

THE WALKERTON INQUIRY

Commissioned Paper 23

**THE WATER INDUSTRY IN RURAL VICTORIA, AUSTRALIA:
A CASE STUDY OF REFORM**

By
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Toronto

2002

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Published by Ontario Ministry of the Attorney General

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General editor, Commissioned Papers: Sheila Protti

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Design: Madeline Koch, Wordcraft Services; Brian Grebow, BG Communications

Abstract

Before 1993, fragmentation, a lack of direction, poor accountability, and poor water quality characterized the provision of water and wastewater in rural Victoria, Australia. At that time, approximately 120 organizations, many closely interwoven with local government, held responsibility for drinking water and wastewater.

In 1993, the state government launched a significant reform of the rural water sector. Today in rural Victoria, 15 water authorities – commercially orientated and separated from local government – focus clearly on their core business.

This paper describes the challenges faced in rural Victoria by the water authorities, the process of reform, and the outcomes of that process. The conclusions, drawn from that experience, contain some important lessons.

About the Author

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Acknowledgements

The author thanks several people who provided access to information and advice. In Australia: Carsten Osmers, Environment Protection Authority, Victoria; Ewen Wilson and Andrew Cooney, Victorian Water Industry Association; Kate Streets, Department of Premier and Cabinet; Laurie Gleeson and Peter Donlan, Goulburn Valley Water; and Peter Guttmann, Water Sector Services, Department of Natural Resources and Environment. In Canada: Rob Scapin; and Dennis Mills for his editing skills.

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1 Introduction

How does a government manage its water resources in a time of declining financial bases and increasing demand? How can it ensure good water quality outcomes and improve the environmental impact of those services? What systems are needed? What reforms can help to build expertise and professionalism in organizations delivering water services, while delivering a financial return to the government?

In 1993 the State of Victoria, Australia, faced these questions and embarked on an ambitious reform program in the provision of water services across the state. The outcomes, which included a completely different structure to deliver water and wastewater, have produced significant improvements in both drinking water quality and the management of wastewater.

This paper focuses on the changes to the provision of water and sewage services to communities outside Melbourne, in rural Victoria. It is of particular interest as a case study. There were extensive and often controversial institutional reforms underway during the same period in many areas of public service, including local government, education, and health. In the case of the reforms to the rural water industry, the management and quality of these services – and the condition of the environment – improved significantly.¹ Where appropriate, I have made comparisons or asked questions related to Ontario's current situation.

The Walkerton Inquiry will likely initiate changes to the provision of Ontario's water services. Because Victoria has had ten years experience in creating a changed culture in that sphere, the outcomes of the reform that occurred there may be useful to those looking at changes in Ontario.

Victoria's reform experience is *not* being presented as a recipe for Ontario. Rather, it shows how one jurisdiction has approached the challenges of improving water and wastewater quality for its citizens.

Four sections follow this Introduction. Section 2 looks at Victoria and shows why there was a need for reform. Section 3 examines the reforms and how they took place. Section 4 surveys the outcomes in a number of areas, including the

This paper has been prepared for discussion purposes only and does not represent the findings or recommendations of the Commissioner.

¹ For this paper, I have drawn on published material as well as personal experience. A significant part of my role as EPA manager of Victoria's North East Region was to negotiate with water authorities to deliver improvement in environmental outcomes in the services they provided.

standards reached. Section 5 looks, briefly, at some of the latest initiatives in Victoria's water industry.

2 Why Look at Victoria?

2.1 Small, Rural Water Providers

Some people argue that it is the smaller water providers that have particular difficulty in being able to meet the need for consistent, good-quality drinking water.² That was certainly the case in Victoria, Australia, prior to the reforms outlined in this paper. (To give an idea of scale, after the reforms, the amalgamated water authorities provide services to customer bases ranging from 8,000 to 99,000 properties.) The provision of water and wastewater services to smaller communities is more challenging than to more-urbanized and -centralized communities. For a start, providing infrastructure in more remote areas can be difficult. A smaller customer or rate base means that there are fewer funds available for upgrades. There can be more requests for external funding. The level of technical expertise may be reduced, and attracting people with appropriate technical skills may be difficult. These were some of the problems faced in Victoria in 1993 and, it is argued, face smaller water providers in Ontario in 2001.

2.2 Victoria and Ontario – Comparing Histories of Water Services

Both jurisdictions have had similar histories in water provision to communities. In both, local municipalities had a significant role. In Ontario this strong connection had been in place for more than 100 years.³ It was only during the 1950s and '60s that the province became an active participant in subsidizing local water and sewage systems. With the establishment of the Ontario Water Resources Commission in 1956 (and subsequent grant schemes) the Ontario government provided increasing amounts of capital to municipalities for waterworks.⁴

² Ontario, The Walkerton Inquiry, "Notes from the expert meeting on drinking water providers in Ontario," June 13–15, 2001, pp. 28–30.

³ Andrew Sancton and Teresa Janik, 2002, *Provincial–Local Relations and Drinking Water in Ontario* (Toronto: Ontario Ministry of the Attorney General), Walkerton Inquiry Commissioned Paper 3, Walkerton Inquiry CD-ROM.

⁴ *Ibid.*, pp. 7–10.

In Victoria, the state had a significant role for a longer period. After creating the State Rivers and Water Supply Commission in 1905 (and with subsequent changes), the state government had a significant role in providing funds, particularly to small municipalities.

In both Ontario and Victoria, the number of organizations providing water services has been reduced. Ontario accomplished this, in part, by amalgamating municipalities – from 834 in 1990 to 447 in 2001.⁵ In Victoria, as a result of sporadic reviews and amalgamation focusing on the water industry, the number of water providers had decreased from 370 in the early 1970s to 120 in 1992. The reforms (outlined in this paper) saw that number reduced to 15 rural water authorities.

For readers not familiar with Victoria, the following provides a brief overview.

2.3 Victoria – A Snapshot

This Australian state covers an area of 227,600 square kilometres – approximately the size of Great Britain, and double the size of Newfoundland (the island)⁶ – and 34% of Victoria's land is publicly owned. Of that state's 4.7 million people (a quarter of Australia's population), 3.4 million live in the Melbourne metropolitan area, and 1.3 million live in rural areas.⁷

2.3.1 Political Structure

Australia's parliamentary system is very similar to Canada's. The State of Victoria has a governor, appointed by the Queen, who acts as the head of state. Parliament, in Melbourne, has an Upper and Lower House.⁸ A third tier (in addition to the federal and state governments) is local government, which is established under the state laws, and has been both reviewed and reformed by the state government.

⁵ Ibid., p. 25.

⁶ Great Britain has an area of 229,958 square kilometres; Newfoundland (the island) has an area of 112,299 square kilometres.

⁷ Further details on Victoria may be found at *Victoria2000* [online], [cited April 17, 2001], <www.vic.gov.au/victoria2000.pdf>.

⁸ Further information on the state and governor may be found online at *The Governor of Victoria* [online], [cited April 17, 2001], <www.governor.vic.gov.au/welcome.htm>.

2.3.2 Water Resources

Ontario has an abundance of water. In comparison, Victoria has few reserves and much less annual precipitation. Of the 150 million ML⁹ of rain or snow that falls on Victoria annually, 84% evaporates or is transpired by vegetation to the atmosphere, 15% is discharged as surface runoff and streamflow, while only 1% infiltrates the soil to groundwater aquifers. Victoria's 84% evaporation/transpiration rate compares with North America's typical rates of approximately 60% loss.¹⁰

In Ontario, total consumptive use remains below 1% of renewable supplies.¹¹ In terms of annual runoff, Ontario has 354 million ML, while Victoria has 22.5 million ML. To put that into context, the amount of runoff in Ontario in three weeks is more than the annual runoff in Victoria.¹²

2.3.3 Water for Towns

The primary water source for Victoria's communities is surface water. In all of Australia, groundwater as a source is comparatively unusual. The high dependence on surface water has implications for the management of water systems and in ensuring good quality drinking water.

Much of Victoria's land area provides catchments for water supplies.¹³ Melbourne's water catchments are closed to public access, but nearly all other catchments are open and used for purposes such as agriculture and recreation, as well as water supply. "It is impractical to reserve all water supply catchments

⁹ An olympic-size swimming pool contains approximately one ML (megalitre) of water.

¹⁰ Victoria, Department of Natural Resources and Environment, Victoria Resources Online, *Victoria in Profile* [online], [cited April 11, 2001], <www.nre.vic.gov.au/web/root/Domino/vro/vrosite.nsf/fc3229fc2404e6beca25662b003332ec/e1086bfbd33e8034ca25673d001fa2a9?OpenDocument>.

¹¹ Donald Tate, 2001, *A Brief Overview of Water Quantity and Related Issues in Ontario* (Toronto: Ontario Ministry of the Attorney General), Walkerton Inquiry Commissioned Paper 22. Walkerton Inquiry CD-ROM.

¹² Extrapolated from Tate, pp. 2–3. In equivalent terms, 1,000 L (litres) is 1 m³ (cubic metres). A flow rate of 1 m³ per second equals 31,449.6 ML per year or 0.03 million ML per year. Tate lists the mean annual runoff for the major Ontario hydrologic regions as 11,810 m³ per second, which is 354.3 million ML per year.

