A guide to
Western Water's
water quality.

Your water

WESTERN WATER

Your water supply

What have you told us?

Our 2004 customer research results told us that 81% of our customers are satisfied with Western Water's overall service, which is an excellent result. However, when we asked how our service could be improved, water quality issues dominated your suggestions, especially the taste and cleanliness of the water.

We have used this valuable feedback to help identify localised water quality concerns and prioritise projects to address the problems. Our capital works program is dedicated to both securing the region's water supplies and upgrading your town's water quality. We are working hard to meet your expectations of a water supply that is not only safe to drink, but looks and tastes great too!

Who does Western Water supply?

Western Water's drinking water reticulation system currently supplies more than 11 million litres of water per year to almost 50,000 homes and businesses across a 3000 square kilometre service area.

To assist with the efficient management of water quality, our service area is divided into sixteen water quality zones. Each zone is determined by the origin of the water, the location of treatment and storage facilities and the associated delivery system.

Water Quality Zones

1. Gisborne
2. Sunbury
3. Diggers Rest
4. Bulla
5. Macedon
6. Mount Macedon
7. Riddells Creek
8. Romsey
9. Lancefield
10. Woodend
11. Melton
12. Rockbank
13. Toolern Vale
14. Long Forest
15. Bacchus Marsh
16. Myrniong

Where does your water come from?

Your drinking water is collected in catchment areas, flowing from rivers and creeks into local reservoirs. From the reservoir, the water is piped into a water filtration plant, filtered, disinfected and then delivered through a network of storage tanks, pipes and pumping stations to homes and businesses.

Catchment	Reservoir	Towns Supplied
Lerderderg River Catchment Goodman Creek Catchment Pyrites Creek Catchment	Lake Merrimu	Melton, Rockbank, Toolern Vale, Bacchus Marsh and Long Forest *
Djerriwarrh Catchment	Djerriwarrh Reservoir	
Jacksons Creek Catchment	Rosslynne Reservoir	Gisborne, Mount Macedon, Macedon and Riddells Creek *
Thomson and Upper Yarra Catchments	Greenvale Reservoir	Sunbury, Bulla and Diggers Rest
Falls/Smokers Creek Catchment Reservoir B&C Catchment	Reservoirs B & C	Woodend
Campaspe River Catchment	Campaspe Reservoir	
Werribee River Catchment Pykes Creek Catchment	Pykes Reservoir	Myrniong*
Upper Bolinda Creek	Kerrie Reservoir	Romsey
Deep Creek Catchment	Lancefield Reservoir	Lancefield
Monument Creek Catchment	Monument Creek Weir	
Lancefield Aquifer	Bore Numbers 2 & 3	
Main Creek Catchment	Wright and Forster Reservoirs	Riddells Creek *(backup supply)*
Baringo Catchment	Pierce Reservoir	Gisborne *(backup supply)*
Riddells Creek Catchment	Frank Mann Reservoir Kitty English Reservoir Bawdon Reservoir	Macedon *(backup supply)*
Willimigongon Catchment	Orde Hill Reservoir Willimigongon Reservoir	Mount Macedon *(backup supply)*
Turitable Creek Catchment	Andersons Reservoir McDonalds Reservoir Gillespies Weir	

** Due to the ongoing drought conditions in our region, these systems have been supplemented with drinking water from Melbourne Water to ensure an adequate supply is available for all customers.*

What do we add to your water supply?

To ensure a safe water supply, water authorities apply some treatment and/or disinfection to water before supplying it to their customers.

In addition to filtration of the water to remove naturally occurring particles, Western Water adds measured doses of chemicals to provide you with safe and healthy drinking water. Different supply systems have different treatment requirements.

Water supply system	Treatment processes	Water quality zones
Lake Merrimu	Fluoridation, pH correction and Chloramination	Melton, Bacchus Marsh, Toolern Vale, Rockbank, Long Forest and Myrniong
Greenvale Reservoir (via Hillside pumping station)	Fluoridation and Chlorination followed by Chloramination	
Rosslynne Reservoir	pH correction and Chloramination	Gisborne, Macedon, Mount Macedon and Riddells Creek
Greenvale Reservoir (via Riddell Road pumping station)	Fluoridation and Chlorination followed by Chloramination	
Greenvale Reservoir (via Loemans Road pumping station)	Fluoridation and Chlorination followed by Chloramination	Sunbury, Bulla and Diggers Rest
Campaspe Reservoir & Reservoir C	pH correction and Chloramination	Woodend
Kerrie Reservoir	pH correction and Chloramination	Romsey
Garden Hut Reservoir	Chloramination	Lancefield
Pykes Creek Reservoir	Chlorination	Myrniong

Disinfection

Disinfection is important in order to destroy potentially harmful micro-organisms in the water supply, thereby maintaining public health. This process kills any bacteria or viruses in the water and provides a disinfection residual to protect the water from recontamination as it travels from a water filtration plant through the distribution system to customer taps. Chlorine and/or ammonia are used to disinfect the water supply through the distribution system to customer's taps.

