Water quality test results

Power and Water regularly tests drinking water to confirm it complies with the Australian Drinking Water Guidelines (ADWG). Frequency of testing is outlined in the Drinking Water Monitoring Program which is developed in consultation with the Department of Health (DoH) and approved by the Chief Health Officer.

Water samples are collected by Essential Services Operators (ESOs) from particular points in the water supply system in each location and sent to laboratories for analysis.

To ensure water samples reach the laboratory in time for testing, small planes are chartered to collect samples from communities and deliver them to testing laboratories in Darwin and Alice Springs.

More than 90 000 analyses are carried out each year to determine microbiological, physio-chemical, trace metal and radiological characteristics of water to confirm it is safe to drink.

Each year over 5 000 water samples are collected from Territory Growth Towns and remote communities for quality testing.

Following is an overview of drinking water quality in each of the Territory Growth Towns and remote communities. Additional information and explanation is provided on some key water quality characteristics relevant to these water supplies to assist interpretation of water quality results.

Further information can be obtained from the Australian Drinking Water Guidelines fact sheets: http://www.nhmrc.gov.au/publications/synopses/eh19syn.htm

HEALTH PARAMETERS

Health parameters are water quality characteristics that may present a risk if the consumer was exposed to concentrations above ADWG levels over a lifetime.

Arsenic in drinking water is recommended not to exceed 0.007 mg/L.

Arsenic can be introduced into ground and surface water naturally through dissolution of minerals and ores. These sources can make a significant contribution to the arsenic concentration in drinking water. Industrial effluent, atmospheric deposition (through the burning of fossil fuels and waste incineration), drainage from old gold mines or some types of sheep dip are also sources of arsenic.

In Australia, arsenic concentrations typically range from less than 0.005 mg/L to 0.015 mg/L. Studies into the consumption of drinking water containing arsenic above 0.3 mg/L over five to 25 years have shown effects on the skin, vascular system and nervous system, with the possibility of being carcinogenic.

Water quality test results

Barium in drinking water is recommended to be less than 0.7 mg/L. A number of epidemiological studies have been carried out on the effects of barium in drinking water and cardiovascular disease. No adverse effects have been found with barium concentrations up to 7mg/L. In a study of a small number of volunteers, no adverse effects were observed after eight weeks exposure to drinking water with up to 10 mg/L of barium.

Escherichia coli (E. coli) is a bacterial coliform excreted from the intestines of warm-blooded animals including humans and is an indicator of recent faecal contamination.

If E. coli is detected in a drinking water supply, immediate action is taken in accordance with established protocols.

Fluoride is one of the most abundant elements in the Earth's crust. It naturally occurs in groundwater supplies and is present in most food and beverage products and toothpaste.

The concentration of natural fluoride in Territory groundwater supplies depends on the type of soil and rock water comes into contact with. Generally, surface water sources have low natural fluoride concentrations (around <0.1 to 0.5mg/L) and groundwater sources may have relatively high levels (ranging from 1-10 mg/L).

In the correct amounts, fluoride in drinking water helps build strong, healthy teeth that resist decay. The minimum fluoride for protection against dental caries is about 0.5mg/L, although about 1mg/L is optimal in temperate climates. At concentrations of 1.5 to 2mg/L, teeth may become mottled due to dental fluorosis.

The majority of communities in the Barkly and southern regions have fluoride levels between 0.5mg/L and 1.5mg/L with two communities very close to the guideline value and Ali Curung above the ADWG value of 1.5mg/L (Figure 1).

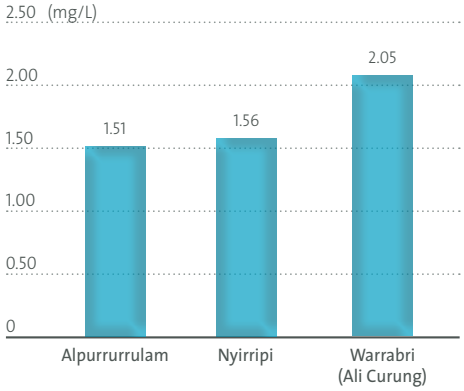

Figure 1
Natural fluoride levels above ADWG value of 1.5mg/L

Power and Water is installing a water treatment system at Ali Curung to reduce fluoride levels to below the guideline of 1.5 mg/L. .

In contrast most water supplies in the northern and Katherine regions have naturally low fluoride levels due to the nature of shallow groundwater supplies and use of surface water supplies in some communities.

In 2011-12 fluoridation plants were installed in Wadeye and Wurrumiyanga in conjunction with works to upgrade disinfection systems. Fluoridation systems will be installed in 2012-13 at Angurugu, Maningrida and Umbakumba.

Nitrate in drinking water supplies in the Territory has been partially attributed to nitrogen fixing by native vegetation and cyanobacteria crusts on soils. Termite mounds appear to be a significant nitrate source, possibly due to the presence of nitrogen-fixing bacteria in many termite species and nitrogen-rich secretions used to build mounds.

The ADWG recommend that nitrate levels between 50 -100 mg/L are a health consideration for infants less than three months, although levels up to 100 mg/L can be safely consumed by adults.

Elevated levels of nitrate have been identified in Pmara Jutunta, Kintore and Ali Curung (Figure 2).

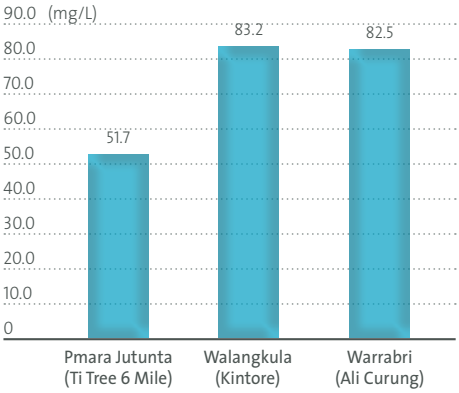

Figure 2
Nitrate levels between 50 - 100 mg/L

Power and Water is installing a water treatment system at Ali Curung and Kintore to reduce nitrate levels to below the guideline of 100 mg/L. .

Regular monitoring is scheduled for Pmara Jutunta as nitrate levels are very close to the recommended guideline.

Uranium is widely distributed in geological formations. It can be found in groundwater aquifers surrounded by granite rocks and pegmatites as well as in sedimentary rocks like sandstones.

Uranium occurs as three naturally occurring isotopes and under appropriate conditions can become soluble and therefore present in a region's groundwater. The transport of uranium in groundwater varies widely according to aquifer conditions. Uranium may also be present in the environment as a result of mine tailings and use of phosphate pesticides.

AESTHETIC PARAMETERS

Aesthetic parameters are characteristics associated with the acceptability of water to the consumer in terms of appearance, taste and odour.

Hardness (as calcium carbonate): is primarily the amount of calcium and magnesium ions in water and is expressed as a calcium carbonate ($CaCO_3$) equivalent. High hardness usually requires more soap to achieve lather and may lead to excessive scaling in hot water pipes and fittings.

Soft water, or water low in total calcium and magnesium ions, may also cause corrosion in pipes although this will depend on other physical and chemical characteristics such as pH, alkalinity and dissolved oxygen. The ADWG recommend hardness levels below 200mg/L to minimise scaling in hot water systems.

The ADWG describes various degrees of hardness as:

<60mg/L $CaCO_3$
Soft but possibly corrosive

60-200mg/L $CaCO_3$
Good quality

200-500mg/L $CaCO_3$
Increasing scaling problems

>500mg/L $CaCO_3$
Severe scaling

Hard water or water with calcium carbonate levels above 500mg/L (Figure 3) may lead to excessive scaling of pipes and fittings, which can impact on infrastructure service life and indirectly impact health through impeding access to water.

Typically, Territory communities that rely on groundwater supplies near the coast in the Northern region are described as 'soft', as the water is drawn from relatively shallow aquifers and maintains naturally low pH and hardness levels. Water supplies in inland communities are often described as 'hard', as the water is stored for longer periods in deeper aquifers resulting in 'rich' water chemistry.

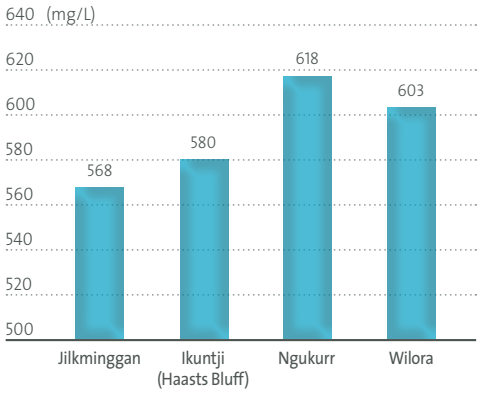

Figure 3
Communities with average hardness levels greater then 500mg/L in drinking water

Power and Water, the National Centre for Excellence in Desalination and the University of South Australia will trial a robust and cost-effective treatment technology that may be used to reduce water hardness levels and improve the quality of water provided.

Iron has a taste threshold of about 0.3mg/L in water and becomes objectionable above 3mg/L.

High iron concentrations give water a rust-brown appearance and can cause staining of laundry and plumbing fittings and blockages in irrigation systems. Growths of iron bacteria, which increase the concentration of iron, may cause taste and odour problems and lead to pipe restrictions, blockages and corrosion. The concentration of iron at the tap can also be influenced by factors such as rusting iron pipes.

