

## ENVIRONMENT PROTECTION LICENCE 20350 MONITORING DATA

<b>Licence Holder:</b>	Santos NSW (Eastern) Pty Ltd
<b>Premises:</b>	Narrabri Gas Field X-Line Road, Narrabri NSW 2390
<b>Licence No:</b>	20350
<b>EPL LINK:</b>	<a href="http://www.epa.nsw.gov.au/prpoeoapp/ViewPOEOLicence.aspx?DOCID=33816&amp;SYSUID=1&amp;LICID=20350">http://www.epa.nsw.gov.au/prpoeoapp/ViewPOEOLicence.aspx?DOCID=33816&amp;SYSUID=1&amp;LICID=20350</a>
<b>EPL Period:</b>	May 1st 2020 to April 30th 2021
<b>Reporting Period:</b>	Quarter 2 - August 2020 - October 2020
<b>Published Date:</b>	Nov-20
<b>Monitoring Location:</b>	Refer to Table 1
<b>Scheduled Activity:</b>	Coal seam gas exploration, assessment and production
<b>General Notes:</b>	Monitoring Point 13 - only standing water level result was able to be obtained due to obstruction. Actions being conducted to rectify obstruction. Monitoring Point 80, 81 & 82 - no sample required in accordance with EPL20350 Condition M2.7 Monitoring Point 77 - no sample required in accordance with EPL20350 Condition M2.7 Monitoring Point 69 & 70 - no sample required in accordance with EPL20350 Condition M2.6 Monitoring Point 83, 84, 85 & 86 - no sample required in accordance with EPL20350 Condition M2.7

**Table 1: EPL20350 Water Monitoring Locations**

EPA Identification No.	Monitoring type	Location	Easting	Northing
7	Groundwater quality monitoring	BWD27PRUPS02	755433.048	6604684.807
8	Groundwater quality monitoring	BWD27PRLPS03	755436.361	6604699.035
9	Groundwater quality monitoring	BWD26PRUPS01	749372.75	6609376.69
10	Groundwater quality monitoring	BWD26PRLPS02	749364.45	6609363.35
11	Groundwater quality monitoring	DWH14PRUPS01	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	762239.68	6605589.32
15	Groundwater quality monitoring	DWH3PRLPS02	762251.05	6605598.98
16	Groundwater quality monitoring	NYOPRORA01	736293.46	6643110.4
17	Groundwater quality monitoring	NYOPRUPS02	736308.8	6643107.84
18	Groundwater quality monitoring	BWD27PRORA01	755429.176	6604670.682
20	Groundwater quality monitoring	BHN14PRORA01	747158.13	6626109.12
21	Groundwater quality monitoring	BHN14PRUPS02	747152.71	6626123.91
22	Groundwater quality monitoring	TULPRNAP01	774464.07	6612048.13
23	Groundwater quality monitoring	TULPRDGY02	774466.48	6612032.98
24	Groundwater quality monitoring	BWDMW13D	753863.3	6608108.51
25	Groundwater quality monitoring	BWDMW13S	753864.82	6608109.3
26	Groundwater quality monitoring	BWDMW12S	753830.65	6608202.74
27	Groundwater quality monitoring	BWDMW12D	753831.91	6608203.71
28	Groundwater quality monitoring	BWDMW12I	753832.68	6608202.25
29	Groundwater quality monitoring	BWDMW2	753912.83	6608241.35
30	Groundwater quality monitoring	BWDMW3	753935.87	6608254.02
31	Groundwater quality monitoring	BWDMW4D	753980.81	6608285.74
32	Groundwater quality monitoring	BWDMW4	753984.14	6608288.04
33	Groundwater quality monitoring	BWDMW15S	753868.09	6608258.34
34	Groundwater quality monitoring	BWDMW15D	753867.1	6608256.75
35	Groundwater quality monitoring	BWDMW16S	753858.95	6608316.49
36	Groundwater quality monitoring	BWDMW16D	753856.98	6608315.57
37	Groundwater quality monitoring	LWDMW1D	751387.93	6623862.96
38	Groundwater quality monitoring	LWDMW1S	751388.92	6623862.46
39	Groundwater quality monitoring	LWDMW1I	751390.64	6623861.85
40	Groundwater quality monitoring	LWDMW2S	751102.84	6622293.02
41	Groundwater quality monitoring	LWDMW2D	751101.81	6622293.15
42	Groundwater quality monitoring	LWDMW3D	751876.16	6622163.76
43	Groundwater quality monitoring	LWDMW3S	751876.47	6622164.93
44	Groundwater level monitoring	DWH8AGMB1	765546.74	6616987.99
45	Groundwater level monitoring	DWH8AGMB2	765546.74	6616987.99
46	Groundwater level monitoring	DWH8AGMB3	765546.74	6616987.99

