DEPARTMENT OF MINES AND ENERGY
SOUTH AUSTRALIA

REPT.BK.NO. 87/64
GROUNDWATER DISCHARGE SURVEY 1982/83 AND 1983/84 PUMPING SEASONS, METROPOLITAN ADELAIDE AREA

GEOLOGICAL SURVEY

by

D. EDWARDS

T. EARL

S. MATHEWS

GROUNDWATER AND ENGINEERING

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CONTENTS

TABLES

APPENDICES - Data tabulation

PLANS

DEPARTMENT OF MINES AND ENERGY
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GROUNDWATER DISCHARGE SURVEY 1982/83 AND 1983/84 PUMPING SEASONS METROPOLITAN ADELAIDE AREA

ABSTRACT

A groundwater discharge survey of the Adelaide Metropolitan Area during 1982/83 and 1983/84 irrigation seasons has revealed that approximately 7 600 Ml is extracted per annum. Of this, one quarter (2 000 Ml) is metered. Average irrigation output is 5 500 kl/ha.

Most of the groundwater is consumed by industry (53%) while recreational areas use 23%, schools 14% with 10% being utilized for agriculture (mainly in the metered area).

INTRODUCTION

As part of the ongoing Adelaide Metropolitan Groundwater investigations, a groundwater discharge survey was conducted on a part time basis between January 1982 and April 1984.

The area studied is located between the Little Para River in the north, and the suburb of Brighton in the south. Part of the region lies within the proclaimed "Northern Adelaide Plains" area, and all production wells within this area are metered (see Fig. 2 - area A).

Outside of this area (Fig. 2 - Area B) individual well owners and/or operators were contacted for seasonal pumping records, or the estimated volume of water required to sustain irrigation areas was used.

All shallow (i.e. less than 10 metre deep) domestic "backyard" wells were ignored for the purposes of this survey as the locations of many wells are unknown and known supply/salinity constraints restrict exploitation (see "Data Gathering Process").

The highest single consumers of groundwater are companies such as ICI, Coca-Cola, Samcor, Palm Beach Towel Company and the Onkaparinga Woollen Mills - highlighting the importance of groundwater availability to the local manufacturing industry.

AQUIFER SYSTEMS INVOLVED

Simplified geological outline, location of faults and cross-section lines are shown in figures 2 & 3. The thickest portion of the basin lies west of the city, and this is the area where groundwater is most exploited. Most production wells exploit Aquifer A - a Tertiary sandstone/limestone aquifer lying above the "Munno Para" clay - a confining bed of blue/grey sticky clay intersected at depth ranging between 100 and 220 metres. East of the city, where the Tertiary sequence is thinner, wells exploit the lower Tertiary (stratigraphically below the Munno Para Clay) or underlying hard rock aquifers.

In the vicinity of the Little Para River (Area A) a late Tertiary/Quaternary unit (the Carisbrook Sand aquifer) is exploited as well as shallow aquifers.

Underlying most of the metropolitan area are saturated sand units within the Hindmarsh Clay sequence. These are known as the Quaternary aquifers. Only a few significant quaternary production wells have been included within area B (Fig. 2) as salinity/supply constraints restrict the exploitation of these aquifers. The most shallow (i.e. <10 m) quaternary wells are known as domestic "backyard" wells. The locations of many of these relatively low discharge wells (average 33 kl/day) drilled prior to 1976, (when the well permit system was introduced) are unknown. Consequently, a representative sum discharge figure is impossible to obtain, but is thought to be lower than 200 000 kl (quaternary discharge from Area A).

DATA GATHERING PROCESS

1. Within the North Adelaide Plains Proclaimed area, all known production wells are metered (see Figs. 1 & 2 - Area A). A computer listing of well unit numbers/discharge for 1982/83 financial year (provided by the Engineering & Water Supply Dept.) was utilized to obtain the data for these wells.

2. In the larger unmetered area (Area B) possible known production wells were selected from the Department's unit numbered one-line computer print-out by:
   a) Depth - minimum depth requirements were set within each 1:10 000 sheet (see Fig. 1) after detailed consultation with the investigating hydro-geologist (N.Z. Gerges),
   b) Age - wells installed prior to 1960 were considered to be unsuitable now due to casing corrosion (resulting in the inflow of saline shallower groundwater), unless rehabilitated (by relining and cementing). Recently drilled wells are usually completed with pressure cemented fibreglass casing to avert future corrosion problems.
   c) Yield - any diversions from the normal expected aquifer yield were checked (e.g. a probable quaternary well stated to be yielding 3 000 kl/day).
   d) Salinity - A high salinity would preclude irrigation from a particular well in any area (however all wells conforming to depth/age requirements were checked). Conversely, an abnormally low salinity well was also checked.

3. In addition to the computer listing checks, letters asking for discharge data from wells were forwarded to:
   a) all local councils (22)
   b) all public and private schools.

   The Housing and Construction Dept site development office provided a computer listing of water quotas for all South Australian Public Schools. The listing included an accurate breakdown of school population, area required to be irrigated, water allocation based on that area, local rainfall records and the actual volume of mains water consumed (Richards, 1983).

   From that print-out a representative Kl/Ha value for all schools within the discharge survey area was calculated by:

i) compiling discharge and irrigation area data from 62 mains water irrigated schools within the discharge survey area (i.e. where the discharge amounts were known accurately). (Table 4 and Fig. 4).

ii) subtracting the student consumption values of 9 Kl/student/annum (high schools) and 6.3 Kl/student/annum (primary schools) to obtain the metered quantity for irrigation purposes only.

iii) plotting this data (linear regression curve - Fig. 4) to derive a value of 5 500 Kl/Ha within the discharge survey area.

iv) finally, applying this average value to each school's irrigated area - (PBD printout) to obtain the annual discharge estimate.

4. All discharge calculations outside of the Proclaimed Area from wells other than those supplying Public Schools were based on personal interviews with the groundsmen or caretakers directly responsible for operating the production wells. Calculation usually took format of "hours pumped per season x discharge rate (g.p.h.) = gallons discharged per season" (800 hours/season - average).

5. All known irrigators were contacted if more data were required.

6. All local deep well pump service and manufacturing companies were contacted for their well records.

7. Data tabulation was subsequently sorted into aquifer type (1:100 000 sheet order - Appendices A, B, C), summarised as Table 1.

8. No attempt has been yet made to quantify groundwater losses via casing corrosion.

CONCLUSIONS

The groundwater discharge survey has shown that in 1982/83 and 1983/84 irrigation seasons approximately 7 600 Ml of groundwater per annum was extracted from the Adelaide Metropolitan area. Of this, one quarter (2 000 Ml) was extracted from a metered area, the remainder was calculated on the basis of information provided by personal interviews with consumers or by calculation using irrigated area.

Average irrigation output is 5 500 Kl/Ha throughout the area.

Within area B discharge from the shallowest aquifer system (<10 m) has been generally omitted as impractical. However, supply (average 30 kl/day) and salinity constraints would probably limit the total discharge from this category to 200 000 kl/annum (total quaternary discharge from Area A).

The largest consumer is industry (53%). Recreational areas consume 23%, schools 14% and 10% of the total groundwater discharge is utilized for agriculture (mainly in metered area A).

D.R. EDWARDS

T. EARL

S. MATHEWS

REFERENCES

Gerges, N.Z., The Hydrogeology of the Adelaide Metropolitan Area - unpub. dept. rept. in preparation, 1987.

Richards, B., Water Quota for Schools - South Australian Department of Housing and Construction - April 1983.

TABLE 1

SUMMARY OF GROUNDWATER DISCHARGE (Kl)

MAJOR PURPOSE FOR GROUNDWATER WITHDRAWAL	AQUIFER (see Fig. 3)								TOTAL DISCHARGE FROM ALL AQUIFERS	
	QUATERNARY		CARISBROOK SANDS (AREA A)		TERTIARY		HARD ROCK			
	Kl/annum	Percentage of Total	Kl/annum	Percentage of Total	Kl/annum	Percentage of Total	Kl/annum	Percentage of Total	Kl/annum	Percentage Total
INDUSTRY	20 800	5.5	-	-	3 590 730	53	26 620	6	3 638 150	
SCHOOLS, AND OTHER EDUCATIONAL INSTITUTIONS	113 325	30.1	-	-	929 400	14	92 535	20	1 135 260	
RECREATION (GOLF COURSES ETC.)	53 750	14.3	-	-	1 580 100	23	242 265	53	1 876 120	
AGRICULTURAL (MAINLY RESTRICTED TO AREA A)	188 635	50.1	87 190	100	627 100	10	28 550	6	931 480	
DOMESTIC	UNKNOWN-But probably less than 200,000 Kl		-	-	-	-	MAINLY SKYE AREA 70 620	15	70 620	
TOTAL DISCHARGE FROM A PARTICULAR AQUIFER IN ALL AREAS	376 510	100	87 190	100	6 727 330	100	460 590	100	7 651 630	100
TOTAL DISCHARGE FROM NORTHERN ADELAIDE PLAINS METERED OVERLAP (AREA A)	201 430	53	87 190	100	1 659 370	25	-	-	1 947 990	25.5
TOTAL DISCHARGE FROM UN-METERED AREA (B)	175 085	47	-	-	5 067 960	75	460 590	100	5 703 640	74.5

TABLE 2

GOVERNMENT SCHOOLS - 1982

MAINS WATER CONSUMED FOR IRRIGATION

SCHOOL	TOTAL AREA OF IRRIGATION (Ha)	METERED WATER USE (MINUS STUDENT CONSUM.)* (Kl)	Kl/Ha
HIGH SCHOOLS			
Adelaide	4.77	33 360	7 000
Campbelltown	6.62	54 250	8 200
Goodwood Boys	0.61	1 560	2 560
Morialta	3.97	20 330	5 120
Norwood	5.38	28 530	5 300
Thornden	5.21	15 070	2 890
Parafield Gardens	8.31	64 910	7 810
Salisbury East	4.97	16 640	3 350
Enfield	2.83	16 200	5 720
Gepps Cross Girls	1.94	14 880	7 670
Northfield	8.10	40 100	4 950
Para Vista	6.57	38 820	5 910
Strathmont	3.56	25 430	7 140
The Heights	5.18	52 790	10 190
Daws Road	5.57	31 330	5 620
Dover	2.95	21 700	7 360
Glengowrie	5.66	20 820	3 680
Unley	5.03	8 540	1 700
Taperoo	5.34	69 560	13 030
Woodville	4.81	7 910	1 640
PRIMARY SCHOOLS			
Athelstone	2.22	10 690	4 820
East Adelaide	0.38	3 110	8 180
Goodwood	0.51	2 200	4 310
Highgate	0.56	5 090	9 080
Linden Park	1.09	1 350	1 240
Paradise	5.49	30 070	5 480
Parkside	1.03	5 100	4 950
Prospect	1.85	7 760	4 200
St. Morris	1.89	13 360	7 070
Thorndon Park	5.49	8 800	1 600
Trinity Gardens	4.36	20 190	4 630
Unley	0.36	480	1 336
Walkerville	0.85	1 770	2 085
Elizabeth South	2.28	21 810	9 560
Elizabeth Vale	2.42	10 440	4 320
Salisbury Park	2.41	14 310	5 940
Dernancourt	2.15	14 660	6 820
Gepps Cross	4.01	14 240	3 550
Highbury	2.88	9 230	3 200
Holden Hill	2.89	16 660	5 770
Ingle Farm	3.30	11 570	3 510
Klemzig	2.07	9 410	4 540