There are a number of communities regularly monitored for iron levels above 0.3mg/L and a limited number above 1mg/L (Figure 4).

Water quality test results

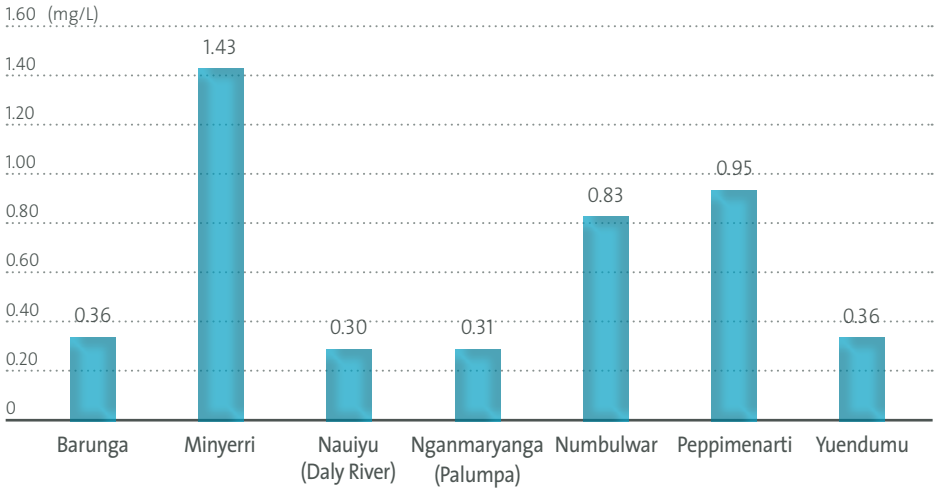

Figure 4
Communities with an average iron concentration greater than 0.3mg/L in the distribution system

Power and Water has identified alternative groundwater sources for Nauiyu (Daly River) that have reduced levels of iron and these will be developed in the next couple of years to improve water quality. Options to reduce iron levels in remaining communities with high levels are being investigated, including altering the operation of production bores to maximise use of those with reduced iron levels.

pH is a measure of the hydrogen ion concentration of water. It is measured on a logarithmic scale from 0 to 14. A pH of 7 is neutral, greater than 7 is alkaline and less than 7 is acidic. The ADWG recommends pH levels in drinking water should be between 6.5-8.5. Levels below 6.5 are likely to cause corrosion of pipes and fittings while levels above 8.5 can cause scaling particularly on hot water systems.

Typically, Territory communities that rely on groundwater supplies near the coast in the northern region are described as 'corrosive', as water is drawn from relatively shallow aquifers and has naturally low pH levels.

Sodium is an essential element for humans although there is currently no agreement on the minimum amount required.

Sodium ion is widespread in water due to the high solubility of sodium salts and the abundance of mineral deposits. The ADWG recommend action on levels above 180mg/L, when the taste becomes noticeable.

Turbidity is a measure of 'discolouration' of water caused by fine suspended matter such as clay or silt. The degree of "discolouration" depends on the amount, size and composition of the suspended matter.

At low levels, turbidity can only be measured by instruments, however at higher levels water has a 'muddy' or 'milky' appearance.

As a guide, "crystal-clear" water usually has a turbidity of less than 1 Nephelometric Turbidity Units (NTU), water with a turbidity of 5NTU appears slightly muddy or milky in a glass, while at >60NTU, it is not possible to see through the water.

Power and Water considers turbidity when managing community disinfection systems and adjusts disinfection doses to ensure adequate disinfection is achieved. Routine monitoring is also undertaken to check that disinfection systems are effective and safe water is being supplied.

Total dissolved solids (TDS) are small organic and inorganic particles dissolved in water that can affect how water tastes.

Water quality test results

TDS comprises of sodium, potassium, calcium, magnesium, chloride, sulphate, bicarbonate, carbonate, silica, organic matter, fluoride, iron, manganese, nitrate and phosphate.

Water with low TDS can taste flat, while water with TDS above 500mg/L could cause scaling in taps, pipes and hot water systems. Levels greater than 800mg/L significantly affect taste and may also cause moderate to severe scaling.

Based on taste, the ADWG recommends TDS levels below 500mg/L. Guidance is provided about palatability of drinking water according to TDS concentration:

<80mg/L
Excellent quality

80-500mg/L
Good quality

500-800mg/L
Fair quality

800-1000mg/L
Poor quality

>1000mg/L
May increase scaling, corrosion, taste.

More information is available from the Power and Water website:
http://www.powerwater.com.au/news_and_publications/publications/remote_communities

Specific results of water quality testing for each of the communities is provided in the tables on the following pages.

Water quality results

Northern Region

	Reported unit	ADWG 2004	Acacia Larrakeyah	Angurugu	Belyuen	Galiwinku (Elcho Island)	Gapuwiyak (Lake Evella)	Gunbalanya (Oenpelli)	Gunyangara (Marngarr)
HEALTH CHARACTERISTICS									
E. coli detections4	per year	0	0	0	0	1	0	1	0
E. coli performance4	%	98	100	100	100	99	100	99	100
Antimony	mg/L	0.003	0.0002[5]	0.0002[5]	0.0002[2,5]	0.0002[5]	0.0002[5]	0.0002[5]	0.0002[5]
Arsenic	mg/L	0.007	0.0008	0.0005[5]	0.001[2,5]	0.0005[5]	0.0005[5]	0.0005[5]	0.0005[5]
Barium	mg/L	0.7	0.05[5]	0.05[5]	0.05[2,5]	0.05[5]	0.05[5]	0.05[5]	0.05[5]
Boron	mg/L	4	0.02[5]	0.02[5]	0.02[2,5]	0.02[5]	0.02[5]	0.02[5]	0.02v
Cadmium	mg/L	0.002	0.0002[5]	0.0002[5]	0.0002[2,5]	0.0002[5]	0.0002[5]	0.0002[5]	0.0002[5]
Chromium	mg/L	0.05	0.005[5]	0.005[5]	0.005[2,5]	0.005[5]	0.005[5]	0.005[5]	0.005[5]
Fluoride	mg/L	1.5	0.1[5]	0.1[5]	0.16[2,5]	0.1[5]	0.1[5]	0.1[5]	0.1[5]
Lead	mg/L	0.01	0.001[5]	0.0016[5]	0.0016[2,5]	0.001[5]	0.0046[5]	0.0011[5]	0.0013[5]
Mercury	mg/L	0.001	0.0001[5]	0.0001[5]	0.0001[2,5]	0.0001[5]	0.0001[5]	0.0001[5]	0.0001[5]
Molybdenum	mg/L	0.05	0.005[5]	0.005[5]	0.005[2,5]	0.005[5]	0.005[5]	0.005[5]	0.005[5]
Nickel	mg/L	0.02	0.002[5]	0.002[5]	0.002[2,5]	0.002[5]	0.002[5]	0.002[5]	0.002[5]
Nitrate	mg/L	50	1.9[5]	1.23[5]	1[2,5]	1.38[5]	2.51[5]	1.01[5]	1[5]
Annual Exposure to Radioactivity	mSv/yr	1	0.1[5]	0.09[5]	0.18[5]	0.12[5]	0.11[5]	0.11[5]	0.12[5]
Selenium	mg/L	0.1	0.001[5]	0.001[5]	0.001[2,5]	0.001[5]	0.001[5]	0.001[5]	0.001[5]
Silver	mg/L	0.1	0.01[5]	0.01[5]	0.01[2,5]	0.01[5]	0.01[5]	0.01[5]	0.01[5]
Uranium	mg/L	0.02	0.0004	0.00003	0.001[2]	0.00002[5]	0.00002	0.00003	0.00001[5]
AESTHETIC CHARACTERISTICS									
Aluminum	mg/L	0.2	0.05[5]	0.02[5]	0.03[2,5]	0.02[5]	0.02[5]	0.14[5]	0.02[5]
Chloride	mg/L	250	7	10.6	8.12[2,5]	11.6	13	7.76[5]	15.4
Copper	mg/L	2	0.01[5]	0.02[5]	0.07[2,5]	0.02[5]	0.07[5]	0.03[5]	0.03[5]
Hardness	$CaCO_3$ mg/L	200	**219**	9	16[2,5]	22	7	7	9
Iodine	mg/L	0.15	0.01[5]	0.01[5]	0.01[2,5]	0.01[5]	0.01[5]	0.01[5]	0.01[5]
Iron	mg/L	0.3	0.038[5]	0.18[5]	0.13[2,5]	0.06[5]	0.09[5]	0.25	0.04[5]
Manganese	mg/L	0.1	0.007[5]	0.005[5]	0.009[2]	0.006[5]	0.006[5]	0.008[5]	0.005[5]
pH	pH Units	6.5-8.5	8.0	6.91	**6.32**[2]	**5.81**	**5.96**	**5.88**	6.87
Sodium	mg/L	180	5	31	7[2]	8	8	4	8
Sulfate	mg/L	250	2	1	1[2]	1	0.31[5]	1	0.22[5]
Total Dissolved Solids	mg/L	500	238	101	70[2]	42.5	45.9	55	33
True Colour	CU	15	2.71[5]	**17.8**[5]	2.59[2,5]	2.7[5]	3.43[5]	6.8[5]	1.83[5]
Turbidity	NTU	5	1.86	**6.03**	1.64[2]	0.39	0.9	3.31	0.72
Zinc	mg/L	3	0.01[5]	0.03[5]	0.03[2,5]	0.01[5]	0.03[5]	0.02[5]	0.02[5]
OTHER CHARACTERISTICS									
Alkalinity	mg/L	#	219	60.9[5]	25.1[2]	20[5]	14.3[5]	13.5[5]	16[5]
Beryllium	mg/L	#	0.001[5]	0.001[5]	0.001[2]	0.001[5]	0.001[5]	0.001[5]	0.001[5]
Bromine	mg/L	#	0.016	0.019	0.009[2]	0.019	0.017	0.022	0.022
Calcium	mg/L	#	43	2.67	5[2]	7	2	2	2.9
Conductivity	µS/cm	#	439	143	59[2]	57.3	57	34.7	58
Magnesium	mg/L	#	26.8	0.67	0.6[2]	0.96	0.7	0.59	0.5
Potassium	mg/L	#	1.46	0.15	3.42[2]	1.01	0.09[5]	0.2	0.18[5]
Silica	mg/L	#	20.6	11.3	34.3[2]	13.9	11.5	12	11.1
Tin	mg/L	#	0.01[5]	0.01[5]	0.01[2,5]	0.01[5]	0.01[5]	0.01[5]	0.01[5]

