

Annual Groundwater Results

Environment Protection Licence 5897 - Condition M2 - Water Monitoring Grab Samples

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

Parameter	NCC ID		GW33	GW34	GW35	GW42	GW46	GW48	GW49	GW51
	Units	LOR	33	34	35	42	46	48	49	51
Standing Water Level	mAHD	0.01	24.26	26.87	6.10	35.75	21.9	35.78	36.70	35.48
Electrical Conductivity	µS/cm	1	9880	8600	13200	2940	10400	1260	3760	2010
pH Value	pH Unit	0.01	5.44	6.12	7.15	6.48	6.23	6.49	5.68	6.28
Total Dissolved Solids	mg/L	10	7460	4480	7800	1820	5590	637	2070	1570
Total Organic Carbon	mg/L	1	5	7	5	10	7	4	11	5
Hydroxide Alkalinity as CaCO ₃	mg/L	1	<1	<1	<1	<1	<1	<1	<1	<1
Carbonate Alkalinity as CaCO ₃	mg/L	1	<1	<1	<1	<1	<1	<1	<1	<1
Bicarbonate Alkalinity as CaCO ₃	mg/L	1	122	567	650	566	456	328	200	314
Alkalinity (as calcium carbonate)	mg/L	1	122	567	650	566	456	328	200	314
Sulfate	mg/L	1	3570	354	358	689	582	141	675	371
Chloride	mg/L	1	1620	1970	4100	236	2980	101	672	252
Fluoride	mg/L	0.1	0.2	0.7	0.2	0.7	0.2	0.5	0.5	0.8
Calcium	mg/L	1	388	106	255	74	63	44	8	10
Magnesium	mg/L	1	532	116	179	72	151	32	52	25
Sodium	mg/L	1	1220	1450	2300	479	1720	176	645	343
Potassium	mg/L	1	37	19	14	15	30	6	14	8
Nitrate	mg/L	0.01	0.1	0.02	14.7	0.04	0.13	<0.01	<0.01	<0.01
Phenolics (Total)	mg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Benzene	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Toluene	mg/L	0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Ethylbenzene	mg/L	0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002

	NCC ID	GW33	GW34	GW35	GW42	GW46	GW48	GW49	GW51	
	EPL ID	33	34	35	42	46	48	49	51	
Metals										
Aluminium (dissolved)	mg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	0.03	<0.01
Arsenic (dissolved)	mg/L	0.001	<0.001	0.002	<0.001	0.006	<0.001	<0.001	<0.001	0.005
Barium (dissolved)	mg/L	0.001	0.022	0.042	0.156	0.042	0.031	0.016	0.02	0.032
Cadmium (dissolved)	mg/L	0.0001	0.0003	<0.0001	0.0002	<0.0001	0.0003	<0.0001	0.0002	<0.0001
Chromium (dissolved)	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Hexavalent Chromium (dissolved)	mg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Cobalt (dissolved)	mg/L	0.001	0.111	<0.001	0.002	0.018	0.001	0.001	0.046	0.015
Copper (dissolved)	mg/L	0.001	<0.001	<0.001	0.006	<0.001	0.003	<0.001	0.002	<0.001
Lead (dissolved)	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Manganese (dissolved)	mg/L	0.001	13.4	0.23	0.397	2.28	0.639	0.752	1.48	1.46
Zinc (dissolved)	mg/L	0.005	0.241	0.243	0.235	0.059	0.084	0.024	0.159	0.021
Iron (dissolved)	mg/L	0.05	54.2	1.59	<0.05	2.05	0.14	0.43	0.17	1.45
Mercury (dissolved)	mg/L	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Chromium (total)	mg/L	0.001	<0.001	<0.001	0.019	<0.001	<0.001	<0.001	<0.001	0.011
Organochlorine Pesticides										
alpha-BHC	mg/L	0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Hexachlorobenzene (HCB)	mg/L	0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
beta-BHC	mg/L	0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
gamma-BHC	mg/L	0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
delta-BHC	mg/L	0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Heptachlor	mg/L	0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Aldrin	mg/L	0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Heptachlor epoxide	mg/L	0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
trans-Chlordane	mg/L	0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
alpha-Endosulfan	mg/L	0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
cis-Chlordane	mg/L	0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Dieldrin	mg/L	0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
4,4'-DDE	mg/L	0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Endrin	mg/L	0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
beta-Endosulfan	mg/L	0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
4,4'-DDD	mg/L	0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Endrin aldehyde	mg/L	0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005

	NCC ID		GW33	GW34	GW35	GW42	GW46	GW48	GW49	GW51
	EPL ID		33	34	35	42	46	48	49	51
Endosulfan sulfate	mg/L	0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
4,4'-DDT	mg/L	0.002	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Endrin ketone	mg/L	0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Methoxychlor	mg/L	0.002	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Organophosphate Pesticides										
Dichlorvos	mg/L	0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Demeton-S-methyl	mg/L	0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Monocrotophos	mg/L	0.002	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Dimethoate	mg/L	0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Diazinon	mg/L	0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Chlorpyrifos-methyl	mg/L	0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Parathion-methyl	mg/L	0.002	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Malathion	mg/L	0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Fenthion	mg/L	0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Chlorpyrifos	mg/L	0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Parathion	mg/L	0.002	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Pirimphos-ethyl	mg/L	0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Chlorfenvinphos	mg/L	0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Bromophos-ethyl	mg/L	0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Fenamiphos	mg/L	0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Prothiofos	mg/L	0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Ethion	mg/L	0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Carbophenothion	mg/L	0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Azinphos Methyl	mg/L	0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Polycyclic Aromatic Hydrocarbons										
Naphthalene	mg/L	0.001	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Acenaphthylene	mg/L	0.001	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Acenaphthene	mg/L	0.001	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Fluorene	mg/L	0.001	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Phenanthrene	mg/L	0.001	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Anthracene	mg/L	0.001	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Fluoranthene	mg/L	0.001	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Pyrene	mg/L	0.001	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010

	NCC ID		GW33	GW34	GW35	GW42	GW46	GW48	GW49	GW51
	EPL ID		33	34	35	42	46	48	49	51
Benz(a)anthracene	mg/L	0.001	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Chrysene	mg/L	0.001	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Benzo(b+j)fluoranthene	mg/L	0.001	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Benzo(k)fluoranthene	mg/L	0.001	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Benzo(a)pyrene	mg/L	0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Indeno(1.2.3.cd)pyrene	mg/L	0.001	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Dibenz(a.h)anthracene	mg/L	0.001	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Benzo(g.h.i)perylene	mg/L	0.001	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Total Recoverable Hydrocarbons										
C6 - C10 Fraction	mg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
>C10 - C16 Fraction	mg/L	0.1	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
>C16 - C34 Fraction	mg/L	0.1	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
>C34 - C40 Fraction	mg/L	0.1	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Total Petroleum Hydrocarbons										
C6 - C9 Fraction	mg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
C10 - C14 Fraction	mg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
C15 - C28 Fraction	mg/L	0.1	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
C29 - C36 Fraction	mg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05

Notes:

NCC = Newcastle City Council

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 31 & 32 were not sampled for safety reasons

Date sampled: 17, 18, 19 July 2018

Final data obtained: 10 August 2018

Date published: 13 August 2018

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>