

EPL20350 WATER MONITORING RESULTS 2014 - QUARTER 1

LICENSEE: Santos NSW (Eastern) Pty Ltd
PREMISES: Narrabri Gas Field
 X Line Road, NARRABRI NSW 2390

LICENCE NUMBER: Environment Protection Licence 20350
EPL LINK (EPA SITE): <http://www.epa.nsw.gov.au/prpoeoapp/ViewPOEOlicence.aspx?DOC D=33816&SYSU D=1&LICID=20350>

SCHEDULED ACTIVITY: Coal seam gas exploration, assessment and production
REPORTING PERIOD: 2014 Quarter 1 - May / July 2014
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MONITORING BY: Santos
ANALYSIS BY: ALS Laboratory, Smithfield

TABLE 1: EPL20350 WATER MONITORING LOCATIONS

Spatial reference: GDA94 MGA Zone 55

EPA Identification No.	Monitoring type	Location	Easting	Northing
7	Groundwater quality monitoring	BWD27PRORA01	755429.176	6604670.682
8	Groundwater quality monitoring	BWD27PRUPS02	755433.048	6604684.807
9	Groundwater quality monitoring	BWD26PRLPS01	749372.750	6609376.690
10	Groundwater quality monitoring	BWD26PRLPS02	749364.450	6609363.350
11	Groundwater quality monitoring	DWH14PRLPS01	764703.313	6617145.443
12	Groundwater quality monitoring	DWH14PRLPS02	764689.147	6617119.109
13	Groundwater quality monitoring	DWH14PRPUR03	764696.211	6617132.298
14	Groundwater quality monitoring	DWH3PRUPS01	762239.680	6605589.320
15	Groundwater quality monitoring	DWH3PRLPS02	762251.050	6605598.980
16	Groundwater quality monitoring	NYOPRORA01	736293.460	6643110.400
17	Groundwater quality monitoring	NYOPRUPS02	736308.800	6643107.840
18	Groundwater quality monitoring	BWD27PRLPS03	755436.361	6604699.035
19	Groundwater quality monitoring	DWH13GMB	764567.030	6616966.810
20	Groundwater quality monitoring	BHN14PRORA01	747158.130	6626109.120
21	Groundwater quality monitoring	BHN14PRUPS02	747152.710	6626123.910
22	Groundwater quality monitoring	TULPRNAP01	774464.070	6612048.130
23	Groundwater quality monitoring	TULPRDGY02	774466.480	6612032.980
24	Groundwater quality monitoring	BWDMW13D	753863.300	6608108.510
25	Groundwater quality monitoring	BWDMW13S	753864.820	6608109.300
26	Groundwater quality monitoring	BWDMW12S	753830.650	6608202.740
27	Groundwater quality monitoring	BWDMW12D	753831.910	6608203.710
28	Groundwater quality monitoring	BWDMW12I	753832.680	6608202.250
29	Groundwater quality monitoring	BWDMW2	753912.830	6608241.350
30	Groundwater quality monitoring	BWDMW3	753935.870	6608254.020
31	Groundwater quality monitoring	BWDMW4D	753980.810	6608285.740
32	Groundwater quality monitoring	BWDMW4	753984.140	6608288.040
33	Groundwater quality monitoring	BWDMW15S	753868.090	6608258.340
34	Groundwater quality monitoring	BWDMW15D	753867.100	6608256.750
35	Groundwater quality monitoring	BWDMW16S	753858.950	6608316.490
36	Groundwater quality monitoring	BWDMW16D	753856.980	6608315.570
37	Groundwater quality monitoring	LWDMW1D	751387.930	6623862.960
38	Groundwater quality monitoring	LWDMW1S	751388.920	6623862.460
39	Groundwater quality monitoring	LWDMW1I	751390.640	6623861.850
40	Groundwater quality monitoring	LWDMW2S	751102.840	6622293.020
41	Groundwater quality monitoring	LWDMW2D	751101.810	6622293.150
42	Groundwater quality monitoring	LWDMW3D	751876.160	6622163.760
43	Groundwater quality monitoring	LWDMW3S	751876.470	6622164.930
44	Groundwater level monitoring	DWH8AGMB1	765546.740	6616987.990
45	Groundwater level monitoring	DWH8AGMB2	765546.740	6616987.990

