Section

REPORT BOOK No.78/40

WATER WELL SURVEY
HUNDRED OF NANGKITA

J.
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Department of Mines and Energy
South Australia —

DEPARTMENT OF MINES & ENERGY
SOUTH AUSTRALIA

WATER WELL SURVEY
HUNDRED OF NANGKITA

by

G. TAYLOR

Rept.Bk.No. 78/40
G.S. No. 6014
DM. No. 236/74
Eng.No. 77/67

APPENDICES

PLANS

DEPARTMENT OF MINES & ENERGY
SOUTH AUSTRALIA

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WATER WELL SURVEY
HUNDRED OF NANGKITA

ABSTRACT

A well survey of the hundred of Nangkita was conducted to accurately locate all wells and up-date well information. Most of the water obtained from the 122 wells which were located was from the Permian fluvioglacial sands and from hard rocks of the Kanmantoo group. Well yields range from 5 m^3/day to 2 398 m^3/day with salinities ranging from 104 mg/l to 15 000 mg/l. The main land uses throughout the hundred are cereal-cropping, grazing of livestock, vineyards and orchards.

INTRODUCTION

The hundred of Nangkita is situated on Fleurieu Peninsula approximately 50 km south of Adelaide (Fig. 1).

A well survey was carried out between April 1974 and December 1977 as part of the investigation of the groundwater resources of Fleurieu Peninsula. All wells were accurately located on aerial photographs and as much information as possible was obtained on well construction and conditions either by field measurement or from owners information.

PHYSICAL FEATURES

Topography

Steep hills enclosing small plains occur in the north western part of the hundred, and towards the south and south east the terrain falls to gently undulating alluvial plains.

Climate

The area has warm to hot summers and cold winters, that is, a Mediterranean type climate. Fig. No. 2 shows mean monthly rainfall for Mt. Compass and Currency Creek and the yearly rainfall from 1964-1974 for Mt. Compass. These towns represent the most northern and southern rainfall recording points within the hundred.

Surface Hydrology

There are three main watercourses which play a large part in supplying water for landowners, either for irrigation or for livestock. These are the Murray and Finniss Rivers and Currency Creek. The backwaters of the Finniss and Currency Creek flow into large areas of swamp, from which water is also pumped by landowners, for vineyards and livestock.

Vegetation

Vegetation in the area consists mainly of seasonal crops, lucerne and cereal crops being the main ones, but areas of natural vegetation and grasses cover steeper slopes.

Land Use

Grazing is the most dominant aspect of farming in the hundred. Large numbers of sheep, cattle and horses are either bred or agisted in the area. Dairying, seasonal cropping and pastures are also important.

A large part of the pasture irrigation however, is not dependent on groundwater but on streams and rivers.

HYDROGEOLOGY

Aquifers

The main aquifers of the region are the Permian sands and the hard rocks of the Kanmantoo group. The sand aquifer is mainly unconfined and produces relatively low yields of good quality groundwater.

There are also a large number of hand dug wells which are particularly abundant on Hindmarsh Island, the southern extreme of the hundred. These, however, give supplies of only 5 m^3/day and have salinities ranging from 6 000 mg/l - 15 000 mg/l.

Well construction and equipment

Deep wells are cased through the fine sands with steel casing but often fail due to inadequate, or total lack of, screening. These wells are equipped with windmills, jack pumps, turbine pumps or centrifugal pumps depending on yield, the purpose of the well, or the landowners' specific need.

There are a large number of shallow, hand dug wells which are shored up with eithertimber or stone to prevent collapse.

Pollution Potential

There is no significant danger of groundwater pollution nor is there any evidence of imminent pollution.

Historical Trends

The only significant change in groundwater usage has been that a large proportion of wells on Hindmarsh Island have been abandoned. It is suggested that this could have resulted

from the raising of water level by the construction of the Goolwa barrages, leading to a rise in groundwater level to the point where it would be affected by evaporation. This would have resulted in an increase in salinity possibly to the point where it could no longer be used.

GENERAL COMMENTS

A number of farmers in the hundred were under the impression that the survey would lead to restrictions on groundwater use but the purpose of the survey was explained, they were most co-operative.

The survey was commenced by Dennis Edwards in 1974 and completed by Kevin Dennis and the author in December, 1977.

