

**Goulburn Broken  
Regional Catchment  
Strategy  
Achievement Report**

**1997 – 2001**

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## Approach

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This achievement report is not intended to replace the detailed analysis of progress with implementing plans and strategies being undertaken by the Implementation Committees and regional Working Groups as part of their review of the Regional Catchment Strategy (RCS). These groups and committees are preparing detailed reports that include:

- Shepparton Irrigation Region Catchment Strategy Achievement Report 1990/91 to 2000/01.
- Goulburn Dryland Salinity Management Plan Targets and Achievements 1995/96 to 2000/01.
- Water Quality Strategy 2002.

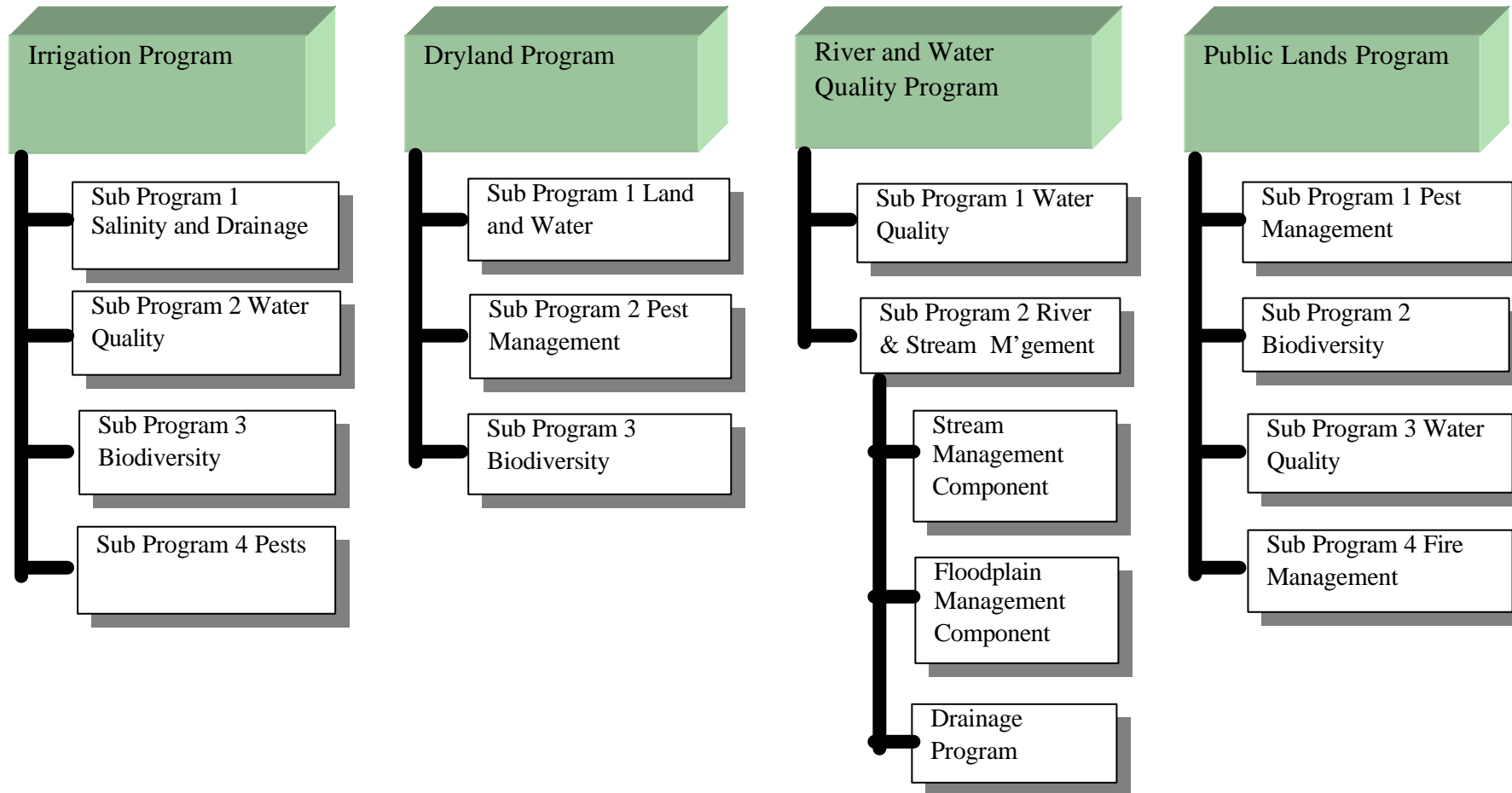
Copies of those reports are available from the Goulburn Broken Catchment Management Authority (CMA).

The aim here is to present a region wide overview of progress with implementation of the programs described in the 1997 Regional Catchment Strategy. The overview will inform the Goulburn Broken CMA Board of progress and provide input into its review and renewal of the RCS.

For each of these RCS Programs the following information has been collated:

- Description of Programs and associated Sub Programs (SP).
- Statement of longer-term objectives (taken from the 1997 RCS).
- Statement of key targets (usually biophysical) to be achieved by full implementation of the program.
- Description of selective achievements (i.e. outputs) as of 1<sup>st</sup> July, 1996, for the period up to 30<sup>th</sup> June 2001.
- Comparison of those achievements against RCS targets.

# Goulburn Broken Regional Catchment Strategy – Program Structure



## Foreword

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The Goulburn Broken region has pursued an adaptive management approach to meeting the goals of the 1997 Regional Catchment Strategy.

That Strategy brought together a diverse range of on-going natural resource management plans and programs and sought to create value through an integrated catchment management approach. At the time of preparing the Strategy there was a range of specific programs in place to address natural resource management issues. This diversity was reflected in the 1997 Strategy structure.

The Board recognised the importance, to the community and to the Programs, of retaining the identity of each of these Programs.

However, these programs often pursued similar actions, goals and outcomes. The Board recognised that an integrated catchment management approach was required and much progress has been made in terms of identifying common solutions to the range of natural resource management issues.

Progress in this regard is most notable in the Irrigation Program where nutrient and salinity management are now closely integrated with biodiversity and economic outcomes.

A similar approach has been adopted for the Dryland Program - native vegetation management, salinity management and water quality actions are now integrated through the works programs of the CMA's Implementation Committees and through the Environmental Management Grants and Waterways Grants Program.

There are many factors beyond the control of the CMA, state agencies and the local community that impact (both positive and negative) on achieving the RCS targets. Commodity prices and climate are the two main factors.

New government policies and programs have also been introduced over the past five years that set new directions for natural resource management within the region.

A major strength of the original RCS was its recognition of the need for the Strategy to be adaptive and to accommodate new issues, new technologies, and changes in government funding and, climatic factors. The Goulburn Broken CMA Board and its Implementation Committees have adjusted their policies and programs to address these changes.

**Stephen Mills**

Chair

Goulburn Broken CMA

## Summary

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The Goulburn Broken region continues to prosper. The regional economy, underpinned by strong performances in the agriculture sector has grown. A rise in regional population has accompanied the economic growth.

The region has prospered during a period when the dairy industry, a significant regional industry, has been deregulated and a cap on water use, a major input to the regional economy, has occurred. The regional community and its economy's resilience is even more apparent when the growth over the last five years is seen in the context of dry seasons and major water restrictions in parts of the region and generally low commodity prices.

The region has a robust network of community, industry, local government and government agency leaders that work closely to promote the region and create innovative solutions to the region's challenges.

Within this context, the Catchment Management Authority has played a major role. In partnership with the Department of Natural Resources and Environment and Goulburn-Murray Water significant progress has been made with implementing the Shepparton Irrigation Region, Upper and Mid Goulburn catchment plans.

The region has worked within the salt disposal, water cap and water quality limits set by the Murray Darling Basin Ministerial Council.

The Irrigation Region Program is largely on track to meet targets; government-funding constraints remain the main barrier. The Dryland Program underwent a major refocus in 1999/2000 after a number of years of below target performance.

