Monthly Monitoring Data

Environmental Protection Licence Number: 12693
link to EPL12693 on EPA Public Register: Click Here
Licensee: Newcastle Coal Infrastructure Group Pty Ltd, Locked Bag 6003, Hunter Region Mail Centre NSW 2310
Premises: Newcastle Coal Infrastructure Group, Cormorant Road, Kooragang NSW 2304
Date Published: 5th February 2019

Note: On the 25th of August 2017 an amendment was made to the NCIG Environmental Protection Licence (EPL12693) which removed the requirement for ambient air quality monitoring at Points 7-10 and 14-15. However, NCIG will continue to publish ambient air quality data for these locations previously listed in EPL12693 for the interest of the public.

Depositional Dust Monitoring
Sample Period: 4th December 2018 – 4th January 2019
Date Obtained: 25th January 2019
Units of Measure: grams per square metre per month (g/m^2/month)
Frequency: Monthly

	Monitoring Point 7 - DG3 (Kooragang Island)	Monitoring Point 8 - DG4 (Mayfield Sport Rec Club)	Monitoring Point 9 - DG5 (Mayfield West)	Monitoring Point 10 - DG6 (Sandgate)
Depositional Dust	1.5	1.8	1.5	1.3

High Volume Air Sampling
Date Obtained: 25th January 2019
Units of measure: micrograms per cubic metre (µg/m^3)
Frequency: Weekly

	Monitoring Point 14 - HVAS 1 (Steel River)			Monitoring Point 15 - HVAS 2 (Crebert Street)			
	TSP	PM10		TSP		PM10	
03-Dec 18	81*	**03-Dec 18**	41*	**03-Dec 18**	86*	**03-Dec 18**	43*
09-Dec 18	52	**09-Dec 18**	28	**09-Dec 18**	53	**09-Dec 18**	31
15-Dec 18	36	**15-Dec 18**	21	**15-Dec 18**	32	**18-Dec 18**	22
21-Dec 18	55	**21-Dec 18**	16	**21-Dec 18**	34	**21-Dec 18**	17
27-Dec 18	46	**27-Dec 18**	27	**27-Dec 18**	51	**27-Dec 18**	30

NB. Sample period is a 24-hour period on each of the above dates | TSP = Total Suspended Particulates | PM10 = Particulate Matter <10 microns
*Note: Higher than usual results. The dominant wind direction during this time was from a ESE direction.

6 Monthly Groundwater Monitoring
Results Received: 25th January 2019
Date Published: 5th February 2019

Groundwater Sampling Point 1 (GW1)
Sample Date: 31st December 2018
Units of Measure: pH units; milligrams per litre (mg/L); microSiemens per centimetre (µS/cm); micrograms per litre (µg/L)

Pollutant	Units of Measure	Frequency	Recorded Value
pH	pH units	Every 6 Months	7.38
Conductivity	µS/cm	Every 6 Months	15200
Bromide	mg/L	Every 6 Months	11.9
Aluminium	mg/L	Every 6 Months	<0.01
Arsenic	mg/L	Every 6 Months	<0.001
Cadmium	mg/L	Every 6 Months	<0.0001
Copper	mg/L	Every 6 Months	<0.001
Manganese	mg/L	Every 6 Months	0.199
Nickel	mg/L	Every 6 Months	<0.001
Zinc	mg/L	Every 6 Months	<0.005
Iron	mg/L	Every 6 Months	<0.05
Total PAH	µg/L	Every 6 Months	<0.5
TPH C6-9 Fraction	µg/L	Every 6 Months	<20
TPH C10-14 Fraction	µg/L	Every 6 Months	<50
TPH C15-28 Fraction	µg/L	Every 6 Months	<100
TPH C29-36 Fraction	µg/L	Every 6 Months	<50
Cyanide (free)	mg/L	Every 6 Months	<0.004
Cyanide (total)	mg/L	Every 6 Months	<0.004

Groundwater Sampling Point 38 (BH21S)
Sample Date: 18th December 2018
Units of Measure: pH units; milligrams per litre (mg/L); microSiemens per centimetre (µS/cm); micrograms per litre (µg/L)

