MONITORING, EVALUATION and REPORTING

9. MONITORING, EVALUATION and REPORTING

9.1 Overview

Monitoring

Monitoring, in the context of integrated catchment management, is the systematic collection and storage of data. It enables activities, projects, programs, plans, strategies and catchment condition to be evaluated and reported upon.

Baseline monitoring provides environmental, social and economic data that is critical in providing context for evaluation and reporting regarding the health of the catchment and the values it provides.

Additional targeted monitoring enables measurement of activity being undertaken and outcomes achieved. Outcomes may come directly or indirectly from an activity, and the link is tested at the evaluation stage.

Monitoring of a variety of data may be important for integrated catchment management, for example:
- climatic and asset condition data such as rainfall, temperature, evaporation, extent of vegetation, stream flow, water quality in rivers and streams
- project output and on-ground works data such as the number of specific activities completed, the area of saline land treated and the length of stream frontage revegetated
- financial data such as costs of activities
- socio-economic data such as population growth and demographics, community attitudes, regional production, farm incomes and in particular the social and economic benefits derived directly from improving the health of catchment assets.

A key feature of an effective monitoring process is the documentation and storage of data in a manner that enables simple retrieval and exchange of data with other users.

Evaluation

Evaluation is conducted to assess the efficiency, effectiveness and appropriateness of actions.

An activity or outcome is best evaluated against a stated goal, objective, target or benchmark. This helps identify whether the level of change in resource condition, for example, is appropriate or adequate, and the strength of the link between the activity and the change that resulted. The need for 'before and after' information is often a key requirement for evaluation. Evaluations might also assess project participants' reactions, changes in knowledge, attitude, skills or behavioural change. Depending on the type of evaluation, quantitative or qualitative data may be required.

Some monitoring and evaluation is costly and time consuming. Therefore, the amount and type of data collected for evaluation should be tailored to the particular purpose such as the decision making that it will inform.

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Reporting

Reporting is the documentation of results of monitoring and evaluation and the presentation of them to appropriate audiences at specified times.

To help ensure efficiency, the purpose of reporting should be clearly defined. Key purposes may be accounting for funds expended or feeding data directly into a decision-making process.

The timeframe of reporting should also be defined to suit its purpose. While it is reasonable to expect reports on outputs delivered from a given investment regularly, perhaps even quarterly, it may be inappropriate to compile reports on outcomes within this same timeframe.

Challenges for monitoring, evaluation and reporting in integrated catchment management

Monitoring, evaluation and reporting activities at a regional scale have been performed across the Port Phillip and Western Port catchments and bays for many decades, but often focussed upon particular issues including water quality, waterway health, agricultural production or a geographical component of the region.

Many organisations in the region are already undertaking monitoring and evaluation activities. The coordinated implementation of this RCS is an opportunity to document and refine these activities, to make them more efficient and to give them an integrated catchment management perspective.

Monitoring and evaluation are undertaken at many levels – from global to national to state to regional to local to farm to site. They also vary greatly in their scope and methods from highly complex, integrated issues to single issues, so some duplication and overlap is unavoidable.

A challenge for this RCS is to help reduce duplication of monitoring, reporting and evaluation activities.

A challenge for this RCS is to help reduce duplication of monitoring, reporting and evaluation activities by fostering linkages between them and enabling aggregation of data at various levels. To achieve this we need to optimise consistency between plans by using similar language and hierarchies of information.

This consistency is being developed through the establishment of National frameworks for monitoring and evaluation and for target setting.

Another of the greatest challenges for natural resource management in recent years has been to ensure accountability without diverting funds, attention and intellect from achieving change on the ground. An approach used in this RCS is for data collection activities, which can be very expensive, to be designed so they feed directly into decision making.

