



Appendix 1
WATER QUALITY DATA

Analytes	Units	LOR	MB1A				MB2			MB3A			
			Walloon Coal Measures				Walloon Coal Measures			Walloon Coal Measures			
Aquifer	-	-											
Date Sampled	-	-	10/10/2009	25/11/2009	21/01/2010	08/07/2011	10/10/2009	25/11/2009	21/01/2010	07/10/2009	26/11/2009	20/01/2010	09/07/2011
Physical Properties													
Field pH Value	pH Unit	0.01	7.05	6.99	7.08	6.93	7.48	7.42	7.18	7.79	7.78	7.77	7.3
Electrical Conductivity @ 25°C	µS/cm	1	18600	17100	18100	17700	14500	13000	14000	6490	6620	6260	5030
Total Dissolved Solids @ 180°C	mg/L	5	10900	10500	11000	10800	8010	7390	7800	3210	3480	3430	2910
Alkalinity													
Hydroxide Alkalinity as CaCO3	mg/L	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Carbonate Alkalinity as CaCO3	mg/L	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Bicarbonate Alkalinity as CaCO3	mg/L	1	655	611	643	601	275	249	264	559	573	495	914
Total Alkalinity as CaCO3	mg/L	1	655	611	643	601	275	249	264	559	573	495	914
Major Ions													
Calcium	mg/L	1	218	222	205	210	72	58	62	18	16	16	64
Chloride	mg/L	1	6070	5860	6190	5930	4700	4330	4730	1720	1870	1710	1090
Magnesium	mg/L	1	97	83	84	83	23	19	20	4	3	3	16
Potassium	mg/L	1	27	29	24	25	16	16	13	6	5	5	7
Sodium	mg/L	1	3400	3740	3740	3480	2880	2910	2830	1440	1510	1300	1050
Sulfate	mg/L	1	32	44	29	49	50	7	2	3	<1	5	4
Dissolved Metals													
Aluminium	mg/L	0.01	0.01	<0.01	0.07	<0.01	0.03	<0.01	<0.01	0.02	0.01	0.01	<0.01
Antimony	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Arsenic	mg/L	0.001	<0.001	<0.001	0.001	<0.001	0.002	0.001	0.003	<0.001	0.002	<0.001	<0.001
Barium	mg/L	0.001	7.05	6.66	6.25	6.55	2.6	2.54	2.68	0.642	0.621	0.523	1.45
Beryllium	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Boron	mg/L	0.05	0.22	0.21	0.16	0.16	0.19	0.16	0.13	0.21	0.21	0.14	0.23
Cadmium	mg/L	0.0001	0.0006	0.0002	<0.0001	<0.0001	0.0014	<0.0001	<0.0001	0.0001	<0.0001	<0.0001	<0.0001
Chromium	mg/L	0.001	0.003	0.004	<0.001	<0.001	0.001	0.003	0.003	0.001	0.009	<0.001	<0.001
Copper	mg/L	0.001	0.059	0.032	0.078	0.002	0.026	0.073	0.007	0.001	0.007	0.015	<0.001
Iron	mg/L	0.05	0.75	0.78	0.49	1.33	0.11	0.06	0.16	<0.05	0.13	<0.05	0.73
Lead	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.002	<0.001	<0.001	0.001	0.002	0.001
Lithium	mg/L	0.001	0.322	0.333	0.234	0.266	0.141	0.161	0.137	0.093	0.092	0.062	0.084
Manganese	mg/L	0.001	0.045	0.043	0.03	0.041	0.083	0.046	0.028	0.01	0.011	0.009	0.131
Mercury	mg/L	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Molybdenum	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	0.013	0.006	0.002	<0.001	<0.001	0.001	0.002
Nickel	mg/L	0.001	0.013	0.03	0.005	<0.001	0.008	0.006	0.002	<0.001	0.003	0.006	0.004
Selenium	mg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Silver	mg/L	0.001	0.002	0.005	<0.001	<0.001	0.003	0.003	<0.001	<0.001	<0.001	<0.001	<0.001
Uranium	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Vanadium	mg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Zinc	mg/L	0.005	0.044	0.045	0.012	0.006	0.028	0.034	0.012	0.008	0.006	0.013	<0.005
Total Metals													
Aluminium	mg/L	0.01	-	-	-	0.02	-	-	-	-	-	-	0.02
Antimony	mg/L	0.001	-	-	-	<0.001	-	-	-	-	-	-	<0.001
Arsenic	mg/L	0.001	-	-	-	<0.001	-	-	-	-	-	-	<0.001
Barium	mg/L	0.001	-	-	-	6.35	-	-	-	-	-	-	1.52
Beryllium	mg/L	0.001	-	-	-	<0.001	-	-	-	-	-	-	<0.001
Boron	mg/L	0.05	-	-	-	0.15	-	-	-	-	-	-	0.22
Cadmium	mg/L	0.0001	-	-	-	<0.0001	-	-	-	-	-	-	<0.0001
Chromium	mg/L	0.001	-	-	-	<0.001	-	-	-	-	-	-	0.005
Copper	mg/L	0.001	-	-	-	0.002	-	-	-	-	-	-	0.002
Iron	mg/L	0.05	-	-	-	2.27	-	-	-	-	-	-	1.11
Lead	mg/L	0.001	-	-	-	0.005	-	-	-	-	-	-	0.026
Lithium	mg/L	0.001	-	-	-	0.306	-	-	-	-	-	-	0.098
Manganese	mg/L	0.001	-	-	-	0.044	-	-	-	-	-	-	0.166
Mercury	mg/L	0.0001	-	-	-	<0.0001	-	-	-	-	-	-	<0.0001
Molybdenum	mg/L	0.001	-	-	-	<0.001	-	-	-	-	-	-	0.002
Nickel	mg/L	0.001	-	-	-	<0.001	-	-	-	-	-	-	0.009
Selenium	mg/L	0.01	-	-	-	<0.01	-	-	-	-	-	-	<0.01
Silver	mg/L	0.001	-	-	-	<0.001	-	-	-	-	-	-	<0.001
Uranium	mg/L	0.001	-	-	-	<0.001	-	-	-	-	-	-	<0.001
Vanadium	mg/L	0.01	-	-	-	<0.01	-	-	-	-	-	-	<0.01
Zinc	mg/L	0.005	-	-	-	0.008	-	-	-	-	-	-	0.017
Nutrients													
Nitrite + Nitrate as N	mg/L	0.01	0.09	0.04	<0.01	0.09	0.08	0.04	0.06	0.04	<0.01	0.04	0.06
Total Kjeldahl Nitrogen as N	mg/L	0.1	2.2	1.8	2.7	2.4	1.6	1.4	2	0.7	0.5	1	0.8
Total Nitrogen as N	mg/L	0.1	2.3	1.8	2.7	2.5	1.7	1.4	2.1	0.8	0.5	1	0.9
Total Phosphorus as P	mg/L	0.01	0.02	<0.01	0.47	0.02	0.04	<0.01	0.21	0.06	0.01	0.05	<0.01

- Transgressed Australian Drinking Water Guidelines (2011) aesthetic guideline value.
- Exceeds Australian Drinking Water Guidelines (2011) health guideline value.
- 1000** Exceeds ANZECC (2000) livestock drinking water guideline value.
- 1000** Laboratory holding time breached.
- * Guideline Value depends on type of livestock.
- ^ ANZECC (2000) livestock guideline is 30 mg/L for nitrite and 400 mg/L for nitrate.
- # ADWG (2011) health guideline is 3 mg/L for nitrite and 50 mg/L for nitrate.

