



**Melbourne
Water**

Public Health Compliance

Quarterly Report

Quarter Two 2006/07
(October, November, December 2006)

DRINKING WATER

Issues/Initiatives/Incidents.

Fluoride in Drinking Water

The World Health Organization (WHO) has released a monograph on *Fluoride in Drinking-water*. The report provides guidance for countries where there are adverse health effects from high levels of fluoride in water as well as the application of the WHO Guideline for fluoride in drinking water. Melbourne Water fluoridates the majority of supplied drinking water under the direction of the *Health (Fluoridation) Act (1973)*.

In several countries, including China and East Africa, individuals are exposed to high concentrations of naturally occurring fluoride from ground water drawn from areas of old marine deposits (up to 50mg/L) and pollution from coal burning. The most common adverse health effects are dental fluorosis and skeletal fluorosis, the latter a crippling bone disease. The WHO Guideline Value of 1.5 mg/L for fluoride was set in 1984 and confirmed in 1996 and 2004. This level of fluoride was set to ensure dental protection from decay. Melbourne Water fluoridates to a level of 1.0 mg/L.

Water Quality and Bushfires

In Quarter Two a number of significant bush fires occurred in Victoria, which resulted in an estimated 1,000,000 hectares of land being burnt. For a catchment-based supply such as Melbourne's, the threat from wildfire is primarily reduction in harvest and water quality. After fire, trees that regrow require large amounts of water that reduces the amount available to run off into storages. When rain occurs after fire, run-off from affected areas can be heavily contaminated with eucalyptus oils, ash and debris. Water can become un-useable and water storages may need to be taken off line.

Only a small amount of Melbourne's catchments were impacted directly by the 2006 fires, namely in the Thomson catchment. At no time was water quality threatened from these fires. There is a potential impact from recent fire management and the construction of containment lines within the Thomson Catchment. These lines are required to stop fire entering the catchment areas, but represent an area of disturbed ground. If heavy rain follows the construction of containment lines, sediment can run off into creeks and reservoirs. The Department of Sustainability and Environment constructed containment lines with input from Melbourne Water to ensure that lines were on ridges and would not have a negative impact on water quality.

The Water Quality Research program within Research and Technology has recently included research into bushfire. Research on the types of soils in Melbourne's catchments and how they will respond to fire and sediment analysis from reservoirs to determine extent of ash run-off from previous fires will be investigated in 2007/2008. The results of this research will help Melbourne Water understand the potential impacts of a major catchment fire.

Catchment and Water Supply Asset Security

During the quarter 50 minor security breaches were recorded. These predominately involved the cutting of fences, trespassing, vandalism, fishing and littering in the catchments. These security breaches had no discernible impact on water quality.

Regulations and Compliance Targets

This section summarises the statutory requirements and corporate targets related to the quality of water supplied by Melbourne Water. Details of compliance and indicators of microbial performance are shown in the following sections.

The *Health (Fluoridation) Act 1973* requires the provision of fluoride in drinking water at concentrations not in excess of 1 mg/L. The requirements of the Act are further amplified by the accompanying Standards for Fluoridation of Public Water Supplies. In the Standards the Department of Human Services (DHS) adopted the recommendations contained in the NHMRC/AWRC 1987 Guidelines for Drinking Water Quality in Australia (referred to as NHMRC/AWRC 1987 Guidelines).

The *Health (Quality of Drinking Water) Regulations 2002*, made under the *Health Act 1958*, have been repealed by Part 6 of the new *Safe Drinking Water Act 2003* and have been replaced by the *Safe Drinking Water Regulations 2005*. The drinking water quality standards set under the Regulations apply at prescribed sampling points and are the responsibility of the water supplier (the retail water businesses in Melbourne).

Melbourne Water and the retail water companies have amended the water quality standards (Schedule 3) in the Bulk Water Supply Agreements (BWSAs). This ensures consistency with the standards in the Regulations that the retail water businesses must meet at customer taps. The new regulations came into force on 19 July 2005.

Melbourne Water has requirements to meet service standards for the Essential Services Commission, which came into force at the beginning of 2005. These standards are based on the standards in the BWSAs.

Melbourne Water also sets some operational targets compatible with statutory requirements. The targets aim to allow Melbourne Water to meet its obligations under the BWSAs and enable the retail water businesses to deliver water in accordance with the conditions of their operating licences. These conditions include compliance with health related parameters of the Australian Drinking Water Guidelines 2004.