1 N/A Not Available
2 95th percentile reported
3 value indicates data from 2007-2012
4 value includes data from 2011-2012
5 one or more values in calculation were below detection limits. Result may be higher than actual value

Water quality test results

Northern Region (cont.)

	Reported unit	ADWG 2004	Maningrida	Milikapiti (Snake Bay)	Milingimbi	Milyakburra (Bickerton Island)	Minjilang (Crocker Island)	Nauiyu Nambiyu (Daly River)	Nganmaryanga (Palumpa)	Numbulwar
HEALTH CHARACTERISTICS										
E. coli detections[4]	per year	0	0	0	0	0	0	0	1	0
E. coli performance[4]	%	98	100	100	100	100	100	100	98	100
Antimony	mg/L	0.003	0.0002[5]	0.0002[5]	0.0002[5]	0.0002[5]	0.0002[2,5]	0.0004[2,5]	0.0002[5]	0.0002[5]
Arsenic	mg/L	0.007	0.0005[5]	0.0005[5]	0.0005[5]	0.0005[5]	0.0005[2,5]	0.004[2]	0.0009[5]	0.001
Barium	mg/L	0.7	0.05[5]	0.05[5]	0.05	0.05[5]	0.05[2,5]	0.05[2,5]	0.19[5]	0.3
Boron	mg/L	4	0.02	0.02[5]	0.04	0.05	0.03[2,5]	0.02[2,5]	0.03[5]	0.04
Cadmium	mg/L	0.002	0.0002[5]	0.0002[5]	0.0002[5]	0.0002[5]	0.0002[2,5]	0.0002[2,5]	0.0002[5]	0.0002[5]
Chromium	mg/L	0.05	0.005[5]	0.005[5]	0.005[5]	0.005[5]	0.005[2,5]	0.005[2,5]	0.005[5]	0.005[5]
Fluoride	mg/L	1.5	0.1[5]	0.12[5]	0.1[5]	0.1[5]	0.1[2,5]	0.4[2]	0.23[5]	0.14
Lead	mg/L	0.01	0.0025[5]	0.0015[5]	0.002[5]	0.004[5]	0.0014[2,5]	0.0013[5]	0.0011[5]	0.001[5]
Mercury	mg/L	0.001	0.0001[5]	0.0001[5]	0.0001[5]	0.0001[5]	0.0001[2,5]	0.0001[2,5]	0.0001[5]	0.0001[5]
Molybdenum	mg/L	0.05	0.005[5]	0.005[5]	0.005[5]	0.005[5]	0.005[2,5]	0.005[2,5]	0.005[5]	0.005[5]
Nickel	mg/L	0.02	0.002[5]	0.002[5]	0.002[5]	0.002[5]	0.002[2,5]	0.002[2,5]	0.002[5]	0.002[5]
Nitrate	mg/L	50	1[5]	1[5]	4	1[5]	1[2,5]	1.27[2,5]	1.44[5]	1.08[5]
Annual Exposure to Radioactivity	mSv/yr	1	0.14[5]	0.12[5]	0.16	0.12[5]	0.13[5]	0.15[5]	0.16[5]	0.13[5]
Selenium	mg/L	0.1	0.001[5]	0.001[5]	0.001[5]	0.001[5]	0.001[2,5]	0.001[2,5]	0.001[5]	0.001[5]
Silver	mg/L	0.1	0.01[5]	0.01[5]	0.01[5]	0.01[5]	0.01[2,5]	0.01[2,5]	0.01[5]	0.01[5]
Uranium	mg/L	0.02	0.00005	0.00001[5]	0.0002	0.00003	0.0002[2]	0.0001[2]	0.00001[5]	0.0008
AESTHETIC CHARACTERISTICS										
Aluminum	mg/L	0.2	0.02[5]	0.03[5]	0.06	0.02[5]	0.09[2,5]	0.1[2,5]	0.02[5]	0.02[5]
Chloride	mg/L	250	9	12[2,5]	79.7	64	17[2]	7.87[2,5]	26	27
Copper	mg/L	2	0.01[5]	0.02[5]	0.03[5]	0.05[5]	0.02[2,5]	0.01[2,5]	0.01[5]	0.01[5]
Hardness	$CaCO_3$ mg/L	200	10.1	14[2]	42.4	32	11.1[2]	130[2]	66	194
Iodine	mg/L	0.15	0.01[5]	0.01[5]	0.01[5]	0.01[5]	0.01[2,5]	0.02[2,5]	0.01[5]	0.01[5]
Iron	mg/L	0.3	0.08[5]	0.22[2,5]	0.08[5]	0.08[5]	0.06[2,5]	**0.3**[2,5]	**0.31**[5]	**0.83**[5]
Manganese	mg/L	0.1	0.005[5]	0.005[5]	0.014[5]	0.022[5]	0.005[2,5]	**0.36**[2]	**0.1**[5]	**0.19**
pH	pH Units	6.5-8.5	**6.05**	**5.74**[2]	**5.29**	**5.63**	**5.29**[2]	7.7[2]	7.36	8.15
Sodium	mg/L	180	5	9[2]	44	38	12[2]	18[2]	36	19
Sulfate	mg/L	250	1	1[2]	9	4	4[2]	5[2]	11	32
Total Dissolved Solids	mg/L	500	39	48[2]	179	140	55[2]	194[2]	188	279
True Colour	CU	15	2.36[5]	2.86[2,5]	2.81[5]	2.93[5]	2.25[2,5]	4.73[2,5]	3.75[5]	6.4
Turbidity	NTU	5	1.42	2.7[2]	0.69	0.74	1.38[2]	**11**[2]	1.99	**10.3**
Zinc	mg/L	3	0.05[5]	0.04[5]	0.08	0.04	0.11[2]	0.02[2,5]	0.01[5]	0.02[5]
OTHER CHARACTERISTICS										
Alkalinity	mg/L	#	14.9[5]	20.6[2,5]	15.2[5]	16.3[5]	15.3[2,5]	168[2]	102[5]	182
Beryllium	mg/L	#	0.001[5]	0.001[5]	0.001[5]	0.001[5]	0.001[2,5]	0.001[2,5]	0.001[5]	0.001[5]
Bromine	mg/L	#	0.024	0.022	0.2	0.1	0.053	0.02[2]	0.047	0.074
Calcium	mg/L	#	3	5	9	9	3[2]	29[2]	18.6	61.7
Conductivity	µS/cm	#	42	59[2]	326	254	83[2]	336[2]	309	484
Magnesium	mg/L	#	0.71	0.58[5]	5.02	2.53	0.71[2]	14.3[2]	4.75	10.9
Potassium	mg/L	#	1.09	0.53[2,5]	0.68	0.31	0.14[2]	0.96[2]	5.29[5]	2.51
Silica	mg/L	#	13.9	12.3[2]	18.3	16.1	12.9[2]	37.9[2]	36.9	17.1
Tin	mg/L	#	0.01[5]	0.01[5]	0.01[5]	0.01[5]	0.01[2,5]	0.01[2,5]	0.01[5]	0.01[5]

1 N/A Not Available
2 95th percentile reported
3 value indicates data from 2007-2012
4 value includes data from 2011-2012
5 one or more values in calculation were below detection limits. Result may be higher than actual value

Water quality test results

Northern Region (cont.)