EPA Identification No.	Monitoring type	Location	Easting	Northing
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	755684.14	6638105.31
51	Groundwater quality monitoring	WPKMW01D	755689.75	6638097.35
52	Groundwater quality monitoring	WPKMW02	755671.2	6638034.29
53	Groundwater quality monitoring	WPKMW04	755632.5	6637993.07
55	Groundwater quality monitoring	WPKMW08	755634.11	6638166.87
56	Groundwater quality monitoring	WPKMW09D	755663.98	6637988.2
57	Groundwater quality monitoring	WPKMW09S	755664.4	6637990.54
58	Groundwater quality monitoring	WPKMW12S	755456.18	6638228.91
59	Groundwater quality monitoring	WPKMW13I	755552.65	6638189.56
60	Groundwater quality monitoring	WPKMW13S	755554.88	6638189.05
61	Groundwater quality monitoring	WPKMW14D	755364.51	6638049.06
62	Groundwater quality monitoring	WPKMW14S	755364.77	6638048.26
63	Groundwater quality monitoring	WPKMW15D	755365.48	6638233.36
64	Groundwater quality monitoring	WPKMW15S	755365.5	6638230.74
65	Groundwater quality monitoring	WPKMW16D	755051.03	6637988.5
66	Groundwater quality monitoring	WPKMW16S	755050.53	6637986.64
67	Groundwater quality monitoring	WPKMW17D	756151.06	6638128.32
68	Groundwater quality monitoring	WPKMW17S	756149.54	6638128.05
69	Produced water storage dam	BWDPD2	753875.87	6607995.06
70	Produced water storage dam	BWDPD3	753992.17	6608125.97
71	Produced water storage dam	LWDPD1CELL4	751473.349	6623513.252
72	Produced water storage dam	LWDPD1CELL3	751460.723	6623323.85
73	Produced water storage dam	LWDPD1CELL2	751428.103	6623124.978
74	Produced water storage dam	LWDPD1CELL1	751390.223	6622935.575
75	Produced water storage dam	TFDPD1	755611.6	6638072.85
76	Produced water storage dam	TFDPD2	755480.11	6638099.04
77	Treated water quality monitoring	LWWTPDM1	751648.02	6622508.31
78	Groundwater quality monitoring	WPKMW18S	755944.01	6638100.84
79	Groundwater quality monitoring	WPKMW18I	755945.07	6638105.04
80	Groundwater quality monitoring	LWDMW4	752080.54	6623038.94
81	Groundwater quality monitoring	LWDMW5	752491.08	6623301.16
82	Groundwater quality monitoring	LWDMW6	752667.55	6623165.03
83	Soil quality monitoring	LWDSMP1	751942.34	6622941.21
84	Soil quality monitoring	LWDSMP2	752164.06	6623143.83
85	Soil quality monitoring	LWDSMP3	752572.6	6623126.32
86	Soil quality monitoring	LWDSMP4	752457.14	6622764.26

Spatial Reference: GDA94 MGA Zone 55

**TABLE 2: GROUNDWATER QUALITY MONITORING**

		EPA Identification No	7	8	9	10	11	12	13	14
		Location	BWD27PRUPS02	BWD27PRLPS03	BWD26PRUPS01	BWD26PRLPS02	DWH14PRUPS01	DWH14PRLPS02	DWH14RRPUR03	DWH3PRUPS01
		Date	27/10/2020	27/10/2020	27/10/2020	27/10/2020	7/10/2020	7/10/2020	7/10/2020	7/10/2020
		Sample Method	in situ	in situ	in situ	in situ	in situ	in situ	No sample - obstruction	in situ
	Units	LOR	RESULT	RESULT	RESULT	RESULT	RESULT	RESULT	RESULT	RESULT
Dissolved Oxygen	mg/L	-	4.8	3.2	2.4	1.4	1.5	2.02		2.62
Electrical Conductivity	µS/cm	-	138	244	68	119	189	157		107
pH	pH Unit	-	5.85	6.25	6.02	6.17	5.91	5.57		5.42
Redox Potential	mV	-	118	-48	-7	-67	188	165		208
Standing Water Level	mTOC	-	38.89	38.37	29.61	29.02	53.36	54.13	53.52	67.27

		EPA Identification No	15	16	17	18	20	21	22	23
		Location	DWH3PRLPS02	NYOPRORA01	NYOPRUPS02	BWD27PRORA01	BHN14PRORA01	BHN14PRUPS02	TULPRNAP01	TULPRDGY02
		Date	7/10/2020	6/10/2020	6/10/2020	27/10/2020	6/10/2020	6/10/2020	25/09/2020	25/09/2020
		Sample Method	in situ	in situ	in situ	No sample - dry	in situ	in situ	in situ	in situ
	Units	LOR	RESULT	RESULT	RESULT	RESULT	RESULT	RESULT	RESULT	RESULT
Dissolved Oxygen	mg/L	-	1.89	1.75	0.3		1.06	2	2.91	2.2
Electrical Conductivity	µS/cm	-	118	1110	1115		424	414	5781	7256
pH	pH Unit	-	5.7	8.36	8.4		7.46	7.35	6.78	6.83
Redox Potential	mV	-	202	-197	-106		-109	-110	-130	-155
Standing Water Level	mTOC	-	67.6	0	0		26.42	15.28	88.49	74.03