Para Vista	1.95	11 750	6 030
Redwood Park	2.63	10 890	4 140
Braeview	2.33	12 970	5 560
Clapham	2.60	12 910	4 970
Dover Gardens	2.14	14 360	6 710
Paringa Park	1.27	11 720	9 230
South Road	3.16	14 700	4 650
Alberton	1.08	11 850	10 970
Allenby Gardens	1.70	3 260	1 920
Croydon Park	1.18	11 400	9 660
Ferryden Park	3.32	20 030	6 030
Grange	1.78	10 660	5 990
Henley Beach	2.52	11 550	4 580
Kidman Park	1.78	17 090	9 600
Mansfield Park	2.97	20 520	6 910
Plympton	1.02	5 540	5 430
Semaphore Park	2.05	28 880	14 090
Taperoo	1.60	17 240	10 780
Thebarton	0.62	4 520	7 300
West Lakes Shore	3.70	14 790	4 000

*= 9 Kl/annum/student - High School
= 6.3 Kl/annum/student - Primary School

APPENDIX A
QUATERNARY AQUIFER

(Discharge largely unknown from shallow domestic wells in area B)

Known annual discharge = 376 510 Kl (mainly from area A)

METROPOLITAN GROUNDWATER DISCHARGE SURVEY 1982/84
DATA TABULATION

(ALL DEPTHS IN METRES BELOW G.L.)

DISCHARGE SURVEY NO.	1:10 000 SHEET NO.	WELL NO.	TOTAL DEPTH	STATIC WATER LEVEL	MAX. DRAW-DOWN	SPECIFIC CAPACITY (m^3/day/m) ($Q=m^3day-1$	TRANS-MISSIVITY (m^2/day)	APPROX. ANNUAL DISCHARGE Kl(galls)	COMMENTS
QUATERNARY AQ									
1	6627-1	1705	24.4					15455 ($3.4x10^6$)	Westminster School
2	6627-1	1702	16.2	14.3 (1915)				7730 ($1.7x10^6$)	Westminster School
3	6627-1	1635	35	3 (1964)				21820 ($4.8x10^6$)	Minda Home (Airlifted NZG-1982 4 hrs) (Drainage bore originally)
4	6627-1	1636	39.6	5.5 (1949)				22730 ($5x10^6$)	Minda Home (1982-March-SM sampled)
5	6628-29	4841	? (Salinity 1385-1972)	?				3690 (811,800)	Metered NAP well (Agricultural)
6	6628-29	4881	21	?				945 (207900)	Metered NAP well (Agricultural)
7	6628-29	4886	25.9	8.5 (1967)				5590 ($1.2x10^6$)	Metered NAP well (Agricultural)
8	6628-29	4887	29.3	7.6 (1970)			Q=237.6 m^3 day, pump set at 26 m	2570 (565,400)	Metered NAP well (Agricultural
9	6628-29	4910	30.5	5.5 (1968)			Q=432 m^3day pump set at 22.8 m	1620 (356400)	Metered NAP well (Agricultural

DISCHARGE SURVEY NO.	1:10 000 SHEET NO.	WELL NO.	TOTAL DEPTH	STATIC WATER LEVEL	MAX. DRAW-DOWN	SPECIFIC CAPACITY (m^3/day/m) ($Q=m^3day-1$	TRANS-MISSIVITY (m^2/day)	APPROX. ANNUAL DISCHARGE Kl(galls)	COMMENTS
10	6628-29	4913	25.6	?			Q=648 m^3day pump set at 22 m	9070 ($2x10^6$)	Metered NAP well (Agricultural)
11	6628-29	4928	39.6	?			Q=561.6 m^3day pump set at 33.5 m	5140 ($1.1x10^6$)	Metered NAP well (Agricultural)
12	6628-29	4933	17.1	9.1 (1964)			Q=561.6 m^3day pump at 16.7 m	2960 (651200)	Metered NAP well (Agricultural)
13	6628-29	4934	38.1	?			Q=864 m^3day pump at 15.8 m	1010 (222,200)	Metered NAP well (Agricultural)
14	6628-29	4945	29.9	13.7 (1969)			Q=112 m^3day pump at 27.4 m	2830 (622600)	Metered NAP well (Agricultural)
15	6628-29	4946	27.41	9.9 (1960)			Q=345.6 m^3day pump at 23.8 m	11,280 ($2.5x10^6$)	Metered NAP well (Recreational - swimming pool
16	6628-29	4948	44.2	12.2 (1940)			Q=112.3 m^3day pump at 27.4 m	915 (201300)	Metered NAP well (Agricultural)
17	6628-29	4976	27.4 Dug well	7.6 (1963)				4285 (942,700)	Metered NAP well (Agricultural)
18	6628-29	4982	31.1	16.4 (1972)			Q=8200 m^3day-1 pump at ?	3450 (759,000)	Metered NAP well (Agricultural)

DISCHARGE SURVEY NO.	1:10 000 SHEET NO.	WELL NO.	TOTAL DEPTH	STATIC WATER LEVEL	MAX. DRAW-DOWN	SPECIFIC CAPACITY ($m^3/day/m$) ($Q=m^3day-1$	TRANS-MISSIVITY (m^2/day)	APPROX. ANNUAL DISCHARGE Kl(galls)	COMMENTS
19	6628-29	4983	62.5	15.2 (1963)			Q=432 pump at ?	8010 ($1.8x10^6$)	Metered NAP well (Agricultural)
20	6628-29	4984	30.5 Dug well				Q=216 pump at 9.1 m	7545 ($1.7x10^6$)	Metered NAP well (Agricultural)
21	6628-29	4985	45.7					3550 (781000)	Metered NAP well (Agricultural)
22	6628-29	4987	29.3	6.1 (1971)				7790 ($1.7x10^6$)	Metered NAP well (agricultural)
23	6628-29	5025	36.6	30.5 (1966)			Q=648 pump at 21.33 m	4880 ($1.1x10^6$)	Metered NAP well (Agricultural)
24	6628-29	5026	38.1	18.3 (1964)			?	8710 ($1.9x10^6$)	Metered NAP well (Agricultural)
25	6628-29	5034	15.2	6.1 (1969)			Q=345.6 pump at 3.9 m	560 (123,200)	Metered NAP well (Agricultural)
26	6628-29	5035	32	?			Q=432 pump set at 18.3 m	1590 (349800)	Metered NAP well (Agricultural)
27	6628-29	5036	28	7.6 (1971)			Q=237.6 pump at 25 m	4520 (994,400)	Metered NAP well (Agricultural)
28	6628-29	5042	15.2	10.7 (1969)				1800 (396,000)	Metered NAP well (Agricultural)
29	6628-29	5058	31.5	?	?			7500 ($1.65x10^6$)	Metered NAP well (Agricultural)
30	6628-29	5069	14.6	8.8 (1969)			Q=121 pump at 12.19 m	2290 (503800)	Metered NAP well (Agricultural)

DISCHARGE SURVEY NO.	1:10 000 SHEET NO.	WELL NO.	TOTAL DEPTH	STATIC WATER LEVEL	MAX. DRAW-DOWN	SPECIFIC CAPACITY (m^3/day/m) ($Q=m^3day-1$	TRANS-MISSIVITY (m^2/day)	APPROX. ANNUAL DISCHARGE Kl(galls)	COMMENTS
31	6628-29	5082	17.7	8.83 (1973)			Q=216 pump at 12.8 m	1980 (435600)	Metered NAP well (Agricultural)
32	6628-29	5085	27.4	?			?	1610 (354,200)	Metered NAP well (Agricultural)
33	6628-29	5087	25.9	?			Q=77.8 pump at 21.9 m	410 (90,200)	Metered NAP well (Recreational - Bowling Club)
34	6628-29	5090	43.6	18.29 (1969)			Q=112 pump at ?	17870 ($3.9x10^6$)	Metered NAP well (agricultural)
35	6628-29	5098	36.3	?			?	12570 ($2.7x10^6$)	Metered NAP well (Agricultural)
36	6628-29	5119	30.5	?			Q=216 pump set at 22 m	2870 (631400)	Metered NAP well (Agricultural)
37	6628-29	5169	41.2	?			Q=432 pump at 24.4 m	600 ($1.3x10^6$)	Metered NAP well (Agricultural)
38	6628-29	9483	57	?	?			4260 (937200)	Metered NAP well (Agricultural)
39	6628-29	10,974	24	11.50 (1979)				6010 ($1.3x10^6$)	Metered NAP well (Recreational)
40	6628-29	10989	49	? (1978)				26,000 ($5.7x10^6$)	Metered NAP well (Agricultural)
41	6628-29	11195	47	?	?	?		3725 (819500)	Metered NAP well (Agricultural)
42	6628-30	3268	25.9	3.7 (1969)			Q=432 pump at 18.3 m	1720 (378400)	Metered NAP well (Agricultural)

DISCHARGE SURVEY NO.	1:10 000 SHEET NO.	WELL NO.	TOTAL DEPTH	STATIC WATER LEVEL	MAX. DRAW-DOWN	SPECIFIC CAPACITY (m^3/day/m) ($Q=m^3day-1$	TRANS-MISSIVITY (m^2/day)	APPROX. ANNUAL DISCHARGE Kl(galls)	COMMENTS
43	6628-30	3269	9.8	?				2300 (506000)	Metered NAP well (Agricultural)
44	6628-39	9539	15.2 Dug well	?				1230 (270,600)	Walkerville oval (mains supplemented) (Recreational)
45	6628-39	9736	10 m	?				3270 (720,000)	I.G. Signorella Dug Well (Agricultural)
46	6628-39	12524	24.00 (1983)	5.00 (1983)			Q=216	1640 (360,000)	Mercorella George St Paradise Dug Well
47	6628-50 Dug Well	12490	36.5	3.00 (1983)				15910 ($3.5x10^6$)	Sacred Heart College
48	6628-50 Dug Well	12491	36.5	3.00 (1983)				COMBINED DISCHARGE WITH 47	Sacred Heart College
49	6628-42(h)	6	6.9			(Q=345.6)		34820 ($7.6x10^6$)	Botanical Gardens (Recreational)
50	6628-42(h)	108	12.8	6.4 (1967)		(Q=345.6)		29090 ($6.4x10^6$)	Zoological Gardens
51	6628-42(h)	137	16.46	7.62 (1975)		(Q=345.6)		Combined discharge from 4 wells	Zoological Gardens
52	6628-42(h)	11489	17 (back filled)	7 (1978)	12.75	(Q=277.0) 21.7 (after 120 mins)			Zoological Gardens

DISCHARGE SURVEY NO.	1:10 000 SHEET NO.	WELL NO.	TOTAL DEPTH	STATIC WATER LEVEL	MAX. DRAW-DOWN	SPECIFIC CAPACITY (m^3/day/m) ($Q=m^3day-1$	TRANS-MISSIVITY (m^2/day)	APPROX. ANNUAL DISCHARGE Kl(galls)	COMMENTS
53	6628-42(h)	11490	18.3	7.14 (1980)	9.04	(Q=308) 34 (after 140 mins)			(ADE63) Zoological Gardens
54	6628-42(h)	12542	15	7.60 (1983)		(Q=112)		590 (130,000)	St Peters Boys College (Dug Well)
55	6628-42	9951	42.60	?				(ADE 98)	Woodroofes
56	6628-42	9952	47.60					20,800 ($4.6x10^6$) combined discharge - both wells	Woodroofes

APPENDIX B

CARISBROOK SANDS AQUIFER

(Groundwater consumption from Area A)

Annual discharge = 87,190 K1

METROPOLITAN GROUNDWATER DISCHARGE SURVEY 1982/84

DATA TABULATION

(ALL DEPTHS IN METRES BELOW G.L.)