	Reported unit	ADWG 2004	Peppimenarti	Pirlangimpi (Garden Point)	Ramingining	Umbakumba	Wadeye	Warruwi	Wurruniyanga (Nguiu)	Yirrkala
HEALTH CHARACTERISTICS										
E. coli detections4	per year	0	0	0	0	0	0	0	0	0
E. coli performance4	%	98	100	100	100	100	100	100	100	100
Antimony	mg/L	0.003	0.0002[5]	0.0002[5]	0.0002[5]	0.0002[5]	0.0002	0.0002[5]	0.0002[5]	0.0002[5]
Arsenic	mg/L	0.007	0.0006[5]	0.0005[5]	0.0006[5]	0.0005[5]	0.0005[5]	0.0006[5]	0.0005[5]	0.0005[5]
Barium	mg/L	0.7	0.08	0.06[5]	0.05[5]	0.05[5]	0.05[5]	0.05[5]	0.05[5]	0.05[5]
Boron	mg/L	4	0.04	0.02[5]	0.02[5]	0.02	0.02[5]	0.02	0.02[5]	0.02[5]
Cadmium	mg/L	0.002	0.0002[5]	0.0002[5]	0.0002[5]	0.0002[5]	0.0002[5]	0.0002[5]	0.0002[5]	0.0002[5]
Chromium	mg/L	0.05	0.005[5]	0.005[5]	0.005[5]	0.005[5]	0.005[5]	0.005[5]	0.005[5]	0.005[5]
Fluoride	mg/L	1.5	0.5	0.1[5]	0.1[5]	0.1[5]	0.1[5]	0.1[5]	0.1[5]	0.1[5]
Lead	mg/L	0.01	0.0013[5]	0.0017[5]	0.0026[5]	0.0038	0.001[5]	0.0015[5]	0.0014[5]	0.0017[5]
Mercury	mg/L	0.001	0.0001[5]	0.0001[5]	0.0001[5]	0.0001[5]	0.0001[5]	0.0001[5]	0.0001[5]	0.0001[5]
Molybdenum	mg/L	0.05	0.005[5]	0.005[5]	0.005[5]	0.005[5]	0.005[5]	0.005[5]	0.005[5]	0.005[5]
Nickel	mg/L	0.02	0.003[5]	0.002[5]	0.002[5]	0.002[5]	0.003[5]	0.002[5]	0.002[5]	0.002[5]
Nitrate	mg/L	50	1.21[5]	1[5]	1[5]	1[5]	1[5]	1[5]	1[5]	1[5]
Annual Exposure to Radioactivity	mSv/yr	1	0.13[5]	0.1[5]	0.09[5]	0.13[5]	0.1[5]	0.11[5]	0.13[5]	0.12[5]
Selenium	mg/L	0.1	0.001[5]	0.001[5]	0.001[5]	0.001[5]	0.001[5]	0.001[5]	0.001[5]	0.001[5]
Silver	mg/L	0.1	0.01[5]	0.01[5]	0.01[5]	0.01[5]	0.01[5]	0.01[5]	0.01[5]	0.01[5]
Uranium	mg/L	0.02	0.00004[5]	0.00001[5]	0.00002	0.00001	0.0002	0.00006	0.00001[5]	0.0001
AESTHETIC CHARACTERISTICS										
Aluminum	mg/L	0.2	0.02[5]	0.07	0.02[5]	0.02[5]	0.02[5]	0.06	0.02[5]	0.18[5]
Chloride	mg/L	250	14	10	10.1[5]	35	12.3[5]	41	8.58	15
Copper	mg/L	2	0.01[5]	0.01[5]	0.02[5]	0.06[5]	0.01[5]	0.03[5]	0.02[5]	0.02[5]
Hardness	$CaCO_3$ mg/L	200	64.2	5.04[5]	15	18.2	17	31	16	6
Iodine	mg/L	0.15	0.01[5]	0.01[5]	0.01[5]	0.01[5]	0.01[5]	0.01[5]	0.01[5]	0.01[5]
Iron	mg/L	0.3	**0.95**	0.24[5]	0.05[5]	0.04[5]	0.08[5]	0.09[5]	0.04[5]	0.17[5]
Manganese	mg/L	0.1	**0.15**	0.005[5]	0.005[5]	0.008[5]	0.011[5]	0.006[5]	0.006[5]	0.005[5]
pH	pH Units	6.5-8.5	7.24	**6.04**	**5.68**	**5.71**	**5.76**	**5.37**	**6.08**	**5.72**
Sodium	mg/L	180	16	7	6	21	6	21	5	7
Sulfate	mg/L	250	3	0.4	0.28	5	0.61	7	0.4	2
Total Dissolved Solids	mg/L	500	117	26	52	90	37	96	29	32
True Colour	CU	15	3.76[5]	7.56	2.02[5]	2.25[5]	2.75[5]	2.34[5]	2.26[5]	2 5
Turbidity	NTU	5	**8.91**	3.44	0.81	1.13	1.28	1.01	1.47	**29.3**
Zinc	mg/L	3	0.03[5]	0.03[5]	0.02[5]	0.04[5]	0.02[5]	0.04[5]	0.04[5]	0.03[5]
OTHER CHARACTERISTICS										
Alkalinity	mg/L	#	86	11.7[5]	17.4[5]	17.4[5]	17.3[5]	18.5[5]	19.6[5]	17.2[5]
Beryllium	mg/L	#	0.001[5]	0.001[5]	0.001[5]	0.001[5]	0.001[5]	0.001[5]	0.001 5	0.001[5]
Bromine	mg/L	#	0.028	0.011	0.008	0.072	0.015	0.082	0.012	0.021
Calcium	mg/L	#	17	2	5	3	6	7	5.8[5]	1
Conductivity	µS/cm	#	212	36	47.2	146	45.8	170	39.1	56.7
Magnesium	mg/L	#	5.5	0.19	0.89	2.66	0.6	3.6	0.41	0.56
Potassium	mg/L	#	5.93	0.07[5]	0.27	0.64	0.31	0.16[5]	0.05[5]	0.43
Silica	mg/L	#	26.3	10.2	15	9.22	15.4	10.7	13.4	12.3
Tin	mg/L	#	0.01[5]	0.01[5]	0.01[5]	0.01[5]	0.01[5]	0.01[5]	0.01[5]	0.01[5]

1 N/A Not Available
2 95th percentile reported
3 value indicates data from 2007-2012
4 value includes data from 2011-2012
5 one or more values in calculation were below detection limits. Result may be higher than actual value

Water quality test results

Katherine Region

	Reported unit	ADWG 2004	Amanbidji Kildurk)	Barunga	Beswick	Binjari	Bunbidee (Pigeon Hole)	Dagaragu	Gudabijin (Bulla)	Gulin Gulin (Bulman)
HEALTH CHARACTERISTICS										
E. coli detections4	per year	0	0	0	0	0	0	0	0	0
E. coli performance4	%	98	100	100	100	100	100	100	100	100
Antimony	mg/L	0.003	0.0004[5]	0.0011[5]	**0.0067**	0.0002[5]	0.0002[5]	0.0002[5]	0.0002[5]	0.0002[5]
Arsenic	mg/L	0.007	0.0015[5]	0.001[5]	**0.007**	0.0015[5]	0.0005[5]	0.001	0.0008[5]	0.0005[5]
Barium	mg/L	0.7	0.18	0.07[5]	0.15	0.18[5]	0.05[5]	0.075	**3.78**	0.05[5]
Boron	mg/L	4	0.51	0.02[5]	0.02[5]	0.02	0.08	0.09	0.1	0.02
Cadmium	mg/L	0.002	0.0002[5]	0.0002[5]	0.0002[5]	0.0002[5]	0.0002[5]	0.0002[5]	0.0002[5]	0.0002[5]
Chromium	mg/L	0.05	0.005[5]	0.005[5]	0.005[5]	0.005[5]	0.005[5]	0.005[5]	0.005[5]	0.005[5]
Fluoride	mg/L	1.5	0.29	0.1[5]	0.11	0.42	0.3	0.3	0.59	0.1[5]
Lead	mg/L	0.01	0.0011[5]	0.0013[5]	0.003[5]	0.0012[5]	0.001[5]	0.0013[5]	0.0011[5]	0.001[5]
Mercury	mg/L	0.001	0.0001[5]	0.0001[5]	0.0001[5]	0.0001[5]	0.0001[5]	0.0001[5]	0.0001[5]	0.0001[5]
Molybdenum	mg/L	0.05	0.005[5]	0.005[5]	0.005[5]	0.005[5]	0.005[5]	0.005[5]	0.005[5]	0.005[5]
Nickel	mg/L	0.02	0.002[5]	0.002[5]	0.002[5]	0.002[5]	0.002[5]	0.002[5]	0.002[5]	0.002[5]
Nitrate	mg/L	50	1.29[5]	1[5]	2.04[5]	1.19[5]	19	2.8	1.4[5]	1[5]
Annual Exposure to Radioactivity	mSv/yr	1	0.18[5]	0.11[5]	0.1[5]	0.87	0.12[5]	0.16[5]	0.17[5]	0.12[5]
Selenium	mg/L	0.1	0.001[5]	0.001[5]	0.001[5]	0.001[5]	0.001[5]	0.001[5]	0.001[5]	0.001[5]
Silver	mg/L	0.1	0.01[5]	0.01[5]	0.01[5]	0.01[5]	0.01[5]	0.01[5]	0.01[5]	0.01[5]
Uranium	mg/L	0.02	0.0009	0.00007	0.0002	0.001	0.002	0.002	0.0002	0.0003
AESTHETIC CHARACTERISTICS										
Aluminum	mg/L	0.2	0.03[5]	0.07[5]	0.02[5]	0.03[5]	0.02[5]	0.02[5]	0.04[5]	0.02[5]
Chloride	mg/L	250	132	7.83	6.64[5]	12.6	25.3	23	40	11
Copper	mg/L	2	0.01[5]	0.03[5]	0.14[5]	0.01[5]	0.05[5]	0.02[5]	0.01[5]	0.01[5]
Hardness	$CaCO_3$ mg/L	200	**372**	118	**296**	**290**	**312**	**251**	**242**	321
Iodine	mg/L	0.15	0.02[5]	0.01[5]	0.01[5]	0.01[5]	0.02[5]	0.02[5]	0.01[5]	0.01[5]
Iron	mg/L	0.3	0.17[5]	**0.36**	0.04[5]	0.05[5]	0.05[5]	0.04[5]	0.15[5]	0.04[5]
Manganese	mg/L	0.1	0.014[5]	0.02[5]	0.014[5]	0.007[5]	0.005[5]	0.021[5]	0.054[5]	0.005[5]
pH	pH Units	6.5-8.5	7.82	**6.44**	7.45	7.57	7.37	7.9	8.33	7.72
Sodium	mg/L	180	**180**	6	6	10	27	29	25	8
Sulfate	mg/L	250	158	1	2	6	7	8	2	1
Total Dissolved Solids	mg/L	500	**883**	151	314	334	430	320	297	338
True Colour	CU	15	2.69[5]	9.44	2.36[5]	2.7[5]	2[5]	2.2[5]	3.64[5]	2.8[5]
Turbidity	NTU	5	1.85	2.19	0.72[5]	0.95[5]	1.4	1	2.1	0.23
Zinc	mg/L	3	0.02[5]	0.4[5]	0.3	0.04[5]	0.02[5]	0.03[5]	0.02[5]	0.02[5]
OTHER CHARACTERISTICS										
Alkalinity	mg/L	#	470	121[5]	318	314	352	295	262	347
Beryllium	mg/L	#	0.001[5]	0.001[5]	0.001[5]	0.001[5]	0.001[5]	0.001[5]	0.001[5]	0.001[5]
Bromine	mg/L	#	0.18	0.022	0.016	0.057	0.057	0.072	0.096	0.021
Calcium	mg/L	#	58	24	57	64.2	69	48.3	34	62
Conductivity	µS/cm	#	1486	235	590	602	713	611	594	619
Magnesium	mg/L	#	55.5	14.3	37.1	32	33.9	31.7	37.9	40.2
Potassium	mg/L	#	4.08	1.14	1.97	4.67	2.05	4.1	4.37	2.55
Silica	mg/L	#	33.7	21.1	22.9	27.7	56	25.3	18.9	24.7
Tin	mg/L	#	0.01[5]	0.01[5]	0.01[5]	0.01[5]	0.01[5]	0.01[5]	0.01[5]	0.01[5]