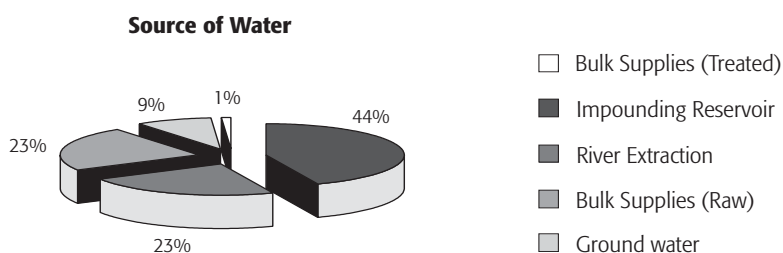
¹³ In Australia, the term "catchment" is used extensively while in Canada the term "watershed" is used.

for the single purpose of water supply. Water supplies must, therefore, be managed for quality, having regard to the full range of activities that occur in catchments, reservoirs, rivers and distribution systems.”¹⁴

Institutional structures have been established to manage urban water supplies from the catchment to the consumer. In the rural sector, this includes catchment management authorities, rural water authorities, and the non-metropolitan urban water authorities.¹⁵ (In this paper the term ‘water authority’ will be used interchangeably with ‘non-metropolitan urban water authority’– NMU.)¹⁶

The provision of water and wastewater facilities within Melbourne is not addressed in this paper, nor is the role of rural water authorities who provide

Figure 2-1 Water Sources for Victoria’s Non-Metropolitan Urban Areas



Source: Victorian Water Industry Association, *Urban Water Review 1999/2000*, p. 59. With permission.

Notes:

“Bulk Supplies (Raw)” refers to the volume of raw water purchased. “Bulk Supplies (Treated)” refers to the volumes of treated water purchased from wholesaler or other utility.

¹⁴ Victoria, Department of Human Services and Department of Natural Resources and Environment, 2000, *A New Regulatory Framework for Drinking Water Quality in Victoria Consultation Paper* [online], [cited April 10, 2001], <[www.nre.vic.gov.au/web/root/domino/cm_da/nrenlwm.nsf/frameset/NRE+Land+and+Water?OpenDocument&\[/4A25676D0024CB20/BCView/864C9620E3CFC0654A2569450005890B?OpenDocument\]](http://www.nre.vic.gov.au/web/root/domino/cm_da/nrenlwm.nsf/frameset/NRE+Land+and+Water?OpenDocument&[/4A25676D0024CB20/BCView/864C9620E3CFC0654A2569450005890B?OpenDocument])>, p. 4.

¹⁵ An outline of the current regulatory framework and a general introduction on different sectors of the water authorities may be found in Victoria, Department of Natural Resources and Environment, 2000, *2001 Price Review of Water, Drainage and Sewerage Services in Victoria Issues Paper* (Melbourne: Department of Natural Resources and Environment). PDF version is available at <www.nre.vic.gov.au>.

¹⁶ In government and industry reports in Victoria, urban water authorities outside Melbourne are referred to as “non-metropolitan urban water authorities” (NMUs).

bulk water for irrigation and source water for the NMUs.¹⁷ However, significant reform of these sectors also took place from 1993 onwards.

2.4 Why the Need for Reform?

Changes to Victoria's water industry happened, not as a result of a crisis, but because of concerns about performance, efficiency, and cost. There had been sporadic attempts to reform the water industry for many years, as the following section highlights.

2.4.1 Water Provision to 1993

Responsibility for the provision of water services rests with the state government. However, the delivery of that service took a variety of approaches. In 1905 the State Rivers and Water Supply Commission (SRWSC) was established and made responsible for all water supply outside the Melbourne metropolitan area. Over time, specific acts of parliament provided for the establishment of water authorities in the larger urban centres. "Local town Waterworks Trusts and (usually separate) Sewerage Authorities were created under provisions of the Water Act and the Sewerage Districts Act and operated under the detailed oversight of the SRWC."¹⁸

In the early 1970s, Victoria's non-metropolitan water industry consisted of 370 water trusts, sewerage authorities, and local councils that operated their own water and sewerage services.¹⁹ Most were very small and depended on government subsidies to be financially viable.²⁰

¹⁷ Rural water authorities are responsible for the supply of bulk water to some non-metropolitan urban water authorities as well as to some industry and agriculture. They operate a series of reservoirs and distribution systems to provide bulk water entitlements and allocations to meet the water requirements of their customers.

Non-metropolitan urban water authorities are responsible for the provision of urban water supply services including the quality of supply to urban communities within their areas of operation. They operate reservoirs, treatment plants, distribution and reticulation systems to provide services to their customers.

¹⁸ Victoria, Department of Water Resources, 1989, *Water Victoria: A Resource Handbook* (Melbourne: Victorian Government Publishing Office on behalf of the Department of Water Resources), p. 24.

¹⁹ Victoria, Department of Treasury, Office of State Owned Enterprises; Department of Conservation and Natural Resources, Office of Water Reform, 1995, *Reforming Victoria's Water Industry – Regional Structure for Non-Metropolitan Urban Water Authorities* (Melbourne: Government of Victoria), p. 1.

²⁰ Victoria, 1989, *Water Victoria: A Resource Handbook*, p. 24.

In 1980 the Public Services Review Committee (a joint parliamentary committee) was established. One of its tasks concerned the fragmentation within the water industry. The review led to a progressive restructuring of non-metropolitan authorities and reduced the number to approximately 150 by the mid 1980s.²¹ Further reviews took place in the late 1980s and early 1990s, to address specific financial or management problems, eventually reducing the number of authorities to 120.

The government and water authorities had traditionally focused on the provision of services and infrastructure. By 1987 only six small towns with a population greater than 200 did not have a reticulated water supply – a system of mains and submains for distribution. Sewerage facilities had also expanded.²² There were, however, substantial weaknesses.

Despite substantial government subsidies, the rural urban water sector continued to experience problems: fragmentation in the industry; poor accountability, including unequal and inconsistent charging regimes; blurring of responsibilities between the water service providers and local government; a declining infrastructure; lack of strategic approach to infrastructure development; and water quality that was inconsistent and did not meet standards. It is also probably fair to note that you could not call the motley range of water and wastewater providers an ‘industry’ as such. That is not the case in 2001.

2.4.2 Weaknesses in the Water Industry

2.4.2.1 Fragmentation and Funding

From the mid-1940s until 1980, a system of government interest subsidies and capital grants helped new water authorities reduce cost variations among communities. Between 1943 and 1980, the state government spent approximately A\$1,350 million in assistance. Changes in forms of assistance followed, but the emphasis remained on providing basic water and sewerage services. The assistance did not focus on quality issues, and tended to bias assistance towards smaller schemes and continued fragmentation.²³

²¹ Victoria, 1995, *Reforming Victoria's Water Industry*, p. 1.

²² Victoria, 1989, *Water Victoria: A Resource Handbook*, p. 28.

²³ *Ibid.*, p. 29.

The long-term structural fragmentation of the water sector added to the difficulties of the small authorities to finance new works – many had both a limited geographical area to service and a small rate base. The state government disbursed considerable subsidies and capital grants to improve the infrastructure.²⁴

2.4.2.2 *Accountability*

One outcome of the fragmentation was the difficulty in obtaining useful information and making it publicly available. State bureaucrats and politicians both recognized a need for improved accountability. Before reform, the level of public reporting was insignificant. Concepts of benchmarking and the identification of performance measures had not been introduced. Customers could not easily compare the cost of services. And there was no requirement for reporting in a clear and consistent way to clients or to a variety of stakeholders.

2.4.2.3 *Responsibilities*

Prior to reform, municipalities and the water authorities were very closely linked.

Apart from water boards which operated completely independently of Councils, many former water authorities were in fact Municipal Councils which had been assigned water and wastewater functions under the *Water Act* 1989. Some water boards were managed in conjunction with municipal functions under mutually convenient arrangements with councils. This close association over many years had led to a blurring of responsibilities.²⁵

In some areas the water board became a mechanism to encourage development. Businesses and jobs were enticed into a community by reduced sewerage and water fees. These enticements did not take account of ongoing infrastructure renewal, which could lead to residents subsidizing industry.

Members of water authority boards were also often elected councillors.

²⁴ Ibid., pp. 29, 30.

²⁵ Victoria, 1995, *Reforming Victoria's Water Industry*, p. 3.

Traditionally members of water authorities were elected on a township or municipality basis. In many cases the municipality is also the water authority, so that if a person is elected to a city or shire council he or she is elected to the board of management of the water authority. As a result of the elections there has been a strong connection between municipalities and water authorities.²⁶

The chief executive of one of the new water authorities noted that

In Victoria, many councils viewed their water supply functions as just another municipal department, ranking alongside rubbish collection and parks and gardens in importance. This approach to the water activities of Council stifled initiative and creativity, resulted in inadequate funding of infrastructure investment, replacement and maintenance and a failure to embrace new technologies and strategies.²⁷

2.4.2.4 Quality of Drinking Water

Of course, these things would matter less if excellent services were being delivered. In 1989 about 1.2 million people were being served with reticulated water supplies, but only 11% of these people received water that regularly complied with World Health Organization (WHO) standards.²⁸ While a program to initiate improvements in drinking water quality was underway by the time of the reforms in 1993, the figure for compliance with WHO standards was still very low.

3 The Reform Process

The reform of the water sector in Victoria was driven by the state government. It set the agenda, outlined the directions, provided government staff to help work through the processes, and assisted with financial incentives.

²⁶ Dr. Napthine, speech to Parliament of Victoria, July 22, 1993 [online], [cited April 9, 2001], <tex2.Parliament.vic.gov.au/bin/tex...July&date3=1993&speech=14010&db=hansard91>, p. 98.