ANZECC 2000	ADWG (2011)	
	Livestock Drinking	Aesthetic Health
-	6.5 - 8.5	-
-	-	-
3000-13000*	600	-
-	-	-
-	-	-
-	-	-
1000	-	-
-	250	-
-	-	-
-	-	-
-	180	-
1000	250	500
-	-	-
5	-	-
-	-	-
0.5	-	-
-	-	-
-	-	-
5	-	-
0.01	-	-
1	-	-
0.5	-	-
-	-	-
0.1	-	-
-	-	-
-	-	-
0.002	-	-
0.15	-	-
1	-	-
0.02	-	-
-	-	-
0.2	-	-
-	-	-
20	-	-
-	-	-
5	0.2	-
-	-	0.003
0.5	-	0.01
-	-	2
-	-	0.06
5	-	4
0.01	-	0.002
1	-	0.05
0.5	1	2
-	0.3	-
0.1	-	0.01
-	-	-
-	0.1	0.5
0.002	-	0.001
0.15	-	0.05
1	-	0.02
0.02	-	0.01
-	-	0.1
0.2	-	0.017
-	-	-
20	3	-
30-400^	-	3-50#
-	-	-
-	-	-

Analytes	Units	LOR	MB4A				MB5			MB6		
			Walloon Coal Measures				Walloon Coal Measures			Walloon Coal Measures		
Aquifer	-	-										
Date Sampled	-	-	10/10/2009	25/11/2009	21/01/2010	09/07/2011	14/10/2009	26/11/2009	22/01/2010	09/10/2009	26/11/2009	20/01/2010
Physical Properties												
Field pH Value	pH Unit	0.01	7.46	7.39	7.28	7.59	7.76	7.71	7.58	6.94	7.02	7.05
Electrical Conductivity @ 25°C	µS/cm	1	7360	8310	8920	5100	8890	7900	7300	18100	12000	14100
Total Dissolved Solids @ 180°C	mg/L	5	4830	4240	4460	2660	4220	4060	4670	13400	7290	8790
Alkalinity												
Hydroxide Alkalinity as CaCO3	mg/L	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Carbonate Alkalinity as CaCO3	mg/L	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Bicarbonate Alkalinity as CaCO3	mg/L	1	285	301	281	205	399	418	405	555	503	523
Total Alkalinity as CaCO3	mg/L	1	285	301	281	205	399	418	405	555	503	523
Major Ions												
Calcium	mg/L	1	49	45	44	33	20	19	19	602	224	333
Chloride	mg/L	1	2810	3060	3090	1480	2670	2420	2090	6310	4580	4940
Magnesium	mg/L	1	18	16	14	9	7	6	6	159	61	84
Potassium	mg/L	1	15	13	11	11	8	6	6	16	11	11
Sodium	mg/L	1	1740	1860	2010	1010	1700	1820	1600	3160	2640	2800
Sulfate	mg/L	1	20	17	20	2	<1	<1	<1	25	10	14
Dissolved Metals												
Aluminium	mg/L	0.01	0.02	0.02	0.02	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Antimony	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Arsenic	mg/L	0.001	0.001	0.002	<0.001	0.001	0.002	0.002	0.002	<0.001	<0.001	0.001
Barium	mg/L	0.001	1.54	1.47	1.36	1.04	1.08	1.14	1.06	6.65	4.32	4.64
Beryllium	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Boron	mg/L	0.05	0.23	0.23	0.16	0.11	0.2	0.21	0.15	0.28	0.27	0.2
Cadmium	mg/L	0.0001	0.0002	0.003	<0.0001	<0.0001	0.0002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Chromium	mg/L	0.001	0.003	0.008	<0.001	0.001	0.002	0.006	<0.001	0.002	0.01	<0.001
Copper	mg/L	0.001	0.004	0.024	0.003	<0.001	0.002	0.002	0.002	0.003	0.003	0.001
Iron	mg/L	0.05	0.09	0.32	0.21	0.42	<0.05	0.17	0.1	1.94	3	2.98
Lead	mg/L	0.001	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Lithium	mg/L	0.001	0.149	0.159	0.115	0.084	0.104	0.111	0.085	0.302	0.23	0.183
Manganese	mg/L	0.001	0.08	0.088	0.063	0.106	0.021	0.014	0.011	0.503	0.262	0.306
Mercury	mg/L	0.0001	<0.0001	<0.0001	<0.0001	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Molybdenum	mg/L	0.001	0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Nickel	mg/L	0.001	0.009	0.006	0.002	0.002	0.002	<0.001	<0.001	<0.001	0.004	<0.001
Selenium	mg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Silver	mg/L	0.001	0.001	0.003	<0.001	<0.001	<0.001	0.001	<0.001	0.001	0.002	<0.001
Uranium	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Vanadium	mg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Zinc	mg/L	0.005	0.027	0.014	0.005	0.006	0.011	0.006	0.005	0.008	0.006	0.008
Total Metals												
Aluminium	mg/L	0.01	-	-	-	0.43	-	-	-	-	-	-
Antimony	mg/L	0.001	-	-	-	<0.001	-	-	-	-	-	-
Arsenic	mg/L	0.001	-	-	-	0.003	-	-	-	-	-	-
Barium	mg/L	0.001	-	-	-	0.935	-	-	-	-	-	-
Beryllium	mg/L	0.001	-	-	-	<0.001	-	-	-	-	-	-
Boron	mg/L	0.05	-	-	-	0.09	-	-	-	-	-	-
Cadmium	mg/L	0.0001	-	-	-	<0.0001	-	-	-	-	-	-
Chromium	mg/L	0.001	-	-	-	0.007	-	-	-	-	-	-
Copper	mg/L	0.001	-	-	-	0.007	-	-	-	-	-	-
Iron	mg/L	0.05	-	-	-	1.6	-	-	-	-	-	-
Lead	mg/L	0.001	-	-	-	0.016	-	-	-	-	-	-
Lithium	mg/L	0.001	-	-	-	0.086	-	-	-	-	-	-
Manganese	mg/L	0.001	-	-	-	0.14	-	-	-	-	-	-
Mercury	mg/L	0.0001	-	-	-	<0.0001	-	-	-	-	-	-
Molybdenum	mg/L	0.001	-	-	-	<0.001	-	-	-	-	-	-
Nickel	mg/L	0.001	-	-	-	0.007	-	-	-	-	-	-
Selenium	mg/L	0.01	-	-	-	<0.01	-	-	-	-	-	-
Silver	mg/L	0.001	-	-	-	<0.001	-	-	-	-	-	-
Uranium	mg/L	0.001	-	-	-	<0.001	-	-	-	-	-	-
Vanadium	mg/L	0.01	-	-	-	<0.01	-	-	-	-	-	-
Zinc	mg/L	0.005	-	-	-	0.268	-	-	-	-	-	-
Nutrients												
Nitrite + Nitrate as N	mg/L	0.01	0.07	0.04	<0.01	0.22	0.07	0.01	<0.01	0.37	0.02	0.02
Total Kjeldahl Nitrogen as N	mg/L	0.1	1.2	0.9	1.4	1.2	0.9	0.8	1.1	1.2	0.9	1.7
Total Nitrogen as N	mg/L	0.1	1.3	0.9	1.4	1.4	1	0.8	1.1	1.6	1	1.8
Total Phosphorus as P	mg/L	0.01	<0.01	<0.01	0.11	0.16	0.04	0.02	0.02	<0.01	<0.01	0.22

