

Terry Hunter
 Goulburn-Murray Water
 40 Casey Street
 Tatura VIC 3616

1 December 2008

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 WT02133

Dear Terry

RE: SIRCS SUBSURFACE DRAINAGE PROGRAM – AUGUST 2008 WATERTABLE STUDY

As part of the monitoring program for the August Watertable Study, observation bores were monitored for groundwater levels within the Shepparton Irrigation Region during August 2008. Data from selected observation bores were used to produce the August 2008 Watertable Study map. Please find attached the August 2008 watertable map (**Figure 2**) and statistics (**Table 2** and **Figure 3**). A summary of the 2007 and 2008 statistics are reproduced below for ease of reference (**Table 1**).

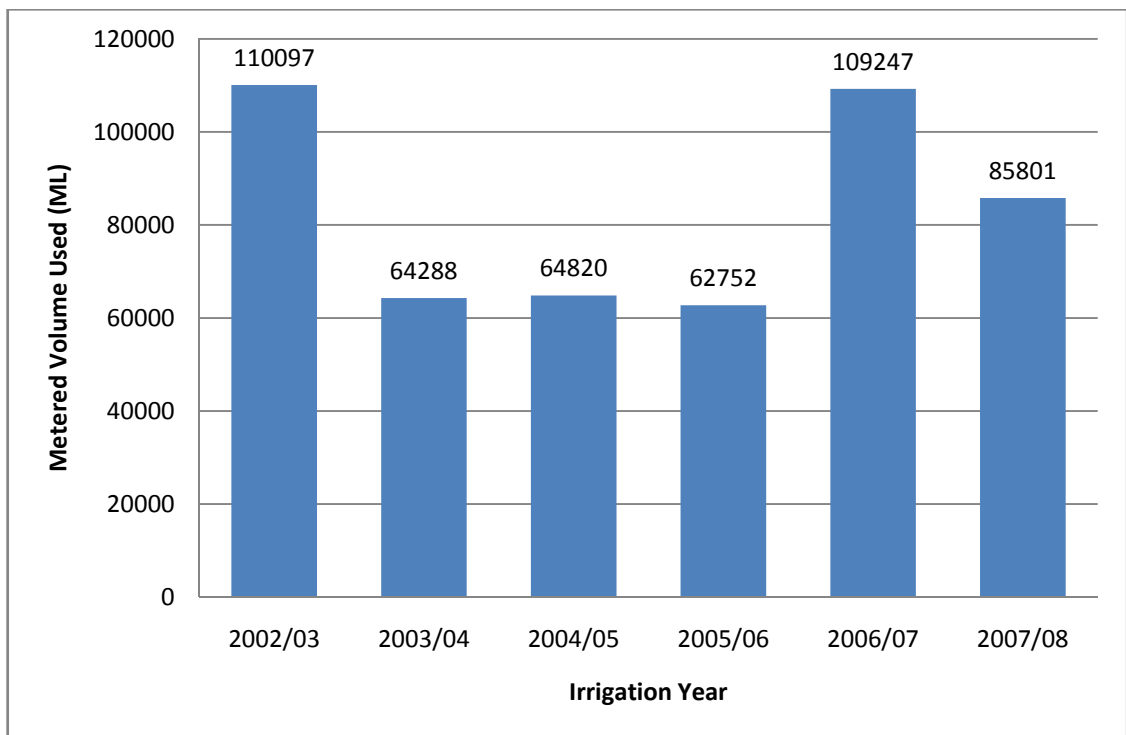
■ **Table 1: August 2007 and 2008 Areas (ha)**