1 N/A Not Available
2 95th percentile reported
3 value indicates data from 2007-2012
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Water quality test results

Katherine Region (cont.)

	Reported unit	ADWG 2004	Jilkminngan (Duck Creek)	Jodetluk (Gorge Camp)	Kalkarindji (Wave Hill)	Kybrook Farm	Lajamanu	Manyalalluk (Eva Valley)	Minyerri
HEALTH CHARACTERISTICS									
E. coli detections4	per year	0	**2**	0	0	0	0	0	0
E. coli performance4	%	98	**95**	100	100	100	100	100	100
Antimony	mg/L	0.003	0.0002[5]	0.0002[5]	0.0002[5]	0.0003[5]	0.0003[5]	0.0002[5]	0.0002[2,5]
Arsenic	mg/L	0.007	0.0008[5]	0.0005[5]	0.001	**0.008**	0.0006[5]	0.0005[5]	0.004[2]
Barium	mg/L	0.7	0.05[5]	0.05[5]	0.12	0.05[5]	0.11	0.05[5]	0.36[2]
Boron	mg/L	4	0.5	0.02[5]	0.01	0.02[5]	0.20	0.02[5]	0.18[2]
Cadmium	mg/L	0.002	0.0002[5]	0.0002[5]	0.0002[5]	0.0002[5]	0.0002	0.0002[5]	0.0002[2,5]
Chromium	mg/L	0.05	0.005[5]	0.005[5]	0.005[5]	0.005[5]	0.005[5]	0.005[5]	0.005[2,5]
Fluoride	mg/L	1.5	0.51	0.1[5]	0.3	0.61[5]	0.33	0.1[5]	0.3[2]
Lead	mg/L	0.01	0.0024[5]	0.0012[5]	0.001[5]	0.0014[5]	0.001[5]	0.0026[5]	0.0012[2,5]
Mercury	mg/L	0.001	0.0001[5]	0.0001[5]	0.0001[5]	0.0001[5]	0.0001[5]	0.0001[5]	0.0001[2,5]
Molybdenum	mg/L	0.05	0.005[5]	0.006[5]	0.005[5]	0.005[5]	0.005[5]	0.005[5]	0.005[2,5]
Nickel	mg/L	0.02	0.004[5]	0.002[5]	0.002[5]	0.002[5]	0.002[5]	0.004[5]	0.002[2,5]
Nitrate	mg/L	50	1.3[5]	1 5	4.57	1[5]	7.9	1[5]	1[2,5]
Annual Exposure to Radioactivity	mSv/yr	1	0.52	N/A	0.21[5]	0.12[5]	0.17[5]	0.13[5]	0.13[5]
Selenium	mg/L	0.1	0.001[5]	0.001[5]	0.001[5]	0.001[5]	0.002[5]	0.001[5]	0.001[2,5]
Silver	mg/L	0.1	0.01[5]	0.01[5]	0.01[5]	0.01[5]	0.01[5]	0.01[5]	0.01[2,5]
Uranium	mg/L	0.02	0.011	0.00001[5]	0.002	0.0003	0.002	0.00007	0.00001[2,5]
AESTHETIC CHARACTERISTICS									
Aluminum	mg/L	0.2	0.08[5]	0.02[5]	0.02[5]	0.04[5]	0.02[5]	0.02	0.02[2,5]
Chloride	mg/L	250	**283**	10[5]	29.9	10[2,5]	140[2]	7.54	16[2,5]
Copper	mg/L	2	0.03[5]	0.01[5]	0.01[5]	0.02[5]	0.02[5]	0.02[5]	0.02[2,5]
Hardness	$CaCO_3$ mg/L	200	**568**	9	**257**	135[5]	**289**[2]	14	102[2]
Iodine	mg/L	0.15	**0.19**	0.01[5]	0.02[5]	0.01[5]	**0.16**	0.01[5]	0.01[2,5]
Iron	mg/L	0.3	0.19[5]	0.06[5]	0.04[5]	0.09[2,5]	0.06[2,5]	0.17[5]	**1.43**[2]
Manganese	mg/L	0.1	**0.18**	0.006[5]	0.005[5]	0.05[5]	0.005[5]	0.005[5]	**0.3**[2]
pH	pH Units	6.5-8.5	7.48	7.57	7.84	7.13[2]	7.64[2]	**5.18**	7.33[2]
Sodium	mg/L	180	**221**	8	35	40[2]	90[2]	4	24[2]
Sulfate	mg/L	250	214	0.2	12	3[2]	58[2]	0.3	11[2]
Total Dissolved Solids	mg/L	500	**1326**	43	351	249[2]	**635**[2]	46	180[2]
True Colour	CU	15	3.38[5]	3.28[5]	1.75[5]	3.75[2,5]	2.03[2,5]	2[5]	4.35[2,5]
Turbidity	NTU	5	2.36	0.88	0.8	1.69[2]	0.98[2,5]	0.56	**34.3**[2]
Zinc	mg/L	3	0.04[5]	0.2	0.01[5]	0.06[5]	0.02[5]	0.06	0.14[2,5]
OTHER CHARACTERISTICS									
Alkalinity	mg/L	#	525	22.6[5]	300	208[2]	261[2]	18.3[5]	1228[2]
Beryllium	mg/L	#	0.001[5]	0.001[5]	0.001[5]	0.001[5]	0.001[5]	0.001[5]	0.001[2,5]
Bromine	mg/L	#	1.4	0.011	0.1	0.026	0.62	0.023	0.039[2]
Calcium	mg/L	#	86.2	1.83	52	23[2]	43.8[2]	5	22[2]
Conductivity	µS/cm	#	2165	58	664	422[2]	1034[2]	30.1	316[2]
Magnesium	mg/L	#	86.2	1.01	31.1	19.2	43.4	0.68	11.6[2]
Potassium	mg/L	#	26.1	0.59	4.61	1.4[2]	8.51[2]	0.45	5.08[2]
Silica	mg/L	#	59.8	14.5	24.3	40.8[2]	99.7[2]	23.4	31.3[2]
Tin	mg/L	#	0.01[5]	0.01[5]	0.01[5]	0.01[5]	0.01[5]	0.01[5]	0.01[2,5]

1 N/A Not Available
2 95th percentile reported
3 value indicates data from 2007-2012
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5 one or more values in calculation were below detection limits. Result may be higher than actual value

Water quality test results

Katherine Region (cont.)

