

## ENVIRONMENT PROTECTION LICENCE 20350 MONITORING DATA

**Licence Holder:** Santos NSW (Eastern) Pty Ltd  
**Premises:** Narrabri Gas Field  
X-Line Road, Narrabri NSW 2390

**Licence No:** 20350  
**EPL LINK:** <http://www.epa.nsw.gov.au/prpoeoapp/ViewPOEOLicence.aspx?DOCID=33816&SYSUID=1&LICID=20350>

**EPL Period:** May 1st 2021 to April 30th 2022  
**Reporting Period:** **Quarter 2 - August 2021 - October 2021**  
**Published Date:** Nov-21

**Monitoring Location:** Refer to Table 1  
**Scheduled Activity:** Coal seam gas exploration, assessment and production

**General Notes:** Monitoring points removed in accordance with Environmental Protection Licence (EPL) 23050 ammended 11th April 2021 (16, 17, 22, 23, 24, 25, 29, 30, 31, 32, 33, 34, 35, 36, 50, 51, 52, 53, 55, 58, 67 and 68)  
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, 75 & 76 - 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  
Monitoring point 18 - The bore is sealed shut and unable to open. Historically dry.  
Monitoring points visited and reported dry : 26, 28, 38, 39, 40, 43, 62 and 66  
Monitoring points visited with field measurements only: 11, 41, 56 and 60  
Monitoring points 47, 48 and 49: no water level results available. Repairs and maintenance being investigated.

**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
		Location	BWD27PRUPS02	BWD27PRLPS03	BWD26PRUPS01	BWD26PRLPS02	DWH14PRUPS01	DWH14PRLPS02
		Date	12/09/2021	12/09/2021	12/09/2021	12/09/2021	11/09/2021	11/09/2021
		Sample Method	in situ	in situ	in situ	in situ	in situ	in situ
Parameter	Units	LOR	RESULT	RESULT	RESULT	RESULT	RESULT	RESULT
Dissolved Oxygen	mg/L	-	3.31	0.1	0.42	0.31	0.5	0.91
Electrical Conductivity	µS/cm	-	134	213	72	131	212	175
pH	pH Unit	-	5.53	5.63	5.31	5.73	5.71	5.03
Redox Potential	mV	-	186	-18	138	-23	31	130
Standing Water Level	mTOC	-	38.9	38.41	29.62	29.05	53.37	54.2

		EPA Identification No	13	14	15	18	20	21
		Location	DWH14PRPUR03	DWH3PRUPS01	DWH3PRLPS02	BWD27PRORA01	BHN14PRORA01	BHN14PRUPS02
		Date	11/09/2021	11/09/2021	11/09/2021		12/09/2021	12/09/2021
		Sample Method	in situ	in situ	in situ	No sample - dry	in situ	No sample available
Parameter	Units	LOR	RESULT	RESULT	RESULT	RESULT	RESULT	RESULT
Dissolved Oxygen	mg/L	-	1.18	1.63	0.5	-	0.61	0.67
Electrical Conductivity	µS/cm	-	648	118	130	-	488	454
pH	pH Unit	-	7.09	4.95	5.1	-	6.87	6.89
Redox Potential	mV	-	-191	177	194	-	-121	-96
Standing Water Level	mTOC	-	53.61	67.51	67.67	-	26.35	15.26

