

Annual Groundwater Results

August 2024

City of Newcastle - Summerhill Waste Management Centre
141 Minmi Road, Wallsend, NSW

Environment Protection Licence 5897 - Condition M2 – Groundwater Sampling

Parameter	CN ID		GW33	GW34	GW35	GW42*	GW46	GW48
	EPL ID		33	34	35	42	46	48
Parameter	Units	LOR						
Ammonia	mg/L	0.01	0.86	1.55	1.90	-	0.84	0.08
Aluminium	mg/L	0.01	0.55	0.09	1.68	-	0.24	0.31
Arsenic	mg/L	0.001	0.002	0.002	0.002	-	0.002	<0.001
Barium	mg/L	0.001	0.034	0.059	0.293	-	0.035	0.048
Benzene	mg/L	0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001
Cadmium	mg/L	0.0001	0.0002	0.0001	0.0010	-	0.0001	<0.0001
Calcium	mg/L	1	394	182	292	-	69	72
Chloride	mg/L	1	2200	1320	3990	-	2690	114
Chromium (hexavalent)	mg/L	0.01	<0.01	<0.01	<0.01	-	<0.01	<0.01
Chromium (total)	mg/L	0.001	0.002	<0.001	0.003	-	0.010	<0.001
Cobalt	mg/L	0.001	0.073	0.004	0.012	-	0.009	<0.001
Copper	mg/L	0.001	0.002	0.006	0.126	-	0.012	0.002
Electrical Conductivity	µS/cm	1	10900	10400	13400	-	9970	1310
Ethyl benzene	mg/L	0.002	<0.002	<0.002	<0.002	-	<0.002	<0.002
Fluoride	mg/L	0.1	0.2	0.6	<0.01	-	0.2	0.4
Iron	mg/L	0.05	61.1	10.5	4.65	-	5.47	0.43
Lead	mg/L	0.001	0.002	<0.001	0.058	-	0.008	<0.001
Magnesium	mg/L	1	555	188	185	-	154	42
Manganese	mg/L	0.001	12.2	0.826	0.727	-	0.683	0.603
Mercury	mg/L	0.0001	<0.0001	<0.0001	<0.0001	-	<0.0001	<0.0001
Nitrate as N	mg/L	0.01	0.01	0.06	9.39	-	<0.01	<0.01
Organochlorine Pesticides	mg/L	0.0005	<0.0005	<0.0005	<0.0005	-	<0.0005	<0.0005
Organophosphate Pesticides	mg/L	0.0005	<0.0005	<0.0005	<0.0005	-	<0.0005	<0.0005
pH Value	pH Unit	0.01	6.12	6.10	6.49	-	6.64	6.07
Polycyclic Aromatic Hydrocarbons	mg/L	0.0005	<0.0005	<0.0005	<0.0005	-	<0.0005	<0.0005
Potassium	mg/L	1	36	21	16	-	30	6
Sodium	mg/L	1	1310	1880	2260	-	1760	178
Sulfate	mg/L	1	3410	385	285	-	584	130
Toluene	mg/L	0.002	<0.002	<0.002	<0.002	-	<0.002	<0.002
Total Alkalinity as CaCO ₃	mg/L	1	80	639	589	-	371	412
Total Dissolved Solids	mg/L	10	8450	6530	7700	-	5550	792
Total Organic Carbon	mg/L	1	4	23	4	-	6	1
Total Petroleum Hydrocarbons	mg/L	0.05	<0.05	<0.1	0.480	-	<0.1	<0.1
Total Phenolics	mg/L	0.001	<0.001	<0.001	2	-	<0.001	<0.001
Zinc	mg/L	0.005	0.110	0.087	4.61	-	0.101	0.030
Standing Water Level	mAHD	0.01	24.27	26.73	6.67	Dry	22.35	37.04

