South East Water

Head office: Moorabbin

Localities supplied with drinking water: Belgrave, Berwick, Bittern, Bunyip, Chelsea, Cranbourne, Dandenong, Flinders, Frankston, Frankston South, Hallam, Hastings, Knox, Koo Wee Rup, Lang Lang, Malvern, Moorabbin, Mornington, Mount Martha, Mount Eliza, Mulgrave, Notting Hill, Pakenham, Rosebud, Rowville, Sandringham, Somers, Somerville, St Kilda, Tynong, Wantirna and adjacent suburbs (please refer to Appendix G for a list of all individual suburbs supplied).

Population supplied with drinking water: approximately 1,420,800.

Map 14: South East Water

Performance against water quality standards

Drinking water supplied in all localities by South East Water during 2005–06 complied with the water quality standards.

South East Water has advised that the chemicals derived from disinfection or treatment with ozone (bromate and formaldehyde) were not tested for since South East Water does not use this form of treatment. Aluminium levels were monitored in the St Kilda locality, as water supplied to this locality was treated with aluminium based chemicals, but not in other localities where the water was not treated with aluminium based chemicals.

Map prepared by, and used with the permission of, South East Water

Other water quality issues of potential health significance

No other parameters measured by South East Water as part of its drinking water quality monitoring program exceeded the relevant health-related guideline values set out in the *Australian Drinking Water Guidelines* (2004) during the reporting period.

For detailed water quality data, including data about other aesthetic characteristics of the water, please refer to South East Water's annual drinking water quality report for 2005–06.

Water quality incidents and events

During 2005–06, the following water quality incidents were reported:

Date	Supply	Issue	Action(s)
July 2005	Cranbourne (Centreville tank)	Detection of *E. coli* in water from the storage	Centreville tank inspected and ventilation areas repaired. The tank was not supplying water to the public at the time.
October 2005	Somers	Detection of *E. coli* in drinking water	Tank was inspected, taken off-line and dosed with disinfectant. Follow-up samples were clear.
December 2005	Frankston	Detection of *E. coli* in drinking water	System inspected, follow-up samples collected were clear
January 2006	Berwick (elevated tank)	Detection of *E. coli* in water from the storage	Tank was inspected and dosed with disinfectant. Follow-up samples collected were clear.
April 2006	Garfield	Wide variation in pH levels in drinking water	Power supply fault at Garfield pH correction plant rectified, mains flushed to remove affected water
May 2006	Berwick (new mains testing)	Detection of *E. coli* in water from newly constructed mains	Sample likely to have been contaminated. The mains were not supplying water to the public at the time. Follow-up samples collected were clear.
May 2006	Tyabb (new mains testing)	Detection of *E. coli* in water from newly constructed mains	Sample likely to have been contaminated. The mains were not supplying water to the public at the time. Follow-up samples collected were clear.

For further information on the water quality incidents listed above please refer to South East Water's annual drinking water quality report for 2005–06.

In addition to the incidents listed above, South East Water reported three separate water quality incidents to the Department that involved chlorinators temporarily ceasing operation for short times, allowing undisinfected water to briefly enter the water supply system. Two events were at Silvan reservoir on 3 and 12 December 2005 and one event was at Cardinia reservoir on 10 September 2005. These plants are operated by Melbourne Water. The undisinfected water was mixed with disinfected water before being supplied to customers. Details about these events are provided in the chapter for Melbourne Water and in Melbourne Water's annual drinking water quality report for 2005–06.

Customer complaints related to water quality

A summary of the customer complaints related to water quality that were recorded by South East Water during 2005–06 is provided in the table below.

Complaint category	Number of water quality complaints	Number of complaints per 100 customers supplied*
Discoloured water	553	0.091
Taste/odour	255	0.042
Blue water	46	0.008
Air in water	63	0.010
Suspected illness	8	0.001
Other	111	0.018

** Based on number of properties serviced.*

The majority of discoloured water quality complaints were caused by an increase in the flow of water through the main and through the disturbance of fine sediment material (from the source water) that can settle in the main during periods of low flow and gradually accumulate to noticeable levels over time.

There was a significant increase in the number of recorded dirty water complaints from St Kilda during May 2006. These additional complaints were due to the late completion of construction works in Glenhuntly Road. As a result, the peak morning flows of water ended up moving at a high velocity through small diameter mains, causing accumulated sediment material in the main to be resuspended. South East Water responded by flushing the discoloured water from the main.

In September 2005, Chelsea and Notting Hill had elevated numbers of taste and odour complaints, mainly relating to chlorine. These were associated with a change in water source from Cardinia Reservoir to Silvan Reservoir due to scheduled maintenance on the pipeline from Cardinia. Once maintenance was completed, the water from Silvan Reservoir was flushed from the mains and replaced by water from Cardinia Reservoir to minimise further customer complaints.

The 'Other' category water quality complaints were either from industrial customers with concern about water quality results for their area or residential customers with specific concerns such as blackening of kettles and chlorine or pH related questions for aquariums.