		EPA Identification No	10	11	12	13	14	15
		Location	BWD26PRLPS02	DWH14PRUPS01	DWH14PRLPS02	DWH14PRPUR03	DWH3PRUPS01	DWH3PRLPS02
		Date	12/09/2021	11/09/2021	11/09/2021	11/09/2021	11/09/2021	11/09/2021
		Sample Method	Grab Sample	Field Measurements Only	Grab Sample	Grab Sample	Grab Sample	Grab Sample
Parameter	Units	LOR	RESULT	RESULT	RESULT	RESULT	RESULT	RESULT
Aluminium	mg/L	0.01	0.08	-	<0.01	0.04	<0.01	<0.01
Ammonia as N	mg/L	0.01	0.03	-	<0.01	0.68	<0.01	0.03
Arsenic	mg/L	0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001
Barium	mg/L	0.001	0.673	-	0.061	0.53	0.034	0.046
Beryllium	mg/L	0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001
Bicarbonate Alkalinity as CaCO3	mg/L	1	37	-	28	269	11	30
Boron	mg/L	0.05	<0.05	-	<0.05	0.05	<0.05	<0.05
Bromide	mg/L	0.01	0.056	-	0.101	0.101	0.057	0.057
Cadmium	mg/L	0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001
Calcium	mg/L	1	1	-	2	29	<1	<1
Carbonate Alkalinity as CaCO3	mg/L	1	<1	-	<1	<1	<1	<1
Chloride	mg/L	1	20	-	39	38	24	24
Chromium	mg/L	0.001	<0.001	-	0.02	<0.001	0.009	<0.001
Cobalt	mg/L	0.001	0.014	-	0.006	<0.001	0.003	0.002
Copper	mg/L	0.001	<0.001	-	0.008	0.002	0.007	0.004
Dissolved Oxygen	mg/L	-	0.31**	0.5**	0.91**	1.18**	1.63**	0.5**
Electrical Conductivity	µS/cm	1	121	212**	149	553	117	130
Fluoride	mg/L	0.1	0.2	-	0.1	0.7	<0.1	0.2
Iron	mg/L	0.05	0.08	-	<0.05	1.36	<0.05	<0.05
Lead	mg/L	0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001
Magnesium	mg/L	1	2	-	2	1	2	1
Manganese	mg/L	0.001	0.052	-	0.051	0.128	0.027	0.024
Mercury	mg/L	0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001
Methane	mg/L	0.01	<0.01	-	<0.01	2.67	<0.01	<0.01
Molybdenum	mg/L	0.001	<0.001	-	0.005	0.032	<0.001	<0.001
Nickel	mg/L	0.001	0.012	-	0.177	0.004	0.092	0.069
Nitrate as N	mg/L	0.01	0.03	-	0.17	<0.01	0.08	0.04
Nitrite as N	mg/L	0.01	<0.01	-	<0.01	<0.01	<0.01	<0.01
pH	pH Unit	0.01	6.1	5.71**	6.07	7.47	5.81	5.94
Potassium	mg/L	1	13	-	4	20	2	3
Reactive Phosphorus	mg/L	0.01	<0.01	-	<0.01	0.09	<0.01	<0.01
Redox Potential	mV	-	-23**	31**	130**	-191**	177**	194**
Selenium	mg/L	0.01	<0.01	-	<0.01	<0.01	<0.01	<0.01
Sodium	mg/L	1	14	-	26	107	18	23
Standing Water Level	mbTOC	-	29.05**	53.37**	54.2**	53.61**	67.51**	67.67**
Strontium	mg/L	0.001	0.05	-	0.018	0.528	0.007	0.012
Sulfate as SO4 2-	mg/L	1	<1	-	1	9	2	1
Total Dissolved Solids @180°C	mg/L	10	68	-	96	482	81	66
Uranium	mg/L	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
Zinc	mg/L	0.005	<0.005	-	0.008	<0.005	0.009	<0.005

\*Limit of reporting (LOR) has been adjusted due to matrix interference as per Australian Laboratory Services (ALS) certificate of analysis (COA) ES2133028.\*\*In-situ