ANZECC 2000	ADWG (2011)	
	Livestock Drinking	Aesthetic Health
-	6.5 - 8.5	-
-	-	-
3000-13000*	600	-
-	-	-
-	-	-
1000	-	-
-	250	-
-	-	-
-	-	-
-	180	-
1000	250	500
-	-	-
5	-	-
-	-	<0.01
0.5	-	-
-	-	-
-	-	<0.01
5	-	-
0.01	-	-
1	-	<0.01
0.5	-	-
-	-	-
0.1	-	<0.01
-	-	-
-	-	-
0.002	-	<0.001
0.15	-	-
1	-	-
0.02	-	<0.01
-	-	-
-	-	-
0.2	-	-
-	-	-
20	-	-
-	-	-
5	0.2	-
-	-	0.003
0.5	-	0.01
-	-	2
-	-	0.06
5	-	4
0.01	-	0.002
1	-	0.05
0.5	1	2
-	0.3	-
0.1	-	0.01
-	-	-
-	0.1	0.5
0.002	-	0.001
0.15	-	0.05
1	-	0.02
0.02	-	0.01
-	-	0.1
0.2	-	0.017
-	-	-
20	3	-
-	-	-
30-400^	-	3-50*
-	-	-
-	-	-

 Transgressed Australian Drinking Water Guidelines (2011) aesthetic guideline value.
 Exceeds Australian Drinking Water Guidelines (2011) health guideline value.
1000 Exceeds ANZECC (2000) livestock drinking water guideline value.
1000 Laboratory holding time breached.
 * Guideline Value depends on type of livestock.
 ^ ANZECC (2000) livestock guideline is 30 mg/L for nitrite and 400 mg/L for nitrate.
 * ADWG (2011) health guideline is 3 mg/L for nitrite and 50 mg/L for nitrate.

Analytes	Units	LOR	MB7A				MB8A				MB9
			Walloon Coal Measures				Walloon Coal Measures				Walloon CM
Date Sampled	-	-	08/10/2009	27/11/2009	20/01/2010	10/03/2011	11/10/2009	28/11/2009	24/01/2010	10/03/2011	16-Oct-09
Physical Properties											
Field pH Value	pH Unit	0.01	7.8	7.77	7.86	7.94	7.76	7.72	7.7	7.96	7.52
Electrical Conductivity @ 25°C	µS/cm	1	7330	7370	7820	7610	6970	6520	5900	6890	12700
Total Dissolved Solids @ 180°C	mg/L	5	4040	3960	4010	3920	3730	3380	3730	3490	6690
Alkalinity											
Hydroxide Alkalinity as CaCO3	mg/L	1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Carbonate Alkalinity as CaCO3	mg/L	1	11	<1	<1	10	<1	<1	<1	15	<1
Bicarbonate Alkalinity as CaCO3	mg/L	1	504	537	525	495	635	665	641	513	335
Total Alkalinity as CaCO3	mg/L	1	514	537	525	505	635	665	641	528	335
Major Ions											
Calcium	mg/L	1	18	16	16	17	18	14	14	19	67
Chloride	mg/L	1	2030	2150	2510	1940	1680	1820	1580	1740	4360
Magnesium	mg/L	1	5	5	5	5	6	4	4	4	16
Potassium	mg/L	1	7	6	6	8	9	5	5	7	14
Sodium	mg/L	1	1600	1650	1740	1600	1400	1500	1410	1470	2600
Sulfate	mg/L	1	2	<1	<1	<1	15	4	2	6	11
Disolved Metals											
Aluminium	mg/L	0.01	0.01	<0.01	0.03	0.01	0.03	0.02	0.05	0.08	0.01
Antimony	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Arsenic	mg/L	0.001	<0.001	0.002	<0.001	<0.001	0.005	0.002	0.004	0.003	<0.001
Barium	mg/L	0.001	0.941	1.38	0.832	0.945	0.312	0.436	0.391	0.51	1.79
Beryllium	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Boron	mg/L	0.05	0.22	0.19	0.16	0.16	0.21	0.21	0.16	0.16	0.24
Cadmium	mg/L	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0003	<0.0001	0.0002	<0.0001	0.0001
Chromium	mg/L	0.001	0.002	0.005	<0.001	<0.001	0.004	0.009	<0.001	<0.001	0.003
Copper	mg/L	0.001	0.001	0.002	<0.001	<0.001	0.003	0.001	<0.001	<0.001	0.004
Iron	mg/L	0.05	0.12	0.14	0.07	0.1	0.09	0.08	0.05	0.18	0.1
Lead	mg/L	0.001	<0.001	<0.001	<0.001	0.001	0.002	<0.001	<0.001	<0.001	0.071
Lithium	mg/L	0.001	0.11	0.146	0.084	0.096	0.065	0.091	0.072	0.083	0.182
Manganese	mg/L	0.001	0.005	0.013	0.004	0.005	0.057	0.027	0.036	0.057	0.045
Mercury	mg/L	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Molybdenum	mg/L	0.001	<0.001	0.002	<0.001	<0.001	0.003	<0.001	<0.001	<0.001	0.004
Nickel	mg/L	0.001	0.002	0.002	<0.001	0.001	0.004	0.001	0.001	<0.001	0.007
Selenium	mg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Silver	mg/L	0.001	<0.001	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.001
Uranium	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	0.003	<0.001	<0.001	<0.001	<0.001
Vanadium	mg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Zinc	mg/L	0.005	0.007	0.005	<0.005	0.008	0.029	0.011	0.006	0.008	0.025
Total Metals											
Aluminium	mg/L	0.01	-	-	-	0.16	-	-	-	14.9	-
Antimony	mg/L	0.001	-	-	-	0.001	-	-	-	<0.001	-
Arsenic	mg/L	0.001	-	-	-	<0.001	-	-	-	0.005	-
Barium	mg/L	0.001	-	-	-	0.993	-	-	-	1.53	-
Beryllium	mg/L	0.001	-	-	-	<0.001	-	-	-	0.003	-
Boron	mg/L	0.05	-	-	-	0.16	-	-	-	0.17	-
Cadmium	mg/L	0.0001	-	-	-	<0.0001	-	-	-	0.0004	-
Chromium	mg/L	0.001	-	-	-	0.005	-	-	-	0.016	-
Copper	mg/L	0.001	-	-	-	0.004	-	-	-	0.02	-
Iron	mg/L	0.05	-	-	-	0.49	-	-	-	15.4	-
Lead	mg/L	0.001	-	-	-	0.096	-	-	-	0.057	-
Lithium	mg/L	0.001	-	-	-	0.111	-	-	-	0.103	-
Manganese	mg/L	0.001	-	-	-	0.009	-	-	-	0.34	-
Mercury	mg/L	0.0001	-	-	-	<0.0001	-	-	-	<0.0001	-
Molybdenum	mg/L	0.001	-	-	-	<0.001	-	-	-	<0.001	-
Nickel	mg/L	0.001	-	-	-	0.004	-	-	-	0.042	-
Selenium	mg/L	0.01	-	-	-	<0.01	-	-	-	<0.01	-
Silver	mg/L	0.001	-	-	-	<0.001	-	-	-	<0.001	-
Uranium	mg/L	0.001	-	-	-	<0.001	-	-	-	0.004	-
Vanadium	mg/L	0.01	-	-	-	<0.01	-	-	-	0.03	-
Zinc	mg/L	0.005	-	-	-	0.026	-	-	-	0.107	-
Nutrients											
Nitrite + Nitrate as N	mg/L	0.01	0.05	<0.01	0.04	0.04	0.18	0.08	0.01	0.08	0.31
Total Kjeldahl Nitrogen as N	mg/L	0.1	0.8	0.2	1.4	1.1	1.5	0.7	0.9	1.1	1.4
Total Nitrogen as N	mg/L	0.1	0.9	0.2	1.4	1.1	1.7	0.8	0.9	1.2	1.7
Total Phosphorus as P	mg/L	0.01	<0.01	<0.01	<0.01	0.01	<0.01	0.09	0.07	0.17	<0.01

