

**Table 3.1:** Monitoring Well Construction Details - Buckland Park

Well ID	Easting GCS GDA94	Northing GCS GDA94	TOC Elevn (mAHD)	Stickup (mAGL)	Well Depth (mBGL)	EOH (mTOC)	EOH (mAHD)	Screen Interval (mBGL)	Drill Date
MWREM01	272962	6164330	12.343	0.57	9.73	10.30	2.043	5.1 - 9.6	14/01/2008
MWREM02	273617	6162946	8.267	0.60	4.81	5.41	2.857	1.7 - 4.7	14/01/2008
MWREM03	270211	6162703	7.895	0.57	9.34	9.91	-2.015	5.5 - 10.0	14/01/2008
MWREM04	270644	6161346	4.356	0.60	3.05	3.65	0.706	0.6 - 3.6	14/01/2008
MWREM05	272258	6162471	6.651	0.50	7.17	7.67	-1.019	3.6 - 8.1	14/01/2008
MWREM06	270674	6160220	3.811	0.60	3.08	3.68	0.131	0.5 - 3.5	15/01/2008
MWREM07	270772	6159069	3.050	0.60	3.38	3.98	-0.930	0.5 - 3.5	15/01/2008
MWREM08	271896	6159019	3.669	0.60	3.65	4.25	-0.581	0.5 - 3.5	15/01/2008
MWREM09	271475	6159993	5.368	0.60	5.17	5.77	-0.402	2.1 - 5.1	15/01/2008
MWREM11	271717	6161581	6.646	0.50	6.75	7.25	-0.604	2.5 - 7.0	15/01/2008
MWREM12	272248	6160113	4.173	0.60	4.13	4.73	-0.557	1.0 - 4.0	15/01/2008

**Notes:**

- m metres
- AHD Australian Height Datum
- TOC Top Of Casing
- BGL Below Ground Level
- AGL Above Ground Level
- DTW Depth To Water
- SWL Standing Water Level
- Stickup Height of PVC casing above ground level

