Toward a Financially Sustainable Irrigation System

Lessons from the State of Victoria, Australia, 1984–1994

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K. John Langford
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The World Bank
Washington, D.C.
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Foreword

Water resource management policies worldwide are at a crossroads. On the one hand, in recent years a remarkable consensus on the principles of reform have emerged. These principles have been most simply stated in “Dublin Statement” of the International Conference on Water and the Environment in 1991, when 100 countries agreed that:

- water should be managed holistically;
- management should be “at the lowest appropriate level”, and involve all stakeholders, and
- water should be treated as an economic as well as a social good.

On the other hand, it has turned out to be far from simple to translate the Dublin principles into reality on the ground. Water management practices in every country of the world are deeply embedded in a particular natural, historical and political context, and reform does not come easily. Accordingly, the challenge of the day is now to learn from the experiences of successful reform efforts, and to translate these lessons into strategies in different settings.

It is in this context that the Australian experience in recent decades has come to the attention of the water world. For there is arguably no other country which has so thoroughly reformed the way in which this scarce resource is managed. What is particularly fascinating to the outsider, is the dialectic of reform in Australia. Starting in the 1970s, a professional consensus began to emerge on how important it was to manage water better in the Australian context. And in the next twenty years a lot was done in technical terms, and some progress made on the institutional side (perhaps more strikingly in the multi-state Murray-Darling Basin Commission). But there was also a sense that this was a “water professionals’ debate”, which had not yet caught the attention of the body politic, and in which reform was incremental at best.

All of this changed fundamentally in the late 1980s and in the 1990s. Now there was a national consensus on the need to reform the Australian economy to become more competitive in a globalizing world, and, more specifically, an understanding of the importance of liberalizing factor markets in agriculture as part of this process. In the state of Victoria a further impetus for reform was the crisis in the state’s finances in the early 1990s. The result was remarkable. Suddenly the “three steps forward, two steps backward” paradigm changed, and there was rapid and decisive progress in the way in which water (and irrigation, as the major water user in the state) was changed forever. To outsiders, this process was “implementing the Dublin principles” – now water was managed holistically, management became as much a responsibility of the farmers as it was of the state and there was an intense search for more economically-appropriate ways of managing the resource.

To the interested outsider, there is one further striking element in the Australian experience. The water reform process has had remarkable leadership from a cadre of “thinker-practitioners” who have constantly sought the holy grail of theoretical soundness and technical and political practicality.

This document describes the particular experience of water reform in the state of Victoria, which has been a leader throughout the period in the water reform process in Australia. The document is a compelling “insiders’ view” by three professionals who played central roles in the process.

The Victorian experience, like all others, is embedded in a particular natural, cultural, historical and political reality. But the generic lessons on the technical and political reform processes, and the links between these, are of profound relevance to those engaged in the water reform process throughout the world.

John Briscoe
Senior Water Adviser
The World Bank
Abstract

The decade from 1984 to 1994 was a period of major reform in the Victorian irrigation industry. By June 1994 the shortfall of revenue over costs had been reduced to $13.3 million, within sight of the ultimate objective. Reduction in operating costs accounted for 62% of the improvement. The decade saw many other reforms: market reforms to introduce transferability of water entitlements, water auctions for new allocations, new technology, staff training and removal of demarcations to create a smaller, multi-skilled and productive workforce. Community leadership in the development of salinity mitigation plans was another important reform.

The Victorian experience of reform is embedded in a particular natural, cultural, historical and political reality. But the generic lessons from the technical and political reform processes, and the links between these, are of profound relevance to those engaged in the water reform process throughout the world.

Acknowledgments

The Authors would like to thank Geoff Carburn who provided expertise in preparing the diagrams and computer layouts, Christine McCallum who edited the text, and Judy Lunn who assisted with typing.

The support of Geoff Spencer and John Briscoe of the World Bank is also very much appreciated.
Executive Summary

The decade from 1984 to 1994 was a period of major reform in the Victorian irrigation industry. The State Rivers and Water Supply Commission, the authority responsible for irrigation since 1905, was abolished in 1984 following an inquiry by the Public Bodies Review Committee of the Victorian Parliament. Policy and regulatory functions were transferred to the newly created Department of Water Resources, and a more commercial Rural Water Commission established to operate the irrigation systems.

The history of irrigation in Victoria provided the new organisation with particular challenges. The objectives of closer settlement in rural Australia had a great influence on the development of irrigation. Unfortunately the lack of financial discipline inherent in these policies left a legacy of irrigation enterprises of low profitability, small farms, financially unviable irrigation authorities, ageing irrigation infrastructure, a large public debt, and environmental degradation through salinity and water logging. Any reform of irrigation would have to overcome this inheritance.

Agreeing on clear financial targets with the Victorian Government, and attention to strategic planning were the first steps in setting a new course to overcome the burdens of the past. Ultimately the target of reducing the shortfall of revenue against business costs from $66.9 million in 1984 to zero over twenty years was agreed with the Government. Business costs were defined as the total of operating, maintenance, administration, any finance charges, and a renewal annuity to fund replacement of the ageing irrigation infrastructure. The Rural Water Commission now had a clear target to use as the basis for strategic planning. The target was to be achieved by a combination of cost reductions and increases in water prices, with emphasis on the cost reductions.

Use of a renewal annuity as a measure of capital consumption instead of current cost depreciation was a major step forward. A more constructive debate with the irrigation community on the risk, level of service and cost trade offs has created better relationships and opportunities to progressively deliver more cost effective services.

In order to achieve the long term target of financial self sufficiency a series of financial and business plans were developed. The Financial Management Strategy covered the four years from 1985/86 to 1988/89. Recurrent expenditure was held constant in nominal dollar terms in a period of 7% to 8% inflation. In the end a 30% reduction in recurrent expenditure was achieved. Even with these large reductions in recurrent costs, real increases in water prices of 2% annually were required over the twenty years to achieve self sufficiency. Use of inflation forecasts that underestimated the actual inflation resulted in under achievement of the pricing target. Real prices increased by 0.9% annually over the four years.

A Business Plan covering the five years from 1990/91 envisaged further efficiency improvements, increases in asset maintenance and renewal, and real price increases of 2.8% annually. The price increases were now based on the actual inflation in the preceding year.

In 1991 prices for agricultural commodities fell and the increases in water prices became the focus for the irrigator’s concerns. A “Rate Protest” was organised to withhold some $30 million of water rates. The Government decided that an inquiry into water pricing and the efficiency of the Rural Water Commission was the best way to resolve the impasse, and established the Future Management Review. After extensive consultation the Review supported the target of financial self sufficiency, and made recommendations to create the Rural Water Corporation out of the Commission as a government business enterprise outside the Victorian Public Service. The Corporation would have much greater flexibility to achieve large gains in operating efficiency. The Review concluded that despite these large potential gains in efficiency real price increases of 2.1% annually were still required.

The Future Management Review supported the appointment of expertise based boards to manage the irrigation systems. A wider range of skills, including commercial skills, was introduced to the irrigation authority. In fact the Act that transformed the Rural Water Commission into the Rural Water...
Corporation in July 1992 specified the range of skills to be considered by the Minister when appointing board directors. The skills of the new board directors played a vital role in the ongoing reform process.

The expected efficiency gains were made, and the shortfall of revenue against business costs was reduced to $13.3 million by June 1994, within sight of the ultimate target that had now been brought forward to the year 2001. Some 62% of the improvement in financial performance came from efficiency gains, and 22% from price increases to the irrigators. The remaining improvement came from broadening the revenue base including hydroelectric power generation. For an irrigation authority to make such an improvement in financial performance, and to come within sight of long term financial viability is a major achievement.

During the implementation of the financial plans the Rural Water Commission and its successor were active in other reform areas. Steps were taken to create a market for water in order to stimulate improvement in the profitability of irrigation. New, more profitable irrigation enterprises would be able to gain access to water, and the opportunity cost of water would be exposed for the first time. Temporary transferability of water entitlements was introduced in 1987 and permanent trading started in 1991. In 1988 the Rural Water Commission organised what is believed to be the first auction of water entitlements in Australia. By 1994 a market for water was emerging.

New technology was introduced to improve the efficiency of irrigation deliveries so that more responsive and new services could be provided to irrigators to take advantage of the opportunities offered by water trading. Central communication and planning of water deliveries was successfully implemented, and a water management system using surveillance control and data acquisition technology was conceived and introduced. The water management system had the potential to fundamentally change the way the irrigation systems were operated to produce a more customer focussed, commercial approach.

The Rural Water Commission and its successor Corporation became leaders in staff training with the objective of supporting the introduction of new technology and other initiatives to improve service and efficiency. The Commission achieved the status of a private provider of courses so that its training was recognised nationally. The career structures and employment conditions were reformed resulting in one industrial award for the staff with four levels to create a more efficient multi-skilled workforce that was rewarded for the acquisition and use of skills. These initiatives made a significant contribution to the reduction in cost described above.

The Victorian Government, after an inquiry into salinity adopted the concept of community leadership in the development of salinity mitigation plans. The technical experts in the irrigation authority became advisers to the community groups. A series of plans were developed that have the potential to progressively halt the spread of salinity.

The strategy implemented in Victoria over this decade brought about significant improvements in irrigation. Furthermore the experience gave those involved important insights into the conception and implementation of a complex reform program. If the reforms can be repeated in other parts of the world, significant economic and environmental benefits will flow through the global economy. This monograph is not a prescription to treat the maladies that have beset irrigation over the centuries, but rather a map with signposts to indicate the way for those facing similar challenges and who must make the same journey.
The Authors

In reading this journey of reform it is important to understand the perspective of the authors. All three authors were part of senior management of the Rural Water Commission, either at board or senior executive level. They were directly involved in implementing many of the reforms, and their descriptions of the journey of reform are no doubt coloured by their experiences in implementing a difficult and at times unpopular reform program for the benefit of the Victorian irrigation industry.

John Langford was Director of Operations from May 1987 to January 1989 and then chief executive of the Rural Water Commission (Corporation) from February 1989 to November 1994. Christine Forster was the inaugural chairperson of the Rural Water Commission from July 1984 November 1990. Duncan Malcolm was the deputy chairperson from July 1984, becoming Chairperson on 1 December 1990 until December 1995 when the Rural Water Corporation ceased to exist. Some biographical notes follow.

JOHN LANGFORD

John Langford is an agricultural engineer with a PhD in hydraulics, with 30 years experience in the water industry. His early career with the Melbourne and Metropolitan Board of Works started in forest hydrology research identifying the effects of bushfires and logging on reducing streamflow yields in wet eucalypt forests. He then prepared a water supply strategy for Melbourne introducing demand management and reform of water pricing. After managing the Distribution Systems Department he was seconded to the then Ministry of Water Resources to prepare a State Water Plan. He initiated the debate on water markets and transferable water entitlements. Returning to the Board of Works he managed the water supply system and implemented the first round of pricing reform introducing user pays pricing to Melbourne. In 1987 he moved to the Rural Water Commission as Director of Operations becoming chief executive in 1989. He was a Commissioner of the Murray Darling Basin Commission for four years and is chairperson of two Cooperative Research Centres on Catchment Hydrology and Freshwater Ecology. He is currently Executive Director of the Water Services Association of Australia.

CHRISTINE FORSTER

Christine Forster is a microbiologist by training and has been involved in the water industry for over thirty years. Her career started with water quality activities in the Northern Territory of Australia, moving to water resources policy in the Federal Government, including the incorporation of water quality and environmental objectives into water resources management. She took part in the Lake Pedder Inquiry in 1973, Australia’s first public inquiry on an environmental issue and a harbinger of strength of the environmental movement.

After a short term as Director of the Australian Heritage Commission, she returned to rural Victoria and became involved in local government and community development. As a partner in the family wool producing enterprise, she has first hand experience of the changes in rural Australia. Christine is currently a Director of the Land and Water Resources Research and Development Corporation and a member of the Victorian Catchment Management Council. She is actively involved in regional development and rural adjustment to achieve sustainable outcomes for agricultural enterprises.

DUNCAN MALCOLM, JP

Duncan Malcolm owns a farm in Victoria’s Macalister Irrigation District and has extensive practical experience in dairying and horticulture. He was inaugural Deputy Chairperson of the Rural Water Commission of Victoria and subsequently Chairperson of that organisation and its successor body, the Rural Water Corporation. His involvement with the irrigation sector extends over 20 years and includes his current membership of the National Board of the Irrigation Association of Australia and the Australian Irrigation Council.

A former Commissioner with East Gippsland Shire, Duncan is also currently Chairman of the Gippsland Lakes and Coast Regional Coastal Board, Chairman of the East Gippsland Catchment Management Authority and Deputy Chairman of Natural Resource Systems, a State Government organisation specialising in geospatial information and technology.
Chapter 1. Introduction

Significant reform took place in the Victorian irrigation industry in the decade 1984 to 1994. This reform has positioned irrigated agriculture to take advantage of emerging international markets while maintaining and enhancing the natural resource base on which irrigation depends.

The authors of this monograph were active participants in this reform and want to place on record their account of the reform process so that it might provide useful information for those governments and irrigation authorities in Australia and overseas who want to undertake a similar journey of reform.

We start with the premise that irrigation is important to the future of human beings on this planet. Increasingly, we are relying on irrigation to provide our fruit and vegetables, dairy products and wine. In Australia, irrigation offers us a way to manage the extreme climate variability and frequent droughts and floods resulting from the El Nino Southern Oscillation (ENSO) climate phenomenon. Figure 1.1 shows the high variability of Australian rainfall relative to the rest of the world. For the same mean annual precipitation Australia has greater variability of precipitation than the rest of the world. Irrigation is therefore particularly important to the future of Australia.

We acknowledge that irrigation in Australia and in Victoria in particular has not been managed on a sustainable basis over the past century. Salinisation, water logging and degradation of rivers through depletion of flows and their use as drains have been the legacy of most irrigation schemes since the early days. Irrigation also has a poor record of financial and economic management.

In order to understand the context of the reform, we describe the inheritance of the Rural Water Commission in 1984, the starting point for the journey of reform.

Irrigation authorities are organisations that supply water to irrigation farms. They may also carry out other activities such as surface and subsurface drainage. While these authorities may raise part of their revenue from water sales and drainage rates, they are usually not viewed as commercial businesses, and are highly dependent on government subsidies to fund their operations. Such subsidies continue to distort decision making for the irrigation industry, and divert attention from the hard decisions necessary for irrigation to have a sustainable future.

While significant achievements were made before 1984, we have concentrated our discussion on the decade from 1984 to 1994 since we took part in the reforms of this period and bear responsibility for the consequences. Much of the time we were operating outside our personal comfort zones, however our belief that the reforms were in the long term interest of the irrigation industry kept us going.

The overall strategy was to improve the profitability of irrigation, improve the efficiency of the irrigation authority and improve the sustainability of irrigation with respect to its resource base, the waters and soils of Victoria. Improved profitability of irrigation generates an improved cash flow for irrigators to invest in improved management of soil and water resources. The ability to pay higher water prices also generates more revenue for the irrigation authority to invest in renewing irrigation infrastructure and improving services.
The discipline of the irrigators funding the renewal of the irrigation infrastructure will ensure that the next generation of infrastructure meets the needs of the industry in more cost effective ways.

Increases in water prices also stimulate necessary restructuring of the industry, the introduction of new technology and improvement of the profitability of irrigated agriculture. The painful consequences of this restructuring for many individual irrigation farmers should not be underestimated and appropriate assistance to them through rural adjustment schemes is vital.

We have quantified the achievements over the decade - an 80% reduction in the shortfall of revenue to total business cost, from $66.9 million per annum to $13.3 million per annum. Some 80% of this improvement in financial performance came from efficiency gains and a broader revenue base, and only 20% from increased water prices to irrigators. The irrigators were therefore protected as far as practicable from the individually difficult consequences of economic reform.

The strategy implemented in Victoria over this decade brought about significant improvements in irrigation. If the reforms can be repeated in other parts of the world, significant economic and environmental benefits will flow through the global economy. This monograph is not a prescription to treat the maladies that have beset irrigation over the centuries, but rather a map with signposts to indicate the way for those facing similar challenges and who must make the same journey.

Irrigation in Victoria has enjoyed a development phase, survived a maturation phase and is now undergoing a renaissance - a rebirth - as a vibrant industry which is contributing to the economic well-being of the State while moving towards the sustainable management of the resource base.
Chapter 2: Irrigation in Victoria in 1984: Starting Point for the Journey

The history of irrigation in Victoria is characterised by episodes of droughts, financial crises and consequent inquiries, including Royal Commissions. Following a drought in the 1870s and financial collapse of the private irrigation schemes, the first Royal Commission involving irrigation was established in 1884. The Royal Commission was chaired by Alfred Deakin, the then Victorian Minister for Water Supply, who later became Prime Minister of Australia.

The 1884 Royal Commission on Water Supply led to the Irrigation Act of 1886. The Act established the Crown’s ownership of “the use and control of the flow” in Victoria’s rivers and streams setting the basis for water allocation in the state, and ultimately the nation. The State of Victoria was now responsible for allocating water rights to irrigators, industry and cities. The Act also retained local control of works by irrigation trusts, but provided for the Victorian Water Supply Department to thoroughly check all their proposals; an early sign of the tension between local autonomy and central control. Important construction projects such as dams would be funded by the State as “National Works”. The notion of separate headworks and distribution systems was well developed even in these early days.

The drought and economic recession of the 1890’s placed severe financial stress on the private irrigation trusts: some 30 irrigation trusts were in existence in 1899 with financial advances in excess of one million pounds (the currency of the day). The Relief Act of 1899 in fact wrote off 75% of the trusts’ debt liabilities. Debt write-offs have a long history in Victorian irrigation businesses as will be seen when the decade from 1984 to 1994 is reviewed.

The politicians of the day also concluded that “...divided control did not work well in practice”, and imposed a higher level of central control. Stuart Murray, who was the Secretary to Deakin’s 1884 Royal Commission, drafted a new Water Bill in 1904 at the direction of the Honourable George Swinburne, the Minister for Water Supply of the time. The resultant Water Act of 1905 removed local control from the irrigation trusts and centralised management under the newly created State Rivers and Water Supply Commission.

Dr Elwood Mead, the second Chairman of the State Rivers and Water Supply Commission took up office in 1907, returning to the United States in 1915 to take a leading role in the Bureau of Reclamation. Mead introduced policies promoting closer settlement in Victorian irrigation. He believed that intensive irrigation was the most effective way of developing irrigation, making the most from the large investment in water distribution systems, and providing livelihoods for a large number of irrigators on small holdings.

Mead developed the system of water rights allocating water to each irrigated land holding in the form of a depth of water per unit area, with the allocated depth declining as the size of the holding increased. The smaller holdings were designed for intensive horticulture that required more intensive irrigation, and the large holdings were expected to irrigate part of their holding to support the overall farming enterprise. The water rights were designed to promote closer settlement in defined irrigation districts. The water rights were enshrined in statute, and legally tied the water to the particular allotments of land so that the rights could not be transferred or traded. In addition no capital charges were made when allocating new water rights. Water was regarded as a social rather than an economic good.

The water rights were to be paid for whether the water was used or not. The water right was designed to provide a sufficient and reliable cash flow to fund the irrigation authority. This initiative overcame one of the deficiencies of the earlier irrigation trusts which raised revenue from water sales and were left in financial difficulties trying to meet fixed costs in wet years when the demand for irrigation water was low.
The question of how to define sufficient revenue or full cost recovery was also considered. The concept of full cost recovery for water pricing included capital consumption in the form of depreciation was introduced stimulating vigorous protests by the irrigators against Mead and his policies. In the end the revenue for water rights was insufficient to cover depreciation sowing the seeds for what was to come.

Table 2.1 shows the substantial growth in irrigation between 1906 and 1935 under the guidance of the State Rivers and Water Supply Commission. Figure 2.1 shows the closer settlement schemes in 1927, including the irrigation schemes. The large number of schemes depicted on the map emphasises the social objective of the time to settle as many people in rural Victoria as possible.

<table>
<thead>
<tr>
<th>Inventory</th>
<th>1906/07</th>
<th>1934/35</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capacity of storages</td>
<td>577 000 ML</td>
<td>2 353 674 ML</td>
</tr>
<tr>
<td>Length of channels</td>
<td>6 144 km</td>
<td>19 796 km</td>
</tr>
<tr>
<td>Area, irrigated districts</td>
<td>351 077 ha</td>
<td>812 233 ha</td>
</tr>
<tr>
<td>Population, irrigated districts</td>
<td>12 700</td>
<td>80 000</td>
</tr>
<tr>
<td>Area, waterworks districts</td>
<td>3 553 671 ha</td>
<td>5 329 899 ha</td>
</tr>
<tr>
<td>Population, waterworks districts</td>
<td>292 000</td>
<td>473 000</td>
</tr>
<tr>
<td>Area, drainage &amp; flood protection districts</td>
<td>20 235 ha</td>
<td>59 256 ha</td>
</tr>
<tr>
<td>Population, drainage &amp; flood protection districts</td>
<td>n.a</td>
<td>3 300 n.a</td>
</tr>
<tr>
<td>Towns supplied, No.</td>
<td>111</td>
<td>232</td>
</tr>
<tr>
<td>Population supplied</td>
<td>261 000</td>
<td>405 500</td>
</tr>
</tbody>
</table>

Figure 2.1 Distribution of Soldier Settlement Allotments and Closer Settlement Estates
The financial stress of developing large scale soldier settlement schemes, a series of droughts, a severe financial depression in the early 1930s resulted in a Royal Commission into the finances of irrigation and the State Rivers and Water Supply Commission in 1932. The 1930s were characterised by a shift to more extensive pasture based irrigation enterprises with lower capital investment requirements but lower profitability. Figure 2.2 illustrates the move to more extensive pasture based enterprises that started in the 1930s.

Figure 2.2 Land Use Profile in the Irrigation Districts - 1906 to 1942

A decision for the State of Victoria to take full responsibility for funding headworks was a significant outcome of the 1932 Royal Commission. This decision contributed significantly to the boom in headworks that followed the end of the Second World War. Figure 2.3 shows the dramatic increase in storage capacity constructed after the War.

The 1980s witnessed the end of the major construction boom of the post Second World War era. Blue Rock Dam, opened in November 1984, was the last major new dam constructed by the State Rivers and Water Supply Commission. Figure 2.6 shows the irrigation systems constructed throughout Victoria by the Commission and the irrigation trusts. Victoria’s water use of some 5 million ML was dominated by irrigation that accounted for about 4 million ML or 80% of total supplies as shown in Figure 2.4.

The total current replacement costs of the infrastructure assets in the irrigation systems was $4.5 billion (as at 30 June 1994). The importance of the investment in water transport infrastructure: channels, drains and pipelines can be seen in Figure 2.5. The debt of over $400 million accumulated during the construction era was a substantial burden on State finances.

Figure 2.5 Current Replacement Cost of Assets

<table>
<thead>
<tr>
<th>Major Structures (Dams, weirs, etc)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Channels</td>
</tr>
<tr>
<td>Tanks and Elevated Storage</td>
</tr>
<tr>
<td>Tiled Drains</td>
</tr>
<tr>
<td>Pumps and Treatment</td>
</tr>
<tr>
<td>Buildings and Equipment</td>
</tr>
<tr>
<td>Pipelines</td>
</tr>
<tr>
<td>(Total $4.5 Billion)</td>
</tr>
</tbody>
</table>
The investment in irrigation generated a total value of irrigated production from Victorian irrigation of some $1.18 billion per annum in 1988/89. The components of this value of production is shown in Table 2.2. Some 60% of the produce from irrigated areas came from trees, vines, vegetables and other horticultural enterprises.

While the Commission was a highly effective organisation by the standards of the day the organisation found the transition from construction of water supply systems to management of “a commercial irrigation supply business” extremely difficult. These difficulties came to a head during the 1980 to 1983 inquiry into rural water supplies by Public Bodies Review Committee of the Parliament of Victoria, Neilson Associates (1981).

An understanding of the inheritance of the new generation of irrigation managers is important in understanding their responses to the challenges.

CHALLENGES PRESENTED BY THE INHERITANCE

Low Profitability of Irrigated Agriculture

Since irrigation had developed from social and closer settlement policies there had been little incentive to apply commercial discipline in the allocation of water. The water was allocated free of capital charges. As a result, large volumes of water were allocated to relatively low value uses with consequent low profitability. In Victoria trees, vines, vegetables and other horticulture generated some 60% of the value of production but used only 15% of the water. The 85% of water used on pastures generated 40% of the total value of production from irrigated agriculture.
Table 2.2 Value of Irrigated Production, 1988/89 ($M)

<table>
<thead>
<tr>
<th></th>
<th>Trees Vines</th>
<th>Vegetables and Other Horticulture</th>
<th>Cereals Rice</th>
<th>Livestock Pastures</th>
<th>Oilseeds</th>
<th>Cotton Sugar</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>New South Wales</td>
<td>332</td>
<td>185</td>
<td>212</td>
<td>285</td>
<td>390</td>
<td></td>
<td>1 404</td>
</tr>
<tr>
<td>Victoria</td>
<td>375</td>
<td>333</td>
<td>2</td>
<td>468</td>
<td>4</td>
<td></td>
<td>1 182</td>
</tr>
<tr>
<td>Queensland</td>
<td>181</td>
<td>382</td>
<td>25</td>
<td>54</td>
<td>467</td>
<td></td>
<td>1 109</td>
</tr>
<tr>
<td>South Australia</td>
<td>286</td>
<td>157</td>
<td>&lt;1</td>
<td>53</td>
<td>&lt;1</td>
<td></td>
<td>496</td>
</tr>
<tr>
<td>Western Australia</td>
<td>62</td>
<td>121</td>
<td>&lt;1</td>
<td>20</td>
<td>&lt;1</td>
<td></td>
<td>203</td>
</tr>
<tr>
<td>Tasmania</td>
<td>31</td>
<td>109</td>
<td>39</td>
<td></td>
<td></td>
<td></td>
<td>179</td>
</tr>
<tr>
<td>Northern Territory</td>
<td>&lt;1</td>
<td>7</td>
<td>&lt;1</td>
<td>&lt;1</td>
<td>&lt;1</td>
<td></td>
<td>7</td>
</tr>
<tr>
<td>Aust. Capital Territory</td>
<td>&lt;1</td>
<td>&lt;1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>&lt;1</td>
</tr>
<tr>
<td>Australia</td>
<td>1 267</td>
<td>1 294</td>
<td>239</td>
<td>919</td>
<td>861</td>
<td></td>
<td>4 580</td>
</tr>
</tbody>
</table>

Source: Australian Bureau of Statistics and Industry bodies.

Figure 2.7 shows the gross value of irrigated production in terms of dollars per unit of water used. The value of production per ML in Victoria was considerably lower than for Queensland, California or Israel reflecting the relatively low value of crops grown with irrigation in Victoria. This relatively low value of production could be seen as an opportunity since there is considerable scope for increasing profitability and improving return on the massive public investment in irrigation systems.

The closer settlement policies of earlier times left another legacy: a large number of relatively small farms within the ‘Government’ irrigation districts. Some 72% of Australia’s horticultural farms are smaller than 15 ha with an annual cash income less than $8,600. The low profitability and questionable viability of a significant number of Victorian irrigation farms has made irrigation water prices a sensitive subject. The irrigators and their political leaders had used water prices as a lever to influence governments and increase government subsidies and the debate was being diverted from the core issue of low profitability to the detriment of the future of irrigation. Overcoming the inheritance of a irrigation enterprises with low profitability and the irrigators obsession with water prices provides substantial challenges.

Ageing Irrigation Infrastructure

The original irrigation infrastructure was ageing with half the channel systems built before 1930. The need for capital expenditure on replacement works was increasing and water pricing policies were not making adequate provision for renewal of this ageing irrigation infrastructure. Replacement of the infrastructure, however, gives the irrigation community the opportunity to think again.

