



Review of the 1997
Corangamite Regional
Catchment Strategy



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This is intended to be a working document that may be changed as the evolving project requirements dictate.

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RCS REVIEW

FOREWORD BY CHAIRMAN

The Corangamite Regional Catchment Strategy (RCS) was approved by the then responsible State Ministers in June 1997 "as the basis to guide further investment by governments and regional communities on land and water resource management in the Corangamite region."

In preparing this RCS the then community based Catchment and Land Protection Board worked with local communities and government agencies to assess the condition of the region's natural resources and to develop a set of integrated programs and specific actions for sustainable development in the region.

From 1 July 1977 a new statutory body, the Corangamite Catchment Management Authority (CCMA) was established to (among other things) coordinate the implementation of the RCS through services delivered by the Authority and by its regional partners.

The CMA is also responsible for the review and ongoing development of the RCS.

For many reasons it was timely to undertake a systematic review of the RCS during 2002, in particular to provide a starting point for the renewal of the RCS.

A renewed RCS, and its investment plan, is a necessary basis for accreditation as setting the strategic directions for the allocation of funds through the National Action Plan for Salinity and Water Quality (NAP); the Natural Heritage Trust (NHT) and other public and private funds.

Foundation funding through the NAP in 2001/2002 enabled the Authority to engage the "Resource Economics Unit" consulting group to deliver a project to review and renew the Corangamite RCS.

This report is an outcome of the project and provides background and direction for the renewal phase of the project.

In publishing this review for the information of wider audiences, the Authority recognises its integrity as an independent review conducted from an external perspective. The Board of the Authority supports the general conclusions of the report contained within the "Summary" and believes that the report provides an excellent foundation for renewal of the RCS.

On behalf of the Corangamite CMA, I thank the consultants; officers of state and commonwealth agencies; the many persons from the regional community who contributed in various ways and my colleagues from the Authority for their contributions to completing the Review.

Bob Carrail

Chairman



SUMMARY

Review Methodology

This Review of the Corangamite Regional Catchment Strategy (1997) was undertaken by the Resource Economics Unit. The review team comprised:

- Jonathan Thomas, Director Resource Economics Unit;
 - David Bennett, Director NRM Pty Ltd;
 - Ross Colliver, The Training and Development Group
 - Jay Gomboso, Gecko Ecologico
 - Catherine Johnson, Australian Research Centre for Water in Society, CSIRO
 - Brian Sadler, Director Water Policy Services Pty Ltd
 - Geoffrey Syme, Acting Program Manager Catchments and Groundwater Quality, CSIRO Land and Water
1. The team acknowledges the very active support of the Board of Corangamite Catchment Management Authority (CCMA), its CEO Mr Don Forsyth, the Regional Catchment Strategy (RCS) Project Manager Mr Peter Codd, the RCS Project Officer Ms Jo Roberts, and CCMA staff.
 2. The review process was carried out by means of desk research, workshops attended by Board members CCMA staff and key stakeholders, and meetings with stakeholder groups.
 3. The Review formed the first phase of the consultancy project to review and renew the Regional Catchment Strategy.

History, Vision and Scope

4. The Corangamite Catchment and Land Protection Board developed the 1997 RCS immediately prior to the creation of the Corangamite Catchment Management Authority. As the Authority had no staff at that time the original Strategy was compiled in a short period by a small team working with limited resources. Nevertheless, from 1997 to the present the RCS (which has evolved through the development of annual Management Plans and the sub-strategies) has provided a substantial basis for catchment management in the region.
5. The RCS provided, for the first time, an opportunity for all of the issues facing natural resources and environment of the region to be presented in a single coherent document.
6. The Strategy's stated objective was to provide a *blueprint for achieving integration and delivery of the land and water management programs in the region into the next century*. This emphasis on integrating programs underlined the fact that the RCS concentrated on bringing together existing efforts, and did not attempt to work from first principles.
7. The RCS was a document for all stakeholders and was not just a strategy for the CCMA itself, for the Authority has legal and statutory responsibilities that lie outside the scope of the 1997 RCS.
8. The RCS outlined a large set of actions that could be undertaken and a qualitative method for prioritising them.
9. Potential actions were grouped into six Programs. The actions that had been selected as having the highest priority were then presented as 'Focus Activities.'

The six Programs were:

- Sustainable Production
- Water Resources
- Biodiversity Conservation
- Catchment Amenity
- Community Education, and
- Monitoring and Evaluation



10. They embraced a number of on-going strategies such as the Salinity Strategy established in 1993. Since 1997 additional sub-strategies and action plans have been created, notably dealing with waterways, nutrients, rabbits and weeds.

Information Base

11. The 1997 RCS essentially pulled together a number of pre-existing natural resource management programs and set new directions. However, the information base for the 1997 RCS itself can only be described as elementary and fragmented. In the past few years major steps have been taken in an effort to rectify this deficiency.

Establishment of Priorities

12. A system for rating priority issues was developed using three main criteria:

- Level of impact of the issue.
- Whether existing efforts were adequate for dealing with the issue.
- Whether a benefit-cost analysis would be likely to demonstrate (or had already demonstrated) economic efficiency of projects addressing the issue.

13. This system succeeded in differentiating issues in terms of the relative effort that should be given to each. It also identified the number and variety of actions which needed to be developed. However, it was difficult in places to trace the links between priority ranking and Focus Activities. Some important actions emerged without a 'parent' issue: for example (i) community action and (ii) natural disasters. Conversely, the "biodiversity" issue was not disaggregated in a similar fashion to sustainable production and water resources, thus it became the sole parent of many proposed actions amongst which no clear prioritisation had been established.

14. Nevertheless, the 1997 RCS established clear directions for catchment management for the region:

- Issues that received a strong response in terms of strategic development included (i) integration of natural resources management with municipal planning policies and practices, (ii) community action, (iii) pest animals and plants and (iv) enhancement of biodiversity provisions.
- Water resources received selective additional emphasis, particularly in relation to (i) flow management, (ii) nutrients and eutrophication, (iii) turbidity, (iv) waterway health and (v) groundwater.
- Issues which continued at previous levels of activity include (i) salinity management and (ii) waterlogging, with more emphasis being sought on hot-spot identification and improved process knowledge.
- A relatively low level of strategic activity was chosen for soil-related issues, largely because of perceived low impact of the particular issues.

Consistency with Other NRM Agencies

15. To the extent that the 1997 RCS incorporated several pre-existing programs and strategies its recommended directions for NRM in the region were broadly consistent with those of other NRM agencies. However, during the course of this Review it was reported that few NRM programs within the region are now *strategically* aligned with the RCS. Hence, it was maintained by some respondents that NRM occurred in a disjointed manner rather than as part of a coordinated effort within the RCS framework.

16. Accordingly, there has been (and still continues to be) considerable diffusion of powers and responsibilities across state and local government agencies that impact on NRM within the region. These powers and responsibilities are not always exercised consistently, and sometimes require resolution. Examples include state development agencies, municipal governance, and bulk water allocation. Recognising this, the 1997 Strategy set out to



improve the working relationships between those agencies and the RC. It also sought to embody RCS policies (which are often statutory responsibilities) into the policies of companion agencies. However, progress in this regard has been slow.

Uptake within the Community

17. The CCMA Board has been active in implementing the strategic direction set by the 1997 RCS, by interfacing with the community.
18. The CCMA has also been active in establishing partnerships and projects with a range of stakeholder groups, particularly water utilities and agricultural groups. These have been enhanced through the Authority's provision of scholarships, grants and sponsorships.
19. Landcare groups receive particular attention from the CCMA. It has provided funding for on-ground works and co-ordinators, the strengthening of networks, and given advice and help to individuals and groups completing funding applications. While relationships between the Authority and Landcare groups were generally considered to be among the strongest and most successful of CCMA interactions with other catchment bodies, they were nonetheless considered a developing area. Unfortunately the focus on Landcare may have unintentionally reduced the emphasis accorded to the role of other environmental groups.
20. There was wide agreement that the CCMA's relationship with industry groups is an area for particular attention and is an enormous area of potential. Thus, the development of stronger relationships with a range of agricultural, forestry and secondary industry groups is considered to be a priority.
21. 'Poor awareness' was identified as a key weakness in RCS initiatives. Respondents reported that knowledge and understanding about both the CCMA and the RCS were either minimal or non-existent outside CCMA/DNRE and Landcare circles. It appears that outside its base in Colac awareness of the Authority is limited. Furthermore, it is believed that mere provision of information is insufficient – rather, it was asserted that strategies are needed to make the RCS relevant for all stakeholders
22. Education about administrative processes is increasingly important. Community groups are often resentful about perceived excessive administrative demands and 'delayed decision-making' by the CCMA. Support for funding applications may act to slightly counter this.
23. Therefore, it is believed more needs to be done to raise the Authority's profile and that of NRM initiatives. More work must be done to broaden the scope of community involvement in NRM programs. Actions must include the establishment of consultation processes which give opportunity for everyone to have input into plans and programs, and fostering 'grass roots action.' Effective catchment management can only be implemented if the process is supported by the provision of sufficient and appropriate resources. These include human resources (both government personnel and community members). Overload is currently is a major problem for participants.

Progress and Achievements

24. A list of the actions promulgated in the 1997 Strategy was circulated by the Resource Economics Unit in April 2002 amongst CCMA and DNRE staff with a detailed knowledge of each Program area. They rated each potential action according to the degree of implementation. Overall, some 79 per cent of actions in the 1997 RCS were completed either successfully or were partly completed with a successful outcome. Approximately 21 per cent of actions were not completed.
25. There appears to have been a high level of implementation of Strategy actions in the pest control area, both plants and animals. Major improvements were also achieved in the areas of strategy development for water quality and waterways management, and in



continuing the Corangamite salinity strategy. Yet despite the impressive level of implementation these are areas requiring continued effort in the region.

26. Most of the actions that were *not* implemented achieved a relatively high priority rating in the 1997 RCS. This also emphasises the importance of continued attention to long-standing needs.
27. Moderate progress has been made in improving the involvement of municipalities in catchment strategy development and its implementation through planning policies.

Water Resources

28. The 1997 RCS grouped its Water Resources program into three core projects, addressing:

- Water quality and waterway management
- Floodplain management
- Groundwater and river health

29. All issues considered affecting water quantity and quality were assessed as having medium to high impact across these three areas. Recommended actions were mainly concerned with planning and management procedures, and included establishment of the Waterways Management Implementation Committee. There have been significant achievements in respect of (i) waterways planning, (ii) development of a nutrient strategy, (iii) continued attention to salinity (iv) establishment of the Index of Stream Condition monitoring program, (v) development of the Barwon River Flood Warning System and Emergency Response Plan, (vi) completion of regional floodplain risk mapping, and subsequent development of the Draft Floodplain Management Strategy, (vii) completion of the Corangamite Crown Frontage Review, and (viii) development of Stormwater Management Plans by all Shires. Other aspects, including land management plans in water supply catchments and riparian re-vegetation were not implemented to the anticipated degree.

30. The 1997 RCS did not give full recognition to the importance of underground water or lakes. In this region flows are often perennial, and underground water has tended to be seen more as an agent. Integrated catchment management for lakes was apparently overlooked within the RCS document. This may be more a matter of expression than actuality.

31. Economic and recreational aspects of water aspirations did not gain sufficient consideration in the original RCS, although considerable recognition has been afforded in subsequent detailed strategies, in particular the Nutrient Management Strategy. A widening range of water assets and their values has entered the process through subsequent sub-activities or related activities, particularly underground water.

32. Flow deficits in regional rivers have left them *highly stressed*. This flow-based concern is centred on an over-use of dry season flows and the ensuing intense competition and detriment to environmental flows. The issue of flow-based stress extends to groundwater and lakes. Forward projection indicates possible exacerbation by climate change (notably rises in temperature) which will affect evaporation rates and possibly rainfall. These flow-based problems and trends are clearly perceived as one of the priority threats to aspirations for water assets.

33. Separate programs addressing water quality have focused on nutrients and salinity. There are now moves to re-integrate and take a wider view of water quality. This would appear to be a good move, not only because some catchment responses are common, but because priorities will be more comprehensively addressable and other aspects of quality will get a more appropriate consideration (e.g. bacteriological quality for health of drinking water supplies and recreational lakes). Such re-integration may need to more deliberately identify, link with, and develop the SEPP beneficial use schedule as part of the aspirational values pursued.



