

Drinking Water Quality Management

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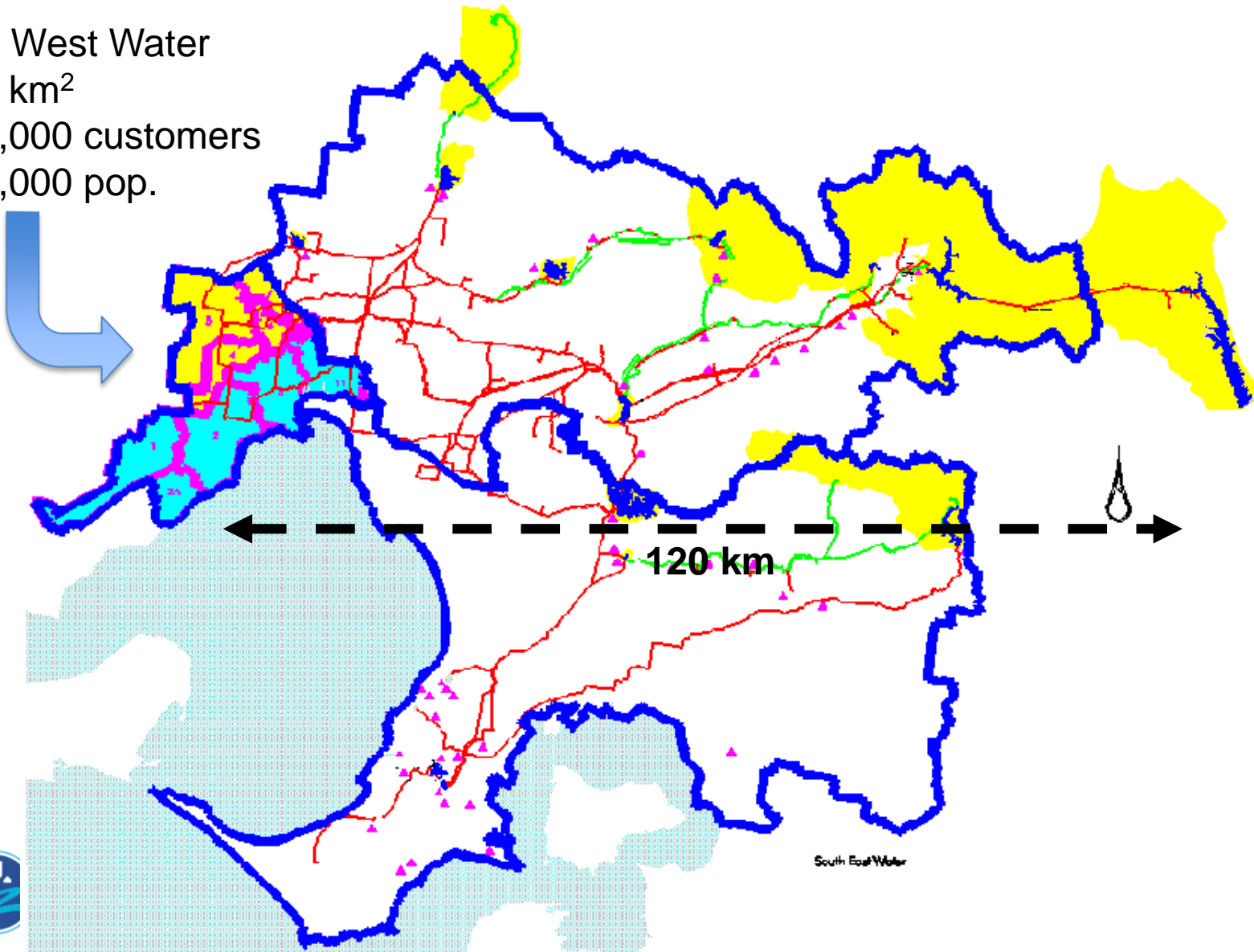
City West Water

Source of drinking water for Melbourne

- 100% from rainfall (no groundwater).
- Extensive water catchment & reservoir system around Melbourne (11 reservoirs).
- Largest reservoir is 120 km east of CWW.