EPA Identification No.	Monitoring type	Location	Easting	Northing
46	Groundwater level monitoring	DWH8AGMB3	765546.740	6616987.990
47	Groundwater level monitoring	BWD28QGUPS01	752949.898	6604219.732
48	Groundwater level monitoring	BWD28QGLPS01	752949.898	6604219.732
49	Groundwater level monitoring	BWD28QGPUR01	752949.898	6604219.732
50	Groundwater quality monitoring	WPKMW01	755684.140	6638105.310
51	Groundwater quality monitoring	WPKMW01D	755689.750	6638097.350
52	Groundwater quality monitoring	WPKMW02	755671.200	6638034.290
53	Groundwater quality monitoring	WPKMW04	755632.500	6637993.070
54	Groundwater quality monitoring	WPKMW07	755501.160	6638207.530
55	Groundwater quality monitoring	WPKMW08	755634.110	6638166.870
56	Groundwater quality monitoring	WPKMW09D	755663.980	6637988.200
57	Groundwater quality monitoring	WPKMW09S	755664.400	6637990.540
58	Groundwater quality monitoring	WPKMW12S	755456.180	6638228.910
59	Groundwater quality monitoring	WPKMW13I	755552.650	6638189.580
60	Groundwater quality monitoring	WPKMW13S	755554.880	6638189.050
61	Groundwater quality monitoring	WPKMW14D	753364.510	6638049.060
62	Groundwater quality monitoring	WPKMW14S	753364.770	6638048.260
63	Groundwater quality monitoring	WPKMW15D	753365.480	6638233.360
64	Groundwater quality monitoring	WPKMW15S	753365.500	6638230.740
65	Groundwater quality monitoring	WPKMW16D	755051.030	6637988.500
66	Groundwater quality monitoring	WPKMW16S	755050.530	6637986.640
67	Groundwater quality monitoring	WPKMW17D	756151.060	6638128.320
68	Groundwater quality monitoring	WPKMW17S	756149.540	6638128.050
69	Produced water storage dam	BWDPD2	753875.870	6607995.060
70	Produced water storage dam	BWDPD3	753992.170	6608125.970
71	Produced water storage dam	LWDPD4	751473.349	6623513.252
72	Produced water storage dam	LWDPD3	751460.723	6623323.850
73	Produced water storage dam	LWDPD2	751428.103	6623124.978
74	Produced water storage dam	LWDPD1	751390.223	6622935.575
75	Produced water storage dam	TFDPD1	755611.600	6638072.850
76	Produced water storage dam	TFDPD2	755480.110	6638099.040

TABLE 2: ANALYTES MONITORED, FREQUENCY AND SAMPLING METHOD

Analyte	Units of measure	Frequency	Sampling method
Aluminium	milligrams per litre	Every 6 months	Grab sample
Ammonia	milligrams per litre	Every 6 months	Grab sample
Arsenic	milligrams per litre	Every 6 months	Grab sample
Barium	milligrams per litre	Every 6 months	Grab sample
Beryllium	milligrams per litre	Every 6 months	Grab sample
Bicarbonate	milligrams per litre	Every 6 months	Grab sample
Boron	milligrams per litre	Every 6 months	Grab sample
Bromide	milligrams per litre	Every 6 months	Grab sample
Cadmium	milligrams per litre	Every 6 months	Grab sample
Calcium	milligrams per litre	Every 6 months	Grab sample
Carbonate	milligrams per litre	Every 6 months	Grab sample
Chloride	milligrams per litre	Every 6 months	Grab sample
Chromium	milligrams per litre	Every 6 months	Grab sample
Cobalt	milligrams per litre	Every 6 months	Grab sample
Copper	milligrams per litre	Every 6 months	Grab sample
Dissolved Oxygen	milligrams per litre	Quarterly	In situ
Electrical Conductivity	microsiemens per centimetre	Quarterly	In situ
Fluoride	milligrams per litre	Every 6 months	Grab sample
Iron	milligrams per litre	Every 6 months	Grab sample
Lead	milligrams per litre	Every 6 months	Grab sample
Magnesium	milligrams per litre	Every 6 months	Grab sample
Manganese	milligrams per litre	Every 6 months	Grab sample
Mercury	milligrams per litre	Every 6 months	Grab sample
Methane	milligrams per litre	Every 6 months	Grab sample
Molybdenum	milligrams per litre	Every 6 months	Grab sample
Nickel	milligrams per litre	Every 6 months	Grab sample
Nitrate	milligrams per litre	Every 6 months	Grab sample
Nitrite	milligrams per litre	Every 6 months	Grab sample
pH	pH Unit	Quarterly	In situ
Potassium	milligrams per litre	Every 6 months	Grab sample
Reactive Phosphorus	milligrams per litre	Every 6 months	Grab sample
Redox Potential	millivolts	Quarterly	In situ
Selenium	milligrams per litre	Every 6 months	Grab sample
Sodium	milligrams per litre	Every 6 months	Grab sample
Sodium Adsorption Ratio	-	Every 6 months	Grab sample
Standing Water Level	metres below ground level	Quarterly	In situ
Strontium	milligrams per litre	Every 6 months	Grab sample
Sulfate	milligrams per litre	Every 6 months	Grab sample
Total Dissolved Solids	milligrams per litre	Every 6 months	Grab sample
Total Organic Carbon	milligrams per litre	Every 6 months	Grab sample
Total Phosphorus	milligrams per litre	Every 6 months	Grab sample
Uranium	milligrams per litre	Every 6 months	Grab sample
Vanadium	milligrams per litre	Every 6 months	Grab sample
Zinc	milligrams per litre	Every 6 months	Grab sample

