



DRINKING WATER QUALITY REPORT

2014 -2015





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MESSAGE FROM THE CEO

Dear Customers,

Each year Unitywater publishes this report to set out transparently information about the quality of the drinking water we supply. I'm pleased to confirm that during 2014-15 the water supplied to our customers remained of a very high standard and, as in previous years, met all regulatory requirements.

Unitywater continues to meet the requirements set by the Queensland Public Health Regulation for drinking water, with 99.9% of all samples free of *E. coli*, an indicator of possible contamination. Meeting this requirement demonstrates that you can continue to have confidence in the water supplied by Unitywater to your home, school and work place. To maintain that confidence Unitywater sampled and completed almost 100,000 individual water tests. Of those only five did not meet an individual guideline. Each of these was investigated promptly and successfully met the guideline when retested.

We recognise that having confidence in the quality of the water you drink is just as important as the quality of food you eat. Unitywater will build on the Queensland and Australian standards we already meet to obtain international recognition, namely ISO 22000. To meet this international accreditation we must demonstrate to independent assessors our ability to identify and control safety hazards throughout the water supply chain.

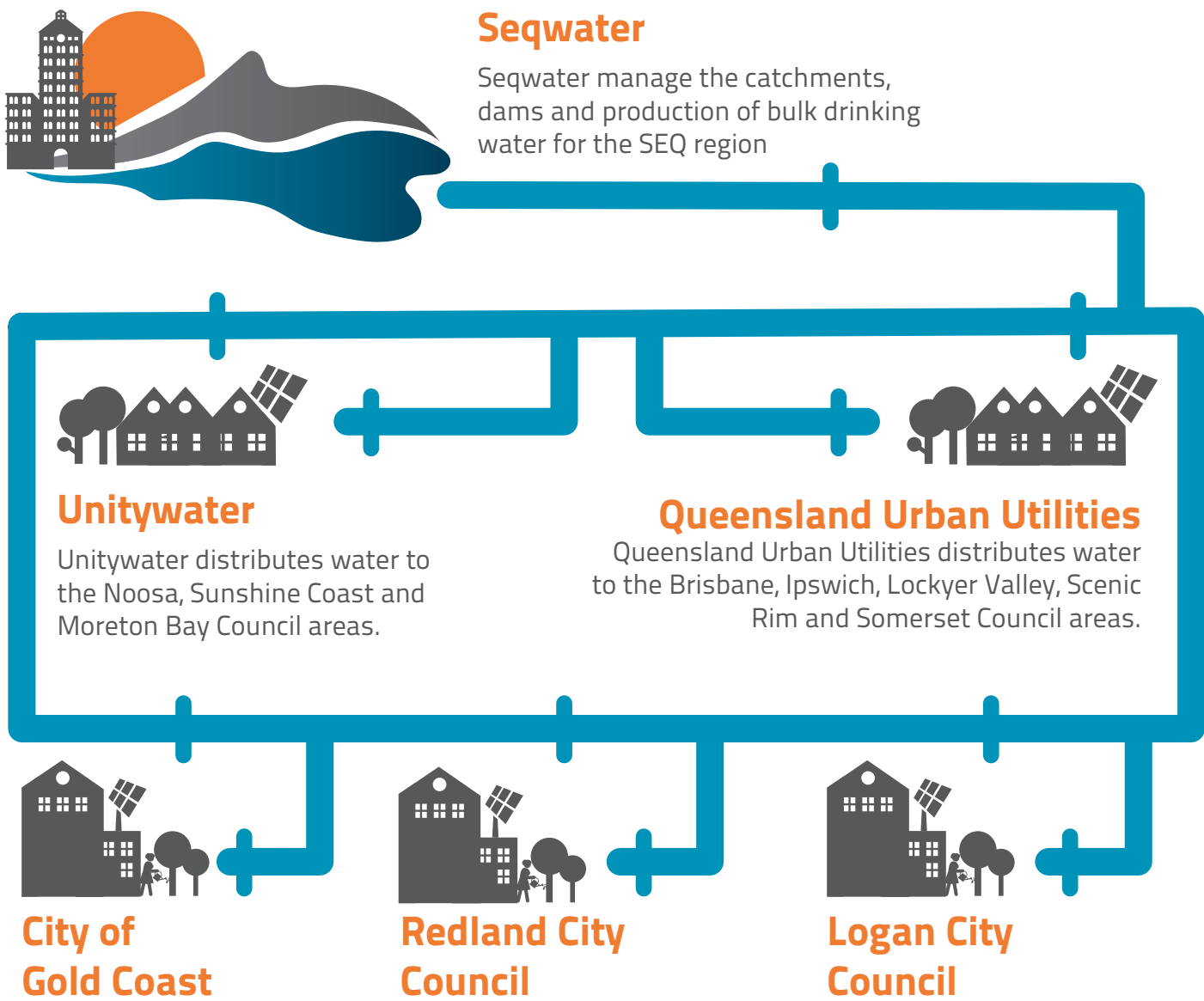
In the meantime further details of the physical and chemical qualities of the drinking water supplied are provided in the Water Quality Summary later in this report. If you have any questions, or feedback on the content of this report, please do not hesitate to call our customer contact centre on 1300 0 UNITY.

George Theo
Chief Executive Officer
Unitywater

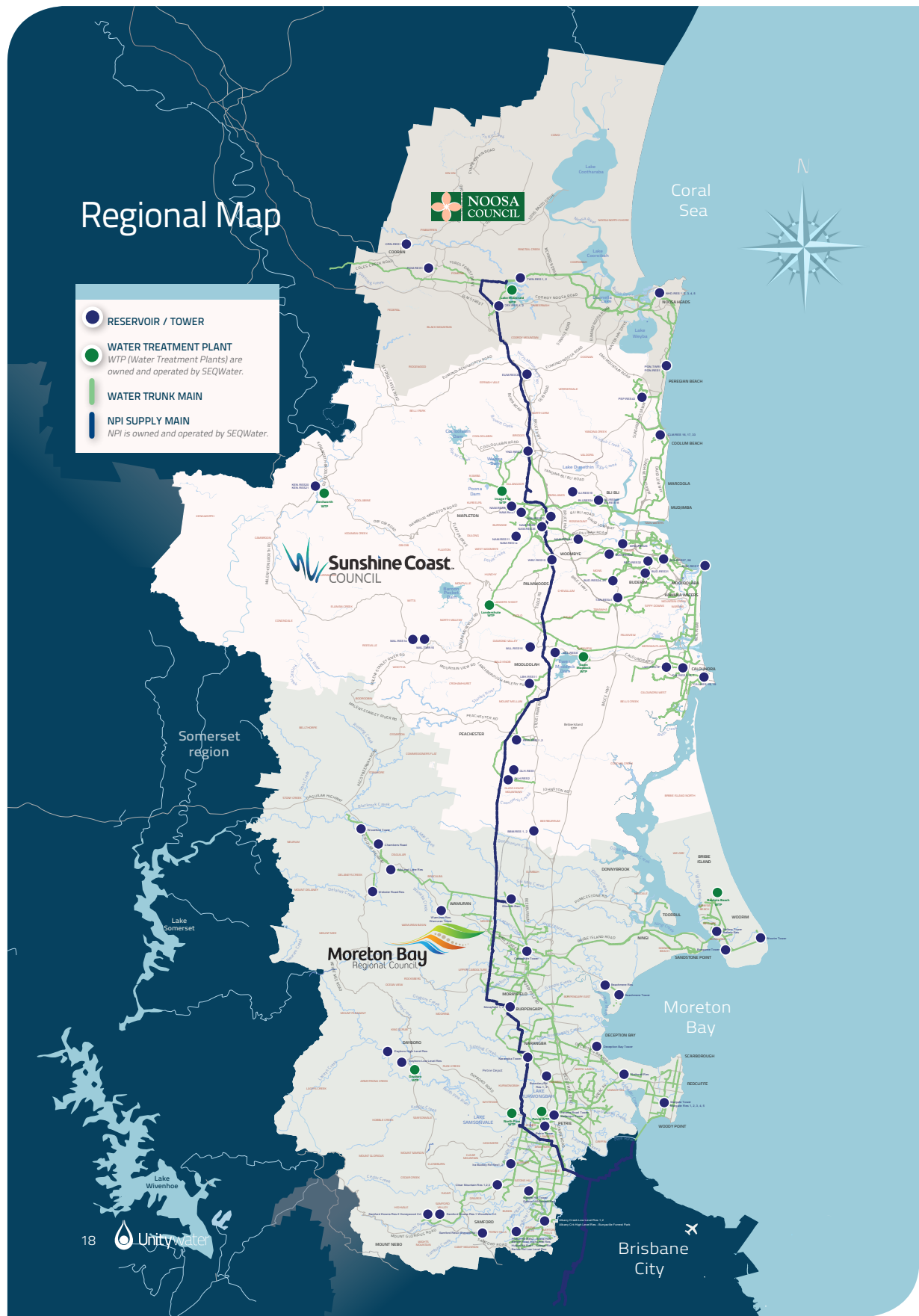
Where we sit in the Grid

The south-east Queensland water grid connects the water supplies from the Sunshine Coast, through greater Brisbane and down to the Gold Coast. This arrangement allows Seqwater to move treated 'bulk' drinking water from one area to another, reducing the risk of any single source being used up.

More detail on the bulk water supply network can be found here:
<http://www.seqwater.com.au/water-supply/supply-network>



Our supply area



Water Supply Sources

All of the water treatment plants (WTPs) are managed by Seqwater. Please direct any queries around bulk water supply arrangements to Seqwater (<http://www.seqwater.com.au/contacts>).

BRIBIE ISLAND

Since the shutdown of the Banksia Beach WTP by Seqwater in 2014, the primary sources of water to the island have been the North Pine WTP and the Landers Shute WTP, via the Northern Pipeline Interconnector and the Morayfield reservoir complex.

CABOOLTURE

The Caboolture water supply region is geographically our largest water supply area, extending from Elimbah in the north to Narangba in the south, west to Wamuran and east to Sandstone Point. Beachmere and Deception Bay are also part of this supply area. There are two typical sources of water for the Caboolture region; Landers Shute WTP and North Pine WTP. Treated water travels through the Northern Pipeline Interconnector, and into reservoirs at Elimbah, Morayfield and Narangba. From here, water is distributed throughout the supply scheme.

CALOUNDRA

The Caloundra water supply region extends from Point Cartwright (Buddina) in the north, to Pelican Waters in the south, and inland to Bells Creek. The main source of water for Caloundra is the Landers Shute WTP, with supplementary supply from the Northern Pipeline Interconnector if required. Water from the two sources is mixed in the Sugarbag Road reservoir complex prior to distribution to customers. The Ewen Maddock WTP is also available as a drought contingency option; however this plant did not operate in the 2014–15 financial year.

