are typically very fine (.3 mm grain size) and interpreted as aeolean or overbank fluviatile in origin (NAP.7 and NAP.10) with rare coarser intervals (NAP.7) interpreted as fluviatile channel in origin. No evidence of a marine environment was noted.

The sands appear to grade laterally to gritty clays (NAP.5 and NAP.8), again indicating a terrestrial environment.

3. GEOLOGY

Although the sands have been labelled Terrestrial Maslin equivalents, they are only so in a loose sense. Drill hole intersections provided insufficient stratigraphic information for comparison with the known stratigraphy.

Sands similar to those intersected could conceivably have been deposited at any time after marine regression, given the basin margin environment.

Evidence from pre-existing drill holes on the west of E.L. 862 and geophysical interpretation indicate that the block bounded by the Alma and Owen-Redbank Faults gently shelves to the west (M. Lindsay and B. Cooper, S.A.D.M.E., pers. comm.). This interpretation is supported by the results of the drilling programme which indicate a low angle Tertiary overlap situation onto an irregular pre-Tertiary topography. Given the general attitude of the block, and the high energy transport systems prevalent during the Tertiary era (high rainfall - temperate climate), it is doubtful whether any sands deposited along a stranded coastline would remain uneroded.

From fossil/stratigraphic evidence further to the south it would appear that early-Tertiary marine influence ventured as far as the present Adelaide Hills escarpment in the metropolitan area and for some distance up the Golden Grove, Noarlunga, Willunga and Myponga embayments.

However, in the area investigated it is difficult to recognize the limit of marine incursion due to the shallow depth and gently dipping attitude of the fault block and the imminent possibility that marine deposits were eroded during marine regression.

The thickness of the Tertiary sequence over the whole of the fault block north of Hamley Bridge appears to be too thin to host sands and does not warrant further investigation (see Plan 3).

A thicker Tertiary sequence is developed on the south of the block. An observation bore approximately 5 km south-west of Roseworthy was reported to have intersected approximately 90 metres of Tertiary-Quaternary sediments.

Tertiary marine sediments are also reported as occurring in shallow drill holes near Reeves Plains (Holes 711 and 712) and also in outcrop approximately 6 km east of Mallala where the Light River cuts through the Quaternary cover (see Plan 9).

It is probable that the limit of Eocene marine incursion occurs somewhere between the forementioned occurrences and the drill holes NAP.2 to NAP.5.

4. CONCLUSIONS

The drilling has indicated that the areas chosen for evaluation probably represent areas of Tertiary terrestrial sedimentation and are not host to mineral sand accumulations.

An embayment containing suitable marine beach deposits could conceivably occur between holes NAP.2 and NAP.5 and the forementioned known Tertiary marine occurrences to the west.

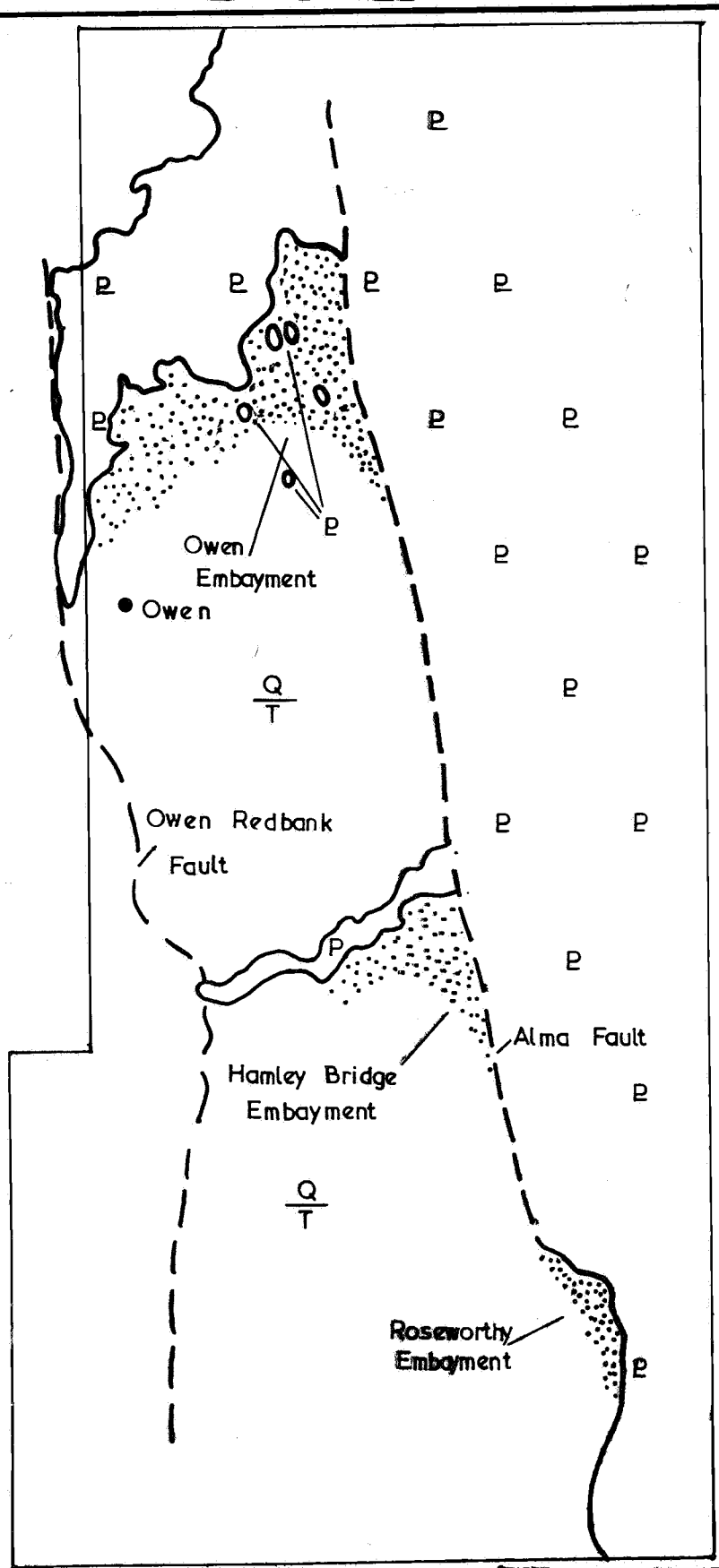
5. PROPOSED PROGRAMME

Another rotary drilling programme consisting of about ten holes along two south-west profiles (Plan 9) will be drilled by Thompson Drilling at the end of January to test the above concept.

Further work is dependent upon the results of the drilling programme.

6. EXPENDITURE STATEMENT - from 31st October, 1981 to 31st January, 1982

	$
Exploration Licence Fees	50.00
Salaries	17,124.01
Publications & Maps	8.90
Printing and Drafting	14.90
Vehicle Expenses	706.00
Travel and Accommodation	1,633.05
Stationery, Postage and Telephone	1.25
Drilling	5,046.50
Freight	99.46
	$24,685.07



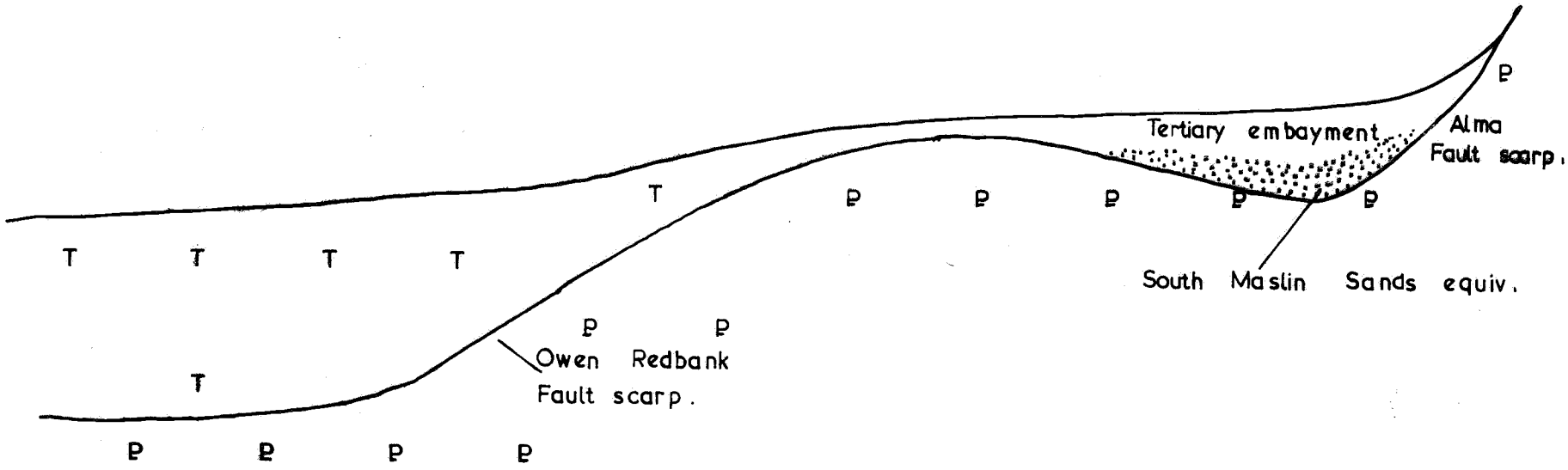
SAMEDAN OF AUSTRALIA

EL 862 HAMLEY BRIDGE. S. A.

CONCEPTUAL MODEL
EMBAYMENT LOCATIONS

0 15km

Author B G T	Drawn B G T	Date 22/1/82
Scale 1:250,000	Project SA 6	Plan No. 1



SAMEDAN OF AUSTRALIA

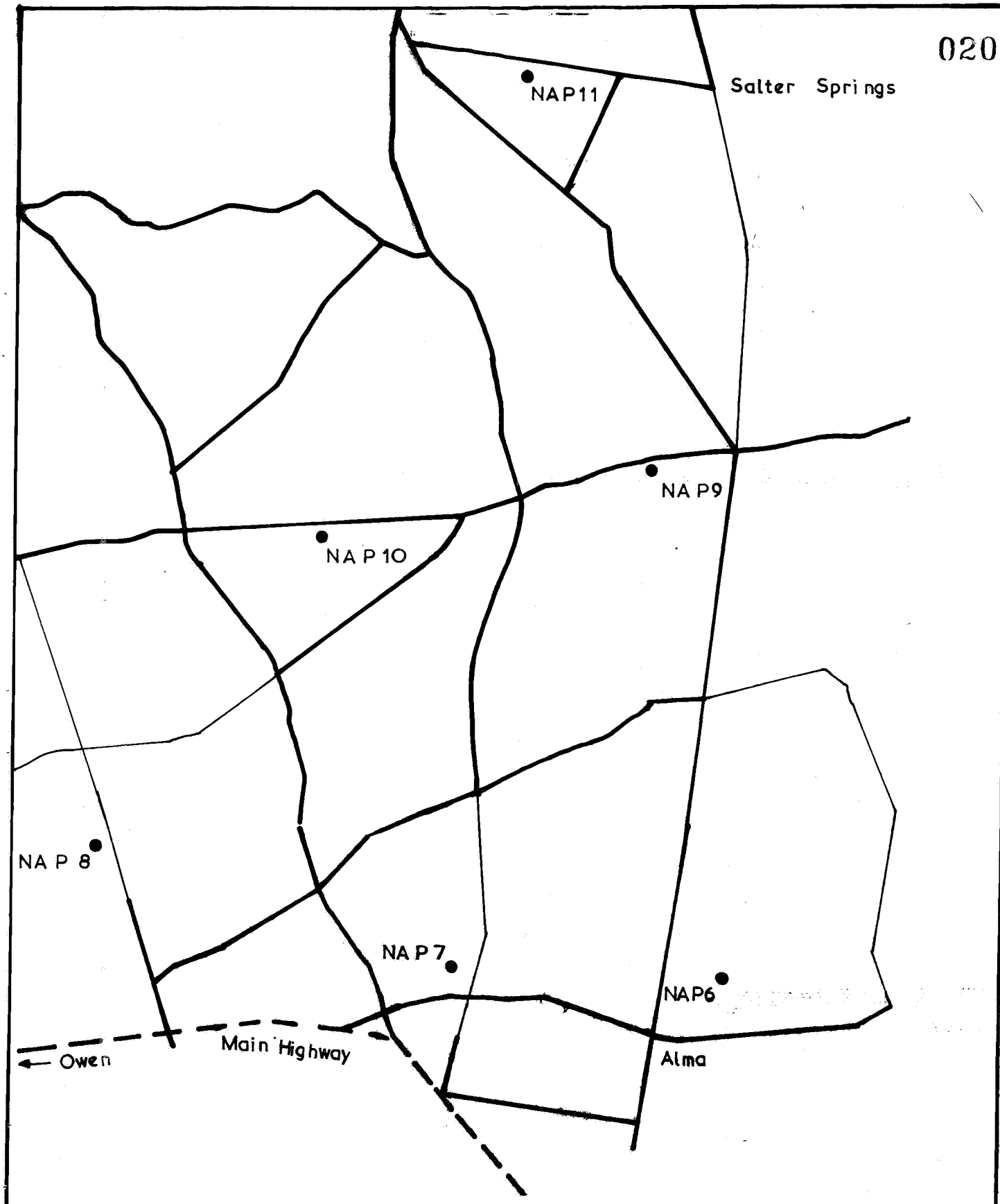
EL 862 HAMLEY ~~B~~RIDGE. S.A.

