



**Melbourne
Water**

Environmental Compliance

Quarterly Report

Quarter Four 2007/2008
(April, May, June)

Incidents, Initiatives and Issues

Incidents

None to report.

Initiatives and Issues

Platypus surveys in the extended area

The Melbourne Water platypus survey program for the year focused on extended area waterways, including the Bass, Werribee, and Little Rivers, Deep & Jacksons Creek and the Mornington Peninsula.

Platypus were found in low numbers in the Werribee River and Jacksons Creek. It is suggested that the absence of platypus in the other areas is likely to be due to both drought conditions and difficulty with trapping platypus in large pools.

Successful Breeding for Second Year within the Dwarf Galaxias Habitat Wetland

The dwarf galaxias (*Galaxiella pusilla*) is a nationally listed fish species that lives in slow flowing habitats such as wetlands, swamps, billabongs and small streams. During 2003-2004 Melbourne Water commissioned a study of dwarf galaxias in the Dandenong Valley. Out of 42 sites surveyed in the Dandenong Valley, two sites in Narre Warren were found to contain dwarf galaxias. Reasons for the widespread demise of dwarf galaxias include habitat loss from swamp drainage, filling, changed waterway flow regimes, water pollution and invasion of pest species such as Eastern Gambusia.

Melbourne Water had constructed a conservation wetland on the Hallam Valley floodplain in Narre Warren to secure and support a sustainable population of dwarf galaxias. The fish were sourced from a roadside drain in Narre Warren where the population is highly threatened by progressive urban development. On-going management of the habitat wetland will be through Melbourne Water's Sites of Biodiversity Significance program.

With Department of Sustainability and Environment permission, 500 fish were progressively introduced into the wetland between December 2006 and June 2007. In September 2007, the fish bred in the habitat wetland for the first time and on-going monitoring of the population in June 2008 showed that the fish had bred successfully for the second time.

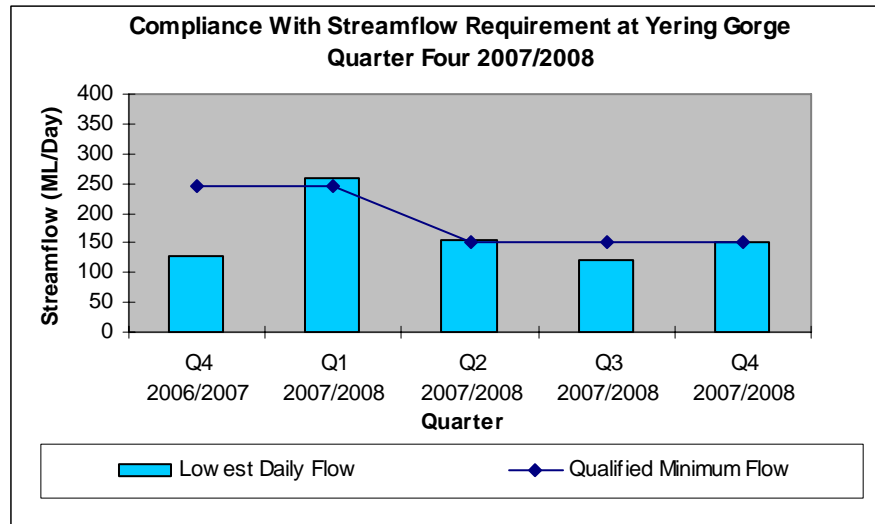
Dights Falls

Melbourne Water has instigated a project to replace Dights Falls, an important historical, cultural and recreational site in Melbourne. The weir structure is nearing the end of its life, and several studies Yarra have identified the weir as having adverse impacts on river health. However the existing fish-way has been partially effective in providing fish passage.

Initial considerations proposed a “like for like” replacement of the weir although other options are now being actively considered. Communication will take place with interested stakeholders such as Heritage Victoria and community groups.

Statutory Compliance

State Environment Protection Policy Requirement for Passing Flow in the Yarra River



Melbourne Water is required to comply with the environmental flow rules specified in the Yarra River Environmental. These supersede the interim requirement specified in Schedule F7 (Waters of the Yarra Catchment) of the Waters of Victoria State environment protection policy for a flow of no less than 245 ML/day in the Yarra River downstream of the Yering Gorge diversion.

Yarra River monitoring by Melbourne Water has shown that when flows fall below 150 ML/day environmental conditions deteriorate due to low dissolved oxygen levels in the river. This has been taken into account in the Yarra River Environmental Entitlement and Melbourne Water is required to make releases according to the following table.

During this quarter, the minimum flow at Yering Gorge was 150 ML/day and Melbourne Water met the requirements of the Yarra Drought Response Plan.

The Phase 1 qualification will cease after either construction of the desalination plant or the removal of Stage 3 restrictions (whichever comes first) and the Phase 2 qualification will cease after the removal of Stage 2 restrictions.

Yarra River Environmental Entitlement: Passing Flow Requirements

The Yarra River Environmental Entitlement and the subsequent qualifications that relate to this entitlement supersede the SEPP requirements for passing flows in the Yarra River. The new passing flow requirements at key sites along the Yarra River are noted below and are consistent with the *Temporary Qualification of Rights in the Melbourne Water Supply System – Yarra October 2007*

Melbourne Water operated in accordance with Phase 1 qualification throughout the whole of this quarter. Therefore compliance is to be measured against these requirements.

Waterway	Environmental Passing Flow Requirement
	Phase 1
Armstrong Creek West	The lesser of 5ML/day and the natural flow
Armstrong Creek East	No flow requirement
McMahons Creek	The lesser of 2ML/day and the natural flow
Micks Creek	No flow requirement
Starvation Creek	The lesser of 2ML/day and the natural flow
Big Flume Creek	No flow requirement
O'Shannassy River below the reservoir	4ML/day
Cement Creek East	The lesser of 3ML/day and the natural flow
Cement Creek West	The lesser of 3ML/day and the natural flow
Cardinia Creek below the reservoir	5ML/day
Coranderrk Creek	The lesser of 3ML/day and the natural flow
Graceburn Creek	The lesser of 3ML/day and the natural flow, reduced to 1ML/day if required to maintain Healesville supply.
Watts River below the Maroondah Reservoir	1ML/day
Donnelly Creek below the weir	The lesser of 1ML/day and the natural flow
Olinda Creek below Silvan Reservoir	2ML/day
Plenty River East Branch below Toorourrong Reservoir	The lesser of 0.2ML/day and the natural flow
Yarra River at Doctors Creek Gauging Station	10ML/day
Yarra River at Millgrove Gauging Station	No flow requirement
Yarra River at Yarra Grange Gauging Station	No Flow Requirement
Yarra River at Yarra Glen Gauging Station	If at least one of the following trigger events did not occur during the previous calendar years and flows greater than the triggers below are observed at Yarra Glen, harvest only that which is in excess of: (a) 1,500ML/day in April and May; and (b) 2,000ML/day from June to September over one 7 day period when each of the above flows occurs for the first time in this calendar year.
Yarra River at Yering Pumps Gauging Station	(a) Cease harvesting water at Yering Gorge pump station when the flow at Yering pumps gauging station is equal to or less than 200ML/day. (b) Subject to paragraph (c), meet a minimum environmental flow of 150ML/day (c) In order to meet the flow in paragraph (b) and subject to paragraph (d), release a total flow from the Yarra headworks system of up to 50% of the

	<p>sum of the natural inflows to Upper Yarra and O'Shannassy reservoirs with a maximum of 80ML/day</p> <p>(d) The Environment Minister may instruct the Storage Operator to withhold part of the release required under paragraph (c) and release it later within that same calendar month in a pattern and at a rate determined by the Environment Minister.</p> <p>(e) All water accumulated through the application of paragraph (d) must be released to the river before the beginning of the next calendar month.</p>
Yarra River at Chandler Highway Gauging Station	If the flow at Chandler Highway Gauging Station is less than 150ML/day, cease harvesting water at Yering Gorge pump station.

Sewerage System Summary of Statutory Compliance by Facility

Summary of Compliance by Facility Quarter four 2007/2008

Facility	Compliance * of Samples		Non-Sample	Sewage	Odour
	Q4 (%)	2007/08 (%)	Compliance**	Spills	Complaints
Eastern Treatment Plant				0	0
Western Treatment Plant				0	0
Wastewater Transfer	N/A	N/A	N/A	1	1
Total	N/A	N/A	N/A	1	1
	Compliance achieved for all parameters				
	Compliance not achieved for one or more parameters.				

* Compliance of samples details the compliance status for maximum/minimum/range or annual discharge parameters as indicated by the quarter's results.

**Non sample compliance covers licence breaches for issues other than discharge parameter limits. Details on compliance breaches appear in following sections.

***Sewage spills include all spill types (operational failures, compliant and non-compliant less than 1:5 rainfall event spills and greater than 1:5 rainfall event spills)

Annual Licence Compliance – 2007/2008

Eastern Treatment Plant

The Eastern Treatment Plant achieved 100 % compliance with effluent discharge requirements in the EPA Victoria licence during 2007/2008.

Western Treatment Plant

The Western Treatment Plant achieved 100 % compliance with effluent discharge requirements in the EPA Victoria licence during 2007/2008.

Sewerage System Statutory Compliance Detail

Compliance of Samples – 4th Quarter 2007/2008

The following table shows compliance of Melbourne Water's wastewater treatment plants with parameters in EPA Victoria licences where limits are expressed as a maximum, minimum or a range.

Treatment Plant Compliance with EPA Victoria Licences by Parameter * Quarter Four 2007/2008

SITE	Amm	Surf	Metals	PH	D.O.	Flow	TRC	Other#
	Max	Max	Max	Range	Min.	Max	Max	
WTP all outlets								
ETP								
Air Emissions								

	Compliance achieved
	Compliance not achieved** - See following sections for details
	Not applicable

* See Appendix One for a guide to the above parameters and Appendix Five for the location map of Western Treatment Plant Outlets.

Parameters that are less significant and rarely fail to meet the required standard.

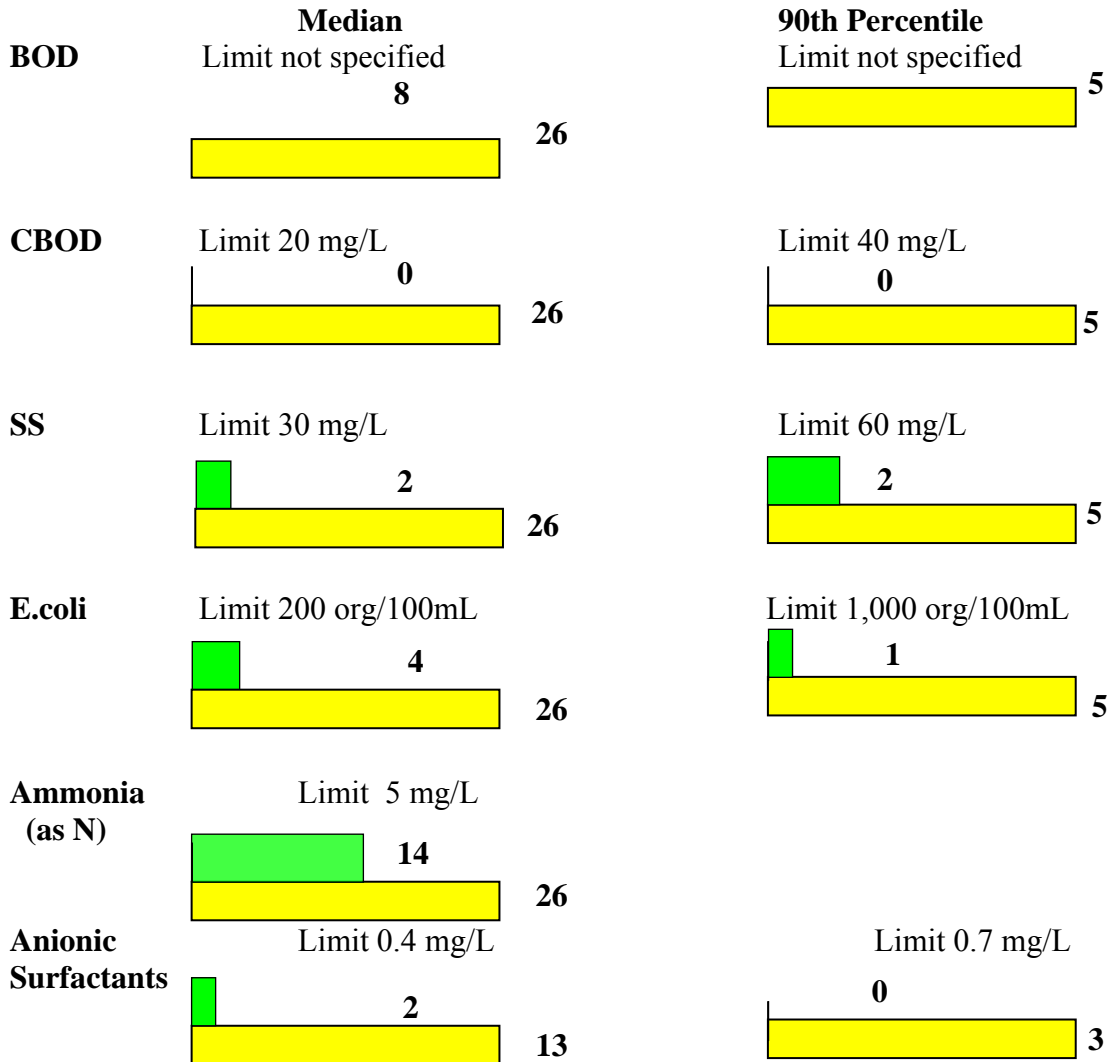
** EPA Victoria is given an explanation for each non-compliance

Eastern Treatment Plant

Annual Parameters

The following details Eastern Treatment Plant’s performance for critical parameters. Performance with respect to other parameters is reported here only if the results exceed licence limits, in which case explanatory information is contained in the following section.

