DEPARTMENT OF MINES
SOUTH AUSTRALIA

S.E. WATER RESOURCES PROJECT

LEVELLING OF MILLICENT OBSERVATION BORES

PROGRESS REPORT NO.9

Hd. of Mt. Muirhead
Riddoch
Mayurra
Hindmarsh

by

J. ERKELENS
SURVEY ASSISTANT GRADE II

7th September, 1970

Rept.Bk.No.70/135

DEPARTMENT OF MINES
SOUTH AUSTRALIA

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LEVELLING OF MILLICENT OBSERVATION BORES

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SURVEY ASSISTANT Gr.II

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Rept.Bk.No.70/135
G.S.No.4522
D.M.No.1058/70

7th September, 1970

DEPARTMENT OF MINES
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LEVELLING OF MILLICENT OBSERVATION BORES

INTRODUCTION

This Survey comprised 60 bores in the Millicent area, where large quantities of underground water are being used, e.g. 3 bores in Hd. Riddoch, 10 in Hd. Mount Muirhead, 17 in Hd. Hindmarsh and 30 in Hd. Mayurra. Work was started in April 1970 with a two week trip. Due to shortage of staff and assistants the second and third trip were not undertaken until July and August.

FIELD WORK

As in most cases of this type of work, Lands Department beuchmarks were again extensively used for elevation values. Where they didn't exist, traverse loops were first established and T.B.M's installed. Nearby bores have then been levelled from these T.B.M's. Work was carried out in three two-week trips with one offsider. A "Wild" N.2 level was used and third order accuracy standard (0.05 $\sqrt{m}$ls) maintained. Traverse loops are shown on accompanying map.

J. ERKELENS
SURVEY ASSISTANT GRADE II

4th September, 1970

DEPARTMENT OF MINES . SOUTH AUSTRALIA

Date 1.9.1970 Sheet 1. of 1.

Datum MSL Pt. Adelaide = 0 Borehole level survey of Hd. Riddoch 606. Surveyor. J. ERKELENS

Level Book 434

Section	Bore	State No.	R.L. Peg	R.L. Ground	R.L. Reference	Casing above Ground	Field Bk Page	Remarks
Bk4	01	606000401	concrete base 259.35	-	259.60	-	2	Rid 1
6	01	606000601	concrete base 409.16	408.42	409.55	1.13	9	Rid 3
23	01	606002301	228.67	229.59	229.29	-0.30	2	Rid 2
				Hd. Mount Muirhead 521				
110	01	521011001	81.05	81.04	80.99	-0.05	1	MM 3
147	01	521014701	53.26	53.21	53.67	0.46	14	" 1
390	01	521039001	-	58.39	59.55	1.16	4	5
424	01	521042401	56.95	56.73	56.98	0.25	11	2
435	01	521043501	53.35	53.07	53.93	0.86	13	4
561	01	521056101	50.42	50.99	51.54	0.55	15	8
661E	01	521066101	61.07	60.77	61.19	0.42	6	10
669	01	521066901	78.63	78.91	78.95	0.04	6	11
689	01	521068901	78.19	77.27	77.60	0.33	26	7
791	01	521079101	cement base 92.37	91.84	87.79	-4.05	5	6

Date 1.9.1970

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Sheet 1 of 1

Datum MSL At. Adelaide = 0 Borehole level survey of Hd. Hindmarsh 396 Surveyor J. ERKELENS

Level Book 434

Section	Bore	State No.	R.L. Peg	R.L. Ground	R.L. Reference	Casing above Ground	Field Bk Page	Remarks
F	01	396000F01	78.99	78.93	79.59	0.66	27	HIN 1
18	01	396001801	77.37 pipe	76.86	76.68	-0.18	27	" 2
Pt.19	01	396001901	60.49	59.05	60.39	1.34	33	HIN 14
"	02	396001902	62.08	62.20	62.89	0.69	33	" 16
Pt.22	01	396002201	73.84	73.74	74.64	0.90	30	" 8
"	02	396002202	67.49 concrete floor	67.03	67.51	0.48	32	" 13
23	01	396002301	78.26	77.85	78.28	0.43	30	" 9
23	02	396002302	74.95	74.86	74.69	-0.17	31	" 11
23	03	396002303	71.87	71.29	72.35	1.06	31	" 15
40	01	396004001	TBM68.59	66.04	67.72	1.68	24	" 4
318	01	396031801	62.68	62.48	63.22	0.74	34	" 17
330	01	396033001	96.24 concrete floor	101.67	96.24	-5.43	29	" 12
342	01	396034201	TBM7703	75.61	75.79	0.18	24	" 5
349	01	396034901	TBM76.39	75.62	75.87	0.25	24	" 3
385	01	396038501	70.97	70.77	70.91	0.14	30	" 7
396	01	396039601	68.27	67.34	67.62	0.28	31	" 6
399	01	396039901	72.35	71.82	72.28	0.46	32	" 10

DEPARTMENT OF MINES . SOUTH AUSTRALIA

Date . 1.9.1970 Sheet 1 of 2.

