

## **Part G**

# **Implementing the Strategy**

## 26 Developing an Investment Plan

### 26.1 Prioritising High Value Waterways

#### 26.1.1 Benefit Cost Analysis

Detailed work has already taken place in Parts D, E and F to determine which waterways within the Corangamite CMA region are considered high value and what activities are required to ensure their protection and/or restoration. This is the "first sieve".

A "second sieve" is now required that analyses the return for investment by implementing recommended actions outlined in Part F for each of these high value waterways. This process, known as benefit cost analysis, is concerned with priorities for investment ie what should be the order in which programs on high value waterways are implemented so that the overall return to the community is maximised when funds are limited. Hence, the "second sieve" will prove the cornerstone in developing works programs for the Corangamite CMAs Regional Catchment Investment Plan.

The benefit cost analysis chosen by the CCMA utilises the methodology put forward in URS (2003). The principal feature of the methodology is the use of benefit-cost ratios as the criterion by which priorities are judged. Benefit-cost ratios are derived from benefit-cost analyses that involve the use of unpriced (or non-market) benefits. Those benefits are assessed using two methods of valuation. The first method uses the concept of the community's willingness to pay (WTP) to gain an attribute of a river, ie when the river or reach is to be improved. The second method uses the concept of the community's willingness to accept compensation (WTA) for the loss of an attribute of a river, as would be the case if the river or reach were not preserved or maintained.

The assessment of priorities is dependent on an understanding of the physical and biological relationships that underlie the response of a river ecosystem to management. There is, however, considerable uncertainty in predicting the outcomes of management actions. This risk is incorporated in the assessment by using a probabilistic form of benefit-cost analysis.

Another feature of the assessment is the use of case studies that are representative of various classes of reaches. Each case study is subjected to detailed analysis and the results extrapolated to the relevant group of reaches.

The benefit cost analysis also includes priced (market) benefits based on a past benefit cost analysis for the Corangamite Nutrient

Management Strategy (2000) as well as direct benefits attributed to public asset protection.

This benefit cost analysis is being undertaken in parallel with the development of the River Health Strategy and will be utilised in the setting of works programs for the region.

#### 26.1.2 Stakeholder Attitudes and Capacity

In addition, to determining priorities for investment based on benefit cost analysis, an understanding of stakeholder attitudes and capacities to implement various identified activities is required.

As this understanding often becomes apparent only when specific actions are proposed (ie when a strategy moves to implementation), it is proposed that targeted interviews and workshops be held with identified stakeholders relating to specific responsibilities and accountabilities for the High Value Waterways immediately after the release of the Strategy.

Wherever possible and/or appropriate, these interviews and workshops should include/link with works programs outlined in other strategies and plans being implemented across the catchment.

#### **Recommendation 26.1**

Upon release of the Strategy, undertake interviews and workshops with relevant stakeholders to determine attitudes and capacities to implement various identified activities.

Typical interviews will include ranking the following factors as they relate to specific actions.

#### **Attitude**

Understanding the motivation of stakeholders is crucial to developing a successful intervention program. The attitude is likely to vary depending on which high value waterway is being considered and the activities being proposed.

The attitude of stakeholders will be assessed under the headings of:

- low
  - minimal awareness of asset or issue
  - until proven to achieve commercial return equivalent to existing enterprises
  - unsure if threat (or degree of threat) exists
  - activities could effect existing enterprise
  - costs are too high

- moderate
  - some recognised need to address the issue
  - some stakeholders aware, others need encouraging
  - many keen to address the issue
  - many have done work, some still need encouraging
  - evidence of keen stakeholders if support is provided
  - unaware of the appropriate treatment
  - unconvinced of the return for the investment
  - awareness low – new area
- high
  - all stakeholders keen to protect the asset
  - good understanding of the importance of the asset
  - keen group/agency with a management plan

### **Capacity**

Capacity relates to the ability of stakeholders to undertake activities that lead to the proposed targets and objective. It will be a key ingredient to the successful adoption and implementation of the river health strategy.