Policy directions for monitoring, evaluation and reporting

National monitoring and evaluation framework

The National Natural Resource Management Monitoring and Evaluation Framework that the Australian and State governments have developed, via the Natural Resource Management Ministerial Council, provides a blueprint for monitoring and evaluation for programs, strategies and policies.
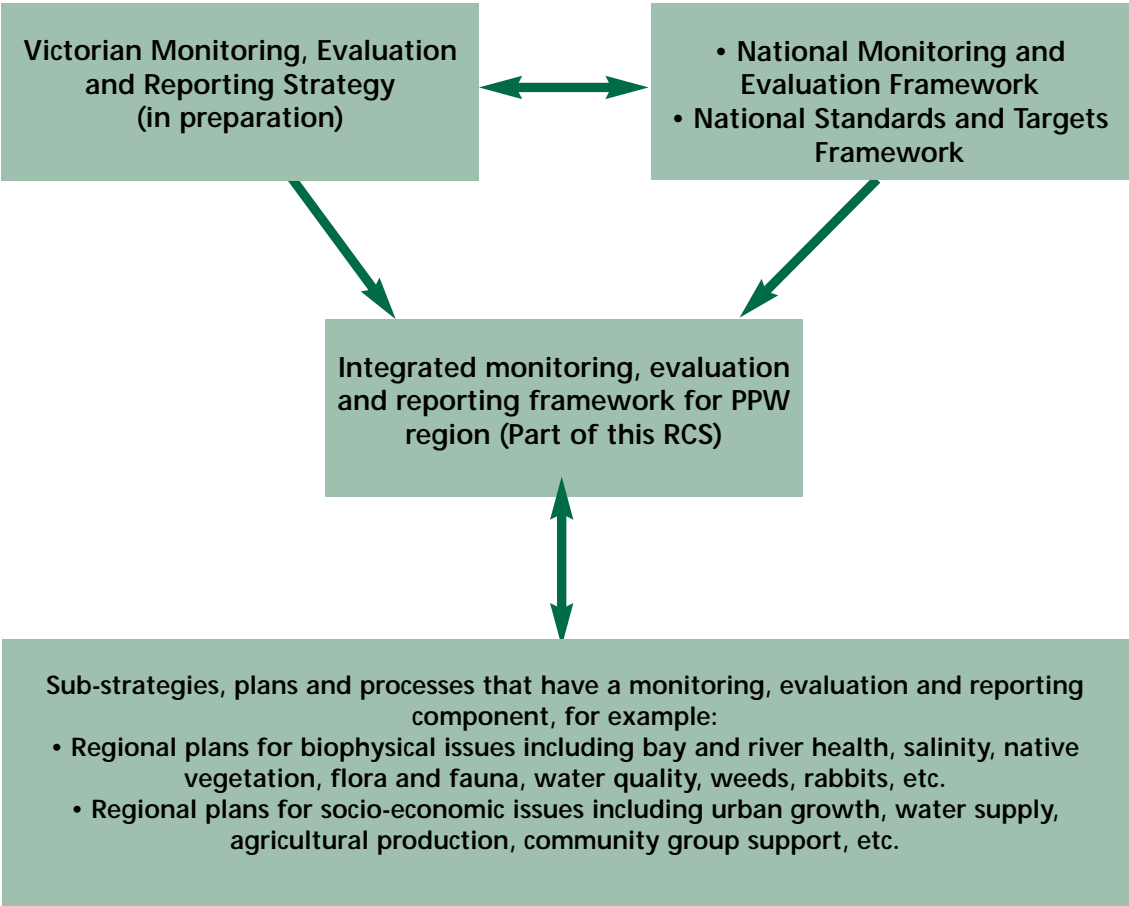
Accompanying this framework is a National Standards and Targets Framework that specifies outcomes that investment in natural resource management should work to achieve (through programs such as the Natural Heritage Trust).

Catchment condition reporting under the Catchment and Land Protection Act

A coordinated approach to monitoring, evaluation and reporting will help the Catchment Management Authority fulfil its obligation under the Catchment and Land Protection Act (1994) to report on the condition and management of land and water resources in its region. The framework for delivery of this obligation is being developed by the CMAs and the State Government and a generalised model is illustrated in Figure 32. Over recent years the Catchment Management Authority has piloted an integrated reporting style within its Annual Report.

A coordinated approach to monitoring, evaluation and reporting will help to report on the condition and management of land and water resources in its region

Figure 32: Generalised hierarchy of monitoring, evaluation and reporting strategies and plans.

Victorian Monitoring, Evaluation and Reporting Strategy (in preparation)

• National Monitoring and Evaluation Framework
• National Standards and Targets Framework

Integrated monitoring, evaluation and reporting framework for PPW region (Part of this RCS)

Sub-strategies, plans and processes that have a monitoring, evaluation and reporting component, for example:
• Regional plans for biophysical issues including bay and river health, salinity, native vegetation, flora and fauna, water quality, weeds, rabbits, etc.
• Regional plans for socio-economic issues including urban growth, water supply, agricultural production, community group support, etc.