Datum MSL Pt. Adelaide = 0 Borehole level survey of . Hd. Mayurra 479 Surveyor. J. Erkelens .

Level Book 434, 437 . .

Section	Bore	State No.	R.L. Peg	R.L. Ground	R.L. Reference	Casing above Ground	Field Bk Page	Remarks
8	01	479000801	54.76	5437	5532	0.95	434/35	MAY 27
15	01	4790001501	55.43	55.08	55.16	0.08	434/36	" 25
17	01	479001701	59.22	58.82	59.76	0.94	434/36	" 23
19	01	479001901	66.24	66.12	67.04	0.92	434/32	" 19
22	01	479002201	58.55	58.57	59.06	0.49	434/37	" 15
22	02	479002202	58.91	58.63	59.16	0.53	434/54	" 16
23	01	479002301	57.42	57.32	57.45	0.13	434/37	" 28
23	02	479002302	56.99	56.91	59.59	2.68	434/54	" 18
26	01	479002601	52.43	51.63	52.05	0.42	434/38	" 21
27	01	479002701	53.53	53.53	53.23	-0.30	434/54	" 22
59	01	4790059-1	53.67	53.47	53.66	0.19	437/1	" 13
67	01	479006701	52.82	53.15	55.30	2.15	434/38	" 24
80	01	479008001	61.63	61.35	62.34	0.99	434/28	" 12
106	01	479010601	57.92	57.70	58.11	0.41	434/28	" 5
adj 120	01	479012001	concrete base 76.65	76.52	77.28	0.76	434/17	" 3 (Cemetry Reserve)
156	01	479015601	48.78	48.78	48.59	-0.19	437/5	" " 6 "
182	01	479018201	48.83	48.83	48.59	-0.24	437.3	" " 2
307	01	479030701	59.15	58.26	58.86	0.60	434/52	" 1
384	01	479038401	66.28	66.04	66.37	0.33	434/24	" 8
391	01	479039101	37.87	37.52	38.90	1.38	434/44	" 20
393	01	479039301	28.66	28.34	29.07	0.73	434/45	" 30

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Date . 1.9.1970 Sheet 2 . of 2 .

Datum MSL Pt. Adelaide = 0 Borehole level survey of Hd. Mayurra . . Surveyor I. Erkelens .

Level Book 434., 437 . .

Section	Bore	State No.	R.L. Peg	R.L. Ground	R.L. Reference	Casing above Ground	Field Bk Page	Remarks
398	01	479039801	53.08	49.02	50.70	1.68	434/51	MAY 4
494	01	479049401	59.65	61.67	62.04	0.37	434/47	" 26
553	01	479055301	65.18	64.92	65.53	0.61	434/41	" 9
560	01	479056001	55.30	55.08	55.23	0.15	434/40	" 7
582	01	479058201	concr.floor	54.15	54.40	-	434/42	" 11
584	01	479058401	56.19	55.78	57.02	1.24	434/41	" 29
585	01	479058501	62.09	59.44	59.92	0.48	434/18	" 14
589	01	479058901	53.59	53.33	53.78	0.45	434/38	" 17

TABULATED CONTROL POINTS

BM.2120 - 75.242
BM.2121 - 71.770
BM.2122 - 66.664
BM.2123 - 64.988
BM.2124 - 61.267
BM.2125 - 62.245
BM.2126 - 59.061
BM.2127 - 55.629
BM.2128 - 58.653
BM.2129 - 56.821
BM.2130 - 64.293
BM.2131 - 248.474
BM.2132 - 200.110
BM.2133 - 249.796
BM.2134 - 252.180
BM.2135 - 213.608