Source of drinking water for Melbourne

City West Water
580 km²
400,000 customers
900,000 pop.





**Mostly protected
catchments:**

**no industries or
farms**

no inhabitation

no roads



Source of drinking water for Melbourne

Therefore:

- Naturally very clean source water
(no pollution, no pesticides, no heavy metals, etc).
- Minimal treatment – disinfection + pH adjustment.
(chlorine gas) (CaO - lime)

Two of the eleven reservoirs have more treatment.

Melbourne drinking water quality

- Safe, clean water.
- Perfectly safe to drink without boiling or filtering.
- Meets Australian & International standards.
- Few complaints ~200 per year (0.5 per 1,000 properties)

TM



City West Water

Hazard Analysis & Critical Control Point

Regulation of drinking water quality

Water quality regulated by the state of Victoria:

Safe Drinking Water Act 2003

Requires:

- Water Quality Risk Management Plan
- Monitoring of water quality
- Full disclosure of water quality

Regulation of drinking water quality

Risk Management Plan

- identify risks
- identify actions
- identify programs

Operational Practices

- undertake actions
- undertake programs



Regulation of drinking water quality

Victorian WQ Standards

- *Escherichia coli*
- Disinfection By-products
 - Chloroacetic acids
 - Trihalomethanes
- Aluminium
- Turbidity
- Bromate
- Formaldehyde



Monitoring of drinking water quality

- ~ 3,000 microbiological samples per year.
- ~ 1,000 chemical samples per year.
- 90% of samples tested at point of delivery to customers (at the meter to property).