The Water Quality Program is exceeding works targets within the irrigation area and overall has demonstrated a major reduction of phosphorus and nitrogen loads at key regional sites. The Board is encouraged by the reductions but is mindful that less than average rainfall over the past five years means these results must be qualified.

## **Overview 1997-2001**

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### ***Socio-Economic Trends in the Goulburn Broken Catchment***

#### **Population**

- Population of 182,679 in 1996 growing at an annual rate of 0.6% (expected to be 210,000 by 2021). 67% live in the Shepparton Irrigation Region.

#### **Employment**

- Total employment in the catchment was 74,000 in 1996. Estimated to be 77,000 in 2000 and predicted to reach 81,000 by 2005.
- On-farm employment to remain fairly constant at around 12,000.
- Direct employment in the value-adding industries (dairy, horticulture, meat, stock feed, fibre and timber) represented an additional 5,200 employees in 1996 and will grow to 5,515 by 2005.

#### **Economy**

- The Regional Farm Gate Gross Value of Production was \$ 1.151 billion (1996) and is now estimated to be \$1.349 billion, 78% comes from the Shepparton Irrigation Region.
- Gross Value of Production – value added – from processing of farm produce is now worth \$2.9 billion with over 50% coming from dairy products.
- The flow-on effects to other sectors in the regional economy resulted in an estimated total GVP from the catchment of \$7.8 billion in 2000.

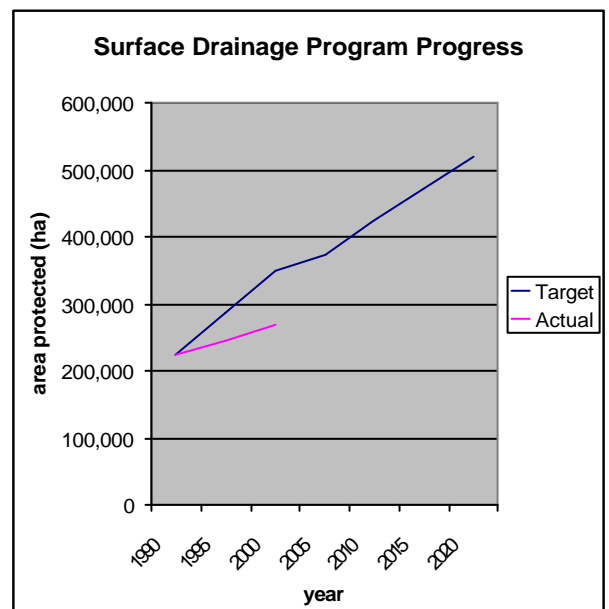
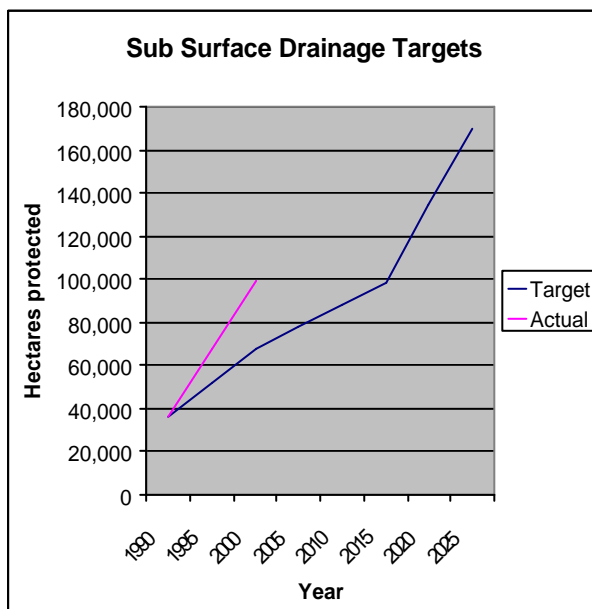
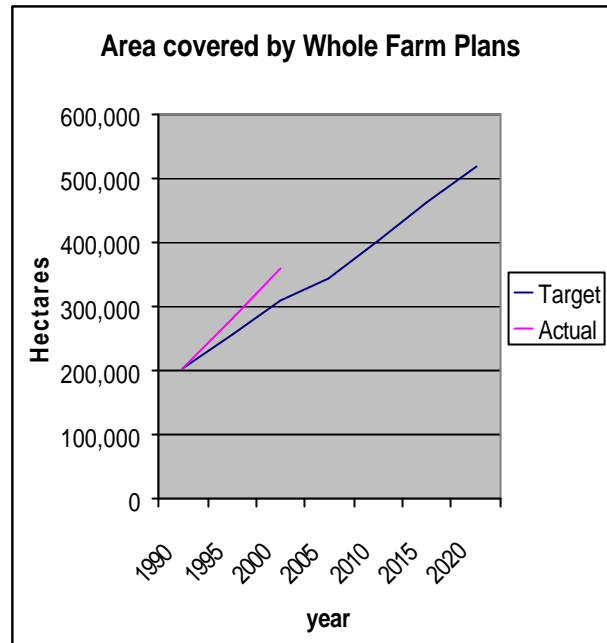
#### **New Investment in Regional Infrastructure**

- The value-adding industries have invested heavily in manufacturing infrastructure over the past 10 years, with an estimated **\$1 billion** of new investment, **\$600 million** of which was invested in the last five years.
- Rural landholders are investing between \$30-40 million annually in farm infrastructure to support implementation of the Goulburn Broken RCS.

# Natural Resource Management

## Goulburn Broken Irrigation Program

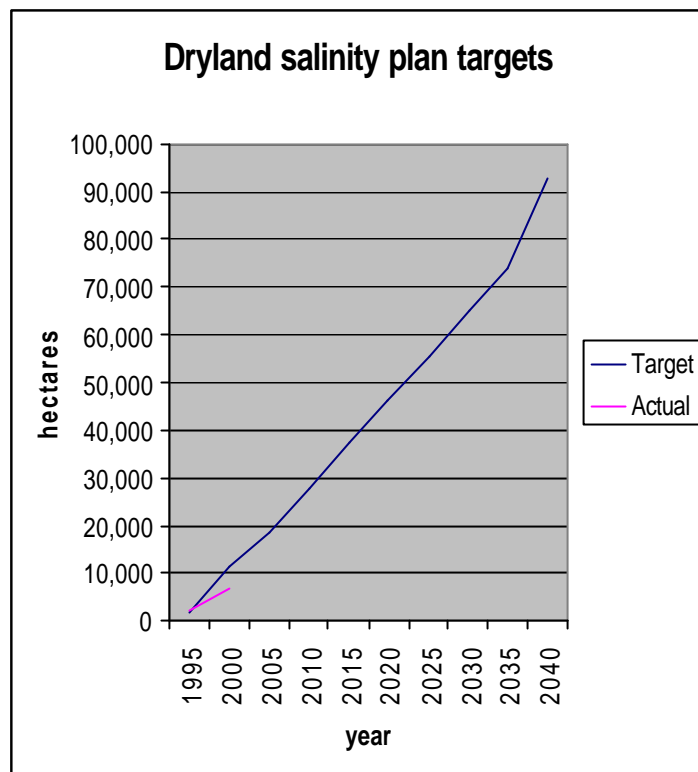
- Preparation of Whole Farm Plans is an indicator of progress by irrigators in adopting farm water use efficiency measures. Progress with preparation of Whole Farm plans is ahead of schedule. Associated investment by irrigators in infrastructure to improve their irrigation efficiency is occurring at a similar rate
- Surface and Sub-Surface Drainage Programs are critical to the future prosperity of the region. The Sub-Surface Drainage Program is now progressing ahead of schedule, but the Surface Water Management Program has dropped behind schedule.
- Government investment has been less than originally proposed. Sub-surface targets have been maintained by concentrating on the private pumping program. The surface program has constructed 173km of primary and 317km of community surface water management schemes to protect 45,000ha and provide outfall for many future schemes.