**Table 4.1:** Groundwater Levels (RSWL in m AHD) from All Available Monitoring Wells - Buckland Park

Name	Easting	Northing	Aq Mon	8/01/2008	15/01/2008	07/02/2008	20/02/2008	21/02/2008	2/07/2008	2/10/2008
MWREM01	272962.04	6164329.65	Q1/Qperch	-	-	6.400	6.367	-	6.493	6.606
MWREM02	273616.50	6162946.34	Q1/Qperch	-	-	6.283	6.244	-	6.113	6.180
MWREM03	270211.12	6162703.14	Q1/Qperch	-	-	1.659	1.622	-	1.505	1.821
MWREM04	270643.66	6161345.55	Q1/Qperch	-	-	2.666	2.702	-	2.219	2.129
MWREM05	272258.05	6162471.03	Q1/Qperch	-	-	2.814	2.770	-	2.604	2.635
MWREM06	270674.04	6160219.68	Q1/Qperch	-	-	2.271	-	2.256	2.266	2.272
MWREM07	270772.35	6159068.64	Q1/Qperch	-	-	1.570	-	1.553	1.568	1.544
MWREM08	271896.10	6159018.99	Q1/Qperch	-	-	1.380	-	1.352	1.461	1.436
MWREM09	271475.23	6159992.59	Q1/Qperch	-	-	1.749	1.719	-	1.630	1.622
MWREM11	271717.33	6161580.60	Q1/Qperch	-	-	2.382	2.339	-	2.146	2.219
MWREM12	272247.51	6160112.90	Q1/Qperch	-	-	1.731	-	1.675	1.763	1.903
6628-19991	274471.12	6163121.97	Q1/Qperch	-	8.010	-	-	-	7.406	7.864
6628-19992	274471.15	6163120.97	Qperch	-	7.990	-	-	-	7.383	7.844
6628-19993	273706.17	6164205.97	Q1	-	7.948	-	-	-	7.705	8.064
6628-19997	274952.16	6162183.95	Q1	-	7.250	-	-	-	7.212	7.214
6628-19998	274952.19	6162182.96	Qperch	-	7.133	-	-	-	7.085	7.021
6628-19999	273244.18	6161093.03	Q1	-	4.290	-	-	-	4.078	4.363
6628-20000	273242.16	6161092.98	Qperch	-	4.172	-	-	-	4.108	4.354
6628-20001	276278.16	6161889.00	Q1	-	9.476	-	-	-	8.944	9.103
6628-20002	276278.09	6161888.00	Qperch	-	9.670	-	-	-	dry	dry
6628-20003	274227.16	6160494.02	Qperch	-	6.440	-	-	-	5.953	6.328
6628-20004	274227.18	6160493.02	Qperch	-	7.145	-	-	-	8.080	7.700
6628-20005	273498.11	6161840.04	Q1	-	4.958	-	-	-	4.480	4.962
6628-20006	273498.18	6161841.04	Qperch	-	4.987	-	-	-	4.517	5.007
6628-02219	271126.72	6162899.29	Q(Q2)	2.265	-	-	2.150	-	2.008	1.988
GW1	271586.30	6161297.52	Q1/Qperch	-	-	-	-	-	2.029	2.124
GW2	271217.53	6160551.98	Q1/Qperch	-	-	-	-	-	2.064	2.155
GW3	272130.21	6160989.47	Q1/Qperch	-	-	-	-	-	2.060	2.331
GW4	272456.30	6159939.93	Q1/Qperch	-	-	-	-	-	1.566	1.733
GW5	274506.35	6162058.28	Q1/Qperch	-	-	-	-	-	6.379	6.488
GW6	272990.09	6162155.28	Q1/Qperch	-	-	-	-	-	3.305	3.577
GW7	274886.32	6162165.12	Q1/Qperch	-	-	-	-	-	7.107	7.093
GW8	273910.10	6162577.28	Q1/Qperch	-	-	-	-	-	5.712	5.718
GW9	273366.85	6162087.29	Q1/Qperch	-	-	-	-	-	3.916	4.224
GW10	274406.31	6163053.24	Q1/Qperch	-	-	-	-	-	7.207	7.526
GW11	272595.47	6159330.14	Q1/Qperch	-	-	-	-	-	2.082	2.189
GW12	272356.67	6164135.57	Q1/Qperch	-	-	-	-	-	4.369	5.152
GW13	272511.72	6161723.66	Q1/Qperch	-	-	-	-	-	2.806	2.979
GW14	272380.18	6160474.51	Q1/Qperch	-	-	-	-	-	2.308	2.447
GW15	273186.77	6159854.23	O1/Oberch	-	-	-	-	-	3.694	4.056

**Table 4.2:** Depth to Groundwater (m BGL) for New Monitoring Wells Installed by REM

<b>Name</b>	<b>Easting</b>	<b>Northing</b>	<b>Aquifer Monitored</b>	<b>7/02/2008</b>	<b>2/07/2008</b>
MWREM01	272962.04	6164329.65	Q1/Qperch	5.373	5.280
MWREM02	273616.50	6162946.34	Q1/Qperch	1.384	1.554
MWREM03	270211.12	6162703.14	Q1/Qperch	5.666	5.820
MWREM04	270643.66	6161345.55	Q1/Qperch	1.090	1.537
MWREM05	272258.05	6162471.03	Q1/Qperch	3.337	3.547
MWREM06	270674.04	6160219.68	Q1/Qperch	0.940	0.945
MWREM07	270772.35	6159068.64	Q1/Qperch	0.880	0.882
MWREM08	271896.10	6159018.99	Q1/Qperch	1.689	1.608
MWREM09	271475.23	6159992.59	Q1/Qperch	3.019	3.138
MWREM11	271717.33	6161580.60	Q1/Qperch	3.764	4.000
MWREM12	272247.51	6160112.90	Q1/Qperch	1.842	1.810