Statutory Compliance

Fluoridation Plant Reliability

Compliance with Health (Fluoridation) Act (1973)

Based on Long Term (12 mth) Average Dosage not to exceed 1 mg/L

Treatment Plant	Compliance			
	Q3 05/06	Q4 05/06	Q1 06/07	Q2 06/07
Cardinia				
Research/Winneke			*	
Monbulk				
Silvan-Olinda				
Silvan-Preston				
Silvan-Waverley				
Yan Yean	**	**		

* Research Plant offline 15/06/2006 and replaced by new Winneke Plant online 07/09/2006.

** Yan Yean Reservoir and Plant off line from 1/02/2006 to 30/06/2006.

Compliance achieved		Not applicable		Compliance not achieved	
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During Quarter Two the average fluoride concentration at all plants did not exceed 1 mg/L.

Quarterly Compliance with Health (Fluoridation) Act (1973)

Quarterly Average Dosage to be between 0.7 - 1.2 mg/L

Treatment Plants	Compliance			
	Q3 05/06	Q4 05/06	Q1 06/07	Q2 06/07
Cardinia				
Research/Winneke			*	
Monbulk				
Silvan-Olinda				
Silvan-Preston				
Silvan-Waverley				
Yan Yean	**	**		

* Research Plant offline 15/06/2006 and replaced by new Winneke Plant online 07/09/2006.

** Yan Yean Reservoir and Plant off line from 1/02/2006 to 30/06/2006.

Compliance achieved		Not applicable		Compliance not achieved	
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During Quarter Two all sites were compliant on a quarterly basis.

Compliance Summary

Summary of Compliance for Corporate Public Health Targets and Performance Standards for Water Quality in the Bulk Water Supply Agreements (BWSAs] and the Essential Services Commission (ESC) Standards

Quarter Two 2006/07

Compliance Measure	Target Met
Disinfection Plant Reliability (Corporate target - combined reliability measure of 96%).	Yes
Supply to retail companies at entry and water quality monitoring points - <i>E.coli</i> . (Corporate target - 100 % of samples < 1 org/100 mL)	Yes
Trihalomethanes and Haloacetic Acids (BWSA - 100% of samples meet standards)	Yes
Aluminium - aesthetic parameter (Compliance with ESC Standards)	Yes
Turbidity - aesthetic parameter. (Compliance with ESC Standards)	Yes

New regulations under the *Safe Drinking Water Act 2003* (SDWA) have resulted in additional chlorine based chemicals (disinfection by-products) being included in the BWSA variations that came into effect on 1 January 2005. These are Chloroacetic Acid, Dichloroacetic Acid and Trichloroacetic Acid. Melbourne Water also has requirements to meet service standards for the ESC starting from this time. Aluminium and turbidity are now regulated parameters under the SDWA and have been included in the BWSAs and ESC standards. Aluminium and turbidity are aesthetic rather than health based parameters.

During Quarter Two of 2006/07, Melbourne Water complied with the health parameters of the BWSA.

Detailed information on quarterly compliance against the indicators is given in the following sections.

Bulk Water Supply Agreements and Corporate Compliance Details

Plant Disinfection Reliability – Primary and Secondary Plants

Primary disinfection plants are those that disinfect water from systems open to faecal contamination, such as major storage reservoirs.

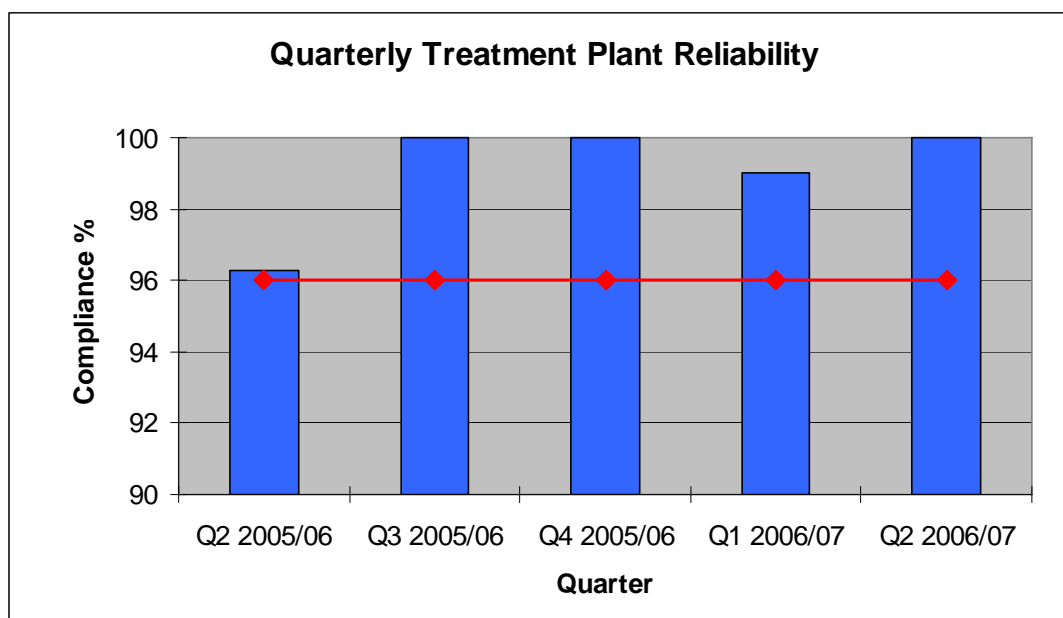
Secondary disinfection plants are those that disinfect after the water has initially been treated by a primary plant. They disinfect within a closed system to control regrowth of bacteria in the pipe network.