DAYBORO

Dayboro is not connected to the South East Queensland water grid. Water is treated at the Dayboro WTP, and distributed to the township. Water can be imported via water tankers if necessary.

KENILWORTH

Kenilworth is not connected to the South East Queensland water grid. The single source of water for this scheme is the Kenilworth WTP. Water can be imported via water tankers if necessary.

MALENY

The single source of water for the Maleny township is the Landers Shute WTP.

MAROOCHY NORTH

This region includes Nambour, Eumundi, Bli Bli and Coolum. The main source of water is the Image Flat WTP, with supplemental supply from the Northern Pipeline Interconnector.

MAROOCHY SOUTH

The Maroochy South region includes the area to the south of the Maroochy River and north of the Mooloolah River, and inland almost as far as Nambour. The main source of water is the Landers Shute WTP, with supplemental supply available from the Northern Pipeline Interconnector.

NOOSA

The Noosa water supply region extends inland and includes Tewantin, Cooroy, Pomona and Cooran. The main sources of supply are the Noosa WTP and the Northern Pipeline Interconnector. Water is blended within the reticulation system and distributed to customers.

PINE RIVERS NORTH

The Pine Rivers North region extends from Dakabin to the north to Lawnton in the south, and across the Bruce Highway to North Lakes and Mango Hill. Water to the Pine Rivers North region is currently supplied solely from the Petrie WTP, although there is a planned future connection to the Northern Pipeline Interconnector.

PINE RIVERS SOUTH

This supply region includes Bray Park, Brendale, Strathpine, Eaton's Hill, Albany Creek, Samford and the Hills District. Pine Rivers South typically receives the majority of its water from the North Pine WTP with an additional small volume from the Northern Pipeline Interconnector. When North Pine WTP is offline for maintenance, water can be supplied from Brisbane via the Aspley reservoir system.

RAILWAY TOWNS

This water supply region gets its name from the fact that the main townships are all linked by the Sunshine Coast train line. The usual source of water for the Railway Towns is the Landers Shute WTP; however supplemental water supply can also feed in from the Northern Pipeline Interconnector. Water travels first through Mooloolah, before being supplied south to Landsborough, Beerwah, Glasshouse Mountains and Beerburum.

REDCLIFFE

The Redcliffe water supply region encompasses the entire Redcliffe peninsula, including Rothwell (however Deception Bay is part of the Caboolture supply region). The primary supply source for this region is the North Pine WTP, with a small additional volume from the Northern Pipeline Interconnector.

Queensland Urban Utilities' Bracken Ridge reservoir also supplies a small but steady volume of water into the region via the main that crosses the Houghton Bridge. There are storage reservoirs at Margate and Rothwell, from where water is distributed to customers.

WOODFORD

The Woodford water supply region is supplied by the Northern Pipeline Interconnector, typically with water that originated from either Landers Shute WTP or North Pine WTP. Water enters the Woodford system via the Elimbah reservoir located within the Caboolture supply region.

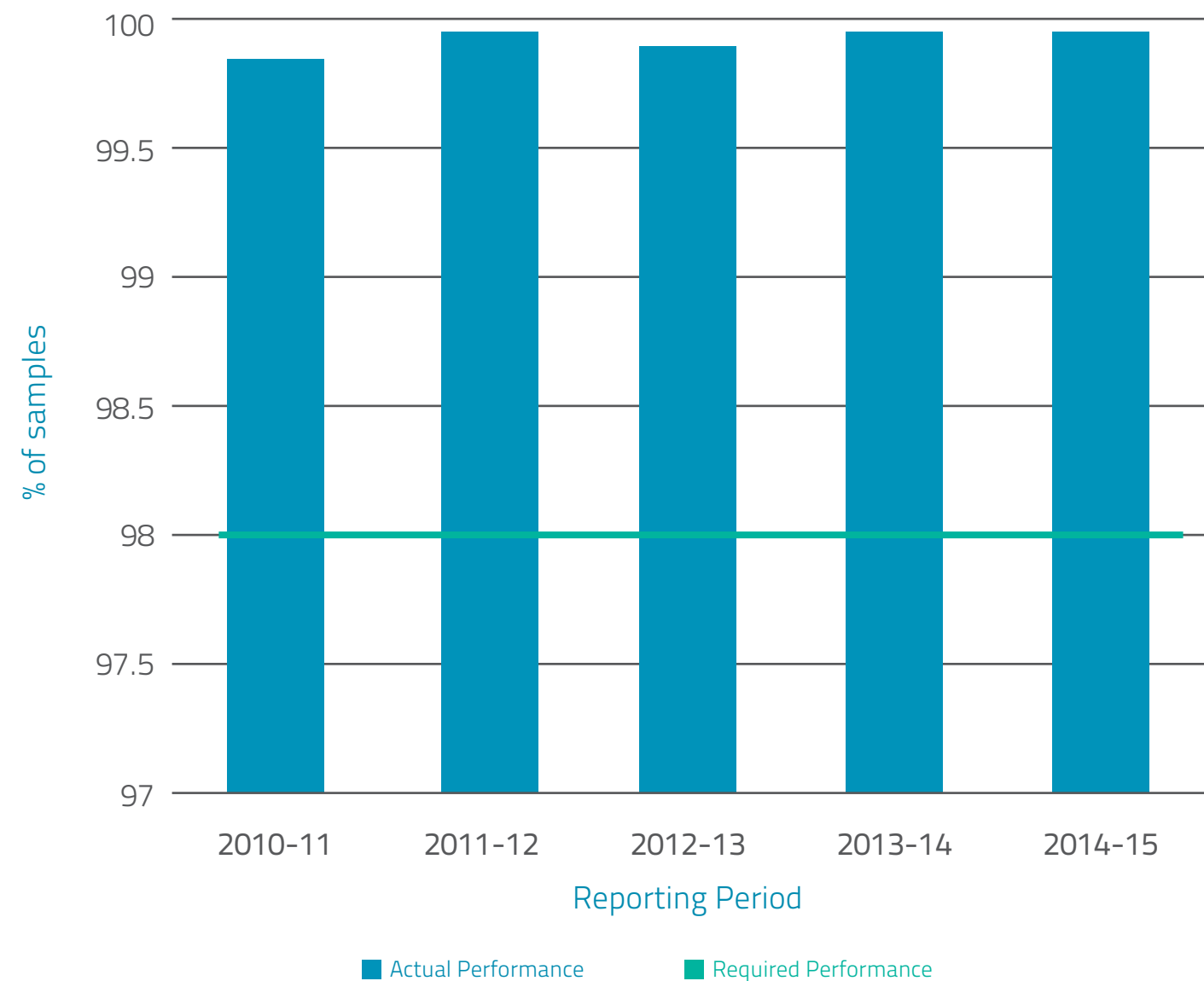
Water Quality Summary

The *Public Health Regulation 2005* requires that all water service providers in Queensland meet the regulated drinking water quality standard; which is that more than 98% of all samples tested must return a negative result for *E. coli*.

In 2014-15, 99.94% of Unitywater's samples were negative for *E. coli*. The graph below shows our performance over the past five years:

Public Health Regulation 2005

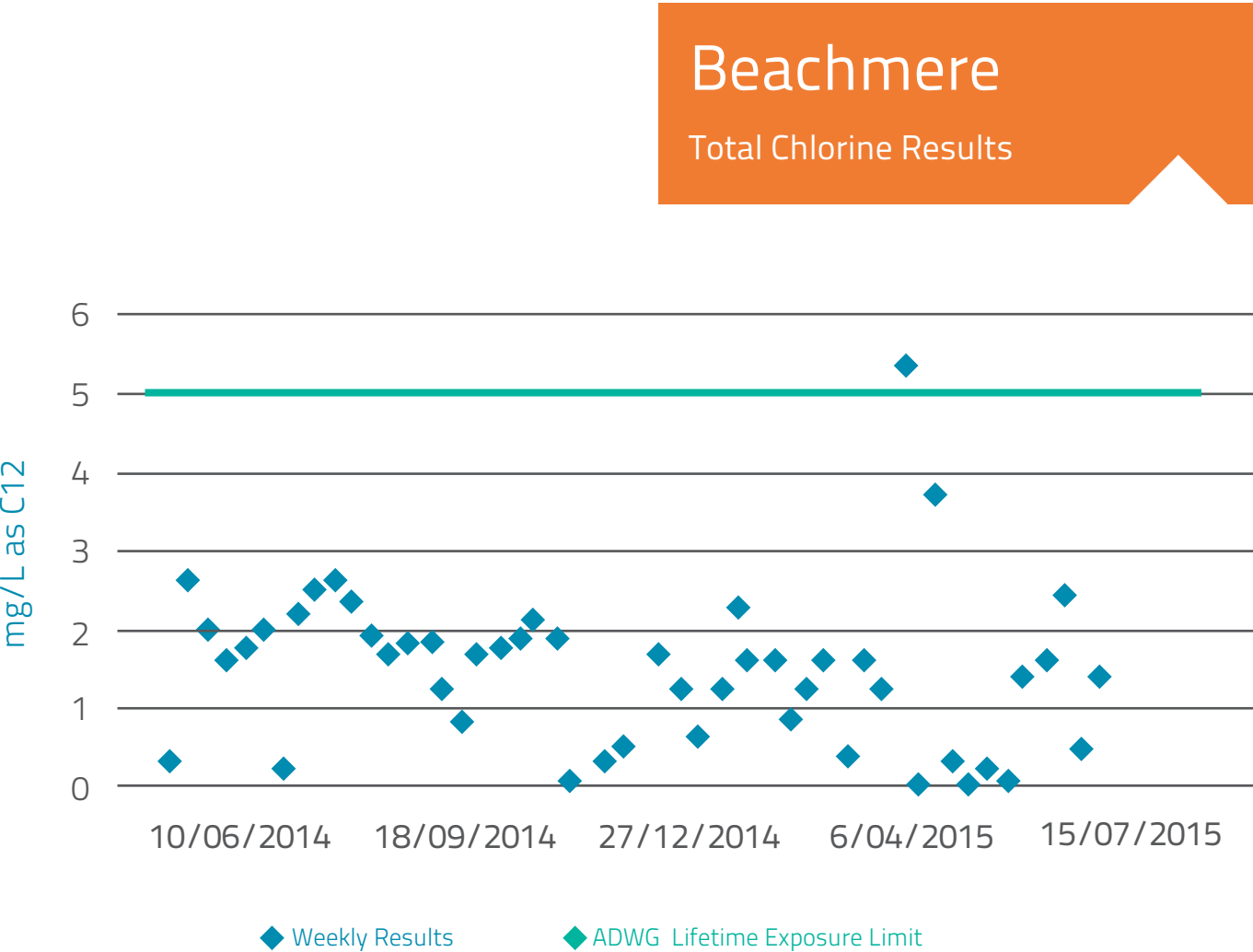
Samples in which *E. coli* was not detected



Water Quality Summary

Unitywater, like other water service providers in Australia, is also obligated to provide customers with water that meets the health related limits as specified in the Australian Drinking Water Guidelines (ADWG) 2011. In 2014-15, there was one instance where the ADWG long term health limit was not met for chlorine at a reservoir in Beachmere. One operational issue resulted in total chlorine measured at 5.4mg/L against an ADWG limit of 5.0mg/L. This was resolved quickly with no long term impacts.

