



**Melbourne
Water**

Environmental Compliance

Quarterly Report

Quarters One and Two 2008/2009
(July - December)

Incidents, Initiatives and Issues

Incidents

None to report

Initiatives and Issues

Pollutant Load Assessment

As part of developing the Better Bays and Waterways plan, an assessment of pollutant loads entering Port Phillip and Westernport Bays utilising our loads monitoring data has been carried out. Monash University has undertaken a comprehensive review of all available flow and water quality data from our 13 loads monitoring sites across the region. This is the first time since the program began over five years ago that we have attempted to calculate loads from the various monitoring sites. Next steps for this project are to compare current loads against the 1000 tonne reduction target set for Port Phillip Bay.

Urban Index of River Condition Assessments Complete

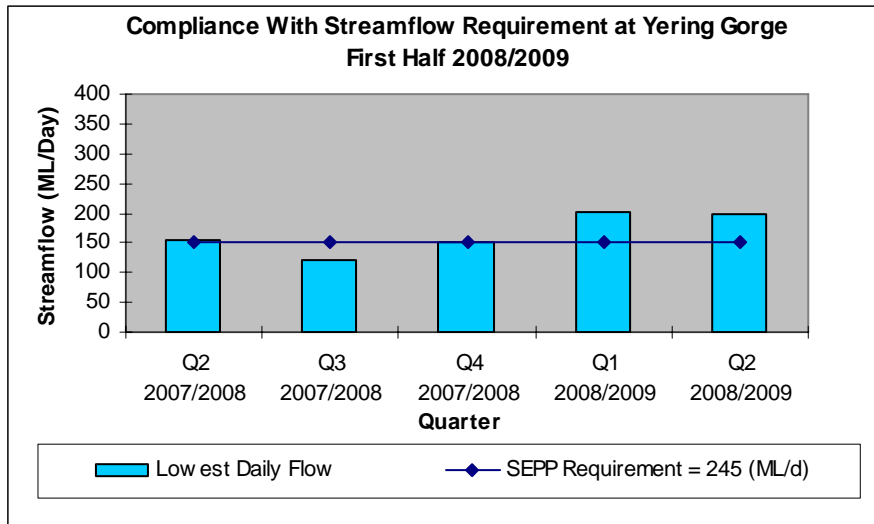
The Index of River Condition is used to monitor and report on the condition of our waterways and is based on a DSE method developed for rural waterways. A revised assessment method which takes into account important values and constraints of urban waterways was rolled out recently. The Urban Index has an additional social condition index which includes amenity, recreational water quality and community involvement. Draft results were received in August and will be used to monitor improvements in river condition.

Melbourne Water Urban Platypus Program

Melbourne Water has commissioned the CESAR research group at the University of Melbourne to develop a program of monitoring and researching platypus in the Melbourne Water region. New netting techniques will be used to capture platypus in deep pool areas that may be used as refuges in drought and where traditional fyke nets are not suitable. This sampling approach will be supplemented by more intensive platypus monitoring in targeted catchments that can be repeated over a longer timeframe (5–10 years). This monitoring work will feed into research on platypus genetics, ecology and behaviour being undertaken as part of the Melbourne Water Urban Platypus Program.

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 Entitlement and the subsequent phase 1 and 2 qualifications described in detail within previous compliance reports. 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 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 from the Yarra Headworks to meet 150ML/Day at Yering Gorge. During low inflows to the Upper Yarra and O'Shannassy Reservoirs, releases are limited to either 50% of these inflows or 80ML/day.

The minimum flow at Yering Gorge was 199 ML/day during the two quarters 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 occurs first) and the Phase 2 qualifications will cease after the removal of Stage 2 restrictions.

Sewerage System Summary of Statutory Compliance by Facility

Summary of Compliance by Facility

Quarter One 2008/2009

Facility	Compliance * of Samples Q1 (%)	Non-Sample Compliance**	Sewage Spills***	Odour Complaints				
Eastern Treatment Plant			0	1				
Western Treatment Plant			0	0				
Wastewater Transfer	N/A	N/A	0	0				
Total	N/A	N/A	0	1				
	<table border="1"> <tr> <td></td> <td>Compliance achieved for all parameters</td> </tr> <tr> <td></td> <td>Compliance not achieved for one or more parameters.</td> </tr> </table>					Compliance achieved for all parameters		Compliance not achieved for one or more parameters.
	Compliance achieved for all parameters							
	Compliance not achieved for one or more parameters.							

Quarter Two 2008/2009

Facility	Compliance * of Samples Q2 (%)	Non-Sample Compliance**	Sewage Spills***	Odour Complaints				
Eastern Treatment Plant			0	3				
Western Treatment Plant			0	0				
Wastewater Transfer	N/A	N/A	2	2				
Total	N/A	N/A	2	5				
	<table border="1"> <tr> <td></td> <td>Compliance achieved for all parameters</td> </tr> <tr> <td></td> <td>Compliance not achieved for one or more parameters.</td> </tr> </table>					Compliance achieved for all parameters		Compliance not achieved for one or more parameters.
	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)

Sewerage System Statutory Compliance Detail

Compliance of Samples – 1st Half 2008/2009

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 One 2008/2009

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

Quarter Two 2008/2009

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.

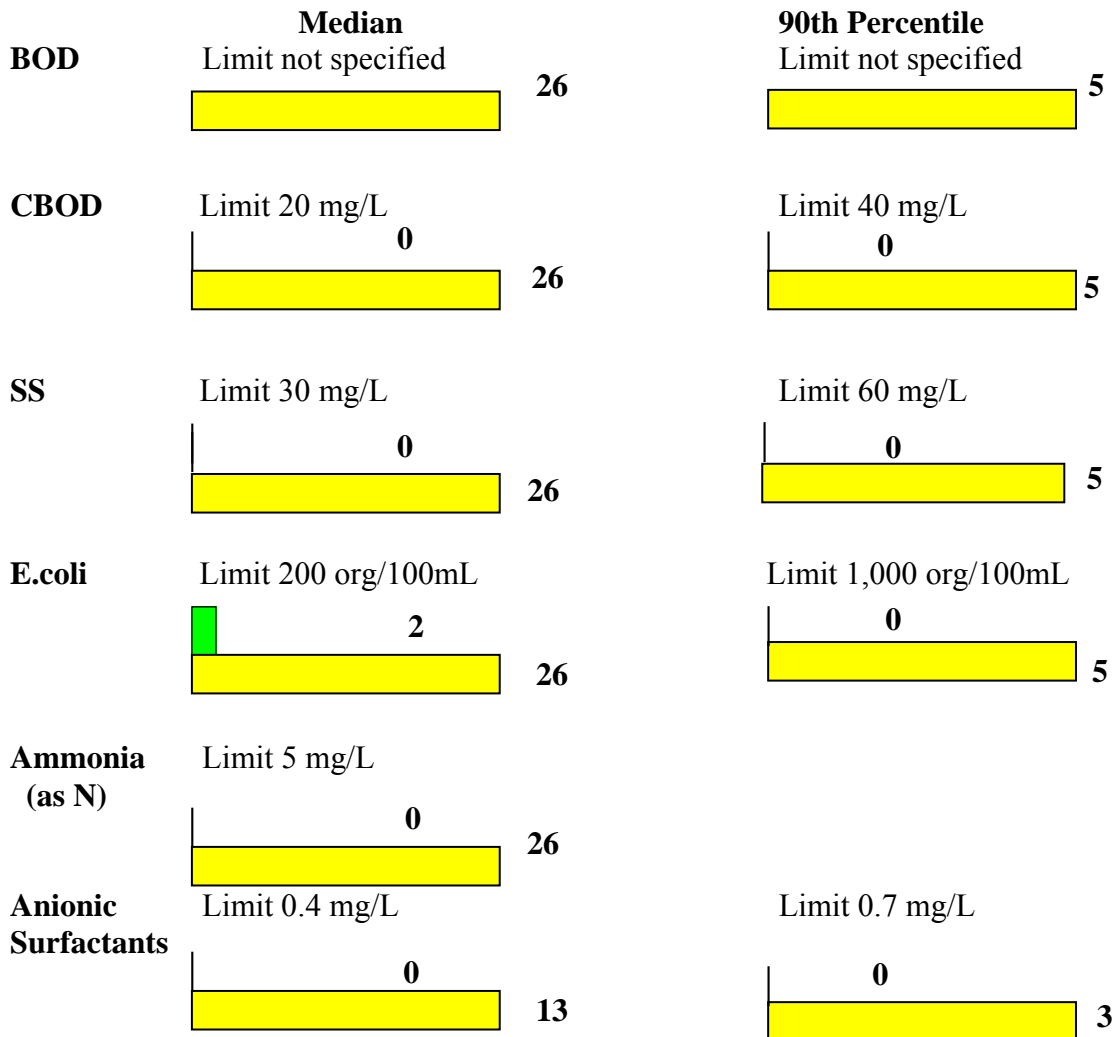
** EPA Victoria is given an explanation for each non-compliance

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

Eastern Treatment Plant fully complied with EPA Victoria discharge licence parameters.