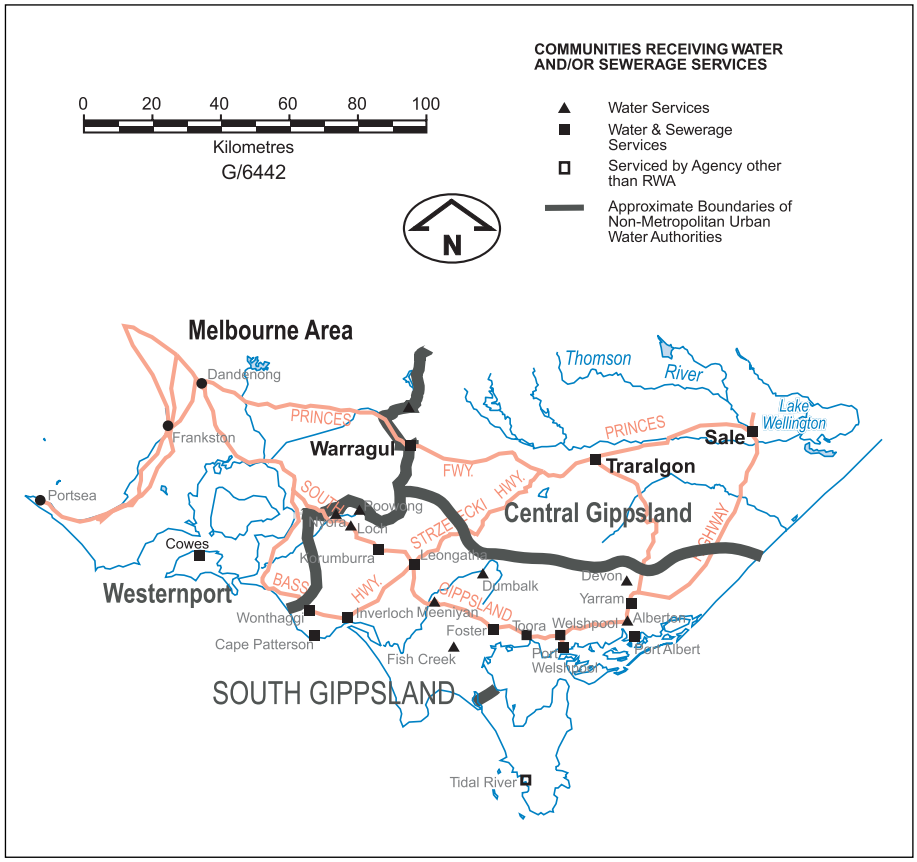
South Gippsland Water

Head office: Foster

Localities supplied with drinking water: Alberton, Cape Paterson, Devon North, Dumbalk, Fish Creek, Foster, Inverloch, Koonwarra, Korumburra, Leongatha, Loch, Meeniyan, Nyora, Poowong, Port Albert, Port Franklin, Port Welshpool, Toora, Welshpool, Wonthaggi and Yarram.

Population supplied with drinking water: approximately 24,380.

Map 15: South Gippsland Water



Performance against water quality standards

Drinking water supplied in all localities by South Gippsland Water during 2005–06 complied with the water quality standards, except as noted in the table below.

Parameter	Localities not complying with water quality standards
Trihalomethanes	Cape Paterson, Dumbalk
Aluminium	Port Welshpool, Leongatha

South Gippsland Water has advised that as it does not use ozone for treatment or disinfection of drinking water, chemicals such as bromate and formaldehyde that are derived from the use of ozone are not likely to be present in the drinking water and therefore were not sampled and analysed during 2005–06.

Map prepared by, and used with the permission of, Department of Sustainability and Environment

South Gippsland Water has implemented a number of responses to individual high results for trihalomethanes detected in the sample from Cape Paterson in November 2005 and the sample from Dumbalk in February 2006. These responses are set out in their annual drinking water quality report and include improvements to chlorine dosing levels, improvements to the management of algae in Lance Creek reservoir and some longer term options. The high results for trihalomethanes did not pose a risk to public health.

South Gippsland Water has also implemented a number of responses to individual high results for aluminium detected in one sample from Leongatha in July 2005 and one sample from Port Welshpool in November 2005. These responses are also set out in their annual drinking water quality report and include improvements to the pH and alum dosing systems and introduction of polymer filter aid for these supplies. The high results for aluminium did not pose a risk to health.

These systems are being monitored to determine if the problems identified in the table above persist and whether undertakings are necessary.

Other water quality issues of potential health significance

No other parameters measured by South Gippsland Water as part of its drinking water quality monitoring program exceeded the relevant health-related guideline values set out in the *Australian Drinking Water Guidelines* (2004) during the reporting period.

For detailed water quality data, including data about other aesthetic characteristics of the water, please refer to South Gippsland Water's annual drinking water quality report for 2005–06.

Water quality incidents and events

During 2005–06, the following water quality incidents and events occurred:

Date	Supply	Issue	Action(s)
August 2005	Toora	Sample not collected	Sampling procedures have been revised and documentation improved
January 2006	Lance Creek	Level 3 blue green algae bloom in reservoir	Improved surveillance at reservoir, dosing by powdered activated carbon and containment of the affected water
March 2006	Port Franklin	Detection of *E. coli* in drinking water	System inspected and flushed, storage basin was contaminated, follow-up samples collected which were clear of *E. coli*
April 2006	Toora	Sample collected but not analysed	New reporting system implemented by contract laboratory
June 2006	Toora	Detection of *E. coli* in drinking water	System inspected and flushed, follow-up samples collected which were clear of *E. coli*

For further information on the water quality incidents and events listed above, please refer to South Gippsland Water's annual drinking water quality report for 2005–06.

Customer complaints related to water quality

A summary of the customer complaints related to water quality that were recorded by South Gippsland Water during 2005–06 is provided in the table below.

Complaint category	Number of water quality complaints	Number of complaints per 100 customers supplied*
Discoloured water	129	0.77
Taste/odour	47	0.28
Blue water	0	0
Air in water	0	0
Suspected illness	0	0
Other	10	0.06

** Based on number of properties serviced.*

Discoloured water complaints primarily resulted from:

- high manganese levels that exist naturally in the soils around South Gippsland that was washed into surface water reservoirs and rivers
- accumulation of sediment
- scouring of mains following high flows or recharging of the system.

Scheduled air scouring and flushing programs were progressively implemented within all distribution systems to remove manganese and accumulated sediment. Potassium permanganate dosing systems have been introduced at all water treatment plants to oxidise and remove soluble manganese from source waters.