It should be noted that the ADWG limit is based on long-term exposure at the guideline level; meaning that it is considered safe to consume water with 5.0mg/L chlorine for a lifetime. Given that drinking water usually contains chlorine at levels well below the guideline limit (refer to the graph below), a short term exceedence is not considered to represent a health impact by health authorities. If you would like to seek further assurance on this point please contact Queensland Health on 13 HEALTH (13 43 25 84).



Your suburb and its water supply region

Suburb	Scheme
ALBANY CREEK.....	Pine Rivers South
ALEXANDRA HEADLAND.....	Maroochy South
ARANA HILLS.....	Pine Rivers South
AROONA.....	Caloundra
BANKSIA BEACH.....	Bribie Island
BATTERY HILL.....	Caloundra
BEACHMERE.....	Caboolture
BEERBURRUM.....	Railway Towns
BEERWAH.....	Railway Towns
BELLARA.....	Bribie Island
BELLMERE.....	Caboolture
BIRTINYA.....	Caloundra
BLI BLI.....	Maroochy North
BONGAREE.....	Bribie Island
BRAY PARK.....	Pine Rivers South
BRENDALE.....	Pine Rivers South
BRIBIE ISLAND.....	Bribie Island
BUDDINA.....	Caloundra
BUDERIM.....	Maroochy South
BUNYA.....	Pine Rivers South
BURPENGARY.....	Caboolture
BURPENGARY EAST.....	Caboolture
CABOOLTURE.....	Caboolture
CABOOLTURE SOUTH.....	Caboolture
CALOUNDRA.....	Caloundra
CALOUNDRA WEST.....	Caloundra
CASHMERE.....	Pine Rivers South
CLEAR MOUNTAIN.....	Pine Rivers South
CLONTARF.....	Redcliffe
COES CREEK.....	Maroochy North
COOLUM BEACH.....	Maroochy North

Suburb	Scheme
COORAN.....	Noosa
COOROY.....	Noosa
COTTON TREE.....	Maroochy South
CURRIMUNDI.....	Caloundra
D’AGUILAR.....	Woodford
DAKABIN.....	Pine Rivers North
DAYBORO.....	Dayboro
DECEPTION BAY.....	Caboolture
DICKY BEACH.....	Caloundra
DIDDILLIBAH.....	Maroochy South
DONNYBROOK.....	Caboolture
EATONS HILL.....	Pine Rivers South
ELIMBAH.....	Caboolture
EUMUNDI.....	Maroochy North
EVERTON HILLS.....	Pine Rivers South
EVERTON PARK.....	Pine Rivers South
FERNY HILLS.....	Pine Rivers South
FOREST GLEN.....	Maroochy South
GLASSHOUSE MOUNTAINS.....	Railway Towns
GOLDEN BEACH.....	Caloundra
GRIFFIN.....	Pine Rivers North
HARBOUR HILL.....	Maroochy South
HIGHWORTH.....	Maroochy North
JOYNER.....	Pine Rivers South
KALLANGUR.....	Pine Rivers North
KEIL MOUNTAIN.....	Maroochy South
KENILWORTH.....	Kenilworth
KINGS BEACH.....	Caloundra
KIPPA-RING.....	Redcliffe
KULANGOOR.....	Maroochy North
KULUIN.....	Maroochy South

Suburb	Scheme
KUNDA PARK.....	Maroochy South
LANDSBOROUGH.....	Railway Towns
LAWNTON.....	Pine Rivers North
LITTLE MOUNTAIN.....	Caloundra
MALENY.....	Maleny
MARCOOLA.....	Maroochy North
MARCUS BEACH.....	Noosa
MARGATE.....	Redcliffe
MAROOCHYDORE.....	Maroochy South
MERIDIAN PLAINS.....	Caloundra
MINYAMA.....	Caloundra
MOFFAT BEACH.....	Caloundra
MOOLOOLABA.....	Maroochy South
MOOLOOLAH VALLEY.....	Railway Towns
MORAYFIELD.....	Caboolture
MOUNT COOLUM.....	Maroochy North
MOUNTAIN CREEK.....	Maroochy South
MUDJIMBA.....	Maroochy North
MURRUMBA DOWNS.....	Pine Rivers North
NAMBOUR.....	Maroochy North
NARANGBA.....	Caboolture
NEWPORT.....	Redcliffe
NINGI.....	Caboolture
NOOSA HEADS.....	Noosa
NOOSAVILLE.....	Noosa
NORTH ARM.....	Maroochy North
NORTH LAKES.....	Pine Rivers North
PACIFIC PARADISE.....	Maroochy North
PALMWOODS.....	Maroochy South
PARKLANDS.....	Maroochy North
PELICAN WATERS.....	Caloundra

Suburb	Scheme
PEREGIAN BEACH.....	Noosa
PEREGIAN SPRINGS.....	Maroochy North
PETRIE.....	Pine Rivers North
POINT CARTWRIGHT.....	Caloundra
POMONA.....	Noosa
REDCLIFFE.....	Redcliffe
ROSEMOUNT.....	Maroochy North
ROTHWELL.....	Redcliffe
SAMFORD.....	Pine Rivers South
SANDSTONE POINT.....	Caboolture
SCARBOROUGH.....	Redcliffe
SIPPY DOWNS.....	Maroochy South
SOLANDER.....	Bribie Island
STRATHPINE.....	Pine Rivers South
SUNRISE BEACH.....	Noosa
SUNSHINE BEACH.....	Noosa
TANAWHA.....	Maroochy South
TEWANTIN.....	Noosa
TOORBUL.....	Caboolture
TOWEN MOUNTAIN.....	Maroochy North
TWIN WATERS.....	Maroochy North
UPPER CABOOLTURE.....	Caboolture
WAMURAN.....	Caboolture
WARANA.....	Caloundra
WARNER.....	Pine Rivers South
WOODFORD.....	Woodford
WOODY POINT.....	Redcliffe
WOOMBYE.....	Maroochy South
WOORIM.....	Bribie Island
WURTULLA.....	Caloundra
YANDINA.....	Maroochy North
YROOMBA.....	Maroochy North

Drinking water quality performance - overview

The table below briefly summarises drinking water performance across three categories, by each supply region.

Microbiological performance is said to have met the performance requirement if more than 98% of samples from the supply region returned a nil result for *E. coli*.

Chemical (Health) performance is said to have met the performance requirement if the 95th percentile (a statistical calculation) for each chemical is below the Australian Drinking Water Guidelines health value for that chemical.

Chemical (Aesthetic) performance is said to have met the performance requirement if the average result for each chemical is below the Australian Drinking Water Guidelines aesthetic value for that chemical.

Supply Region	Microbiological Performance	Chemical (Health) Performance	Chemical (Aesthetic) Performance
Bribie Island	✓	✓	✓
Caboolture	✓	✓	✓
Caloundra	✓	✓	✓
Dayboro	✓	✓	✓
Kenilworth	✓	✓	✓
Maleny	✓	✓	✓
Maroochy North	✓	✓	✓
Maroochy South	✓	✓	✓
Noosa	✓	✓	✓
Pine Rivers North	✓	✓	✓
Pine Rivers South	✓	✓	✓
Railway Towns	✓	✓	✓
Redcliffe	✓	✓	✓
Woodford	✓	✓	✓

✓ ✓ means that performance requirement was met

Microbiological performance in detail

Supply Region	Number of Samples	Number of Positive Results	Required <i>E. coli</i> Performance	Actual Performance	Met PHR
Bribie Island	130	0	98%	100%	✓
Caboolture	775	2	98%	99.7%	✓
Caloundra	567	0	98%	100%	✓
Dayboro	152	0	98%	100%	✓
Kenilworth	104	0	98%	100%	✓
Maleny	152	0	98%	100%	✓
Maroochy North	445	0	98%	100%	✓
Maroochy South	550	0	98%	100%	✓
Noosa	528	0	98%	100%	✓
Pine Rivers North	322	0	98%	100%	✓
Pine Rivers South	697	0	98%	100%	✓
Railway Towns	581	0	98%	100%	✓
Redcliffe	257	0	98%	100%	✓
Woodford	129	1	98%	99.2%	✓
All Schemes	5389	3	98%	99.94%	✓

PHR = Public Health Regulation 2005

There were three low level detections of *E. coli* in 2014-2015. *E. coli* is an organism used as a potential indicator of water contamination but which can also sometimes be found in the natural environment. In all cases we investigated the circumstances around these detections and did not identify any source of contamination. Investigative water quality sampling undertaken at the time did not return any additional *E. coli* results, which would suggest that these events were transient in nature and do not represent any systemic issues with the water supply.