34. Considerable work is taking place on waterways condition. Condition is partly stabilised or recovering.' It is clear that strong values are attached to these assets.

Land and Sustainable Production

35. The 1997 RCS promulgated the 'Sustainable Production Program.' Its principal aim was "to increase production in the region while ensuring that resources... will support the needs of future generations." In assessing issues and impacts the Strategy considered:

- Soil characteristics (salinity, acidity, contamination, fertility, structural decline, erosion, waterlogging, eutrophication of waterways, and mass movement).
- Impacts of changed land use.
- Plant and animal pests.

36. Most of the issues identified against the soil category were ranked low to medium in terms of impact. The Strategy took an investigative tack by establishing a working group to explore research and information on soils issues. At the time of writing it appears that much of this work remains to be done.

37. The Corangamite region is one of diversity and opportunity and this is particularly reflected through changing land use opportunities and land management practice improvements. The CCMA Board has provided considerable input to the blue gum expansion program and raised-bed cropping initiative. It adheres to a philosophy designed to ensure changes in land use do not have adverse direct or indirect environmental and sustainability impacts. However, within the RCS this over-arching philosophy was not well articulated. Nor were there clear statements explaining how the CCMA would encourage those with the power to control land uses to act. Nor was there any attempt to quantify targets for new beneficial land uses.

38. It is noted that since the 1997 RCS several pest control strategies (published by the CCMA or covering the region) have been published. This pest management framework provides a support mechanism. The main strengths of the 1997 RCS (with respect to the way it addressed pest plants and animals) are:

- The Strategy demonstrates a commitment to ensuring the delivery of 'whole catchment' weed management programs, supporting community effort and integrating projects to achieve the maximum benefit on the ground.
- It consulted relevant stakeholders concerned with pest plants and animals and involved all levels of government (local, state and Commonwealth).
- Weed control strategies were supported by community-driven species action plans for serrated tussock, ragwort and gorse.
- An action plan for rabbits has been developed for the region in the last 3 years.
- The Weeds Action Plan and the Rabbit Action Plan have surpassed the RCS, because they are relatively easy to understand/read and useable; have clearly identified roles and responsibilities of stakeholders and interest groups; have been effective in achieving a sense of community ownership; are flexible and adaptable enough to accommodate changing circumstances (i.e. living documents); have been realistic, in terms of the budgets available to fund actions required to meet regional priorities; and have provided a key link between the major regional strategies that are now being worked on, though this was not a part of the original 1997 Strategy.

39. A key aspect of a holistic approach is integration, yet weed management was treated as a separate component within the 1997 RCS.

40. A decline in the level of resourcing for *pest management* activities continues a long-term trend despite increasing resources being made available for revegetation activities that are *directly threatened* by pest and weeds. This is inconsistent.



41. When funds are available the region does not directly support a well-targeted R & D program in relation to the social science aspects of pest management, other than *ad-hoc* projects.

Biodiversity

42. The 1997 RCS formulated its Biodiversity Conservation Program by relating catchment issues to biodiversity outcomes. Almost all of its activities were concerned with inter-agency coordination, strategy development, management planning, mapping, and community education. The main directions were:

- Protecting and reinstating habitat, through vegetation planning, retention and protection; wetlands and stream flow management; improved management of grassland communities; and reduction of environmental weeds.
- Species protection, through pest animal controls and annual Action Statements for listed species.
- Fire management of grasslands and heaths.

43. The RCS can list the following amongst its achievements:

- Acted as a source document for funding applications.
- Acted as a starting point for sub-ordinate plans.
- Assisted the establishment of biodiversity team within the CCMA.
- Establishment of Regional Native Vegetation Plan.
- New regional pest plant and pest animal strategies were developed.
- The survey and mapping of needle grass was a success.
- Regional waterway health strategy, nutrient management plan contributes to biodiversity outcomes.

44. Criticisms of the RCS include the following:

- It did not adequately define bio-diversity, its components, risks to biodiversity, or its relationship to regional NRM.
- It did not take a systems approach to biodiversity or link to other programs
- The focus was too agri-centric.
- Differences between nature conservation on private versus public land were not adequately addressed.
- It was difficult to see how identified threats related to each ecosystem.
- Implementation of the RCS has suffered from lack of a unified position amongst agencies at state and local levels on regional biodiversity conservation priorities.

45. These issues need to be considered in the new RCS:

- Need a better understanding of 'biodiversity assets'.
- Bio-regions need to be better understood.
- Need to make use of regional LGA maps of biodiversity assets and bioregional plans.
- Links between farm forestry, commercial forestry, agro-forestry and biodiversity conservation need to be better understood and promoted.
- There is a great need for biodiversity community education programs.
- Nutrient management and agricultural management should go hand-in-hand
- Pest management needs to be better integrated in native vegetation management.
- There is a need to integrate salinity on land and water bodies.
- Native grassland values need to be re-emphasized.
- Estuary management plans and coastal plans need to find a 'home'.



Monitoring and Evaluation

46. It was suggested that while the 1997 RCS did not lay out a clear reporting framework, this was now in place as a result of the development of sub-programs and Strategies. However, this could not be said to be universally applicable across all the action areas of the 1997 RCS.
47. It was considered that at least some of the outcomes and achievements of the RCS could be measured and monitored. However, groups dealing with biodiversity expressed the view that existing resources were inadequate for satisfactory monitoring.

Adequacy Against New Information and Arrangements

48. This Review discusses recent changes in arrangements for integrated catchment management that have been adopted at both Commonwealth and state level. It is clear that the demands on CMAs have now changed. Both jurisdictions have promulgated guidelines that are broadly consistent in terms of information base, asset identification and valuation, investment and prioritisation frameworks, monitoring, and reporting.
49. 'Capacity building' is an integral part of collaborative governance in natural resources management. However, there is concern that support mechanisms in this area are inadequate for meeting devolved roles and responsibilities. The need to establish mechanisms for optimal information management is a major issue for capacity building aims.
50. It is widely agreed that clarifying and reaching agreement about roles and responsibilities of all parties is essential for effective partnerships. Currently, confusion and lack of coordination act as significant impediments to the delivery of plans. It is being promulgated that clear contracts need be established to rectify these problems.

Areas for Improvement

51. The Resource Economics Unit (influenced by the consultancy project brief prepared by CCMA) will develop the new RCS in a way which:
- Adopts a simple and common framework of assessment, investment prioritisation and performance monitoring across all sectors.
 - Solicits, acts upon and re-juvenates grass-roots inputs.
 - Clarifies the linkages between different dimensions of catchment management (location, process, dynamics, socio-economics, governance).
 - Strengthens cross-institutional and multi-level relationships in Strategy formulation and implementation.
 - Recognises the existence of a well-developed organisation for involvement and implementation.
 - Establishes clear lines of commitment, accountability, reporting and evaluation.
52. The fact that integrated catchment management is multi-dimensional creates difficulties. ***This problem needs to be viewed in dimensions of asset group, space, values, time, process, and management measures.*** The inter-relations of such dimensions need to be seen and be part of the rationale of goal setting and decision-making. The original RCS was not strong in this department and it remains a challenge at the current point of progress.
53. The NAP and state models for RCSs, and statements by the Board chairman and staff of the CCMA stress that the RCS is the ***Region's Strategy***, not a corporate plan for the Authority. Other key agencies that hold accountable roles for natural resources management in the region stress similar outlooks. 'Higher' level processes of the state, such as the Victorian Strategies for River Health, SEPP, and Weeds Strategies, set guiding



principles and some beneficial uses (aspirational values) but delegate strongly to the RCS with respect to setting further and more specific aspirations on the ground. Higher-level processes essentially supportively bid the RCSs to take initiative.

54. Conflict resolution: some of the key issues identified in this regard depend on action through the statutory operational accountabilities of one or other of several 'regional' agencies/authorities, but commonly will need some partnership with other agencies, including the CCMA (firstly as broker, but also, as one such operator). Importantly, each of these lateral agencies also represents, and brings in, community stakeholders comprising part of the community with need for ownership in the RCS.
55. All of the high level processes referred to above are multi-objective in outlook: i.e. they expect a triple bottom line approach which pursues balanced economic, social and environmental goals and a healthy legacy for future generations in the catchment.



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ABBREVIATIONS

CALP Board	Catchment and Land Protection Board
CAT	Consultative Action Team
CFA	Country Fire Authority
CLPR	Centre for Land Protection Research
CCMA	Corangamite Catchment Management Authority
CMA	Catchment Management Authority
CPA	Central Planning Authority
CRSIG	Corangamite Region Salinity Implementation Group
CSIRO	Commonwealth Scientific and Industrial Research Organisation
CVPC	Central Victorian Plantation Committee
DNRE	Department of Natural Resources and Environment
EPA	Environmental Protection Authority
FFF	Flora, Fauna and Fisheries
FFG	Flora and Fauna Guarantee Act 1988
GAV	Greening Australia Victoria
GERG	Grassy Ecosystem Reference Group
GIS	Geographic Information Systems
GRDC	Grains Research Development Corporation
ha	hectares
km	kilometres
mg/L	milligrams per litre
ML	megalitres (1 million litres)
mm	millimetres
NAP	National Action Plan for Salinity and Water Quality
NHT	Natural Heritage Trust
NRE	Natural Resources and Environment
NVR	Native Vegetation Retention
PMIS	Pest Management Information System
PMP	Property Management Planning
PTC	Public Transport Corporation
RAP	Rabbit Action Plan
RCD	Rabbit Calicivirus Disease
RCS	Regional Catchment Strategy
RMUs	Resource Management Units
SALMIC	Sustainable Agriculture and Land Management Implementation Committee
SEPP	State Environment Protection Policies
SWRS	South West Ragwort Strategy
VFF	Victorian Farmers Federation
VPC	Victorian Plantations Corporation
WAP	Weed Action Plan
WMIC	Waterway Management Implementation Committee



1. INTEGRATED CATCHMENT MANAGEMENT IN VICTORIA

In Victoria, the creation of Catchment Management Authorities (CMAs) in 1997, responsible for the planning and implementation of a Regional Catchment Strategy (RCS), was a first major step towards a statewide strategic approach in Natural Resources Management.

Nine CMAs, including the Corangamite Catchment Management Authority, were established to create a 'whole of catchment' approach to NRM. CMAs were established in the belief that "by having one peak body responsible for integrating all NRM issues with an appropriate organisational structure, the key elements of catchment planning ... can be managed more effectively." The Victorian catchment authorities enjoy formal structures, power and funding through state government resources provided through the Regional Management Plan (RMP) process. The Commonwealth assists through programs such as the National Action Plan for Salinity and Water Quality.

Five principles govern the way in which catchment management is implemented throughout Victoria. These are: community empowerment, integrated management, targeted investment, accountability and administrative efficiency. These principles follow the philosophy integrated catchment management that is embraced nationally.

The basic structure of a CMA is designed to foster community involvement in decision-making. This is achieved through:

- The Board – directly responsible for strategic direction (priority setting, evaluation, monitoring and identification of opportunities)
- Implementation Committees – designed to continue the work of pre-existing resource management bodies. ICs act as conduits for local community input, and are responsible for the development of detailed work programs, and for overseeing on-ground program delivery.
- The Staff – who support the Board and ICs, oversee development and implementation of programs, and liaise with the community, government and other catchment organisations.

CMAs are primarily responsible for **developing and coordinating the implementation of Regional Catchment Strategies (RCSs)**. This is done in partnership with other key stakeholders. They provide **advice to Government on resourcing priorities** in the region, monitor and report catchment management activities, and play a part in waterway and floodplain-related service delivery. These organisations access both government and regional resources in order to undertake a strategic catchment management approach and must **facilitate partnerships** at the regional level with other key stakeholders.

These include state government agencies, local government, rural water authorities and local community groups and members. On a broader level, other stakeholders include the Victorian Catchment Management Council (VCMC), the statewide advisory body for land and water condition, which has strong networks to CMAs. The state government also has a critical role, setting statewide policy and strategic directions for NRM and environmental protection.

Regional Management Plans (RMPs) are an integral component of the Victorian catchment management arrangement. RCSs provide an overarching plan for implementation at the local regional level. However, a three-year rolling RMP is designed to translate integrated planning into integrated management – what will be delivered, by whom, when, how and at what cost. RMPs, in essence, provide a detailed investment strategy for the use of all NRM funding. They are also important in clearly setting out the responsibilities of relevant agencies and stakeholders. These plans are developed by CMAs in collaboration with all other government funded organisations in the region. Communities are also involved in this process through ICs.