NOTE: The plant has been granted a waiver for BOD compliance by EPA Victoria on the understanding that CBOD is also monitored and CBOD limits are complied with.



	Number of sample results to date greater than the Licence Limit – exceeds the total allowance for the year (licence breach).
	Number of sample results to date greater than the Licence Limit – exceeds the allowance for the year to date.
	Number of sample results to date greater than the Licence Limit – within the allowance for the year to date.
	Number of sample results during the year allowed to exceed the Licence Limit.

General Licence Requirements

ETP fully complied with EPA Victoria discharge licence parameters for the year.

Groundwater Monitoring

The results of the May 2008 monitoring program are:

- Groundwater levels have decreased slightly across the majority of the ETP site in line with the observed seasonal variation.
- The inferred groundwater flow is directed south-west towards the Patterson Lakes area; surface water elevations in the Patterson River and the Eumemmerring Creek remained above the groundwater elevations in the bores located in the vicinity supporting the conclusion that groundwater does not immediately discharge into surface water bodies.
- Variations of field-recorded parameters were not indicative of major changes in groundwater quality.
- Laboratory results suggest that groundwater chemistry remained relatively unchanged in comparison with the previous results.
- The reported exceedances of the adopted groundwater quality objectives for maintenance of the marine aquatic ecosystems, stock watering, buildings and structures indicated that groundwater from the site may be potentially detrimental to the receiving aquatic environment of Patterson Lakes and is unsuitable for dairy cattle watering.

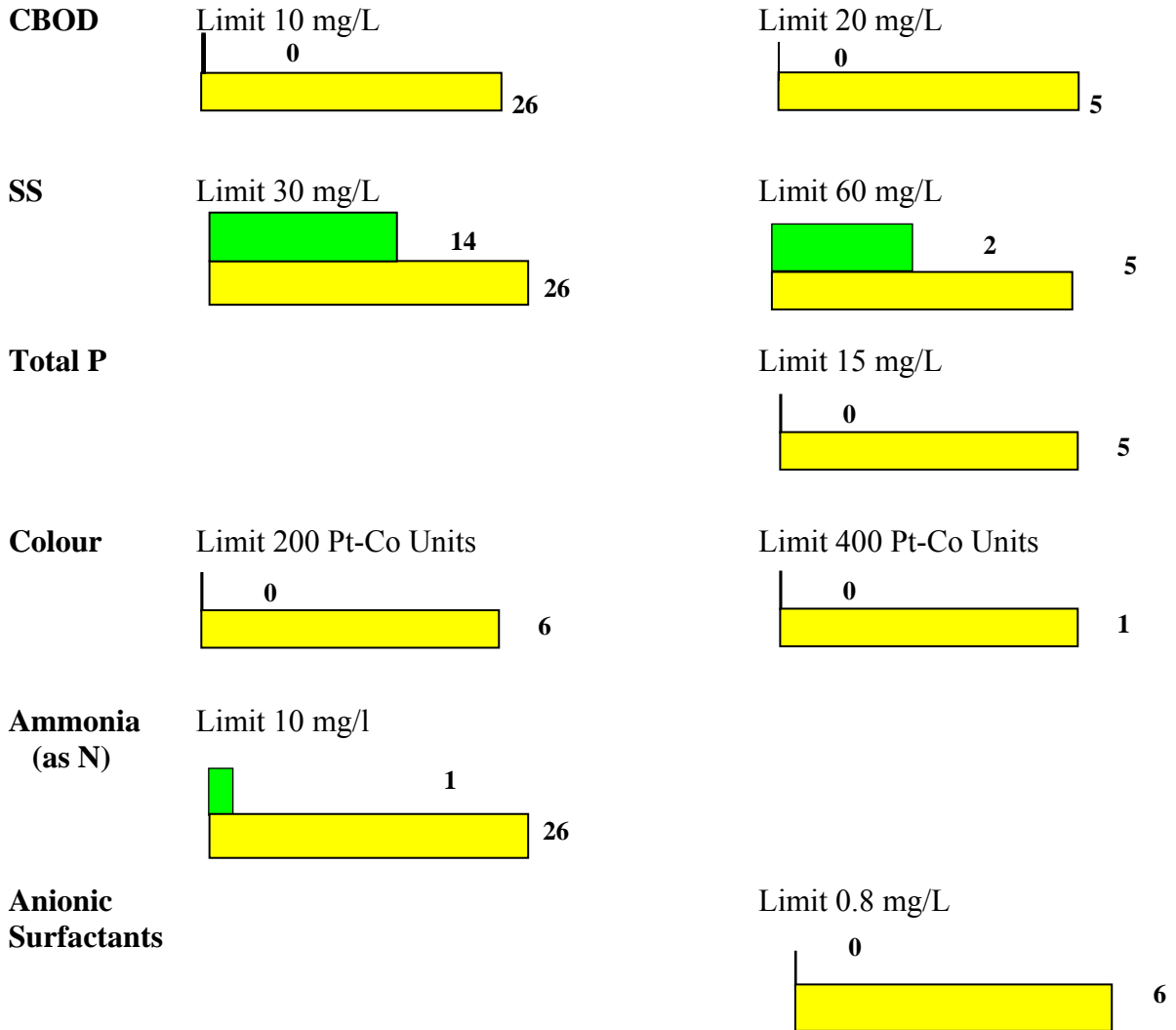
Details of Licence Non-Compliance/Parameter Exceedances

None to report.

Western Treatment Plant

The following details Western Treatment Plant’s performance for critical parameters. Performance with respect to other parameters is reported here only if the results exceed licence limits.

Annual Parameters - flow weighted average of all four licensed outlets



	Number of sample results to date greater than the Licence Limit – exceeds the total allowance for the year (licence breach).
	Number of sample results to date greater than the Licence Limit – exceeds the allowance for the year to date.
	Number of sample results to date greater than the Licence Limit – within the allowance for the year to date.
	Number of sample results during the year allowed to exceed the Licence Limit.

General Licence Requirements

WTP fully complied with EPA Victoria discharge licence parameters for the year.

Groundwater Monitoring

Consultants Golders completed another round of groundwater sampling for the WTP in June 2008. The results from this will be reported next quarter.

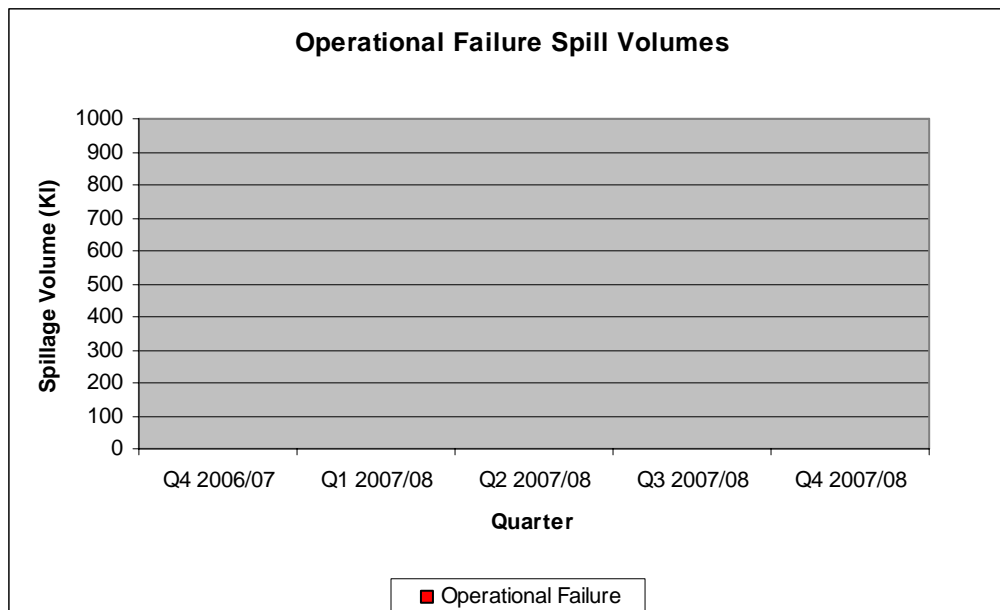
Details of Licence Non-Compliance/Parameter Exceedances

None to report.

Sewage Spills Summary

Number of Spills	Q4 2006/07	Q1 2007/08	Q2 2007/08	Q3 2007/08	Q4 2007/08
Number of Spills	0	0	5	0	1
Operational failure	0	0	0	0	1
<1:5 compliant	0	0	5	0	0
<1:5 non-compliant	0	0	0	0	0
>1:5	0	0	0	0	0
Significance*	Q4 2006/07	Q1 2007/08	Q2 2007/08	Q3 2007/08	Q4 2007/08
Minor (Rating 1 - 3)	0	0	4	0	0
Significant (Rating 4 – 5)	0	0	1	0	0
Not Rated	0	0	0	0	1
EPA Victoria Reporting Protocol Met	Yes	Yes	Yes	Yes	Yes

*Melbourne Water reports spills according to the Melbourne Water-EPA Victoria spill reporting protocol that is contained in Appendix Three. The rating assigned to a spill is determined by applying the potential impact rating to the incident (refer to Appendix Two). If a spill is contained on site with no damage to the environment it will be reported in this report but not included in spills publicly reported.



Spills Due to Operational Failures

There was one spill due to operational failure during the quarter.

On 3 April 2008 the control room was advised of sewage spilling from a Melbourne Water air valve pit on the rising main from Mordialloc No 1 Pump Station, Governor Road, Braeside.

The pump station was immediately stopped and sewage educted from the pit and surrounds. It was determined that an air valve on the rising main was leaking. The air valve was isolated and the pump station returned to normal operation with no more sewage spilt. An estimated 780 litres of sewage was spilled. EPA Victoria were advised and attended the site and have indicated they will not take any action regarding the spill.

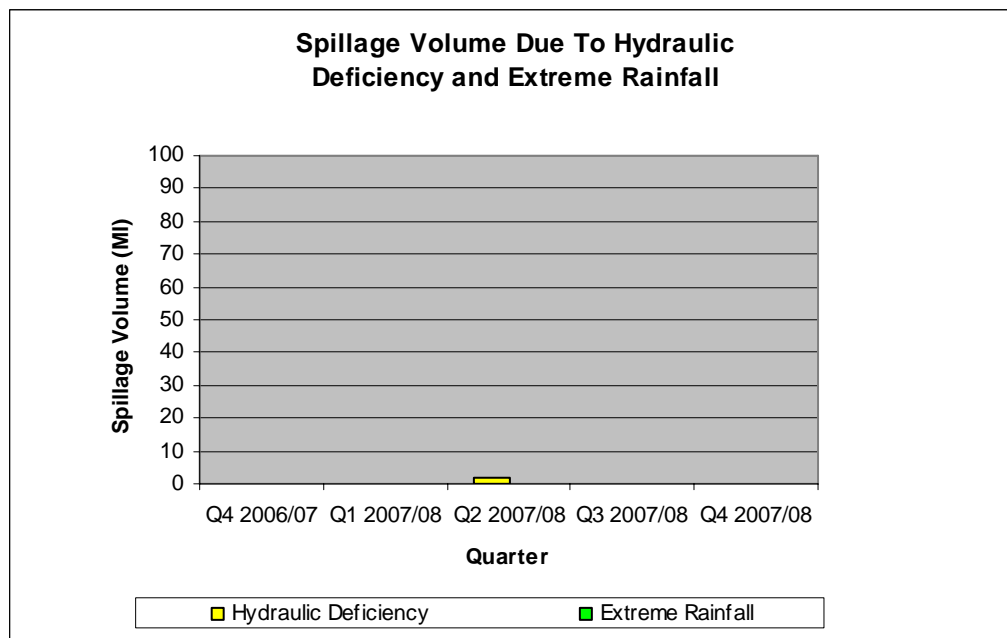
Eastern Treatment Plant

There were no spills at Eastern Treatment Plant during the quarter.