Sub-Region	Area (ha) within 0-1 m Depth range			Area (ha) within 0-2 m Depth range			Area (ha) within 0-3 m Depth range		
	Aug 07	Aug 08	Change	Aug 07	Aug 08	Change	Aug 07	Aug 08	Change
Rochester West & Campaspe West	49	144	95	855	1,497	642	15,434	8,568	-6,866
Rochester East & Campaspe East	88	0	-88	646	11	-635	6,230	731	-5,499
Rodney/Tongala & Corop	349	34	-315	5,080	1,830	-3,250	52,028	30,277	-21,751
Invergordon, Shepparton E & N	0	0	0	220	7	-113	1,958	851	-1,107
Shepparton South	0	0	0	0	0	0	0	0	0
Murray Valley	0	0	0	287	159	-128	5,540	2,323	-3,217
Regional Total	486	178	-308	7,088	3,505	-3,200	81,782	42,751	-39,031



Monthly rainfall data for Kyabram is shown in **Table 2**. The rainfall at Kyabram between January and October 2008 totalled approximately 284 mm compared to a long term annual average of approximately 450 mm. The rainfall from June to August 2008 totalled approximately 107 mm compared to a June to August average of approximately 132 mm.

During the 2007/08 season, approximately 85,801 ML was extracted by 869 shallow irrigation bores (GMW 2008) (99 ML/pump on average) that had a functional meter fitted all season. The annual volume of groundwater pumped from Shepparton WSPA licensed irrigation bores was approximately 23,000 ML less than last season. The volumes pumped over the previous 5 seasons are shown in **Figure 1**.



■ **Figure 1: Total Metered Usage (ML) (Adapted from GMW 2008).**

In summary, the areas subject to high groundwater levels have generally declined from 1996 to 2008 due to a combination of prevailing dry conditions and groundwater pumping. Furthermore, the area at risk, ie, areas with groundwater levels within 2 m of the surface continued to decline between August 2007 and August 2008 by 3,200 ha.



Should you have any queries, don't hesitate to contact me on the number below.

Yours sincerely

Joshua Cimera

Project Manager

Phone: (03) 5824 6408

Fax: (03) 5824 6444

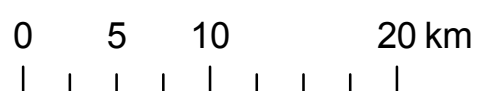
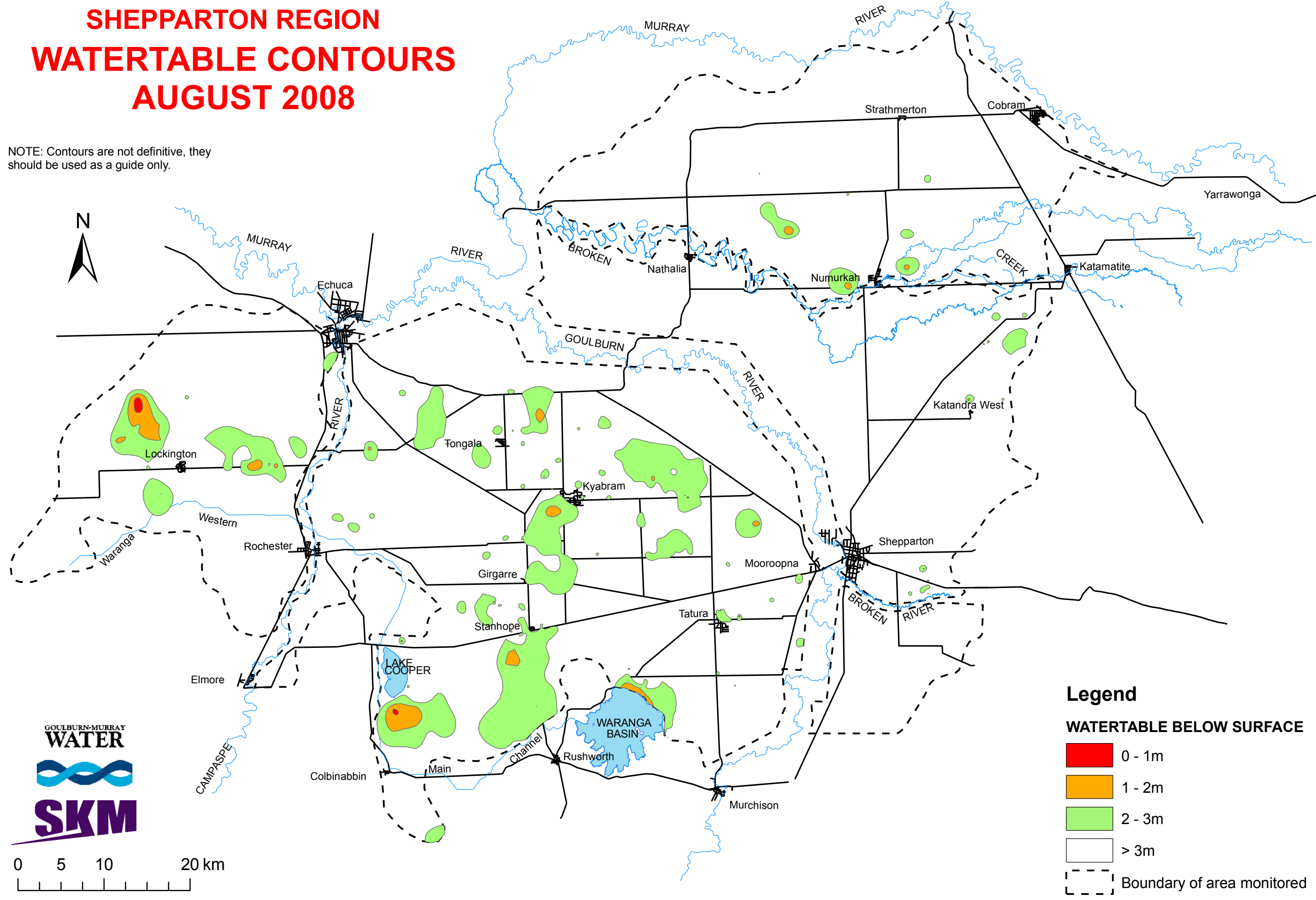
E-mail: JCimera@skm.com.au