TABLE 3: WATER MONITORING RESULTS FOR 1ST QUARTER - MAY / JULY 2014

Analyte	EPA Monitoring Point		8	9	10	11	12	13	14	15	16
	Location	Date Sampled	BWD27PRUPS02 26/07/2014	BWD26PRUPS01 27/07/2014	BWD26PRLPS02 27/07/2014	DWH14PRUPS01 28/07/2014	DWH14PRLPS02 28/07/2014	DWH14PRPUR03 25/07/2014	DWH3PRUPS01 25/07/2014	DWH3PRLPS02 25/07/2014	NYOPRORA01 29/07/2014
	Sample obtained	Sampling Method	Yes	Yes	Yes	Yes	Yes	Bore obstructed unable to sample	Yes	Yes	Insufficient water to take sample
Units	Method	Grab/In situ	Grab/In situ	Grab/In situ	Grab/In situ	Grab/In situ	Grab/In situ	Grab/In situ	Grab/In situ	Grab/In situ	In situ
OR	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result
Aluminium	mg/L	0.01	0.01	0.07	0.16	0.01	0.01	0.01	0.02	0.08	NR
Ammonia	mg/L	0.01	0.01	0.02	0.01	0.01	0.01	NR	0.01	0.01	NR
Arsenic	mg/L	0.001	0.001	0.003	0.001	0.001	0.001	NR	0.001	0.001	NR
Barium	mg/L	0.001	0.154	0.487	0.244	0.264	0.138	NR	0.054	0.127	NR
Beryllium	mg/L	0.001	0.001	0.001	0.001	0.001	0.001	NR	0.001	0.001	NR
Bicarbonate	mg/L	1	15	58	39	47	79	NR	17	64	NR
Boron	mg/L	0.05	0.05	0.17	0.15	0.05	0.05	NR	0.05	0.14	NR
Bromide	mg/L	0.01	0.111	0.084	0.01	0.15	0.168	NR	0.079	0.085	NR
Cadmium	mg/L	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	NR	0.0001	0.0001	NR
Calcium	mg/L	1	1	3	2	4	16	NR	2	8	NR
Carbonate	mg/L	1	1	1	1	1	1	NR	1	1	NR
Chloride	mg/L	1	23	19	7	32	37	NR	24	24	NR
Chromium	mg/L	0.001	0.026	0.001	0.001	0.001	0.001	NR	0.001	0.001	NR
Cobalt	mg/L	0.001	0.009	0.001	0.001	0.004	0.002	NR	0.001	0.003	NR
Copper	mg/L	0.001	0.058	0.001	0.001	0.048	0.004	NR	0.1	0.005	NR
Dissolved Oxygen	mg/L		3.69	1.2	1.29	1.91	2.01	NR	3.84	2.5	NR
Electrical Conductivity	µS/cm		300	254	293	450	617	NR	293	301	NR
Fluoride	mg/L	0.1	0.1	0.3	0.1	0.1	0.1	NR	0.1	0.1	NR
Iron	mg/L	0.05	0.06	5.61	0.58	0.05	0.1	NR	0.05	1.73	NR
Lead	mg/L	0.001	0.001	0.001	0.001	0.001	0.001	NR	0.001	0.001	NR
Magnesium	mg/L	1	1	2	2	4	3	NR	1	1	NR
Manganese	mg/L	0.001	0.07	0.406	0.045	0.317	0.281	NR	0.059	0.368	NR
Mercury	mg/L	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	NR	0.0001	0.0001	NR
Methane	µg/L	10	10	409	10	10	10	NR	10	42	NR
Molybdenum	mg/L	0.001	0.001	0.001	0.001	0.001	0.001	NR	0.001	0.002	NR
Nickel	mg/L	0.001	0.269	0.001	0.01	0.025	0.041	NR	0.009	0.026	NR
Nitrate	mg/L	0.01	0.2	0.01	0.02	0.05	0.12	NR	0.08	0.01	NR
Nitrite	mg/L	0.01	0.01	0.01	0.01	0.01	0.01	NR	0.01	0.01	NR
pH	pH Unit		4.94	6.36	6.01	5.22	5.79	NR	4.87	5.62	NR
Potassium	mg/L	1	6	12	6	7	4	NR	2	6	NR
Reactive Phosphorus	mg/L	0.01	0.01	0.01	0.01	0.01	0.01	NR	0.01	0.01	NR
Redox Potential	mV		196	-71	52	182	106.2	NR	230	35.4	NR
Selenium	mg/L	0.01	0.01	0.01	0.01	0.01	0.01	NR	0.01	0.01	NR
Sodium	mg/L	1	19	23	12	29	38	NR	24	29	NR
Standing Water Level	mbgl		38.8	28.79	29.43	53.32	54.09	NR	67.46	67.63	NR
Strontium	mg/L	0.001	0.024	0.066	0.045	0.099	0.066	NR	0.025	0.127	NR
Sulfate	mg/L	1	1	1	1	1	1	NR	3	1	NR
Total Dissolved Solids	mg/L		201	170.18	196.31	301.5	413.39	NR	196.31	201.67	NR
Uranium	mg/L	0.001	0.001	0.001	0.001	0.001	0.001	NR	0.001	0.001	NR
Vanadium	mg/L	0.01	0.01	0.01	0.01	0.01	0.01	NR	0.01	0.01	NR
Zinc	mg/L	0.005	0.014	0.007	0.008	0.014	0.011	NR	0.016	0.01	NR