		EPA Identification No	24	25	26	27	28	29	30	31
		Location	BWDMW13D	BWDMW13S	BWDMW12S	BWDMW12D	BWDMW12I	BWDMW2	BWDMW3	BWDMW4D**
		Date	8/09/2020	8/09/2020	8/09/2020	8/09/2020	8/09/2020	8/09/2020	8/09/2020	8/09/2020
		Sample Method	Grab Sample	No sample - dry	No sample - dry	Grab Sample	Grab Sample	No sample - insufficient liquid	Grab Sample	No sample - insufficient liquid
	Units	LOR	RESULT	RESULT	RESULT	RESULT	RESULT	RESULT	RESULT	RESULT
Aluminium	mg/L	0.01	< 0.01			< 0.01	< 0.01		< 0.01	
Ammonia	mg/L	0.01	< 0.01			0.03	0.01		0.12	
Arsenic	mg/L	0.001	< 0.001			< 0.001	< 0.001		< 0.001	
Barium	mg/L	0.001	0.342			1.26	4.36		0.116	
Beryllium	mg/L	0.001	< 0.001			< 0.001	< 0.001		< 0.001	
Bicarbonate	mg/L	1	79			1950	4910		59	
Boron	mg/L	0.05	< 0.05			< 0.05	< 0.05		< 0.05	
Bromide	mg/L	0.01	0.991			3.41	7.74		0.756	
Cadmium	mg/L	0.0001	< 0.0001			< 0.0001	< 0.0001		< 0.0001	
Calcium	mg/L	1	3			16	3		5	
Carbonate	mg/L	1	< 1			< 1	< 1		< 1	
Chloride	mg/L	1	363			819	1630		244	
Chromium	mg/L	0.001	< 0.001			< 0.001	< 0.001		< 0.001	
Cobalt	mg/L	0.001	0.014			< 0.001	0.005		0.012	
Copper	mg/L	0.001	< 0.001			< 0.001	0.002		< 0.001	
Dissolved Oxygen		-	2.14			3.6	3.3		1.38	3
Electrical Conductivity	µS/cm	-	1084			4915	10719		862	216
Fluoride	mg/L	0.1	< 0.1			0.6	1.5		< 0.1	
Iron	mg/L	0.05	< 0.05			0.13	< 0.05		2.93	
Lead	mg/L	0.001	< 0.001			< 0.001	< 0.001		< 0.001	
Magnesium	mg/L	1	33			181	404		15	
Manganese	mg/L	0.001	0.061			0.008	0.008		0.486	
Mercury	mg/L	0.0001	< 0.0001			< 0.0001	< 0.0001		< 0.0001	
Methane	mg/L	0.01	< 0.01			< 0.01	< 0.01		< 0.01	
Molybdenum	mg/L	0.001	< 0.001			< 0.001	0.002		< 0.001	
Nickel	mg/L	0.001	0.008			0.002	0.003		0.009	
Nitrate	mg/L	0.01	0.08			0.19	0.35		< 0.01	
Nitrite	mg/L	0.01	< 0.01			< 0.01	< 0.01		< 0.01	
pH	pH Unit	-	5.34			6.98	7.31		5.78	5.78
Potassium	mg/L	1	16			36	41		12	
Reactive Phosphorus	mg/L	0.01	< 0.01			< 0.01	0.04		< 0.01	
Redox Potential	mV	-	224			59	181		70	105
Selenium	mg/L	0.01	< 0.01			0.02	< 0.01		< 0.01	
Sodium	mg/L	1	168			1110	2120		164	
Standing Water Level	mTOC	-	30.61			29.96	21.69		30.9	30.28
Strontium	mg/L	0.001	0.076			0.5	0.179		0.078	
Sulfate	mg/L	1	30			66	< 1		66	
Total Dissolved Solids	mg/L	10	776			3460	8020		750	
Uranium	mg/L	0.001	< 0.001			0.013	0.034		< 0.001	
Vanadium	mg/L	0.01	< 0.01			< 0.01	< 0.01		< 0.01	
Zinc	mg/L	0.005	1.62			< 0.005	< 0.005		0.013	