References:

GMW (2008). Shepparton Irrigation Region Water Supply Protection Area (Groundwater) Management Plan. *Annual Report for the Year Ended June 2008*. Goulburn-Murray Water (Docs# 2497160)

SHEPPARTON REGION WATERTABLE CONTOURS AUGUST 2008

NOTE: Contours are not definitive, they should be used as a guide only.



Shepparton Region Watertable Study

Depth to Watertable Statistics

Year	District																											
	Regional Total				Rochester West and Campaspe West				Rochester East and Campaspe East				Rodney, Tongala & Corop				Invergordon, Shepparton North and Shepparton East				Shepparton South				Murray Valley			
	Depth Range			Study Area	Depth Range			Study Area	Depth Range			Study Area	Depth Range			Study Area	Depth Range			Study Area	Depth Range			Study Area				
	0-1 m	0-2 m	0-3 m		0-1 m	0-2 m	0-3 m		0-1 m	0-2 m	0-3 m		0-1 m	0-2 m	0-3 m		0-1 m	0-2 m	0-3 m		0-1 m	0-2 m	0-3 m		0-1 m	0-2 m	0-3 m	
Area	Area	Area	Area	Area	Area	Area	Area	Area	Area	Area	Area	Area	Area	Area	Area	Area	Area	Area	Area	Area	Area	Area						
1982	0	107000	225400	374660	0	33000	52000	76710	0	5300	9900	25250	0	58100	101800	143100	0	500	10400	51900	-	-	-	0	0	10100	51300	77700
1983	6050	114400	223350	378680	900	32100	52900	76710	350	4950	11200	25250	4800	65250	104400	144450	0	1050	9200	51900	-	-	-	0	0	11050	45650	80370
1984	12100	121800	221900	391700	1800	31200	53800	76710	700	4600	12500	25250	9600	72400	107000	145800	0	1600	8000	51900	0	0	600	9000	0	12000	40000	83040
1985	22730	132100	222900	405300	4950	30950	52450	76710	1550	5250	11300	25250	14200	74450	107150	149550	580	3660	9150	55415	0	290	850	15335	1450	17500	42000	83040
1986	33360	142400	223900	418900	8100	30700	51100	76710	2400	5900	10100	25250	18800	76500	107300	153300	1160	5720	10300	58930	0	580	1100	21670	2900	23000	44000	83040
1987	40880	159700	246490	434380	11770	38460	55970	76710	2760	7420	13000	25250	22450	88890	117760	163230	330	1740	7240	64480	100	520	2580	21670	3470	22670	49940	83040
1988	81450	193760	265720	434380	25970	48140	57920	76710	4290	10390	14500	25250	43180	98780	121160	163230	880	3780	12070	64480	400	1390	4900	21670	6730	31280	55170	83040
1989	85200	220100	296300	434380	15000	43900	59000	76710	4600	10400	15900	25250	53300	117000	135200	163230	1000	6800	18600	64480	800	4000	7100	21670	10500	38000	60500	83040
1990	87300	227000	301300	434380	15400	46200	60100	76710	3400	9000	15600	25250	51800	114600	133600	163230	300	4800	19200	64480	200	2400	6000	21670	16200	50000	66800	83040
1991	78150	219970	317260	552050	15060	44960	61470	81400	3780	11210	18750	31890	54810	126930	152300	187230	600	7030	20970	108190	220	1310	4530	21670	3680	28530	59240	121670