The commercial discipline of the irrigators paying for replacement of the infrastructure should ensure that only essential infrastructure is replaced, and to a standard appropriate to meet the irrigators needs. Managing the inheritance of a massive, ageing asset base with an inadequate revenue stream and declining government subsidies provided another substantial challenge.
Confused Accountabilities and Lack of Defined Financial Targets

The State Rivers and Water Supply Commission had accumulated a wide range of functions over nearly eighty years including policy, regulatory and commercial functions. The Commission was in danger of becoming both poacher and gamekeeper. Governments as owners of the irrigation authority, while quick to criticise poor financial performance, had not set clear financial objectives and performance targets, and had not been prepared to take hard political decisions. The Commission could not take all the responsibility for its financial condition. Persuading governments to set well defined financial targets was a significant challenge.

Financially Unviable Water Businesses

Since Government had provided the capital funds for investment in the dams, channels and drains, the irrigation community had little exposure to the implications of capital investment for both level of service and cost. There was a temptation to demand higher standards than were commercially viable. Water prices were discussed in relation to operating costs, and both the opportunity cost of capital and depreciation were considered by the irrigation community to be 'free' distorting investment priorities. Irrigation businesses were considered as providers of a public service, not commercial businesses that needed to be financially viable, even though the lack of commercial discipline was harming the long term interests of irrigation.

Revenue from water rates and charges did not even cover the operating costs let alone, depreciation or return on capital investment. In 1984/85 revenue only covered 74% of direct operating expenditure. Decisions to invest capital were not considered in relation to the revenue the investment would generate. Supply of irrigation water was not seen as a commercial enterprise and Government provided the capital for "free".

Community values of the time stressed the need to "stop water running to waste in the sea", and to construct as many dams as possible as a protection against the inevitable droughts. A strong case could be made that the lack of commercial discipline in the original decisions to invest in irrigation infrastructure led to over investment, and that too many irrigation schemes supplying water for low value enterprises were built.

The legacy of these investments was an unsustainable debt of some $400 million. Staff superannuation schemes had also accumulated large unfunded liabilities compounding the debt problem. While it is interesting to consider what might have been, the crucial challenge facing irrigation managers is how to get the best return from that large community investment.

Strong Organisational Culture

The organisational culture if the State Rivers and Water Supply Commission (SR&WSC) was strong, with a drive for excellence and focus on engineering and construction. In its prime the State Rivers and Water Supply Commission was one of the best publicly owned construction authorities in Australia. Their project management skills on major dams were second to none. The organisation gained much strength from the interesting, intellectually challenging work of managing water resources, and the obvious value of the work to the wider community.

Refocussing the inheritance of such a strong organisation on the new tasks that lay ahead provided a substantial challenge. The organisation had to make a difficult transition from a highly skilled construction authority focussed on building dams, channels and drains to a more financially skilled commercial organisation focussed on providing water services to the irrigators in an environmentally sustainable way.
Environmental Degradation

The environmental consequences of salinity, high water tables and the effects of river regulation on Riverine forests, algal blooms and water quality were emerging. Figure 2.8 shows the changed flow regimes in the Goulburn, Broken and Campaspe Rivers that supply the irrigation areas of Northern Victoria. The substantial changes in flow regimes were having adverse environmental consequences including algal blooms. However, on the positive side of the ledger, the tight central discipline applied to water allocation by the State Rivers and Water Supply Commission illustrated in Figure 2.9, has served future generations well. The growth in water diversions has not ballooned out of control.

Figure 2.8 Changed Flow Regime in Goulburn-Broken-Campaspe Rivers

High water tables are a crucial challenge facing Victorian irrigation. Figure 2.10 shows the rapid rise in water tables underlyng the irrigation areas and consequent increase in the area of agricultural land affected by high water tables. Overcoming the inheritance of environmental degradation to create a sustainable future for irrigation provides the greatest challenge of all if irrigation is to have a future.

Negative Community Perceptions of Irrigation

Community attitudes to irrigation were changing from the earlier view of "making the deserts bloom" to the "Northern Myth" of Davidson (1965). The construction of the Ord River Scheme, an obvious economic failure, was a turning point in the increasingly negative community attitude to irrigation. Community concern about the environmental degradation emerging as a result of long periods of irrigation was reinforcing these negative perceptions. The political debate on irrigation was becoming increasingly negative and becoming a significant influence on the political economy of irrigation.

Figure 2.9 Growth in Diversions
Figure 2.10 Shepparton Area - Rise in Water Table Levels over 11 Years

SHEPPARTON REGION
WATER TABLE CONTOURS
AUGUST 1982

LEGEND
Water table below surface
- 0 - 1m
- 1 - 2m
- > 2m

Scale 1:500,000

SHEPPARTON REGION
WATER TABLE CONTOURS
AUGUST 1993

LEGEND
Water table below surface
- 0 - 1m
- 1 - 2m
- > 2m

Scale 1:500,000
Chapter 3: Signposts along the Way

INTRODUCTION

The history of the Victorian irrigation industry in the decade from 1984 to 1994 is a complex series of inter-woven events. The major areas of reform are discussed in turn following the reforms through the sequence of major events... There were many important milestones in each major reform, sometimes separated by the passage of several years, and intermingled with many other important but unrelated events. A better understanding of each reform would come from a concentrated description of all the important events in that reform in one place.

The journey of reform is therefore described in terms of the key areas of government policy, irrigation, commercial and environmental challenges selected to be useful for the reader contemplating similar reforms. In order to assist the reader understand the inter-relationships between the many simultaneous reforms the events are set out in chronological order as signposts along the way.

Figure 3.1 Financial Targets and Strategies

<table>
<thead>
<tr>
<th></th>
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<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Shortfall</td>
<td>$66.9M</td>
<td>Rural Water Commission created</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>$33.4M</td>
<td>Financial Management Strategy endorsed</td>
<td>Operating Costs held fixed in nominal dollar terms for four years.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>$13.3M</td>
<td>Financial Management Strategy completed</td>
<td>Operating costs reduced by 30%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| 1990/91 to 1994/95 Rural Water Commission Business Plan endorsed |
| 'Rate Protest' |
| Future Management Review |
| Rural Water Corporation created and Future Management Review targets endorsed |
| Autonomous organisations created out of Rural Water Corporation |
| Rural Water Corporation ceases to exist |

Figure 3.2 illustrates the transition of the functions of the State Rivers and Water Supply Commission into the Department of Water Resources and the Rural Water Commission to separate policy, regulatory and operational activities. The further transition through the Rural Water Corporation into 4 autonomous regional authorities is also illustrated.

POLITICAL ECONOMY OF REFORM, GOVERNMENT POLICY, GOVERNANCE AND STRATEGIC PLANNING: TIMETABLE OF KEY EVENTS

Figure 3.1 sets out the timing of transition of the State Rivers and Water Supply Commission into the Rural Water Commission through the "Rate Protest", and the Future Management Review to the Rural Water Corporation. The sequence of the three major strategic plans: the Financial Management Strategy; the 1990/91 Business Plan; and the Future Management Review targets are also shown.

Figure 3.2 illustrates the transition of the functions of the State Rivers and Water Supply Commission into the Department of Water Resources and the Rural Water Commission to separate policy, regulatory and operational activities. The further transition through the Rural Water Corporation into 4 autonomous regional authorities is also illustrated.
Public Bodies Review Committee: 1980 - 1983

- **March 1980**
  
  Public Bodies Review Committee (PBRC) an all party committee of the Victorian Parliament given the charter of reviewing the rural water industry. The committee includes leading members of the Labor Party.

- **April 1982**
  
  Election of the Cain Labor Government in Victoria with Ministers who have gained experience in reform of the rural water industry from the PBRC

- **July 1983**
  


- **May 1984**
  
  Central Management Restructuring Act, 1984 passed by the Victorian Parliament as the first step in reforming industry structures. The Act created two new organisations on 1 July 1984: the Department of Water Resources; and the Rural Water Commission of Victoria out of the State Rivers and Water Supply Commission, which was abolished on 30 June 1984.


- **July 1985**
  
  Victorian Government approves the Financial Management Strategy of the Rural Water Commission. The Government agreed to take responsibility for some $330 million of the debt incurred in constructing the irrigation infrastructure. In return the Commission agreed to cut operating expenditure by about 30% holding expenditure constant in nominal $ terms for 4 years. The Commission was left with responsibility for $68 million of the total debt.

- **September 1985**
  
  Rural Water Commission clarified the concept of financial self sufficiency for irrigation authorities implicit in the Financial Management Strategy and set a target of 20 years to achieve the goal. After allowing for the cost reductions, an increase in water prices of 2% real per annum over the 20 year period was required.

- **July 1987**
  
  Minister confirms the decision to regionalise the Rural Water Commission into 9 defined regions with devolvement of authority from head office in Melbourne to the regional centres.

- **August 1988**
  
  Rural Water Commission approves the new regional management structure and restructuring the organisation starts in earnest.

- **June 1989**
  
  Successful completion of the Financial Management Strategy with cost reductions of some 30%. The pricing reform however is less successful with real price increases averaging 0.9% per annum since July 1984.

- **January 1990**
  Advisory Board Conference for consultation between the irrigators and the Rural Water Commission on the 1990/91 Business Plan targets and future pricing.

- **July 1990**
  Implementation of the Rural Water Commission's 1990/91 Business Plan covering the next 5 years starts with approval of the Victorian Government. Real price increases of 2.8% per annum are required. High inflation rates resulted in a nominal price increase of 11% for 1990/91. At the time commodity prices were satisfactory.

- **December 1990**
  Regionalisation approved by the Rural Water Commission in 1988 completed.

"Rate Protest": 1991

- **March 1991**
  Most commodity prices for irrigated agriculture collapse causing widespread concern in the rural communities.

- **April 1991**
  Protest march of irrigators in Kerang

- **May 1991**
  Victorian Farmers Federation promote a “Rate Protest” encouraging irrigators to refuse payment of their water bills: some $30 million in payments withheld to put pressure on the Corporation and the Government.

- **May 1991**
  Head Office of the Rural Water Corporation in Melbourne blockaded by some 400 irrigators

- **July 1991**
  Government funding of the Rural Water Commission moves to a one-line net appropriation. The one line appropriation covers the gap between revenue and costs. The Commission therefore gains control of its revenue for the first time.

- **August 1991**
  Arthur Andersen reports to the Minister recommending the use of renewal annuities as a measure of capital consumption for water pricing, in place of current cost depreciation. The consultants were appointed by the Minister in an attempt to defuse the “Rate Protest”.

Future Management Review: 1991

- **September 1991**
  Future Management Review Committee appointed to review water pricing and the future of the Rural Water Commission.

- **January 1992**
  Future Management Review reports to Government after extensive consultation confirming the principle of financial self sufficiency and recommending 2.1% real water prices to 2001, earlier than envisaged in the Business Plan. The reduction was made possible by costs savings by creating the Rural Water Corporation as a government business enterprise outside the Victorian Public Service.


- **June 1992**
  Rural Water Corporation Act, 1992 passed by the Victoria Parliament creating the Rural Water Corporation including 5 subsidiary Regional Management Boards.
from the 1st of July 1992. Further devolvement of authority is proposed.

- **July 1992**
  Renewal annuities used to set water prices for the first time.

- **September 1992**
  Regional Management Boards meet for the first time.

- **October 1992**
  Kennett Coalition elected as the Government of Victoria.

- **October 1992**
  New Government agrees to accept liability for the debt of $102.4 million of the Rural Water Commission (the original $68 million plus debt accumulated since 1984) plus the liability for staff superannuation to 30 June 1992. Provision of $12 million for restructuring the Rural Water Corporation generated from sale of the Corporation's staff housing. In return the Corporation will receive no further Government subsidy and must fund all activities including future staff superannuation costs from revenue.

- **October 1993**
  Kennett Government announces major reforms of the Victorian water industry including creating the 5 Regional Management Boards as autonomous organisations and phasing out the Rural Water Corporation.

**Autonomous Regional Rural Water Authorities Formed 1994**

- **July 1994**
  Regional Management Boards become government business enterprises in their own right completing the devolvement of authority.
PROFITABILITY OF IRRIGATION: TIMETABLE OF KEY EVENTS

Figure 3.3 sets out the timetable of reforms of water allocation from the introduction of temporary trading in water entitlements, through water auctions to permanent trading and continuous water accounting for bulk allocations of Murray River resources.

**Figure 3.3 Timetable of Reform of Water Allocations**

<table>
<thead>
<tr>
<th>Year</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>1984</td>
<td>ACIL Consultants Report on Transferability of Water Entitlements</td>
</tr>
<tr>
<td>1985</td>
<td></td>
</tr>
<tr>
<td>1986</td>
<td></td>
</tr>
<tr>
<td>1987</td>
<td>Temporary Trading in Water Entitlements start</td>
</tr>
<tr>
<td>1988</td>
<td>Water Allocation Anomalies Committee Reports</td>
</tr>
<tr>
<td>1989</td>
<td>First Water Auction of new Water Entitlements</td>
</tr>
<tr>
<td>1990</td>
<td>New Water Act passed providing for Permanent Transfers</td>
</tr>
<tr>
<td>1991</td>
<td>Murray Darling Basin Commission adopts capacity sharing and continuous accounting for Water Allocations</td>
</tr>
<tr>
<td>1992</td>
<td>Permanent Trading in Water Entitlements start</td>
</tr>
<tr>
<td>1993</td>
<td></td>
</tr>
<tr>
<td>1994</td>
<td></td>
</tr>
<tr>
<td>1995</td>
<td></td>
</tr>
</tbody>
</table>

Figure 3.4 provides the time sequence of major milestones in the reform of water distribution practices from the introduction of central communication and planning to development of the Water Management System.

**Figure 3.4 Water Distribution Reform**

<table>
<thead>
<tr>
<th>Year</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>1984</td>
<td></td>
</tr>
<tr>
<td>1985</td>
<td>Jan '85 Channel Systems Project initiated to develop Central Communication &amp; Planning</td>
</tr>
<tr>
<td>1990</td>
<td>Sept '90 - Information Technology Strategy completed initiating development of the Water Management System (WMS)</td>
</tr>
<tr>
<td>1991</td>
<td></td>
</tr>
<tr>
<td>1992</td>
<td>Aug '92 - Central Communication and Planning implemented in all irrigation districts</td>
</tr>
<tr>
<td>1993</td>
<td></td>
</tr>
<tr>
<td>1994</td>
<td>Sept '94 - Waterline - Interactive voice response system goes live (first stage of WMS)</td>
</tr>
<tr>
<td>1995</td>
<td></td>
</tr>
</tbody>
</table>
The Irrigation Management Study

- **August 1984**
  ACIL Consultants report to the new Department of Water Resources recommending the introduction of transferable water entitlements initially by leasing entitlements between irrigators. These reforms would involve breaking the legal bond between irrigated land and water to allow the two property rights to be traded separately.

- **January 1985**
  Channel Systems Project initiated to introduce central communication and planning of irrigation water deliveries. The new operating system has the potential to improve the flexibility of operation facilitating trading and new water delivery services such as high capacity meter wheels. The new operating system prepared the way for introduction of more sophisticated information technology.

- **September 1986**
  Minister for Water Resources releases report of the Irrigation Management Study. The report addresses water availability, methods of allocation of the limited volumes of additional water for irrigation, security of supply, water pricing, transferability of water entitlements, standards of service and on farm management. The report draws on the earlier study by ACIL.

- **July 1987**
  National Irrigation Research Fund (NIRF) initiated. The research is intended to improve water management.

- **August 1987**
  Temporary trading in water entitlements starts.

- **January 1988**
  Water Allocation Anomalies Committee hearings finalised report anticipated in September 1988. Resolution of the anomalies is required to clean the slate before the new Water Act is passed and permanent trading in water entitlements becomes possible.

Water Auctions

- **May 1988**
  First water auction of new water entitlements in Australia organised by the Rural Water Commission.

- **May 1989**
  Water Act, 1989 passed by the Victorian Parliament opening the way for permanent trading of water entitlements between irrigators. Permanent trades between irrigation and other sectors, such as urban, requires direct Government involvement.

Continuous Accounting for Murray River Resources

- **December 1989**
  Murray Darling Basin Commission adopts continuous accounting for bulk allocations of Murray River resources between New South Wales and Victoria.

- **September 1990**
  Rural Water Commission’s Information
Technology Strategy approved initiating the development of the Water Management System to build on central communications and planning and take advantage of modern technology to improve water delivery services and operating efficiency.

Permanent Trading in Water Entitlements
- **September 1991**
  Regulatory Impact Statement for introduction of permanent transferability of water entitlements. Permanent trading in water entitlements between irrigators starts later in the year for the 1990/91 irrigation season.
- **June 1992**
  Central communication and planning for management of water deliveries operational in most irrigation districts. The new system now accepted by irrigators and the Rural Water Commission’s staff.

The Water Management System
- **August 1992**
  SCADA system installed at Pyramid Hill as another step towards the Water Management System.
- **September 1992**
  National Program for Irrigation Research starts replacing NIRF
- **October 1992**
  Trial of new irrigation planning and scheduling system as another step to the Water Management System.
- **September 1994**
  Waterline, the interactive voice response system for water ordering is commissioned in selected irrigation districts. Waterline is the first component of the Water Management System to be commissioned. Irrigation water delivery in Victoria is at the dawn of a new era.

THE IRRIGATION AUTHORITY AS A COMMERCIAL BUSINESS: TIMETABLE OF KEY EVENTS

Figure 3.5 illustrates the reform of staff employment conditions, removal of demarcations and implementation of staff training programs. The dramatic improvement in flexibility created by moving the Rural Water Corporation out of the Victorian Public Service to create a government business enterprise can be clearly seen.

Commercial Accounting Practices
- **July 1984**
  Commercial General Ledger, accrual accounting and other accounting reforms introduced to the Rural Water Commission
- **December 1988**
  Category Review of Rural Water Commission’s water distribution staff completed leading to more flexible use of staff, lower costs and better career structures.

Application of Information Technology
- **September 1990**
  Rural Water Commission Information Technology Strategy approved. The strategy was designed to improve management information systems and water management through the development of the Water Management System to take advantage of SCADA technology.
New Revenue: Hydroelectricity
- April 1991
  Contract to install 2.5 MW hydroelectric generator at Blue Rock signed with Kvaerner Boving.
- July 1991
  New Customer Information and Billing System introduced, encompassing 74,000 customers with over 60 different services, supporting tariff reform and water trading
- July 1991
  Funds for enhanced resignation packages become available for the first time allowing acceleration of the reduction in staff numbers and costs.

Investing in Staff Training to Enhance Skills
- July 1992
  Rural Water Corporation gains accreditation as a private provider of training to build skills of staff to create a smaller more highly skilled organisation.
- July 1992
  A new generation of commercial accounting systems introduced supported by the appointment of experienced financial controllers to the regions and all business units.

Figure 3.5 Staff Employment Conditions, Career Structures and Training
Restructuring of Employment
Conditions: Removing Demarcations

- **November 1992**
  Single industrial award with 2 respondent trade unions created for the Rural Water Corporation's staff with potential for better career structures for staff and reduced costs for the Rural Water Corporation. Incentives given for staff to gain and utilise new skills through Rural Water Corporation’s accredited training programs. Reforms made possible by creation of the Rural Water Corporation as a government business enterprise.

- **December 1992**
  Enhanced resignation packages funded from proceeds of the sale of Rural Water Corporation houses accelerates the restructuring and the reduction of staff numbers.

- **January 1993**
  Non metropolitan urban authorities charged for bulk water supplied from Rural Water Corporation systems. Water had previously been supplied free.

- **March 1993**
  Commercial Development Project starts with the objective of taking business planning and a commercial approach into every work unit in the RWC

- **July 1993**
  Quarterly billing introduced using new customer information and billing system to improve Rural Water Corporation’s cash flow and reduce finance charges.

- **July 1993**
  Rural Water Corporation’s business and commercial divisions set up as commercial consultancies providing services to the regions.

- **August 1993**
  First Certificates of Water Resources Management awarded under Rural Water Corporation’s accredited training program.

- **November 1993**
  Agreement reached with SEC to increase revenue from hydroelectric power station at Eildon backdated to 1990 when the original agreement was cancelled

- **July 1994**
  Rural Water Corporation reduced shortfall in revenue over business costs by 80% to $13.3 Million and passes the baton to the newly independent Regional authorities

ENVIRONMENTAL SUSTAINABILITY: TIMETABLE OF KEY EVENTS

Salinity Mitigation

- **September 1985**
  Consultants report on the Barr Creek salinity mitigation plan

- **December 1986**
  Mineral Reserves Basin salinity mitigation scheme abandoned and impetus for community leadership in natural resource management grows.

- **May 1988**
  Victorian Government announces “Salt Action” a $50 million initiative to mitigate salinity.
Formation of the Murray Darling Basin Commission

- **January 1988**

- **April 1989**
  The draft Natural Resources Management Strategy presented to Murray Darling Ministerial Council with a preliminary budget of $45 million.

Salinity and Drainage Strategy

- **April 1989**
  Murray Darling Salinity and Drainage Strategy approved by the Murray Darling Ministerial Council

- **May 1990**
  Victorian Government approves 4 major salinity management plans covering Shepparton irrigation, Goulburn Broken dryland, Campaspe West, and the Tragowell Plains.

- **December 1990**
  Woolpunda Salt Interception Scheme, the first major new work of the Salinity and Drainage Strategy opened.

- **January 1991**
  Algal bloom extends for 1000 km along the Darling River.

- **May 1991**
  Murray Darling draft Fish Management Plan released for public comment.

- **July 1991**
  Land and Water Resources Research and Development Corporation commences operations.

- **July 1992**
  Cooperative Research Centre for Catchment Hydrology starts work with the Rural Water Corporation as a partner.

- **June 1993**
  Murray Darling draft Algal Management Strategy released for public comment.

- **July 1993**
  Cooperative Research Centre for Freshwater Ecology starts work with the support of the Rural Water Corporation.

- **August 1993**
  Completion by the Rural Water Corporation of Victoria's Groundwater Management Strategy after extensive consultation.

- **August 1984**
  Rural Water Corporation completes its first environmental audit.

- **September 1994**
  Fish lift at Yarrawonga Weir Commissioned.
CHAPTER 4: Political Economy of Reform, Government Policy, Governance and Strategic Planning

POLITICAL ECONOMY OF REFORM

The journey to a financially sustainable irrigation system started in the early 1980’s at a time when changes to the political economy of Australia were becoming evident.

Globalisation of national economies was starting to have a significant impact on the structure of the Australian society, felt most strongly in the labour market and rural and regional areas. When the newly elected Federal Labor Government deregulated the banking industry and floated the currency in 1984 Australia was exposed to the increasing global forces of competition.

The manufacturing industry had been protected by a system of tariffs, and many agricultural industries were supported by subsidies that remained from the days when closer settlement of rural areas was the policy of successive governments. Australia, as a nation heavily dependent on commodity trading, could not hide from the forces of global competition. Progressive reduction of tariffs and subsidies commenced exposing the low level of profitability of many irrigation enterprises.

Victoria was not isolated from these winds of change. The high level of debt built up during a period of major infrastructure construction after the Second World War was not sustainable. Borrowing had been used to delay making hard decisions about the future structure of the Victorian economy. Reduction of the high levels of debt became a policy imperative. Highly subsidised public utilities such as transport and water were therefore an early target of government attempts to improve financial management and gain the approval of the international money market which now determined the rate of interest paid on growing levels of debt.

In the United Kingdom and New Zealand, Margaret Thatcher and David Lange respectively initiated fundamental economic restructuring. Although these leaders came from different political persuasions the principles of economic rationalism underpinning their reforms were similar. Industry structures were reformed to separate regulatory functions so that commercialisation and privatisation of government business enterprises could start.

Governments were concerned about the increasing expenditures required to renew ageing infrastructure, and the implications of these expenditures for service prices. Proceeds of asset sales from privatisation would be available to reduce debt, and the private sector with its greater commercial focus should be capable of improving the efficiency of the enterprises including water supply. The private sector could also wear the odium of price increases.

In 1980’s Australia a political convergence was taking place, providing a window of opportunity. The traditional socialist Australian Labor Party was moving further to the centre and adopting much of the agenda of economic rationalism. Most of the economic reforms set in train in Australia were initiated in an era when Labor Governments were in power both at the commonwealth level and in many of the states. Successive Coalition governments have accelerated the implementation of these economic reforms, based on the philosophies of economic rationalism.

Australia is a federation of sovereign states with the powers of the Commonwealth Government constrained by the Constitution. While this structure of government has many strengths, it is rare for most governments, Commonwealth and state, to share a similar political philosophy. Concerted action on issues that require cooperation across state borders
can be difficult to achieve. During the second half of the decade of the 1980’s political convergence took place in Australia and, like some astrological convergences, it portended well for certain actions.

The most notable of these actions has direct implications for the irrigation industry. Formation of the Murray Darling Basin Commission (MDBC) to replace the River Murray Commission created an organisation with wide responsibilities for managing the catchment of the Murray and Darling Rivers containing most of Australia’s irrigation industries. Formation of the MDBC has profound implications for water allocation across the three states involved including the irrigation schemes managed by the Rural Water Commission of Victoria. Holistic water management was now possible.

The drivers for reform in the water industry were not confined to economic issues alone. During the 1980’s community concern about the environmental consequences of constructing dams and diverting large volumes of water were increasing. The issue of dam construction came to a head with the blockade of a dam site on the Franklin River in Tasmania by the green movement in 1983. One legacy of that blockade is that construction of new dams in Australia for whatever purpose is a highly contentious issue.

Concerns about the effects of irrigation on waterlogging and salinity were also increasing. It is ironic that efforts to raise community concern about environmental issues such as salinity to strengthen the political will to invest government funds in reversing the degradation also served to create negative perceptions of irrigation in the wider community. These attitudes reinforced the negative perceptions created by the demonstrable economic failure of the Ord River irrigation scheme in northern Australia, Davidson (1960). The irrigation industry in Australia was on notice to improve both its economic and environmental performance if it was to have a sustainable future.

The tension between central authority and local autonomy was also part of the political landscape of Australia in the 1980’s. There was considerable pressure to devolve authority to the lowest appropriate level of management and break down the highly centralised management systems. Regionalisation of activities was a policy of many governments in the 1980’s. The community was also demanding greater involvement in decision making, either through effective consultation or direct participation.

Development of the Landcare Movement took place during the late 1980’s. Rural Australia has always had a strong ethic of social cooperation, especially in emergency situations and in response to crises brought about by the highly variable climate. A sense of responsibility has been stimulated at the grass roots of rural communities by formation of the Landcare Movement. Landcare facilitates groups of land holders to come together and work cooperatively to address environmental issues. The advisory system in the Victorian irrigation industry has a long history reflecting the need to work together and take decisions at the community level. Development of the irrigation advisory system provided a model for natural resources management in Victoria.

Reform in the irrigation business in Victoria took place in the context of these economic, environmental and social trends. In some cases Victoria led the reforms occurring throughout the Australian water industry.

The Cain Labor Government came to power in 1982 with a strategy for reform of the rural water industry developed by the Public Bodies Review Committee, an all party Parliamentary Committee established with bipartisan support by the previous Liberal Government. In developing this strategy the Public Bodies Review Committee thoroughly examined many aspects of the rural water industry, published extensively and consulted widely, Neilson (1983). The strategy received strong support from Labor members of the Committee who went on to hold significant posts in the Cain Labor Government. David White and Steve Crabb held the Water Resources portfolio and Rob Jolly was Treasurer.

The need for reform was now evident to those in power in Victoria, and the political will to take difficult decisions was strengthened. Labor governments have an inherent advantage in reforming rural activities in that rural communities are not part of the Labor party’s political
constituency, and the odium of difficult decisions has less effect on the Party’s support.

Establishment of the Council of Australian Governments (COAG), a forum consisting of the Prime Minister of Australia and the heads of all state and territory governments provided continuing impetus for water reform. COAG’s Water Reform Agenda, which was launched in February 1994, provided strong incentives for continuing the momentum of reform built up in the previous decade.

The Water Reform Agenda requires pricing reform, achievement of full cost recovery for delivery of irrigation water and reinforces the concept that water is an economic good, principally through promoting reform of water allocation and creation of water markets. Successful achievement of the reform milestones will result in the states benefiting from substantial payments from the Commonwealth Government. The experience of reform in the irrigation industry in Victoria was influential in shaping the COAG Water Reform Agenda.