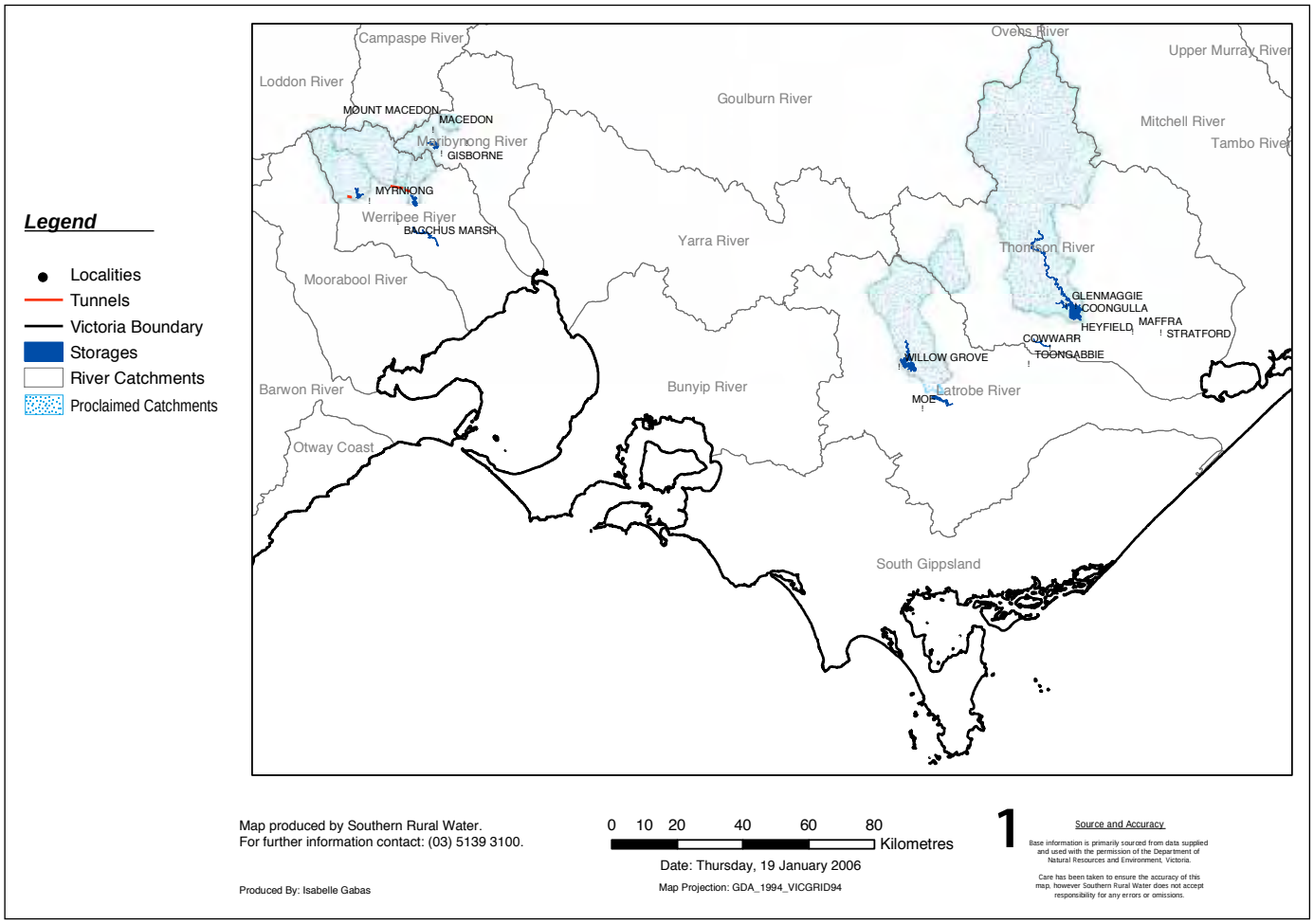
Southern Rural Water

Head office: Maffra

Water suppliers serviced: Gippsland Water and Western Water (untreated water).

Major water storages: Glenmaggie, Narracan, Blue Rock Lake (Gippsland Region) & Melton, Merrimu, Pykes Creek and Rosslynne (Central Region).

Map 16: Supply systems operated by Southern Rural Water



Overview

Southern Rural Water provides bulk water supplies of raw water to Gippsland Water and Western Water, who then treat the water to a drinking water standard. Therefore, one of the challenges for Southern Rural Water is to manage the water storage areas under their responsibility to optimise the quality of raw water available for treatment to a drinking water standard. The better the raw water quality, generally the easier the treatment process.

Map prepared by, and used with the permission of, Southern Rural Water

Water quality events and incidents

During 2005–06 reporting period, the only water quality incidents and events that occurred within the storages operated by the Southern Rural Water were cyanobacterial blooms. The major blooms are summarised in the table below.

Date	Water storage area affected by bloom	Supply	Action(s)
December 2005 to January 2006	Pykes Creek Reservoir	Supplies water for the township of Myrniong	Monitoring frequency increased, media releases issued and notifications made to Western Water and regulatory agencies
December 2005 to April 2006	Blue Rock Lake	Supplies water for the township of Willow Grove	Monitoring frequency increased, media releases issued and notifications made to Gippsland Water and regulatory agencies
January 2006 (ongoing)*	Merrimu Reservoir	Supplies water for the townships of Bacchus Marsh and Melton	Monitoring frequency increased, media releases issued and notifications made to Western Water and regulatory agencies
February 2006 (ongoing)*	Lake Glenmaggie	Supplies water for the townships of Coongulla and Glenmaggie	Extended community communication through media releases and information available on their website as well as on the 24-hour BGA Information Line (1300 781 806) was immediately organised. Additional treatment and alternative supplies, and other activities such as media releases regarding quality of drinking water, were also organised by Gippsland Water.
March 2006 to April 2006	Cowwarr Weir	Supplies water for the township of Heyfield and Toongabbie.	Monitoring frequency increased, media releases issued and notifications made to Gippsland Water and regulatory agencies to regulatory agencies
April 2006 (ongoing)*	Macalister River	Supplies water for the township of Maffra	Monitoring frequency increased, additional sites added to sampling program, media releases issued and notifications made to Gippsland Water and regulatory agencies
April 2006 to June 2006	Rosslynne Reservoir	Supplies water for the township of Macedon, Gisborne and Mount Macedon	Monitoring frequency increased, media releases issued and notifications made to Western Water and regulatory agencies
May 2006 (ongoing)*	Pykes Creek Reservoir	Supplies water for the township of Myrniong	Monitoring frequency increased, media releases issued and notifications made to Western Water and regulatory agencies

** Bloom was still present at end of report period.*

As detailed in the table above, the majority of drinking water storages managed by Southern Rural Water experienced blooms at levels that required reporting to the Department under the relevant reporting protocols. The effects of these blooms on drinking water quality are discussed in greater detail in the Gippsland Water and Western Water sections.

As noted, no other water quality incidents were reported by Southern Rural Water during the reporting period.

The nature of the water storage areas, and the current climatic and low flow conditions, are likely to result in ongoing algal issues. Current protocols and management strategies are viewed as being adequate to minimise the risk to drinking water quality in the event of a bloom, and there appears to be effective cooperation between Southern Rural Water and the water suppliers it deals with.