The Victorian government believes that this catchment management approach will play an important role in meeting the following four objectives underpinning its broader policy agenda: responsible financial management; growing the whole state; delivering improved services; and restoring democracy.

2. OBJECTIVES OF THE REVIEW

The aim of this document is to review the 1997 Corangamite Regional Catchment Strategy (RCS) in order to evaluate its strengths and weaknesses against its:

- Vision
- Objectives
- Scope
- Information base
- Priorities
- Directions and consistency with other agencies involved in natural resources management (NRM)
- Up-take within the community
- Progress, achievements and extent of implementation

in order to:

- Assess the adequacy of the existing RCS in the light of new information and arrangements, and
- Identify gaps and areas of improvement for the future RCS

The Review has been structured around the recommended format given in *Guidelines for Review of Regional Catchment Strategies* (Department of Natural Resources and Environment, 2002).

3. METHODOLOGY

The Review was conducted between 11 February and 26 March 2002, by a team comprising:

- Mr Jonathan Thomas, Director Resource Economics Unit
- Dr David Bennett, NRM Pty Ltd
- Mr Ross Colliver, Training and Education
- Dr Jay Gomboso, Gecko Ecologico Pty Ltd
- Ms Catherine Johnson, Australian Research Centre for Water in Society, CSIRO Land & Water
- Mr Brian Sadler, Water Policy Services Pty Ltd
- Dr Geoffrey Syme, Australian Research Centre for Water in Society, CSIRO Land & Water

The review process included desk research, a series of meetings, workshops, telephone interviews and a self-assessment questionnaire for community groups. The schedule of meetings appears in Appendix A.

4. THE VISION OF THE 1997 RCS

The current RCS was developed early in 1997 by the Corangamite Catchment and Land Protection Board, just prior to the formation on July 1st 1997 of the current Catchment Management Authority, for which it provided a "*blueprint for achieving integration and delivery of the land and water management programs in the Region into the next century.*" (Preface to the RCS, by the Hon Marie Tehan MP, Minister for Conservation and Land Management and Hon. Patrick McNamara MP, Minister for Agriculture and Resources).

It is notable that the Chairman and Executive Officer of the CCLPB remain as the Chair and Chief Executive Officer, respectively, of the CCMA. This continuity in leadership has seen a steady progression of the Authority's functions and evolution of policies and practices during the time horizon of the 1997 Strategy.



5. OBJECTIVES OF THE 1997 RCS

The 1997 RCS expressed the objective of seeing

"the Corangamite community managing land and water resources based on an understanding of and a commitment to sustainable use, conservation and rehabilitation of those resources."

6. SCOPE OF THE 1997 RCS

6.1 Key Areas

The 1997 RCS encompassed many, but not all, aspects of natural resources management within the region. Topics covered in the Strategy included:

- Soil and catchment management, (clean green production, management of pest animals and plants, natural disasters).
- Water resources (water quality and waterway management, floodplain management, groundwater and river health).
- Biodiversity conservation (habitat protection, species protection, and fire management).
- Catchment amenity (waste control and access to natural areas).

In addition to the four RCS Programs addressing these fields, two more programs dealt with *Community Education* and *Monitoring & Evaluation*. Finally, six *Focus Activities* were highlighted. These were drawn from the various programs, and formed the key action items for the period from 1997 to 2000. In order corresponding to the program listing above, they were:

- Pest plant control
- Pest animal control
- Soil management
- Water quality enhancement
- Grasslands conservation
- Municipal Cooperation

A widening of scope has included logical dissection of problems and plans into actionable specifics such as controls for rabbits, animal and plant pests, nutrient management and salinity plans, specific groundwater plans, floodplain management strategies and flow management activities. These were partly in direct response to state programs and partly local need. These were not all necessarily under the initiation of the RCS, and certainly have involved a range of accountable bodies beyond the CCMA. However, at least implicitly, they were under the logical umbrella of the RCS and its implied goals.

Comments received at interview, particularly from community people, included expressed perplexity at the plethora of actions and accountabilities. This, of course, is a reality of integrated catchment management and one of its challenges.

6.2 Supporting Strategies

Prior to the formation of the CALP Board there were already a number of programs operating, which were now brought under the umbrella of the new Strategy. These included:

- Corangamite Salinity Implementation Group
- Woody Yaloak Catchment Landcare Project
- Swan Bay Integrated Catchment Management Project
- Consultative Action Team (CAT: for waterway management)
- A number of farm forestry support activities including the *Corangamite Farm Forestry Project*, the Central Victorian Regional Plantation Committee, and the Otway Agroforestry Network
- The Serrated Tussock Working Party and the Ragwort Reference Group
- The Strategy for Managing Salinity in the Corangamite Region
- Corangamite Catchment Nutrient Management Working Group



Following its publication in 1997 the RCS spawned several major initiatives dealing with particular aspects of natural resources management. These included:

- Formation of the Sustainable Agriculture and Land Management Implementation Committee
- Formation of the Waterways Implementation Committee
- The South West Ragwort Strategy (1999); developed in association with the DNRE and the Glenelg Hopkins CMA
- Corangamite Rabbit Action Plan (2000)
- Corangamite Native Vegetation Plan (2001)
- Corangamite Waterway Health Strategy (2001)
- Corangamite Regional Nutrient Management Plan (2000)
- Review of the Corangamite Salinity Strategy (2002)

Interviewees were asked whether they considered that the 1997 Strategy provided good linkages between sub-strategies, plans and reports. The overall response was that integration had been weak. For example, groups that were involved in pest management activities considered that other strategies do not sufficiently recognise the threats that pest animals and plants have on many of the solutions they put forward to manage issues (i.e. biodiversity, salinity, nutrient management, farm forestry, vegetation management).

6.3 Information Base

The NRM information base for the 1997 RCS can only be described as elementary and fragmented.

The past few years have seen major strides in rectifying this deficiency by both CCMA and DNRE. The Corangamite GIS Atlas developed by DNRE and research work undertaken at the research centre at Bendigo has considerably expanded the range of electronic data sets. However, at the time of writing the DNRE website did not contain suitable data for this region.

The consultants have found it difficult to find adequate, comprehensive data sets. For example, soils data is patchy and lacking in sufficient dimensions to properly describe soils condition across the catchment. At the time of writing, water quality trend data have not been obtained. It is notable in this regard that the data for water quality supplied by Victoria to the National Land and Water Resources Audit, indicated that trend data were not available for the four AWRC catchments that comprise the Corangamite region. Information on land use and land management practices is not well integrated.

6.4 Establishment of Priorities

The approach set out in the 1997 RCS is essentially one of pragmatic and incremental improvement. The development of constituent programs and projects is explained in terms of identified issues and actions. Table 1 summarises the assessment of issues across four of the six CCMA programs. Issues were not identified for the other programs, *Community Education* and *Monitoring & Evaluation*, although actions were developed for these.

A system for rating priority issues was developed based on three criteria:

- Level of impact of the issue.
- Whether existing efforts were adequate for dealing with the issue.
- Whether a benefit-cost analysis would be likely to demonstrate (or had already demonstrated) economic efficiency of projects addressing the issue.

This system succeeded in differentiating issues in terms of the amount of effort that should be given to each, and the number and variety of actions to be developed for each issue. However, the underlying rationale was not made very transparent in the Strategy document in the sense that it was difficult to trace the links between priority ranking and *Focus Activities*. Some important actions emerged without a 'parent' issue: for example (i)



community action and (ii) natural disasters. Conversely, the 'biodiversity' issue was not disaggregated in a similar fashion to sustainable production and water resources, and thus it became the sole parent of many proposed actions, amongst which no clear prioritisation had been established.

It was also difficult in the written document to perceive the linkages between issues and actions across the program areas. Thus, the document itself gives relatively little sense of the pressures for land use change, the biophysical processes that link catchment land use and water quality and quantity, or how the management of agricultural, forest and urban land is impacting on biodiversity.

Nevertheless, the 1997 RCS did establish clear lines of future development in catchment management for the region:

- Issues that received a strong response in terms of strategic development included (i) integration of natural resources management with municipal planning policies and practices, (ii) community action, (iii) pest animals and plants and (iv) enhancement of biodiversity provisions.
- Water resources received selective additional emphasis, particularly in relation to (i) flow management, (ii) nutrients and eutrophication, (iii) turbidity, (iv) waterway health and (v) groundwater.
- Issues, which were kept at previous levels of activity, included (i) salinity management and (ii) waterlogging, with more emphasis being sought on hot-spot identification and improved process knowledge.
- A relatively low level of strategic activity was chosen for several of the soil-related issues, largely because of perceived low impact of the particular issues.

**TABLE 1:
ISSUES THREATENING NATURAL RESOURCES IN EACH CCMA PROGRAM AREA AND PRINCIPAL
ACTIONS IDENTIFIED IN THE 1997 RCS**

ISSUE	SUSTAINABLE PRODUCTION	BIODIVERSITY CONSERVATION	CATCHMENT AMENITY	WATER RESOURCES	PRINCIPAL ACTIONS IDENTIFIED
- CHANGED LAND USE	* H/N/Y	*H/N/Y	*H/N/Y	*H/N/Y	1. Cooperate with industry and regional development agencies in achieving sustainable development
					2. Establish a formal process with municipalities for incorporating the RCS.
					3. Assist in planning reviews
					4. Coordinator for joint municipal initiatives
					5. Ensure planning and development decisions consider streamflow impacts
					6. Develop local drainage planning controls for containing environmental impact.



ISSUE	SUSTAINABLE PRODUCTION	BIODIVERSITY CONSERVATION	CATCHMENT AMENITY	WATER RESOURCES	PRINCIPAL ACTIONS IDENTIFIED
- COMMUNITY ACTION*					1. Encourage Landcare groups in project development and funding 2. Facilitate networking
- NATURAL DISASTERS*					1. Review response strategies for fire, floods and drought
- CHANGED FLOWS		*M/N/Y		*M/N/Y	1. Bulk water entitlements to consider stream flow management plans 2. Enhance stream flow monitoring 3. Develop a regional water quality and implementation strategy. 4. Catchment management plans for 14 proclaimed water domestic water catchment areas 5. Link with property management plans and Sustainable production program. 6. Regional guidelines for drainage planning.
- FLOODING				*L/N/Y	
- WATERLOGGING	*L/N/?				
- WATER SALINISATION		*M/Y/Y	*M/Y/Y	*M/Y/?	
- EUTROPHICATION	*M/N/Y	*H/N/Y	*H/N/Y	*H/N/Y	
- TURBIDITY				*M/N/Y	
- WATERWAY HEALTH		*M/N/Y	*M/N/Y	*M/N/Y	1. Establish a waterway management group for stability and restoration projects. 2. Revegetate 20% of unprotected riparian zones over 3 years. 3. Educate private and public land managers on benefits of riparian revegetation (including DNRE Index) 4. Review waterway frontage values, threats and assess license conditions.
- WETLANDS		*M/N/Y		*M/N/Y	
- GROUNDWATER					
QUANTITY & QUALITY		*H/N/Y		*H/N/?	
- WIND EROSION	*L/N/Y				
- WATER EROSION	*H/N/Y				1. Working group appointed to develop and implement a soil management plan. 2. Landowners to develop property management plans 3. Plans to be developed for proclaimed water supply catchments.