Chemical performance in detail

Bribie Island – Chemical (health) performance

Parameter	Units	Number Of Samples	Min Result	Max Result	Average Result	95th Percentile	ADWG Guideline	Met ADWG
Antimony	mg/L	1	<0.001	<0.001	<0.001	<0.001	0.003	✓
Arsenic	mg/L	1	<0.001	<0.001	<0.001	<0.001	0.01	✓
Barium	mg/L	1	<0.02	<0.02	<0.02	<0.02	2	✓
Beryllium	mg/L	1	<0.001	<0.001	<0.001	<0.001	0.06	✓
Boron	mg/L	1	<0.1	<0.1	<0.1	<0.1	4	✓
Bromate	mg/L	4	<0.005	0.008	<0.005	0.007	0.02	✓
Cadmium	mg/L	1	<0.001	<0.001	<0.001	<0.001	0.002	✓
Chlorine Free	mg/L	129	<0.1	2.2	0.9	1.8	5	✓
Chlorine Total	mg/L	129	<0.1	2.2	1.1	2.0	5	✓
Chromium	mg/L	1	<0.01	<0.01	<0.01	<0.01	0.05	✓
Copper	mg/L	60	<0.01	<0.01	<0.01	<0.01	2	✓
Cyanogen Chloride	mg/L	4	<0.004	<0.004	<0.004	<0.004	0.08	✓
Fluoride	mg/L	60	0.29	0.95	0.83	0.93	1.5	✓
Lead	mg/L	54	<0.01	<0.01	<0.01	<0.01	0.01	✓
Manganese	mg/L	60	<0.01	<0.01	<0.01	<0.01	0.5	✓
Mercury	mg/L	1	<0.0005	<0.0005	<0.0005	<0.0005	0.001	✓
Nickel	mg/L	54	<0.01	<0.01	<0.01	<0.01	0.02	✓
Nitrate NO ³ (calc)	mg/L	60	0.79	4.72	2.25	3.69	50	✓
Nitrite as NO ²	mg/L	60	<0.02	0.1	<0.02	<0.02	3	✓
Selenium	mg/L	1	<0.01	<0.01	<0.01	<0.01	0.01	✓
Sulphate	mg/L	1	26	26	26	26	500	✓
THMs	ug/L	12	38	119	75	118	250	✓

Bribie Island – Chemical (aesthetic) performance

Parameter	Units	Number Of Samples	Min Result	Max Result	Average Result	95th Percentile	ADWG Guideline	Met ADWG
Aluminium	mg/L	60	<0.02	0.04	0.02	0.04	0.2	✓
Colour (Apparent)	PCU	60	<1	1.7	<1	1.4	a	✓
Colour (True)	PCU	60	<1	<1	<1	<1	15	✓
Conductivity	µS/cm	130	167	312	246	295	b	✓
Copper	mg/L	60	<0.01	<0.01	<0.01	<0.01	1	✓
Iron	mg/L	60	<0.01	0.05	<0.01	0.02	0.3	✓
Manganese	mg/L	60	<0.01	<0.01	<0.01	<0.01	0.1	✓
pH	pH Units	130	7.3	8.6	8.0	8.3	6.5-9.2	✓
Sodium	mg/L	4	15	24	21.3	23.9	180	✓
Temperature	°C	127	17.4	30.7	25.0	29.3	c	✓
Turbidity	NTU	130	<0.05	19	0.26	0.22	5	✓
Zinc	mg/L	60	<0.01	<0.01	<0.01	<0.01	3	✓

- a - No guideline limit for Colour (Apparent)
- b - ADWG guideline limit is for 600mg/L as total dissolved solids. This is approximately equal to a conductivity of 1000µS/cm.
- c - No guideline limit for Temperature

Caboolture – Chemical (health) performance

Parameter	Units	Number Of Samples	Min Result	Max Result	Average Result	95th Percentile	ADWG Guideline	Met ADWG
Antimony	mg/L	3	<0.001	<0.001	<0.001	<0.001	0.003	✓
Arsenic	mg/L	3	<0.001	0.001	<0.001	0.001	0.01	✓
Barium	mg/L	3	<0.02	<0.02	<0.02	<0.02	2	✓
Beryllium	mg/L	3	<0.001	<0.001	<0.001	<0.001	0.06	✓
Boron	mg/L	3	<0.1	<0.1	<0.1	<0.1	4	✓
Bromate	mg/L	12	<0.005	0.01	<0.005	<0.01	0.02	✓
Cadmium	mg/L	3	<0.001	<0.001	<0.001	<0.001	0.002	✓
Chlorine Free	mg/L	763	<0.1	5.1	0.2	1.0	5	✓
Chlorine Total	mg/L	763	<0.1	5.4	0.9	2.7	5	✓
Chromium	mg/L	3	<0.01	<0.01	<0.01	<0.01	0.05	✓
Copper	mg/L	263	<0.01	<0.01	<0.01	<0.01	2	✓
Cyanogen Chloride	mg/L	11	<0.004	<0.004	<0.004	<0.004	0.08	✓
Fluoride	mg/L	287	0.2	0.96	0.83	0.93	1.5	✓
Lead	mg/L	237	<0.01	<0.01	<0.01	<0.01	0.01	✓
Manganese	mg/L	287	<0.01	0.02	<0.01	<0.01	0.5	✓
Mercury	mg/L	3	<0.0005	<0.0005	<0.0005	<0.0005	0.001	✓
Monochloramine NH ² Cl	mg/L	665	<0.02	2.21	0.41	1.62	3	✓
Nickel	mg/L	237	<0.01	<0.01	<0.01	<0.01	0.02	✓
Nitrate NO ³ (calc)	mg/L	718	0.05	7.13	1.63	3.37	50	✓
Nitrite as NO ²	mg/L	718	<0.02	1.77	0.18	0.63	3	✓
Selenium	mg/L	3	<0.01	<0.01	<0.01	<0.01	0.01	✓
Sulphate	mg/L	3	25	26	25.7	26	500	✓
THMs	ug/L	24	29	107	63	105	250	✓

Caboolture – Chemical (aesthetic) performance

Parameter	Units	Number Of Samples	Min Result	Max Result	Average Result	95th Percentile	ADWG Guideline	Met ADWG
Aluminium	mg/L	287	<0.02	0.06	0.02	0.04	0.2	✓
Ammonia Free NH ₃ (calc)	mg/L	665	<0.02	2.12	0.12	0.40	0.5	✓
Colour (Apparent)	PCU	287	<1	3.9	1.1	2.2	a	✓
Colour (True)	PCU	287	<1	1.4	<1	1.1	15	✓
Conductivity	µS/cm	770	162	358	235	286	b	✓
Copper	mg/L	263	<0.01	<0.01	<0.01	<0.01	1	✓
Iron	mg/L	287	<0.01	0.04	<0.01	0.02	0.3	✓
Manganese	mg/L	287	<0.01	0.02	<0.01	<0.01	0.1	✓
pH	pH Units	770	6.9	8.8	7.7	8.4	6.5-9.2	✓
Sodium	mg/L	12	12	24	20.4	24.0	180	✓
Temperature	°C	755	16.7	31.2	23.6	28.3	c	✓
Total Hardness	mg/L as CaCO ₃	11	55	67	62	67	200	✓
Turbidity	NTU	770	<0.05	0.69	0.12	0.23	5	✓
Zinc	mg/L	263	<0.01	<0.01	<0.01	<0.01	3	✓

- a - No guideline limit for Colour (Apparent)
- b - ADWG guideline limit is for 600mg/L as total dissolved solids. This is approximately equal to a conductivity of 1000µS/cm.
- c - No guideline limit for Temperature

Caloundra – Chemical (health) performance

Parameter	Units	Number Of Samples	Min Result	Max Result	Average Result	95th Percentile	ADWG Guideline	Met ADWG
Antimony	mg/L	1	<0.001	<0.001	<0.001	<0.001	0.003	✓
Arsenic	mg/L	1	<0.001	<0.001	<0.001	<0.001	0.01	✓
Barium	mg/L	1	<0.02	<0.02	<0.02	<0.02	2	✓
Beryllium	mg/L	1	<0.001	<0.001	<0.001	<0.001	0.06	✓
Boron	mg/L	1	<0.1	<0.1	<0.1	<0.1	4	✓
Bromate	mg/L	4	<0.005	0.01	<0.005	0.009	0.02	✓
Cadmium	mg/L	1	<0.001	<0.001	<0.001	<0.001	0.002	✓
Chlorine Free	mg/L	572	0.1	1.9	0.95	1.4	5	✓
Chlorine Total	mg/L	572	0.2	2	1.09	1.50	5	✓
Chromium	mg/L	1	<0.01	<0.01	<0.01	<0.01	0.05	✓
Copper	mg/L	234	<0.01	0.01	<0.01	<0.01	2	✓
Cyanogen Chloride	mg/L	3	<0.004	<0.004	<0.004	<0.004	0.08	✓
Fluoride	mg/L	246	0.33	0.94	0.82	0.89	1.5	✓
Lead	mg/L	234	<0.01	<0.01	<0.01	<0.01	0.01	✓
Manganese	mg/L	249	<0.01	0.02	<0.01	<0.01	0.5	✓
Mercury	mg/L	1	<0.0005	<0.0005	<0.0005	<0.0005	0.001	✓
Nickel	mg/L	234	<0.01	<0.01	<0.01	<0.01	0.02	✓
Nitrate NO ³ (calc)	mg/L	246	0.31	1.83	0.77	1.66	50	✓
Nitrite as NO ²	mg/L	246	<0.02	<0.02	<0.02	<0.02	3	✓
Selenium	mg/L	1	<0.01	<0.01	<0.01	<0.01	0.01	✓
Sulphate	mg/L	1	16	16	16	16	500	✓
THMs	ug/L	12	24	51	37	51	250	✓

Caloundra – Chemical (aesthetic) performance

Parameter	Units	Number Of Samples	Min Result	Max Result	Average Result	95th Percentile	ADWG Guideline	Met ADWG
Aluminium	mg/L	249	<0.02	0.04	<0.02	0.02	0.2	✓
Colour (Apparent)	PCU	246	<1	2.5	<1	1.48	a	✓
Colour (True)	PCU	246	<1	1.4	<1	<1	15	✓
Conductivity	µS/cm	567	143	280	190	242	b	✓
Copper	mg/L	234	<0.01	0.01	<0.01	<0.01	1	✓
Iron	mg/L	249	<0.01	0.11	<0.01	0.02	0.3	✓
Manganese	mg/L	249	<0.01	0.02	<0.01	<0.01	0.1	✓
pH	pH Units	567	6.6	8.6	7.5	7.9	6.5-9.2	✓
Sodium	mg/L	4	9	13	11.0	12.9	180	✓
Temperature	°C	564	16.4	29.7	23.4	28.2	c	✓
Turbidity	NTU	567	<0.05	0.93	0.12	0.27	5	✓
Zinc	mg/L	234	<0.01	0.01	<0.01	<0.01	3	✓

- a - No guideline limit for Colour (Apparent)
- b - ADWG guideline limit is for 600mg/L as total dissolved solids. This is approximately equal to a conductivity of 1000µS/cm.
- c - No guideline limit for Temperature