G. Taylor

GT:FdeA
6/4/78

GUY TAYLOR
FIELD ASSISTANT

APPENDIX I

SUMMARY OF WATER WELL DETAILS

HD. NANGKITA - WATER WELL DETAILS

SECTION	BORE NO.	mg/l	DEPTH (m)	S.W.D. (m)	SUPPLY (m^3/d)	pH	DIAM. (m)	DEPTH (m)	USE	GENERAL COMMENTS
11	01	2420	1.60	1.20	5	7.7			Stock	Equipped with windmill
15	01	1865	2.60	2.45	6	7.9			Stock	Well abandoned.
21	01	243	71.60							Not located.
24	01	810	7.45	5.90		7.5	152	7.45	Stock	Abandoned.
24	02	2175	1.65	1.40	5	7.6			Stock	
24	03	2315	3.20	2.90	5	7.3			Stock	Windmill equipped.
30	01	9366	1.77	1.21						Abandoned.
31	01	643	1.82	.914	54					Not located.
32	01	4145	.914			8.0			Stock	Not located.
35	01		1.92						Stock	Not located.
36	01		1.52						Stock	Not located.
37	01	2860	1.75	1.25	5	7.5			Stock	Windmill equipped.
38	01	2575	1.75	1.50	5	7.2			Stock	Windmill equipped.
38	02	2375	1.45	1.30	5	7.4			Stock	Windmill equipped.
39	01	1925	2.50	2.0	50	8.6			Stock	Equipped with windmill and small submersible pump.
44	01	15000+	1.82							Not located.
47	01	10000	1.75	1.65	5	7.2			Stock	Windmill equipped.
54	01		1.82						Stock	Not located.
70	01	4590	3.65	.915						Well abandoned and dry.
76	01	6500	2.75	2.45		7.8			Stock	Abandoned.
78	01	SALTY	182.88							Drilled 1922: Total failure.
78	02	2970	1.18	1.14		9.4			Stock	Seepage: Bulldozed hole.
86	01	1455	4.57				1.21	4.57	Stock	Not located.
93	01	1865	1.14	1.0		7.9			Stock	Abandoned.
99	01	2181	3.04	1.82						Not located.
131	01									No information available.
157	01	C.M.*								Not located.
157	02	1865	152		440	7.4	152	54	Irrigation	
159	01	1051	47.85	3.96			102	45		Not located.
159	02	6930	45.82	5.79			102	45		
159	03		56.00				152	56		Not sampled.
160	01	4270	129.00			6.9	228	24.3	Irrigation	
161	01	1010	56.00	42	45	6.2	152	56	Stock-Garden.	

*C.M. - Card Missing (DRE1/5/78).

SECTION	BORE NO.	mg/l	DEPTH (m)	S.W.D. (m)	SUPPLY (m^3/d)	pH	DIAM. (m)	DEPTH (m)	USE	GENERAL COMMENTS
175	01	5500	8	6.79	11	7.5			Stock	Windmill equipped.
177	01	293	53		330	6.5	152	53	Irrigation	Suitable for all purposes.
189	01									Not located: (Last record: Dry 1942)
189	02									" " " " "
190	01	C.M.	11.0	8.00	11	7.7	126	11	Stock	Windmill equipped.
190	02	C.M.	61.00	8.0		7.7	152	23	Stock	Abandoned.
192	01	11400	7.0	3.0	8	7.7			Stock	Windmill equipped.
206	01	240	91.44		49	7.2	152	40		Not suitable for domestic use.
206	02	309	30.00	2.6	75	7.7	152	21	Unequipped	Was a small irrigation supply bore.
207	01	265	9.6	3.63	270	7.3				Well collapsed into bore.
208	01	104	67.06	2.83		7.4	73	65.7		Abandoned.
210	01		18.0	10.0			152	6.1		Abandoned.
211W	01	86	12.00	OVERFLOWS	54					Abandoned.
211W	02	180	3.05		54		152	10.71		No longer usable.
211W	03	74	60.00	1.08		6.9			Irrigation	Abandoned.
211W	04	157	6.0	GROUND LEVEL		5.9				Abandoned.
212	01	243	4.27	.914	54					
212	02	206	24.38	.305	54		152	9.14		
213	01		25.60		44					
213	02									
213	03	500	53.00	17.07	540	6.5	152	10		Bore abandoned.
213	04		56.7	18.00	76		152	56.7		Equipped with submersible pump. Not sampled.
213	05	715	57.5	11.50	616	6.3	156	44	Irrigation	Submersible pump.
214	01		18.44							
214	02		30.48							
214	03		18.5							
214	04		3.65							
214	05	114								Water flowing from a swamp.
215	01	375	79.76	FLOWING	1080	6.8	152	19.5	Domestic	Supplies house dam and tank.
216	01	180	31.8	18.87	256	7.9	152			Abandoned.
228	01	153	42.67		25	7.4	152	43	Stock & domestic.	Equipped with windmill.
228	02	114	48.8	10.2		7.2	152			Unequipped, alongside old windmill.