		EPA Identification No	20	21	26	27	28	37
		Location	BHN14PRORA01	BHN14PRUPS02	BWDMW12S	BWDMW12D	BWDMW12I	LWDMW1D
		Date	12/09/2021	12/09/2021	12/09/2021	12/09/2021	12/09/2021	12/09/2021
		Sample Method	Grab Sample	Grab Sample	No sample - dry	Grab Sample	No sample - dry	Grab Sample
Parameter	Units	LOR	RESULT	RESULT	RESULT	RESULT	RESULT	RESULT
Aluminium	mg/L	0.01	<0.01	<0.01	-	<0.01	-	<0.01
Ammonia as N	mg/L	0.01	0.13	0.08	-	0.01	-	<0.01
Arsenic	mg/L	0.001	<0.001	0.001	-	<0.001	-	<0.001
Barium	mg/L	0.001	0.516	0.482	-	0.831	-	0.387
Beryllium	mg/L	0.001	<0.001	<0.001	-	<0.001	-	<0.001
Bicarbonate Alkalinity as CaCO3	mg/L	1	199	210	-	1550	-	175
Boron	mg/L	0.05	<0.05	<0.05	-	<0.05	-	0.12
Bromide	mg/L	0.01	0.097	0.049	-	3.24	-	1.17
Cadmium	mg/L	0.0001	<0.0001	<0.0001	-	<0.0001	-	<0.0001
Calcium	mg/L	1	39	42	-	14	-	6
Carbonate Alkalinity as CaCO3	mg/L	1	<1	<1	-	<1	-	<1
Chloride	mg/L	1	36	20	-	768	-	633
Chromium	mg/L	0.001	<0.001	<0.001	-	<0.001	-	<0.001
Cobalt	mg/L	0.001	<0.001	<0.001	-	<0.001	-	<0.001
Copper	mg/L	0.001	<0.001	<0.001	-	<0.001	-	<0.001
Dissolved Oxygen	mg/L	-	0.61**	0.67**	-	3.67**	-	7.7**
Electrical Conductivity	µS/cm	1	433	407	-	4000	-	1510
Fluoride	mg/L	0.1	0.4	0.4	-	0.6	-	0.5
Iron	mg/L	0.05	0.06	1.86	-	<0.05	-	<0.05
Lead	mg/L	0.001	<0.001	<0.001	-	<0.001	-	<0.001
Magnesium	mg/L	1	8	8	-	124	-	12
Manganese	mg/L	0.001	0.125	0.087	-	0.002	-	0.003
Mercury	mg/L	0.0001	<0.0001	<0.0001	-	<0.0001	-	<0.0001
Methane	mg/L	0.01	0.071	2.19	-	<0.01	-	<0.01
Molybdenum	mg/L	0.001	<0.001	0.005	-	<0.001	-	<0.001
Nickel	mg/L	0.001	0.009	0.002	-	0.002	-	<0.001
Nitrate as N	mg/L	0.01	<0.01	<0.01	-	0.22	-	0.08
Nitrite as N	mg/L	0.01	<0.01	<0.01	-	<0.01	-	<0.01
pH	pH Unit	0.01	7.11	7.2	-	7.52	-	6.91
Potassium	mg/L	1	4	6	-	31	-	12
Reactive Phosphorus	mg/L	0.01	<0.01	0.01	-	<0.01	-	0.07
Redox Potential	mV	-	-121**	-96**	-	21**	-	40.2**
Selenium	mg/L	0.01	<0.01	<0.01	-	0.02	-	<0.01
Sodium	mg/L	1	48	42	-	822	-	402
Standing Water Level	mbTOC	-	26.35**	15.26**	-	30.88**	-	29.86**
Strontium	mg/L	0.001	0.442	0.442	-	0.386	-	0.113
Sulfate as SO4 2-	mg/L	1	3	2	-	72	-	15
Total Dissolved Solids @180°C	mg/L	10	338	330	-	2970	-	1400
Uranium	mg/L	0.001	<0.001	<0.001	-	0.006	-	<0.001
Vanadium	mg/L	0.01	<0.01	<0.01	-	<0.01	-	<0.01
Zinc	mg/L	0.005	<0.005	<0.005	-	0.006	-	<0.005

\*Limit of reporting (LOR) has been adjusted due to matrix interference as per Australian Laboratory Services (ALS) certificate of analysis (COA) ES2133028.