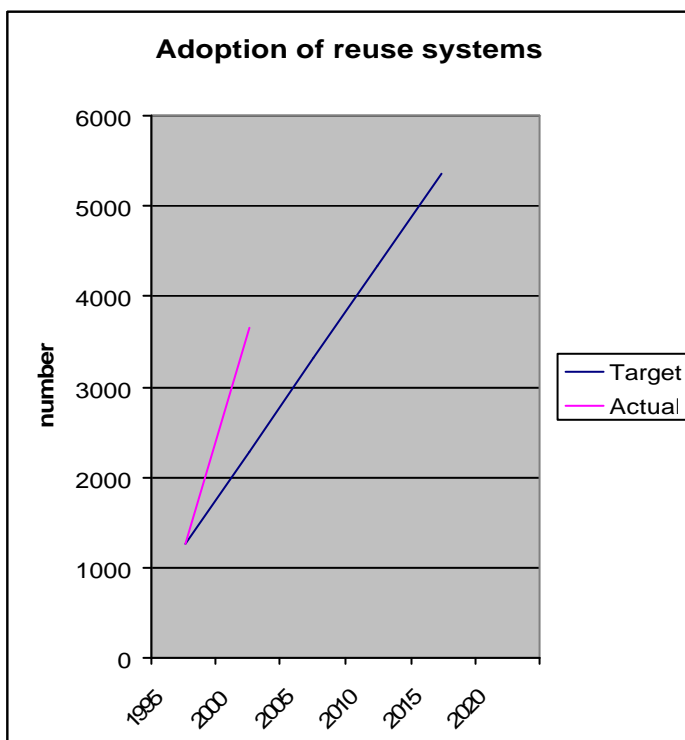
### Goulburn Broken Dryland Program

- Targets set by the Goulburn Broken Salinity Management Plan have driven the Dryland Program.
- That Plan calls for 1200 ha per annum, over 50 years, to be addressed by increased revegetation, perennial pasture management or recharge control activities.
- Annual targets were met once in the last five years. Climatic factors have been a major influence on the rate of progress.
- The Implementation Committees have reviewed the process for allocating incentives to landholders and have developed an integrated Environmental Management Grants approach. There is emerging evidence that landholder demand has increased significantly, this is expected to be reflected in the 2001/02 figures.



### River Health and Water Quality

- Water Quality targets are being achieved. The rate of uptake of reuse systems in irrigation areas is ahead of schedule. This impact of this uptake is now being seen in the biophysical monitoring data showing a decline in the total P and N leaving the catchment.
- Development of a Waterway Management Plan for the lower Goulburn River in 1997 and River Health Strategy for the Western Catchment in 2000.
- Development and implementation of local waterway management strategies for the Broken Creek, Boosey Creek and tributaries



- Commenced implementation of the Mid Goulburn Broken Riverine Implementation Plan and Upper Goulburn Waterway Plan.
- Completion of a Waterway Recreation Strategy for the upper Goulburn catchment.

### ***Greenhouse***

- Improved understanding of global warming and greenhouse processes has increased interest in revegetation programs providing carbon sequestration as well as biodiversity and salinity recharge benefits.

## **Government Policy Developments**

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### ***Water***

- The Murray Darling Basin Ministerial Council introduced a cap on further diversions within the Murray Darling Basin. This has been implemented in the region through defining bulk water entitlements for Goulburn-Murray Water and urban water authorities. In developing the bulk entitlement order, environmental needs of a number of the region's rivers were defined. The bulk entitlement process addressed these needs, either by making a specific environmental allocation, or by adjusting the operating rules associated with the bulk entitlement order.
- The region's bulk entitlement to water is now coming under pressure from increased awareness of the environmental flow needs of the Murray River and the Snowy River.
- Water trading and the water market has steadily matured with more than 166,000 ML sold in temporary transfers of water rights and sales in the Goulburn System during 2001- 2002. Sales on the temporary market reached records in excess of \$350 ML in October of the 2002-2003 season.

### ***Biodiversity***

- The State government released Victoria's Biodiversity Strategy 1997 in response to the Flora and Fauna Guarantee Act 1988 and the National Strategy for the Conservation of Australia's Biodiversity 1996.

### ***Native Vegetation Management Framework***

- In 2000 the Victorian Government began developing a State-wide Native Vegetation Management Framework and required each CMA to develop a regional native vegetation management plan. The initial goal for the Framework was for "no net loss" of native vegetation by 2005, this was modified to a "net gain" in native vegetation by 2005.

### ***Pest Management***

The Region has strongly supported the pest plant and animal initiatives of the State Government over the past five years. Rabbit and weed management have been major issues addressed within the region.

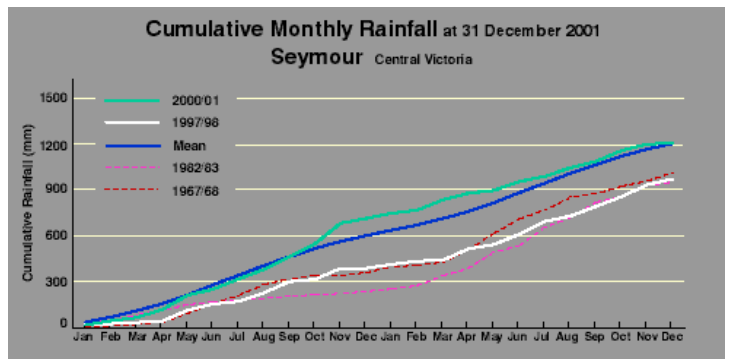
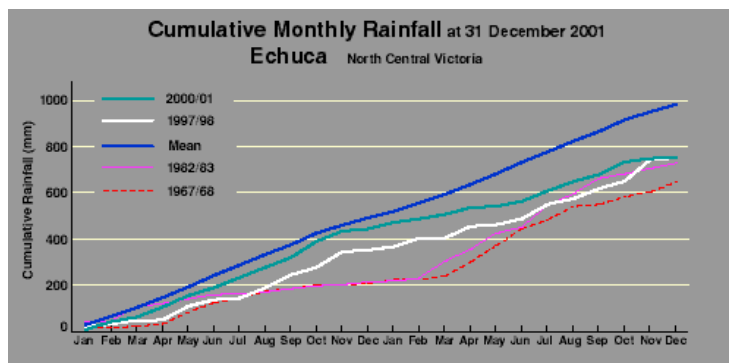
- **Rabbit Busters.** The release of the Rabbit Calicivirus Disease into Victoria in 1997 provided the opportunity for a major increase in rabbit management programs. Within the Goulburn Broken region, the disease has had a general impact on rabbit numbers

across the catchment with this impact being greatest in drier parts of the region. To capitalise on the release of the RCD, the region has invested in the development of a detailed action plan for rabbit management (*Rabbit Management Action Plan 2000 – 2005 – The Goulburn Broken Region*).

- Weed Action Plan.** The region has broadly categorised weeds within the region as either agricultural or environmental and within these groups has identified a number species as being “noxious weeds” under the definition of the Catchment and Land Protection Act 1984. This requires those species to be controlled or eradicated. Detailed planning for weed management for the period 2001 –2005 commenced in 2000 and resulted in the publication of the *Goulburn Broken Region Weed Action Plan*. This plan increases the focus of our weed management programs on the protection of the regions natural assets.