DISCHARGE SURVEY NO.	1:10 000 SHEET NO.	WELL NO.	TOTAL DEPTH	STATIC WATER LEVEL	MAX. DRAW-DOWN	SPECIFIC CAPACITY (m^3/day/m) ($Q=m^3day-1$	TRANS-MISSIVITY (m^2/day)	APPROX. ANNUAL DISCHARGE Kl(galls)	COMMENTS
CARISBROOK SANDS AQUIFER									
(Entirely consumed within Area A)									
1	6628-29	4837	45.7	9.1 (1967)				1160 (255200)	NAP metered well (Agricultural)
2	6628-29	4853	30.5	7.6 (1969)				6560 ($1.4x10^6$)	Metered NAP well (Agricultural)
3	6628-29	4855	27.4	5.82 (1966)			Q=864 pump at 15.2 m	3990 (877,800)	Metered NAP well (Agricultural)
4	6628-29	4865	29.9	4.87 (1963)			Q=1080 pump at 10.97	1800 (396,000)	Metered NAP well (Agricultural)
5	6628-29	4876	34.1	21.34 (1967)			Q=864 pump at 21.34 m	12415 ($2.7x10^6$)	Metered NAP well (Agricultural)
6	6628-29	4890	51.8	9.14 (1969)			Q=216 pump at 18.29 m	950 (209,000)	Metered NAP well (Agricultural)
7	6628-29	4923	50.3	?			Q=432 pump at 36.38 m	9110 ($2x10^6$)	Metered NAP well (Agricultural)

DISCHARGE SURVEY NO.	1:10 000 SHEET NO.	WELL NO.	TOTAL DEPTH	STATIC WATER LEVEL	MAX. DRAW-DOWN	SPECIFIC CAPACITY ($m^3/day/m$) ($Q=m^3day-1$	TRANS-MISSIVITY (m^2/day)	APPROX. ANNUAL DISCHARGE Kl(galls)	COMMENTS
8	6628-29	4927	45.7	21.3 (1969)			Q=86.4 pump at 27.43 m	1755 (386,100)	Metered NAP well (Agricultural)
9	6628-29	5148	73.2	30.48 (1969)				5000 ($1.1x10^6$)	Metered NAP well (Agricultural)
10	6628-29	5168	81.4	?			Q=562 pump set at 24.4 m	13,240 ($2.9x10^6$)	Metered NAP well (Agricutural)
11	6628-29	3279	39.6	9.1 (1969)			Q=237.6 pump at 21.3 m	12,690 ($2.8x10^6$)	Metered NAP well (Agricultural)
12	6628-30	3280	39.6	35.7 (1970)				10,470 ($2.3x10^6$)	Metered NAP well (Agricultural)
13	6628-30	3341	68.6	?				8050 ($1.8x10^6$)	Metered NAP well (Agricultural)

APPENDIX C

TERTIARY AND HARD ROCK AQUIFERS

Annual discharge from Tertiary aquifers = 6,727,330 Kl

Annual discharge from Hard Rock aquifer = 460,590 Kl

METROPOLITAN GROUNDWATER DISCHARGE SURVEY 1982/84

DATA TABULARION

(ALL DEPTHS IN METRES BELOW G.L.)

*Aquifer/well test data available)

DISCHARGE SURVEY NO.	1:10 000 SHEET NO.	WELL NO.	TOTAL DEPTH	STATIC WATER LEVEL	MAX. DRAW-DOWN	SPECIFIC CAPACITY (m^3/day/m) ($Q=m^3$day-1	TRANS-MISSIVITY (m^2/day)	APPROX. ANNUAL DISCHARGE Kl(galls)	COMMENTS
HARD ROCK (HR) AND TERTIARY AQUIFER									
1	6528-26	376	144.5	7.60 (1978)	80 m	($Q=450$ m^3day) 5.6 (after 24 hrs)	*	13820 ($3.04x10^6$)	Obs well PTA62(Report 78/39) North Haven Golf Course. (Mains water supplemented)
2	6528-35	645	155	12.7 (1982)			*	48360 ($10.64x10^6$)	*Calculated using 5 months discharge (non wet days). Police Academy.
3	6528-36	511	124	4.15 (1974)			*	49090 ($10.8x10^6$)	Delfin Island (Recreational)
4	6528-36	526	189				Q=1309	46360 ($10.2x10^6$)	Football Park (YAT 46)
5	6528-36	435(1)	192	?			Q=1080		Grange Golf Club
6	6628-40	8653(2)	195.7	15.97 (1983)			Q=1309		Discharge from wells "5" to "12" grouped as one. (S. Matthews)
7	6628-40	8632(3)	195	15.24 (1965)			Q=1309	TOTAL Q	Grange Golf Club
8	6528-36	525(4)	188.9	15.24 (1965)			Q-1080	=433,180 ($95.3x10^6$)	Grange Golf Club

DISCHARGE SURVEY NO.	1:10 000 SHEET NO.	WELL NO.	TOTAL DEPTH	STATIC WATER LEVEL	MAX. DRAW-DOWN	SPECIFIC CAPACITY (m^3/day/m) ($Q=m^3day-1$	TRANS-MISSIVITY (m^2/day)	APPROX. ANNUAL DISCHARGE Kl(galls)	COMMENTS
9	6528-36	432(5)	188.9	18.97			Q=1309*		Grange Golf Club (cont.)
10	6528-36	441(6)	131	15.47			Q=1080*	Discharge from wells 5 to 12 grouped as one.	-(YAT 51)- Grange Golf Club
11	6528-36	437(7)	187	20.18 (10.37 in 1957)			*		
12	6528	436(8)	192	18.43	23	55.8 (after 1,000 mins)	78.3*	Grange Golf	Q=1284 m^3day-1 (Grange Golf Club)
13	6528-36	507	121.9	11 (1962)			Q=1080 pump set at 57.9 m	TOTAL DISCHARGE = 230,000 ($50.4x10^6$)	Riverside Golf Club - each well rated at 1,080 m^3day-1 (10,000 gph)
14	6528-36	508	121.9	11 (1962)					Riverside Golf Club
15	6628-40	11517	182.9	FLOWING					(YAT 69) Riverside Golf Club
16	6528-36	776	201	19.6				28,050 ($6.2x10^6$)	Grange Recreation Reserve
17	6528-45	405	153	7 (1961)				22,550 ($5x10^6$)	Henley Oval
18	6528-45	408	139.3	3.96 (1970)	23.3	(Q=545.6) 23.5 (after 2/3 hrs)		26,700 ($5.9x10^6$)	Henley High School PBD
19	6627-1	1707	86.9					4730 ($1.04x10^6$)	Oaklands Reserve
20	6627-1	1681	68.6	22.86 (1970)	17.8	Q=812 45.6 (aftr 8 hrs)		11820 ($2.6x10^6$)	Sturt Oval

DISCHARGE SURVEY NO.	1:10 000 SHEET NO.	WELL NO.	TOTAL DEPTH	STATIC WATER LEVEL	MAX. DRAW-DOWN	SPECIFIC CAPACITY (m^3/day/m) ($Q=m^3day^{-1}$	TRANS-MISSIVITY (m^2/day)	APPROX. ANNUAL DISCHARGE Kl(galls)	COMMENTS
21	6627-1	6234	71	22.8 (1981)	17.56	Q=233 m^3/day 13.2 (after 6 hrs)	*	7730 ($1.7x10^6$)	Sturt Oval (NOA 17)
22	6627-1	1631	92	4.3 (1983)	Bailed Q=127.2 s=5.2 m 24.4 m (Bailed tested)			28,600 ($6.3x10^6$)	(NOA 11)Brighton High School PBD
23	6627-1	1642	89.3	21.5 (1968)			Q=648 ?	22,900 ($5x10^6$)	(NOA 6) Mawson High School (Brighton Boys Tech) PBD
24	6627-1	1646	85.3	11 (1970)	15.8	(Q=371) 23.5 (after 17 hrs)		14,400 ($3.2x10^6$)	Brighton Primary School PBD
25	6627-1	1668	64.6	10.39 (1967)	8.5 (after 500 mins)	(Q=47.47 m^3day^{-1}) 5.6	*	12540 ($2.8x10^6$)	(NOA 12) Warradale Primary Primary - PBD
26	6627-1	1678	57	13.10 (1969)	21.95	(Q=345.6) 15.74 (after 26½ hrs)		14,300 ($3.1x10^6$)	Oaklands Park Primary School - PBD
27	6627-1	1684	73.15	22.86 (1969)	19.81	(Q=345.6) 17.44 (after 5¼ hrs)		11,000 ($2.4x10^6$)	(NOA5) Sturt Primary School PBD
28	6627-1	1704	61.27	22.1 (1971)	30.48	(Q=250.9) 8.2 (after 14 hrs)	*	14,900 ($3.3x10^6$)	Marion Primary PBD
29	6627-1	1710	64.62	10.67 (1969)	?	?		8,700 ($1.9x10^6$)	Mitchell Park Primary PBD
30	6627-1	1721	58.83	33.22 (1970)	6.4	(Q=381.9) 59.67 (after 26 hrs)		28,700 ($6.3x10^6$)	(ADE23, Maron High School) PBD

