



**Melbourne  
Water**

**Public Health Compliance**

*Quarterly Report*

**Quarter One 2007/08**  
(July, August, September 2007)

## **DRINKING WATER**

### **Issues/Initiatives/Incidents**

#### ***Upper Yarra Reservoir Water Quality Incident***

After many months of record drought conditions the storm event of Wednesday 27 June 2007 produced very turbid inflows to Upper Yarra Reservoir. In the following week the turbidity of the water supplied from the outlet increased to between 10 and 15 NTU. On Saturday 14 July 2007 turbidity reached 24 NTU. This is significantly above the Australian Drinking Water Guidelines aesthetic limit of 5 NTU. Turbidity from Upper Yarra Reservoir is normally about 2 NTU and is supplied to customers unfiltered. As of Tuesday 24<sup>th</sup> July, Yarra Valley Water had received sixteen customer complaints associated with this event.

On Saturday 30 June the inflows from the Thomson River, via Swingler Weir, were shut off to help reduce the load of turbidity into Upper Yarra Reservoir. Throughout this event the turbidity in the reservoir ranged from about 7 NTU to 140 NTU.

To minimise the water quality impacts on Silvan Reservoir, transfer flows to Silvan from Upper Yarra were significantly reduced. Water quality monitoring was increased in Upper Yarra Reservoir and the downstream supplies in the Yarra Valley townships, to assist with operational control and to manage the customer impacts in consultation with Yarra Valley Water. Monitoring included turbidity, colour, microbiological indicators (*E.coli*, coliforms), pathogens, particle size and UV transmissivity. Water quality monitoring was also increased to measure the disinfection effectiveness for the supply of water to the Yarra Valley townships with increased turbidity. This included transmissivity testing to validate UV disinfection. Microbiological monitoring showed low levels of *E.coli* in the raw water (consistently less than 10 orgs/100mL), demonstrating low pathogen risk in the source water.

On Monday 16 July, following consultation with the Department of Human Services (DHS), Yarra Valley Water issued a boil water notice to customers in East Warburton. The rest of the Yarra Valley townships between Warburton and Woori Yallock were issued boil water notices later that same week. This was a precautionary notice to approximately 6000 customers and was based on the turbidity being high enough (ie. greater than 20 NTU) to create uncertainty about the effectiveness of the disinfection.

The boil water notice was lifted on 14 August 2007 when turbidity of Upper Yarra water was deemed to be satisfactory (less than 10 NTU). Melbourne Water has approved the installation of small, package media-filtration plants to treat the turbid water supplied to the Yarra Valley townships, to a standard that will enable effective disinfection of the water. These plants are currently being installed.

The turbidity in Upper Yarra Reservoir has continued to improve and is nearing pre-incident levels. The filtration units will provide security of supply for the Yarra Valley townships in the event of future significant rainfall resulting in high turbidity. Additional measures to reduce the impact of turbid water from Upper Yarra and Silvan Reservoir, including the plan for turbidity curtains to be installed at the Yarra Silvan Conduit inlet, have been put in place.

### ***Recycled Water Cross Connection at Eastern Treatment Plant (ETP) – Update***

On March 19 2007 it was discovered that a potable water pipe in a kitchen in the new Courtyard building at ETP was supplying Class '2W' recycled water (approximately equivalent to EPA Class B). The supply to the kitchen was immediately shut off and an incident declared.

2W water has been used for toilet flushing at ETP since the Plant became operational in 1975. Mechanical problems with toilet flushing due to fine grit in the 2W water resulted in the supply to the toilets in the Administration building being switched to potable water around March 2006. Due to increasing accommodation requirements, and a need to upgrade amenities in the Administration building, a project commenced in early 2006 to undertake refurbishment works and construct a new building. The supply for the new building's water supply was plumbed off the potable water supply to the toilets in the Administration building.