Australia was not alone in facing up to the need for reforming irrigation. The Dublin Statement of the pre-UNCED Conference on Water and the Environment, World Meteorological Organisation (1992) articulated three principles that demonstrate remarkable similarity with the Australian experience. The principles for effective water management embodied in the Dublin Statement are:

- the “ecological principle”, requiring holistic management of water;
- the “institutional principle”, requiring that management be participatory, with responsibility at “the lowest appropriate level”;
- the “instrument principle”, requiring that water be managed as an economic resource.

The experience of reforming the Victorian irrigation industry highlights the importance of these principles.

ROLE OF GOVERNMENT

The role of government in irrigation had increased in complexity reflecting the incompatibility of many of the earlier social imperatives underlying irrigation development with the emerging economic agenda. The winds of political change and the greater focus on economic reality gave an opportunity to reconsider the role of government in irrigation. It was a role in which a number of functions emerged including industry restructuring; governance; pricing and the setting of financial targets. Each of these functions will be discussed in detail in the following sections of this chapter.

Industry restructuring is a function of governments. Reform of industry structures is required to separate policy, regulatory, resource management and operational functions to develop a more commercial and financially competent industry.

Appointment of skilled boards to manage government business enterprises is one way for governments to ensure sound governance of government business enterprises, and the implementation of a complex reform agenda. Transparent reporting of financial performance is another way for governments to promote competent management.

In the absence of an independent economic or price regulator in Victoria at the time, approval of rural water pricing remained a function of government. The government was heavily involved in developing the water pricing policies of the irrigation industry and took its share of the political odium as a consequence.

Setting clear financial targets for the management of government business enterprises such as irrigation authorities is another vital function of government. Such targets are essential for the good management of government businesses. How can management succeed if their goals are poorly defined?

A good summary of the role of governments in the reform of government business enterprises is reflected in the principles for corporatisation set out in Table 4.1.
Table 4.1 Corporatisation Principles

- Providing utilities with clear commercial goals free of conflicting objectives;
- Abolishing or transferring utilities' regulatory roles (this is a function of governments or properly constituted authorities);
- Paying utilities the commercial price for any community service obligations undertaken;
- Vesting management responsibilities in a commercial board accountable to Parliament through the Minister
- Establishing and monitoring targets and providing reward/penalty mechanisms;
- Establishing a "dividend" component of net earnings;
- Requiring utilities to pay tax and a fee for any Government Services (for example, loan guarantees);
- Removing policy and regulatory constraints not applying to industry generally;
- Adapting uniform commercial accounting practices which are transparent; and
- Reducing significantly the scope for Ministerial intervention.

INDUSTRY STRUCTURES AND ACCOUNTABILITY

The discussion of industry restructuring starts with the end of the State Rivers and Water Supply Commission in June 1984 with the formation of the Rural Water Commission. Restructuring gathered pace in July 1992 with the transformation of the Rural Water Commission into the Rural Water Corporation. Restructuring focussed on the role of the rural water authority in industry regulation, urban water supply, and water resources management. Regionalisation of service delivery was another important aspect of industry structure. The community were also demanding a greater voice in natural resources management that had to be accommodated.

The new Government of Victoria inherited an irrigation authority with a wide range of functions from developing government policy, regulation of one sort or another, resource management and operating both urban and rural water supply businesses. These functions often resulted in conflict of interest. For example, the State Rivers and Water Supply Commission, the body that represented the interests of irrigation, the largest water user, was also accountable for policy and regulation of water allocation. In other words the irrigation authority was both the poacher and the gamekeeper.

Reform of the irrigation industry required clarification and rationalisation of the functions of the State Rivers and Water Supply Commission, the urban water authorities and of the government and its departments. The Ministerial Statement that introduced the 1984 Bill to restructure central management of the Victorian water industry described creation of the Department of Water Resources as the central policy unit, and the Rural Water Commission as the operational arm of the rural water industry. The Bill defined two major objectives - "the delivery of significantly improved services to consumers and the implementation of key public administration reforms through the introduction of modern financial and resource management practices." The Bill provided for an "integrated corporate approach" and established a Board of Management for the Rural Water Commission including representatives of the major rural water users and board members selected for their specific skills.

The Rural Water Commission was charged by the Government of the day to become more commercial in its approach to the delivery of services to its customers, to improve financial management and accountability, and to establish strategic planning within the framework of wise resource allocation.

Clear accountability is vital to effective management, however clear accountability of the Rural Water Commission could not be established until the scope of the irrigation business was properly defined. The functions that were not essential to the irrigation business had to be identified and separated. The subsidies and cross subsidies had also to be identified, and if not removed completely, at least recognised. Unravelling the confusing financial relationships and confused accountabilities was an essential component of the reforms.

The State Rivers and Water Supply Commission had accumulated a mixture of internal and external accountabilities across a range of public sector functions:
construction and management of infrastructure which harnessed the major part of the available water resources in Victoria;

- bulk supplier to non-metropolitan urban water authorities and supervision of their activities on behalf of the Government;
- retailing water to major urban areas such as the Mornington and Bellarine Peninsulas, and Bendigo;
- managing large gravity and piped government irrigation districts and regulated supply to private diverters and smaller schemes such as the First Mildura Irrigation Trust;
- policy adviser to the Government;
- regulator on behalf of Government including environmental regulation on behalf of the Environmental Protection Authority;
- providing technical services throughout the water industry; and
- assessing and monitoring water quality and quantity.

Separation of the Poacher and Gamekeeper

In order to clarify accountability, the Government transferred some of the Commission's policy and regulation functions as well as its responsibility for some urban water supplies to the newly formed Department of Water Resources. The water quality regulation functions delegated to the State Rivers and Water Supply Commission by the Environment Protection Authority were returned. This allowed the Rural Water Commission to concentrate on rural water supply and resources management. The ultimate objective of the structural reforms was to create an efficient commercial irrigation authority working within a policy and regulatory framework established by the new Department of Water Resources.

Urban Water Supply

The State Rivers and Water Supply Commission also directly managed a number of urban water supplies including the Mornington Peninsula and Bendigo, and supervised some 450 urban water boards. While the supervisory function was transferred to the then Department of Water Resources in 1984, some direct management of urban water supplies continued.

Urban and irrigation water businesses are very different and the urban businesses within the Rural Water Commission were a distraction. Eventually all the urban water supply businesses were separated leaving the Rural Water Corporation and its successors as purely irrigation and rural water supply business with clearer objectives and fewer opportunities for cross subsidy.

Separation of the larger, more profitable urban water businesses inflicted some financial stress on the Rural Water Commission, leaving the Commission with overhead costs that were not easy to reduce, especially when public sector staffing policies did not allow for redeployment or redundancies. The heavily subsidised small rural town supplies remained with the Rural Water Commission. Often the lack of financial viability of the small town supplies was the reason that they were left for the Commission to manage. No other urban water board wanted them!

Water Resources Management and Other Government Services

During an 80 year period the State Rivers and Water Supply Commission accumulated a range of functions relating to management of water as a natural resource, including water resource assessment, floodplain and river management. The reason for accumulating these functions was often that the State Rivers had the necessary skills and the staff members were motivated to increase the range of their activities. Over the passage of the years the Government lost contact with these activities and was often unaware of the services it was getting!

Collection of water resource and environmental data, ground water studies and involvement in the salinity program were more directly in the interests of the Rural Water Commission and its customers.
A Commercial Orientation Task Force, Rural Water Commission (1987), was established in 1987 to review all the Commission's activities to separate them into activities that were part of the irrigation business and thus funded from the Commission's revenue. Natural resource management activities, on the other hand, are more appropriately funded by Government.

The ultimate objective was to convert the natural resource management activities into a contract with the Government to ensure that all services were regularly scrutinised and subject to competitive tendering. The discipline of reviewing each activity would also eliminate activities that were being subsidised by inappropriate classification as a government service instead of part of the irrigation business.

Independent observers such as the Director General of Water Resources commented that the process was highly disciplined. The Board of Management of the Rural Water Commission was confident that all subsidies resulting from misclassification of activities had been eliminated. The process certainly led to a more streamlined and efficient Commission. The future of the water resource activities previously carried out by the Commission then became highly dependent on the skill of the natural resource departments in establishing and managing contracts.

Regionalisation

The Cain Labor Government had a strong commitment to regionalisation of service delivery. Regionalisation has the advantage of devolving responsibility closer to the work-face with the potential to improve the effectiveness of decision making. While arguments can be developed that centralised structures are more cost effective the decision to regionalise was made on philosophical grounds. The Rural Water Commission had the job of implementing regionalisation and making productivity savings, and commenced a major regional restructuring program in September 1986.

The selection of regional centres and the reduction in functions and staff in the district centres were highly controversial issues in rural Victoria. It was also an issue that caused difficulty for the Government. After extensive and exhaustive consultation with the rural communities by the Rural Water Commission a regional structure of nine regions together with the regional centres was announced. This regional structure is shown in Figure 4.1.

The communities in some of the districts that had missed out on selection for a regional centre reacted strongly and organised political protests. The Pyramid Hill community composed a song lampooning the Rural Water Commission, and the entire community of Murtoa in the Wimmera walked 30 km to Horsham, the newly designated regional centre, to publicise their case. In the end the decisions held.

The initial regionalisation commenced by the Rural Water Commission in 1986 was completed by December 1990. The recommendations of the Future Management Review made in January 1992 took regionalisation of rural water management to the next stage.

In its submission to the Review the Rural Water Commission recommended that its nine regions be reduced to five based on rural water systems. Mallee Region was divided into a stock and domestic supply component and an irrigation component. The stock and domestic component was combined with Wimmera to form the Wimmera Mallee Region based on the stock and domestic water supply system. The remainder of Mallee was combined with Loddon Torrumbarry, Goulburn and Murray-North East Regions to form the Goulburn Region covering the whole of the Goulburn Murray Irrigation District. The larger regions would have greater chance of becoming financially viable in their own right if they were ultimately separated. The Future Management review took up this proposal for five regions.

The Victorian Government accepted the recommendations of the Future Management Review in their entirety and established the Rural Water Corporation with the five regions shown in Figure 4.2. The new regional structure further clarified accountabilities by separating the regions according to the type of rural water business, and facilitated holistic water management of catchments and water supply systems.
Figure 4.1 Rural Water Commission - Regions and Regional Centres

Figure 4.2 Rural Water Corporation - Regions and Regional Centres
Devolvement of Authority to the Community

The government encouraged delegation of authority to the community level. The first effect of this policy was reflected in the Victorian Salinity Program that developed from the Parliamentary Inquiry on Salinity of 1982-1984. Community groups were established to lead the development of salinity management plans for specific water systems. The technical specialists of the government agencies including the Rural Water Commission, and subsequently the Rural Water Corporation provided technical advice to these community groups. The technical specialists had led previous planning programs and the role reversal took time for both the community and technical specialists to adjust to. The policy of devolving authority also involved the irrigators through development of the advisory committees of the irrigation districts described in Chapter 5.

Customer focus was enhanced by the Rural Water Commission through strengthening the advisory system of irrigators and other rural water users. Local advisory committees were based on irrigation areas and in the case of domestic and stock water supply, on communities of interest. Membership was drawn from customers with the by-laws of the Advisory Committees allowing for appointment of members with specialist skills. Representatives of these local Advisory Committees formed Regional Advisory Councils covering whole water systems. A state wide forum was convened biennially to consider state wide issues. A state wide Groundwater Advisory Committee was established in 1991 and developed a Groundwater Strategy to improve management and protect the quality of groundwater in Victoria.

Advisory committees and councils were the forum for the discussion of options for pricing policies and asset maintenance and replacement. Improved methods for water distribution were also canvassed. The establishment of advisory system was the first step towards customer management of the irrigation systems.

GOVERNANCE

Governance, by which is meant the manner of governing, was critical to the success of intended reforms. The governing body must have clearly defined powers, responsibility and accountability in order to achieve its objectives. It must be able to control those elements of its budget which affect its financial performance. The most appropriate form of governance emerges from experience, review and refinement. In the decade from 1984 to 1994, which is the focus of this discussion, there were three major forms of governance each giving way to the next as the state government reform process proceeded.

State Rivers and Water Supply Commission – 1905 to 1984

The State Rivers and Water Supply Commission was governed by Chairman and two Commissioners appointed by the Government. Commissioners were usually appointed from inside the organisation and more often than not were professional engineers reflecting the priorities of the construction era.

Rural Water Commission – 1984 to 1992

On the 1st of July 1984, the body responsible for governance of rural water changed from an expert commission of three to a representative Board of Management consisting of 8 members. Representation of irrigators and other rural water user groups on the Board of Management was one way to ensure that the industry’s needs and interests were promoted. Delivery of improved services to customers was one of the main objectives for establishing the Rural Water Commission.

The Board consisted of two representatives of irrigator interests and one representative of domestic and stock water users. These representatives were selected by the Minister from a panel of names proposed by Rural Water Commission’s Regional Advisory Councils. Two other Board members were selected by the Minister
on the basis of skills and experience in the fields of waterway management, and business. The staff of the Commission elected another Board Member. The Director-General of Water Resources (head of the Department of Water Resources) was an ex-officio member of the Board. The General Manager (chief executive) of the Rural Water Commission who was appointed by the Minister, completed the Board of eight members.

Board membership was designed to achieve a balance between internal management and external skills while keeping in close touch with development of water policy. The new Board of Management developed a vision for irrigated agriculture to make a significant contribution to the wealth of the State and nation by improving profitability while addressing the problems of financial and ecological sustainability. Goals for customer service, productivity, and commercial viability were established by the Board of Management.

Clearly defined and numerically expressed goals were essential to the reform process. The Board of Management took the initiative and negotiated specific performance targets with the government to ensure that accountabilities were clearly defined.

The Board of Management was convinced that long-term sustainability of the irrigation industry in Victoria would depend on the irrigation authority becoming financially self-sufficient. It saw that the financial discipline of relying on revenue to fund operations and investment in infrastructure renewal would lead to the development of more appropriate services and cost effective irrigation systems. The financial goal was to close the gap between revenue and expenditure in twenty years, including making adequate provision for renewal of the irrigation infrastructure. This was to be achieved by combination of price increases, and cost reduction, with emphasis on cost reduction.

Ecological sustainability was addressed through providing considerable technical resources to the Victorian Government’s Salinity Program and improved water allocation policies. The Rural Water Commission played a major role in supporting the Department of Water Resources in drafting the Water Act, 1989 which provided for establishment of bulk water entitlements, including environmental entitlements, and transferability of water entitlements. The Rural Water Commission was also an active participant in the affairs of the Murray Darling Basin Commission including development of the Salinity and Drainage Strategy.

While the restructuring arrangements put in place on 1 July 1984 went a long way towards improving accountability, the dual reporting arrangements of the General Manager to both the Minister of the day and the Board of Management, created the potential for significant conflict between the long term goals of the Board and the shorter term political imperatives of the Minister. Success depended on a good working relationship between the Board and the General Manager and a considerable amount of trust and goodwill was invested to make this arrangement work. The key players became masters of compromise, exploiting every window of opportunity.

The representative based Board disciplined itself to work more as a corporate skills based board. There were, however, constraints in respect of the range of skills available to the Board. Ex-officio Board membership for the Director General of Water Resources also made it difficult for the Board to operate as an independent authority to achieve its primary objective - a financial and ecological sustainable irrigation industry. The staff member on the Board faced significant conflicts of interest. At times the interests of the organisation and its customers conflicted with the interests of the staff, particularly when large reductions in workforce numbers were required.

Rampant inflation and adverse terms of trade made the Board’s pricing regime very unpalatable to the rural sector resulting in a “Rate Protest” by the irrigators and the subsequent Future Management Review of the Rural Water Commission. The Board of Management embraced this review and submitted its recommendations which were largely incorporated into the next phase of restructuring - the establishment of the Rural Water Corporation.
The Rural Water Corporation was established on 1 July 1992, based on the recommendations of the Future Management Review. Figure 4.3 summarises the organisational structure of the Rural Water Corporation.

The new skills-based Corporation Board was appointed by the Minister, through the Governor-in-Council on the recommendation of a selection panel, chaired by Stuart McDonald, the chairman of the Future Management Review. The new Board was equipped with considerably enhanced financial management skills, while continuity was maintained by the appointment of three former members of the Rural Water Commission Board of Management, including the Managing Director.

The Corporation Board supported by two Audit Committees, the internal auditor and the Corporate Office, in effect formed a holding company providing strategic direction and corporate discipline, to five regional subsidiaries, to maintain a careful balance between central authority and regional autonomy. The establishment of a strong Financial Audit Committee by the Board, together with augmentation of the internal audit function by private contractors, was essential to expedite the establishment of accounting policies and secure the integrity of the financial systems in the transition.

Five Regional Management Boards were established as subsidiaries of the Rural Water Corporation. The Future Management Review reduced the nine regions of the Rural Water Commission to five in the Corporation. The regions were not separate legal entities although this was foreshadowed in their establishment. Each region now had its own Regional Management Board including two members of the Corporate Board, or senior management. Bi-monthly meetings of the Chairs and Deputy Chairs with the Corporation Board served as a high level forum for solving some of the transition problems. This overall structure provided effective leadership to the regions in their ultimate transition to independence.

The crucial factor in the success of these Boards was that the members were appointed on the basis of expertise structured to ensure that each Regional Board had access to the full range of skills required. Members of the Regional Management Boards, apart from the Corporate appointments, were selected by a similar process to that used for the Corporation Board. Customer involvement in the selection process for all the Regional Management Boards was accounted for by significant representation on the selection panels by nominees of the Victorian Farmers Federation.

The five regions worked within performance contracts negotiated with the Corporation Board. The performance contracts set financial targets to
achieve the Rural Water Corporation's overall goal of financial self-sufficiency within 20 years. The principal target was the required regional reduction in the shortfall of revenue against business costs. Figure 4.4 (on the next page) sets out a typical performance contract between the Corporation Board and a Regional Management Board.

Regional Management Boards managed their own affairs, preparing budgets within borrowing limits set by the Corporation, in turn fixed by global borrowing constraints set by the Government. Regional Business Plans (including Asset Management Plans) were developed and incorporated into the Rural Water Corporation Business Plan. Regional Management Boards were free to determine their own pricing policies within the overall guideline of becoming financially self-sufficient by 2001. Tariff structures were also revised on a regional basis.

Headworks (Water Systems Division in Figure 4.3) were separated out from other Corporate Office activities, costed accordingly, with appropriate charge-out rates and bulk water prices to the regional subsidiaries. The Regions delivered retail water services and operated the headworks under contract to the Corporation's Water Systems Division which in turn was contracted to the Corporation Board to deliver wholesale water services.

The two service divisions of Business Services and Hydrotechnology were established in the form of stand-alone business and technical consultancies reliant on revenue from customers to survive. Both these consultancies also operated within a contract with the Corporation Board, supervised by Board subcommittees. These subcommittees addressed the issues of restructuring and financial management of the business units so that business dealings between divisions and the regional subsidiaries were transparent with all costs attributed to the unit in which they occurred. A purchaser-provider relationship was established between the business units and the regions.

The Future Management Review also recommended further strengthening of the Advisory Committee structure with the formation of Customer Groups with a major role in determining levels of service, maintenance and replacements of assets in each irrigation or water user group area. Independent management of local systems by these groups was foreshadowed once they were financially self-sufficient. The Regional Management Boards were responsible for establishing the Customer groups.

During the Future Management Review some expressed the view that there should be an immediate move to full autonomy of the regions. In the end a commercially based and expert Corporation Board supported by a small corporate office proved highly effective in accelerating the movement to financial self-sufficiency, and managing the transition to autonomous regional authorities.

A change of government occurred in late 1992 and new state-wide policies for water reform were established. These involved, amongst other things, early separation of the regions into independent rural water authorities and the privatisation of business units such as Hydrotechnology. Implementation of these reforms stepped up the pace of pricing reform so that regions could be financially sustainable in their own right. A decision was made to disband the Rural Water Corporation and the Corporation's regions became independent Rural Water Authorities on 1 July 1994.

The Corporation sold the individual businesses within Hydrotechnology, maximising the sale of assets to retire debt; disbanded the Corporate Office and those business units not commercially viable, and devolved the remaining policy functions to the Department of Conservation and Natural Resources. The Corporation Board undertook this task with the objective of maintaining the momentum for reform in the industry while preserving essential technical and management skills. The Rural Water Corporation ceased to exist on 27 December 1995.
The items contained herein are specifically agreed to by the parties within the context of this document.

<table>
<thead>
<tr>
<th>Region</th>
<th>Corporation</th>
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<tbody>
<tr>
<td>Continue to develop the Regions as an effective operating entity, in accordance with this Performance Contract.</td>
<td>Continue to implement the McDonald Review.</td>
</tr>
<tr>
<td>Operate the water system in accordance with the Operational Plan.</td>
<td>Provide strategic advice and assistance to the region.</td>
</tr>
<tr>
<td>Establish new consultation and customer group structures.</td>
<td>Achieve productivity gains for the Corporate Office and Service Companies in line with McDonald Review targets.</td>
</tr>
<tr>
<td>Establish prices that assist in achieving financial self-sufficiency in a period shorter than defined by the McDonald Review.</td>
<td>Enter into contracts with the Government in relation to services Government requirements.</td>
</tr>
<tr>
<td>Ensure all beneficiaries of the region’s services contribute to the region’s revenue base.</td>
<td>Expand the customer base to incorporate all identifiable beneficiaries within the water systems by June 1994.</td>
</tr>
<tr>
<td>Develop strategies to address the issue of WHO standards compliance for urban systems.</td>
<td>Maximise returns on periodic cash surpluses.</td>
</tr>
<tr>
<td>Deliver any Government funded programs.</td>
<td>Ensure the Water Resources Business function is delivered in the most effective manner.</td>
</tr>
<tr>
<td>Maintain the system’s assets in accordance with asset management plan.</td>
<td>Provide the region with an overdraft facility.</td>
</tr>
<tr>
<td>Deliver the regional components of the contract with the Water Resources Business.</td>
<td>Negotiate mutually beneficial financial and policy arrangements with Government.</td>
</tr>
<tr>
<td>Meet financial obligations to the Corporation to ensure the shortfall to cover financial costs is no greater than $1.4 million.</td>
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<tr>
<td>Develop a strategy to reduce dependence on overdraft.</td>
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<td>Initiate programs for delivery efficiency improvement.</td>
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<tr>
<td>Continue to productivity improvement program.</td>
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Chairperson, Region
Chairperson, Corporation
DEVELOPMENT OF A PRICING POLICY FOR IRRIGATION WATER

Water pricing policy was one of the first subjects to occupy the Board of Management of the Rural Water Commission on its formation in July 1984. Previous state governments had not specified clear financial objectives for the irrigation authority. Construction of irrigation infrastructure in a cost effective manner was the unwritten performance target.

Increasing the level of cost recovery, stimulating the development of more profitable irrigation enterprises and reducing the emerging financial burden on the government of financing the renewal of ageing irrigation infrastructure were the new policy objectives of the Cain Labor Government. Changing the notion that water was an economic and not solely a social good would also require pricing reform so that irrigators receive more appropriate economic signals about the value of water.

Development of pricing policy involved considerable interaction between the government, the irrigation authority and the irrigation community, although, in the absence of an independent pricing regulator, the government had the ultimate responsibility for pricing policy. The Rural Water Commission and the Victorian Government had to develop an appropriate pricing policy defining the level of cost recovery to be achieved for irrigation water.

Opportunity Cost of Capital

Definition of full cost recovery raises some complex questions. Should an allowance be made for the opportunity cost of capital used to construct the existing irrigation infrastructure? At the beginning of the decade under discussion the government was meeting all the interest payments on a debt of some $400 million incurred in constructing the existing infrastructure. An analysis of pricing levels of 1984 demonstrated that water prices would have to be increased by a factor of four times to generate a 4% real rate of return on the current written down replacement value of the assets. Such a level of price increase was politically untenable and inequitable. The current generation of irrigators had paid a higher cost for their farms reflecting the low, highly subsidised price of water. Government wisely decided to regard the opportunity cost of the original capital as a sunk cost, and not to seek to recover the opportunity cost of the original capital expenditure. The opportunity cost of new investments in irrigation was another matter.

Capital Consumption

Allowance for capital consumption in the definition of cost recovery presented another policy dilemma. The government was concerned about meeting the high cost of renewing ageing irrigation infrastructure. Including a measure of capital consumption in the definition of cost recovery would influence future behaviour, an important consideration when formulating economic policy. If the irrigators funded renewal of the infrastructure they would have strong incentives to ensure that only essential infrastructure was renewed, and to an appropriate standard to meet their needs. What measure of capital consumption should be used in determining water prices?

Traditionally depreciation based on historical costs had been used as a measure of capital consumption. The long lived assets of the water industry and the ravages of inflation over time left inadequate financial provision to fund renewal works when required. A more appropriate measure of capital consumption was required.

Current Cost Depreciation as a Measure of Capital Consumption

The Cain Labor Government introduced current cost accounting to all government business enterprises as a matter of policy. Current cost depreciation therefore became the required measure of capital consumption for pricing purposes. While current cost accounting and current cost depreciation have some significant advantages, particularly in performance comparisons, and making adequate provision for asset renewal, the policy had some substantial disadvantages.
Current cost depreciation was calculated from estimates of current replacement cost, assuming that the service potential of every major infrastructure asset would be replaced using modern design and construction techniques. The current replacement cost was then depreciated in a straight line over the estimated life of each asset or class of assets. In broad terms historical depreciation for the assets held by the Rural Water Commission was $16 million per annum while the equivalent current cost depreciation was $50 million per annum.

A major advantage of current cost accounting was that it required a rigorous review of all assets and the development of a comprehensive asset register including the replacement cost and nominated life of each asset or class of asset. Development of a comprehensive asset register imposed substantial disciplines on the Rural Water Commission.

The major disadvantage of current cost depreciation, which in the end proved fatal to implementation of current cost accounting as the basis for setting water prices, was the difficulty in explaining the policy to the irrigation community. The large price increases necessitated by current cost accounting required clear explanations. The policy debate was easily sidetracked. Why assign a life of 200 years to Eildon Dam, the principal structure in the irrigation system? Wouldn’t the electrical and mechanical components require replacement first and the embankment last much longer? Calculation of current cost depreciation of a drain creates another policy dilemma. A drain is a hole in the ground. If the drain is properly maintained, that is cleaned out regularly wouldn’t the drain last indefinitely? These questions are very difficult to answer, particularly to a highly sceptical audience. Application of current cost accounting was also correctly seen to generate large cash surpluses in the early stages of implementation.

Definition of Cost Recovery

Despite these difficulties the financial target for the irrigation authority could now be defined. The Rural Water Commission was given the goal of achieving a 0% real rate of return on assets within 20 years: that is meet the operations, maintenance and administration costs plus the current cost depreciation of the irrigation infrastructure by the year 2004/05. Water prices would have to reflect this goal having regard to the potential to make productivity savings and reduce the costs of renewing the infrastructure. Use of current cost depreciation did not give the irrigators a clear incentive to reduce renewal costs.

When this goal was achieved the Rural Water Commission would have sufficient cash flow to manage the irrigation business into the future without further government subsidy. The policy was based on the assumption that the interest on the original debt would continue to be met by the Government. In the end a small positive rate of return would be required to meet interest costs on new debt incurred after the original debt write-off.

Until this policy change, pricing decisions had been made from year to year on an ad hoc basis. If commodity prices were high and farming profits good then price increases were large, on the other hand if commodity prices were depressed water prices were often frozen. Large fluctuations in price increases occurred as illustrated in Figure 4.5 showing water prices, both in nominal and real terms (in 1994/95 dollars), from 1959/60 to 1994/95 for the Goulburn Murray Irrigation District, the largest irrigation system in Victoria.