Western Treatment Plant

There were no spills at Western Treatment Plant during the quarter.

Spills Due to Rainfall Events Greater than 1:5 Year Return Frequency (Extreme Rainfall) and Hydraulic Deficiency

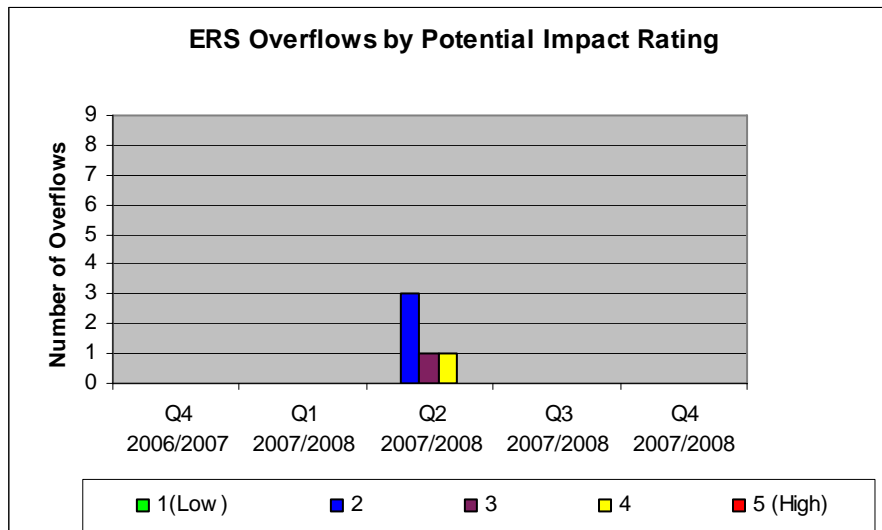


Hydraulic Deficiency - Spills due to insufficient pipe/pump capacity

Extreme Rainfall - Spills due to rainfall events greater than 1: 5 year return frequency

There were no spills due to hydraulic deficiency or extreme rainfall (greater than 1 in 5 event)

ERS Overflows

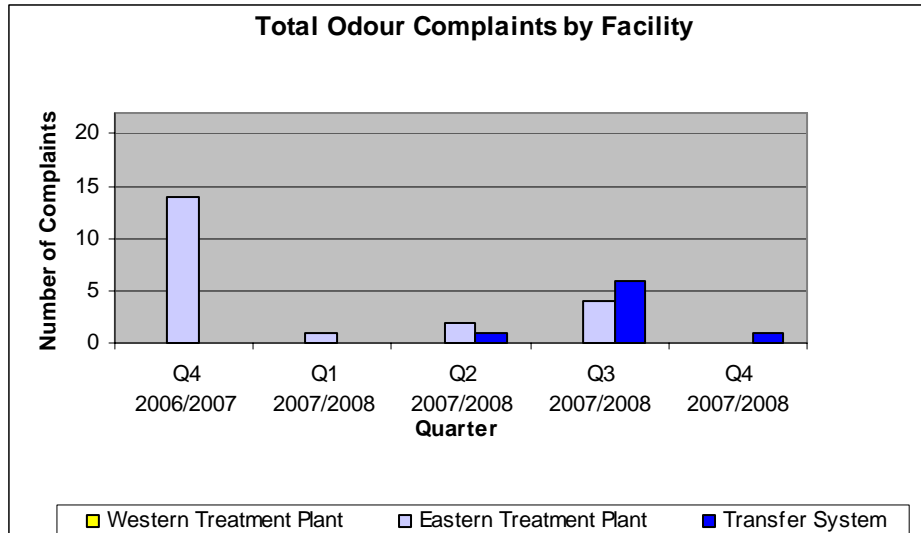


Odour Complaints

EPA Victoria regulates odour and this requires Melbourne Water to have no offensive odour attributable to its activities. New facilities have to be designed to meet this requirement and existing facilities with odour have to establish improvement programs to achieve this in agreement with EPA Victoria. Melbourne Water has an odour management strategy to ensure that treatment plant and transfer system odour performance meets regulatory requirements. This strategy has been developed with EPA Victoria agreement. This includes targeted actions for Eastern and Western Treatment Plants and the Transfer System.

Odour performance from facilities is measured through odour complaints attributable to the facility. EPA Victoria will consider an odour complaint a discharge licence breach if it is attributable to Melbourne Water and if either the relevant improvement program is not being implemented or the program is considered unsatisfactory. Odour complaints from facilities without a discharge licence could result in a requirement to develop and implement a neighbourhood improvement plan. Should odour become a significant local issue EPA Victoria could strengthen this approach and require a review of improvement strategies or issue sanctions such as penalty infringement notices.

None of the odour complaints described below are considered to be licence breaches by EPA Victoria at this time.



Eastern Treatment Plant

There were no odour complaints received during the quarter. Details are as follows:

Western Treatment Plant

There were no odour complaints received during the quarter. Details are as follows:

Transfer System

There was one odour complaint received during the quarter. Details are as follows:

On 3 June 2008, a member of the public reported an odour via Yarra Valley Water in the vicinity of the Bryant Family Reserve, Oak Park. Melbourne Water attended the site and found that the manhole cover had been broken possibly by mowing activities. The manhole cover was replaced and the odour eliminated.

Corporate Compliance

Melbourne Water Passing Flow Compliance in Rivers and Streams

The qualifications on environmental entitlements for the Thomson and Yarra Rivers remains in place until level 2 restrictions are lifted. The table below outlines compliance with passing flow requirements at various sites. Some of these passing flows may vary due to the Yarra bulk entitlement conversion process.

**Melbourne Water Passing Flow Compliance
Quarter Four 2007/2008**

Site	Passing Flow (ML/d)	Actual Min. Flow (ML/d)	Compliance	Comments Phase 1 Requirements
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RESERVOIRS:

Cardinia Res. to Cardinia Ck	5	5	√	The lesser of 5 ML/d and the Natural flow
Maroondah Res. to Watts R.	1	1	√	Operating rule - 1 ML/d released via ungauged outlet pipe
O'Shannassy Res. To O'Shannassy R.	4	4	√	Operating rule - 4 ML/d released via ungauged outlet pipe
Silvan Res. to Olinda Ck	2	2	√	Operating rule - 2 ML/d released via "V" notch, outlet pond.
Tarago Res to Tarago R At Scalp Ck	5	7	√	MWC agreement with former SR&WSC
Thomson Res. To Thomson R: • Below Dam • At Narrows • At Coopers Ck	25 80 230	140 135 224*	√ √ √	Melbourne Water Bulk Entitlement provision for Thomson Reservoir and qualification granted by the Minister for Water on 20 December 2007.
Toorourrong Res. to Plenty R.	0.2	0.2	√	MWC operating rule - 0.2 ML/d released for stock
Upper Yarra Res. to Yarra R: • Upper Yarra Dam • At Yering Gorge Pump Stn • At Chandler Highway	10 200/150 150	10 150 241**	√ √ √	- At Doctors Ck. Gauging Station -Cease harvesting when flow <= 200ML/d./ or minimum Env .Flow =150 ML/d when not pumping. - When flow less than 150 MLD, cease harvesting at Yering Gorge.

WEIRS†:

Armstrong Ck Weir	5	5	√	MWC operating rule
Coranderrk Ck Weir	3	3	√	MWC operating rule – via ungauged outlet pipe
Donnelly Ck Weir	1	1	√	MWC operating rule– via ungauged outlet pipe
Graceburn Ck Weir	3	3	√	The lesser of 3 ML/day and the natural flow reduced to 1 ML/d if required to maintain Healesville supply.
McMahons Ck Weir	2	2	√	MWC operating rule
Silver Ck Weir	1	0***	√	Bulk Entitlement provision – 1 ML/d is released when streamflow is 4 ML/d or greater
Starvation Ck Weir	2	2	√	MWC operating rule
Wallaby Ck Weir	1	0****	√	Bulk Entitlement provision – 1 ML/d is released when streamflow is 2 ML/d or greater

Clarification on variations in Passing Flow Compliance Table

* Seven day rolling average for Coopers Ck flows were above required flows for May.

**Faulty flow meter from 08/05/08-12/05/08 upstream flow meter used for this period.

*** Silver Creek Weir stream flow was less than 4 ML/d during this period. (Bulk Entitlement provision - 1 ML/d is released when stream flow is 4ML/d or greater).

**** Wallaby Creek Weir compensation dictated by stream flow which is low due to drought conditions.

Maribyrnong River Bulk Entitlement

Melbourne Water is required to manage its share of releases from Rosslynne Reservoir and water extractions from the Maribyrnong River to ensure that, as a result of diversion activities, passing flows in the river at Keilor do not fall below requirements specified in the Maribyrnong Bulk Entitlement Orders - 5 ML/day or the natural flow, whichever is the lesser. Natural flow is based on flow at Deep Creek at the Bulla gauging station.

Days when flow at Keilor was below that required		0
	Compliance achieved	
	Compliance non achieved	

Trade Waste Agreements

Trade Waste Reporting Results for Quarter 4 2007/2008 Financial Year

Melbourne Water's key performance indicator for trade waste is as follows:

- Zero high risk non-compliant trade waste discharges to Melbourne Water's sewer system.

The following table shows the number of non-compliant discharges for each retail water company, at each risk level.

	CWW	YVW	SEW
April			
Insignificant	64	15	19
Moderate	0	0	0
High	0	0	0
May			
Insignificant	64	15	25
Moderate	0	0	0
High	0	0	0
June			
Insignificant	64	10	23
Moderate	0	0	0
High	0	0	0
Total	192	40	67

Table 1 - Risk level of non-compliant discharges as reported by retail water companies

The table above includes non-compliant discharges that were both resolved and unresolved during each month. The graph below summarises the number of non-compliant discharges at each risk level for the previous quarter, for all retail water companies.

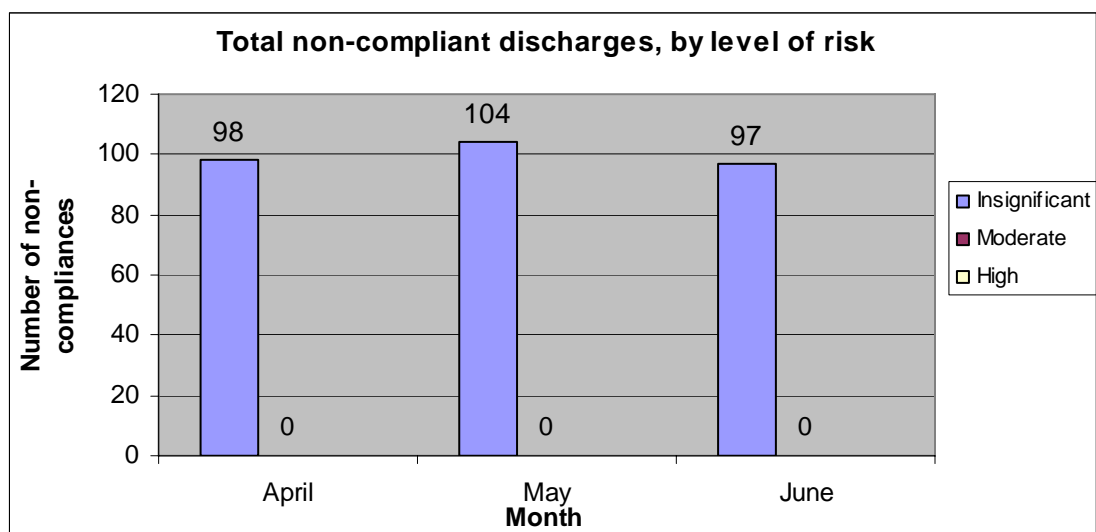


Figure 1- Total non-compliant discharges by risk level

Discussion of Trade Waste Reporting Results for Quarter 4 2007/2008 Financial Year

High Risk:

There were zero high risk non-compliances in Q4 2007/ 2008.

High risk non-compliances could strongly affect the OH&S of sewer workers, inhibit the treatment plant process affecting product compliance, significantly impact on receiving environment, breach Melbourne Water's operating license or ability to supply customers with recycled water, biogas or biosolids. "High" risk non compliances would require both retail water companies and Melbourne Water incident management response and debrief procedures to be followed.

Moderate Risk:

There were zero moderate risk non-compliances in Q4 2007/ 2008.

Moderate risk non-compliances could affect the OH&S of sewer workers, inhibit the treatment plant process without affecting product compliance, impact on the receiving environment which can be easily remediated, impact on the license compliance for a short period of time and/or affect Melbourne Water's ability to supply customers with recycled water, biogas and biosolids. The likelihood of impact of "Moderate" risk non-compliances is low due to existing Melbourne Water and retail water companies control measures in place. "Moderate" risk non compliances would require a follow-up report of the incident including actions taken to resolve the issue, increased monitoring and contingencies in place to prevent reoccurrence.