Upgraded toilets were installed in the Administration building in order to overcome flushing problems. As a result, on 1 March the decision was made to switch the water supply to those toilets from potable back to 2W.

On 19 March, an employee based in the Courtyard building reported that the tap water had a noticeable smell and tasted very poor. The supply was immediately isolated and investigations commenced. It was then that the connection was found to be coming from the line now supplying 2W water to the Administration building toilets.

All employees and contractors on the site were notified of the incident and Business Management Health Services (BMHS) were called to the site to offer medical advice to people who may have been affected. The Department of Human Services (DHS), WorkSafe and EPAV were also notified.

A list of people who had used the building and its conference rooms during the period was drawn up. It was established that approximately 106 people used the affected building during the period 1 – 19 March. Of these, approximately 60 reported consuming water from the affected kitchen. Of these, 22 people have since reported a range of symptoms including those typical of gastro-intestinal illness.

Melbourne Water is working closely with DHS to provide support and ongoing monitoring of the people affected. BMHS will also continue to follow-up affected people for a period of 6 months in order to ensure there are no longer-term effects or recurring symptoms.

Melbourne Water has sent a letter to all those who drank the water formally informing them of the issue and offering them ongoing support in respect of medical advice via BMHS, counselling via Gus Carfi and Associates and coverage of any reasonable medical expenses.

DHS has also sent all affected people a letter requesting them to contact DHS if they become ill within a period of six weeks of receiving the letter. The letter also offers an immunoglobulin injection for anyone who has not had a hepatitis A vaccination or

had hepatitis A. The risk of contracting hepatitis A from drinking the recycled water is considered to be very low.

Melbourne Water engaged an independent investigator to undertake an investigation into the causes of the incident. Additional site controls have been implemented in relation to modification of any services. WorkSafe has undertaken an initial investigation of the incident. The investigation resulted in the issuing of two "provisional improvement notices" and one "prohibition notice". All three notices have been signed off. WorkSafe is waiting for the Melbourne Water investigation report prior to completing their investigations.

A debrief on how the incident was managed was held on the 22 May. The debrief was facilitated by IBIS Consulting and was attended by some of the affected people, DHS, WorkSafe and those involved in the management of the incident. No significant issues on the management of the incident were raised in the debrief.

The final investigation report from the OHS consultant, Jim Kent and Associates, has been received and multiple factors that influenced the incident identified. These include lack of awareness of contractors about the risks of recycled water, capital management procedures, change control procedures and labelling of recycled water pipes. Ten actions were identified in the report that will be implemented at the site, including labelling pipework, improved induction procedures, implementation of a standard operating procedure for potable water and increasing internal stakeholder awareness of the risk associated with the use of recycled water.

### ***Catchment and Water Supply Asset Security***

During the quarter 23 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 drinking 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 *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			
	Q2 06/07	Q3 06/07	Q4 06/07	Q1 07/08
Cardinia				
Research/Winneke				
Monbulk				
Silvan-Olinda				
Silvan-Preston				
Silvan-Waverley				
Yan Yean		#	#	#

# Yan Yean Reservoir and Plant off line from 5/02/2007 to 30/09/2007.

Compliance achieved		Not applicable		Compliance not achieved	
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During Quarter One 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			
	Q2 06/07	Q3 06/07	Q4 06/07	Q1 07/08
Cardinia				
Research/Winneke				
Monbulk				
Silvan-Olinda				
Silvan-Preston				
Silvan-Waverley				
Yan Yean		#	#	#

# Yan Yean Reservoir and Plant off line from 5/02/2007 to 30/09/2007.

Compliance achieved		Not applicable		Compliance not achieved	
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During Quarter One 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 (BWSA) and the Essential Services Commission (ESC) Standards**

*Quarter One 2007/08*

<b>Compliance Measure</b>	<b>Target Met</b>
Primary Disinfection Plant Reliability (Corporate target 100%).	Yes
Secondary Disinfection Plant Reliability (Corporate target 100%)	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)	No

**As of July 2007, the Corporate Targets for Disinfection Plant Reliability were amended. Previously the Corporate Target of 96% was a combined reliability measure. From Quarter One 07/08, the reliability of primary and secondary chlorinators will be reported separately with a Corporate Target of 100% each. Additional information describing the individual reliability targets is contained in the next section.**

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 One of 2007/08, Melbourne Water complied with the health parameters of the BWSA (*E.coli* and Trihalomethanes and Haloacetic Acids).