9.3 Principles

A robust and inclusive monitoring, evaluation and reporting framework is important to:
- monitor the health of catchment assets
- enable continual improvement in the effectiveness of actions
- develop and promote a shared view of catchment health amongst regional stakeholders
- enable identification of new issues
- provide opportunities to incorporate new research
- provide opportunities to test the effectiveness of actions and underlying assumptions
- make available catchment management data to planners, researchers and the community
- enhance knowledge by decision-makers of catchment management issues
- promote adaptive management and a culture of integrated catchment management across the region
- increase confidence among investors that their efforts will produce expected outcomes
- improve targeting and coordination of investments and on-ground actions
- enable improvements to catchment management plans, strategies and programs
- ensure accountability for the actions taking place to the community and government.

Principles advanced nationally[105] and within Victoria[106] have been followed in developing the regional goal, objectives, targets and actions for monitoring, evaluation and reporting in this RCS.

Key principles are that monitoring, evaluation and reporting should:
- be useful for all partners
- be simple, cost-effective, affordable and practical by:
  - avoiding duplication of effort,
  - using data for multiple purposes,
  - ensuring that users can obtain the data, and,
  - ensuring that users can easily find out whether suitable data already exist.
- recognise that catchment management interventions encompass a range of time-scales
- allow meaningful interpretation of data over time
- specify assumptions within strategies and decision making processes.

Monitoring, evaluation and reporting is important to increase confidence among investors that efforts will produce expected outcomes.

The regional community has reinforced the following other important points for monitoring, evaluation and reporting activities:
- Information-gathering exercises are appropriate for the scale of decision-making that the information influences. There needs to be a clear reason why information is being gathered. In most cases these reasons will relate specifically to decision-making, although exercises such as some baseline monitoring are often necessary because we simply don't know today what might be important for decision-making in future, and that requires an understanding of change over time.
- Stakeholders may have unique needs that must be recognised. Monitoring, evaluation and reporting protocols need to have sufficient flexibility to ensure that the exercise remains relevant to the stakeholders.
- A demonstration of adequate process can substitute for outcomes where outcomes are very long-term or difficult to measure.
- Catchment management programs are focused on high-level outcomes to be delivered many years in the future and it is generally impossible to accurately assess their overall effectiveness within their funded life. While intermediate outcomes will provide some guide to likely effectiveness, most targets set within the first five years will represent only the earliest stages of progress towards remedying the key problems identified in regional plans.

9.4 Regional goal

Our regional goal for monitoring, evaluation and reporting is that it builds:

A strong understanding of the health of our catchment assets, ecosystem processes, trends and risks, enabling evidence-based planning and action, coordination of effort and continual improvement.

This goal encompasses:

- Working towards integration of regional catchment management monitoring, evaluation and reporting processes that currently have dramatically different levels of maturity.

- The development of a strategic approach to monitoring, evaluating and reporting of:
  - the baseline health and condition of the region's catchment assets
  - trends in condition and health of the catchment assets, and the values they provide
  - short-term and long-term threats and risks to the catchment assets
  - the key ecosystem processes at play in the region
  - the effectiveness of actions in achieving goals and targets for the catchment assets and the ecosystem processes
  - the progress in implementation of action.

- Making available information that assists all levels of investors, planners and land/water managers to make sound decisions that contribute to achieving sustainability of our catchment assets and assists coordination and integration of effort.

[105] *National Natural Resource Management Monitoring and Evaluation Framework (2002)*
[106] *Monitoring, Evaluation and Reporting Strategy for the Goulburn Broken Catchment (2004)*

9.5 Objectives

The following Monitoring, evaluation and reporting Objectives (MO1 – MO3) are designed as the basis for achieving the regional goal.

Objective

MO1   Adequate, appropriate, efficient and cost effective monitoring of catchment assets, ecosystem processes, trends, risks, implementation of actions and outputs

Objective MO1 recognises that monitoring is required at a minimum of two levels:
- Asset monitoring – including the monitoring of the condition of catchment assets, ecosystem processes, trends, threats and risks
- Action monitoring – including the monitoring of the implementation of actions and the outputs/results that are being achieved.