Pollutant	Units of Measure	Frequency	Recorded Value
pH	pH units	Every 6 Months	11.09
Conductivity	µS/cm	Every 6 Months	1260
Bromide	mg/L	Every 6 Months	0.789
Aluminium	mg/L	Every 6 Months	0.58
Arsenic	mg/L	Every 6 Months	0.006
Cadmium	mg/L	Every 6 Months	<0.0001
Copper	mg/L	Every 6 Months	<0.001
Manganese	mg/L	Every 6 Months	<0.001
Nickel	mg/L	Every 6 Months	0.002
Zinc	mg/L	Every 6 Months	<0.005
Iron	mg/L	Every 6 Months	0.09
Total PAH	µg/L	Every 6 Months	67.2
TPH C6-9 Fraction	µg/L	Every 6 Months	<100
TPH C10-14 Fraction	µg/L	Every 6 Months	190
TPH C15-28 Fraction	µg/L	Every 6 Months	<100
TPH C29-36 Fraction	µg/L	Every 6 Months	<50
Cyanide (free)	mg/L	Every 6 Months	0.005
Cyanide (total)	mg/L	Every 6 Months	0.276

Groundwater Sampling Point 39 (BH21D)
Sample Date: 18th December 2018
Units of Measure: pH units; milligrams per litre (mg/L); microSiemens per centimetre (µS/cm); micrograms per litre (µg/L)

Pollutant	Units of Measure	Frequency	Recorded Value
pH	pH units	Every 6 Months	7.64
Conductivity	µS/cm	Every 6 Months	10400
Bromide	mg/L	Every 6 Months	8.24
Aluminium	mg/L	Every 6 Months	0.08
Arsenic	mg/L	Every 6 Months	0.002
Cadmium	mg/L	Every 6 Months	<0.0001
Copper	mg/L	Every 6 Months	<0.001
Manganese	mg/L	Every 6 Months	0.4
Nickel	mg/L	Every 6 Months	0.002
Zinc	mg/L	Every 6 Months	<0.005
Iron	mg/L	Every 6 Months	1.91
Total PAH	µg/L	Every 6 Months	102
TPH C6-9 Fraction	µg/L	Every 6 Months	<100
TPH C10-14 Fraction	µg/L	Every 6 Months	190
TPH C15-28 Fraction	µg/L	Every 6 Months	<100
TPH C29-36 Fraction	µg/L	Every 6 Months	<50
Cyanide (free)	mg/L	Every 6 Months	0.006
Cyanide (total)	mg/L	Every 6 Months	0.198

Groundwater Sampling Point 20 (K9/3N)
Sample Date: 19th December 2018
Units of Measure: pH units; milligrams per litre (mg/L); microSiemens per centimetre (µS/cm); micrograms per litre (µg/L)

Pollutant	Units of Measure	Frequency	Recorded Value	Exceedance (Yes/No)*
pH	pH units	Every 6 Months	7.0	No
Conductivity	µS/cm	Every 6 Months	27900	Yes
Bromide	mg/L	Every 6 Months	20.5	No
Aluminium	mg/L	Every 6 Months	<0.01	No
Arsenic	mg/L	Every 6 Months	<0.001	No
Cadmium	mg/L	Every 6 Months	<0.0001	No
Copper	mg/L	Every 6 Months	<0.001	No
Manganese	mg/L	Every 6 Months	1.01	No
Nickel	mg/L	Every 6 Months	0.002	No
Zinc	mg/L	Every 6 Months	<0.005	No
Iron	mg/L	Every 6 Months	<0.05	No
Total PAH	µg/L	Every 6 Months	<0.5	No
TPH C6-9 Fraction	µg/L	Every 6 Months	<20	No
TPH C10-14 Fraction	µg/L	Every 6 Months	<50	No
TPH C15-28 Fraction	µg/L	Every 6 Months	<100	No
TPH C29-36 Fraction	µg/L	Every 6 Months	<50	No
Cyanide (free)	mg/L	Every 6 Months	<0.004	No
Cyanide (total)	mg/L	Every 6 Months	<0.004	No

Note: If trigger level is exceeded, actions listed in Condition E1.2 of EPL12693 are to be followed. These actions include notifying the EPA and resampling the location to confirm the elevated concentration.
* Trigger Condition 1 and 2 recalculated each sampling round- value not shown in table.