The turbidity failure in Quarter One is a function of changed water use during drought recovery with an increased reliance on water from Silvan Reservoir which has a higher turbidity than the filtered sources. This failure was also due to the Upper Yarra incident with high turbidities experienced at the Yarra townships.

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 the environment and contamination, such as major storage reservoirs.

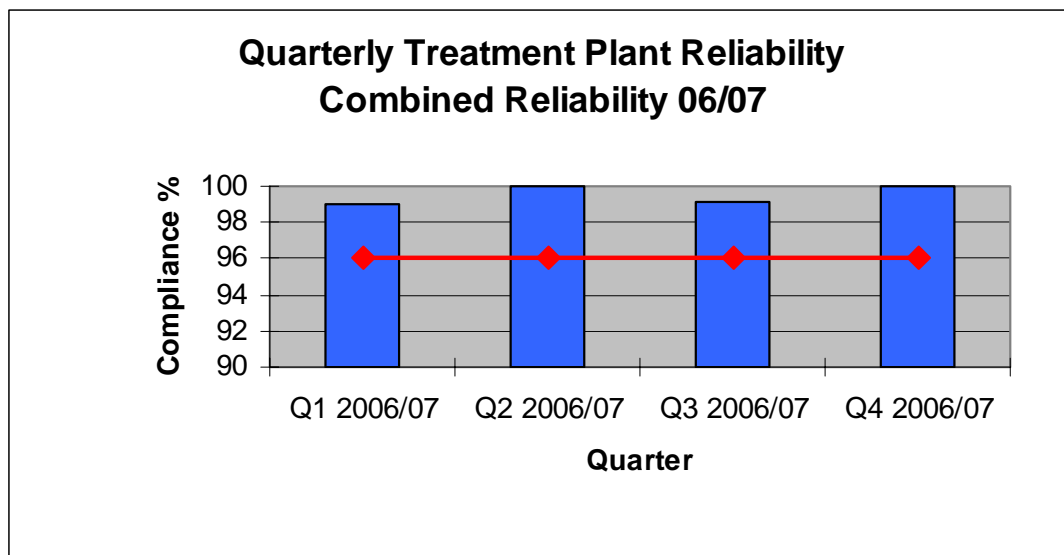
Secondary disinfection plants are those that disinfect after the water has initially been treated by a primary plant. They disinfect within a closed system to control regrowth of bacteria in the pipe network.

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.

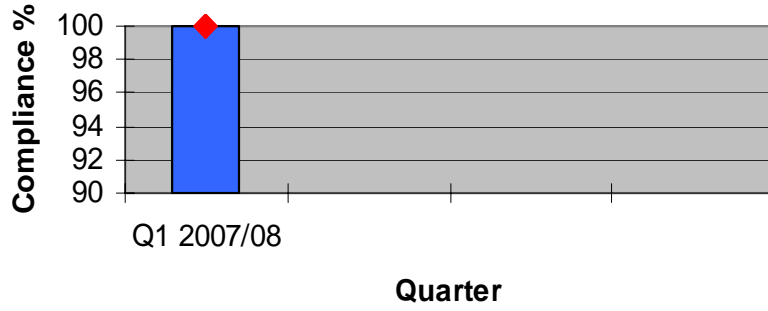
The established reliability measures for primary and secondary chlorination plants in operation are:

- Primary chlorinators meeting the chlorine contact time requirements for 99.9% of available operating time, and
- Secondary chlorinators within their operating range for 100% of available operating time

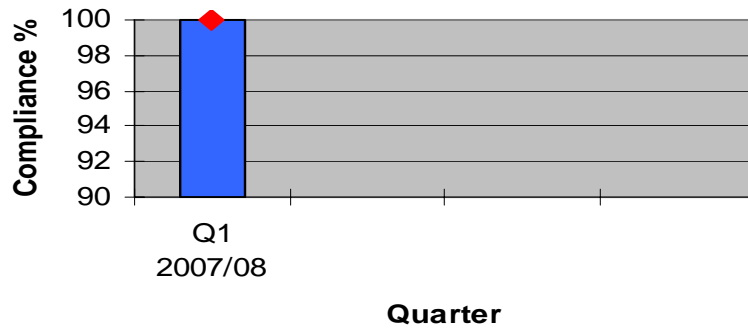
For comparison purposes, the quarterly compliance for combined treatment plant reliability for 2006/07 has been included in this report. From Q2, the individual compliance graphs only will be included. Melbourne Water has a target for 100% of all plants to meet the reliability measures. The target was met in Quarter One.



### Quarterly Treatment Plant Reliability Primary Chlorinators



### Quarterly Treatment Plant Reliability Secondary Chlorinators

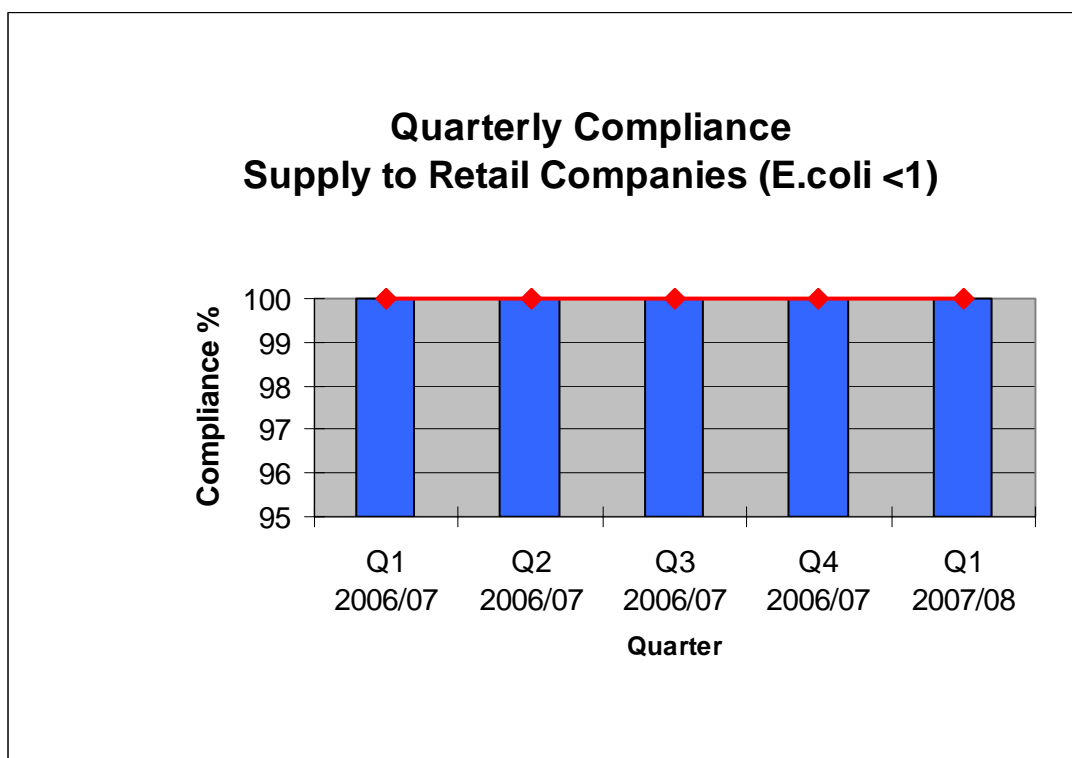


### ***Supply to Retail Companies – E.coli***

The overall objective is for no *Escherichia coli* (*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*. It is more stringent than the requirements of the BWSAs that specify a target of 99% for each monitoring point. During Quarter One 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 and a range of health matters including increased cancer rates.