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Parameter	CN ID		GW49	GW51	GW101	GW102	GW103	GW104
	EPL ID	LOR	49	51	68	69	70	71
Parameter	Units	LOR						
Ammonia	mg/L	0.01	-	0.12	-	0.06	0.98	1.88
Aluminium	mg/L	0.01	-	10.0	-	0.76	4.65	1.08
Arsenic	mg/L	0.001	-	0.006	-	0.006	0.010	0.005
Barium	mg/L	0.001	-	0.080	-	0.032	0.102	0.095
Benzene	mg/L	0.001	-	<0.001	-	<0.001	<0.001	<0.001
Cadmium	mg/L	0.0001	-	0.0007	-	<0.0001	<0.0001	0.0001
Calcium	mg/L	1	-	11	-	9	209	56
Chloride	mg/L	1	-	202	-	205	1400	2760
Chromium (hexavalent)	mg/L	0.01	-	<0.01	-	<0.01	<0.01	<0.01
Chromium (total)	mg/L	0.001	-	0.006	-	0.001	0.013	0.096
Cobalt	mg/L	0.001	-	0.021	-	0.016	0.005	0.028
Copper	mg/L	0.001	-	0.033	-	0.006	0.065	0.347
Electrical Conductivity	µS/cm	1	-	1700	-	1690	6320	9040
Ethyl benzene	mg/L	0.002	-	<0.002	-	<0.002	<0.002	<0.002
Fluoride	mg/L	0.1	-	0.4	-	0.7	0.4	0.4
Iron	mg/L	0.05	-	6.06	-	2.43	7.33	16.7
Lead	mg/L	0.001	-	0.024	-	0.002	0.006	0.003
Magnesium	mg/L	1	-	25	-	21	103	192
Manganese	mg/L	0.001	-	1.71	-	1.38	0.396	3.24
Mercury	mg/L	0.0001	-	<0.0001	-	<0.0001	<0.0001	<0.0001
Nitrate as N	mg/L	0.01	-	<0.01	-	0.02	0.01	<0.01
Organochlorine Pesticides	mg/L	0.0005	-	<0.0005	-	<0.0005	<0.0005	<0.0005
Organophosphate Pesticides	mg/L	0.0005	-	<0.0005	-	<0.0005	<0.0005	<0.0005
pH Value	pH Unit	0.01	-	6.22	-	5.99	5.87	5.59
Polycyclic Aromatic Hydrocarbons	mg/L	0.0005	-	<0.0005	-	<0.0005	<0.0005	<0.0005
Potassium	mg/L	1	-	12	-	9	18	34
Sodium	mg/L	1	-	344	-	342	997	1680
Sulfate	mg/L	1	-	301	-	314	394	434
Toluene	mg/L	0.002	-	<0.002	-	<0.002	<0.002	<0.002
Total Alkalinity as CaCO3	mg/L	1	-	254	-	245	586	241
Total Dissolved Solids	mg/L	10	-	1350	-	1060	3750	5530
Total Organic Carbon	mg/L	1	-	5	-	4	19	3
Total Petroleum Hydrocarbons	mg/L	0.1	-	<0.1	-	<0.1	<0.1	<0.1
Total Phenolics	mg/L	0.001	-	<0.001	-	<0.001	<0.001	<0.001
Zinc	mg/L	0.005	-	0.185	-	0.050	0.064	0.099
Standing Water Level	mAHD	0.01	19.94	15.45	Dry	16.025	8.655	10.65