**Table 4.3:** Hydraulic Conductivity Values from Aquifer Testing - Buckland Park

Name	Easting	Northing	EOH (mTOC)	Hydraulic Conductivity (m/day)	Solution	Testing Date
MWREM01	272962	6164330	10.30	0.01	Bouwer Rice	20/02/2008
MWREM02	273617	6162946	5.41	0.33	Bouwer Rice	20/02/2008
MWREM03	270211	6162703	9.91	0.07	Bouwer Rice	20/02/2008
MWREM04	270644	6161346	3.65	1.12	Bouwer Rice	20/02/2008
MWREM05	272258	6162471	7.67	0.19	Bouwer Rice	20/02/2008
MWREM06	270674	6160220	3.68	0.59	Bouwer Rice	21/02/2008
MWREM07	270772	6159069	3.98	0.12	Bouwer Rice	21/02/2008
MWREM08	271896	6159019	4.25	0.18	Bouwer Rice	21/02/2008
MWREM09	271475	6159993	5.77	0.06	Bouwer Rice	20/02/2008
MWREM11	271717	6161581	7.25	0.59	Bouwer Rice	20/02/2008
MWREM12	272248	6160113	4.73	0.19	Bouwer Rice	21/02/2008
PTA058	271127	6162899	7.64	0.14	Bouwer Rice	20/02/2008

  

<b>Geo. Mean</b>	0.17
<b>Maximum</b>	1.12
<b>Minimum</b>	0.01



**Table 4.5: Summary of Groundwater Field Parameters - Buckland Park**

Monitoring Well	MWREM01 7/02/2008	MWREM02 7/02/2008	MWREM03 7/02/2008	MWREM04 7/02/2008	MWREM05 7/02/2008	MWREM06 7/02/2008	MWREM07 7/02/2008	MWREM08 7/02/2008	MWREM09 7/02/2008	MWREM11 7/02/2008	MWREM12 7/02/2008
pH	-	-	7.33	7.27	-	6.82	6.83	7.28	7.97	7.70	7.29
Redox (mV)	-	-	64	104	-	84	5	156	152	63	177
Temperature (oC)	-	-	19.4	19.9	-	23.2	21.6	20.4	19.9	18.7	20.0
EC (mS/cm)	-	-	10.86	34.90	-	93.90	106.30	40.90	5.02	12.82	32.20
TDS* (mg/L)	-	-	8,145	26,175	-	70,425	79,725	30,675	3,765	9,615	24,150

Monitoring Well	MWREM01 13/02/2008	MWREM02 13/02/2008	MWREM03 13/02/2008	MWREM04 13/02/2008	MWREM05 13/02/2008	MWREM06 13/02/2008	MWREM07 13/02/2008	MWREM08 13/02/2008	MWREM09 13/02/2008	MWREM11 13/02/2008	MWREM12 13/02/2008
pH	7.12	7.81	-	7.40	7.50	6.66	-	7.21	-	7.75	-
Redox (mV)	77	18	-	104	62	43	-	64	-	-1	-
Temperature (oC)	19.3	21.4	-	21.5	18.9	22.7	-	21.4	-	19.8	-
EC (mS/cm)	11.34	8.87	-	36.10	24.60	106.60	-	41.90	-	12.28	-
TDS* (mg/L)	8,505	6,653	-	27,075	18,450	79,950	-	31,425	-	9,210	-

\*TDS calculated as 750 x EC as described in Hem (1985)

**Table 5.1:** Stormwater Retention Modelling Parameters

<b>Parameter</b>	<b>Symbol</b>	<b>Value</b>
Pond Area	A	150 000 m <sup>2</sup>
Pond Radius	r	218 m
Saturated Thickness	Hs	17.8 m
Unsaturated Thickness	Hm	20 m
Specific Yield	Sy	0.01
Hydraulic conductivity	K	3 m/day

**Table 5.2: Stormwater Retention Scenarios and Results**

<b>Scenario</b>	<b>Retention Time (days)</b>	<b>Lined / Unlined</b>	<b>Recharge (mm/d)</b>	<b>Mound Height (m)</b>	<b>Mound Radius (m)</b>
Ornamental Pond	365	Lined	0.5	0.62	4000
	365	Unlined	15	13.62	4000
Winter Retention	90	Lined	0.5	0.47	2000
	90	Unlined	15	10.87	2000
Month-long Retention	30	Lined	0.5	0.35	1500
	30	Unlined	15	8.54	1500
Single Event	10	Lined	0.5	0.23	1000
	10	Unlined	15	6.09	1000