The Bulk Water Supply Agreements (BWSAs) with the retail water businesses contain targets for Haloacetic Acids that are more stringent than the Regulations in the *Safe Drinking Water Act 2003* (SDWA).

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 One of 2007/08 all targets were met.

***Performance against Bulk Water Supply Agreement Targets***

Parameter	BWSA targets	Q2 2006/07	Q3 2006/07	Q4 2006/07	Q1 2007/08
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 One the target for aluminium was met but the turbidity target was not met. This was due to higher turbidity in the source water from Upper Yarra Reservoir. The recent drought resulted in lower storage levels and exposed banks in this reservoir. Heavy rainfall in late June produced very high inflows and an increase in turbidity with fine colloidal particles being suspended in the water and not settling.

This was an unprecedented event for this source and in response Melbourne Water is installing five emergency filtration plants for the townships in the Yarra Valley. The use of different source water during drought recovery has also contributed to higher turbidity in the transfer system.

*Performance against ESC service standards*

Parameter	Q2 2006/07	Q3 2006/07	Q4 2006/07	Q1 2007/08
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.

## **RECREATIONAL WATER ENVIRONMENT**

### **Major Incidents/Initiatives/Issues**

#### ***Yarra River Priority Project: Faecal Investigations – Ongoing study***

This is a *Yarra River Action Plan* three-year investigation that initially targeted 52 sites on the Yarra River system below Warrandyte. Screening investigations allow the identification of likely sources of faecal pollution whereupon more detailed investigations attempt to pinpoint the source, which can then be rectified. We are now in the last financial year of this project.

As the project progresses and the scope of work increases, new techniques and tools are being employed to improve project effectiveness. Notable is the acquisition of two ammonium probes and engagement of a previously uncontracted branch of Thiess Services to coordinate deployment of the probes. Despite significant searching we have been unable to find a catchment or drainage management authority anywhere in the world that has trialled this style of faecal source tracking. Preliminary testing of these probes shows promise—in one case a probe detected a signal from a known sewage source nearly two kilometres away.

Yarra Valley Water confirmed on-going problems with damaged sewer infrastructure in Malvern East. Of particular concern was a length of sewer pipe breached by conduit containing Optus fibre-optic cable. As a result of damage to the sewer pipe, sewage from approximately 200 households and businesses found its way into the stormwater network and ultimately into Gardiners Creek. Yarra Valley Water rectified the problem including mending the sewer after a negotiation period with Optus. Follow-up sampling confirmed substantial improvements in bacterial indicator levels.

First discovered in February of this year, contamination from a Northland Shopping Centre private drain has been a persistent problem. Recently, centre management informed EPA Victoria that a sewer blockage and a cross-connection had been rectified and in their opinion the drain was now clean. During August the last of the follow-up sampling visits were scheduled on this drain and laboratory results confirm that the problem had indeed been resolved.

During recent laneway cleanliness investigations in the CBD, a 500-litre wheelie bin was observed discharging a constant stream of water. The bin was full of water and domestic type rubbish, later found to be street-sweepings. The stream of water was finding its way into a stormwater pit at the end of the lane, and measurements showed quality of the wheelie-bin stream to be similar to sewage. Talks are continuing with Melbourne City Council in order to put an end to this rather unsound method of disposing of street-sweepings.