NR = No Result

EPA Monitoring Point		17	18	20	21	22	22	23	24	25	
Location		NYOPRUPS02	BWD27PRLPS03	BHN14PRORA01	BHN14PRUPS02	TULPRNAP01	TULPRNAP01	TULPRDGY02	BWDMW13D	BWDMW13S	
Date Sampled		29/07/2014	26/07/2014	24/07/2014	24/07/2014	9/07/2014	29/07/2014	29/07/2014	31/07/2014	29/07/2014	
Sample obtained		Environmental safety issues. Equipment ordered to take safe sample									
Analyte		Units	Grab/In situ	Grab/In situ	Grab/In situ	Grab/In situ	Grab sample/In-situ	Grab sample/In-situ	Grab sample/In-situ	Grab sample/In-situ	
		LOR	RESULT	RESULT	RESULT	RESULT	RESULT	RESULT	RESULT	RESULT	
Aluminium		mg/L	0.01	NR	0.03	0.01	0.01	0.03	NR	NR	
Ammonia		mg/L	0.01	NR	0.01	0.06	0.02	1.43	NR	NR	
Arsenic		mg/L	0.001	NR	0.001	0.004	0.006	0.004	NR	NR	
Barium		mg/L	0.001	NR	0.088	0.86	0.887	0.668	NR	NR	
Beryllium		mg/L	0.001	NR	0.001	0.001	0.001	0.001	NR	NR	
Bicarbonate		mg/L	1	NR	26	262	252	1380	NR	NR	
Boron		mg/L	0.05	NR	0.05	0.17	0.08	1.15	NR	NR	
Bromide		mg/L	0.01	NR	0.146	0.168	0.082	0.743	NR	NR	
Cadmium		mg/L	0.0001	NR	0.0001	0.0001	0.0003	0.0001	NR	NR	
Calcium		mg/L	1	NR	1	36	45	30	NR	NR	
Carbonate		mg/L	1	NR	1	1	1	1	NR	NR	
Chloride		mg/L	1	NR	35	39	23	300	NR	NR	
Chromium		mg/L	0.001	NR	0.005	0.001	0.002	0.004	NR	NR	
Cobalt		mg/L	0.001	NR	0.001	0.001	0.002	0.001	NR	NR	
Copper		mg/L	0.001	NR	0.032	0.001	0.002	0.001	NR	NR	
Dissolved Oxygen		mg/L		NR	2.43	1.51	1.86	0	6.38	NR	3.99
Electrical Conductivity		µS/cm		NR	360	930	599	3740	3126	NR	323.7
Fluoride		mg/L	0.1	NR	0.1	0.3	0.3	1.2	NR	NR	
Iron		mg/L	0.05	NR	0.05	4.63	5.42	3.06	NR	NR	
Lead		mg/L	0.001	NR	0.001	0.001	0.001	0.001	NR	NR	
Magnesium		mg/L	1	NR	2	11	10	12	NR	NR	
Manganese		mg/L	0.001	NR	0.019	0.682	0.299	0.543	NR	NR	
Mercury		mg/L	0.0001	NR	0.0001	0.0001	0.0001	0.0001	NR	NR	
Methane		µg/L	10	NR	10	649	1910	11100	NR	NR	
Molybdenum		mg/L	0.001	NR	0.001	0.005	0.006	0.008	NR	NR	
Nickel		mg/L	0.001	NR	0.039	0.006	0.002	0.004	NR	NR	
Nitrate		mg/L	0.01	NR	0.18	0.01	0.01	0.01	NR	NR	
Nitrite		mg/L	0.01	NR	0.01	0.01	0.01	0.01	NR	NR	
pH		pH Unit		NR	5.11	6.72	6.62	6.73	5.76	NR	5.48
Potassium		mg/L	1	NR	4	4	6	27	NR	NR	
Reactive Phosphorus		mg/L	0.01	NR	0.01	0.02	0.01	0.09	NR	NR	
Redox Potential		mV		NR	211	-114	-114	-208.3	122	NR	123.1
Selenium		mg/L	0.01	NR	0.01	0.01	0.01	0.01	NR	NR	
Sodium		mg/L	1	NR	34	89	61	866	NR	NR	
Standing Water Level		mbgl		NR	28.31	26.98	15.9	109.34	113.8	NR	29.53
Strontium		mg/L	0.001	NR	0.032	0.606	0.616	1.51	NR	NR	
Sulfate		mg/L	1	NR	1	11	1	239	NR	NR	
Total Dissolved Solids		mg/L		NR	241.2	623.1	401.33	2505.8	2094.42	NR	210.6
Uranium		mg/L	0.001	NR	0.001	0.001	0.001	0.001	NR	NR	
Vanadium		mg/L	0.01	NR	0.01	0.01	0.01	0.01	NR	NR	
Zinc		mg/L	0.005	NR	0.022	0.009	0.008	0.024	NR	NR	