Insignificant Risk:

There were 98 insignificant risk non-compliances in April 2008.

There were 104 insignificant risk non-compliances in May 2008.

There were 97 insignificant risk non-compliances in June 2008.

Non-compliant discharges ranked as "Insignificant" present very little or no risk to Melbourne Water. They can be easily managed through procedures and control measures in place to ensure customers take actions to rectify issues and return to compliance.

The risk assessment framework that has been developed aims to ensure that the appropriate management actions for each risk level are appropriately undertaken and consistently applied.

Water Recycling at Western and Eastern Treatment Plants

Waste minimisation, through effluent and biosolids reuse and by other means, is a licence objective for both Eastern Treatment Plant and Western Treatment Plant. Melbourne Water has established a target to recycle on average 20 % of effluent by 2010.

Eastern Treatment Plant

During the quarter approximately 121 ML of recycled water was supplied to customers along the South East Outfall and 1,263 ML was supplied to the Eastern Irrigation Scheme. In addition to this approximately 3,066 ML of water was used onsite at the Eastern Treatment Plant.

The Eastern Irrigation Scheme now provides “Class A” recycled water from their new plant off Thompson Road to the Sandhurst Club, Wedge Rd Reserve and other customers in the Cranbourne and Five Ways districts.

Western Treatment Plant

During the quarter approximately 2,410 ML of recycled water was supplied to Southern Rural Water for the Werribee Irrigation District, and 21 ML was supplied to the Werribee Tourist Precinct, incorporating both the Werribee Park Golf Club and the State Equestrian Centre. In addition to this, 4 ML was supplied to Mc Killop College, 30 ML to the Werribee Technical Precinct and 24 ML to the retail water companies as part of the drought relief initiative.

In addition to this, approximately 4,719 ML of recycled water was used onsite at the Western Treatment Plant.

The new chlorination and UV disinfection plant is supplying Class A recycled water to both the Werribee Tourist Precinct customers and the Werribee Irrigation District.

Influent Total Dissolved Solid Limit

To ensure that flows into Western Treatment Plant do not have total dissolved solids levels that would compromise effluent reuse opportunities, the revised discharge licence from EPA Victoria has a future influent limit of median total dissolved solids to not exceed 1000 mg/L by 2009. This section will report on compliance with the current compliance limit of 1250 mg/L.

Influent limit of 1250 mg/L total dissolved solids	
Compliance	Not Achieved
	Achieved

Biosolids Reuse at Western and Eastern Treatment Plant

Melbourne Water had developed a biosolids management strategy that included targets to beneficially use 100% of annual production at Eastern Treatment Plant by 2005 and Western Treatment Plant by 2010. This was adjusted to 100 % at WTP by 2011/12 and 0 % at ETP as a result of the 2006 Biosolids Beneficial Use Strategy and the draft Water Plan 2.

EPA Victoria approved the Eastern and Western Treatment Plant biosolids management plans in January 2004. These plans describe biosolids inventories, address quality/quantity issues and beneficial use options and set relevant Melbourne Water operational targets. Discussions between Melbourne Water and EPA Victoria about the changed targets have occurred as part of the Water Plan process.

The Board noted the 2006 Biosolids Beneficial Use Strategy in July 2006. The Strategy outlined actions to achieve the use of clay-rich biosolids stored onsite at the Eastern Treatment Plant as structural fill in roads in the short to medium term. The strategy also outlined plans for further investigations into the potential use of Eastern Treatment Plant biosolids for land application in the longer term, subject to clarification of potential risks and liabilities. In addition, a research program for identifying future innovative options for beneficial use of biosolids from both the Eastern and Western Treatment Plants will be implemented. At Western Treatment Plant, the strategy recommends developing a business case for the potential use of biosolids as a fuel at the Blue Circle Southern Cement facility at Geelong.

Eastern Treatment Plant

During the quarter there were no biosolids removed from the Eastern Treatment Plant for beneficial use.

Due to the high clay content of the Eastern Treatment Plant stockpiled biosolids, Melbourne Water is pursuing the use of biosolids as structural fill. Melbourne Water has received confirmation from EPA Victoria that the project is consistent with regulatory obligations and EPA Victoria is working to develop guidelines for using biosolids in this application that will allow biosolids structural fill projects to proceed under an approved Environment Improvement Plan.

Western Treatment Plant

During the quarter no biosolids were removed from the Western Treatment Plant for beneficial use.

Due to the high contaminant levels and potentially useful calorific value of the Western Treatment Plant biosolids, Melbourne Water completed a feasibility study into energy recovery. The study investigated both onsite and offsite energy recovery alternatives and found that use of biosolids as a fuel at Blue Circle Southern Cement was the preferred option.

Status Report - Meeting SEPP Targets for Melbourne's Waterways

The following information describes the physico-chemical and bacteriological condition of Melbourne's waterways during the reporting period. Objectives set out in the three relevant State environment protection policies (SEPPs) are the long-term targets for water quality. There is no specific statutory obligation on Melbourne Water to meet these targets.

The Waters of Victoria SEPP has a provision for the development of interim waterway water quality targets if there is little chance of attaining the desired quality within the ten-year time frame of the SEPP. Melbourne Water will be developing interim targets where relevant as part of the Regional River Health Strategy. Melbourne Water has adopted a long-term aim to achieve objectives for water quality in accordance with State environmental protection policies and targets set out in the Regional River Health Strategy and Waterways Water Quality Strategy.

This quarterly report uses a rolling twelve months of waterway water quality data and uses the relevant statistical measure from the particular SEPP schedule and segment a waterway falls within. The map shows SEPP segments and where monitoring points are located. The performance tables show performance against relevant SEPP objectives with red indicating a failure to meet SEPP and green indicating compliance with SEPP. The number in each cell is the result for the previous 12 months.

SEPP compliance calculations require eleven samples for most parameters. For a small number of sites in this report, a reduced number of data were available due to drought or access conditions. New monitoring sites are being added in the extended area and as data becomes available this will be included in the tables.

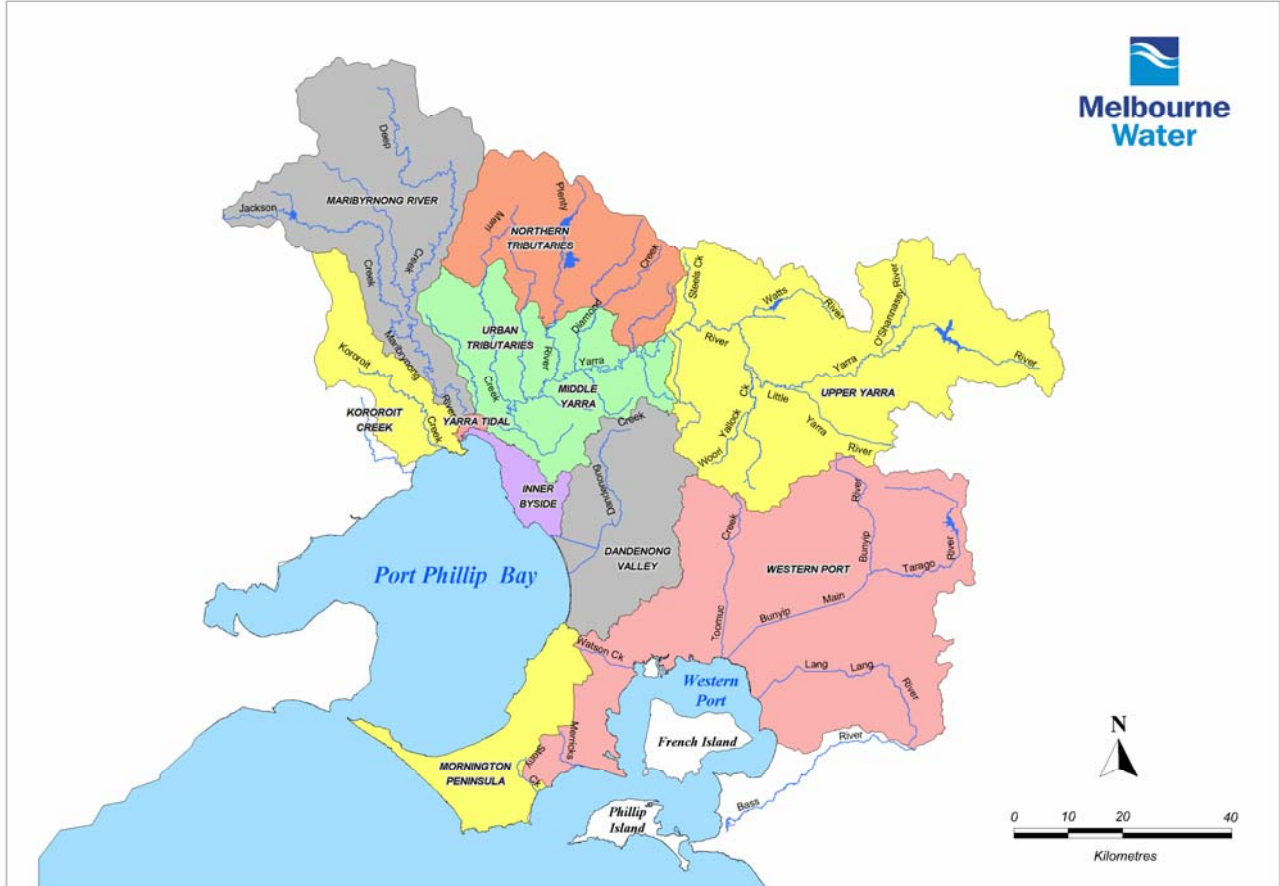
Waterway monitoring data from the last twelve months showed that waterways within Greater Melbourne performed well for pH, with most catchments complying with their SEPP objectives. Catchments varied from zero to full compliance for turbidity. Rural Waters of the Yarra Catchment generally performed better than other SEPP segments. All waterways performed poorly for dissolved oxygen and nutrient levels with most catchment having no sites that complied with oxygen or nitrogen objectives.

Please note that the new sites in the extended and the old area are now part of this report. The total number of WQ sites is now 136.

Waterway Water Quality

Quarter Four, 2007/2008

The table below shows the water quality compliance of Greater Melbourne's waterways during the reporting period, sorted by catchment. Results indicate the percentage of samples taken in each catchment that comply with State water quality guidelines.



Definitions

DO	Dissolved oxygen
EC	Electrical conductivity
Turb	Turbidity
T-P	total phosphorus
T-N	total nitrogen
min	Minimum
max	maximum
...%tile	...th percentile
geo	geometric mean
*	This SEPP requires 5 samples at regular intervals within 30 days, however these figures have been calculated using 12 monthly readings
**	This SEPP requires a 42 day geometric mean, however these figures have been calculated using 12 monthly readings.
%sat	percentage saturation
uS/cm	micro Siemens per centimetre
NTU	nephelometric turbidity units
mg/l	milligrams per litre
org/100ml	organisms per 100 millilitres
NA	none applicable