- Transgressed Australian Drinking Water Guidelines (2011) aesthetic guideline value.
- Exceeds Australian Drinking Water Guidelines (2011) health guideline value.
- 1000** Exceeds ANZECC (2000) livestock drinking water guideline value.
- 1000** Laboratory holding time breached.
- * Guideline Value depends on type of livestock.
- ^ ANZECC (2000) livestock guideline is 30 mg/L for nitrite and 400 mg/L for nitrate.
- # ADWG (2011) health guideline is 3 mg/L for nitrite and 50 mg/L for nitrate.

ANZECC 2000	ADWG (2011)	
	Livestock Drinking	Aesthetic
-	6.5 - 8.5	-
-	-	-
3000-13000*	600	-
-	-	-
-	-	-
-	-	-
1000	-	-
-	250	-
-	-	-
-	-	-
-	180	-
1000	250	500
-	-	-
5	-	-
-	-	-
0.5	-	-
-	-	-
-	-	-
5	-	-
0.01	-	-
1	-	-
0.5	-	-
-	-	-
0.1	-	-
-	-	-
-	-	-
0.002	-	-
0.15	-	-
1	-	-
0.02	-	-
-	-	-
0.2	-	-
-	-	-
20	-	-
-	-	-
5	0.2	-
-	-	0.003
0.5	-	0.01
-	-	2
-	-	0.06
5	-	4
0.01	-	0.002
1	-	0.05
0.5	1	2
-	0.3	-
0.1	-	0.01
-	-	-
-	0.1	0.5
0.002	-	0.001
0.15	-	0.05
1	-	0.02
0.02	-	0.01
-	-	0.1
0.2	-	0.017
-	-	-
20	3	-
-	-	-
30-400^	-	3-50#
-	-	-
-	-	-

Analytes	Units	LOR	MB10			MB11			MB12		
			Walloon Coal Measures			Walloon Coal Measures			Walloon Coal Measures		
Date Sampled			13/10/2009	29/11/2009	22/01/2010	15/10/2009	29/11/2009	23/01/2010	12/10/2009	27/11/2009	23/01/2010
Physical Properties											
Field pH Value	pH Unit	0.01	7.64	7.67	7.6	7.76	7.66	7.47	7.76	7.69	7.54
Electrical Conductivity @ 25°C	µS/cm	1	3690	4200	4120	6950	6570	5930	9470	8850	7950
Total Dissolved Solids @ 180°C	mg/L	5	2460	2730	2570	3550	3640	3830	4160	4350	4540
Alkalinity											
Hydroxide Alkalinity as CaCO3	mg/L	1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Carbonate Alkalinity as CaCO3	mg/L	1	<1	<1	18	<1	<1	<1	<1	<1	<1
Bicarbonate Alkalinity as CaCO3	mg/L	1	1280	1340	1260	515	545	528	331	347	333
Total Alkalinity as CaCO3	mg/L	1	1280	1340	1280	515	545	528	331	347	333
Major Ions											
Calcium	mg/L	1	16	15	17	17	15	15	28	28	29
Chloride	mg/L	1	750	803	769	1710	1860	1590	2960	3320	3090
Magnesium	mg/L	1	6	6	6	6	3	3	6	6	6
Potassium	mg/L	1	4	5	4	8	5	5	9	8	7
Sodium	mg/L	1	968	1080	1020	1400	1480	1280	1860	2220	1950
Sulfate	mg/L	1	2	<1	<1	7	1	<1	8	4	3
Disolved Metals											
Aluminium	mg/L	0.01	<0.01	<0.01	<0.01	0.02	<0.01	<0.01	<0.01	<0.01	0.07
Antimony	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Arsenic	mg/L	0.001	<0.001	<0.001	<0.001	0.002	0.001	0.001	0.001	0.002	<0.001
Barium	mg/L	0.001	0.645	0.682	0.643	0.313	0.541	0.496	1.26	0.951	1.25
Beryllium	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Boron	mg/L	0.05	0.31	0.31	0.25	0.25	0.24	0.18	0.18	0.22	0.14
Cadmium	mg/L	0.0001	0.0002	<0.0001	<0.0001	0.0003	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Chromium	mg/L	0.001	<0.001	<0.001	<0.001	0.001	<0.001	<0.001	0.003	0.001	<0.001
Copper	mg/L	0.001	<0.001	0.002	0.001	0.002	0.002	<0.001	0.003	<0.001	<0.001
Iron	mg/L	0.05	0.11	<0.05	<0.05	0.08	0.05	0.08	0.09	0.07	0.07
Lead	mg/L	0.001	0.002	0.002	0.002	0.006	0.003	0.001	0.036	<0.001	<0.001
Lithium	mg/L	0.001	0.09	0.103	0.08	0.078	0.098	0.07	0.123	0.12	0.11
Manganese	mg/L	0.001	0.01	0.006	0.005	0.05	0.016	0.014	0.022	0.004	0.012
Mercury	mg/L	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Molybdenum	mg/L	0.001	<0.001	<0.001	<0.001	0.001	<0.001	<0.001	0.012	<0.001	0.001
Nickel	mg/L	0.001	<0.001	<0.001	<0.001	0.004	<0.001	<0.001	0.005	<0.001	<0.001
Selenium	mg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Silver	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.001	0.001	<0.001
Uranium	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Vanadium	mg/L	0.01	0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Zinc	mg/L	0.005	0.008	0.008	0.006	0.011	0.006	<0.005	0.015	0.008	0.005
Total Metals											
Aluminium	mg/L	0.01	-	-	-	-	-	-	-	-	-
Antimony	mg/L	0.001	-	-	-	-	-	-	-	-	-
Arsenic	mg/L	0.001	-	-	-	-	-	-	-	-	-
Barium	mg/L	0.001	-	-	-	-	-	-	-	-	-
Beryllium	mg/L	0.001	-	-	-	-	-	-	-	-	-
Boron	mg/L	0.05	-	-	-	-	-	-	-	-	-
Cadmium	mg/L	0.0001	-	-	-	-	-	-	-	-	-
Chromium	mg/L	0.001	-	-	-	-	-	-	-	-	-
Copper	mg/L	0.001	-	-	-	-	-	-	-	-	-
Iron	mg/L	0.05	-	-	-	-	-	-	-	-	-
Lead	mg/L	0.001	-	-	-	-	-	-	-	-	-
Lithium	mg/L	0.001	-	-	-	-	-	-	-	-	-
Manganese	mg/L	0.001	-	-	-	-	-	-	-	-	-
Mercury	mg/L	0.0001	-	-	-	-	-	-	-	-	-
Molybdenum	mg/L	0.001	-	-	-	-	-	-	-	-	-
Nickel	mg/L	0.001	-	-	-	-	-	-	-	-	-
Selenium	mg/L	0.01	-	-	-	-	-	-	-	-	-
Silver	mg/L	0.001	-	-	-	-	-	-	-	-	-
Uranium	mg/L	0.001	-	-	-	-	-	-	-	-	-
Vanadium	mg/L	0.01	-	-	-	-	-	-	-	-	-
Zinc	mg/L	0.005	-	-	-	-	-	-	-	-	-
Nutrients											
Nitrite + Nitrate as N	mg/L	0.01	0.04	<0.01	<0.01	0.06	<0.01	0.01	0.04	0.03	0.04
Total Kjeldahl Nitrogen as N	mg/L	0.1	0.5	0.1	0.4	0.9	0.6	1.5	0.9	0.9	1.4
Total Nitrogen as N	mg/L	0.1	0.5	0.1	0.4	1	0.6	1.5	0.9	0.9	1.4
Total Phosphorus as P	mg/L	0.01	<0.01	0.02	<0.01	<0.01	0.03	0.06	<0.01	<0.01	0.04