NR = No Result

Analyte	EPA Monitoring Point Location	Date Sampled	Sample obtained	Sampling Method	26	27	28	29	30	31	32	33	35
					BWDMW12S	BWDMW12D	BWDMW12I	BWDMW2	BWDMW3	BWDMW4D	BWDMW4	BWDMW15S	BWDMW16S
					5/07/2014	5/07/2014	5/07/2014	29/07/2014	31/07/2014	31/07/2014	29/07/2014	31/07/2014	29/07/2014
					Yes	Yes	Yes	DRY BORE	Yes	Yes	DRY BORE	Yes	DRY BORE
					In situ	In situ	In situ	In situ	In situ	In situ	Grab	In situ	In situ
					RESULT	RESULT	RESULT	RESULT	RESULT	RESULT	RESULT	RESULT	RESULT
Units	LOR												
Aluminium	mg/L	0.01						NR			NR		NR
Ammonia	mg/L	0.01						NR			NR		NR
Arsenic	mg/L	0.001						NR			NR		NR
Barium	mg/L	0.001						NR			NR		NR
Beryllium	mg/L	0.001						NR			NR		NR
Bicarbonate	mg/L	1						NR			NR		NR
Boron	mg/L	0.05						NR			NR		NR
Bromide	mg/L	0.01						NR			NR		NR
Cadmium	mg/L	0.0001						NR			NR		NR
Calcium	mg/L	1						NR			NR		NR
Carbonate	mg/L	1						NR			NR		NR
Chloride	mg/L	1						NR			NR		NR
Chromium	mg/L	0.001						NR			NR		NR
Cobalt	mg/L	0.001						NR			NR		NR
Copper	mg/L	0.001						NR			NR		NR
Dissolved Oxygen	mg/L							NR	3.46	3.62	NR	4.2	NR
Electrical Conductivity	µS/cm		30968	5714	13909			NR	403.2	329.9	NR	391	NR
Fluoride	mg/L	0.1						NR			NR		NR
Iron	mg/L	0.05						NR			NR		NR
Lead	mg/L	0.001						NR			NR		NR
Magnesium	mg/L	1						NR			NR		NR
Manganese	mg/L	0.001						NR			NR		NR
Mercury	mg/L	0.0001						NR			NR		NR
Methane	µg/L	10						NR			NR		NR
Molybdenum	mg/L	0.001						NR			NR		NR
Nickel	mg/L	0.001						NR			NR		NR
Nitrate	mg/L	0.01						NR			NR		NR
Nitrite	mg/L	0.01						NR			NR		NR
pH	pH Unit		7.73	7.09	8.07			NR	5.62	6.13	NR	5.88	NR
Potassium	mg/L	1						NR			NR		NR
Reactive Phosphorus	mg/L	0.01						NR			NR		NR
Redox Potential	mV		118.5	116.8	123.5			NR	140.3	116.3	NR	121.5	NR
Selenium	mg/L	0.01						NR			NR		NR
Sodium	mg/L	1						NR			NR		NR
Standing Water Level	mbgl		8.095	30.465	18.865			NR	30.07	29.515	NR	29.38	NR
Strontium	mg/L	0.001						NR			NR		NR
Sulfate	mg/L	1						NR			NR		NR
Total Dissolved Solids	mg/L		20124	3718	9041.5			NR	261.95	214.5	NR	254.15	NR
Uranium	mg/L	0.001						NR			NR		NR
Vanadium	mg/L	0.01						NR			NR		NR
Zinc	mg/L	0.005						NR			NR		NR