Waters of Victoria	EC 75%	DO% 25%	pH 25%	pH 75%	E Coli Geome an	Turb 75%	TP 75%	TN 75%
	µS/cm	% sat	ph units	ph units	org/ 100m	NTU	mg/l	mg/l
Cleared Hills & Coastal Plains Werribee/Maribyrnong	1500	85	6.5	8.3	150	10	0.045	0.6
Arundel Creek at Annandale Road, Keilor	3150	58	7.55	8	79	16.5	0.053	0.6155
Barringo Creek at Wooling Road, Macedon	190	57.5	7	8	29	6.5	0.0255	0.4645
Deep Creek at Kennedys Lane, Romsey	925	65	7.75	8.85	29	15.25	0.06925	1.97225
Deep Creek at end of Kinnear Road, Michelam	1425	36.25	7.175	7.85	71	35.5	0.0595	1.5365
Deep Creek at Bulla Road, Bulla	1950	54.25	7.95	8.3	72	39	0.08225	1.36425
Jacksons Creek upstream Sunbury-Riddells Rd, Sunbury	1100	47.75	7.35	7.7	39	15	0.04475	1.25225
Jacksons Creek at bridge upstream Sunbury Rd	1200	56	7.6	7.925	80	38.75	0.04775	0.9425
Jacksons Creek at Organ Pipes NP, at walkway ~200 u/s Rosette Rock	1215	66.5	7.8	8	82	16.5	0.19	1.282
Maribyrnong River at Arundel Rd, Keilor	2050	67.25	7.825	8.2	34	23	0.08175	1.493
Maribyrnong River at Brimbank Park Ford (upstream Taylors Creek), Keilor	1925	57.75	7.475	8	79	22.75	0.065	1.33725
Maribyrnong River at Canning Street Ford, Avondale Heights (EPA 6070)	2250	64.5	7.775	8.025	98	21.75	0.0745	1.3725
Maribyrnong River at end of Newsom St. 500m d/s of Ascot Vale MD, Ascot Vale West	47175	65.25	7.6	8	34	13.25	0.1425	0.9065
Riddells Creek upstream Gisbourne-Kilmore Rd,	972.5	54	7.2	7.625	40	11.5	0.02625	0.89913
Steele Creek at Rose Avenue, Niddrie	1532.5	67.25	7.7	8.125	288	5.25	0.047	0.753
Stony Creek at Bena Street, Yarraville	644.25	87.25	7.7	8.75	416	18.5	0.355	4.3995
Taylors Creek at walkway downstream Green Gully Road, Kealba	2527.5	65	7.6	7.9	203	22.5	0.087	0.98713
Cherry MD upstream Kororoit Creek Road, Altona North	1272.5	34.25	7.175	7.75	64	12.5	1.0175	2.10125
Kororoit Creek at Millbank Drive, Deer Park (Replaces EPA5509)	2162.5	50.75	7.4	7.825	159	10	0.0805	0.776
Kororoit Creek at Racecourse Road Ford, Altona	20750	81.5	7.8	8.45	90	29.75	0.24	1.3035
Laverton Creek at track off Valente St, D/s Kayes Drain, U/s weir, Altona Meadows	945	45.5	7.25	7.8	131	31.5	0.1825	0.93325
Lerderderg River at O'Brien Road	265	50.5	7.45	7.95	23	11	0.033	0.6715
Lerderderg River at Bacchus March Road, Bacchus Marsh	722.5	47.25	7.2	8.125	31	24.25	0.033	0.63013
Little River at You Yangs Rd, Little River	8302.5	56.75	7.9	8.4	33	12.25	0.033	1.03325
Lollypop Creek upstream Black Forest Road, Wyndham Vale	302.5	60	7.9	8.475	340	94.5	0.1525	1.2885
Parwan Creek at Bacchus Marsh- Geelong Road, Parwon	9172.5	58.5	7.625	8.025	37	53.25	0.18275	2.00213
Skeleton Creek at Ayr Street, Laverton	4840	48.5	7.175	7.65	264	16.25	0.1625	0.99788
Yangardook Creek at Bridge Road, Melton South	172.5	39	7.2	8	70	25.75	0.12	1.131
Werribee River at Old Melbourne Rd, Ballan	645	48.75	7.375	7.825	27	10.5	0.03825	1.02438
Werribee River opposite end of McGregor Court (Lions Club Reserve), Maddingley	2672.5	53.5	7.475	7.925	86	19.25	0.048	0.58088
Werribee River at Cobbledicks Ford Rd,	2830	55.75	7.675	7.95	199	16.25	0.0575	0.735
Werribee River upstream weir at Riversdale Road, Werribee	2725	66	7.875	8.225	166	30.75	0.1025	1.03375

Waters of Victoria	EC 75%	DO% 25%	pH 25%	pH 75%	E Coli Geomean	Turb 75%	TP 75%	TN 75%
	µS/cm	% sat	ph units	ph units	org/ 100m	NTU	mg/l	mg/l
Cleared Hills & Coastal Plains Westernport	500	85	6.4	7.7	150	10	0.045	0.6
Blind Creek at Cathies Lane, Wantirna South	700	36	7.075	7.625	529	38.5	0.12	1.95475
Boggy Creek at Lathams Rd, Carrum Downs	1700	55.5	7.55	8.55	634	42.5	0.23	2.3915
Corhanwarrabul Creek at Wellington Road, Rowville	1025	54.5	7.175	7.625	327	31.25	0.097	1.6845
Croydon MD at walkway between Bangalook Rd West and East, Bayswater North	871.5	32	7	7.225	525	19.25	0.13	3.101
Dandenong Creek at Boronia Road, Wantirna	468.75	24.75	7.275	7.625	287	28.5	0.1025	1.72775
Dandenong Creek at Stud Road, Dandenong North (EPA 5654)	436.25	67.75	7.4	7.975	263	41.25	0.10125	1.55975
Dandenong Creek at Pillars Crossing, Dandenong South	690	58.75	7.375	7.775	174	61.5	0.0975	1.42225
Elster Creek at Cochrane Street, Elwood	743	76.5	7.975	9	567	20.5	0.125	1.6895
Eumemmerring Creek at Worsley Road, Bangholme	800	69.75	7.375	8.1	182	38	0.1325	1.31275
Ferry Creek upstream of confluence with Monbulk Ck, Knoxfield	412.75	54	7.175	7.775	234	37.25	0.1025	1.34375
Hallam Main Drain at South Gippsland Highway, Hampton Park	1085	46.5	7.15	7.725	135	31.75	0.075	1.3305
Heatherton Drain at Bear St, Mordialloc	351	72	7.5	8.3	232	25	0.31	1.398
Kananook Creek at Wells Street, Frankston	53500	56.75	7.45	7.9	138	13.5	0.1275	0.70375
Mile Creek at Cheltenham Road, Keysborough	1900	73.25	7.475	7.9	404	16.5	0.08	1.673
Monbulk Creek at a track off Karoo Road, Rowville	349	61	7.35	7.8	281	51	0.083	1.313
Mordialloc Creek at Wells Road, Mordialloc	12200	49.25	7.1	7.55	213	39.25	0.2025	1.4585
National Water Sports Centre outlet, Bangholme (EPA 5682)	552.5	62.5	7.6	8.2	73	58.5	0.135	1.8005
Balcombe Creek at footbridge off Uralla Drive, Mt Martha	1900	55.75	7.1	7.65	158	25.25	0.0835	1.75475
Chinamans Creek at Eastborne Road, Rosebud West	1625	28.75	7.2	7.55	205	13	0.1675	2.9955
Dunns Creek at Marine Drive, Safety Beach	4300	65	7.175	7.575	306	10.25	0.08575	0.773
Kackeraboite Creek upstream Old Mornington Rd, Mt Eliza	2800	59.5	7.275	7.825	258	9.75	0.0715	1.32188
Main Creek at Boneo Road, Flinders	2300	76	7.475	8.025	89	10.25	0.0735	1.39313
Sweetwater Creek at Grange Rd, Frankston South	2000	65.75	7.35	8.05	604	18.5	0.059	1.276
Forest - A	100	90	6.4	7.7	150	5	0.025	0.5
Dandenong Creek at Sheffield Road, Doongalla Forest	160.5	60	6.95	7.5	36	15.5	0.0195	1.143

Waters of Western Port Bay & Catchment	DO% Min	pH Min	pH Max	E Coli Geomean	Turb 50%	TP Max	TN Max
	% sat	ph units	ph units	org/100m	NTU	mg/l	mg/l
Lowlands & Phillip Island	80	6.5	9	200	15	0.05	0.6
Bunyip River at Healesville Koo-Wee-Rup Road, Koo-Wee-Rup	20	5.7	8	26	28	0.59	3.1035
Cardinia Creek at Ballarto Road, Cardinia	65	6.5	10	141	20	0.12	1.937
Deep Creek at Ballarto Road, Rythdale	30	6.8	7.8	156	70	1.8	3.632
Lower Gum Scrub Creek at Wenn Road, Cardinia	64	7	8.2	40	12.5	0.3	3.646
Toomuc Creek at Ballarto Road, Rythdale	36	6.4	8.2	159	21.5	0.68	2.618
Warrangine Creek at Frankston-Flinders Road, Hastings	43	6.3	8.3	157	16	0.15	16.016
Watsons Creek at Dandenong-Hastings Road, Somerville	18	6.2	7.6	357	18.5	5.8	263.46
Wyllies Drain at Baxter-Tooradin Rd, Devon Meadows	54	7.1	8.1	23	10	2.1	42.946
Yallock Outfall at South Gippsland Highway, Monomeith	21	6.5	7.9	209	62.5	9.8	10.464
Northern Hills	85	6.5	9	200	5	0.03	0.2
Bunyip River at North Labertouche Road, Labertouche	67	6.4	8.1	59	8	0.042	0.998
Bunyip River d/s Cannibal Creek, Longwarry North	66	6.4	8.3	304	13	0.054	0.994
Cardinia Creek at Chadwick Road, Upper Beaconsfield (Replaces AM089)	55	6.6	8.4	61	7.5	0.043	0.667
Diamond Creek at Ellis Road, Tonimbuk	21	6.1	8.5	60	12	0.1	2.158
Labertouche Creek at Draytons Road, Labertouche	55	6.6	7.7	194	10	0.34	1.785
Tarago River at Morrisons Road, Labertouche	8	6.9	8.4	355	8	0.052	1.357
Toomuc Creek at Princes Highway, Pakenham	42	6.8	8.1	160	8	0.11	1.478
Upper Tarago River at Elton Road, Neerim (upstream Tarago Reservoir)	8	6.5	8	85	13	0.042	1.247
Peninsula	80	6.5	9	200	15	0.05	0.6
Merricks Creek at Bridge Street, Merricks (Beach Road)	29	6.2	8	152	11.5	0.28	5.105
Olivers Creek at Barclays Crescent, Hastings	24	6.3	7.7	213	13.5	1.6	3.842
Stony Creek downstream Byrnes Road, Shoreham	39	6.1	8.3	295	5.5	0.43	2.723
South Eastern Rural	80	6.5	9	200	15	0.05	0.6
Ararat Creek at Nar Nar Goon- Longwarry Road	43	6.8	8	150	26	0.13	1.73
Bass River at Loch-Poowong Road	12	7	8.6	197	13	1.1	7.01
Bass River at McGrath Road	6	7	8.6	61	12	0.19	6.481
Bass River at School Road,	12	6.7	8.4	624	16.5	0.19	3.932
Bunyip Main Drain at Little Road, Iona	69	6.7	8.5	534	11	0.051	0.994
King Parrot Creek upstream Koo-Wee Rup - Longwarry Rd,	44	7	8	287	38	0.96	6.211
Lang Lang River upstream Drouin-Poowong Road, Athlone	14	7	8.1	266	17.5	0.31	5.329
Lang Lang River at South Gippsland Highway, Lang Lang	42	6.7	8	278	20.5	0.2	6.436
McDonalds Drain at Ballarto Rd, Cardinia	22	6.6	7.0	206	29	0.75	8.414
Minnieburn Creek at South Rd, Poowong	32	7	8.1	176	10.5	0.32	4.288
Musk Creek upstream Koo-Wee Rup - Longwarry Rd,	13	6.8	7.9	391	15	0.35	3.1025
Red Bluff Creek at Bass Highway, Jam Jerrup	46	6.4	8.5	69	21.5	0.61	6.065

Waters of the Yarra Catchment	DO% Min	pH Min	pH Max	E Coli Geomean	Turb 50%	TP Max	TN Max
	% sat	ph units	ph units	org/ 100m	NTU	mg/l	mg/l
Rural Eastern Waters	80	6	8.5	200	15	0.05	0.6
Arthurs Creek at Hurstbridge-Arhturs Creek Road, Hurstbridge	14	6.6	8.3	65	24	0.17	2.433
Cockatoo Creek at Tschampions Road, Macclesfield	30	5.9	8.2	33	18	0.051	2.099
Coranderrk Creek at Healesville-Koo Wee Rup Rd, Badger Creek	28.1	6.7	8.3		3	0.064	0.984
Diamond Creek at Strathewan Road, Cottlesbridge	14	6.6	8.3	32	13	0.17	3.714
Hoddles Creek upstream Warburton Hwy, Launching Place	25	6.2	8.6		15	0.032	1.448
Little Yarra River at Corduroy Road, Yarra Junction	29	5.8	8.1	279	16	0.036	1.857
McCrae Creek upstream Healesville-Koo Wee Rup Road, Yellingbo	26	5.4	8.2		24	0.03	1.546
New Chum Creek at Valley Farm Road, Healesville	25.7	6.5	8.2		14	0.048	2.73
Pauls Creek at Healesville- Yarra Glen Road, Tarrawarra	21.9	6.7	7.3		22	0.19	3.322
Shepherd Creek at Healesville-Koo Wee Rup Rd, Yellingbo	26	5.7	8.2		19	0.04	1.858
Steels Creek at Yarra Glen-Healesville Road, Yarra Glen	25.7	6.2	7.8	32	27	0.073	2.14
Stringybark Creek at Melba Highway, Yering	32.6	6.6	8.1	100	12	0.28	1.777
Wandin Yallock Creek at Killara Road, Gruyere	31	6.9	8.2	75	11	0.069	2.747
Watsons Creek at Henley Road, Kangaroo Road	30	7.1	8.6	31	5	0.14	2.343
Woori Yallock Creek at Macclesfield-Woori Yallock Road, Yellingbo	25	5.9	7.4	124	16	0.038	2.508
Woori Yallock Creek at Warburton Highway, Woori Yallock	33	5.9	8.6	132	17	0.35	2.02
Watts River at Healesville-Kinglake Road, Healesville	19.7	6.6	8.2	295	11	2.2	1.578
Yarra River at McKenzie-King Drive, Millgrove	29	6.6	7.9	160	7	0.019	0.837
Yarra River at Don Road, Launching Place (EPA 2916)	29	5.8	8.2	194	7	0.019	1.057
Yarra River at Maroondah Hwy, Healesville (EPA 2904)	44.4	6.4	8.8	206	11	0.036	1.296
Yarra River at Spadonis Reserve, Coldstream	46.9	7.1	7.9	162	13	0.06	1.487
Rural Western Waters	60	6	8.5	200	25	0.05	0.6
Bruces Creek at Beech St, Whittlesea	13	6.7	8.4	67	13	0.37	2.249
Merri Creek at Summerhill Road, Craigieburn	22	6.9	8.5	43	10.5	0.14	2.011
Plenty River at Kurrak Road, South Morang	27	6.8	7.9	41	12.5	0.13	1.866
Upper Estuary	60	6.5	8.5	200	30		
Yarra River at Princes Bridge, Melbourne	50	6.8	8.4	217	8	0.14	1.427