SECTION	BORE NO.	mg/l	DEPTH (m)	S.W.D. (m)	SUPPLY (m^3/d)	pH	DIAM. (m)	DEPTH (m)	USE	GENERAL COMMENTS
232	01		2.43							Well
232	02	176	2.5	.90		6.4			Stock	Abandoned.
233	01	515	55	9.5	330	7.5	152	45	Irrigation	Abandoned.
240	01	104	61		77	6.2	152		Stock	
241	01	290	69	48.76	100+	6.8	152		Domestic	Equipped with submersible pump. Suitable for domestic stock & irrigation.
242	01	119			270	6.3	152		Irrigation	Kuitpo forest reserve.
243	01		50.9	50					Stock	No sample.
245N	01	200								Bore abandoned.
247	01	680	64.5	18.2	220	6.7	152	64.5	Domestic	
248	01		18.28	12.19						
250	01	96	74.8	41.66	54	6.7	152	74.14		No sample.
250	02			1.21						Well.
250	03	64	16.45			5.7	152	16.45	Cleaning Piggery	Sampled monthly by E. & W.S. for bacteriological analyses.
250	04	84	10.36	7.93					Stock & domestic	Filled with rubbish, inaccessible.
250	05		48.77		54					Filled in and abandoned.
250	06		121.92				152			Filled in and abandoned.
250	07		51.82							Bore drilled for E.T.S.A.
250	08	295	7.50	4.65		6.5			Stock	Abandoned.
250	09	83	52		84.6	5.7				Backfilled and abandoned.
253	01	715	36.75	24.38	37.8		152			Not located.
254	01	218	36.5	.45	1100	7.6	202	36.5	Irrigation	Now abandoned.
259	01	C.M.	36.5	30.2	40	6.2	126	36.5	Stock	
260	01	C.M.	36.5	18.2	1100		152	36.5	Stock	
261	01	C.M.	57	8.5		7.7	152	57	Stock	Bore was drilled for irrigation.
269	01	1715	54.86	21.3	1309	7.4	152	36.5	Stock & domestic	Not used for drinking.
269	02	515	48.6	16.15	1200	7.8	203	48.15	Stock & domestic	Has been backfilled 3.7 m.
269	03	1335	48.81	15.54		7.8	203	48.8	Stock	
269	04	1960	52.43	14.07		7.9			Stock & irrigation	Unused
269	05	1200	49.38				2-3	36.86	Irrigation	not located.

C.M. - Card Missing.

SECTION	BORE NO.	mg/l	DEPTH (m)	S.W.D. (m)	SUPPLY (m^3/d)	pH	DIAM. (m)	DEPTH (m)	USE	GENERAL COMMENTS
269	06	500	48.77	16.15		6.0	203	48.11		Water for stock, vines, irrigation.
T.270	01	1627	36.57		648		203	31.09		Not located.
T.270		2970	54.80	15.39	3270	7.8	203	31	Irrigation	Abandoned & filled 23 m.
T.270	02	2345	37.59	14.6		7.8	203	31.1	Irrigation	
T.270	03	2670	39.62	20.44	1526	7.3	152	33.56	Irrigation	
PT.270	04	1835	42.67	20.39	2182	7.4	152	36.57	Irrigation	
270			40							
270			20							
270										
270										
271	01	950	49	22.3	55	7.2	152	49	Irrigation	Abandoned.
271	02	940	53	26.5	1210	7.7	202	39	Irrigation	
275	01		38.76	24.38	48		102			Not located.
275	02		38.1	21.94	21.8					Not located.
277	01	275	38	22.8	5	7.4	152	38		
277	02	610								
277	03	570	54						Irrigation	
278A	01	860	67.05	24.38	980	7.5	202	50.9	Stock	
278A	02	830	59.13	24.38	654	7.0	152	50.9	Irrigation	Not located.
279	01	1560	38.09	23.7		6.7	152	34.75	Irrigation	Now used for stock.
309	01	3100	91.44			7.6				Drilled for irrigation.
316	01									
316	02									No sample, well inaccessible.
316	03	195	5.0	4.7		6.6			Lawns & Gardens.	
316	04	331	6.1	4.45		6.2			Domestic	Well is frequently used.
316	05	120	10.5	1.5		6.2	152	10.5	Domestic	Bore in well. Bore is from 3.5 m - 10.5 m.
316	06	93	13	4	125	5.1	140	13	Domestic	Slotted screen from 5-13 m.
317	01	280	31.7	15		6.7	152	31.7	Domestic	
318	01		6.0							Abandoned.
318	02	79	15.0	4.5	54	6.7	152	12	Domestic	
319	04		42.67	3.65	163.5	6.0				Suitable for all purposes.
319	01	90	9.14	4.57						Not sampled.
319	02		119		432	7.4	See comments			550mm, 0-6m,-203mm,60103m, 130mm,103-107.3,130mm sand screen 107.3-112.