		EPA Identification No	38	39	40	41	42	43
		Location	LWDMW1S	LWDMW1I	LWDMW2S	LWDMW2D	LWDMW3D	LWDMW3S
		Date	12/09/2021	12/09/2021	12/09/2021	12/09/2021	12/09/2021	12/09/2021
		Sample Method	No sample - dry	No sample - dry	No sample - dry	Field Measurements Only	Grab Sample	No sample - dry
Parameter	Units	LOR	RESULT	RESULT	RESULT	RESULT	RESULT	RESULT
Aluminium	mg/L	0.01	-	-	-	-	<0.01	-
Ammonia as N	mg/L	0.01	-	-	-	-	2	-
Arsenic	mg/L	0.001	-	-	-	-	0.001	-
Barium	mg/L	0.001	-	-	-	-	0.069	-
Beryllium	mg/L	0.001	-	-	-	-	<0.001	-
Bicarbonate Alkalinity as CaCO3	mg/L	1	-	-	-	-	120	-
Boron	mg/L	0.05	-	-	-	-	0.08	-
Bromide	mg/L	0.01	-	-	-	-	0.464	-
Cadmium	mg/L	0.0001	-	-	-	-	<0.0001	-
Calcium	mg/L	1	-	-	-	-	2	-
Carbonate Alkalinity as CaCO3	mg/L	1	-	-	-	-	<1	-
Chloride	mg/L	1	-	-	-	-	258	-
Chromium	mg/L	0.001	-	-	-	-	<0.001	-
Cobalt	mg/L	0.001	-	-	-	-	<0.001	-
Copper	mg/L	0.001	-	-	-	-	<0.001	-
Dissolved Oxygen	mg/L	-	-	-	-	6.76**	6.5**	-
Electrical Conductivity	µS/cm	1	-	-	-	1789**	988	-
Fluoride	mg/L	0.1	-	-	-	-	0.3	-
Iron	mg/L	0.05	-	-	-	-	0.58	-
Lead	mg/L	0.001	-	-	-	-	<0.001	-
Magnesium	mg/L	1	-	-	-	-	4	-
Manganese	mg/L	0.001	-	-	-	-	0.012	-
Mercury	mg/L	0.0001	-	-	-	-	<0.0001	-
Methane	mg/L	0.01	-	-	-	-	0.539	-
Molybdenum	mg/L	0.001	-	-	-	-	<0.001	-
Nickel	mg/L	0.001	-	-	-	-	0.001	-
Nitrate as N	mg/L	0.01	-	-	-	-	0.01	-
Nitrite as N	mg/L	0.01	-	-	-	-	<0.01	-
pH	pH Unit	0.01	-	-	-	6.8**	6.74	-
Potassium	mg/L	1	-	-	-	-	10	-
Reactive Phosphorus	mg/L	0.01	-	-	-	-	0.45	-
Redox Potential	mV	-	-	-	-	11.7**	-232.4**	-
Selenium	mg/L	0.01	-	-	-	-	<0.01	-
Sodium	mg/L	1	-	-	-	-	169	-
Standing Water Level	mbTOC	-	-	-	-	25.95**	20.95**	-
Strontium	mg/L	0.001	-	-	-	-	0.024	-
Sulfate as SO4 2-	mg/L	1	-	-	-	-	3	-
Total Dissolved Solids @180°C	mg/L	10	-	-	-	-	636	-
Uranium	mg/L	0.001	-	-	-	-	<0.001	-
Vanadium	mg/L	0.01	-	-	-	-	<0.01	-
Zinc	mg/L	0.005	-	-	-	-	<0.005	-

\*Limit of reporting (LOR) has been adjusted due to matrix interference as per Australian Laboratory Services (ALS) certificate of analysis (COA) ES2133028.