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	CN ID		GW105	GW106 *	GW107 *	GW109	GW110	GW111 *
	EPL ID		71	73	74	75	76	77
Parameter	Units	LOR						
Ammonia	mg/L	0.01	1.10	-	-	<0.10	0.35	-
Aluminium	mg/L	0.01	2.74	-	-	7.77	17.6	-
Arsenic	mg/L	0.001	0.010	-	-	0.002	0.013	-
Barium	mg/L	0.001	0.345	-	-	0.057	0.182	-
Benzene	mg/L	0.001	<0.001	-	-	<0.001	<0.001	-
Cadmium	mg/L	0.0001	<0.0001	-	-	0.0001	0.0004	-
Calcium	mg/L	1	89	-	-	14	15	-
Chloride	mg/L	1	3830	-	-	55	105	-
Chromium (hexavalent)	mg/L	0.01	<0.10	-	-	<0.01	<0.01	-
Chromium (total)	mg/L	0.001	0.008	-	-	0.025	0.008	-
Cobalt	mg/L	0.001	0.018	-	-	0.006	0.035	-
Copper	mg/L	0.001	0.380	-	-	0.016	0.025	-
Electrical Conductivity	µS/cm	1	12200	-	-	414	1280	-
Ethyl benzene	mg/L	0.002	<0.002	-	-	<0.002	<0.002	-
Fluoride	mg/L	0.1	0.9	-	-	0.2	0.5	-
Iron	mg/L	0.05	45.5	-	-	9.43	12.3	-
Lead	mg/L	0.001	0.003	-	-	0.011	0.032	-
Magnesium	mg/L	1	332	-	-	5	17	-
Manganese	mg/L	0.001	1.30	-	-	0.240	0.361	-
Mercury	mg/L	0.0001	<0.0001	-	-	<0.0001	<0.0001	-
Nitrate as N	mg/L	0.01	<0.01	-	-	<0.01	<0.10	-
Organochlorine Pesticides	mg/L	0.0005	<0.0005	-	-	<0.0005	<0.0005	-
Organophosphate Pesticides	mg/L	0.0005	<0.0005	-	-	<0.0005	<0.0005	-
pH Value	pH Unit	0.01	6.65	-	-	6.45	5.72	-
Polycyclic Aromatic Hydrocarbons	mg/L	0.0005	<0.0005	-	-	<0.0005	<0.0005	-
Potassium	mg/L	1	40	-	-	4	13	-
Sodium	mg/L	1	2200	-	-	62	259	-
Sulfate	mg/L	1	469	-	-	32	271	-
Toluene	mg/L	0.002	<0.002	-	-	<0.002	<0.002	-
Total Alkalinity as CaCO3	mg/L	1	235	-	-	68	217	-
Total Dissolved Solids	mg/L	10	8260	-	-	404	1120	-
Total Organic Carbon	mg/L	1	15	-	-	20	54	-
Total Petroleum Hydrocarbons	mg/L	0.05	<0.05	-	-	<0.05	<0.05	-
Total Phenolics	mg/L	0.001	<0.001	-	-	<0.001	<0.001	-
Zinc	mg/L	0.005	0.028	-	-	0.054	0.232	-
Standing Water Level	mAHD	0.01	6.24	17.07	25.78	5.76	12.15	47.82

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	CN ID		GW112	GW113	GW114	GW115	GW116	GW117
	EPL ID		78	79	80	81	82	83
Parameter	Units	LOR						
Ammonia	mg/L	0.01	-	-	0.39	0.03	-	0.13
Aluminium	mg/L	0.01	-	-	3.40	15.1	-	1.16
Arsenic	mg/L	0.001	-	-	0.022	0.005	-	0.006
Barium	mg/L	0.001	-	-	0.120	0.110	-	0.034
Benzene	mg/L	0.001	-	-	<0.001	<0.001	-	
Cadmium	mg/L	0.0001	-	-	0.0002	<0.0001	-	0.0002
Calcium	mg/L	1	-	-	90	29	-	5
Chloride	mg/L	1	-	-	479	419	-	284
Chromium (hexavalent)	mg/L	0.01	-	-	<0.01	<0.01	-	<0.01
Chromium (total)	mg/L	0.001	-	-	0.009	0.022	-	0.003
Cobalt	mg/L	0.001	-	-	0.005	0.014	-	0.024
Copper	mg/L	0.001	-	-	0.014	0.163	-	0.082
Electrical Conductivity	µS/cm	1	-	-	2460	2270	-	1640
Ethyl benzene	mg/L	0.002	-	-	<0.002	<0.002	-	<0.002
Fluoride	mg/L	0.1	-	-	0.5	0.7	-	0.8
Iron	mg/L	0.05	-	-	10.3	12.4	-	10.2
Lead	mg/L	0.001	-	-	0.006	0.163	-	0.001
Magnesium	mg/L	1	-	-	62	44	-	22
Manganese	mg/L	0.001	-	-	0.900	1.36	-	2.62
Mercury	mg/L	0.0001	-	-	<0.0001	<0.0001	-	<0.0001
Nitrate as N	mg/L	0.01	-	-	0.01	<0.01	-	0.01
Organochlorine Pesticides	mg/L	0.0005	-	-	<0.0005	<0.0005	-	<0.0005
Organophosphate Pesticides	mg/L	0.0005	-	-	<0.0005	<0.0005	-	<0.0005
pH Value	pH Unit	0.01	-	-	6.68	6.48	-	6.14
Polycyclic Aromatic Hydrocarbons	mg/L	0.0005	-	-	1900	<0.0005	-	<0.0005
Potassium	mg/L	1	-	-	11	14	-	6
Sodium	mg/L	1	-	-	375	384	-	300
Sulfate	mg/L	1	-	-	202	222	-	218
Toluene	mg/L	0.002	-	-	<0.002	<0.002	-	<0.002
Total Alkalinity as CaCO3	mg/L	1	-	-	521	310	-	176
Total Dissolved Solids	mg/L	10	-	-	1470	1530	-	898
Total Organic Carbon	mg/L	1	-	-	87	3	-	7
Total Petroleum Hydrocarbons	mg/L	0.05	-	-	0.700	<0.05	-	0.240
Total Phenolics	mg/L	0.001	-	-	<0.001	<0.001	-	<0.001
Zinc	mg/L	0.005	-	-	0.130	0.094	-	0.083
Standing Water Level	mAHD	0.01	-	-	69.64	48.30	70.745	49.75