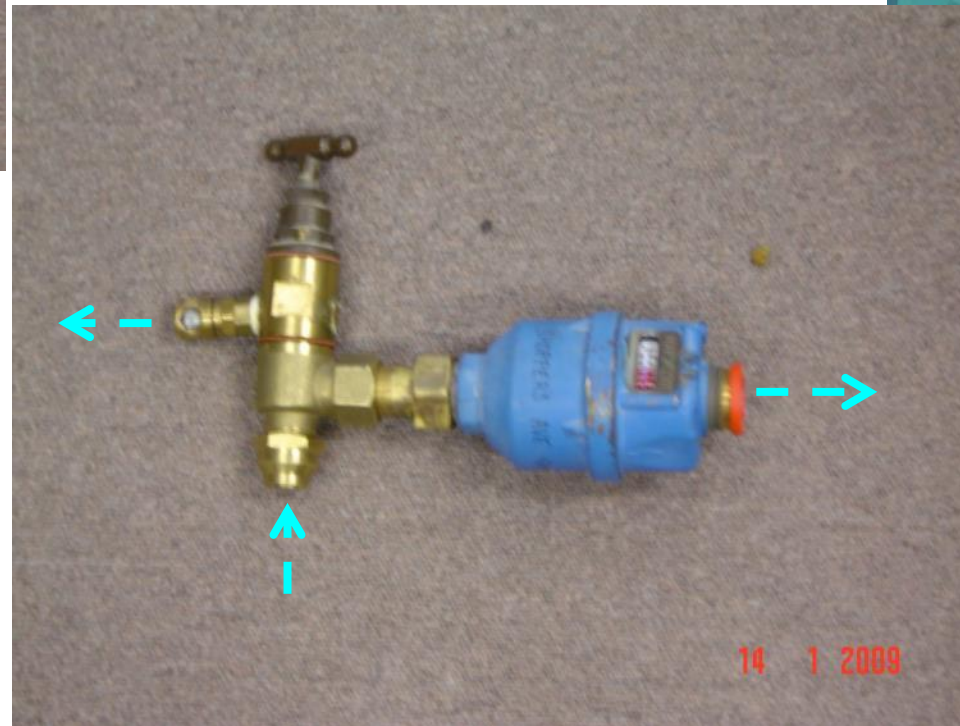
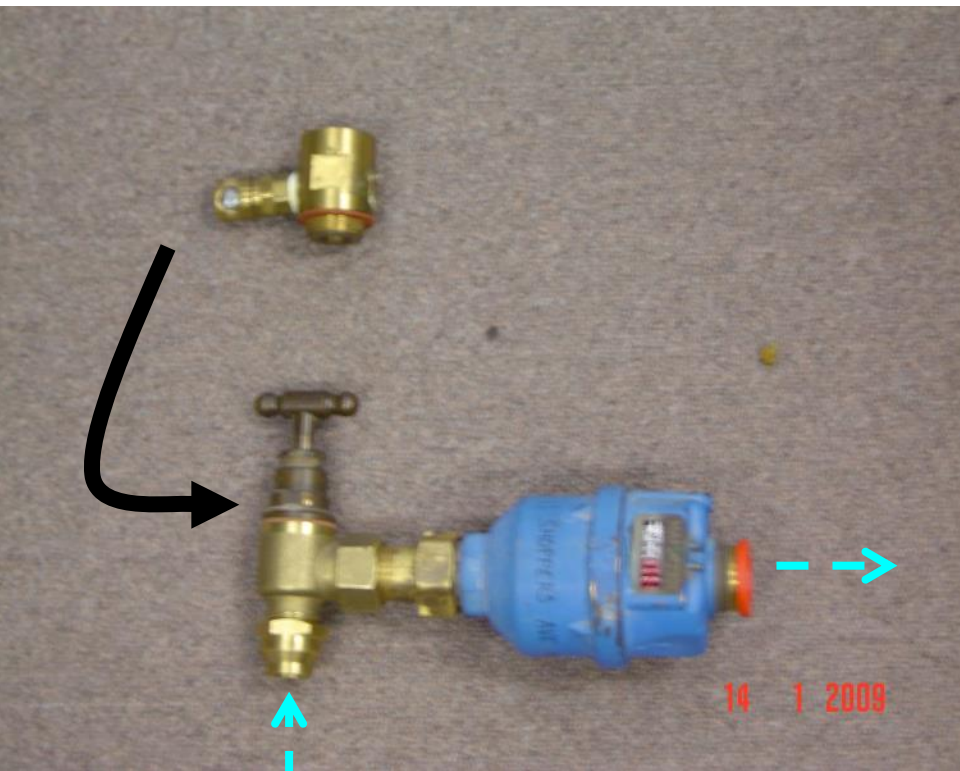
meter