1992	24523	186950	307850	562340	6510	38320	60220	81400	1210	8550	17250	31890	15243	115720	157790	197520	380	4080	18210	108190	130	700	5010	21670	1050	19580	49370	121670
1993	74420	236190	339150	562340	10570	45360	62850	81400	2860	10820	19200	31890	49780	135330	165710	197520	940	7710	23360	108190	200	970	5860	21670	10070	36000	62170	121670
1994	23370	202100	319170	562340	3480	40480	60690	81400	1160	9900	17560	31890	17400	124010	161730	197520	210	4310	19150	108190	120	670	4560	21670	1000	22730	55480	121670
1995	141178	267706	352606	562340	30442	49188	62946	81400	8706	15070	20101	31890	89424	151724	172988	197520	1404	9450	24684	108190	413	2913	6828	21670	10789	39361	65059	121670
1996	91614	238095	336817	562340	16019	42913	59539	81400	4222	11852	19223	31890	66501	142984	170306	197520	732	6090	21528	108190	286	3231	7398	21670	3854	31025	58823	121670
1997	35703	187455	306353	562340	8306	37273	58352	81400	1285	8389	17800	31890	24626	121729	161145	197520	9	1196	13203	108190	74	611	5049	21670	1403	18257	50804	121670
1998	6709	122111	268987	562340	1722	26883	54154	81400	1153	7198	16441	31890	3627	79452	149839	197520	0	889	9725	108190	11	372	3166	21670	196	7317	35662	121670
1999	24134	159779	274890	562340	2618	30219	51919	81400	735	6938	16084	31890	18758	105218	151749	197520	46	1121	8316	108190	131	498	4260	21670	1846	15785	42562	121670
2000	18021	152074	268660	562340	1452	27154	47243	81400	932	5848	15747	31890	14823	103993	149643	197520	161	2923	11945	108190	162	550	3437	21670	491	11606	40645	121670
2001	10559	132118	250975	562340	2833	27081	46471	81400	245	4923	12443	31890	6589	88413	145218	197520	0	752	5230	108190	79	545	3855	21670	813	10404	37758	121670
2002	1258	69544	225550	562340	53	15534	39596	81400	0	3059	13487	31890	1129	42572	130892	197520	23	759	3641	108190	0	287	2436	21670	53	7333	35498	121670
2003	11353	89703	202480	562340	1519	17313	36800	81400	399	4057	13359	31890	9288	60759	122508	197520	5	898	4052	108190	37	846	3918	21670	105	5830	21843	121670
2004	1485	61647	190634	562340	28	10505	32391	81400	296	4371	12190	31890	1148	42684	122491	197520	1	1428	3924	108190	7	506	3119	21670	5	2153	16519	121670
2005	5609	90306	203051	562340	374	18826	35022	81400	637	5233	11116	31890	4413	60184	129949	197520	29	1076	4006	108190	0	335	2013	21670	156	4652	20944	121670
2006	2217	62799	185395	562340	582	19863	35253	81400	85	3439	10945	31890	1501	34977	116666	197520	0	1055	3174	108190	0	134	1007	21670	50	3333	18350	121670
2007	485	7087	81783	562340	49	855	15434	81400	88	646	6230	31890	349	5080	52028	197520	0	220	1958	108190	0	0	592	21670	0	287	5540	121670
2008	178	3505	42751	562340	144	1497	8568	81400	0	11	731	31890	34	1830	30277	197520	0	7	851	108190	0	0	0	21670	0	159	2323	121670