²⁷ Laurie Gleeson, 2000, "Water reform in Victoria – a real success story," paper presented to the Crossroads for the Future – Water Summit Conference, p. 3.

²⁸ Victoria, 1989, *Water Victoria: A Resource Handbook*, p. 30.

The tools to permit the changes were incorporated under various pieces of legislation. At the government organizational level, an Office of Water Reform was established to translate the vision into the reality and to assist in working out the mechanics of the reform process.

Through various departments, the state government produced specific summaries of the problems facing each new proposed organization, as well as documents that clearly set out the framework of the standards to be achieved.

The process of widespread and strategic reform of the non-metropolitan urban water authorities formally commenced in October 1993. In that month, the government released its policy: *Victoria's Water Industry – A Competitive Future – Water*. Its major points were to identify the potential for improvement. This document listed as major concerns previous over-investment of capital, excessive debt, inefficient work practices, and lack of responsiveness to customers. The remedies identified included a program to separate the public-good functions and commercial functions in the water industry, and to introduce greater financial transparency and accountability.²⁹ The policy addressed all three sectors of the water industry.³⁰

The government continued, in March 1994, with the release of the *Plan for Reform of Non-Metropolitan Urban Water Authorities*. This set out “the Government’s desire to complete the amalgamations of water authorities as a necessary first step towards achieving major improvements in water services and environmental conditions in Victoria.”³¹

The key objectives included

- improving efficiency and service,
- achieving water quality and effluent standards without relying on government financial assistance,
- achieving economies of scale in the use of capital and support facilities,
- promoting a more commercial approach to management, and
- maintaining legitimate community service obligations.³²

²⁹ As quoted in Victoria, 1995, *Reforming Victoria's Water Industry*, p. 1. This document is no longer available.

³⁰ The others were the Melbourne Water Corporation and the Rural Water Corporation.

³¹ Victoria, 1995, *Reforming Victoria's Water Industry*, Preface.

³² *Ibid.*, p. 2.

Criteria for the new authorities were also specified. These included

- being commercially viable,
- being logical in terms of water systems,
- serving a community of interest,
- being able to improve service standards,
- being able to meet the requirements of operating licences, and
- being capable of providing a commercial return to government.³³

The document was circulated to all non-urban water authorities, with a six-month consultation phase. In this comparatively brief time, water authorities submitted proposals that led to clarification of some boundary and membership issues. By January 1995, many water authorities had applied to form new water authorities. In five cases, the government proceeded with the changes and amalgamations without the water authorities' agreement.³⁴

In 1997 a further review saw some further amalgamations, so the final number of water authorities became 15, a significant reduction from the pre-reform number of 120. (In 2001 there were still 15 water authorities.)

3.1 The Revamped Water Authorities

3.1.1 Size

The 15 non-metropolitan urban water authorities have a wide range of characteristics, serving customer bases ranging from approximately 8,000 to 99,000 properties. (Appendix A1 provides a summary of the authorities by revenue, properties supplied, and wastewater collected.) Overall, across regional Victoria, the authorities provide water and/or wastewater services to over 540,000 properties and generate revenues of approximately A\$340 million per year.³⁵

The reform process meant amalgamations. This has had significant advantages in finances, in the authorities' abilities to attract competent and commercial

³³ Ibid., p. 2.

³⁴ Ibid., p. 3.

³⁵ Victoria, Auditor General, 2000, *Non-Metropolitan Urban Water Authorities: Enhancing Performance and Accountability* [online], [cited April 8, 2001], <www.audit.vic.gov.au/par66_nmuwater/agp6602.htm#2a>, part 2, para. 2.8.

staff, and has led to improved efficiency in operations, customer service, and water quality.

“The small authorities/systems, with a small customer base, did not have the resources to put in place the infrastructure needed to provide a safe drinking water supply. Regionalisation of water supply in Victoria has enabled modern water and wastewater treatment facilities to be constructed for those small systems, with the costs being spread over a much larger population base.”³⁶

3.1.2 Accountability

A significant focus of the reforms established benchmarks and performance criteria. In 1995 the government listed the need for additional accountability tools, indicated that operating licences would be established for each organization, and identified publicly reported performance measures – customer satisfaction, water quality parameters, and meeting standards of both water quality and effluent. Other measures included returns on investment, profitability, and other financial parameters.

3.1.3 Separation from Local Government

A significant change has been the removal of linkages with local government. The sole responsibility – and *only* activity – of water authorities now is the delivery of water services. Separating these authorities from local government provided a new focus to the management of the water services as separate, commercially orientated water businesses.³⁷

Prior to reform, local governments had been heavily involved in their water systems. For example, in 1989 it was observed that “most local authorities are too small to employ full-time professional staff; they rely heavily on the personal quality of their Secretary, and the technical support of private consultants.”³⁸

Concurrently with reforms to the water industry, there was a substantial restructuring and amalgamation of the local municipalities; however,

³⁶ Laurie Gleeson, 2000, p. 3.

³⁷ Victoria, 1995, *Reforming Victoria's Water Industry*, p. 3.

³⁸ Victoria, 1989, *Water Victoria: A Resource Handbook*, p. 32.

considerable negotiation ensured that the correct staff were transferred to the new water authorities.³⁹

3.1.4 Board Structure

A major change implemented was the appointment of a skills-based board. Ministerial appointments replaced elections. Using open advertisements, the minister emphasized “skills in the area of business, finance, science and technology, regional knowledge, law and an understanding of Government objectives for the water industry.”⁴⁰

3.1.5 Board Guidelines

The new authorities were to have a clear focus on commercial viability. The criteria for groupings included

- a minimum revenue base (approximately A\$10 million per year),
- the ability to service debt,
- the ability to self-fund future capital works,
- the capability of attracting skills-based directors and competent management, and
- the prospect of acting as a commercial operation.

They were also expected to provide a commercial return to the government (as their shareholder) through licence fees, tax equivalents, and commercially based dividends.⁴¹

The general argument for a commercial focus is more efficiency and less cost. “The introduction of commercial objectives and competition can provide strong incentives for suppliers to ensure that essential services are organised and delivered efficiently so that customers pay no more than they need to and receive continuously improving services.”⁴²

³⁹ Victoria, 1995, *Reforming Victoria's Water Industry*, p. 3. Staff changes were planned and made under the Water Industry Restructuring Employment Guidelines.

⁴⁰ *Ibid.*, p. 4.

⁴¹ Laurie Gleeson, 2000, p. 4.

⁴² Victoria, Department of Treasury and Finance, 2000, *Essential Services Commission, Consultation Paper* [online], [cited April 18, 2001], <www.vic.gov.au/treasury/esconcs.pdf>, p. 8.

3.1.6 Ownership of Assets

Prior to reform, the assets of the water authorities were vested in either the local council or water board. Since state law had established both these organizations, “[A]t the end of the day the assets were ultimately vested in the Crown (State Government). Under the new structural arrangements ... all water industry assets ... are ultimately owned by the State, although vested in each statutory authority.”⁴³

This was an important part of the concern expressed by the community. The process of reform has significantly expanded the size and responsibilities of each water authority. Each became a corporate body, but not a *private* body. The authorities were expected to be run as businesses and to have a clear commercial focus, with the only shareholder being the Government of Victoria (for the people of Victoria). Opponents to the changes argued that this was but a first stage for privatization. This has not occurred.

3.1.7 Challenges for the New Water Authorities

At the time of the reform process, the state government identified the challenges facing the new water authorities. These included the need for major upgrades for systems, new water or sewerage schemes, water quality issues, and water supply issues. There was also a need to identify both conventional and innovative business approaches to obtain access to capital, and the challenges inherent in consolidating operations of previously independent organizations and establishing new corporations.⁴⁴

Specific challenges for each of the new authorities were also identified. In North East Victoria, for example, the Ovens Region Water Authority had to integrate six former authorities, establish a new organizational structure, and set new strategic directions. As a high tourism area, the need to address the variable and low quality of water was identified, especially for smaller towns. The authority also had to address wastewater effluent discharged to streams, with plans that all effluent discharge to streams was to cease by 2000. New sewerage schemes had to be completed or installed, and tariff reform was also on the agenda.⁴⁵

⁴³ Laurie Gleeson, 2000, p. 6.

⁴⁴ Victoria, 1995, *Reforming Victoria's Water Industry*, p. 11.

⁴⁵ *Ibid.*, pp. 24–25.

Different challenges faced the Goulburn Valley Region Water Authority. Because this is a major food-production and food-processing area in Australia, the region is dependent on good quality water. Food-processing companies were undergoing significant expansion, and the volume of waste discharged to the authority's systems was equivalent to that from 1.5 million people.⁴⁶ Challenges identified in 1995 included the need to improve water quality to smaller towns and address the region's wastewater disposal systems, as well as servicing the rapidly expanding food-processing industry. The backlog for infrastructure development was estimated to cost from A\$73 million to A\$100 million. In addition, the authority had to change the 12 different rating methods to a consistent "pay-for-use" system.⁴⁷

The new authorities were also to be bound by state government objectives, which included

- preparing drought-response plans,
- introducing 'pay-for-use' pricing,
- implementing the recommendations of the government's report on drinking water quality,⁴⁸
- implementing the report on effluent standards and compliance for waterways,⁴⁹
- reducing debt levels, and
- preparing to operate under licences as per the Water Industry Act 1994.⁵⁰

3.1.8 Water Quality and Effluent Management

The state government had made clear its objectives for the water sector.

In the broadest terms these objectives are to achieve enduring public benefit by improving services and reducing costs. Economies of scale

⁴⁶ Ibid., pp. 20–21.