Barkly Region

	Reported unit	ADWG 2004	Mungoobada (Robinson River)	Ngukurr	Rittarangu	Weemol	Yarralin	Alpurrurulam (Lake Nash)	Imangara (Murray Downs)
HEALTH CHARACTERISTICS									
E. coli detections4	per year	0	0	0	0	1	**2**	0	0
E. coli performance4	%	98	100	100	100	98	**96**	100	100
Antimony	mg/L	0.003	0.0003 [2,5]	0.0003 [2,5]	0.0002 [5]	0.0002 [5]	0.0002 [2,5]	0.0002 [5]	0.0002 [5]
Arsenic	mg/L	0.007	0.0005 [2,5]	0.0006 [2,5]	0.0005 [5]	0.0005 [5]	0.003 [2]	0.0015	0.001
Barium	mg/L	0.7	**1.18** [2]	0.61 [2]	0.17	0.05 [5]	**0.98** [2]	0.1	0.49
Boron	mg/L	4	0.1 [2]	0.05 [2,5]	0.04 [5]	0.03	0.09 [2]	0.25	0.25
Cadmium	mg/L	0.002	0.0002 [2,5]	0.0002 [2,5]	0.0002 [5]	0.0002 [5]	0.0002 [2,5]	0.0002 [5]	0.0002 [5]
Chromium	mg/L	0.05	0.005 [2,5]	0.005 [2,5]	0.005 [5]	0.005 [5]	0.005 [2,5]	0.005 [5]	0.005 [5]
Fluoride	mg/L	1.5	0.9 [2]	0.22 [2]	0.1 [5]	0.12	0.1 [2]	**1.5**	0.72
Lead	mg/L	0.01	0.0015 [2,5]	0.0029 [2,5]	0.0013 [5]	0.001 [5]	0.0014 [2,5]	0.001 [5]	0.001 [5]
Mercury	mg/L	0.001	0.0002 [2,5]	0.0001 [2,5]	0.0001 [5]	0.0001 [5]	0.0001 [2,5]	0.0001 [5]	0.0001 [5]
Molybdenum	mg/L	0.05	0.005 [2,5]	0.005 [2,5]	0.005 [5]	0.005 [5]	0.005 [2,5]	0.005 [5]	0.005 [5]
Nickel	mg/L	0.02	0.002 [2,5]	0.002 [2,5]	0.002 [5]	0.002 [5]	0.002 [2,5]	0.002 [5]	0.002 [5]
Nitrate	mg/L	50	4 [2,5]	1.44 [2,5]	2.93 [5]	1 [5]	3.19 [2,5]	2.66	9.09
Annual Exposure to Radioactivity	mSv/yr	1	0.13 [5]	0.15 [5]	0.12 [5]	0.12 [5]	0.14 [5]	0.29 [5]	0.71
Selenium	mg/L	0.1	0.001 [2,5]	0.002 [2,5]	0.001 [5]	0.001 [5]	0.001 [2,5]	0.002 [5]	0.001 [5]
Silver	mg/L	0.1	0.01 [2,5]	0.01 [2,5]	0.01 [5]	0.01 [5]	0.01 [2,5]	0.01 [5]	0.01 [5]
Uranium	mg/L	0.02	0.003 [2]	0.001 [2]	0.0008	0.0003	0.001 [2]	0.01	0.012
AESTHETIC CHARACTERISTICS									
Aluminum	mg/L	0.2	0.03 [2,5]	0.1 [2,5]	0.02 [5]	0.02 [5]	0.02 [2,5]	0.02 [5]	0.02 [5]
Chloride	mg/L	250	34	**370** [2]	60	11	31	192	21
Copper	mg/L	2	0.01 [2,5]	0.04 [2,5]	0.02 [5]	0.02 [5]	0.01 [2,5]	0.07 [5]	0.01 [5]
Hardness	$CaCO_3$ mg/L	200	**495**	**618** [2]	**287**	**352**	**378**	**461**	183
Iodine	mg/L	0.15	0.03 [2,5]	0.03 [2,5]	0.01 [5]	0.01 [5]	0.04 [2,5]	**0.18**	0.08
Iron	mg/L	0.3	0.07 [5]	0.26 [2,5]	0.08v	0.04 [5]	0.25 [5]	0.02 [5]	0.04 [5]
Manganese	mg/L	0.1	0.013 [2,5]	0.011 [2,5]	0.005 [5]	0.005 [5]	0.066 [2]	0.005 [5]	0.005 [5]
pH	pH Units	6.5-8.5	7.47	7.58 [2]	7.56	7.45	7.5	7.67	7.9
Sodium	mg/L	180	20	94 [2]	26	10	30	145	31
Sulfate	mg/L	250	6	36 [2]	3	0.3	7	89	11
Total Dissolved Solids	mg/L	500	**552**	**927** [2]	367	386	489	**924**	426
True Colour	CU	15	2.75 [5]	3.69 [2,5]	1.9 [5]	3.25 [5]	3.99 [5]	2.59 [5]	1.67 [5]
Turbidity	NTU	5	1.09	3.36 [2]	0.86	0.23	3.44	0.9 [5]	0.27
Zinc	mg/L	3	0.06 [2,5]	0.07 [2,5]	0.06 [5]	0.02	0.1 [2]	0.02 [5]	0.01 [5]
OTHER CHARACTERISTICS									
Alkalinity	mg/L	#	536	324 [2]	281	385	438	482	334
Beryllium	mg/L	#	0.001 [2,5]	0.001 [2,5]	0.001 [5]	0.001 [5]	0.001 [2,5]	0.001 [5]	0.001 [5]
Bromine	mg/L	#	0.2 [2]	1.14 [2]	0.2	0.025	0.2 [2]	0.8	0.098
Calcium	mg/L	#	42.7 [2]	108 [2]	53.5	62	69 [2]	60	39
Conductivity	µS/cm	#	1017	1780 [2]	698	686	867	1556	719
Magnesium	mg/L	#	94.4 [2]	85.6 [2]	37.3	47.9	50.2 [2]	76	37.8
Potassium	mg/L	#	3.8	6.59 [2]	2.9	2.81	3.1	7.42	30
Silica	mg/L	#	34	24.8 [2]	23.3	34.2	41.8	67.4	80.3
Tin	mg/L	#	0.01 [2,5]	0.01 [2,5]	0.01 [5]	0.01 [5]	0.01 [2,5]	0.01 [5]	0.01 [5]

1 N/A Not Available
2 95th percentile reported
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Water quality test results

Barkly Region (cont.)

	Reported unit	ADWG 2004	Nturiya [4]	Owaitilla (Canteen Creek) [4]	Tara	Warrabri (Ali Curung)	Willowra	Wilora (Stirling) [4]	Wutunugurra (Epenarra) [4]
HEALTH CHARACTERISTICS									
E. coli detections4	per year	0	0	0	0	0	0	1	0
E. coli performance4	%	98	100	100	100	100	100	98	100
Antimony	mg/L	0.003	0.0003 [5]	0.0002 [5]	0.0002 [5]	0.0003 [5]	0.0002 [5]	0.0003 [5]	0.0002 [5]
Arsenic	mg/L	0.007	0.0005	0.0005 [5]	0.0006 [5]	0.003	0.0018	0.0015	0.0007 [5]
Barium	mg/L	0.7	0.05	0.1	0.05 [5]	0.08	0.05	0.05 [5]	0.41
Boron	mg/L	4	0.57	0.22	0.44	0.7	0.45	0.72	0.12
Cadmium	mg/L	0.002	0.0002 [5]	0.0002 [5]	0.0002 [5]	0.0002 [5]	0.0002 [5]	0.0002 [5]	0.0002 [5]
Chromium	mg/L	0.05	0.005 [5]	0.005 [5]	0.005 [5]	0.005 [5]	0.005 [5]	0.005 [5]	0.005 [5]
Fluoride	mg/L	1.5	0.97	0.51	0.9	**2.05**	0.8	0.91	0.23
Lead	mg/L	0.01	0.0011 [5]	0.0011 [5]	0.0015 [5]	0.001 [5]	0.001 [5]	0.0011 [5]	0.001 [5]
Mercury	mg/L	0.001	0.0001 [5]	0.0001 [5]	0.0001 [5]	0.0001 [5]	0.0001 [5]	0.0001 [5]	0.0001 [5]
Molybdenum	mg/L	0.05	0.005 [5]	0.005 [5]	0.005 [5]	0.005 [5]	0.005 [5]	0.005 [5]	0.005 [5]
Nickel	mg/L	0.02	0.002 [5]	0.003 [5]	0.007 [5]	0.002 [5]	0.002 [5]	0.002 [5]	0.004 [5]
Nitrate	mg/L	50	36.5	7.76	23.1	**82.5**	35.6	17	3.81
Annual Exposure to Radioactivity	mSv/yr	1	0.52 [5]	0.43	0.62	0.74 [5]	0.72	0.99 [5]	0.24 [5]
Selenium	mg/L	0.1	0.003	0.001 [5]	0.002 [5]	0.003	0.004	0.005	0.001 [5]
Silver	mg/L	0.1	0.01 [5]	0.01 [5]	0.01 [5]	0.01 [5]	0.01 [5]	0.01 [5]	0.01 [5]
Uranium	mg/L	0.02	0.014	0.001	0.004	0.012	**0.025**	**0.02**	0.002
AESTHETIC CHARACTERISTICS									
Aluminum	mg/L	0.2	0.02 [5]	0.02 [5]	0.02 [5]	0.03 [5]	0.02 [5]	0.02 [5]	0.02 [5]
Chloride	mg/L	250	**353**	91	**485**	201	175	**520**	44.3
Copper	mg/L	2	0.02 [5]	0.02 [5]	0.1 [5]	0.04 [5]	0.01 [5]	0.03 [5]	0.02 [5]
Hardness	$CaCO_3$ mg/L	200	**301**	138	**304**	**248**	**249**	**603**	173
Iodine	mg/L	0.15	**0.32**	0.11	**0.32**	**0.3**	**0.28**	**0.37**	0.07
Iron	mg/L	0.3	0.07 [5]	0.06 [5]	0.08 [5]	0.03 [5]	0.02 [5]	0.02 [5]	0.04 [5]
Manganese	mg/L	0.1	0.005 [5]	0.005 [5]	0.005 [5]	0.005 [5]	0.005 [5]	0.01 [5]	0.012 [5]
pH	pH Units	6.5-8.5	7.68	7.21	7.05	8.11	8.08	7.84	7.48
Sodium	mg/L	180	**227**	85	**214**	**212**	138	**301**	34
Sulfate	mg/L	250	184	36	152	96	81	233	13
Total Dissolved Solids	mg/L	500	**1161**	472	**1026**	**972**	**756**	**1700**	335
True Colour	CU	15	3.39 [5]	2.93 [5]	2.28 [5]	3.47 [5]	2.67 [5]	4.33 [5]	2.5 [5]
Turbidity	NTU	5	0.63 [5]	0.87	1.59	0.82 [5]	0.71	0.52 [5]	0.83
Zinc	mg/L	3	0.04 [5]	0.02 [5]	0.05 [5]	0.01 [5]	0.04 [5]	0.06	0.03
OTHER CHARACTERISTICS									
Alkalinity	mg/L	#	213	232	197	375	260	396	196
Beryllium	mg/L	#	0.001 [5]	0.001 [5]	0.001 [5]	0.001 [5]	0.001 [5]	0.001 [5]	0.001 [5]
Bromine	mg/L	#	1.9	0.5	1.5	1.0	0.9	3.1	0.2
Calcium	mg/L	#	69	27	39	33	49	96	38
Conductivity	µS/cm	#	1850	819	1741	1637	1242	2676	557
Magnesium	mg/L	#	32.2	29.1	55.2	40.5	30.7	89.4	18.9
Potassium	mg/L	#	24.4	12.8	28	50.9	32.3	60.3	7.99
Silica	mg/L	#	79.9	59	21.3	60.4	86.3	90.8	64.8
Tin	mg/L	#	0.01 [5]	0.01 [5]	0.01 [5]	0.01 [5]	0.01 [5]	0.01 [5]	0.01 [5]

