



Section 3: Summaries of performance of individual water businesses

Alpine resorts

Five Alpine Resorts Management Boards, as designated in the *Alpine Resorts (Management) Act 1997*, have responsibility for all aspects of management of the commercial alpine resorts in Victoria. The current Boards, and the localities they provide drinking water to are:

- Falls Creek Alpine Resort Management Board
- Lake Mountain Alpine Resort Management Board
- Mount Baw Baw Alpine Resort Management Board
- Mount Buller and Mount Stirling Alpine Resort Management Board
- Mount Hotham Alpine Resort Management Board.

The resorts have very small, or no, year-round permanent populations. During the ski season, the populations at each resort rise significantly, and the number of visitors ranges from 7,000 (Mount Stirling) to 245,000 (Mount Buller)¹. In recent years, winter visitors to all resorts have numbered between 460,000 and 830,000. All resorts except Lake Mountain and Mount Stirling have residential accommodation, varying from 750 to 7,700 beds. The demand for a drinking water supply is therefore highly seasonal.

Map 1: Alpine resorts



Prior to the commencement of the *Safe Drinking Water Act 2003*, the only requirement for the alpine resorts in relation to the provision of drinking water was set out in the *Alpine Resorts (Management) Act 1997*. This Act obliges the Boards to provide a range of services, including the supply of water. There are no conditions or obligations attached to this requirement that necessitated the Boards to consider the quality of water provided or to manage public health risk.

The Department of Sustainability and Environment (DSE) is the lead Government agency overseeing the *Alpine Resorts (Management) Act 1997*. In 2004 DSE produced the Alpine Resorts 2020 Strategy, to guide the sustainable planning and management of Victoria's alpine resorts. This policy document identifies the key challenge of providing access to adequate volumes of high quality potable water to meet increasing demand.

The *Safe Drinking Water Act 2003* (the Act) captures those Boards identified in the *Alpine Resorts (Management) Act 1997* as water suppliers. This imposed a number of new legislative obligations on the Boards in relation to the provision of a water supply. If the Board made the decision to provide water that was intended for drinking, they were then obliged to undertake specific action to ensure the supplied water met the legislated standards defined in the Act and the subordinate Safe Drinking Water Regulations 2005 (the Regulations), and was fit for human consumption. If they were unable to provide a water supply that met the obligations imposed by the Act, they are required to ensure that the water is not inadvertently consumed as drinking water.

With multiple legislative and policy obligations, the provision of drinking water in a way that does not compromise human health, is now a major business imperative for the Alpine Resort Management Boards (ARMBs).

Falls Creek ARMB

Population supplied with drinking water: 120 permanent population and 4,700 residents and 2,000 day visitors during the ski season.

The Falls Creek ARMB supplies drinking water to a single water sampling locality Falls Creek. This comprises the resort village and the immediate surroundings, including public shelters. The treatment plant comprises a single UV disinfection treatment plant with an emergency power generator.

Falls Creek ARMB was the first Board to supply treated water to their resort. The first system was installed in 1991, and a second system installed in 1997 to improve water quality. With the exception of power failure during the 2003 bushfires, there have been no recorded *E. coli* detections since the installation of the second UV system in 1997.

Performance against drinking water standards

Falls Creek use only UV disinfection, and are required to monitor for compliance with *E. coli* and turbidity. The locality attained the drinking water quality standards during 2005–06.

Other water quality issues of potential health significance

The Falls Creek ARMB undertook testing of a wide range of health parameters, including pesticides, manganese, hardness and fluoride. All results met the related health-related guidelines values in the *Australian Drinking Water Guidelines* (2004). Details of the full testing protocol and results are available in the Board's annual water quality report.

The Falls Creek ARMB tested for a range of aesthetic standards during 2005–06, and all results met the aesthetic health-related guidelines values in the *Australian Drinking Water Guidelines* (2004), except for iron. Details of the full testing protocol and results are available in the Board’s annual water quality report.

Water quality incidents and events

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

Date	Supply	Issue	Action(s)
September 2005	Falls Creek	Lightning strike caused damage to water pipe, dirty water introduced into tank	Boiled water notice implemented
February 2006	Falls Creek	Elevated iron levels resulting in customer complaint	Customer bulletins disseminated to provide information on the problem, and the actions being undertaken Consultant engaged to investigate and provide management options for the Board to consider Temporary pipeline installed to provide filtered water when similar conditions arise in Rocky Valley Reservoir

Customer complaints related to water quality

Customer complaints were made in relation to the elevated iron levels in the treated water.

Lake Mountain ARMB

Population supplied with drinking water: No permanent residential population. Annual visitation is approximately 200,000 people.

The Lake Mountain ARMB provide untreated water to the Lake Mountain resort, including management offices, ski patrol facilities, retail and food outlets, day visitor facilities, rental accommodation (single premise) and external taps.

Due to the risk of people mistaking the water for drinking water, the Minister for Health declared the water supplied to the resort as regulated water. The declaration was made on 23 October 2005, and published in the *Government Gazette* No. G47, on 24 November 2005.

In accordance with the Act, Lake Mountain ARMB has prepared a risk management plan for the supply, and submitted an annual water quality report. They are not required to monitor for any water quality standards, as the water supplied is not drinking water.

They have implemented a program to ensure that staff, stakeholders and visitors to the Resort are aware the water supplied is not drinking water.

Mount Baw Baw ARMB

Population supplied with drinking water: The resort has a 750-bed capacity, with annual visitation of 46,000 people.