To be adequate and appropriate, monitoring programs must gather sufficient data on key indicators to enable analysis and understanding. To be efficient and cost effective, monitoring programs must focus on key indicators, avoid duplication and avoid unnecessary or excessive data collection.

Another important consideration in monitoring processes is the storage of data.   The number of databases has grown in recent decades as information technology has improved and to cater for demands from different investors. Various databases are currently being managed by many organisations. While it is appropriate that databases continue to be managed by different organisations, it is important to avoid duplication and enable data sharing where it can assist decision making, coordination and integration.

Objective

MO2   Timely, rigorous, efficient and cost effective evaluation of catchment management planning and implementation

Over recent decades, improvements have been made in understanding the effects of actions on our catchment assets, such as the impact of increased nitrogen loads on marine systems. However, our understanding of ecosystems and complex relationships at a regional scale is still in its relative infancy as highlighted by a quote from the report of a national forum:

> *Standards of monitoring and evaluation for natural resource management programs over the past decade have, in general, been extremely inadequate. There is relatively little accumulated information sufficiently robust to make a clear evaluation of outcomes and of the efficacy of program investment by governments or communities.*[107]

Objective MO2 supports the improvement of evaluation processes for catchment management. It encompasses evaluating the effectiveness of actions, the contribution of actions to outcomes, the validity of assumptions and the need for modifying plans, targets, actions and priorities.

To be timely, evaluation processes must be undertaken at appropriate times and with appropriate regularity in the context of what is being evaluated. For example, at an action level the evaluation of adoption rates for agricultural best practices may be best undertaken on an annual basis, whereas the evaluation of the impacts of revegetation programs on threatened species populations will be more appropriately undertaken over a much longer timeframe. To be rigorous, an evaluation must be a critical assessment that is repeatable and uses an appropriate methodology for whatever is being evaluated. To be efficient and cost effective, an evaluation must be relevant to the range of stakeholders who are investing or are planning and undertaking actions, with an adequate level of detail. It should not go into unnecessary or excessive detail. It should focus on key questions and assumptions, and should directly guide decision making, planning and priority setting.

[107] *Enhancing Community Participation in Natural Resource Management*

Objective

MO3   Timely, tailored, efficient and cost effective reporting on catchment assets, ecosystem processes, trends, risks, catchment management planning and implementation

The accessibility of data, and the presentation of it in user-friendly ways, provides the crucial feed-back loop into planning, priority setting, decision-making, investment and implementation processes. Without timely and tailored reporting, there is a risk that continual improvement in our understanding and decision making will not occur.

