

Project name/number:				pH Value	Total Dissolv	Sulfate	Chloride	Sodium	Aluminium	Cadmium	Copper	Lead	Manganese	Nickel	Zinc	Iron	Nitrite as N	Nitrate as N
ASHTON LEAD STUDY				pH Unit	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Sample date	Client s	Location	Source															
				0.01	1	1	1	1	0.01	0.0001	0.001	0.001	0.001	0.001	0.005	0.05	0.01	0.01
1/07/2008	ACO 1	Camberwell		7.82	146	19	35.7	20	0.03	0.0004	<0.001	<0.001	0.003	<0.001	0.655	<0.05	<0.010	<0.200
9/07/2008	ACO 2	Camberwell	rain	7.78	38	8	7.9	5	*0.22	<0.0001	<0.001	<0.001	0.011	<0.001	0.44	0.09	<0.010	0.44
9/07/2008	ACO 3	Camberwell	creek/rain	7.68	246	20	77.9	54	*0.23	<0.0001	0.002	0.002	0.006	<0.001	0.049	*0.31	<0.010	0.144
9/07/2008	ACO 4	Camberwell	rain	7.84	18	2	1.9	<1	0.12	<0.0001	0.002	0.001	0.002	<0.001	0.215	0.12	<0.010	0.326
1/07/2008	ACO5W	Camberwell	rain	7.16	18	<1	2.2	1	0.14	0.0002	0.005	<0.001	0.026	0.001	0.24	<0.05	<0.010	0.605
9/07/2008	ACO 6	Camberwell		7.61	240	18	62.1	41	*0.23	0.0002	0.002	<0.001	0.006	<0.001	0.036	0.25	<0.010	0.188
1/07/2008	ACO 9	Camberwell	rain	*6.48	28	1	4.3	2	0.07	<0.0001	0.012	<0.001	0.016	0.001	0.628	<0.05	<0.010	0.506
1/07/2008	ACO 10	Camberwell		*6.47	13	2	2.6	1	0.08	<0.0001	0.003	<0.001	0.018	<0.001	0.422	<0.05	<0.010	0.918
1/07/2008	ACO 11	Camberwell	rain	7.84	16	2	2.4	1	0.08	0.0002	0.001	<0.001	0.008	0.002	0.304	<0.05	<0.010	<0.500
1/07/2008	ACO 12	Camberwell	creek/rain	7.05	292	18	53.4	31	*1.18	0.0001	0.001	0.009	0.014	<0.001	1.47	*1.05	<0.010	0.121
9/07/2008	ACO 13	Camberwell	rain	7.52	89	7	4.4	2	0.03	<0.0001	0.001	0.002	<0.001	<0.001	0.071	<0.05	<0.010	0.48
1/07/2008	ACO 14	Camberwell	rain	7.74	68	<1	35.3	1	0.1	<0.0001	0.001	<0.001	<0.001	<0.001	0.02	<0.05	<0.010	<0.500
9/07/2008	ACO 15	Camberwell		7.59	66	6	6.3	4	0.1	0.0001	<0.001	<0.001	0.008	<0.001	0.312	<0.05	<0.010	0.604
1/07/2008	ACO 16	Camberwell	town/rain	7.29	182	22	37.2	20	0.07	<0.0001	0.003	<0.001	0.01	<0.001	0.014	<0.05	<0.010	0.071
1/07/2008	ACO 17	Camberwell		7.39	115	14	18.6	11	0.04	0.0006	<0.001	<0.001	<0.001	<0.001	0.113	<0.05	<0.010	0.196
1/07/2008	ACO 19	Camberwell	town/rain	7.39	158	20	31.3	16	0.07	<0.0001	<0.001	<0.001	0.004	<0.001	0.019	<0.05	0.029	0.12
9/07/2008	ACO 20	Camberwell	town/rain	7.56	154	18	30.4	18	*0.23	0.0002	0.002	0.005	0.008	<0.001	0.042	0.16	<0.010	0.136
9/07/2008	ACO 21	Camberwell	rain	7.97	480	51	149	129	0.07	<0.0001	0.002	0.002	0.005	<0.001	0.235	0.13	<0.010	2.94
1/07/2008	ACO 22	Camberwell	rain	7.7	113	3	20.6	12	0.05	0.0002	<0.001	0.001	0.002	<0.001	0.063	0.07	<0.010	<0.500
1/07/2008	ACO 23	Camberwell	rain	7.44	70	5	1.8	1	0.04	<0.0001	<0.001	<0.001	<0.001	<0.001	0.012	<0.05	<0.010	0.172
9/07/2008	ACO 28	Greenlands	rain	7.85	24	1	2	1	0.04	<0.0001	<0.001	0.01	0.003	<0.001	0.16	<0.05	<0.010	0.386
1/07/2008	ACO 29	Glennies	creek	8.03	346	8	96.9	61	*0.31	<0.0001	0.001	<0.001	0.014	<0.001	<0.005	*0.6	<0.010	<0.100
9/07/2008	ACO 30	Camberwell	creek/rain	7.51	28	4	2.5	1	0.09	<0.0001	<0.001	0.001	0.002	<0.001	0.157	<0.05	<0.010	0.897