SECTION	BORE NO.	mg/l	DEPTH (m)	S.W.D. (m)	SUPPLY (m^3/d)	pH	DIAM. (m)	DEPTH (m)	USE	GENERAL COMMENTS
320	01	74	24.0	4.8	216	6.3			Abandoned	All casing has been removed.
323	01		12.19	Flows	108					Not sampled.
328	01	650	45.72	15.24	266	7.2	152	39.62	Irrigation	
329	01	960	89.92	18.2	1080	7.1	152	21.33	Irrigation	
330	01	398	121.92	15.24	266	6.9	152	12.18		Pump set at 106.8 m.
339	01	129	29	7	54.5	6.0	143	26.5	Irrigation	
362	01		24.38		276		152	24.38		No sample
362	02	280	5.6	2.15		6.1				Suitable for all purposes.
377	01	145	117.95	3.04	272.5	6.0	152	106.07		Samples held for palaeontological examination.
385	01		6.0					6.0		Not sampled.
391	01		18.30	4.35		5.9	152	18.30	Domestic	
396	02	252	43.6	32	35	6.6	152	43.6	Stock	Drilled for irrigation.
396	01	171	26	Dry					Irrigation	Abandoned.
408	01	238	52.82	Flows	2180	6.4	152	19.81	Irrigation	
415	01	74	24.00		276	7.2	152	24.0	Domestic	Supplies nursery as well.
437	01	3141								Not sampled.
437	02	935	43.6	17.00	1471.5	7.5	152	41.4		
438	01	971	39.62	16.5	1962					Not sampled.
438	02	1110	39.62	16.75	1962	7.8	152	39.62	Stock	
441	01		31.00	Dry			Uncased			Unequipped
1770	01									
2001	01	3084	28.34							Windmill equipped.
2003	01	5500	24.6	23.76		7.6			Stock	Abandoned.
2007	01	3100	60	21.3	250.7	7.1	152	39.5	Stock	
2010	01		41.2	30.58	"		152	41.2	Stock	
2015	01	C.M.	34	28.1	"	7.0	152	34	Stock	
PT.2025	01	2125	42	34	"	7.5	126	42	Stock	Windmill equipped.
2025	02	3450	46	18.5	220	7.0	152	46	Irrigation	
2028	01		42.67	30.17	246.3		152	36.72		
2038	01		66		"		152	40	Stock	Windmill equipped.
2046	01	2870	5.79	1.21						Windmill equipped.
2060	01	3100	2.09	1.50		7.7			Stock	Abandoned.
2062	01	2560	4.47	2.12		8.4			Stock	Windmill equipped.
2065	01	1130	3.50	3.20		8.0			Stock	
2096	01	1295	12.5	6.09	"	6.7	126	12.5	Stock	Windmill equipped.
2265	01	3927	42.67		4.7					

SECTION	BORE NO.	mg/l	DEPTH (m)	S.W.D. (m)	SUPPLY (m^3/d)	pH	DIAM. (m)	DEPTH (m)	USE	GENERAL COMMENTS
2325	01	1100								Spring water, windmill equipped.
2335	01									Spring
2343	02	890	3.05	3.05		7.4			Domestic	Abandoned
2343	01	2470	40.64			7.5	152	40.64	Stock & Gdn.	Windmill equipped
2359	01	1955					203		Irrigation	
2362	01	CM								Not located.
2362	02	CM	60.96	21.33		7.5				Large windmill
2365	01	1100	54.00		40		152	24	Water lawns	
2365	02	865	37.00	32		7.5				Abandoned mine shaft.
2365	01A	3655	38	16.91	47.5					Windmill equipped.
2403	01	3240	5.5	4.49		7.6			Stock	
2404	01	4850	3.30	2.56		8.2			Stock	Windmill equipped
2405	01	2770	3.96	1.82	10.9					Not located.
2406	01	2870	5.79	4.26	10.9					Not located.
2420	01	355	3.65	2.43	21.8					Not located.
2422	01		6.09							Not located.
2422	02	355	3.65	2.43	22					Not located.
2432	01	2405	32	4.5	22	6.9	152	32	Stock	
2446	02	1157								Not located.
2446	02	3084								Spring, 2.4 m above level of Finniss River.