⁴⁷ Ibid., p. 21.

⁴⁸ Victoria, Department of Conservation and Natural Resources and Department of Health and Community Services, 1994, *Reforming Victoria's Water Industry – Working Group Summary Report on Rural Drinking Water Quality*, (Melbourne: Government of Victoria).

⁴⁹ Victoria, Environment Protection Authority and Department of Conservation and Natural Resources, 1994, *Reforming Victoria's Water Industry – Working Group on Effluent Standards and Compliance for Waterways*, (Melbourne: Government of Victoria).

⁵⁰ Victoria, 1995, *Reforming Victoria's Water Industry*, p. 11.

achieved from restructuring should enable operating costs to be reduced by 20% statewide. These savings will contribute to the financing of priority works for improved water quality to customers and better wastewater management, which are the two key outcomes expected of the reforms.⁵¹

Two additional government reports provided direction for drinking water quality and effluent standards: *Reforming Victoria's Water Industry – Working Group Summary on Rural Drinking Water Quality*,⁵² and *Reforming Victoria's Water Industry – Working Group Report on Effluent Standards and Compliance for Waterways*.⁵³

The government also provided assistance as part of a recognition of the need to invest in infrastructure in a targeted way. Additional reforms allocated \$450 million to the 15 water authorities to reduce prices and debt while also accelerating capital works programs to improve water and environmental quality.⁵⁴ The funding, however, was conditional. Before any authority could obtain its share, it had to sign off on a memorandum of understanding (MOU) with the minister. The MOU reflected negotiated outcomes for the standards and timetables that were to be met to improve water quality and improve the standards of wastewater effluent.

4 The Outcomes

In 2001 the 15 non-metropolitan urban water authorities, now established organizations, have been able to report significant improvements in a wide range of areas.

⁵¹ Ibid., Preface.

⁵² Victoria, Department of Conservation and Natural Resources and Department of Health and Community Services, 1994, *Reforming Victoria's Water Industry – Working Group Summary Report on Rural Drinking Water Quality*, (Melbourne: Government of Victoria).

⁵³ Victoria, Environment Protection Authority and Department of Conservation and Natural Resources, 1994, *Reforming Victoria's Water Industry – Working Group on Effluent Standards and Compliance for Waterways*, (Melbourne: Government of Victoria).

⁵⁴ Victoria, Office of the Premier, October 9, 1997, "Reform package to cut bills and boost water quality," press release [online], [cited April 6, 2001], <www.reggen.vic.gov.au/docs/Media/Premier1.html>, p. 1.

4.1 Accountability

There has been a major shift in culture and performance. Disentanglement from local government (and amalgamations) have allowed water authorities to focus clearly on their core business.

NMUs now derive their functions and powers under the Water Act 1989, rather than from licences.⁵⁵ The minister for environment and conservation is primarily responsible for the Victorian water industry.⁵⁶ The Department of Natural Resources and Environment (DNRE) oversees the NMUs. (The minister for environment and conservation oversees the Department of Natural Resources and Environment and the Environment Protection Authority.) “This includes approval of annual business plans and monitoring performance against those plans; reviewing and setting . . . monitoring performance against prescribed performance indicators; and managing compliance with the Water Act 1989.”⁵⁷

In addition, there are specific reporting requirements for Victorian NMUs’ annual reports.

Each year, the Victorian NMUs are required under a Ministerial Directive (issued on 11 July 1995) to provide a performance report as part of the report of operations in their annual report. The report is to include the reported performance indicators (RPIs). The NMUs are required to report the target, specified for each indicator under the NMUs’ business plan, actual performance achieved for the year and the variance in percentage terms.

The RPIs are as follows:

- long-term profitability,
- owner’s investment,

⁵⁵ Victoria, Department of Natural Resources and Environment, 2001, *2001 Price Review of Water, Drainage and Sewerage Services in Victoria Issues Paper* [online], [cited April 10, 2001], <[www.nre.vic.gov.au/web/root/domino/cm_da/nrenlwm.nsf/frameset/NRE+Land+and+Water?OpenDocument&\[/4A25676D0024CB20/BCView/864C9620E3CFC0654A2569450005890B?OpenDocument\]](http://www.nre.vic.gov.au/web/root/domino/cm_da/nrenlwm.nsf/frameset/NRE+Land+and+Water?OpenDocument&[/4A25676D0024CB20/BCView/864C9620E3CFC0654A2569450005890B?OpenDocument])>, p. 6.

⁵⁶ Victoria, 2000, *Non-Metropolitan Urban Water*, part 2, para. 2.10.

⁵⁷ *Ibid.*, para. 2.13.

- long-term financial viability,
- liquidity and debt servicing,
- movement in real service prices,
- operating efficiency,
- reliability of supply,
- reliability of wastewater collections services,
- bacteriological quality of potable water,
- physico-chemical quality of water,
- quality of wastewater disposal, and
- waste management for wastewater.⁵⁸

All water authorities produce annual reports, many of which are available on their Web sites.

At an industry level, the Victorian Water Industry Association has been established, with membership across the state.⁵⁹ For the last five years, this association has published, annually, performance data for all of Victoria's urban retail water businesses.⁶⁰

Published comparisons in the *Urban Water Review 1999/2000* include customer charges across authorities, water quality compliance, restoration of unplanned service interruptions within five hours, water main breaks per 100 km of main, and wastewater compliance for each of the authorities, as well as substantial information on costs and returns on assets.

4.2 Finances

Some of the financial achievements identified from the point of view of the industry – as reported by the state government – include the following:

- Reductions in operating costs across the industry ranging from 20 to 35% ... (savings from the new authorities) have been ploughed back into new infrastructure.

⁵⁸ Ibid., para. 2.14.

⁵⁹ Membership comprises all 24 water utilities in Victoria and covers the rural, non-metropolitan urban, and Melbourne metropolitan water companies.

⁶⁰ Victorian Water Industry Association, 2000, *Urban Water Review 1999/2000* (Melbourne: Victorian Water Industry Association).

- Smaller towns and communities have experienced unprecedented levels of investment in water treatment and water infrastructure and received reductions in annual water/sewer costs of 40 to 60%.
- Over A\$1 billion was invested in regional Victoria to improve drinking water quality, sewer all towns with populations greater than 500, and improve the environmental performance of sewerage treatment plants to meet EPA licence conditions by 2001.⁶¹

Financially, there has been a turnaround – the authorities are now paying a dividend to the state government (as the shareholder) of A\$20.6 million in 1997/1998, compared with previous subsidies in the mid-1980s of A\$30 million per year.⁶²

Consumers have seen changes in pricing. Previous charges tended to be on rate-based arrangements, with charges related to property values. This has been changed to a user-pay system for both water and sewerage. The high level of cross-subsidization between water authorities and local government has also been eliminated.⁶³ (Appendix A2 outlines the water charges.)

The tariff for customers incorporates two parts: a fixed service fee and a charge based on the volume of water used. Over time, it is expected that the authorities using a charging structure that has a higher proportion of consumption charge (compared to the fixed service charge) will be able to modify the demand of customers for water.⁶⁴ Higher prices based on the level of consumption encourage more efficient water usage.

The use of performance measures allows the water industry, the community, the shareholders, and other interested parties to gauge the relative costs among authorities as they provide water and wastewater services to their communities.

In 1997–98 and 1998–99, major price reviews of the Victorian water industry took place. These reviews were designed to ensure that long-term cash flows were sufficient to fund the efficient delivery of services. The 1998–99 review resulted in a price freeze, which was to remain in place until 30 June 2001.

⁶¹ Laurie Gleeson, 2000, p. 6.

⁶² *Ibid.*, p. 7.

⁶³ *Ibid.*, p. 5.

⁶⁴ Victorian Water Industry Association, 2000, pp. 15, 16.

4.3 Staffing and Professionalism

The expansion of the water authorities and the clearly articulated goals and performance requirements have had a significant impact on the level of professionalism and expertise in the water authorities. Likewise, the approach of a skills-based board has increased the internal scrutiny and raised expectations of staff performance.

At the most basic level, the reforms allowed a more comprehensive risk assessment of the plant owned by the new authorities – for both the infrastructure of the water and wastewater plants, and the staff who operated them. Initial audits determined that there was considerable infrastructure improvement required. But the state government had made it clear that they expected the water authorities to meet the increasingly stringent water quality and wastewater standards.

Faced with an often severe backlog of upgrades, water authorities needed to identify their investment decisions to upgrade in the most strategic manner. This could include the use of consultants to undertake research on both infrastructure and funding arrangements. However, the water authorities, particularly management, had to ensure that their staff became much more strategic in their approach (compared with the previous organizations), and that they had the appropriate skills base to meet the new challenges. As well, the larger scale allowed for a more strategic approach: different water systems or wastewater systems could be linked together, a much less likely scenario when different systems had different management.

Staff working in the plants also had increased demands on their skills, and the water authorities had to ensure that they had both the right numbers and mix of staff distributed through the larger network of plants.

4.4 Water Quality

Responsibility for regulating drinking water supplies lies with the Departments of Human Services and Natural Resources and the Environment.