Elements of capacity that will be discussed with identified stakeholders include:

- coordination (are there external threats beyond the stakeholders control, do stakeholders need support from other stakeholders to implement, is project coordination required);
- finances (is financial support required, are proposed cost shares acceptable, could

the proposed activity be financially damaging, does the stakeholder only have limited funding);

- technical expertise (is technical advice required, are new skills required, is there a lack of knowledge);
- labour (is appropriate machinery and labour available); and
- time (does the stakeholder have the time available).

## **26.2 Confirming On Ground Actions**

Actions developed for the high value waterways were determined based on existing Action Plans, current works programs, agency and local community knowledge, internal CCMA resources and aerial photo interpretation. As such, many site specific actions will need to be tested and refined 'on the ground' to ensure that the necessary targets and objectives are met.

In addition, the activities within the 5 Year Action Plans will be tested against current knowledge and expertise of stakeholders to confirm their appropriateness and (where required) alternative approaches adopted and/or trialled.

This will be achieved through the development of Landscape Management Plans and specific River Rehabilitation Plans that involve all relevant stakeholders.

## 27 Community Engagement and Capacity Building

In the development and implementation of any strategy, the roles of all stakeholders need to be clearly articulated if communication and implementation of action are to be successful. We have learnt from past experience that without careful definition and planning of roles and tasks, community participation can be seen as tokenistic, can be poorly attended and can fail to fulfil expectations (VRHS, 2002).

Rowley (2004) noted that investment in community capacity building or 'social assets' is often left as an after thought compared to investment directly linked to changing biophysical asset condition.

The success of the Corangamite River Health Strategy will rely on the capacity of the CCMA and regional stakeholders to deliver the biophysical outcomes defined within it.

The Corangamite CMA with stakeholders will continue to improve existing engagement frameworks intended to develop a strong program aimed at increasing the shared capacity to understand, own, debate and address issues which will lead to enduring and sustainable river health outcomes.

The goal is improvement in practices and resource condition. The goal of NRM isn't to improve communities; the goal is to reverse the trend of environmental degradation and change the way people use the environment so that the integrity of natural systems is maintained (Training and Development Group 2006).

A key component and starting point for the implementation of the Corangamite River Health Strategy is a robust Community Engagement Plan. This plan will ensure that:

- community and other stakeholders are engaged at the most advantageous level using the most appropriate tools;

- the CCMA and community have the best available knowledge, information and advice when making decisions;
- CCMA as an organisation will continue to develop staff capacity and capability to effectively engage with the community and other stakeholders to address the complexity of issues.

(based on Effective Community Engagement, DSE and DPI, 2004)

### 27.1 Current Approaches to Community Engagement

DSE (2004) defines community engagement as a planned process with the specific purpose of working with identified groups of people, whether they are connected by geographic location, special interest or affiliation, to address issues affecting their well-being.

Community means more than just local communities it encompasses the full range of relevant stakeholders - local government, government agencies, industry bodies, indigenous groups, local community groups, the various segments of the general public (young/old, rural/urban, etc.), the scientific community and communities of interest that form around specific issues (Training Development Group 2006).

The development of the regional Corangamite Community Strategy (2005-2008) also describes community assets and threats as a guide to evaluating who we are trying to engage and the level of engagement required for each project (refer to Tables 27.1 and 27.2).

**Table 27.1 - Description of Community Based Assets**

#### **Community based environmental and interest groups**

These groups enable collectives of individuals to set targets or goals for their local area, develop a platform for volunteer groups of people to plan and implement projects to protect and enhance their local landscape, share learning and sharing of technical and experiential knowledge and sharing of resources and influence on priorities for regional catchment management.

#### **Individual urban residents**

There is a significant level of community ownership associated with urban environments due to the high recreational and aesthetic values these environments represent. There is increasing interest by the urban sector in enhancing these environments. This approach provides an opportunity to fulfil local priorities demands and expectations and to increase participation rates.

#### **Individual rural landholders**

There a high level of community commitment and interest to undertake river health works across the region. This project aims to harness this interest and fulfil local priorities, removing the geographical restrictions currently associated with regional priority investment.