APPENDIX II

HYDROGEOLOGICAL REPORTS

SECTION	REPORT BOOK	AUTHOR
Pt. 4	71/56	R.G. Shepherd
28	46/5	C. Bleys
30	42/72	W. Johnson
31	42/72	W. Johnson
35	46/5	C. Bleys
36	46/5	C. Bleys
38	42/72	W. Johnson
39	42/72	W. Johnson
44	46/5	C. Bleys
45	46/5	C. Bleys
46	46/5	C. Bleys
54	46/5	C. Bleys
55	46/5	C. Bleys
56	46/5	C. Bleys
57	46/5	C. Bleys
157	47/91	R.G. Shepherd
157	47/191	P.C. Smith
158	60/95	E.R. Hillwood
159	60/95	E.R. Hillwood
159	11/275	R.L. Jack
161	60/95	E.R. Hillwood
100	18/225	R.W. Segnit
191	18/225	R.W. Segnit
207	46/123	R.G. Shepherd
210 W	53/172	C. Bleys
213	53/172	C. Bleys
214	54/14	C. Bleys
Pt.215	20/235	R.W. Segnit

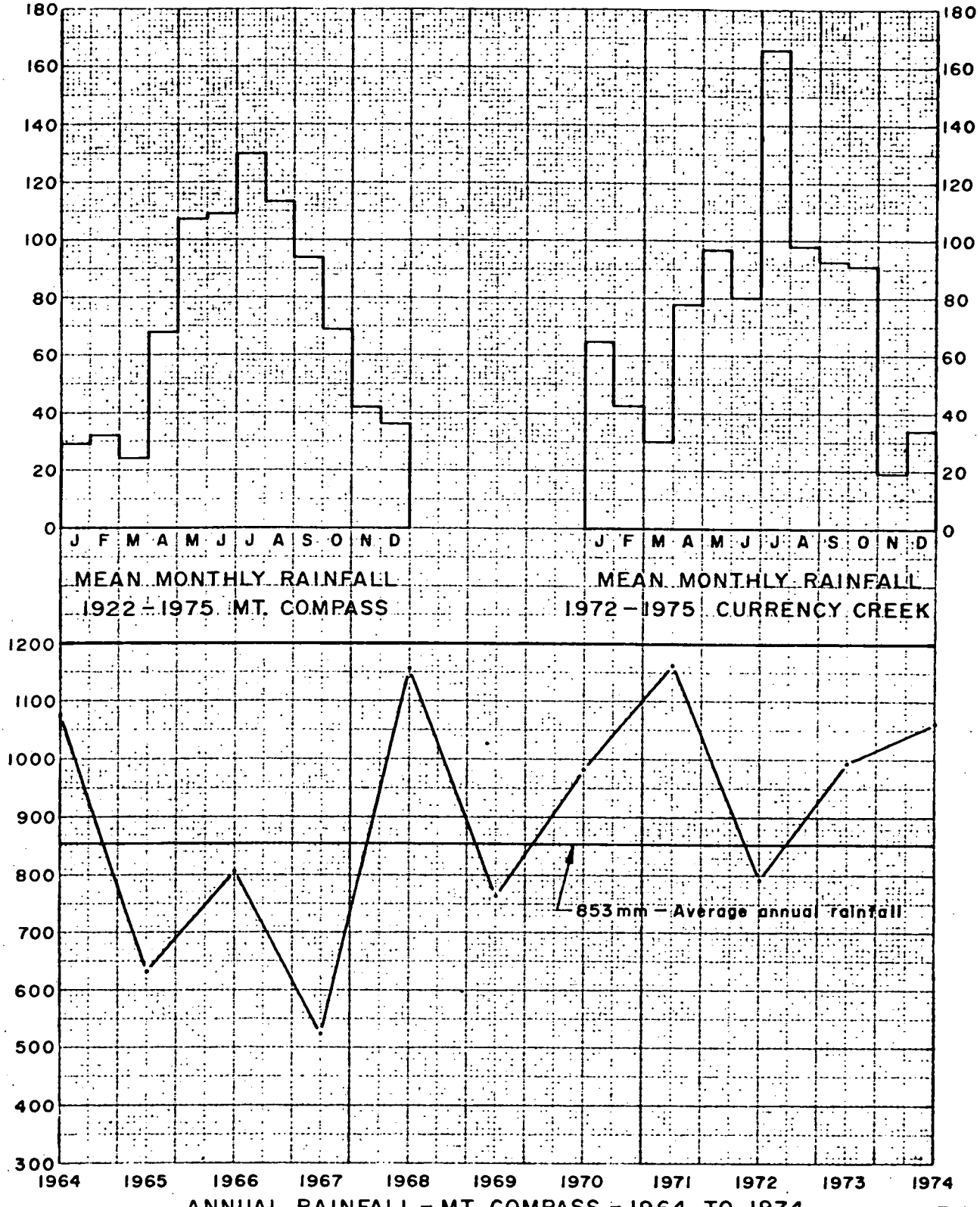
SECTION	REPORT BOOK	AUTHOR.
Pt. 216	61/159	C. Bleys
232	20/271	R.W. Segnit
232	49/32	E.P.D. Driscoll
232	71/199	F. Carosone
235	71/199	F. Carosone
Pt. 241	67/101	P.R. Bowden
Pt. 252	56/90	C. Bleys
253	56/90	C. Bleys
258	53/163	P.G. Miller
259	53/163	P.G. Miller
Pt. 269	51/126	C. Bleys
Pt. 270	51/126	C. Bleys
271	72/88	P.C. Smith
272	72/88	P.C. Smith
Pt. 272	51/126	C. Bleys
273	72/88	P.C. Smith
274	72/88	P.C. Smith
275	72/88	P.C. Smith
276	72/88	P.C. Smith
277	72/88	P.C. Smith
323	31/120	B.F. Fitzpartick
341	67/1	P.G. Thomas
2328	71/191	P.C. Smith
2329	71/191	P.C. Smith
2330	71/191	P.C. Smith
2331	71/191	P.C. Smith
2331	47/91	R.G. Shepherd
2356	72/88	P.C. Smith
2357	72/88	P.C. Smith
2358	72/88	P.C. Smith