The Mount Baw Baw ARMB provide drinking water to a single water sampling locality Mount Baw Baw – comprising the resort village and the immediate surrounds. Prior to May 2005, the Board provided untreated water through the reticulation system. Prior to installation of the UV disinfection treatment system, the Board undertook compliance testing, and implemented an on-going boiled water notice until the system was operating effectively.

In May 2005 they installed a UV treatment plant, which was operational for the full reporting period 2005–06.

Performance against drinking water standards

The Board are only required to monitor for compliance to the *E. coli* and turbidity standards. The following non-compliance occurred:

Parameter	Localities not complying with water quality standard
<i>E. coli</i>	Mount Baw Baw

The Board have experienced ongoing operational difficulties with the UV disinfection system, and have invested considerable time in investigations and operational processes to improve effectiveness. Gippsland Water has assisted with these activities. The problems are due to variable, and at times very low, demand on the system.

The Board implemented a boiled water notice in the resort in response to *E. coli* detections. They are currently consulting with the Department regarding future works to manage the problem of *E. coli* in the water supply.

Other water quality issues of potential health significance

There are no other issues to report.

Water quality incidents and events

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

Date	Supply	Issue	Action(s)
July 2005	Mount Baw Baw	<i>E. coli</i> in the reticulation	Implement boiled water notice
September 2005	Mount Baw Baw	<i>E. coli</i> in the reticulation	Implement boiled water notice
December 2005	Mount Baw Baw	<i>E. coli</i> in the reticulation	Implement boiled water notice
February 2006	Mount Baw Baw	<i>E. coli</i> in the reticulation	Implement boiled water notice
February 2006	Mount Baw Baw	<i>E. coli</i> in the reticulation	Implement boiled water notice
March 2006	Mount Baw Baw	<i>E. coli</i> in the reticulation	Implement boiled water notice
March 2006	Mount Baw Baw	<i>E. coli</i> in the reticulation	Implement boiled water notice
March 2006	Mount Baw Baw	<i>E. coli</i> in the reticulation	Implement boiled water notice
March 2006	Mount Baw Baw	<i>E. coli</i> in the reticulation	Implement boiled water notice
May 2006	Mount Baw Baw	<i>E. coli</i> in the reticulation	Implement boiled water notice

The Board have undertaken considerable investigative work to improve the effectiveness of the UV disinfection treatment system. In addition to implementing a boiled water notice at the time of *E. coli* detections (which covered 92 per cent of the reporting period), the Board also implemented maintenance protocols such as flushing, sluicing and catchment inspections.

Customer complaints related to water quality

No customer complaints were made.

Mount Buller and Mount Stirling ARMB

Population supplied with drinking water: The resort has a 7,800-bed capacity, with a permanent population of 30 residents that increases to approximately 1,600 during the ski season. The resort has an annual visitation of 500,000 visitor days with an estimated maximum of 17,000 people in the resort in any one day.

There is no permanent population at Mirimbah or Mount Stirling, although ski patrol members from Stirling have a residence in the Mirimbah locality.

Localities supplied with drinking water: Mount Buller High Level Reticulation, Mount Buller Low Level Reticulation, Mt Stirling Telephone Box Junction.

The Board supplies treated drinking water to the resort village and its immediate surrounds and to the small settlement at Mount Stirling.

Water not intended for drinking is supplied to the buildings and external areas at the small settlement at Mirimbah at the base of Mount Buller.

The water supplied to the settlement at Telephone Box Junction at Mount Stirling was previously untreated. There was some confusion relating to the intent of this supply, with some uses indicating consumers believed this to be a source of drinking water. Following a review of water supplies to all parts of their jurisdiction, the Mount Buller and Mount Stirling ARMB entered into, and completed an undertaking with the Department to install and commission a treatment system to provide drinking water at Mount Stirling.

Further infrastructure works were undertaken at Mirimbah and two weeks before the end of the reporting period, a small filtration and disinfection system had been installed and commissioned to provide drinking water to the staff, contractors and visitors to the Mirimbah area. The Board were in the process of finalising risk management plans for both these systems at the end of the current reporting year.

Performance against drinking water standards

The Board are required to monitor for compliance to *E. coli*, turbidity and chlorine disinfection by-products standards. Ozone disinfection and aluminium are not in use and the Board are not expected to monitor for these standards. The following non-compliance occurred:

Parameter	Localities not complying with water quality standard
<i>E. coli</i>	Mount Buller Low Level, Mirimbah**
** based on a very limited data set. Mirimbah was also managed as a non-drinking water supply for most of the reporting period.	

Separate UV disinfection treatment plants treat the Low Level and High Level Reticulation localities at Mount Buller. The High Level Reticulation is compliant with the *E. coli* and turbidity standards, however the Low Level Reticulation had ongoing detections of *E. coli*, which could not be managed through operational and maintenance strategies. In March 2006 the board entered into an undertaking with the Department to install an on-line hypochlorite dosing system to bring the locality into compliance with the *E. coli* standard.

Manual hypochlorite dosing is currently being carried out in the High Level Reticulation system.

There have been no detections of *E. coli* in either the High Level or Low Level systems since the commencement of hypochlorite disinfection.

The required numbers of samples for disinfection by-products have not been collected because compliance testing only commenced at the time that hypochlorite treatment commenced.

Other water quality issues of potential health significance

There are no other water quality issues to report.