### Regional climate

- Rainfall across most of the catchment has been significantly lower than the long term average over the past five years (check)



## Outcomes from investment in the RCS from 1997 – 2001

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Irrigation investment in the SIR in the five years since 1996/97 was estimated at: \$261,099,242 - Government \$75,453,145 and the community \$185,556,097

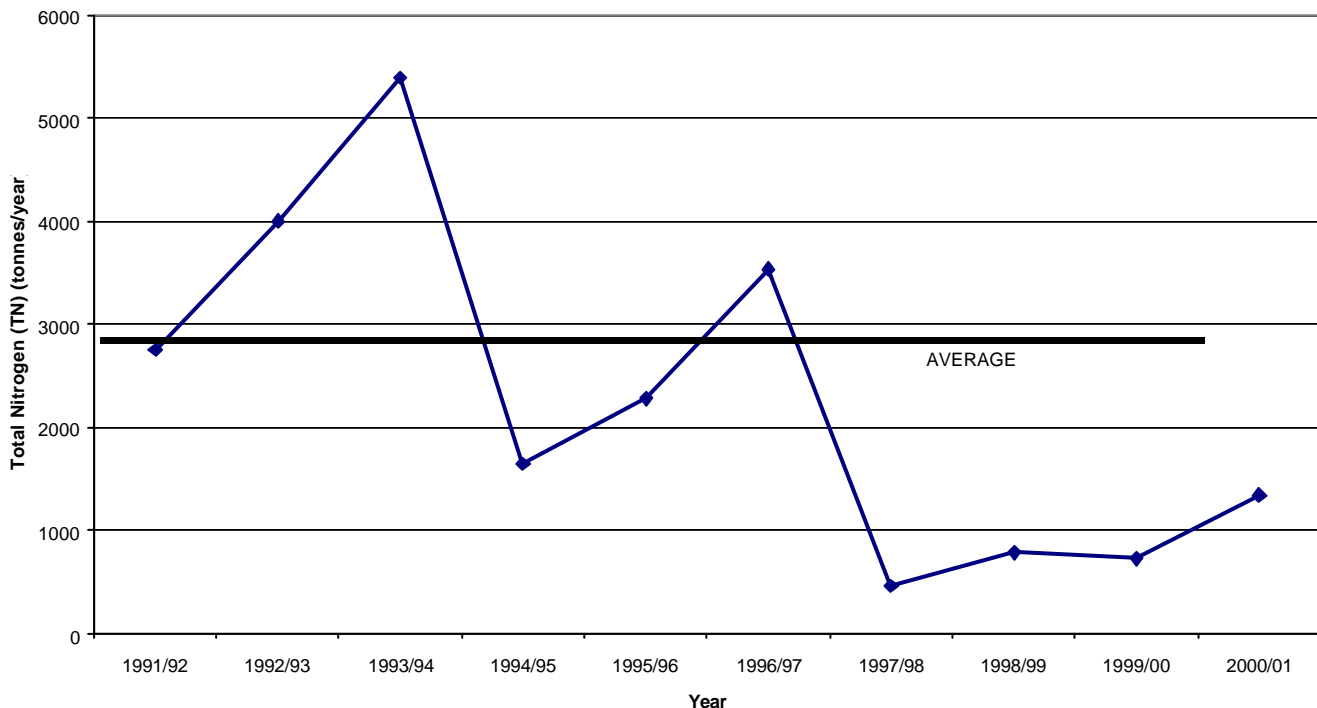
## Biophysical Indicators

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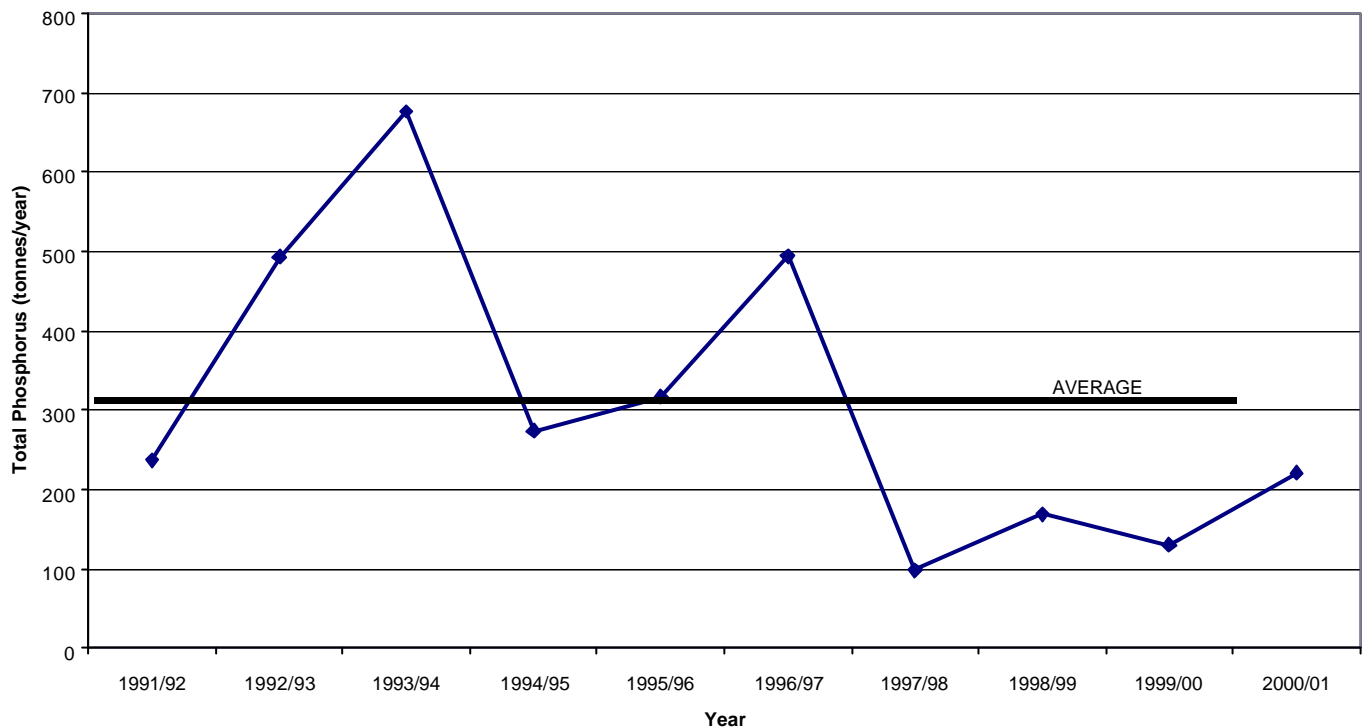
Biophysical trends are difficult to identify over a short time frame (5 years) and any variation can often be accounted for by climatic or other factors. Consequentially no detailed analysis has been undertaken at this time. Of the data available to the CMA a number of encouraging trends are worth noting:

- Total Phosphorus and Nitrogen loads at the key monitoring sites have decreased since 1995 (see charts below);
- The rate of loss of native vegetation has declined significantly in the 1990s compared to the 1980s
- The salt export from the SIR is within the constraints established by the Murray Darling Basin Salinity and Drainage Strategy.

**Total Nitrogen (TN) Exported from Goulburn Broken Catchments 1991/92 to 2000/01**



Total Phosphorus (TP) Exported from Goulburn Broken Catchments 1991/92 to 2000/2001



## **Irrigation Program**

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The Shepparton Region Catchment Management Strategy (formerly the Shepparton Land and Water Management Plan) commenced implementation in 1991 and sets out a thirty-year works program to achieve its objectives. The plan enjoys a strong level of community support and has undergone two major five years reviews. The reviews have confirmed the broad direction of the plan and have also resulted in modifications to enable the irrigation program to address other issues such as water quality.

### **Objective**

To manage the salinity of land and water resources and the quality of water in the Shepparton Irrigation Region in order to maintain and, where feasible, improve the social wellbeing, environmental quality and productive capacity of the region.

### ***SP1 Salinity and Drainage***

#### **Objective**

- To reduce groundwater accessions, soil salinisation and water logging on farms.

#### **Key Targets**

- By 2020 to provide surface drainage to 267,900 ha of the Shepparton Irrigation Region which is currently un-drained.
- To protect and where possible rehabilitate the natural environment of the Region from loss or serious damage from high water tables and salinity.