Waters of the Yarra Catchment	DO% Min	pH Min	pH Max	E Coli Geomean	Turb 50%	TP Max	TN Max
	% sat	ph units	ph units	org/ 100m	NTU	mg/l	mg/l
Urban Waters	60	6	8.5	200	25	0.1	1
Andersons Creek at Everard Drive, Warrandyte	30	7	7.9	266	10.5	0.31	4.771
Brushy Creek at Lower Homestead Road, Wonga Park	34.9	6.9	7.7	421	24	0.43	9.64
Darebin Creek at Clark Road, Alphington	35	6.8	8.6	360	7.5	0.24	1.85
Diamond Creek at Main Road, Eltham	28	7	8.3	351	32.5	0.26	2.518
Edgars Creek at Murray Road, Coburg	23	7.3	9.1	731	3.5	0.16	1.689
Gardiners Creek at footbridge off Barrington Drive, Ashwood	60	7	10.9	513	12	0.18	2.57
Gardiners Creek at Glenferrie Road, Hawthorn	49	6.6	8.5	874	9.5	0.12	2.018
Jumping Creek at Jumping Creek Road, Wonga Park	32.3	6.8	8.1	180	10	0.24	2.273
Koonung Creek at Bulleen Road, Bulleen	28	7.1	8.3	573	12.5	0.33	2.318
Merri Creek at Roseneath Street, Yarra Bend	38	6.8	9.1	105	6	0.17	1.626
Moonee Ponds Creek at walk bridge in Jacana Reserve,	24	7.4	8.6	116	14	0.57	3.878
Moonee Ponds Creek at Racecourse Road, Flemington	44	7.1	8.9	1086	9.5	0.12	3.9
Mullum Mullum Creek at Deep Creek Reserve, Warrandyte	28.5	7	8.2	400	27	0.57	4.49
Olinda Creek upstream Hull Rd, Lilydale	21	6.5	7.9	218	16	0.066	2.22
Olinda Creek at MacIntyre Lane, Coldstream	31	7	8	311	12	0.23	3.867
Plenty River at Henty Road, View Bank	26	7	8.5	288	23	0.16	2.214
Ruffey Creek at Parker Street, Templestowe	37	7.1	8.6	491	12.5	0.2	2.631
Scotchman Creek at Golfers Drive, Malvern East	33	7.3	9	346	11	0.11	1.82
Yarra River at Kangaroo Ground-Warrandyte Road, Warrandyte	57.2	7	8.6	61	11.5	0.059	2.405
Yarra River at Chandler Hwy, Kew (Replaces MY01)	31	6.7	8.9	149	28	0.11	1.833
Parks and Forests	85	6.5	8.5	200	5	0.03	0.2
Big Pats Creek upstream Riverside Drive, East Warburton	29	6.3	7.8	39	6	0.017	0.765
McMahons Creek at Woods Point Road, Mc Mahons Creek	30	6.2	7.7	77	7	0.035	0.727
O'Shannassy River at a small track off Road one, Warburton East	31	5.4	7.3	38	4	0.14	2.405
Starvation Creek upstream Woods Point Road, McMahons Creek	29	6	7.9	52	7	0.014	0.626

Reporting Alert Levels for Waterway Water Quality

Water quality alert levels were agreed between EPA Victoria and Melbourne Water in 1994. Alert levels are generally well above water quality objectives specified in relevant State Environment Protection Policies, representing instances of particularly undesirable water quality. Melbourne Water is required to report all alert-level exceedances that occur within our jurisdiction to provide a means of identifying sites that often experience poor water quality and also to provide a mechanism for locating and mitigating chronic pollution problems.

From April to June 2008, a total of 342 alert-level exceedances were reported to EPA Victoria, or about 4 % of the total number of water quality measurements.

This compares with 1.7% of exceedances reported in the fourth quarter last year. Exceedances were most commonly reported for dissolved oxygen, nitrogen and phosphorus. The largest number of exceedances was reported in Watsons Creek at Dandenong-Hastings Road – Somerville thought to be associated with the presence of upstream market gardens and Brushy Creek at Lower Homestead Road Bridge, Wonga Park presumably associated with upstream wastewater treatment plant discharges.

Renewable Energy and Greenhouse Gas Emissions Performance

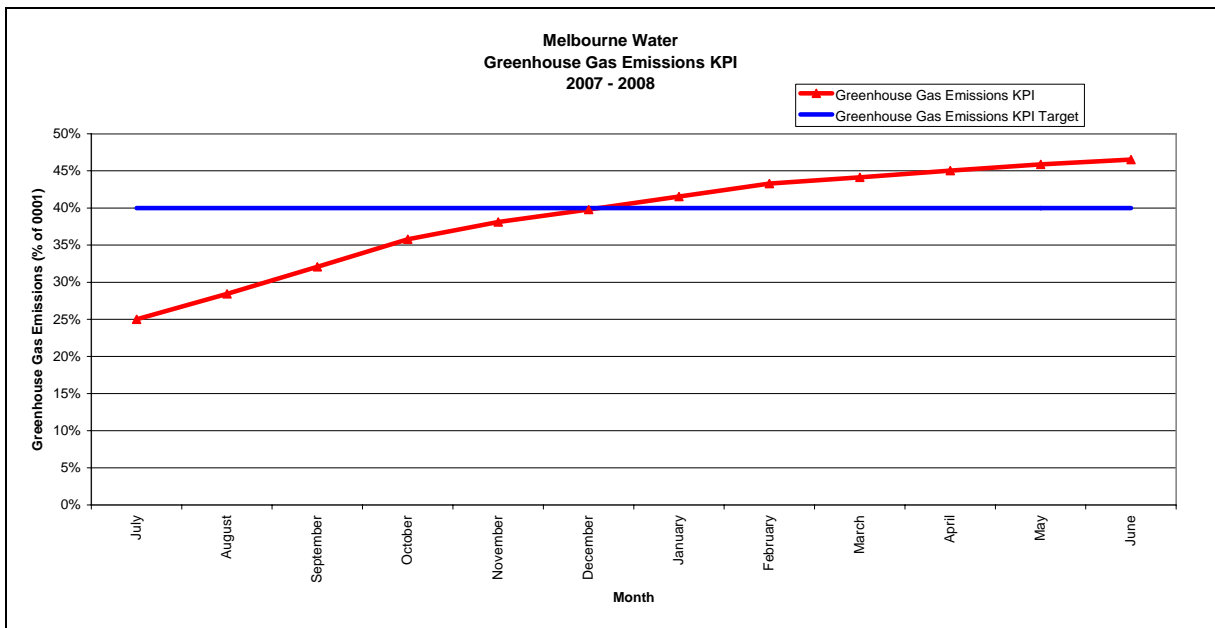
Melbourne Water has established Key Performance Indicators for increased renewable energy and reduced greenhouse gas emissions. While there are no strict regulatory requirements for these, there are increasing soft regulatory requirements such as EPA Victoria’s discharge licence requirement to implement energy efficiency projects with pay back periods of three years or less. The Commonwealth Government is also introducing similar requirements for businesses that use more than 0.5 PJ of energy each year and Melbourne Water uses about 2 PJ.

The following graphs show performance against the two Key Performance Indicators. The definition for each is included with each graph. For information two additional charts are included showing the energy content of sewage and water and the fuel efficiency of Melbourne Water’s vehicle fleet.

Greenhouse Emissions KPI

Melbourne Water has exceeded the 2007/08 target for reducing greenhouse gas emissions.

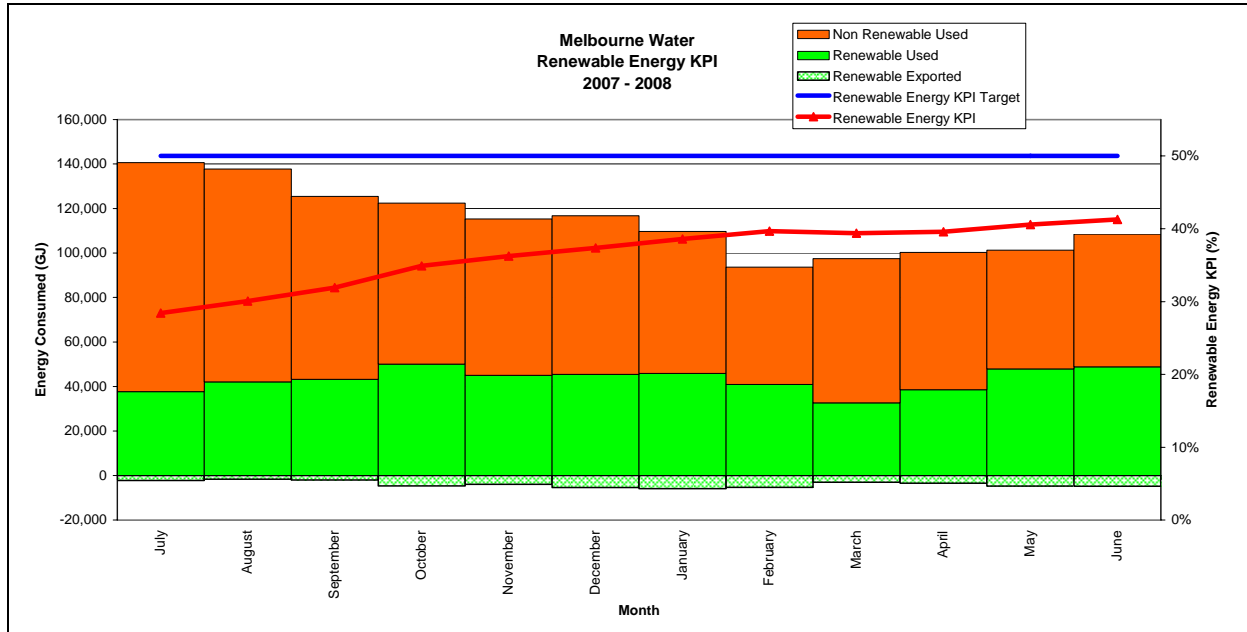
$$= (\text{Total Emissions 2000/01} - \text{Total Emissions 2005/06}) / \text{Total Emissions 2000/01}$$



Renewable Energy KPI

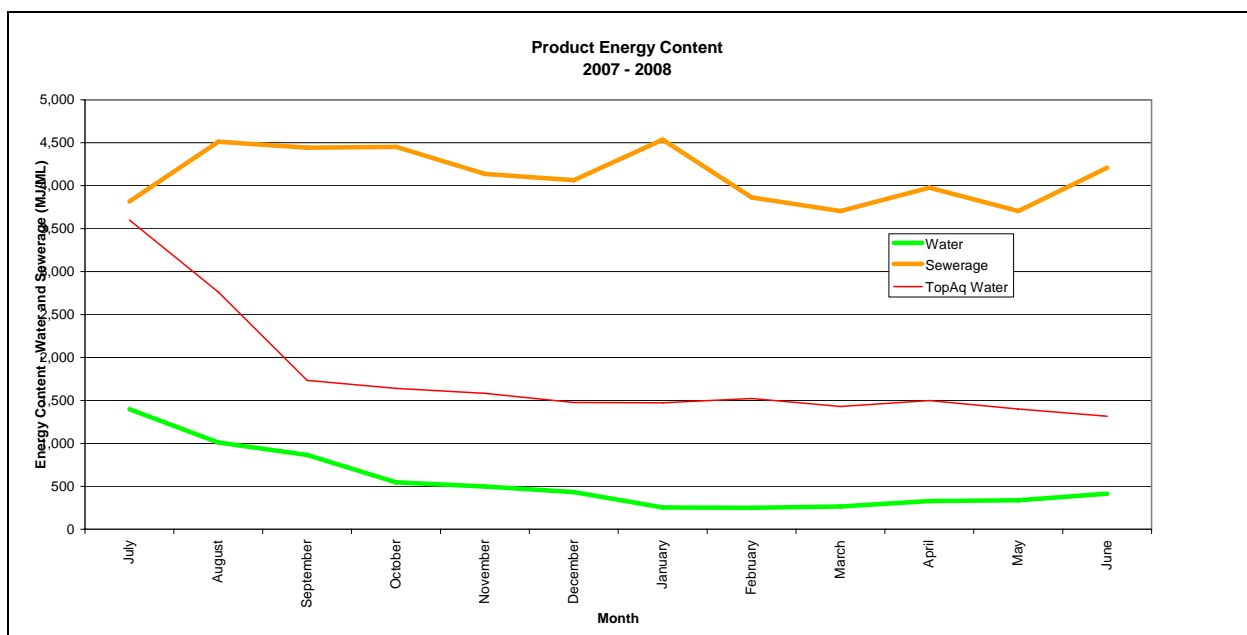
The renewable energy target for 2007/08 has not been achieved. This was due to limited operation of hydro generators on Thomson Dam and the Silvan-Cardinia pipeline due to the drought.