Results from sampling undertaken during an underground drain walk at Glass Creek Main Drain suggested presence of a sewer leak in the upstream council network. Further sampling coupled with “following their noses” led the team to a sewer leak in Balwyn North. Sewage was flowing up on to the street from around a pit lid, then down a gutter and into a side-entry pit. Yarra Valley Water was notified and a

blockage promptly rectified. This was the second such discovery for August, with a similar leak being found in Box Hill earlier in the month.

Recent investigations in Thomastown located two pollution sources to Thomastown East Main Drain and Darebin Creek. Initial investigations to locate one of the sources led the team to a poultry processor, where with the assistance of EPA Victoria, dye-testing demonstrated that a number of poultry handling areas were incorrectly connected to stormwater. EPA Victoria was invited to inspect the company's rectification works and report being "very impressed with the works undertaken." Follow-up sampling has shown a substantial improvement in bacterial indicator levels.

Following the discovery of contaminated flow in Alexandra Parade Main Drain, EPA Victoria assisted Melbourne Water with an inspection of the adjacent City of Yarra Depot, which is operated by Citywide. During this inspection problems were identified with litter, street-sweepings and putrescent waste being stored in areas that drained to the stormwater system. EPA Victoria now report that 'No Wash Area' signage has been installed outside the designated wash bay area, litter traps and bunding have been extended and the yard surface has been improved. Follow-up sampling confirms that contaminated dry weather flows have ceased.

## **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 (EPAV) 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 EPAV licence specifies annual median and 90<sup>th</sup> percentile performance limits of 200 org/100mL and 1000 org/100mL respectively, for *E.coli* at the discharge sampling point. The median and 90<sup>th</sup> percentile annual limits for 2006/07 were met and are on target for 2007/08.

#### ***Compliance with specified levels of E.coli***

<b>Parameter</b>	<b>Compliance target</b>
<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 EPAV 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 75<sup>th</sup> percentile of 35 org/100mL and 150 org/100mL respectively (Appendix 2). For the first quarter of 2007/08, compliance with the State environment protection policy was met.

#### ***Reporting of Results in Accordance with Statutory Requirements***

<b>Parameter</b>	<b>2007/08</b>			
	<b>Q1</b>	<b>Q2</b>	<b>Q3</b>	<b>Q4</b>
<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 EPAV 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 EPAV 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 EPAV in September each year.

Again, before accreditation, the EPAV 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 80<sup>th</sup> 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 first quarter of 2007/08 both geometric mean and 80<sup>th</sup> 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	2007/08			
	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 72 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 *E.coli* as an indicator of contamination in relation to swimming is contained in Appendix Two.

A revised State Environment Protection Policy (Waters of Victoria) was issued in June 2003. Objectives are more stringent in an endeavour to improve water quality. New targets apply 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 a 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.

This report uses a rolling twelve months of *E.coli* data and applies geometric means and 50<sup>th</sup> percentiles (medians) dependant on the particular SEPP for the waterway. Sites have been grouped by SEPP schedule rather than by regionally named catchments. 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.