Groundwater Monitoring

Routine groundwater sampling was completed between 24 and 27 November 2008. The report from this sampling has not yet been received.

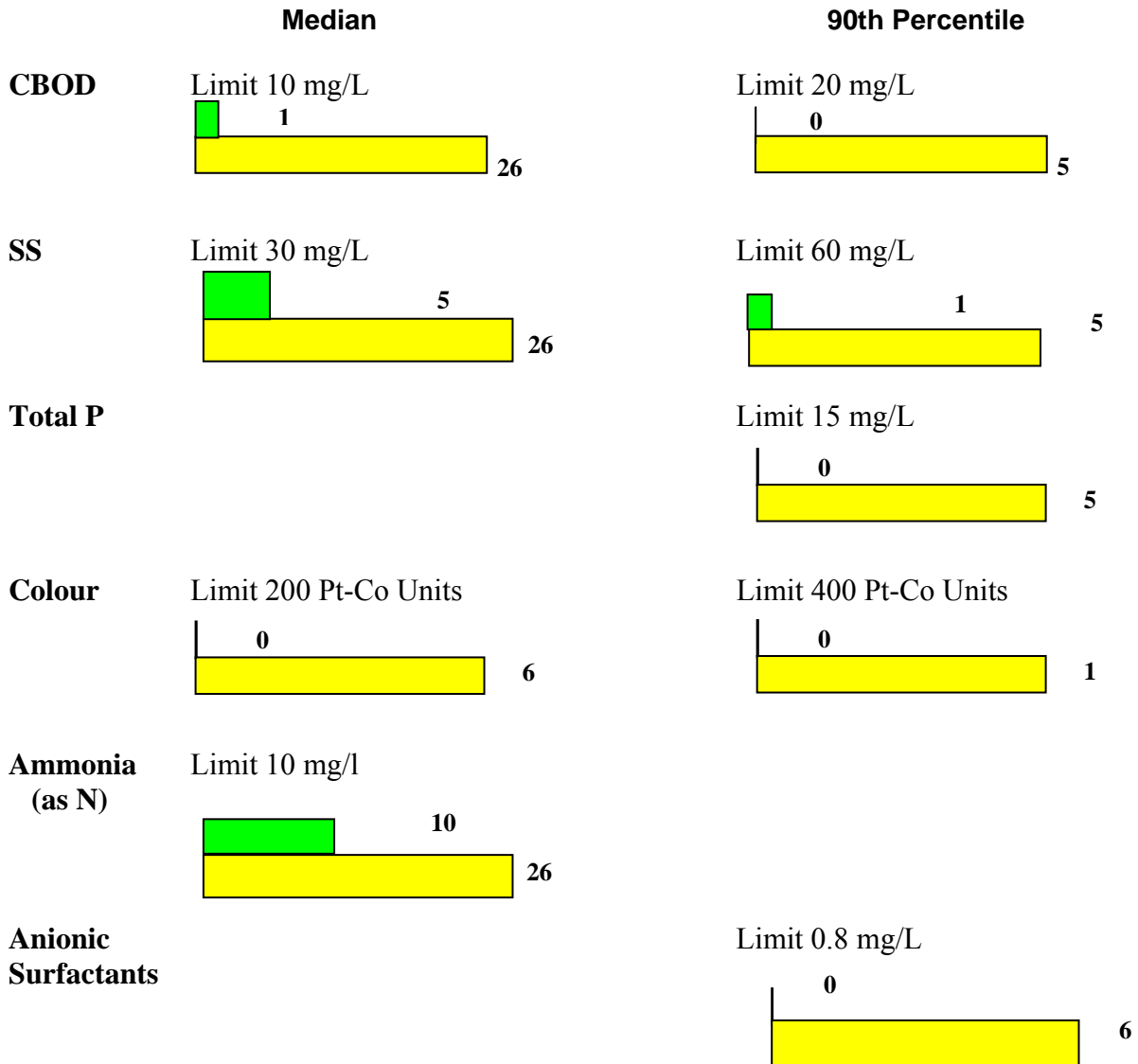
Details of Licence Non-Compliance/Parameter Exceedances

The two E.coli results above the annual median during the six months were from samples taken on 5 November 2008 and 22 November 2008 and they were 240 and 600 orgs/100mL respectively. The median to date for E.coli is 16 orgs/100mL against the EPA Victoria licence limit of 200 Orgs/100mL.

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

Western Treatment Plant fully complied with EPA Victoria discharge licence parameters.

Details of Licence Non-Compliance/Parameter Exceedances

Nil to report

Groundwater Monitoring

Melbourne Water has continued to monitor the groundwater quality in accordance with the revised program which was adopted in 2006 and the 2007/08 report has been received. Groundwater monitoring encompassed water level and quality sampling of 86 bores. During 2007/08, three new bores were installed around the new sludge drying pans.

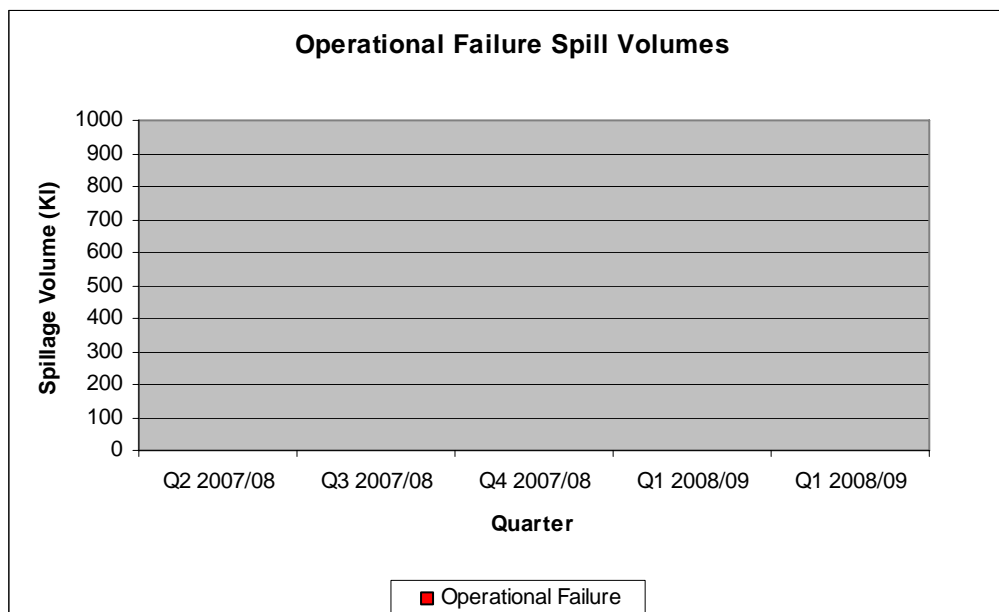
The following conclusions have been drawn from the groundwater monitoring:

- The results indicate that some bores have metal concentrations in excess of the adopted beneficial use criteria. These metal concentrations are considered to be reflective of background or natural conditions with the exception of one lead result and four chromium results. One lead result for 2007/08 was inconsistent with that for previous years and may be an aberration.
- The results indicate that in a number of bores, the nitrate and ammonia concentrations exceed the beneficial use criteria. High nitrate levels are generally centered on the land irrigation areas. This is likely to be due to irrigation with recycled water containing high nitrate levels. The high ammonia levels are present in the coastal fringes and may be a result of lagoon based sewage treatment operations. In most bores, the ammonia concentrations are stable or decreasing.

Sewage Spills Summary

Number of Spills	Q2 2007/08	Q3 2007/08	Q4 2007/08	Q1 2008/09	Q2 2008/09
Number of Spills	5	0	1	0	2
Operational failure	0	0	1	0	0
<1:5 compliant	5	0	0	0	2
<1:5 non-compliant	0	0	0	0	0
>1:5	0	0	0	0	0
Significance*	Q2 2007/08	Q3 2007/08	Q4 2007/08	Q1 2008/09	Q2 2008/09
Minor (Rating 1 - 3)	4	0	0	0	2
Significant (Rating 4 – 5)	1	0	0	0	0
Not Rated	0	0	1	0	0
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 were no spills due to operational failure during the two quarters

The above graph indicates the volume of sewage silt due to equipment breakdown or human error.