**Table 27.1 (cont) - Description of Community Based Assets**

<p><b>Regional NRM agencies</b> NRM agencies allow for the effective coordination of natural resource management planning, extension services and on ground works. Their role in engaging and empowering the community is essential to increase knowledge and bring about environmental change.</p> <p><b>Local Government</b> Local governments provide the major legislative and community functions for local planning and development referrals. In addition, they play a major role in community services and information provision across a broad range of social, economic and environmental issues.</p> <p><b>Government funders and policy makers</b> Policy sets the parameters for funding and funding requirements drive bids for the region. Long-term, the assessment of the results of funding, and the research and discussion that leads to new policy, will affect not only funding for NRM programs, but funding for research and development, requirements for NRM governance, preferred approached to change in practices and resource condition.</p>
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**Table 27.2 - Description of Community Based Threats**

<p><b>Lack of support from NRM agencies</b> Communities need to feel supported and valued and given the opportunity to participate in training and learning activities to ensure optimal outcomes from their hard work are achieved. Stakeholders including CCMA need to understand these needs and values and build them into our outcomes.</p> <p><b>Lack of commitment to NRM outcomes</b> This project will provide an opportunity to identify community groups and individuals who can be involved in river health improvement works resulting in a wider spectrum of possible participants and reducing the likelihood of project failure.</p> <p><b>Lack of motivation to undertake natural resource management</b> The project will allow the community and other interested parties to experience natural resource management first hand and discover that undertaking environmental works is neither difficult, expensive and has immediate benefits that meet community needs and expectations.</p> <p><b>Targeted river health investment</b> The project aims to engage and involve all interested community groups and individuals in river health improvement works focusing on local priorities, irrespective of regional priorities.</p>
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**27.1.1 CCMA River Health Program Engagement Process**

The Corangamite CMA Board is responsible for the development and implementation of the Regional Catchment Strategy. This implementation is undertaken through the Regional Implementation Committee (RIC) which has the responsibility for allocation of resources to address priorities across the region. The Board and the RIC are supported by a number of Operational Portfolio Groups including the River Health Operational Portfolio Group.

The Regional Implementation Committee draws its members from the key stakeholders across the region including chairs of portfolio groups, Coastal Boards, DPI, DSE, local government, indigenous community and industry groups. The committee has a strong focus on implementing the sub-strategies and plans of the RCS. The breadth of stakeholders represented on this committee assists the broader integration of programs and communication and implementation of initiatives between stakeholders.

The Corangamite River Health Operational Portfolio Group is a Co-ordination Committee that oversees the River Health Program. The Portfolio Group was established with community representatives who had strong links within their regional communities and have substantial knowledge of river health issues.

Current community engagement methodologies in the region focus on the engagement of key community and stakeholder organisations. Successful engagement processes that are being adopted in the region as part of the delivery of the river health program utilise action learning cycles as part of the process to engage, develop and deliver river restoration projects.

Current engagement practices adopted in the region are based around the creation of Project Working Groups. These groups consist of representatives from a range of community and Landcare groups, water authorities, public and private land managers, industry groups, recreational fishing groups, local government, DPI and DSE. The process outlined below is undertaken to engage the group in the development and delivery of the project:

- Identify the key stakeholders and scope the issue
- Develop a Community Engagement Plan
- Engage communities with the project
- Develop an Implementation Plan
- Implement works
- Evaluate the project

This approach has significantly improved the engagement processes with local communities and stakeholders leading to a greater understanding and involvement in the delivery of river restoration projects. The inclusion of action learning cycles within each stage of project development and delivery has resulted in opportunities for reflection and significant process, project and content learnings being gained through the stages of the project.

The CCMA is also trialling the use of the River Restoration Framework (Land and Water Australia 2001) with a large scale river restoration project on Pennyroyal Creek in the Upper Barwon River Catchment. The project is currently in the scoping and visioning stage with a draft restoration plan to be completed in 2006. As part of the implementation of this process action learning cycles have been included through the development of each stage. An evaluation framework is being developed within the scoping stage to enable the process and project outcomes to be captured and documented building a culture of continuous improvement.