There are up to 37 primary and secondary plants included in the performance assessment for reliability compliance. The actual number in operation depends on system configuration during the quarter.

The established reliability measures for primary and secondary chlorination plants in operation are:

- Primary chlorinators meeting the chlorine contact time requirements for 99.9% of available operating time, and
- Secondary chlorinators within their operating range for 95% of available operating time

Melbourne Water has a target for 96% of all plants to meet the reliability measures. The target was met in Quarter Two.

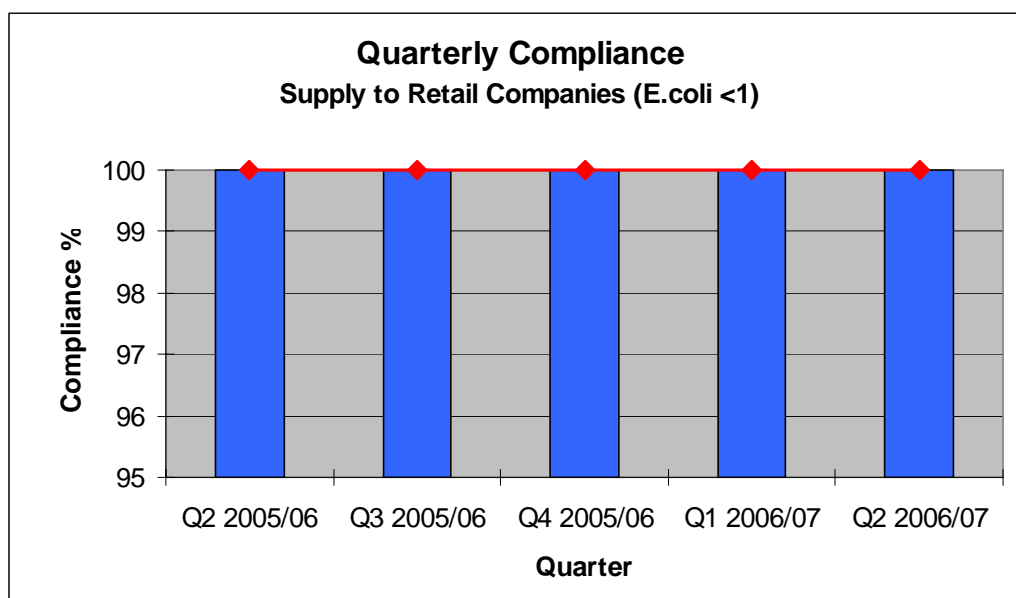


Supply to Retail Companies – E.coli

The overall objective is for no *E.coli* to be present in the water supply system. All detections are investigated and appropriate actions are taken. The chart below shows the percentage of samples taken at entry points and water quality monitoring points, which contain less than one *E.coli* bacterium per 100mL.

Entry points to supply are monitoring points immediately downstream of primary disinfection. Water quality monitoring points are other points at storages or water mains within the wholesale transfer system. They are identified in the BWSAs with the retail water businesses.

Melbourne Water's target is for 100% of the samples taken to be free from *E.coli* bacterium. It is more stringent than the requirements of the BWSAs that specify a target of 99% for each monitoring point. During Quarter Two this target was met.



Disinfection By-products - Trihalomethanes (THMs) and Haloacetic Acids

Trihalomethanes and the related haloacetic acids are present in drinking water principally as by-products of disinfection using chlorine. Some epidemiological studies have reported associations between the ingestion of chlorinated drinking water with a range of health matters including increased cancer mortality rates.

The new Bulk Water Supply Agreements (BWSA) with the retail water businesses contain targets for Haloacetic Acids that are those that were expected to be in the final regulations under the *Safe Drinking Water Act 2003* (SDWA). Some minor variations were contained in the final regulations. In simple terms, the targets are consistent with standards in the SDWA regulations, which adopt the health limits of the Australian Drinking Water Guidelines. For Trihalomethanes, the target is more stringent than in the regulations.