Water quality incidents and events

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

Date	Supply	Issue	Action(s)
January 2006	Mt Buller High Level Reticulation	<i>E. coli</i> in the reticulation	No <i>E. coli</i> in raw water, possible mix up of samples. Re-test no <i>E. coli</i> .
February 2006	Mt Buller Low Level Reticulation	<i>E. coli</i> in the reticulation	Inspection of UV treatment plant. No cause identified.
February 2006	Mt Buller Low Level Reticulation	<i>E. coli</i> in the reticulation	Manufacturer inspection identified issue with electricity supply to system. Very low tourist numbers at resort, no further action taken.
February 2006	Mt Buller Low Level Reticulation	<i>E. coli</i> in the reticulation	Low Level reservoir dosed with hypochlorite, monitoring chlorine residuals, no further action.
March 2006	Mt Buller Low Level Reticulation	<i>E. coli</i> in the reticulation	<i>E. coli</i> detection and elevated turbidity following a heavy rain event. Low Level reservoir dosed with hypochlorite, boiled water notice implemented. Re-test clear of <i>E. coli</i> .
April 2006	Mt Buller Low Level Reticulation	<i>E. coli</i> in the reticulation	On-line chlorination system in place, inspection showed operation ineffective. Dose Low Level reservoir. No further action.
April 2006	Mt Buller Low Level Reticulation	<i>E. coli</i> in the reticulation	Increased turbidity following rain events. Dose Low Level reservoir, no further action.

These incidents were reported under section 22 of the Act.

Customer complaints related to water quality

Mount Buller and Mount Stirling ARMB received one official complaint and multiple queries regarding the safety of the water following a coloured water incident in June 2006. The incident occurred following increased draw on the Burnt Hut Reservoir for snowmaking and shortened settling time in the reservoir.

Non-drinking water supply – Mirimbah

During the 2005–06 reporting period, the Mirimbah locality was supplied with untreated water for non-drinking purposes. Samples were collected to monitor the quality of the water for purposes of decision making in relation to potential water treatment options. Samples taken during this time were compliant with the turbidity standard but not the *E. coli* standard. Thirty eight per cent of samples had no *E. coli*.

Appropriate signage was in place to inform people that the water was not suitable for drinking.

Two weeks prior to the end of the reporting period, a treatment and disinfection system comprising of filtration and hypochlorite dosing was installed, in order to make the supply suitable for drinking.

At the commencement of treatment, samples were collected to monitor for the *E. coli*, turbidity and chlorine disinfection by-product standards, and will be reported fully in the next reporting period. No detections of *E. coli* were found after treatment and disinfection commenced.

Mount Hotham ARMB

Population supplied with drinking water: The resort has a 4,600-bed capacity, with a permanent population of less than 100 residents that increases to an estimated maximum of 4,000–5,000 people in the resort on any one day in peak periods.

The Board supplies treated drinking water to a single locality Mount Hotham – comprising the resort village and the immediate surrounds. The water is treated with UV disinfection only prior to distribution through the reticulation system.

Performance against drinking water standards

The Board is required to monitor for compliance with the *E. coli* and turbidity standards only.

The locality was compliant with both these standards for the 2005–06 reporting period. This is an improvement on the preceding reporting period when the water supply had been non-compliant with the *E. coli* standard.

A single sample was missed due to the failure of a courier to collect the sample during the time between Christmas and New Year.

Other water quality issues of potential health significance

There are no other issues to report.

Water quality incidents and events

There were no water quality incidents or events to report.

Customer complaints related to water quality

There were no customer complaints in relation to the quality of the water.

The Boards continue to grapple with issues that arise from them not being traditional water authorities, and the fact that the provision of drinking water is not their core business. They have also endured consecutive poor snow seasons, and some of the driest seasons on record. This raises issues such as staff capacity to manage and deliver all required elements of the Act and Regulations and the lack of funds to improve infrastructure related to drinking water quality.

Several water authorities have generously provided assistance such as operational advice and hands-on assistance to some of the resorts. This has been particularly useful, as the supplies are difficult to manage due to the need to manage both very high and very low demand.

The remoteness of the areas can create some difficulties, and in some cases the failure to deliver a sample for analysis has resulted from issues with couriers failing, or being unable to collect the samples.

The Boards should be congratulated on the following achievements:

- Mount Hotham moving from non-compliance to compliance with the *E. coli* standard
- completion of infrastructure works to address the non-compliance with the *E. coli* standard in the Mount Buller Low Level reticulation
- infrastructure works to provide drinking water to the smaller, non-resort areas at Mount Stirling and Mirimbah
- commencement of risk management plans for the drinking water supplies at Mount Stirling and Mirimbah
- completion of infrastructure works to supply treated water to Mount Baw Baw
- declaration of all water sampling localities
- identification of water sampling points for each locality
- delivery of regulatory requirements relating to annual reports and monthly water quality results.