Figure 4.5 Goulburn Murray Irrigation District,
Water Prices - 1959/60 to 1994/95

Future Management Review

Charge adjusted to 1994/5 values

Actual Charge per ML

$ per megalitre


Definition of Cost Recovery

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The price of irrigation water in Victoria had been held low in the belief that low water prices would assist the irrigation industry. Water prices, in real terms, had increased by approximately $10/ML from the early 1960's to the late 1970's. In the late 1970's and early 1980's, the State Rivers and Water Supply Commission started to increase water prices substantially, partly in response to stimulation from the Public Bodies Review Committee, and also reflecting the underlying concern that ageing infrastructure would erode the long-term economic viability of irrigation. Water prices had reached approximately $14/ML by 1984/85 (in 1994/95 $) when the Rural Water Commission succeeded the State Rivers and Water Supply Commission.

Adoption of the 0% real rate of return would result in almost doubling water prices from 14 $/ML to about 25 $/ML. The latter target could be achieved by greater efficiency gains and reducing the cost of renewing infrastructure. Given the capital intensive nature of the irrigation authority's business, the potential for reducing the target is limited unless there is a large amount of the infrastructure is not renewed. The government and the Rural Water Commission had to face the odium of doubling water prices. The next policy question was over what period would this price increase be phased in?

Twenty Year Phasing in Period

Long term predictability of water prices was an important policy goal developed by the Rural Water Commission and accepted by the government. Providing the irrigation community time to adjust to rising water prices by improving water use efficiency and profitability would reduce the impact of price increases. The Rural Water Commission therefore decided to phase in the required price increases over 20 years from 1984/5 to 2004/5. The annual price increase required was calculated as 2% real per annum over the twenty years, having regard to projected efficiency improvements and cost reductions. The wisdom of announcing such a long term pricing policy can be questioned. Some would argue that the same result could be achieved by stealth, putting up water prices when commodity prices were high and holding them in periods of recession. But there can be little doubt that the policy of openness adopted by the Rural Water Commission has led to a much greater understanding of the financial realities of the irrigation authority within the irrigation community.

A Controversial Outcome

Inflation levels used to calculate the annual price increases were based on forecasts of inflation prepared by the Victorian Treasury. Inevitably, forecasts of inflation prepared by governments are underestimates of the actual inflation. Governments want to avoid forecasts of high inflation becoming self-fulfilling prophecies by building high inflation estimates into budgets. The underestimates in inflation resulted in the Rural Water Commission under-achieving its pricing targets. The actual real price increases achieved over the life of the Financial Management Strategy to 1988/89 was 0.9% per annum compared to the target of 2%.

During the development of the 1990/91 Business Plan the need for remedial action was identified to speed up achievement of pricing reforms. In future, pricing calculations would be based on the actual inflation in the previous financial year and not forecasts. Coincidentally, the decision was taken just as the level of inflation started to fall. The required price increase was now 2.8% real per annum. The more accurate estimates of current cost depreciation and productivity improvement embodied in the 1990/91 Business Plan, together with the underachievement of the original target resulted in a high target for real price increases.

With inflation running at 8%, the nominal price increase in the first year after the change in method of price calculation was 11%. Declining inflation helped over-achieve the annual target as illustrated by the step in real prices in 1990/91 shown in Figure 4.5. The 11% increase in water prices was taken at a time when commodity prices were high. Unfortunately, shortly after the decision had been implemented the prices of most rural commodities crashed leading to unrest in the irrigation community, and the "Rate Protest" during which the irrigators refused to pay their outstanding water rates and charges. The unrest stimulated a series of reviews including a review of current cost depreciation, and the Future Management Review of 1991/92.
The Move to Renewal Accounting for Calculating Water Prices

Current cost depreciation was the first policy element to feel the heat of review. Initially the Minister, Steve Crabb, requested the Auditor General to review the concept of current cost depreciation. Understandably the Auditor-General refused, stating that he could not comment on government policy. The accounting firm, Arthur Anderson, was then commissioned to review current cost accounting and other policy options to account for capital consumption.

Arthur Anderson recommended a shift to renewal accounting. Renewal accounting requires estimation of the timing and cost of replacing essential infrastructure having regard to risk of failure and the hazard should failure occur. The cash flow required to fund the required renewal of infrastructure over an extended period is built up from a study of all the infrastructure assets in turn. An annuity is calculated to smooth out fluctuations in cash flow over the annuity period. Capital consumption is then defined in terms of the renewal annuity. The renewal annuity unlike current cost depreciation has the advantage that it can influence future behaviour with the potential to create a more cost effective irrigation system. The renewal annuity has the potential to facilitate a more positive debate with the irrigators over renewal costs and pricing.

Renewal accounting requires building up substantial knowledge on all the assets including their condition, the risk to service and the hazard to life and limb. From the formation of the Rural Water Commission on the 1 July 1984 a substantial, and ongoing effort was put into developing and improving asset registers and supporting information systems. The important step was getting a complete picture of the long term cost of replacing the infrastructure. The initial estimate would likely be on the high side and subsequent reviews and revisions would reduce the estimates of renewal costs.

A six level condition rating system was introduced with Condition 1. referring to a new asset, and Condition 6. referring to an asset that had failed or was on the point of failure. Experienced water distribution staff were used to rate the majority of assets in the channel and drainage system during field inspections. A risk rating was also be assigned to each structure based on the consequences of failure. If the structure could be reinstated quickly and only affected a small number of customers, then a low risk rating was assigned. On the other hand, if the structure was large, would take a long time to reinstate and affected a large number of customers, then a high rating was assigned.

Finally the cost of replacing each structure or class of structure was estimated, based on using the best available technology, and the cash flow necessary to fund replacement of the infrastructure prepared. The cash flow was presented in the form of an annuity to smooth out annual variations in asset replacement costs. The first renewal annuity was based on a 100 year period. The replacement profile of irrigation infrastructure in the Goulburn Murray Region over 100 years is illustrated in Figure 4.6. Subsequently the annuity period has been reduced to 20 years which brings the risk of substantial increases in the annuity as large replacement items move into the 20 year period.

Figure 4.6 Goulburn Murray Water, 100 year Replacement Profile for all Services.

The first estimate of the 100 year renewal annuity for the Rural Water Commission was $38 million per annum compared to $50 million per annum for current cost depreciation. The difference partly resulted from the fact that “holes in the ground” in the form of channels or drains do not need replacing, only the bed and banks do.
Replacement of a channel therefore can cost less than construction of the equivalent new channel.

The concept of renewal accounting was introduced following Future Management Review and ultimately adopted by the Government as the basis for calculating future irrigation water prices. The price increase recommended by the Future Management Review was 2.1% real per annum over the period to 2001 compared to the 2.8% of the Rural Water Commission's Business Plan. In fact the Future Management Review brought forward the target date for financial self-sufficiency from 2004/2005 to 2001.

Acceleration of productivity improvement, and adoption of renewal accounting helped reduce the real price increases required to achieve financial viability. The stark reality of the financial position of the Rural Water Commission could not be avoided, however, and there was acceptance that large price increases would still be necessary despite substantial gains in operating efficiency.

Water supply and irrigation is a capital intensive industry and the cost of replacing ageing infrastructure dominates the calculation of prices. The continued sharp increase in real water prices following the freeze during the “Rate Protest” is evident in Figure 4.5. Real water prices had increased to $18/ML by 1994/95 and the target for financial viability was within sight, coming down with improved efficiency, and more cost effective asset renewal to the range of $22 to $23/ML.

Funding the renewal of essential infrastructure was now the focus of the pricing debate. Renewal accounting for pricing irrigation water has a vital advantage in that it is forward looking and promotes a much more positive debate on pricing with the irrigation community. The debate now shifted to what needed replacing to keep the irrigation system working to provide the level of service required by the irrigators. Importantly the debate could focus on smarter ways of replacing the service capacity of the infrastructure and trading off level of service against water prices.

The shift in focus of the debate from water prices to what needs to be done to keep the irrigation system working is testament to the success of renewal accounting as a policy initiative, and has contributed to the more constructive relationship between the irrigation authorities and the irrigators.

FINANCIAL TARGETS AND STRATEGIC PLANNING

Three Strategic Plans were formulated for the period 1984 to 1994. The first four years from 1985/86 to 1988/89 were guided by the Financial Management Strategy (FMS), the second time segment was covered by the 1990/91 Business Plan which was superseded by the Strategic Plan drafted by the Future Management Review which reported in January 1992. This Review established the Rural Water Corporation. All three plans had common goals - to reduce the business cost shortfall to zero, a strong customer focus and local management of business operations. The business cost shortfall was defined as the difference between revenue and the total of operation costs, maintenance costs, administration costs, any finance charges and the renewal annuity. The Future Management Review strongly endorsed the Rural Water Commission's 1990/91 Business Plan and accepted the goal of financial self sufficiency for irrigation.


The Financial Management Strategy was the first strategic plan endorsed by the Board of Management of the Rural Water Commission and the Government. The Strategy was negotiated with the Department of Management and Budget (the Government's treasury department) by the Commission's General Manager, and the Director of Finance and his staff. It was essentially a “top-down” exercise with little involvement across the organisation. It was a blunt tool and recognised as such.

The basic elements of the Financial Management Strategy were:

- the Commission agreed to restrict recurrent expenditure for four years from 1985/86 to the nominal expenditure for 1984/85. Regardless of inflation, the annual
Appropriation Act would show constant operating expenditure for the organisation for the next four years. Only Government initiatives approved by Cabinet on a project by project basis would cross this threshold. With inflation running at 7% to 8% at the time, the real reduction in operating expenditure was projected to be about 30%.

- in return the Government agreed to forgive historical debt of some $400 million, and any interest on that which might have accrued;
- the Financial Management Strategy did not include pricing policy, except to note that revenue needed to be increased.

Forgiveness of historical debt was an essential part of the pricing strategy ultimately agreed between the Rural Water Commission and the Government. If the Commission accepted responsibility for the debt of the past 80 years it would sink the organisation financially before it started. This debt had been incurred for projects that were often carried out to meet social objectives, such as soldier settlement and closer settlement, rather than to generate a viable irrigation business. Forgiving the debt recognised this reality and gave the irrigation industry a clean start to become a viable business enterprise.

The only debt that was carried forward was that incurred directly in the name of the State Rivers and Water Supply Commission. This amounted to $68 million that had been borrowed in the early 1980s. Allocation of the $68 million across the Commission’s irrigation systems caused much debate as the original monies bore no relationship with particular projects. Inclusion of this $68 million in the financial package caused a major diversion in the debate and was ultimately forgiven by the government in the financial package that followed the Future Management Review.

The accounting practices of the Rural Water Commission were systematically overhauled to provide management information necessary to implement the Financial Management Strategy. Accrual accounting, together with current cost accounting provided the tools necessary to indicate future capital requirements to maintain the irrigation infrastructure. Further reform of accounting practices was constrained by the Rural Water Commission remaining in the inner budget, with operating funds appropriated by the Victorian Parliament and revenue disappearing into the Government’s Consolidated Fund. A series of internal and external reviews and activity value analyses were used to help formulate the budget from year to year to meet the diminishing financial resources available. The first two years of the Financial Management Strategy were relatively painless but by the third year rising inflation and diminishing scope for across the board cost reductions caused significant tensions in the organisation.

The outcome was that the Rural Water Commission achieved the targets of the Financial Management Strategy. Operating costs were reduced by 30% over the four years to 1988/89.

Rural Water Commission’s 1990/91 Business Plan

The next significant strategic planning activity was the formulation of the 1990/91 Business Plan. The goal of this five year plan was financial self-sufficiency within 15 years given that five years had elapsed since the twenty year target was set. Figure 4.7 sets out the business of the Rural Water Commission in 1989/90 in terms of revenue sources. The Business Plan built on the experience of implementing the Financial Management Strategy to develop more sophisticated strategies for reducing costs and ensuring the financial and environmental sustainability of the irrigation systems.

The Business Plan was based on the following strategies:

- further productivity gains and continuing real price increase to achieve financial self sufficiency in 15 years;
- the provision of those services which customers want and for which they are prepared to pay;
- increased expenditure on maintenance and replacement of assets to ensure ability to provide services in the future;
greater investment in salinity and groundwater control measures, in accordance with agreed salinity management plans, and protection of the resource through total systems management; and
greater efficiency in water use and more equitable cost sharing.

Figure 4.8 (on the next page) sets out the 5 year financial targets of the 1990/91 Business Plan. In summary the Plan involved:

- boosting revenue by $20 million over the 5 years, with half coming from the irrigators and half coming from other sources such as hydroelectricity;
- reducing costs by $11 million;
- increasing maintenance by $5.1 million, and capital expenditure on renewal of infrastructure by $9.5 million;
- ensuring debt servicing costs were kept below 25% of revenue; and
- reducing government subsidies by $16 million.

The balance between maintenance and replacement of infrastructure was important issue considered in developing the business plan. The State Rivers and Water Supply Commission worked in an environment where capital was provided by government and the finance charges were disguised within the Consolidated Fund. Such a system favoured capital expenditure on replacement assets over recurrent expenditure on maintenance. This situation was exacerbated by the Financial Management Strategy placing a tight rein on recurrent expenditure including maintenance. Maintenance expenditures reduced in real terms during the four years of the Strategy. While some decrease could have resulted from productivity improvements the conclusion was reached that increasing expenditure on asset maintenance was required.

The Business Plan of 1990/91 included an allowance for real increases in expenditure on asset maintenance. Expressed in 1989/90 values, annual maintenance was targeted to increase from $14.7 million in 1989/90 to $19.8 million in 1994/95, the capital expenditures on replacement of the distribution infrastructure were targeted to increase from $14.6 million to $21.7 million over the same period. The equivalent expenditures on replacement
**Figure 4.8 Five Year Targets**

<table>
<thead>
<tr>
<th>Water Services</th>
<th>TARGETS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>89/90</td>
</tr>
<tr>
<td></td>
<td>$M</td>
</tr>
<tr>
<td>Increases in Revenue</td>
<td></td>
</tr>
<tr>
<td>District Rates and Charges</td>
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</tr>
<tr>
<td>Other Services</td>
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<tr>
<td>Decreases in Costs</td>
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<tr>
<td>Additional Productivity Gains</td>
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</tr>
<tr>
<td>Quarterly Billing</td>
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</tr>
<tr>
<td>Increases in Asset Investment</td>
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</tr>
<tr>
<td>Total Maintenance</td>
<td>14.7</td>
</tr>
<tr>
<td>Distribution System Replacement</td>
<td>14.6</td>
</tr>
<tr>
<td>Headworks Replacement, Safety</td>
<td>5.6</td>
</tr>
<tr>
<td>Productivity Capital</td>
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</tr>
<tr>
<td>Reduction in Debt Servicing Costs</td>
<td>24%</td>
</tr>
<tr>
<td>(as a percentage of Revenue)</td>
<td></td>
</tr>
<tr>
<td>Reduction in Government Funding</td>
<td></td>
</tr>
<tr>
<td>Recurrent Costs</td>
<td>14.0</td>
</tr>
<tr>
<td>Capital Costs</td>
<td>13.0</td>
</tr>
</tbody>
</table>

* Longer term maximum is 25%

The implementation of the 1990/91 Business Plan coincided with a period of high inflation, high interest rates and the deepening of a rural recession. Nominal price increases were high and a “Rate Protest” was organised with the objective of forcing a reduction in water prices. The irrigators, led by the Victorian Farmers Federation, withheld payment of some $30 million of water rates.

The Victorian Premier of the day decided to diffuse the protest by promising a review of the future management of rural water in Victoria and the principles of the Rural Water Commission’s Business Plan. The Future Management Review was therefore established with terms of reference drafted by the Rural Water Commission and agreed by the Government and the Victorian Farmers Federation, but the protests continued including a lockout of the Rural Water Commission’s head office in Melbourne by some 400 irrigators.

The average life of infrastructure assets was therefore assumed to be 100 years.

These planned increases in expenditure were a direct reflection of the Board of Management’s concern to keep the ageing infrastructure in good working order and catch up on deferred maintenance of earlier years.

Achievement of these targets would reduce the annual subsidy by Government to $11 million for capital works. Significant progress towards financial self sufficiency was the goal. These targets were met for the first two years of the plan.

of headworks including dam safety were an increase from $5.6 Million to $8.0 million. The total increase in annual maintenance and replacement of irrigation infrastructure over the five years of the 1990/91 Business Plan was $14.6 million representing an increase of 42% in 5 years. Even with these large increases the expenditure represented only 1% of the then current replacement cost of $4.7 billion. The average life of infrastructure assets was therefore assumed to be 100 years.

Future Management Review
The laws relating to secondary boycotts left the Federation highly vulnerable to legal action. Having been reminded of its legal situation the Federation agreed to support abandonment of the "Rate Protest" and allow the Future Management Review to proceed under the original terms of reference. Whatever the rights and wrongs of the "Rate Protest" the outcome was good in that an inquiry with a high degree of credibility was established and the financial realities communicated to the irrigators for the long term benefit of irrigation in Victoria.

The Steering Committee for the Future Management Review (FMR) was chaired by Stuart McDonald, Chairman of the Rural Finance Corporation and an irrigator himself. The Steering Committee included representatives of the Victorian Farmers Federation, Rural Water Commission, union and business interests. The Review was supported by consultants Gutteridge, Haskin and Davey, assisted by ACIL Australia and Ernst and Young.

The report of the Future Management Review endorsed the principles of the 1990/91 Business Plan and made recommendations in respect of the structure of the Rural Water Commission:

- creating the Rural Water Corporation as a statutory authority outside the inner budget sector;
- removing the employees of this new Corporation from under the provisions of the Public Service Act;
- redirecting head office functions to emphasis water production and asset management;
- reducing the nine regions of the Rural Water Commission into five regions (Coliban was to become an independent urban water authority) establishing expertise based Regional Management Boards as subsidiaries of the Rural Water Corporation;
- requiring that from 1993, each Regional Management Board assume responsibility for running its own business;
- stipulating that a new, small central authority (in effect a holding company) be formed to set specific policies, coordinate the State wide system and drive the change process;
- stipulating that subsidiary businesses be set up to provide specialist technical, training and business services to the regions;
- identifying the shortfall in revenue to be made up by:
  - substantial cost savings through restructuring,
  - reduction in costs by converting debt to equity,
  - revenue from new sources,
  - increased charges to existing customers and,
- declining Government subsidy over an adjustment period.

The Future Management Review report noted that it is in the best interests of the Victorian community that users of Victorian rural water systems pay the economic costs of operating, maintaining, administering and renewing these systems, while ensuring that these activities are undertaken at least cost and conforming to best practice. The Review endorsed the principle of financial self sufficiency that was the foundation of the Rural Water Commission's business plan.

The efficiency savings made possible by removing the organisation from the inner budget sector allowed reduction of the real annual price increase from 2.8% to 2.1%. However the capital costs of renewing the infrastructure dominated the pricing equation. The Future Management Review endorsed the concept of using renewal accounting instead of current cost depreciation to calculate capital consumption for pricing purposes.

The Government implemented the recommendations of the Review and the Rural Water Corporation together with its five regional Boards was established in 1992. The Future Management Review recommended phasing out capital subsidies over the period to 2001 although the financial burden of the debt held by the Rural Water Commission was also recognised. The debt was made up of the $68 million left with the Commission at its inception plus the debt required to fund replacement of essential infrastructure. The debt amounted to some $102.4 million in 1992.
Continuing capital subsidies gave the irrigation community confusing signals about the future of government subsidies, even if they were being phased out. Fortuitously the present value of the subsidies and the finance charges on the remaining debt were effectively the same. The debt was therefore written off and the capital subsidies withdrawn in a cost neutral trade-off to give the Rural Water Corporation and the irrigation community much clearer financial accountabilities.

Negotiations were held with the Government to forgive the remaining debt of $102.4 million in return for removal of the remaining capital subsidies. The Government also accepted responsibility for the unfunded staff superannuation costs of $269 million to 1 July 1992 in return for the Corporation accepting liability from 1 July 1992. In addition the Government agreed to purchase the Corporation's housing stock for $12 million to fund the restructuring costs including redundancy packages. The arrangements of the financial package are summarised in Table 4.2.

The Rural Water Corporation now had to be dependent on revenue raised from its customers for long term financial viability, and finance charges were now a small component of the pricing equation. At last the financial accountabilities and performance targets were clear and the Corporation had sufficient resources to accelerate the restructuring.

The Rural Water Corporation made substantial progress in achieving the targets set by the Future Management Review. Figure 4.9 shows the reduction in staff numbers relative to the targets, and the substantial benefits of removing the Rural Water Commission from the strictures of the public service. The Rural Water Corporation achieved the 5 year targets in only two years.

<table>
<thead>
<tr>
<th>Table 4.2 Rural Water Corporation - Debt and Superannuation Liabilities</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Government’s Package:</strong></td>
</tr>
<tr>
<td>• Debt forgiveness of $102.4m balanced by no more subsidies to Corporation.</td>
</tr>
<tr>
<td>• 1991/92 Debt Servicing of $16m Subsidy of $20.8m</td>
</tr>
<tr>
<td>• Superannuation: Government accepts Liability of $269m to 1 July 1992</td>
</tr>
<tr>
<td>RWC accepts liability from 1 July 1992 onwards</td>
</tr>
<tr>
<td>• Government funding $12m for implementing recommendations of McDonald Review from sale of RWC houses to GEHA</td>
</tr>
</tbody>
</table>

**Figure 4.9 Rural Water Corporation - Staff Numbers - June 1986 to June 1996**

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CHAPTER 5: Profitability of Irrigation

INTRODUCTION

The profitability of irrigated agriculture must be improved to break the cycle of drought, economic recession, inability of the irrigation authority to fund essential maintenance, financial hardship in the irrigation community, and the inevitable public inquiry. In the past governments have responded to these crises by restructuring institutions and increasing subsidies to the irrigation community in one form or another. Experience has shown that if all the subsidies do is keep the price of water low and the issue of profitability is not addressed then the next economic crisis is only a matter of time. Improving profitability of irrigated agriculture is the key to a better future for irrigation.

The tools available to an irrigation authority to improve profitability of irrigated agriculture are limited, however the irrigation authorities and governments can exert significant influence. Changing the irrigation community’s view of water from a social to an economic good is a useful first step.

Reform of water allocation policies to create markets for water and trading encourages the reallocation of water to more profitable irrigation enterprises, and gives the irrigators valuable knowledge of the opportunity cost of water. The opportunity cost is reflected in the prices paid at auction for new water entitlements or the prices irrigators are willing to pay to purchase existing entitlements from their neighbours. Knowledge of the opportunity cost will influence decisions on water management and improves profitability.

Operation of the complex irrigation channel systems in Victoria in 1984 was inflexible and highly reactive. Once water was released from the headworks, the job of the operators was to do the best they could to meet the requirements of the irrigators using all the water flowing down to them and in the last resort outfall the excess water orders back to the river systems. Operation of the irrigation systems was driven from the headworks down.

Modern technology for surveillance, control and data acquisition systems (SCADA) provide the opportunity to turn the operation of the irrigation system on its head so that the demands of the irrigators drive operation of the system. Development of a water management system can improve system operation, provide more flexibility in water trading, and create new water delivery services for more profitable irrigation enterprises. Implementation of such technology also provides the opportunity to create an organisation focussed on customer service.

The discipline that irrigator’s meet the full cost of renewing irrigation infrastructure is vital to ensure commercial disciplines are applied to future investments in replacing ageing irrigation infrastructure. Renewal of infrastructure provides another important opportunity. Instead of replacing the infrastructure as it exists, careful analysis of the system will reveal opportunities to create better, more cost effective irrigation systems. Most of the investment in irrigation systems is in the network of small channels and drains close to the irrigation farms. A high degree of involvement by the irrigation community in decisions to renew infrastructure is required if this opportunity is to be realised.

Reform of tariffs is also necessary to support pricing reforms to ensure that as far as practical the irrigators receive valid economic signals from their use of irrigation and drainage services and can make decisions accordingly. Research to develop more efficient irrigation technology, better water management systems, and better ways of replacing ageing infrastructure is also important to support the overall reform program.

Earlier social policies of closer settlement left a legacy to be overcome. The policy issues arising from the large number of small, unprofitable irrigation properties and the large volumes of irrigation water used on enterprises with low profitability can not be ignored. Rural adjustment policies must be developed to provide opportunities for improving the profitability of irrigators with long term prospects. The policies should also assist those who do not have a long term future in irrigation to leave the industry with dignity with sufficient resources to re-establish their lives in a new venture.

A major shift in thinking was required away from subsidising water prices to improving the profitability of irrigated agriculture. Improving the profitability of irrigated agriculture generates more
cash for meeting the higher water prices necessary to meet the costs of maintaining and renewing the irrigation systems adequately, and to ensure sufficient funds are available to invest in salinity, drainage and essential environmental management activities.

**REFORM OF WATER ALLOCATION**

**Water as an Economic Good**

Promotion of the concept of water as an economic good, by measures such as creation of a market and trading in water allocations has the potential to substantially improve the profitability of irrigated agriculture. For many people this requires a paradigm shift.

The system of water rights introduced by Elwood Mead in the early days of the Twentieth Century was based on the principle of government ownership of the “right to the use and control the flow” of water in waterways. This principle had been developed by Alfred Deakin and enshrined in the Irrigation Act, 1884. The volume of water right allocated to individual irrigators was based on a complex formula relating the unit depth (ML/ha) to the particular area of land to which the water was allocated. Well defined water allocations had been owned by private individuals since the Irrigation Act, 1884. A fresh look at the principle of locking land and water together, a century later, revealed an opportunity. If the legal bond between land and water could be broken a system of trading in the existing property rights in water could be established.

When large irrigation schemes were being constructed and with new water allocations continuously becoming available, the issue of water trading did not arise. However, as the construction of new irrigation schemes effectively stopped in the 1970s, the demand for new water allocations had to be met in other ways and the issue of water trading emerged.

Increasing salinisation of land also provided an incentive for development of more flexible water allocation systems to allow water to be moved from unsuitable and degraded land to situations that had a sustainable future under irrigation. The majority of irrigators, however, were opposed to trading in water at this early stage. The irrigators feared that the major cities would buy the water entitlements to the detriment of irrigation. Victoria’s irrigators had been sensitised to the issue by a proposal from the Melbourne water supply authorities in 1960 to divert water from the irrigation areas to supply Melbourne. The experiences of the Owens Valley in California in a similar situation did not give the irrigators much comfort.

The economists correctly argued that if trading in water was allowed, the buyers would, in general, be developing more profitable irrigation enterprises, and the sellers would be operators of less profitable enterprises. Water trading would therefore progressively improve the profitability of irrigation. The owners of less profitable enterprises would also gain access to capital either for restructuring their farming enterprise or for leaving the industry with some dignity. Only a small proportion of water needs to traded to expose the opportunity cost with implications for the whole irrigation community.

The Department of Water Resources initiated the introduction of transferable water rights in Victoria in 1983 by commissioning consultants ACIL Australia Pty Ltd to evaluate the costs and benefits of transferable water entitlements. The final report, ACIL Australia Pty Ltd (1984) was published the following year.

The consultants concluded that transferable water entitlements provided an opportunity for improvement in the economic efficiency with which water is allocated between farms. The number of transactions was likely to be initially low and build up over time allowing adjustments in policy as experience in the emerging water market developed. A water market involving trading in about 5% of the total allocation was expected to develop. While the volume traded was expected to be low, the effects in creating an opportunity cost for water were expected to be much greater.

Introduction of transferability would reinforce trends to more intensive irrigation already evident
in the more flexible allocation of sales water (the annual allocation of water available in excess of water rights). The irrigation districts with the greatest proportion of salinised land were expected to provide the sellers of water entitlements, in particular the Kerang and Tragowel Plains. The buyers were expected to come from the dairy industry in the Goulburn Valley, and the viticulture industry of Sunraysia. Minimum constraints on transfers were recommended. Constraints caused by limited capacity of irrigation channels, together with salinity and drainage constraints were also recommended. Leasing or trading in temporary water entitlements was recommended as a first step in preparing the irrigation community for more wide ranging reform.

Temporary Transfers of Water Entitlements

Introduction of temporary transfers or leasing of water rights between irrigators was recommended as a first step before allowing permanent transfers or sale of water entitlements. Leasing could be approved with minimal changes to the existing legislation, permanent transfers required legislative change. After extensive consultation, and some obstruction from the Department of Water Resources, the Rural Water Commission introduced a system of temporary transferable water rights to the Goulburn Murray Irrigation District at the start of the irrigation season of 1987/88.