Routine sampling at selected sites is carried out to provide adequate data on the quality of water supplied to the retail water businesses. It is currently performed on a quarterly basis. An expanded monitoring program began in Quarter Two of 2004/05 at the time the SDWA came into effect. During Quarter Two of 2006/07 all targets were met.

Performance against Bulk Water Supply Agreement Targets

Parameter	BWSA targets	Q3 2005/06	Q4 2005/06	Q1 2006/07	Q2 2006/07
Chloroacetic Acid	0.15 mg/L				
Dichloroacetic acid	0.10 mg/L				
Trichloroacetic acid	0.10 mg/L				
Total Trihalomethanes	0.15 mg/L				

Target met		Action required & taken		Action required & not taken	
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Other Chemical and Physical Parameters included in Bulk Water Supply Agreements (BWSAs) and reported to the Essential Services Commission (ESC)

The ESC service standards and the revised BWSAs have requirements for aluminium and turbidity, which are aesthetic rather than health based parameters.

The standards set by the BWSAs and ESC have different underlying concepts in that the BWSAs' assessment is on individual rolling average performance achieved at each sample site while the ESC performance measures are assessed on annual aggregates for all sites.

For aluminium, the ESC target is more stringent than in the SDWA regulations, which relate to retail customers' taps. For turbidity, targets are based on achieving or bettering recent historical performance. Performance against the ESC service standards is shown in the table.

During Quarter Two both the target for turbidity and aluminium were met.

Performance against ESC service standards *

Parameter	Q3 2005/06	Q4 2005/06	Q1 2006/07	Q2 2006/07
Aluminium (mg/litre)				
Turbidity (NTU)				

NTU = Nephelometric Turbidity Units

Target met for this quarter		Target not met for this quarter * (see note)	
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Note: The ESC assesses compliance with these service standards on an annual basis, rather than for quarterly periods as shown above. Quarterly results are therefore an indication of likely annual compliance. However in the case of aluminium a single failure at any time will result in annual non-compliance as the Essential Services Commission (ESC) service standards contain a standard for “Aesthetic standards (aluminium)” of 99.88% of the aggregated number of samples from all monitoring points to comply with the BWSA provisions.

A report on aluminium non-conformance in drinking water for 2005/06 was provided at the EHSC meeting on 17 August 2006.

RECREATIONAL WATER ENVIRONMENT

Major Incidents/Initiatives/Issues

Yarra River Priority Project: Faecal Investigations – Ongoing study

The investigation of faecal contamination of stormwater drains around Melbourne is continuing.

Melbourne Water has made progress with investigations of the drain system in central Melbourne. Melbourne Water gained access to the underground stormwater system and traffic management plans from Melbourne City Council. This information has allowed Melbourne Water to trace contamination of drains to the north of the city in Carlton. Initial results have identified buildings in Grattan Place, Carlton, that may be responsible for contamination. City West Water staff are liaising with the building owners.

Surveillance monitoring of all major creeks and drains that run into the Yarra River below Warrandyte commenced during Quarter Two. Contracted personnel visit each of the 24 sites on a fortnightly basis to measure bacterial and physico-chemical run-off quality.

During an earlier investigation on the Hawthorn Main Drain system, an apartment in a block situated in Lynch Street Hawthorn was discovered with its sewer pipe connected to the council stormwater system. This fault was believed to be rectified, until further investigation showed that more than one apartment was connected to the drain. The entire apartment block is now under investigation by the Body Corporate to identify which apartments have been incorrectly plumbed. Yarra Valley Water and EPA Victoria are involved in the project.

Full screening stage investigation of Gardiners Creek is underway. It will involve dry and wet weather sampling of the main creek and about 15 of the major drains running into the creek. In Quarter Two, four dry weather sampling runs have been completed.

Statutory Compliance and Reporting

Melbourne Water has no existing statutory requirements for public health performance in regard to waterways. There are requirements for sewerage in the form of certain conditions that apply to the EPA Victoria (EPA) licences for the Eastern and Western Treatment Plants. The key health parameter is *Escherichia coli* (*E.coli*), which is defined in Appendix 1.

Bacteriological Conditions of Receiving Waters Required under the EPA Victoria Licence - Eastern Treatment Plant.

Melbourne Water is required to monitor the effect of the treated wastewater discharged from the Eastern Treatment Plant on the bacteriological quality of the receiving waters near the point of discharge at Boags Rocks. Monitoring is carried out each week in the pipeline upstream of the actual discharge and at six designated locations along the foreshore, including Gunnamatta Beach. Licence requirements are for samples to be measured for *E.coli*.