\*\*Insufficient liquid for grab sample

		EPA Identification No	32	33	34	35	36	37	38	39
		Location	BWDMW4	BWDMW15S	BWDMW15D	BWDMW16S	BWDMW16D	LWDMW1D	LWDMW1S	LWDMW1I
		Date	8/09/2020	8/09/2020	8/09/2020	8/09/2020	8/09/2020	2/09/2020	2/09/2020	2/09/2020
		Sample Method	No sample - insufficient liquid	No sample - dry	Grab Sample	No sample - dry	Grab Sample	Grab Sample	No sample - dry	No sample - dry
	Units	LOR	RESULT	RESULT	RESULT	RESULT	RESULT	RESULT	RESULT	RESULT
Aluminium	mg/L	0.01			< 0.01		< 0.01	< 0.01		
Ammonia	mg/L	0.01			0.04		< 0.01	0.13		
Arsenic	mg/L	0.001			< 0.001		< 0.001	0.002		
Barium	mg/L	0.001			0.047		0.071	0.068		
Beryllium	mg/L	0.001			< 0.001		< 0.001	< 0.001		
Bicarbonate	mg/L	1			18		14	118		
Boron	mg/L	0.05			< 0.05		< 0.05	0.12		
Bromide	mg/L	0.01			0.248		0.235	0.436		
Cadmium	mg/L	0.0001			< 0.0001		< 0.0001	< 0.0001		
Calcium	mg/L	1			1		< 1	1		
Carbonate	mg/L	1			< 1		< 1	< 1		
Chloride	mg/L	1			80		87	217		
Chromium	mg/L	0.001			< 0.001		< 0.001	0.001		
Cobalt	mg/L	0.001			< 0.001		0.001	< 0.001		
Copper	mg/L	0.001			< 0.001		< 0.001	< 0.001		
Dissolved Oxygen	mg/L	-			4.18		4.4	1.65		
Electrical Conductivity	µS/cm	-			363		309	1976		
Fluoride	mg/L	0.1			< 0.1		< 0.1	0.2		
Iron	mg/L	0.05			0.41		0.06	0.47		
Lead	mg/L	0.001			< 0.001		< 0.001	< 0.001		
Magnesium	mg/L	1			4		3	3		
Manganese	mg/L	0.001			0.013		0.012	0.006		
Mercury	mg/L	0.0001			< 0.0001		< 0.0001	< 0.0001		
Methane	mg/L	0.01			< 0.01		< 0.01	0.016		
Molybdenum	mg/L	0.001			< 0.001		< 0.001	< 0.001		
Nickel	mg/L	0.001			0.002		0.002	0.002		
Nitrate	mg/L	0.01			0.33		0.17	< 0.01		
Nitrite	mg/L	0.01			< 0.01		< 0.01	< 0.01		
pH	pH Unit	-			5.83		5.67	6.42		
Potassium	mg/L	1			7		7	14		
Reactive Phosphorus	mg/L	0.01			< 0.01		< 0.01	0.04		
Redox Potential	mV	-			100		225	148		
Selenium	mg/L	0.01			< 0.01		< 0.01	< 0.01		
Sodium	mg/L	1			64		59	153		
Standing Water Level	mTOC	-	20.55		30.36		30.2	29.97		
Strontium	mg/L	0.001			0.008		0.006	0.021		
Sulfate	mg/L	1			26		1	4		
Total Dissolved Solids	mg/L	10			264		235	551		
Uranium	mg/L	0.001			< 0.001		< 0.001	< 0.001		
Vanadium	mg/L	0.01			< 0.01		< 0.01	< 0.01		
Zinc	mg/L	0.005			0.008		0.009	< 0.005		

		EPA Identification No	40	41	42	43	50	51	52	53
		Location	LWDMW2S	LWDMW2D	LWDMW3D	LWDMW3S	WPKMW1	WPKMW1D	WPKMW2	WPKMW4
		Date	2/09/2020	2/09/2020	2/09/2020	2/09/2020	16/09/2020	16/09/2020	16/09/2020	16/09/2020
		Sample Method	No sample - dry	Grab Sample	Grab Sample	No sample - dry	Grab Sample	Grab Sample	Grab Sample	Grab Sample
	Units	LOR	RESULT	RESULT	RESULT	RESULT	RESULT	RESULT	RESULT	RESULT
Aluminium	mg/L	0.01		< 0.01	< 0.01		< 0.01	< 0.01	< 0.01	< 0.01
Ammonia	mg/L	0.01		0.05	0.08		0.01	0.11	< 0.01	< 0.01
Arsenic	mg/L	0.001		0.001	< 0.001		0.002	0.004	0.004	0.004
Barium	mg/L	0.001		0.49	0.359		0.026	0.106	0.067	0.022
Beryllium	mg/L	0.001		< 0.001	< 0.001		< 0.001	< 0.001	< 0.001	< 0.001
Bicarbonate	mg/L	1		463	230		627	581	1460	1060
Boron	mg/L	0.05		0.13	0.16		0.22	0.2	0.22	0.27
Bromide	mg/L	0.01		0.702	1.19		0.233	0.123	0.986	0.479
Cadmium	mg/L	0.0001		< 0.0001	< 0.0001		< 0.0001	< 0.0001	< 0.0001	< 0.0001
Calcium	mg/L	1		13	5		2	7	4	2
Carbonate	mg/L	1		< 1	< 1		< 1	< 1	38	21
Chloride	mg/L	1		379	549		113	49	500	243
Chromium	mg/L	0.001		0.002	< 0.001		< 0.001	< 0.001	< 0.001	< 0.001
Cobalt	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
Dissolved Oxygen	mg/L	-		1.14	0.92		2.14	1.01	1.01	1.64
Electrical Conductivity	µS/cm	-		1301	846		1281	1056	3291	2120
Fluoride	mg/L	0.1		0.4	0.3		0.7	0.8	0.7	1
Iron	mg/L	0.05		0.1	< 0.05		< 0.05	< 0.05	< 0.05	< 0.05
Lead	mg/L	0.001		< 0.001	< 0.001		< 0.001	< 0.001	< 0.001	< 0.001
Magnesium	mg/L	1		20	11		< 1	2	2	< 1
Manganese	mg/L	0.001		0.047	0.005		< 0.001	0.102	0.008	< 0.001
Mercury	mg/L	0.0001		< 0.0001	< 0.0001		< 0.0001	< 0.0001	< 0.0001	< 0.0001
Methane	mg/L	0.01		< 0.01	< 0.01		< 0.01	0.083	< 0.01	< 0.01
Molybdenum	mg/L	0.001		0.003	< 0.001		< 0.001	< 0.001	0.002	0.001
Nickel	mg/L	0.001		0.005	< 0.001		< 0.001	< 0.001	< 0.001	< 0.001
Nitrate	mg/L	0.01		0.02	0.04		0.11	< 0.01	0.03	0.09
Nitrite	mg/L	0.01		< 0.01	< 0.01		< 0.01	< 0.01	< 0.01	< 0.01
pH	pH Unit	-		6.91	6.43		7.98	8.15	7.92	7.98
Potassium	mg/L	1		37	21		4	3	9	6
Reactive Phosphorus	mg/L	0.01		0.11	0.06		0.44	0.1	0.59	0.58
Redox Potential	mV	-		51	-32		105	-98	75	64
Selenium	mg/L	0.01		< 0.01	< 0.01		< 0.01	< 0.01	< 0.01	< 0.01
Sodium	mg/L	1		318	377		338	272	850	582
Standing Water Level	mTOC	-		25.97	21.06		16.37	16.08	15.55	16.19
Strontium	mg/L	0.001		0.218	0.102		0.03	0.059	0.082	0.033
Sulfate	mg/L	1		15	16		< 1	< 1	< 1	< 1
Total Dissolved Solids	mg/L	10		1160	1260		900	738	2110	1490
Uranium	mg/L	0.001		0.002	< 0.001		< 0.001	< 0.001	0.003	0.002
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	< 0.005	< 0.005	< 0.005