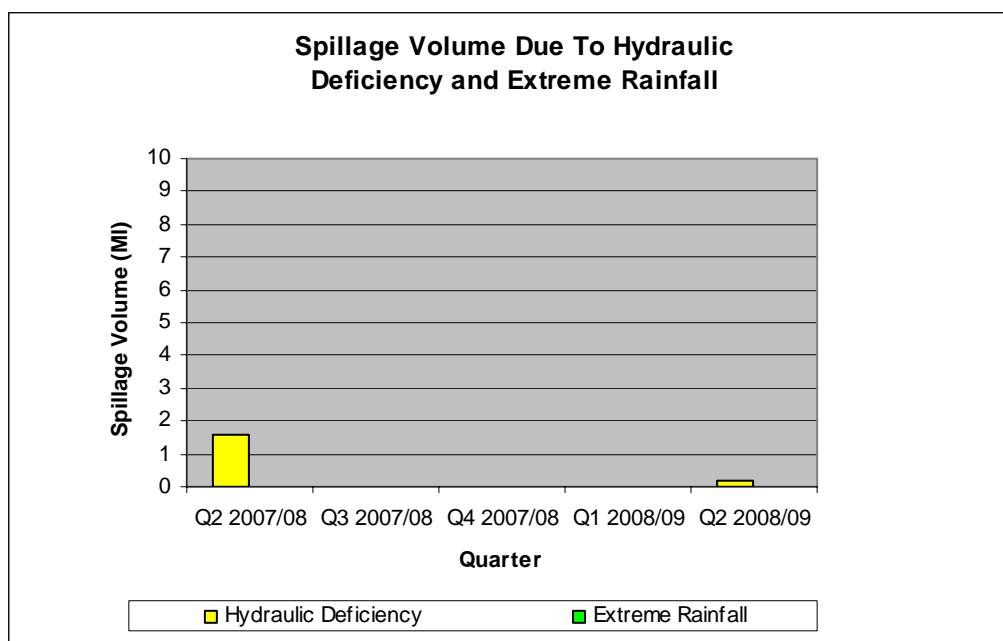
Eastern Treatment Plant

There were no spills at Eastern Treatment Plant during the two quarters.

Western Treatment Plant

There were no spills at Western Treatment Plant during the two quarters.

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 two spills due to hydraulic deficiency. Details are as follows:

12 to 14 December 2008 rainfall event

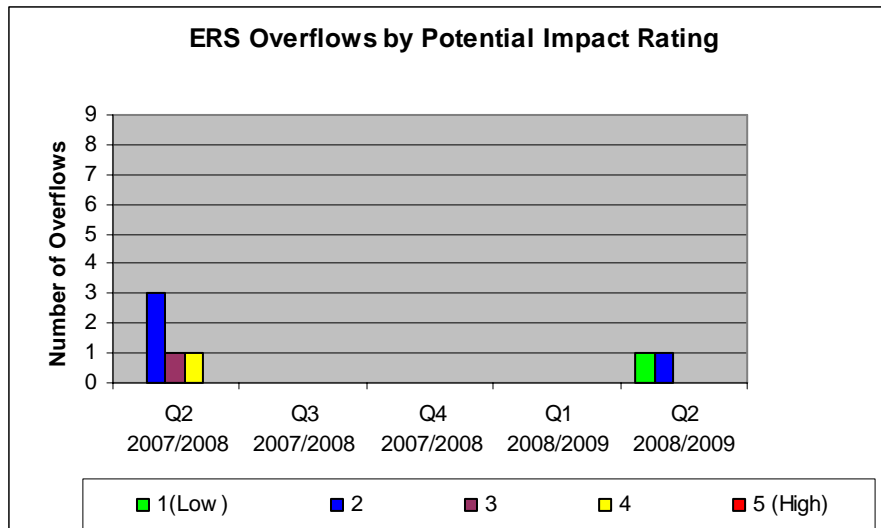
Heavy rainfall was experienced across parts of metropolitan Melbourne from 12 to 14 December 2008 and the resultant two spills into Moonee Ponds Ck were classified “hydraulic deficiency – compliant”.

During the event there were two spills resulting from hydraulic overload of the sewerage system in the Moonee Ponds catchment. Despite optimal operation of the system one ERS located on the Pascoe Vale Main Sewer spilled less than 0.15 ML of highly diluted sewage into Moonee Ponds Creek and one ERS site located on the Merri Creek Main Sewer spilled approximately 0.045 ML of highly diluted sewage into Moonee Ponds Creek.

A follow up inspection of the site was undertaken to ensure that surrounding areas were clean of debris and that the flap gates on the ERS had reseated correctly. Written notification was forwarded to the EPA in accordance with agreed reporting requirements.

Implementation of the Northern Suburbs Sewerage Strategy will eliminate sewerage spills in these areas.

ERS Overflows

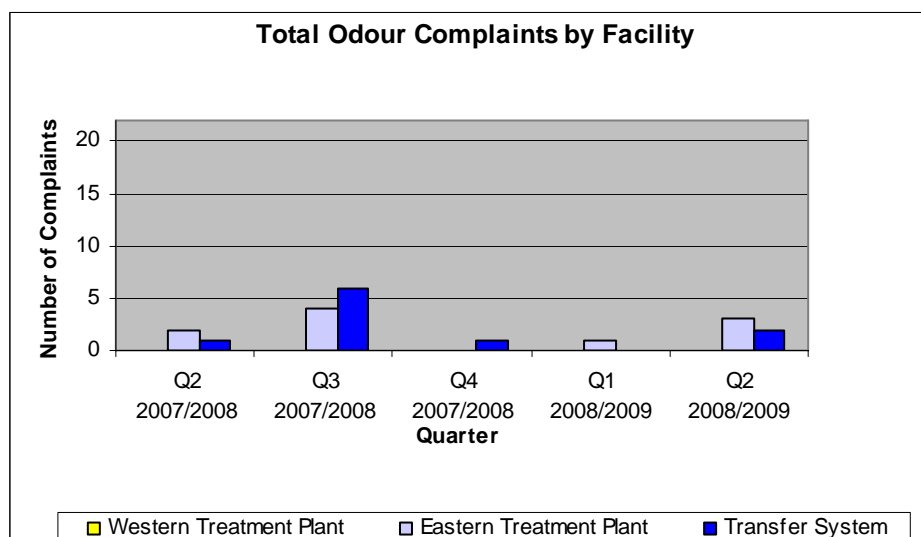


Odour Complaints

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 four odour complaints received during the two quarters. Details are as follows:

On 26 September 2008 a member of the public reported an odour in the Carrum Downs area. The complaint was received well after the odour was noticed so a site visit was unable to be conducted. A wind track analysis to the time of the complaint and a check of process and operational records was completed. The wind track for the hour leading up to the time of the complaint was from the North West and crossed the sludge drying pans. The Plant possibly contributed to the odour as sludge turning works were being completed in preparation for the summer sludge harvest season.

On 1 December 2008 a member of the public reported an odour in the Patterson Lakes area. A visit to the site soon after the complaint was received could not detect the odour. A wind track analysis to the time of the complaint was from East North East to North East direction and crossed Vic Roads earth works along Thompson Road, the sludge drying pan area south of Thompson Road and the local meat works. The Plant possibly contributed to the odour as a sludge drying pan had been filled earlier that week and on the day of the complaint.

On 5 December 2008 a complaint was received via EPA Victoria from a member of the public who had reported an odour to them in the Patterson Lakes area on the 4 December 2008 at 9.00 pm. A site visit was unable to be completed as the complaint was received after the event. A wind track analysis to the time of the complaint was from the East and crossed the outer edge of the mechanised area of the treatment plant and the Vic Roads earth works areas along Thompson Road. The Plant possibly contributed to the odour detected.

On 5 December 2008 an odour complaint was received from a member of the public by phone at 9.30am. The complainant reported the odour was detectable while catching the bus along Worsley Road on their way to work that morning. A visit to the site was conducted and odour was detected in pockets along Worsley Road. A wind track analysis to the time of the complaint was from the North West and crossed known odour sources of the treatment plant. The Plant possibly contributed to the odour detected.

Western Treatment Plant

There were no odour complaints received during the two quarters.

Transfer System

There were two odour complaints received during the two quarters. Details are as follows:

On 17 November 2008 a member of the public reported an odour in the vicinity of the intersection of Kensington and Dynon Roads, West Melbourne possibly coming from a failed sealing-plate. Thiess attended the site to cover the plate with sand as a temporary fix. On inspection the drop pipe in the manhole was blocked and this was unblocked at this time.