23 4 2008

**sampling
point**



23 4 2008



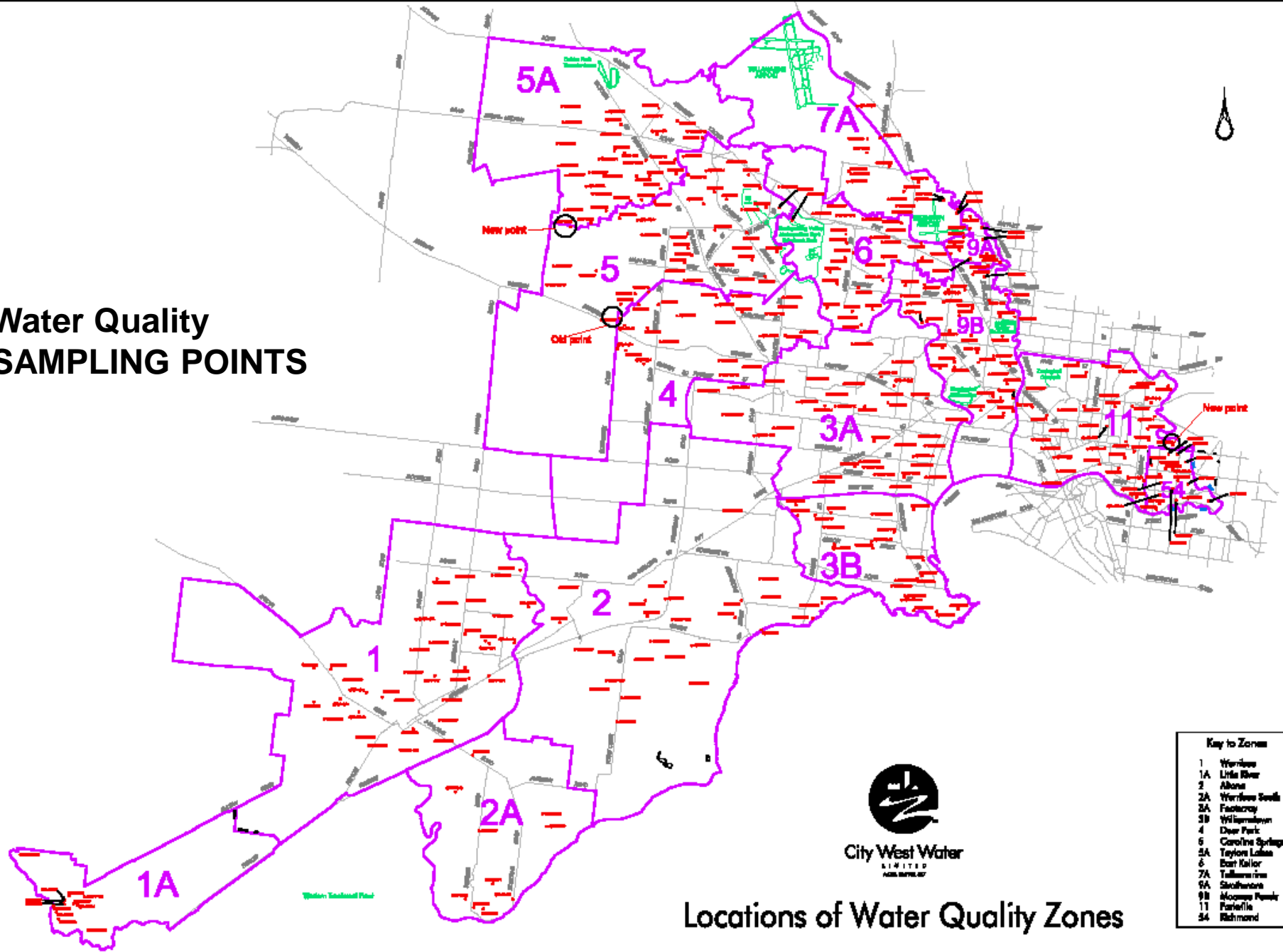


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Sampling & testing
undertaken by contractor



Water Quality SAMPLING POINTS



City West Water
LIMITED
Auckland City Council

Locations of Water Quality Zones

Key to Zones	
1	Wairana
1A	Little River
2	Albion
2A	Wairana South
3A	Factory
3B	Willemshaven
4	Dear Park
6	Caroline Springs
5A	Taylor Lakes
6	East Kallio
7A	Tallentire
8A	Strathmore
9B	Kopuapa Point
11	Paritike
14	Richmond