		EPA Identification No	55	56	57	58	59	60	61	62
		Location	WPKMW8	WPKMW9D	WPKMW9S	WPKMW12S	WPKMW13I	WPKMW13S	WPKMW14D	WPKMW14S
		Date	16/09/2020	16/09/2020	16/09/2020	16/09/2020	16/09/2020	16/09/2020	16/09/2020	16/09/2020
		Sample Method	Grab Sample	Grab Sample	Grab Sample	No sample - dry	Grab Sample	Grab Sample	Grab Sample	No sample - dry
	Units	LOR	RESULT	RESULT	RESULT	RESULT	RESULT	RESULT	RESULT	RESULT
Aluminium	mg/L	0.01	< 0.01	< 0.01	< 0.01		0.01	< 0.01	< 0.01	
Ammonia	mg/L	0.01	< 0.01	0.08	0.05		0.02	< 0.01	0.05	
Arsenic	mg/L	0.001	0.002	0.004	0.002		0.002	0.002	0.002	
Barium	mg/L	0.001	0.035	0.099	0.236		0.042	0.101	0.306	
Beryllium	mg/L	0.001	< 0.001	< 0.001	< 0.001		< 0.001	< 0.001	< 0.001	
Bicarbonate	mg/L	1	1010	578	1800		582	1180	586	
Boron	mg/L	0.05	0.22	0.18	0.29		0.2	0.28	0.18	
Bromide	mg/L	0.01	0.594	0.135	0.821		0.172	1	0.13	
Cadmium	mg/L	0.0001	< 0.0001	< 0.0001	< 0.0001		< 0.0001	< 0.0001	< 0.0001	
Calcium	mg/L	1	4	4	10		4	4	7	
Carbonate	mg/L	1	< 1	12	40		< 1	< 1	< 1	
Chloride	mg/L	1	298	50	424		60	451	48	
Chromium	mg/L	0.001	< 0.001	< 0.001	< 0.001		< 0.001	< 0.001	< 0.001	
Cobalt	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	
Dissolved Oxygen	mg/L	-	1.72	0.87	1.01		0.03	1.53	1.54	
Electrical Conductivity	µS/cm	-	2162	1062	3575		1143	2957	1044	
Fluoride	mg/L	0.1	0.6	0.8	0.8		0.7	0.6	0.7	
Iron	mg/L	0.05	< 0.05	0.08	0.06		< 0.05	< 0.05	< 0.05	
Lead	mg/L	0.001	< 0.001	< 0.001	< 0.001		< 0.001	< 0.001	< 0.001	
Magnesium	mg/L	1	1	1	3		< 1	2	2	
Manganese	mg/L	0.001	< 0.001	0.17	0.057		0.027	0.008	0.019	
Mercury	mg/L	0.0001	< 0.0001	< 0.0001	< 0.0001		< 0.0001	< 0.0001	< 0.0001	
Methane	mg/L	0.01	< 0.01	0.125	< 0.01		0.016	< 0.01	0.012	
Molybdenum	mg/L	0.001	0.001	0.001	0.003		0.001	0.003	0.001	
Nickel	mg/L	0.001	< 0.001	< 0.001	< 0.001		< 0.001	< 0.001	< 0.001	
Nitrate	mg/L	0.01	0.2	< 0.01	0.03		0.4	< 0.01	< 0.01	
Nitrite	mg/L	0.01	< 0.01	< 0.01	< 0.01		0.01	< 0.01	< 0.01	
pH	pH Unit	-	7.66	8.26	7.9		8.31	7.52	8.2	
Potassium	mg/L	1	7	3	10		4	10	5	
Reactive Phosphorus	mg/L	0.01	0.36	0.26	0.34		0.27	0.27	0.2	
Redox Potential	mV	-	109	-42	0.1		13	98	108	
Selenium	mg/L	0.01	< 0.01	< 0.01	< 0.01		< 0.01	< 0.01	< 0.01	
Sodium	mg/L	1	549	273	964		298	767	266	
Standing Water Level	mTOC	-	16.77	15.61	15.88		16.96	17.05	20.98	
Strontium	mg/L	0.001	0.043	0.055	0.117		0.02	0.047	0.041	
Sulfate	mg/L	1	4	< 1	60		5	< 1	< 1	
Total Dissolved Solids	mg/L	10	1490	774	2560		790	2070	778	
Uranium	mg/L	0.001	0.001	< 0.001	0.006		< 0.001	0.002	< 0.001	
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		< 0.005	< 0.005	< 0.005	