 Transgressed Australian Drinking Water Guidelines (2011) aesthetic guideline value.
 Exceeds Australian Drinking Water Guidelines (2011) health guideline value.
1000 Exceeds ANZECC (2000) livestock drinking water guideline value.
1000 Laboratory holding time breached.
* Guideline Value depends on type of livestock.
^ ANZECC (2000) livestock guideline is 30 mg/L for nitrite and 400 mg/L for nitrate.
ADWG (2011) health guideline is 3 mg/L for nitrite and 50 mg/L for nitrate.

ANZECC 2000	ADWG (2011)	
	Livestock Drinking	Aesthetic Health
-	6.5 - 8.5	-
-	-	-
3000-13000*	600	-
-	-	-
-	-	-
-	-	-
1000	-	-
-	250	-
-	-	-
-	-	-
-	180	-
1000	250	500
-	-	-
5	-	-
-	-	-
0.5	-	-
-	-	-
-	-	-
5	-	-
0.01	-	-
1	-	-
0.5	-	-
-	-	-
0.1	-	-
-	-	-
-	-	-
0.002	-	-
0.15	-	-
1	-	-
0.02	-	-
-	-	-
0.2	-	-
-	-	-
20	-	-
-	-	-
5	0.2	-
-	-	0.003
0.5	-	0.01
-	-	2
-	-	0.06
5	-	4
0.01	-	0.002
1	-	0.05
0.5	1	2
-	0.3	-
0.1	-	0.01
-	-	-
-	0.1	0.5
0.002	-	0.001
0.15	-	0.05
1	-	0.02
0.02	-	0.01
-	-	0.1
0.2	-	0.017
-	-	-
20	3	-
-	-	-
30-400^	-	3-50#
-	-	-
-	-	-

Analytes	Units	LOR	MB7B	MB8B	MB14	MB15	MB16	MB17
Aquifer	-	-	Horse Creek Alluvium	Horse Creek Alluvium	Horse Creek Alluvium	Horse Creek Alluvium	Horse Creek Alluvium	Alluvium
Date Sampled	-	-	10/03/2011	10/03/2011	08/07/2011	08/07/2011	05/07/2011	07/07/2011
Physical Properties								
Field pH Value	pH Unit	0.01	7.08	7.08	7.51	7.27	7.02	7.32
Electrical Conductivity @ 25°C	µS/cm	1	877	840	1740	4850	689	1700
Total Dissolved Solids @ 180°C	mg/L	5	552	521	1130	2920	418	1040
Alkalinity								
Hydroxide Alkalinity as CaCO3	mg/L	1	<1	<1	<1	<1	<1	<1
Carbonate Alkalinity as CaCO3	mg/L	1	<1	<1	<1	<1	<1	<1
Bicarbonate Alkalinity as CaCO3	mg/L	1	341	387	525	574	278	573
Total Alkalinity as CaCO3	mg/L	1	341	387	525	574	278	573
Major Ions								
Calcium	mg/L	1	24	52	17	128	42	30
Chloride	mg/L	1	52	26	222	1040	30	171
Magnesium	mg/L	1	5	9	5	40	9	28
Potassium	mg/L	1	10	10	1	4	4	1
Sodium	mg/L	1	158	117	365	872	94	308
Sulfate	mg/L	1	24	17	57	333	24	82
Disolved Metals								
Aluminium	mg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Antimony	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Arsenic	mg/L	0.001	0.003	<0.001	0.003	0.003	0.001	0.002
Barium	mg/L	0.001	0.164	0.157	0.034	0.086	0.056	0.059
Beryllium	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Boron	mg/L	0.05	0.16	0.13	<0.05	0.17	0.06	0.06
Cadmium	mg/L	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Chromium	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Copper	mg/L	0.001	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Iron	mg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.08
Lead	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Lithium	mg/L	0.001	0.003	0.016	0.011	0.048	0.011	0.019
Manganese	mg/L	0.001	<0.001	<0.001	0.002	0.102	0.1	0.971
Mercury	mg/L	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Molybdenum	mg/L	0.001	<0.001	0.001	0.007	0.004	0.002	0.003
Nickel	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Selenium	mg/L	0.01	<0.01	<0.01	<0.01	0.02	<0.01	<0.01
Silver	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Uranium	mg/L	0.001	0.002	0.003	0.005	0.016	0.002	0.004
Vanadium	mg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Zinc	mg/L	0.005	<0.005	0.005	<0.005	0.006	0.007	<0.005
Total Metals								
Aluminium	mg/L	0.01	0.14	8.91	0.02	1.47	0.02	0.04
Antimony	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Arsenic	mg/L	0.001	0.002	0.001	0.002	0.003	0.001	0.002
Barium	mg/L	0.001	0.161	0.225	0.037	0.095	0.059	0.064
Beryllium	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Boron	mg/L	0.05	0.17	0.13	<0.05	0.16	0.05	0.05
Cadmium	mg/L	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Chromium	mg/L	0.001	<0.001	0.006	<0.001	0.002	<0.001	<0.001
Copper	mg/L	0.001	<0.001	0.005	0.001	0.004	<0.001	0.001
Iron	mg/L	0.05	0.16	2.53	<0.05	1.68	<0.05	0.18
Lead	mg/L	0.001	0.019	0.063	<0.001	0.003	<0.001	<0.001
Lithium	mg/L	0.001	0.004	0.018	0.012	0.052	0.011	0.02
Manganese	mg/L	0.001	0.004	0.221	0.032	0.135	0.103	1.04
Mercury	mg/L	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Molybdenum	mg/L	0.001	<0.001	<0.001	0.007	0.002	<0.001	0.003
Nickel	mg/L	0.001	<0.001	0.009	0.001	0.002	<0.001	0.001
Selenium	mg/L	0.01	<0.01	<0.01	<0.01	0.02	<0.01	<0.01
Silver	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Uranium	mg/L	0.001	0.002	0.004	0.005	0.016	0.002	0.004
Vanadium	mg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Zinc	mg/L	0.005	0.011	0.028	<0.005	0.047	<0.005	<0.005
Nutrients								
Nitrite + Nitrate as N	mg/L	0.01	0.06	0.17	1.11	1.92	0.03	0.06
Total Kjeldahl Nitrogen as N	mg/L	0.1	0.1	0.2	3	0.3	0.3	0.4
Total Nitrogen as N	mg/L	0.1	0.2	0.4	4.1	2.2	0.3	0.5
Total Phosphorus as P	mg/L	0.01	0.51	0.11	0.32	0.21	0.11	<0.01