ISSUE	SUSTAINABLE PRODUCTION	BIODIVERSITY CONSERVATION	CATCHMENT AMENITY	WATER RESOURCES	PRINCIPAL ACTIONS IDENTIFIED
					4. Promote commercial tree planting, subject to remnant habitat needs and feral pigs
					5. Codes of practice.
					6. Advocate appropriate taxation incentives
- MASS MOVEMENT	*L/?/V				
- SOIL CONTAMINATION	*L/?/Y				
- SOIL STRUCTURE DECLINE	*L/N/Y				
- SOIL FERTILITY	*L/N/Y				
- SOIL ACIDITY	* L/N/?				
- DRYLAND SALINITY	*M/Y/Y	*M/Y/Y			1. Continue the Corangamite Salinity strategy
					2. Undertake B/C analysis of salinity control options.
					3. Models to pinpoint hotspots.
					4. Model the waterlogging-discharge process.
					5. Refer S-W Research Review for further priorities
- PEST ANIMALS	*H/N/Y	*H/N/Y			1. PIMS monitoring project on post-Calici Virus rabbit dynamics
					2. Support Good Neighbour Program
					3. Support fox control projects, and facilitators
					4. Enforcement & extension procedures for foxes and rabbits
- PEST PLANTS	*H/N/V	*H/N/Y	*H/N/Y	*H/N/Y	1. Strategies for serrated tussock and ragwort
					2. Local strategies for priority weeds
					3. Community education
					4. Enforcement procedures
					5. Monitor minor problem weeds
					6. Support use of PIMS (GIS application)
					7. Develop B/C analysis process for pest plant control
					8. Review noxious weeds list
- BIODIVERSITY REDUCTION				*H/N/Y	

Notes:

need to insert text regarding M/Y/Y and B/C

H/N/Y = High impact/ insufficient current efforts/ and positive B/C ratios are realisable

L/Y/Y = Low impact/current efforts are sufficient/ and positive B/C ratios are realisable

V = variable

? indicates not known

* these topics were not identified as 'issues', but actions were identified



7. DIRECTIONS AND CONSISTENCY WITH OTHER NRM AGENCIES

7.1 Overview of Institutional Context

The RCS identified a number of key groups holding responsibilities for existing management and resource allocation, which are re-produced in Table 2. All of these groups still exist, though there have been some fundamental changes within the state government departments since 1997, and the CCMA has itself instituted new groups, particularly the SALM IC and WMIC.

The development and consolidation of relationships was considered a positive aspect of the RCS. The RCS was seen to have reinforced the need to raise awareness and broaden the scope of stakeholder participation in the Corangamite region. The concerted move to form collaborative relationships between the range of government bodies and the regional community was offered as a beneficial aspect of the RCS. Further, the suggestion was made that the RCS served as a catalyst for clarifying roles and responsibilities.

The most noticeable omission in the 1997 RCS is any mention of the then recently formed Natural Heritage Trust, or even its antecedent Commonwealth environment programs. The NHT soon became a prime source of funds for natural resource and environmental projects. The omission is telling because it is symptomatic of a de-emphasis of organisational strategy and financial targeting.

It is also notable that the 1997 RCS was content to describe what each of these 'partner' groups was doing in terms of environmental improvement projects, without saying how the *total* activities and policies of each was impacting on each other, and on natural resources and the environment.

**TABLE 2:
STAKEHOLDER GROUPS IDENTIFIED IN THE 1997 RCS**

TYPE OF GROUP	EXAMPLES
Community groups and individuals	Individual Landowners Landcare groups Salinity implementation group Woody Yaloak Project Swan Bay ICM Project
Other Groups	Consultative Action Team (CAT) for Waterways Corangamite Farm Forestry Project Central Victorian Regional Plantation Committee Otway Agroforestry Network Serrated Tussock Working Party Ragwort Reference Group Corangamite Catchment Nutrient Management Working Group Greening Australia Victorian Farmers Federation Coastal Boards CALP Board
State government	Environment Protection Agency Department of Infrastructure Department of Natural Resources & Environment Vic Roads and Public Transport Corporation Country Fire Authority
Water Authorities	Southern Rural Water Authority Barwon Region Water Authority Central Highlands region Water Authority Otway Region Water Authority South West Water Authority
Municipalities	City of Ballarat Greater Geelong City Queenscliffe Borough Colac Otway Shire Golden Plains Shire Surf Coast Shire Corangamite Shire Moorabool Shire Moyne Shire



7.2 Interactions with the Commonwealth Government

Opinions about the relationship between the CCMA and the Commonwealth government were divided. On the one hand there was said to be little interaction as state government acted as a point of liaison between the two parties. The Victorian government for reasons of coordination favoured this. Conversely, it was reported that direct working relations were being developed and consolidated through NAP processes. This, in turn, was favoured at a regional level where it was considered important to develop more frequent and open relations with the Commonwealth government. Increasing the Federal government's understanding of the CCMA and their role and responsibilities was considered particularly important.

Differing opinions can be seen to reflect the shifting relationships between the state and Commonwealth governments and the CMAs at this time. Direct contact between CMAs and the Commonwealth has traditionally been limited by the mediatory role of the state government. However, the introduction of the NAP has served to change past distant relations in favour of more immediate interactions. It was believed that the highly political nature of interactions between state and Federal governments (coupled with the desire of states to maintain their mediatory role) often meant the CCMA was placed in a position in which they were 'meat in the sandwich.'

While relations between the Commonwealth and the CCMA were considered to be favourable overall, it was noted there was some difference in ideas about implementation. It was reported that while the policies and objectives were aligned, there were marked differences in beliefs about methods for achieving shared aims. The Commonwealth government, as evidenced by NHT and NAP, favours an approach in which funds are directed towards specific on-ground projects. This is also considered important by the CCMA, however it was seen to be insufficient without a 'macro' view of what was needed for implementation. Understanding the social and economic context of a region was considered particularly important. The failure to provide resources and support towards drivers for on-ground programs was therefore seen as a source of frustration for the Authority.

7.3 Interactions with State Government

Interactions between the state government and the CCMA were qualified according to state government at policy level, and at a regional level. Regional interactions mostly involve those between the CCMA and the DNRE.

Relations between the CCMA and the policy level were considered favourable. It was reported that regular contact is maintained, as the CCMA is required to advise state government about both regional issues and the organisation's overall state of affairs. However, it was noted that there was a large gap between the two bodies – Head Office is responsible for policy decision-making whilst the CCMA are responsible for implementation of these policies. Several issues were reported to have arisen as a consequence of this situation. A number of regional stakeholders perceive the Authority to be disadvantaged by its position. It was noted that while the CCMA was given responsibility for implementing state policies, policy decision makers were removed from the actual realities policy implementation. Hence, although policy rhetoric was compelling, the Authority's ability to meet objectives (and in some instances, the objectives themselves), was often questionable.

Supportive mechanisms for the CCMA to meet policy objectives were reported to be inadequate. The lack of an enabling statewide framework for implementation of RCSs was a primary concern. The extremely heavy workload of CCMA personnel was also seen as a major concern, compromising ability to meet all delegated responsibilities. It was likewise noted that it severely constrained opportunity for considered thought and reflection before moving ahead with issues. Hence, the CCMA was seen to be in a 'Catch 22' situation - attracting blame at a regional level for difficulties with implementation, and from state government itself for 'failures' in meeting their responsibilities.'



At a regional level, the relationship between the Authority and the state government was reported to be in a state of flux. The creation of the CMAs fundamentally changed the role and responsibilities of the DNRE in NRM in the region, and all agreed that interactions between the two parties were characterised by confusion and tension.

The roles and responsibilities for NRM of each party were perceived to be unclear and communications were reported as insufficient. It was also reported that few DNRE personnel had any real faith or trust in the RCS as a guiding document for NRM in the region. As a result, few DNRE initiatives were *strategically* aligned with the RCS and NRM programs tended to be *ad hoc* throughout the region.

It was reported an attitude of 'us and them' impeded collaboration and cooperation between CCMA and DNRE regional staff. These problems are much more to do with difficult institutional arrangements than the officers themselves.

The issue of funding was also reported to be a major concern. DNRE has suffered from budgetary stresses during a period of the Authority's expansion. Accordingly, uncertainty about the ongoing provision of adequate funds has been a significant barrier to the development of collaborative relations.

In the view of the consultant these tensions are to be expected given the changing roles of DNRE and the CCMA. It should be emphasised that most respondents professed a genuine willingness and desire to form collaborative relations in implementing programs. Individual relationships are typically positive and productive - past ties and working relationships between individuals were seen to create strong bonds capable of rising above obstacles and difficulties. This was demonstrated by a number of excellent working collaborative projects - for example, floodplain management and implementation of the nutrient management program. It was believed there was huge potential, despite underlying tensions and misperceptions.

However, it remains important that roles are defined, clarified and re-stated. This has been recognised and encouraging steps are being taken. It is clearly articulated in the 1997 RCS that the DNRE is responsible for providing support and technical expertise to the CCMA. The renewal of the RCS presents an opportunity to consolidate, and to recognise the very important role and contribution that both the Authority and the DNRE must make at regional level. Respondents agreed that collaborative roles and processes for planning and implementing the RCS must be articulated so that it becomes, for *both of the two responsible agencies*, the guiding document for NRM in the region.

7.4 Interactions between the CCMA and local government

Following publication of the 1997 RCS the CCMA provided input into local government Planning Schemes, and partnerships have been developed with local authorities in the fields of stormwater management, floodplain management and Landcare support. It was widely agreed that much had been done to develop stronger relations in recent times.

Fostering strong relationships with local government bodies was considered a priority issue and it was recognised that concerted efforts were being made in this direction. It was considered that good links had been established with many local municipalities, particularly through ties with local government environmental officers. The point was made that much had been done in a relatively short period of time, however it was believed there was wide scope for improvement in this area.

There were several reported barriers to further developing and consolidating relationships with local government entities. A number of municipalities exist within the Corangamite Catchment area, some of which have an urban focus and agenda. Hence, the CCMA needed to gain support and interest in the development of NRM partnerships from nine individual local government bodies - an evidently challenging task. Limited local government resources



presented further difficulties in this area. It was reported, however, that strategic and proactive moves had been made in this area, including the development of a relationship with the Municipal Association of Victoria to facilitate coordination and collaboration between the the Authority and local governments in the region.

Cross-jurisdictional authority, and indeed confusion about who had authority in CCMA and local government partnerships, was a major concern. It was recognised that it was extremely important for both parties to work collaboratively. Local government support and statutory power was reported to be critical to the CCMA in terms of implementation of RCS strategies. Local government, in turn, are required by state government to work within the RCS framework. Hence, it was asserted that it was imperative the Authority have input into local government planning processes, and that local government similarly have opportunity for input into RCS planning processes. As yet, however, it was considered effective processes had not been established to facilitate this process.

It was reported that strategic links had been formed with the Department of Infrastructure to formulate policy that would require local government to act on the RCS. This was seen as one way to address the issue of the limited statutory powers of CMAs. It was noted, however, that positive relations were not fostered if parties felt 'forced' to collaborate. It was believed that clear legislative arrangements clarifying and bounding the role of the CMAs needed to be established if partnership relations were to be successful. It was also suggested that raising the awareness of local government about the benefits of collaborative efforts for long-term RCS programs - especially given limited funds - was a necessary step to gaining support.

7.5 Interaction with the community as a whole: influence of the 1998 Tariff

The way in which the CCMA is funded has the potential to raise awareness in the community as a whole about its existence and activities. The Catchment Tariff of 1998 required that approximately 160,000 assessment notices be distributed across the region. With a base charge of \$32.00 a 95 per cent return was achieved, but CCMA staff, Board Members and Implementation Committees incurred a great deal of stress and the process required an enormous amount of effort from all concerned.

The tariff process became a massive exercise in community education and it did raise awareness. It also helped to create an increased sense of community ownership in relation to catchment issues, which was demonstrated by the fact that 3 reprints of the Authority's Annual Report were needed to help satisfy enquiries.

Respondents reported that the introduction of the tariff for a time raised awareness as the regional community were being directly taxed for funds to go to the CCMA. However, it was pointed out such 'awareness raising' was more in the nature of negative reaction to an unpopular levy. It was believed that once the levy was abolished, public 'interest' in the CCMA subsided once more. And it is true that after the tariff was abolished there were few requests for copies of the Annual Report.

8. UPTAKE WITHIN THE COMMUNITY

8.1 Familiarity

Familiarity with the Corangamite RCS was very much dependent upon an individual's role and responsibilities. Most respondents claimed to have a good overall understanding of the RCS, although they were evidently more familiar with their particular field of expertise. State government knowledge about the RCS varied according to whether an individual was employed at a central or regional level. At the central level understanding of the RCS was more of a broad nature. There was greater regional awareness at the regional level where individuals were involved in the Corangamite RCS as part of their work commitment. General community members were least familiar with details of the RCS.



Poor general awareness was identified as a weakness in RCS initiatives. It was reported that knowledge and understanding about both the CCMA and the RCS were either minimal or non-existent outside CCMA/DNRE and Landcare circles. It was asserted that awareness raising strategies, firstly, needed to target the entire Corangamite Catchment – the suggestion was made that awareness outside of Colac, the base of the CCMA, was limited. Furthermore, This was seen to significantly impede the effectiveness of the RCS as a guiding document for the region. Firstly, it was asserted that lack of awareness considerably constrained the scope of participation in initiatives. Moreover, it was reported that few NRM programs within the region were strategically aligned with the RCS. Hence, it was maintained that NRM occurred in a primarily disjointed manner rather than as part of a coordinated effort within the RCS framework. Lack of awareness was also seen to limit support for programs – for example, by failing to attract ‘targeted investment’ into initiatives, especially from potentially valuable sources such as corporate organisations in the urbanised areas of the catchment.