Chlorination

Chlorination is the addition of chlorine to the water supply and requires minimal contact time to destroy micro-organisms. The reticulation lengths in smaller towns respond most effectively to chlorine.

Chloramination

Chloramination is the addition of ammonia to chlorine, to form chloramines. Chloramines are less reactive than chlorine alone enabling them to travel further into the distribution system to safely disinfect the water supply. Chloramines are also less likely to generate taste and odour issues, compared to chlorine alone.

Fluoridation

Fluoride is added to the water in some towns for dental health benefits, in accordance with Victorian Department of Human Services (DHS) requirements. Fluoride is particularly effective in protecting children's teeth while they are forming and helps reduce dental decay in adult teeth.

pH correction

The water's acidity is corrected to maintain a neutral pH, by adding lime. This ensures the water does not corrode our water mains.

Water quality test results

	Microbiological	
	E.coli	Total Coliforms
WSA or ADWG Value (for assessment over 12 month period)	Zero *E.coli* organisms per 100mL in 95% of samples examined	Zero coliform organisms per 100mL in 95% of samples examined

Test Results – 1 June 2003 to 30 June 2004

Water quality zone	All characteristics comply	% of samples complying	% of samples complying
Bacchus Marsh	✓	98.7	98.7
Bulla	✓	100.0	100.0
Diggers Rest	✓	100.0	98.1
Gisborne	✓	100.0	100.0
Lancefield	✓	100.0	96.2
Long Forest	✓	100.0	100.0
Macedon	✓	100.0	100.0
Melton	✓	100.0	98.1
Mount Macedon	✓	100.0	96.4
Myrniong	✓	100.0	98.1
Riddells Creek	✓	100.0	100.0
Rockbank	✓	100.0	100.0
Romsey	✓	100.0	96.2
Sunbury	✓	100.0	97.4
Toolern Vale	✓	100.0	98.1
Woodend	✓	98.2	100.0

Understanding the results

E.coli and Total Coliforms

E.coli and coliform bacteria are used as indicators of the possible presence of disease causing micro-organisms. They are measured in organisms per 100 millilitres (mL).

Turbidity

This is a measure of the clarity of the water as suspended material in water may cause it to look muddy or discoloured. Turbidity is measured in Nephelometric Turbidity Units (NTU).

Physical/Chemical		
Turbidity	**Colour**	**pH**
Average result <5 NTU	Average result <15 TCU	Average result between 6.5 – 8.5 pH units

Average result (NTU)	Average result (TCU)	Average result (pH)
0.19	1.3	7.77
0.94	1.7	8.49
1.63	1.6	7.57
0.13	0.7	7.49
0.50	1.8	7.98
0.13	1.4	7.99
0.19	1.0	7.96
0.02	0.8	8.16
0.36	1.3	7.50
1.87	3.3	7.85
0.20	0.8	7.87
0.37	0.9	7.71
0.02	5.0	8.04
0.77	1.8	7.57
0.16	1.9	7.87
0.04	2.4	7.65

Colour

A measure of the colour of water, which should be virtually colourless. It is measured in True Colour Units (TCU).

pH

This is a measure of the acidity or alkalinity of water. Water with a pH of seven is neutral. Guidelines suggest a pH value of 6.5 – 8.5, going up to 9.2 for areas with cement-lined pipes, such as Bulla.

Testing your water quality

How do we test water quality?

In 2003/04, over 10,000 tests were conducted on more than 4000 water quality samples. We engage an accredited commercial laboratory to independently collect and test the samples.

Samples are collected right across the water supply system including:

- untreated water (before it reaches a water filtration plant)
- water that has been treated at a water filtration plant
- water from pipework throughout the distribution system
- water from customer taps

What water quality guidelines must we meet?

A new framework for drinking water quality has been developed to regulate drinking water quality in Victoria. The *Safe Drinking Water Act 2003* came into operation on 1 July 2004 and is administered by DHS.

The new Act has established uniform performance targets for water quality across the state, introduced risk management systems to ensure good management of water quality and provided for more open and transparent disclosure of water quality results to the community.

Before July 2004, we were required to comply with a Water Services Agreement (WSA) with the Victorian Government, based on World Health Organisation (WHO) guidelines and the *Health (Drinking Water) Regulations 2002*. The National Medical Health and Research Council's (NMHRC) *Australian Drinking Water Guidelines (ADWG) 1996* were also used as a framework to establish guideline values for some water quality characteristics.

What do we test for?

Water samples are tested for over 50 different microbiological, chemical and physical characteristics including micro-organisms, colour, pH and chemical content.

The chart on the previous page shows Western Water's performance on selected characteristics for each water quality zone, against the relevant WSA or ADWG value. They show test results on the drinking water supplied to you during 2003/04.

Monthly water quality results are also now available on our website at **www.westernwater.com.au**

Frequently asked questions

Has drought impacted water quality?

2003/04 was our eighth consecutive year of dry conditions. The storage levels of our region's largest reservoirs, Lake Merrimu and Rosslynne Reservoir, continued to decline and water restrictions remained in place across Western Water's service area.