		EPA Identification No	63	64	65	66	67	68	78	79
		Location	WPKMW15D	WPKMW15S	WPKMW16D	WPKMW16S	WPKMW17D	WPKMW17S	WPKMW18S	WPKMW18I
		Date	16/09/2020	16/09/2020	16/09/2020	16/09/2020	16/09/2020	16/09/2020	16/09/2020	16/09/2020
		Sample Method	Grab Sample	Grab Sample	Grab Sample	No sample - dry	Grab Sample	No sample - insufficient liquid	No sample - insufficient liquid	Grab Sample
	Units	LOR	RESULT	RESULT	RESULT	RESULT	RESULT	RESULT	RESULT	RESULT
Aluminium	mg/L	0.01	< 0.01	< 0.10*	< 0.01		< 0.01			< 0.01
Ammonia	mg/L	0.01	0.06	< 0.01	0.03		0.05			< 0.01
Arsenic	mg/L	0.001	0.003	< 0.010*	0.002		0.002			0.001
Barium	mg/L	0.001	0.364	2.08*	0.191		0.131			0.086
Beryllium	mg/L	0.001	< 0.001	< 0.010*	< 0.001		< 0.001			< 0.001
Bicarbonate	mg/L	1	588	3890	619		525			601
Boron	mg/L	0.05	0.13	0.47*	< 0.05		< 0.05			0.19
Bromide	mg/L	0.01	0.146	2.32	0.15		0.14			0.125
Cadmium	mg/L	0.0001	< 0.0001	< 0.0010*	< 0.0001		< 0.0001			< 0.0001
Calcium	mg/L	1	7	8	6		3			2
Carbonate	mg/L	1	< 1	< 1	< 1		< 1			< 1
Chloride	mg/L	1	51	937	55		50			47
Chromium	mg/L	0.001	< 0.001	< 0.010*	< 0.001		< 0.001			< 0.001
Cobalt	mg/L	0.001	< 0.001	< 0.010*	< 0.001		< 0.001			< 0.001
Copper	mg/L	0.001	< 0.001	< 0.010*	< 0.001		< 0.001			< 0.001
Dissolved Oxygen	mg/L	-	1.92	2.9	2		1.37			1.9
Electrical Conductivity	µS/cm	-	1143	7678	1097		994			1039
Fluoride	mg/L	0.1	0.4	1	0.6		0.8			0.6
Iron	mg/L	0.05	0.23	< 0.10*	< 0.05		< 0.05			< 0.05
Lead	mg/L	0.001	< 0.001	< 0.010*	< 0.001		< 0.001			< 0.001
Magnesium	mg/L	1	2	14	2		1			< 1
Manganese	mg/L	0.001	0.063	< 0.010*	0.041		0.038			0.002
Mercury	mg/L	0.0001	< 0.0001	< 0.0001	< 0.0001		< 0.0001			< 0.0001
Methane	mg/L	0.01	0.261	< 0.01	0.023		0.013			< 0.01
Molybdenum	mg/L	0.001	0.011	< 0.010*	0.006		0.008			0.003
Nickel	mg/L	0.001	0.001	< 0.010*	0.002		< 0.001			< 0.001
Nitrate	mg/L	0.01	0.01	0.41	< 0.01		< 0.01			1.15
Nitrite	mg/L	0.01	< 0.01	< 0.01	< 0.01		< 0.01			< 0.01
pH	pH Unit	-	7.95	7.85	7.94		7.5			8.05
Potassium	mg/L	1	8	34	11		6			4
Reactive Phosphorus	mg/L	0.01	0.31	0.63	0.26		0.05			0.35
Redox Potential	mV	-	-112	122	41		-9			82
Selenium	mg/L	0.01	< 0.01	< 0.10*	< 0.01		< 0.01			< 0.01
Sodium	mg/L	1	285	2300	273		258			271
Standing Water Level	mTOC	-	22.31	22.55	27.59		18.93	22.51	16.93	16.26
Strontium	mg/L	0.001	0.053	0.246*	0.05		0.019			0.013
Sulfate	mg/L	1	13	< 1	8		< 1			< 1
Total Dissolved Solids	mg/L	10	904	5880	812		746			780
Uranium	mg/L	0.001	< 0.001	< 0.010*	0.004		0.001			< 0.001
Vanadium	mg/L	0.01	< 0.01	< 0.10*	< 0.01		< 0.01			< 0.01
Zinc	mg/L	0.005	< 0.005	< 0.050*	< 0.005		< 0.005			< 0.005