(a) Statutory Compliance and Reporting – Waste Discharge Sampling Point

The EPA licence specifies annual median and 90th percentile performance limits of 200 org/100mL and 1000 org/100mL respectively, for *E.coli* at the discharge sampling point. For the second quarter of 2006/07 the median and 90th percentile are on target to meet annual limits.

Compliance with specified levels of E.coli

Parameter	Compliance target
<i>E.coli</i> - annual median.	
<i>E.coli</i> - annual 90th percentile	

Compliance on target

Compliance not on target

(b) Statutory Reporting - Foreshore Locations

The EPA Victoria Licence requires monitoring of the receiving environment in accordance with the Eastern Treatment Plant Environmental Improvement Plan, which is a component of the Licence. The objectives for receiving water quality are defined by the State environment protection policy (Waters of Victoria). The limit for *E.coli* specified in the policy for primary contact recreation is a median of not more than 150 org/100mL. The limits for Enterococci are a median and 75th percentile of 35 org/100mL and 150 org/100mL respectively (Appendix 2). For the second quarter of 2006/07, compliance with the State environment protection policy was met.

Reporting of Results in Accordance with Statutory Requirements

Parameter	2006/07			
	Q1	Q2	Q3	Q4
<i>E.coli</i> - median				
Enterococci - median and 75% ile				

Reporting not required
 Report required and submitted

Report required but not submitted

Bacteriological Conditions of Receiving Waters Required under the EPA Victoria Licence - Western Treatment Plant.

The EPA Victoria licence for the Western Treatment Plant requires Melbourne Water to manage the effect of the discharge on the bacteriological conditions of the receiving waters of Port Phillip Bay. Long term monitoring has occurred at the actual discharges from the Plant and offshore at two locations, which are accessible from public roads. Samples are taken each week and measured for *E.coli*.

Statutory Compliance and Reporting

Before accreditation in August 2000, the EPA licence required weekly monitoring for *E.coli* at the four discharge points. This practice has continued as an appropriate means of assessing operating performance. No guidelines or limits have been established and results are only required as part of the annual report to the EPA in September each year.

Again, before accreditation, the EPA Licence required monitoring at the two foreshore locations and reporting of results when limits were exceeded. These were a geometric mean of 1000 org/100mL and an 80th percentile of 2000 org/100mL over each 42 day period beginning 1 January of each year. Although this is not a specific requirement of the accredited licence, Melbourne Water continues this monitoring as part of the overall program and to measure performance against the State environment protection policy (Waters of Victoria). For the second quarter of 2006/07 both geometric mean and 80th percentile results were below the traditional targets and compliance with the State Environment Protection Policy was met.

Comparison of Results against Traditional Licence Requirements

Parameter	2006/07			
	Q1	Q2	Q3	Q4
<i>E.coli</i> - geometric mean				
<i>E.coli</i> - 80th percentile				

Reporting not required		Report required but not submitted	
Report required and submitted			

Meeting “State environment protection policy” Objectives

As part of Melbourne Water’s long term Waterway Water Quality Monitoring Network, *Escherichia coli* (*E.coli*) is monitored at 73 sites with a more intensive weekly monitoring program in the Yarra and Maribyrnong Rivers (Yarra Watch) all year round and other key recreational sites in the summer.

The following information provides details on the levels of *E.coli* in Melbourne’s waterways using State environment protection policy (SEPP) objectives as long-term targets. An explanation of the *E.coli* bacteriological contamination indicator in relation to swimming is contained in Appendix Two.

A revised State environment protection policy (Waters of Victoria) was issued in June 2003. Objectives became more stringent in an endeavour to increasingly improve water quality. New targets applied to the Melbourne Water region, excluding the Yarra and Western Port catchments, where regionally specific SEPPs are in force.

SEPP objectives are established according to the “beneficial uses” associated with the particular waterway. In the case of “primary contact recreation” involving direct contact with the water, there is a possibility that water may be ingested. The general policy objective for “primary contact recreation” is a median *E.coli* of <150 org/100mL, although it remains as a geometric mean of <200 org/100mL in the Yarra and Western Port catchment policies. In waterways where only “secondary contact recreation” occurs, the policy objective is less stringent.

Presentation of results in this quarterly report has been revised from last year in order to provide a better comparison against SEPP objectives. This report uses a rolling twelve months of *E.coli* data and applies geometric means and 50th percentiles (medians) dependant on the particular SEPP for the waterway. Sites have now been grouped by SEPP schedule rather than by regionally named catchments.