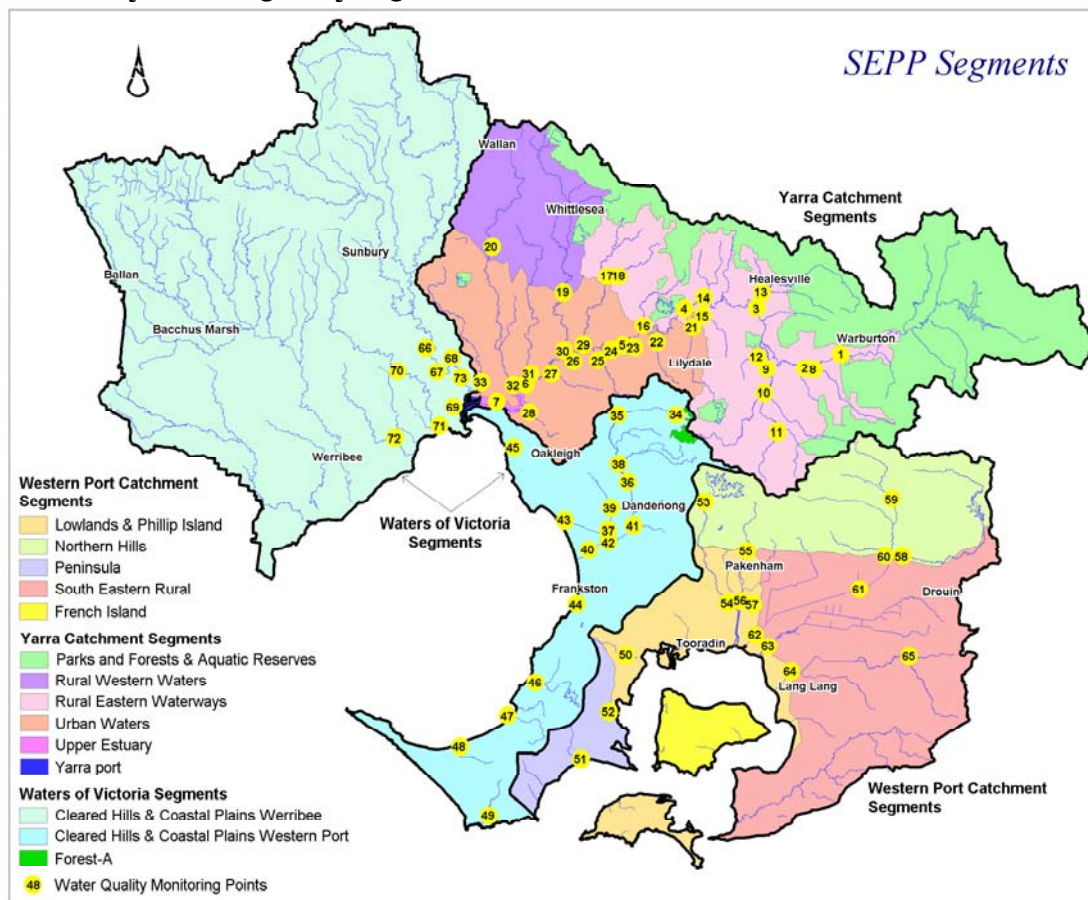
Monitoring regimes needed to assess true compliance, as specified in the SEPPs, would be:

- 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.

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 One 2007/08



### Compliance Performance Number of sites and performance rating

SEPP Schedule & Segments	No. of Sites	Q1 2007/08	Q2 2007/08	Q3 2007/08	Q4 2007/08
<b>Waters of the Yarra Catchment</b>					
# Rural Eastern Waters	15	13			
# Rural Western Waters	2	2			
# Upper Estuary	1	0			
# Urban Waters	15	3			
<b>Waters of Victoria</b>					
# Cleared Hills & Coastal Plains Werribee/ Maribyrnong	8	5			
# Cleared Hills & Coastal Plains Western Port	15	3			
# Forest-A	1	1			
<b>Waters of Western Port &amp; Catchment</b>					
# Lowlands & Phillip Island	7	5			
# Northern Hills	5	3			
# Peninsula	1	1			
# South Eastern Rural	3	1			

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 River. It involves weekly sampling for *E. coli* at 12 Yarra River sites. The program is managed by Melbourne Water with results published on the Environment Protection Authority Victoria (EPAV) website ([www.epa.vic.gov.au](http://www.epa.vic.gov.au)). The State Environment Protection Policy (Waters of Victoria) sets a limit for microbial water quality for primary recreation of <200 *E.coli*/100mL, expressed as a 42 day geometric mean. As the sites on the Yarra River are sampled weekly, 5 weekly samples are considered acceptable for EPAV reporting. For Melbourne Water's reporting purposes, the results of all samples taken during the quarter (generally 13 samples) are used to calculate the geometric mean for each site. For comparison purposes, the annual geometric mean for each site for the previous financial year is also included in the reporting table.