SECTION	REPORT BOOK	AUTHOR
2359	72/88	P.C. Smith
2360	72/88	P.C. Smith
2361	72/88	P.C. Smith
2362	72/88	P.C. Smith
2363	71/191	P.C. Smith
2365	71/191	P.C. Smith
2366	71/191	P.C. Smith
2367	71/191	P.C. Smith
2422	21/269	K.R. Miles
Mt. Compass Water Supply pump testing of Bore No. 1 Completion Rept. and Recommendation	76/33	O.J.W. Bowering

FIG. 1

	DEPARTMENT OF MINES - SOUTH AUSTRALIA	
Compiled: G. Taylor	HD. NANGKITA WATER WELL SURVEY	Date: Mar. 78
Drn: M.S.W.	LOCALITY PLAN	Drg.No: S13317
Ckd:		

P.F. No. S 10066 Hoc

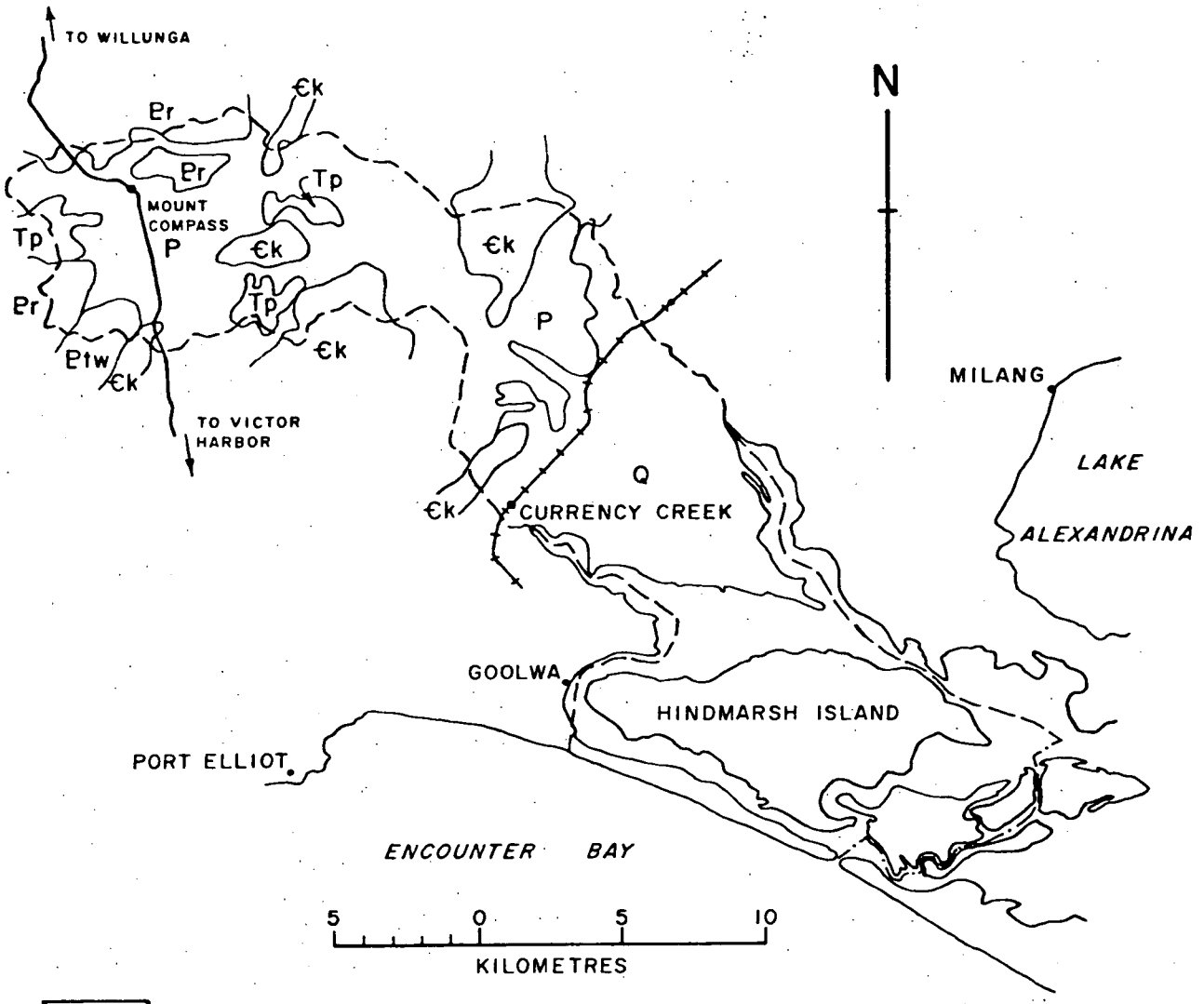


ANNUAL RAINFALL – MT. COMPASS – 1964 TO 1974

FIG. 2

	DEPARTMENT OF MINES – SOUTH AUSTRALIA	Scale:
Compiled: G. Taylor	HD. NANGKITA WATER WELL SURVEY	Date: Mar. 78
Drn. M.W. | Ckd.	RAINFALL STATISTICS	Drg. No.
	MT. COMPASS AND CURRENCY CREEK	S13318

PF. N° 57852 M



Q	QUATERNARY – Alluvial slope & outwash deposits, sands & clays.
Tp	TERTIARY – Laterised sands & gravels.
P	PERMIAN – Glacial & fluvioglacial deposits.
€k	CAMBRIAN – Phyllites, greywackes, arkoses & siltstones.
Ptw	PROTEROZOIC – Siltstones & slates.
Pr	LOWER PROTEROZOIC – Schists & gneisses.

FIG. 3

	DEPARTMENT OF MINES AND ENERGY SOUTH AUSTRALIA	SCALE 1:250,000
COMPILED G. Taylor	HD. NANGKITA WATER WELL SURVEY	DATE Mar. 78
DRN. M.W.	GENERALIZED REGIONAL GEOLOGY	PLAN NUMBER S 13319