This manhole had been inspected as part of the routine CCTV program within the last four weeks and the drop pipe was not blocked at that time. The sealing plate was sealed. There was no odour from this manhole at the time of the inspection.

On 10 December 2008 a member of the public reported an odour in the vicinity of a vent stack at Dandenong Valley Trunk Sewer Manhole Number 4 in Dandenong South. Thiess attended the site and found the assets were in good working order with a slight odour coming from the vent. There is no immediate remedial action as the vent is performing its required function. However, Melbourne Water will consider implementing odour monitoring if there are ongoing odour issues at this location.

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 Quarter1 2008/09

Site	Passing Flow (ML/d)	Actual Min. Flow (ML/d)	Compliance	Comments New Environmental Release 2007 (Phase 1)
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	8	√	MWC agreement with former SR&WSC
Thomson Res. To Thoms R: • Below Dam • At Narrows • At Coopers Ck	25 0 125	30 44 144	√ √ √	Melbourne Water Bulk Entitlement provision for Thomson Reservoir.
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	10 199 227	√ √ √	- At Doctors Ck. Gauging Station - Cease harvesting when flow <= 200ML/d - Meet minimum Env. Flow =150 ML/d when not pumping through Yarra headworks system releases (max 80ML/day) - 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/d and 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	1	√	Bulk Entitlement provision - 1 ML/d is released when streamflow is 2 ML/d or greater

† Flows from weirs are either the table's passing flow or natural inflows if less than this

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).

**Melbourne Water Passing Flow Compliance
Quarter2 2008/09**

Site	Passing Flow (ML/d)	Actual Min. Flow (ML/d)	Compliance	Comments New Environmental Release 2007 (Phase 1)
------	---------------------	-------------------------	------------	--

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	8	√	MWC agreement with former SR&WSC
Thomson Res. To Thomson R: • Below Dam • At Narrows • At Coopers Ck	25 120 230	30 103* 204**	√ √ √	Melbourne Water Bulk Entitlement provision for Thomson Reservoir.
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	10 199 183	√ √ √	- 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	1	√	Bulk Entitlement provision - 1 ML/d is released when streamflow is 2 ML/d or greater

* 08:00am flow at Narrows low due to travel time from release point at Thomson Reservoir. However flows were above 120 ML/d from 12:00 noon on 01/12/2008

** The 7 day rolling average was above operating tolerances for Quarter2 2008/09

† Flows from weirs are either the table's passing flow or natural inflows if less than this

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)

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 1 and Quarter 2 2008/09

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		CWW	YVW	SEW
July				October			
Insignificant	55	19	29	Insignificant	53	21	21
Moderate	0	1	0	Moderate	0	0	0
High	0	0	0	High	0	0	0
August				November			
Insignificant	54	15	17	Insignificant	54	15	16
Moderate	0	1	0	Moderate	0	0	0
High	0	0	0	High	0	0	0
September				December			
Insignificant	57	12	20	Insignificant	53	15	31
Moderate	0	0	0	Moderate	0	0	0
High	0	0	0	High	0	0	0
Total	166	48	66		160	51	68

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.

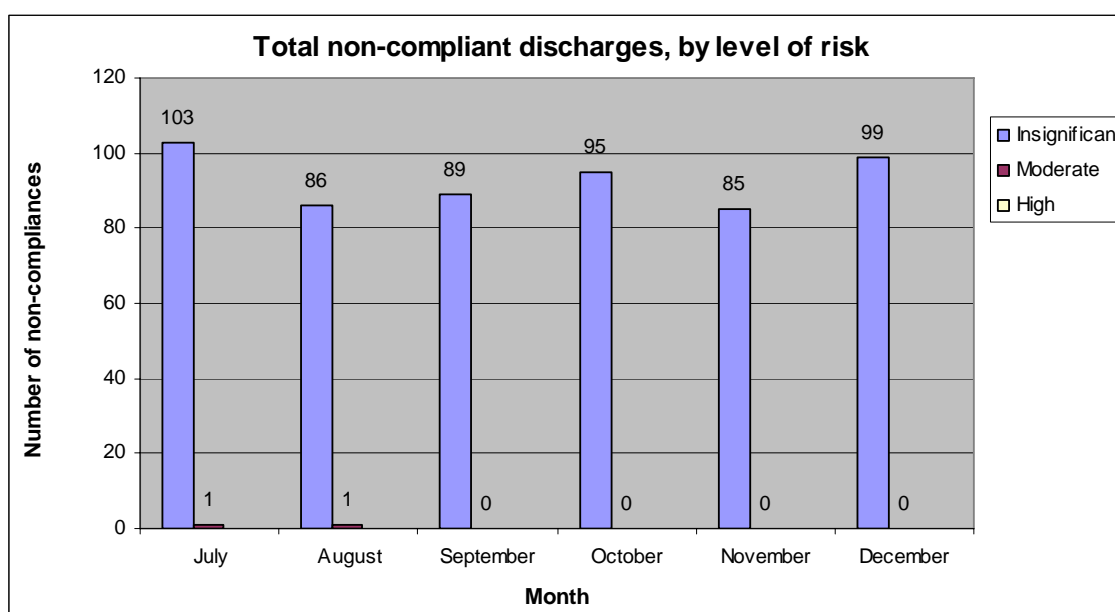


Figure 1- Total non-compliant discharges by risk level

Discussion of Trade Waste Reporting Results for Quarter 1 and Quarter 2 2008/09

High Risk:

There were zero high risk non-compliances in Q1 and Q2 2008/09.

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 licence 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 was 1 (new) moderate risk non-compliance in July 2008.

There was 1 (unresolved) moderate risk non-compliance in August 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 licence 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.

The one moderate risk non compliance was due to a low pH discharge from a batch waste-treater. A cease discharge was immediately ordered once the non compliance was detected. The customer remained on the non-compliant list until the non-compliance was resolved.

Insignificant Risk:

The number of insignificant non-compliances ranged from 85 to 103 per month over the six month period.

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. In 2007/08 Melbourne Water recycled 21.5%

Eastern Treatment Plant

During the two quarters approximately 476 ML of “Class C” recycled water was supplied to customers along the South East Outfall and 2777 ML was supplied to the Eastern Irrigation Scheme. In addition to this approximately 7214 ML of water was used onsite at the Eastern Treatment Plant.

The Eastern Irrigation Scheme provides “Class A” recycled water from their 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 two quarters approximately 6067 ML of “Class A” recycled water was supplied to Southern Rural Water for the Werribee Irrigation District, and 110 ML was supplied to the Werribee Tourist Precinct, incorporating both the Werribee Park Golf Club and the State Equestrian Centre. In addition to this, approximately 10,252 ML of “Class C” recycled water was used onsite at the Western Treatment Plant.

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. Melbourne Water is in discussions with EPA Victoria regarding issues surrounding the tighter limit. This section reports 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 0% at Western Treatment Plant by 2012/13 and 95,000 cubic meters at Eastern Treatment Plant as a result of the 2006 Biosolids Beneficial Use Strategy and 2009 Water Plan.

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 is being implemented. At Western Treatment Plant, the strategy recommends developing a business case for the potential use of biosolids as a fuel at an external facility. An update on progress against the Strategy was provided to the Board in August 2008. The Strategy will be reviewed in 2009.

Eastern Treatment Plant

During the two quarters 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 road embankment fill. Melbourne Water worked with EPA Victoria to develop guidelines for using biosolids in this application. The guidelines have been released for public comment and as currently written, will allow biosolids structural fill projects like this to proceed under an approved Environment Improvement Plan. Melbourne Water has recently been informed that we are unable to progress the use of biosolids as a structural fill until the guidelines have been finalized.

Western Treatment Plant

During the two quarters 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 offsite use of biosolids as a fuel was the preferred option. This project will progress throughout the second Water Plan period.

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 objectives 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 objectives where relevant as part of the Regional River Health Strategy. Melbourne Water has adopted a long-term target to achieve good waterway health in all natural waterways by 2025.

This report uses a rolling twelve months of waterway water quality data and uses the relevant statistical measure from the particular SEPP schedule and the 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.