\*Limit of reporting (LOR) has been raised due to matrix interference as per Australian Laboratory Services (ALS) certificate of analysis (COA) ES2032682



		EPA Identification No	80	81	82
		Location	LWDMW4	LWDMW5	LWDMW6
		Date	Sep-19	Sep-19	Sep-19
		Sample Method	No sample - no irrigation	No sample - no irrigation	No sample - no irrigation
	Units	LOR	RESULT	RESULT	RESULT
Aluminium	mg/L	0.01			
Ammonia	mg/L	0.01			
Arsenic	mg/L	0.001			
Barium	mg/L	0.001			
Beryllium	mg/L	0.001			
Bicarbonate	mg/L	1			
Boron	mg/L	0.05			
Bromide	mg/L	0.01			
Cadmium	mg/L	0.0001			
Calcium	mg/L	1			
Carbonate	mg/L	1			
Chloride	mg/L	1			
Chromium	mg/L	0.001			
Cobalt	mg/L	0.001			
Copper	mg/L	0.001			
Dissolved Oxygen	mg/L	-			
Electrical Conductivity	µS/cm	-			
Fluoride	mg/L	0.1			
Iron	mg/L	0.05			
Lead	mg/L	0.001			
Magnesium	mg/L	1			
Manganese	mg/L	0.001			
Mercury	mg/L	0.0001			
Methane	mg/L	0.01			
Molybdenum	mg/L	0.001			
Nickel	mg/L	0.001			
Nitrate	mg/L	0.01			
Nitrite	mg/L	0.01			
pH	pH Unit	-			
Potassium	mg/L	1			
Reactive Phosphorus	mg/L	0.01			
Redox Potential	mV	-			
Selenium	mg/L	0.01			
Sodium	mg/L	1			
Standing Water Level	mTOC	-			
Strontium	mg/L	0.001			
Sulfate	mg/L	1			
Total Dissolved Solids	mg/L	10			
Uranium	mg/L	0.001			
Vanadium	mg/L	0.01			
Zinc	mg/L	0.005			

**TABLE 3: TREATED WATER QUALITY MONITORING**

		EPA Identification No	77	77	77
		Location	LWWTPDM1	LWWTPDM1	LWWTPDM1
		Date	Aug-20	Sep-20	Oct-20
		Sample Method	No sample - plant not operating	No sample - plant not operating	No sample - plant not operating
	Units	LOR	RESULT	RESULT	RESULT
Ammonia	mg/L	0.01			
Bicarbonate	mg/L	1			
Boron	mg/L	0.05			
Calcium	mg/L	1			
Carbonate	mg/L	1			
Chloride	mg/L	1			
Electrical Conductivity	µS/cm	-			
Fluoride	mg/L	0.1			
Magnesium	mg/L	1			
Nitrate	mg/L	0.01			
Nitrite	mg/L	0.01			
pH	pH Unit	-			
Potassium	mg/L	1			
Silica	mg/L				
Sodium	mg/L	1			
Sodium Adsorption Ratio	-	0.01			
Sulfate	mg/L	1			
Total Alkalinity (as CaCO3)	mg/L	1			
Total Dissolved Solids	mg/L	10			
Total Hardness (as CaCO3)	mg/L	1			
Total Nitrogen (as N)	mg/L	0.1			
Total Phosphorus (as P)	mg/L	0.01			
Total Residual Chlorine	mg/L				
Turbidity	NTU	0.1			