Groundwater Sampling Point 21 (K9/3S)
Sample Date: 19th December 2018
Units of Measure: pH units; milligrams per litre (mg/L); microSiemens per centimetre (µS/cm); micrograms per litre (µg/L)

Pollutant	Units of Measure	Frequency	Recorded Value	Exceedance (Yes/No)*
pH	pH units	Every 6 Months	7.94	No
Conductivity	µS/cm	Every 6 Months	5340	No
Bromide	mg/L	Every 6 Months	3.41	No
Aluminium	mg/L	Every 6 Months	<0.01	No
Arsenic	mg/L	Every 6 Months	0.003	No
Cadmium	mg/L	Every 6 Months	<0.0001	No
Copper	mg/L	Every 6 Months	<0.001	No
Manganese	mg/L	Every 6 Months	0.166	No
Nickel	mg/L	Every 6 Months	0.002	No
Zinc	mg/L	Every 6 Months	<0.005	No
Iron	mg/L	Every 6 Months	0.16	No
Total PAH	µg/L	Every 6 Months	<0.5	No
TPH C6-9 Fraction	µg/L	Every 6 Months	<20	No
TPH C10-14 Fraction	µg/L	Every 6 Months	<50	No
TPH C15-28 Fraction	µg/L	Every 6 Months	<100	No
TPH C29-36 Fraction	µg/L	Every 6 Months	<50	No
Cyanide (free)	mg/L	Every 6 Months	<0.004	No
Cyanide (total)	mg/L	Every 6 Months	<0.004	No

Note: If trigger level is exceeded, actions listed in Condition E1.2 of EPL12693 are to be followed. These actions include notifying the EPA and resampling the location to confirm the elevated concentration.
* Trigger Condition 1 and 2 recalculated each sampling round- value not shown in table.

Groundwater Sampling Point 22 (K11/1)
Sample Date: 19th December 2018
Units of Measure: pH units; milligrams per litre (mg/L); microSiemens per centimetre (µS/cm); micrograms per litre (µg/L)

Pollutant	Units of Measure	Frequency	Recorded Value	Exceedance (Yes/No)*
pH	pH units	Every 6 Months	7.32	No
Conductivity	µS/cm	Every 6 Months	1490	No
Bromide	mg/L	Every 6 Months	0.755	No
Aluminium	mg/L	Every 6 Months	<0.01	No
Arsenic	mg/L	Every 6 Months	<0.001	No
Cadmium	mg/L	Every 6 Months	<0.0001	No
Copper	mg/L	Every 6 Months	<0.001	No
Manganese	mg/L	Every 6 Months	0.799	No
Nickel	mg/L	Every 6 Months	<0.001	No
Zinc	mg/L	Every 6 Months	<0.005	No
Iron	mg/L	Every 6 Months	0.25	No
Total PAH	µg/L	Every 6 Months	<0.5	No
TPH C6-9 Fraction	µg/L	Every 6 Months	<20	No
TPH C10-14 Fraction	µg/L	Every 6 Months	<50	No
TPH C15-28 Fraction	µg/L	Every 6 Months	<100	No
TPH C29-36 Fraction	µg/L	Every 6 Months	<50	No
Cyanide (free)	mg/L	Every 6 Months	<0.004	No
Cyanide (total)	mg/L	Every 6 Months	<0.004	No

Note: If trigger level is exceeded, actions listed in Condition E1.2 of EPL12693 are to be followed. These actions include notifying the EPA and resampling the location to confirm the elevated concentration.
* Trigger Condition 1 and 2 recalculated each sampling round- value not shown in table.