Wannon Water

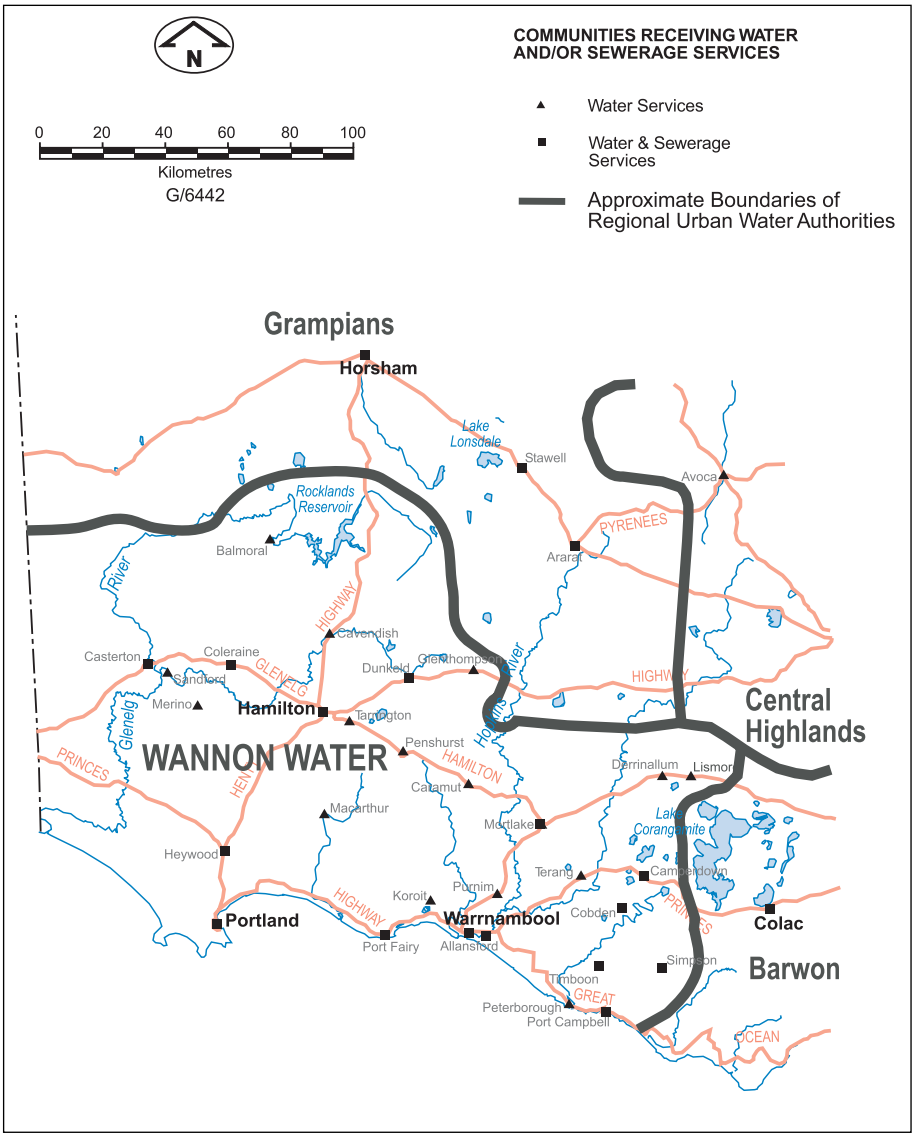
Head office: Warrnambool

Localities supplied with drinking water: Allansford, Balmoral, Camperdown – Rural, Camperdown – Urban, Caramut, Casterton, Cavendish, Cobden, Coleraine, Dartmoor, Derrinallum, Dunkeld, Glenormiston Glenthompson, Hamilton, Heywood, Koroit, Lismore, Noorat, Macarthur, Merino, Mortlake, Penshurst, Peterborough, Port Campbell, Portland, Port Fairy, Purnim, Sandford, Simpson, Tarrington, Terang, Timboon, Warrnambool.

Towns supplied with non-drinking water: Darlington.

Population supplied with drinking water: approximately 74,040.

Map 17: Wannon Water



Map prepared by, and used with the permission of, Department of Sustainability and Environment

Performance against water quality standards

All drinking water localities complied with the drinking water quality standards during 2005–06 reporting period, except as noted in the table below.

Parameter	Localities not complying with water quality standard
Trihalomethanes	Balmoral, Coleraine, Glenthompson
Trichloroacetic acid	Purnim
Aluminium	Cobden, Glenthompson, Hamilton, Simpson

During the reporting period undertakings were put in place to manage the identified non-compliances at Balmoral, Cobden, Coleraine, Glenthompson, Hamilton and Simpson. More detail on these undertakings can be found in Appendix E.

The elevated trichloroacetic acid result at Purnim and the elevated aluminium result at Hamilton were seen as isolated incidents. Future results will be looked at closely, and if more elevated results occur in these supplies undertakings will be considered.

Other water quality issues of potential health significance

As with the 2004–05 reporting period, the other major water quality issue for Wannon Water was elevated arsenic levels in the water supplies of Merino and Macarthur. The bore water that is used to supply both towns contains levels of naturally occurring arsenic that are above the health-related guideline value specified in the *Australian Drinking Water Guidelines* (2004) (0.007 mg/L). Illness as a result of the consumption of water that contains arsenic requires long-term consumption of large quantities of contaminated water. At the time of reporting no reports of community illness had been received, as there was general community awareness that the reticulated water contained arsenic, with most households relying on tank water for drinking water.

In the case of the Merino supply, the problem was resolved by the construction of a pipeline from the Casterton water supply system. This pipeline was operational by January 2006. A new water storage basin was also constructed that allowed the existing service basin to be removed from service and rehabilitated. Upon completion of the works arsenic levels in the Merino supply were below the health-related guideline value.

In the case of the Macarthur supply, Wannon Water investigated water treatment optimisation options to bring the arsenic levels down to an acceptable level. No cost-effective options could be implemented, and by the end of the reporting period DHS was working with Wannon Water to have the water supply at Macarthur declared as regulated water, under section 6 of the *Safe Drinking Water Act 2003*.

A single elevated lead result was recorded within the Warrnambool water supply. A repeat analysis was immediately undertaken by Wannon Water, which returned a result of <0.01 mg/L. All other results for the 2005–06 reporting period were <0.01 mg/L. The cause of the high result could not be established, and was considered atypical for this supply. No further action was considered necessary by DHS.

Elevated Gross Beta activity was measured in the Port Fairy water supply. The main source of Gross Beta activity is Radium-226, which is naturally occurring isotope in the source water, which is deep aquifer groundwater. During the reporting period the level of Gross Beta fluctuated around the *Australian Drinking Water Guidelines* (2004) limit of 0.5 Bq/L. The significance of this elevated Gross Beta activity is not currently known, and further investigations are being undertaken.

No other parameters measured by Wannon Water as part of its drinking water quality monitoring program were reported to have exceeded the relevant health-related guideline values detailed in the *Australian Drinking Water Guidelines* (2004) during the reporting period.

Water quality incidents and events

During 2005–06, the following water quality incidents and events were reported by Wannon Water.