DISCHARGE SURVEY NO.	1:10 000 SHEET NO.	WELL NO.	TOTAL DEPTH	STATIC WATER LEVEL	MAX. DRAW-DOWN	SPECIFIC CAPACITY (m^3/day/m) ($Q=m^3day-1$	TRANS-MISSIVITY (m^2/day)	APPROX. ANNUAL DISCHARGE Kl(galls)	COMMENTS
31	6627-1	1706	59.74	14.63 (1962)	21.64	($Q=1417m^3day$) 65.6 (after at least 3 hrs)		15,454 ($3.4x10^6$)	Westminister School+
32	6627-1	1873	120	1.9 (1978)	60	($Q=436$) 7.3 approx	*	21,600 ($4.75x10^6$)	Marion Park Golf Course (NOA 18)
33	6627-1	1875	101.9	4.73 (1977) 6.45 (1981)	70.35	($Q=567$) 8 (after 10 hrs)	*	21,600 ($4.75x10^6$)	(NOA 19) Shoreham Road Marion Park Golf Course
34	6627-1	6214	104.5	9 (1980)			*	21,600 ($4.75x10^6$)	(NOA 14) Marion Park Golf Course
35	6627-1	1632	90.22	7.62 (1969)				32,730 ($7.2x10^6$)	Minda Home
36	6627-1	6490	77	3.40 (1982)				21,820 ($4.8x10^6$)	(NOA 25) (Minda Home also has 2 quaternary Q wells). (See folder for details).
37	6628-28	3612	106.68				Q=653 pump at76.2 m	COMBINED EXTRACTION	Hallett Bricks Golden Grove & Christies Sands (from Maslin Sands)
38	6628-28	3599	118.9	9.1 (1975)				90,910 ($20x10^6$)	Hallett Bricks
39	6628-28	SUMP IN QUARRY							Hallett Bricks
40	6628-28	SUMP IN QUARRY						392.730 ($86.4x10^6$)	Monier Besser Golden Grove (From Maslin Sands)

+School also has 2 Quaternary wells (see Q file for details).

DISCHARGE SURVEY NO.	1:10 000 SHEET NO.	WELL NO.	TOTAL DEPTH	STATIC WATER LEVEL	MAX. DRAW-DOWN	SPECIFIC CAPACITY (m^3/day/m) (Q=m^3day-1	TRANS-MISSIVITY (m^2/day)	APPROX. ANNUAL DISCHARGE Kl(galls)	COMMENTS
41	6628-29	4832	103.0	24.4 (1969)			Q=1525* Pump at 61 m	21020 $4.6x10^6$	(NAP well, Metered) (Agricultural)
42	6628-29	4863	133.8	12.19 (1962) 22.80 (1967)		(Q=648)	Pump set at 42.67 m	18059 ($3.97x10^6$)	Metered NAP well - only Tertiary included (Agricultural)
43	6628-29	4866	129.5	7.62 (1969)		(Q=864)	Pump set at 51.82 m	1376 (302,720)	Metered NAP well (MPA 24) (Agricultural)
44	6628-29	4867	131			(Q=864)	Pump set 36.38 m	5030 ($1.1x10^6$)	Metered NAP well (Agricultural)
45	6628-29	4868	113	3.66 (1951)		(Q=993.6)		9950 ($2.19x10^6$)	Metered NAP well (Agricultural)
46	6628-29	4878	91.4			(Q=1080)	Pump set at 25.91 m	913 (200,860)	Metered NAP well (Agricultural)
47	6628-29	4880				(Q=345.6)		4060 (893,200)	Metered NAP well (Agricultural)
48	6628-29	4883	140.2			(Q=777.6)	Pump set at 46.94 m	19160 ($4.2x10^6$)	Metered NAP well (Agricultural)
49	6628-29	4884	139					13,470 ($3x10^6$)	Metered NAP well (Agricultural)
50	6628-29	4891	108	4.88 (1951)				31,810 ($7x10^6$)	Metered NAP well (Agricultural)
51	6628-29	4894	136.3			(Q=1080)	Pump set at 42.67 m	26,360 ($5.8x10^6$)	Metered NAP well (Agricultural)

DISCHARGE SURVEY NO.	1:10 000 SHEET NO.	WELL NO.	TOTAL DEPTH	STATIC WATER LEVEL	MAX. DRAW-DOWN	SPECIFIC CAPACITY (m^3/day/m) ($Q=m^3day^{-1}$	TRANS-MISSIVITY (m^2/day)	APPROX. ANNUAL DISCHARGE Kl(galls)	COMMENTS
52	6628-29	4918	146.3	12.19 (1962)		(Q=777.6)		15,140 ($3.3x10^6$)	Metered NAP well (Agricultural)
53	6628-29	4992	125.6	6.1 (1967)		(Q=562)	Pump set at 30.48 m	440 (96,800)	Metered NAP well (Agricultural)
54	6628-29	4980	109.7			(Q=648)	Pump set at 27.43 m	788 (173,360)	Metered NAP well (Agricultural)
55	6628-29	4995	171.6	31.94 (1962) 31.5 (1923) (pumping from 68.5)	14.24	(Q=984) 69 (after 240 mins)	Pump set* 68.5 m	88100 ($1.9x10^6$)	(MPA92)-("P3")(Recreational Old Spot (1983 well test & 1968 well test
56	6628-29	5010	140.2			(Q=1080)	Pump set at 42.67 m	6150 ($1.35x10^6$)	Metered NAP well (Agricultural)
57	6628-29	5015	100.6			(Q=562)		339 (74,580)	Metered NAP well (Agricultural)
58	6628-29	5016	124.4			(Q=1309)	Pump set at 76.2 m	9,820 ($2.2x10^6$)	(YAT 28) (Agricultural) (A. Bevone)
59	6628-29	5017	147.8	12.19 (1963)		(Q=777.6)		5,380 ($1.2x10^6$)	Metered NAP well (Agricultural)
60	6628-29	5018	144.5	15.24 (1967)		(Q=864)	Pump set at 60.96 m	28370 ($6.2x10^6$)	Metered NAP well (Agricultural)
61	6628-29	5023	147.8			(Q=927.5)		27090 ($6x10^6$)	Metered NAP well (Agricultural)
62	6628-29	5024	144.5			(Q=993.6)		1400 (308,000)	Metered NAP well (Agricultural)

DISCHARGE SURVEY NO.	1:10 000 SHEET NO.	WELL NO.	TOTAL DEPTH	STATIC WATER LEVEL	MAX. DRAW-DOWN	SPECIFIC CAPACITY (m^3/day/m) ($Q=m^3day-1$	TRANS-MISSIVITY (m^2/day)	APPROX. ANNUAL DISCHARGE Kl(galls)	COMMENTS
63	6628-29	5027	117.4	27.43 (1972)		(Q=1080)	Pump set at 36.38 m	738 (162,360)	Metered NAP well (Agricultural)
64	6628-29	5028	137.8	10.67 (1962)		(Q=648)	Pump set at 41.15 m	3885 (854,700)	(YAT 22) (Agricultural)
65	6628-29	5066	134.1			(Q=432)		97650 ($2.1x10^6$)	Metered NAP well (Agricultural)
66	6628-29	5092	168.3	21.34 (1947)		(Q=345.6)	Pump set at 44.20 m	9461 ($2.1x10^6$)	Metered NAP well (Agricultural)
67	6628-29	5103	204.2	22.67 (1972)	20.92	Q=697.3) 33.3 (after 2900 mins)	*	4910 ($1.1x10^6$)	Obs. well "P9" YAT 9 Salisbury Reserve (Agricultural)
68	6628-29	5167	141.7	12.19 (1967)		(Q=1309)	Pump set at 36.38 m	20,730 ($4.6x10^6$)	Metered NAP well (Agricultural)
69	6628-29	5170	106.7	12.80 (1971)		(Q=562)		3970 (873,400)	Metered NAP well (Agricultural)
70	6628-29	5172	141.4	30.48 (1972)		(Q=1309)		5110 ($1.1x10^6$)	Metered NAP well (Agricultural)
71	6628-29	5176	137.2	36.38 (1967)		(Q=648)	Pump set at 36.38 m	15140 ($3.3x10^6$)	Metered NAP well (Agricultural)
72	6628-29	5183	101.5	3.04 (1953)		(Q=1309)	Pump set at 24.38 m	203 (44660)	Metered NAP well (YAT 27) (Agricultural)
73	6628-29	5238	184.4	JUST FLOWED (1957)		(Q=864.6)		1970 (433,400)	Metered NAP well (Govt. Irrig Well)

DISCHARGE SURVEY NO.	1:10 000 SHEET NO.	WELL NO.	TOTAL DEPTH	STATIC WATER LEVEL	MAX. DRAW-DOWN	SPECIFIC CAPACITY (m^3/day/m) ($Q=m^3day-1$	TRANS-MISSIVITY (m^2/day)	APPROX. ANNUAL DISCHARGE Kl(galls)	COMMENTS
74	6628-30	3266	89.9	12.19 (1961)		(Q=562)	Pump set at 60.96 m	2450 (539,000)	Metered NAP well (MPA 29) N & S Moches (Agricultural)
75	6628-30	3270	116.4	12.19 (1967)		(Q=777.6)	Pump set at 45.72 m	8320 ($1.8x10^6$)	Metered NAP well (Agricultural)
76	6628-30	3274	116.7			(Q=432)	Pump set at 30.48 m	20800 ($4.6x10^6$)	Metered NAP well (Agricultural)
77	6628-30	3290	92.4			(Q=864)		2640 (580,800)	Metered NAP well (Agricultural)
78	6628-30	3291	132	7.32 (1960)		(Q=1309)		1640 (360,800)	Metered NAP well (Agricultural)
79	6628-30	3294	133.5	15.24 (1967)		(Q=562)	Pump set at 39.62 m	2240 (492,800)	Metered NAP well (Agricultural)
80	6628-30	3295	73.8	3.66 (1959)		(Q=777.6)	Pump set at 51.82 m	4870 ($1.1x10^6$)	Metered NAP well (MPA 58) (Agricultural)
81	6628-30	3297	144.8	3.35 (1967)		(Q=993.6)	Pump set at 36.38 m	9790 ($2.2x10^6$)	Metered NAP well (Agricultural)
82	6628-30	3298	135.3			(Q=993.6)	Pump set at 45.72 m	10,600 ($2.3x10^6$)	Metered NAP well (Agricultural)
83	6628-30	3299	137.2	24.38 (1960)		(Q=1309)	Pump set at 36.38 m	7430 ($1.6x10^6$)	Metered NAP well (Agricultural)
84	6628-30	3300	131.1			(Q=1080)	Pump set at 36.38 m	10540 ($2.3x10^6$)	Metered NAP well (Agricultural)
85	6628-30	3307	149.4	2.74 (1974)		(Q=1309)	Pump set at 57.91 m	39750 ($8.7x10^6$)	Metered NAP well (Agricultural)