- Transgressed Australian Drinking Water Guidelines (2011) aesthetic guideline value.
- Exceeds Australian Drinking Water Guidelines (2011) health guideline value.
- 1000** Exceeds ANZECC (2000) livestock drinking water guideline value.
- 1000** Laboratory holding time breached.
- * Guideline Value depends on type of livestock.
- ^ ANZECC (2000) livestock guideline is 30 mg/L for nitrite and 400 mg/L for nitrate.
- # ADWG (2011) health guideline is 3 mg/L for nitrite and 50 mg/L for nitrate.

ANZECC 2000	ADWG (2011)	
	Livestock Drinking	Aesthetic Health
-	6.5 - 8.5	-
-	-	1700
3000-13000*	600	-
-	-	-
-	-	-
-	-	-
1000	-	-
-	250	-
-	-	-
-	-	-
-	180	-
1000	250	500
5	0.2	-
-	-	0.003
0.5	-	0.01
-	-	2
-	-	0.06
5	-	4
0.01	-	0.002
1	-	0.05
0.5	1	2
-	0.3	-
0.1	-	0.01
-	-	-
-	0.1	0.5
0.002	-	0.001
0.15	-	0.05
1	-	0.02
0.02	-	0.01
-	-	0.1
0.2	-	0.017
-	-	-
20	3	-
5	-	-
-	-	-
0.5	-	-
-	-	-
-	-	-
5	-	-
0.01	-	-
1	-	-
0.5	-	-
-	-	-
0.1	-	-
-	-	-
-	-	-
0.002	-	-
0.15	-	-
1	-	-
0.02	-	-
-	-	-
0.2	-	-
-	-	-
20	-	-
30-400^	-	3
-	-	-
-	-	-