**ADWG Value**

Health	mg/L	N/A	N/A	**500	N/A	N/A	N/A	**0.002	**2	**0.01	**0.5	**0.02	N/A	N/A	**3	**50
Aesthetic	mg/L	*6.5 - 8.5	*500	*250	*250	*180	*0.2	N/A	*1	N/A	*0.1	N/A	3	*0.3	N/A	N/A

\*\* ADWG Health Value

\* ADWG Aesthetic Value

The above data represents water tank sampling results for samples collected from Camberwell Village and Glennis Creek from 1 to 9 July 2008 as part of investigation into residents concerns.

The analysis was conducted on behalf of Ashton Coal, by ALS Laboratory Group, Analytical Chemistry & Testing Services, Environmental Division; a NATA accredited laboratory.

The data was utilised to finalise the report Noller B, Community Lead Issues at Camberwell NSW 29 June 2009.

The spread sheet has been prepared by Hunter New England Population Health on 17 August 2010 at request of the Expert Advisory Committee.

**NSW Chief Health Officer's Air Pollution Expert Advisory Committee  
Water tank sampling results; Camberwell Village & Glennies Creek; 1-9 July 2008**

### **Expert Advisory Committee commentary**

Amongst the 23 water tanks sampled in Camberwell and Glennies Creek during July 2008, exceedance of Australian Drinking Water Guidelines (ADWG) values occurred for aluminium in 6 water tanks and for iron in 3 water tanks. All 3 tanks with higher iron levels also had raised aluminium but only one tank (ACO12) had levels considerably higher than the aesthetic levels recommended in the ADWG. This sourced water from a creek in addition to rainwater. It is important to note that the levels measured exceeded the aesthetic guideline level but this is not a health concern level. Considerations regarding the aesthetic quality (taste, colour and odour) and cosmetic effects of water lead to aesthetic guideline levels.

The US EPA recommends similar aesthetic guideline levels to the ADWG viz. 0.05-0.2 mg/L for aluminium and 0.3 mg/L for iron in drinking water (2009).

### **Aluminium**

The National Health and Medical Research Council (NHMRC) has not set a health-based guideline for aluminium but keeps this under review. The bioavailability of aluminium in drinking water is low and thus the contribution from drinking water is low compared to other dietary sources and thus of little significance or concern. Aluminium can occur in detectable levels in many natural water sources and generally arises from aluminium containing soils. The most common source in public water supplies arises from the use of Aluminium-based coagulants in the water purification process. Water suppliers aim to maintain a level below 0.1 mg/L with the focus being on ensuring the aesthetic quality of the water.

Concerns have been expressed as whether aluminium in drinking water might pose a neurotoxic risk as aluminium is present in Alzheimer plaques in the brain tissue of people with Alzheimer's Disease. As a precautionary measure the aluminium content of water used in renal dialysis is maintained below 0.01mg/L (ADWG). There is however no convincing evidence of neurotoxic effects at levels detected in the tankwater.

### **Iron**

The NHMRC has not set a health-based guideline for aluminium. Iron is prevalent in the earth's crust and dissolution of iron into groundwater or surface water can occur as a result of oxidation or a low pH. The median river iron concentration is reported to be 0.7 mg/litre. The taste threshold in water is 0.12 mg/L but taste is considered acceptable up to 3 mg/L (WHO, 2003).

Iron occurs as a natural constituent in plants and animals. Liver, kidney, fish, and green vegetables contain 20-150 mg/kg, whereas red meats and egg yolks contain 10-20 mg/kg. Reported daily intakes of iron in food – the major source of exposure – ranges from 10-14 mg. Drinking water containing 0.3 mg/L would contribute about 0.6 mg to the daily intake.

An intake of 0.4 -1 mg/kg of body weight per day is unlikely to cause adverse effects in healthy persons (WHO, 2003). People with haemochromatosis (genetic iron overload) should carefully follow the advice of their medical practitioners to limit iron intake from all sources.

Please direct any further enquiries to Philippe Porigneaux, Environmental Health, Hunter New England Population Health at 02-49246477.