Groundwater Sampling Point 23 (K11/1S)
Sample Date: 19th December 2018
Units of Measure: pH units; milligrams per litre (mg/L); microSiemens per centimetre (µS/cm); micrograms per litre (µg/L)

Pollutant	Units of Measure	Frequency	Recorded Value	Exceedance (Yes/No)*
pH	pH units	Every 6 Months	7.79	No
Conductivity	µS/cm	Every 6 Months	12700	No
Bromide	mg/L	Every 6 Months	9.39	No
Aluminium	mg/L	Every 6 Months	<0.01	No
Arsenic	mg/L	Every 6 Months	<0.001	No
Cadmium	mg/L	Every 6 Months	<0.0001	No
Copper	mg/L	Every 6 Months	<0.001	No
Manganese	mg/L	Every 6 Months	0.114	No
Nickel	mg/L	Every 6 Months	<0.001	No
Zinc	mg/L	Every 6 Months	<0.005	No
Iron	mg/L	Every 6 Months	<0.05	No
Total PAH	µg/L	Every 6 Months	<0.5	No
TPH C6-9 Fraction	µg/L	Every 6 Months	<20	No
TPH C10-14 Fraction	µg/L	Every 6 Months	<50	No
TPH C15-28 Fraction	µg/L	Every 6 Months	<100	No
TPH C29-36 Fraction	µg/L	Every 6 Months	<50	No
Cyanide (free)	mg/L	Every 6 Months	<0.004	No
Cyanide (total)	mg/L	Every 6 Months	<0.004	No

Note: If trigger level is exceeded, actions listed in Condition E1.2 of EPL12693 are to be followed. These actions include notifying the EPA and resampling the location to confirm the elevated concentration.
* Trigger Condition 1 and 2 recalculated each sampling round- value not shown in table.

Groundwater Sampling Point 36 (BH20S)
Sample Date: 18th December 2018
Units of Measure: pH units; milligrams per litre (mg/L); microSiemens per centimetre (µS/cm); micrograms per litre (µg/L)

Pollutant	Units of Measure	Frequency	Recorded Value	Exceedance (Yes/No)*
pH	pH units	Every 6 Months	6.67	No
Conductivity	µS/cm	Every 6 Months	2490	No
Bromide	mg/L	Every 6 Months	0.799	No
Aluminium	mg/L	Every 6 Months	3.95	No
Arsenic	mg/L	Every 6 Months	0.002	No
Cadmium	mg/L	Every 6 Months	<0.0001	No
Copper	mg/L	Every 6 Months	0.003	No
Manganese	mg/L	Every 6 Months	4.68	No
Nickel	mg/L	Every 6 Months	0.007	No
Zinc	mg/L	Every 6 Months	0.04	No
Iron	mg/L	Every 6 Months	0.21	No
Total PAH	µg/L	Every 6 Months	1.7	No
TPH C6-9 Fraction	µg/L	Every 6 Months	<20	No
TPH C10-14 Fraction	µg/L	Every 6 Months	<50	No
TPH C15-28 Fraction	µg/L	Every 6 Months	<100	No
TPH C29-36 Fraction	µg/L	Every 6 Months	<50	No
Cyanide (free)	mg/L	Every 6 Months	<0.004	No
Cyanide (total)	mg/L	Every 6 Months	<0.004	No

Note: If trigger level is exceeded, actions listed in Condition E1.2 of EPL12693 are to be followed. These actions include notifying the EPA and resampling the location to confirm the elevated concentration.
* Trigger Condition 1 and 2 recalculated each sampling round- value not shown in table.

Groundwater Sampling Point 37 (BH20D)
Sample Date: 18th December 2018
Units of Measure: pH units; milligrams per litre (mg/L); microSiemens per centimetre (µS/cm); micrograms per litre (µg/L)

Pollutant	Units of Measure	Frequency	Recorded Value	Exceedance (Yes/No)*
pH	pH units	Every 6 Months	6.07	Yes
Conductivity	µS/cm	Every 6 Months	53600	No
Bromide	mg/L	Every 6 Months	55.4	No
Aluminium	mg/L	Every 6 Months	<0.10	No
Arsenic	mg/L	Every 6 Months	<0.010	No
Cadmium	mg/L	Every 6 Months	<0.0010	No
Copper	mg/L	Every 6 Months	<0.010	No
Manganese	mg/L	Every 6 Months	10.6	No
Nickel	mg/L	Every 6 Months	0.035	Yes
Zinc	mg/L	Every 6 Months	<0.050	No
Iron	mg/L	Every 6 Months	38.3	No
Total PAH	µg/L	Every 6 Months	<0.5	No
TPH C6-9 Fraction	µg/L	Every 6 Months	<20	No
TPH C10-14 Fraction	µg/L	Every 6 Months	<50	No
TPH C15-28 Fraction	µg/L	Every 6 Months	<100	No
TPH C29-36 Fraction	µg/L	Every 6 Months	<50	No
Cyanide (free)	mg/L	Every 6 Months	<0.004	No
Cyanide (total)	mg/L	Every 6 Months	<0.004	No