NR = No Result

Analyte	Units	LOR	EPA Monitoring Point		36	37	38	39	40	41	42	43	50	
			Location	Date Sampled	BWDMW16D	LWDMW1D	LWDMW1S	LWDMW1I	LWDMW2S	LWDMW2D	LWDMW3D	LWDMW3S	WPKMW1	
Sampling Method					31/07/2014	30/07/2014	30/07/2014	30/07/2014	30/07/2014	30/07/2014	30/07/2014	30/07/2014	30/07/2014	
					Yes	Yes	DRY BORE	DRY BORE	DRY BORE	Yes	Yes	DRY BORE	Yes	
					In situ	In situ	In situ	In situ	In situ	In situ	In situ	In situ	In situ	
					RESULT	RESULT	RESULT	RESULT	RESULT	RESULT	RESULT	RESULT	RESULT	
Aluminium	mg/L	0.01					NR	NR	NR				NR	
Ammonia	mg/L	0.01					NR	NR	NR				NR	
Arsenic	mg/L	0.001					NR	NR	NR				NR	
Barium	mg/L	0.001					NR	NR	NR				NR	
Beryllium	mg/L	0.001					NR	NR	NR				NR	
Bicarbonate	mg/L	1					NR	NR	NR				NR	
Boron	mg/L	0.05					NR	NR	NR				NR	
Bromide	mg/L	0.01					NR	NR	NR				NR	
Cadmium	mg/L	0.0001					NR	NR	NR				NR	
Calcium	mg/L	1					NR	NR	NR				NR	
Carbonate	mg/L	1					NR	NR	NR				NR	
Chloride	mg/L	1					NR	NR	NR				NR	
Chromium	mg/L	0.001					NR	NR	NR				NR	
Cobalt	mg/L	0.001					NR	NR	NR				NR	
Copper	mg/L	0.001					NR	NR	NR				NR	
Dissolved Oxygen	mg/L		3.68	1.59			NR	NR	NR	1.3	1.18		NR	2.31
Electrical Conductivity	µS/cm		358.9	2055			NR	NR	NR	1699	938		NR	1296
Fluoride	mg/L	0.1					NR	NR	NR				NR	
Iron	mg/L	0.05					NR	NR	NR				NR	
Lead	mg/L	0.001					NR	NR	NR				NR	
Magnesium	mg/L	1					NR	NR	NR				NR	
Manganese	mg/L	0.001					NR	NR	NR				NR	
Mercury	mg/L	0.0001					NR	NR	NR				NR	
Methane	µg/L	10					NR	NR	NR				NR	
Molybdenum	mg/L	0.001					NR	NR	NR				NR	
Nickel	mg/L	0.001					NR	NR	NR				NR	
Nitrate	mg/L	0.01					NR	NR	NR				NR	
Nitrite	mg/L	0.01					NR	NR	NR				NR	
pH	pH Unit		6.98	6.24			NR	NR	NR	6.33	6.28		NR	7.78
Potassium	mg/L	1					NR	NR	NR				NR	
Reactive Phosphorus	mg/L	0.01					NR	NR	NR				NR	
Redox Potential	mV		120.8	47.6			NR	NR	NR	25.3	-137.9		NR	37.7
Selenium	mg/L	0.01					NR	NR	NR				NR	
Sodium	mg/L	1					NR	NR	NR				NR	
Standing Water Level	mbgl		29.54	29.62			NR	NR	NR	25.95	20.75		NR	15.815
Strontium	mg/L	0.001					NR	NR	NR				NR	
Sulfate	mg/L	1					NR	NR	NR				NR	
Total Dissolved Solids	mg/L		233.35	1339			NR	NR	NR	1105	611		NR	845
Uranium	mg/L	0.001					NR	NR	NR				NR	
Vanadium	mg/L	0.01					NR	NR	NR				NR	
Zinc	mg/L	0.005					NR	NR	NR				NR	