The new system was a significant step in the development of irrigation in Victoria, removing the traditional nexus between water right and land. The system allowed leasing of water rights, diversion licences, and sales entitlements between established irrigation farms within the same river or supply system subject to certain conditions. These conditions were designed to safeguard the rights of the other irrigators on the same supply system and avoid drainage and salinity problems.

In 1987/88 a total of 242 applications were approved involving 16,345 ML. Figure 5.1 shows the growth in temporary transfers of water entitlements for Victoria, New South Wales, Queensland and South Australia. Water trading of diversion permits along the river valleys of New South Wales suffered fewer capacity constraints, and started earlier than transfers within the highly integrated channel systems of northern Victoria.

Water Allocation Anomalies

Given that water allocations were based on formulae enshrined in legislation that was being continually amended, and that the allocations had been managed with no formal system of appeal, a backlog of disputes over anomalies in water allocation had accumulated. The water legislation had to be rewritten to remove the formulae and define the allocations as at a set date. The backlog of disputes and the clarification of policies regarding these water allocation anomalies had to be resolved before trading in water could be introduced. Failure to address the anomalies would have undermined support for water trading from within the irrigation community.

A Water Allocation Anomalies Committee was established and public hearings completed by January 1988. A total of 365 applications were received by the Committee, of which 257 proceeded to a hearing. The final report of the Committee contained internal inconsistencies rejecting most of the individual applications but in the final stages the Committee changed its view supporting general principles that would allow most of the applications to succeed. The Board of Management of the Rural Water Commission was left to adjudicate.

After extensive deliberation by the Board of Management, and subsequent intervention of the
Victorian ombudsman, effectively all the anomalies were resolved without recourse to the courts. The relatively small number of anomalies and the disciplined management of water allocation was a credit to the State Rivers and Water Supply Commission the body responsible for the majority of water allocation in Victoria. The state was now clear for legislative change and permanent trading in water.

Permanent Transfers of Water Entitlements

A Water Bill, completely revising the Water Act, 1958, was introduced to the Victorian Parliament in 1989. The Bill did not contain provisions to facilitate permanent transfers of water entitlements. The left wing of the Victorian Labor Party, the party in government in Victoria at the time, opposed the trading in water as a natural resource. The members of the left wing faction believed water should stay in public ownership despite the fact that private ownership of water rights, attached to land, had been in place for nearly 100 years. In the end an opposition amendment in the Upper House of the Victorian Parliament, with the tacit support of the Government and the Rural Water Commission, opened the door for permanent transfers.

After some more political skirmishing the necessary regulations were passed and permanent transfers or sale of water entitlements started in the 1991/92 irrigation season. Figure 5.2 shows the cumulative growth in permanent transfers. While the initial volumes of permanent transfers are small, the potential long term significance of this policy reform in water allocation, and the potential improvement in the profitability of irrigation, are immense.

Water Auctions

Introduction of permanent transfers of water entitlements necessitated introduction of capital charges for all new water entitlements. Such capital charges are necessary to avoid the recipients of new entitlements making unearned capital gains by selling water entitlements that they had received free of charge. Setting the charge opened an important policy debate. The principle of allowing the market to set the capital charge was adopted. The options for setting the charge were thus reduced to a choice between tenders or auctions. Initially the Rural Water Commission favoured tendering largely because of the extensive experience the Commission had gained through its construction activities. After consultation, the irrigation community favoured auctions. The farming community has a great deal of experience of auctions. Auctions are more open, and prices are set in public.

There were new unallocated water entitlements arising from construction of Dartmouth Dam on the Mitta Mitta River in northern Victoria. The Rural Water Commission recommended to the Minister that these new entitlements be auctioned. In what is believed to be the first water auction in Australia, on 4 May 1988, the Rural Water Commission auctioned in Bridgewater 2,000 ML of entitlements to divert water from the Loddon River. The 2,000 ML were sold to existing and potential diverters at an average price of $239 ML. Prices ranged from $175 per ML for lots of 200 ML up to $775 per ML for small lots less than 10 ML.

The system of water auctions was based on a system used for auctioning gold. Pre-registration was required to participate in the auction. Applicants had to provide evidence that they were bona fide irrigators and that they owned irrigable land that could be supplied from the Loddon River. The maximum application for water also had to be specified. The unit depth of water was checked to ensure that the volume applied for was reasonable given the area of land and the irrigation enterprise.
involved. A decision had been taken to prevent speculation by building up large volumes of water on small areas of land. Speculation in the first auction had the potential to undermine community confidence in the auction process.

The water was auctioned in a series of steps, for example steps in volume of 5 ML, 10 ML and 20 ML could be used. The auction would start with the auctioneer calling for bids on the basis of $/ML for minimum allocations of 5 ML. The successful bidder could take an allocation at the bid price up to the maximum volume specified in the pre-registration. All other participants in the auction could then take allocations up to their pre-registered maximum volume at the bid price.

Given the small volumes involved, the unit water prices in the first stage of the auction were invariably high and those seeking large volumes of water held back in the hope of achieving lower unit prices. The auctioneer would then start the second stage by calling for bids for a minimum allocation of 10 ML. Again the successful bidder would gain access to the pre-registered maximum requirement at the bid price. If the total volume sought by the other participants at the bid price was less than the remaining volume available, then all the applications could be approved. If on the other hand the total volume of water sought was greater than the remaining volume the auction would start again and the price would rise. A good sense of timing was required by those seeking large volumes of water: some did well and some got their fingers burnt by underestimating the demand.

The first water auction nearly turned into a riot. The irrigators realised at the last minute that there was a very large demand for water and that many applicants were likely to miss out. The local water users group tried to boycott the auction and also tried to distract the auctioneer by chanting in time to his call for bids. Fortunately the auctioneer was a large man with an even larger voice and he overcame the tumult. The boycotting group walked out in protest except for their secretary who sneaked back and bought some water, which did not do his standing in the local community much good when his colleagues discovered what he had done. After the auction the auctioneer emerged hot, sweating and breathless to declare: “fancy getting paid for that, I have not had so much fun in years!” Obviously an excellent choice of auctioneer saved the day.

Subsequently the Rural Water Commission (and the successor Corporation) organised five more successful auctions of water entitlements on the Goulburn, Broken, King, Thomson and Murray Rivers. Successful completion of these water auctions represented another important milestone in the reform of water allocation policy in Victoria. The auctions clearly established the opportunity cost of water in the minds of the irrigation community in a highly public forum.

Bulk Water Allocations: The River Murray Waters Agreement

The River Murray Waters Agreement specifying the bulk allocations of water between Victoria, New South Wales and Victoria was another important area of reform for Victoria’s irrigation systems. Clark (1982), describes the lengthy debate and controversy involved in developing the original River Murray Waters Agreement signed in 1914. Significantly the Agreement was signed during a drought which had served to concentrate the minds of the politicians!

The Agreement established a formula for sharing the waters of the Murray River. The formula was simple in concept. South Australia, the downstream state was to receive a guaranteed minimum flow. The waters upstream of Albury were to be shared equally between New South Wales and Victoria, and the downstream tributaries belonged to the state in which they originated.

The Agreement was successful in reducing the controversies of the time involving bulk water allocations between the three states. The water sharing agreement was, however, based on an annual accounting period. There were no large storage reservoirs in the water supply systems at that time and the lack of accounting for carry over volumes was not an issue.

The integrity of the Agreement was eroded over time as major storage reservoirs were constructed at Hume, Menindee, Lake Victoria and
Dartmouth. The annual accounting period enshrined in the original Agreement excluded carry overs of unused water allocations from year to year. New South Wales with a significant rice industry could operate on low security of supply. Victorian irrigation, on the other hand, was dominated by permanent plantings of fruit trees, vines and pasture requiring a higher security of supply.

In wet years New South Wales could take advantage of the large volumes of water available to grow rice. Victoria could not make full use of its half share in wet years without compromising its security standards and being unable to meet the requirements of permanent plantings in subsequent dry years. At the end of the annual water accounting period the unused Victorian allocation was shared equally between New South Wales and Victoria. Effectively this meant that Victoria was losing part of its water allocation.

After much controversy and debate the concept of continuous accounting, or capacity sharing was introduced through no small measure to the efforts of David Dole, The Rural Water Commission’s Director of Technical Services, and a Deputy Commissioner of the Murray Darling Basin Commission. Figure 5.3 depicts the River Murray Water Accounts showing the system of flows, storage volumes, transmission losses being divided into two equal shares. Even with only two shares the water accounting system becomes highly complex. The water previously lost by Victoria is shown as a credit balance to Victoria in the water accounts.

The new system of continuous accounting introduced the opportunity of interstate water trading and widening of the water market. If Victoria did not sell part of its allocation it would spill into New South Wales’s notional half storage for no cost to New South Wales. On the other hand if Victoria sold too much of its allocation it would compromise the security standards for its existing irrigator customers.

As a trial, an interstate trade in water was organised between the Rural Water Corporation and rice growers in New South Wales. A system of options was devised. The rice growers could take out an option in August for the delivery of Victorian irrigation water later in the season. The option gave the rice grower security to plant a given acreage of rice knowing with certainty at an early stage the volume of water that would be available during the growing season. If the New South Wales water supply system could not meet the demand then the option on Victorian water would be taken up and the full bulk water price paid to the Rural Water Corporation for delivery to the off take of the New South Wales Irrigation System. The first option for an interstate trade was set up and paid for in the irrigation season of 1992/93.

The introduction of capacity-sharing is another good example of innovation in water allocation policy providing irrigators with opportunities to manage their security of supply and improve their profitability.

THE WATER MANAGEMENT SYSTEM: A MORE COMMERCIAL APPROACH TO IRRIGATION DELIVERIES

In 1985 the first step was taken to fundamentally change the approach to managing the irrigation systems. A project team was set up by the Rural Water Commission to initiate the “Channel Systems Project” with the objective of reducing the costs of delivering water services and of building a base with new technology to allow more sophisticated water services and tariff arrangements. The Project developed the concept of Central Communication and Planning (CCP).

Development of modern information technology for surveillance, control and data acquisition systems (SCADA) provides the opportunity to make fundamental improvements to the management of water deliveries in an irrigation system. The opportunities are particularly important in an irrigation system using open channels as the delivery system. Open channels are inflexible in operation and slow in responding to changing demands for water.

Policy initiatives such as water trading, tariff reform and the development of new water delivery services could not deliver their full potential without
a fundamental change to the operating systems used to manage water deliveries. Constraints imposed by channel capacity are the critical factor limiting transfers of water into a system. Investment in an operating system that could make better use of existing channel systems has considerable potential to increase the opportunities for water trading in an open channel system.

Harvesting additional water resources in Victoria is becoming increasingly difficult. Improved operating systems that reduce losses and allow better economic utilisation of existing supplies is therefore an attractive option. In addition water management will require much better integration of data systems so that costs, workforce, maintenance, water resource, water delivery and level of service data can be combined to give management much better information on performance and costs. New operating systems also have the potential to introduce more commercial customer focussed values to an organisation. Care must be taken, however, to avoid being seduced by new technology.

The next step in applying new technology to improving water delivery services was taken in 1991 with the publication of the Rural Water Commission’s Information Technology Strategy, Rural Water Commission (1990). The strategy introduced a relational data base and developed the concept of a Water Management System to provide the information and operating systems to allow proactive operation of the systems from the headworks to the irrigator’s meter wheel.

The Traditional Operating System

The traditional operating system was based the division of the channel system into a set of fixed geographical areas called Bailiff Sections. Each Bailiff Section was judged to be an area that could be operated by one person. The Water Bailiff lived in a house owned by the Rural Water Commission and located in a strategic position in the Section. The Bailiff had the responsibility of collecting the irrigators water orders from a special letterbox in the Section, and planning the water deliveries to irrigators. Planning involved scheduling the water deliveries to match demand to channel capacity. As soon as one irrigator shut off a delivery, another irrigator would be scheduled to start irrigation so that the water level remained constant and maximum use was made of the channel capacity. The operating system requires give and take both from all the irrigators and the operators. The system required skilful negotiation.

The total order for all water deliveries for all Sections in an irrigation district was calculated by the Head Bailiff. This total was used as the basis for an order to release water from the headworks. Releases from the headworks were adjusted on a weekly basis and the Head Water Bailiff had to consider weather conditions and predict fluctuations in demand while allowing for the considerable time lapse between release of water and its arrival at the District boundary. There were at least two, and often four, Head Bailiffs within a district supervising both the work output, quality of service to irrigators, and efficiency of water delivery in terms of water actually delivered to the irrigators relative to the volume delivered to the Bailiff Section. Planning and operation of the system was dominated by a large number of isolated individuals controlling small Sections of the total irrigation system. There was little prospect of system optimisation.

Central Communication and Planning

The project team organised an audit of the traditional system as the first step in redesigning the operation of the irrigation system. The audit showed that at least 25% of an individual Water Bailiff’s time was spent talking to the irrigators. While this usually established good relationships between the Commission and the irrigators it was unnecessarily expensive. In addition the workforce had considerable autonomy and was very hard to supervise unless the irrigators complained, which they were usually reluctant to do. The system was inappropriate for introduction of modern SCADA technology. In addition the houses occupied by the Water Bailiffs at subsidised rentals tied up scarce capital funds. Fundamental change was required.

Figure 5.4 shows the three generations of water distribution practice. The project team developed the concept of Centralised Communication and Planning or CCP as it became
Water orders were now made on the telephone using a standard format. The water orders were recorded so that an order could be made at any time and from any place with access to a telephone. After some initial reservations the irrigation community took to telephone ordering with enthusiasm. The best thing since bulk super!

The next step in implementation involved appointment of a Planner who was responsible for all water orders for a group of Bailiff Sections (initially about 4 Sections). The Planner was responsible for processing and scheduling the water orders and setting up the channel system to deliver the water orders. The Planner was the focus for communication with the irrigators and contacted the irrigators to inform them when their order was scheduled.

The number of Sections in a Planner’s group was progressively increased as the Planners became more skilled and the technology improved to allow processing of a greater number of water orders in a shorter period of time. As a general philosophy the technology was kept as simple as possible in the first stage of implementing the change. The numbers of Sections managed by each Planner was also kept small until the system was operating effectively and both the irrigators and staff had gained confidence.

Instructions of the Planner specifying the operation of the channel system were carried out by Field Operators. Field Operators were not longer confined to particular Bailiff Sections and could range throughout the irrigation district. The Planner’s job was more complex than that of the original Water Bailiff and commanded higher pay. On the other hand the job of Field Operator was less skilled since it did not include the planning and customer contact roles of the original Water Bailiffs.

New pay and career structure had to be designed for the Planners and Field Operators. The Commission was faced with the prospect of introducing a new work practice and rewarding the majority of the workforce with a pay cut because the role of Field Operator was less skilled. This dilemma was solved by creating a 4:2:2 roster for the Planners, that is 4 days planning, 2 days as a Field Operator to maintain knowledge of the channel system and 2 days off. A position of Senior Field
Operator was created working a 2: 4:2 roster, spending 2 days planning, 4 days in the field and 2 days off. In effect the Senior Field Operator was a Planner in training.

All existing Water Bailiffs were appointed as Senior Field Operators with the same total remuneration as their original job. The Planners were selected using a competitive selection process and received appropriately higher remuneration. Field Operators were recruited from outside the Commission at lower rates of pay than the original water bailiffs. As the original commission staff retired or resigned the number of Senior Field Operators decreased until a balance was reached. The whole wage structure of water distribution staff was thus reduced over time without major industrial turmoil. There were plenty of angry meetings and threatened industrial activity caused more by the uncertainty about new work practices, job security and concern about future careers in a shrinking workforce. No water delivery was affected by industrial activity however.

Improved information on the performance of the water distribution system and the productivity of the workforce was a major benefit gained from introduction of centralised communication and planning. Performance of the workforce could now be benchmarked and productivity or high water delivery efficiency rewarded. The development of new career structures to support the basic level of new technology involved in Centralised Communication and Planning, and a workforce that was receptive to new ideas laid the foundation for introduction of more sophisticated technology without disruption by industrial unrest.

The Water Management System

The concept of a technological Water Management System was developed during formulation of the Commission’s Information Technology Strategy in 1990. The Water Management System was based on a mathematical model of the hydraulics of the irrigation supply system so that time delays and channel capacity could be calculated. A planning model was designed to schedule irrigation deliveries based on water orders input directly by irrigators to the Commission’s computer using interactive voice response. The planning model also helped the Planner in communicating with the irrigators removing the necessity of direct contact for routine transactions. A telemetry system provided real time information on channel flows and water levels. A relational data base allowed Planners access to information on irrigators water allocations, trading and water bills.

Progressive implementation of the Water Management System started in 1994/95 after considerable development and pilot testing. Waterline was implemented in 1995 replacing the tape recorded water orders of Central Communication and Planning with an interactive voice response system as shown in Figure 5.4. The telemetry systems were also being installed progressively along the Waranga Western Channel, the main supply channel for the Goulburn Murray Irrigation District. The Planners were provided with up to date operational information on this major transport system. A new operational system had been initiated with a relatively modest investment and with the support of irrigators and the workforce reflecting the more positive relationships that had developed. Operation of the channel systems was now at the dawn of a new era and the capability of harnessing the benefits of the other policy initiatives was now available.

DEVELOPMENT OF NEW WATER DELIVERY SERVICES

The form of water delivery service can have a profound effect on the effectiveness of irrigation and hence profitability. Provision of new services also provides the opportunity for the irrigation business to increase revenue without aggravating its traditional customers.

One of the simplest improvements to water delivery services provides a good illustration of the importance of providing water services in ways that meet the irrigator’s needs. Figure 5.5 illustrates the effect on water consumption of a change from a roster system to a water-on-order system in the Redcliffs Irrigation District. The roster required the irrigators to take water on a fixed schedule every two weeks, rain, hail, or shine. Conversion to a
water-on-order system, despite some constraints necessary to ration the limited delivery capacity of the system, allowed the irrigators to better meet the needs of their crops, make more efficient use of water, and reduce pumping costs. The reduction in water pumped into the district following introduction of water-on-order is evident in Figure 5.5.

Figure 5.5 Introduction of Water on Order in the Red Cliffs Irrigation District

![Graph showing water deliveries and orders]

Sharing the delivery capacity is a major issue for irrigation systems. Unless crops have high values and specialised requirements for irrigation at short notice it is not economic to build a distribution system that can meet all demands simultaneously. Rationing of system delivery capacity and scheduling capacity to meet the requirements of the greatest number to the highest degree is an inevitable challenge of most irrigation systems.

Widespread adoption of laser guided land forming in gravity irrigation districts was changing demand patterns significantly: wider and longer irrigation bays required much higher flow rates for efficient irrigation. This service need was partly being met by introduction of farm outlets with higher capacity through the Dethridge-Long meter wheel with a capacity of 20 ML/day compared to conventional Dethridge wheels of 12 ML/day.

The introduction of high capacity outlets together with transferable water entitlements was concentrating demands in the better irrigation situations and placing substantial burdens on the irrigation delivery system. If better ways of providing services and operating the system could be developed the profitability of irrigators could be improved.

Figure 5.6 shows the daily fluctuation in water orders in the Murray Valley Irrigation District relative to the delivery capacity of the channel. The wide fluctuation in demands and opportunities for making better use of existing channel capacity in a system that is perceived to be under stress can be seen.

Figure 5.6 Murray Valley Irrigation District - Orders in December 1989

![Graph showing water orders]

Irrigators were installing recycling dams to recycle tail water, reduce drainage flows and help reduce the threat of salinity. A recycling dam provides the irrigator with at least one irrigation stored on the farm eliminating the need to supply water on demand. Introduction of off-peak delivery services to fill recycling dams, at a lower water price, would make better use of the existing delivery systems and on-farm investments to improve the profitability. The search for new water delivery services to help the profitability of both the irrigators and the irrigation authority is important and should be continued with vigour.

INFRASTRUCTURE RENEWAL: AN OPPORTUNITY TO CREATE A BETTER IRRIGATION SYSTEM

Renewal accounting and renewal of irrigation infrastructure has been described in an earlier Chapter. One further aspect of renewal accounting is worthy of more comment. Renewing infrastructure provides the opportunity to redesign the system to create much more cost effective water delivery systems. Capital, operating and maintenance costs
can all be reduced often while delivering an improved service.

The maze of small channels supplying individual irrigators makes up a large proportion of the renewal costs of irrigation infrastructure. Rationalisation of this small scale channel network can significantly reduce the required renewal annuity. Given that amalgamation of irrigation farms is occurring in response to pressures to improve farm profitability substantial investments are being made by irrigators in restructuring their on-farm water delivery systems creating many opportunities.

Table 5.1 shows three examples of the opportunities for restructuring the channel network evaluated in 1994. The total saving for the three projects was 70% of the replacement cost of the existing assets. Renewal accounting should take the credit for facilitating the debate and alerting the irrigation community to the benefits of redesigning the channel network, and ultimately providing lower water prices. This rationalisation is stimulated by the fact that the irrigators are paying and have a strong incentive to ensure that only essential infrastructure is replaced in a cost effective way, to an appropriate standard, having regard to the risk to customer service. Renewal accounting provides the basis for negotiation between irrigators and the irrigation authority and provides Customer Groups with well defined responsibilities.

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<th>Table 5.1 Sample Asset Rationalisation Projects</th>
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<td>CG 1/6 channel</td>
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<td>Rochester No 24 channel - Lockington Township</td>
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<td>CG 1/10/28/9 channel &amp; Deakin drain 9/1</td>
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PRICING AND TARIFF REFORM

Pricing determines the total amount of revenue to be collected by the irrigation authority. Tariff structures determine how the revenue is collected from individual customers. Well designed tariff structures should ensure that customers’ bills reflect the costs of providing services, costs are shared equitably and are cost effective to administer.

The tariff structures for the irrigation districts in Sunraysia provide a good example of the importance of tariff reform. The Sunraysia tariff reform is illustrated graphically in Figure 5.7.

![Figure 5.7 Sunraysia Tariff Change - Red Cliffs Irrigation District](image)

Under the old tariff irrigators were assigned a water right of 9 ML/ha which they paid whether they used the water or not. On average 82% of irrigators used less than this water right. The irrigators who used less water and imposed smaller pumping costs paid the same as those who used more water and imposed higher costs. There was also little financial incentive to invest in more efficient irrigation technology. The tariff structure was reformed by reducing the fixed charge (an access charge) to cover 4 ML/ha on the basis that this level of fixed charge would generate about half the revenue. All water delivered was also subject to a volumetric charge making a two part tariff to provide irrigators with clear economic signals.

The tariffs in the Wimmera Mallee Waterworks district provide another example of tariff reform. Water is provided to meet domestic needs and for watering stock for farms throughout the Waterworks District. Storage dams on the individual farms are filled once or twice a year from an extensive network of channels.

The old tariff was based on the area of the farm which had no relationship to the number of dams filled, the volume of water used or the costs imposed by providing the service. A new three part tariff was developed in 1991 after extensive consultation with the farmers. The new tariff reduced the area charge, raised the minimum charge to ensure hobby farmers paid their fair share of costs, and introduced a dam fill charge. In practice, the dam fill component meant that a volumetric component was levied for the first time in the district’s history.

Information systems had to be developed to identify and account for every dam filled with water. With some 25,000 dams involved this proved to be a major task. In addition, considerable effort was put into familiarising the customers about the new tariff. Customers could now benefit from being able to control their annual water charges by deciding on the number of dams they needed to fill. In implementing the tariff, the Rural Water Commission gained greater knowledge of the number and location of dams, developing a sophisticated computer database to improve future planning and service delivery. The new tariff provides more flexibility for customers, while helping to conserve scarce water resources.

1991 was a vintage year for tariff reform. A new tariff was also introduced in the Coliban urban water supply district covering the City of Bendigo. The old tariff was based on property rates (in effect a property tax) and “free” allowances for water based on these property rates. The tariff provided little incentive to use water efficiently and did not share costs equitably. Over a period of years the minimum rate had been progressively increased and the property rate reduced until some 70% of customers were paying the minimum. The effect on revenue of eliminating the property rate had now been reduced to the point where introduction of a fixed access charge based on the size of the water
A volumetric charge for all water consumed was introduced at the same time to give a classic two part tariff for urban water supply.

There was also a fire service charge for commercial and industrial premises with fire service connections, reflecting the costs of the larger water mains needed to support these fire services. The undesirable cross subsidies from the commercial to the domestic sector were thereby eliminated. This urban tariff system was at the forefront of urban tariffs and ahead of its time.

The full program of tariff reform also included tariffs for:
- surface and sub surface drainage in irrigation districts;
- ground water supplies; and
- Otway Rural and Urban Districts (for both urban, bulk supplies and stock and domestic).

The extensive program of tariff reform reinforces the importance placed on these reforms by the Rural Water Commission and its successors.

**RESEARCH**

The irrigation related research effort in Australia was largely funded by government research organisations and was focussed on agronomic and agricultural aspects. The water management side of irrigation was relatively neglected. If irrigation was to have a sustainable future the search for more profitable irrigation would have to be supported by a research effort designed to improve irrigation water management and to develop more cost effective ways of renewing the service capacity of aging irrigation infrastructure.

The Rural Water Commission, through its then Chairperson played a leading role in establishing the National Irrigation Research Fund (NIRF) in 1987. NIRF was a modest fund of $300,000 per annum, formed by the partnership of the Australian Water Research Advisory Council and irrigation agencies in Queensland, New South Wales and Victoria. NIRF funded small strategically located projects with the aim of demonstrating to local irrigation communities, the value of research.

One of the most strategic outputs of NIRF was a comprehensive strategic plan prepared by Wood and Banks (1991). Priorities related to the sustainable use of irrigation allocations and off-site impacts. The strategy not only identified research priorities but also presented a funding strategy. One of the major barriers to developing a national approach was that there was no national focus for the irrigation industry. Research focussed on commodity production such as wheat wool or meat and not on industry inputs such as irrigation water.

Establishment of the Land and Water Resources Research and Development Corporation (LWRRDC) provided a research focus for management of natural resources such as water. A National Program for Irrigation Research was established with $500,000 from LWRRDC matched by $200,000 from each of the Rural Water Corporation, New South Wales and Queensland irrigation authorities. A program management committee was established with strong representation from the irrigation community to ensure that the research was focussed on practical outcomes, and more importantly, was supported by the irrigation community.

The National Program for Irrigation Research based its priorities on the NIRF Strategy, developing new priorities for the second phase of the program through consultation with the irrigation community. The theme of the second phase was water use efficiency and major projects were commissioned to benchmark irrigation practices across Australia for different irrigation enterprises.
STIMULATION OF POLICY DEVELOPMENT ON RESTRUCTURING IRRIGATED AGRICULTURE

The legacy of closer settlement policies for irrigation, and the impact of increasing water prices on accelerating restructuring cannot be ignored. Table 5.2 shows that in 1989/90 some 72% of Australian horticultural farms were smaller than 15 ha and had cash incomes that would not sustain the farm enterprise in the long term. One of the frustrations of the Rural Water Commission was the inability to stimulate major policy reforms designed to assist the restructuring of irrigated agriculture leading to a more profitable, export oriented horticultural industry. Despite the great progress in reform of irrigation, integration of rural restructuring policies with reform of the irrigation industry is an important subject that will have to be left for future irrigation managers.

Table 5.2 Australian Horticultural Farms

<table>
<thead>
<tr>
<th>Farm Area (ha)</th>
<th>Proportion of Farms (%)</th>
<th>Cash Income ($/year)</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;10</td>
<td>50</td>
<td>6,700</td>
</tr>
<tr>
<td>10-15</td>
<td>22</td>
<td>8,500</td>
</tr>
<tr>
<td>15-20</td>
<td>12</td>
<td>18,800</td>
</tr>
<tr>
<td>20-25</td>
<td>7</td>
<td>29,900</td>
</tr>
<tr>
<td>25-30</td>
<td>3</td>
<td>28,600</td>
</tr>
<tr>
<td>30-40</td>
<td>5</td>
<td>38,200</td>
</tr>
<tr>
<td>&gt;40</td>
<td>2</td>
<td>184,200</td>
</tr>
</tbody>
</table>

Source: ABARE Farm Survey 1989/90

VOTE OF CONFIDENCE BY THE FOOD PROCESSING INDUSTRY

The large investments made by the food processing industries in enterprises dependent on irrigation such as wine making and dairy foods, is a strong vote of confidence in the long term future of irrigation in Victoria. Table 5.3 shows export earnings and investments by food processing companies in the Goulburn Valley. Processed food, much of it reliant on irrigation, makes up a large part of Victoria's total exports. Figure 5.8 (over the page) shows the rapid growth in Victorian winemaking production in 1991/92 most of which occurred in the irrigation areas of Sunraysia and Kerang/Swan Hill. Effort to improve the profitability of irrigated agriculture must continue because therein lies the key to a sustainable future for irrigation.

