

Water Quality Summary - October 2019

Hunter Water provides safe and reliable drinking water to over half a million customers in the Lower Hunter. The drinking water we supply is routinely tested throughout our water supply systems.

Whole of Hunter Water Distribution System

Drinking water results for the distribution system are based on samples representative of water supplied to customer's taps. Distribution system results for microbiological and key physical/chemical parameters are summarised below.

Whole of Hunter Water Distribution System - key health analytes

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Analyte	Units of measure ADWG healt guideline val		Performance standard (assessment over previous 12 months)		% of E. coli results < 1 over the last 12 months	Met performance standard		
E. coli	MPN/100mL Should not be detected in 100mL At lea		At least 98% of test results <1		99.94%	Yes		
Analyte	Units of measure	ADWG health guideline value			95th Percentile over the last 12 months	Met performance standard		
Fluoride	mg/L	1.5		0.94	1.03	Yes		
Chlorine	mg/L	5.0		0.59	1.23	Yes		
Copper	mg/L	2.0	95th percentile of test results less than respective ADWG aesthetic guideline	0.006	0.033	Yes		
Lead	mg/L	0.01	value	0.000	0.001	Yes		
Manganese	mg/L	0.5		0.008	0.013	Yes		
Trihalomethanes	mg/L	0.25		0.082	0.142	Yes		

Whole of Hunter Water Distribution System - PFOS, PFHxS & PFOA

Analyte	Units of measure	ADWG health guideline value	Performance standard (assessment over previous 12 months)	Average for Month	Maximum detection over the last 12 months	Met performance standard
PFOS + PFHxS	ug/L	0.07	100% of test results less than respective ADWG health guideline	<0.004	0.008	Yes
PFOA	ug/L	0.56	value	<0.002	<0.002	Yes

Whole of Hunter Water Distribution System - key aesthetic analytes

Analyte	Units of measure	ADWG aesthetic guideline value	Performance standard (assessment over previous 12 months)	Average for Month	12 month average result	Met performance standard
Iron	mg/L	0.3		0.031	0.031	Yes
Aluminium	mg/L	0.2		0.041	0.048	Yes
Copper	mg/L	1.0	Average of test results less than respective ADWG aesthetic guideline	0.005	0.009	Yes
Zinc	mg/L	3.0	3.0 value		0.004	Yes
Turbidity	NTU	5.0		0.3	0.2	Yes
Colour-True	HU	15.0		5	5	Yes
рН	pH units	6.5-9.2	Average of test results between 6.5-9.2 pH units	7.58	7.58	Yes

Brief explanation of key parameters:	Key Physical, Chemical and Microbiological Parameters					
A 95th percentile is a statistical method to evaluate the long-term performance standard for Health-related analytes. Additional information is available in Section 10.3.2 and Information Sheet 3.3 of the Austra Drinking Water Guidelines 2011 (ADWG).						
For more detail please refer:	Australian Drinking Water Guidelines 2011					
Map showing water quality zones:	Water Quality Zones at Hunter Water					