CONCEPTUAL MODEL

E W Section across Owen Redbank and Alma Faults.

0 5km

Author BGT	Drawn BGT	Date 22/1/82
Scale 1:100,000	Project SA 6	Plan No. 2



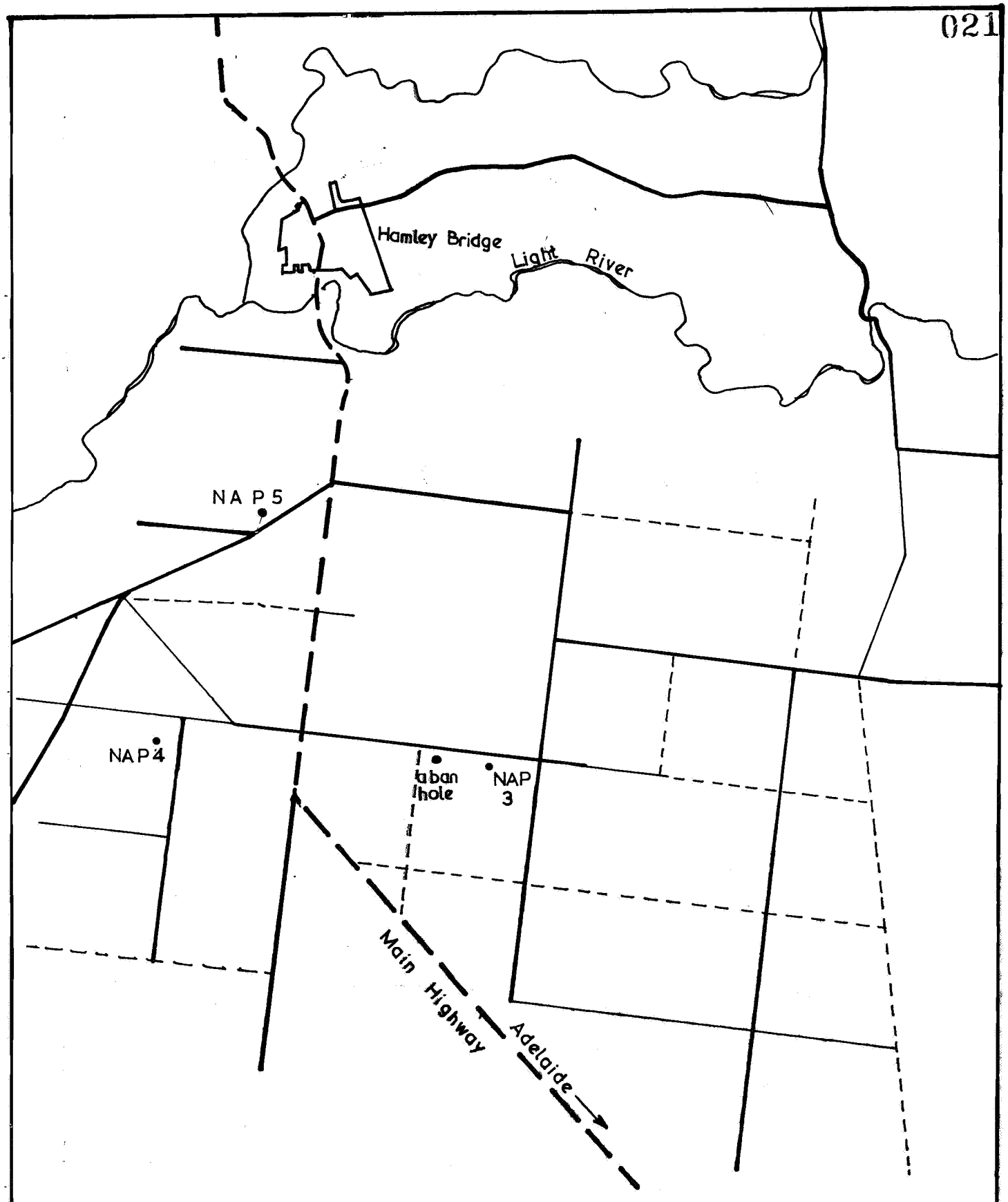
SAMEDAN OF AUSTRALIA

EL 862 HAMLEY BRIDGE SA

DRILL HOLE LOCATIONS
NAP 6-11

0 1 2k

Author B G T	Drawn B G T	Date 22/1/81
Scale 1:50,000	Project SA 6	Plan No. 3



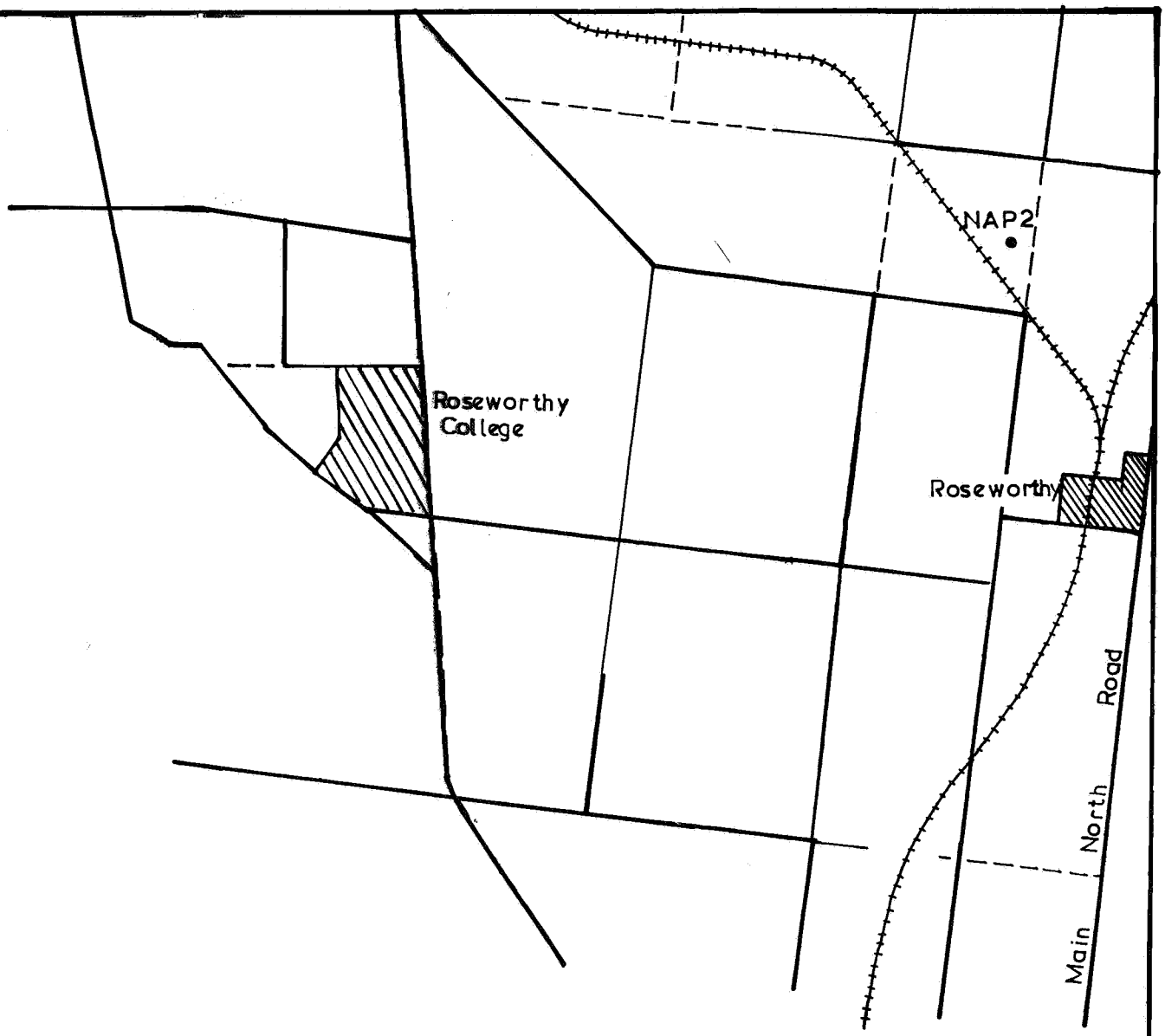
SAMEDAN OF AUSTRALIA

EL 862 HAMLEY BRIDGE SA

DRILL HOLE LOCATIONS
NAP 3-5

0 1 2k

Author B G T	Drawn B G.T	Date 22/1/82
Scale 1:50,000	Project SA 6	Plan No. 4



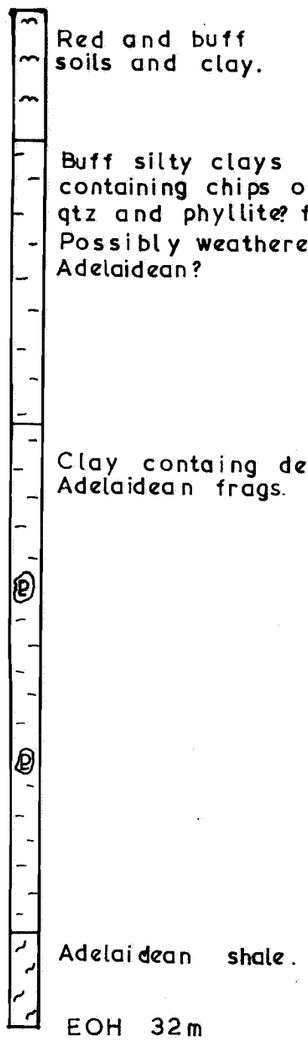
SAMEDAN OF AUSTRALIA

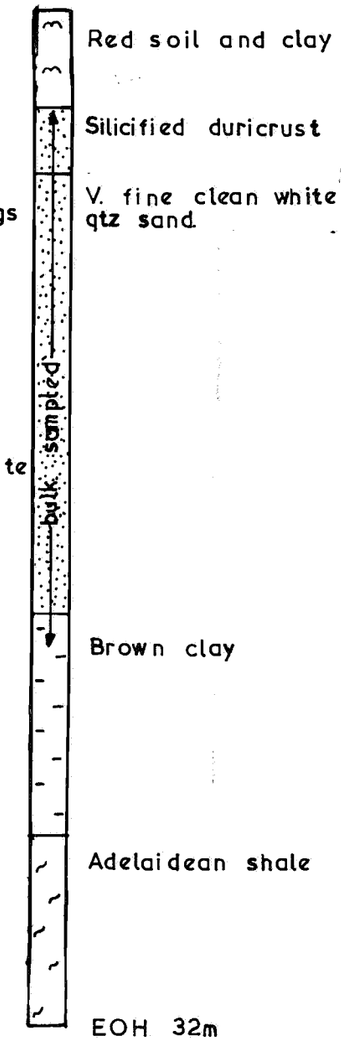
EL 862 HAMLEY BRIDGE S A

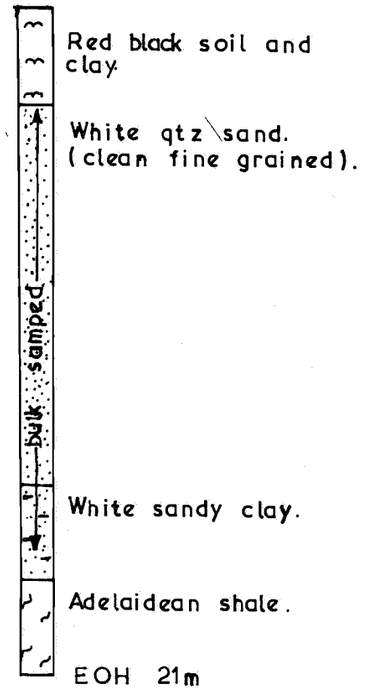
LOCATION OF DRILLHOLE NAP2 (NAP1 was proposed but not drilled)