Rest of Region

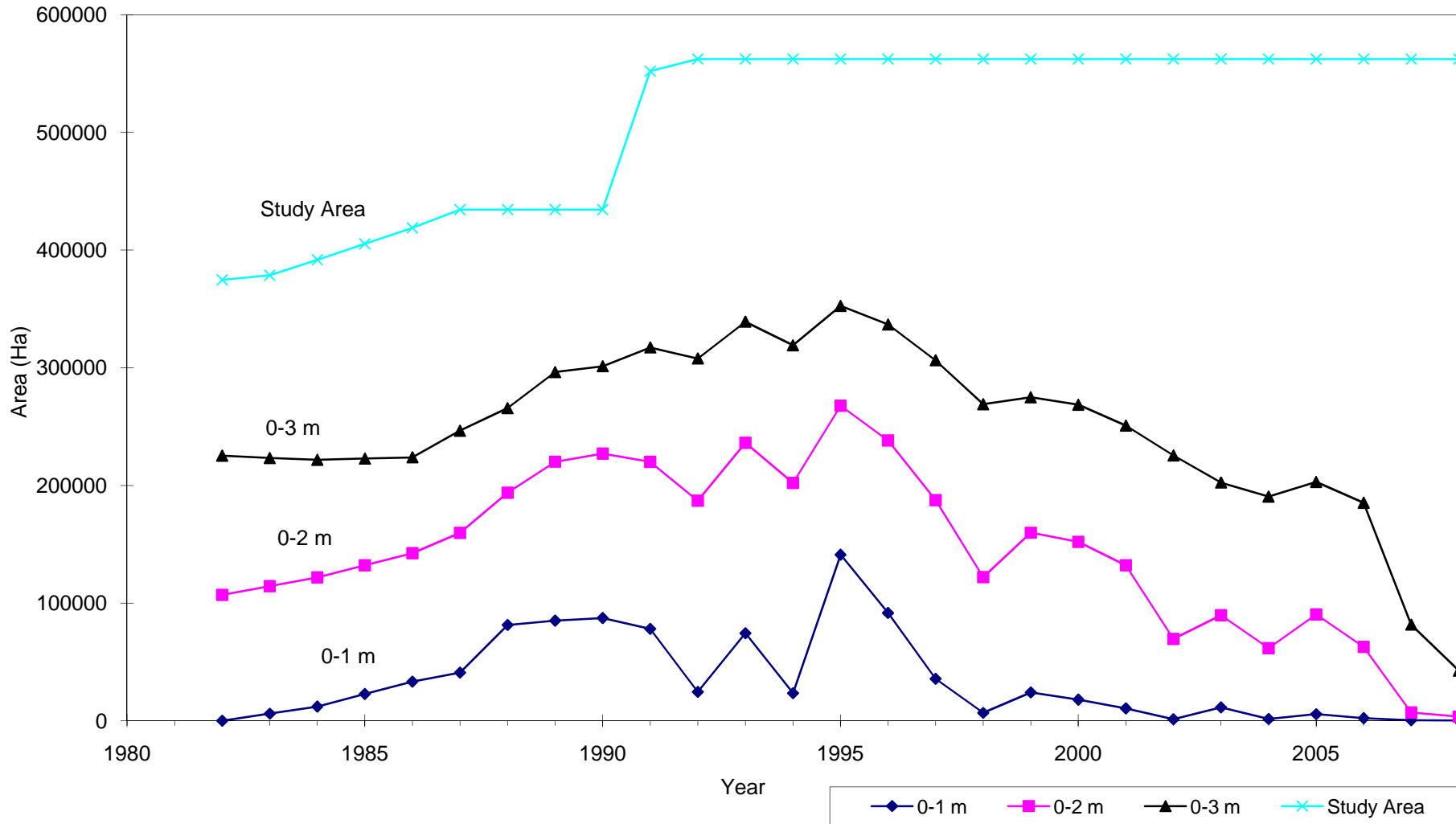
Table 2: Areas within Depth to Watertable Ranges since 1982