Anna Bay and Nelson Bay Zone - key	health analytes					
Analyte	Units of measure	ADWG health guideline value	Performance standard (assessment over previous 12 months)		% of E. coli results < 1 over the last 12 months	Met performan
E. coli	MPN/100mL	Should not be detected in 100mL	At least 98% of test results <1		100.00%	Yes
Analyte	Units of measure	ADWG health guideline value			95th Percentile over the last 12 months	Met performand standard
Fluoride	mg/L	1.5		0.97	1.03	Yes
Chlorine	mg/L	5.0		0.53	1.20	Yes
Copper	mg/L	2.0	95th percentile of test results less than	0.005	0.009	Yes
Lead	mg/L	0.01	respective ADWG aesthetic guideline value	0.000	0.001	Yes
Manganese	mg/L	0.5		0.008	0.014	Yes
Trihalomethanes	mg/L	0.25		0.067	0.088	Yes
Anna Bay and Nelson Bay Zone - PFO	S, PFHxS & PFOA					
Analyte	Units of measure	ADWG health guideline value	Performance standard (assessment over previous 12 months)	Average for Month	Maximum detection over the last 12 months	Met performan
PFOS + PFHxS	ug/l	0.07	100% of test results less than	~ 0.004	<0.004	Voc
PFOA PFHXS	ug/L	0.07	respective ADWG health guideline	<0.004	<0.004	Yes
	ug/L	0.56	value	<0.002	<0.002	Yes
Anna Bay and Nelson Bay Zone - key	aestnetic analytes					
Analyte	Units of measure	ADWG aesthetic guideline value	Performance standard (assessment over previous 12 months)	Average for Month	12 month average result	Met performan standard
Iron	mg/L	0.3		0.036	0.040	Yes
Aluminium	mg/L	0.2		0.040	0.049	Yes
Copper	mg/L	1.0	Average of test results less than respective ADWG aesthetic guideline	0.005	0.007	Yes
Zinc	mg/L	3.0	value	0.003	0.004	Yes
Turbidity	NTU	5.0		0.3	0.3	Yes
Colour-True	HU	15.0		5	5	Yes
рН	pH units	6.5-9.2	Average of test results between 6.5-9.2 pH units	7.53	7.49	Yes
Chichester Zone - key health analytes						
Analyte	Units of measure	ADWG health guideline value	Performance standard (assessment over previous 12 months)		% of E. coli results < 1 over the last 12 months	Met performand standard
E. coli	MPN/100mL	Should not be detected in 100mL	At least 98% of test results <1		99.79%	Yes
Analyte	Units of measure	ADWG health guideline value	Performance standard (assessment over previous 12 months)	Average for Month	95th Percentile over the last 12 months	Met performand standard
Fluoride	mg/L	1.5		0.83	1.01	Yes
Chlorine	mg/L	5.0		0.65	1.22	Yes
Copper	mg/L	2.0	95th percentile of test results less than respective ADWG aesthetic guideline	0.007	0.010	Yes
Lead	mg/L	0.01	value	0.000	0.000	Yes
Manganese	mg/L	0.5		0.004	0.009	Yes
Trihalomethanes	mg/L	0.25		0.072	0.158	Yes
Chichester Zone - PFOS, PFHxS & PF	JA					
Analyte	Units of measure	ADWG health guideline value	Performance standard (assessment over previous 12 months)	Average for Month	Maximum detection over the last 12 months	Met performan standard
PFOS + PFHxS	ug/L	0.07	100% of test results less than	<0.004	0.006	Yes
PFOA	ug/L	0.56	respective ADWG health guideline value	<0.002	<0.002	Yes
Chichester Zone - key aesthetic analy		1 2.22				
	Units of measure	ADWG aesthetic guideline value	Performance standard (assessment over previous 12 months)	Average for Month	12 month average result	Met performand standard
Analyte		guidelille value				
	mg/L	0.3		0.024	0.024	Yes
Iron				0.024 0.045	0.024 0.054	Yes Yes
Iron Aluminium	mg/L	0.3	Average of test results less than respective ADWG aesthetic middline			
iron Aluminium Copper Zinc	mg/L mg/L mg/L mg/L	0.3	Average of test results less than respective ADWG aesthetic guideline value	0.045	0.054	Yes
Iron Aluminium Copper Zinc Turbidity	mg/L mg/L mg/L mg/L NTU	0.3 0.2 1.0 3.0 5.0	respective ADWG aesthetic guideline	0.045 0.005 0.003 0.3	0.054 0.005 0.003 0.3	Yes Yes Yes Yes
Analyte Iron Aluminium Copper Zinc Turbidity Colour-True	mg/L mg/L mg/L mg/L	0.3 0.2 1.0 3.0	respective ADWG aesthetic guideline	0.045 0.005 0.003	0.054 0.005 0.003	Yes Yes Yes