DISCHARGE SURVEY NO.	1:10 000 SHEET NO.	WELL NO.	TOTAL DEPTH	STATIC WATER LEVEL	MAX. DRAW-DOWN	SPECIFIC CAPACITY (m^3/day/m) ($Q=m^3day-1$	TRANS-MISSIVITY (m^2/day)	APPROX. ANNUAL DISCHARGE Kl(galls)	COMMENTS
86	6628-30	3318	111.6	15.24 (1967)		(Q=648)	Pump set at 30.48 m	5790 ($1.3x10^6$)	Metered NAP well (Agricultural)
87	6628-30	3433	123.4	18.29 (1973)		(Q=1091)		3730 (820,600)	Metered NAP well (Agricultural)
88	6628-30	3436	137.2	18.29 (1966)		(Q=1525)	Pump set at 48.77 m	3200 (704,000)	Metered NAP well (Agricultural)
89	6628-30	3438	140.2	15.85 (1967)		(Q=1080)		145,380 ($32x10^6$)	Metered NAP well ICI AUST (Industrial) (Dry Creek)
90	6628-30	8000	134	7.50 (1967)		(Q=604.8)		6400 ($1.4x10^6$)	Metered NAP well (Agricultural)
91	6628-30	3356	111.6	3.66 (1954) 6.1 (1964)	11.20 (Nov'74 (test after 22 hrs)	(Q=1107) 98.9	*	169455 ($37.3x10^6$)	Torrens Isle Quarrantine (DM Rept 75/73) (Agricultural (Govt.))
92	6628-30	3402	132.5		9.1	(Q=1080) 118.7		COMBINED DISCHARGE =545800 ($120x10^6$)	ICI Osborne (Not metered)
93	6628-31	4427 (PTA63)	140.2	15.24 (1967)					ICI Osborne (Not metered)
94	6628-31	4356 (No 4)	118.4	flowed 1957 at 3000 gph 18.58 (1974)	13	(Q=2181 for test) (1957) 168 (tested for 101 hrs)		305280 ($67.3x10^6$)	ICI (Metered) Dry Creek
95	6628-31	4370 (No 1)	120	7.6 (1967)		(Q=1633)		305900 ($67.3x10^6$)	ICI (Metered Dry Creek

DISCHARGE SURVEY NO.	1:10 000 SHEET NO.	WELL NO.	TOTAL DEPTH	STATIC WATER LEVEL	MAX. DRAW-DOWN	SPECIFIC CAPACITY (m^3/day/m) ($Q=m^3day-1$	TRANS-MISSIVITY (m^2/day)	APPROX. ANNUAL DISCHARGE Kl(galls)	COMMENTS
96	6628-31	4371 (No 2)	128	FLOWED (1957)		(Q=1417)		154,140 ($33.9x10^6$)	ICI (Metered) Dry Creek
97	6628-31	4372 (PTA 61 (No 3)	121.9	FLOWED (1957) 7.6 (1967)	15.85	(Q=1857) 117.2 (after 7 hrs)		277,660 ($61x10^6$)	ICI (Metered) Dry Creek
98	6628-32	6905	141.7	27.49 (1965)		(Q=1080)		COMBINED	
99	6628-32	6907	139.3	10.96 (1948)		(Q=1525)		DISCHARGE	
100	6628-32	6912	138.7	12.20 (1959)		(Q=1309)		=784,860 ($172.7x10^6$)	SAMCOR GEPPS CROSS (INDUSTRIAL)
101	6628-32	6913	130.2	30.48 (1965)		(Q=1745)			
102 (HR)	6628-33	12212	161	24.38 (1967)		(Q=993.6)		COMBINED	TEA TREE GULLY
103 (HR)	6628-33	5341	97.56	18.50 (1975)		(Q=691.2)		DISCHARGE 136,360	GOLD COURSE
104 (HR)	6628-33	5342	121.95	19.10 (1975)		(Q=1123.2		($30x10^6$)	
105 (HR)	6628-33	5471	75.59	17.90 (1974)	40.23	(Q=562) 14 (after 4 hrs)		15,840 ($3.5x10^6$)	Highbury Primary School PBD - (YAT 50)
106 (HR)	6628-38	12044	22	10 (1982)		(Q=1309)		3440 (756,000)	Creative Landscaping (ADE 137)

DISCHARGE SURVEY NO.	1:10 000 SHEET NO.	WELL NO.	TOTAL DEPTH	STATIC WATER LEVEL	MAX. DRAW-DOWN	SPECIFIC CAPACITY (m^3/day/m) ($Q=m^3day-1$	TRANS-MISSIVITY (m^2/day)	APPROX. ANNUAL DISCHARGE Kl(galls)	COMMENTS
107 (HR)	6628-38	11989	114	72 (1982)		(Q=345.6)	*	2270 (500,000)	Black Hill Conservation Park (ADE 147)
108 (HR)	6628-38	6882	29	1.3 (1978)		(Q=381.9(	*	13,640 ($3x10^6$)	Mary Bank Estates (ADE 133) (Agricultural)
109	6628-39	9570	50.29	6.7 (1968)	1.2	(Q=327.4) 273		39,900 ($8.8x10^6$)	PBD - Marden High School (ADE 27)
110	6628-39	9723	90.83	17.68 (1969)	37.19	(Q=305.5) 8.2 (for 9.5 hrs)		7,000 ($1.5x10^6$)	Campbelltown Primary (ADE 130) Not on PBD printout
111	6628-39	9915	89.91	19.63 (1968)		(Q=261.8)	(S.C. data only)	10,780 ($2.4x10^6$)	PBD - Newton Primary (ADE 28)
112 (HR)	6628-39	9762	92.96	6.10 (1963)		(Q=1080)		5455 ($1.2x10^6$)	P. Mercorella Athelstone (Agricultural)
113 (HR)	6628-39	11721	31.6	3.0 (1979)		(Q=1080)		2180 (480,000)	N.V. EMERGY, Athelstone (ADE 136) (Agricultural)
114	6628-39	9702	63.09	56.39 (1972)		(Q=777.6)		22730 ($5x10^6$)	Campbelltown Ovan Dailey Road
115	6628-39	9874	48	3 (1977)		(Q=993.6)	Pump set at 45 m	10910 ($2.4x10^6$)	St. Bernards Recreation Centre
116 (HR)	6628-39	9786	140	33 (1978)		(Q=1309)	*	50,455 ($11.1x10^6$)	St Ignatius College (ADE 134)
117 (HR)	6628-39 (well is 15.24 deep)	9817	73.15 (Bore in well)	15.24 (1948)		(Q=523)		730 (160,000)	Mt L. Heading (49, 2nd Ave Klemzig (Agricultural)
118 (HR)	6628-39	12311	152	17 (1983)		(Q=259.2)		159105 ($3.5x10^6$)	Schweppes Co.

DISCHARGE SURVEY NO.	1:10 000 SHEET NO.	WELL NO.	TOTAL DEPTH	STATIC WATER LEVEL	MAX. DRAW-DOWN	SPECIFIC CAPACITY (m^3/day/m) ($Q=m^3day^{-1}$	TRANS-MISSIVITY (m^2/day)	APPROX. ANNUAL DISCHARGE Kl(galls)	COMMENTS
119	6628-39	9872	45.72	3.15 (1976)	(Originally a drainage well	(Q=392.8)		13,370 ($2.9x10^6$)	East Marden Primary (ADE 29) PBD
120 (HR)	6628-39	9756	24.38	18.29 (1965)		(Q=1080)		6545 ($1.4x10^6$)	Mr Fry (Agricultural)
121	6628-40	8754	131.37	5.14 (Dec.1977)	52	(Q=860) 16.5 (after 96 hrs)	*	18630 ($4.1x10^6$)	Woodville Oval (Recretional)
122	6628-40	8899	219	2.83 (1976)	77.5	(Q=910) 11.70 (after 330 mins)	*	7730 ($1.7x10^6$)	Regency Park Golf Course (YAT 53)
123	6628-40	8655	199.8	17.37 (1969)		(Q=720)		42,000 ($9.2x10^6$)	Seaton North Primary (&Seaton Tech High) PBD
124	6628-40	8667	134.72	21.34 (1955)		(Q=993.6	*	COMBINED DISCHARGE	Royal Adelaide Golf Course
125	6628-40	8668	183.49	12.19 (1969)		(Q=1201)		=355,455	Royal Adelaide Golf Course
126	6628-40	11542	201	8 (1980)		(Q=1080)		($78.2x10^6$)	(YAT 70) Royal Adelaide Golf Course
127	6628-40	8635	128.93	10.67 (1971)	57.91	(Q=338.3 5.8 (after 18 hrs)		14,850 ($3.3x10^6$)	Hendon Primary YAT 52 PBD
128	6628-40	8679	115.70	9.1 (1963)		(Q=864)		23,000 ($5.1x10^6$)	Findon High School PBD
129	6628-40	8759	128.0	11.1 (1969)		(Q=196.4)		14,200 ($3.1x10^6$)	Findon Primary School PBD

DISCHARGE SURVEY NO.	1:10 000 SHEET NO.	WELL NO.	TOTAL DEPTH	STATIC WATER LEVEL	MAX. DRAW-DOWN	SPECIFIC CAPACITY (m^3/day/m) ($Q=m^3day^{-1}$	TRANS-MISSIVITY (m^2/day)	APPROX. ANNUAL DISCHARGE Kl(galls)	COMMENTS
130	6628-40	8786	137.8	11.05 (1975)		(Q=655)		14,100 ($3.1x10^6$)	Croydon Tech High School (YAT 48) - PBD
131	6628-40	8847	102.1	7.62 (1963)		(Q=562)		39770 ($8.75x10^6$)	Birrell M.K. & Co. Electroplaters Woodville North
132	6628-40	8617	116	11.70 (1972)	11.66	(Q=949.4) * 81.4 (after 8 hrs)		33,000 ($7.2x10^6$)	Royal Park High School (YAT 47) - PBD
133	6628-41	11153	220	6.3 (1979) 8.18 (1979)	57.89	(Q=1342) * 23.2 (after 650 mins)		62350 ($13.7x10^6$)	Collins Reserve (Recreational)
134	6628-41	7725 (No 3)	127	21.50 (1973)	19.55	(Q=864) 46.4 (after 5½ hrs)		COMBINED DISCHARGE = 91950 ($20.2x10^6$)	Coca Cola (ADE 851)
135	6628-41	7724 (No 2)	155.5	26 (1980)		(Q=1417)			Coca Cola
136	6628-41	516 (No 1)	137.8	17.6 (1964)	26.9	(Q=1124) * 41.8 (1964 test) (after 1440 mins)			Coca Cola
137	6628-41	11199	170	15 (1979)		(Q=2181)		57270 ($12.6x10^6$)	CARBA (Liquid Air Aust) (Industrial)
133	6628-41	7791	141.73			(Q=1309)		14090 ($3.1x10^6$)	Central Bottle Co-Op West Beach Road
139	6628-41	7538	182.9	18.29 (1972)		(Q=1080)	(ADE 2)	COMBINED DISCHARGE	Torrens College Ad. Ed.