Low storage levels significantly reduce the holding time of water in our reservoirs, which minimises the time for particles from the catchments to settle. While we have continued to provide all of our customers with quality drinking water during the drought, falling water levels in our storages have impacted on water quality for some customers.

For example, the quality of water in Myrniong's Pykes Creek Reservoir varies in quality depending upon rainfall in the catchment and the water level. A low storage level combined with rainfall can agitate the water, affecting the colour, turbidity and iron and manganese levels. In October 2003, Western Water commenced temporary carting of water from Bacchus Marsh to Myrniong for improved water quality.

Major projects, such as the Melbourne to Melton/Bacchus Marsh pipeline and Woodend's Marriages Basin Water Filtration Plant upgrade, have assisted us to continue delivering a high quality of water to customers during the drought.

However, the local community has helped offset our low water levels by significantly reducing water usage. We recorded a huge drop in usage of 27%, or 3,081 million litres of water, in 2003/04. Thank you for your great water saving efforts and please continue to stay waterwise!

Should I buy bottled water?

You do not need to buy bottled water for health reasons, as Western Water supplies you with drinking water that meets the necessary health guidelines.

If you want a drink with a different taste, you can buy bottled water, however you are often buying a product that is no better than the water available at minimum cost from your tap. A litre of bottled water purchased at a supermarket costs more than one dollar, but to fill a one litre bottle at your kitchen tap costs less than 0.1 cents. That is more than a one thousand-fold difference in price!

What is 'hard' water?

Hard water contains excessive amounts of the minerals calcium and magnesium, which are naturally occurring elements in water. Hard water is not a health risk, but can be a nuisance because of its tendency to cause mineral build up in water pipe and heating systems, and its poor soap and/or detergent performance when compared with soft water, which contains little of these minerals.

ADWG guidelines recommend a hardness range between 60 to 200 milligrams per litre (mg/L) for good quality water. The table below shows the average hardness values recorded in all Western Water's water quality zones during 2003/04.

ADWG Value (for assessment over 12 month period)		Average result between 60 - 200 mg/L
Water quality zone	**Complies with guideline?**	**Average result (mg/L)**
Bacchus Marsh	✓	114
Bulla	✓	21
Diggers Rest	✓	16
Gisborne	✓	171
Lancefield	✓	145
Long Forest	✓	145
Macedon	✓	157
Melton	✓	90
Mount Macedon	✓	163
Myrniong	✓	117
Riddells Creek	✓	150
Rockbank	✓	92
Romsey	✓	25
Sunbury	✓	17
Toolern Vale	✓	183
Woodend	✓	35

Why does water sometimes look cloudy when first taken from a tap?

When your drinking water appears cloudy or milky, it usually indicates the presence of tiny air bubbles in the water. This commonly occurs after a burst water main is repaired and air has been trapped in the pipes when the water main is turned back on. The bubbles generally go away on their own or when the mains are flushed.

Do I need a water filter?

Western Water strives to deliver high quality water to our customers. We continually monitor, sample and analyse water from all areas of our distribution network to help us achieve this. We do not believe that filters are necessary for our water, however it is acknowledged that some customers may choose to purchase a filter.

If you do decide to install a filter, it is important that you select one that meets your needs. Do you want the filter to remove colour, taste, odour or chemicals?

Also consider the following points when choosing a filter:

- Filters should be certified to relevant Australian Standards
- Filters must be maintained properly to avoid materials building up (eg bacteria) and entering your water supply
- Most filters require ongoing maintenance costs
- Different manufacturers and suppliers will have varying standards of after sales service

A water filter company wants to test my tap water to determine the quality. What can they tell me?

While many water filter companies have an established reputation, some customers have reported cases of salespeople claiming to represent Western Water and offering to conduct free water quality tests. ***Western Water does not promote or endorse any water filter company.***

Some filter manufacturers and salespeople claim that their water filters remove substances such as pesticides, detergents or heavy metals from tap water. As these substances have not actually been detected in Western Water's supply system, these claims are unfounded. Your water supply is treated and disinfected before it reaches your tap to remove naturally occurring organisms and contaminants, which may pose a health risk.

If a claim is made that a water filter can deliver a higher quality water supply, you should ask the manufacturer or salesperson for technical information on how their filter has been designed for Western Water's supply system. If they cannot supply this particular information and clearly demonstrate how the filter works, then you should question its effectiveness.

Glossary

ADWG	Australian Drinking Water Guidelines
DHS	Department of Human Services: **www.dhs.vic.gov.au**
Melbourne Water	Melbourne Water Corporation manage Melbourne's water supply catchments. **www.melbournewater.com.au**
Mg/L	Milligrams per litre
mL	Millilitre (one thousandth of a litre)
NHMRC	National Medical Health and Research Council **www.nhmrc.gov.au**
WHO	World Health Organisation: **www.who.int**
WSA	Water Services Agreement

Further information

If you would like further information on any aspect of water quality or the operation of Western Water's supply system, please contact us on 1300 650 425. We also welcome your feedback on the information contained in this brochure.

If you are unhappy with the quality of your drinking water, we encourage you to call us, as we can help investigate the issue and determine the best course of action to take.

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