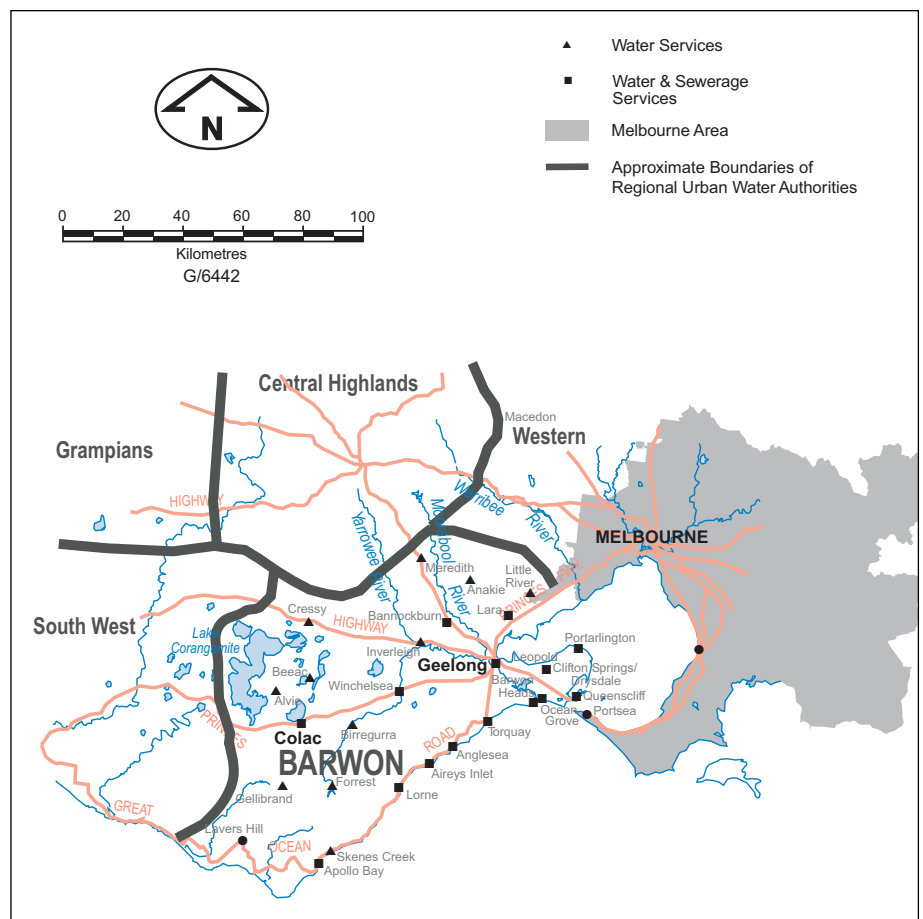
Barwon Water

Head office: Geelong

Localities supplied with drinking water: Aireys Inlet, Alvie, Anakie, Anglesea, Apollo Bay, Bannockburn, Beeac, Birregurra, Clifton Springs – Drysdale, Colac, Cororooke, Cressy, Forrest, Gellibrand, Gheringhap, Grovedale, Highton, Highton High Level, Inverleigh, Leopold, Lethbridge, Little River, Lorne, Lovely Banks, Meredith, Montpellier, Moriac, Mount Duneed, Ocean Grove, Portarlington, Queenscliff, Shelford, Teesdale, Torquay, Winchelsea.

Population supplied with drinking water: approximately 265,120.

Map 2: Barwon Water



Performance against water quality standards

Barwon Water monitored for the nine drinking water quality standards during the reporting period. All localities, with the exception of Cressy, complied with the standards.

Parameter	Localities not complying with water quality standard
<i>E. coli</i>	Cressy

Water quality within the Cressy locality did not meet the standard for *E. coli*. There were two occasions where low levels of *E. coli* were detected. Barwon Water undertook immediate investigation and remedial action as outlined in the water quality incidents and events section below.

Other water quality issues of potential health significance

No other parameters measured by Barwon 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 Barwon Water.

Date	Supply	Issue	Action(s)
September 2005	Montpellier	<i>E. coli</i> detection	Mains flushing. Repeat samples free of <i>E. coli</i> .
September 2005	Bellarine	Disinfection plant failure	The Bellarine Basin services the town of Wallington (approximately 250 properties) during the period when the pump station is transferring water to the Clifton Springs Tank. This transfer occurs between approximately 9pm and 3am every night. The Bellarine Basin receives water that has been filtered and disinfected at the Wurdee Boluc Water Treatment Plant. On 2 September 2005, the disinfection pump failed to activate, and secondary disinfection did not occur overnight during the pumping period (just over five hours). Monitoring was undertaken throughout the system the following day, and no <i>E. coli</i> were detected. In response, changes were made to the operation of the pumps to prevent a similar occurrence in the future.
October 2005	Lovely Banks	Disinfection plant failure	There are three basins located at Lovely Banks that together service the Lovely Banks zone. These basins receive water that has been treated and disinfected at the Wurdee Boluc and Moorabool water treatment plants. Secondary disinfection is provided on the outlet of the basins at Lovely Banks. The three basins at Lovely Banks supply water to the northern suburbs of Geelong on a 'floating' arrangement with no discrete separation of areas supplied by individual basins. This is done to manage demand within the zone. Before entering the distribution system, the water is chloraminated. On 9 October 2005, the disinfection pumps failed due to an air lock, and secondary disinfection did not occur for a period of two hours. Monitoring was undertaken throughout the system the following day, and no <i>E. coli</i> were detected. In response to this failure, changes to the configuration of the dosing control were made to minimise the likelihood of another air lock.
November 2005	Lorne	<i>E. coli</i> detection	Mains flushing. Repeat samples free of <i>E. coli</i> .
November 2005	Montpellier, Bellarine	Disinfection plant failures	As the basin prior to disinfection had no <i>E. coli</i> in the most recent monthly sample and failures were very brief, this was not perceived by Barwon Water to present a public health risk.
January 2006	Alvie	<i>E. coli</i> detection	As the sample was taken at the disinfection plant itself, and was not a distribution sample, this was not perceived by Barwon Water to present a public health risk.
February 2006	Alvie	<i>E. coli</i> detection	Following the detection, spot dosing commenced throughout the entire system and the open basin at Alvie was isolated. Extensive mains flushing was undertaken throughout the system, replacing any possibly contaminated water from the Alvie Basin with water from the Colac Water Treatment Plant. Notices were sent to local residents to inform them of the detection, however no reports of illness were received. Resampling at all points in the system demonstrated that the issue had been resolved. The cause of the detection was most likely due to a small volume of undisinfected water entering the system during the start up of the Alvie disinfection plant. To resolve this issue, the basin was taken offline until improvements were made to the dosing controls at the Alvie disinfection plant.