DISCHARGE SURVEY NO.	1:10 000 SHEET NO.	WELL NO.	TOTAL DEPTH	STATIC WATER LEVEL	MAX. DRAW-DOWN	SPECIFIC CAPACITY (m^3/day/m) ($Q=m^3day-1$	TRANS-MISSIVITY (m^2/day)	APPROX. ANNUAL DISCHARGE Kl(galls)	COMMENTS
140	6628-41	7546	144	19.46 (1974)	6.07	(Q=587.5) 96.8 (after 250 mins)		=28,640	Torrens College
141	6628-41	7691	204	17.13 (1973)	22.46	(Q=785.7) 35 (after 360 mins)	*	($6.3x10^6$)	(ADE 32) Torrens College NOT ON PBD PRINTOUT
142	6628-41	7746	118.9	9.1 (1971)		(Q=1080)		1620 (356400)	Fulham Gardens Old Folks Home (St. Josephs)
143	6628-41	7384	106.7	8.84 (1969)	52.73	(Q=216) 4.10 (aftr 1680 mins)		14,400 ($3.2x10^6$)	Fulham Gardens Primary (YAT 62) - PBD
144	6628-41	7385	137.16 Deepened to 205.7	3.05 (1974) 4.20 (1976)				45450 ($10x10^6$)	St Michalels College
145	6628-41	7461	137.16	18.66 (1970)	54.86	(Q=600.0) 10.94 (after 480 mins)	*	17900 ($3.9x10^6$)	Kidman Park High PBD
146	6628-41	7504	140.21	16.46 (1968)		(Q=993.6)		8300 ($1.8x10^6$)	Flinders Park Primary PBD
147	6628-41	7576	131.67	13.72 (1970)		(Q=229.2)		14700 ($3.2x10^6$)	Fulham Primary PBD
148	6628-41	7625	128.02	7.28 (1979)		(Q=2073.3)		18700 ($4.1x10^6$)	West Beach Primary (ADE 37) - PBD
149	6628-41	7661 (No 5)	213.36	5.49 (1972)	17.7 (Abundant grain size analyses)	(Q=888)	*		Adelaide Airport (ADE 38)

DISCHARGE SURVEY NO.	1:10 000 SHEET NO.	WELL NO.	TOTAL DEPTH	STATIC WATER LEVEL	MAX. DRAW-DOWN	SPECIFIC CAPACITY (m^3/day/m) ($Q=m^3day^{-1}$	TRANS-MISSIVITY (m^2/day)	APPROX. ANNUAL DISCHARGE Kl(galls)	COMMENTS
150	6628-41	7663 (No 4)	214	6.40 (1962)		(Q=1080)	*	125,450 ($27.6x10^6$) (INDUSTRIAL)	(ADE 9) Adelaide Airport
151	6628-41	7664 (No 3)	213.4	3.66 (1962)	50.80 (Pump test using Bore Nos 2,3,5) 25.10 (aftr 51 hrs)	(Aue Q=1275 m^3/day)	* (T&S)	COMBINED DISCHARGE	Adelaide Airport PUMPING TO BE DISCONTINUED FROM 1984
152	6628-41	7693	143			(Q=648)		30,300 ($6.7x10^6$)	Underdale High School
153	6628-41	7717	143.26	20.12 (1966)		(Q=927.5)		3200 (700,000)	Thebarton Boys Tech.High (originally a drainage well) - PBD
154	6628-41	7750	123	8.43 (1973)	23.48	(Q=864) 36.92 (after 6 hrs)	*	9800 ($2.2x10^6$)	Cowandilla Primary PBD
155	6628-41	7759	103	8.53 (1962)		(Q=709.3)		680 (150,000)	S.A. Cold Stores
156	6628-42(r)	555	29.26					36,000 ($7.9x10^6$)	Pulteney St Grammar School
157	6628-42	11160	133.31	62 (1980)	32.13	(Q=1008) 31.37 (after 10 hrs)	*	13640 ($3.0x10^6$)	Hazelwood Park Reserve (ADE 61)
157	6628-42	11758	250	24 (1981)		(Q=981.5)	*	301 (66220) (INDUSTRIAL)	Glenside Hospital (Equipped with flow meter) (ADE 90)

DISCHARGE SURVEY NO.	1:10 000 SHEET NO.	WELL NO.	TOTAL DEPTH	STATIC WATER LEVEL	MAX. DRAW-DOWN	SPECIFIC CAPACITY ($m^3/day/m$) ($Q=m^3day-1$	TRANS-MISSIVITY (m^2/day)	APPROX. ANNUAL DISCHARGE Kl(galls)	COMMENTS
159	6628-42(H)	104	47.5	7.6 (1914)		(Q=163.7)		590 (130,000)	St Peters Boys College Hackney
160 (HR)	6628-42	12058	287	105 (1982)		(Q=777.6		11820 ($2.6x10^6$)	St Peters Girls School Wattle Park
161 (HR)	6628-42	10,025	22	FLOWING (1979)		(Q=1080)		2270 (500.000)	R.G. Pank, Burnside
162 (HR)	6628-42	10028	390	0.66 (1974)		(Q=?)		7270 ($1.6x10^6$)	Pioneer Concrete Greenhill (ADE 22)
163 (HR)	6628-42	11905	266	?		(Q=540)		11,200 ($2.5x10^6$)	Ridge Supply SKYE (supplies 14 houses) (178,000 galls/ house)
164 (HR)	6628-42	10126	91.44	28.04 (1963)		(Q=1633)		15,000 ($3.3x10^6$)	Foothills Water Co. SKYE (supplies 20 houses) ADE 39
165 (HR)	6628-42	11908	182	105 (1981)		(Q=486)		12800 ($2.8x10^6$)	W.A. Lavers - SKYE (Knoxstead Pty Ltd) (supplies 16 houses)
166 (HR)	6628-42	11907	318	160 (1981)		(Q=270)		10,150 ($2.2x10^6$)	B.M. Dolling - SKYE
167 (HR)	6628-42	11932	182	48.5 (1981)		(Q=540)		19,200 ($4.2x10^6$)	A.A. Shepherd - SKYE (24 houses) (176,000 galls/house
168 (HR)	6628-49	12020	62	FLOWING (1981)				6240 ($1.4x10^6$)	Waite Research Unit (ADE 71)
169 (HR)	6628-49	11643	21.3	6.0 (1981)			*	8180 ($1.8x10^6$)	Carmellite Comment (ADE 72)

DISCHARGE SURVEY NO.	1:10 000 SHEET NO.	WELL NO.	TOTAL DEPTH	STATIC WATER LEVEL	MAX. DRAW-DOWN	SPECIFIC CAPACITY ($m^3/day/m$) ($Q=m^3day^{-1}$	TRANS-MISSIVITY (m^2/day)	APPROX. ANNUAL DISCHARGE Kl(galls)	COMMENTS
170 (HR)	6628-49	7267	121.9	72.54 (1963)		(Q=2181)		COMBINED DISCHARGE	Mt. Osmond Golf Club ADE 73
171 (HR)	6628-49	7268	164.3	103.3 (1978)		(Q=993.6)		98,180 ($21.6x10^6$)	Mt. Osmond Golf Links (ADE 45)
172 (HR)	6628-49	11722	90	57.4 (1981)		(Q=648)	*	5455 ($1.2x10^6$)	Beaumont House (National Trust) (ADE 92) (Recreational)
173	6628-50	11693	52	2 (1980)				COMBINED DISCHARGE)	Morphettville Racecourse (SAJC)
174	6628-50	11694	47.5	4.5 (1980)				34770 ($7.65x10^6$)	Morphettville Racecourse (SAJC)
175	6628-50	8045	106.7	FLOWED in 1964	34.4	(Q=1159) 33.7 (after 6 hrs)	*	22730 ($5x10^6$)	Immanuel College (ADE 62)
176	6628-50	11591	62	29.20 (1981)		(Q=240)	*	9090 ($2x10^6$)	Centennial Pk. Cemetery (ADE 62) (Industrial)
177	6628-50	7945	73	14.33 (1971)	34.2	(Q=323.0) 9.4 (after 400 mins)	*	27270 ($6x10^6$)	Road Safety Council (ADE 41) (Educational)
178	6628-50	7860	109.7	1.83 (1950)		(Q=2619)		65,450 ($14.4x10^6$)	Fordham Reserve (David Ave) (NOA 1)
179	6628-50	8093	50.6	7.32 (1945)		(Q=?)		33090 ($7.3x10^6$)	Weigall Oval (Kumulta Park)

DISCHARGE SURVEY NO.	1:10 000 SHEET NO.	WELL NO.	TOTAL DEPTH	STATIC WATER LEVEL	MAX. DRAW-DOWN	SPECIFIC CAPACITY (m^3/day/m) ($Q=m^3day-1$	TRANS-MISSIVITY (m^2/day)	APPROX. ANNUAL DISCHARGE Kl(galls)	COMMENTS
180	6628-50	8143	30.48	13.72 (1964)		(Q=993.6)		11820 ($2.6x10^6$)	Glandore Oval Glandore
181	6628-50	7869	88	3.45 (1979)		(Q=2563)		21820 ($4.8x10^6$)	Glenelg Oval (NOA 13)
182	6628-50	7926	94.49	?		(Q=648)		8700 ($1.9x10^6$)	Morphettville Park Primary - PBD
183	6628-50	7939	53.65	10.67 (1969)		(Q=392.8)		18400 ($4x10^6$)	Ascot Park Primary PBD
184	6628-50	7955	49	16.30 (1973)	7.1	(Q=518) 73 (after 13½ hrs)	*	8700 ($1.9x10^6$)	Mitchell Park Boys Tech PBD
185	6628-50	8084	50.9	?		(Q=?)		23700 ($5.2x10^6$)	Plympton High School PBD
186	6628-50	8102	83.5	18 (1973)		(Q=622)	*	12700 ($2.8x10^6$)	Vermont Girls High School PBD
187	6628-50	8112	47.2	8.84 (1969)	7.47	(Q=392.8) 52.6 (after 8 hrs)		13000 ($2.9x10^6$)	Forbes Primary School PBD
188	6628-50	7928						31100 ($6.8x10^6$)	Glengowrie High School PBD
189	6628-50	8115						14770 ($3.25x10^6$)	Edwardstown Oval ADE 18 (AQUIFER B)
190	6628-50	7944	?	14.33 (1974)		(Q=818.4)		11820 ($2.6x10^6$)	Marion Swimming Centre Parkholme
191	6628-50	7965	67.10	20.73 (1969)		(Q=1633)		2140 (470,000)	Lois Jeans Aust Edwardstown