The Department of Human Services is the principal Victorian Government Agency with overall responsibility for public health. In particular, it employs its powers under the Health Act 1958 to

administer water quality regulation systems and manage incidents, to ensure that the drinking water supplies in Victoria do not pose a risk to human health.⁶⁵

Standards for water quality in NMUs (established before 1994 and set out in the 1997 memorandum of understanding) are measured against WHO's *Guidelines for Drinking-Water Quality*. This arrangement differs for water authorities in Melbourne. In the latter case, the drinking water standards are set out in operating licences and associated customer contracts. The operating licences include performance standards that are based on the *Guidelines for Drinking Water Quality in Australia 1987* (known as NHMRC 1987).⁶⁶ "The principal difference between the standards applying in the metropolitan and non-metropolitan sector relates to compliance with total coliform bacteria levels."⁶⁷ The current regulatory framework for drinking water standards, including the need for consistency in standards for drinking water quality, is under review (see section 5).

The 1997 MOU between the water authorities and the minister established obligations to meet 31 specified health-related drinking water standards by 31 December 1999 and to carry out a sampling program.⁶⁸

Measurements of water quality compliance are reported publicly, as required by the performance guidelines. Measures of water compliance in performance reports include bacteriological levels and measurements of turbidity, colour and pH. In 1992 NMUs achieved a low 27% average bacteriological reading. In 1998/1999, that figure had increased to 85%, while the average reported level of compliance for fecal coliform and total coliform were 98% and 91% respectively.⁶⁹ Table 4-1 outlines the current compliance for water authorities for bacteriological, physical, and chemical parameters.

The target is to achieve 100% compliance with bacteriological parameters. The performance in this parameter has increased markedly, because of better operation and systems management and because of significant investment for new infrastructure.

⁶⁵ Victoria, 2000, *A New Regulatory Framework*, p. 5.

⁶⁶ *Ibid.*, p. 6.

⁶⁷ *Ibid.*

⁶⁸ *Ibid.*

⁶⁹ Victorian Water Industry Association, 2000, p. 18.

A number of water authorities have now installed full disinfection processes. Further new treatment works are also being built and commissioned.⁷⁰ Examples of some of the infrastructure and systems needed to improve water quality are outlined in the annual report for Goulburn Valley Water.⁷¹ Appendix A3

Table 4-1 Water Compliance – Bacteriological, Physical, and Chemical – 1998/1999 and 1999/2000

	Bacteriological				Physical and Chemical					
	Coliform (%)		Coliform (%)		Turbidity (%)		Colour (%)		PH (%)	
	1998/- 1999	1999/- 2000	1998/- 1999	1999/- 2000	1998/- 1999	1999/- 2000	1998/- 1999	1999/- 2000	1998/- 1999	1999/- 2000
Barwon	97.7	99.6	79.8	88.9	98.5	99.7	99.3	99.9	77.4	46.8
Central Highlands	92.5	95.0	79.8	67.0	88.5	92.0	82.6	82.0	83.0	84.0
Coliban	99.5	100.0	94.8	92.0	95.2	98.0	98.0	100.0	98.2	97.0
Gippsland	99.1	99.0	79.8	98.0	98.0	98.0	97.0	97.0	80.0	89.0
Goulburn Valley	98.0	98.0	95.0	96.0	92.0	89.0	89.0	87.0	96.0	95.0
North East	80.0	95.0	34.0	83.0	80.0	90.0	82.0	88.0	98.0	94.0
Western	98.0	99.3	93.9	95.4	91.5	98.0	85.1	87.0	90.9	89.0
East Gippsland	63.0	96.0	63.0	85.2	93.2	97.3	50.8	82.4	94.9	94.8
Glenelg	93.0	100.0	73.0	90.0	88.0	78.3	88.0	95.7	76.0	67.4
Grampians	85.0	90.0	59.0	71.0	67.0	72.1	77.0	73.7	85.0	80.5
Lower Murray	99.7	100.0	97.8	96.4	80.8	88.7	84.6	94.3	98.1	98.1
Portland	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
South Gippsland	92.0	99.2	92.0	95.8	98.0	96.0	99.0	89.0	100.0	96.5
South West	100.0	100.0	93.3	95.9	98.5	100.0	41.5	82.4	88.2	85.3
Westernport		99.0	93.9	94.0	100.0	100.0	100.0	100.0	100.0	100.0
State Average	93.89	98.27	84.57	91.23	92.71	94.23	87.31	92.12	92.08	89.49
Metropolitan	99.53	99.57	97.73	97.87	99.83	99.67	99.20	99.93	97.23	97.83
NMUs > 35,000	94.97	97.99	79.59	88.61	91.96	94.96	90.43	91.56	89.07	84.97
NMUs < 35,000	90.39	98.02	84.0	91.04	90.69	91.55	80.11	89.68	92.78	90.32

Source: Victorian Water Industry Association, 2000, *Urban Water Review 1999/2000*, p. 17. Reprinted with permission.

Notes: This listing is for non-metropolitan water authorities only. However, the "Metropolitan" (Melbourne) average is included as a comparison.

Measures for each of the parameters follow the same formula: for example, % colour compliant = number of samples tested (which meet the utility's water quality standard on fecal coliforms) X 100/total number of samples tested for compliance of parameter.

⁷⁰ Victorian Water Industry Association, 2000, p. 18.

⁷¹ Goulburn Valley Water, 2000, *Goulburn Valley Water Annual Report 1999–2000* [online], [cited April 12, 2001], <www.gvwater.vic.gov.au/Anl_Rpt/9900/report.pdf>.

includes an extract of this report from Goulburn Valley Water and lists examples for both water supply and effluent management.

Appendix A4 lists the NMUs' fixed assets for water supply and wastewater for 1998/1999 and 1999/2000.

4.5 Effluent Standards

Water quality in streams and other waterways is of particular interest in Victoria. As previously noted, the bulk of water supplies is drawn from surface water. In the 1990s, outbreaks of blue-green algae and elevated nutrient levels, throughout many Australian waterways, led to greater attention being paid to the condition of the rivers and streams. Improving their environmental state meant taking into account water flows and inputs.

The second stated objective of the water reforms was to improve the management of wastewater and reduce its impact on the environment. The Environment Protection Authority (EPA) oversees the water authorities' compliance (under the Environment Protection Act 1970). The EPA regulates the water authorities through the issue of operating licences for wastewater plant discharges.⁷² The MOU signed by water authorities included a requirement that they upgrade their wastewater discharges.

Sewage treatment plants that discharge into waterways, particularly inland waters, may have significant localized impacts on low flowing streams. Sewage plants may be a significant source of nutrients. As part of the water industry reform process, the *Working Group Report on Effluent Standards and Compliance for Waterways* was released in July 1994.⁷³

The report's key recommendations: water authorities that needed to discharge to waterways would be required to

- demonstrate that total effluent reuse was not practicable or environmentally beneficial, and

⁷² Victoria, 2000, *Non-Metropolitan Urban Water*, para. 2.16.

⁷³ Victoria, Environment Protection Authority and Department of Conservation and Natural Resources, 1994, *Reforming Victoria's Water Industry – Working Group on Effluent Standards and Compliance for Waterways* (Melbourne: Government of Victoria).

- submit plans to EPA by December 1995 to ensure the minimization of nutrient inputs into waterways.⁷⁴

The major thrust from EPA was to have effluent reuse, after ensuring that there would not be other (land and groundwater) degradation issues. Benefits of this approach include the ability to reuse nutrient-enriched effluent for agriculture and recreational uses, such as golf greens. Instead of polluting waterways, the treated effluent is put to a positive use. In addition, reusing effluent reduces the demand on water being diverted for irrigation, and assists in maintaining water quantity in the waterways.

With fewer water authorities, the ability to negotiate and to ensure compliance was significantly enhanced. As with water quality, the amalgamated and refocused authorities could identify their areas of higher risk and establish priorities for investment, in consultation with EPA. Table 4-2 outlines wastewater compliance for NMUs for 1998/1999 and 1999/2000.

For definitions used in this table, see Victorian Water Industry Association, 2000, *Urban Water Review 1999/2000*, p. 63. The measures for each of the parameters follows the same formula: for example, % BOD compliant = number of wastewater samples tested (which meet the licensed standard for BOD) X 100 / total number of samples tested for compliance to this parameter.

Percent of wastewater treatment that is compliant refers to the volume of wastewater (in percentage terms) receiving treatment within the specified category (primary, secondary, or tertiary) that is compliant with the licence. For example, for secondary treatment you may have four plants of which three are compliant. The three that are compliant process 90% of the total secondary treatment. The % to include in this case is 90%.

A number of NMUs were able to report on nutrient measures for the first time in 1999–2000.

Appendix A5 shows one example of the type of reporting and the range of work undertaken since 1995. The range of investment and improvements in water quality and effluent management – direct outcomes of the reform process

⁷⁴Victoria, Environment Protection Authority, 1995, *Managing Sewage Discharges to Inland Waters* (Melbourne: Government of Victoria), p. 1.

initiated in 1993 – is impressive. Likewise, the previous tables illustrate the higher level of accountability. The requirement to provide figures publicly (for both water quality and wastewater compliance) is a significant driver for improved performance, and assists in benchmarking the performance of individual water authorities.