To be timely, reporting must be undertaken within an appropriate timeframe. For example, and as illustrated in Figure 33, project activities may be appropriately reported quarterly, project outputs reported annually and outcomes reported five-yearly or longer. To be tailored, reporting should be designed with specific target audiences in mind. For example, the data and format for a community-awareness raising report should ideally be very different in detail and style of presentation to a technical report informing project planning or investment decisions. To be efficient and cost effective, reporting should focus on the crucial information whilst streamlining processes by, for example, reporting to multiple stakeholders with a single process.
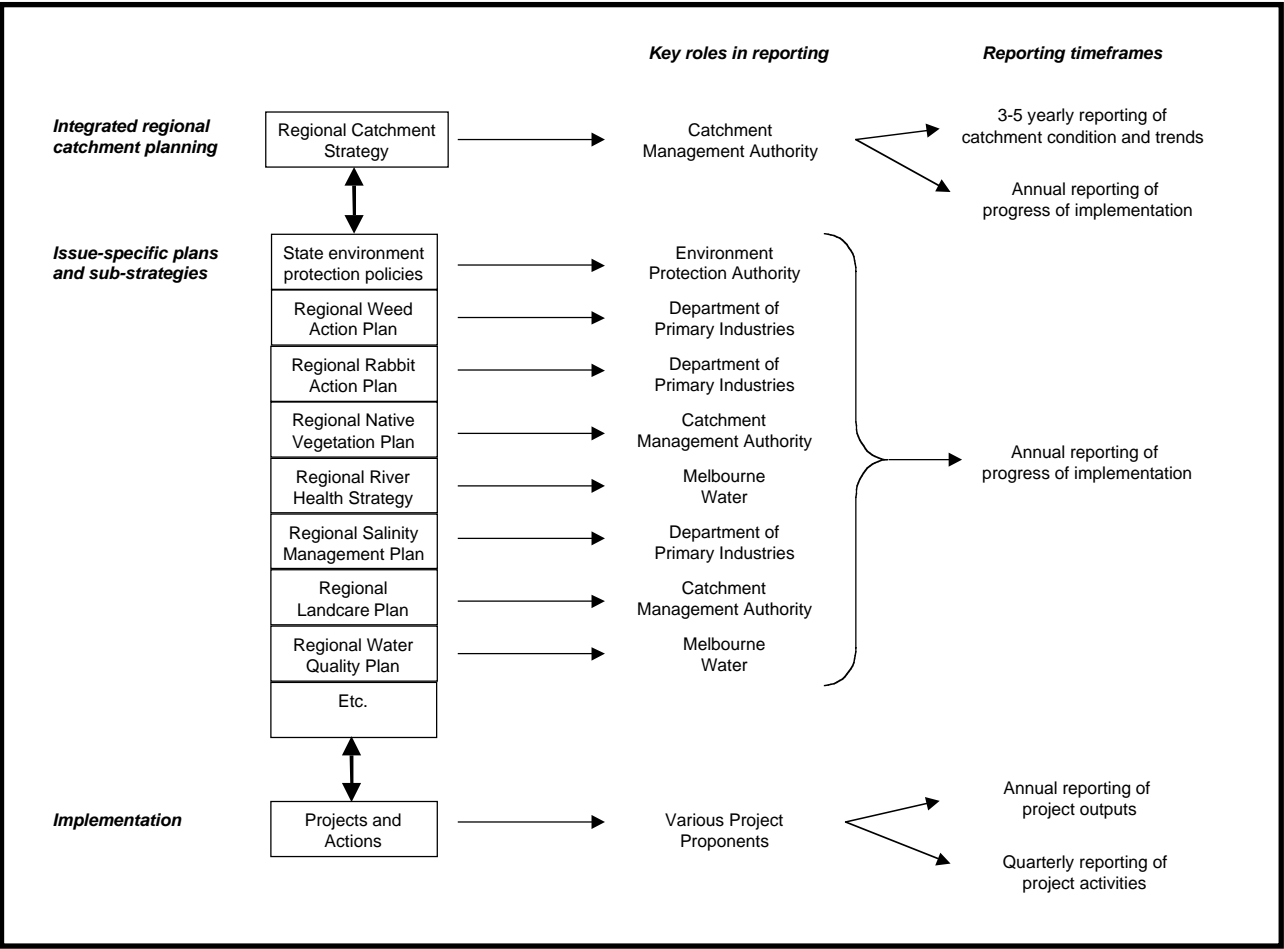

Figure 33: The regional reporting framework

9.6   Targets

The following inter-related Monitoring, evaluation and reporting Targets (MT1 – MT4) are proposed in order to attain the objectives.

Target		Relevant objectives
MT1	Monitoring programs for key catchment assets agreed and in place by 2007	MO1
MT2	Monitoring programs for all RCS actions and other major actions of key stakeholders agreed and in place by 2006	MO1

Targets MT1 and MT2 focus on collecting data and information at both the "asset" and "action" levels.

At the asset level, gathering an adequate level of relevant information on the condition of key catchment assets and factors related to their management is the first step in the monitoring, evaluation and reporting process.

At the action level, it is important to have a consolidated picture of the major catchment management activities. While a number of these are contained in the RCS itself, many other important activities are being carried out under other programs by the wide range of stakeholders in this region. A consolidated picture will assist in avoiding duplication of monitoring effort and highlighting the interaction between different activities.

Target		Relevant objectives
MT3	Evaluation processes to assist priority setting and assess links between actions and outcomes agreed and in place by 2008	MO2

Currently, there is no agreed and integrated process for evaluating priorities and actions across this region and assessing the links to the health of our catchment assets. Target MT3 recognises the need for evaluation processes at all levels. Evaluation needs to be an integral part of all projects and the results must be continually fed into regional planning and priority setting. Timely, rigorous and efficient evaluation at all levels will improve local and regional catchment management programs and the targeting of investment.