BM.2213 - 59.220
BM.2214 - 56.268
BM.2215 - 61.348
BM.2216 - 70.866
BM.2217 - 55.244

Lake Bonney gauge,
0 = 3.20

Datum: MSL Pt. Adelaide = 0

TBM. 1/70 - 85.45
TBM. 2/70 - 67.20
TBM. 3/70 - 359.46
TBM. 4/70 - 54.92
TBM. 5/70 - 51.36
TBM. 6/70 - 58.00
TBM. 7/70 - 67.34
TBM. 8/70 - 73.13
TBM. 9/70 - 76.39
TBM.10/70 - 77.03
TBM.11/70 - 68.59
TBM.12/70 - 61.24
TBM.13/70 - 64.04
TBM.14/70 - 70.83
TBM.15/70 - 73.49
TBM.16/70 - 77.91
TBM.17/70 - 60.91
TBM.18/70 - 61.87
TBM.19/70 - 60.69
TBM.20/70 - 67.91
TBM.21/70 - 57.17
TBM.22/70 - 48.11
TBM.23/70 - 63.45
TBM.24/70 - 13.09
TBM.25/70 - 41.72
TBM.26/70 - 52.66
TBM.27/70 - 41.11
TBM.28/70 - 49.17
TBM.29/70 - 68.17
TBM.30/70 - 43.35
TBM.31/70 - 37.83
TBM.32/70 - 58.30
TBM.33/70 - 47.72
TBM.34/70 - 52.22

TRAVERSE LOOPS

FROM	BORE LEVELLED	TO	DISTANCE IN MLS.	MIS-CLOSURE.
BM.2134	Rid 1	BM.2134	1.3	0.02
BM.2134	Rid 2	BM.2134	0.7	-
BM.2133	Rid 3	BM.2133	4.9	0.04
MM.4	MM. 1	MM.4	4.5	0.02
BM.2129	MM. 2	BM.2129	2.8	0.03
BM.2131	MM. 3	BM.2131	1.5	0.03
TBM.4/70	MM. 4	TBM.4/70	2.2	0.05
BM.2129	MM. 5	BM.2129	0.7	0.01
MM.3	MM. 6,11,10	BM.2129	6.7	-
BM.2217	MM. 7	BM.2217	1.5	0.01
BM.2128	MM. 8	BM.2128	1.1	0.01
TBM.8/70	HIN.1,2	TBM.8/70	2.1	0.03
BM.2125	TBM's 6/70, 7/70, 8/70, 9/70, 10/70, 11/70, 12/70, 13/70.	BM.2123	6.5	0.01
TBM.9/70	HIN.3	-	0.1	-
TBM.11/70	HIN.4	-	0.1	-
TBM.10/70	HIN.5	-	0.2	-
BM.2122	HIN.6	-	0.5	-
BM.2122	TBM's 14/70, 15/70, 16/70.	BM.2122	2.4	-
TBM.14/70	HIN.7	-	-	-
TBM.15/70	HIN.8	-	0.1	-
TBM.16/70	HIN.9	-	0.1	-
BM.2121	HIN.15, HIN.11.	-	0.6	-
BM.2121	HIN.10	-	0.7	-
BM.2119	HIN.12	-	-	-
BM.2122	MAY.19, HIN.13,14, TBM.17/70, HIN.16, TBM.18/70, 19/70, HIN.17, TBM.20/70.	BM.2216	4.4	0.02
MAY.4	MAY.1	MAY.4	5.2	0.01
BM.2126	MAY.2	BM.2126	6.4	0.05
BM.2126	MAY.3	BM.2126	1.0	0.03
TBM.26/70	MAY.4, TBM.30/70.	TBM.26/70	3.8	0.04
TBM.6/70	MAY.5	-	-	-

FROM	BORE LEVELLED	TO	DISTANCE IN MLS.	MIS-CLOSURE
TBM.32/70	TBM.34/70, MAY.6	TBM.32/70	3.8	0.01
BM.2124	MAY.7	BM.2124	1.4	0.01
TBM.12/70	MAY.8	TBM.12/70	0.6	-
BM.2123	TBM.23/70, MAY.9	BM.2123	1.3	0.06
TBM.23/70	MAY.29, MAY.11	TBM.23/70	2.5	0.07
TBM.12/70	MAY.12	TBM.12/70	1.1	-
MAY.11	TBM.32/70, MAY.13	MAY.11	3.9	0.01
BM.2123	MAY.14	BM.2123	0.4	0.01
TBM.13/70	MAY.15,28,17,21,24, TBM.22/70.	TBM.13/70	5.3	0.1
MAY.19	MAY.16,18,22	-	1.8	-
BM.Lake Bonney	TBM.24/70, 25/70.	TBM.24/70	1.7	-
TBM.25/70	MAY.20	TBM.25/70	1.4	-
TBM.17/70	MAY.23,25,TBM.21/70	TBM.17/70	1.5	-
BM.2213	TBM.28/70,29/70,MAY.26	BM.2213	5.6	0.01
TBM.19/70	MAY.27	TBM.19/70	2.2	0.02
TBM.25/70	TBM.27/70, MAY.30	TBM.25/70	3	0.01