4.6 Innovation

Reorientation has given the water authorities incentives for them to be more innovative in both operational and business practices. The reforms, including

Table 4-2 Wastewater Compliance – 1998/1999 and 1999/2000

	BOD* (%)		Suspended Solids (%)		Total Nitrogen (%)		Total Phosphorous (%)		Other Nutrients (%)	
	1998/ 1999	1999/ 2000	1998/ 1999	1999/ 2000	1998/ 1999	1999/ 2000	1998/ 1999	1999/ 2000	1998/ 1999	1999/ 2000
Barwon	89.0	100.0	87.0	99.0	100.0	100.0	100.0	100.0	84.0	98.0
Central Highlands	99.3	99.0	99.3	100.0	96.0	98.0	62.0	78.0		
Coliban	90.6	96.8	93.8	100.0	62.5	83.3	75.0	100.0		
Gippsland	94.0	98.0	84.0	85.0	88.0	96.0	56.0	72.0	86.0	97.0
Goulburn Valley	68.0	68.0	88.0	80.0		63.0	93.0	90.0	71.0	80.0
North East	88.0	96.0	81.0	91.0	20.0	64.0	50.0	100.0		
Western	97.7	100.0	98.6	100.0	100.0	100.0	100.0	96.4		
East Gippsland	90.0	100.0	90.0	100.0						
Glenelg	78.0	86.0	80.0	100.0		100.0		100.0		100.0
Grampians	92.8	91.3	80.4	100.0		100.0		100.0		
Lower Murray	100.0	97.1	100.0	100.0		100.0	100.0	100.0		
Portland	100.0	100.0	100.0	100.0	100.0		100.0	100.0	100.0	100.0
South Gippsland	95.9	97.9	84.5	97.9	100.0		76.9	100.0		100.0
South West	95.8	100.0	96.0	100.0		100.0		100.0		100.0
Westernport	100.0	100.0	88.0	100.0		100.0	100.0	100.0		100.0
State Average	93.3	96.1	91.7	97.4	87.9	94.0	86.6	96.3	88.2	97.5
Metropolitan†	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
NMUs > 35,000	89.5	94.0	90.2	93.6	77.8	86.3	76.6	90.9	80.3	91.7
NMUs > 35,000	94.1	96.5	89.9	99.7	100.0	100.0	94.2	100.0		100.0

Source: Victorian Water Industry Association, 2000, Urban Water Review 1999/2000, p. 35.

Notes:

*BOD is Biological Oxygen Demand.

†The "Metropolitan" (Melbourne) average is shown as a comparison; otherwise, the list includes only non-metropolitan water authorities.

a skills-based board, have all worked to change the culture of the organizations. They must be much more creative in their approach and innovative in obtaining cost-effective solutions. For the communities and customers, these are welcome changes. Examples of innovation include

- the use of technical review committees comprising eminent specialists to advise on complex technical issues;
- effluent use/reuse schemes to irrigate grapes for the wine industry;
- annual aerial survey of pipeline routes during summer to find “green patches,” which indicate potential pipeline leakages;
- computer technology for paperless approach to board meetings (South Gippsland Water);⁷⁵ and
- joint ventures with research organizations and universities to undertake fundamental research on some of the issues facing water authorities.

To summarize the outcomes of the reforms,

- A water industry has emerged to replace a large and disparate group of organizations.
- Financial accountability has reversed the money flow – from state subsidies of approximately A\$30 million per year to the provision of a dividend in 1997/1998 of A\$20.6 million.
- Operations have become more streamlined, with a strategic approach to planning, and addressing the backlog of infrastructure requirements.
- Clear objectives for the improvement of water quality and wastewater were outlined as part of the reform process, and these objectives are being met.
- The quality of the drinking water and the environment have both improved.

⁷⁵Victoria, 2000, *Non-Metropolitan Urban Water*, Table 3E, “Examples of commitment to innovation” [online], [cited April 16, 2001], <www.audit.vic.gov.au/par66nmuwater/agp6603.htm>, ch. 3, p. 015.

- The levels of reporting and accountability have increased, and the state government (as shareholders) and the community (both as customers and stakeholders) can easily obtain information about the performance of the authorities on a range of parameters.

The reform of Victoria's water industry has been a major success – and progress continues.

5 Reforms and Reviews – The Latest Generation

The reforms outlined in section 3 did not significantly focus on changing the regulatory regime (for which see appendix A6). To recap briefly, a number of organization or agencies are responsible for particular aspects of water quality and effluent for NMUs.⁷⁶

- The minister for environment and conservation is the portfolio minister, and NMUs are statutory authorities under the *Water Act 1989*.
- The Water Sector Services Branch of the Department of Natural Resources and Environment oversees the NMUs – in addition to the approval of business plans, monitoring performance against the plans, and ensuring compliance under the *Water Act 1989*.
- The Environment Protection Authority (EPA) has responsibility for overseeing water industry environment compliance over the *Environment Protection Act 1970*.
- The Department of Human Services (DHS) is responsible for regulating the NMUs in relation to all aspects of drinking water under the *Health Act 1958*, the Health (Quality of Drinking Water) Regulations 1991, and *Fluoridation Act 1973*.
- The Department of Treasury and Finance (DTF) sets borrowing levels, dividend policies, and financial matters (such as approvals of some projects) – under the *Public Authorities (Dividends) Act 1983*, *Borrowing and Investment Powers Act 1987*, and the *Financial Management Act 1994*.

⁷⁶The following section is derived from Victorian Water Industry, 2000, pp. 8–10, and Victoria, 2000, *Non-Metropolitan Urban Water*, parts 2.10–2.20.

Further reviews and reforms of Victoria's water industry are now addressing issues across *all* of Victoria, not just the water authorities that have been the focus of this paper. These reviews include a recently completed report by the state's auditor general, who looked at the question of enhancing performance and accountability.⁷⁷ Other recent initiatives include

- the introduction of an Essential Services Bill, which would require all water authorities to belong to an external dispute resolution scheme approved by the office of the Regulator General;
- a proposed Essential Services Commission, which would have responsibilities for economic regulation of the metropolitan, non-metropolitan, and rural water and wastewater industry;⁷⁸
- a review of water legislation in relation to restrictions to competition by the Department of Natural Resources and Environment, in accordance with the National Competition Policy; and
- a review of the regulatory arrangements for farm dams built on waterways. The Department of Natural Resources and Environment recently released a discussion paper on this issue.⁷⁹

Two of the more significant reviews include the development of a new regulatory framework for drinking water quality, and a price review of water, drainage, and sewerage services.⁸⁰ The most important is the development of a new regulatory framework.

⁷⁷ Victoria, 2000, *Non-Metropolitan Urban Water* [online], [cited April 15, 2001], <www.audit.vic.gov.au/par66_nmuwater/>.

⁷⁸ Victoria, Department of Treasury and Finance, 2000, *Essential Services Commission, Consultation Paper* (Melbourne: Government of Victoria) [online], [cited April 18, 2001], <www.vic.gov.au/treasury/escons.pdf>.

⁷⁹ Victoria, 2000, *Non-Metropolitan Urban Water*, Appendix D; government reviews in progress at October 1, 2000.

⁸⁰ Victoria, 2000, Department of Natural Resources and Environment, *2001 Price Review of Water, Drainage and Sewerage Services in Victoria Issues Paper* [online] [cited 10 April 2001], <

5.1 Framing a New Regulatory Framework for Drinking Water Quality in Victoria

The Productivity Commission is the Australian government's principal review and advisory body on microeconomic policy and regulation.⁸¹ A report produced by that commission in 2000 is "part of an ongoing program of research benchmarking the performance of economic infrastructure industries. It compares regulatory processes (not standards) for establishing and enforcing drinking water standards in Australian jurisdictions with those in Canada, France, New Zealand, the United Kingdom and the United States."⁸²

The report, *Arrangements for Setting Drinking Water Standards*, was released in April 2000.⁸³ This report provides international benchmarking information, which highlights a lack of consistency of approach throughout Australia in regulating water quality, and draws on other examples around the world. (Appendix A7 outlines the Best Practice Principles identified by the Productivity Commission.)

Two other recent reports have added weight to a review of the regulatory approach to water quality. Concerns had been expressed by both the Victorian auditor general and the regulator general about the inadequacies in the current framework for drinking water quality across the state – and the lack of consistency in relation to all sectors of the water industry. Impetus for the review also arose from some recent incidents that highlighted risks. These included a 1998 water quality incident in Sydney (New South Wales, Australia) and a gas explosion at Longford, Victoria. Brief mention is also made of Walkerton, Canada.⁸⁴

In August 2000 a consultation report titled *A New Regulatory Framework for Drinking Water Quality in Victoria Consultation Paper* was issued by the Department of Natural Resources and Environment and the Department of

⁸¹ Canberra, AusInfo, Productivity Commission Home Page [online], [cited April 18, 2001], <www.pc.gov.au/>, p. 1.

⁸² Victoria, 2000, *A New Regulatory Framework*, p. 7.

⁸³ Canberra, AusInfo, Productivity Commission, 2000, *Arrangements for Setting Drinking Water Standards*, p. xxii [online], [cited April 18, 2001], <www.pc.gov.au/research/benchmark/drinkw/finalreport/>.

⁸⁴ Victoria, 2000, *A New Regulatory Framework*, pp. 2, 10. Additional reports cited include: Victoria, Auditor-General, *Report on Ministerial Portfolios*, May 1999; Victoria, Office of the Regulator General, Victoria, January 2000, *Melbourne's Retail Water and Sewerage Companies Performance Report, July 1998–June 1999*.