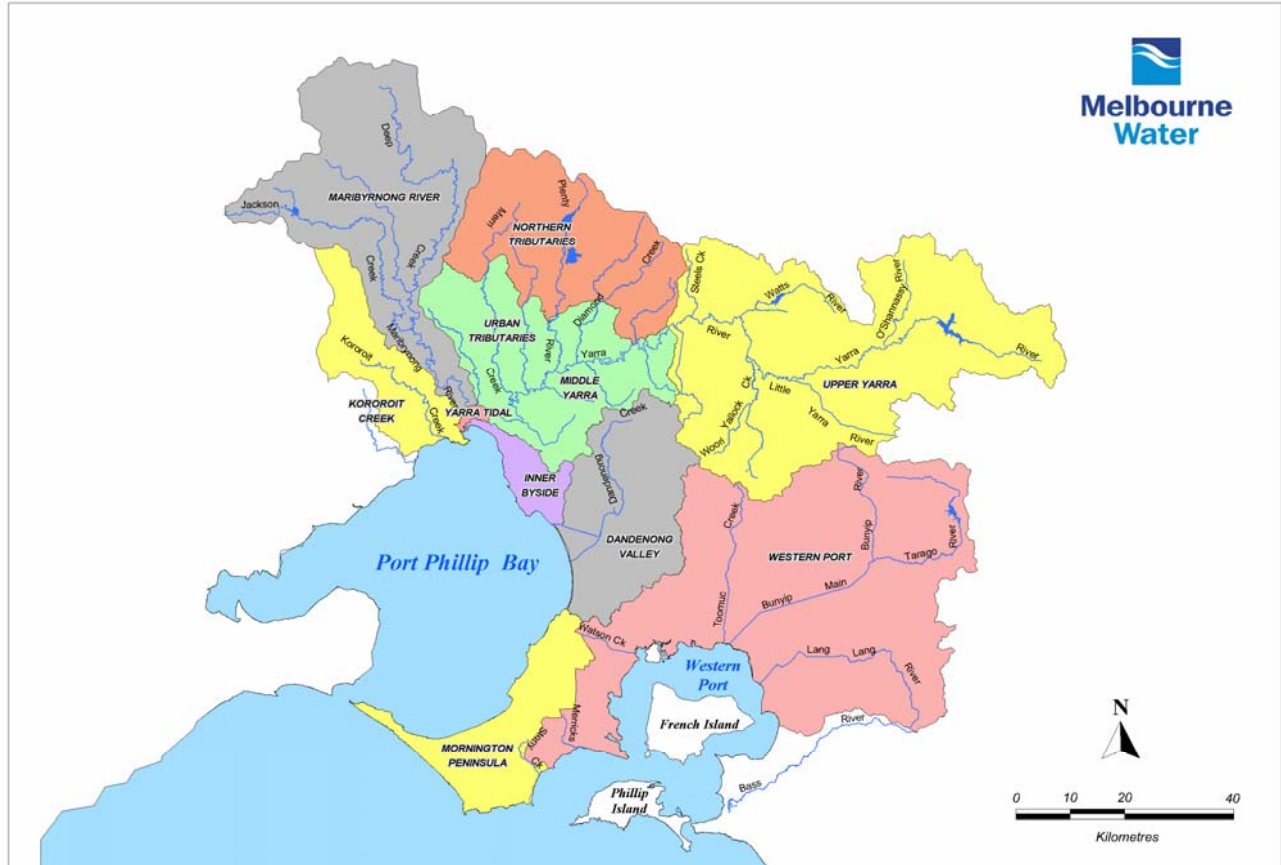
SEPP compliance calculations require eleven samples for most parameters. For a small number of sites in this report, a reduced number of data were available due to drought or access conditions. New monitoring sites are being added in the extended area and as data becomes available this will be included 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 vary from zero to full compliance for turbidity. Rural Waters of the Yarra catchment generally perform better than other segments. All waterways perform poorly for dissolved oxygen and nutrient levels with most catchments having no sites that comply with oxygen and/or nitrogen objectives.

Waterway Water Quality

Quarters One and Two, 2008/2009

The table below shows the environmental quality 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 Seimen per centimeter
NTU	nephelometric turbidity units
mg/l	milligrams per litre
org/100ml	organisms per 100 millimetres
NA	none applicable

Waters of Victoria									
Waterway	MELWAYS	EC 75%	DO% 25%	pH 25 %	pH 75%	E Coli Geo mean	Turb 75%	TP 75%	TN 75%
Cleared Hills & Coastal Plains Werribee/Maribyrnong		1500	85	6.5	8.3	150	10	0.045	0.6
Arundel Creek	14K1	3075	55	7.6	8.0	39	11	0.047	0.5
Deep Creek	598G12	1800	64	7.7	8.5	23	12	0.068	1.2
Deep Creek	177A6	3725	54	7.9	8.2	77	29	0.092	1.4
Jacksons Creek	620F7	1100	55	7.6	7.8	39	15	0.039	0.9
Jacksons Creek	382G5	1125	50	7.5	7.7	63	51	0.061	1.0
Jacksons Creek	3C3	1200	51	7.8	8.0	146	39	0.225	1.6
Maribyrnong River	14H2	1825	67	7.7	8.1	38	14	0.051	1.8
Maribyrnong River	14H8	1900	56	7.5	7.7	64	15	0.057	1.5
Maribyrnong River	27B8	2400	59	7.7	8.1	85	19	0.071	1.2
Maribyrnong River	28D11	46000	64	7.6	7.8	43	11	0.155	1.1
Riddells Creek	620E4	1200	54	7.5	7.8	35	9	0.022	0.9
Steele Creek	27J2	1225	64	7.7	8.1	339	19	0.072	0.9
Stony Creek	41J11	508	74	7.7	8.5	484	23	0.518	2.6
Taylor's Creek	14G8	3200	65	7.6	7.7	169	23	0.087	1.1
Cherry MD	54E5	1035	29	7.0	7.6	75	16	0.905	2.1
Kororoit Creek	25D7	1425	39	7.4	7.7	141	11	0.081	0.9
Kororoit Creek	55C8	23750	79	7.8	8.3	159	22	0.243	1.3
Laverton Creek	53J10	755	48	7.1	7.8	272	36	0.198	1.0
Lerderderg River	617G8	265	50	7.6	8.2	36	19	0.043	0.7
Lerderderg River	334H9	780	47	7.1	7.9	25	22	0.033	0.6
Little River	730J7	8400	64	8.0	8.4	25	12	0.035	1.0
Lollypop Creek	205A8	313	60	7.8	8.2	227	64	0.153	1.2
Skeleton Creek	53B12	4425	43	7.2	7.5	354	16	0.160	0.9
Yangardook Creek	343A5	180	42	7.2	7.7	77	31	0.120	1.1
Werribee River	VICR								
Werribee River	294H3	903	52	7.6	7.8	19	16	0.044	1.2
Werribee River	333G8	3000	56	7.5	7.9	98	19	0.034	0.6
Werribee River	227B10	3400	57	7.7	8.0	193	20	0.069	0.8
Werribee River	205F2	3000	65	7.9	8.2	59	14	0.081	0.8
Cleared Hills & Coastal Plains Westernport		500	85	6.4	7.7	150	10	0.045	0.6
Blind Creek	72D3	843	41	6.9	7.2	511	25	0.096	2.4
Boggy Creek	99K2	1475	56	7.5	8.6	492	51	0.298	2.4
Corhanwarrabul Creek	81C2	538	61	7.0	7.4	349	27	0.100	1.4
Croydon MD	64D2	765	32	6.8	7.1	482	21	0.155	3.5
Dandenong Creek	63D5	513	37	7.1	7.4	420	24	0.095	1.6
Dandenong Creek	81G9	505	73	7.0	7.5	332	35	0.099	1.5
Dandenong Creek	94H7	933	69	7.1	7.6	290	61	0.095	1.4
Elster Creek	67F5	913	72	7.7	8.1	1491	26	0.143	2.8
Eumemmerring Creek	94H10	830	63	7.0	7.5	389	30	0.140	1.2

Ferny Creek	73C8	368	60	7.0	7.5	277	30	0.091	1.1
Hallam Main Drain	95K4	1025	54	6.9	7.4	182	29	0.091	1.2
Heatherton Drain	87H12	383	73	7.6	8.1	624	20	0.233	1.5
Kananook Creek	102C2	52750	55	7.4	7.8	187	10	0.153	0.7
Mile Creek	86J9	1950	76	7.2	7.8	571	11	0.083	1.7
Monbulk Creek	73D9	345	66	7.2	7.4	343	38	0.083	1.3
Mordialloc Creek	92J2	6325	47	7.2	7.7	194	38	0.190	1.6
Patterson River	97J3	580	60	7.6	8.3	76	57	0.138	1.6
Balcombe Creek	145C11	2000	51	7.3	7.6	284	15	0.145	2.0
Chinamans Creek	169J3	1325	30	7.2	7.5	390	11	0.168	1.8
Dunns Creek	160C2	3500	67	7.5	7.7	288	10	0.086	0.8
Kackeraboite Creek	101H8	2500	66	7.4	7.6	585	10	0.069	1.3
Main Creek	260A9	2300	84	7.4	7.7	84	9	0.030	1.1
Sweetwater Creek	102A6	1850	78	7.4	7.7	794	18	0.068	1.3
Forest - A		100	90	6.4	7.7	150	5	0.025	0.5
Dandenong Creek	65K5	160	67	7.1	7.8	55	13	0.023	1.2