1 N/A Not Available
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Water quality test results

Southern Region

	Reported unit	ADWG 2004	Ampilawatja (Ammarroo)	Amunturangu (Mt Liebig)	Apatula (Finke)	Areyonga	Atitjere (Harts Range)	Engawala (Alcoota)	Ikuntji (Haasts Bluff)
HEALTH CHARACTERISTICS									
E. coli detections4	per year	0	0	0	0	0	0	0	0
E. coli performance4	%	98	100	100	100	100	100	100	100
Antimony	mg/L	0.003	0.0003[5]	0.0003[5]	0.0002[5]	0.0003[5]	0.0003[5]	0.0003[5]	0.0004[5]
Arsenic	mg/L	0.007	0.0005[5]	0.0006[5]	0.0006[5]	0.0007[5]	0.0005[5]	0.0005[5]	0.0005[5]
Barium	mg/L	0.7	0.05[5]	0.05[5]	0.13	0.1	0.055	0.13	0.05[5]
Boron	mg/L	4	0.29	0.26	0.07	0.17	0.14	0.15	0.33
Cadmium	mg/L	0.002	0.0002[5]	0.0002[5]	0.0002[5]	0.0003[5]	0.0002[5]	0.0002[5]	0.0002[5]
Chromium	mg/L	0.05	0.005[5]	0.005[5]	0.005[5]	0.005[5]	0.005[5]	0.005[5]	0.005[5]
Fluoride	mg/L	1.5	1.11	1.16	0.2	0.4	0.55	0.6	0.5
Lead	mg/L	0.01	0.0012[5]	0.0011[5]	0.0017[5]	0.0017[5]	0.0021[5]	0.001[5]	0.0024[5]
Mercury	mg/L	0.001	0.0001[5]	0.0001[5]	0.0001[5]	0.0001[5]	0.0001[5]	0.0001[5]	0.0001[5]
Molybdenum	mg/L	0.05	0.005[5]	0.005[5]	0.005[5]	0.005[5]	0.005[5]	0.005[5]	0.005[5]
Nickel	mg/L	0.02	0.002[5]	0.002[5]	0.002[5]	0.009	0.002[5]	0.002[5]	0.002[5]
Nitrate	mg/L	50	29.2	17.4	8.9	7.75	29.3	14.8	7.25
Annual Exposure to Radioactivity	mSv/yr	1	0.47[5]	0.28[5]	0.21[5]	0.36	0.2[5]	0.15[5]	0.6[5]
Selenium	mg/L	0.1	0.002[5]	0.002[5]	0.001[5]	0.002[5]	0.003[5]	0.002[5]	0.002[5]
Silver	mg/L	0.1	0.01[5]	0.01[5]	0.01[5]	0.01[5]	0.01[5]	0.01[5]	0.01[5]
Uranium	mg/L	0.02	0.008	0.006	0.003	0.008	0.007	0.005	0.01
AESTHETIC CHARACTERISTICS									
Aluminum	mg/L	0.2	0.14[5]	0.02[5]	0.02[5]	0.02[5]	0.02[5]	0.02[5]	0.02[5]
Chloride	mg/L	250	166	118	146	108	118	136	**371**[2]
Copper	mg/L	2	0.01[5]	0.02[5]	0.02[5]	0.02[5]	0.03[5]	0.02[5]	0.05[5]
Hardness	$CaCO_3$ mg/L	200	**446**	**273**	187	**416**	**277**	**377**	**580**[2]
Iodine	mg/L	0.15	**0.18**	**0.21**	0.03	0.09	0.1	0.12	**0.25**
Iron	mg/L	0.3	0.02[5]	0.06[5]	0.09[5]	0.09[5]	0.05[5]	0.09[5]	0.08[2,5]
Manganese	mg/L	0.1	0.005[5]	0.005[5]	0.005[5]	0.005[5]	0.005[5]	0.005[5]	0.005[5]
pH	pH Units	6.5-8.5	7.83	7.72	7.6	8.01	8.02	7.91	7.65[2]
Sodium	mg/L	180	116	99	85	57	113	85	165[2]
Sulfate	mg/L	250	224	97	57	77	134	61	**258**[2]
Total Dissolved Solids	mg/L	500	**992**	**621**	462	**640**	**691**	**705**	**1266**[2]
True Colour	CU	15	2.81[5]	1.93[5]	2.2[5]	1.83[5]	3.25[5]	2.89[5]	3.86[2,5]
Turbidity	NTU	5	0.39[5]	1.04	0.9	1.19	0.7	3.4	1.28[2]
Zinc	mg/L	3	0.02[5]	0.02[5]	0.14	0.05[5]	0.03	0.03	0.15
OTHER CHARACTERISTICS									
Alkalinity	mg/L	#	301	254	123	341	216	123	241[2]
Beryllium	mg/L	#	0.001[5]	0.001[5]	0.001[5]	0.001[5]	0.001[5]	0.001[5]	0.001[5]
Bromine	mg/L	#	0.9	0.5	0.2	0.4	0.5	0.63	1.5
Calcium	mg/L	#	97	60	53	75	44	69	109[2]
Conductivity	µS/cm	#	1502	1058	869	1121	1114	1184	1982[2]
Magnesium	mg/L	#	53.6	30.1	13	55.4	40.6	49.8	74.4
Potassium	mg/L	#	23.6	13.7	6.4	8.37	8.66	7.3	28.7[2]
Silica	mg/L	#	39	49.5	16.4	18.8	34.6	68.7	51.6[2]
Tin	mg/L	#	0.01[5]	0.01[5]	0.01[5]	0.01[5]	0.01[5]	0.01[5]	0.01[5]

1 N/A Not Available
2 95th percentile reported
3 value indicates data from 2007-2012
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5 one or more values in calculation were below detection limits. Result may be higher than actual value

Water quality test results

Southern Region (cont.)