Target		Relevant objectives
MT4	A regional catchment management reporting framework agreed and in place by 2006	MO3

Current reporting of catchment condition is fragmented, not comprehensive and is often not presented in ways that assist key stakeholders in making decisions. Target MT4 recognises the need for a coordinated reporting framework so that the work and learnings of stakeholders can be shared and a full picture of catchment condition, trends and actions is readily available to raise community awareness and assist project planning and decision making.

9.7   Actions

Community understanding of catchment condition and trends is important if we are to establish a strong case for achieving greater investment and participation in catchment management. Monitoring, evaluation and reporting Actions MA1 to MA5 will generate scientific and research information, bring it together for debate and distil it to show the whole picture for the region. They involve many stakeholders and, by analysing assets and risks, they will inform future planning, investment and on-ground action.

Action		Relevant targets	Completion date	Lead role	Key partners	Level of investment
MA1	Develop an agreed framework for integrated monitoring of regional catchment condition	MT1	2005	CMA	MW, EPA, PV, SRW, DPI, DSE, Local government	Low

Action MA1 recognises the need for a strategic approach to monitoring the condition of our catchment assets in an integrated manner. The region contains many organisations involved in catchment management, many of which already carry out some monitoring activity in line with their core business and responsibilities. However, an overarching framework is needed to ensure that all important information is collected and that the relevant information can be pulled together regularly.

This action will include:
- design of a framework for integrated catchment monitoring
- involvement of and negotiation with stakeholders to gain agreement
- an analysis of the current monitoring programs in the region and identification of gaps.

Action		Relevant targets	Completion date	Lead role	Key partners	Level of investment
MA2	Develop and implement regional monitoring and reporting programs for key catchment assets including:	MT1 MT3	2006		Melb Water, DSE, DPI, PV, PPWCMA, EPA, Local government, SRW, Universities, Community groups	High
	• Surface water, rivers and streams			Melb Water		
	• Groundwater and aquifers			DSE		
	• Wetlands			DSE		
	• Coasts			DSE		
	• Estuaries, bays and seas			DSE		
	• Land			DPI		
	• Biodiversity			DSE		
	• People and organisations			PPWCMA		

Building on the outcomes from Action MA1, this action will deliver the specific monitoring programs for key catchment assets. In line with the regional monitoring framework, this action will identify what needs to be monitored, to what level of detail, how often and by whom. It will also consider how the monitoring will be most efficiently undertaken and how the information from various organisations will be stored, distributed and shared. The design of the specific programs will also consider data required to monitor the implementation of Regional Catchment Strategy actions.

Action		Relevant targets	Completion date	Lead role	Key partners	Level of investment
MA3	Further develop an asset-risk assessment methodology and apply it consistently to catchment assets to assist integrated priority setting	MT3	2009	CMA	MW, DSE, DPI, EPA, SRW, Local Government, CCB	Low

A preliminary asset-risk assessment methodology has been piloted in the development of this RCS. However, a limited number of assets and threats have been assessed at this stage, and even these have been at a broad scale. There is a need to develop and improve methodologies for applying this approach to the diverse types of catchment assets and threats that are important to this region. In many cases there is also a need to generate new data that will underpin the assessments.

This action therefore needs to be advanced on various fronts including:
- Further development of the GIS-based tool that has been piloted in the development of this RCS
- Improvement in the methodologies that have been used for individual assets (such as groundwater, native vegetation and agriculture) and threats (such as overuse of groundwater, salinity and vegetation clearing)
- Generation of methodologies for catchment assets that have not yet been assessed under this approach (such as marine areas, wetlands, estuaries, soil)
- Development of methodologies that can adequately consider environmental, economic and social values
- Data gathering to support application of the methodologies
- Analysis to assess the risks, followed up by testing of the outcomes including some ground truthing
- Achieving agreement with relevant stakeholders during the various stages of this process so that there is widespread support and cooperation in this approach.

This action ties together various other RCS actions that seek analysis of individual assets, values and risks. For example, Action WA20 in Chapter 5 seeks to further develop the regional risk assessment model to identify the level of risk facing groundwater assets, and Action WA30 seeks to develop a Regional Wetland Plan to establish and implement priorities for investment. Similarly, Action LA3 in Chapter 6 seeks to develop a comprehensive risk assessment of soil health as a basis for development of a Soil Health Plan. These and other RCS actions will benefit from a consistent approach in analysis that can be used to guide priority setting and investment across the region's diverse assets and programs.