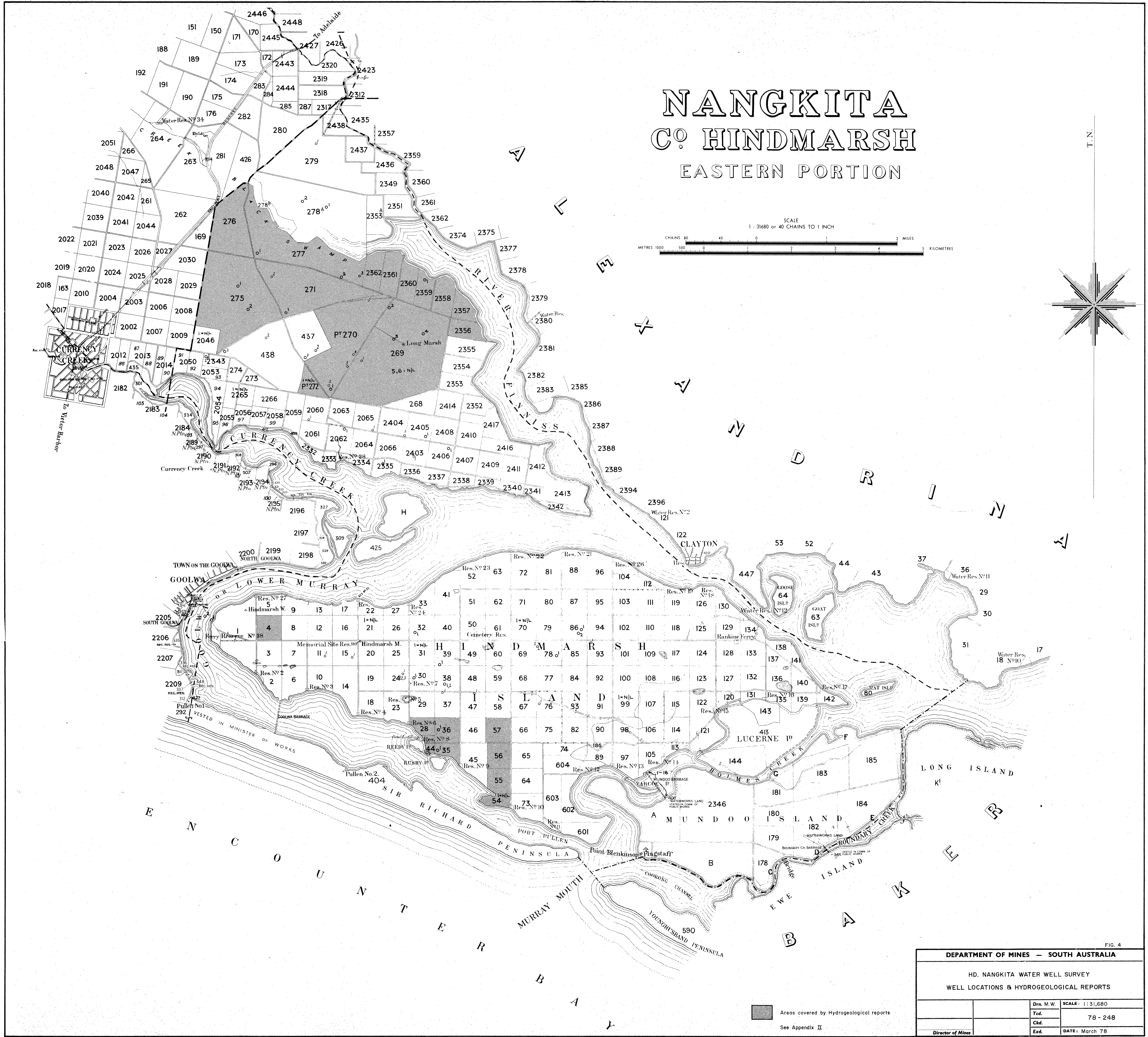

NANGKITA
Co. HINDMARSH
EASTERN PORTION
SCALE
1 : 31680 or 40 CHAINS TO 1 INCH
CHAINS 80 40 0 1 2 MILES
METRES 1000 500 0 1 2 3 4 5 KILOMETRES
T.N.
To Adelaide
To Victor Harbor
CURRENCY CREEK
Currency Creek
BLACK SWAMP
Long Marsh
RIVER FINNISS
CURRENCY CREEK
CLAYTON
TOWN ON THE GOOLWA
GOOLWA
SOUTH GOOLWA
NORTH GOOLWA
GOOLWA OR LOWER MURRAY
HINDMARSH ISLAND
Hindmarsh W.
Hindmarsh M.
Memorial Site
Cemetery Res.
Rankine Ferry
Ferry Reserve
GOOLWA BARRAGE
Pullen No.1
Pullen No.2
REEDY I.
RUSHY I.
GOOSE ISL.
GOAT ISL.
RAT ISL.
LUCERNE I.
HOLMES CREEK
MUNDOO BARRAGE
MUNDOO ISLAND
BOUNDARY CREEK
LONG ISLAND
EWE ISLAND
SIR RICHARD PENINSULA
PORT PULLEN
Point Blenkinsop
Flagstaff
MURRAY MOUTH
COORONG CHANNEL
YOUNGHUSBAND PENINSULA
VESTED IN MINISTER OF WORKS
ALEXANDRINA
BAKER
ENCOUNTER BAY

FIG. 4

DEPARTMENT OF MINES — SOUTH AUSTRALIA