## **Achievements**

<b>Surface Water Management Program Outcomes</b>	<b>At Start of Plan or Strategy</b>	<b>At the end of the Plan or Strategy</b>	<b>By 2003</b>	<b>Expected Time for Full Implementation (Years)</b>	<b>Current Change in Condition since start (% of target)</b>
Increase the area of land protected through surface drains from 35 % to 100 % of the SIR by <b>2020</b> (or 286,000 ha)	223,200 ha	519,240 ha	374,180 ha (51%)	30 years	44,530 ha 20%

<b>Sub-surface Program Outcome</b>	<b>At Start of Plan or Strategy</b>	<b>At the end of the Plan or Strategy</b>	<b>By 2003</b>	<b>Expected Time for Full Implementation (Years)</b>	<b>Current Change in Condition since start (% of target)</b>
Providing protection of 137,500 ha land from high watertables through sub-surface water management by <b>2020</b> .	36,370 ha	170,000 ha	73,670 ha	30 years	99,170 ha 15 %
Controlled disposal of salt equivalent to 10.8 EC at Morgan by <b>2020</b> .	0.093 EC	10.8 EC		30 years	2.176 EC

<b>Farm Program Outcome</b>	<b>At Start of Plan or Strategy</b>	<b>At the end of the Plan or Strategy</b>	<b>By 2003</b>	<b>Expected Time for Full Implementation (Years)</b>	<b>Current Change in Condition since start (% of target)</b>
Number of WFP	539	5250	2500	30	1,717 36%
Area covered by WFP	36,000	316,000	180,000	30	118,705 42 %

## **SP2 Water Quality**

### **Objectives**

- To minimise blue-green algal outbreaks in the catchment.
- To minimise/optimize water treatment costs.
- To minimise nutrient contribution to the Murray River.
- To foster regional development (by ensuring quality water for industry, agriculture and the community).

- To enhance the riverine environment.

### **Key Targets**

- Reduce annual P loads in the Goulburn River at McCoys Bridge by 229 tonnes.
- Reduce annual P loads in the Broken Creek at Rices Weir by 56 tonnes.

### **Achievements**

<b>Irrigation Program Outcomes</b>	<b>At Start of Plan or Strategy</b>	<b>At the end of the Plan or Strategy</b>	<b>Expected Time for Full Implementation (Years)</b>	<b>Current Change in Condition since start (% of target)</b>
Additional 64,000 megalitres of new drainage diversions to reduce TP by 32 tonnes by <b>2006 (WQS goal)</b>	68,000 MLs diverted initially	132,000 MLs	10 (from 1996)	11% achieved based on 2000/01 use (20% based on licensed volume)
To reduce phosphorus loads from irrigation drains by 50% by 2016 ( <b>WQS goal</b> )	169 t	84.5 t	15	100% achieved (5 year average)
80 % of farms to have reuse systems by 2016 ( <b>SIRCS and WQS goal</b> )	1250	5,360	15	68 %

### ***SP3 Biodiversity***

#### **Objectives**

- To incorporate Biodiversity into other irrigation programs.
- To provide a major focus for the management of reserve areas and how they link into other parcels of private land.

#### **Key targets**

- 23,100 ha of wetlands protected by **2020**.
- 2,700 ha remnant vegetation protected by **2020**.

#### **Achievements**

<b>Irrigation Program Outcomes</b>	<b>At Start of Plan or Strategy</b>	<b>At the end of the Plan or Strategy</b>	<b>Expected Time for Full Implementation (Years)</b>	<b>Current Change in Condition since start (% of target)</b>
23,100 ha of wetlands protected by <b>2020</b>	0	23,100 ha	30 years	25 %
2,700 ha remnant vegetation protected by <b>2020</b>	0	?? ha	30 years	10 %

## **SP4 Pests**

### **Objectives**

- To reduce the economic and environmental impact of pest plants and animals within the catchment.

### **Key targets**

- Aquatic weeds – Arrow Head and Alligator Weed.
- Terrestrial weeds – Mullumbimby Couch.
- Pest animals – continuation of RCD and Fox-off.

### **Achievements**

See the Dryland Program for an overall comment on pest plant and animal achievements.



## Dryland Program

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The 1997 RCS proposed to build on the Dryland Salinity Program within the region to develop an integrated land management program that delivered benefits in addressing a range of natural resource management issues.

Through the establishment of the Upper and Mid Goulburn Implementation Committees and development of Local Area Plans, integration is now being achieved.

### **SP1 Land and Water**

The Goulburn Dryland Salinity Management Plan (GDSMP) 1989 forms the basis for the dryland land and water program.

The objectives of the GDSMP were to:

- Reduce rainfall accessions to the groundwater system by planting areas of high or moderate infiltration (recharge areas) with high water using trees, pastures and crops
- Establish vegetation cover on denuded salt land and to control erosion from these areas.

The Plan has been reviewed twice. The 1995 review conceded that the initial timeframe for implementation was very optimistic and a fifty-year implementation time frame was adopted. That review also resulted in a phasing out of low density tree planting as a recharge control option.

### **Objectives**

To integrate a number of the land management actions relating to key strategies in the dryland, maintaining the commitment to existing programs of salinity and Local Area Plans (LAPS).

### **Key Targets**

- Reduce salt loads at Morgan by 15 EC.
- Reduce the increase in saltload leaving the Broken Catchment to 13,300 tonnes per year by 2050.
- Reduce the saltload leaving the Goulburn Catchment by 22,600 tonnes per year (or about 10%) by 2050.
- Salinity and waterlogging in the Broken Catchment ?????.
- Management of erosion induced diffuse source of nutrients in the dryland.
- Management of soil erosion, acidity, nutrient and structural decline.

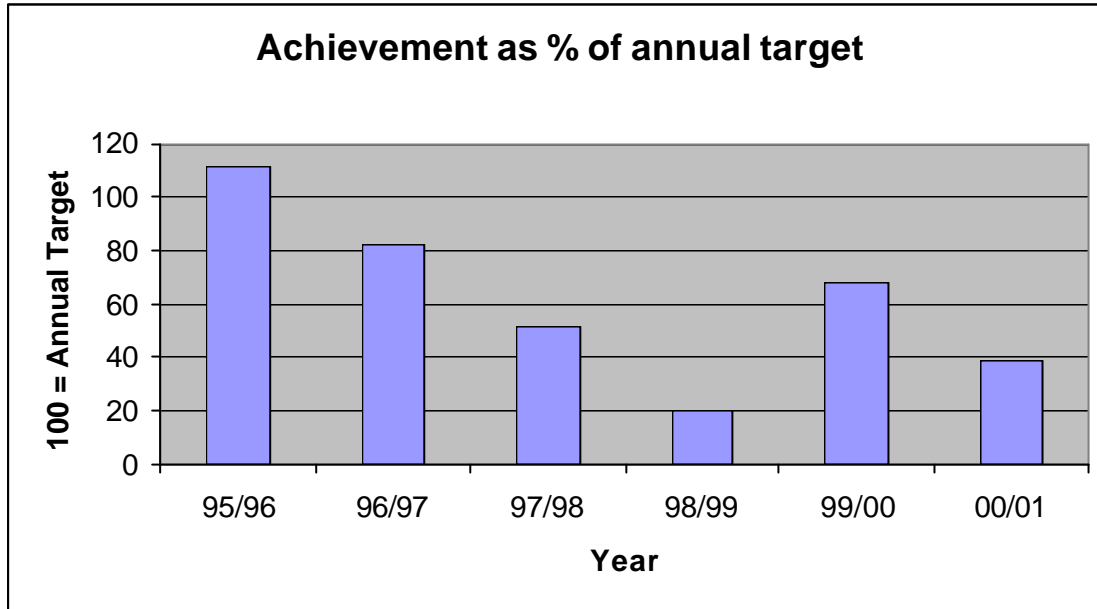
### **Achievements**

*Achievements 1995 - 2001 (1995 targets)*

	Reveg	HD Trees	LD Trees	Per Past	Luc	BOS	Enviro works	Reveg	Reclaim	GW Pumps
<b>Annual Target 96-01</b>	<b>57</b>	<b>195</b>	<b>15</b>	<b>973</b>	<b>465</b>	<b>35</b>	<b>67</b>	<b>19</b>	<b>112</b>	<b>4</b>
95/96	24	420.3	10	839.2	585.6	110.8	38	72	65.7	1
96/97	149.5	134.95	0	797.5	291	32	27.2	108.7	50.3	1
97/98	48	132.15	0	588	93.6	12	28.3	58	43.6	3
98/99		7.1	0	140.5	197	0	*	6.7	27.3	
99/00	23	92.2	0	567.5	547.6	10.2	*	4.7	61.2	#