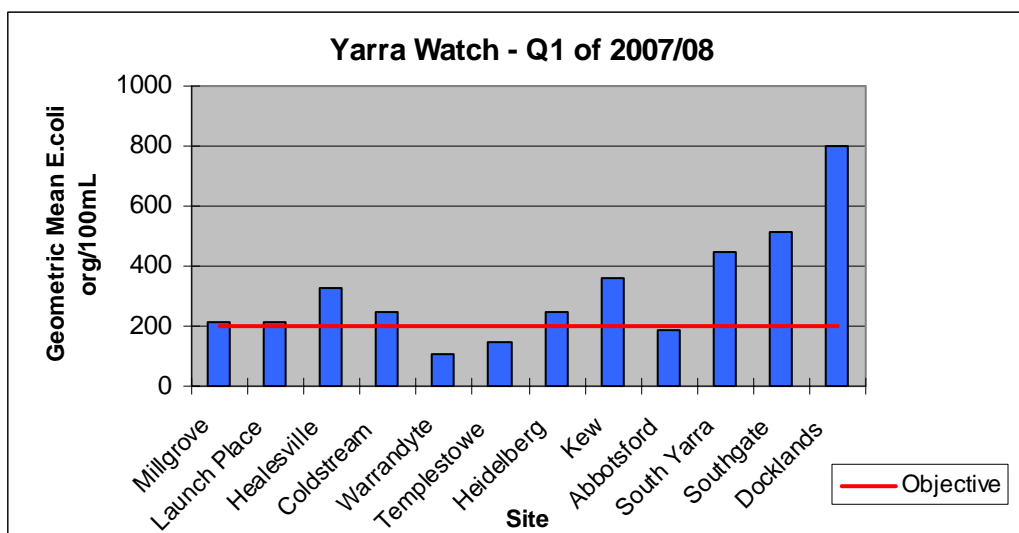
The Yarra Watch results for the quarter are shown below. During Quarter One, EPAV issued stormwater advisory notices for the Lower, Middle and Upper Yarra River on two occasions following significant rainfall in July and September.

### **Yarra Watch Results for 2007/08**

(Data source: EPAV web site)

River Section	Sampling Site	Annual Geomean 2006/07	2007/08			
			Q1	Q2	Q3	Q4
Lower Yarra	Docklands	496	803			
	Southgate	378	513			
	South Yarra	560	448			
	Abbotsford	197	185			
Middle Yarra	Kew	444	362			
	Heidelberg	308	247			
	Templestowe	181	143			
	Warrandyte	103	109			
Upper Yarra	Coldstream	347	245			
	Healesville	369	328			
	Launching Place	314	213			
	Millgrove	261	213			

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 target is a geometric mean of 1000 org/100mL

## **RECYCLED WATER**

### **Major Incidents/Initiatives/Issues.**

#### ***Recycled Water from Treatment Plants***

The cross connection incident at the Eastern Treatment Plant has been addressed in the Drinking Water Issues/Initiatives/Incidents on Page 2 of this report.

## **WERRIBEE AGRICULTURE**

### **Major Incidents/Initiatives/Issues.**

There were no significant health compliance matters during Quarter One.

#### **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

<b>Term/Parameter</b>	<b>Unit</b>	<b>Definition</b>
<b><i>Escherichia coli</i> <i>E.coli</i></b>	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.
<b>Enterococci</b>	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 currently the convening agency for the metropolitan area (Bunyip, Yarra and part of the Maribyrnong catchments). Melbourne Water has approached Southern Rural Water and Western Water with a view to taking over their convening agency roles for the Werribee (currently Southern Rural Water) and Maribyrnong (part) (currently Western Water) basins and becoming the convening agency for the entire Port Phillip and Westernport region.

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.