Waters of Western Port Bay & Catchment								
Waterway	MELWAYS	DO% Min	pH Min	pH Max	E Coli Geomean	Turb 50%	TP Max	TN Max
Lowlands & Phillip Island		80	6.5	9.0	200	15	0.05	0.6
Cardinia Creek	767C13	72	6.5	8.5	107	21	0.08	1.3
Deep Creek	767D13	30	6.8	7.7	124	58	1.80	7.2
Toomuc Creek	767D13	44	6.4	8.2	84	24	0.68	2.6
Warrangine Creek	164G1	41	6.3	8.3	273	22	0.15	16.0
Watsons Creek	149E1	18	6.2	8.2	443	14	6.80	255.4
Northern Hills		85	6.5	9.0	200	5	0.03	0.2
Bunyip River	742A7	57	6.4	7.5	75	16	0.06	1.6
Bunyip River	770A5	66	6.4	8.3	572	17	0.33	2.6
Cardinia Creek	210B7	55	6.3	7.8	109	7	0.03	0.8
Diamond Creek	741J11	21	6.1	7.9	144	12	0.13	2.2
Tarago River	770B5	8	6.9	8.4	447	10	0.23	2.0
Toomuc Creek	215K4	45	6.8	8.0	108	13	0.11	1.4
Upper Tarago River	VICR 80G9	8	7.2	7.9	78	14	0.04	1.5
Peninsula		80	6.5	9.0	200	15	0.05	0.6
Merricks Creek	193C9	17	6.2	7.8	185	11	0.24	2.6
Olivers Creek	154K6	24	6.3	7.7	176	13	1.50	4.6
Stony Creek	256E8	39	6.1	7.9	305	5	0.43	2.7
South Eastern Rural		80	6.5	9.0	200	15	0.05	0.6
Ararat Creek	319J10	43	6.7	7.9	146	30	0.09	1.6
Bass River	825I10	6	6.9	8.2	77	13	0.20	5.4
Bass River	851A9	12	6.7	7.8	493	23	0.22	5.5
Bunyip Main Drain	769E10	69	6.7	8.5	402	17	0.09	1.3
Lang Lang River	798D9	14	7.0	8.1	353	18	0.51	4.8
Minnieburn Creek	798H9	32	6.4	8.1	189	11	0.24	3.5

Waters of the Yarra Catchment								
Waterway	MELWAYS	DO% Min	pH Min	pH Max	E Coli Geomean	Turb 50%	TP Max	TN Max
Rural Eastern Waters		80	6.0	8.5	200	15	0.1	0.6
Arthurs Creek	185K4	14	6.6	8.3	107	24	0.2	2.4
Cockatoo Creek	310E1	30	6.6	8.2	30	15	0.0	2.2
Coranderrk Creek	278C10	52	6.5	7.5	82	3	0.0	0.8
Hoddles Creek	287F6	25	6.3	8.2	263	16	0.0	0.8
Little Yarra River	288C6	29	6.4	8.6	311	11	0.0	0.9
McCrae Creek	305K10	26	6.6	8.2	374	22	0.0	0.9
New Chum Creek	270C6	49	6.5	7.8	77	11	0.0	3.0
Shepherd Creek	308F11	26	6.6	8.3	304	18	0.0	1.1
Stringybark Creek	275A9	33	6.6	7.8	55	10	0.0	1.0
Wandin Yallock Creek	285G4	31	6.5	8.2	48	11	0.1	2.5
Watsons Creek	24F1	34	7.0	7.8	71	9	0.1	2.3
Woori Yallock Creek	305K8	25	6.6	8.2	122	16	0.0	1.5
Woori Yallock Creek	286A10	33	6.6	8.6	163	12	0.0	1.4
Watts River	650H10	47	6.6	8.1	246	9	2.2	1.3
Yarra River	289E4	29	6.5	8.3	133	5	0.0	0.7
Yarra River	287H6	29	6.2	8.8	229	6	0.0	0.8
Yarra River	277G7	44	6.3	7.5	158	10	0.0	1.0
Yarra River	274E8	47	6.9	8.2	176	14	0.1	1.0
Rural Western Waters		60	6.0	8.5	200	25	0.1	0.6
Bruces Creek	246G8	13	6.9	9.1	99	25	0.4	2.2
Merri Creek	387H2	22	7.1	8.5	53	15	0.1	2.0
Plenty River	183K11	27	6.8	8.0	63	13	0.1	1.8
Upper Estuary		60	6.5	8.5	200	30		
Yarra River	43J9	53	6.8	8.4	236	6	0.1	1.2
Urban Waters		60	6.0	8.5	200	25	0.1	1.0
Andersons Creek	23B12	41	7.0	7.7	347	17	0.3	3.7
Brushy Creek	279B9	49	6.9	7.6	641	24	0.4	10.5
Darebin Creek	31E11	35	6.8	8.6	429	7	0.1	3.3
Diamond Creek	21H9	38	7.1	7.8	397	37	0.3	7.9
Edgars Creek	18A10	56	6.9	8.5	1170	3	0.1	1.2
Gardiners Creek	60J10	60	7.0	10.0	544	12	0.2	2.5
Gardiners Creek	59C2	49	6.6	8.5	862	8	0.1	2.3
Jumping Creek	24A11	33	6.8	8.0	146	9	0.2	2.3
Koonung Creek	32D10	32	7.1	7.6	1033	16	0.3	2.5
Merri Creek	2D C4	38	6.8	8.9	206	5	0.2	2.0
Moonee Ponds Creek	6D8	44	7.2	8.6	241	14	0.2	3.3
Moonee Ponds Creek	43B1	38	7.1	8.8	740	8	0.2	3.9
Mullum Mullum Creek	34F3	29	7.0	8.0	385	31	0.4	3.3
Olinda Creek	38H10	21	6.6	8.1	358	13	0.1	2.2
Olinda Creek	280J1	31	6.5	7.6	342	12	0.2	3.5
Plenty River	20K12	30	7.0	7.8	336	27	0.2	2.2
Ruffey Creek	33D4	66	7.1	7.9	532	13	0.2	2.9
Scotchman Creek	69D1	33	6.9	8.2	291	12	0.1	2.3

Yarra River	23F11	57	7.0	8.3	79	13	0.1	1.7
Yarra River	45B1	31	6.7	7.8	178	27	0.1	2.0
Parks and Forests		85	6.5	8.5	200	5	0.0	0.2
Big Pats Creek	291A11	29	6.6	8.6	82	7	0.0	0.7
McMahons Creek	686G2	30	6.6	8.3	70	6	0.0	0.6
O'Shannassy River	686C3	31	6.5	8.4	19	4	0.0	1.4
Starvation Creek	292G1	29	6.5	8.6	40	7	0.0	0.8

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 July to December 2008, a total of 674 alert-level exceedances were reported to EPA Victoria, or about 4% of the total number of water quality measurements.

This compares with around 2.4% exceedances reported for the same time last year. Exceedances were most commonly reported for oxygen and nitrogen. Watsons Creek at Dandenong-Hastings Road, Somerville and Wylies Drain at Baxter-Tooradin Rd, Devon Meadows particularly stood out with more than 30 exceedances each. The exceedances are mostly related to nutrients and low oxygen levels, most likely a result of intensive agriculture activities in the catchment of these waterways.

Low flows in waterways and higher temperatures due to the drought have also contributed to the higher number of exceedances during the two quarters.