Human Services.⁸⁵ The report addresses all sectors of the water industry, including Melbourne metropolitan and non-metropolitan water authorities. Its summary of deficiencies in regulatory arrangements includes the following:

- service providers have no specific obligation to supply water that meets a comprehensive set of microbiological, chemical, and physical (aesthetic) requirements enshrined in legislation;
- no coherent regulatory and enforcement framework exists for drinking water quality in Victoria;
- no uniform arrangements exist for the generation and publication of objective and comprehensive information on drinking water quality in Victoria;
- the division of responsibilities for the prevention and management of water quality incidents is blurred;
- current regulatory arrangements do not cover smaller yet significant service providers such as Alpine Resorts; and
- outside the metropolitan area, no formal arrangements exist to deal with the quality of bulk water supplied to the non-metropolitan urban water authorities.⁸⁶

The report proposed that:

[t]here be a comprehensive, Victorian statewide regulatory framework for drinking water quality that provides clarity of roles and responsibilities (Government, service provider, regulator and consumers) and greater confidence in the supply of good quality drinking water. The proposal overcomes the difference in regulatory frameworks applying to the metropolitan and non metropolitan water sectors, enabling consistent quality standards and management requirements to be put in place. Implementation of the proposal will support a consistent approach to the establishment of drinking water quality standards and associated risks....

⁸⁵ Victoria, 2000, *A New Regulatory Framework*.

⁸⁶ *Ibid.*, p. 9.

The regulatory framework has four key features:

- enforceable and achievable health and non-health-related standards for drinking water quality;
- flexibility for agreed local community-based variations to standards for drinking water quality;
- public disclosure of water quality information; and
- general obligations placed on service providers, which are based on public health risk analysis, due diligence, hazard management, and third-party auditing.⁸⁷

Written comments on the consultation paper were due in mid-October 2000. This review of the regulatory framework for drinking water quality in Victoria could provide useful additional insights for the Walkerton Inquiry.

6 Conclusions

At least seven major lessons can be drawn from the changes that took place in Victoria to reform the rural urban water authorities:

- The state (or provincial) government has a role in ensuring better outcomes. In Victoria's case, the state drove the reforms. It identified, both through the bureaucracy and the political arm, that the existing arrangements for delivering water and wastewater services were inefficient and unwieldy. The state government set the direction and outlined the reform process and set the targets and accountability process in motion. That would not have happened if it had been left to the plethora of existing water authorities.
- Disentangling the delivery of water and wastewater services from local government created significant advantages for Victoria. The reform process has created organizations whose core business is the delivery of water-related services in rural Victoria. The water authorities are not competing for attention and finances in an organization with other responsibilities such as waste management or road construction.

⁸⁷ Victoria, 2000, *A New Regulatory Framework*, p. 1.

- Size matters. Disentanglement from local government but keeping the existing size structure would not have addressed the lack of resources.
- Changing the composition and role of the boards – and using a skills-based criterion – helped to cement the new approach and role of the authorities. Boards held staff accountable, as they, in turn, were also held accountable to the government.
- Financial accountability and transparency of finances are important.
- The requirements for reporting performance – across a range of parameters – helped to raise standards of performance across the authorities.
- The state made it clear that improvements in both water quality and wastewater management were to be outcomes of the reforms. This clear direction also helped to focus the authorities' attention on the priorities for infrastructure investment. And the performance reporting on compliance – in a public manner through the annual reports (and other means) – helped to make the authorities accountable to a range of stakeholders, including citizens.

Obviously the reform process did not solve every issue or guarantee no risk to communities for their water quality. The current reviews (outlined in section 5) are showing further room for improvement. However, without the earlier structural reforms, the clarification of roles and regulatory changes would have been significantly more difficult. At the very least, dealing with 15 water authorities – with consistent “rules of engagement” and responsibilities – allows for a more focused and efficient review process, compared to the previous motley arrangement.

In sum, the water reform process in Victoria, from 1993 to the present, has delivered significant, positive outcomes – in terms of customer costs, the financial return to the state, the quality of water delivered, and the quality of the environment. It is, looking with the hindsight of both time and distance, a very successful model of reform.

Appendix A1: Relative Size of Non-Metropolitan Urban Water Authorities

Table A1-1 Relative Size of Non-Metropolitan Urban Water Authorities

Non-Metropolitan Urban Water Authority	Total Revenue 1998/99	Properties Supplied	Wastewater Collected
	(A\$ million)	(thousands)	(gigalitres)
Barwon Water	62	108	20
Gippsland Water	39	55	20
Central Highlands Water	39	57	11
Coliban Water	35	58	9
Goulburn Valley Water	29	49	16
Western Water	22	38	7
North East Region Water	22	37	9
Grampians Water	21	29	5
Lower Murray Water	19	26	5
South West Water	14	21	5
East Gippsland Water	11	17	2
South Gippsland Water	9	16	3
Westernport Water	7	14	1
Glenelg Water	5	8	1
Portland Coast Water	5	8	2
Total	339	541	116

Source: Victoria, Auditor General, *Non-Metropolitan Urban Water Authorities: Enhancing Performance and Accountability* [online], [cited April 8, 2001], <www.audit.vic.gov.au/par66_nmuwater/agp6602.htm#2a> part 2, Background, Table 2B.

Note: For this table, the NMUs are ranked by revenue.

Appendix A2: Water Customer Charges – 1998/99 and 1999/00

Table A2-1 Water Customer Charges – 1988/99 and 1999/00*

	Fixed Annual Service Charge		Av. 200kl/Service Consumption		Av. 200kl/Service Total	
	1998/99	1999/00	1998/99	1999/00	1998/99	1999/00
Barwon	94	94	130	130	224	224
Central Highlands	54	54	140	140	194	194
Coliban	79	79	100	100	179	179
Gippsland	64	64	100	100	164	164
Goulburn Valley	80	80	72	72	152	152
North East	80	80	72	72	152	152
Western	129	129	130	130	259	259
East Gippsland	114	114	108	108	222	222
Glenelg	117	117	130	130	247	247
Grampians	159	159	146	146	305	305
Lower Murray	85	85	40	40	125	125
Portland	152	152	40	40	192	192
South Gippsland	147	147	104	104	251	251
South West	135	135	100	100	235	235
Westernport	171	171	170	170	341	341
State Average	101	101	111	111	213	213
Metropolitan Av.	54	54	141	141	195	195

Source: Victorian Water Industry Association, 2000, *Urban Water Review 1999/2000*, p. 16.

Notes:

The Australian financial year is from July 1 to June 30.

"Metropolitan" (Melbourne) Average is included as a comparison.

*Charges in Australian dollars per standardized use of 200kL per annum per household.

Appendix A3: Examples of Infrastructure Investment

The *Goulburn Valley Water Annual Report 1999-2000* included the following infrastructure upgrades for water supply:⁸⁸

- changes in water supply to Violet Town. Options include upgrading of the water supply reservoir or an extension of a pipeline from Euroa;
- upgrading of water supply at Marysville with community consultation. Current disinfection is ultraviolet light, which does not provide consistent compliance with World Health Organization bacteriological standards. Options for upgrade include chlorination and chlorine dioxide;
- providing the small community of Waterford Park with fully treated water during 1999/2000 with new pipelines and two new pumping stations, at a cost of A\$100,000;
- upgrading of Merrigum Township water supply. This had previously been drawn from (irrigation) channel water, which had been receiving primary treatment and chlorination. The alternative chosen was to construct an additional 11 kilometres of pipeline and storage tanks at a cost of A\$570,000;
- the provision of an alternative supply of water for Buxton, which previously had drawn water from the Steavenson River (cost A\$210,000);
- at Tongala, an additional 130-megalitre storage dam was completed, along with pipelines and pump stations. The cost of A\$1.1 million was in addition to a project completed in 1999 to upgrade the water treatment plant (cost A\$700,000).⁸⁹

The following examples of infrastructure upgrades in wastewater were also outlined in the report:

- consultations with community members in Kilmore, to cease discharging treated wastewater to Kilmore creek and establish a land-based reuse scheme;

⁸⁸ Goulburn Valley Water, 2000, *Goulburn Valley Water Annual Report 1999/2000* [online], [cited April 12, 2001], <www.gvwater.vic.gov.au/Anl_rpt/9900/report.pdf>.

⁸⁹ These examples are from Goulburn Valley Water, 2000, pp. 10–15.

- construction of a 25-megalitre tertiary level Actiflo plant, to reduce phosphorus at Shepparton. Due to equivalent industry waste loads, the Shepparton plant handles the equivalent wastewater load from a city of 700,000 people. The cost of A\$3.8 million is being supported with grants from both the federal and Victorian governments;
- completed sewerage schemes at Merrigum and near completion at Wandong Heathcote Junction, the latter at a cost of A\$4 million;
- upgrading the Kyabram Wastewater treatment facility, to provide reuse of reclaimed water for irrigation (cost A\$2.1 million);
- upgrading at Yea wastewater management facility, to allow adoption of land-based reuse of reclaimed water (cost A\$700,000);
- at Mansfield, upgrading includes construction of a 210-megalitre winter storage and associated works to allow for irrigation of reclaimed water, at a cost of A\$2.9 million;
- upgrading at Mooroopna, to reduce odorous emissions (cost A\$3.9 million).⁹⁰

⁹⁰ Ibid., pp. 11–16.

Appendix A4: Fixed Assets of Water Authorities

Table A4-1 Water Supply 1998/99 – 1999/2000

	Water Treatment Plants							
	Simple Disinfection		Full Treatment		Pumping Stations		Water Mains (km)	
	1998/ 1999	1999/ 2000	1998/ 1999	1999/ 2000	1998/ 1999	1999/ 2000	1998/ 1999	1999/ 2000
Barwon	1	1	8	8	35	35	2805	3147
Central Highlands	12	11	2	2	97	97	2011	2011
Coliban	15	15	18	18	62	62	1578	1718
Gippsland	5	1	15	16	51	51	1661	1661
Goulburn Valley	18	18	24	25	74	71	1425	1428
North East	16	10	15	23	50	54	1275	1352
Western Water	2	2	5	6	43	45	1634	1638
East Gippsland	8	8	3	3	39	43	735	756
Glenelg	6	7	5	5	3	3	395	397
Grampians	23	22	3	9	73	82	1072	1176
Lower Murray	2	0	8	8	27	28	736	798
Portland	0	3	0	0	8	8	171	172
South Gippsland	3	1	7	9	17	17	331	345
South West	13	9	1	4	38	36	974	983
Western-port	0	0	1	1	4	4	417	422

Source: Victorian Water Industry Association, 2000, *Urban Water Review 1999/2000*, p. 57.