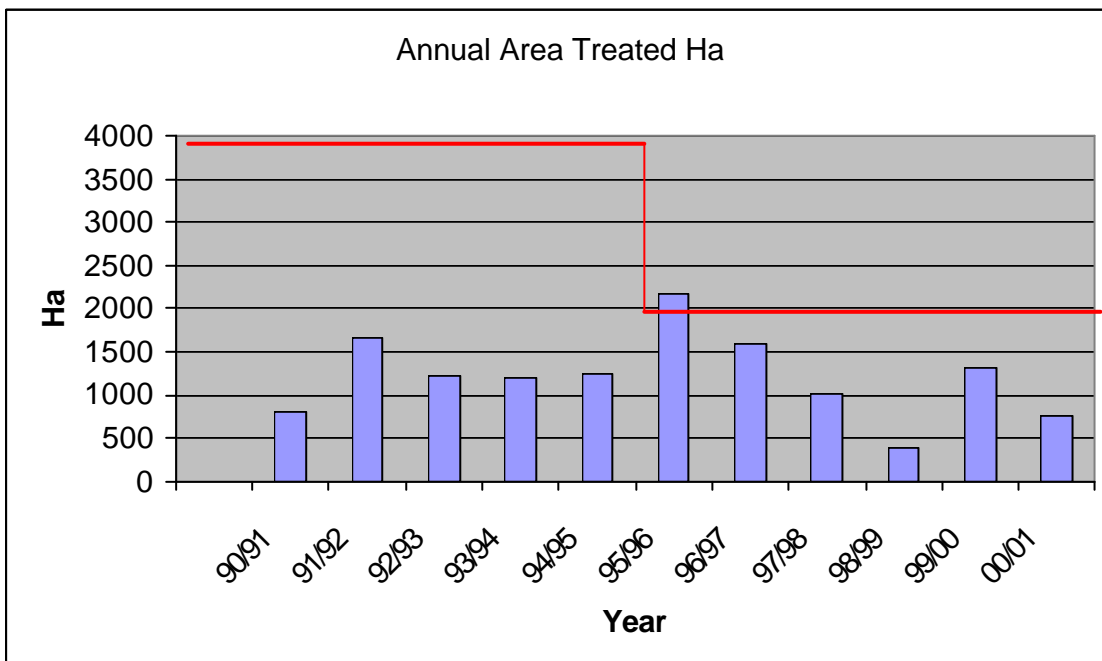
00/01	42.9	67.9	0.1	224	305.4	0	*	5.8	101.7	#
Total	287	855	10	3157	2020	165	94	256	350	5
% of 6 yr target	84	73	11	54	72	79	*	224	52	#

**Figure 1 Works achievement as a % of annual target (as set in 1995).**



The average annual area treated over the first five years (1220 ha/yr) is very similar to that achieved in the following 6 years (1199 ha/yr). Figure 2 shows these annual values and the overall targets as set in 1989 and 1995. In only one year, (95/96) were the targets achieved.

**Figure 2 Area treated annually.**



Targets were: 1989 – 1995 **3983 ha**, 1995 – 2001 **1938 ha**

## **SP2 Pest Management**

### **Objectives**

To reduce the economic and environmental impact of pest plants and animals within the catchment.

### **Key targets**

- 95 % of landowners complying with the requirements of the CaLP Act in priority areas.
- 60 % or 96,000 ha of high priority pest plant infested land identified in the Action Plans are covered by control programs.
- Six priority species action statements completed and endorsed by the Goulburn Broken CMA.
- Five LAPS developed which included community control standards.
- Monitor and evaluate the effectiveness of weed management in the region.
- Integrate biodiversity outcomes into pest plant and animal programs.

### **Achievements**

<b>Weed and Pest Management</b>	Total over life of plan/strategy	<i>Achieved by Jan 2001</i>
Estimated area of effective weed control (including aquatic) (ha) <i>From RMP</i>	60%	<b>6000</b>
Estimated area of effective vertebrate pest control (ha) <i>(From RMP)</i>	60%	<b>6000</b>
Other Specify (ha)	???	

- The release of the Rabbit Calicivirus Disease into Victoria in 1997 provided the opportunity for a major increase in rabbit management programs. Within the Goulburn Broken Region RCD has had a general impact on rabbit numbers across the catchment with this impact being greatest in the drier part of the region. To capitalise on the release of the RCD, the region has invested in the development of a detailed action plan for rabbit management (*Rabbit Management Action Plan 2000 – 2005 – The Goulburn Broken Region*).
- The region has broadly categorised weeds as either agricultural or environmental and within these groups has identified a number species as being “noxious weeds” under the definition of the Catchment and Land Protection Act 1984. This requires those species to be controlled or eradicated. Detailed planning for weed management for the period 2001 –2005 commenced in 2000 and resulted in the publication of the *Goulburn Broken Region Weed Action Plan*.

## **SP3 Biodiversity**

### **Objective**

To incorporate Biodiversity into other Dryland Programs and provide a major focus for the management of reserve areas and how they link into other parcels of private land within the catchment.

## Key targets

See earlier section.

## Achievements

<b>Primary Output</b>	<b>Total Primary Output Planned (over the life of the main plan/strategy)</b>	<b>Completed to January 2001</b>
<b>Native Vegetation / Habitat</b>		
Total area of native vegetation works (ha)	133,800	<b>2,433</b>
Remnant protection works (ha) ( <i>from NVMS target 2 x 30 years</i> )	66,900	<b>419</b>
Remnant rehabilitation works (ha)		<b>394</b>
Revegetation works (ha) ( <i>from NVMS target x 30 years</i> )	66,900	<b>1620</b>
Number of plants to be established (No) <i>Area 1 above x 500 trees / ha x 30 years</i>	33 million	<b>158,481</b>
Length of protective fencing (km) (DSMP only)	60,210	<b>21631</b>
Area of voluntary management agreements established (ha) ( <i>output 1 + 10</i> )	303,300	<b>2079</b>
Covenanted areas established to protect remnant native vegetation (ha) (DSMP only)	6,690	<b>24</b>
Area of works that protect/enhance threatened species/community habitat ( <i>from NVMS target 2 x 30 years</i> )	169,500	<b>1012</b>

## River and Water Quality Program

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The River and Water Quality Program provides the focus for improving river health across the catchment. Achieving these outcomes relies on the successful implementation of other programs promoted by the RCS and reinforces the need for an integrated catchment management approach.

In reporting on this program it should be noted that a number of the achievements are reported in other sections of this report.

### **SP1 Water Quality**

#### **Objectives**

- To reduce potential phosphorus loads in catchment water bodies by 65%.
- Minimise nutrient contribution to the Murray River.
- Foster regional development.
- Minimize blue green algal outbreaks.
- Enhance riverine environment.
- Minimize/optimize water treatment costs.

#### **Key targets**

- To reduce annual P loads in the Goulburn River at McCoy's Bridge by 229 t.
- To reduce annual P loads in the Broken Creek at Rice's Weir by 56 t.

#### **Achievements**

<b>Goal/Outcome</b> (To be reported at Plan, Strategy or Priority document level)	<b>At Start of Plan or Strategy</b>	<b>At the end of the Plan or Strategy</b>	<b>Expected Time for Full Implementation (Years)</b>	<b>Current Change in Condition since start (% of target)</b>
To reduce potential phosphorus loads in catchment waterbodies by 65 % by 2016 to minimise risks of blue-green algae blooms in the catchment and annual loads to the Murray River	615 t TP /year	215t TP/yr	15	Assessment of 1996-99 water quality data is not conclusive
To reduce phosphorus loads from irrigation drains by 50% by 2016	169 t	84.5 t	15	
80 % of farms to have reuse systems by 2016	1250	5360	15	24%
Additional 64,000 megalitres of new drainage diversions to reduce TP by 32 tonnes by 2016	68,000 MLs diverted initially	132,000 MLs	15	2315 Ml – 3.6 % high flow only (probably an underestimate)

<b>Goal/Outcome</b> (To be reported at Plan, Strategy or Priority document level)	<b>At Start of Plan or Strategy</b>	<b>At the end of the Plan or Strategy</b>	<b>Expected Time for Full Implementation (Years)</b>	<b>Current Change in Condition since start (% of target)</b>
80% of farms in SIR to have Whole Farm Plans by 2016	2227	4627	15	16%
Reduction TP 86 t TP from Reuse Schemes installation (based on WFP %)	1250 systems	3470 systems 86 t TP	15	27%
20 % reduction from the dryland areas in TP by 2016	110 t TP	88 t TP	15	25%
80 % reduction in phosphorus loads discharged from sewerage through land reuse or tertiary treatment by 2006	50.5 tonnes TP refer GVW projected results graph	10.1 tonnes TP	10	22/40 = 55%
550 kilometres of riparian plantings both banks) to reduce TP by 3.6 tonnes by 2016	Target sites not fenced and revegetated	550 kms water quality target sites fenced and revegetated	15	25%

## ***SP2 River and Stream Management***

### **Objectives**

- To improve the condition of 3000 km of stream to good or excellent while maintaining the environmental condition of streams currently rated good and excellent.
- To ensure development in flood prone areas is appropriate with the nature of the floodplain.