Date	Supply	Issue	Action(s)
November 2005	Warrnambool	High lead	Resample taken. Result compliant.
November 2005	Caramut	High turbidity	Resample taken. Result compliant.
January 2006	Dunkeld	Bushfire activity	Bushfires increased demand for water therefore a raw water basin was brought online and a boil water notice was issued
June 2006	Glenthompson	High aluminium and turbidity	Two incidents occurred which are believed to have contributed to the results. Firstly, a high water demand event occurred within the system as a result of efforts to extinguish the Glenthompson Roadhouse fire. High flow through the mains is believed to have re-suspended deposited material. The second contributor was located at the Water Treatment Plant. The material used to flocculate (poly aluminium chloride) was observed to have crystallised. This may result in the potential to deliver a higher rate into the treated water with the potential to overdose and carry through the treatment process. Either or both are believed to be the cause of the exceedance. In response to this, the Glenthompson reticulation system was air scoured to remove any deposited material. The chemical dosing facility at the Water Treatment Plant was overhauled.
April – June 2006	Hamilton	High aluminium and turbidity	A review of mains cleaning program will be undertaken in late 2006
May – June 2006	Heywood	Discoloured water	Mains cleaning/air scouring
May 2006	Simpson	Blue-green algae	A blue green algae bloom occurred on the Simpson Service Basin (Raw Water Basin) during May 2006. The predominant species of blue green algae (cyanobacteria) detected was Planktolyngbya subtilis. This species has been recorded as an unconfirmed potential toxin producer. As a result of this bloom, the Simpson Service Basin was removed from operation, with the Simpson Water Treatment Plant sourcing water directly from the North Otway Pipeline. An aluminium exceedance was recorded for the Simpson system on 16 May 2006. The cause of this exceedance is due to overdosing of alum during the water treatment process. The overdosing resulted from sudden changes in the incoming raw water quality. The quality of the water supplied from the pipeline is variable, depending on the rainfall in the catchment and the period of inactivity between pumping. When the pumps commence, the plant is supplied water which initially has a low turbidity, with any material having settled out in the pipeline. As the pumping continues, the settled material is re-suspended in the incoming flow, resulting in a turbidity 'spike'. The higher turbidity water requires additional alum for treatment. The incoming water turbidity then decreases and stabilizes. Overdosing with alum can occur at this point.

Customer complaints related to water quality

The customer complaints received by Wannon Water during the reporting period are summarised in the table below. As with most water businesses, the highest number of complaints received related to discoloured water.

Complaint category	Number of water quality complaints	Number of complaints per 100 customers supplied[#]
Discoloured water	79	0.107
Taste/odour	46	0.062
Air in water	0	0
Blue water	0	0
Illness	0	0
Other	0	0

[#] *Based on population served.*

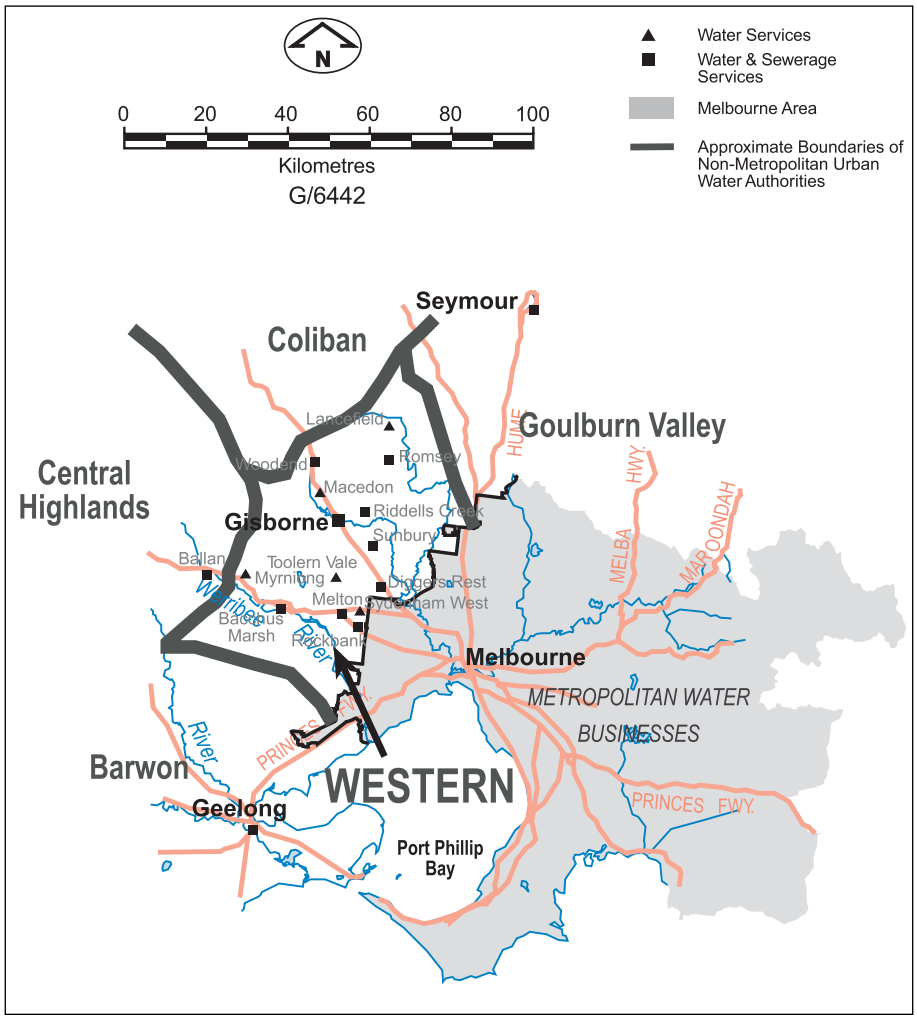
Western Water

Head office: Gisborne

Localities supplied with drinking water: Bacchus Marsh, Bulla, Diggers Rest, Gisborne, Lancefield, Long Forest, Macedon, Melton, Mount Macedon, Myrniong, Riddells Creek, Rockbank, Romsey, Sunbury, Toolern Vale and Woodend.

Population supplied with drinking water: approximately 128,760.

Map 18: Western Water



Map prepared by, and used with the permission of, Department of Sustainability and Environment

Performance against water quality standards

Drinking water supplied in all localities by Western Water during 2005–06 complied with the water quality standards, except as noted in the table below.

Parameter	Locality not complying with water quality standards
Aluminium	Myrniong
Turbidity	Myrniong
Trihalomethanes	Myrniong

Western Water has advised that it does not use ozone-based chemicals in any of its water quality systems. Therefore, sampling and analyses for bromate and formaldehyde was not undertaken throughout 2005–06. Ozone-based disinfection by-products such as bromate and formaldehyde are not considered to be a risk in drinking water supplied by Western Water. Although water supplied to Lancefield was not treated with aluminium based chemicals, aluminium was nevertheless monitored for this locality.

Drinking water supplied to the locality of Myrniong did not comply with the standards for turbidity, trihalomethanes and aluminium in 2005–06. Water supply for Myrniong is drawn from the nearby Pykes Creek reservoir. This water supply is disinfected but not filtered, with higher levels of aluminium and turbidity due to clay present as suspended material in this supply. This situation has been exacerbated by the low water levels in the Pykes Creek reservoir. These chemicals are likely to be present at levels that will periodically exceed the water quality standards until the proposed new water filtration plant for Myrniong is commissioned.