Note: If trigger level is exceeded, actions listed in Condition E1.2 of EPL12693 are to be followed. These actions include notifying the EPA and resampling the location to confirm the elevated concentration.
* Trigger Condition 1 and 2 recalculated each sampling round- value not shown in table.

Groundwater Sampling Point 40 (BH23S)
Sample Date: 18th December 2018
Units of Measure: pH units; milligrams per litre (mg/L); microSiemens per centimetre (µS/cm); micrograms per litre (µg/L)

Pollutant	Units of Measure	Frequency	Recorded Value	Exceedance (Yes/No)*
pH	pH units	Every 6 Months	8.5	No
Conductivity	µS/cm	Every 6 Months	724	No
Bromide	mg/L	Every 6 Months	0.254	No
Aluminium	mg/L	Every 6 Months	0.12	Yes
Arsenic	mg/L	Every 6 Months	0.002	No
Cadmium	mg/L	Every 6 Months	<0.0001	No
Copper	mg/L	Every 6 Months	<0.001	No
Manganese	mg/L	Every 6 Months	0.288	No
Nickel	mg/L	Every 6 Months	<0.001	No
Zinc	mg/L	Every 6 Months	<0.005	No
Iron	mg/L	Every 6 Months	1.66	No
Total PAH	µg/L	Every 6 Months	1.6	No
TPH C6-9 Fraction	µg/L	Every 6 Months	<20	No
TPH C10-14 Fraction	µg/L	Every 6 Months	<50	No
TPH C15-28 Fraction	µg/L	Every 6 Months	<100	No
TPH C29-36 Fraction	µg/L	Every 6 Months	<50	No
Cyanide (free)	mg/L	Every 6 Months	0.004	No
Cyanide (total)	mg/L	Every 6 Months	0.004	No

Note: If trigger level is exceeded, actions listed in Condition E1.2 of EPL12693 are to be followed. These actions include notifying the EPA and resampling the location to confirm the elevated concentration.
* Trigger Condition 1 and 2 recalculated each sampling round- value not shown in table.

Groundwater Sampling Point 41 (BH23D)
Sample Date: 18th December 2018
Units of Measure: pH units; milligrams per litre (mg/L); microSiemens per centimetre (µS/cm); micrograms per litre (µg/L)

Pollutant	Units of Measure	Frequency	Recorded Value	Exceedance (Yes/No)*
pH	pH units	Every 6 Months	6.73	No
Conductivity	µS/cm	Every 6 Months	23200	No
Bromide	mg/L	Every 6 Months	23	No
Aluminium	mg/L	Every 6 Months	<0.01	No
Arsenic	mg/L	Every 6 Months	<0.001	No
Cadmium	mg/L	Every 6 Months	<0.0001	No
Copper	mg/L	Every 6 Months	<0.001	No
Manganese	mg/L	Every 6 Months	1.05	No
Nickel	mg/L	Every 6 Months	<0.001	No
Zinc	mg/L	Every 6 Months	<0.005	No
Iron	mg/L	Every 6 Months	8.51	No
Total PAH	µg/L	Every 6 Months	<0.5	No
TPH C6-9 Fraction	µg/L	Every 6 Months	<20	No
TPH C10-14 Fraction	µg/L	Every 6 Months	<50	No
TPH C15-28 Fraction	µg/L	Every 6 Months	<100	No
TPH C29-36 Fraction	µg/L	Every 6 Months	<50	No
Cyanide (free)	mg/L	Every 6 Months	<0.004	No
Cyanide (total)	mg/L	Every 6 Months	0.01	No

Note: If trigger level is exceeded, actions listed in Condition E1.2 of EPL12693 are to be followed. These actions include notifying the EPA and resampling the location to confirm the elevated concentration.
* Trigger Condition 1 and 2 recalculated each sampling round- value not shown in table.