Dayboro – Chemical (health) performance

Parameter	Units	Number Of Samples	Min Result	Max Result	Average Result	95th Percentile	ADWG Guideline	Met ADWG
Antimony	mg/L	1	<0.001	<0.001	<0.001	<0.001	0.003	✓
Arsenic	mg/L	1	<0.001	<0.001	<0.001	<0.001	0.01	✓
Barium	mg/L	1	0.02	0.02	0.02	0.02	2	✓
Beryllium	mg/L	1	<0.001	<0.001	<0.001	<0.001	0.06	✓
Boron	mg/L	1	<0.1	<0.1	<0.1	<0.1	4	✓
Bromate	mg/L	4	<0.005	<0.005	<0.005	<0.005	0.02	✓
Cadmium	mg/L	1	<0.001	<0.001	<0.001	<0.001	0.002	✓
Chlorine Free	mg/L	154	0.4	1.4	0.90	1.10	5	✓
Chlorine Total	mg/L	154	0.5	1.6	0.98	1.30	5	✓
Chromium	mg/L	1	<0.01	<0.01	<0.01	<0.01	0.05	✓
Copper	mg/L	24	<0.01	0.01	<0.01	<0.01	2	✓
Cyanogen Chloride	mg/L	3	<0.004	<0.004	<0.004	<0.004	0.08	✓
Fluoride	mg/L	36	0.81	0.95	0.89	0.93	1.5	✓
Lead	mg/L	24	<0.01	<0.01	<0.01	<0.01	0.01	✓
Manganese	mg/L	36	<0.01	<0.01	<0.01	<0.01	0.5	✓
Mercury	mg/L	1	<0.0005	<0.0005	<0.0005	<0.0005	0.001	✓
Nickel	mg/L	24	<0.01	<0.01	<0.01	<0.01	0.02	✓
Nitrate NO ³ (calc)	mg/L	36	0.17	3.93	1.25	3.69	50	✓
Nitrite as NO ²	mg/L	36	<0.02	<0.02	<0.02	<0.02	3	✓
Selenium	mg/L	1	<0.01	<0.01	<0.01	<0.01	0.01	✓
Sulphate	mg/L	1	7	7	7	7	500	✓
THMs	ug/L	12	12	64	23	44	250	✓

Dayboro – Chemical (aesthetic) performance

Parameter	Units	Number Of Samples	Min Result	Max Result	Average Result	95th Percentile	ADWG Guideline	Met ADWG
Aluminium	mg/L	36	<0.02	0.02	<0.02	0.02	0.2	✓
Colour (Apparent)	PCU	36	<1	2.2	<1	1.25	a	✓
Colour (True)	PCU	36	<1	<1	<1	<1	15	✓
Conductivity	µS/cm	152	244	375	319	363	b	✓
Copper	mg/L	24	<0.01	0.01	<0.01	<0.01	1	✓
Iron	mg/L	36	<0.01	0.1	0.01	0.05	0.3	✓
Manganese	mg/L	36	<0.01	<0.01	<0.01	<0.01	0.1	✓
pH	pH Units	152	7.1	8.1	7.6	7.9	6.5-9.2	✓
Sodium	mg/L	4	33	44	37.8	43.1	180	✓
Temperature	°C	151	16.1	28.5	22.9	27.5	c	✓
Turbidity	NTU	152	<0.05	0.6	0.15	0.25	5	✓
Zinc	mg/L	24	<0.01	0.02	<0.01	0.02	3	✓
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- a - No guideline limit for Colour (Apparent)
- b - ADWG guideline limit is for 600mg/L as total dissolved solids. This is approximately equal to a conductivity of 1000µS/cm.
- c - No guideline limit for Temperature

Kenilworth – Chemical (health) performance

Parameter	Units	Number Of Samples	Min Result	Max Result	Average Result	95th Percentile	ADWG Guideline	Met ADWG
Antimony	mg/L	1	0.001	0.001	0.001	0.001	0.003	✓
Arsenic	mg/L	1	<0.001	0.001	<0.001	0.001	0.01	✓
Barium	mg/L	1	0.02	0.02	0.02	0.02	2	✓
Beryllium	mg/L	1	<0.001	<0.001	<0.001	<0.001	0.06	✓
Boron	mg/L	1	<0.1	<0.1	<0.1	<0.1	4	✓
Bromate	mg/L	4	<0.005	<0.005	<0.005	<0.005	0.02	✓
Cadmium	mg/L	1	<0.001	<0.001	<0.001	<0.001	0.002	✓
Chlorine Free	mg/L	104	<0.1	3.8	0.96	2.39	5	✓
Chlorine Total	mg/L	104	0.1	3.8	1.04	2.40	5	✓
Chromium	mg/L	1	<0.01	<0.01	<0.01	<0.01	0.05	✓
Copper	mg/L	24	<0.01	<0.01	<0.01	<0.01	2	✓
Cyanogen Chloride	mg/L	3	<0.004	<0.004	<0.004	<0.004	0.08	✓
Fluoride	mg/L	24	0.18	0.86	0.32	0.82	1.5	✓
Lead	mg/L	20	<0.01	<0.01	<0.01	<0.01	0.01	✓
Manganese	mg/L	24	<0.01	0.06	<0.01	<0.01	0.5	✓
Mercury	mg/L	1	<0.0005	<0.0005	<0.0005	<0.0005	0.001	✓
Nickel	mg/L	20	<0.01	<0.01	<0.01	<0.01	0.02	✓
Nitrate NO ³ (calc)	mg/L	26	0.16	2.7	0.57	1.55	50	✓
Nitrite as NO ²	mg/L	26	<0.02	0.85	0.06	0.44	3	✓
Selenium	mg/L	1	<0.01	<0.01	<0.01	<0.01	0.01	✓
Sulphate	mg/L	1	8	8	8	8	500	✓
THMs	ug/L	12	6	160	58	155	250	✓

Kenilworth – Chemical (aesthetic) performance

Parameter	Units	Number Of Samples	Min Result	Max Result	Average Result	95th Percentile	ADWG Guideline	Met ADWG
Aluminium	mg/L	24	<0.02	0.04	<0.02	0.04	0.2	✓
Colour (Apparent)	PCU	24	<1	7.1	<1	1.39	a	✓
Colour (True)	PCU	24	<1	<1	<1	<1	15	✓
Conductivity	µS/cm	104	179	414	343	407	b	✓
Copper	mg/L	24	<0.01	<0.01	<0.01	<0.01	1	✓
Iron	mg/L	24	<0.01	0.07	<0.01	0.02	0.3	✓
Manganese	mg/L	24	<0.01	0.06	<0.01	<0.01	0.1	✓
pH	pH Units	104	7.1	7.8	7.4	7.7	6.5-9.2	✓
Sodium	mg/L	4	22	51	42.8	50.7	180	✓
Temperature	°C	101	18.1	31.6	24.3	29.7	c	✓
Total Hardness	mg/L as CaCO ₃	12	62	85	75	83	200	✓
Turbidity	NTU	104	<0.05	1.2	0.10	0.22	5	✓
Zinc	mg/L	24	<0.01	<0.01	<0.01	<0.01	3	✓

- a - No guideline limit for Colour (Apparent)
- b - ADWG guideline limit is for 600mg/L as total dissolved solids. This is approximately equal to a conductivity of 1000µS/cm.
- c - No guideline limit for Temperature

Maleny – Chemical (health) performance

Parameter	Units	Number Of Samples	Min Result	Max Result	Average Result	95th Percentile	ADWG Guideline	Met ADWG
Antimony	mg/L	1	<0.001	<0.001	<0.001	<0.001	0.003	✓
Arsenic	mg/L	1	<0.001	<0.001	<0.001	<0.001	0.01	✓
Barium	mg/L	1	<0.02	<0.02	<0.02	<0.02	2	✓
Beryllium	mg/L	1	<0.001	<0.001	<0.001	<0.001	0.06	✓
Boron	mg/L	1	<0.1	<0.1	<0.1	<0.1	4	✓
Bromate	mg/L	4	<0.005	0.01	0.006	0.010	0.02	✓
Cadmium	mg/L	1	<0.001	<0.001	<0.001	<0.001	0.002	✓
Chlorine Free	mg/L	154	0.2	1.5	0.94	1.2	5	✓
Chlorine Total	mg/L	154	0.2	1.8	1.00	1.34	5	✓
Chromium	mg/L	1	<0.01	<0.01	<0.01	<0.01	0.05	✓
Copper	mg/L	60	<0.01	0.01	<0.01	<0.01	2	✓
Cyanogen Chloride	mg/L	3	<0.004	<0.004	<0.004	<0.004	0.08	✓
Fluoride	mg/L	60	0.22	0.94	0.78	0.91	1.5	✓
Lead	mg/L	60	<0.01	<0.01	<0.01	<0.01	0.01	✓
Manganese	mg/L	60	<0.01	0.01	<0.01	<0.01	0.5	✓
Mercury	mg/L	1	<0.0005	<0.0005	<0.0005	<0.0005	0.001	✓
Nickel	mg/L	60	<0.01	<0.01	<0.01	<0.01	0.02	✓
Nitrate NO ³ (calc)	mg/L	60	0.38	1.75	0.79	1.68	50	✓
Nitrite as NO ²	mg/L	60	<0.02	<0.02	<0.02	<0.02	3	✓
Selenium	mg/L	1	<0.01	<0.01	<0.01	<0.01	0.01	✓
Sulphate	mg/L	1	15	15	15	15	500	✓
THMs	ug/L	12	16	50	34	49	250	✓

Maleny – Chemical (aesthetic) performance

Parameter	Units	Number Of Samples	Min Result	Max Result	Average Result	95th Percentile	ADWG Guideline	Met ADWG
Aluminium	mg/L	60	<0.02	0.04	<0.02	0.03	0.2	✓
Colour (Apparent)	PCU	60	<1	1.5	<1	1.21	a	✓
Colour (True)	PCU	60	<1	<1	<1	<1	15	✓
Conductivity	µS/cm	152	159	215	193	206	b	✓
Copper	mg/L	60	<0.01	0.01	<0.01	<0.01	1	✓
Iron	mg/L	60	<0.01	0.03	<0.01	0.02	0.3	✓
Manganese	mg/L	60	<0.01	0.01	<0.01	<0.01	0.1	✓
pH	pH Units	152	7.4	9.1	8.0	8.8	6.5-9.2	✓
Sodium	mg/L	4	8	11	10.0	11.0	180	✓
Temperature	°C	151	15.9	27.7	21.3	25.7	c	✓
Turbidity	NTU	152	<0.05	0.46	0.10	0.20	5	✓
Zinc	mg/L	60	<0.01	0.03	<0.01	0.01	3	✓

- a - No guideline limit for Colour (Apparent)
- b - ADWG guideline limit is for 600mg/L as total dissolved solids. This is approximately equal to a conductivity of 1000µS/cm.
- c - No guideline limit for Temperature