Grahamstown Zone - key health analytes						
Analyte	Units of measure	ADWG health guideline value	Performance standard (assessment over previous 12 months)		% of E. coli results < 1 over the last 12 months	Met performance standard
E. coli	MPN/100mL	Should not be detected in 100mL	At least 98% of test results <1		100.00%	Yes
Analyte	Units of measure	ADWG health guideline value	Performance standard (assessment over previous 12 months)	Average for Month	95th Percentile over the last 12 months	Met performance standard
Fluoride	mg/L	1.5		0.98	1.04	Yes
Chlorine	mg/L	5.0	-	0.58	1.22	Yes
Copper	mg/L	2.0	95th percentile of test results less than	0.005	0.042	Yes
Lead	mg/L	0.01	respective ADWG aesthetic guideline value	0.000	0.001	Yes
Manganese	mg/L	0.5		0.011	0.015	Yes
Trihalomethanes	mg/L	0.25		0.093	0.131	Yes
Grahamstown Zone - PFOS, PFHxS & PFOA	·					
Analyte	Units of measure	ADWG health guideline value	Performance standard (assessment over previous 12 months)	Average for Month	Maximum detection over the last 12 months	Met performance standard
PFOS + PFHxS	ug/L	0.07	100% of test results less than	<0.004	0.008	Yes
PFOA	ug/L	0.56	respective ADWG health guideline value	<0.002	<0.002	Yes
Grahamstown Zone - key aesthetic analytes	-9-	3.30	value	10.002	30.002	. 65
Analyte	Units of measure	ADWG aesthetic guideline value	Performance standard (assessment over previous 12 months)	Average for Month	12 month average result	Met performance standard
Iron	mg/L	0.3		0.036	0.033	Yes
Aluminium	mg/L	0.2		0.042	0.049	Yes
Copper	mg/L	1.0	Average of test results less than	0.006	0.012	Yes
Zinc	mg/L	3.0	respective ADWG aesthetic guideline value	0.004	0.005	Yes
Turbidity	NTU	5.0		0.3	0.2	Yes
Colour-True	HU	15.0		5	5	Yes
рН	pH units	6.5-9.2	Average of test results between 6.5-9.2 pH units	7.53	7.53	Yes
Gresford Zone - key health analytes						
Analyte	Units of measure	ADWG health guideline value	Performance standard (assessment over previous 12 months)		% of E. coli results < 1 over the last 12 months	Met performance standard
E. coli	MPN/100mL	Should not be detected in 100mL	At least 98% of test results <1		100.00%	Yes
Analyte	Units of measure	ADWG health guideline value	Performance standard (assessment over previous 12 months)	Average for Month	95th Percentile over the last 12 months	Met performance standard
Chlorine	mg/L	5.0	95th percentile of test results less than respective ADWG aesthetic guideline value	0.67	1.32	Yes
Gresford Zone - PFOS, PFHxS & PFOA						
Analyte	Units of measure	ADWG health guideline value	Performance standard (assessment over previous 12 months)	Average for Month #	Maximum detection over the last 12 months	Met performance standard
PFOS + PFHxS	ug/L	0.07	100% of test results less than	<0.004	<0.004	Yes
PFOA	ug/L	0.56	respective ADWG health guideline value	<0.002	<0.002	Yes
Gresford Zone - key aesthetic analytes						
Analyte	Units of measure	ADWG aesthetic guideline value	Performance standard (assessment over previous 12 months)	Average for Month	12 month average result	Met performance standard
Turbidity	NTU	5.0	Average of test results less than respective ADWG aesthetic guideline value	0.1	0.2	Yes
рН	pH units	6.5-9.2	Average of test results between 6.5-9.2 pH units	7.69	7.98	Yes