* Estimates only as no analysis undertaken

** Computer aided analysis introduced

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Figure 3: August Depth to Watertable Areas - Shepparton Region
Shepparton Region Watertable Study 2008



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Shepparton Region Watertable Study August 2008

Shepparton Rainfall 1982-2008
 Kyabram Weather Station
 (Station No. 080091)

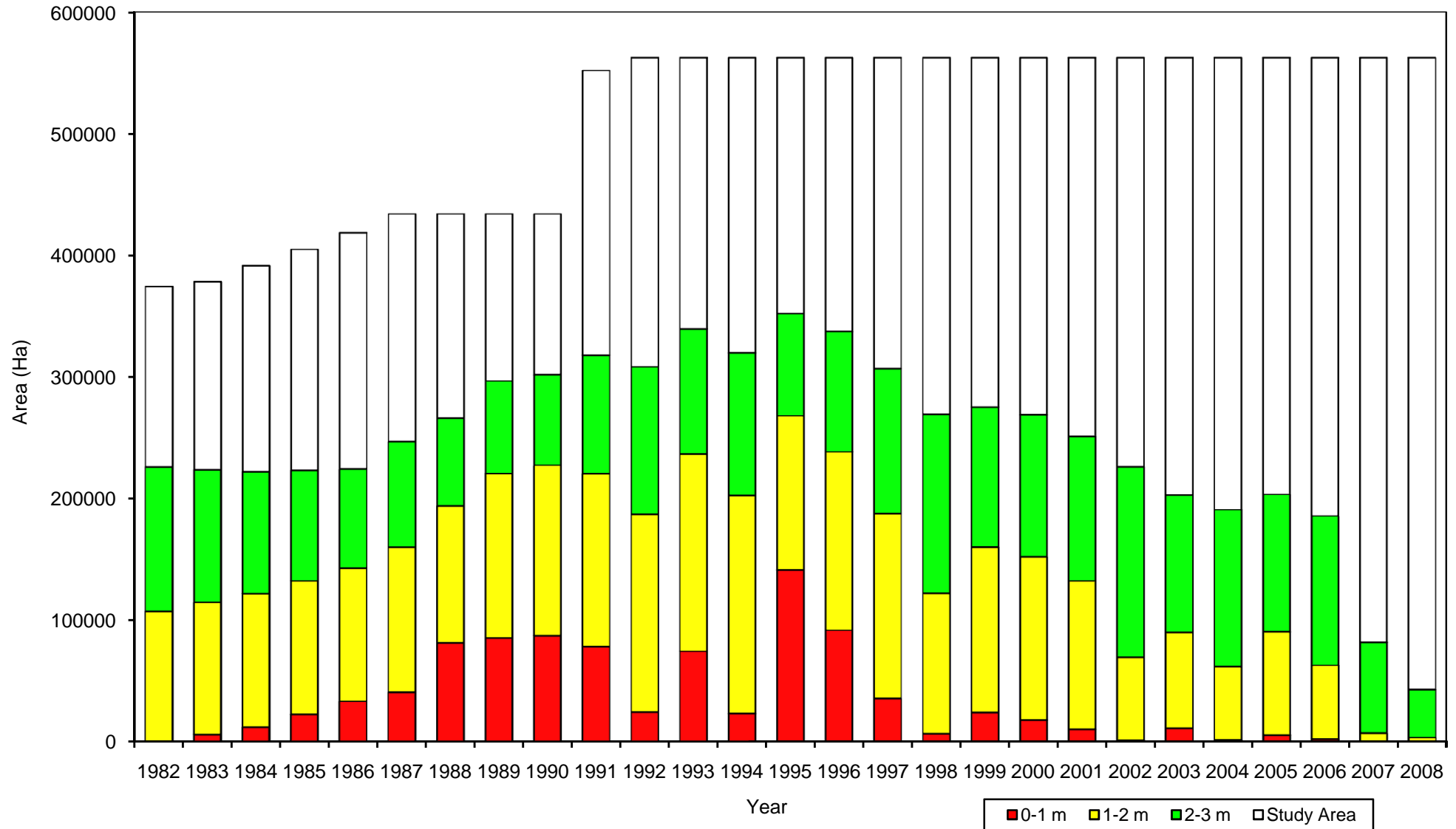
Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Total
1982	53	1	33	15	26	22	7	5	25	9	3	5	203
1983	6	1	62	70	95	36	104	44	72	34	23	26	574
1984	115	3	39	42	5	9	62	75	37	25	18	4	434
1985	6	0	14	35	45	18	20	89	10	48	55	71	411
1986	2	11	0	31	80	19	76	44	48	72	5	26	415
1987	10	20	15	45	37	71	57	26	9	24	20	36	369
1988	48	10	23	52	79	73	46	13	68	19	68	76	574
1989	32	12	80	87	57	70	32	90	27	46	19	20	573
1990	10	75	8	40	37	45	83	58	17	27	8	5	413
1991	73	1	9	23	7	108	51	43	57	1	4	31	407
1992	5	14	8	29	83	24	22	58	99	86	56	94	576
1993	103	44	50	2	29	23	65	28	100	154	55	47	700