### **Key targets**

- Improve the condition of 3000 kilometre of stream to good or excellent over 30 years while maintaining the environmental conditions of streams currently rated good by 2030.

### **Achievements**

- Waterways Program has completed 313 km of fencing along waterways in the period 1998 to 2001.
- Rate of river management works increased by more than 100% (\$M2.4 1997/8 to \$M5.0 2000/1).
- Mokoan Catchment Strategy developed and being implemented including Seven Mile, Winton, Eleven Mile and Show Creeks.

- Adoption of Best Management Practices assisted by waterways vegetation and community education officers.
- Best Management Practice publication on dryland nutrient management developed and widely distributed.

<b>Implementation Works</b>	<b>UGIC 1998/99 – 2000/01</b>	<b>SIRIC 1998/99 – 2000/01</b>	<b>MGBIC 1998/99 – 2000/01</b>	<b>TOTAL</b>
Major grade control / bank stabilisation projects	174	82	213	469
Rock beaching projects	135	48	80	263
Length of stream protected (km)	12	16	27.6	55.6
Exotic weed control (km)	30	36	38	104
Fencing projects (km)	92	144	77.1	313.1
Revegetation projects (no plants)	82,000	79,600	76,400	238,000
Fish ladders/ways	1	22	2	25
Urban enhancement projects	10	12	3	25
Research Projects	3			3
Monitoring (Surveys km)	15	10	76.9	101.9
Application of ISC	~150			~150
Local waterway strategies and plans (No)	10	10	12	32

**Investment to date:**

<b>Waterways Program</b>	<b>Total Resources to 2001 (\$,000)</b>	
	<i>State / Regional</i>	<i>Federal</i>
<b>1998 / 1999</b>	\$3,216	\$157
<b>1999 / 2000</b>	<b>\$3,296</b>	<b>\$2,719</b>
<b>2000 / 2001</b>	<b>\$3,328</b>	<b>\$1,969</b>
<b>Total</b>	<b>\$9,840.00</b>	<b>\$4,845.00</b>

**Flows**

There have been significant achievements made in the management of water and flows in recent time. These achievements aim to ensure the allocation of valuable water resources can be sustainably managed.

- In the last five years Bulk Entitlements for the Goulburn and Murray rivers have been completed.
- A program of four priority streamflow management plans was started in 1998/99. To date Consultative Committees have been established on the King Parrot Creek and Yea River. Draft plans have been prepared for the first two streams and these are currently in the consultation phase.
- Stream Flow Management Plans are currently underway on Seven Creeks and the Delatite River.
- A Groundwater Management Plan for the Shepparton Irrigation Region Groundwater Supply Protection Area was completed in 1997. The development of a Groundwater Management Plan for the Katunga Groundwater Supply Protection program is close to completion following the release of a draft report in March 2001.

### **Recreation**

- The Upper Goulburn Recreational Waterway Strategy is the first strategy of its kind to focus purely on the protection of waterways, whilst fostering the social and economic values of recreation

### **Fisheries**

Achievements of Victorian Fisheries relevant to the Goulburn-Broken catchment include:

- A fishery management plan developed for the Goulburn/Eildon Region to provide the framework for future management decisions.
- The Fisheries (Amendment) Act 2000 provided a suite of reforms for the continued improvement in stronger enforcement provisions and management processes.
- NRE worked in cooperation with recreational fishing groups in releasing over one million native fish and 800,000 salmonid fish in over 150 waters throughout the State. This included coordination of Departmental and private releases and increased the opportunity for recreational anglers to catch fish. Lake Mokoan, Lake Eildon and the Lake Eildon pondage, the Goulburn River downstream of Shepparton are such examples within the Goulburn-Broken Catchment that benefited from this action.
- Recreational Fishing Licence (RFL) revenue of approximately \$243,000 provided funding for four new projects: two major fish habitat restoration projects including work along the Goulburn River and the purchase of native fish fingerlings for stocking purposes. Some of these stockings have been undertaken in the Goulburn-Broken Catchment.

### **Floodplain**

A range of achievements have been made in floodplain management. Some key highlights include:

- Information Management
- Flood Data Transfer Project (NRE 1998-2000).



- An airborne laser scanning project (MDBC and Southern Murray Darling Project Consortium 2001).
- Statutory Planning and Development Guidelines
- Flood advice and input into a large number of planning permit applications

### **Flood Studies and Floodplain Management Plans**

Nine major studies completed within the region studies were undertaken:

- PWD Levees
- Levee Audit (1997)
- Lower Goulburn and Urban Levees
- Levee audits (1998 and 1999), Nathalia Town Levee Audit (1996). Cobram Water Management Scheme (completed 2001). Water management (flood protection) schemes are being prepared for Euroa and Benalla (ongoing).

### **Flood Monitoring and Emergency Response Planning**

- Municipal emergency management plans have been prepared incorporating flood sub plans.

### **Flood Warning**

- A flood category warning service (minor, moderate, major) for most other Goulburn River tributaries.
- Flood warning system upgrades at Benalla (1997), Euroa (1998) and Seymour (2000).

## **Public Lands Program**

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### ***SP1 Pest Management***

#### **Objectives**

- Prevent the establishment in the catchment of wild populations of introduced organisms which will threaten native flora and fauna and or the agricultural lands which abut public lands.
- Eradicate or control populations of feral animals and environmental weeds.
- Protect indigenous taxa and ecosystems from the impact of genetically modified organisms.

### ***SP2 Biodiversity***

#### **Objectives**

- To protect representative and ecologically viable samples of Victoria's natural ecosystems which occur in the catchment on public land.
- To manage public land so that flora and fauna conservation and management objectives of the *Flora and Fauna Guarantee Act 1989* are met.

### ***SP3 Water Quality***

#### **Objectives**

- To implement the public lands component of the Water Quality Strategy with special emphasis on sediment reduction.
- To maintain or improve the environmental quality and ecological integrity of aquatic ecosystems in the catchment.

### ***SP4 Fire Management***

#### **Objectives**

- To plan for and manage fire to achieve ecological and land and water management objectives.
- To manage the threat of deleterious effects caused by uncontrolled wildfires such that adverse impacts of fire prevention and suppression activities upon flora and fauna are minimised.

#### **Achievements**

The creation of Parks Victoria in 1996 resulted in a reduced expectation of CMA involvement in public land management.

The Goulburn Broken CMA maintained an active interest in the management of crown river frontages managed by Land Victoria and in 1999 undertook a detailed review of the condition Crown frontages within the region. This work was undertaken in anticipation of the CMA

being asked by the Victorian Government to take a greater role in Crown frontage management. This issue is still under consideration by the Victorian Government.

The Public Lands Program outcomes have been integrated in the biodiversity and water quality outcomes of the Irrigation and Dryland programs. The CMA's primary area of interest was the interface between public and private lands and the need to address pest plant and animal issues.

## **Biodiversity Strategy**

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Although the Catchment community had been investing in the "environment" for several years, in 1997 "biodiversity" was a new and slightly different concept that extended thinking about the links between all natural resource issues.