Lemon Tree Passage Zone - key healt	th analytes					
Analyte	Units of measure	ADWG health guideline value	Performance standard (assessment over previous 12 months)		% of E. coli results < 1 over the last 12 months	Met performance standard
E. coli	MPN/100mL	Should not be detected in 100mL	At least 98% of test results <1		100.00%	Yes
Analyte	Units of measure	ADWG health guideline value	Performance standard (assessment over previous 12 months)	Average for Month	95th Percentile over the last 12 months	Met performance standard
Fluoride	mg/L	1.5		0.99	1.04	Yes
Chlorine	mg/L	5.0		0.51	1.40	Yes
Copper	mg/L	2.0	95th percentile of test results less than respective ADWG aesthetic guideline	0.002	0.011	Yes
Lead	mg/L	0.01	value	0.000	0.001	Yes
Manganese	mg/L	0.5		0.003	0.008	Yes
Trihalomethanes	mg/L	0.25		0.072	0.105	Yes
Lemon Tree Passage Zone - PFOS, PF	FHxS & PFOA					
Analyte	Units of measure	ADWG health guideline value	Performance standard (assessment over previous 12 months)	Average for Month	Maximum detection over the last 12 months	Met performance standard
Analyte PFOS + PFHxS	Units of measure		over previous 12 months) 100% of test results less than		detection over the	
		guideline value	over previous 12 months)	Month	detection over the last 12 months	standard
PFOS + PFHxS	ug/L ug/L	guideline value 0.07	over previous 12 months) 100% of test results less than respective ADWG health guideline	Month <0.004	detection over the last 12 months 0.008	standard Yes
PFOS + PFHxS PFOA	ug/L ug/L	guideline value 0.07	over previous 12 months) 100% of test results less than respective ADWG health guideline	Month <0.004	detection over the last 12 months 0.008	standard Yes Yes
PFOS + PFHxS PFOA Lemon Tree Passage Zone - key aesth	ug/L ug/L hetic analytes	guideline value 0.07 0.56 ADWG aesthetic	over previous 12 months) 100% of test results less than respective ADWG health guideline value Performance standard (assessment	Month <0.004 <0.002 Average for	detection over the last 12 months 0.008 <0.002	standard Yes Yes Met performance
PFOS + PFHxS PFOA Lemon Tree Passage Zone - key aesth Analyte	ug/L ug/L hetic analytes Units of measure	guideline value 0.07 0.56 ADWG aesthetic guideline value	over previous 12 months) 100% of test results less than respective ADWG health guideline value Performance standard (assessment	Month <0.004 <0.002 Average for Month	detection over the last 12 months 0.008 <0.002 12 month average result	Yes Yes Met performance standard
PFOS + PFHxS PFOA Lemon Tree Passage Zone - key aesth Analyte	ug/L ug/L hetic analytes Units of measure mg/L	Quideline value 0.07 0.56 ADWG aesthetic guideline value 0.3	over previous 12 months) 100% of test results less than respective ADWG health guideline value Performance standard (assessment over previous 12 months) Average of test results less than	Month	detection over the last 12 months 0.008 <0.002 12 month average result 0.027	yes Yes Met performance standard Yes
PFOS + PFHxS PFOA Lemon Tree Passage Zone - key aestf Analyte Iron Aluminium	ug/L ug/L hetic analytes Units of measure mg/L mg/L	and a substitution of the	over previous 12 months) 100% of test results less than respective ADWG health guideline value Performance standard (assessment over previous 12 months)	Month <0.004 <0.002	detection over the last 12 months 0.008 <0.002 12 month average result 0.027 0.040	standard Yes Yes Met performance standard Yes Yes
PFOS + PFHxS PFOA Lemon Tree Passage Zone - key aesth Analyte Iron Aluminium Copper	ug/L ug/L hetic analytes Units of measure mg/L mg/L mg/L	apuideline value 0.07 0.56 ADWG aesthetic guideline value 0.3 0.2 1.0	over previous 12 months) 100% of test results less than respective ADWG health guideline value Performance standard (assessment over previous 12 months) Average of test results less than respective ADWG aesthetic guideline	Month <0.004 <0.002	detection over the last 12 months	standard Yes Yes Met performance standard Yes Yes Yes
PFOS + PFHxS PFOA Lemon Tree Passage Zone - key aesth Analyte Iron Aluminium Copper Zinc	ug/L ug/L hetic analytes Units of measure mg/L mg/L mg/L mg/L mg/L mg/L	aguideline value 0.07 0.56 ADWG aesthetic guideline value 0.3 0.2 1.0 3.0	over previous 12 months) 100% of test results less than respective ADWG health guideline value Performance standard (assessment over previous 12 months) Average of test results less than respective ADWG aesthetic guideline	Month <0.004 <0.002	detection over the last 12 months	standard Yes Yes Met performance standard Yes Yes Yes Yes

PFOS, PFHxS and PFOA Results for Clear Water Tanks - October 2019

Clear water tanks (CWTs) are the final point at each water treatment plant before water enters the distribution system for delivery to customers. Maximum drinking water results in the CWT for each water treatment plant are summarised below.

Analyte	Units of measure	ADWG health guideline value	Anna Bay CWT	Dungog CWT	Grahamstown CWT	Gresford CWT	Lemon Tree Passage CWT	Nelson Bay CWT
PFOS + PFHxS	ug/L	0.07	<0.004	<0.004	0.006	<0.004	<0.004	<0.004
PFOA	ug/L	0.56	<0.002	<0.002	<0.002	<0.002	< 0.002	<0.002

PFOS, PFHxS and PFOA Results for Raw Waters - October 2019

Raw water monitoring points are representative of water received at the water treatment plants, prior to any treatment occurring. Maximum raw water results for each water treatment plant are summarised below.

Analyte	Units of measure	ADWG health guideline value	Anna Bay WTP - Raw Water	Dungog TW Raw	Grahamstown (East) WTP ^	Grahamstown (West) WTP ^	Gresford (Allyn River) WTP *	Gresford (Paterson River) WTP *	Lemon Tree Passage WTP	Nelson Bay WTP
PFOS + PFHxS	ug/L	0.07	<0.004	<0.004	0.006	0.004	<0.004	<0.004	<0.004	<0.004
PFOA	ug/l	0.56	<0.002	<0.002	< 0.002	<0.002	<0.002	<0.002	<0.002	<0.002

Note

^ Water sourced from the Tomago Borefield -when operational -is delivered to Grahamstown WTP via the East'Main. When the Tomago Borefield is not being used as part of the drinking water supply mix for the Lower Hunter, the East'and West'monitoring points are both representative of water sourced from Grahamstown Dam.

^{*} Gresford WTP can be supplied from either the Allyn or Paterson Rivers. The plant was supplied from the Paterson River for the month.

 $[\]ensuremath{\text{\#}}$ One sample is collected per month in the Gresford Zone