DISCHARGE SURVEY NO.	1:10 000 SHEET NO.	WELL NO.	TOTAL DEPTH	STATIC WATER LEVEL	MAX. DRAW-DOWN	SPECIFIC CAPACITY (m^3/day/m) ($Q=m^3day-1$	TRANS-MISSIVITY (m^2/day)	APPROX. ANNUAL DISCHARGE Kl(galls)	COMMENTS
192	6628-50	7852	153.3	15.9 (1968)		(Q=1309)		5455 ($1.2x10^6$)	Glenelg Golf Club (Recycled water supplements supply)
193	6628-50	8981	66	32 (1978)		(Q=756)		68180 ($15x10^6$)	Palm Beach Towel Co.
194	6628-50	8010	60.96	7.62 (1951)		(Q=1309)		21820 ($4.8x10^6$)	Cabra Convent (ADE 25)
195	6628-50	7974	73.2	23.2 (1972)	14.94	(Q=1527.7) 102.3 (after 20 hrs)		68180 ($15x10^6$)	Palm Beach Towel Co. (ADE 40)
196	6628-41	7555	141.6	?	?	?(Q=2380gph)		Combined Discharge 109350 ($24.3x10^6$)	Onkaparinga Woolen Mills Thebarton
197	6628-41	13389	138.7	?	?	?(Q=2380gph)			

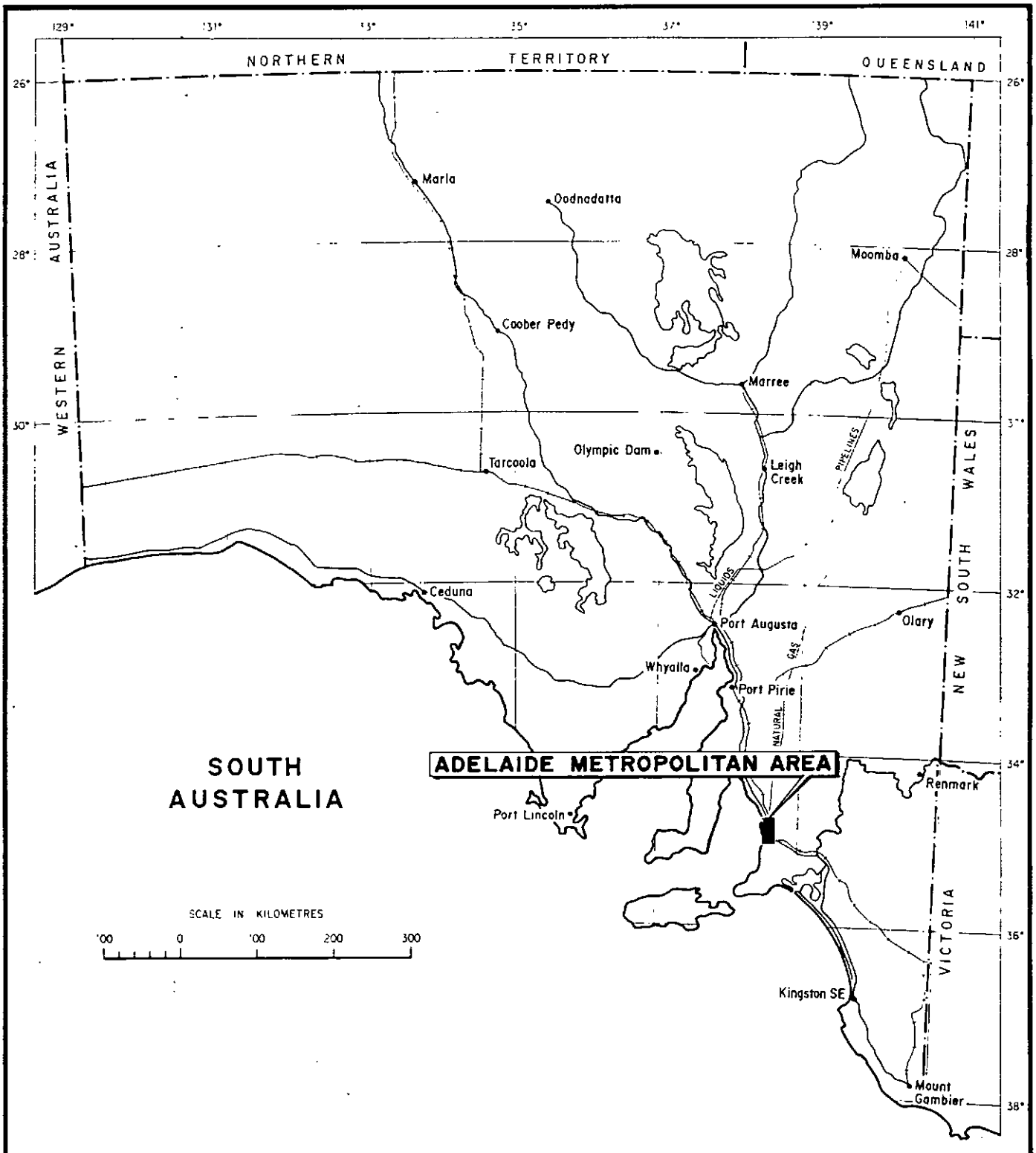


FIG. 1

DEPARTMENT OF MINES AND ENERGY
SOUTH AUSTRALIA

ADELAIDE METROPOLITAN AREA GROUNDWATER DISCHARGE SURVEY
1982 / 1983 IRRIGATION SEASON
LOCALITY PLAN

COMPILED	D. Edwards	MR 19·5·87 C.D.O. DATE
DRAWN	E. Calabio	SCALE 1:7,000,000
DATE	Mar. '87	PLAN NUMBER
CHECKED		S 19144

4298

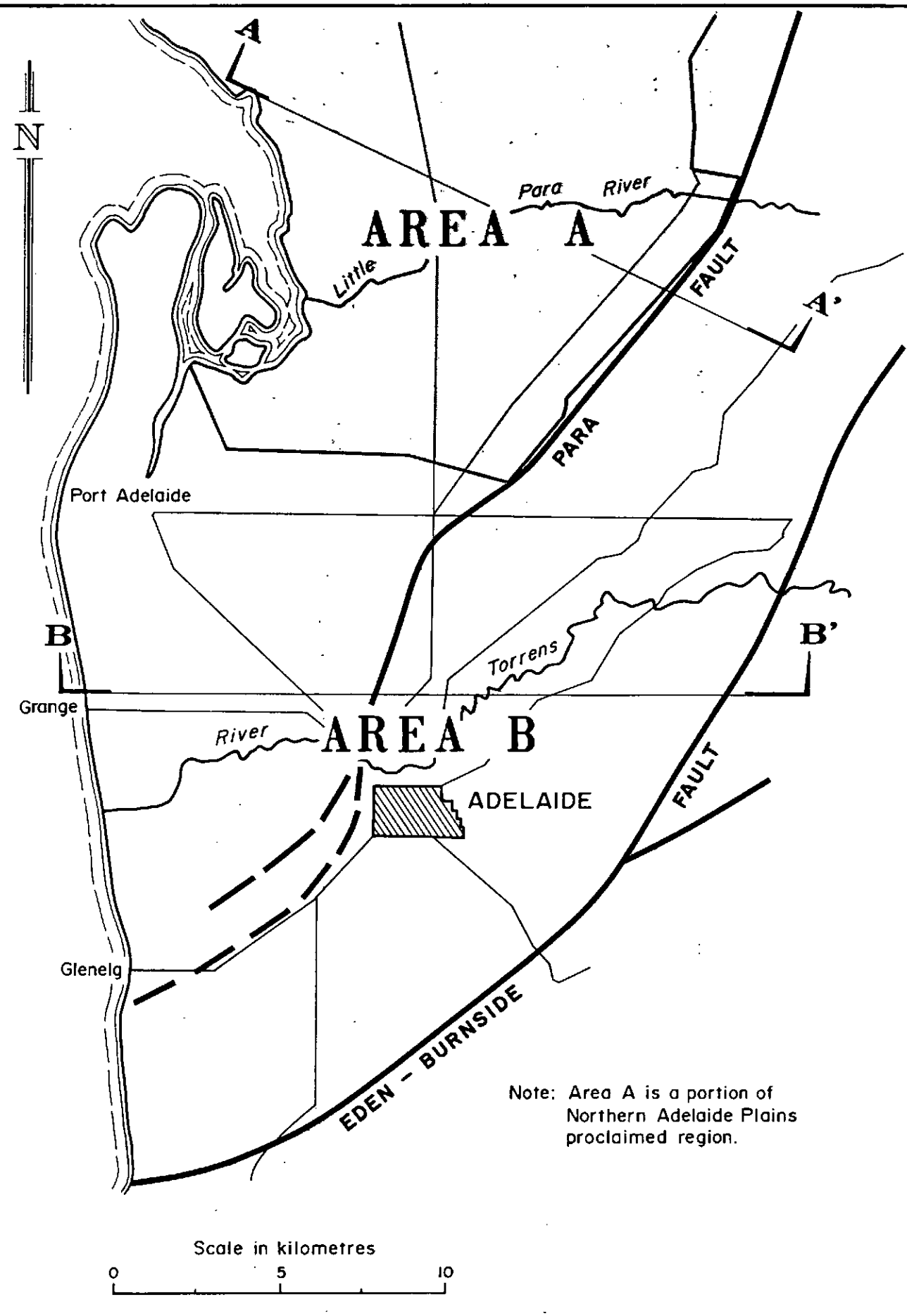
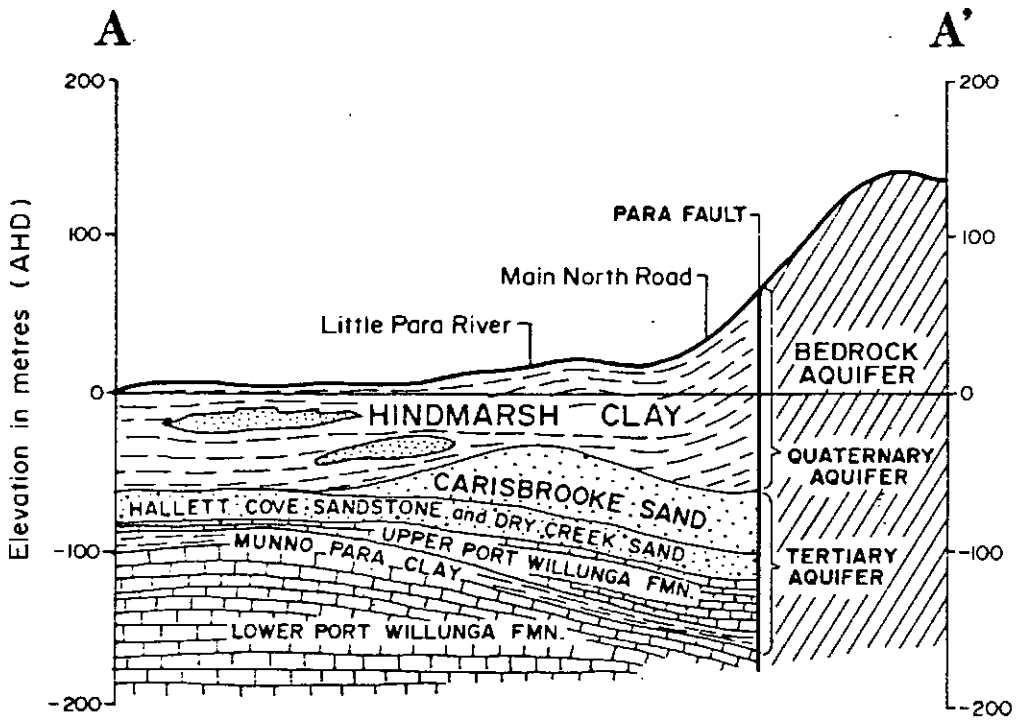