		EPA Identification No	56	57	59	60	61	62
		Location	WPKMW9D	WPKMW9S	WPKMW13I	WPKMW13S	WPKMW14D	WPKMW14S
		Date	11/09/2021	11/09/2021	11/09/2021	11/09/2021	11/09/2021	11/09/2021
		Sample Method	Field Measurements Only	Grab Sample	Grab Sample	Field Measurements Only	Grab Sample	No sample - dry
Parameter	Units	LOR	RESULT	RESULT	RESULT	RESULT	RESULT	RESULT
Aluminium	mg/L	0.01	-	<0.01	<0.01	-	<0.01	-
Ammonia as N	mg/L	0.01	-	0.18	0.32	-	0.09	-
Arsenic	mg/L	0.001	-	0.002	0.002	-	0.002	-
Barium	mg/L	0.001	-	0.194	0.029	-	0.334	-
Beryllium	mg/L	0.001	-	<0.001	<0.001	-	<0.001	-
Bicarbonate Alkalinity as CaCO3	mg/L	1	-	834	326	-	316	-
Boron	mg/L	0.05	-	0.34	0.2	-	0.2	-
Bromide	mg/L	0.01	-	1.05	0.02	-	<0.01	-
Cadmium	mg/L	0.0001	-	<0.0001	<0.0001	-	<0.0001	-
Calcium	mg/L	1	-	8	3	-	8	-
Carbonate Alkalinity as CaCO3	mg/L	1	-	22	<1	-	<1	-
Chloride	mg/L	1	-	369	72	-	60	-
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	-	1.61**	1.33**	1.5**	3.14**	2.64**	-
Electrical Conductivity	µS/cm	1	1059**	3700	1250	2963**	1140	-
Fluoride	mg/L	0.1	-	0.2	0.4	-	0.5	-
Iron	mg/L	0.05	-	0.05	<0.05	-	<0.05	-
Lead	mg/L	0.001	-	<0.001	<0.001	-	<0.001	-
Magnesium	mg/L	1	-	3	<1	-	2	-
Manganese	mg/L	0.001	-	0.059	<0.001	-	<0.001	-
Mercury	mg/L	0.0001	-	<0.0001	<0.0001	-	<0.0001	-
Methane	mg/L	0.01	-	0.322	0.029	-	<0.01	-
Molybdenum	mg/L	0.001	-	0.002	0.001	-	<0.001	-
Nickel	mg/L	0.001	-	<0.001	0.002	-	<0.001	-
Nitrate as N	mg/L	0.01	-	<0.01	0.03	-	<0.01	-
Nitrite as N	mg/L	0.01	-	<0.01	<0.01	-	<0.01	-
pH	pH Unit	0.01	8.28**	8.34	8.15	7.42**	8.24	-
Potassium	mg/L	1	-	9	5	-	6	-
Reactive Phosphorus	mg/L	0.01	-	0.4	0.26	-	0.2	-
Redox Potential	mV	-	4.8**	-59.3**	-153.4**	7.7**	17.7**	-
Selenium	mg/L	0.01	-	<0.01	<0.01	-	<0.01	-
Sodium	mg/L	1	-	888	331	-	303	-
Standing Water Level	mbTOC	-	15.52**	15.73**	16.87**	16.98**	20.86**	-
Strontium	mg/L	0.001	-	0.097	0.016	-	0.041	-
Sulfate as SO4 2-	mg/L	1	-	475	<1	-	<1	-
Total Dissolved Solids @180°C	mg/L	10	-	2630	801	-	745	-
Uranium	mg/L	0.001	-	0.004	<0.001	-	<0.001	-
Vanadium	mg/L	0.01	-	<0.01	<0.01	-	<0.01	-