Implementation of this action is expected to take some years. Melbourne Water have developed the STREAMs model for assessing waterway-related risk, and this work has itself taken approximately 6 years to reach its current level of sophistication. It is therefore expected that a regional, integrated approach covering the diversity of catchment assets will take at least this long.

Action		Relevant targets	Completion date	Lead role	Key partners	Level of investment
MA4	Establish an independent scientific panel to evaluate and report on the condition of catchment assets, ecosystem processes, trends and risks	MT2 MT3	2006	CMA		Low

One of the most difficult tasks in a complex and highly populated region is the evaluation of the overall progress being made in catchment management. Dealing with this task at the regional level, Action MA4 will establish an independent scientific panel to annually analyse information and provide condition ratings of our key catchment assets.

A mechanism similar to this is proving effective in the Moreton Bay catchment around Brisbane, and the independence of the assessment has been highlighted as a feature. In Victoria, the Gippsland Integrated Natural Resource Management Forum has piloted an annual rating system for Gippsland's key catchment assets and presented the results in the style of a report card. These and other approaches will be considered in the establishment of a system that best suits this region.

Action		Relevant targets	Completion date	Lead role	Key partners	Level of investment
MA5	Ensure that all RCS projects include appropriate monitoring, evaluation and reporting processes	MT1 MT2 MT3	2006	CMA	MW, EPA, SRW, Local government, CCB, DSE, DPI, PV, Community groups	Low

This action focuses on achieving sound monitoring, evaluation and reporting at the project and action level. Standard approaches will be developed for inclusion in project planning. Before projects will be considered for funding through the Regional Catchment Investment Plan, they must include monitoring, evaluation and reporting processes that will contribute to the regional processes.

Action		Relevant targets	Completion date	Lead role	Key partners	Level of investment
MA6	Design and establish an RCS Action Tracking Database	MT1 MT2	2005	CMA	MW, EPA, SRW, Local government, CCB, DSE, DPI	Medium

Action MA6 recognises the need to monitor the many activities being undertaken by various stakeholders to implementing the RCS. It involves development of an 'action tracking database' as a central record of progress in implementation of all RCS actions.

For this database to be efficient, up-to-date and accurate, the various organisations will need to regularly provide information and progress reports. Action MA6 will therefore require up-front agreement with and commitment from these organisations to the process.

9.8 Summary table

The following table summarises the translation of the goal for monitoring, evaluation and reporting through the steps of objectives and targets to actions.

Goal

A strong understanding of the health of our catchment assets, ecosystem processes, trends and risks, enabling evidence-based planning and action, coordination of effort and continual improvement

Objectives

MO1. Adequate, appropriate, efficient and cost effective monitoring of catchment assets, ecosystem processes, trends, risks, implementation of actions and outputs

MO2. Timely, rigorous, efficient and cost effective evaluation of catchment management planning and implementation

MO3. Timely, tailored, efficient and cost effective reporting on catchment assets, ecosystem processes, trends, risks, catchment management planning and implementation

Targets

MT1. Monitoring programs for key catchment assets agreed and in place by 2007

MT2. Monitoring programs for all RCS actions and other major actions of key stakeholders agreed and in place by 2006

MT3. Evaluation processes to assist priority setting and assess links between actions and outcomes agreed and in place by 2008

MT4. A regional catchment management reporting framework agreed and in place by 2006

Actions

MA1. Develop an agreed framework for integrated monitoring of regional catchment condition

MA2. Develop and implement regional monitoring and reporting programs for key catchment assets including:
• Surface water, rivers and streams
• Groundwater and aquifers
• Wetlands
• Coasts
• Estuaries, bays and seas
• Land
• Biodiversity
• People and organisations

MA3. Further develop an asset-risk assessment methodology and apply it consistently to catchment assets to assist integrated priority setting

MA6. Design and establish an RCS Action Tracking Database

MA4. Establish an independent scientific panel to evaluate and report on the condition of catchment assets, ecosystem processes, trends and risks

MA5. Ensure that all RCS projects include appropriate monitoring, evaluation and reporting processes