Table A4-2 Wastewater 1998/1999 – 1999/2000

	Wastewater Treatment Plants		Pumping Stations		Sewer Mains (kms)		Sea Outfalls		Inland Water Outfalls	
	1998/1999	1999/2000	1998/1999	1999/2000	1998/1999	1999/2000	1998/1999	1999/2000	1998/1999	1999/2000
Barwon	9	9	145	145	1957	1981	4	4	1	1
Central Highlands	8	8	71	71	881	898	-	-	5	5
Coliban	9	10	114	112	1014	1040	-	-	3	3
Gippsland	8	13	171	171	1278	1278	2	2	5	8
Goulburn Valley	23	24	234	242	878	883	-	-	8	8
North East	19	19	109	109	773	903	-	-	10	1
Western Water	7	7	41	42	698	698	-	-	3	3
East Gippsland	9	9	118	118	485	486	-	-	2	2
Glenelg Water	3	3	15	15	142	142	-	-	3	3
Grampians	21	22	64	74	539	570	-	-	3	3
Lower Murray	8	8	89	96	445	456	-	-	-	-
Portland	4	3	30	32	171	170	2	2	-	-
South Gippsland	9	10	8	39	345	347	5	5	2	2
South West	8	8	44	45	358	405	1	1	4	4
Westernport	2	2	56	58	260	260	1	1	-	-

Source: Victorian Water Industry Association, 2000, *Urban Water Review 1999/2000*, p. 57

Appendix A5: Projects Completed under Memorandum of Understanding – South Gippsland Water

The South Gippsland Water Authority is one of the smaller authorities, with a revenue of A\$9 million and serving 6,000 households. The following extract is from its Web site:

Despite the complexity of managing 10 water supply systems and 9 wastewater systems, South Gippsland Water's program remains on target financially and within the agreed timeframes. The main priority is the deadline of December 1999 for water quality improvements, commissioning of capital works, and fine-tuning of the water supply operations systems.

The \$25 million water and wastewater capital works program will be successfully completed by December 2001.

The program has already produced obvious benefits to our customers...

Table A5-1 MOU Completed Projects – Water

Town/Location	Project Description	Customer Impact
Lance Creek	Water treatment plant	Clear, safe potable water supply
Alberton	Booster chlorination	Safe potable water supply
Devon North	Booster chlorination	Safe potable water supply
Meeniyah	Construct elevated storage	Improved pressure
Meeniyah	Construct filtration plant	Clear, safe potable water supply
Meeniyah	Construct rising main	Service additional customers with potable water supply
Toora	Disinfection at service basin	Safe potable water supply

Table A5-2 MOU Completed Projects – Wastewater

Town/Location	Project Description	Customer Impact
Port Albert	New town sewerage system	Safe, cost-effective wastewater disposal

Table A5-3 MOU Projects in Progress – Water

Town/Location	Project Description	Customer Impact
Lance Creek	Wonthaggi and Inverloch Trunk system upgrade	Continuous supply
Cape Paterson	Standpipe separate inlet/outlet	Safe potable water supply
	Separate disinfection	Safe potable water supply
Fish Creek	Water treatment program	Clear, safe potable water supply
	Basin cover	Safe potable water supply
Foster	Basin cover	Safe potable water supply
	Water tank separate inlet/outlet	Safe potable water supply
Poowong	Service basin improvements	Safe potable water supply
	Upgrade disinfection	Safe potable water supply
Port Albert	Water tank separate inlet/outlet	Safe potable water supply
Toora	Line and cover service basin	Safe potable water supply

Table A5-4 MOU Projects in Progress – Wastewater

Town/Location	Project Description	Customer Impact
Foster	Upgrade outfall pipeline and install pump station	Service additional customers
	Treatment plant upgrade	Safe, potable water supply Enhanced environmental performance
	DAFF facility for NFR	
Toora	Seawater treatment	
Wonthaggi	DAFF facility for NFR	
Korumburra/Leongatha	Korumburra-Leongatha waste management project	Facility for regional wastewater treatment and disposal
Leongatha	Reservoir No. 2 spillway upgrade	Reduce chance of dam failure

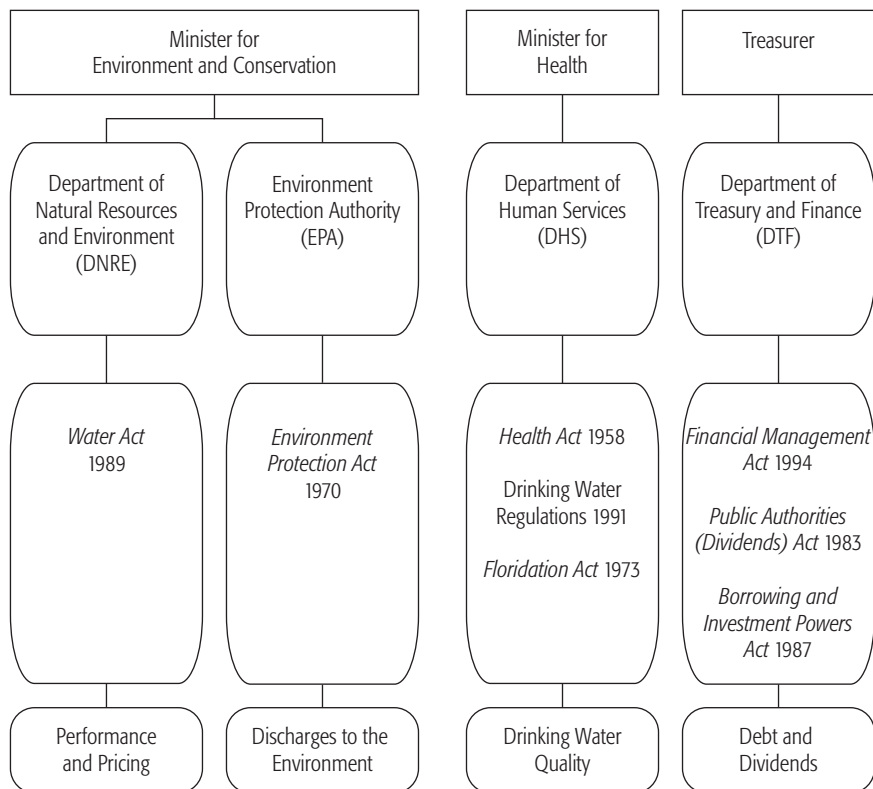
Source: South Gippsland Water [online], [cited April 17, 2001], <www.sgwater.com.au/SGWPPage/MOU%20summary.htm>.

Notes:

DAFF (Dissolved Air Flotation Filtration) is a technique to separate oil and suspended solids from water. NFR refers to Non-Filterable Residue (suspended materials).

Appendix A6: Regulatory Framework Applicable to Non-Metropolitan Urban Water Authorities

Figure A6-1 Regulatory Framework Applicable to Non-Metropolitan Urban Water Authorities



Source: Victorian Auditor General's Office, 2000, *Non-Metropolitan Urban Water Authorities: Enhancing Performance and Accountability*, part 2, p. 5 [online], [cited April 8, 2001], <www.audit.vic.gov.au/par66_nmuwater/agnp6602.htm#2a>.

Appendix A7: Productivity Commission – Best Practice Principles

The following principles are widely recognized by Australian governments as best practice in government administration and regulation setting.

Institutional Settings

- *Clearly defined objectives.* The success of an institution is judged by the extent to which it achieves clearly defined regulatory objectives;
- *Avoidance of shared responsibility.* Shared responsibilities can lead to confusion and a lack of accountability for regulatory outcomes;
- *Transparent processes.* Accountability requires processes that are transparent and a clear understanding of who is responsible for what.

Regulatory Process

- *Adequate communication and consultation.* Community acceptance of regulation and the incorporation of design features that recognize any relevant constraints in its implementation are best achieved if there is adequate communication and consultation with those affected by the regulation, prior to finalization.
- *Clearly defined regulatory objectives.* The desired objectives of all proposed regulation should be identified and clearly defined so that it is possible to assess how effective proposed regulations would be in the achievement of the objectives.
- *Identification of regulatory alternatives.* A range of regulatory options that represent viable means of achieving the desired objectives should be identified. Regulators should look beyond regulatory approaches used in the past.
- *Benefit-cost assessment of all proposals.* Regulatory options should be subject to benefit-cost assessment. This enables alternatives to be ranked and the

expected net benefits of the proposed regulations to be confirmed. Without this assessment process, resources may be wasted in developing and complying with a regulation that does not achieve its intended purpose.

- *Flexibility, provided that it is compatible with objectives.* Regulations should focus on outcomes that are consistent with the regulatory objectives, but subject to this constraint, they should be sufficiently flexible to allow different means of compliance that are cost effective.

Source: Australia, Productivity Commission 2000, *Arrangements for Setting Drinking Water Standards*, International Benchmarking, AusInfo, Canberra, p. XXII [online], [cited April 18, 2001], <www.pc.gov.au/research/benchmark/drinkw/finalreport/>.

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