

Water Quality Summary - February 2023 (amended 19.07.2023 to include Mn results)

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

Analyte	Units of measure	ADWG health guideline value Performance standard (assessmen 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		99.95%	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		0.92	1.00	Yes
Chlorine	mg/L	5.0		0.96	1.69	Yes
Copper	mg/L	2.0	95th percentile of test results less than	0.009	0.015	Yes
Lead	mg/L	0.01	respective ADWG health guideline value	0.000	0.001	Yes
Manganese	mg/L	0.5		0.005	0.010	Yes
Trihalomethanes	mg/L	0.25	1	0.106	0.176	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	<0.004	0.004	Yes
PFOA	ug/L	0.56	respective ADWG health guideline 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		0.028	0.024	Yes
Aluminium	mg/L	0.2		0.047	0.042	Yes
Copper	mg/L	1.0	Average of test results less than	0.009	0.006	Yes
Zinc	mg/L	3.0	respective ADWG aesthetic guideline	0.003	0.003	Yes
Manganese	mg/L	0.1	value	0.005	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	7.61	7.60	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 Au 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					

Water Quality Zones						
Anna Bay and Nelson Bay Zone - key hea	lth 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		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	Met performand standard
					months	
Fluoride Chlorine	mg/L	1.5		0.99	1.10	Yes
Copper	mg/L mg/L	5.0	0515	0.016	2.18 0.028	Yes Yes
Lead	mg/L	0.01	95th percentile of test results less than respective ADWG health guideline value	0.016	0.028	Yes
Manganese	mg/L	0.5		0.004	0.009	Yes
Trihalomethanes	mg/L	0.25		0.020	0.096	Yes
Anna Bay and Nelson Bay Zone - PFOS, F	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 performand standard
PFOS + PFHxS	ug/L	0.07	100% of test results less than	<0.004	<0.004	Yes
PFOA	ug/L	0.56	100% of test results less than respective ADWG health guideline value	<0.002	<0.002	Yes
Anna Bay and Nelson Bay Zone - key aes		3.00				
Analyte	Units of measure	ADWG aesthetic guideline value	Performance standard (assessment over previous 12 months)	Average for Month	12 month average result	Met performand standard
Iron Aluminium	mg/L mg/L	0.3		0.033	0.033	Yes
Copper	mg/L	1.0		0.046	0.044	Yes Yes
Zinc	mg/L	3.0	Average of test results less than respective ADWG aesthetic guideline	0.005	0.003	Yes
Manganese	mg/L	0.1	value	0.004	0.004	Yes
Turbidity	NTU	5.0		0.4	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						
					% of E. coli	
Analyte	Units of measure	ADWG health guideline value	Performance standard (assessment over previous 12 months)		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		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 performand standard
Fluoride	mg/L	1.5		0.90	1.00	Yes
Chlorine	mg/L	5.0		1.01	1.46	Yes
Copper	mg/L	2.0	95th percentile of test results less than respective ADWG health guideline value	0.005	0.008	Yes
Lead Managanese	mg/L mg/L	0.01	respective ADVVG fleatitt guideline value	0.000	0.000	Yes
Manganese	IIIQ/L				0.005	
Trihalomethanes		0.5			0.005	Yes
	mg/L	0.5		0.086	0.005 0.098	
Chichester Zone - PFOS, PFHxS & PFOA	mg/L	0.25	Performance standard (assessment	0.086	0.098	Yes Yes
Chichester Zone - PFOS, PFHxS & PFOA			Performance standard (assessment over previous 12 months)		0.098	Yes Yes
Chichester Zone - PFOS, PFHxS & PFOA	mg/L Units of measure	ADWG health guideline value	over previous 12 months)	0.086 Average for Month	0.098 Maximum detection over the last 12 months	Yes Yes Met performand standard
Chichester Zone - PFOS, PFHxS & PFOA Analyte PFOS + PFHxS	mg/L Units of measure	ADWG health guideline value		0.086 Average for Month	Maximum detection over the last 12 months	Yes Yes Met performand standard Yes
Trihalomethanes Chichester Zone - PFOS, PFHxS & PFOA Analyte PFOS + PFHxS PFOA Chichester Zone - key aesthetic analytes	mg/L Units of measure	ADWG health guideline value	over previous 12 months) 100% of test results less than	0.086 Average for Month	0.098 Maximum detection over the last 12 months	Yes Yes Met performand standard
Chichester Zone - PFOS, PFHxS & PFOA Analyte PFOS + PFHxS PFOA	mg/L Units of measure	ADWG health guideline value	over previous 12 months) 100% of test results less than respective ADWG health guideline value	0.086 Average for Month	Maximum detection over the last 12 months	Yes Yes Met performand standard Yes