Analytes	Units	LOR	MB1B				MB3B				MB4B			
			Alluvium				Horse Creek Alluvium				Horse Creek Alluvium			
Date Sampled			09/10/2009	25/11/2009	21/01/2010	08/07/2011	07/10/2009	26/11/2009	20/01/2010	09/07/2011	09/10/2009	25/11/2009	21/01/2010	09/07/2011
Physical Properties														
Field pH Value	pH Unit	0.01	8.15	7.61	7.58	7.57	6.68	6.73	6.87	6.89	6.98	6.76	6.85	7.43
Electrical Conductivity @ 25°C	µS/cm	1	1370	1340	1540	1350	2630	2760	2650	1730	6340	6820	7230	1370
Total Dissolved Solids @ 180°C	mg/L	5	875	900	1040	925	1610	1820	1540	1020	-	4450	4610	908
Alkalinity														
Hydroxide Alkalinity as CaCO3	mg/L	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Carbonate Alkalinity as CaCO3	mg/L	1	<1	20	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Bicarbonate Alkalinity as CaCO3	mg/L	1	626	577	697	610	660	701	580	458	229	663	674	415
Total Alkalinity as CaCO3	mg/L	1	626	597	697	610	660	701	580	458	229	663	674	415
Major Ions														
Calcium	mg/L	1	11	10	11	14	160	168	147	62	104	127	136	9
Chloride	mg/L	1	64	60	101	55	557	584	555	261	1370	1610	1590	125
Magnesium	mg/L	1	4	4	4	5	42	38	33	21	82	91	88	5
Potassium	mg/L	1	<1	<1	<1	<1	3	3	2	2	35	28	24	7
Sodium	mg/L	1	327	325	356	314	427	435	366	284	1150	1390	1310	288
Sulfate	mg/L	1	38	31	36	24	114	73	38	36	669	763	747	86
Disolved Metals														
Aluminium	mg/L	0.01	0.01	<0.01	0.06	0.02	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.02
Antimony	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	0.001	<0.001	<0.001	<0.001	0.003	<0.001	<0.001	<0.001
Arsenic	mg/L	0.001	0.004	0.004	0.004	0.004	0.001	0.001	0.001	<0.001	0.004	0.01	0.005	0.008
Barium	mg/L	0.001	0.027	0.025	0.028	0.034	0.238	0.168	0.143	0.109	0.196	0.148	0.087	0.024
Beryllium	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Boron	mg/L	0.05	0.2	0.18	0.12	0.07	0.15	0.14	0.1	0.14	0.35	0.35	0.25	0.13
Cadmium	mg/L	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0015	<0.0001	<0.0001	<0.0001	0.0004	<0.0001	<0.0001	<0.0001
Chromium	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.002	0.009	<0.001	<0.001
Copper	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	0.001	0.001	<0.001	0.002	0.004	0.001	<0.001	0.002
Iron	mg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.56	<0.05	<0.05	0.24	3.17	0.68	<0.05
Lead	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.012	<0.001	<0.001	<0.001
Lithium	mg/L	0.001	0.006	0.004	0.006	0.009	0.042	0.043	0.029	0.028	0.04	0.047	0.034	0.014
Manganese	mg/L	0.001	0.04	0.007	0.032	<0.001	1.18	1.03	0.236	0.004	1.87	2.03	0.867	0.013
Mercury	mg/L	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Molybdenum	mg/L	0.001	0.004	0.004	0.004	0.002	0.003	0.002	0.001	0.001	0.003	0.001	0.002	0.002
Nickel	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	0.003	0.004	<0.001	<0.001	0.029	0.011	0.013	0.004
Selenium	mg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Silver	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.001	<0.001	<0.001
Uranium	mg/L	0.001	0.004	0.003	0.003	0.002	0.008	0.007	0.006	0.004	0.005	0.004	0.006	0.001
Vanadium	mg/L	0.01	0.02	0.03	0.02	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	<0.01	0.02
Zinc	mg/L	0.005	0.006	<0.005	0.005	0.013	0.018	0.016	0.012	0.005	0.046	0.01	0.008	0.012
Total Metals														
Aluminium	mg/L	0.01	-	-	-	14.3	-	-	-	0.56	-	-	-	0.57
Antimony	mg/L	0.001	-	-	-	<0.001	-	-	-	<0.001	-	-	-	<0.001
Arsenic	mg/L	0.001	-	-	-	0.004	-	-	-	0.002	-	-	-	0.007
Barium	mg/L	0.001	-	-	-	0.348	-	-	-	0.105	-	-	-	0.033
Beryllium	mg/L	0.001	-	-	-	0.002	-	-	-	<0.001	-	-	-	<0.001
Boron	mg/L	0.05	-	-	-	<0.05	-	-	-	0.11	-	-	-	0.11
Cadmium	mg/L	0.0001	-	-	-	0.0002	-	-	-	<0.0001	-	-	-	<0.0001
Chromium	mg/L	0.001	-	-	-	0.007	-	-	-	0.002	-	-	-	0.003
Copper	mg/L	0.001	-	-	-	0.021	-	-	-	0.003	-	-	-	0.007
Iron	mg/L	0.05	-	-	-	10.5	-	-	-	0.69	-	-	-	0.79
Lead	mg/L	0.001	-	-	-	0.026	-	-	-	0.016	-	-	-	0.018
Lithium	mg/L	0.001	-	-	-	0.021	-	-	-	0.029	-	-	-	0.016
Manganese	mg/L	0.001	-	-	-	0.669	-	-	-	0.107	-	-	-	0.109
Mercury	mg/L	0.0001	<0.0001	-	-	<0.0001	-	-	-	<0.0001	-	-	-	<0.0001
Molybdenum	mg/L	0.001	-	-	-	<0.001	-	-	-	<0.001	-	-	-	<0.001
Nickel	mg/L	0.001	-	-	-	0.014	-	-	-	0.003	-	-	-	0.01
Selenium	mg/L	0.01	-	-	-	<0.01	-	-	-	<0.01	-	-	-	<0.01
Silver	mg/L	0.001	-	-	-	<0.001	-	-	-	<0.001	-	-	-	<0.001
Uranium	mg/L	0.001	-	-	-	0.002	-	-	-	0.004	-	-	-	0.001
Vanadium	mg/L	0.01	-	-	-	0.04	-	-	-	<0.01	-	-	-	0.02
Zinc	mg/L	0.005	-	-	-	0.085	-	-	-	0.037	-	-	-	0.014
Nutrients														
Nitrite + Nitrate as N	mg/L	0.01	2.73	0.18	<0.01	0.14	0.15	0.06	0.2	0.69	0.18	0.06	0.14	0.07
Total Kjeldahl Nitrogen as N	mg/L	0.1	0.3	0.2	0.2	0.5	0.4	0.2	0.5	0.3	0.9	<0.1	0.5	0.3
Total Nitrogen as N	mg/L	0.1	3.1	0.3	0.2	0.6	0.6	0.3	0.7	1	1	<0.1	0.6	0.4
Total Phosphorus as P	mg/L	0.01	0.05	0.09	0.15	0.05	0.05	0.03	<0.01	0.08	0.02	0.16	0.04	0.75

ANZECC 2000	ADWG (2011)	
	Livestock Drinking	Aesthetic Health
-	6.5 - 8.5	-
-	-	-
3000-13000*	600	-
-	-	-
-	-	-
1000	-	-
-	250	-
-	-	-
-	-	-
-	180	-
1000	250	500
-	-	-
5	-	-
-	-	-
0.5	-	-
-	-	-
-	-	-
5	-	-
0.01	-	-
1	-	-
0.5	-	-
-	-	-
0.1	-	-
-	-	-
-	-	-
0.002	-	-
0.002	-	-
0.15	-	-
1	-	-
0.02	-	-
-	-	-
-	-	-
0.2	-	-
-	-	-
20	-	-
-	-	-
5	0.2	-
-	-	0.003
0.5	-	0.01
-	-	2
-	-	0.06
5	-	4
0.01	-	0.002
1	-	0.05
0.5	1	2
-	0.3	-
0.1	-	0.01
-	-	-
-	0.1	0.5
0.002	-	0.001
0.15	-	0.05
1	-	0.02
0.02	-	0.01
-	-	0.1
0.2	-	0.017
-	-	-
20	3	-
30-400^	-	3
-	-	-
-	-	-

Transgressed Australian Drinking Water Guidelines (2011) aesthetic guideline value.
 Exceeds Australian Drinking Water Guidelines (2011) health guideline value.
1000 Exceeds ANZECC (2000) livestock drinking water guideline value.
1000 Laboratory holding time breached.
* Guideline Value depends on type of livestock.
^ ANZECC (2000) livestock guideline is 30 mg/L for nitrite and 400 mg/L for nitrate.
ADWG (2011) health guideline is 3 mg/L for nitrite and 50 mg/L for nitrate.



Appendix 2

SIMULATED AND MEASURED GROUNDWATER LEVELS

Table A2.1: OBSERVED AND MODELLED HEADS – DERM BORES

RN / Bore ID	Easting	Northing	Observed Head (mAHD)	Modelled Head (mAHD)	Head Difference
16511	757277	7134349	223.11	215.19	7.92
58005	778387	7130161	200.80	203.06	-2.26
18197	778951	7129164	198.01	204.78	-6.77
11714	751011	7128589	223.84	218.16	5.68
14889	767668	7127551	210.93	217.79	-6.86
14618	756263	7126671	256.62	223.53	33.09
15765	786111	7125437	200.08	205.42	-5.34
15780	776854	7124835	187.19	216.20	-29.01
15781	781086	7124837	210.41	211.39	-0.98
15857	786529	7124195	200.88	207.30	-6.42
16119	753714	7122964	189.61	228.61	-39.00
48810	753854	7123022	194.11	228.61	-34.50
58612	755244	7122934	207.96	228.74	-20.78
58064	765955	7122751	221.51	225.35	-3.84
17753	769829	7122980	214.84	224.58	-9.74
15838	770384	7122937	209.49	224.37	-14.88
15831	781592	7122455	197.11	215.54	-18.43
15836	787079	7122613	183.41	209.97	-26.56
14649	747989	7121872	230.46	227.70	2.76
15854	776103	7122202	236.38	223.12	13.26
43380	772057	7121733	226.41	226.84	-0.43
17800	785695	7121719	214.96	212.09	2.87
17799	786377	7121057	212.66	212.52	0.14
16191	774489	7118263	222.38	231.11	-8.73
58537	765297	7117745	213.61	234.91	-21.30
16080	776979	7117564	242.89	230.15	12.74
44246	764476	7117053	233.89	236.06	-2.17
58079	768179	7115838	240.89	238.98	1.91
15761	777189	7115681	237.67	233.42	4.25
48803	737484	7114955	267.66	246.11	21.55
16040	773889	7114857	233.53	237.71	-4.18
14744	758294	7113740	247.91	241.96	5.95
58297	768857	7113606	248.98	243.58	5.40
11590	753250	7113396	252.87	246.74	6.13
15828	783805	7112859	240.25	227.31	12.94
14533	750446	7112188	279.44	251.20	28.24
15989	759061	7111927	236.76	244.06	-7.30
15989	759061	7111927	236.76	242.91	-6.15
34929	770047	7112012	258.79	246.78	12.01
15855	783315	7112069	234.66	229.30	5.36
34708	766592	7110327	246.89	252.24	-5.35
14743	758565	7109882	249.48	248.31	1.17
33821	757641	7109030	253.93	248.09	5.84
34718	773331	7109479	262.80	249.71	13.09
34709	767306	7108527	253.27	256.29	-3.02
16789	768973	7108492	260.98	257.05	3.93