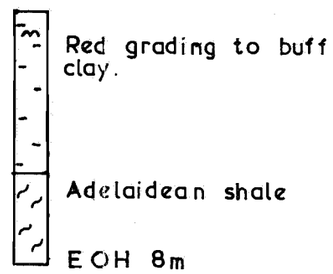
0 1 2k

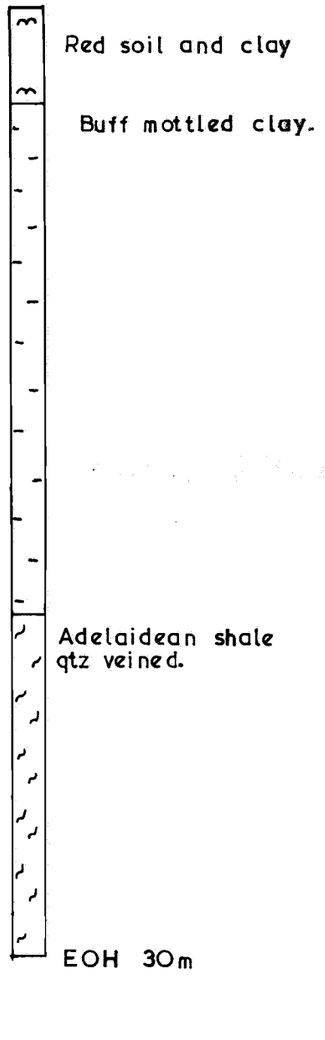
Author B G T	Drawn B G T	Date 22/1/82
Scale 1: 50,000	Project SA 6	Plan No. 5

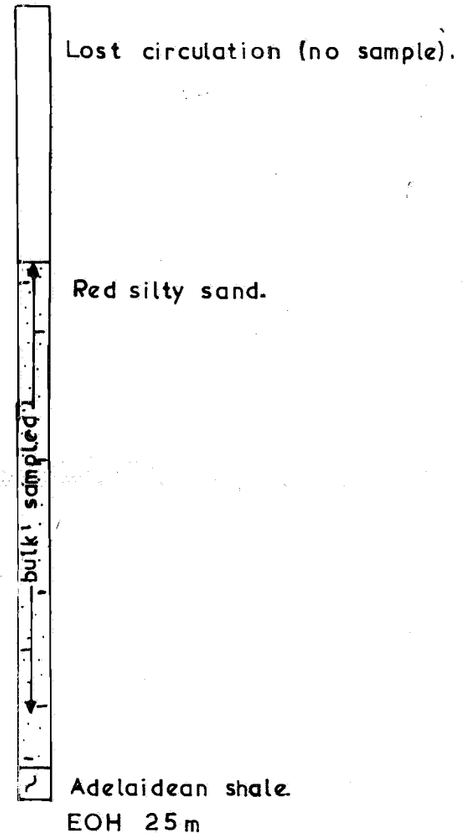


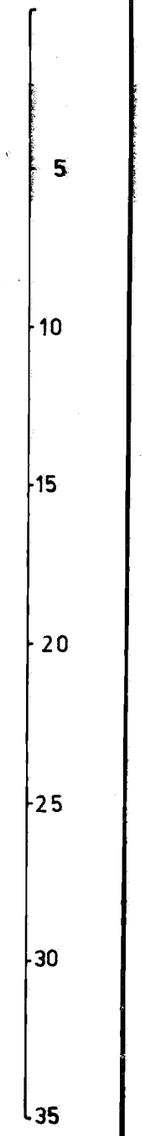












023

SAMEDAN OF AUSTRALIA		
EL 862 HAMLEY BRIDGE. S.A.		
DRILL-LOGS NAP 6-11		
Author BGT	Drawn BGT	Date 23/1/82
Scale 1:200	Project SA 6	Plan No. 6

022

NAP 4

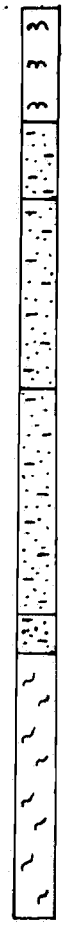
Alluvium red and buff clay

Clay (buff mottled containing qtz pebbles).

Fresh Adelaidean Phyllite (Qtz veins).

EOH 12m

NAP5



Alluvium red and buff clay.

Red gritty silt and clay.

White gritty clay.

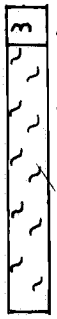
Buff gritty clay.

Clay and qtz sand (fine).

Clay grading into Adelaidean Phyllite.

EOH 24m

NAP3

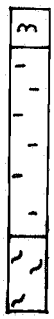


Alluvium c basement frags

Adelaidean basement.

EOH 8m

NAP2



Black alluvium

White and buff mottled plastic clay

Adelaidean shale.