In December 2005 the Department accepted an undertaking from Western Water, to:

- improve this supply by construction of a new water filtration plant
- manage any risk in the interim, principally by monitoring the system more intensively, notify customers if necessary and implementing contingency plans and water carting if the source water quality deteriorates.

As a result of the health risk assessment undertaken by the Department in relation to this undertaking, the Department has concluded that the time period and interim risk management measures set out by Western Water in its undertaking to rectify the exceedances in the supply to Myrniong is reasonable and that exposure to aluminium, trihalomethanes and higher turbidity at the reported concentrations over these time periods will not pose a risk to public health.

Other water quality issues of potential health significance

Cadmium was detected in one water sample from Mount Macedon at a level exceeding the health-related guideline value set out in the *Australian Drinking Water Guidelines* (2004). This sample was taken in August 2005 and no other samples from this water supply system detected cadmium. The result was reanalysed by the laboratory, as possible cross contamination between sample bottles containing cadmium as a preservative for other samples may have occurred. No further elevated cadmium detections have occurred.

Other than the trihalomethanes and cadmium detection described above, no other parameters measured by Western Water in its drinking water quality monitoring program exceeded the relevant health-related guideline values set out in the *Australian Drinking Water Guidelines* (2004) during the reporting period.

For detailed water quality data, including data about other aesthetic characteristics of the water, please refer to Western Water's annual drinking water quality report for 2005–06.

Water quality incidents and events

During 2005–06, the following water quality incidents and events occurred:

Date	Supply	Issue	Action(s)
August 2005	Romsey	Detection of *E. coli* in drinking water	System inspected and cross connection detected on customer's property, sample found to not be representative of the Romsey supply (the Department agreed to remove this from the sampling results for Romsey for *E. coli*)
November 2005	Melton	White water complaints due to air in water supply	System flushed to purge entrapped air caused by surge vessel equipment failure
February 2006	Myrniong	Detection of *E. coli* in drinking water	System inspected and flushed, source water found to be contaminated, follow-up samples collected which were clear of *E. coli*

For further information on the water quality incidents and events listed above please refer to Western Water's annual drinking water quality report for 2005–06.

Customer complaints related to water quality

A summary of the customer complaints related to water quality that were recorded by Western Water during 2005–06 is provided in the table below.

Complaint category	Number of water quality complaints	Number of complaints per 100 customers*
Discoloured water	156	0.318
Taste/odour	26	0.053
Blue water	0	0
Air in water	45	0.092
Suspected illness	3	0.006
Other	5	0.010

** Based on number of properties serviced.*

Water quality complaint figures show an increasing trend in complaints in recent years with a large proportion received from Melton, Sunbury and Lancefield. Construction of a second pipeline and upgrade works to improve water supply security to the Macedon Ranges prompted several discoloured water and 'white water' complaints from residents in Sunbury and Bulla.

Switching between a filtered supply from the Merrimu water filtration plant to an unfiltered supply from Melbourne and reduced flushing within the system due to drought management prompted discoloured water complaints in courts and low flow mains where fine sediments within pipes may settle, accumulate and resuspend. These complaints have predominately been from residents in Melton and Bacchus Marsh.

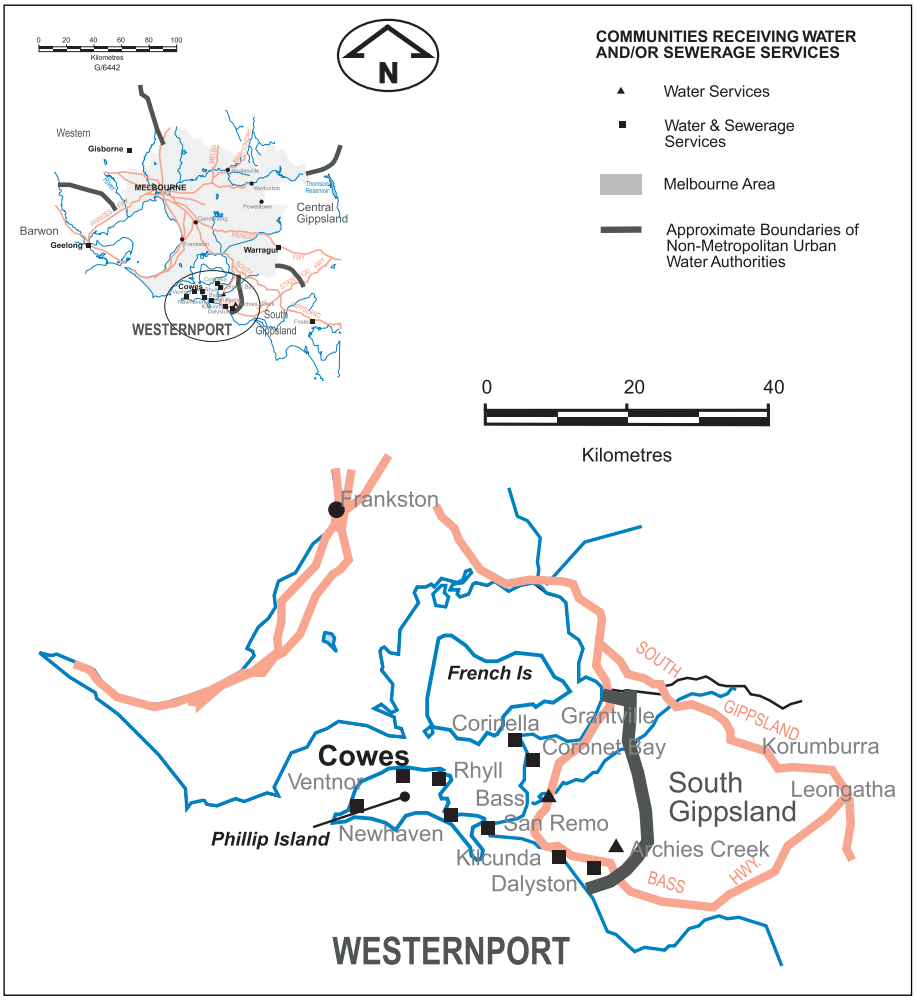
Westernport Water

Head office: Newhaven

Localities supplied with drinking water: Bass, Grantville, Corinella, Kilcunda, Dalyston, San Remo, Woolamai, Rhyll, Cowes, Ventnor, Surf Beach, New Haven, Pioneer Bay, Archies Creek, Sunderland Bay, Summerlands, Sunset Strip, Smiths Beach, Silverleaves, Coronet Bay, Tenby Point.

Population supplied with drinking water: approximately 9,760, rising to 33,500 in peak holiday periods.