The need to develop strategic and effective awareness raising strategies was consequently considered a priority issue. Current initiatives in this area were noted, however were generally seen as little more than a ‘PR’ campaign. It was believed that mere provision of information was insufficient – rather, it was asserted strategies were needed that made an RCS relevant for all stakeholders. Pointing out the personal and environmental benefits for all, of wider participation in initiatives, was identified as a critical aspect of awareness raising. This included the general public, as well as bodies such as local government, other government bodies, industry groups and corporate organisations.

The development of effective strategies for raising community awareness was reported as a particular need. Community awareness about the CCMA and the RCS was seen as limited to those already involved in NRM initiatives. From a community perspective, the Authority needed to ensure its definition of ‘community’ expanded beyond just that of ‘landholders.’ Raising the awareness of urban regional residents was considered a priority given they comprise 70-80 per cent of the population in the catchment. Concerns were also reported about limited awareness amongst landholders themselves. It was suggested that landholders (who form a critical part of NRM in the region) had limited understanding of the CCMA, often perceiving it to be ‘just another bureaucratic layer.’ Few were reported to have understanding about the RCS. This was seen to have serious implications for coordinating and integrating their NRM activities within the RCS.

Raising community awareness was seen as an essential prelude to fostering community participation in NRM initiatives. Community involvement and commitment to NRM is a specific objective of the RCS, however inadequate mechanisms towards this end were cited as a key downfall of the RCS. Indeed, it was reported that while funds were available for NRM initiatives, the community was failing to utilise them. Increasing the role of the community at all levels and stages of the planning and implementation of NRM programs was therefore seen as a major concern for the CCMA.

Currently, it is reported that community consultation mostly occurs through the medium of Implementation Committees (ICs). IC members encompass a range of stakeholders, and provide a point of liaison between the CCMA, other catchment bodies, and the community. They are also a means for the Authority to obtain stakeholder input into RCS policies and practices. However, most interviewees involved in an IC reported feeling frustrated about a failure to clearly articulate the roles and responsibilities of members. In addition, there was a perceived lack of openness and transparency about CMA policies and decision-making processes at the community level. It was also believed that processes for ‘tackling hard issues’ must be established if ICs were to successfully meet their responsibilities.

Despite difficulties, ICs are considered a positive move towards community consultation and engagement. However, it was asserted they were inadequate in themselves for meeting needs in this area. It was reported that ICs tended to attract the ‘usual community players’,



hence overlooking and excluding a vast proportion of the community population. Moreover, they were not considered to be in any way a 'comprehensive' means of consulting and engaging community residents throughout the region. Finding ways to increase both the numbers and scope of community participation in NRM initiatives was therefore cited as a critical issue for the CCMA.

While gaining community involvement and commitment to NRM was well recognised as an important area for improvement in the RCS, the difficulties of meeting these objectives were equally acknowledged. Raising awareness by educating the community about the CCMA and NRM and their relevance and importance for all members of the region was seen as a critical first step. Ensuring all members of the region have ready access to the Colac-based CMA was also considered important.

These moves were seen to be inadequate without a good understanding of the social barriers to community participation - time and resource constraints of community members, for example, were noted as key issues. Undertaking a comprehensive social investigation of the region was therefore widely supported. Moreover, building community capacity through training and knowledge and skills building was also considered necessary for effective participation. However, the point was made that if strategies were to be effective, it must be ensured they are appropriate and relevant according to community needs and values.

8.2 CCMA interactions with the general community

There was wide recognition that interactions with the general public were minimal. Indeed, many believed that if questioned about the CCMA, the typical response of community residents would be, "Who?"

Community engagement was considered to be generally poor. This was linked with poor awareness of the CCMA and RCS initiatives. There was reported to be areas of targeted consultation and community involvement - Implementation Committees provided a point for community consultation and participation, and specific programs (for example, waterways management) were reported to have good levels of community engagement. For the most part, however, community consultation and engagement processes were seen as limited, and involving the 'usual players.'

It was believed much more must be done to raise the profile of the CCMA and NRM initiatives, as well as to broaden the scope of community involvement in NRM programs. This included establishing consultation processes that gave opportunity for everyone to have input into plans and programs, and fostering 'grass roots action'. This was linked to the need to educate and build the capacity of the community to mobilise and support their involvement in NRM. Demystifying the 'rural/urban' distinction and engaging the urban population was seen as an important issue. It was noted, however, that the CCMA capacity to engage the general public was fraught with difficulties - engaging the general community is recognised as particularly challenging. It was suggested that this is not helped by the fact that the Authority's personnel number about 20 in a region with a population of some 300,000 people.

8.3 CCMA interaction with Landcare, other catchment and community groups

8.3.1 Responses to SHEF Questionnaire and Telephone interviews

It was well recognised that Landcare groups received particular attention from the CCMA. The development of productive relationships with Landcare groups was considered a priority given they play a primary role in the implementation of NRM projects in the catchment. For this reason, it was reported that Landcare groups received a great deal of support from the Authority. This included funding for on-ground works and Landcare co-ordinators, strengthening networks, and advice and help in completing funding applications.

While relationships between the CCMA and Landcare groups were generally considered to be among the strongest and most successful of the Authority's interactions with other catchment bodies, they were nonetheless considered a developing area. A key issue raised was taking a



more strategic and proactive approach in coordinating Landcare groups and establishing (wider) collaborative relations. Support was reported to be somewhat erratic, reactive, and directed mostly towards the larger and stronger groups. It was also believed the organization tended to be 'Colac-centric,' thereby overlooking groups in other parts of the region.

A number of suggestions were forwarded for improving collaborative relations with Landcare organisations. CCMA support for Landcare groups, while helpful, was clearly considered inadequate. Rather, it was asserted strategic planning was needed for forming wide supportive partnerships to effect NRM projects. Strategic capacity building was also considered critical, not only for effective implementation of NRM programs, but also for widening community involvement in Landcare projects. It was observed that the establishment of CCMA extension offices strategically situated outside Colac would be a positive move. It would go some way towards fostering relations with Landcare participants (as well as with other community members), given the large area of the region.

Issues associated with education and awareness raising were seen to be in need of attention in order to achieve RCS objectives. It was believed that many Landcare participants were confused about the role of the CCMA, often unaware of any distinction between them and the DNRE. Indeed, it was asserted they were often simply viewed as a potential source of funds. Hence, it was considered important to clarify roles and responsibilities and means of establishing mutually beneficial relationships to strategically implement the RCS.

The need to educate stakeholders about bureaucratic and administrative processes was also seen as important. It was reported Landcare participants were often resentful about perceived excessive administrative demands and 'delayed decision-making by the CCMA.' Alternately, it was suggested that the view that the Authority was 'just another bureaucratic layer' meant funds might be sourced independently from the NHT, which was at least a 'known enemy.' Support in applications for funding may act to slightly counter this, however it was believed Landcare groups needed to be clear about the CCMA's responsibilities in meeting government requirements.

Relations with other catchment groups were generally considered weak. However, a number of explanations were offered for this state of affairs. It was pointed out that CCMA resources were limited, and for strategic purposes it was more effective to build on existing networks which were known to be strong and developing professionally. It was also noted that it was politically dangerous to establish links with the more 'radical' groups that existed in the region. It was nonetheless acknowledged that this was an area for improvement. The observation was also made that there were serious political implications of fostering the potential domination of Landcare groups to conduct NRM in the region.

There was little reported interaction with community groups in the Corangamite Catchment, although it was asserted this was a targeted area for improvement. It was acknowledged that general community awareness of the CCMA was poor. Awareness raising was therefore the current focus for efforts by the Authority. It was reported interactions mostly involved CCMA representatives giving presentations to community groups to explain who they are and what they do. It was acknowledged this was an important move, as community support and involvement is critical to the success of the RCS.

8.3.2 Suggestions for improvement

Respondents pointed that 85-95 per cent of catchment is privately owned. Therefore Landcare represents best vehicle to drive change. Specific suggestions for improvement in the ways Landcare operates in the region included the following.

- There is a need to re-think, "what is the best strategic way to do Landcare work on the ground."
- If a well-functioning hierarchy is not in place and supported, then Landcare will not be effective.



- Landcare groups need to have some autonomy in where to spend the money, as priorities change within the course of working on a project.
- It is important for CCMA to foster relationships between major commercial supporters and Landcare groups e.g. income support, in-kind, education, technology.
- The CCMA needs to take on the role of breaking down the rural/urban (we/them) barriers. There is potential for Landcare to be a model to engage urban communities more. There is a need to educate community in NRM and understand that all sectors of society contribute to the cause of the natural resources problems, and therefore all should contribute towards solving the problems.
- Landholders' roles in landscape management need to be better defined and understood more widely within the community and in governance.

8.3.3 CCMA interactions with producer and other organisations

The CCMA has established and implemented many joint projects with both public sector and private sector producer groups. Extensive on-ground waterway reclamation and protection has been carried out with Barwon Water, South West Water, and Central Highlands Water within their Proclaimed Water Supply Catchment areas.

Direct support and involvement with agricultural industry groups such as Southern Farming Systems, WestVic Dairy, Central Highlands Integrated Production Systems (CHIPS) and the South West Sustainability Project is a highlight.

The CCMA has supported universities through scholarships, grants and sponsorships.

Nevertheless, there was wide agreement that relationships with industry groups are an area for particular attention by the Authority. It was reported that while some links had been established, it was an enormous area of potential still to be 'tapped into.' The development of stronger relationships with a range of agricultural groups was considered a priority. It was believed that in this way the organisation would have a powerful avenue of communication with the agricultural sector, and could ensure agricultural programs were integrated within the RCS. It was noted corporate groups and organisations located in the Geelong and Ballarat regions were mostly overlooked at this time.

9 PROGRESS, ACHIEVEMENTS AND EXTENT OF IMPLEMENTATION

9.1 Rating by CCMA and DNRE Staff

The actions promulgated in the 1997 Strategy (listed in Table 1) were circulated amongst CCMA and DNRE staff who had detailed knowledge of each program area. They were asked to rate each potential action according to the classification shown in Table 3.

Overall, some 79 per cent of actions in the 1997 RCS were completed either successfully or were partly completed with a successful outcome. Some 21 per cent of actions were not completed. The following summarises the key points arising from this analysis.

**TABLE 3:
SUMMARY OF ACTIONS FROM THE 1997 RCS WHOLLY OR PARTLY COMPLETED**

	NUMBER OF ITEMS	%
Done successfully or process well established	15	32
Done with partial success	22	47
Not done/ not addressed	10	21
Total	47	100



9.2 Actions Completed Successfully

Table 4 shows the items that were completed successfully, either in part or completely. Many of the activities that were ongoing were classified as 'completed in part.' There appears to have been a high level of implementation of actions in the pest control area, both plants and animals. Major improvements were achieved in the areas of strategy development for water quality and waterways management, and in continuing the Corangamite salinity strategy.

**TABLE 4:
ACTIONS LISTED IN THE 1997 RCS COMPLETED WITH SUCCESSFUL OUTCOMES OR PROCESS WELL ESTABLISHED**

Sustainable Production Program:

- PIMS monitoring project on post-Calici Virus rabbit dynamics
- Develop B/C analysis process for pest plant control
- Support use of PIMS (GIS application)
- Inform 75 Landcare groups about relevant programs
- Support Good Neighbour Program
- Serrated Tussock Strategy
- Ragwort Strategy
- Support for Creswick Education Centre
- Support for Warrembeen Education Centre

Water Resources:

- Review waterway frontage values, threats and assess license conditions. (Crown Water Frontage review)
- Research the environment of Barwon River and impacts of changed water quantity and quality on aquatic flora and fauna
- Develop a regional water quality and implementation strategy.
- Establish a waterway management group for stability and restoration projects.

Biodiversity:

- Map and survey Chilean Needle Grass infestations
- Develop management plans for 13 wetlands of international importance (completed by DNRE)

Table 5 shows the actions that were partially completed with mainly successful outcomes to date. Despite the progress that has been made, there remains much to be done against all the headings in the table.