Table A2.1: OBSERVED AND MODELLED HEADS – DERM BORES

RN / Bore ID	Easting	Northing	Observed Head (mAHD)	Modelled Head (mAHD)	Head Difference
16939	747568	7107070	255.49	266.80	-11.31
36143	739505	7106913	276.47	269.37	7.10
16942	749776	7106258	275.58	268.84	6.74
16945	749040	7105533	234.83	270.68	-35.85
32259	756299	7105823	266.01	257.04	8.97
32259	756299	7105823	269.21	257.04	12.17
33435	761713	7105561	244.08	260.23	-16.15
16135	764241	7105479	268.58	269.16	-0.58
48965	765930	7105167	326.84	302.24	24.60
12763	795570	7105451	226.39	230.83	-4.44
16944	747248	7104859	260.25	274.30	-14.05
16941	749420	7103647	259.81	276.75	-16.94
16946	745604	7103166	303.56	283.04	20.52
16943	746552	7103302	269.56	280.66	-11.10
37479	763605	7102905	298.38	270.85	27.53
43660	739979	7102440	275.59	280.74	-5.15
35842	763565	7100904	326.37	280.33	46.04
16102	753137	7100434	282.29	290.26	-7.97
58009	775800	7100064	280.56	266.69	13.87
58009	775800	7100064	279.61	265.03	14.58
58609	778002	7100356	261.70	258.80	2.90
15967	760184	7099956	233.69	263.49	-29.80
48806	765903	7099748	297.39	310.16	-12.77
30553	763805	7099052	288.78	281.98	6.80
14893	756988	7098511	278.93	287.30	-8.37
44699	770463	7098606	286.65	297.32	-10.67
15759	739901	7098254	291.82	287.62	4.20
12464	742123	7098243	288.17	295.41	-7.24
43686	737664	7097897	310.12	287.73	22.39
17947	743783	7097904	299.84	291.90	7.94
36486	753766	7097096	323.98	319.28	4.70
37343	740706	7096730	303.99	289.57	14.42

Table A2.2: OBSERVED AND MODELLED HEADS – MONITORING BORES

Bore ID	Easting	Northing	Model Layer	Representative Head	Modelled Head (steady state)	Head Difference
MB10	763542.5	7115938.9	2	232.00	238.00	-6.00
			3		238.00	-6.00
			4		238.00	-6.00
			5		238.00	-6.00
			6		238.00	-6.00
			7		238.00	-6.00
			8		238.00	-6.00
			11		238.04	-6.04

Table A2.2: OBSERVED AND MODELLED HEADS – MONITORING BORES						
Bore ID	Easting	Northing	Model Layer	Representative Head	Modelled Head (steady state)	Head Difference
MB11	763492.8	7113178.7	2	245.18	244.33	0.85
			3		244.32	0.86
			4		244.31	0.87
			5		244.31	0.87
			6		244.31	0.87
			7		244.30	0.88
			8		244.29	0.89
			11		244.21	0.97
MB12	759272.3	7115705.7	2	234.15	237.86	-3.71
			4		237.89	-3.74
			4		237.89	-3.74
			5		237.90	-3.75
			6		237.91	-3.76
			7		237.92	-3.77
			8		237.93	-3.78
			11		238.18	-4.03
MB1A	760997.4	7120001.6	3	239.62	231.53	8.09
			3		231.53	8.09
			4		231.53	8.09
			5		231.53	8.09
			6		231.53	8.09
			7		231.53	8.09
			8		231.53	8.09
			12		231.49	8.13
MB2	760367.3	7117880.0	3	235.00	234.43	0.57
			3		234.43	0.57
			4		234.43	0.57
			5		234.43	0.57
			6		234.44	0.56
			7		234.44	0.56
			8		234.44	0.56
			12		234.63	0.37
MB3A	763091.5	7117997.6	3	231.47	232.34	-0.87
			4		232.39	-0.92
			5		232.41	-0.94
			6		232.42	-0.95
			7		232.46	-0.99
			8		232.50	-1.03
			12		233.81	-2.34
MB4A	760348.3	7116954.4	3	234.19	235.15	-0.96
			3		235.15	-0.96
			4		235.15	-0.96
			5		235.15	-0.96
			6		235.15	-0.96
			7		235.16	-0.97
			8		235.17	-0.98
			12		235.89	-1.70

Table A2.2: OBSERVED AND MODELLED HEADS – MONITORING BORES						
Bore ID	Easting	Northing	Model Layer	Representative Head	Modelled Head (steady state)	Head Difference
MB5	762400.2	7116428.9	2	234.05	236.08	-2.03
			3		235.98	-1.93
			4		235.91	-1.86
			5		235.89	-1.84
			6		235.88	-1.83
			7		235.88	-1.83
			8		235.88	-1.83
			11		236.24	-2.19
MB6	761431.8	7114841.7	2	235.57	238.86	-3.29
			3		238.86	-3.29
			4		238.86	-3.29
			5		238.86	-3.29
			6		238.86	-3.29
			7		238.88	-3.31
			8		238.90	-3.33
			11		239.30	-3.73
MB7A	760017.0	7115206.8	2	235.19	235.63	-0.44
			3		236.23	-1.04
			4		236.84	-1.65
			5		236.94	-1.75
			6		237.03	-1.84
			7		237.09	-1.90
			8		237.14	-1.95
			11		238.19	-3.00
MB8A	759277.0	7112982.7	2	241.89	240.60	1.29
			3		240.87	1.02
			4		241.13	0.76
			5		241.22	0.67
			6		241.30	0.59
			7		241.41	0.48
			8		241.51	0.38
			11		242.41	-0.52
MB9	761753.2	7112703.5	2	236.76	244.37	-7.61
			3		244.37	-7.61
			4		244.36	-7.60
			5		244.36	-7.60
			6		244.36	-7.60
			7		244.35	-7.59
			8		244.35	-7.59
			11		244.35	-7.59