	Reported unit	ADWG 2004	Imanpa	Kaltukatjara (Docker River)	Laramba (Napperby)	Ntaria (Hermmansburg)	Nyirripi	Papunya	Pmara Jutunta (Ti Tree 6 Mile)
HEALTH CHARACTERISTICS									
E. coli detections4	per year	0	0	0	0	0	0	1	0
E. coli performance4	%	98	100	100	100	100	100	98	100
Antimony	mg/L	0.003	0.0003[5]	0.0003[5]	0.0003[5]	0.0002[5]	0.0002[5]	0.0003[5]	0.0002[5]
Arsenic	mg/L	0.007	0.0007[5]	0.0005[5]	0.0008[5]	0.0005[5]	0.0016[5]	0.0008[5]	0.001
Barium	mg/L	0.7	0.05[5]	0.05[5]	0.26	0.05[5]	0.09	0.1	0.1
Boron	mg/L	4	0.77	0.14	0.34	0.16	0.33	0.3	0.33
Cadmium	mg/L	0.002	0.0002[5]	0.0002[5]	0.0002[5]	0.0002[5]	0.0002[5]	0.0002[5]	0.0002[5]
Chromium	mg/L	0.05	0.005[5]	0.005[5]	0.005[5]	0.005[5]	0.005[5]	0.005[5]	0.005[5]
Fluoride	mg/L	1.5	0.83	0.41	1.1	0.37	**1.56**	0.96	0.8
Lead	mg/L	0.01	0.0013[5]	0.001[5]	0.0036[5]	0.0011[5]	0.0012[5]	0.0011[5]	0.0024[5]
Mercury	mg/L	0.001	0.0001[5]	0.0001[5]	0.0001[5]	0.0001[5]	0.0001[5]	0.0001[5]	0.0001[5]
Molybdenum	mg/L	0.05	0.005[5]	0.005[5]	0.005[5]	0.005[5]	0.005[5]	0.005[5]	0.005[5]
Nickel	mg/L	0.02	0.004	0.002[5]	0.002[5]	0.002[5]	0.003[5]	0.002[5]	0.002[5]
Nitrate	mg/L	50	29	1	36.4	4.9	25.8[5]	20.4	**51.7**
Annual Exposure to Radioactivity	mSv/yr	1	0.77[5]	0.2[5]	0.84[5]	0.2[5]	0.45[5]	0.23[5]	0.25[5]
Selenium	mg/L	0.1	0.005	0.001[5]	0.003[5]	0.001[5]	0.002	0.006[5]	0.002[5]
Silver	mg/L	0.1	0.01[5]	0.01[5]	0.01[5]	0.01[5]	0.01[5]	0.01[5]	0.01[5]
Uranium	mg/L	0.02	0.011	0.00001[5]	**0.039**	0.005	0.009	0.011	0.008
AESTHETIC CHARACTERISTICS									
Aluminum	mg/L	0.2	0.03[5]	0.02[5]	0.02[5]	0.02[5]	0.02[5]	0.02[5]	0.02[5]
Chloride	mg/L	250	**382**	89	104	113	102	201	66[2]
Copper	mg/L	2	0.02[5]	0.02[5]	0.09[5]	0.02[5]	0.01[5]	0.02[5]	0.03[5]
Hardness	$CaCO_3$ mg/L	200	**432**	**275**	**288**	**314**	**242**	**258**	**200**[2]
Iodine	mg/L	0.15	**0.55**	0.12	**0.3**	0.07	**0.16**	**0.25**	0.14
Iron	mg/L	0.3	0.23[5]	0.13[5]	0.06[5]	0.1[5]	0.04[5]	0.04[5]	0.05[2]
Manganese	mg/L	0.1	0.018[5]	0.008[5]	0.006[5]	0.007[5]	0.005[5]	0.005[5]	0.005[5]
pH	pH Units	6.5-8.5	8.1	8.33	7.82	7.89	8.07	8.05	7.99[2]
Sodium	mg/L	180	**231**	56	69	62	89	**226**	66[2]
Sulfate	mg/L	250	244	65	37	62	44	90	37[2]
Total Dissolved Solids	mg/L	500	**1283**	468	**645**	**541**	**604**	**943**	**514**[2]
True Colour	CU	15	4.17[5]	2.48[5]	2.5[5]	2.68[5]	2.28[5]	2.41[5]	3.09[2,5]
Turbidity	NTU	5	**7.63**	1.17	0.43	1.94	1.62	0.32	0.81[2]
Zinc	mg/L	3	0.25	0.02[5]	0.13[5]	0.04	0.02[5]	0.01[5]	0.04[5]
OTHER CHARACTERISTICS									
Alkalinity	mg/L	#	207	268	301	260	289	412	211[2]
Beryllium	mg/L	#	0.001[5]	0.001[5]	0.001[5]	0.001[5]	0.001[5]	0.001[5]	0.001[5]
Bromine	mg/L	#	1.8	0.5	0.5	0.5	0.4	1.1	0.4
Calcium	mg/L	#	83	52	59	60.6	45.4	52.5	45.4[2]
Conductivity	µS/cm	#	1984	851	1029	963	992	1574	784[2]
Magnesium	mg/L	#	54.6	35.2	34.4	39.5	31.2	30.8	21.5
Potassium	mg/L	#	29.6	11.1	39.4	7.06	26.9	11.4	18.4[2]
Silica	mg/L	#	29.8	12	95.9	15	89	64.8	95[2]
Tin	mg/L	#	0.01[5]	0.01[5]	0.01[5]	0.01[5]	0.01[5]	0.01[5]	0.01[5]

1 N/A Not Available
2 95th percentile reported
3 value indicates data from 2007-2012
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5 one or more values in calculation were below detection limits. Result may be higher than actual value

Water quality test results

Southern Region (cont.)

	Reported unit	ADWG 2004	Santa Teresa	Titjikala (Maryvale)	Walangkula (Kintore)	Wallace Rockhole	Yuelamu (Mt Allan)	Yuendumu
HEALTH CHARACTERISTICS								
E. coli detections4	per year	0	0	0	0	1	0	0
E. coli performance4	%	98	100	100	100	98	100	100
Antimony	mg/L	0.003	0.0007[5]	0.0002[5]	0.0003[2,5]	0.0003[5]	0.0002[5]	0.0003[5]
Arsenic	mg/L	0.007	0.0005[5]	0.001	0.0009[2,5]	0.0009[5]	0.0007[5]	0.0005[5]
Barium	mg/L	0.7	0.5	0.32	0.05[2,5]	0.06	0.06[5]	0.05[5]
Boron	mg/L	4	0.06	0.1	0.28[2]	0.36	0.2	0.28
Cadmium	mg/L	0.002	0.0002[5]	0.0002[5]	0.0002[2,5]	0.0002[5]	0.0002[5]	0.0002[5]
Chromium	mg/L	0.05	0.005[5]	0.005[5]	0.005[2,5]	0.005[5]	0.005[5]	0.005[5]
Fluoride	mg/L	1.5	0.2	0.59	0.76[2]	0.78	0.61	0.59
Lead	mg/L	0.01	0.0021[5]	0.0011[5]	0.0011[2,5]	0.0019[5]	0.0019[5]	0.0012[5]
Mercury	mg/L	0.001	0.0001	0.0001[5]	0.0001[2,5]	0.0001[5]	0.0001[5]	0.0001[5]
Molybdenum	mg/L	0.05	0.005[5]	0.005[5]	0.005[2,5]	0.005[5]	0.005[5]	0.005[5]
Nickel	mg/L	0.02	0.002[5]	0.002[5]	0.003[2,5]	0.009[5]	0.002[5]	0.002[5]
Nitrate	mg/L	50	12.7	19.1	**83.2**[2]	14.4	5.21[5]	3.26[5]
Annual Exposure to Radioactivity	mSv/yr	1	0.41	0.26	0.13[5]	0.4	0.17[5]	0.48[5]
Selenium	mg/L	0.1	0.003	0.001[5]	0.004[2,5]	0.004	0.002[5]	0.002[5]
Silver	mg/L	0.1	0.01[5]	0.01[5]	0.01[2,5]	0.01[5]	0.01[5]	0.01[5]
Uranium	mg/L	0.02	0.005	0.004	0.002[2]	0.005	**0.028**	0.009
AESTHETIC CHARACTERISTICS								
Aluminum	mg/L	0.2	0.02[5]	0.04[5]	0.03[2,5]	**0.73**[5]	0.03[5]	0.02[5]
Chloride	mg/L	250	13	47	118[2]	148	87	196
Copper	mg/L	2	0.02[5]	0.02[5]	0.17[2,5]	0.02[5]	0.06[5]	0.03[5]
Hardness	$CaCO_3$ mg/L	200	**254**	**222**	**465**[2]	**278**	114	**314**
Iodine	mg/L	0.15	0.02	0.04	**0.15**[2]	0.13	0.13	**0.24**
Iron	mg/L	0.3	0.08[5]	0.07[5]	0.04[2,5]	0.29[5]	0.15[5]	**0.36**[5]
Manganese	mg/L	0.1	0.005[5]	0.005[5]	0.005[2,5]	0.005[5]	0.012[5]	0.015[5]
pH	pH Units	6.5-8.5	7.74	7.67	7.57[2]	7.62	7.97	7.88
Sodium	mg/L	180	7	54	96[2]	94	81	115
Sulfate	mg/L	250	11	23	67[2]	68	95	113
Total Dissolved Solids	mg/L	500	310	394	**853**[2]	**589**	375	**696**
True Colour	CU	15	2.14[5]	2.5[5]	2.23[2,5]	3.92[5]	4.89[5]	2.18[5]
Turbidity	NTU	5	0.77	2.36	0.51[2]	**36.7**[5]	2.29	**5.04**[5]
Zinc	mg/L	3	0.03[5]	0.05[5]	0.03[2,5]	0.1	0.05[5]	0.2
OTHER CHARACTERISTICS								
Alkalinity	mg/L	#	275	242	405[2]	233	95.8	238
Beryllium	mg/L	#	0.001[5]	0.001[5]	0.001[2,5]	0.001[5]	0.001[5]	0.001[5]
Bromine	mg/L	#	0.05	0.1	1.08[2]	0.4	0.6	1.78
Calcium	mg/L	#	64	62	73.4[2]	63.6	30	34.1
Conductivity	µS/cm	#	553	699	1336[2]	1091	671	1196
Magnesium	mg/L	#	22.7	16.6	68.4[2]	29	9.6	37.3
Potassium	mg/L	#	4.5	5.21	5.2[2]	9.28	5.72	16.4
Silica	mg/L	#	17.5	35.6	88.9[2]	16.6	5.77	15.7
Tin	mg/L	#	0.01[5]	0.01[5]	0.01[2,5]	0.01[5]	0.01[5]	0.01[5]

1 N/A Not Available
2 95th percentile reported
3 value indicates data from 2007-2012
4 value includes data from 2011-2012
5 one or more values in calculation were below detection limits. Result may be higher than actual value