**TABLE 5:
ACTIONS LISTED IN THE 1997 RCS PARTIALLY COMPLETED WITH SUCCESSFUL OUTCOMES TO DATE.**

Sustainable Production:

- Encourage Landcare groups in project development and funding
- Strategies for serrated tussock and ragwort
- Local strategies for priority weeds
- Monitor minor problem weeds
- Weed control on roadsides
- Support fox control projects, and facilitators
- Promote commercial tree planting, subject to remnant habitat needs and feral pigs



Water Resources:

- Develop floodplain management plans and warning systems: (flood risk mapping completed and being incorporated into Planning Schemes. Draft Floodplain Strategy forwarded to DNRE, Barwon River Flood Warning System and Emergency Response Plan completed)
- Revegetate 20% of unprotected riparian zones over 3 years: extensive work has been done.
- Continue the Corangamite Salinity strategy
- Undertake B/C analysis of salinity control options.
- Determine groundwater-surface water interactions (significant work undertaken at Warrion, Barwon Downs and Blue Gums Impact project)

Biodiversity:

- Develop a consistent process for advising municipalities on the impact of development on flora and fauna
- Encourage increased community use and experience of natural areas, with educational material and information
- Explore incentives for wetland rehabilitation (current NHT project)

Community:

- Cooperate with industry and regional development agencies in achieving sustainable development
- Realise 10,000 individual contacts promoting RCS
- Establish a formal process with municipalities for incorporating the RCS (statewide consultancy, ongoing collaboration between CCMA and DoI)
- Promote development of waste management plans by municipalities, including generator pays and target pollutants (all water authorities have been reviewing waste plans, regional waste groups in Ballarat and Geelong)
- Facilitate networking
- Encourage increased community use and experience of natural areas, with educational material and information
- Facilitate networking

9.3 Actions Not Completed

Table 6 lists actions that were envisaged in the 1997 RCS but not undertaken. Several initiatives in the water resources area were not implemented, notably in relation to drainage planning, groundwater investigations and riparian re-vegetation. It is noted that the CCMA has considerably increased its capacity in these areas in recent times. It is also notable that only slow progress has been made in relation to improving the involvement of municipalities in catchment strategy development and implementation through planning policies. Most of the actions that were not implemented had achieved a relatively high priority rating in the 1997 RCS, which emphasises the importance of continued attention to long-standing needs against relatively short time frames.



**TABLE 6:
ACTIONS LISTED IN THE 1997 RCS THAT WERE ADVOCATED BUT NOT UNDERTAKEN**

Sustainable Production Program:

- Catchment management plans for 14 proclaimed water domestic water catchment areas
- Working group appointed to develop and implement a soil management plan.
- Review noxious weeds list

Water Resources:

- Develop local drainage planning controls for containing environmental impact.
- Regional guidelines for drainage planning.
- Model the waterlogging-discharge process.
- Ensure planning and development decisions consider stream flow impacts
- Models to pinpoint hotspots.
- Develop Special Area plan for the floodplain and estuarine areas of the Aire River

Institutional:

- Review response strategies for fire and drought

9.4 Assessment from Scoping Interviews

From telephone interviews the general consensus was that the implementation of the RCS was successful *in part*. Firstly, the delivery of a number of specific NRM goals was seen as a positive outcome. This not only included biophysical aspects, but the formation of collaborative relationships to deliver these outcomes.

However, it was the overall opinion that meeting RCS objectives was somewhat 'hit and miss' and that more needed to be done in most areas – again, this included both biophysical aspects of the Strategy as well as other issues, for example, coordinating efforts and forming effective partnership relations.

Another view related to the belief that the RCS was only partially successful in its implementation concerned the focus of the Strategy. It was commonly believed that while the RCS could in many ways be considered successful in the implementation of biophysical goals, it neglected to incorporate social, cultural and economic issues. The integration of these aspects was considered essential if RCS goals were to be achieved.

Opinion about how well the RCS was being implemented also differed according to broad stakeholder category. Members of the CCMA itself tended to be more positive and enthusiastic about the RCS, which is understandable, both from a commitment point of view, and also perhaps because of greater knowledge of what had in fact been accomplished. The RCS was seen to be a productive start to integrated catchment management in the region. This was also a common sentiment among other key stakeholders, however this view was tempered by the question of *what* was included in the strategy and the criteria for 'successful' implementation - for example, there was the view that, overall, the RCS was too broad and not very relevant or supported outside of the Authority. All agreed, however, that the RCS was a useful guide and that genuine efforts had been made to make its implementation as effective as possible.

It is important to note that the majority of opinions about how well the RCS was being implemented were made in the context of the evolving nature of integrated catchment management. It was often pointed out that is a highly complex and challenging approach to NRM and requires adaptive, 'ongoing learning' responses. Furthermore, it was noted that both CMAs and RCSs are relatively recent developments in Victoria. Accordingly, the perceived weaknesses in the implementation of the RCS were typically viewed as sites for improvement which provide an opportunity to integrate more recent understandings. This in itself was considered to be a reflection of the overall success of the RCS.



10 WATER RESOURCES

10.1 Content of the 1997 RCS

Water is relevant as both an asset and an agent. Catchment Management outcomes are concerned with realising the values of water assets in environmental, economic and social terms. Catchment Management also needs to consider and manage the role of water as an agent to the extent that water processes affect water and land assets both positively and negatively. The roles of water as an agent are relevant to management of land, water and biological assets of the catchment.

The 1997 RCS grouped its Water Resources program into three core projects, addressing:

- Water quality and waterway management
- Floodplain management
- Groundwater and river health

Of all the issues considered in Table 1, water quantity and quality were assessed as having medium to high impact across these three areas.

The actions promulgated under the water quality and waterway management heading were mainly concerned with planning and management procedures, and included establishment of the Waterways Management Implementation Committee (WMIC), development of a regional nutrient management strategy, guidelines and plans for 14 proclaimed domestic water supply areas, planning and approval processes for flow management, including bulk water entitlements and rural drainage planning controls. A target was set for riparian revegetation and management, and a review was proposed of waterfrontage occupation patterns and management practices. The floodplain management activity focussed on flood mitigation through planning approaches, while the groundwater program was largely investigative. As has been pointed out, the main achievements were in respect of waterways planning, nutrient strategy and continued attention to salinity, while other aspects, including land management plans in water supply catchments and riparian re-vegetation were not implemented to the hoped-for degree.

A widening range of water assets and their values has entered the process through subsequent sub-activities or related activities, particularly underground water.

10.2 Flow Competition and Trends

Regional rivers are *highly stressed* in the sense of flow deficits. This flow-based concern is centred on an over-use of dry season flows. Because the region enjoys perennial or at least well-sustained summer flows, many users have made the best of opportunity in the drier seasons. The result is intense competition and detriment to environmental flows. The issue of flow-based stress extends to groundwater and lakes. It tends to compound other water problems.

Water supplies in the region have a significant component drawn from *run-of-river* systems supplementing storages that impound winter flows. Water quality problems for public water supplies tend to be worse in such run-of-river sources and this includes bacteriological pollution as well as nutrients, nitrates turbidity and salinity. This aspect was not emphasised in the 1997 RCS document, but has been given considerable attention since then.

Groundwater flows and extraction are also of considerable concern in the region, and a process of Groundwater Plans (now recognised in water statutes) is being implemented by SRW. Various opinions, not wholly consistent, were given on the need for water quality protection in groundwater systems and this may need closer consideration.

Lakes are not specifically addressed in current activity, despite their beneficial use and attainment programme declarations in SEPP. However, concerns relating to quality are expressed and quantity issues may be associated with flow conflicts and climate change (see subsequent discussion relating to climate).



10.3 Water Quality

Water quality programs have focussed on specific aspects of condition seen to be priority concerns. This relates particularly to nutrients and salinity. There are now moves to re-integrate and view water quality from a wider perspective. This would appear to be appropriate, not only because some catchment responses are common, but because priorities will be more comprehensively addressed and other aspects of quality will get a more appropriate consideration (e.g. bacteriological quality for health of drinking water supplies and recreational lakes). Re-integration of this type may need to more deliberately identify, link with, and develop the SEPP beneficial use schedule as part of the aspirational values pursued.

10.4 Secondary Salinity

The 1997 RCS advocated continuation of the salinity strategy inaugurated in 1993. Any attempt to measure progress with this strategy is complicated by the experience of below-average rainfall for much of the 1990s.

Processes of secondary salinity (mobilisation of previously stable salt accumulations) and reclamation are subject to debate within the catchment with arguments that the problem and solution do not parallel the classic secondary salinity model of South Western Australia. Clearly, the accumulations of salt in the soil profile are much less, and it may be that waterlogging and dryland salinity problems are less synonymous in this region. In interviews, no expectations were expressed that secondary salinity decline was following a rapid or relentless degradation which is a threat to fitness for purpose in water supplies or biological assets. Overlaid on the question of whether a serious degradation is occurring, there is questioning of the extent to which tree planting will be beneficial. Is this a circumstance where there is time and need for full investigation, coupled with avoiding land use changes, which will exacerbate any potential problem, rather than pursuing reclamation as a priority?

Accordingly, a review of the 1993 Strategy is now required, and is underway.

10.5 Nutrient Management, Nitrates and Bacteriological Quality - Non Point Pollution

Nutrients have been, and remain, an issue of some concern. These are classic examples involving non-point pollution, which need to be addressed by best practice type programmes for land use across a catchment. Although not prominently identified, related issues of non-point pollution (such as bacteriological pollution of water supply sources and recreational lakes) occur which are responsive to the same catchment management measures that address nutrients, sediment and improvement of riparian vegetation. The integration of Nutrient Management into a wider water quality program makes much sense in these circumstances.

10.6 Point Source Pollution and other Pollutants

Nutrients and bacteriological quality as well as other quality issues are affected by point source pollution as well as non-point pollution. These issues involve a different suite of options beyond the best land use practice approach central to management of non-point pollution. There were some general concerns expressed about mining wastes, sewage effluent standards, piggery and dairy effluents, and urban stormwater (point and non-point). Presumably, these also will come under the ambit of a water quality strategy.

10.7 Waterways and Riparian Vegetation

The Authority's Waterways Program has been the primary vehicle for remedial investment, which has been implemented steadily since the 1997 Strategy. The program works largely through the Landcare network, supported by a strong central planning group in CCMA. It was somewhat surprising that waterways condition took a back place in many meetings to issues of flow and quality. It is likely that this was partly due to a feeling that considerable work is going on in this respect, and condition is 'partly stabilised' or 'recovering.' It is clear that



strong values are attached to these assets. However, perhaps with particular exceptions, there was a sense that priority was OK in respect to aspirations.

10.8 Lakes and Wetlands

The 1997 RCS document tended to give most emphasis to rivers and waterways as assets. It did not give such full recognition to lakes, which were largely overlooked in the sense of integrated catchment management. A local comment, which seems to sum up the position of the lakes, is that the community sees them as "*part of the wallpaper.*"

This may be more a matter of perception than actuality. The development of the Western District Lakes Management Plan concentrated on RAMSAR wetlands and has led to a major contribution of funding between NHT, the CCMA, Parks Victoria and more recently Greening Australia. There has also been considerable Landcare activity in the catchment of Lake Corangamite.

Some respondents pointed to the lack of riparian zones on private land to protect lakes and wetlands. In doing so they asserted the need to protect more than just the buffers, but all waterways running into the lake. Approximately 90 per cent of this ecosystem is on private land. It was felt that management planning controls do not go far enough.

10.9 Omissions

Several respondents felt that the 1997 RCS had overlooked some aspects of water management. In particular, the topics of climate change, groundwater, recreational use, and inland fisheries aspects of water planning and management were significant omissions.

10.9.1 Groundwater

In this region of often-perennial stream flows, underground water has tended to be seen more as an agent than an asset. This needs to change, as groundwater systems are strongly implicated in the state of rivers, wetlands, soil conditions, pasture production and water supplies.

10.9.2 Recreational Use of Water

Economic and recreational aspects of water aspirations also did not gain very complete consideration in the original RCS, although considerable recognition has been afforded in subsequent detailed strategies, in particular the Nutrient Management Strategy, which undertook a detailed assessment of recreational and tourism values affected by algal blooms. Didn't address regional drainage.

10.9.3 Fisheries and Aquatic Environments

Several respondents felt that the 1997 RCS did not deal adequately with fish and aquatic systems.

10.9.4 Coasts and Estuaries

It was pointed out that the 1997 RCS did not sufficiently address linkages between water resources management and coastal environments.