The 1997 RCS listed the development of a biodiversity program as a high priority and there has been a dramatic increase in emphasis on biodiversity since. The CMA now has a Biodiversity Manager to direct funding specifically for biodiversity from new fund sources (such as the Natural Heritage Trust and the National Action Plan) and to ensure biodiversity needs are integrated into complementary programs.

The main milestone listed in the 1997 RCS was to include biodiversity objectives in all natural resource management projects. This related to one of the two main streams listed: "Enhancement of existing programs". This milestone was largely achieved:

- All revegetation programs funded through the CMA have a biodiversity component.
- Most NRM programs have guidelines that ensure remnant vegetation is protected or enhanced.
- Methodology to provide biodiversity overlays for rural zones and appropriate planning mechanisms to protect remnant vegetation is still being developed at statewide level.
- Most of the seven municipalities have made explicit improvements in managing native vegetation on roadsides.
- Parks Victoria is committed to biodiversity objectives and provides reports to the CMA on activities
- There is a commitment to improve the CMA's understanding of the contribution of NRE Forests Management to biodiversity.
- BMPs for grazing of streams have been developed.

The other main stream listed in the 1997 RCS was "New programs". By 2002 information had become available in the form of "Biodiversity Action Planning" to enable targeting of biodiversity priorities at local landscape scale and holistic local area plans including biodiversity needs. This includes an approach to prioritise threatened species by NRE using Bioregional Networks Analysis.

A *Regional Biodiversity Strategy* was proposed in the 1997 RCS. A significant step was taken through funding for a pilot project for Victoria from Land and Water Resources Research and Development Corporation and NRE: the *Goulburn Broken Native Vegetation Management Strategy (2000)* was developed over three years by a Steering Committee with very broad stakeholder representation. The NVMS identified key targets for native vegetation, geographic priorities in terms of Ecological Vegetation Classes and organisational

priorities to improve integrated native vegetation management. The NVMS covers many of the broader needs of biodiversity – especially organisational issues.

Other organisations have also invested heavily in planning for important biodiversity issues in the Catchment. For example, the Environment Conservation Council's report *Box-Ironbark Forests and Woodlands Investigation 2001* has major management implications for regional stakeholders. The CMA supports this document and is involved in implementation.

Understanding of the more detailed components of biodiversity has recently become possible through National Action Plan funding. Background papers for the 2002 RCS include cryptogams, riparian and in-stream native flora and fauna, wetlands, threatened species, non-threatened fauna and soil biodiversity.

The Steering Committee evolved into the Goulburn Broken Biodiversity Committee in 2000 and it expanded the strategic approach for biodiversity beyond native vegetation. By the time of this review, most remaining issues concerning biodiversity are implementation issues for staff and it is expected that referral to such a broad stakeholder reference group will not be needed nearly as often.

NVMS actions have largely been implemented from funding under the Natural Heritage Trust and the State and by adjusting the revegetation actions promoted by the salinity management and water quality plans. A companion volume *Native Vegetation Retention Controls Draft Regional Guidelines* was also prepared to ensure a more consistent approach to applying native vegetation retention controls by NRE and local government within the Catchment.

The CMA partnered VicRoads and NRE during 1999-2000 in preparing Victoria's first approach to applying the principle of "net gain" (the n "no net loss") and "habitat hectares" to projects involving the removal of native vegetation.

In 2000, the CMA adopted an Environmental Management Grants Framework as the basis for cost-sharing for revegetation and vegetation protection across all of its plans and programs. This innovative process allows for priority to be given to works that provide the greatest number and level of environmental benefits. Grants are now recorded on the statewide Regional DataNet.

In 2001, the Goulburn Broken Indigenous Seedbank was opened at the Dookie Campus of the University of Melbourne and a Goulburn Broken Revegetation Guide was produced.

Monitoring of biodiversity remains challenging, as it does for the rest of the world. The CMA has pioneered methodology to measure progress against goals of the NVMS and it is likely that the review of the RCS in 2007 will contain more definitive data.

## **Catchment Management**

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### **Objectives**

- To efficiently manage the operation of the Goulburn Broken CMA Board.
- To develop and implement a catchment communication strategy.

There are a number of other outcomes that are expected as a result of investment and works in the catchment which are not quantifiable, but can be qualified and include:

- Ensuring environmentally sustainable **recreational use** of waterways for the community.
- Incorporating **water quality planning issues** by councils, planners, developers into new developments.
- Improving land use planning systems within **floodplain** areas and flood mapping and flood level information for Buxton, Jamieson and Yea Townships Corop Lakes Avenel and Tallarook Townships.
- Involvement of the **community in decisions** relating to natural resource management within their region.
- Increasing community understanding of natural resources issues with the skills needed to manage natural resource issues resulting in **vibrant rural communities**.
- More sustainable and viable **community groups** (eg Landcare) committed to sustainable catchment management by the year 2003.
- Development of a sustainable **regional development strategy** for the Goulburn Broken catchment by 2003.

## **Achievements**

- Following the appointment of the CMA board, Implementation Committees were established to oversee the works programs in the Upper, Mid Goulburn and Shepparton Irrigation regions.
- The CMA maintained its investment in fostering its relationship with local government through the continued appointment of a local government liaison officer.
- The CMA has developed and strongly promoted the use of planning overlays for floodplain management.
- The CMA has identified the lower Goulburn River floodplain as an area for major landuse change that will reduce flood damage costs and enhance biodiversity values within the region.
- The Region has successfully piloted the development of the “habitat hectare” approach to native vegetation management in the planning for the Goulburn Valley Highway duplication and the Shepparton by-pass.
- The region has pursued an integrated natural resource management approach to its works program; the Muckatah drainage scheme, opened by the Prime Minister in 1998 has been recognised as best practice for its combination of environmental and drainage outcomes.
- The region was one of the first in Victoria to recognise the value of a regional approach to Landcare support. Seven Landcare networks currently exist in the Catchment.
- The CMA has worked towards reducing the administrative burden on Landcare groups. Landcare Management Guidelines were developed and in 2000 it piloted the development

of a large integrated NHT bid for the region in place of the many smaller NHT applications prepared by individual groups.

- The CMA's efforts in natural resource management have been recognised with numerous awards. The awards include:

1995	SIR IC - BP Landcare Catchment Award for Victoria
1998	Department of Natural Resources & Environment staff working on the program were runners up in the NRE Daniel McAlpine Award
1999	SIR IC - Finalist in the community group section of the Banksia Awards
1999	Muckatah Catchment Strategy – Institute of Engineers Awards for Environmental Excellence
1999	Goulburn Broken Catchment Management– Finalist in International <i>Riverprize</i>
2000	SIR IC – Finalist in BP Landcare Catchment Award for Victoria
2000	SIR IC (Waterways Group) Finalist in Rivercare Award for Victoria
2000	Muckatah Catchment Strategy – Winner of the Banksia Award for Land, Bank & Waterways and finalist in the Banksia Award for Innovation
2000	SIR IC – Finalist and Highly Commended in the Prime Minister's Environmental Awards (Category of Community Leadership and Environmental Achievement)
2001	Cornella Local Area Plan - Winner Telstra Catchment Award Victoria
2001	Nanneella Local Area Plan - Finalist Telstra Catchment Award
2001	Salinity Implementation Team - Winner of NRE Diversity Award
2002	"Rehabilitation of the Broken, Boosey Nine Mile Creek system in Northern Victoria" - finalist for the Banksia Awards and the Prime Minister's Award.

The Catchment's natural resource management effort resulted in many visitors to the region. Most recent visitors include:

- OECD Environmental Audit Team
- Murray Darling Basin Ministerial Council
- Queensland Minister for Environment
- Agriculture and Resources Ministerial Council of Australia and New Zealand
- World Bank [twice]
- House of Representatives Inquiry into Catchment Management
- Lake Wellington Salinity Group
- International Sodcity Conference

- Catchment and Water Directors
- International Rural Leadership Group
- Williamson Leadership Program