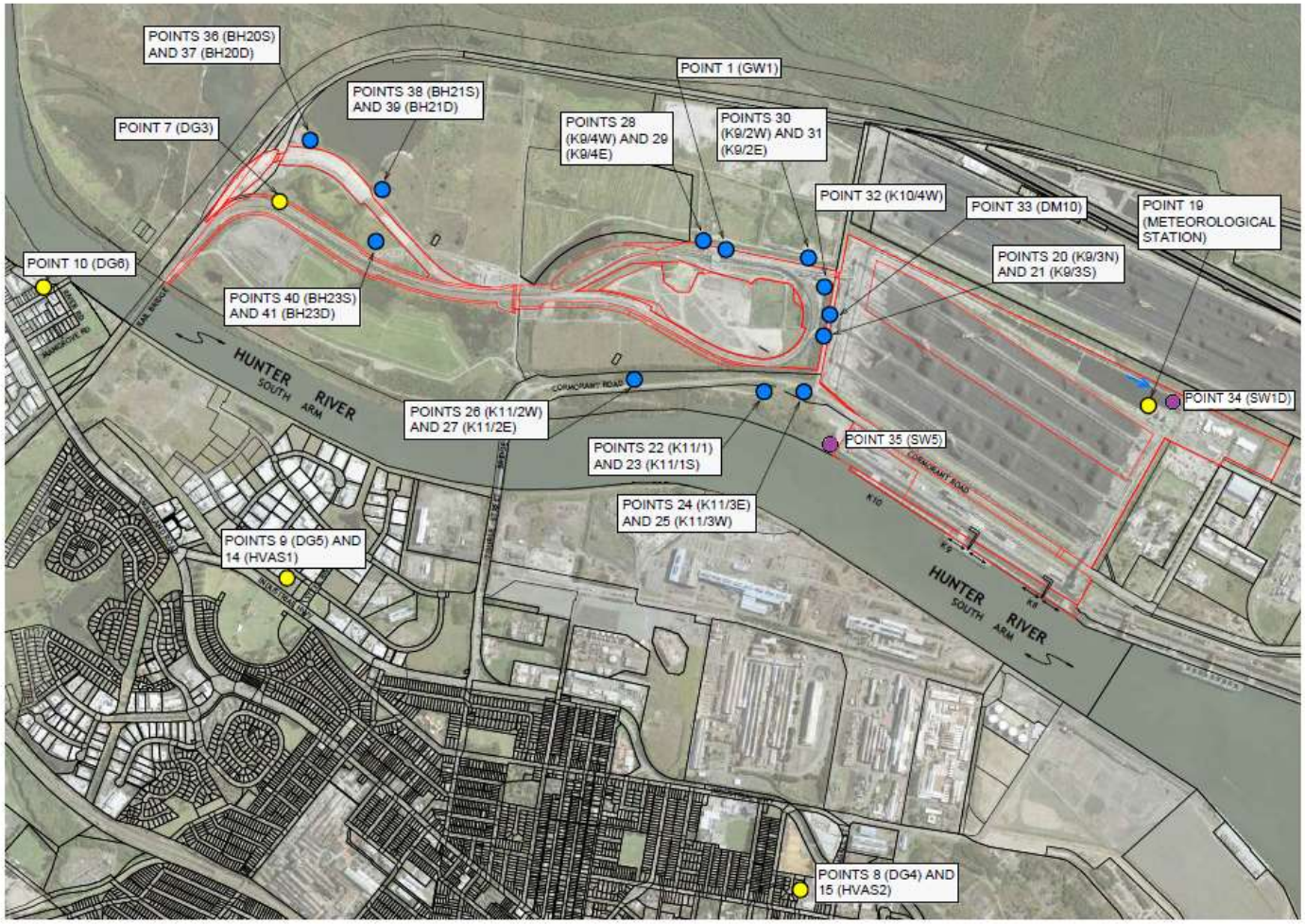

Figure 1: Groundwater, Surface Water and Additional Ambient Air Quality Monitoring Locations.