= Renewable Energy Produced or Used / Total Energy used by Melbourne Water



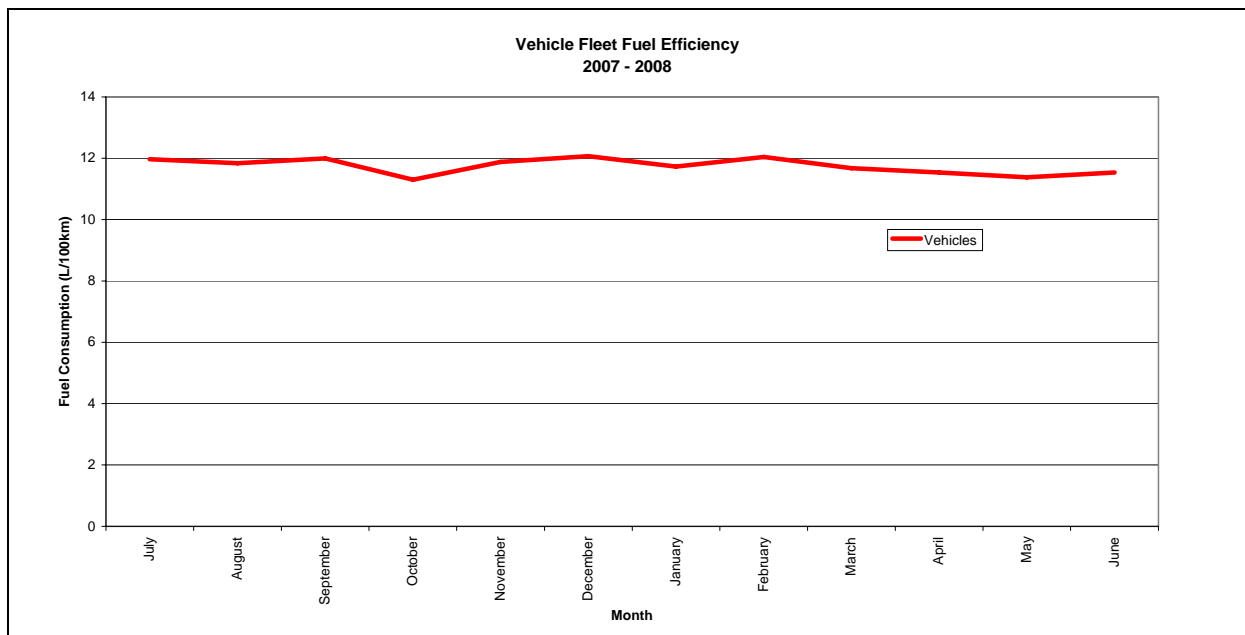
Energy content

Energy content is how much energy Melbourne Water or Earth Tech (TopAq Water) uses to produce a ML of product. Earth Tech's line is the average energy required per ML of Class A water from ETP effluent.



Vehicle fleet efficiency

On average how much fuel is used to travel 100 kms.



Catchment Profile

Yarra River water quality monitoring during low flow periods



Dights Falls March 2008

Streamline Research was commissioned to conduct weekly monitoring of water quality in the Yarra River between Fitzsimons Lane, Templestowe and Gipps Street, Collingwood between 11 February 2008 and 7 April 2008. The study investigated the effect of low flows on water quality in the Lower Yarra pools and the availability of that habitat to aquatic life.

Depth profiles of dissolved oxygen, temperature and conductivity were monitored in 11 pools between Kew Golf Course and Dights Falls. Surface water monitoring of pH, dissolved oxygen, temperature, electrical conductivity and turbidity was made at an additional 7 locations between Templestowe and Collingwood.

The investigation showed that when stream flows are sustained below 200 ML/day at Chandler Highway, oxygen depletion will occur in the Yarra River between Templestowe and Collingwood. Oxygen depletion occurs in surface waters but is severely depleted in pool environments. In the pools (some of which exceed 8m in depth), the oxygen concentration falls to around 2-3 mg/L at a depth of 2m from the surface, considerably lower than the SEPP requirement of 6.0 mg/L for the Yarra River (EPA, 1999). At streamflows below 200 ML/day at Chandler Highway, lower oxygen levels are expected to cause up to 80% of pool habitat to be unsuitable for aquatic fauna.

The findings of this study suggest that streamflows below 200 ML/day at Chandler Highway should be avoided, if in-stream habitat is to be protected for aquatic fauna. Environmental flow releases should be triggered when streamflows drop below 200 ML/day, rather than the existing trigger of 150 ML/day that is used under the Melbourne Water Environmental Emergency Contingency Plan.

Appendices

Appendix One: Guide to Terms

Parameter	Units	Explanation
BOD <i>Biochemical Oxygen Demand</i>	mg/L*	A measure of the oxygen depleting potential of waste - usually measured over a five day period.
CBOD <i>Carbonaceous Biochemical Oxygen Demand</i>	mg/L*	A measure of the oxygen depleting potential of the carbonaceous (organic) portion of the waste - usually measured over a five day period.
SS <i>Suspended Solids</i>	mg/L*	A gravimetric measure of undissolved matter, when retained on filter.
Amm <i>Ammonia</i>	mg/L*	A form of nitrogen, present in untreated sewage and many industrial wastes. Is toxic to certain fish and marine species.
Surf <i>Anionic Surfactants</i>	mg/L*	Surface active agents, associated with detergents
pH	numeric	A measure of the acidity (pH 0-7) or alkalinity (pH 7-14) of sample. Pure water is slightly acidic, due to dissolved carbon dioxide.
TRC <i>Total Residual Chlorine</i>	mg/L*	A measure of the remaining chlorine associated with the disinfection of effluent.
D.O. <i>Dissolved Oxygen</i>	mg/L*	An indication of "waterway health". Levels may deviate from saturation by pollutant depletion, or supersaturation due to algal activity.
Metals	mg/L* or µg/L#	Are an indication of contamination. Metals tested include lead, cadmium, chromium, copper, zinc, nickel and mercury.
E. coli <i>Escherichia coli</i>	no. of organism s/ 100ml	A common bacteria from the intestines of warm blooded animals. Used as an indicator of faecal contamination.
PAH's <i>Polynuclear Aromatic Hydrocarbons</i>	µg/L#	Polynuclear Aromatic Hydrocarbons are by-products of petro-chemical industries and combustion processes. Many PAH's are highly carcinogenic.
Total P or TP <i>Total Phosphorus</i>	mg/L*	Measured as phosphate after acid digestion of total sample to convert all combinations of phosphorus to phosphate.
Phenols	µg/L#	Phenols are widely used in resins, disinfectants and industrial products. Trace residuals are resistant to decomposition.
Total N or TN Total Nitrogen	mg/L*	The total amount of nitrogen comprising organic nitrogen, ammonia, nitrate and nitrite
Turb Turbidity	NTU	Cloudiness caused by materials suspended in water
EC Electrical conductivity	µS/cm	A measure of the ability to conduct an electrical current and used as an indicator of salinity
Org N <i>Organic Nitrogen</i>	mg/L*	A distinction between the inorganic nitrogen forms (ammonia, nitrite and nitrate), and the organic compounds present in food/body wastes. (proteins, amines)

* milligrams per litre of water sampled - is equivalent to parts per million

usually expressed as micrograms per litre of water sampled - is equivalent to parts per billion

Appendix Two: Details of the Environmental Impact Rating of Sewer Spillages

The development of an environmental impact rating for sewer spills includes the following factors:

- environmental quality of the receiving water;
- spill content;
- dilution of effluent in receiving water; and
- the volume of the spill.

The impact rating is based on a procedure that considers the various combinations of grade for each of the factors together and then groups them into an impact rating based on a simple model. Each possible combination of grades has been put into one of the ratings from one to five. Although this may appear to be an arbitrary process, the results represent a reasonable estimation of the potential environmental impact of a spill from a sewer.

The environmental impact rating is an indication of the potential impact of spill events, not a measure of actual impact.

Examples

An example of a significant spill achieving an impact rating of “5” occurred during Period 12 1994/95. ERS number 327 discharged 10 826 Kl of untreated sewage into the Maribyrnong River. The volume of this spill was the key determinant in the spill classification of “5”.

ERS number 327 discharged on another occasion during Period 12 1994/95 resulting in 68 Kl of sewage being discharged into the Maribyrnong River. This spill was given a rating of “2” due to the relatively minor volume of sewage discharged into the waterway and was not regarded as significant.

Appendix Three: Melbourne Water Spillage Reporting

How Melbourne Water reports sewerage system spills within Melbourne Water and to EPA Victoria is described below.

All spills, regardless of volume or content, are reported internally or to an external authority. The significance of the spill determines the reporting process.

Spills where there may be an environmental or public health hazard*

1. Immediately by phone or fax using the EPA NOTIFICATION OF SEWER SPILL form by a senior manager to EPA Victoria.
2. These spills require a SEWER SPILL NOTIFICATION FOLLOW-UP report to EPA Victoria within 21 days of the spill.
3. Subsequent written reports are provided to Melbourne Water executives (as required) and EPA Victoria (quarterly).

Where there is potential for a public health impact DHS is also notified.

All Spills (including spills of low significance)

1. Each period, a summary of all spills is included in the Business Unit's Operating Report to Board.
2. The Quarterly Board Environmental Compliance Report provides more details on all spills.
3. A Quarterly Spills Report summary of spills is forwarded to EPA Victoria.

*Hazards that require immediate follow up include where there is a:

- public health concern
- sensitive receiving environment
- large industrial or commercial waste component
- sewer spill very visible in a public area
- potential for media involvement
- sewer pipe 300mm diameter or greater
- flow >80L/min (ie: two house taps going flat out for approx hour = 5 KL)

Appendix Four: Description of the Phases of Trade Waste Agreement Restrictions

The retail water companies use a risk-ranking model as one of the tools used to manage trade waste discharged to sewer. The risk-ranking model has been developed over many years and takes into account key aspects of each customer's circumstances.

These include:

- Location of the discharge in relation to the receiving sewage treatment plant;
- Volume of trade waste discharged to sewer;
- Compliance history of the customer;
- Activities undertaken on the customer's site which generate trade waste; and
- Substances in the trade waste.

The risk-ranking model calculates a risk weighting for each customer and from this customers are allocated to one of five risk categories, with a risk ranking of 1 being the highest risk and 5 being the lowest. The risk rating determines the level of monitoring required for a company.

Retail water companies initiate a three-step management process when a customer does not comply with the conditions of their Trade Waste Agreement or Consent.

Stage 1:

When a non-compliant sample is identified, an Initial Trade Waste Notice is issued. The Notice specifies how the trade waste fails to comply and requires the customer to remedy the problem, provide written documentation explaining reasons for the non-compliance and the steps taken to ensure it will not happen again.

Stage 2:

If further samples of trade waste do not comply after the date specified in the Notice a letter is issued requiring the customer to:

- review its waste treatment processes;
- attend a meeting to discuss the cause of the non-compliance and processes to prevent a recurrence; and
- meet costs in ensuring trade waste complies with the Agreement.