Map 19: Westernport Water



Map prepared by, and used with the permission of, Department of Sustainability and Environment

Performance against water quality standards

All drinking water localities attained the drinking water quality standards monitored during 2005–06, except as noted in the table below.

Ozone is not used Westernport Water as a treatment chemical, therefore, bromate and formaldehyde were not required to be monitored at the frequencies specified in Schedule 2 of the Regulations.

Parameter	Localities not complying with water quality standard
Trihalomethanes	Rhyll

The elevation of trihalomethanes to above the standard was an isolated occurrence for the Rhyll locality. Results were below the standard for the majority of the reporting period and no further action was deemed necessary.

Other water quality issues of potential health significance

The majority of issues for Westernport Water were related to exceedences of parameters that are not part of Schedule 2 of the Regulations. These exceedences were largely due to the difficulty of managing the variable, and often poor, water quality in Candowie Reservoir.

For the 2005–06 reporting period these were:

Iron

All localities of Bass, Grantville, Corinella, Kilcinda, Dalyston, San Remo, Rhyll and Cowes exceeded the aesthetic guideline value for iron, detailed in the *Australian Drinking Water Guidelines* (2004). With the exception of the Rhyll locality that had three exceedences, each of the other localities listed above had a single result that exceeded the aesthetic guideline value. Five of the exceedences occurred on a single date. The standard response to an iron exceedence is to flush the reticulation system to remove any residual iron.

Manganese

Westernport Water detected two widespread occurrences of raised manganese concentrations in July 2005 (three detections) and February 2006 (four detections). There was a further random detection in October 2005. In all but one case (Bass locality, February 2006), the manganese results exceeded the aesthetic guideline value for manganese, detailed in the *Australian Drinking Water Guidelines* (2004), but not the health-related guideline value. Customer complaints and media interest occurred at the time of the detections, which were managed with extensive air scouring and flushing of the reticulation system. The likely cause was elevated levels of manganese-producing bacteria in Candowie Reservoir.

Water quality incidents and events

Westernport Water has a number of ongoing issues associated with variable quality of raw water sourced from Candowie Reservoir. The catchment is unprotected, and located in an intensively farmed area. Recurrent issues requiring management include blue-green algal blooms, and high concentrations of manganese and iron.

During 2005–06, the following water quality incidents and events occurred:

Date	Supply	Issue	Action(s)
July 2005	San Remo Woolamai Rhyll	Elevated manganese (exceeds ADWG 2004 aesthetic standard), public complaint and media interest	Extensive air scouring and flushing of the reticulation system. Consultant review of the treatment system commissioned. Reporting protocols modified. Likely cause increase in manganese-producing bacteria.
October 2005	Corinella	Elevated manganese (exceeds ADWG 2004 aesthetic standard)	Isolated incident, no action taken
January 2006		Blue green algae bloom in Candowie Reservoir	Annual occurrence in Candowie Reservoir. Protocols for management include use of cupricide, supply in the San Remo Basin and powdered activated carbon treatment. Likely to reoccur in the reservoir when the levels of cupricide are below control levels.
February 2006	Coronet Bay Corinella Bass Kilcunda	Widespread customer complaint of dirty water	Burst water main shut down. Dirty water entered the system when the pipes re-charged. On-going flushing of mains, widespread testing to assess water quality and press release and customer information released.
February 2006	Bass	Elevated manganese (exceeds ADWG 2004 health standard), public complaint and media interest	Exceedence following burst water main and widespread dirty water incident (widespread customer complaints). Extensive air scouring and flushing of the reticulation system.
February 2006	Grantville Kilcunda	Elevated manganese (exceeds ADWG 2004 aesthetic standard), public complaint and media interest	Exceedence following burst water main and widespread dirty water incident (widespread customer complaints). Extensive air scouring and flushing of the reticulation system.

Customer complaints related to water quality

A summary of the customer complaints on water quality during the 2005–06 reporting period that were recorded by Westernport Water is provided in the table below.

Complaint category	Number of water quality complaints	Number of complaints per 100 customers supplied[#]
Discoloured water	119	0.9
Taste and odour	13	0.1
Blue water	2	0.01
Air in water	0	0
Alleged illness	0	0
Other	54	1.4

[#] *Based on population served.*

The widespread complaints were associated with the increased manganese in July 2005 and the burst water mains and associated dirty water in February 2006. The actions taken by Westernport Water are described in the water quality incidents and events table above.

Yarra Valley Water

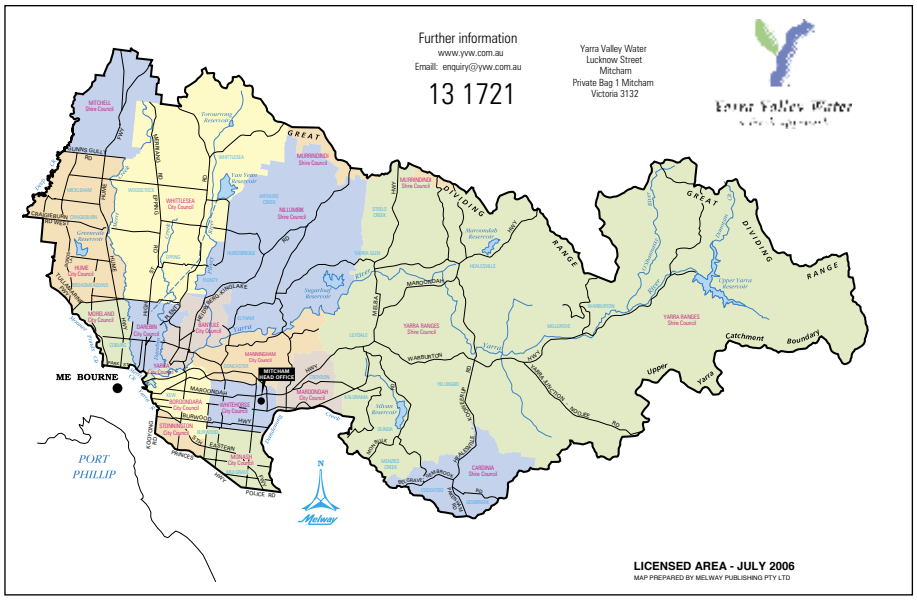
Head office: Mitcham

Localities supplied with drinking water: Broadmeadows, Bulleen, Coburg, Croydon, Doncaster, Eltham, Emerald, Epping, Glen Waverley, Healesville, Keon Park, Lilydale, Malvern, Mernda/Hurstbridge, Mitcham, Montrose, Mulgrave, Northcote, Plenty, Preston, Richmond, Ridge/Monbulk, Seville, Somerton, Surrey Hills, Thomastown, Tullamarine, Upper Yarra, Wallan, Wantirna, Warranwood, Watsonia, Whittlesea, Woori Yallock, Yarra Glen (please refer to Appendix G for a list of all individual suburbs supplied).