Zinc	mg/L	0.005	-	<0.005	<0.005	-	<0.005	-

\*Limit of reporting (LOR) has been adjusted due to matrix interference as per Australian Laboratory Services (ALS) certificate of analysis (COA) ES2133028.

		EPA Identification No	63	64	65	66
		Location	WPKMW15D	WPKMW15S	WPKMW16D	WPKMW16S
		Date	11/09/2021	11/09/2021	12/09/2021	12/09/2021
		Sample Method	Grab Sample	Grab Sample	Grab Sample	No sample - dry
Parameter	Units	LOR	RESULT	RESULT	RESULT	RESULT
Aluminium	mg/L	0.01	<0.01	<0.1*	<0.01	-
Ammonia as N	mg/L	0.01	0.06	0.01	0.02	-
Arsenic	mg/L	0.001	0.003	<0.01*	0.002	-
Barium	mg/L	0.001	0.41	1.8	0.177	-
Beryllium	mg/L	0.001	<0.001	<0.01*	<0.001	-
Bicarbonate Alkalinity as CaCO3	mg/L	1	330	4350	305	-
Boron	mg/L	0.05	0.15	0.54	0.06	-
Bromide	mg/L	0.01	0.018	0.059	<0.01	-
Cadmium	mg/L	0.0001	<0.0001	<0.001*	<0.0001	-
Calcium	mg/L	1	7	6	6	-
Carbonate Alkalinity as CaCO3	mg/L	1	<1	<1	<1	-
Chloride	mg/L	1	61	823	68	-
Chromium	mg/L	0.001	<0.001	0.011	<0.001	-
Cobalt	mg/L	0.001	<0.001	<0.01*	<0.001	-
Copper	mg/L	0.001	<0.001	<0.01*	<0.001	-
Dissolved Oxygen	mg/L	-	0.66**	2.39**	4.77**	-
Electrical Conductivity	µS/cm	1	1230	10100	1200	-
Fluoride	mg/L	0.1	0.3	1.2	0.4	-
Iron	mg/L	0.05	<0.05	<0.1*	<0.05	-
Lead	mg/L	0.001	<0.001	<0.01*	<0.001	-
Magnesium	mg/L	1	3	11	2	-
Manganese	mg/L	0.001	<0.001	<0.01*	<0.001	-
Mercury	mg/L	0.0001	<0.0001	<0.0001	<0.0001	-
Methane	mg/L	0.01	0.467	<0.01	<0.01	-
Molybdenum	mg/L	0.001	0.006	<0.01*	0.003	-
Nickel	mg/L	0.001	0.004	<0.01*	0.001	-
Nitrate as N	mg/L	0.01	0.08	0.46	0.01	-
Nitrite as N	mg/L	0.01	<0.01	<0.01	<0.01	-
pH	pH Unit	0.01	8.24	7.78	8.26	-
Potassium	mg/L	1	9	32	13	-
Reactive Phosphorus	mg/L	0.01	0.3	0.63	0.26	-
Redox Potential	mV	-	-68**	49.3**	16.5**	-
Selenium	mg/L	0.01	<0.01	<0.1*	<0.01	-
Sodium	mg/L	1	324	2230	298	-
Standing Water Level	mbTOC	-	22.26**	22.46**	26.45**	-
Strontium	mg/L	0.001	0.052	0.233	0.048	-
Sulfate as SO4 2-	mg/L	1	11	<1	7	-
Total Dissolved Solids @180°C	mg/L	10	954	5970	690	-
Uranium	mg/L	0.001	<0.001	<0.01*	0.002	-
Vanadium	mg/L	0.01	<0.01	<0.1*	<0.01	-
Zinc	mg/L	0.005	<0.005	<0.05*	<0.005	-