Table 5.3 Processed Food Exports from Irrigation in the Goulburn Valley

<table>
<thead>
<tr>
<th>Ranking</th>
<th>Company</th>
<th>Earnings ($m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>40</td>
<td>Bonlac</td>
<td>267</td>
</tr>
<tr>
<td>43</td>
<td>Murray-Goulburn Cooperative</td>
<td>260</td>
</tr>
<tr>
<td>71</td>
<td>Nestles</td>
<td>141</td>
</tr>
<tr>
<td>135</td>
<td>Unilever Australia</td>
<td>50.9</td>
</tr>
<tr>
<td>137</td>
<td>SPC</td>
<td>50.3</td>
</tr>
<tr>
<td>157</td>
<td>Ardmona</td>
<td>39</td>
</tr>
<tr>
<td>163</td>
<td>Tatura Milk Industries</td>
<td>36.2</td>
</tr>
</tbody>
</table>

Company Infrastructure Investments - current / proposed

<table>
<thead>
<tr>
<th>Company</th>
<th>$ m</th>
</tr>
</thead>
<tbody>
<tr>
<td>Murray-Goulburn Cooperative</td>
<td>40</td>
</tr>
<tr>
<td>Nestles Foods, Tonga</td>
<td>5.6</td>
</tr>
<tr>
<td>Tatura Milk, Tatura</td>
<td>25.3</td>
</tr>
<tr>
<td>Kraft Foods, Strathmerton</td>
<td>82</td>
</tr>
<tr>
<td>Henry Jones, IXL, Kyabram</td>
<td>3</td>
</tr>
<tr>
<td>Unilever, Tatura</td>
<td>28</td>
</tr>
<tr>
<td>Plumrose, Echuca</td>
<td>56.2</td>
</tr>
<tr>
<td>SPC, Shepparton</td>
<td>8.1</td>
</tr>
<tr>
<td>Ardmona Fruits, Mooroodina</td>
<td>21</td>
</tr>
<tr>
<td>Unifoods, Tatura</td>
<td>26</td>
</tr>
<tr>
<td>Bonlac Foods, Goulburn Valley</td>
<td>58.1</td>
</tr>
<tr>
<td>HW Greenham &amp; Sons, Tonga</td>
<td>3.5</td>
</tr>
</tbody>
</table>

Source: Shepparton News, June 1993 (Industry Ranking by Pinnacle International)
Figure 5.8 Winemaking Production 1991/92

**Australian Winemaking Production 1991/92**

- QLD, W.A, Tas
- Victoria
- South Australia
- N.S.W

Total 564,054 tonnes

**Victorian Winemaking Production 1991/92**

- Rest of Victoria
- Kerang
- Swan Hill
- Sunraysia

Total 104,398 tonnes

*an increase of 32.7% over 1990/91*

*Source: ABS Viticulture Australia 1991-92*
CHAPTER 6: The Irrigation Authority as a Commercial Business

THE FINANCIAL PERFORMANCE REQUIRED OF A COMMERCIAL IRRIGATION AUTHORITY

The long term viability of the irrigation authority as a commercial business is vital to the future of irrigation. Managing an irrigation business requires long term investment in infrastructure assets and the long term care of natural resources. Failure to pay sufficient attention to either of these investments will result in the decline of irrigation through poor services, water logging and salinity, or financial failure through building up unsustainable debt. An organisation that does not control its revenue and is not subject to the discipline of raising revenue to fund its activities will not survive. Such an organisation will be subject to the whims of governments and bureaucrats and cannot manage a long term business such as irrigation.

The Rural Water Commission, like many irrigation authorities, was run as a public service department. The Commission was set up as a spending department and there was no connection between revenue and expenditure. The Commission’s revenue disappeared into the Consolidated Fund of the Victorian Government, and operating expenditure was appropriated annually by the Parliament as part of the annual budget of the Government. There was no discipline on the Commission to rely on revenue to fund operations. This financial system provided the Commission little incentive to reduce costs or increase revenue.

Capital funds for investment in irrigation infrastructure were provided by governments with little or no regard to the direct income derived from the investment or any notion that such income should be used to meet the finance charges on the debt. Such policies led to a substantial over investment in irrigation infrastructure and high levels of debt. The finance charges were lost in the overall cost of funding Victoria’s debt. The irrigators regarded capital funds as “free” distorting investment analyses to favour capital intensive investments that might not be the most cost effective solution. The irrigators funding capital investments and paying the finance charges on debt is an important discipline.

Managing the water delivery and drainage operations of the Rural Water Commission as a commercial business would ensure that the necessary commercial disciplines are applied in generating sufficient revenue, getting the costs down, managing cash flows, assets, debt and making sound capital investments. In addition pricing water to meet the costs of delivering the service would stimulate more efficient and profitable water use.

While governments find investment in new infrastructure projects politically attractive, replacement of decaying irrigation channels which make up the major proportion of irrigation infrastructure is not a vote-winner in urban electorates. The inevitable result of inadequate funding is deferral of maintenance and renewal which eventually impacts on the standard of service to the irrigation community. The prospect of irrigation schemes deteriorating to the point where large injections of capital funds are required to ensure services continue is very real. Irrigation communities would then be faced with the difficult choice of raising the money themselves or face the abandonment of the irrigation scheme.

Preparation of a profit and loss statements and a balance sheet was the first step in setting up the Rural Water Commission as a commercial irrigation business. Unfortunately this was not as simple as it sounds. The financial and accounting systems of the Commission were intertwined with those of the wider Victorian Public Service disguising many hidden subsidies. Reforming the financial and accounting systems to clarify the financial position of the Commission for all stakeholders was therefore a priority task.

Table 6.1 (over the page) shows the finances of the Rural Water Commission in 1984/85. Annual operating revenue in 1993/94 $ was $75.5 million covering only 74% of the annual operating costs of $101.9 million. The annual funding requirements for replacing the irrigation infrastructure is now
Table 6.1 Rural Water Corporation - Comparison of Financial Position 1984/85 and 1993/94

<table>
<thead>
<tr>
<th>Water Services in $ millions</th>
<th>1984/85</th>
<th>1993/94</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating Revenue</td>
<td>75.5</td>
<td>96.7</td>
</tr>
<tr>
<td>Business Cost</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operating expenditure</td>
<td>101.9</td>
<td>69.3</td>
</tr>
<tr>
<td>Finance Charges *</td>
<td>2.5</td>
<td>1.7</td>
</tr>
<tr>
<td>Renewals Annuity</td>
<td>38.0</td>
<td>38.0</td>
</tr>
<tr>
<td>Dividend</td>
<td>0</td>
<td>1.0</td>
</tr>
<tr>
<td>Total</td>
<td>142.4</td>
<td>110.0</td>
</tr>
<tr>
<td>Business Cost Shortfall</td>
<td>$66.9m</td>
<td>$13.3m</td>
</tr>
<tr>
<td>As percentage of Revenue</td>
<td>88.6%</td>
<td>13.8%</td>
</tr>
</tbody>
</table>

* Finance charges standardised to service debt accumulated by Corporation after 1 July 1992

known to be of the order of $38 million based on a renewal annuity. The shortfall in revenue over business costs was $66.9 million. The Commission was clearly not viable as a commercial business. Productivity improvements alone could not bridge a shortfall of this magnitude.

The overall strategy for developing the Commission as a commercial business can be summarised as:

1. clarify Government responsibility for historical debt and unfunded liabilities for staff superannuation;
2. define the irrigation business and provide support to the business with high quality commercial accounting and financial information systems;
3. negotiate with government in setting challenging targets for productivity improvement; invest in staff training to create a smaller, more highly skilled organisation focussed on providing services to irrigators;
4. define the financial resources required to renew the aging irrigation infrastructure;
5. broaden the revenue base, and sell non essential assets;
6. invest in research, and development to improve cost effectiveness both in operations and renewal of infrastructure; and finally progressively increase water prices to achieve financial self sufficiency for the irrigation authority.

All these strategic efforts needed the support of commercial accounting systems to prevent them coming to nought.

INTRODUCTION OF COMMERCIAL ACCOUNTING

Reform of Accounting Systems

The accounting systems of the State Rivers and Water Supply Commission were set up for the role of a spending department within the Victorian Public Service, not a commercial business, and were based on the principles of cash accounting. Accrual accounting and a commercial general ledger were implemented in 1984/85, to support the concept of profit and cost centres. The general ledger, with upgrades served the Commission well for ten years. The lack of credibility of the Rural Water Commission's accounting systems in the eyes of the irrigators, and the continuing changes as the hidden subsidies were progressively exposed was a major cause of the "Rate Protest" described in Chapter 4.

The rapid progress made in improving the financial systems after formation of the Rural Water Corporation and the appointment of professionally qualified accountants as financial controllers in the Regions raises the issue of whether these expert staff should have been appointed earlier given the improvement in credibility they achieved. Looking back it is doubtful whether the Commission would have been able to recruit such high quality staff while the financial systems were in such a primitive state, and the Commission was still forced to use the financial and employment system of the Victorian Public Service.

Suffice to say that the movement of the Rural Water Commission out of the Victorian Public
Service to form the Rural Water Corporation as government business enterprise and the consequential improvements in financial management have delivered major benefit to the irrigation industry. The Rural Water Corporation had the advantage of direct access to the revenue gained from water rates and sales.

Identification of All Costs

The accounting systems of the Victorian Public Service did not identify and allocate many of the costs legitimately associated with running an irrigation business. Employer contributions for staff superannuation schemes amounted to some $13 million per annum based on a payroll of $60 million and the then standard public service employer contribution rate of 21.5% of salary. Exposure of this high cost stimulated a change in the superannuation schemes for new staff and negotiation of a more realistic employer contribution rate of 12%. Workcover or workers compensation insurance was another expenditure met directly by the Government and not recorded in the Rural Water Commission’s accounts. Allocation of these costs directly to profit centres gave managers both the rewards and penalties of managing staff numbers and occupational health and safety in their workplace.

The annual insurance premium for the Rural Water Corporation was the order of $800,000 (in the days of the Rural Water Commission the insurance premium was paid by the Victorian Government as a hidden subsidy). A major incident at the hydroelectric power station at Dartmouth Reservoir highlighted the benefits of such insurance with liability for costs being limited to the deductible of $5 million under the policy. Potential costs were considerably greater.

The Rural Water Commission’s customers gained considerable benefit from the wholesale water business of the Murray Darling Basin Commission but Victoria's share of the costs were met directly by the Victorian Government. The Victoria's quarter share of the annual operations, maintenance, administration and asset renewal costs of some $3.6 million was allocated to the Rural Water Commission’s customers and the Victorian Government reimbursed annually from the Commission’s revenue.

Financial charges on the Rural Water Commission’s “overdraft” was the other hidden subsidy. The Commission’s major costs such as wages and salaries were distributed uniformly throughout the financial year in contrast to revenue from rates, charges and water sales that came in the last quarter of the financial year. The financial charges on the “overdraft” over the first three quarters of the financial year were hidden in the Government’s Consolidated Fund. The net finance charge over the financial year was the order of $4 million depending on prevailing interest rates.

Movement of its funding to a one line net appropriation required the Rural Water Commission to manage its loan portfolio and meet the financial charges on the overdraft from revenue. For the first time the Commission had a strong incentive to manage its cash flow. A Customer Information and Billing System was developed and, after consultation with the Commission’s customers, periodic billing was introduced progressively to give a more uniform revenue stream over the financial year. Finance charges on the “overdraft” were reduced substantially as a result.

The rigorous process of identifying the full costs of running the Commission’s water business and exposing all the hidden subsidies did not earn the Commission many friends in the irrigation community. The progressive exposure of the subsidies instead of a once-off exposure of the full financial position, and the lack of credibility of the Commission’s accounting systems did not help relationships with the irrigators, “not another set of figures worse than the last lot!”
The Board of the Commission held firmly to the view that it was in the best long term interests of the irrigators that the Commission be financially self sufficient and not have to rely on shrinking government subsidies to renew and modernise the irrigation systems. The risk of a decline of the irrigation systems was very real.

Profit and Cost Centres

The activities of the Rural Water Commission were separated into cost and profit centres at an early stage of the reform process. Cost centres were called “Responsibility Areas” and profit centres were called “Financial Entities”. The profit centres or Financial Entities provided profit and loss statements and balance sheets and were intended to be the fundamental management unit of the Commission. The early attempts did not include all the costs but a start had to be made. Establishment of profit centres made the possibility of separation of the Commission into individual profit centres more likely, particularly once the internal cross subsidies were exposed. The benefits of establishing profit centres far outweighed the risks and the journey was commenced.

In the early years of the Rural Water Commission and the Financial Management Strategy there was an inevitable focus on cost reduction. As a consequence the Responsibility Areas became the fundamental financial unit used in managing the irrigation business. It was only after the establishment of the Rural Water Corporation in 1992 that the full benefits of increasing revenue and selling redundant assets became available to the managers of financial entities. Until that time management naturally concentrated on costs.

Allocation of Overheads

Definition of profit centres required the proper allocation of overheads presented another vexed question. Regional and head office overheads had to be allocated to all profit centres. After much analysis the simple method of allocating overheads in proportion to recurrent expenditure was chosen. Many questions were asked both by the Rural Water Commission’s customers and by regional management about the services they were getting for the cost of head office overheads.

In 1991 the accounting firm Arthur Anderson was commissioned to carry out a review of overhead allocation. After a rigorous analysis as many overheads as practicable were allocated on a causal basis in an attempt to link the overhead directly to a service. The discussion of overheads could then proceed on a more constructive basis even though the end result in terms of cost allocation was much the same.

REDUCTION OF OPERATING COSTS: IMPROVEMENT OF PRODUCTIVITY

Meeting the Targets

Achievement of financial targets was an essential part of the Rural Water Commission’s business planning.

The Financial management Strategy set a target of holding recurrent or operating expenditure constant in $ terms for 4 years during a period of 7% to 8% annual inflation. Recurrent expenditure included Government Services as well as operating expenditure on the irrigation and drainage systems.

The 1990/91 Business Plan set a target of reducing annual operating costs by $7 million over the 5 year period of the Plan in 1989/90 dollars. Total operations, maintenance and administration costs at the time were some $85 million.

The Future Management Review in effect doubled the 1990/91 Business Plan target for reduction of operating costs to $14 million over the 5 year planning period in equivalent terms.

These targets for cost reduction and productivity improvement were all achieved.

Strategies to Improve Productivity and Reduce Costs

The task of the Rural Water Commission, and later the Rural Water Corporation was to develop strategies to deliver the required efficiency
improvements or better. Establishment of the financial framework with government has been described, together with business planning and setting of financial targets. Strategies to improve productivity are summarised in Figure 6.1 depicting the Rural Water Corporation's Change Plan for 1992 to 1994.

The strategies can be divided into two major components:

1. organisational or macro restructuring including regionalisation and development of business units;
2. redesign of work or micro restructuring supported by introduction of new technology, staff training, award restructuring, and introduction of business planning at the work unit level.

Restructuring the Organisation

Once a decision to regionalise had been made the task was to deliver the productivity savings within a regional structure. The Rural Water Commission did have an opportunity to improve productivity in that reduction of the 20 districts of the State Rivers and Water Supply Commission into the 9 regions of the Rural Water Commission allowed consolidation of management, administration and technical support to the regional centres. Staff numbers in the district centres were reduced significantly. The regional centres were to grow at the expense of both the district centres and head office in Melbourne.

Designing organisational structures for the regions and head office presented another challenge. The first attempt failed because the recommended structures envisaged staff levels far in excess of the targets set by the Financial Management Strategy. The productivity targets were non-negotiable and the regional structure was redesigned to deliver them.

A regional structure was approved by the Board of Management in August 1987. The scale of head office still presented difficulties however. In order to address the issue of head office the concept of Service Units was adopted. The concept was based on establishing a purchaser/provider relationship between the regions and the support groups in head office. While the service units did not charge the full costs, an attempt was made to cost services and build regional budgets based on
the services to be provided by head office. In the first instance costs such as employer contributions to superannuation were excluded from service unit costs, however costs such as corporate overhead were included. The structure imposed a discipline on both the purchaser to define the service required and the provider to deliver the service at a predetermined price.

Regionalisation proceeded following approval of the structure in August 1988. It took about 12 months to complete each layer of the organisation working from the top down. The work had to be redesigned, positions described in detail and the complex and time consuming procedures of the Victorian Public Service followed to the letter, including processing appeals from unsuccessful candidates. A Labor Government was in power in Victoria and the trade unions wielded considerable influence. Management had to be careful how far and how fast restructuring proceeded.

Given that the organisation had been static for a long period it is not surprising that extensive consultation with staff was required to overcome uncertainties. However the approach paid off in that the confidence gained by staff that they would be fairly treated even if decisions went against them, allowed future restructuring to proceed more rapidly. Management also gained in experience and developed skill in restructuring the workforce.

The Government had promised a series of eight new regional offices. Southern Region was located with head office at 590 Orrong Road, Armadale in Melbourne. Fortunately the conceptual design proceeded slowly and the original cost estimates of some $9 million left a lot to be desired and costs escalated substantially. Reasonably comfortable temporary accommodation was organised including the leasing of buildings in Horsham and Swan Hill. Later it proved a great advantage not to have invested much needed capital in regional office buildings that would shortly be redundant.

Following successful establishment of the regions the focus on restructuring returned to head office. After some major surgery to the Finance and Administration Division in the early days of the Financial Management Strategy the pace of change had slowed. With the effective completion of the first round of regionalisation the Regional Coordination Branch was closed down. To date the substantial staff reductions had been achieved by natural attrition and not replacing staff who resigned or retired. Inability to offer redundancy packages to encourage staff to leave was emerging as a major difficulty. It was not until the 1991/92 financial year that the Commission gained access to funds as part of a wider program to streamline the Victoria Public Service. By this time the economic difficulties of Victoria were becoming obvious and the Government had no option but to start reducing the public service.

Although the funds gained by the Commission were relatively modest, the value of investing in staff reduction became obvious. Management also gained useful experience in applying redundancy and early retirement packages. One fundamental principle that was rigorously applied throughout was that management determined who received an offer. Too often in such programs all staff are made an offer and the more competent ones who have better prospects of alternative employment take up the offers with alacrity. The organisation rapidly loses skill at a time when highly skilled staff are vital to the ongoing performance of the organisation.

The other fundamental principle applied was that any redundancy package offered had to result in a permanent reduction in staff either directly or by restructure of the work unit. The rate of reduction in head office costs was accelerated by doubling the productivity targets for corporate overheads compared to the regions. If the regions faced a 3% real reduction in recurrent budgets the corporate areas of head office faced a 6% real reduction. Application of a doubled productivity target over three years resulted in substantial reductions in staff numbers at head office.

The service units were progressively upgraded to business units with full accounting of all costs as though the business unit was a commercial consulting company relying on income from customers to survive. The Designs Branch and the State Water Laboratory were early candidates for conversion to business units since they had developed stronger client provider relationships. Ultimately
Table 6.2 Future Management Review Implementation Timetable

<table>
<thead>
<tr>
<th>Phase One - completion by June 1993</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Commission to be taken outside public service as a statutory authority in the “off-budget” sector;</td>
</tr>
<tr>
<td>• Emphasise production management and planning in the head office structure;</td>
</tr>
<tr>
<td>• Reconfigure the present nine regions into five, with each region focused on particular types of customers within largely discrete water systems</td>
</tr>
</tbody>
</table>

Phase Two - completion in 1995/96

- Each region to have a Management Board running discrete businesses, setting prices & levels of service;
- A new small central group be formed to set specific policies and performance contracts, co-ordinate state-wide aspects of water systems and drive the change process;
- Semi-independent service companies to provide specialist technical and business services to the rest of the authority on a commercial basis.

these business units were sold. Most of Hydrotechnology was purchased by Sinclair Knight Merz, with the major structures group being purchased by the Snowy Mountains Engineering Corporation. The State Water Laboratory was merged with Melbourne Water’s laboratory to form Water Ecoscience which was ultimately sold to Australian Water Technologies. The purchasers were impressed by the good preparation of the business units for a future in the commercial world.

The Future Management Review reduced the number of regions to five and opened up the potential of further consolidation of administration and technical support functions. Direct involvement of regional and middle management in preparation of the Rural Water Commission’s submission to the Future Management Review helped gain the commitment of middle management to the major changes that were to follow. The Future Management Review team organised extensive consultation with all stakeholders, particularly the rural communities. This extensive consultation went a long way to gaining acceptance and subsequent rapid implementation of the findings. Table 6.2 gives a timetable for the implementation of the Review recommendations.

Redesign of Work

Redesign of basic work practices was necessary to achieve more cost effective operations. The Commission decided on the approach of reforming its own work practices rather than wholesale contracting out of activities to introduce potentially better work practices of contractors. In the case of irrigation there was not a competitive market for many operational services in the rural communities of the irrigation districts.

The redesign of work can be subdivided into three general categories: streamlining administration; redesign of water distribution activities; and award restructuring to combine the operations (water distribution) and maintenance workforces into one, smaller multi-skilled workforce.

Streamlining Administration

The streamlining of administration was built into almost all activities of the Commission and it is difficult to identify highlights. The early reductions in the Finance and Administration Division and in the regions following the consolidation of the districts into regions are notable. The “Activity Value Analysis” conducted by consultants Price
Waterhouse Urwick reviewed all administration activity and was of major benefit. Implementation of the Customer information and Billing System reduced the amount of manual work in processing water rates and sales. When the Rural Water Corporation was formed there was a substantial reduction in administrative work required to satisfy Victorian Public Service conditions, particularly in managing the workforce. There can be no doubt that the Rural Water Corporation as a government business enterprise had greater freedom of action and lower costs.

In streamlining administration there proved to be no substitute for the hard grind of continual reviewing activities and attention to detail in implementing improvements. Constant vigilance was also required to prevent new initiatives from imposing significant administrative work.

Redesign of Water Distribution

The redesign of water distribution activities had the dual objectives of improving services and reducing costs. The initiatives are described earlier in Chapter 5.

Creating a Multi-skilled Workforce:
The Training and Development Strategy

The Staff Training and Development Strategy was introduced to facilitate creation of a smaller multi-skilled workforce. The Commission's training programs were designed to be externally accredited so that the qualifications would be recognised throughout Australia. This would impose the discipline on the Commission of providing a fulfilling work environment and good career structures to hold competent and well trained staff. Staff displaced by the restructuring would have a better chance of gaining alternative employment, which improved the workforce's attitude to restructuring and the redesign of work. The development of externally accredited training programs also gave the Commission's workforce strong signals that management regarded training as an investment not a cost.

The introduction of new technology required a strong training program to ensure that staff were well equipped to use the new technology and as a result have a positive attitude to the new work practices. The Training and Development Strategy was essential to successful introduction of Central Communication and Planning and the Water Management System. Staff needed support to make best use of new technology.

The Strategy had a strong emphasis on competency based "on the job" training and assessment. The first line supervisors had a major role in determining the training needs of their workers, in delivering the "on the job" components of the training program, and in the competency based assessment. Specialised consultants provided advice on training needs, development of curricula, competency standards and assessment procedures. The assessment of prior learning gained from the extensive work experience of the existing workforce was a major issue. One objective of the training strategy was to build into the Commission's supervisors the skills on identification of training needs, curriculum development, competency standards and assessment, and recognition of prior learning.

The Rural Water Commission had a well established staff training facility at Tatura, the regional centre of the Goulburn Murray Region, which was used to deliver the specialised training courses for the water distribution and maintenance activities. The Tatura facility was also used to deliver occupational health and safety courses. The more general training courses such as the use of computers, supervision, and financial management were delivered through the established Technical and Further Education Colleges (TAFE) located in the regional centres of rural Victoria. In addition to reducing the cost of delivering training programs, the use of TAFE Colleges had the advantage of giving the Commission's workforce the opportunity of mixing with people from a wider range of backgrounds and occupations, broadening their outlook.

Development of the Commission's training program was supported by a grant from the Commonwealth Government through the
Restructuring Industrial Awards

Although training and development was an essential first step in creating a smaller, flexible, multi skilled workforce the goal could not be achieved without restructuring the industrial awards which prevented using certain categories of workers on other than specialised functions.

While the Commission remained within the Victorian Public Service there were severe restrictions on what could be achieved. The Victorian Public Service Board was continually looking at the implications of the Commission’s industrial restructuring for the wider Public Service and was extremely cautious if there was a possibility of a “flow on” of new working conditions to the wider workforce. As a consequence the only restructuring of awards that was possible was confined to the unique components of the Commission’s workforce, specifically the water distribution workforce.

The Rural Water Commission inherited a water distribution workforce with at least 30 different categories of worker from water bailiff, reservoir keeper, diversion inspector, urban turncock, etc. Each category of worker usually had no more than three career levels. The workforce was therefore fragmented into a large number of different categories each with relatively restricted career opportunities. Combination of all these different categories of worker into one water distribution category would allow the training programs to create a multi-skilled workforce with better career opportunities in the one, larger category of water distribution worker. Management would also have greater flexibility in the assignment of highly skilled workers.

After much effort a “Category Review” in conjunction with the Public Service Board produced one category of water distribution worker from the previous 30 different categories. The door was also opened to reviewing the expensive overtime and stand-by arrangements that are vital to running a 24 hour 7 day a week water distribution operation.

Under the industrial awards of the day there was a demarcation between the operations, and the construction and maintenance workforces of the
The Rural Water Commission that required that they were managed as two separate workforces without interchange of workers. The operations, and the maintenance work were seasonal and out of phase. The irrigation systems delivered water in summer and were shut down in winter for maintenance. If the same workforce could be used for both activities a smaller multi-skilled workforce could do both operations and maintenance significantly reducing costs.

The Rural Water Commission started with 12 trade unions and 8 industrial awards governing working conditions and remuneration. The multiplicity of awards created demarcations within the workforce and consequent inefficiencies. Integration of the two workforces would not only result in a smaller multi-skilled workforce, better career structures would also result in giving workers a positive incentive to support change. The construction and maintenance workers did not enjoy the same public service conditions as the operational workforce and were a disadvantaged group. If long serving construction and maintenance workers wanted jobs in the operational workforce they had to respond to a newspaper advertisement and compete with external applicants for base level positions. The higher grade positions were not available to construction and maintenance workers no matter how long and comprehensive their experience.

A long term strategy was devised with the objective of removing all artificial demarcations in the workforce, that is demarcations not based on skill requirements. The desired result was one industrial award for the entire workforce serviced by one trade union. The first element of the strategy was to devise a staff training strategy so that operational workers could learn construction and maintenance practices and vice versa.

Creation of the Rural Water Corporation as a government business enterprise outside the Public Service made more fundamental award restructuring possible. A major recommendation of the Future Management Review was to move the Rural Water Commission out of the Public Service to allow development of an entirely new industrial award governing terms and conditions of employment, including overtime and stand-by.

By November 1992 a new industrial award had been written with only 2 responding trade unions. The award covered more than 95% of the newly created Rural Water Corporation’s workforce excluding senior management. The only basis for a demarcation was the skill and qualifications required to carry out specific functions. The award contained four levels replacing the previous seven level structure. A flatter more effective organisational structure was now possible. Each of the four employment levels contained 3 pay points; movement between pay points was only possible by acquiring and using new skills as defined by the Corporation’s accredited training program. Workers were now rewarded for acquiring and using skills, replacing the previous system which rewarded workers for length of service. Positive forces could now create a multiskilled workforce.