1994	11	76	27	4	13	59	12	10	18	14	10	6	259
1995	75	11	0	32	88	71	90	11	23	57	22	0	481
1996	30	30	28	38	13	85	81	53	57	25	30	23	493
1997	31	12	10	1	59	32	7	45	79	23	58	13	371
1998	22	33	4	47	5	24	55	16	52	34	85	9	385
1999	18	8	41	48	72	29	13	88	34	24	46	76	496
2000	7	44	19	30	58	43	45	29	51	98	81	7	511
2001	22	26	24	49	10	20	26	39	28	75	45	3	367
2002	18	38	13	5	16	33	13	6	29	10	9	11	201
2003	20	28	0	68	34	57	82	53	22	49	29	48	490
2004	3	3	2	7	24	35	33	29	55	16	79	87	372
2005	14	100	2	8	2	75	33	65	33	78	61	17	489
2006	35	31	5	23	14	30	37	13	28	1	14	6	234
2007	19	12	35	28	50	25	63	9	9	2	41	65	356
2008	105	0	17	8	29	19	51	38	10	7			284
Average since 1887	31	28	32	34	44	47	45	45	42	45	31	29	453
Average 1982-08	33	24	21	32	40	43	47	40	41	39	36	31	424
Std Dev 1982-08	33	25	20	22	28	25	27	26	26	35	25	29	120

Table 3: Rainfall data over study period.

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FIGURE 4

August Depth to Watertable Areas - Shepparton Region Shepparton Region Watertable Study 1982-2008



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