Previous quarterly reports used a simplified calculation (medians) to assess levels of *E.coli*. This was done for ease of interpretation and to enable comparison across the entire region. However, the new approach is based more closely on the individual SEPP rather than a comparison between waterways.

Although comparison is made against SEPP, actual compliance is not assessed. However the use of monthly samples over 12 months gives a good indication of performance against the SEPPs - incorporating a range of seasons and a greater number of samples, similar to other environmental parameters in the SEPPs.

Monitoring regimes needed to assess true compliance, as specified in the SEPPs, would be:

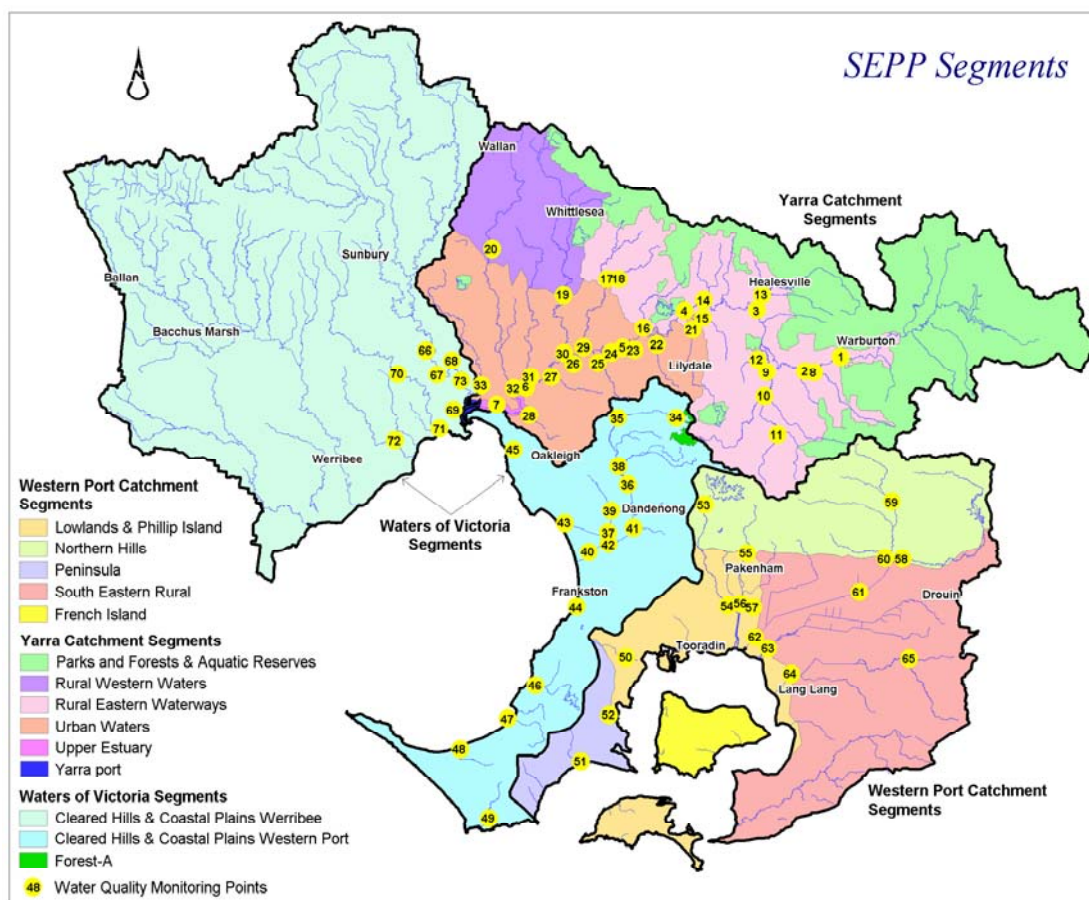
- Waters of Victoria – ‘the median of five samples taken at regular intervals within 30 days’,
- Waters of Western Port and Catchment – ‘a 42 day geometric mean’, and
- Waters of the Yarra Catchment – ‘geometric mean of not less than five samples taken over a period of not more than 42 days’.

With Melbourne Water's current program, it is only possible to determine true SEPP compliance using the Yarra Watch sites where results are obtained weekly. Yarra Watch results are provided later in this report.

Overall results for the quarter are shown in the following table. Future quarterly reports will eventually show results covering the present quarter and the previous three quarters. This report includes first and second quarter results.

A map of the SEPP segments and sampling points is also shown. An expanded monitoring program to cover the Werribee Cleared Hills and Coastal Plains Segment, now managed by Melbourne Water, is being developed.