Chichester Zone - PFOS, PFHxS & PFOA Analyte PFOS + PFHxS PFOA	mg/L Units of measure	ADWG health guideline value	over previous 12 months) 100% of test results less than	0.086 Average for Month	Maximum detection over the last 12 months	Yes Yes Met performand standard Yes
Chichester Zone - PFOS, PFHxS & PFOA Analyte PFOS + PFHxS PFOA Chichester Zone - key aesthetic analytes	mg/L Units of measure ug/L ug/L	0.25 ADWG health guideline value 0.07 0.56	over previous 12 months) 100% of test results less than respective ADWG health guideline value Performance standard (assessment	O.086 Average for Month <0.004 <0.002	0.098 Maximum detection over the last 12 months <0.004 <0.002	Yes Yes Met performand standard Yes Yes Met performand standard
Chichester Zone - PFOS, PFHxS & PFOA Analyte PFOS + PFHxS PFOA Chichester Zone - key aesthetic analytes Analyte	mg/L Units of measure ug/L ug/L Units of measure	O.25 ADWG health 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	O.086 Average for Month <0.004 <0.002 Average for Month	0.098 Maximum detection over the last 12 months <0.004 <0.002	Yes Yes Met performant standard Yes Yes Met performant standard
Chichester Zone - PFOS, PFHxS & PFOA Analyte PFOS + PFHxS PFOA Chichester Zone - key aesthetic analytes Analyte Iron Aluminium Copper	mg/L Units of measure ug/L ug/L Units of measure mg/L mg/L mg/L	ADWG health guideline 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	0.086 Average for Month <0.004 <0.002 Average for Month 0.035 0.050 0.005	0.098 Maximum detection over the last 12 months <0.004 <0.002 12 month average result 0.019 0.036 0.004	Yes Yes Met performan standard Yes Yes Met performan standard Yes Yes Yes Yes
Chichester Zone - PFOS, PFHxS & PFOA Analyte PFOS + PFHxS PFOA Chichester Zone - key aesthetic analytes Analyte Iron Aluminium Copper Zinc	mg/L Units of measure ug/L ug/L Units of measure mg/L mg/L mg/L mg/L	ADWG health guideline 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	0.086 Average for Month <0.004 <0.002 Average for Month 0.035 0.050 0.005 0.002	0.098 Maximum detection over the last 12 months <0.004 <0.002 12 month average result 0.019 0.036 0.004 0.002	Yes Yes Met performan standard Yes Yes Met performan standard Yes Yes Yes Yes Yes
Chichester Zone - PFOS, PFHxS & PFOA Analyte PFOS + PFHxS PFOA Chichester Zone - key aesthetic analytes Analyte Iron Aluminium Copper Zinc Manganese	mg/L Units of measure ug/L Units of measure mg/L mg/L mg/L mg/L mg/L mg/L	ADWG health guideline value 0.07 0.56 ADWG aesthetic guideline value 0.3 0.2 1.0 3.0 0.1	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	0.086 Average for Month <0.004 <0.002 Average for Month 0.035 0.050 0.005 0.002 0.004	0.098 Maximum detection over the last 12 months <0.004 <0.002 12 month average result 0.019 0.036 0.004 0.002 0.002	Yes Yes Met performan standard Yes Yes Met performan standard Yes Yes Yes Yes Yes Yes
Chichester Zone - PFOS, PFHxS & PFOA Analyte PFOS + PFHxS PFOA Chichester Zone - key aesthetic analytes Analyte Iron Aluminium Copper Zinc Manganese Turbidity	mg/L Units of measure ug/L ug/L Units of measure mg/L mg/L mg/L mg/L mg/L mg/L Mg/L	ADWG health guideline value 0.07 0.56 ADWG aesthetic guideline value 0.3 0.2 1.0 3.0 0.1 5.0	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	0.086 Average for Month <0.004 <0.002 Average for Month 0.035 0.050 0.005 0.002 0.004 0.4	0.098 Maximum detection over the last 12 months <0.004 <0.002 12 month average result 0.019 0.036 0.004 0.002 0.002 0.002	Yes Yes Met performant standard Yes Met performant standard Yes Yes Yes Yes Yes Yes Yes Ye
Chichester Zone - PFOS, PFHxS & PFOA Analyte PFOS + PFHxS PFOA Chichester Zone - key aesthetic analytes Analyte Iron Aluminium Copper Zinc Manganese	mg/L Units of measure ug/L Units of measure mg/L mg/L mg/L mg/L mg/L mg/L	ADWG health guideline value 0.07 0.56 ADWG aesthetic guideline value 0.3 0.2 1.0 3.0 0.1	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	0.086 Average for Month <0.004 <0.002 Average for Month 0.035 0.050 0.005 0.002 0.004	0.098 Maximum detection over the last 12 months <0.004 <0.002 12 month average result 0.019 0.036 0.004 0.002 0.002	Yes Yes Met performan standard Yes Yes Met performan standard Yes Yes Yes Yes Yes Yes