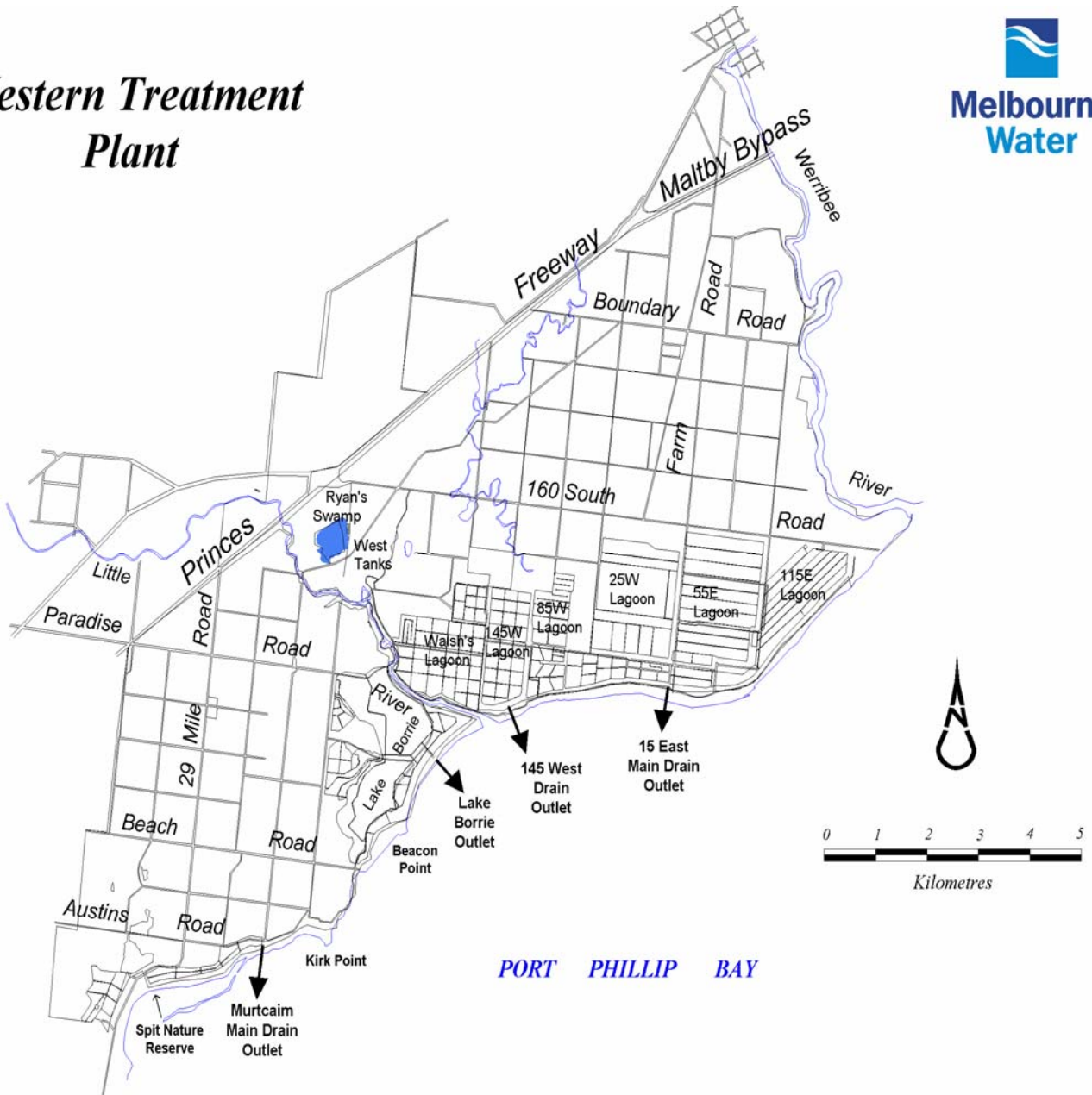
Stage 3:

Samples of trade waste will continue to be taken and analysed and no further action will be taken if the trade waste becomes compliant. However if a sample does not comply a Notice of Breach will be issued setting out a date by which the trade waste must comply with the Agreement.

If the trade waste does not comply by the set date the customer must cease discharging trade waste to the sewer immediately, the trade waste connection point will be sealed and the media may be informed. Any further discharge of waste will be liable to a fine of up to \$20,000 and up to \$8000 for each day during which waste is discharged. Before any further trade waste can be discharged, a new Agreement must be negotiated and the customer must prove it will achieve on-going compliance.

Appendix Five: Map of Western Treatment Plant Discharge Points

Western Treatment Plant



Appendix Six: Environment Protection Authority (EPA) Enforcement Policy

The Environment Protection Act (1970) establishes the Environment Protection Authority to provide for a system of administration to ensure a high standard of environmental quality. The Act allows for a range of regulatory and non-regulatory activities including implementation of State environment protection policies, environmental monitoring and community education programs.

EPA Investigations

After an incident has been reported to the EPA, authorised officers from the EPA have the power under the Environmental Protection Act (1970) to embark upon an investigation. The investigation may involve:

- entry to the premises to take samples, photographs, tests, etc
- requesting information such as files, maps and or other documents relating to the incident
- identifying the occupier of the premises
- ordering clean-up procedures
- conducting formal interviews with management or individuals associated with the incident

Enforcement Measures

After investigation of a particular incident by the EPA the following enforcement measures are available under the Environment Protection Act (1970):

- warnings
- directions by an authorised officer
- notices
- infringement notices
- prosecutions
- licence suspension or revocation
- injunctions

Mounting a Prosecution - What is considered

In brief, the following factors are taken into account when deciding upon the most appropriate enforcement measures following an incident:

- the seriousness of the offence and harm to the environment
- previous history of offences
- the prevalence of the offence in the eyes of the public
- enforcement costs for the EPA
- the precedent which may be set by not taking enforcement action
- the cooperation of the alleged offending individual or company.

Melbourne Water and EPA Victoria

Melbourne Water could be subject to formal investigation by EPA Victoria in relation to incidents such as the 1992 Epsom Road Sewer Collapse and subsequent unlicensed discharge into the Maribyrnong River.

Melbourne Water has maintains a long-term cooperative relationship with EPA Victoria, including Quarterly Liaison Meetings of senior managers. This working relationship has resulted in open and honest communication so that the interaction between Melbourne Water's environmental performance and EPA Victoria's expectations holds no surprises.

Every incident such as the overflow of untreated sewage from an Emergency Relief Structure into a waterway could be regarded as an unlicensed discharge and an offence under the Environment Protection Act (1970). Where such incidents lead to unclear regulatory requirements steps are taken so that a clear position is developed. For example EPA Victoria has clarified that releases from the sewerage system through Emergency Relief Structures are compliant if they occur during rainfall events in excess of 1 in 5 years.

Appendix Seven: Emergency Response Procedures in Melbourne Water

A critical element of Melbourne Water's risk management process is ensuring the Corporation is prepared for and can effectively respond to and recover from incidents with potential to have an impact on our stakeholders, customers, the broader community or the environment.

Melbourne Water has established PERFORM (Prompt Emergency Response for Melbourne), which outlines the responsibility all Melbourne Water people have in incident management and details how we will respond to an incident in an integrated manner. The program highlights the need for thorough planning, preparation and training as a means of ensuring the effective and efficient management of any incident.

PERFORM is more than an incident management program, it is a comprehensive risk management program which incorporates prevention, preparedness, response and recovery for any adverse incident which could affect Melbourne Water.

The aims of PERFORM are to:

- Prevent or reduce the risks of incidents occurring in Melbourne Water
- Prevent or reduce the impact and consequences of incidents on customers, local community, stakeholders, environment, service delivery, system assets and operations
- Promote and support the maintenance and control of effective incident and emergency management processes

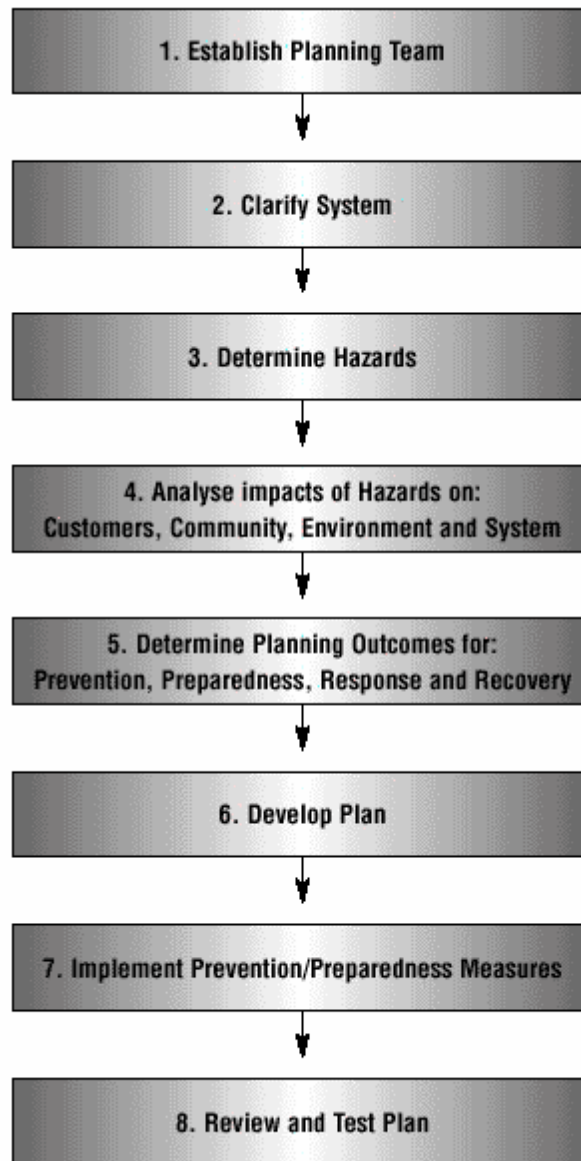
An *Incident* is any event or circumstance within our, or our customers operations that causes or is likely to cause:

- An interruption of service to customers
- A threat to our systems
- A threat to community health and safety
- A threat to the environment
- A threat to private or public property.
- The creation of the need for urgent action under statute or legislation

PERFORM incidents are categorised into five types. The following table defines the incident types and provides some examples of each type:

Category	Definition	Examples
Near Miss	A Near Miss is an unintended event that, but for the intervention of a risk control measure or human intervention, is likely to have resulted in a minor, significant or major incident, or in an emergency.	<ul style="list-style-type: none"> • Detection of a chlorine release of greater than two ppm, but less than 10 ppm at Winneke water treatment plant • Lost bush walkers in catchment area
Minor	A Minor Incident is one where local work teams, under normal supervision, can effectively cope with little or no adverse effects on the Corporation, its customers and the community. <i>Note: If the media become involved, a Minor Incident becomes a Major Incident.</i>	<ul style="list-style-type: none"> • Minor motor vehicle accident • Short duration computer system malfunction • Minor flooding • Vandalism in catchment area • Employee or contractor/visitor injury • Intentional access to catchment area
Significant	A Significant Incident is one that can be managed at the site level but: <ul style="list-style-type: none"> • May need external resourcing over and above that which is usually used by the work team; and/or • The actual or potential impact on the Corporation, its customers, the community and the environment is more widespread. <i>Note: If the media become involved, a Significant Incident becomes a Major Incident.</i>	<ul style="list-style-type: none"> • Burst main causing some property damage • General sewer stoppage with contained spill • Moderate flooding • Prolonged SCADA outage • Minor industrial actions • Asset or system failure causing property damage • Intentional damage to catchment area
Major	A Major Incident is one which requires off-site co-ordination with major levels of external resourcing and support; and/or causes or has the potential to cause major impact on the Corporation, its customers, the community and the environment. <i>Note: All incidents which involve the media are to be considered as Major Incidents</i>	<ul style="list-style-type: none"> • Burst main in a large shopping centre • General sewer stoppage resulting in an uncontained spill • Major or widespread flooding • Bushfire in water supply catchments (natural or intentional) • Dam failure • Major industrial action • Asset or system failure causing major property damage
Emergency	An Emergency is an event which significantly impacts Melbourne Water's ability to continue its operations. It will affect Melbourne Water's: <ul style="list-style-type: none"> • Operability (acceptable level of service) • Image or reputation (community, media, political) • Liability (legal, financial) 	<ul style="list-style-type: none"> • Any of the above major incidents • Fatality or multiple injuries • Loss of stakeholder support • Corporate governance/compliance issue • Occurrence of any of the five key metropolitan water industry threats

PERFORM does not only involve cleaning up after an incident. It also involves planning, training, procedure documentation and test planning. The incident management planning process is described below;



PERFORM applies to all Melbourne Water operations and business areas. Each group has generic plans to cover routine system faults for the different water supply, wastewater and drainage operations or for any other activity that has potential to have an impact on Melbourne Water’s business, its customers or the community.

A contingency plan is a series of processes or procedures to prevent, prepare for, and respond to and recover from events that can be foreseen to occur that can affect our operations or service delivery. It identifies any potential problem areas, and provides options for containing and controlling such events.

Each manager is responsible for determining the probability and consequences of failure of assets, systems and work practices, as well as for preparing contingency plans to deal with any failure.