Date	Supply	Issue	Action(s)
February 2006	Queenscliff	Disinfection plant failure	The townships of Queenscliff and Point Lonsdale are serviced by an open basin, which receives water that has been treated and disinfected at the Wurdee Boluc Water Treatment Plant. Secondary disinfection (chloramination) is provided on the outlet of the basin at Queenscliff. On 28 February 2006, the disinfection pumps failed due to an air lock, and secondary disinfection did not occur for a period of 40 minutes. In response to this failure, a scour prior to the first customer was turned on which effectively diverted 85 per cent of the affected water out of the reticulation system. Monitoring was undertaken throughout the system the following day, and no <i>E. coli</i> were detected.
February 2006	Queenscliff	Ammonia overdosing	The ammonia pump faulted and dosed at a higher rate than usual, however this was not at a level that was unsafe.
April 2006	Cressy	<i>E. coli</i> detection	Spot dosing with chlorine and mains flushing. Repeat samples free of <i>E. coli</i> .
May 2006	Cressy	<i>E. coli</i> detection	Spot dosing with chlorine and mains flushing. Repeat samples free of <i>E. coli</i> .
May 2006	Birregurra	<i>E. coli</i> detection	Mains flushing. Repeat samples free of <i>E. coli</i> .

Customer complaints related to water quality

Barwon Water records all complaints relating to drinking water quality. The complaints are compared to the number of connected properties to enable comparison with other water suppliers. The number of complaints in 2005–06 was 5.76/1000 properties, which was higher than the average over the past six years of 5.28/1000 properties.

The large majority of the complaints for 2005–06 were due to dirty water complaints related to manganese in the Colac locality. The dry conditions caused the raw water quality to decrease significantly and also prevented pro-active mains cleaning from being undertaken.

Disregarding the manganese issues in Colac, the number of complaints received across the whole region serviced by Barwon Water was lower than other years.

The following table shows a breakdown of these complaints by complaint type.

Complaint category	Number of water quality complaints	Number of complaints per 100 customers supplied [#]
Discoloured water	509	0.192
Taste and odour	93	0.035
Air in water	4	0.002
Blue water	20	0.008
Illness	6	0.002
Other	74	0.028

[#] Based on population served.

Central Highlands Water

Head office: Ballarat

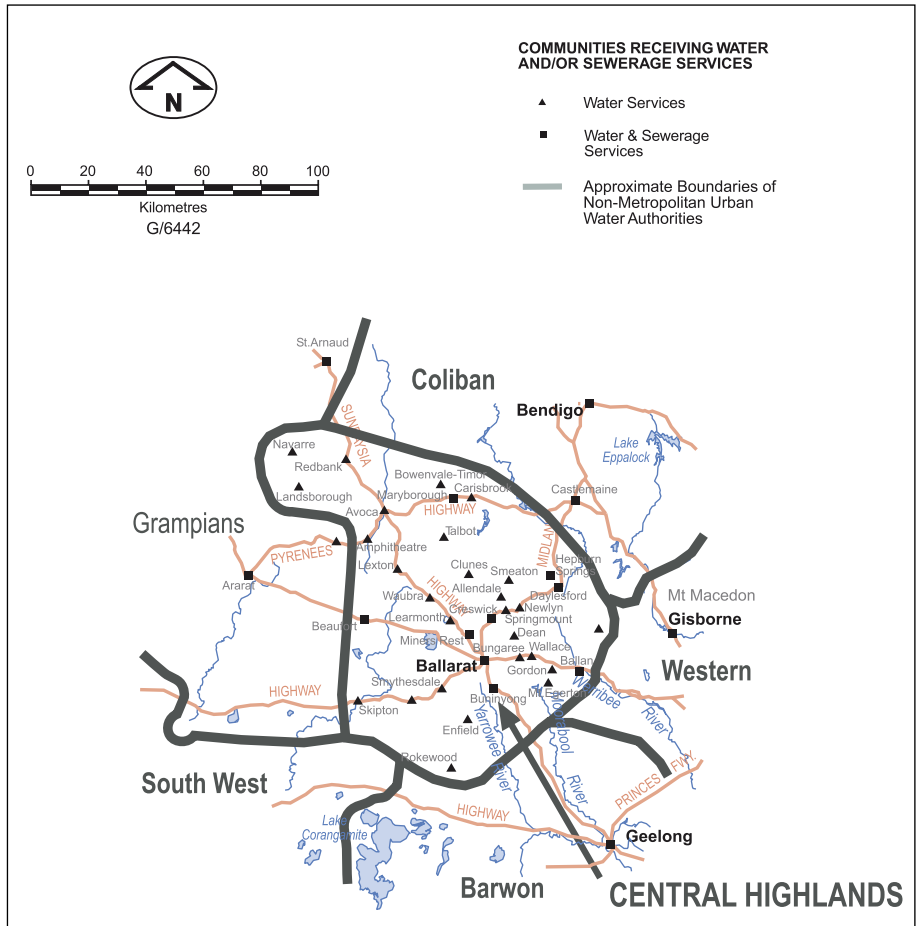
Localities supplied with drinking water: Alma, Avoca, Ballan, Ballarat Central, Ballarat North/Nerrina, Beaufort, Bet Bet, Blackwood/Barry’s Reef, Bungaree/Wallace, Buninyong/Mount Helen, Cardigan Village, Carisbrook, Clunes, Creswick, Daisy Hill, Daylesford High Level, Daylesford Low Level/Hepburn, Dean, Enfield, Fiskville/Glenmore, Gordon/Mount Egerton, Haddon, Kingston/Smeaton, Lal Lal, Learmonth, Lexton, Linton, Majorca, Maryborough, Napoleons, Newlyn/Springmount, Sebastopol, Skipton, Smythesdale, Talbot, Timor, Waubra, Wendouree.