Maroochy North – Chemical (health) performance

Parameter	Units	Number Of Samples	Min Result	Max Result	Average Result	95th Percentile	ADWG Guideline	Met ADWG
Antimony	mg/L	2	0.001	0.001	0.001	0.001	0.003	✓
Arsenic	mg/L	2	<0.001	<0.001	<0.001	<0.001	0.01	✓
Barium	mg/L	2	<0.02	<0.02	<0.02	<0.02	2	✓
Beryllium	mg/L	2	<0.001	<0.001	<0.001	<0.001	0.06	✓
Boron	mg/L	2	<0.1	<0.1	<0.1	<0.1	4	✓
Bromate	mg/L	8	<0.005	0.02	0.006	0.016	0.02	✓
Cadmium	mg/L	2	<0.001	<0.001	<0.001	<0.001	0.002	✓
Chlorine Free	mg/L	447	<0.1	1.9	0.72	1.40	5	✓
Chlorine Total	mg/L	448	<0.1	1.9	0.83	1.50	5	✓
Chromium	mg/L	2	<0.01	<0.01	<0.01	<0.01	0.05	✓
Copper	mg/L	188	<0.01	<0.01	<0.01	<0.01	2	✓
Cyanogen Chloride	mg/L	6	<0.004	<0.004	<0.004	<0.004	0.08	✓
Fluoride	mg/L	188	0.21	0.96	0.69	0.93	1.5	✓
Lead	mg/L	188	<0.01	<0.01	<0.01	<0.01	0.01	✓
Manganese	mg/L	188	<0.01	0.07	<0.01	0.02	0.5	✓
Mercury	mg/L	2	<0.0005	<0.0005	<0.0005	<0.0005	0.001	✓
Nickel	mg/L	188	<0.01	<0.01	<0.01	<0.01	0.02	✓
Nitrate NO ³ (calc)	mg/L	188	0.09	1.62	0.50	0.97	50	✓
Nitrite as NO ²	mg/L	188	<0.02	<0.02	<0.02	<0.02	3	✓
Selenium	mg/L	2	<0.01	<0.01	<0.01	<0.01	0.01	✓
Sulphate	mg/L	2	25	26	25.5	26	500	✓
THMs	ug/L	12	45	116	70	101	250	✓

Maroochy North – Chemical (aesthetic) performance

Parameter	Units	Number Of Samples	Min Result	Max Result	Average Result	95th Percentile	ADWG Guideline	Met ADWG
Aluminium	mg/L	188	<0.02	0.14	<0.02	0.03	0.2	✓
Colour (Apparent)	PCU	188	<1	7.6	1.23	2.77	a	✓
Colour (True)	PCU	188	<1	2.1	<1	1.20	15	✓
Conductivity	µS/cm	445	145	305	234	290	b	✓
Copper	mg/L	188	<0.01	<0.01	<0.01	<0.01	1	✓
Iron	mg/L	188	<0.01	0.24	0.01	0.05	0.3	✓
Manganese	mg/L	188	<0.01	0.07	<0.01	0.02	0.1	✓
pH	pH Units	445	7	8.9	7.6	8.4	6.5-9.2	✓
Sodium	mg/L	8	12	34	24.1	32.6	180	✓
Temperature	°C	435	16.1	30.9	23.3	27.8	c	✓
Turbidity	NTU	445	<0.05	4.1	0.16	0.31	5	✓
Zinc	mg/L	188	<0.01	<0.01	<0.01	<0.01	3	✓

- a - No guideline limit for Colour (Apparent)
- b - ADWG guideline limit is for 600mg/L as total dissolved solids. This is approximately equal to a conductivity of 1000µS/cm.
- c - No guideline limit for Temperature

Maroochy South – Chemical (health) performance

Parameter	Units	Number Of Samples	Min Result	Max Result	Average Result	95th Percentile	ADWG Guideline	Met ADWG
Antimony	mg/L	1	0.002	0.002	0.001	0.001	0.003	✓
Arsenic	mg/L	1	<0.001	<0.001	<0.001	<0.001	0.01	✓
Barium	mg/L	1	<0.02	<0.02	<0.02	<0.02	2	✓
Beryllium	mg/L	1	<0.001	<0.001	<0.001	<0.001	0.06	✓
Boron	mg/L	1	<0.1	<0.1	<0.1	<0.1	4	✓
Bromate	mg/L	6	<0.005	0.01	0.007	0.010	0.02	✓
Cadmium	mg/L	1	<0.001	<0.001	<0.001	<0.001	0.002	✓
Chlorine Free	mg/L	548	<0.1	2.1	1.08	1.60	5	✓
Chlorine Total	mg/L	549	0.1	2.5	1.17	1.80	5	✓
Chromium	mg/L	1	<0.01	<0.01	<0.01	<0.01	0.05	✓
Copper	mg/L	213	<0.01	0.01	<0.01	<0.01	2	✓
Cyanogen Chloride	mg/L	5	<0.004	<0.004	<0.004	<0.004	0.08	✓
Fluoride	mg/L	213	0.31	0.98	0.80	0.89	1.5	✓
Lead	mg/L	213	<0.01	<0.01	<0.01	<0.01	0.01	✓
Manganese	mg/L	213	<0.01	<0.01	<0.01	<0.01	0.5	✓
Mercury	mg/L	1	<0.0005	<0.0005	<0.0005	<0.0005	0.001	✓
Nickel	mg/L	213	<0.01	<0.01	<0.01	<0.01	0.02	✓
Nitrate NO ³ (calc)	mg/L	213	0.29	1.72	0.76	1.60	50	✓
Nitrite as NO ²	mg/L	213	<0.02	<0.02	<0.02	<0.02	3	✓
Selenium	mg/L	1	<0.01	<0.01	<0.01	<0.01	0.01	✓
Sulphate	mg/L	1	15	15	15	15	500	✓
THMs	ug/L	21	<5	31	13	29	250	✓

Maroochy South – Chemical (aesthetic) performance

Parameter	Units	Number Of Samples	Min Result	Max Result	Average Result	95th Percentile	ADWG Guideline	Met ADWG
Aluminium	mg/L	213	<0.02	0.04	<0.02	0.02	0.2	✓
Colour (Apparent)	PCU	213	<1	3.8	<1	1.20	a	✓
Colour (True)	PCU	213	<1	1	<1	<1	15	✓
Conductivity	µS/cm	544	143	664	186	203	b	✓
Copper	mg/L	213	<0.01	0.01	<0.01	<0.01	1	✓
Iron	mg/L	213	<0.01	0.04	<0.01	0.02	0.3	✓
Manganese	mg/L	213	<0.01	<0.01	<0.01	<0.01	0.1	✓
pH	pH Units	544	6.9	9.3	7.5	8.2	6.5-9.2	✓
Sodium	mg/L	6	8	12	10.0	11.8	180	✓
Temperature	°C	531	16	31	23.2	28.6	c	✓
Total Hardness	mg/L as CaCO ₃	9	52	62	58	62	200	✓
Turbidity	NTU	544	<0.05	0.51	0.11	0.20	5	✓
Zinc	mg/L	213	<0.01	0.02	<0.01	<0.01	3	✓

- a - No guideline limit for Colour (Apparent)
- b - ADWG guideline limit is for 600mg/L as total dissolved solids. This is approximately equal to a conductivity of 1000µS/cm.
- c - No guideline limit for Temperature

Noosa – Chemical (health) performance

Parameter	Units	Number Of Samples	Min Result	Max Result	Average Result	95th Percentile	ADWG Guideline	Met ADWG
Antimony	mg/L	2	<0.001	<0.001	<0.001	<0.001	0.003	✓
Arsenic	mg/L	2	<0.001	<0.001	<0.001	<0.001	0.01	✓
Barium	mg/L	2	<0.02	<0.02	<0.02	<0.02	2	✓
Beryllium	mg/L	2	<0.001	<0.001	<0.001	<0.001	0.06	✓
Boron	mg/L	2	<0.1	<0.1	<0.1	<0.1	4	✓
Bromate	mg/L	8	<0.005	0.01	<0.005	0.007	0.02	✓
Cadmium	mg/L	2	<0.001	<0.001	<0.001	<0.001	0.002	✓
Chlorine Free	mg/L	537	<0.1	1.8	0.62	1.22	5	✓
Chlorine Total	mg/L	537	<0.1	2	0.72	1.40	5	✓
Chromium	mg/L	2	<0.01	<0.01	<0.01	<0.01	0.05	✓
Copper	mg/L	227	<0.01	<0.01	<0.01	<0.01	2	✓
Cyanogen Chloride	mg/L	6	<0.004	<0.004	<0.004	<0.004	0.08	✓
Fluoride	mg/L	227	0.36	0.97	0.86	0.94	1.5	✓
Lead	mg/L	227	<0.01	<0.01	<0.01	<0.01	0.01	✓
Manganese	mg/L	227	<0.01	0.03	<0.01	<0.01	0.5	✓
Mercury	mg/L	2	<0.0005	<0.0005	<0.0005	<0.0005	0.001	✓
Nickel	mg/L	227	<0.01	<0.01	<0.01	<0.01	0.02	✓
Nitrate NO ³ (calc)	mg/L	227	0.21	1.18	0.56	0.85	50	✓
Nitrite as NO ²	mg/L	227	<0.02	<0.02	<0.02	<0.02	3	✓
Selenium	mg/L	2	<0.01	<0.01	<0.01	<0.01	0.01	✓
Sulphate	mg/L	2	30	43	36.5	42.4	500	✓
THMs	ug/L	23	47	135	93	131	250	✓

Noosa – Chemical (aesthetic) performance

Parameter	Units	Number Of Samples	Min Result	Max Result	Average Result	95th Percentile	ADWG Guideline	Met ADWG
Aluminium	mg/L	227	<0.02	0.03	<0.02	0.02	0.2	✓
Colour (Apparent)	PCU	227	<1	5.1	<1	1.9	a	✓
Colour (True)	PCU	227	<1	2	<1	1.0	15	✓
Conductivity	µS/cm	527	152	465	249	330	b	✓
Copper	mg/L	227	<0.01	<0.01	<0.01	<0.01	1	✓
Iron	mg/L	227	<0.01	0.18	0.01	0.05	0.3	✓
Manganese	mg/L	227	<0.01	0.03	<0.01	<0.01	0.1	✓
pH	pH Units	527	6.9	8.7	7.6	8.3	6.5-9.2	✓
Sodium	mg/L	8	16	38	24.0	35.2	180	✓
Temperature	°C	525	17.3	29.2	22.9	27.5	c	✓
Total Hardness	mg/L as CaCO ₃	12	43	83	58.17	78.6	200	✓
Turbidity	NTU	527	<0.05	11	0.16	0.32	5	✓
Zinc	mg/L	227	<0.01	0.02	<0.01	<0.01	3	✓
		3715						

- a - No guideline limit for Colour (Apparent)
- b - ADWG guideline limit is for 600mg/L as total dissolved solids. This is approximately equal to a conductivity of 1000µS/cm.
- c - No guideline limit for Temperature