\*Limit of reporting (LOR) has been adjusted due to matrix interference as per Australian Laboratory Services (ALS) certificate of analysis (COA) ES2133028.



**TABLE 3: TREATED WATER QUALITY MONITORING**

		EPA Identification No	77	77	77
		Location	LWWTPDM1	LWWTPDM1	LWWTPDM1
		Date	May-21	Jun-21	Jul-21
		Sample Method	No sample - plant not operating	No sample - plant not operating	No sample - plant not operating
Parameter	Units	LOR	RESULT	RESULT	RESULT
Ammonia as N	mg/L	0.01			
Bicarbonate Alkalinity as CaCO3	mg/L	1			
Boron	mg/L	0.05			
Calcium	mg/L	1			
Carbonate Alkalinity as CaCO3	mg/L	1			
Chloride	mg/L	1			
Electrical Conductivity	µS/cm	-			
Fluoride	mg/L	0.1			
Magnesium	mg/L	1			
Nitrate as N	mg/L	0.01			
Nitrite as N	mg/L	0.01			
pH	pH Unit	-			
Potassium	mg/L	1			
Reactive Silica	mg/L	1			
Sodium Adsorption Ratio	-	0.01			
Sodium	mg/L	1			
Sulfate as SO4 2-	mg/L	1			
Total Alkalinity (as CaCO3)	mg/L	1			
Total Dissolved Solids @180°C	mg/L	10			
Total Hardness (as CaCO3)	mg/L	1			
Total Nitrogen (as N)	mg/L	0.5			
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
		Location	BWDP2	BWDP3	LWDPD1CELL4	LWDPD1CELL3	LWDPD1CELL2	LWDPD1CELL1	TFDPD1
		Date			12/09/2021	12/09/2021	12/09/2021	12/09/2021	6/10/2021
		Sample Method	No produced water	No produced water	Grab Sample	Grab Sample	Grab Sample	Grab Sample	Grab Sample
Parameter	Units	LOR	RESULT	RESULT	RESULT	RESULT	RESULT	RESULT	RESULT
Aluminium	mg/L	0.1	-	-	<0.1	<0.1	<0.1	<0.1	0.05*
Ammonia as N	mg/L	0.1	-	-	<0.1	1.18	<0.1	<0.1	0.05*
Arsenic	mg/L	0.01	-	-	<0.01	<0.01	<0.01	<0.01	0.002*
Barium	mg/L	0.01	-	-	0.076	4.15	4.81	1.66	0.542*
Beryllium	mg/L	0.01	-	-	<0.01	<0.01	<0.01	<0.01	<0.001*
Bicarbonate Alkalinity as CaCO3	mg/L	1	-	-	6240	7210	7450	10100	632
Boron	mg/L	0.1	-	-	4.13	1.14	1.5	4.15	0.2*
Bromide	mg/L	0.01	-	-	40.4	3.84	5.42	36.2	5.27
Cadmium	mg/L	0.001	-	-	<0.001	<0.001	<0.001	<0.001	<0.0001*
Calcium	mg/L	1	-	-	2	11	14	12	3
Carbonate Alkalinity as CaCO3	mg/L	1	-	-	45300	11500	14000	46000	5230
Chloride	mg/L	1	-	-	10900	2240	2620	8870	2020*
Chromium	mg/L	0.01	-	-	0.012	<0.01	<0.01	0.012	0.001*
Cobalt	mg/L	0.01	-	-	<0.01	<0.01	<0.01	<0.01	<0.001*
Copper	mg/L	0.01	-	-	<0.01	<0.01	<0.01	<0.01	<0.001*
Dissolved Oxygen	mg/L	-	-	-	5.81	7.55	8.75	4.58	5.81
Electrical Conductivity	µS/cm	-	-	-	64850	24991	28034	71487	14297
Iron	mg/L	0.1	-	-	<0.1	<0.1	0.41	0.28	<0.05*
Lead	mg/L	0.01	-	-	<0.01	<0.01	<0.01	<0.01	<0.001*
Magnesium	mg/L	1	-	-	6	8	13	14	<1
Manganese	mg/L	0.01	-	-	<0.01	<0.01	<0.01	0.017	0.002*
Mercury	mg/L	0.001	-	-	<0.001	<0.001	<0.001	<0.001	<0.0001*
Molybdenum	mg/L	0.01	-	-	0.067	0.011	<0.01	0.055	0.004*
Nickel	mg/L	0.01	-	-	<0.01	<0.01	<0.01	<0.01	<0.001*
Nitrate as N	mg/L	0.1	-	-	<0.1	<0.1	<0.1	<0.1	<0.1
Nitrite as N	mg/L	0.01	-	-	<0.01	<0.1*	<0.1*	<0.01	<0.1*
pH	pH Unit	-	-	-	10.09	9.54	9.64	9.75	9.93
Potassium	mg/L	1	-	-	630	82	105	720	53
Redox	mV	-	-	-	7.7	25.7	15.4	-31.5	-3
Selenium	mg/L	0.1	-	-	<0.1	<0.1	<0.1	<0.1	<0.01*
Sodium Adsorption Ratio	-	0.1	-	-	2120	488	454	1280	481
Sodium	mg/L	1	-	-	26600	8710	9810	27500	3420
Strontium	mg/L	0.01	-	-	0.213	1.11	1.47	1.04	0.25*
Sulfate as SO4 2-	mg/L	100	-	-	<100	<100	12*	<100	<10*
Total Dissolved Solids @180°C	mg/L	10	-	-	72000	22400	25900	74800	9920
Total Organic Carbon	mg/L	1	-	-	45	10	46	64	21
Total Phosphorus as P	mg/L	0.2	-	-	1.92	<0.1	0.17	1.77	0.03
Uranium	mg/L	0.01	-	-	<0.01	<0.01	<0.01	<0.01	<0.001*
Vanadium	mg/L	0.1	-	-	<0.1	<0.1	<0.1	<0.1	<0.01*
Zinc	mg/L	0.05	-	-	<0.05	<0.05	<0.05	<0.05	<0.005*

**Note:** \*Limit of reporting (LOR) has been adjusted due to matrix interference as per Australian Laboratory Services (ALS) certificate of analysis (COA) ES2133027

**TABLE 6: GROUNDWATER LEVEL MONITORING**

EPA Identification No	44	45	46	47	48	49
Location	Dewhurst 8A-1 (DWH8AQGDGY01)	Dewhurst 8A-2 (DWH8AQGARK02)	Dewhurst 8A-3 (DWH8AQGPOR03)	Bibbiewindi 28A (BWD28QGUPS01)	Bibbiewindi 28B (BWD28QGLPS01)	Bibbiewindi 28C (BWD28QGPUR01)
Start Date	1/08/2021	1/08/2021	1/08/2021	1/08/2021	1/08/2021	1/08/2021
End Date	31/10/2021	31/10/2021	31/10/2021	31/10/2021	31/10/2021	31/10/2021
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	-36.995	16.109	-58.09	-	-	-
Mean of sample	-37.068	16.02	-60.41	-	-	-
Highest sample value	-37.148	16.895	-62.616	-	-	-

**Note:** Monitoring points 47,48 and 49: Sensor is faulty and data not available since 21 April 2021