10.9.5 Climate Change

The 1997 Strategy made no reference to climate change. Since then there has been a considerable increase in knowledge about global climate change, and it is now clear that global warming is a fact, and is likely to continue for a substantial period. Rainfall changes are less predictable, but the balance of results from climate simulation models is that rainfall decline is more likely than not. Some consideration of this for the next RCS is recommended.



11 LAND AND SUSTAINABLE PRODUCTION

11.1 Contents of the 1997 RCS

The Sustainable Production Program outlined in the Strategy stated that its principle aim was *"to increase production in the region while ensuring that resources... will support the needs of future generations."*

In assessing issues and impacts the Strategy considered:

- Impacts of changed land use.
- Soil characteristics (salinity, acidity, contamination, fertility, structural decline, erosion, waterlogging, eutrophication, mass movement).
- Plant and animal pests.

These are discussed in turn, below.

11.2 Impacts of Land Use Change

The Strategy suggested a range of regional planning and management instruments aimed at better aligning the planning of new land developments with the aims of catchment management. This included coordination with regional development agencies and industry.

However, there appears to be no overarching strategy as to how the CCMA operate to encourage land uses, or to encourage those with the power to control land uses to act; as well as how much can be achieved by these means. Responsibility for development planning and control of private land is vested with local government, so unless the RCS has some statutory power within the planning framework its influence is limited.

It is evident that the region is experiencing rapid change in its demographics and land use patterns. Institutions are looking for overarching regional directions –and the renewed RCS may contribute here. Respondents pointed out that:

- There are three separate planning processes that are not integrated at the higher levels.
- Regional development needs to be in RCS within the framework of good catchment management.
- There is a lack of lateral thinking in many planning schemes, with land capability seldom being considered.

11.3 Need for integration of land management in catchment management

Respondents frequently mentioned the need for better integration of land management with catchment objectives. The numerous examples cited included the following:

- New forestry activities are not necessarily associated with NRM goals for catchment. Plantation policy needs development in relation to encouragement of plans that better control catchment variables.
- There is a real opportunity for forestry to deliver public outcomes/benefits, but these are usually not rewarded.
- More thought needs to be given to the right form and balance of 'carrots' and 'sticks.'
- The different land use and management policies of different local authorities need to be rationalized.
- Public ownership conflicts (role of government – sale of government plantations, use of government land for plantations, etc.): we should look at other forms of ownership, for example collective/cooperative systems.
- Inefficiencies in dairy water use and increasing water use in horticulture/viticulture add to stresses on the water environment.
- There is a need to set standards for new industries (e.g. piggeries and horticulture)
- The nutrient management strategy and the agricultural strategy should go hand-in-hand.
- There is a need to integrate salinity on land and water bodies.
- Estuary management plans and coastal plans need to find a 'home.'



11.4 Influencing change within agriculture

The 1997 RCS supported many initiatives for improved production processes with agriculture. These included:

- Development of codes of practice.
- Support for recognition of Landcare works in taxation provisions.
- Support for Landcare groups.
- Promotion of commercial tree planting on private property, subject to protection of remnant habitat.

The intent of the Strategy seems to have been confused by the section title used in the document ('Clean Green production'). There appeared to be relatively little recognition of these initiatives in responses from the scoping interviews, SHEF Questionnaires, or at meetings with REU's technical consultants.

It is clear from early discussions with respondents that the intensification of agriculture in the region is an ongoing process. Suggestions for new emphasis in the RCS included the following:

- The RCS needs to promote industry innovation, including modernization of existing practices and adoption of new practices.
- The RCS needs to be pro-active, rather than coming in at the end.
- There was a widespread view that work by farmers that has positive social benefits should be recognised and should be offered incentives.

The emphasis on whole-farm-planning process is gradually being replaced by an approach emphasising best management practices. Respondents saw a need to further promote the adoption of best management practices on farms. The handouts *Environmental Best Management Practice on Farms (Workbooks 1 and 2)* were developed after extensive discussion with farmers. These are currently being trialled with 420 landholders. This will provide benchmarks of adoption. Some Landcare groups are running with these handouts as a pilot scheme, but it was suggested that these reports need to go to a much broader audience than just Landcare groups: in particular the producer organisations need to be involved in their use and promotion.

However, it was also pointed out that sustainability and conservation are not necessarily linked. Agriculture can be sustainable without being conservation-minded. One respondent warned that policies that are good for agriculture might damage nature conservation assets.

The *Good Neighbour Program* that has been promoted in the region was generally commended. Two suggestions were:

- The Program has not addressed public land and flora/fauna management enough - need to make sure that public land management (including CARR system) is covered.
- A strategy is needed where public and private lands are both managed in the same way - with both managed sustainably, and both working towards agreed regional objectives.
- Need a unified position amongst agencies. Challenge is to identify the triggers in the community that move them towards better behaviour. This was not a strong focus of the previous strategy.

11.5 Soils

Three types of degradation can be seen in the region: (i) physical - soil structure decline, waterlogging; (ii) chemical - acid soils, soil fertility; and (iii) biodiversity (soil biota) - invisible but extremely diverse.

Most of the issues identified against the soil category ranked low to medium in terms of impact, and the Strategy took an investigative tack, with establishment of a working group to explore research and information on soils issues. Also, a start was made on promoting the development of property management plans in proclaimed water supply catchments.



Soil salinity was assessed as having a medium impact, and the Strategy advocated continuation of the pre-existing salinity strategy, to be carried primarily by DNRE, landowners and Landcare groups.

There is continuing concern for sediment load in rivers, lakes and estuaries. This affects recreation; river structures (filling in of pools); the costs of treating water; and the frequency and extent of algal blooms. There appears to have been slow progress in this area since 1997. There is still a need to develop indicators of soil health, and any estimate of the rate at which soil is being lost must be very approximate. Some respondents stressed the need for better soils information and indicators.

Soil loss is the precursor to sedimentation. Changes in land use, or lack attention to land management practices are affecting sedimentation rates, but were not strongly identified in the 1997 RCS. These include:

- Allowing continued access of stock to stream frontages
- Unsealed local government roads (poor structures)
- Loss of soil from irrigation for potatoes on slopes and from horticulture
- Loss from urban activities (new constructions) – little compliance with conditions except on the coast
- Recreation vehicles (e.g. 4-wheel drives and trail bikes)
- It was noted that improved forestry techniques are reducing sediment, with 96 per cent compliance with Best Management Practice.

11.6 Pest management

11.6.1 Overview of Pest Management

The 1997 RCS gave particular attention to weed control strategies, and this is appropriate because the region's environment is favourable to a wide range of introduced weed and animal pests, many having been introduced since European settlement. Weeds include serrated tussock, ragwort, gorse and spiny rush, which colonises saline areas and is a favoured habitat for rabbits during dry periods. Pest animals include rabbits, (which have apparently resisted the *calici virus* in this region), foxes, and feral cats, dogs, pigs and deer.

Pest plants and animals in the Corangamite catchment are seen as a risk to both productive and environmental issues. Threats to agricultural production include: reduced quality of grazing, soil collapse from burrows; threat of continued invasion if left uncontrolled; unwanted selective grazing of pasture species pre and post establishment; uncontrolled grazing pressure; threat to animal health (e.g. alkaloids from within plants, photo sensitivity); reduced reproductive potential (predation); and economic value of individuals within a species (productive capacity e.g. 3-teated cow).

Threats to ecosystems include reduced quality of vegetation; reduced species richness; changed food, nectar and habitat availability regimes; altered fuel loads; and restricted flow regimes and structural characteristics of local waterways.

Pest animals and plants also threaten social values by limiting land use options because of the cost of control; placing increased need for education for managers to manage farming system complexity; causing social disharmony through stress & anxiety between differing parties, localised vilification, the expectation that pests are someone else's problem (lack of ownership of pest/plant problem); reducing public safety, including increased fire risk, reduced visibility, and disease spread potential; and reducing the amenity value of regional community space.

11.6.2 Assessment of Animal Pest Programs

In general it was thought that the RCS objectives had been exceeded, with favourable implications for long-term control. The 1997 RCS has provided direction in moving from coercive to cooperative approaches, e.g. in rabbit control. Respondents also expressed the view that the 1997 RCS had helped to integrate NRM strategies, with both public and private benefits.



It was suggested that the renewed RCS should target local government as a key stakeholder in animal pest management. The view was expressed that the level of effort going to rabbit controls was now adequate, but further work was needed on defining at what level rabbits cease to be a threat to environmental values for the region, and the negotiation around whether this is realistic and reasonable for the community to be held accountable.

Control of foxes was felt to be still inadequate. It was suggested that a regional plan should be developed, with an investment framework that sets benchmarks for differing levels of protection needed to have differing objectives met (agricultural protection & environmental protection).

There was less conviction about the state of control for other vertebrate pests, including pigs, goats, feral cats, and deer. The real (as differentiated from the perceived) threat to the region from these species is yet to be assessed.

11.6.3 Assessment of Plant Pest Programs

In general there appears to be satisfaction with progress in weed control. The total effort includes species action plans and community-driven strategies for serrated tussock, ragwort and gorse.

Nevertheless the whole region continues to suffer from a wide variety of introduced weeds, in riverine environments, on agricultural land and within areas of remnant vegetation. Thus, current control efforts have a long way to go before the situation can be said to be 'under control.'

The view was expressed that the process of prosecution under the CALP Act is long, drawn-out, and resource hungry.

11.6.4 Summary: Strengths of the 1997 RCS in pest management

It was noted that many pest control strategies either published by the CCMA, or covering the region had been published since the 1997 RCS. The main strengths of the Corangamite Regional Catchment Strategy with respect to the way it has addressed pest plants and animals are seen as follows:

- Has captured all relevant stakeholders concerned with pest plants and animals and involving all levels of government (local, state and Commonwealth).
- Pest management framework provides support mechanism.
- The Weeds Action Plan and the Rabbit Action Plan have surpassed the RCS, because they.
- Are relatively easy to understand/read and useable.
- Have clearly identified roles and responsibilities of stakeholders and interest groups; are flexible and adaptable enough to accommodate changing circumstances (i.e. living documents).
- Have been realistic, in terms of budgets available to fund actions required to meet regional priorities.
- Have provided a key link between the major regional strategies that are now being worked on, though this was not a part of the original 1997 Strategy.
- Have been effective in achieving a sense of community ownership.

11.6.5 Summary: Limitations of the 1997 RCS for Pest Management

Comments on the limitations of pest management efforts largely referred to organisational issues. These included comments on the following:

- Weaknesses in enforcement procedures and legislative aspects (state laws as against local Bye-laws)
- Integration with all aspects of NRM is a key aspect of a holistic approach but it has been suggested that pest programs have been treated as a separate component of landscape management/change.
- The level of resourcing for *pest management* activities continues a long-term trend downward despite an increasing resourcing for revegetation activities that *are directly threatened by pest and weeds*. This is inconsistent.



- The region does not directly support a well-targeted R & D program in relation to social science aspects of pest management, other than *ad-hoc* projects when funds are available.

12 BIODIVERSITY

12.1 Contents of the 1997 Strategy

The 1997 RCS identified biodiversity conservation as a key area for future action. It stated that habitat removal or modification continued to be a major threat to biodiversity in the region. Indigenous grasslands had shrunk to dangerously low levels. The 1997 RCS formulated its Biodiversity Conservation Program by relating catchment issues to biodiversity outcomes. The main actions promulgated by the Strategy (but not exactly as presented in the 1997 Strategy) were:

A. Protecting and Reinstating Habitat

- Vegetation planning, retention and protection
- Wetlands and flow management
- Grassland communities
- Environmental weeds

B. Species Protection

- Pest animal controls
- Annual action statements for listed species under the FFG Act, 1988

C. Fire management of grasslands and heaths

Nearly all the above activities were concerned with inter-agency coordination, strategy development, management planning, mapping, and community education.

The 1997 RCS recognised that private landholders faced a dilemma in regard to natural areas on their land. Disclosure of biodiversity assets on private land could lead to restrictions that would reduce the profitability and asset value of farms as well as the capacity of the private sector to manage the biodiversity asset independently.

The Strategy advocated consideration of compensation for biodiversity protection on private land.

12.2 Strengths of the biodiversity strategy

Perhaps the main compliment to the RCS is the completion of several Priority Actions identified in the RCS, notably:

- Establishment of the Regional Native Vegetation Plan.
- Development of regional pest plant and pest animal strategies.
- Regional Waterway Health Strategy, and
- The Regional Nutrient Management Plan.