Note that Wallan is a new locality that was created in January 2006. Goulburn Valley Water previously managed Wallan.

Population supplied with drinking water: approximately 1,522,350.

Map 20: Yarra Valley Water



Map prepared by, and used with the permission of, Yarra Valley Water

Performance against water quality standards

Drinking water supplied in water sampling localities by Yarra Valley Water complied with the water quality standards monitored during 2005–06.

Ozone is not used either by Yarra Valley Water or Melbourne Water as a treatment chemical, therefore, bromate and formaldehyde were not monitored at the frequencies specified in Schedule 2 of the Regulations.

In December 2005 Yarra Valley Water conducted an internal audit which revealed that the contracted testing laboratory had not performed weekly sampling for *E. coli* on 17 occasions over ten water sampling localities and for turbidity on 138 occasions over 34 water sampling localities. These shortfalls arose due to a programming error of monthly samples which were based on dividing 52 samples for the year by 12 months. Consequently adequate numbers of samples were tested for any given month but not always each week. An undertaking was entered into to

rectify the non-conformance with regulation 11 and all actions, as detailed in Yarra Valley Water's drinking water quality annual report for 2005–06, were completed by 30 June 2006.

Other water quality issues of potential health significance

No other parameters measured by Yarra Valley Water as part of its drinking water quality monitoring program exceeded the relevant health-related guideline values set out in the *Australian Drinking Water Guidelines* (2004) during the reporting period.

For detailed water quality data, including data about other aesthetic characteristics of the water, please refer to Yarra Valley Water's drinking water quality annual report for 2005–06.

Water quality incidents and events

During 2005–06, the following water quality incidents occurred:

Date	Supply	Issue	Action(s)
July 2005	Silvan – Preston (Olinda area)	Disinfection plant failure. In June a manual valve on one of the chlorine storages was left shut resulting in a loss of chlorine supply when the control system switched to that storage at Melbourne Water's Silvan inspection plant.	Disinfection recommenced after one hour once a manual changeover to an alternate storage was established. Undisinfected water was transferred to storage reservoirs and spot dosed with chlorine, although a small volume entered supply at Olinda. Actions have been taken to ensure all valves are thoroughly checked following isolations for maintenance.
November 2005	Silvan – Olinda & Waverley	Disinfection plant failure. The automatic transfer switch that normally enables the backup generator to operate failed at Melbourne Water's Silvan inspection plant. The event lasted 25 minutes.	An alternate supply was arranged for customers that could be potentially affected. Untreated water was redirected and chlorinated.
November 2005	Silvan – Olinda & Waverley	Disinfection plant failure. The power supply to the battery charger failed which eventually caused the power in the batteries to drain and the plant to shut down at Melbourne Water's Silvan inspection plant. The event lasted 40 minutes	The circuit breaker was reset to re-establish power and the disinfection plant was restarted. The undisinfected water was transferred into the Olinda Reservoir and spot chlorinated.
December 2005	Silvan – Olinda & Waverley	Disinfection plant failure. Mains power supply failure, generator started but the plant did not restart due to a signal fault at Melbourne Water's Silvan inspection plant. The event lasted one hour and forty minutes	An alternate supply was arranged for customers that could be potentially affected. Untreated water was redirected to an alternate storage site for further treatment.
January 2006	Broadmeadows area (south of Barry Road)	Widespread taste and odour customer complaint	(see details in the customer complaints section below)
January 2006	Heidelberg area	Widespread customer complaint of discoloured water	(see details in the customer complaints section below)
January 2006	Wallan	Disinfection plant failure. On 17 January the chlorinator supplying the Wallan township failed for approximately 12 hours.	Extensive flushing was undertaken to remove undisinfected water from the system. Chlorine residuals were measured and water samples tested.
January 2006	Wallan high level area	Disinfection plant failure. On 18 January the chlorinator to the high level area failed for approximately 20 minutes.	Isolation of the high level system and mains flushing. Chlorine residuals were measured to confirm disinfected water was being supplied.

Date	Supply	Issue	Action(s)
January 2006	Woori Yallock area (Lusatia Park)	Disinfection plant failure at Melbourne Water's Lusatia Park on 14 January for one hour. Low chlorine residuals were detected in the system due to gassing at a metering pump. The standby system shutdown failed after a short period of operation.	Extensive flushing was undertaken to remove undisinfected water from the reticulation
January 2006	Woori Yallock area (Lusatia Park)	Disinfection plant failure at Melbourne Water's Lusatia Park on 24 January for 15 minutes due to gassing at a metering pump. A low chlorine residual was detected in the system.	On this occasion the plant recovered automatically by switching to the standby system. Modifications to the pipe work to improve plant performance were undertaken by Melbourne Water in March 2006. Additionally a UV plant is scheduled for construction within 2006–07 to improve primary disinfection at this site.
January 2006	Croydon area	Detection of *E. coli* in drinking water	Water mains were flushed in the immediate area and follow-up monitoring revealed no *E. coli*
January 2006	Malvern area	Detection of *E. coli* in drinking water	Water mains were flushed in the immediate area and follow-up monitoring revealed no *E. coli*

During 2005–06 there were two instances when Melbourne Water's Greenvale chlorinator temporarily ceased operation. Yarra Valley Water advised that due to either the short duration of the outage or reconfiguration of the supply during the events, untreated water was not supplied to customers. Details about these events are provided in the chapter for Melbourne Water and in Melbourne Water's annual drinking water quality report for 2005–06.

Customer complaints related to water quality

A summary of the customer complaints related to water quality that were recorded by Yarra Valley Water during 2005–06 is provided in the table below.

Complaint category	Number of complaints	No. of complaints per 100 customers[#]
Discoloured Water	2864	0.188
Taste and Odour	450	0.03
Blue Water	50	0.003
Air in Water	258	0.017
Illness confirmed	0	0
Other (incl. Customer pipes)	216	0.014

[#] *Based on population served.*

There were two significant events in January 2006 that generated widespread customer complaint. During the first week in January 30 customer complaints were received relating to taste and odour in the Broadmeadows area. The change in water quality was a result of long detention times and low chlorine residuals of water from Greenvale Reservoir to the Broadmeadows area south of Barry Road. The level of chlorination at Greenvale Reservoir was increased, mains in the affected areas were flushed and Broadmeadows Reservoir was spot chlorinated.

The second event generated 40 customer complaints related to discoloured water in the Heidelberg area. This event was a result of maintenance works, which resulted in a reversal of flows and stirring up of sediment. Systematic flushing of selected mains to remove discoloured water was undertaken and effectiveness verified through testing.