One major factor in creating the industrial climate was a communication strategy using the Managing Director in a series of visits to discuss the restructuring with the workforce in the less threatening environment of their workplace. Effective two way communication was vital for the Managing Director to understand the views of the workforce and for the workforce to understand the reasons behind the significant restructuring taking place. At least half the workforce had the opportunity to interact directly with the Managing Director over a six month period before the negotiations for the new award commenced. Visits were followed up by written communications answering the important questions raised in the discussions. The questions and responses were circulated to the whole workforce. The communication strategy was an important factor in the success of the negotiations to establish the new award. Despite the complexity and sensitivity of the negotiations no time was lost from industrial activity.

The Commercial Development Project (CDP) was the next step in the strategy to create a customer focused high performance culture within the corporation. In essence the project, or CDP as it became known, was to take the Corporation’s vision and mission together with the overall Business Plan to develop a business plan for each work unit within
The Corporation, taking business planning down to work unit level. The level of understanding of commercial practice and the commitment of the workforce was significantly improved by CDP that is set out in schematic form in Figure 6.1.

The Corporation's Commercial Development Project stimulated:

- development of commercially oriented business plans for work units throughout the Corporation;
- synchronisation of the business planning cycle to meet Corporation, Regional and business division planning requirements;
- development of marketing plans;
- asset management strategies;
- transition plans arising from implementation of Water Industry Structural Review (which disaggregated the Corporation); and
- development of new organisational structures.

While it is hard to allocate individual productivity improvements to specific initiatives there can be no doubt about the substantial overall improvement in productivity achieved. Figure 6.2 shows a $33.4 million or 32% reduction in annual operating cost over the ten years of the reform process, while accommodating large real increases in maintenance expenditure, was a major achievement by any standard.

**BROADENING THE REVENUE BASE**

Until the Rural Water Commission's funding moved to the one line net appropriation it had no financial incentive to identify new sources of revenue. Bulk water supplies were provided free or at nominal prices to the cities and towns along the rivers regulated by the Commission's irrigation headworks, principally on the Goulburn and Murray Rivers. The annual revenue subsidy amounted to some $6 million if a 4% real rate of return on the current written down value of the assets was used to calculate bulk water prices. The regional cities were getting drought security at the expense of the irrigators.

Generation of hydroelectricity was another example of revenue foregone. The agreements to allow generation of hydroelectricity at the Commission's dams were written in an earlier era when proposals for one government authority charging another commercial rates were not considered appropriate. In addition the agreement
allowing generation of hydro electricity at Eildon, which was written in 1955, contained no allowance for inflation, and the real value of payments had declined substantially by the 1980s. Fortunately the Eildon Agreement contained a clause that allowed either party to cancel the Agreement providing 12 months notice was given.

The Rural Water Commission cancelled the agreement and, after lengthy and vigorous negotiations, a new agreement on more favourable terms was signed. The agreement at Dartmouth did not contain a cancellation clause and has proved very difficult to renegotiate despite the intervention of Ministers.

The potential for new hydroelectricity generators at the Commission's other dams raised some interesting possibilities both in terms of revenue and innovative licencing arrangements and some 5 new small hydroelectricity generators were licenced and constructed, contributing to the Corporation's revenue.

The Commission owned considerable areas of land surrounding reservoirs and other works. While much of the land was leased the terms were less than equivalent commercial leases. As the leases expired the terms were renegotiated on more commercial lines and revenue progressively increased.

Recreational activities, particularly boating on reservoirs, imposed considerable costs on the Commission without compensating revenue. Houseboats on Eildon Reservoir were the only boating activity which the Commission directly licensed and had an immediate opportunity to seek commercial terms. The real value of licence fees for houseboats had declined substantially since they were first introduced. A five year strategy was introduced to increase the fees to commercial levels. The end result was to increase the annual fee on a typical houseboat from $160 to $1000 over the five year strategy.

Initiatives were taken to raise revenue from the other boat owners who made considerable use of the Commission's reservoirs, but without success. The political influence of the small boat owners proved insurmountable. In general the revenue raised from recreational activities was not worth the risk or the management cost involved. Future irrigation managers would be well advised to divest themselves of the management of recreation by licensing the activity to local government or other suitable management agencies.

Government authorities often provide subsidised services to particular groups in the community, in effect as community service obligations. The Commission's services were reviewed and concessional services identified. Subsidised water supplies to churches, scout halls, local government in rural towns, etc, were identified. The subsidies were more generous than those prevailing in the wider urban water industry and a strategy to reduce the subsidies by some $350,000 was implemented to improve the Commission's revenue. The Commission was unsuccessful at gaining support from the Government for continued funding of these concessions as Community Service Obligations.

Broadening the Rural Water Commission's revenue base was one of the most difficult and time consuming tasks. The political barriers created by groups who benefit from highly subsidised services should never be underestimated. Politicians like to make good fellows of themselves and are often unwilling to withstand either the political pressure from interest groups, or the pressures from the Treasury to avoid funding such community service obligations through direct subsidies from the state budget.

OUTCOMES

To illustrate the growing pace of reform the achievements of the Rural Water Corporation during 1992, 1993 and 1994 are set out in Tables 6.3, 6.4 and 6.5.

Table 6.1 shows the improvement in the financial position of the Rural Water Commission and Corporation between 1984/85 and 1993/94. The figures have been adjusted to reflect the reductions in responsibilities of the Rural Water Commission and Corporation during the period. The revenue and costs for both 1984/85 and 1993/94 relate to the business as it was structured in 1993/94.
<table>
<thead>
<tr>
<th>Month</th>
<th>Achievements</th>
</tr>
</thead>
<tbody>
<tr>
<td>January</td>
<td>FMR Report to Government</td>
</tr>
<tr>
<td>March</td>
<td>Government decision to implement FMR findings</td>
</tr>
<tr>
<td>April</td>
<td>Rural Water Corporation legislation drafted</td>
</tr>
<tr>
<td>May</td>
<td>Torrumbarry Weir failed (Remedial work success fully implemented)</td>
</tr>
<tr>
<td>June</td>
<td>1992/93 Business Plan, budget and pricing approved (average 4.4%)</td>
</tr>
<tr>
<td>July</td>
<td>RWC established outside public service</td>
</tr>
<tr>
<td></td>
<td>Corporation's Board of Directors holds first meeting</td>
</tr>
<tr>
<td></td>
<td>Fully funded superannuation arrangements for new employees</td>
</tr>
<tr>
<td></td>
<td>Interim award created</td>
</tr>
<tr>
<td></td>
<td>Corporation became only water authority in Australia accredited as private TAFE provider</td>
</tr>
<tr>
<td>August</td>
<td>Delegation manual approved</td>
</tr>
<tr>
<td>September</td>
<td>Regional Management Boards meet</td>
</tr>
<tr>
<td>October</td>
<td>$100 million debt converted to equity</td>
</tr>
<tr>
<td></td>
<td>Past superannuation liability borne by Government</td>
</tr>
<tr>
<td></td>
<td>future liability borne by Corporation</td>
</tr>
<tr>
<td>November</td>
<td>Single award with two respondent unions</td>
</tr>
<tr>
<td></td>
<td>New commercial financial systems go live</td>
</tr>
<tr>
<td></td>
<td>Financial controllers appointed</td>
</tr>
<tr>
<td>December</td>
<td>Enhanced resignation packages offered</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Month</th>
<th>Achievements</th>
</tr>
</thead>
<tbody>
<tr>
<td>January</td>
<td>Urban water authorities charged for supply of bulk water</td>
</tr>
<tr>
<td>February</td>
<td>Irrigation research program established</td>
</tr>
<tr>
<td>March</td>
<td>Commercial Development Project initiated</td>
</tr>
<tr>
<td>May</td>
<td>High level Asia Pacific Economic Co-operation Forum delegation received</td>
</tr>
<tr>
<td></td>
<td>Water Industry Structural Reform Study initiated</td>
</tr>
<tr>
<td></td>
<td>Lowest seasonal irrigation water sales on record ($7m shortfall in budgeted revenue)</td>
</tr>
<tr>
<td>June</td>
<td>7.6% workforce reduction over past six months</td>
</tr>
<tr>
<td></td>
<td>Annual profit of $14.8 million which is greater than the $14.4m budget despite reduced sales</td>
</tr>
<tr>
<td>July</td>
<td>Business plans completed and Regions decide prices</td>
</tr>
<tr>
<td></td>
<td>Business and Technical Services Divisions commence commercial operations</td>
</tr>
<tr>
<td></td>
<td>Final meeting of Water Industry Structural Reform Steering Committee</td>
</tr>
<tr>
<td>August</td>
<td>First certificates of Water Resource Management awarded</td>
</tr>
<tr>
<td></td>
<td>Completion of Groundwater Management Strategy</td>
</tr>
<tr>
<td></td>
<td>Performance contracts signed between regions and Corporation Board</td>
</tr>
<tr>
<td>September</td>
<td>Financial statements completed and audited by due date for the first time</td>
</tr>
<tr>
<td>October</td>
<td>Legislation changed to allow charging for securing bulk water entitlements</td>
</tr>
<tr>
<td></td>
<td>Lake Eildon significantly reduced major flooding</td>
</tr>
<tr>
<td>18 October</td>
<td>Government announced major reforms to water industry and released a strategy paper</td>
</tr>
<tr>
<td>27 October</td>
<td>First meeting of Regional Autonomy Task Force</td>
</tr>
<tr>
<td>November</td>
<td>Implementation plan endorsed by Corporation Board</td>
</tr>
<tr>
<td></td>
<td>Communication with staff commenced relating to organisational change</td>
</tr>
<tr>
<td></td>
<td>Agreement with SEC for Eildon power generation re-negotiated to provide additional revenue from June 1990</td>
</tr>
</tbody>
</table>
### Table 6.5 Rural Water Corporation - Achievements in 1994

<table>
<thead>
<tr>
<th>Month</th>
<th>Achievements</th>
</tr>
</thead>
<tbody>
<tr>
<td>March</td>
<td>Auction of River Murray water for irrigation</td>
</tr>
<tr>
<td>April</td>
<td>Corporation Board adoption of proposal for the Preservation of Information and Corporate Memory</td>
</tr>
<tr>
<td>May</td>
<td>Interim Board of Radius Computing met for first time</td>
</tr>
<tr>
<td></td>
<td>Legislation passed by Parliament to enable the creation of Rural Water Authorities</td>
</tr>
<tr>
<td>June</td>
<td>Torrumbarry Weir commencement ceremony held for construction to commence in September '94</td>
</tr>
<tr>
<td></td>
<td>Ministerial Order creating new Rural Water Authorities</td>
</tr>
<tr>
<td></td>
<td>Interim Board of Water Ecoscience (joint laboratory venture with Melbourne Water) met for the first time</td>
</tr>
<tr>
<td></td>
<td>Final meeting of Regional Autonomy Task Force</td>
</tr>
<tr>
<td></td>
<td>Redcliffs Pipelining Project comprising conversion of 55km channels to pipelines and construction of 2 major pumping stations completed on time, in budget</td>
</tr>
<tr>
<td>July</td>
<td>Regions autonomous from 1 July</td>
</tr>
<tr>
<td></td>
<td>RWC succeeded in reducing shortfall of revenue against business costs to $13.3m</td>
</tr>
<tr>
<td></td>
<td>Operating Costs were reduced: Staff numbers decreased by 9.3% without disruption to service</td>
</tr>
<tr>
<td>September</td>
<td>Commencement of interactive voice response system for water delivery orders</td>
</tr>
<tr>
<td></td>
<td>Private power station opened at Yarrawonga Weir to generate 9.6 megawatts into the State's power grid</td>
</tr>
<tr>
<td></td>
<td>A fish lift constructed at Yarrawonga Weir for upstream fish migration</td>
</tr>
<tr>
<td></td>
<td>Contract approved for re-construction of Torrumbarry Weir</td>
</tr>
</tbody>
</table>

Overall revenue had increased 28% in real terms and operating expenditure had been reduced by 32% despite the large real increases in maintenance expenditure. The shortfall of revenue against business costs (total of operations, maintenance, administration, a renewal annuity and finance charges) was reduced by 80% or $53.6 million in real terms. Figure 6.2 traces progress towards financial self sufficiency from the annual shortfall of $66.9 million in 1984/85 to $13.3 million in 1993/94.

During the management of the Rural Water Commission the shortfall was reduced on average by $4.8 million per year. In the first year of the Rural Water Corporation the shortfall was reduced by $11.4 million, a clear demonstration to the irrigation community of the value of the Future Management Review. Appointment of a highly skilled Board with strong commercial skills, and elimination of the large overheads generated by the Victorian Public Service contributed significantly to the improved performance.

The reduction in operating costs of $33.4 million contributed 62% of the improvement in performance. Increase in water rates and charges to the irrigators contributed $11.8 million or 22%. New sources of revenue net of a dividend to Government contributed the remaining 16% of the improvement in financial performance. The irrigators and other rural water users had been protected from price increases as far as practicable.
CHAPTER 7: Environmental Sustainability

INTRODUCTION

Any irrigation authority has a vested interest in protecting the resource base of soil, land and water resources. Ecologically sustainable development is more than just a catch-cry. It is the substance of the business. Degradation of the land and water resource impacts on delivery of water of appropriate quality and quantity to customers downstream and on the viability of irrigation farms. Potential resource degradation includes salinity and water logging, water pollution through drainage and ecological damage through over-allocation and regulation of rivers inducing changed flow patterns, with consequences for algal blooms and infestation of pest species such as carp. If the irrigation practices of customers are not environmentally sustainable in respect of resource use, then both the irrigators and the irrigation authority are out of business.

In Victoria a strategic decision was made early in the twentieth century to promote closer settlement to settle as many people as practicable in rural Victoria and increase the intensity of irrigation, a decision that has significant environmental implications. Many irrigation districts in Victoria were established as the result of closer settlement and soldier settlement policies after the two world wars. In addition the political imperative of the day was to establish as many farms as possible for the least cost. Planning and establishment costs were minimised and essential activities such as the provision of drainage and soil surveys frequently did not take place. Local politics influenced decisions on the location of new irrigation schemes, often against the technical advice of the time. The outcome was that many Victorian irrigation districts were established with inadequate drainage and sometimes on soils that were not suitable for irrigation.

Integrated catchment management, or holistic water management is vital in ensuring sustainable use of land and water management. Formation of the Murray Darling Basin Commission was an important step in managing the water and land resources of Victoria, New South Wales and South Australia within the Basin. The Rural Water Commission contributed to the development and implementation of the MDBC’s catchment-wide strategies including management of salinity and water allocation.

Some environmental activities are part of the core business of an irrigation authority. Potential adverse environmental impacts can result from system operation, impact of works and activities such as channel spraying with herbicides, leaking channels from poor maintenance, cold water releases from reservoirs and rapidly changing water levels and rates of flow in rivers. Management of aquatic weeds, for example, provides a more cost effective solution to maintaining hydraulic capacity of channels and drains. Reservoir management is another. During the reform decade decisions on reservoir management led to degradation of water quality and the formation of toxic blue green algal blooms preventing use of the water. This highlighted the importance of environmental auditing and the development of environmental management plans, important initiatives for a commercial organisation working in the natural environment.

The Rural Water Commission and its predecessor had carried out resource management activities for the state that were not the core business of an irrigation authority. These activities were converted to a Government Services Contract as described in Chapter 4. with the RWC as the service provider. Surface and groundwater assessment, and floodplain and waterway management were the major activities in this category.

The Rural Water Commission had a strong commitment to building the knowledge base and supported research principally through the Commonwealth’s Cooperative Research Centres program, including the Cooperative Research Centre for Catchment Hydrology and the Cooperative Research Centre for Freshwater Ecology. The National Irrigation Research Fund was another important initiative supported by the Commission.
INTEGRATED CATCHMENT MANAGEMENT: THE MURRAY DARLING BASIN COMMISSION

Most of the irrigation districts in Victoria lie within the Murray Darling Basin. The Murray Darling Basin Commission and its Ministerial Council were established in 1987 to co-ordinate the management of water quantity and quality in the basin. The Murray Darling Basin Commission brought together the agricultural, water and environmental management agencies of Victoria, New South Wales, South Australia, and the Commonwealth into a decision making and program implementation organisation with responsibility for a multi million dollar budget. The Commonwealth Government was involved because of the economic importance of the region and the crucial role in water resources policy and funding.

The MDB’s roles in developing and implementing catchment-wide strategies for water allocation and salinity management were vital. Development of the Salinity and Drainage Strategy was a particularly important step forward in brokering a solution to the impass between the three states on managing salinity in the Murray River.

The Rural Water Commission was represented on the MDB by a Commissioner (the General Manager of the Rural Water Commission), and a Deputy Commissioner (Director of Technical Services or Director of Operations of the RWC). The Rural Water Commission was in a position to influence the development of catchment-wide strategies and assist in harmonising Victoria’s water management with those strategies.

Salinity and Drainage Strategy

Development of the Salinity and Drainage Strategy was a key point in addressing the problems of the Basin. It established principles for cost-sharing between states and regions and introduced the concept of salinity credits which broke the gridlock that had developed when downstream communities took action to protect their areas from the impact of upstream irrigation and drainage activities.

The Mineral Reserves Basin, near Swan Hill in Victoria was a project designed to intercept saline water before it entered the Murray River and concentrate it through evaporation. The scheme was intended to compensate for increased saline drainage from the upstream irrigation areas in Victoria. Construction of the project, although well advanced was aborted by a class action from Swan Hill farmers who opposed disposal of salt from the upstream irrigators in their district.

The strength of the Salinity and Drainage Strategy was that it included the whole catchment. A salinity audit was carried out and a model developed of salt loads and concentrations along the main stem of the Murray River. The three states and the Commonwealth were to contribute to the costs of saline interception works to reduce river salinity by 80 EC units. Victoria and New South Wales could each earn the right to dispose of 15 EC units of salt in drainage water by contributing to the interception schemes. Expenditure of $50m would give a net reduction in salinity of 50 EC units in the Murray River at Morgan, a reference point in South Australia.

Salinity mitigation schemes were rated according to cost-effectiveness without regard to their location in the states. Most of the more cost effective schemes were located in South Australia, requiring investment of funds from the two upstream states in South Australia. These investments would not have been possible without the MDB. The Rural Water Commission provided considerable technical support to the implementation of the Strategy, establishing the framework and performance targets for salinity plans within Victoria.

Natural Resource Management Strategy

The Natural Resources Management Strategy was developed as an umbrella strategy addressing the many complex natural resource degradation issues on an integrated catchment management basis. The NRMS had two components: Investigation and Education designed to strengthen the knowledge and skill base; and Integrated Catchment Management based on the development and implementation of
catchment plans by community groups. The Strategy
included all resources, land, water and the riverine
environment.

Riverine Forests

The Barmah Forest is a riverine red gum
(Eucalyptus camaldulensis) forest on the Murray
River upstream of Echuca. The forest has depended
on spring flooding through the forest to regenerate
and maintain its health. Construction of reservoirs
and use of the River as a supply channel has
eliminated all but the high spring floods and the
forest is declining. The Murray Darling Basin
Commission made an annual allocation of 100,000
ML to the forest as an environmental allocation.
The allocation is managed by a trust representing
the various community interests. Providing specific
environmental allocations and assigning them to
specific organisations with accountability for the
environmental outcome are important principles that
should be applied more widely.

Native Fish

Native fish require unimpeded passage up and
down the Murray River system to maintain their
normal breeding cycle. Weirs and other regulation
structures form an unnatural barrier with adverse
impact on the fish population. As part of the MDBC
Fish Management Strategy a fish ladder was
constructed at Torrumbarry Weir and a fish lift
constructed at Yarrawonga Weir in association with
the establishment of a small hydroelectricity scheme
allowing the passage of fish through a widely
expanded area of the river system.

Algal Management

In 1994, the Murray Darling Basin
Commission adopted the Algal Management
Strategy, prompted by increasing concern about
eutrophication and accelerated by a massive 1000km
algal bloom in the Darling River in 1992. The goal
of the Strategy was to reduce the frequency and
intensity of algal blooms, and other water quality
problems associated with nutrient pollution in the
Murray Darling Basin, through a framework of
coordinated planning and management actions.

Targets were set for phosphorus loads from
the major sub catchments of the Basin to provide
the framework for community catchment plans
designed to reduce phosphorus. Other actions were
focused on improved flow regimes, heightened
community awareness and improved scientific
knowledge.

Water Audit

The steadily increasing diversions of water
for irrigation illustrated in Figure 2.9 raised concerns
that the water resources of the Basin were being
over allocated, and the sustainability of the current
level of use was questioned. A comprehensive audit
of water use in the Murray Darling Basin was
completed in 1995. This audit highlighted the fact
that diversions had increased since 1988. The Rural
Water Commission had a major role in respect of
this audit in Victoria through modelling future water
use scenarios. Although new water allocations for
diversion had been limited in Victoria, one of the
impacts of water trading was to activate water rights
that had been allocated but not been previously used
(referred to as sleeper licences).

A major and controversial outcome of the
audit was the capping of future diversions and the
introduction of conditions for water trading that
would not increase diversions. The discipline on
water allocation imposed by the State Rivers and
Water Supply Commission was to the long term
benefit of the Victorian irrigation community, which
will become more evident as the other states have to
cut back allocations.

THE VICTORIAN SALINITY
PROGRAM

The Victorian Parliamentary Inquiry on
Salinity reported in 1984 identifying the cost of rising
saline water tables to the State and to individual
irrigators as a major threat to sustainability of
agriculture, Parliamentary Salinity Committee 1984,
The report reflected the growing community concern
as to the impacts of both irrigation and dryland
salinity on land and water resources.
The Government recognised the importance of this threat to the State's natural resources and the Victorian Salinity Program was established as a high profile activity by Joan Kirner, then Minister for Conservation, Forests and Lands, with a budget of some $20m per annum. The most important aspect of this program was that it was community driven. Some eighteen salinity Plans were developed by community groups.

The Government established the Salinity Bureau to coordinate the activities of the number of agencies that could contribute to salinity mitigation, principally the Departments of Agriculture, Conservation, Forests and Lands and the Rural Water Commission. The Rural Water Commission contributed significantly to the success of the Salinity Program through provision of technical support to the community working groups as they developed their Plans and in the implementation of those Plans.

Cost sharing arrangements between farmers, local government, State Government and the Commonwealth Government were a key feature of all the Plans. Cost sharing reflected the flow of benefits that were expected to result from implementation of the Plan.

The following plans and projects were enhanced by Rural water Commission policy initiatives and technical direction.

Sunraysia Plan

One of the key elements of the Sunraysia Salinity Plan was an education program for irrigators that emphasised water use efficiency and the technologies for efficient application of irrigation water and monitoring water use performance. The Plan also included grants and other incentives to improve water use efficiency but required that irrigators complete the course to become eligible for purchasing further water allocations through trading. Water pricing and tariff reform reflecting the true cost of providing the water also encouraged water use efficiency by sending the right price signals.

Nyah to the Border Plan

Soil and land types were classified as high or low hazard in respect of salinity along the Murray River from Nyah to the South Australian Border. The trading rules developed for Transferable Water Entitlements along this reach of the Murray River only allowed trading from high hazard to low salinity hazard land. Water could not be traded for use on high hazard land. A long-term reduction of saline flows to the Murray is expected to result from the new trading rules.

Tragowel Plains Plan

The Tragowel Plains are an area in northern Victoria that has suffered from high water tables and salinity for a long time. The key element of the Plan was extensive soil surveys which identified A, B, C and D class soils in respect of soil salinity. Armed with this information, irrigators could concentrate their water allocation on the better A and B soils and use Transferable Water Entitlements to shift water from saline C and D class soils.

Shepparton Plan

Shepparton is a prosperous irrigation area concentrating on horticulture and dairying and is one of the more upstream irrigation districts in the Goulburn Murray Irrigation District. Rising water tables and inadequate drainage affected productivity in the Shepparton region. Surface and sub-surface drainage were required but provision of traditional drainage by the Rural Water Commission required financial resources that were not available from the government or irrigators. Community drainage schemes were devised to allow for sharing of risk of flooding between irrigators who were given responsibility for small drains, and the Rural Water Commission that was responsible for major regional drains. Saline discharge to the Murray River must be covered by salinity credits under the MDBC's Salinity and Drainage Strategy.

Barr Creek

Barr Creek was identified early as a major contributor to salinity levels in the Murray River as
it received sub-surface flows from elevated saline watertables and drainage flows from irrigation. It was the largest single point source of salt to the Murray River, discharging some 150,000 tonnes per annum. The Plan was based on reducing flow of relatively low salinity drainage water into Barr Creek so that the existing evaporation basin would have a lower volume of more saline water to manage, and could operate more effectively. Implementation of the Plan included incentives to encourage whole-farm planning, laser levelling and the retention of drainage flows on farm through re-use systems.

Lake Mokoan
Lake Mokoan is a shallow storage adjacent the Broken River in northern Victoria. In the 1982/83 drought the water level was drawn down and the reservoir almost emptied, exposing the lake bed. The naturally occurring ribbon weeds were destroyed. In addition an intense thunderstorm following directly after the 1982/83 drought washed soil and nutrients into the reservoir. In subsequent years the Lake experienced regular algal blooms; it was ecologically degraded and water could not be used. Improving water quality in the lake involved the local community in strategic development and planning. A research forum on lake restoration was established and simulation modelling of the Goulburn-Broken system assisted in planning. The outcomes included new target lake levels between 40% and 70% of capacity, flushing flows, a completed ecological study, revegetation, grazing controls and fencing and water quality monitoring.

Girgarre Evaporation Basin.
Rising watertables were threatening productive irrigation enterprises near Girgarre in the Goulburn Murray Irrigation District. The Girgarre Project involved the installation of groundwater pumps to lower water tables. The highly saline groundwater was discharged to a constructed evaporation basin. The project was completed in 1987 and has operated successfully since then ensuring greatly improved productivity of previously degraded land. More importantly, this project demonstrated the efficacy of a system that can be applied in other parts of the Murray Darling Basin.

ENVIRONMENTAL MANAGEMENT AS CORE BUSINESS

Aquatic Weeds
The use of herbicides to control aquatic weeds is a highly cost effective way of maintaining the hydraulic capacity of channels and drains. Selection and use of herbicides in an aquatic environment requires a great deal of skill and care. Exotic weeds such as water hyacinth pose a threat to the natural ecology. The Rural Water Commission developed considerable expertise in the management of aquatic weeds which was used both by the Commission and other natural resource managers.

Improved Irrigation Management
The Rural Water Commission recognised that development of sustainable irrigation management practices at the farm level was a key factor to ensure sustainability of the irrigation authorities business. Irrigation at the farm level must be profitable if the irrigator is to generate cash surpluses to invest in sustainable practices. Chapter 5 outlines the actions taken to encourage best practice in the industry at the farm level.

Sending the right price signals, making sure that the price of water reflected the true costs of resource use was a key driver in establishing water efficient practices on farm. Trading in water entitlements also exposed the opportunity cost of water, and gave the irrigators more flexibility in the use of water. Flexible operation of delivery systems such as the move in the pumped districts, from rostered delivery of water, whether the crop needed it or not, to water on order, reduced outfalls from drainage. Development of “best practice” manuals for on-farm activities, irrigation scheduling and technological innovations provided the irrigator with the tools needed to reduce water use and minimise the cost impact of higher water prices.
Environmental Audit

In 1994, the Rural Water Commission completed a comprehensive environmental audit of all its activities, providing its successor bodies, the Rural Water Authorities, with the basis for developing environmental management plans. This audit covered all aspects of the business operation of the organisation.

RESOURCE MANAGEMENT

Water Resource Assessment: Surface Water

Reliable data is required to manage a resource. The Rural Water Commission was responsible for the Victorian water resources assessment program, measuring and monitoring the quantity and quality of water resources throughout the State for inventory, water management and environmental purposes.

The Rural Water Commission also developed computer models of the Victorian water system so that the natural carriers and the distribution system could be operated efficiently, minimising water use. These models were also used to protect water quality and mitigate the effects of salinity and excess nutrients. The models also formed the basis for establishing Bulk Water allocations for Victoria, making provision for environmental entitlements.