Further comments received included the following.

- It is good to see that biodiversity conservation is being considered as a regional issue.
- The RCS legitimized good ideas such as Bushcare and biodiversity.
- The RCS acted as a source document for biodiversity funding applications.
- The RCS assisted the establishment of biodiversity team within the CCMA.
- It acted as a starting point for sub-ordinate plans

12.3 Limitations of the biodiversity strategy

Several groups felt that the wider institutional context was not favourable for achievement of the RCS biodiversity objectives. For example:

- The power of the RCS was limited by the fact that different shires have different views on biodiversity conservation. Regional goals/visions were weakened.



- There was no unified position amongst government agencies at state and local levels on regional biodiversity conservation priorities.
- There are differences in regulations between agencies in adoption of policies and practices for economically sustainable development
- Inter-agency differences in policies and regulations affect the management of many land uses and processes, including natural vegetation (dieback), forestry, farm forestry, agro-forestry, commercial fishing, tourism, hobby farming, estuarine and coastal issues, pest insects, aquatic pests, regional drainage, soil biota, eel fishing, passive clearing, environmental weeds.

Criticisms of the approach adopted in the RCS were:

- It did not adequately define bio-diversity, its components, risks to biodiversity, and their relationship to regional NRM.
- It did not take a systems approach to biodiversity: eg wetlands as a component of waterways, etc. As a result it was difficult to see how identified threats related to each ecosystem.
- The RCS did not adequately explore linkages and how biodiversity encompasses *all* of the other programs.
- The focus was too agri-centric.
- Differences between nature conservation on private versus public land were not adequately addressed.
- Big picture gains to biodiversity have not been not adequately identified.

12.4 Biodiversity Issues Needing Consideration in the New RCS

Suggestions for the new RCS were that:

- There is a need for a better understanding of 'biodiversity assets'.
- Bio-regions need to be better understood.
- The new RCS should make use of regional maps of biodiversity assets held by local government, and new state-level bioregional plans.
- Links between farm forestry, commercial forestry, agro-forestry and biodiversity conservation need to be better understood and promoted.
- Pest animal management needs to be integrated into native vegetation management.
- Native grassland values need to be re-emphasized.
- There is a great need for biodiversity community education programs.

A number of forthcoming reports will provide useful insights and directions in shaping broad directions in achieving behavioural change, practice change and the outcomes expected from the strategies. These include:

- Rabbit Attitude Benchmark
- Effect of Prosecution Report
- Report on Social Marketing using MOA in designing programs based on CCMA regional Data.

13 MONITORING AND EVALUATION

The development of strong and reliable monitoring and evaluation techniques was reported to be critical to assessing the effectiveness of future RCS objectives and initiatives. Respondents suggested that monitoring and evaluation efforts were currently inadequate. It was suggested that, while the 1997 RCS did not clearly lay out a reporting framework, this was now in place as a result of the development of sub-programs and strategies. However, this could not be said to be universally applicable across all the action areas of the 1997 RCS.

Comments received included the following:

- Monitoring and evaluation should have a set part of the budget (e.g. 10%). Coordinators should meet regularly to discuss monitoring issues.



- There has been no reporting against objectives, and an evaluation framework and reporting cycle is missing. Indicators should be selected with reference to the outcomes negotiated.
- It was considered that at least some of the outcomes and achievements of the RCS could be measured and monitored.
- It was felt that 'key stakeholder responsible' or 'stakeholder accountable' should be identified along side each Priority Action identified in the new Catchment Strategy.
- Many called for the development of clear reporting mechanisms that would be well received by the largest possible audience in the region - it was commonly thought that reports, in their current form, were not relevant for or of interest to the general community in particular. It was suggested that monitoring should be considered as a marketing tool

It was acknowledged that developing indicators was highly challenging, however was nonetheless a priority issue. Different stakeholders want to measure different things. The government wants to measure the effectiveness of its investment. Local groups need simple tools for local goals.

- It was suggested that it was unnecessary to monitor all actions. In depth evaluation of key sites was advocated, with extrapolation to other sites.
- It was also asserted that 'non-biophysical' indicators must be developed – for example, those that examined progress in social and collaborative aspects of the RCS.
- Several respondents stressed the need for indicators of quality as well as quantity outcomes, including practice-change measures and attitudinal changes.
- Indicator species or biological monitoring should be used in places. For example the *Heytesbury Biolink Project* has identified key species and movements of species as indicators.

Who should undertake the monitoring task and how? Several respondents emphasized the contribution that community groups can make. Some of the key points were as follows:

- Several respondents emphasised the need to consider the quality of monitoring (e.g. Waterwatch and asked for professional guidance on what to measure and how to measure it.
- It was also felt that there is a need to include a diversity of groups to 'measure' outcomes (e.g. field naturalists, bird observers and universities)
- Groups dealing with biodiversity expressed the view that existing resources were inadequate for satisfactory monitoring. Many believed this to be an underdeveloped area of the RCS, and one that needed particular attention in future times.

14 ADEQUACY OF THE EXISTING RCS IN THE LIGHT OF NEW INFORMATION AND ARRANGEMENTS

Since the 1980's, when land and natural resources degradation was recognised as a critical concern, catchment management has achieved national prominence as a means of managing natural resources in an ecologically sustainable manner. Following the emergence of a sustainable development focus in recent times, an *integrated* approach to catchment management is favoured as the best means of tackling catchment management. Within this, recognition is given to mutual impacts – that is, what happens in one area has wider ramifications. That is, integrated catchment management needs to be viewed as:

"integrating ecological, economic and social aspects of natural resource management ... in the way that best ensures long-term viability whilst at the same time serving human needs."

The House of Representatives Standing Committee on Environment and Heritage (SCEH), 2000, p. 25.



The 1997 RCS plainly was moving in the direction indicated by these changes. This can be seen in its approach to natural resource management issues in the Corangamite region, which identified a wide range of issues facing the region. The task now is to deepen understanding and awareness of integrative forces (whether positive or negative), amongst all stakeholders, leading to action that produces sustainable and ecologically superior outcomes.

Sub-strategies written since the 1997 RCS have provided a basis from which to move forward, and others such as the salinity strategy are currently under review. The more difficult task here is to translate strategy into on-the-ground achievements through effective cross-community action.

14.1 Partnerships and Process

Trends in governance are emphasising a partnership approach that engages all stakeholders (government, community and industry sectors), with an emphasis on 'local ownership.' Currently, this is seen in the development of responsibilities for planning and managing natural resources to the regional level.

Consistent with this growing emphasis is the need for an RCS to provide an over-arching planning framework and implementation process. Therefore, much greater efforts will need to be made to strengthen institutional and community linkages and participation in the task of delivering catchment outcomes.

14.2 Financial Support

Currently, the Commonwealth is making moves with agreement from the states, to give regional/catchment bodies 'block funding'. These bodies will subsequently be given responsibility for decision-making and accountability. This requires that added emphasis is needed on the development of an acceptable investment framework for the RCS, to ensure that effort is well directed in a triple-bottom-line sense.

The related idea of cost sharing for implementation of catchment plans is also gaining favour. There are considerable challenges in identifying parties who should contribute, and then reaching agreement and commitment about this, but it is an essential ingredient in securing commitment and action. This aspect is a new feature of an RCS.

14.3 Assessing Performance: an Adaptive Approach

While process aspects are well recognised, and reasonably well established in the Corangamite region, less attention has been given to outcomes. Consideration of outcomes firstly requires change in ways of thinking.

The need for more effective monitoring, evaluation and reporting processes is well recognised. The focus for evaluating progress needs to shift from a single activity, environmentally focused approach to one that takes into account overall performance, 'whole systems' and long term vision. This includes what is happening on-ground, but also progress in areas such as institutional reform, and improved relationships, communication and trust among stakeholders. It is also important that distinctions between goals, targets and outcomes is clear when monitoring, evaluating and reporting on progress.

The complex, dynamic and long-term nature of catchment management demands an adaptive approach in which plans, strategies and programs are flexible and responsive. It is imperative that the RCS be viewed as an ongoing learning process. Further focus needs to be on incremental progress and celebration of achievements, rather than 'perfect solutions and outcomes.'



15 GAPS AND AREAS FOR IMPROVEMENT FOR THE FUTURE RCS

15.1 The Basics are in Place

There is a fundamentally good system of governance for the region, a widespread willingness to make it work, a good human resource base in the CCMA, DNRE and many other stakeholder groups, a satisfying level of public response and interest and a catchment with a generally good level of resilience.

There has been a healthy process of evolution in scope, outlook, enlistment, involvement and approach. Early emphasis was on enlistment, and taking opportunities for improvement particularly, but not exclusively, by various activities involving individual and community action to achieve better practice.

The people of Corangamite face ever-increasing challenges in integrated catchment management, if only because as time progresses it is the harder obstacles to a healthy and sustainable environment that have to be overcome. But also, the forces of social and economic change within the catchment are accelerating and these put extra demands on performance of the RCS.

15.2 The Demands for Vision and Integration

A frequent comment, expressed in most discussions, is that the new RCS needs to give vision. The vision sought is not a prosaic one, but real guidance to on-ground outcomes in terms which could connect to programs within an integrating rationale. There were clearly concerns as to whether programs were all running in compatible directions, that limited resources needed to be applied to best effect, and that while some sections of society were working in favour of environmental improvement, policies and practices in other realms of governance were frustrating any overall improvement (for example the rate of biodiversity loss due to new forestry or agricultural developments might exceed the rate of improvement due to revegetation).

This concern for vision and integration partly reflects the 'middleman' position of the CCMA itself, and partly the wide range of natural resource management issues that are evident in the catchment. The Authority has to recognise the existence and legitimacy of other agencies that impact on natural resources and the environment, and has to work through advice, influence, and cajolery as much as through direct decision-making and project implementation. The pragmatic and incremental approach evident in the 1997 RCS is a reflection of the societal, institutional, and natural resource complexity within which it has to work.

Suggestions for the new RCS that were offered by respondents included the following:

- The new RCS needs to be a reference/guiding document - it should be a 'framework' document. Needs to be stronger in its recommendations to look at issues collectively - needs to be a 'broader scoping document.'
- There is a great deal of duplication and crossover between planning documents. Rather than be another one of these, the new RCS should be like a 'Resource Kit.'
- The framework document should manage a process - the current strategy has not helped to facilitate this.
- The new RCS should deal directly with threatening processes.
- The new RCS needs to be a catalyst for change.
- The single biggest change needed is that the new RCS should not just be *accessible* (for funding), but *useful* (wider coverage of use).



15.3 Response

The response of Resource Economics Unit, influenced by the consultancy project brief prepared by CCMA, is to develop the new RCS in a way that:

- Adopts a simple and common framework of assessment, investment prioritisation and performance monitoring across all sectors;
- Solicits, acts upon and re-juvenates grass-roots inputs;
- Clarifies the linkages between different dimensions of catchment management (location, process, dynamics, socio-economics, governance);
- Strengthens cross-institutional and multi-level relationships in Strategy formulation and implementation;
- Recognises the existence of a well-developed organisation for involvement and implementation; and
- Establishes clear lines of commitment, accountability, reporting and evaluation.



APPENDIX A

Discussions with regional stakeholders were held between 11 February and 25 March 2002. The following table summarises the meetings and the lead consultant(s) for each

DATE	TITLE OF WORKSHOP	LEAD CONSULTANTS
February 11th	RCS Project Inception Workshop	Colliver, Thomas, Syme
March 19th	Coastal Board	Sadler
March 20th	Biodiversity Interests	Gomboso
March 20th	NRE State-wide Water Group	Sadler
March 20th	State EPA	Sadler
March 21st	Forestry and Agroforestry	Bennett and Gomboso
March 21st	Water Authorities	Sadler
March 21st	Pest Plants and Animals	Bennett and Gomboso
March 22nd	Waterways Management	Gomboso and Sadler
March 22nd	Salinity and NAP	Bennett and Sadler
March 22nd	Sustainable Agriculture and Land Management Implementation Committee	Bennett and Sadler
March 22nd	Strategic Planning Framework	Bennett
March 25th	Water Quality and Nutrients	Bennett and Sadler
March 25th	Landcare Coordinators	Bennett
March 25th	Local Government Environment Officers	Thomas
March 26 th	Project Review Plenary Workshop	All



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