HD. NANGKITA WATER WELL SURVEY

WELL LOCATIONS & HYDROGEOLOGICAL REPORTS

	Drn. M.W.	SCALE: 1:31,680	
	Tcd.	78-248	
	Ckd.		
Director of Mines	Exd.	DATE: March 78	

Areas covered by Hydrogeological reports

See Appendix II

NANGKITA
Cº HINDMARSH
WESTERN PORTION
PONCA
KONDOPARINGA
MYPONGA
COOLAWA
ENCOUNTER BAY
T.N.
Mt. Compass
Mt. Effie
Mt. Observation
Wright Hill
CURRENCY CREEK
SCOTT 218 NATIONAL PARK
Square Waterhole
Wood Cone
Mt. Jagged
CLELAND GULLY
BLACK SWAMP
To Willunga
To Victor Harbor
To Bull Creek
To Strathalbyn
To Adelaide
SCALE
1:31,680 or 40 CHAINS TO 1 INCH
CHAINS 80 40 0 1 2 MILES
METRES 1,000 500 0 1 2 3 4 5 KILOMETRES
Areas covered by Hydrogeological reports
See Appendix II

FIG. 4A

DEPARTMENT OF MINES — SOUTH AUSTRALIA		
HD. NANGKITA WATER WELL SURVEY		
WELL LOCATIONS & HYDROGEOLOGICAL REPORTS		
Drn. M.W.	SCALE: 1:31,680	
Tcd.	78-247	
Ckd.		
Exd.	DATE: March 78	
Director of Mines		