NR = No Result

Analyte	EPA Monitoring Point		51	52	53	55	56	57	58	59	60
	Location	Units LOR	WPKMW1D	WPKMW2	WPKMW4	WPKMW8	WPKMW9D	WPKMW9S	WPKMW12S	WPKMW13I	WPKMW13S
	Date Sampled		30/07/2014	30/07/2014	30/07/2014	30/07/2014	30/07/2014	30/07/2014	31/07/2014	31/07/2014	31/07/2014
	Sample obtained		Yes	Yes	Yes	Yes	Yes	Yes	DRY BORE	Yes	Yes
	Sampling Method		In situ	In situ	In situ	In situ	In situ	In situ	In situ	In situ	In situ
	RESULT	RESULT	RESULT	RESULT	RESULT	RESULT	RESULT	RESULT	RESULT	RESULT	RESULT
Aluminium	mg/L	0.01							NR		
Ammonia	mg/L	0.01							NR		
Arsenic	mg/L	0.001							NR		
Barium	mg/L	0.001							NR		
Beryllium	mg/L	0.001							NR		
Bicarbonate	mg/L	1							NR		
Boron	mg/L	0.05							NR		
Bromide	mg/L	0.01							NR		
Cadmium	mg/L	0.0001							NR		
Calcium	mg/L	1							NR		
Carbonate	mg/L	1							NR		
Chloride	mg/L	1							NR		
Chromium	mg/L	0.001							NR		
Cobalt	mg/L	0.001							NR		
Copper	mg/L	0.001							NR		
Dissolved Oxygen	mg/L		1.3	1.56	1.55	1.82	1.32	1.7	NR	1.28	1.39
Electrical Conductivity	µS/cm		1101	2923	1883	2274	1136	3117	NR	1148	3166
Fluoride	mg/L	0.1							NR		
Iron	mg/L	0.05							NR		
Lead	mg/L	0.001							NR		
Magnesium	mg/L	1							NR		
Manganese	mg/L	0.001							NR		
Mercury	mg/L	0.0001							NR		
Methane	µg/L	10							NR		
Molybdenum	mg/L	0.001							NR		
Nickel	mg/L	0.001							NR		
Nitrate	mg/L	0.01							NR		
Nitrite	mg/L	0.01							NR		
pH	pH Unit		7.82	7.42	7.53	7.72	7.68	7.55	NR	7.89	7.33
Potassium	mg/L	1							NR		
Reactive Phosphorus	mg/L	0.01							NR		
Redox Potential	mV		37.3	42	27.7	43.8	-3.4	36.6	NR	-27.5	-1.4
Selenium	mg/L	0.01							NR		
Sodium	mg/L	1							NR		
Standing Water Level	mbgl		15.52	14.905	15.605	16.06	14.87	15.17	NR	16.47	16.58
Strontium	mg/L	0.001							NR		
Sulfate	mg/L	1							NR		
Total Dissolved Solids	mg/L		715	1898	1222	1475.5	741	2028	NR	747.5	2060.5
Uranium	mg/L	0.001							NR		
Vanadium	mg/L	0.01							NR		
Zinc	mg/L	0.005							NR		

NR = No Result

Analyte	EPA Monitoring Point		61	62	63	64	65	66	67	68
	Location		WPKMW14D	WPKMW14S	WPKMW15D	WPKMW15S	WPKMW16D	WPKMW16S	WPKMW17D	WPKMW17S
	Date Sampled		30/07/2014	30/07/2014	31/07/2014	31/07/2014	31/07/2014	29/07/2014	30/07/2014	30/07/2014
	Sample obtained		Yes	DRY BORE	Yes	Yes	Yes	DRY BORE	Yes	Yes
	Sampling Method		In situ	In situ	In situ	In situ	In situ	In situ	In situ	In situ
	Units	LOR	RESULT	RESULT	RESULT	RESULT	RESULT	RESULT	RESULT	RESULT
Aluminium	mg/L	0.01		NR				NR		
Ammonia	mg/L	0.01		NR				NR		
Arsenic	mg/L	0.001		NR				NR		
Barium	mg/L	0.001		NR				NR		
Beryllium	mg/L	0.001		NR				NR		
Bicarbonate	mg/L	1		NR				NR		
Boron	mg/L	0.05		NR				NR		
Bromide	mg/L	0.01		NR				NR		
Cadmium	mg/L	0.0001		NR				NR		
Calcium	mg/L	1		NR				NR		
Carbonate	mg/L	1		NR				NR		
Chloride	mg/L	1		NR				NR		
Chromium	mg/L	0.001		NR				NR		
Cobalt	mg/L	0.001		NR				NR		
Copper	mg/L	0.001		NR				NR		
Dissolved Oxygen	mg/L		2.34	NR	1.27	3.54	2.24	NR	1.64	1.29
Electrical Conductivity	µS/cm		1099	NR	1261	8275	1191	NR	1039	1880
Fluoride	mg/L	0.1		NR				NR		
Iron	mg/L	0.05		NR				NR		
Lead	mg/L	0.001		NR				NR		
Magnesium	mg/L	1		NR				NR		
Manganese	mg/L	0.001		NR				NR		
Mercury	mg/L	0.0001		NR				NR		
Methane	µg/L	10		NR				NR		
Molybdenum	mg/L	0.001		NR				NR		
Nickel	mg/L	0.001		NR				NR		
Nitrate	mg/L	0.01		NR				NR		
Nitrite	mg/L	0.01		NR				NR		
pH	pH Unit		7.54	NR	7.82	7.68	7.52	NR	7.31	7.18
Potassium	mg/L	1		NR				NR		
Reactive Phosphorus	mg/L	0.01		NR				NR		
Redox Potential	mV		21.1	NR	216.3	48.4	42.3	NR	27.5	40.3
Selenium	mg/L	0.01		NR				NR		
Sodium	mg/L	1		NR				NR		
Standing Water Level	mbgl		20.8	NR	21.76	22.01	26.25	NR	18.12	20.53
Strontium	mg/L	0.001		NR				NR		
Sulfate	mg/L	1		NR				NR		
Total Dissolved Solids	mg/L		715	NR	819	5382.5	773.5	NR	676	1222
Uranium	mg/L	0.001		NR				NR		
Vanadium	mg/L	0.01		NR				NR		
Zinc	mg/L	0.005		NR				NR		