Figure 7.1 Groundwater Licence Authorisations

The models also underpinned the work of the Office of Water Resources in the process of establishing Bulk Water entitlements and environmental flows.

The State Water Laboratory developed a range of tools to monitor and manage water quality. These included biological monitoring and the use of the Adaptive Environmental Assessment Model which has contributed significantly to community understanding of the processes which affect water quality in individual catchments.

Water Resource Assessment:

Groundwater

Groundwater is an important future resource in Victoria and is the only source of fresh water in parts of the State. The 1982/83 drought stimulated a significant increase in the Groundwater Licence Authorisations as demonstrated in Figure 7.1. The Rural Water Commission established a Statewide Groundwater Advisory Committee which developed a Groundwater Management Strategy. A groundwater database was developed by the Rural Water Commission to provide information on a statewide basis. The database is an invaluable tool for the management of groundwater, assisting in protecting the quantity and quality of the resource.

Groundwater pricing was revised for the 6000 irrigation bores throughout the State. The new pricing strategy reflected the full cost of managing groundwater. In the Koo-wee-rup and Dalmore districts over-use of groundwater led to the depletion...
of the resource and the threat of saline intrusion, jeopardising the horticultural enterprises in the region. The Rural Water Commission established the first Groundwater Conservation Area, using appropriate pricing and metering to match extraction with recharge, thus protecting the resource. All groundwater extraction was metered and irrigators charged for water used.

Increasing urbanisation threatens the quality of groundwater through contamination. One of the most significant sources of this contamination is from landfills for garbage disposal. The Rural Water Commission provided technical assistance to the Environment Protection Authority in developing protection policies. Landmark legal action by the Commission established precedents to protect groundwater from this source of contamination.

Floodplain and Waterway Management

The Rural Water Commission provided technical support to the River Management Authorities throughout the State. The Commission also had responsibility for the management of floodplains and waterways for those parts of the State not controlled by other formal arrangements. Floodplain Management Plans were developed in consultation with local communities and municipalities with the emphasis on non-structural means of protection from flood damage i.e. using planning schemes to limit building in flood prone areas. Sensitive application of structural measures were used where these were necessary to protect existing assets. Communities of Wangaratta, Shepparton, Echuca and Werribee all implemented floodplain management plans and have benefited by increased protection. The community of Benalla did not implement its plan and paid a high price in subsequent floods.

RESEARCH

Strategies to ensure that irrigation can be environmentally sustainable into the future need to be underpinned by a sound scientific base. The Rural Water Commission took an active role in the establishment and management of two Co-operative Research Centres - Freshwater Ecology and Catchment Hydrology. Considerable research effort was applied in respect of the MDBC Natural Resources Management Strategy, the Salinity Program and the National Irrigation Research Fund.

OUTCOMES

Ecological sustainability is essential for the long-term viability of the irrigation business. The health of the natural resources which underpin irrigation must be nurtured. The lessons learned as the reforms of the decade from 1984 to 1994 included the importance of an integrated catchment-wide strategy, including cost sharing arrangements, which has been developed in partnership with the relevant local community. The Salinity Program was an example of that partnership - the technical expertise of the Rural Water Corporation and community leadership resulted in strategies which are being implemented, thus helping ensuring long term viability of irrigation.
Many organisations and individuals contributed to the reform program of 1984 to 1994. However the role of the Rural Water Commission, and its successor, the Rural Water Corporation was central to the success of the reforms. Without these organisations the achievements we describe either would not have happened or would have taken considerably longer. Placing these achievements on the record provides a benchmark for our successors to measure their performance.

The experience of a decade of reform in the Victorian irrigation industry also gave those involved important insights into the conception and implementation of a complex reform program. Many hard lessons were learnt along the way. We hope future reformers will benefit from the following insights gained from our journey.

**IMPROVE THE PROFITABILITY OF IRRIGATED AGRICULTURE**

Irrigation in Australia has suffered from a series of crises brought on by severe droughts, economic recession, or both. The allocation of large volumes of water to irrigation enterprises with low profitability is a legacy of historical policies. Rather than face up to the fundamental issue, the typical policy response to the inevitable crisis has been to increase subsidies usually in the form of subsidised water prices. Water is a relatively small proportion of the overall costs of irrigated agriculture, and such subsidies are poorly targeted benefitting many who do not need assistance. In the end the only way to break the cycle is to stimulate improved profitability of irrigated agriculture so that future irrigators have the financial resources to survive the pressures of periodic drought and economic recession.

The first step in improving profitability is to accept that for commercial activities such as irrigation, water is an economic not a social good and should be priced accordingly. Establishing water prices to raise sufficient revenue to cover operations, maintenance, administration and provide for renewal of ageing irrigation infrastructure is the first step in improving profitability. Irrigators are given the correct economic signal of the costs they are imposing, and can respond accordingly.

The opportunity cost of the original investments in irrigation schemes should not be recovered. The opportunity cost has been capitalised into the value of the irrigation farms, and paid by succeeding generations of irrigators. New irrigation schemes are another issue altogether. The opportunity costs of investments in new irrigation schemes in Australia should be recovered at full commercial rates.

Given that unprofitable enterprises will not survive such a pricing regime time should be given to allow for readjustment, and governments should concentrate their financial resources on helping those who can not survive to leave the irrigation industry with dignity and a financial stake to re establish themselves. Given our time over again more energy and effort would be put into stimulating governments to develop more effective adjustment policies for irrigated agriculture. The drive for full cost recovery pricing and the target of 20 years to achieve it would remain.

Significant reform of water prices was achieved over the decade increasing the real water price from some $14/ML to $19/ML (1994/95 $ values) in the Goulburn Murray Irrigation District, stimulating improved efficiency and profitability of irrigated agriculture. Reform of water pricing will remain controversial but there can be no doubt that the discipline of having to rely on revenue from irrigators to fund business costs is stimulating a more cost effective, commercial approach by the Victorian irrigation authorities.

Significant reform of tariffs to ensure that they were cost reflective to support pricing reform was also achieved over the decade. Introduction of a dam fill charge in the Wimmera Mallee stock and domestic water supply system, and other user pays initiatives such as in the pumped irrigation districts of Sunraysia, and in the City of Bendigo were also major achievements.
Reform of water allocation policy is another effective way to stimulate improved profitability, and another step in establishing irrigation water as an economic good. Establishment of a market for water allocations has two main advantages:

- new, more profitable enterprises can gain access to water resources, and conversely unprofitable enterprises can realise an asset to assist them adjust; and
- the opportunity cost of water is exposed to give irrigators a valid measure of the value of water stimulating investment in more efficient irrigation technology.

Initiatives to develop water markets should be given a high priority in any reform agenda.

The Rural Water Commission and subsequently the Corporation stimulated reforms to create a water market through introduction of temporary trading in 1987, and subsequently permanent trading of water entitlements in 1991.

The first water auctions in Australia to introduce new water allocations to the market were also organised by the Rural Water Commission. A total of six water auctions were successfully organised by the Rural Water Commission and Corporation. Creation of water markets, pricing reform and demonstrated competence of the Rural Water Commission and Corporation in managing irrigation systems were factors in convincing food processing companies to invest substantial capital sums in Victoria's irrigation areas. In 1993 a total investment in food processing of $360 million was committed to the Goulburn Valley alone.

Where there is economic poverty, environmental degradation will follow. Since environmental degradation threatens the entire irrigation community it is in the interests of all in the irrigation industry that profitability is improved. Sufficient funds will then be available for sustainable environmental management of irrigation.

USE RENEWAL ANNUITIES TO PROVIDE FOR RENEWAL OF AGEING IRRIGATION INFRASTRUCTURE

Capital consumption of infrastructure is usually provided for by depreciation, based on either historical or current replacement costs. The dams, weirs, channels, pipelines and drains that make up irrigation infrastructure have long lives. Inflation over these long lives results in historical cost depreciation making inadequate provision for renewing the irrigation systems. On the other hand, use of depreciation based on current replacement costs for setting water prices has generated destructive debates with the irrigators, and proved counter productive.

The use of renewal annuities has stimulated a much more constructive debate about service requirements, risk and cost trade offs between the irrigators and the irrigation business. The renewal annuities approach encourages debate about future actions, and facilitates development of a more cost effective irrigation system. When irrigators pay for renewal of ageing irrigation systems they have a strong interest in ensuring that:

- only the service potential of essential infrastructure is replaced;
- irrigation systems are redesigned to deliver services in a more cost effective ways; and
- risk cost trade-offs are made by the irrigators in an open debate.

Implementation of renewal annuities requires a sophisticated asset register, supported by field inspection of all assets, classification of their condition, and evaluation of the costs of renewal. Successful implementation of such a reform was a major achievement of both the Rural Water Commission and Corporation.
ESTABLISH CLEARLY DEFINED FINANCIAL GOALS WITH GOVERNMENT

The Rural Water Commission successfully developed and promoted to the Victorian Government the policy of financial self-sufficiency for irrigation authorities. Attainment of financial self-sufficiency is a necessary precondition for the industry to control its destiny. Confused accountabilities will result unless clearly defined financial goals and targets are set. Defining a financial goal to reduce the business cost shortfall from $66.9 million to zero over twenty years proved effective.

The policy of self-sufficiency was the foundation of the Commission's strategic planning and embodied in the Financial Management Strategy and subsequent business plans, all of which were endorsed by the Victorian Government. The Commission was less successful in promoting the policy to the irrigation community. Following the "Rate Protest" the policy was endorsed by the Future Management Review after extensive consultation and is now more acceptable to the Victorian irrigation community.

The Rural Water Commission (Corporation) achieved substantial progress in the journey towards financial self-sufficiency. The shortfall of revenue over business costs was reduced by 80% from $66.9 million to $13.3 million over the 10 years from 1984 to 1994. Some $33.4 million or 62% of this $53.6 million improvement in performance came from productivity improvements or cost reductions. New revenue sources contributed another $8.4 million, while increased water charges to the irrigators contributed $11.8 million or 22% of the total improvement in financial performance. This achievement places the Rural Water Corporation in the forefront of international irrigation businesses, and is the major achievement of the Corporation.

REMOVE THE BURDENS OF THE PAST

Victoria's irrigation systems were burdened by historic liabilities for debt incurred in building the irrigation infrastructure. Unfunded employer contributions to superannuation for staff employed to construct and manage the irrigation systems were another historic liability. These liabilities related to earlier times and seeking their repayment by current generations would not be equitable.

The Rural Water Commission made repeated representations to the Victorian Government seeking relief from these historic liabilities. Progress was achieved during negotiation of the 1985 Financial Management Strategy when all but $68 million of the $400 million historic debt incurred in constructing the irrigation systems was taken over by the Victorian Government.

The Rural Water Corporation completed the task in 1992 by convincing the Victorian Government to accept responsibility for the remaining debt, and all the unfunded staff superannuation liabilities of $269 million incurred up to 1 July 1992. In return the Rural Water Corporation accepted responsibility for costs incurred after 1 July 1992 including renewing irrigation infrastructure, finance charges and fully funding staff superannuation. The slate was now wiped clean and a new start could be made to define the financial accountability of the irrigators.

Establishment of a financial framework in which any subsidies from government are provided in the form of a one line subsidy, and the historical liabilities are removed so that progress towards financial viability can be clearly demonstrated is an important lesson.
DEFINE THE CORE BUSINESS OF THE IRRIGATION AUTHORITY

Governments have an important role in clarifying accountabilities and defining the core business of the irrigation authority. Irrigation authorities often accumulate a confusing array of functions to meet government needs of the time, or to build an empire. All but the activities essential for running an irrigation business should be stripped away leaving a clearly defined irrigation business. Regulatory and government policy functions should be transferred to other appropriate organisations.

There is no substitute for the hard grind of going through all the activities of the irrigation business, examining them in detail, deciding on their status to unravel the tangled web of government accounting systems and subsidies. All activities of the Commission that were not part of the irrigation business were either devolved to another organisation or set up as a “government services contract” with Government as purchasing and the Rural Water Corporation as provider. The “Government Services Contract” was designed for competitive tendering. It is fair to say that the Rural Water Commission found the devolvement of profitable activities such as urban water supply a difficult issue to confront. Once the decision was made to devolve an activity the Commission managed the devolvement with great skill.

Improved definition of the core business of an irrigation authority makes a significant contribution to improving the efficiency of the organisation.

APPOINT EXPERTISE - BASED BOARDS TO MANAGE THE IRRIGATION BUSINESS

Appointment of management boards representing the interests of particular groups, such as the irrigation farmers, runs a high risk that the board directors will play to the gallery instead of making sure that the irrigation business is financially viable and running efficiently. Appointment of a board of directors with expertise covering the wide range of skills from financial management of a business, through engineering management to irrigation farming has introduced a new approach to irrigation in Victoria, and is a very important lesson for the future of irrigation.

The Board of the Rural Water Commission included a broader range of skills including irrigators, business and natural resource skills. Although representative Board members were selected from the farming community the Board decided to act as though it was a professional board of directors. Decisions were taken in the best interest of the Commission and its customers. While the views of the multitude of interest groups were considered, the interests of the Commission and its assets took priority.

The principle of appointing high calibre boards covering a wide range of skills to direct irrigation authorities was ultimately endorsed by the Future Management Review, and embodied in the legislation creating the Rural Water Corporation. To its great credit, the principle of appointing skills based boards was supported by the Victorian Farmers Federation. The Minister, in appointing the boards of the Rural Water Corporation and its regional subsidiaries, was guided by a specification of the range of skills required.

The skills introduced onto management boards as a result of adopting this principle have made a great contribution to the Victorian irrigation industry.
INTRODUCE CREDIBLE COMMERCIAL ACCOUNTING SYSTEMS

Discussion of accounting systems in the same list as strategic goal of full cost recovery may seem odd, however introduction of commercial accounting systems of high quality supported by qualified financial controllers is vital to the success of reform in irrigation.

All players in the game must understand the costs and revenues, and have faith that the numbers presented are valid. Public access to comprehensive and accurate financial information is essential to the effective management of what is a monopoly business.

STRIVE TO IMPROVE THE EFFICIENCY OF THE IRRIGATION AUTHORITY

Transformation of the Rural Water Commission from a budget sector government “spending” department dependent on appropriations from Parliament to fund operations, into the Rural Water Corporation, a government business enterprise reliant on revenue collected from irrigators to fund its business activities was a substantial achievement. At last financial and management accountability was clearly defined.

Allocation of the contribution of individual initiatives to improving efficiency is difficult however there is little doubt that the following were also major contributors:

- regionalisation of operations to get decision making closer to the centre of operations;
- implementing flatter organisational structures to delegate responsibility closer to the workforce;
- establishing technical and business consultancies;
- introduction of new operational systems supported by new technology and staff training;
- removing demarcations from the workforce by restructuring industrial awards, and reducing the number of unions. The amalgamation of the operations and construction workforces delivered considerable savings;
- working hard to maintain good communication with staff on the reforms and workplace changes;
- development of staff who were adaptable and who could cope with the substantial changes occurring in their working lives.

The commitment of the organisation to investing in staff training and development was a vital factor in helping the staff through the changes and in improving efficiency. The Rural Water Corporation was one of only a handful of government business enterprises to gain external accreditation of its on-the-job training programs to the level of Certificate, Advanced Certificate and Associate Diploma of Water Resources Management.

The reduction of $33.4 million or 33% of the annual recurrent costs of the core business of the Rural Water Commission (Corporation) over the decade from 1984 to 1994 stands as a major achievement.

Redesign of work is difficult and all too often is neglected during reform programs. Redesign of work requires the hard grind of redesigning detailed work practices at the grass roots of an organisation. Investing in technology, staff training, industrial relations and development of new career structures that provide staff incentives to perform well is another important lesson.
USE TECHNOLOGY TO FUNDAMENTALLY CHANGE AND IMPROVE THE BUSINESS

Development and implementation of systems such as Central Communications and Planning and the Water Management System to improve service to irrigators were major achievements of the Rural Water Corporation.

If opportunities arise to fundamentally change the way the services are delivered by using new information technology they should be pursued with vigour. Traditional operating practices of open channel irrigation systems are highly reactive and do not respond flexibly to changes in irrigator demand. Development of a water management system as part of an overall business strategy can deliver substantial benefits. Through modern surveillance control and data acquisition systems operators can see the behaviour of the whole irrigation system for the first time and respond more quickly and responsively to irrigator demands. New water delivery services, and the ability to reduce the constraints of inadequate channel capacity on water trading present considerable opportunities.

The lesson of our experience of introducing new technology is to take a small first step by introducing a basic, relatively simple form of new information technology. Training of staff and customers can then proceed in parallel with development of new career and incentive structures for staff. Once customers and staff are comfortable with the new systems and can see the potential benefits they will start to demand the introduction of new systems, greatly improving the chances of succeeding by making fundamental changes from the use of more sophisticated technology.

COMMUNICATE AND TREAT ALL STAFF FAIRLY

Reform of irrigation business will often result in substantial reductions in the numbers of staff. Achieving the necessary reductions in staff without destroying morale (and thereby productivity) and the skill base of the organisation is very difficult. The need for, and the nature of change must be communicated quickly and effectively to staff. There is nothing that destroys an organisation quicker than uncertainty. The chief executive must take the lead in communicating directly with the staff at all levels.

A demonstrated record of treating staff fairly and with dignity will develop trust between staff and management allowing difficult and often harsh changes to be implemented effectively. If staff know that effort will be put into helping them find a new career and that they will be compensated for redundancy they are more likely to embrace change. Implementation of fundamental reforms will then proceed rapidly and effectively. Only one staff member in hundreds need be treated unreasonably for that trust to be destroyed, and the reform process set back.

The Kennett Government, on coming to power in 1992, started implementing radical restructuring of all the utility industries including water. The objectives were to deliver lasting benefits to the Victorian economy, give commercial customers greater input to the management of the utilities through appointment of skills based boards of directors, and to sell assets to repay the State’s unsustainable debt. The changes were to be made in ways that were difficult to reverse by future governments. Privatisation was the favoured option.

The process of reform started with a structural analysis of each utility industry to identify the
essential monopoly components and to define ways competition could be introduced. The electricity industry, for example was divided into generation, transmission and distribution so that the individual generators could be separated to create competition for the production of electricity. The vertically integrated electricity utility was broken up into a large number of organisations most of which have since been privatised.

The water industry was subject to a similar structural review. The review proposed that the wholesale water systems be separated from water distribution. A series of regional wholesale water businesses in public ownership trading in bulk water entitlements was thought necessary to create a competitive market for bulk water. The wholesalers would supply a series of regional distributors of urban water and a series of smaller district based distributors of irrigation water. The ultimate objective was to privatise the water distributors. All service components of the water utilities such as engineering design and laboratories were to be sold.

The Rural Water Corporation faced the ultimate test of dividing itself into five regional water authorities based on the Corporation’s regional water systems, devolving the wholesale water systems to the five regions, selling the technical consultancies and closing down the corporate office and business service division. The new restructure represented the next wave of devolvement of responsibility and weakening of central authority. The success of the model is highly dependent on the competence of the new regional authorities and it is difficult to predict what the outcome will be. Their ultimate test will come when the inevitable crisis occurs whether a drought and severe water shortage, a structural failure or financial stress in the irrigation industry.

Managing such a disaggregation is an extremely challenging task. The professionalism of the Rural Water Corporation and its staff in implementing the radical structural reforms of the Kennett Government without industrial disputation or disruption to water deliveries stands as a measure of the quality of the organisation.

CONSULT WITH THE IRRIGATORS

Some of the reforms such as introduction of water trading can provide large benefits to irrigators and are an easier issue to consult effectively with the irrigation community. Other reforms such as full cost recovery pricing are much more difficult. The principle lessons were never to stop trying to consult as effectively as possible, and to delegate genuine power when that was appropriate such as deciding on the risk, level of service trade offs in determining investment in maintenance and renewal.

Development of credible financial systems and information presented by staff with competence in business management, together with the use of renewal annuities considerably improved the effectiveness of consultation, as did the appointment of regional management boards with local credibility.

SUPPORT COMMUNITY LEADERSHIP IN PLANNING FOR ENVIRONMENTAL SUSTAINABILITY

The community faces many hard choices in achieving environmental sustainability. Salinity and water logging are difficult issues to deal with. Community understanding of the choices facing them is vital if far reaching and effective strategies for achieving environmental sustainability are to be implemented. Establishment of catchment planning groups led by community members with the technical experts in an advisory role is improving understanding and on ground environmental management. The principle of community leadership should be supported.

Substantial steps were taken to improve the environmental sustainability of irrigation through the support of community developed salinity management plans such as those in the Goulburn Valley, Tragowell Plains and Sunraysia. The Rural Water Commission provided technical support to development of the Murray Darling Basin Commission’s Salinity and Drainage Strategy. The technical expertise of the Rural Water Corporation played a significant part in the development and implementation of these plans completing another major achievement.
SEE EXTERNAL INQUIRIES AS AN OPPORTUNITY

External inquiries into the effectiveness and efficiency of your organisation can be daunting to say the least. Instinct often leads you to see such external inquiries as a threat: that instinct should be resisted. External inquiries, while painful, present a great opportunity to progress reform of irrigation management.

The Future Management Review led by a person with a high level of knowledge and competence in irrigation, and with a high level of credibility with the irrigation community, endorsed the strategies and business plan developed by the Rural Water Commission. These strategies, including that of full cost recovery were more acceptable to the irrigation community and resistance to reform lessened.

The inquiry into water management by a prominent businessman that set up the national COAG Water Reform Agenda also endorsed the principle of full cost recovery for irrigation water pricing. Two independent inquiries have effectively reinforced the reforms initiated by the Rural Water Commission at a state and national level maximising their chances of full implementation.

To succeed in reforming irrigation persistence and a healthy sense of humour are essential qualities!
Glossary

ACT/STATUTE/BILL

An Act is a legal instrument passed by both Houses of Parliament at either the Federal Government or the State Government level. A Bill is a draft Act, introduced to parliament for debate. A Bill becomes an Act after it has been debated in both Houses of Parliament, amended as necessary, and passed. An Act becomes law after it is promulgated, which might be some time after it is passed. A statute is a formal document which has been enacted by the legislature.

Cabinet

A group of senior Ministers of the Crown who are responsible for the government of the nation or the state. Cabinet is chaired by the Leader of the government, the Prime Minister or Premier.

Coalition Government

Elected members of Parliament usually have allegiance to a political party, although some are independent. Political parties usually vote as a bloc in Parliament. In Australia there are two major parties. Liberal and Labor, several minor parties the most numerous being the Democrats and the National Party. Coalition Government refers to the coalition of Liberal and National Party which combine to form a government.

Consolidated Fund

A government wide fund which collects revenue due to the government. Revenues due to the Fund were often set without regard to the expenditure which may be required under the Appropriation Act.

Council of Australian Governments (COAG)

Formerly known as the Prime Minister/Premiers' Conference. The Council comprises the Prime Minister of Australia and the Premiers of each state. COAG was established with a charter to be proactive in the introduction of competition policy and microeconomic reform throughout the public sector.

Department of Water Resources, Conservation and Natural Resources, Natural Resources and Environment

Successive government departments which administered the Water Act and advised the Minister for Water Resources during the time of this journey.

Federal Political Structures

Australia is a federation of sovereign states, those states having ceded some powers to the Federal Government on formation in 1901 and occasionally thereafter. Each state government and the Federal Government independently elect an upper and a
lower house of parliament, the lower house providing the government of the day. Given that systems of election are different and elections take place at different times, it is quite common to have upper and lower houses controlled by different major parties and certainly common to have a different political status between states and with the federal government. An alignment provides an opportunity for concerted action.

GMID
The Goulburn Murray Irrigation District. The largest irrigation district in Victoria, using 80% of the irrigation water.

GOVERNMENT BUSINESS ENTERPRISE
Semi-autonomous government agencies, usually established by statute, which generate revenue for provision of services, e.g. gas, water, electricity, grains handling, railways etc.

GOVERNOR-IN-COUNCIL
The Governor is the ultimate Head of State in Victoria, appointed by the Queen. The Governor heads an Executive Council comprising the Premier, Treasurer and other nominated Ministers. The Council approves statutory appointments, the promulgation of legislation.

HEADWORKS
In the case of irrigation, headworks refers to the structures which impound and release the water for irrigation purposes.

INNER BUDGET
Refers to those government departments and agencies whose annual, recurrent expenditure is determined by the Appropriation Act.

IRRIGATION TRUST
An association which was established as a cooperative venture by landholders and licenced by the State Government to divert water for irrigation.

LABOR GOVERNMENT
Refers to the State Governments led by Premiers John Cain and Joan Kirner, when the Labor Party held a majority in the lower house of Parliament, from 1982 to 1992. Can also refer to the Federal Government which was in power from 1983 to 1996.

LAND AND WATER RESOURCES RESEARCH AND DEVELOPMENT CORPORATION
A Federal Government statutory authority, established under the Primary Industries and Energy Research and Development Act. A successor body to the Australian Water Research Advisory Council, it was established in 1991, to develop, fund and manage land, water and vegetation research and development at the national level, especially in respect of their relationship to primary industries.

MDBC SALINITY AND DRAINAGE STRATEGY
The Murray Darling Basin Commission developed a number of strategies in relation to concerted action to address natural resources management issues. The Salinity and Drainage Strategy was the first such strategy and established principles for cost sharing and resource allocation between states on the issues covered by the strategy.

MINISTER
Under the Westminster system of government, responsibility for the administration of Acts of Parliament are allocated to nominated members of the party which has gained the majority number of seats in the lower house of parliament at election. Each Minister has a portfolio of related acts to administer and is responsible for related matters. A Minister is advised by a Department. Both the State and Federal Governments have Ministers responsible for similar issues, although the degree of responsibility is related to which government has the constitutional power. In the case of water resources, they are a State responsibility, with the Federal Government taking part in national coordination through Ministerial Councils. The Federal Government has taxing powers which, de facto confers influence over State Governments.
MURRAY DARLING BASIN COMMISSION
The MDBC succeed the River Murray Commission which was established in 1915 to manage the allocation of water from the Murray River system to the three states which contribute to and draw from the system. Victoria, New South Wales and South Australia, together with the Commonwealth were members. In 1985, MDBC replaced RMC, the new body encompassed a much larger geographic area, including the catchment of Australia's longest river, the Darling, and broadening the terms of references to cover natural resources management in the region. The State of Queensland became involved and accepted formal membership later.

NATIONAL IRRIGATION RESEARCH FUND
NIRF was established in 1987 to provide a focus for irrigation related research at the national level. It was funded partly by the Federal Government and partly by State irrigation agencies. It was a small research fund which stimulated the development of a national Irrigation Research Strategy which was adopted and implemented by the Land and Water Resources Research and Development Corporation.

PUBLIC SERVICE ACT
An Act which governed the terms and conditions of employment of public servants, employees of government and government agencies.

REGIONAL MANAGEMENT BOARD
Following the implementation of the Future Management Review in 1992 and the establishment of the Rural Water Corporation, five Regional Management Boards were established to manage irrigation and associated enterprises across Victoria under the guidance of the Corporation. Each Board had five members selected by an independent panel and appointed by the Minister. A director or officer of the Rural Water Corporation was also appointed to each Board.

ROYAL COMMISSION
A Royal Commission is the level of public inquiry, commissioned by the Queen on the advice of the Government of the day. A Royal Commission has expanded powers of discovery and is only established on matters of serious import to the State.

RURAL WATER COMMISSION
This body was established in 1984 by the Central Management Restructuring Act of Victoria as a successor to many of the functions of the State Rivers and Water Supply Commission.

RURAL WATER CORPORATION
The successor body to the Rural Water Commission, this body was established by the Rural Water Corporation Act in 1992, following the Future Management Review carried out by Stuart McDonald.

STATE RIVERS AND WATER SUPPLY COMMISSION
The predecessor body of the Rural Water Commission was established in 1905 and had responsibility for irrigation and many other water related matters in rural Victoria.

URBAN WATER BOARD
Boards established to manage particular urban water supplies, basically retailing water and sewerage services to non metropolitan urban communities.

VICTORIAN TREASURY/DEPARTMENT OF MANAGEMENT AND BUDGET
Alternative names for the State Government Department which advises the State treasurer on economic and financial issues.
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