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		99.90%	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		0.97	1.08	Yes
Chlorine	mg/L	5.0		0.88	1.49	Yes
Copper	mg/L	2.0	95th percentile of test results less than	0.009	0.015	Yes
ead	mg/L	0.01	respective ADWG health guideline value	0.000	0.001	Yes
Manganese	mg/L	0.5		0.006	0.012	Yes
rihalomethanes	mg/L	0.25		0.142	0.190	Yes
Grahamstown Zone - PFOS, PFHxS & PFO		, ,,,,,,				
nalyte	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 performal standard
PFOS + PFHxS	ug/L	0.07		-0.004	0.004	Vee
		0.07	100% of test results less than respective ADWG health guideline value	<0.004	0.004	Yes
FOA	ug/L	0.56		<0.002	<0.002	Yes
Grahamstown Zone - key aesthetic analyte	es					
Analyte	Units of measure	ADWG aesthetic guideline value	Performance standard (assessment over previous 12 months)	Average for Month	12 month average result	Met performal standard
ron	mg/L	0.3		0.025	0.023	Yes
Juminium	mg/L	0.2		0.062	0.049	Yes
opper	mg/L	1.0		0.002	0.004	Yes
inc	mg/L	3.0	Average of test results less than respective ADWG aesthetic guideline	0.009	0.003	Yes
langanese	mg/L	0.1	value		0.005	
·	NTU			0.006		Yes
urbidity Colour-True	HU	5.0		0.3	0.3	Yes
H	pH units	15.0 6.5-9.2	Average of test results between 6.5-9.2 pH units	7.58	7.56	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	Met performar standard
E. coli	MPN/100mL	Should not be detected in 100mL	At least 98% of test results <1	_	months 100.00%	Yes
		ADWG health	Performance standard (assessment	Average for	95th Percentile	Met performa
ınalyte	Units of measure	guideline value	over previous 12 months)	Month	over the last 12 months	standard
Chlorine	mg/L	5.0	95th percentile of test results less than respective ADWG health guideline value	0.93	1.26	Yes
Gresford Zone - PFOS, PFHxS & PFOA						
ınalyte	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 performar standard
PFOS + PFHxS	ug/L	0.07	100% of test results less than	<0.004	<0.004	Yes
FOA	ug/L	0.56	respective ADWG health guideline value	<0.002	<0.002	Yes
Gresford Zone - key aesthetic analytes	•	0.00				
resiona Zone - key aestrictic analytes						
nalyte	Units of measure	ADWG aesthetic guideline value	Performance standard (assessment over previous 12 months)	Average for Month	12 month average result	Met performate standard
urbidity	NTU	5.0	Average of test results less than respective ADWG aesthetic guideline value	0.1	0.2	Yes