NR = No Result

Analyte	Units	LOR	69		70		71		72		73		74		75		76	
			BWDPD2		BWDPD3		LWDPD1CELL4		LWDPD1CELL3		LWDPD1CELL2		LWDPD1CELL1		TFDPD1		TFDPD2	
			23/06/2014		23/06/2014		13/06/2014		13/06/2014		13/06/2014		13/06/2014		30/07/2014		30/07/2014	
Sample obtained			Yes		Yes		No produced water in Cell		No produced water in Cell		No produced water in Cell		Yes		Yes		Yes	
Sampling Method			In situ		In situ		In situ		In situ		In situ		In situ		In situ		In situ	
RESULT			RESULT		RESULT		RESULT		RESULT		RESULT		RESULT		RESULT		RESULT	
Aluminium	mg/L	0.01			NR		NR		NR									
Ammonia	mg/L	0.01			NR		NR		NR									
Arsenic	mg/L	0.001			NR		NR		NR									
Barium	mg/L	0.001			NR		NR		NR									
Beryllium	mg/L	0.001			NR		NR		NR									
Bicarbonate	mg/L	1			NR		NR		NR									
Boron	mg/L	0.05			NR		NR		NR									
Bromide	mg/L	0.01			NR		NR		NR									
Cadmium	mg/L	0.0001			NR		NR		NR									
Calcium	mg/L	1			NR		NR		NR									
Carbonate	mg/L	1			NR		NR		NR									
Chloride	mg/L	1			NR		NR		NR									
Chromium	mg/L	0.001			NR		NR		NR									
Cobalt	mg/L	0.001			NR		NR		NR									
Copper	mg/L	0.001			NR		NR		NR									
Dissolved Oxygen	mg/L				NR		NR		NR		6.07		8.65		7.72			
Electrical Conductivity	µS/cm		11944	27745	NR		NR		NR		40313		15438		51029			
Iron	mg/L	0.05			NR		NR		NR									
Lead	mg/L	0.001			NR		NR		NR									
Magnesium	mg/L	1			NR		NR		NR									
Manganese	mg/L	0.001			NR		NR		NR									
Mercury	mg/L	0.0001			NR		NR		NR									
Methane	µg/L	10			NR		NR		NR									
Molybdenum	mg/L	0.001			NR		NR		NR									
Nickel	mg/L	0.001			NR		NR		NR									
Nitrate	mg/L	0.01			NR		NR		NR									
Nitrite	mg/L	0.01			NR		NR		NR									
pH	pH Unit		8.94	9.68	NR		NR		NR		9.71		8.49		9.24			
Potassium	mg/L	1			NR		NR		NR									
Redox Potential	mV		108.2	124.9	NR		NR		NR				25.9		18.2			
Selenium	mg/L	0.01			NR		NR		NR									
Sodium	mg/L	1			NR		NR		NR									
Sodium Adsorption Ratio	-	0.01			NR		NR		NR									
Strontium	mg/L	0.001			NR		NR		NR									
Sulfate	mg/L	1			NR		NR		NR									
Total Dissolved Solids	mg/L		7767.5	18037.5	NR		NR		NR		32996		10036		33169.5			
Total Organic Carbon	mg/L	1			NR		NR		NR									
Total Phosphorus	mg/L	0.01			NR		NR		NR									
Uranium	mg/L	0.001			NR		NR		NR									
Vanadium	mg/L	0.01			NR		NR		NR									
Zinc	mg/L	0.005			NR		NR		NR									

NR = No Result

TABLE 4: GROUNDWATER LEVEL RESULTS FOR 1ST QUARTER - MAY / JULY 2014

EPA Monitoring Point	Analyte	Unit	Number of samples required	Number of samples collected	Lowest sample value	Mean of sample	Highest sample value
44	Standing Water Level	Metres	Continuous	Continuous	874.1	874.2	874.5
45	Standing Water Level	Metres	Continuous	Continuous	769.5	769.6	769.6
46	Standing Water Level	Metres	Continuous	Continuous	591.6	591.6	591.6
47	Standing Water Level	Metres	Continuous	Continuous	12.6	16.9	23.8
48	Standing Water Level	Metres	Continuous	Continuous	5	5	5
49	Standing Water Level	Metres	Continuous	Continuous	15.2	15.2	15.2