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	CN ID		GW118	GW119	GW120
	EPL ID		84	85	86
Parameter	Units	LOR			
Ammonia	mg/L	0.01	-	-	0.02
Aluminium	mg/L	0.01	-	-	0.25
Arsenic	mg/L	0.001	-	-	<0.001
Barium	mg/L	0.001	-	-	0.053
Benzene	mg/L	0.001	-	-	<0.001
Cadmium	mg/L	0.0001	-	-	<0.0001
Calcium	mg/L	1	-	-	64
Chloride	mg/L	1	-	-	39
Chromium (hexavalent)	mg/L	0.01	-	-	<0.01
Chromium (total)	mg/L	0.001	-	-	<0.001
Cobalt	mg/L	0.001	-	-	0.003
Copper	mg/L	0.001	-	-	0.005
Electrical Conductivity	µS/cm	1	-	-	1210
Ethyl benzene	mg/L	0.002	-	-	<0.002
Fluoride	mg/L	0.1	-	-	0.5
Iron	mg/L	0.05	-	-	0.36
Lead	mg/L	0.001	-	-	<0.001
Magnesium	mg/L	1	-	-	36
Manganese	mg/L	0.001	-	-	0.336
Mercury	mg/L	0.0001	-	-	<0.0001
Nitrate as N	mg/L	0.01	-	-	0.02
Organochlorine Pesticides	mg/L	0.0005	-	-	<0.0005
Organophosphate Pesticides	mg/L	0.0005	-	-	<0.0005
pH Value	pH Unit	0.01	-	-	6.21
Polycyclic Aromatic Hydrocarbons	mg/L	0.0005	-	-	<0.0005
Potassium	mg/L	1	-	-	16
Sodium	mg/L	1	-	-	162
Sulfate	mg/L	1	-	-	300
Toluene	mg/L	0.002	-	-	<0.002
Total Alkalinity as CaCO ₃	mg/L	1	-	-	307
Total Dissolved Solids	mg/L	10	-	-	824
Total Organic Carbon	mg/L	1	-	-	6
Total Petroleum Hydrocarbons	mg/L	0.05	-	-	<0.05
Total Phenolics	mg/L	0.001	-	-	<0.001
Zinc	mg/L	0.005	-	-	0.036
Standing Water Level	mAHD	0.01	Dry	41.97	9.77

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Date sampled: 12, 13, 14, 15 and 19 August 2024

Final data obtained: 26 August 2024

Date published: 19 September 2024

Notes:

CN = City of Newcastle

EPL = Environment Protection Licence

LOR = limit of reporting

mAHD = metres above Australian Height Datum

Results preceded by < indicate that the results were below the limit of detection for that analysis

NR = no result (non-compliant sample, insufficient water to sample etc)

EPL Monitoring points 42 was not sampled as wells are damaged (-)

*Insufficient water for analysis to be conducted

A copy of the Environmental Protection Licence can be viewed at: <http://app.epa.nsw.gov.au/prpoeoapp/> A map showing the location of monitoring points can be viewed at: <http://www.newcastle.nsw.gov.au/Living/Waste-recycling/Summerhill-Waste-management-Centre/Environmental-Monitoring-Data>