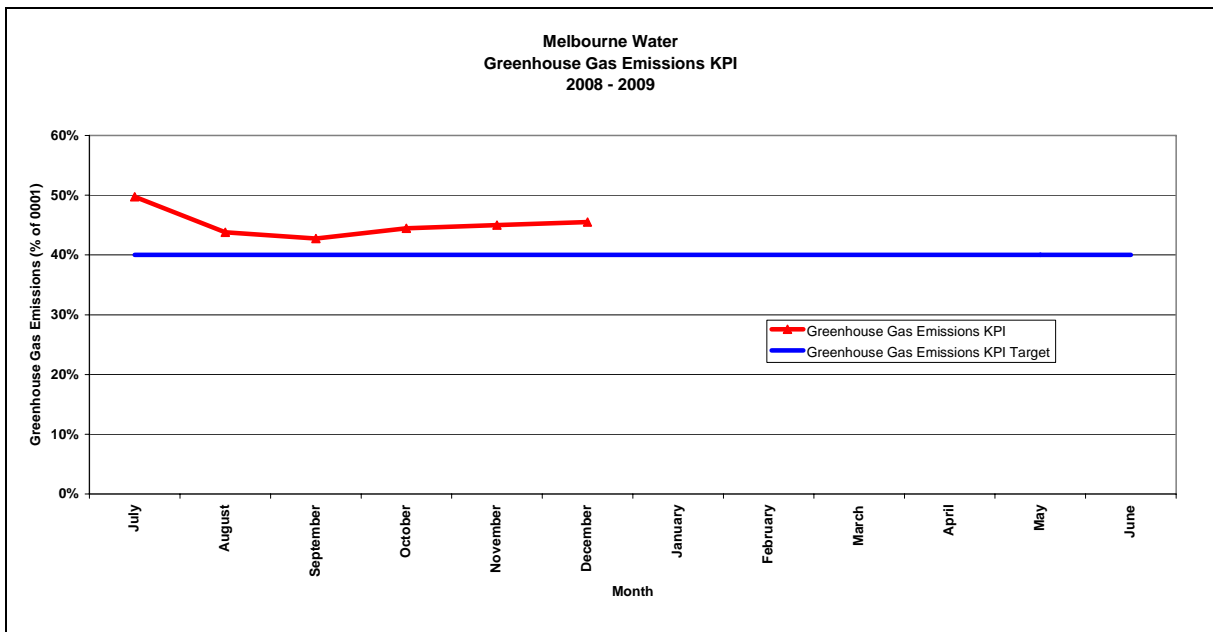
Renewable Energy and Greenhouse Gas Emissions Performance

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.

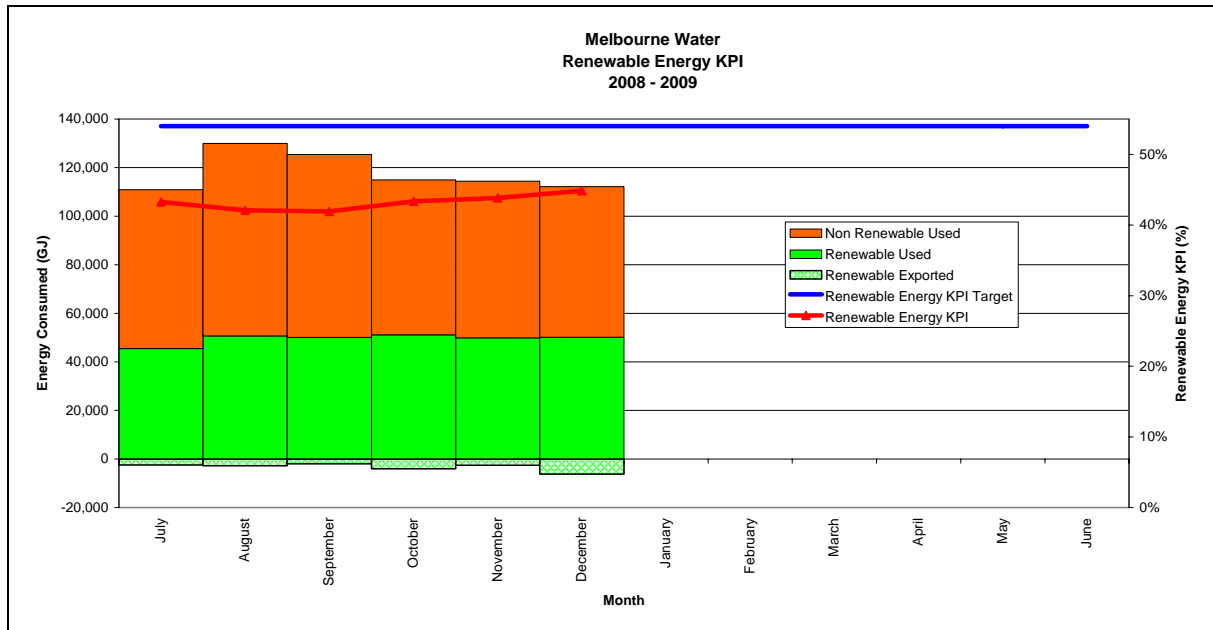
Greenhouse Emissions KPI

$$= (\text{Total Emissions 2000/01} - \text{Total Emissions 2008/09}) / \text{Total Emissions 2000/01}$$



Renewable Energy KPI

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

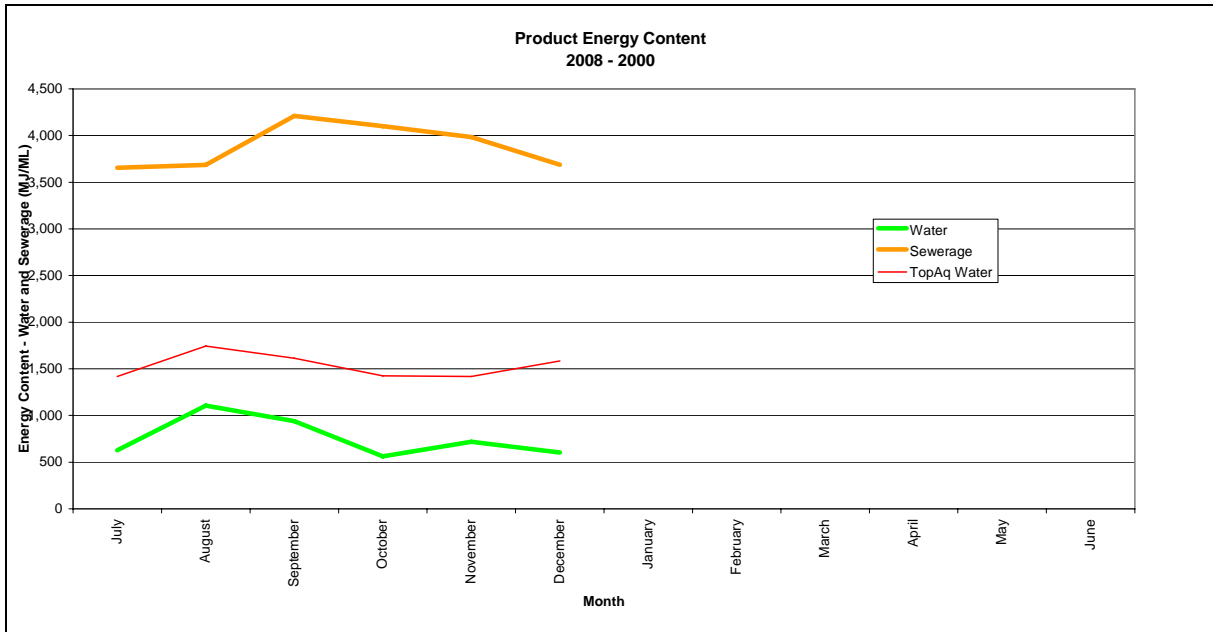


The reasons that the Renewable Energy KPI is low are:

- No production from Thomson hydroelectric power station due to low reservoir levels (drought effect)
- Low production from Cardinia hydroelectric power station due to low water transfer volumes (drought effect) and equipment failure
- Delayed commissioning of mini-hydroelectric power stations. Preston, Notting Hill, Mt View and Olinda are now commissioned. It was originally planned to have these stations commissioned earlier
- Low production from the commissioned mini-hydroelectric power stations due to lower than anticipated water transfer volumes (drought effects)
- High grid electricity consumption by Winneke (Yering Gorge PS)