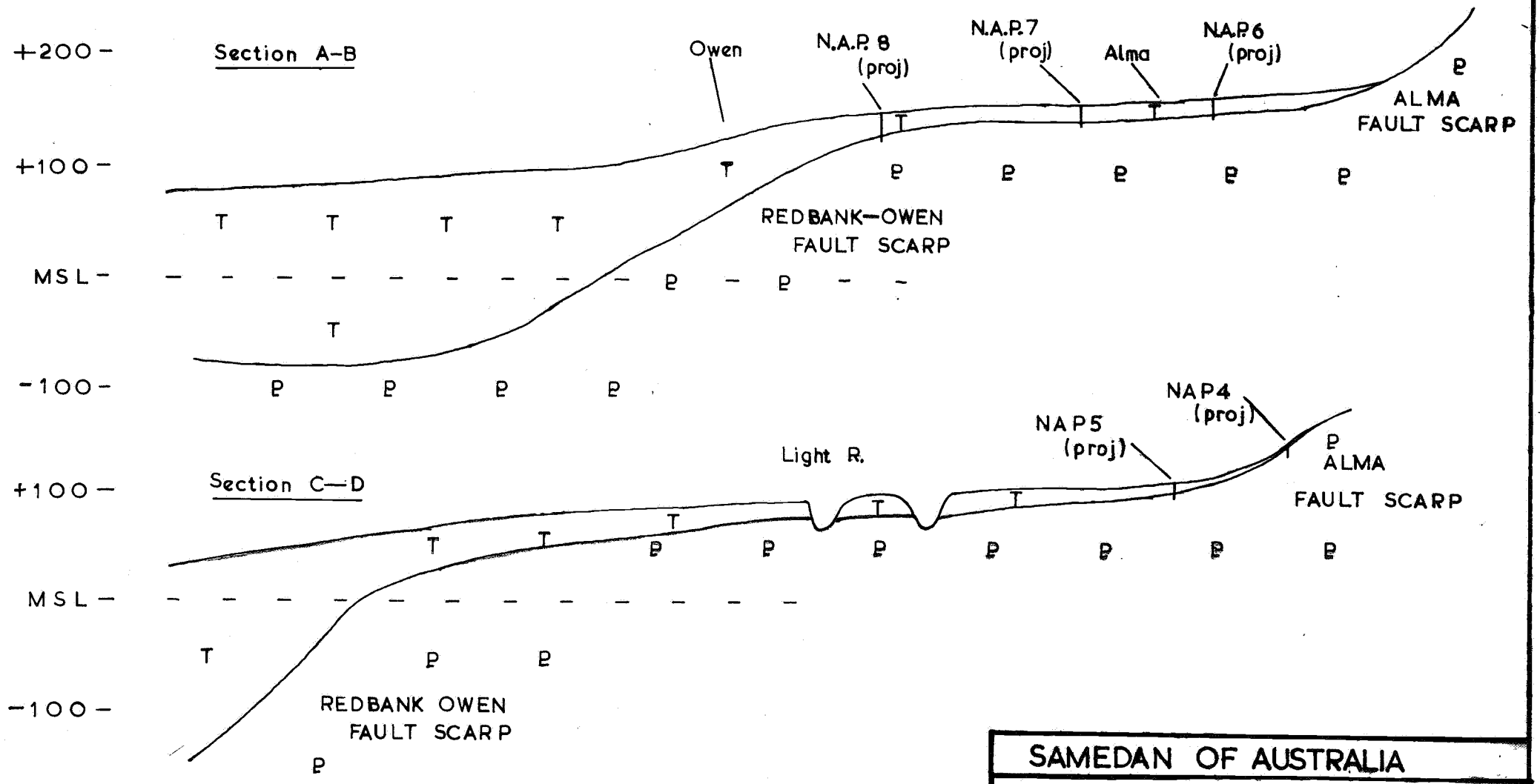
EOH 8m

SAMEDAN OF AUSTRALIA

EL 862 HAMLEY BRIDGE SA

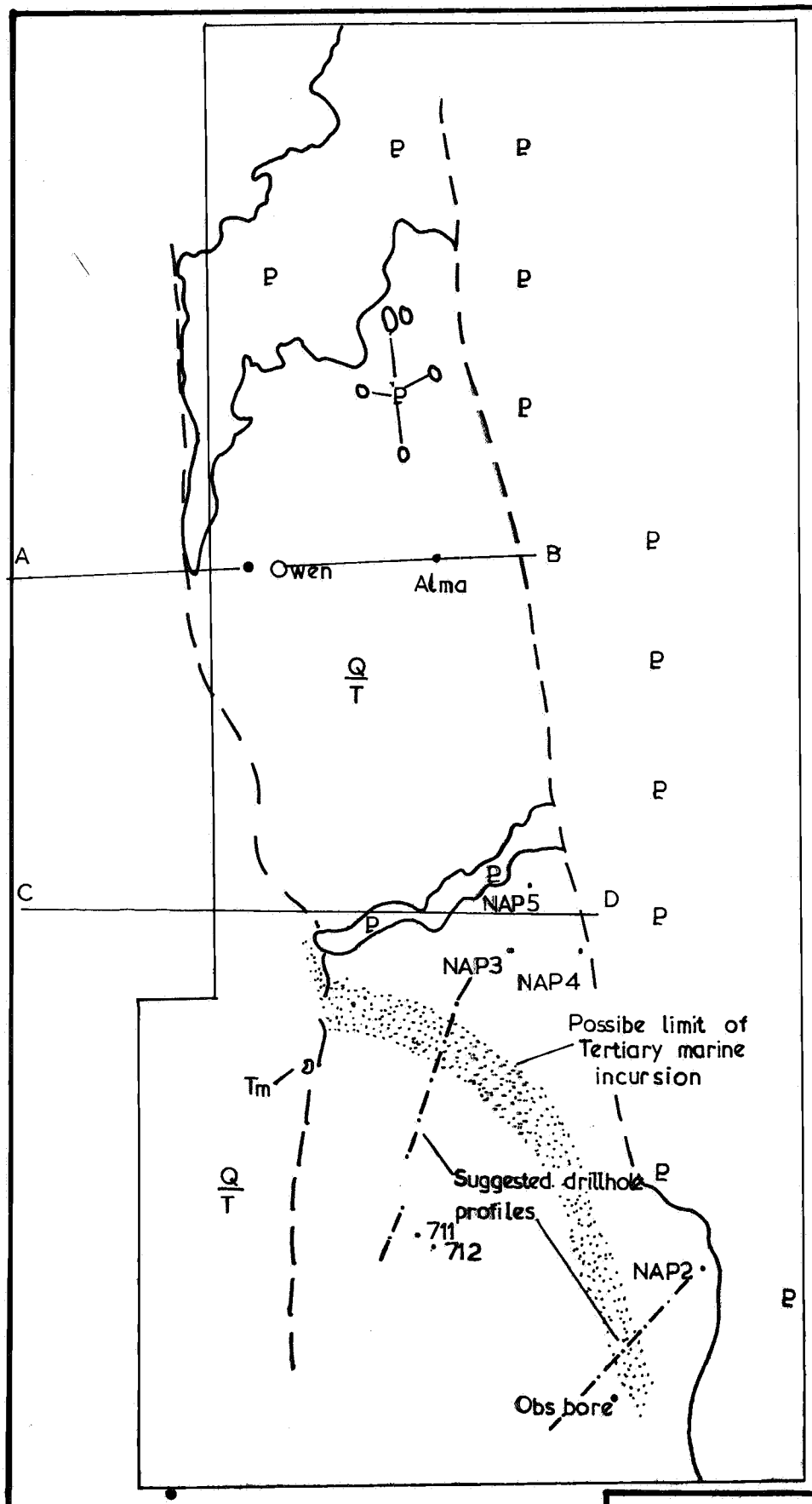
DRILL LOGS NAP 2-5

Author BGT	Drawn BGT	Date 23/1/82
Scale 1:200	Project SA 6	Plan No. 7



SAMEDAN OF AUSTRALIA		
EL 862 HAMLEY BRIDGE. S.A.		
SECTIONS A-B and C-D		
(refer to plan 9 for section locations) adapted from CD Cockshell et al 1978		
0 5k		
Author BGT	Drawn BGT	Date 22/1/82
Scale 1:100,000	Project SA 6	Plan No. 8

EL 862



SAMEDAN OF AUSTRALIA	
EL 862 HAMLEY BRIDGE S.A.	
Location of sections A B and C D. Possible limit of marine incursion. Proposed drillhole profile lines. 0 — 15k	
Author B G T	Drawn B G T — Date 22/1/82
Scale1:250,000	Project SA 6 — Plan No. 9

SAMEDAN OF AUSTRALIA
P.O. Box 140, Civic Square, A.C.T. 2608
(28-36 Ainslie Avenue, Canberra City, A.C.T.)
Telephone 47 0911

Ref. 22.44.1/276

29th April, 1982

The Director-General,
Department of Mines and Energy,
P.O. Box 151,
EASTWOOD, S.A. 5063.

Dear Sir,

Exploration Licence 862

Further to my March 19, 1982 letter to you applying for relinquishment of Exploration Licence 862, I have enclosed a copy of the final report by Mr. B.G. Taylor. You will note the statement on expenditures is at page 5 of the report.

Yours faithfully,

D.A. White,
Manager and Attorney for
SAMEDAN OIL CORPORATION

Enc.

SAMEDAN OIL CORPORATION 0028

FINAL (RELINQUISHMENT) REPORT
EXPLORATION LICENCE 862

HAMLEY BRIDGE (NORTH ADELAIDE PLAINS)
SOUTH AUSTRALIA

Period Ended: April 26, 1982

by B.G. Taylor,
Geologist

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0029

LIST OF PLANS

1. INTRODUCTION

Exploration Licence 862 was tenured to test for stranded beach equivalents to the fluviatile Golden Grove mineral sands deposit. Details of the E.L. boundaries are given on Plan 1.

The area was thought to have some potential for mineral sands in view of the following features (see Plan 2):

1) The Barossa Complex and overlying Adelaidean quartzites to the east are a known source of economic heavy minerals.

2) Tertiary drainage off the Barossa Complex appears to have had a marine outlet to the south of Exploration Licence 862 in the Golden Grove embayment.

3) Marine influence during the Tertiary ventured as far as the Adelaide Hills escarpment in the Adelaide metropolitan area and possibly as far as the Alma Fault within E.L. 862.

4) Northerly longshore drift would have transported available heavy minerals northwards and concentration may have occurred in suitable geomorphological trap situations.

5) Antithetic growth faults, active during the Tertiary, would have provided elongate basinal structures marginal to the faults where Tertiary marine sands, once deposited, would be preserved after subsequent marine regression. The scarp producing faults in the Adelaide area typically have an antithetic aspect.

A program of 20 drill holes was conducted to test the Tertiary stratigraphy for suitable host sequences for mineral sands deposits.

2. DRILLING

2.a Drilling - Modus Operandi

0031

Drilling was conducted in two phases, of 10 holes each, during the second and fourth weeks of January, 1982.

The program was contracted to the locally based Thompson Drilling who completed the holes using a 21 ton Mayhew rig (drag bit - water sample return).

Sampling was conducted at 1 metre intervals and samples of sandy intervals were panned on site. Representative samples were also submitted to the Glenside Core Library.

Sample return was satisfactory in most cases, although circulation difficulties were experienced in the top sections of most holes and in the loose porous sands in NAP.19 (North Adelaide Plains 19) and NAP.21.

The first phase of drilling, conducted entirely on private property, was originally designed to consist of 11 holes (NAP.1 to NAP.11). NAP.1 was not drilled due to failure to reach a suitable compensation arrangement with the affected landholder.

The second phase of drilling (NAP.12 to NAP.21) was carried out along secondary road verges with approval from the District Council of Light.

2.b Drilling - Phase 1

The phase 1 program was designed to test for possible embayment situations bounded to the east by the Alma Fault and to the north by possible ridges of Adelaidean rocks in the Owen, Hamley Bridge and Roseworthy areas (see Plan 2). Drill hole locations and drill logs are given on Plans 3-7.

Drilling proved that the Alma Fault does not have an antithetic aspect in the areas tested. the fault block bounded by the Alma and Redbank-Owen Faults appears to shelve gently to the west. Drilling indicated a low angle Tertiary overlap situation onto an irregular pre-Tertiary topography.

Sands or sandy intervals were intersected in holes NAP.5, 6, 7 and 10.

The sand intervals in NAP.7 and 10 appear to be part of the same unit. The sand is a typically very fine (0.3 mm grain size) well sorted, clean white quartz sand. In exposure and in the top section of NAP.10 the sands exhibit a hard silicified duricrust. The silicified upper level was quarried by the pioneer settlers for building stone. Below the silicified section the sands are loose and unconsolidated.

Rare coarser intervals were noted around the 15 m depth in NAP.7 (grain size to 1 mm).

From the outcrop distribution it appears the sands are the uneroded remnant of a blanket type deposit.

2.b Drilling - Phase 1 (Cont'd)

Panning indicated that the sand was almost totally devoid of heavy minerals. Only rare limonite was noted. No evidence of a marine environment was seen.

The sands are interpreted as aeolian or overbank fluviatile in origin with minor low energy fluviatile channel deposits.

The silty sands intersected in NAP.5 and 6 are probably, in part, derived from the forementioned sand sequence. NAP.6 was drilled proximal to a large area of the blanket sand and NAP.5 lies within the flood plain of the Light River.

2.c Drilling - Phase 2

Phase 2 drilling was designed to locate the limit of recognizable marine incursion over the fault block bounded by the Alma and Owen-Redbank Faults.

Two profiles of holes were drilled towards the south-west from NAP.2 and NAP.4 towards known Tertiary marine occurrences. (Holes 711 and 712, an outcrop 6 km east of Mallala and an observation bore 5 km south-west of Roseworthy where 90 metres of Quaternary-Tertiary sediments were intersected.) See Plan 8.

Drill hole locations and drill logs are provided on Plans 8-12.

The gently shelving aspect of the fault block and relatively thin Tertiary cover was confirmed by profile EF (Plans 13 and 14). However a thick Tertiary sequence exists marginal to the Alma Fault on profile GH (Plans 13 and 14). Marine "Maslin type" sands occur within a basement low. The sands are uniformly fine, (0.3 to 0.4 mm) unconsolidated white quartz sands and are interpreted as being marine in origin. Panning revealed the presence of fine dark heavy minerals and a composite sample of the sand samples was submitted to Amdel for heavy mineral identification. Results are given in Appendix 1 (Composite sample 1). More detailed sampling was not conducted because the sands lie beneath the depth of economic interest.

Coarse gravels containing heavy minerals were intersected in holes NAP.13, 14, 15, 17 and 18 along profile EF. The gravels are typically quartz-rich although polymictic in some intersections. Cobbles of Adelaidean to 2 cm were noted in some of the polymict gravels. The gravels are unconsolidated and vary from clean to clayey. The clay may be due to migration under loading from the clay beds overlying the gravels and not reflect the depositional characteristics of the gravels.

The gravels are interpreted as fluviatile or marine lag in origin.

A composite sample from the gravel intersections was submitted to Amdel for heavy mineral identification. Results are given in Appendix 1 (Composite sample 2). The gravels were too deep to be of economic interest and hence heavy mineral identification on a metre by metre basis was not undertaken.

3. GEOLOGY

The antithetic aspect of the Alma Fault does not continue north to Hamley Bridge. The fault block bounded by the Alma and Owen-Redbank Faults shelves to the west beneath a comparatively thin cover of Tertiary sediments.

However in the Roseworthy area a more pronounced fault scarp is developed beneath the Tertiary cover and "Maslin type" marine sands occur on top of the downthrown block. The sands contain minor amounts of economic heavy minerals (rutile, zircon, ilmenite) as well as considerable quantities of Adelaidean derived heavy minerals (staurolite).

The limit of Tertiary incursion over the fault block is difficult to identify due to the gently shelving nature and shallow depth of the block. The gravels intersected on profile EF could be either marine lag or fluviatile in origin. Heavy minerals in the gravels indicate a source with both Barossa Complex and Adelaidean rocks.

If the gravels are fluviatile, a considerable alteration in the geography is necessary to explain their presence relative to the location of the Barossa Complex. Tertiary drainage off the Barossa Complex was interpreted as being south-west into the Golden Grove embayment.

Although the sands have been labelled Maslin equivalents, they are only so in a loose sense. Similar type sands could have developed at any time during the marine transgression given the basin margin environment.

The gravels appear to be younger than the Maslin type sands and could conceivably have been deposited under a different drainage regime to that evidenced by the Tertiary fluviatile deposits in the Barossa Valley and Golden Grove areas.

The presence of economic heavy minerals in the sands and gravels (albeit in trace amounts) validifies the premises under which exploration was conducted. However grades are too low and host sequences too deep to warrant further expenditure.