Pine Rivers North – Chemical (health) performance

Parameter	Units	Number Of Samples	Min Result	Max Result	Average Result	95th Percentile	ADWG Guideline	Met ADWG
Antimony	mg/L	3	<0.001	0.002	0.001	0.002	0.003	✓
Arsenic	mg/L	3	<0.001	0.001	<0.001	<0.001	0.01	✓
Barium	mg/L	3	<0.02	<0.02	<0.02	<0.02	2	✓
Beryllium	mg/L	3	<0.001	<0.001	<0.001	<0.001	0.06	✓
Boron	mg/L	3	<0.1	<0.1	<0.1	<0.1	4	✓
Bromate	mg/L	12	<0.005	<0.005	<0.005	<0.005	0.02	✓
Cadmium	mg/L	3	<0.001	<0.001	<0.001	<0.001	0.002	✓
Chlorine Free	mg/L	322	<0.1	2.5	1.3	2.1	5	✓
Chlorine Total	mg/L	322	<0.1	2.8	1.6	2.4	5	✓
Chromium	mg/L	3	<0.01	<0.01	<0.01	<0.01	0.05	✓
Copper	mg/L	101	<0.01	0.05	<0.01	<0.01	2	✓
Cyanogen Chloride	mg/L	9	<0.004	<0.004	<0.004	<0.004	0.08	✓
Fluoride	mg/L	125	0.29	1.37	0.94	1.03	1.5	✓
Lead	mg/L	101	<0.01	<0.01	<0.01	<0.01	0.01	✓
Manganese	mg/L	127	<0.01	0.33	<0.01	<0.01	0.5	✓
Mercury	mg/L	3	<0.0005	<0.0005	<0.0005	<0.0005	0.001	✓
Nickel	mg/L	101	<0.01	<0.01	<0.01	<0.01	0.02	✓
Nitrate NO ³ (calc)	mg/L	125	0.11	1.47	0.60	1.02	50	✓
Nitrite as NO ²	mg/L	125	<0.02	0.92	0.02	0.06	3	✓
Selenium	mg/L	3	<0.01	<0.01	<0.01	<0.01	0.01	✓
Sulphate	mg/L	3	48	50	49.3	50	500	✓
THMs	ug/L	24	46	112	69	91	250	✓

Pine Rivers North – Chemical (aesthetic) performance

Parameter	Units	Number Of Samples	Min Result	Max Result	Average Result	95th Percentile	ADWG Guideline	Met ADWG
Aluminium	mg/L	127	<0.02	0.42	0.03	0.06	0.2	✓
Colour (Apparent)	PCU	125	<1	27	1.29	3.46	a	✓
Colour (True)	PCU	125	<1	3.4	<1	1.38	15	✓
Conductivity	µS/cm	318	205	557	273	309	b	✓
Copper	mg/L	101	<0.01	0.05	<0.01	<0.01	1	✓
Iron	mg/L	127	<0.01	0.29	0.01	0.05	0.3	✓
Manganese	mg/L	127	<0.01	0.33	<0.01	<0.01	0.1	✓
pH	pH Units	318	7	9.5	7.5	8.8	6.5-9.2	✓
Sodium	mg/L	12	22	31	26.8	29.9	180	✓
Temperature	°C	315	16	30.1	23.7	28.4	c	✓
Total Hardness	mg/L as CaCO ₃	12	48	100	64	82	200	✓
Turbidity	NTU	318	<0.05	8.8	0.14	0.28	5	✓
Zinc	mg/L	101	<0.01	0.04	<0.01	<0.01	3	✓

- a - No guideline limit for Colour (Apparent)
- b - ADWG guideline limit is for 600mg/L as total dissolved solids. This is approximately equal to a conductivity of 1000µS/cm.
- c - No guideline limit for Temperature

Pine Rivers South – Chemical (health) performance

Parameter	Units	Number Of Samples	Min Result	Max Result	Average Result	95th Percentile	ADWG Guideline	Met ADWG
Antimony	mg/L	2	<0.001	<0.001	<0.001	<0.001	0.003	✓
Arsenic	mg/L	2	0.001	0.001	0.001	0.001	0.01	✓
Barium	mg/L	2	<0.02	<0.02	<0.02	<0.02	2	✓
Beryllium	mg/L	2	<0.001	<0.001	<0.001	<0.001	0.06	✓
Boron	mg/L	2	<0.1	<0.1	<0.1	<0.1	4	✓
Bromate	mg/L	10	<0.005	0.01	<0.005	0.007	0.02	✓
Cadmium	mg/L	2	<0.001	<0.001	<0.001	<0.001	0.002	✓
Chlorine Free	mg/L	829	<0.1	2.4	0.40	1.5	5	✓
Chlorine Total	mg/L	830	<0.1	3.3	1.22	2.40	5	✓
Chromium	mg/L	2	<0.01	<0.01	<0.01	<0.01	0.05	✓
Copper	mg/L	190	<0.01	0.01	<0.01	<0.01	2	✓
Cyanogen Chloride	mg/L	9	<0.004	<0.004	<0.004	<0.004	0.08	✓
Fluoride	mg/L	234	0.42	0.98	0.87	0.94	1.5	✓
Lead	mg/L	190	<0.01	<0.01	<0.01	<0.01	0.01	✓
Manganese	mg/L	235	<0.01	0.06	<0.01	<0.01	0.5	✓
Mercury	mg/L	2	<0.0005	<0.0005	<0.0005	<0.0005	0.001	✓
Monochloramine NH ² Cl	mg/L	642	<0.02	2.17	0.43	1.43	3	✓
Nickel	mg/L	190	<0.01	<0.01	<0.01	<0.01	0.02	✓
Nitrate NO ³ (calc)	mg/L	688	0.08	5.67	1.20	3.25	50	✓
Nitrite as NO ²	mg/L	688	<0.02	0.85	0.09	0.46	3	✓
Selenium	mg/L	2	<0.01	<0.01	<0.01	<0.01	0.01	✓
Sulphate	mg/L	2	27	31	29.0	30.8	500	✓
THMs	ug/L	32	25	140	75	136	250	✓

Pine Rivers South – Chemical (aesthetic) performance

Parameter	Units	Number Of Samples	Min Result	Max Result	Average Result	95th Percentile	ADWG Guideline	Met ADWG
Aluminium	mg/L	235	0.02	0.07	0.03	0.05	0.2	✓
Ammonia Free NH ₃ (calc)	mg/L	643	<0.02	0.68	0.12	0.30	0.5	✓
Colour (Apparent)	PCU	242	<1	3.1	1.25	2.40	a	✓
Colour (True)	PCU	234	<1	1.7	<1	1.20	15	✓
Conductivity	µS/cm	791	203	541	279	404	b	✓
Copper	mg/L	190	<0.01	0.01	<0.01	<0.01	1	✓
Iron	mg/L	235	<0.01	0.11	0.01	0.04	0.3	✓
Manganese	mg/L	235	<0.01	0.06	<0.01	<0.01	0.1	✓
pH	pH Units	791	7.1	8.3	7.7	8.0	6.5-9.2	✓
Sodium	mg/L	10	21	40	28.0	38.2	180	✓
Temperature	°C	777	13.8	31.2	23.1	27.9	c	✓
Total Hardness	mg/L as CaCO ₃	8	51	118	71.38	110.30	200	✓
Turbidity	NTU	823	<0.05	1.8	0.14	0.25	5	✓
Zinc	mg/L	190	<0.01	0.03	<0.01	<0.01	3	✓

- a - No guideline limit for Colour (Apparent)
- b - ADWG guideline limit is for 600mg/L as total dissolved solids. This is approximately equal to a conductivity of 1000µS/cm.
- c - No guideline limit for Temperature

Railway Towns – Chemical (health) performance

Parameter	Units	Number Of Samples	Min Result	Max Result	Average Result	95th Percentile	ADWG Guideline	Met ADWG
Antimony	mg/L	1	<0.001	<0.001	<0.001	<0.001	0.003	✓
Arsenic	mg/L	1	<0.001	<0.001	<0.001	<0.001	0.01	✓
Barium	mg/L	1	<0.02	<0.02	<0.02	<0.02	2	✓
Beryllium	mg/L	1	<0.001	<0.001	<0.001	<0.001	0.06	✓
Boron	mg/L	1	<0.1	<0.1	<0.1	<0.1	4	✓
Bromate	mg/L	4	<0.005	0.01	0.007	0.010	0.02	✓
Cadmium	mg/L	1	<0.001	<0.001	<0.001	<0.001	0.002	✓
Chlorine Free	mg/L	579	<0.1	2.8	0.93	1.70	5	✓
Chlorine Total	mg/L	579	<0.1	3	1.02	1.80	5	✓
Chromium	mg/L	1	<0.01	<0.01	<0.01	<0.01	0.05	✓
Copper	mg/L	215	<0.01	0.02	<0.01	<0.01	2	✓
Cyanogen Chloride	mg/L	4	<0.004	<0.004	<0.004	<0.004	0.08	✓
Fluoride	mg/L	215	0.28	0.96	0.81	0.91	1.5	✓
Lead	mg/L	213	<0.01	<0.01	<0.01	<0.01	0.01	✓
Manganese	mg/L	215	<0.01	<0.01	<0.01	<0.01	0.5	✓
Mercury	mg/L	1	<0.0005	<0.0005	<0.0005	<0.0005	0.001	✓
Nickel	mg/L	213	<0.01	<0.01	<0.01	<0.01	0.02	✓
Nitrate NO ³ (calc)	mg/L	215	0.29	1.76	0.76	1.60	50	✓
Nitrite as NO ²	mg/L	215	<0.02	<0.02	<0.02	<0.02	3	✓
Selenium	mg/L	1	<0.01	<0.01	<0.01	<0.01	0.01	✓
Sulphate	mg/L	1	17	17	17.0	17.0	500	✓
THMs	ug/L	12	37	86	56	78	250	✓

Railway Towns – Chemical (aesthetic) performance

Parameter	Units	Number Of Samples	Min Result	Max Result	Average Result	95th Percentile	ADWG Guideline	Met ADWG
Aluminium	mg/L	215	<0.02	0.03	<0.02	0.02	0.2	✓
Colour (Apparent)	PCU	215	<1	2.1	<1	1.2	a	✓
Colour (True)	PCU	215	<1	1	<1	<1	15	✓
Conductivity	µS/cm	581	139	272	189	221	b	✓
Copper	mg/L	215	<0.01	0.02	<0.01	<0.01	1	✓
Iron	mg/L	215	<0.01	0.05	<0.01	0.02	0.3	✓
Manganese	mg/L	215	<0.01	<0.01	<0.01	<0.01	0.1	✓
pH	pH Units	581	6.9	9.1	7.7	8.6	6.5-9.2	✓
Sodium	mg/L	4	9	15	11.3	14.4	180	✓
Temperature	°C	574	15.6	28.7	22.3	27.0	c	✓
Turbidity	NTU	581	<0.05	0.61	0.10	0.20	5	✓
Zinc	mg/L	215	<0.01	0.02	<0.01	<0.01	3	✓