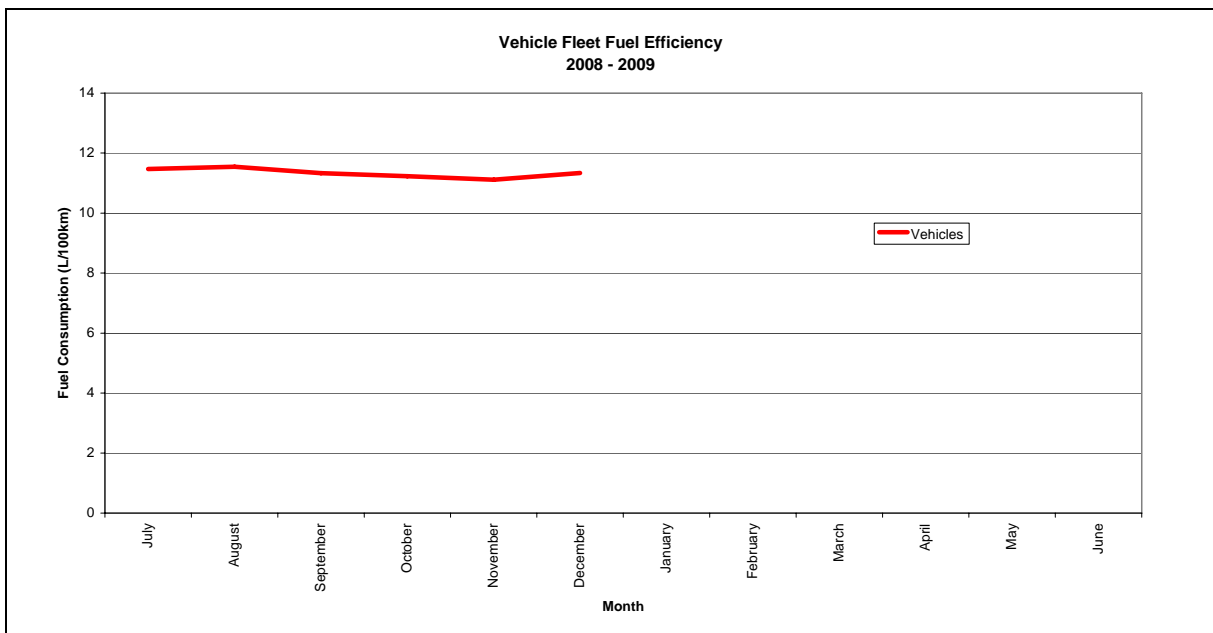
Energy content

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

Pale Mangrove Goby

The distribution, biology and ecology of Victoria's only threatened estuarine fish species, the Pale Mangrove Goby. (T. A. RAADIK, J. S. HINDELL, comments by R. Coleman)



Melbourne water commissioned a study on biology and distribution of Pale Mangrove Goby (*Mugilogobius platynotus*) in 2008.

This small (around 60mm in length) fish is the only estuarine fish listed as threatened in Flora and Fauna Guarantee processes. It is found only in Western Port in mangroves associated with freshwater input from tributaries and drains. The report provides a summary of what is known about this species to date as well as results of the recent survey within the Port Phillip and Western Port.

The fish were found only in Western Port, with highest abundances found in the vicinity of Hastings. They were only sampled from mangroves, and were significantly more abundant inside mangrove forest than along the edge.

Otolith (inner ear structure with annual growth rings) based age determination revealed that the fish live as old as 9 years, which is uncharacteristically long for a small fish. Growth rings technique and the movement of the fish within the mangroves and its life cycle need to be validated in future studies

The report will be used as a general reference on this species and an information source for planning future studies of this species.

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.

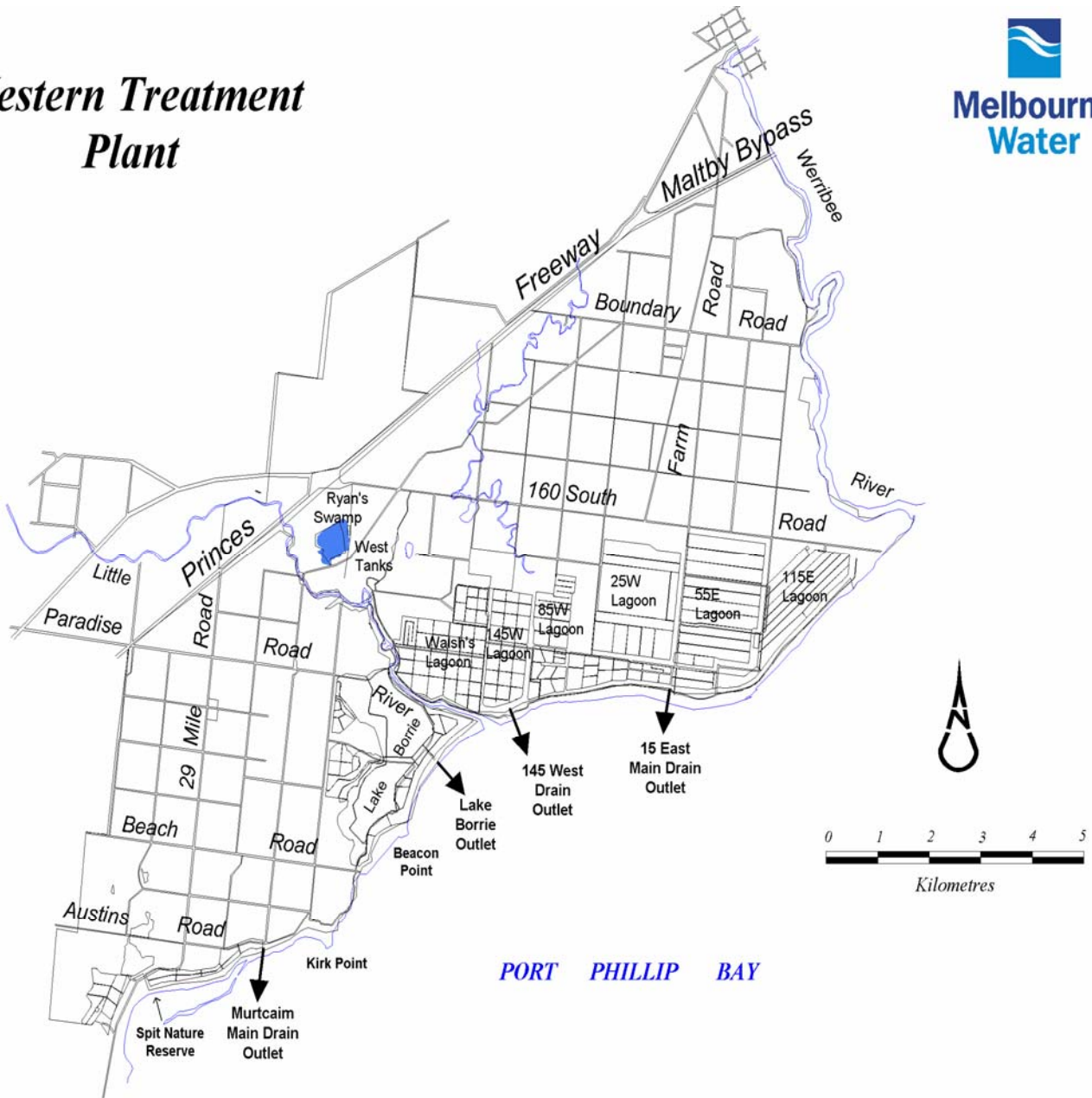
Stage 3:

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

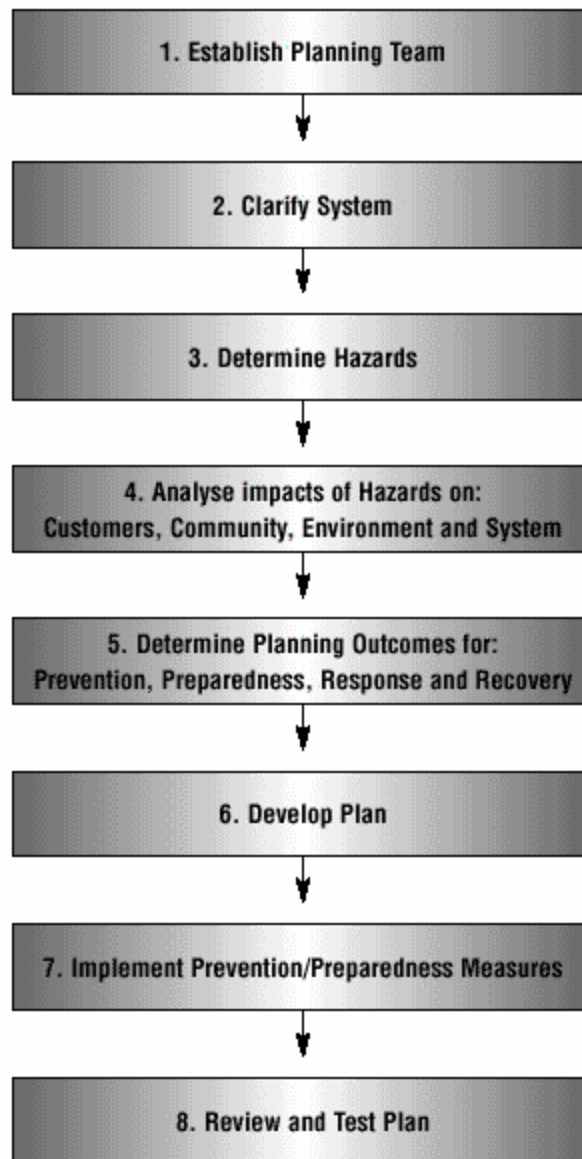
An *Incident* is any event or circumstance within our, or our customers operations that causes or is likely to cause:

- 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.