4. REFERENCES

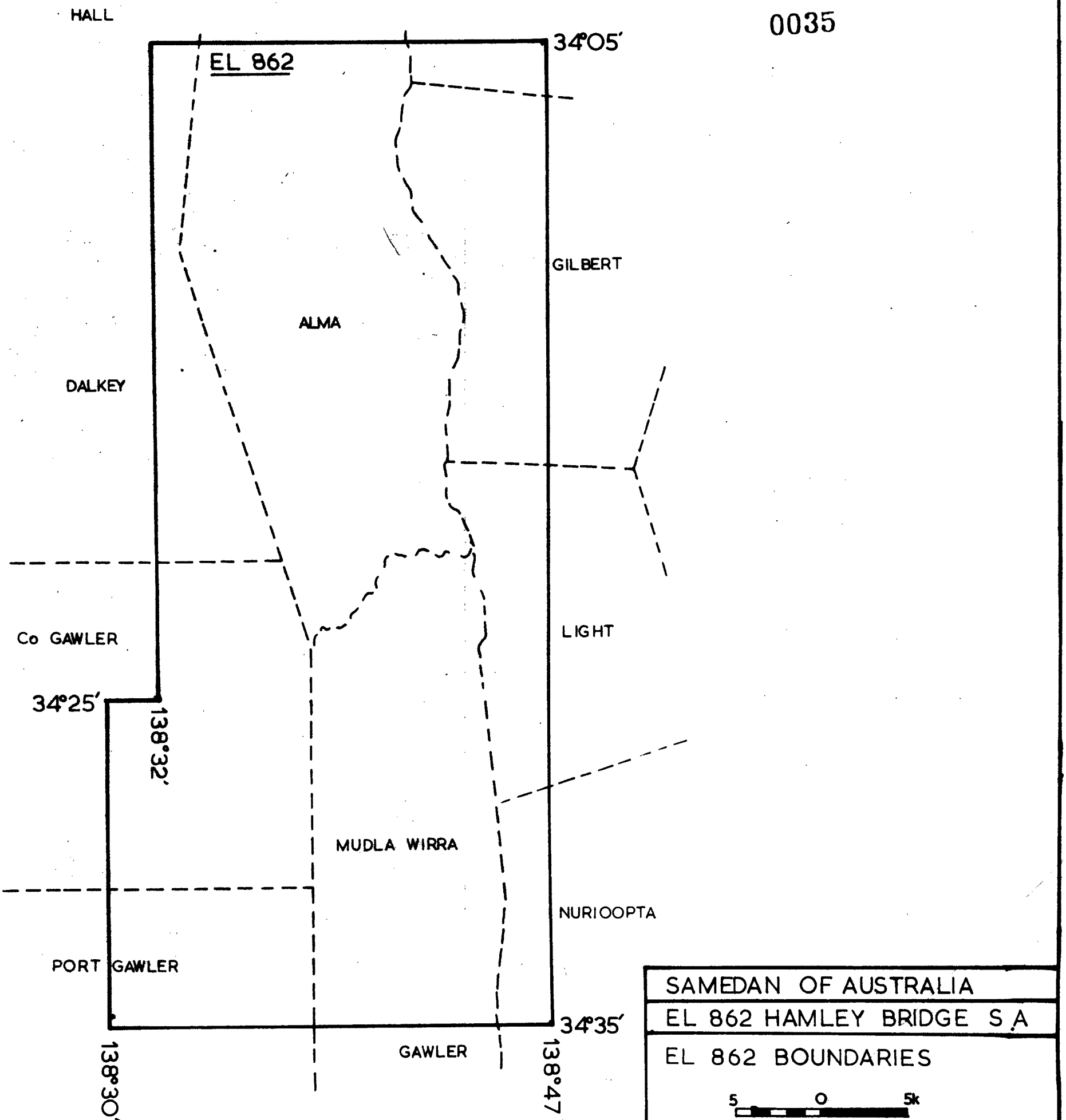
a) Report for quarter ended October 26, 1981, by G.R. Baglin on E.L. 862.

b) Report for quarter ended January 26, 1982, by B.G. Taylor on E.L. 862.

0034

5. EXPENDITURE STATEMENT - From 27th July, 1981 to 24th April, 1982.

	$
Exploration Licence Fees	1,055.70
Salaries	30,610.99
Publications and Maps	105.50
Printing and Drafting	87.93
Vehicle Expenses	1,385.55
Travel and Accommodation	5,563.73
Stationery, Postage and Telephone	9.00
Freight	123.01
Field Stores	181.48
Compensation - Landholders	1,000.00
Food and Accommodation	364.38
Assays	390.25
Total:	$51,064.02



SAMEDAN OF AUSTRALIA

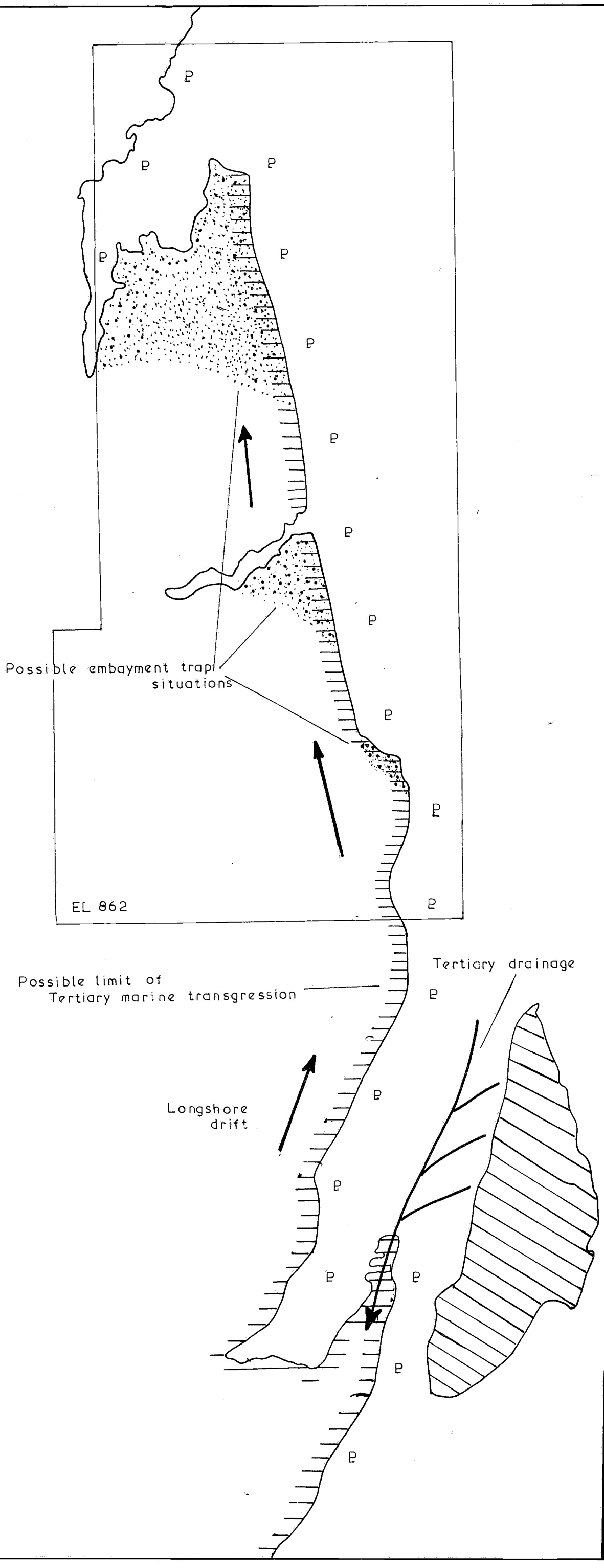
EL 862 HAMLEY BRIDGE S A

EL 862 BOUNDARIES

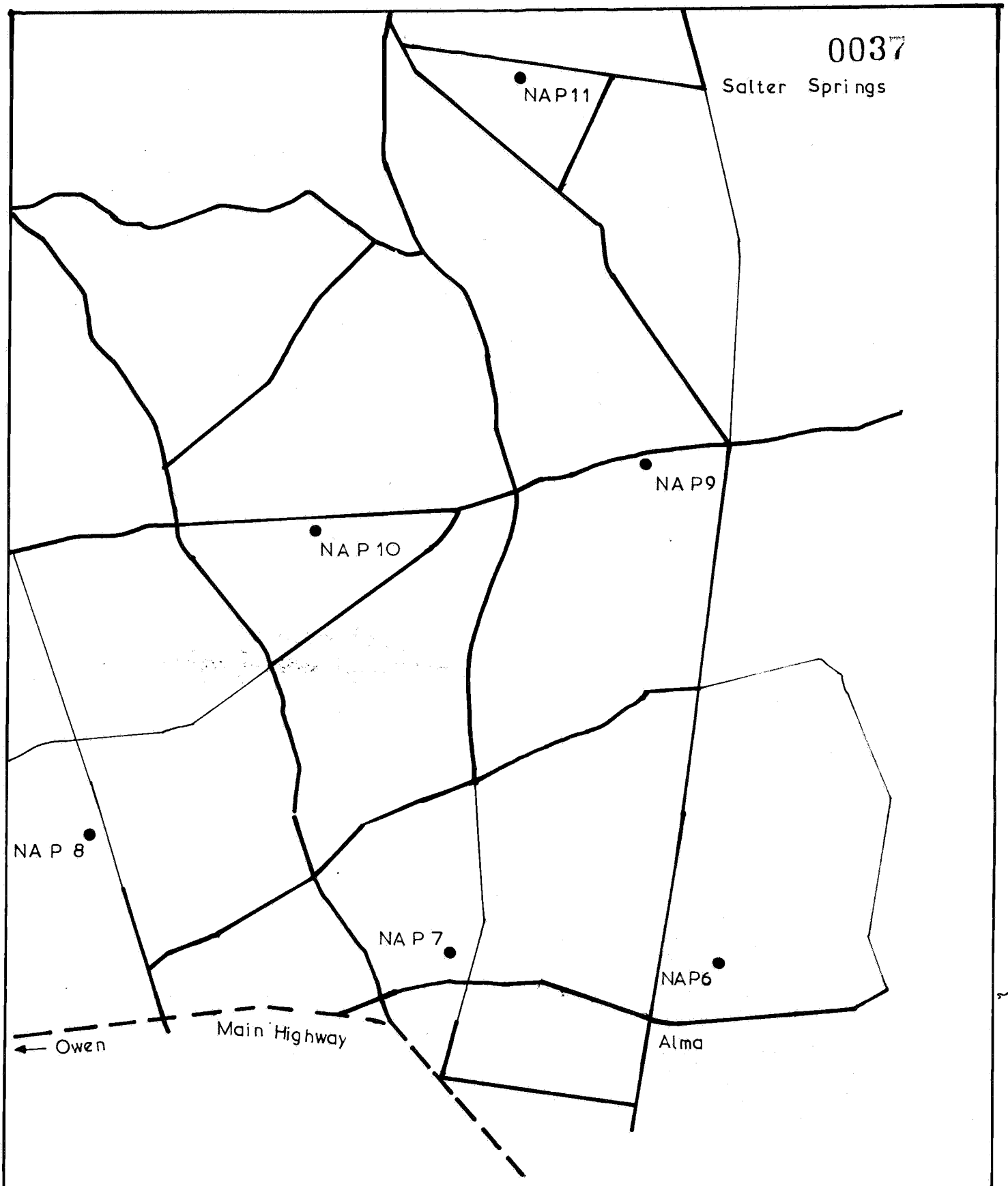
5 0 5k

Author BGT	Drawn BGT	Date 6/4/82
Scale 250000	Project S A 6	Plan No. 1

36



SAMEDAN OF AUSTRALIA		
EL 862 HAMLEY BRIDGE SA		
CONCEPTUAL MODEL		
0 — 1.5k		
Author BGT	Drawn BGT	Date 7/4/82
Scale 250000	Project SA6	Plan No, 2