Waterway Water Quality - Quarter Two of 2006/07



Compliance Performance Number of sites and performance rating

SEPP Schedule & Segments	No. of Sites	Q1 2006/07	Q2 2006/07	Q3 2006/07	Q4 2006/07
Waters of the Yarra Catchment					
# Rural Eastern Waters	15	7	11		
# Rural Western Waters	2	2	2		
# Upper Estuary	1	0	0		
# Urban Waters	15	1	1		
Waters of Victoria					
# Cleared Hills & Coastal Plains Werribee/ Maribyrnong	8	5	6		
# Cleared Hills & Coastal Plains Western Port	15	5	4		
# Forest-A	1	1	1		
Waters of Western Port & Catchment					
# Lowlands & Phillip Island	7	4	4		
# Northern Hills	5	1	3		
# Peninsula	1	0	0		
# South Eastern Rural	3	0	0		

Yarra Catchment SEPP Objective – *E.coli* Geometric mean 200 org/100mL

Waters of Victoria SEPP Objective – *E.coli* Median 150 org/100mL

Waters of Western Port SEPP Objective – *E.coli* Geometric mean 200 org/100mL

Number of sites passing SEPP	Nil	< Half	= or > Half	All
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Yarra Watch Program

The Yarra Watch Program, which commenced in March 2005, is separate from Melbourne Water's long-term routine monitoring program. Yarra Watch is designed to provide information to the public on the water quality trends in the Yarra. It involves weekly sampling for *E. coli* and Enterococci at 12 Yarra River sites. The program is managed by Melbourne Water with results published on the EPA Victoria website. It covers the Yarra from the Docklands to Millgrove near Warburton.

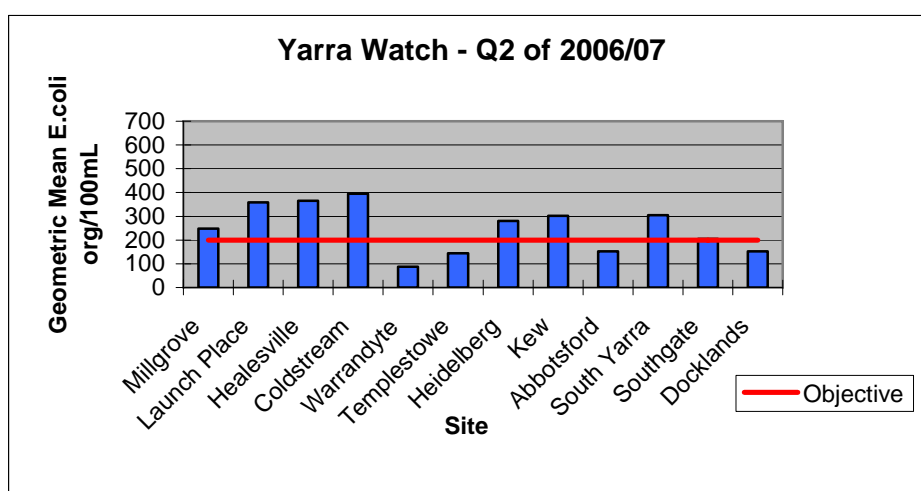
The Yarra Watch results and comparison with equivalent results for 2002 to 2005 are shown below. Docklands, South Yarra and Templestowe sites have only been monitored since March 2005. There was improved water quality in Quarter 1 due to the dry conditions. Even so there were two occasions when EPA Victoria issued stormwater advisory notices for the river following rainfall events. South Yarra continues to be the worst performing site.

Yarra Watch results for 2006/07

(Main source of data: EPA Victoria web site)

River Section	Sampling Site	2002	2003	2004	2005	2005/6		2006/7	
						Q3	Q4	Q1	Q2
Lower Yarra	Docklands	*	*	*	564	556	544	289	152
	Southgate	879	677	563	460	412	456	404	205
	South Yarra	*	*	*	777	1181	613	538	305
	Abbotsford	288	276	181	308	324	336	206	152
Middle Yarra	Kew	327	624	237	358	264	351	498	302
	Heidelberg	439	389	320	247	547	267	195	281
	Templestowe	*	*	*	204	362	174	99	144
	Warrandyte	154	167	112	116	193	109	43	88
Upper Yarra	Coldstream	143	171	171	275	291	326	251	395
	Healesville	209	190	170	258	409	299	281	366
	Launching Place	402	238	209	240	305	248	221	359
	Millgrove	173	119	144	152	388	160	123	248

Complies with SEPP objective		Exceeds SEPP objective	
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All figures are *E. coli* calculated as geometric means in org/100mL. Compliance is measured against the SEPP target for primary contact of a geometric mean for *E. coli* of 200 org/100mL. This target applies to all the listed sites. For secondary contact the traditionally accepted target is a geometric mean of 1000 org/100mL.