**TABLE 4: PRODUCED WATER STORAGE QUALITY MONITORING**

		EPA Identification No	69	70	71	72	73	74	75	76
		Location	BWDPD2	BWDPD3	LWDPD1CELL4	LWDPD1CELL3	LWDPD1CELL2	LWDPD1CELL1	TFDPD1	TFDPD2
		Date	Sep-20	Sep-20	21/09/2020	21/09/2020	21/09/2020	21/09/2020	Sep-20	Sep-20
		Sample Method	No produced water	No produced water	Grab Sample	Grab Sample	Grab Sample	Grab Sample	No produced water	No produced water
	Units	LOR	RESULT	RESULT	RESULT	RESULT	RESULT	RESULT	RESULT	RESULT
Aluminium	mg/L	0.01			< 0.10*	< 0.10*	< 0.10*	< 0.10*		
Ammonia	mg/L	0.01			< 0.10*	< 0.10*	0.79	< 0.10*		
Arsenic	mg/L	0.001			0.014*	< 0.010*	< 0.010*	< 0.010*		
Barium	mg/L	0.001			1.10*	1.02	12.4	3.34		
Beryllium	mg/L	0.001			< 0.010*	< 0.010*	< 0.010*	< 0.010*		
Bicarbonate	mg/L	1			16200	7880	7630	12000		
Boron	mg/L	0.05			< 0.10*	1.66	1.62	1.94		
Bromide	mg/L	0.01			52	4.77	5.55	24.3		
Cadmium	mg/L	0.0001			< 0.0010*	< 0.0010*	< 0.0010*	< 0.0010*		
Calcium	mg/L	1			7	6	16	8		
Carbonate	mg/L	1			57600	10800	8610	22500		
Chloride	mg/L	1				2370	2560	6120		
Chromium	mg/L	0.001			< 0.010*	< 0.010*	< 0.010*	< 0.010*		
Cobalt	mg/L	0.001			< 0.010*	< 0.010*	< 0.010*	< 0.010*		
Copper	mg/L	0.001			< 0.010*	< 0.010*	< 0.010*	< 0.010*		
Dissolved Oxygen	mg/L	-			3.82	5.5	7.05	4		
Electrical Conductivity	µS/cm	-			86403	28932	28553	52384		
Iron	mg/L	0.05			0.28	< 0.10	0.1	0.15		
Lead	mg/L	0.001			< 0.010*	< 0.010*	< 0.010*	< 0.010*		
Magnesium	mg/L	1			29	14	12	14		
Manganese	mg/L	0.001			0.052	< 0.010	0.029	0.03		
Mercury	mg/L	0.0001			< 0.0001	< 0.0001	< 0.0001	< 0.0001		
Molybdenum	mg/L	0.001			0.016	< 0.010*	< 0.010*	< 0.010*		
Nickel	mg/L	0.001			< 0.010*	< 0.010*	< 0.010*	< 0.010*		
Nitrate	mg/L	0.01			0.77	0.51	< 0.1*	< 0.1*		
Nitrite	mg/L	0.01			< 0.10*	< 0.10*	< 0.10*	< 0.10*		
pH	pH Unit	-			9.89	9.67	9.57	9.78		
Potassium	mg/L	1			955	90	116	492		
Redox Potential	mV	-			73.8	87.2	96.7	89.6		
Selenium	mg/L	0.01			< 0.10*	< 0.10*	< 0.10*	< 0.10*		
Sodium	mg/L	1			42500	10800	10800	21200		
Sodium Adsorption Ratio	-	0.01			1580	551	497*	1050*		
Strontium	mg/L	0.001			1.62	1.1	2.68	1.25		
Sulfate	mg/L	1			< 500*	161*	< 10*	< 10*		
Total Dissolved Solids	mg/L	10			128000	29900	27000	49000		
Total Organic Carbon (Storages)	mg/L	1			2360	84	89	101		
Total Phosphorus (as P)	mg/L	0.01			3.73*	< 0.20*	0.27*	0.85*		
Uranium	mg/L	0.001			< 0.010*	< 0.010*	< 0.010*	< 0.010*		
Vanadium	mg/L	0.01			< 0.10*	< 0.10*	< 0.10*	< 0.10*		
Zinc	mg/L	0.005			< 0.050*	< 0.050*	< 0.050*	< 0.050*		

\*Limit of reporting (LOR) has been raised due to matrix interference as per Australian Laboratory Services (ALS) certificate of analysis (COA) ES2033211 & ES2033214

**TABLE 6: GROUNDWATER LEVEL MONITORING**

EPA Identification No	44	45	46	47	48	49
Location	Dewhurst 8A-1	Dewhurst 8A-2	Dewhurst 8A-3	Biblewindi 28A	Biblewindi 28B	Bibbewindi 28C
	(DWH8AQGDGY01)	(DWH8AQGARK)	(DWH8AQGPOR03)	(BWD28QGUPS01)	(BWD28QGLPS01)	(BWD28QGPUR01)
Start Date	1/08/2020	1/08/2020	1/08/2020	1/08/2020	1/08/2020	1/08/2020
End Date	31/10/2020	31/10/2020	31/10/2020	31/10/2020	31/10/2020	31/10/2020
Sample Obtained	Standing Water Level	Standing Water Level	Standing Water Level	Standing Water Level	Standing Water Level	Standing Water Level
Number of Samples Required	Continuous	Continuous	Continuous	Continuous	Continuous	Continuous
Lowest sample value	-35.9	16.8	-71	11.6	1.7	13.8
Mean of sample	-35.6	17.1	-70.6	11.8	1.8	14.1
Highest sample value	-35.4	17.4	-70.3	11.8	2.4	14.7