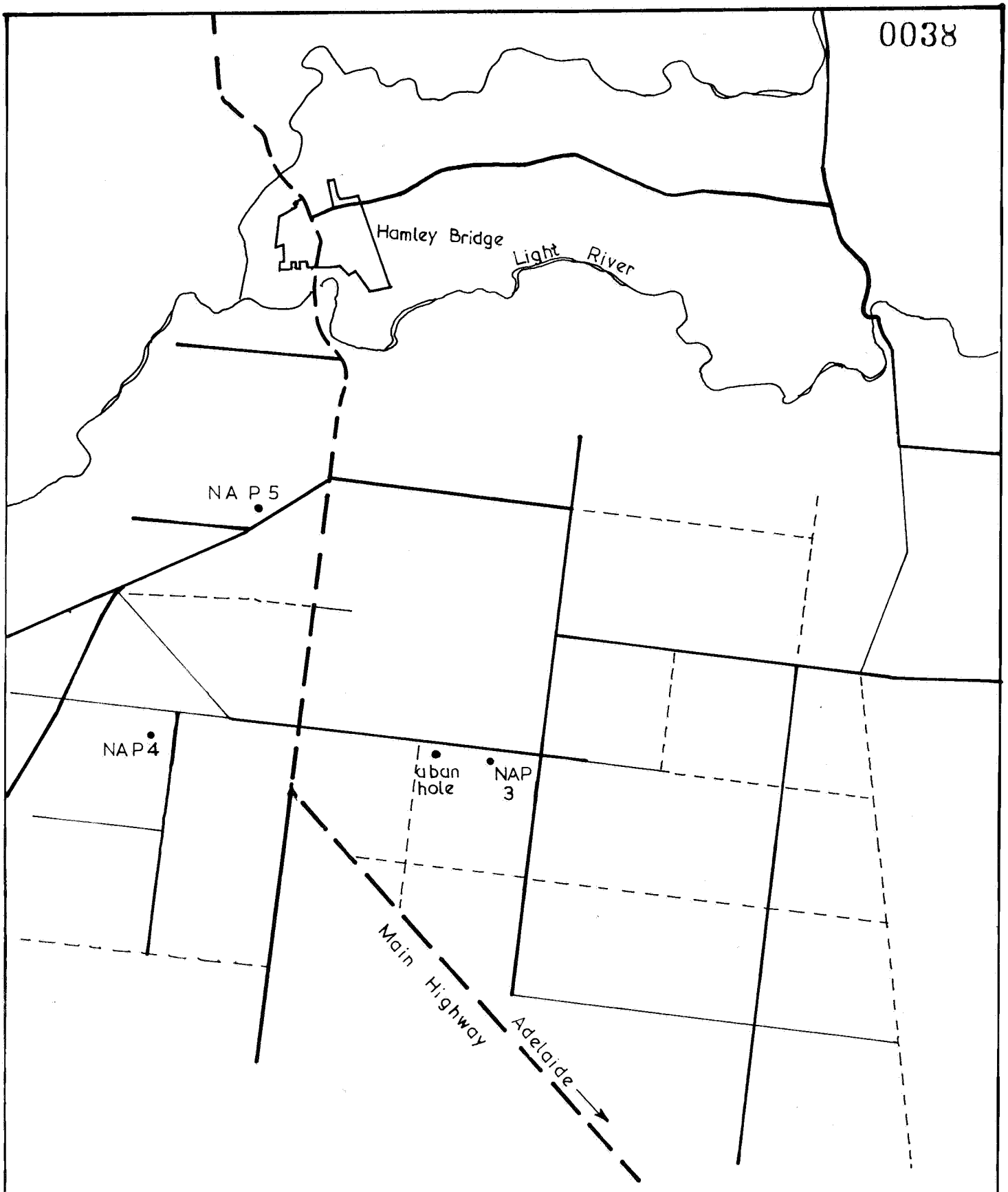
SAMEDAN OF AUSTRALIA

EL 862 HAMLEY BRIDGE SA

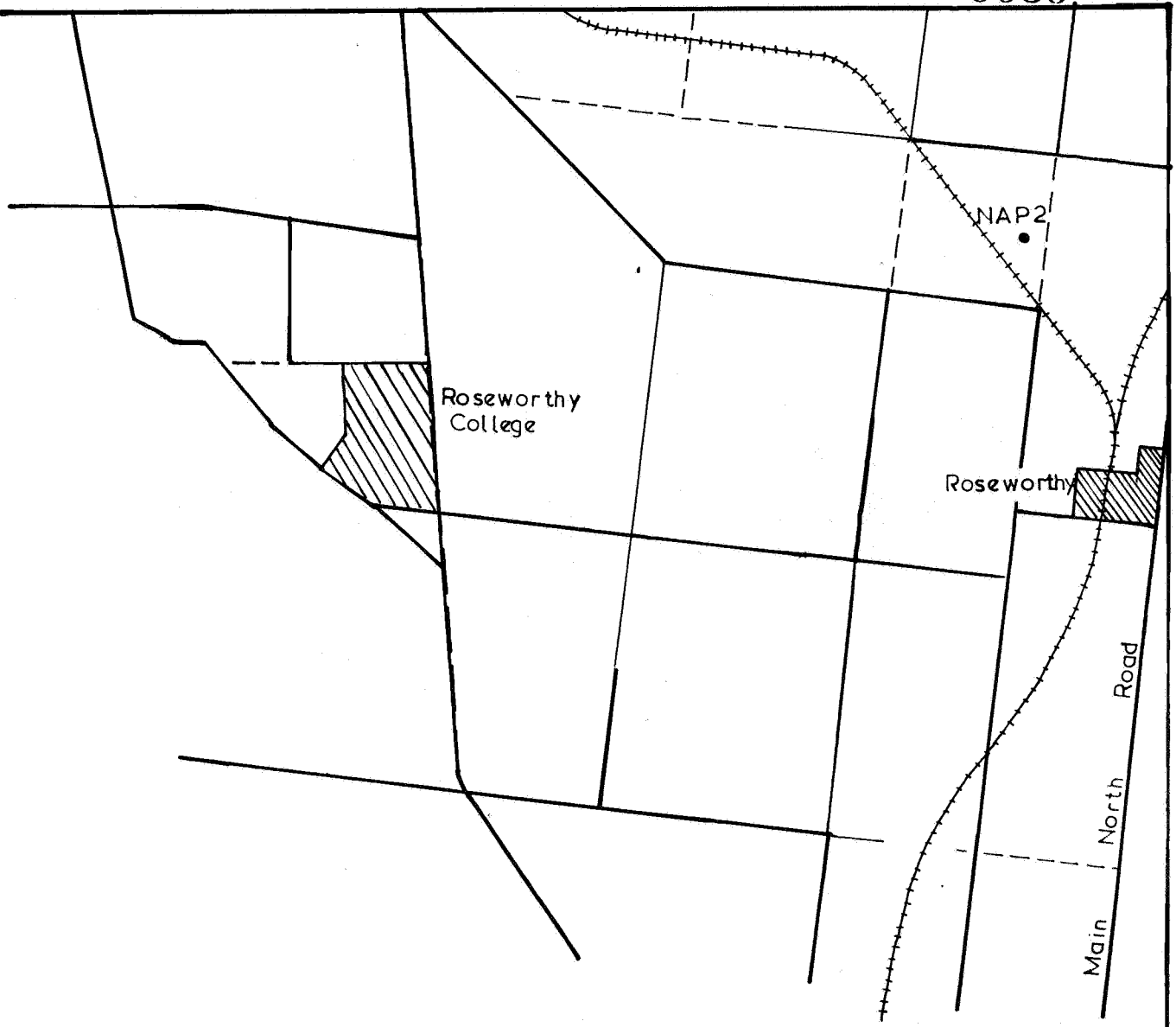
DRILL HOLE LOCATIONS
NAP 6-11

0 1 2k

Author B G T	Drawn B G T	Date 22/1/81
Scale 1:50,000	Project SA 6	Plan No, 3



SAMEDAN OF AUSTRALIA		
EL 862 HAMLEY BRIDGE SA		
DRILL HOLE LOCATIONS NAP 3-5 0 1 2k		
Author B G T	Drawn B G.T	Date 22/1/82
Scale 1:50,000	Project SA 6	Plan No, 4



SAMEDAN OF AUSTRALIA

EL 862 HAMLEY BRIDGE S A

LOCATION OF DRILLHOLE NAP 2 (NAP1 was proposed but not drilled)

0 1 2k

Author B G T	Drawn B G T	Date 22/1/82
Scale 1: 50,000	Project SA 6	Plan No. 5

0040

NAP 8

Red and buff soils and clay.

Buff silty clays containing chips of qtz. and phyllite? frags Possibly weathered Adelaidean?

Clay containg definite Adelaidean frags.

Adelaidean shale.

EOH 32m

NAP 10

Red soil and clay

Silicified duricrust

V. fine clean white qtz sand.

bulk sampled

Brown clay

Adelaidean shale

EOH 32m

NAP 7

Red black soil and clay.

White qtz sand. (clean fine grained).

bulk samped

White sandy clay.

Adelaidean shale.

EOH 21m

NAP 11

Red grading to buff clay.

Adelaidean shale

EOH 8m

NAP 9

Red soil and clay

Buff mottled clay.

Adelaidean shale qtz veined.

EOH 30m

NAP 6

Lost circulation (no sample).

Red silty sand.

bulk sampled

Adelaidean shale.

EOH 25m

Depth m

5

10

15

20

25

30

35

SAMEDAN OF AUSTRALIA

EL 862 HAMLEY BRIDGE. S.A.

DRILL-LOGS NAP 6-11

Author B G T	Drawn B G T	Date 23/1/82
Scale 1:200	Project SA 6	Plan No. 6

0041

NAP 4

Alluvium
red and buff
clay

Clay (buff mottled
containing qtz
pebbles).

Fresh Adelaidean
Phyllite (Qtz veins).

EOH 12m

NAP 5

Alluvium
red and buff clay.

Red gritty silt and
clay.

White gritty clay.

Buff gritty clay.

Clay and qtz sand (fine).

Clay grading into Adelaidean
Phyllite.

EOH 24m

NAP 3

Alluvium c basement frags

Adelaidean basement.