* New sites established under Yarra Watch Program.

RECYCLED WATER

Major Incidents/Initiatives/Issues.

Recycled Water from Treatment Plants

There were no significant health compliance matters related to recycled water during Quarter Two.

WERRIBEE AGRICULTURE

Major Incidents/Initiatives/Issues.

There were no significant health compliance matters during Quarter Two.

Statutory Compliance

Compliance with Livestock Disease Control Act 1994

During the quarter, all cattle sales conducted by Werribee Agriculture complied with S.44 (1) of the *Livestock Disease Control Act 1994*.

APPENDICES

Appendix One: Guide to Terms

Term/Parameter	Unit	Definition
<i>Escherichia coli</i> <i>E.coli</i>	Number of organisms per 100mL	A common bacterium from the intestines of warm-blooded animals including humans. Used as the primary microbial indicator of faecal contamination. For drinking water, performance is assessed by the percentage of samples with <i>E.coli</i> less than 1 organism per 100 mL of water at entry and monitoring points.
Enterococci	Number of organisms per 100mL	A group of bacteria found in the gastrointestinal tract of warm-blooded animals. Recognised as the best microbial indicator for measuring faecal contamination of marine recreational waters. Quality is assessed using the total number of organisms per 100 mL of water at beach sampling points.

Appendix Two: Bacterial indicators

Escherichia coli is used throughout the world as an indicator of faecal contamination as it is associated with the presence of pathogenic bacteria and viruses in water. It is the most reliable indicator organism for detecting any faecal contamination in drinking water supplies.

For recreational waters both *E.coli* and enterococci are used as bacterial indicator organisms. Melbourne Water monitors waterways and receiving waters for the presence of *E.coli* through the Water Quality Monitoring Network and Licence Monitoring programs. Measurement of enterococci provides the best bacterial indicator of faecal contamination of marine recreational waters. EPA Victoria monitors enterococci at Port Phillip Bay beaches as part of the annual Beach Report program. Scientific studies have demonstrated an association between enterococci and the degree of health risk to swimmers. The overall risk of illness from swimming in the Bay is low.

State environment protection policies include acceptable levels of *E.coli* (and enterococci) for swimming. In the event of unacceptable results, EPA Victoria makes a recommendation to local Councils and the general public to avoid swimming in the contaminated area.

A revised State environment protection policy (Waters of Victoria) was issued in June 2003 and EPA Victoria has adopted the water quality guidelines in the "Australian and New Zealand Guidelines for Fresh and Marine Water Quality 2000". In these, the primary contact guideline for *E.coli* is for a median of five samples over one month being <150 org/100mL (as against a geometric mean of <200 org/100mL). This change to *E.coli* will have no impact in regard to Melbourne Water's marine

discharges but may impact the long-term attainment of State environment protection policy water quality objectives in waterways.

Bacteriological contamination in Port Phillip Bay is usually confined to beaches near stormwater or stream outlets. Sources of contamination, which enter the Bay through urban streams and stormwater drains, are derived from domestic animals, birds, herbivores, septic tank outflows and sewage spills.

Appendix Three: Melbourne Water's role in blue-green algae management

Melbourne Water conducts algal bloom monitoring of water bodies under its control and has algal bloom response plans in place. The water bodies include water supply reservoirs, sewage treatment lagoons, retarding basins and recreational lakes.

Water bodies are selected for monitoring on the basis of history of incidence, susceptibility to blooms and potential consequences. If a bloom of potentially toxic blue-green algae is discovered in a water body, a number of management actions are considered and implemented by the responsible management group. Toxicity testing can be undertaken, along with aeration of the water body, posting of signs, media releases and increased monitoring.

The Department of Sustainability and Environment (DSE) is the state wide coordinator for addressing blue-green algal blooms within Victoria. A network of eighteen "convening agencies" has been established to provide a sub-coordinating role and a means of managing outbreaks of blue green algae, which occur on a regional scale, i.e. when more than one local water manager is involved.

The convening agencies for the State are drawn from rural water authorities, non-metropolitan urban water authorities, Melbourne Water and DSE regions. Melbourne Water, through the Infrastructure Group, is the convening agency for the metropolitan area (Bunyip, Yarra and part of the Maribyrnong catchments).

The role of the convening agency is to compile a regional coordination plan and arrange for the establishment of a response group to manage the bloom. In the event of a bloom, the DSE, Department of Human Services and the relevant convening agency are informed in writing by the authority responsible for the waterway or water body in question.