- a - No guideline limit for Colour (Apparent)
- b - ADWG guideline limit is for 600mg/L as total dissolved solids. This is approximately equal to a conductivity of 1000µS/cm.
- c - No guideline limit for Temperature

Redcliffe – Chemical (health) performance

Parameter	Units	Number Of Samples	Min Result	Max Result	Average Result	95th Percentile	ADWG Guideline	Met ADWG
Antimony	mg/L	1	0.002	0.002	0.002	0.002	0.003	✓
Arsenic	mg/L	1	<0.001	<0.001	<0.001	<0.001	0.01	✓
Barium	mg/L	1	<0.02	<0.02	<0.02	<0.02	2	✓
Beryllium	mg/L	1	<0.001	<0.001	<0.001	<0.001	0.06	✓
Boron	mg/L	1	<0.1	<0.1	<0.1	<0.1	4	✓
Bromate	mg/L	4	<0.005	<0.005	<0.005	<0.005	0.02	✓
Cadmium	mg/L	1	<0.001	<0.001	<0.001	<0.001	0.002	✓
Chlorine Free	mg/L	264	<0.1	1.1	<0.1	0.40	5	✓
Chlorine Total	mg/L	264	<0.1	2.1	0.43	1.50	5	✓
Chromium	mg/L	1	<0.01	<0.01	<0.01	<0.01	0.05	✓
Copper	mg/L	119	<0.01	0.03	<0.01	<0.01	2	✓
Cyanogen Chloride	mg/L	3	<0.004	<0.004	<0.004	<0.004	0.08	✓
Fluoride	mg/L	119	0.37	0.94	0.84	0.92	1.5	✓
Lead	mg/L	110	<0.01	<0.01	<0.01	<0.01	0.01	✓
Manganese	mg/L	119	<0.01	0.02	<0.01	<0.01	0.5	✓
Mercury	mg/L	1	<0.0005	<0.0005	<0.0005	<0.0005	0.001	✓
Monochloramine NH2Cl	mg/L	257	<0.02	1.14	0.09	0.51	3	✓
Nickel	mg/L	110	<0.01	<0.01	<0.01	<0.01	0.02	✓
Nitrate NO ³ (calc)	mg/L	257	0.5	3.63	2.20	3.17	50	✓
Nitrite as NO ²	mg/L	257	<0.02	0.69	0.12	0.40	3	✓
Selenium	mg/L	1	<0.01	<0.01	<0.01	<0.01	0.01	✓
Sulphate	mg/L	1	26	26	26	26	500	✓
THMs	ug/L	12	20	64	45	62	250	✓

Redcliffe – Chemical (aesthetic) performance

Parameter	Units	Number Of Samples	Min Result	Max Result	Average Result	95th Percentile	ADWG Guideline	Met ADWG
Aluminium	mg/L	119	<0.02	0.05	0.02	0.03	0.2	✓
Ammonia Free NH3 (calc)	mg/L	257	<0.02	0.25	0.06	0.19	0.5	✓
Colour (Apparent)	PCU	122	<1	5.9	1.56	2.40	a	✓
Colour (True)	PCU	119	<1	1.8	<1	1.20	15	✓
Conductivity	µS/cm	257	216	401	258	319	b	✓
Copper	mg/L	119	<0.01	0.03	<0.01	<0.01	1	✓
Iron	mg/L	122	<0.01	0.12	0.01	0.03	0.3	✓
Manganese	mg/L	119	<0.01	0.02	<0.01	<0.01	0.1	✓
pH	pH Units	257	7.1	7.9	7.5	7.7	6.5-9.2	✓
Sodium	mg/L	4	20	31	24.3	30.0	180	✓
Temperature	°C	250	15.2	31.3	24.5	29.6	c	✓
Turbidity	NTU	265	<0.05	3.6	0.16	0.26	5	✓
Zinc	mg/L	119	<0.01	0.02	<0.01	<0.01	3	✓

- a - No guideline limit for Colour (Apparent)
- b - ADWG guideline limit is for 600mg/L as total dissolved solids. This is approximately equal to a conductivity of 1000µS/cm.
- c - No guideline limit for Temperature

Woodford – Chemical (health) performance

Parameter	Units	Number Of Samples	Min Result	Max Result	Average Result	95th Percentile	ADWG Guideline	Met ADWG
Antimony	mg/L	1	<0.001	<0.001	<0.001	<0.001	0.003	✓
Arsenic	mg/L	1	0.001	0.001	0.001	0.001	0.01	✓
Barium	mg/L	1	<0.02	<0.02	<0.02	<0.02	2	✓
Beryllium	mg/L	1	<0.001	<0.001	<0.001	<0.001	0.06	✓
Boron	mg/L	1	<0.1	<0.1	<0.1	<0.1	4	✓
Bromate	mg/L	4	<0.005	0.008	<0.005	0.007	0.02	✓
Cadmium	mg/L	1	<0.001	<0.001	<0.001	<0.001	0.002	✓
Chlorine Free	mg/L	128	<0.1	1.8	1.00	1.40	5	✓
Chlorine Total	mg/L	128	<0.1	2	1.19	1.60	5	✓
Chromium	mg/L	1	<0.01	<0.01	<0.01	<0.01	0.05	✓
Copper	mg/L	36	<0.01	<0.01	<0.01	<0.01	2	✓
Cyanogen Chloride	mg/L	3	<0.004	<0.004	<0.004	<0.004	0.08	✓
Fluoride	mg/L	36	0.45	0.95	0.84	0.93	1.5	✓
Lead	mg/L	32	<0.01	<0.01	<0.01	<0.01	0.01	✓
Manganese	mg/L	36	<0.01	<0.01	<0.01	<0.01	0.5	✓
Mercury	mg/L	1	<0.0005	<0.0005	<0.0005	<0.0005	0.001	✓
Monochloramine NH ₂ Cl	mg/L	127	<0.02	0.33	0.03	0.07	3	✓
Nickel	mg/L	32	<0.01	<0.01	<0.01	<0.01	0.02	✓
Nitrate NO ₃ (calc)	mg/L	127	0.74	4.12	1.88	3.51	50	✓
Nitrite as NO ₂	mg/L	127	<0.02	1.35	0.02	<0.02	3	✓
Selenium	mg/L	1	<0.01	<0.01	<0.01	<0.01	0.01	✓
Sulphate	mg/L	1	26	26	26	26	500	✓
THMs	ug/L	12	20	101	64	101	250	✓

Woodford – Chemical (aesthetic) performance

Parameter	Units	Number Of Samples	Min Result	Max Result	Average Result	95th Percentile	ADWG Guideline	Met ADWG
Aluminium	mg/L	36	<0.02	0.07	0.03	0.05	0.2	✓
Ammonia Free NH ₃ (calc)	mg/L	127	<0.02	0.07	<0.02	<0.02	0.5	✓
Colour (Apparent)	PCU	36	<1	1.8	<1	1.33	a	✓
Colour (True)	PCU	36	<1	1	<1	<1	15	✓
Conductivity	µS/cm	129	187	398	250	301	b	✓
Copper	mg/L	36	<0.01	<0.01	<0.01	<0.01	1	✓
Iron	mg/L	36	<0.01	0.02	<0.01	0.01	0.3	✓
Manganese	mg/L	36	<0.01	<0.01	<0.01	<0.01	0.1	✓
pH	pH Units	129	7.4	9	8.1	8.5	6.5-9.2	✓
Sodium	mg/L	4	15	25	21.8	24.9	180	✓
Temperature	°C	125	16.8	27	22.1	26.4	c	✓
Turbidity	NTU	129	<0.05	0.67	0.13	0.23	5	✓
Zinc	mg/L	36	<0.01	<0.01	<0.01	<0.01	3	✓

- a - No guideline limit for Colour (Apparent)
- b - ADWG guideline limit is for 600mg/L as total dissolved solids. This is approximately equal to a conductivity of 1000µS/cm.
- c - No guideline limit for Temperature

Topic in focus:

Chlorine is a chemical which has been used in water treatment since the late 1800s. It can be added to water in gaseous, liquid or solid form, and is a very powerful disinfectant. The main objective of adding chlorine to water is to kill or inactivate harmful microorganisms which may be present in the “raw” water, which if left untreated could cause illness to the general population. Generally, the most vulnerable groups are the very old, very young, and those who have weakened immune systems due to other illnesses or illness treatments.

“Disinfection is of unquestionable importance in the supply of safe drinking water. The destruction of pathogenic microorganisms is essential...”

World Health Organisation 2011 -
Guidelines for Drinking Water Quality.

There are two main aspects to manage when using chlorine in water. These include:

- ▶ Disinfection by-products. These are a range of chemicals which can form when chlorine reacts with natural organic matter in the water. Above certain levels these by-products can be harmful to health; however levels of disinfection by-products in Unitywater’s water supply systems are low.
- ▶ Taste. The level of chlorine required to provide a disinfectant residual is often above the taste threshold for many people. This taste can be described as “metallic”, “chemical” or even “like bleach” in some cases. We find that most of our calls regarding chlorine taste in water are from customers who have only recently moved into the area. If you are particularly sensitive to the taste of chlorine, consider filling a bottle with water and including a

Chlorine why does it matter?

slice of lemon... the lemon will instantaneously react with the chlorine and remove the unwanted taste!

The advantages of chlorination cannot be overstated. The World Health Organisation estimates that more than 500,000 deaths per year are caused by contaminated drinking water. If water was able to be adequately treated and disinfected, most if not all of these deaths could be prevented.

“The greatest risks to consumers of drinking water are pathogenic microorganisms. Disinfection is the single process that has had the greatest impact on drinking water safety. There is clear evidence that the common adoption of chlorination of drinking water supplies in the 20th century was responsible for a substantial decrease in infectious diseases.”

National Health & Medical Research
Council 2011 – Australian Drinking Water
Guidelines.

Further reading:
World Health Organisation 2015 – Drinking Water Fact Sheet <http://www.who.int/mediacentre/factsheets/fs391/en/>

Scientific American 1998 - How does chlorine added to drinking water kill bacteria and other harmful organisms? Why doesn't it harm us?
<http://www.scientificamerican.com/article/how-does-chlorine-added-t/>



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Unitywater has certification to:

OH&S ISO 4801:2001 Reg No 4260

Environmental ISO 14001:2004 Reg No 4259

Quality Systems ISO 9001:2008 Reg No 4258

and operates under a drinking water quality management plan
approved by the Department of Energy and Water Supply