Other communities within these localities that are provided with drinking water include Simson, Havelock, Craigie, Bowenvale, Adelaide Lead, Moonlight, Betley, Flagstaff, Golden Point and Timor West.

Towns supplied with regulated (non-drinking) water: Landsborough/Navarre (current), Amphitheatre, Raglan and Redbank (under consideration).

Population supplied with drinking water: approximately 117,500.

Map 3: Central Highlands Water



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

Performance against drinking water standards (drinking water supplies only)

All drinking water localities attained the drinking water quality standards monitored during 2005–06, except as noted in the table below. The most significant problem for Central Highlands Water has been non-compliances with the Trihalomethanes water quality standard.

Parameter	Localities not complying with water quality standard
<i>E. coli</i>	Clunes
Trihalomethanes	Alma, Avoca, Carisbrook, Clunes, Daisy Hill, Lexton, Maryborough
Aluminium	Alma
Bromate	Clunes

The water locality of Clunes was the subject of an undertaking between December 2005 and March 2006, in relation to non-compliance with the *E. coli* water quality standard. The undertaking involved infrastructure upgrade works and the introduction of a new water supply. A boiled water notice was in place for the period of the undertaking to minimise public health risk in the event that *E. coli* were detected within the water supply. Even though the 12-month rolling calculation for percentage of samples without *E. coli* did not meet the required 98 per cent for compliance, no *E. coli* were isolated from samples collected during the two months prior to, and months since, the completion date for of the undertaking.

Undertakings that involve infrastructure improvements are currently in place in relation to the following non-compliances or potential non-compliances:

Avoca	Trihalomethanes
Beaufort	<i>E. coli</i>
Maryborough	Trihalomethanes

The Maryborough undertaking will address non-compliances in the localities of Alma, Bet Bet, Carisbrook, Daisy Hill, Majorca, Talbot and Timor.

Other non-compliances are the result of sporadic, rather than ongoing, exceedances of the water quality parameters. In some cases a cause for the non-compliance was identified. In these cases, no undertakings are in place, however should the exceedances continue or escalate, the situation will be reviewed.

Missed monthly compliance samples were noted for Lal Lal (one *E. coli* sample, one turbidity), Sebastopol (one sample for chloroacetic acid, dichloroacetic acid and trichloroacetic acid), Ballarat Central and Wendouree (one trihalomethanes sample).

Central Highlands Water have completed a number of infrastructure improvement works during the current reporting period that have not been required to meet the legislative standards. These have contributed to the high level of water quality experienced by the customers of Central Highlands Water.

Other water quality issues of potential health significance

The Gordon/Mount Egerton locality did not meet the *Australian Drinking Water Guidelines* (2004) health-related guideline value of 0.01 mg/L for lead. One sample was found to contain a lead concentration of 0.06 mg/L, but all other lead results for this locality were below the guideline value. Central Highlands Water has indicated that this result is not typical for this locality and will continue to closely monitor the system.

Water quality incidents and events

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

Date	Supply	Issue	Action(s)
Section 22 notifications			
July 2005	Clunes	<i>E. coli</i> detection customer tap	Mains flushing. Repeat samples free of <i>E. coli</i> . Boil water notice in place during this time.
August 2005	Creswick	<i>E. coli</i> detection customer tap	Mains flushing. Repeat samples free of <i>E. coli</i> .
November 2005	Clunes	<i>E. coli</i> detection customer tap	Mains flushing. Repeat samples free of <i>E. coli</i> . Boil water notice in place during this time.
January 2006	Clunes	<i>E. coli</i> detection customer tap	Burst water mains in area. Boil water notice in place during this time.
June 2006	Dean	<i>E. coli</i> detection customer tap	Mains flushing. Repeat samples free of <i>E. coli</i> .
Other events			
November 2005	Creswick	<i>E. coli</i> detection Ballarat Road Basin	Inspection of basin and pumps. Introduced fresh water into basin by manually controlling pump delivering water to the storage and resampled. No <i>E. coli</i> detected in resample. Informed DHS of initial and resample results.
November 2005	Kingston/Smeaton	<i>E. coli</i> detection Smeaton tanks	Isolation of Smeaton Tanks (these tanks operate under high flow conditions) and partially drained. Disinfected (chlorine residual of 2 mg/L), mains outlet scoured and resampled. No <i>E. coli</i> detected in resample. Informed DHS of initial and resample results.
November 2005	Buninyong/Mount Helen	<i>E. coli</i> detection Buninyong tanks	System inspected and resample taken. No <i>E. coli</i> detected in resample.
February 2006	Maryborough	Blue-green algae Centenary Reservoir	Centenary Reservoir closed and taken offline for 24-hours. Algaecide dosing, toxicity testing and further blue-green algae (BGA) analysis performed. Informed DHS and DSE via required email.
February 2006	Ballarat System (All localities – see overleaf)	Taste and Odour at Lal Lal Water Treatment Plant (WTP) and White Swan Reservoir	Addition of powdered activated carbon to treatment process
March 2006	Ballarat System (All localities – see overleaf)	Taste and Odour at Lal Lal Water Treatment Plant (WTP) and White Swan Reservoir	Addition of powdered activated carbon to treatment process