EOH 8m

NAP 2

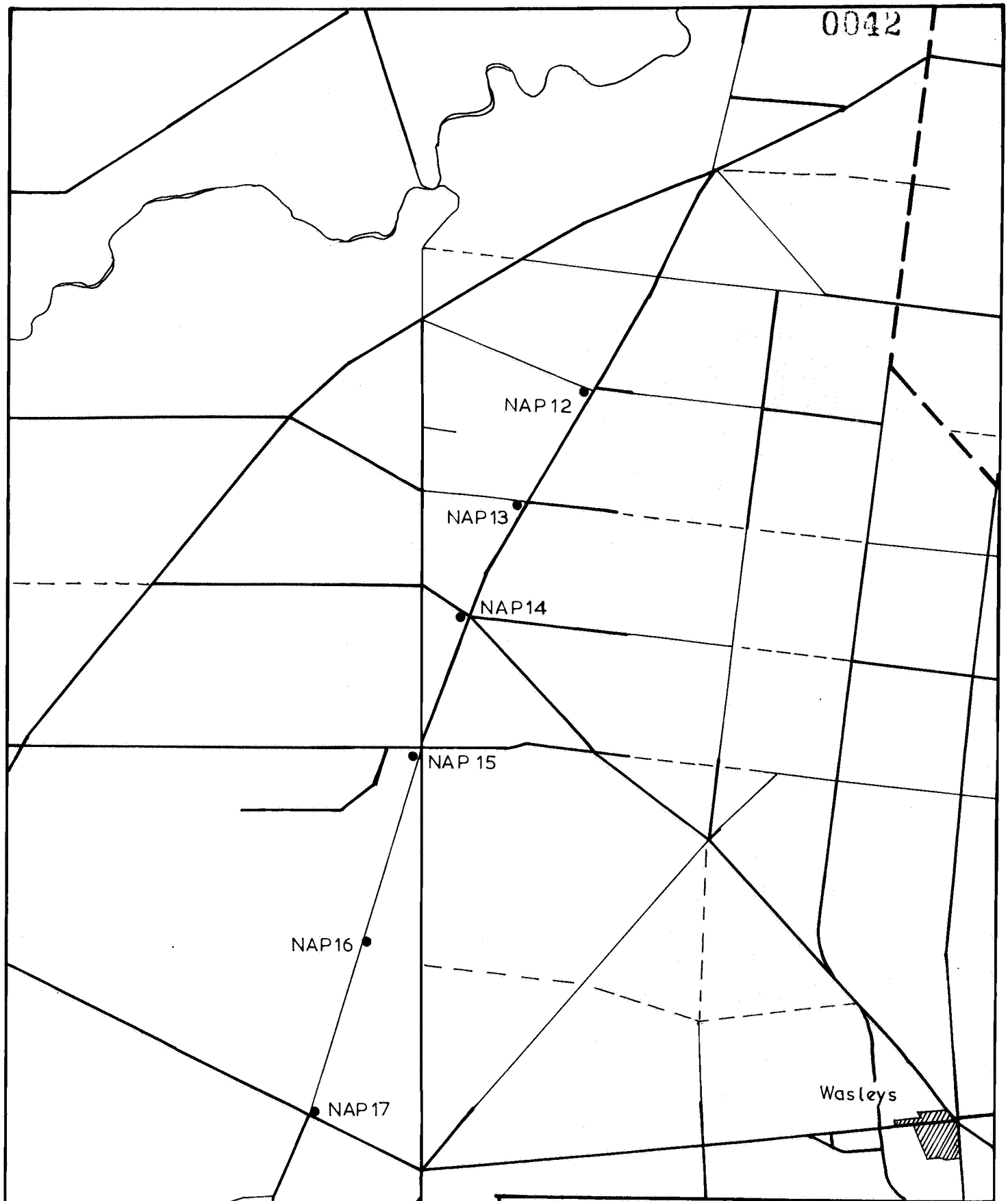
Black alluvium

White and buff mottled
plastic clay

Adelaidean shale.

EOH 8m

SAMEDAN OF AUSTRALIA		
EL 862 HAMLEY BRIDGE SA		
DRILL LOGS NAP 2-5		
Author BGT	Drawn BGT	Date 23/1/82
Scale 1:200	Project SA 6	Plan No. 7



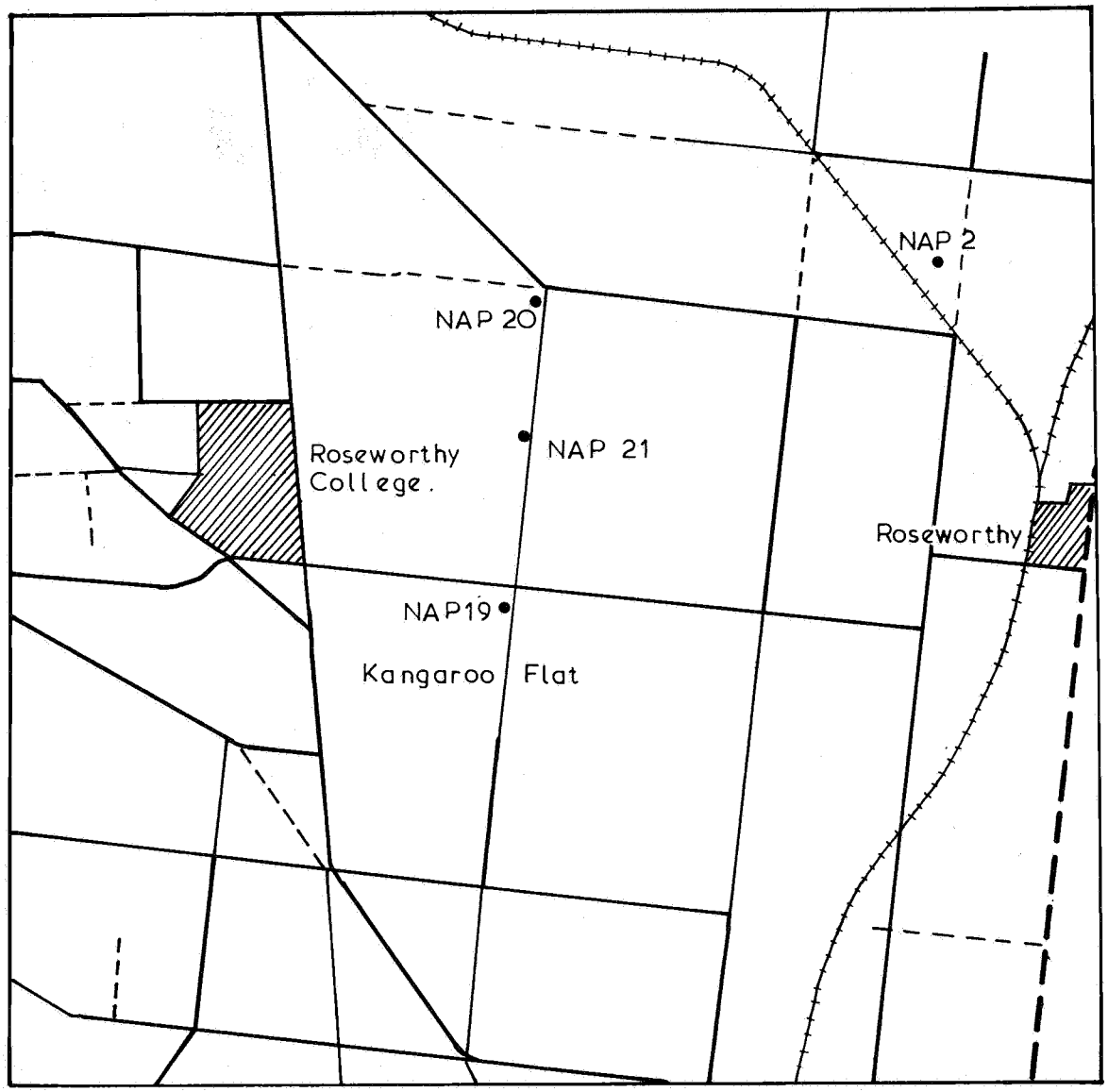
SAMEDAN OF AUSTRALIA

EL 862 HAMLEY BRIDGE SA

DRILL HOLE LOCATIONS
NAP 12 - 18

0 3k

Author BGT	Drawn BGT	Date 2/2/82
Scale 50,000	Project SA6	Plan No. 8



SAMEDAN OF AUSTRALIA

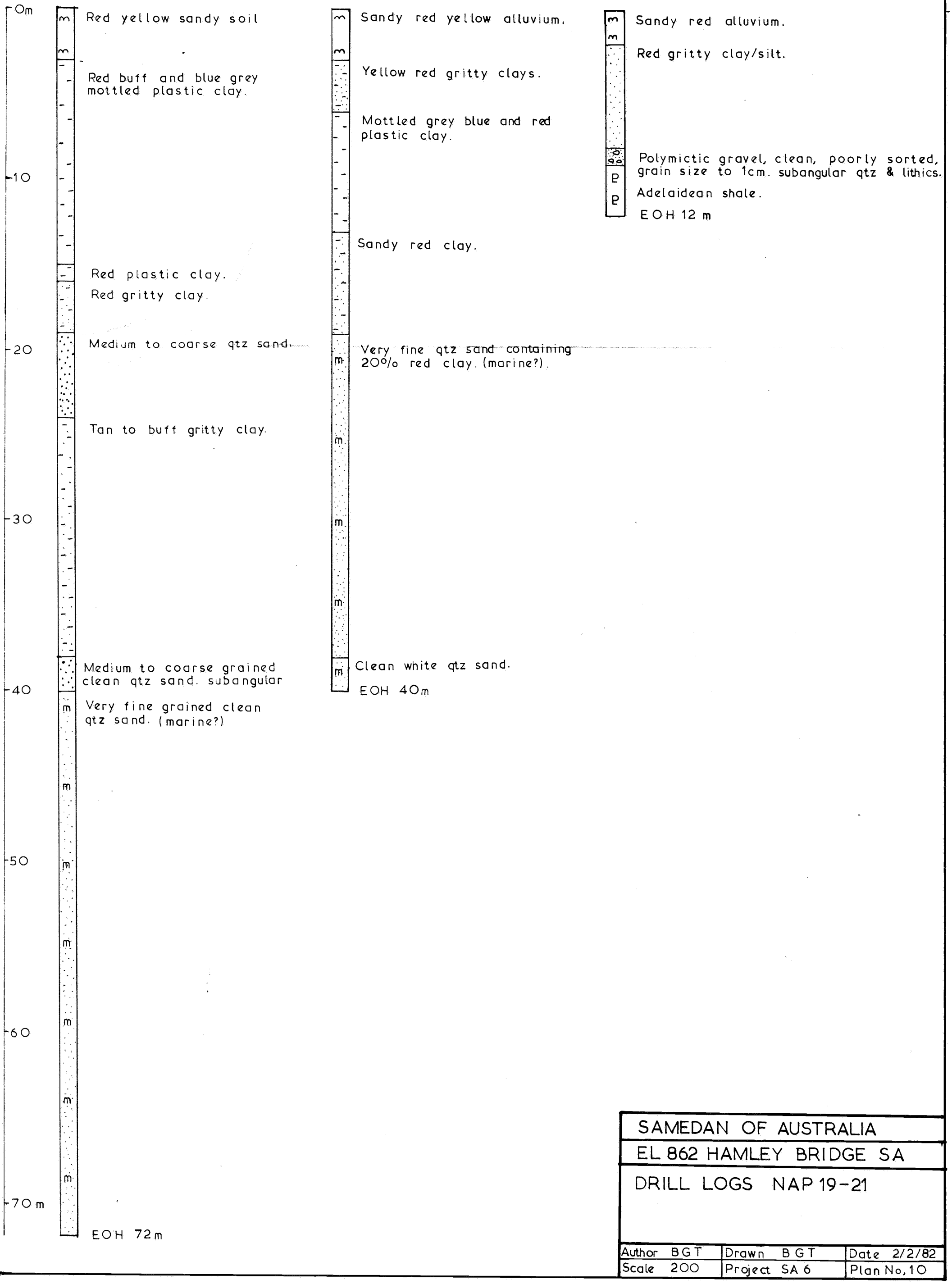
EL 862 HAMLEY BRIDGE SA

DRILL HOLE LOCATIONS
NAP 18–21 and NAP 2

0 3k

Author BGT	Drawn BGT	Date 2/2/82
Scale 50,000	Project SA 6	Plan No. 9

0044



SAMEDAN OF AUSTRALIA		
EL 862 HAMLEY BRIDGE SA		
DRILL LOGS NAP 19-21		
Author BGT	Drawn BGT	Date 2/2/82
Scale 200	Project SA 6	Plan No, 10

0045

NAP12

- Red black alluvium.
- Red brown silty clay containg kunkar frags in the top 3m.
- Red silts getting progressively sandier towards the base.
- Buff clay containg weathered lithic frags.
- Adelaidean shale

24

NAP13

- Red alluvium.
- Red silty clay containing kunkar frags.
- Red clay.
- Grey plastic clay
- Coarse gravel. polymictic. cont subrounded qtz pebb.
- Buff clay grading into Adelaidean shale.

21

Qpac

NAP14

- Red sandy alluvium.
- Red silty clay cont kunkar frags.
- Red silty clay

Qpac

- Grey plastic clay

Qpak

- Coarse clean white qtz sand. grain size to 1cm. fines towards base.
- White to buff clay
- Adelaidean shale.