Lemon Tree Passage Zone - key healt	n 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		0.94	1.00	Yes
Chlorine	mg/L	5.0	1	1.20	2.02	Yes
Copper	mg/L	2.0	95th percentile of test results less than	0.006	0.010	Yes
Lead	mg/L	0.01	respective ADWG health guideline value	0.000	0.001	Yes
Manganese	mg/L	0.5		0.003	0.010	Yes
Trihalomethanes	mg/L	0.25		0.114	0.139	Yes
Lemon Tree Passage Zone - PFOS, PF	HxS & 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
Lemon Tree Passage Zone - key aesth	-	0.56	respective ADWG health guideline value	<0.002	<0.002	Yes
-	-	ADWG aesthetic guideline value	respective ADWG health guideline value Performance standard (assessment over previous 12 months)	<0.002 Average for Month	<0.002 12 month average result	Yes Met performance standard
Lemon Tree Passage Zone - key aesth	netic analytes	ADWG aesthetic	Performance standard (assessment	Average for	12 month average	Met performance
Lemon Tree Passage Zone - key aesth Analyte	netic analytes Units of measure	ADWG aesthetic guideline value	Performance standard (assessment	Average for Month	12 month average result	Met performance standard
Lemon Tree Passage Zone - key aesth Analyte Iron	Units of measure	ADWG aesthetic guideline value	Performance standard (assessment over previous 12 months)	Average for Month	12 month average result	Met performance standard Yes
Lemon Tree Passage Zone - key aesth Analyte Iron Aluminium Copper	Units of measure mg/L mg/L	ADWG aesthetic guideline value 0.3 0.2	Performance standard (assessment over previous 12 months) Average of test results less than respective ADWG aesthetic guideline	Average for Month 0.029 0.042	12 month average result 0.037 0.036	Met performance standard Yes
Lemon Tree Passage Zone - key aesth Analyte Iron Aluminium	Units of measure mg/L mg/L mg/L	ADWG aesthetic guideline value 0.3 0.2 1.0	Performance standard (assessment over previous 12 months) Average of test results less than	Average for Month 0.029 0.042 0.006	12 month average result 0.037 0.036 0.005	Met performance standard Yes Yes
Lemon Tree Passage Zone - key aesth Analyte Iron Aluminium Copper Zinc	Units of measure mg/L mg/L mg/L mg/L	ADWG aesthetic guideline value 0.3 0.2 1.0 3.0	Performance standard (assessment over previous 12 months) Average of test results less than respective ADWG aesthetic guideline	Average for Month 0.029 0.042 0.006 0.004	12 month average result 0.037 0.036 0.005 0.004	Met performance standard Yes Yes Yes Yes Yes
Lemon Tree Passage Zone - key aesth Analyte Iron Aduminium Copper Zinc Manganese	mg/L mg/L mg/L mg/L mg/L mg/L mg/L	ADWG aesthetic guideline value 0.3 0.2 1.0 3.0 0.1	Performance standard (assessment over previous 12 months) Average of test results less than respective ADWG aesthetic guideline	Average for Month 0.029 0.042 0.006 0.004 0.003	12 month average result 0.037 0.036 0.005 0.004 0.004	Met performance standard Yes Yes Yes Yes Yes Yes Yes

PFOS, PFHxS and PFOA Results for Clear Water Tanks - February 2023

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 CWTs of the water treatment plants monitored during the month are summarised below.

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

PFOS, PFHxS and PFOA Results for Raw Waters - February 2023

Raw water monitoring points are representative of water received at the water treatment plants, prior to any treatment occurring. Maximum raw water results of the water treatment plants monitored during the month are summarised below.

Analyte	Units of measure	ADWG health guideline value	Anna Bay WTP - Raw Water	Dungog TW Raw	Grahamstown Raw - East Main ^	Grahamstown Raw - West Main		Gresford (Paterson River) WTP *	Lemon Tree Passage WTP - Raw Water	Nelson Bay WTP - Raw Water
PFOS + PFHxS	ug/L	0.07	<0.004	<0.004	0.008	0.005	<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

[^] 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.

[#] One sample is collected per month in the Gresford Zone