Date	Supply	Issue	Action(s)
April 2006	Ballarat System (Ballarat Central, Buninyong/ Mount Helen, Cardigan Village, Enfield, Fiskville/ Glenmore, Haddon, Linton, Napoleons, Sebastopol, Skipton, Smythesdale)	<i>E. coli</i> detection Warranheip Basin	System inspected and resample taken. No <i>E. coli</i> detected in resample.
April 2006	Kingston/Smeaton	<i>E. coli</i> detection Smeaton tanks	System inspected and resample taken. No <i>E. coli</i> detected in resample.
April 2006	Ballarat System (All localities – see above)	<i>E. coli</i> detection Warranheip Basin	System inspected and resample taken. No <i>E. coli</i> detected in resample.
April 2006	Enfield	<i>E. coli</i> detection Enfield Basin	System inspected and resample taken. No <i>E. coli</i> detected in resample.
April 2006	Smythesdale	<i>E. coli</i> detection Tilligs Road tank, Scarsdale	System inspected and resample taken. No <i>E. coli</i> detected in resample.
May 2006	Kingston/Smeaton	<i>E. coli</i> detection Smeaton tanks	Smeaton Tanks drained and refilled. No <i>E. coli</i> detected in resample.
May 2006	Skipton	<i>E. coli</i> detection Skipton Basin	Skipton Basin was offline at time of sampling therefore no action taken
May 2006	Gordon/Mount Egerton	High lead customer tap	System inspected and resample taken. Lead resample result less than guideline limit
May 2006	Smythesdale	<i>E. coli</i> detection Tilligs Road tank, Scarsdale	Isolation of Tillings Road Tank until 26th June 2006. Sample collected prior to bringing online, no <i>E. coli</i> detected.
June 2006	Gordon/Mount Egerton	<i>E. coli</i> detection Gordon tank	Resample taken. No <i>E. coli</i> detected in resample.

Guidance from the Department in relation to Section 22 of the Act, and the application of a systematic reporting protocol, was issued in July 2006. The incidents that were reported under Section 22 of the Act are noted in the above table.

For further information on the water quality incidents listed above please refer to Central Highlands Water's annual drinking water quality report.

Customer complaints related to water quality

A summary of the customer complaints on water quality recorded by Central Highlands Water during the reporting period is provided in the table below.

Complaint category	Number of water quality complaints	Number of complaints per 100 customers supplied*
Discoloured water	79	0.14
Taste/odour	30	0.05
Blue water	0	0
Air in water	9	0.02
Suspected illness	4	0.01
Other	24	0.04
<i>* Based on number of properties serviced.</i>		

Customer complaints are recorded in a corporate database, and are dealt with according to established internal protocols. None of the customer complaints were of a widespread nature.

Non-drinking water supplies

Central Highlands Water supplies untreated water to the towns of Amphitheatre, Landsborough, Navarre, Raglan and Redbank. During the 2005–06 reporting period, Central Highlands Water undertook a hazard identification and risk assessment process on these supplies to determine what additional controls should be in place, and to identify the hazards at the customer tap. The outcomes of this assessment were used to inform a program designed to ensure that such non-drinking supplies are not consumed or confused as drinking water supplies.

Regulated water supplies

Central Highlands Water submitted an application to the Minister for Health to approve the Amphitheatre, Landsborough/Navarre, Raglan and Redbank Water supplies as Regulated Water under section 6 of the Act. During the reporting period the declaration of the water supplied to Landsborough/Navarre as regulated water was made on June 26 2006, and published in the Government Gazette of 6 July 2006 (G27). The other applications were still being processed at the end of the reporting period.