FIG. 2

DEPARTMENT OF MINES AND ENERGY SOUTH AUSTRALIA	COMPILED D. Edwards	MR 19.5.87 C.D.O. DATE	
ADELAIDE METROPOLITAN AREA GROUNDWATER DISCHARGE SURVEY 1982 / 1984 IRRIGATION SEASON	DRAWN E. Calabio	SCALE As shown	
LOCATION OF AREAS A AND B	DATE Mar. '87	PLAN NUMBER S 19145	
	CHECKED		



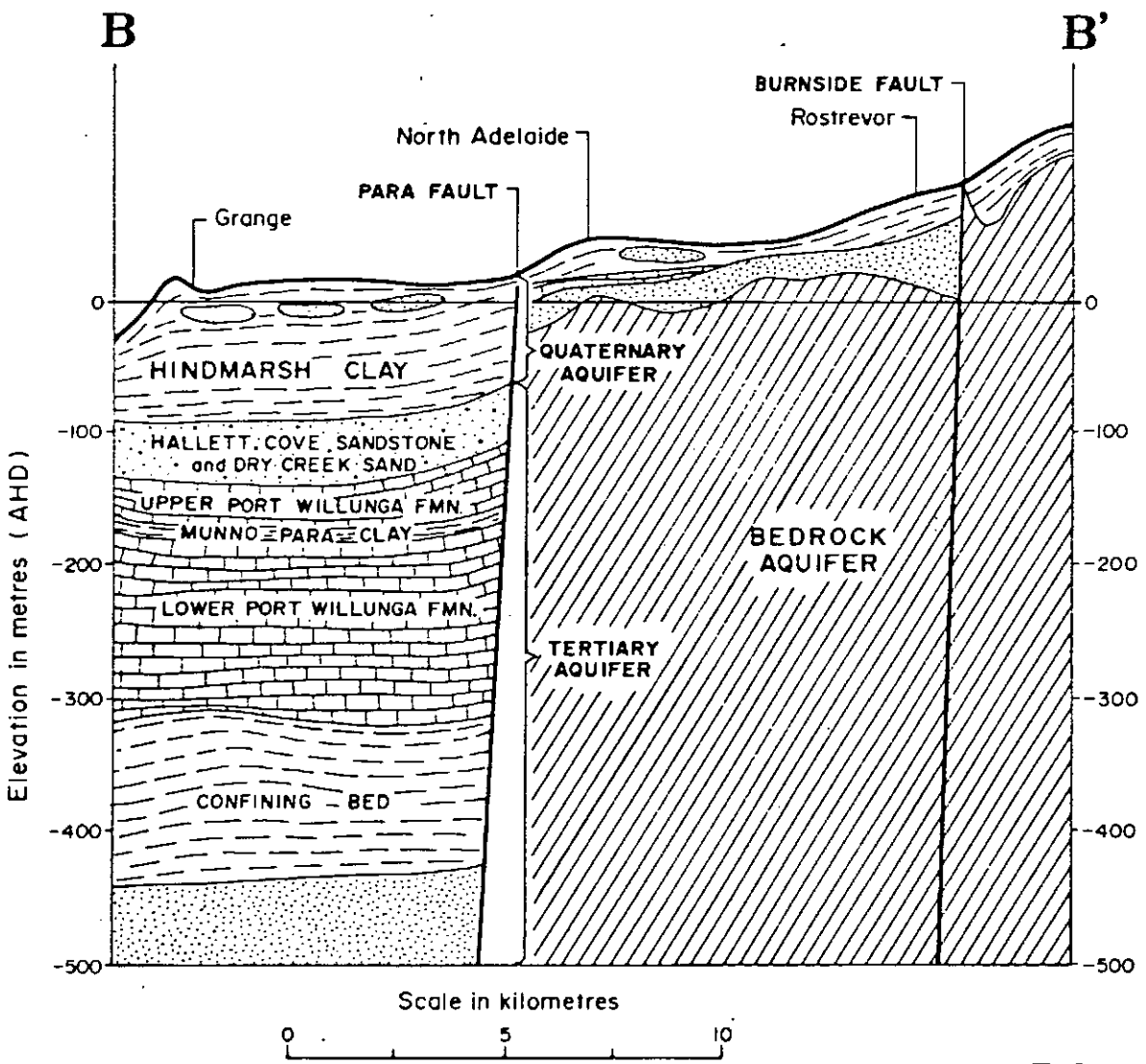


FIG. 3

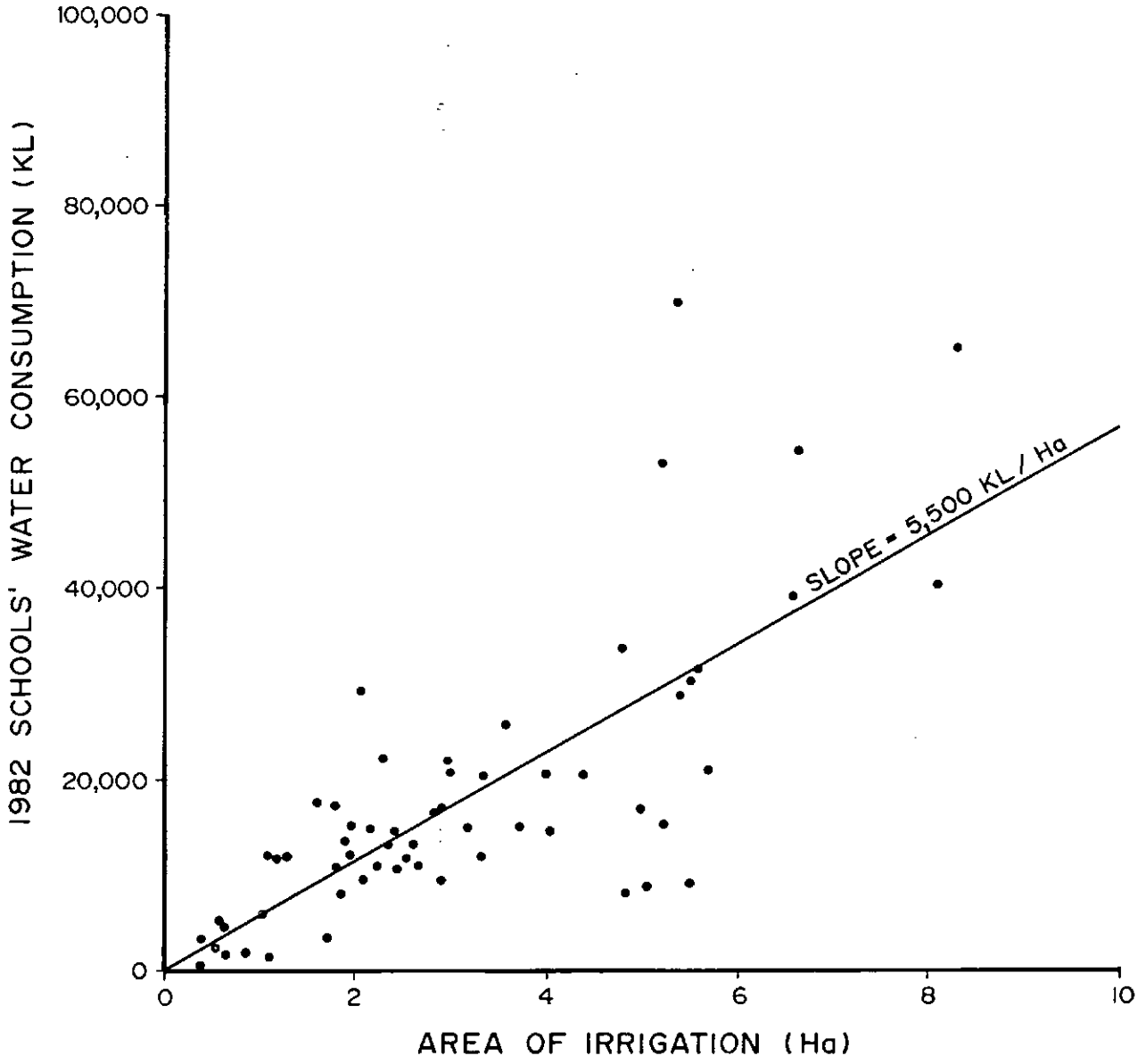
DEPARTMENT OF MINES AND ENERGY
SOUTH AUSTRALIA

ADELAIDE METROPOLITAN AREA GROUNDWATER DISCHARGE SURVEY
1982 / 1983 IRRIGATION SEASON

CROSS SECTIONS AA' AND BB'

COMPILED D. Edwards	C.D.O.	19·5·87 DATE
DRAWN E. Calabio	SCALE As shown	
DATE Mar. '87	PLAN NUMBER S 19146	
CHECKED		

42985



See reference – Department of Housing and Construction Printout.

FIG. 4

DEPARTMENT OF MINES AND ENERGY SOUTH AUSTRALIA	COMPILED D. Edwards	CDO.	19-5-87 DATE
ADELAIDE METROPOLITAN AREA GROUNDWATER DISCHARGE SURVEY 1982 / 1983 IRRIGATION SEASON **RELATIONSHIP BETWEEN MAINS WATER CONSUMPTION AND IRRIGATION AREA**	DRAWN E. Calabio	SCALE ——	
	DATE Mar. '87	PLAN NUMBER	S 19147
	CHECKED		

REFERENCE

Carisbrooke Sands aquifer production well . . . ●
Quaternary aquifer production well. . . . . ◒
Tertiary aquifer production well. . . . . ⊕
Bedrock aquifer production well. . . . . ▲

Well field number. 168
(Refer to text for well unit number)
1:10,000 sheet number. 6527-6

SCALE IN KILOMETRES
0 1 2 3 4

FIG. 5

DEPARTMENT OF MINES AND ENERGY SOUTH AUSTRALIA

ADELAIDE METROPOLITAN AREA GROUNDWATER DISCHARGE SURVEY
1982 / 1983 IRRIGATION SEASON
WELL LOCATION PLAN

COMPILED D. Edwards	C.D.O.	DATE 19.5.87	
DRAWN E. Calabio	SCALE 1:50,000		
DATE Mar.'87	PLAN NUMBER 87-130		
CHECKED			

4298