Full data disclosure

ALL WATER QUALITY LOCALITIES						POPULATION 695,209 (2006 Census)		
FOR PERIOD		1 July 2008 to 30 June 2009						
Parameter	Unit	Guideline Value (ADWG 2004)	Concentration or value (all samples)			No. of Samples		Performance against standard / guideline
			Min	Mean ^G	Max	Total	Passing	
Total Plate Count (37°C)	orgs/mL	1000*	<1	1	4,700	2535	2531	99.8%
Total Coliforms	orgs/100mL	N	<1	<1	200	2536	-	-
<i>E.coli</i> #	orgs/100mL	98%<1	<1	<1	<1	2536	2536	within standard (actual 100%)
Free Chlorine	mg/L	5	0.01	0.11	1.1	2536	2536	100%
Total Chlorine	mg/L	5	0.02	0.16	1.1	2536	2536	100%
Alkalinity (as CaCO ₃)	mg/L	N	12	15	24	15	-	-
Aluminium (acid soluble)	mg/L	0.2	<0.01	0.02	0.11	394	394	100%
Arsenic	mg/L	0.007	<0.001	<0.001	<0.001	15	15	100%
Cadmium	mg/L	0.002	<0.002	<0.002	<0.002	15	15	100%
Calcium	mg/L	N	3.6	7.7	14.0	15	-	-
Chloride	mg/L	250	7.0	16.0	20.0	15	15	100%
Chromium	mg/L	0.05	<0.01	<0.01	<0.01	15	15	100%
Colour	Pt/Co	25**	<2	4	18	394	394	100%
Conductivity	µS/cm	~750	53	109	170	394	394	100%
Copper	mg/L	1	<0.01	0.026	0.080	15	15	100%
Cyanide	mg/L	0.08	<0.005	<0.005	<0.005	15	15	100%
Dissolved Oxygen	mg/L	N	7.4	9.5	10.9	27	-	-
Fluoride	mg/L	1.5	0.25	0.91	1.10	394	394	100%
Hardness (as CaCO ₃)	mg/L	200	15	27	40	15	15	100%
Iron	mg/L	0.3	<0.02	0.05	0.18	394	394	100%
Lead	mg/L	0.01	<0.01	<0.01	<0.01	15	15	100%
Magnesium	mg/L	N	1.1	1.8	2.4	15	-	-
Manganese	mg/L	0.1	<0.001	0.003	0.010	394	394	100%
Mercury	mg/L	0.001	<0.001	<0.001	<0.001	15	15	100%
Nitrate (NO ₃)	mg/L	50	0.43	1.38	1.73	15	15	100%
pH	units	6.5-8.5	6.6	7.3	9.5	391	382	97.7%
pH	units	6.5-9.2	6.6	7.3	9.5	391	388	99.2%
Potassium	mg/L	N	0.8	1.5	1.8	15	-	-
Silica (SiO ₂)	mg/L	N	2.9	4.2	6.9	15	-	-
Sodium	mg/L	180	4.9	9.8	12.0	15	15	100%
Sulphate	mg/L	250	2.2	12.2	18.0	15	15	100%
Temperature	°C	N	10	17	22	27	-	-
Total Organic Carbon	mg/L	N	2.0	2.2	3.0	15	-	-
Total Phosphorus	mg/L	N	<0.005	0.006	0.011	15	-	-
Total Dissolved Solids	mg/L	500	36	74	100	15	15	100%
Turbidity	NTU	5 ¹	<0.2	0.65 ¹	4.4	787	-	within standard
Zinc	mg/L	3	<0.01	<0.01	0.020	15	15	100%
Dibromochloromethane	mg/L	N	<0.001	0.004	0.011	195	-	-
Dichlorobromomethane	mg/L	N	0.001	0.011	0.022	195	-	-
Bromoform	mg/L	N	<0.001	<0.001	0.001	195	-	-
Chloroform	mg/L	N	<0.001	0.031	0.092	195	-	-
Total Trihalomethanes	mg/L	0.25	0.002	0.047	0.103	195	195	100%
Chloroacetic acid	mg/L	0.15	<0.005	<0.005	<0.005	195	195	100%
Dichloroacetic acid	mg/L	0.1	<0.005	<0.005	0.021	195	195	100%
Trichloroacetic acid	mg/L	0.1	<0.005	0.010	0.047	195	195	100%
Bromate	mg/L	0.02	<0.01	<0.01	<0.01	15	15	100%
Formaldehyde	mg/L	0.5	<0.1	<0.1	<0.1	15	15	100%

Notes: * Internal City West Water guideline.
 ** Guideline set for "True Colour" (15 NTU) however "Apparent Colour" is measured (with a benchmark guideline of 25 NTU).
 N No guideline/standard value set for this parameter.
 1 Maximum permitted daily 99% of samples must not exceed this value. For more information visit our website at www.cww.govt.nz

Drinking Water
Quality Report 2009



Thank You



City West Water