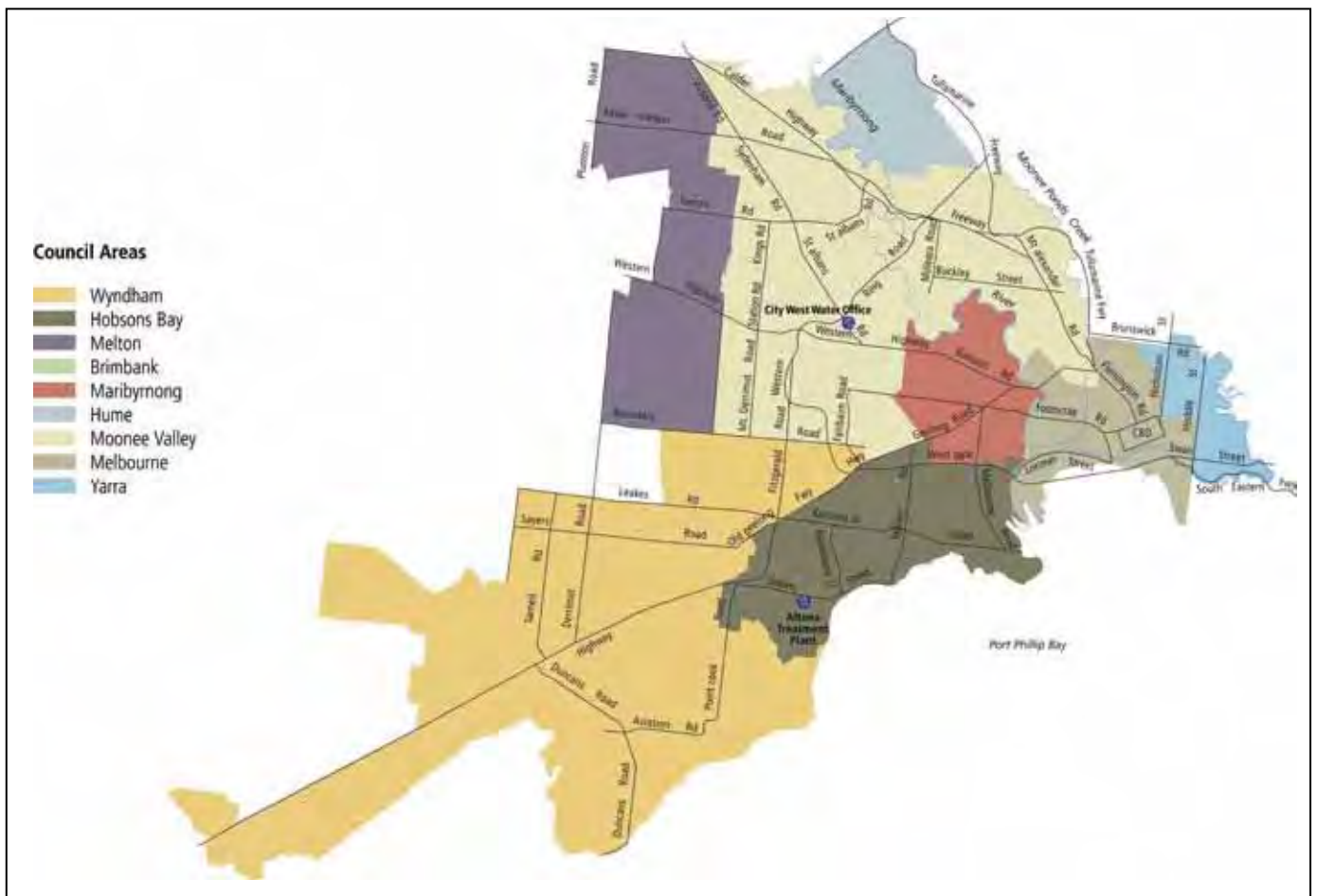
City West Water

Head office: Sunshine

Localities supplied with drinking water: Altona, East Keilor, Footscray, North Melbourne, Richmond, St Albans, Sydenham, Tullamarine, Werribee, Werribee South and adjacent suburbs (please refer to Appendix G for a list of all individual suburbs supplied).

Population supplied with drinking water: approximately 619,340.

Map 4: City West Water



Performance against water quality standards

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

City West Water has advised that bromate and formaldehyde were not monitored on a regular basis for compliance purposes as City West Water's water supply is not treated with ozone. Nevertheless, an annual customer tap water sample from each locality was tested. All eleven results for both bromate and formaldehyde complied with the standards.

Other water quality issues of potential health significance

No other parameters measured by City West 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 City West 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)
October 2005	Fitzroy, Carlton, North Melbourne, Footscray and Altona areas.	Widespread customer complaint of dirty/white water	(see details in the customer complaints section below)
Late January to early February 2006	Airport West, Avondale Heights, Keilor East, Essendon, Niddrie and St Albans areas.	Widespread taste and odour customer complaint	(see details in the customer complaints section below)
January 2006	Sydenham area (Holden reservoir)	Detection of <i>E. coli</i>	Holden reservoir was cleaned and kept isolated. It was not supplying water to the public at the time.
April 2006	Werribee South area (Werribee South reservoir)	Detection of <i>E. coli</i>	Werribee South reservoir was cleaned and kept isolated. It was not supplying water to the public at the time.

During 2005–06 there were several instances when Melbourne Water's Greenvale and Silvan chlorinators temporarily ceased operation, allowing undisinfecting water to briefly enter the water supply system. This 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.

City West Water advised that in each case there was no significant effect on water supplied to the public, due to either the short durations of the outage, targeted chlorine spot dosing by Melbourne Water before the water reached City West Water's supply system or mixing of the unchlorinated water with chlorinated supplies. No bacteriological contamination was detected.

Customer complaints related to water quality

A summary of the customer complaints related to water quality that were recorded by City West 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	168	0.053
Taste/odour	232	0.073
Blue water	9	0.003
Air in water	38	0.012
Suspected illness	3	0.001
Other	3	0.001
<i>* Based on number of properties serviced.</i>		

The most significant discoloured water incident occurred in October 2005, when a group of 37 related customer complaints were received of ‘dirty’/white water in Fitzroy, Carlton, North Melbourne, Footscray and Altona areas. The origin of this event was traced back to the bulk water supply at Melbourne Water’s Preston reservoir, where works were being undertaken to modify the reservoir’s outlets.

Partial shutdown of local water mains led to entrapment of air in the water supply from the reservoir. Associated variable flows caused re-suspension of natural sediments in the mains. Melbourne Water advised City West Water no external contamination had taken place and public health had not been compromised. Melbourne Water has since modified its shutdown procedures to mitigate the possibility of a similar event.

In late January to early February 2006 a group of 159 related customer complaints were received of unpleasant tasting and odorous water in the areas of Airport West, Avondale Heights, Keilor East, Essendon, Niddrie and St Albans. The origin of this event was traced to an adverse change in bulk supply water quality within the southern portion of Melbourne Water’s Greenvale–St Albans water main. Comprehensive water quality testing at the time did not show a causal factor.

City West Water has advised the taste and odour issue has been successfully addressed by Melbourne Water increasing flow rates in the mains. In addition, a new chlorine dosing station has been commissioned to assist in mitigating future possible related taste and odour instances. This is a repeat of a similar event that took place in February 2005. In both cases Melbourne Water discounted the possibility of external contamination. Follow-up investigations have indicated the unpleasant taste and odour may be related to the main’s internal lining during periods of low water flows.