36

NAP 15

- Red sandy alluvium.
- Red clay cont kunkar frags.
- Red clay
- Mottled blue grey and red plastic clay.
- Fine grained silty qtz sand.
- Polymictic gravel. pebbles to 2cm. poorly sorted subangular.
- Green grey and buff clay
- Adelaidean shale.

30

NAP16

- Red alluvium
- Silty red clay.
- Blue grey clay. gritty.
- Adelaidean shale

28

NAP17

- Red alluvium.
- Red clay.

Qpag

- Coarse gravel predominantly qtz at the top. lithic frags increasing towards base angular poorly sorted.

TQa

- Buff clay.
- Adelaidean shale

30

Depth m

5 10 15 20 25 30 35

SAMEDAN OF AUSTRALIA

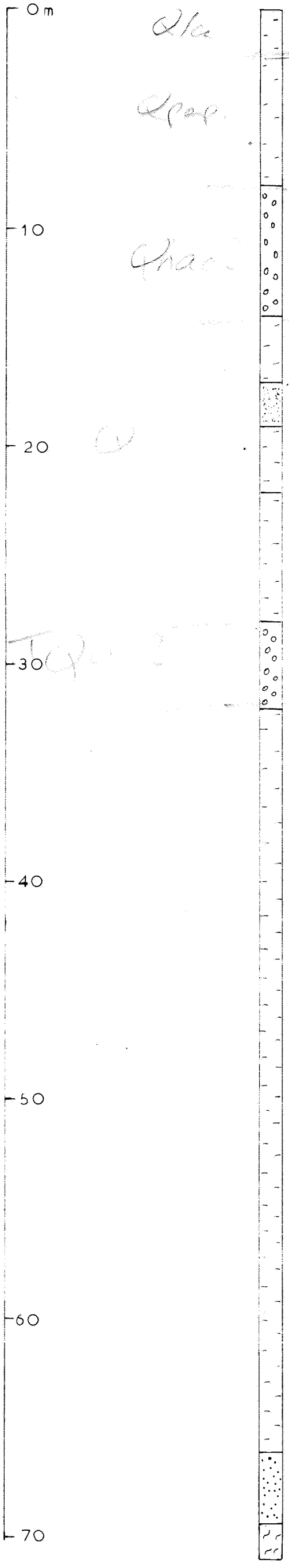
EL 862 HAMLEY BRIDGE S.A.

DRILL-LOGS NAP 12–17

Author BGT	Drawn BGT	Date 3/2/82
Scale 1 200	Project SA 6	Plan No, 11

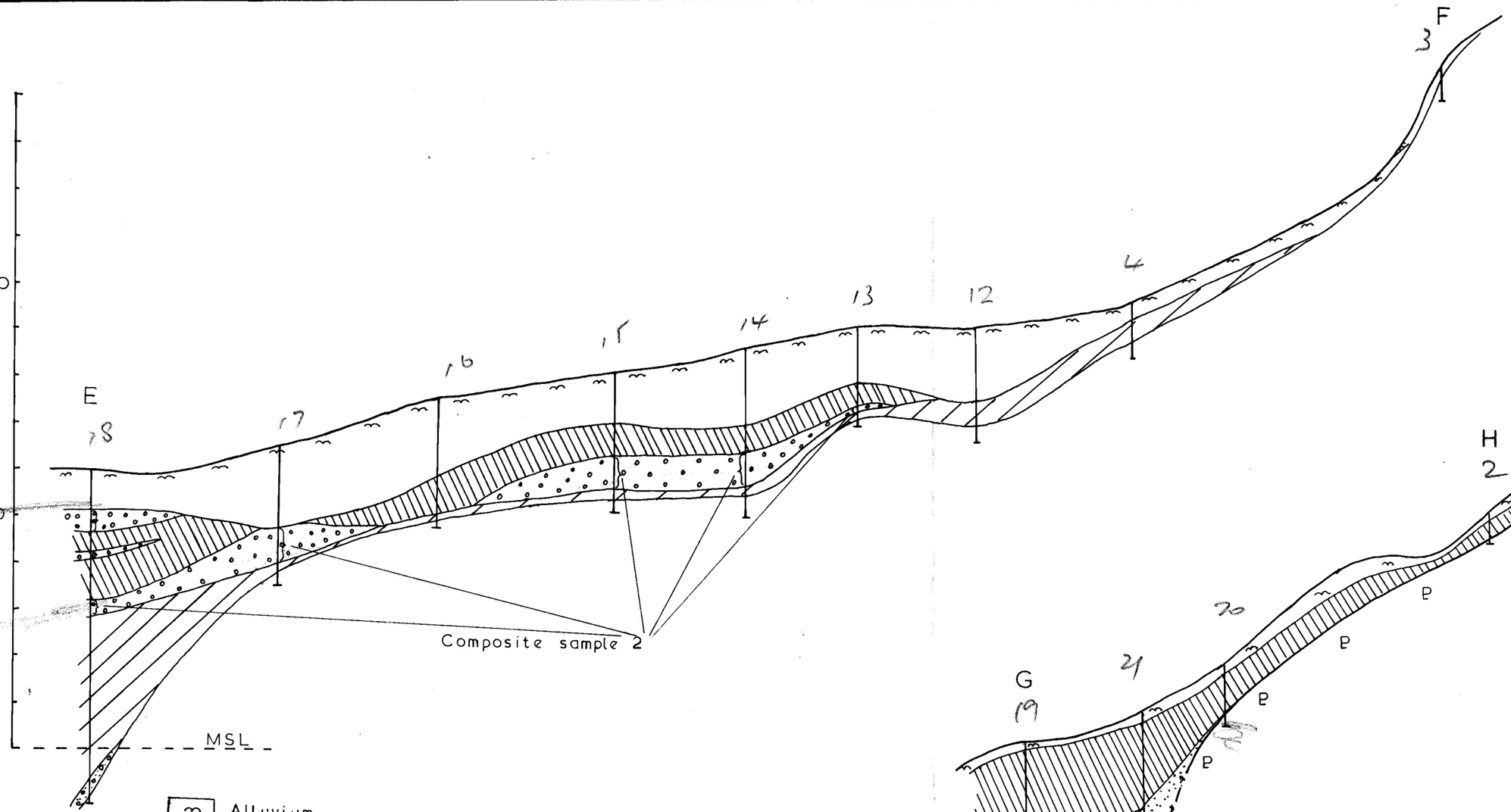
NAP18

0046



SAMEDAN OF AUSTRALIA		
EL 862 HAMLEY BRIDGE S.A.		
DRILL-LOG NAP 18		
Author BGT	Drawn BGT	Date 4/2/82
Scale 200'.	Project SA6	Plan No.12

0047



- Alluvium
- Red silty clay
- Tan to buff gritty clay
- Mottled blue grey and red clay
- Quartz and polymict gravels
- Buff clay (weathered Adelaidean scree?)
- Maslin type sand
- P — Adelaidean basement

SAMEDAN OF AUSTRALIA.		
E.L.862. HAMLEY BRIDGE SA		
SECTIONS E-F & G-H		
Author BGT	Drawn BGT	Date 19/3/82
Scale 50000	Project SA6	Plan No, 13

The Australian Mineral Development Laboratories

Flemington Street, Frewville,
South Australia 5063
Phone Adelaide 79 1662
Telex AA 82520

Please address all correspondence to
P.O. Box 114 Eastwood
SA 5063
In reply quote:

0048

26 February 1982

GS3/611/0

SAMEDAN of Australia,
PO Box 140,
Civic Square,
CANBERRA CITY. ACT 2608

Attention: Mr B. Taylor

REPORT GS4127/82

YOUR REFERENCE:	Telephoned instructions on 2 February, 1982 and follow-up letter.
MATERIAL:	Sand and gravel
IDENTIFICATION:	Composite 1 and 2
DATE RECEIVED:	8 February, 1982
WORK REQUIRED:	Screening, heavy media separation and identifcation of heavy minerals.

Investigation and Report by: Dr Alan Webb

Chief - Geological Services Section: Dr Keith J. Henley
Manager, Mineral and Materials Sciences Division: Dr William G. Spencer

Keith Henley

for Norton Jackson
Managing Director

cah

Pilot Plant: Osman Place
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Telephone 43 8053
Branch Laboratories:
Perth W.A.
Telephone 325 7311
Melbourne Vic.
Telephone 645 3093

HEAVY MINERAL IDENTIFICATION 0049

1. INTRODUCTION

Two samples of sand and gravel, labelled Composite 1 and 2, were received from Mr B. Taylor, Samedan of Australia, with a request for heavy media separation at 2.96 specific gravity of the +75 µm material and identification and approximate abundance of the minerals in these fractions.

2. PROCEDURE

The samples were dried and weighed and screened at 10 mesh (1680 µm). 500 grams of each sample were riffled out and deslimed at 75 µm by wet sieving. The +75 µm material was then dried and weighed and the heavy mineral fraction separated in tetrabromoethane at 2.96 sp. gr. A second separation was made in methylene iodide at 3.3 sp. gr. to assist in mineral identification.

A hand magnet was used to test for the presence of magnetic grains. This test proved negative for Composite 1 but Composite 2 was found to contain a considerable quantity of magnetite.

Rutile, in Composite 1, occurs with a wide variation in colour from rose-red to dark reddish brown and, in general, only the darker grains exhibit crystal faces. X-ray diffraction measurements were made on grains of both types to confirm their identification as rutile.

3. RESULTS

3.1 Composite 1

Composite 1: Total weight (g) = 1577.6

Weight % -1680 µm = 75.9

The dry weight distribution of the various fractions of the riffled sample was:

Weight riffled Sample (g)	Deslimed Wt (g)	Wt % (deslimed) at sp. gr.	
		2.96-3.3	>3.3
516.8	437.0	0.137	0.320

2.96-3.3 sp.gr. This fraction was composed mainly of limonite grains or limonite-cemented aggregates of quartz, and tourmaline in approximately equal amounts.

>3.3 sp.gr. Limonite and staurolite make up approximately 80% of this fraction. The remainder of the sample contained about 5% zircon (mainly <100 µm grain size) and rutile (10-15%). Rutile, which occurred both as rounded, rose-red grains and as darker red-brown, prismatic crystals, was confirmed by X-ray diffraction.

A few grains with an octahedral shape were slightly magnetic and one or two yellowish grains may have been monazite.

3.2 Composite 2

Composite 2: Total Weight (g) = 1562.8

Weight % -1680 µm = 41.7

The dry weight distribution of the density fractions of the riffled sample was:

Weight riffled Sample (g)	Deslimed Wt. (g)	Wt % (deslimed) >2.96 sp.gr.
652.2	473.4	6.57

The >2.96 sp. gr. fraction was further subdivided into:

Wt % Hand Magnetic	Wt % 2.96-3.3 sp. gr.	Wt % >3.3 sp.gr.
35.3	21.8	42.9

Hand Magnetic Fraction The magnetic grains were predominantly in the coarser grain size range and had rounded surfaces with no crystal faces. However, well formed octahedra were noted in the finer grain size range (< 200 µm).

2.96-3.3 sp. gr. This fraction contained mainly limonite, or limonite-encrusted grains, with a few percent of tourmaline.

>3.3 sp. gr. Staurolite, goethite and limonite-coated grains made up approximately 90% of this fraction. Rutile and zircon were noted in the finer grain size range (< 200 µm), zircon (colourless to pale pink) making up about 1 to 2% and rutile (mainly the rose-red variety) about 5%.

4. SUMMARY

Magnetite was the most abundant heavy mineral in Composite 2 but was present in only trace amounts in Composite 1. Tourmaline and staurolite occur in both samples, tourmaline being more abundant in Composite 1 and staurolite more abundant in Composite 2. Rutile and zircon occur in minor percentages in both samples but are more abundant, relative to the original sample weight, in Composite 2.