## 27.2 Corangamite CMA Community Strategy

The regional Corangamite Community Strategy presents principles to guide engagement and social capacity building, resource condition targets for the community as a social asset and management action targets. It is due for completion by December 2006.

Engagement means creating opportunities for people to work together as they analyse problems and opportunities, consider options, make decisions and take action.

Social capacity building means improving people's capacity to work together on NRM tasks.

Engagement creates opportunities to participate in NRM planning and practice change. Social capacity building builds the relationships, so that trust and commitment develop.

The development of the Strategy involved a process to map key stakeholder groups and the proposed level of engagement required by CCMA with each group by 2008. Each program has set targets for relationships with stakeholders, based on an assessment of current relationships, including feedback from stakeholders. Programs have also considered

stakeholder capacity, and where necessary set targets for developing capacity.

The mapping of stakeholder and community engagement builds on the current engagement processes being carried out in the region. This process also highlights the engagement and social capacity building challenges in the region which underpin the successful delivery of the Corangamite River Health Strategy.

After completion of the Community Strategy, the next step for each key stakeholder group will be to:

- conduct a stakeholder analysis to identify the systems and the relevant needs of the stakeholders;
- plan for implementation of the engagement process;
- plan for the evaluation of the process; and
- incorporation of learnings into the process.

It is anticipated that specific issues will be identified that result in a shift of emphasis from engagement with communities to building of capacity within these communities through the development of the Community Engagement Plan and the ongoing stakeholder analysis undertaken through this process

Additional support will need to be provided to project officers/facilitators and communities to allow them to implement a stronger role in building of capacity and capability. This support will take a variety of forms and will also depend on the existing knowledge, experience (including skills, attitudes, and aspirations) and responsibilities of stakeholders. Considerations for supporting the facilitators in the successful implementation of the engagement plan include:

- **Resource Allocation:** providing sufficient time for the increase in work for the implementation of the engagement strategy. For example, examining and undertaking the stakeholder analyses for each project will require an upfront allocation of time.
- **Underpinning knowledge and skills:** In order for facilitators to be able to communicate the engagement strategies and establish partnerships with key people / stakeholders within the region a stronger understanding of engagement social processes will need to be learnt and understood.
- **Time for reflection and review:** With all new directions and learning experiences, time for reflection on actions taken is beneficial and will enable improvements that can be made (large or small) to current practice and what further needs for learning or training they require.

## 27.3 Community Participation

The following section is adapted from DNRE (2002a pp127-129).

Communities and the individuals that make up communities have a number of roles in the implementation of the Corangamite RHS. Primarily, individuals will be relied on to manage their own enterprises in ways that acknowledge their 'duty of care' and their role as stewards on natural resources. Secondly, they may participate in community groups and networks such as Landcare and Waterwatch, aimed at undertaking restoration activities and/or monitoring river health. Thirdly, community members may participate in

planning, priority setting and implementation of river restoration projects.

In order to fulfil these roles, it is important that community members are able to build on and enhance local and existing knowledge, skills and resources. Current opportunities include:

- participation in Waterwatch programs;
- membership and involvement in Landcare;
- advice and support from facilitators and coordinators (both community and government);
- involvement in NRM programs such as Environmental Best Management Practice; and
- attendance at field days.

## 28 Securing Resources

### 28.1 Possible Funding Sources

#### 28.1.1 Regional Funding Base

The Corangamite CMA receives base funding through the Department of Sustainability and Environment for delivery of the Corangamite River Health Program.

In addition to the current base level of funding there are a number of significant funding sources available through state and Australian government initiatives which will play a major role in the implementation of the Strategy. As these initiatives are usually targeted forms of investment (eg. National Action Plan for

Salinity and Water Quality (NAP)) the CCMA through its regional planning and co-ordination processes implements processes to ensure regional priorities for investment align with these funds to maximise the delivery of regional targets.

Additional forms of investment such as those available through industry based organisations such as philanthropic trusts, industry bodies and private industry may also contribute to the implementation of the Strategy particularly where a direct relationship has been built with community based groups such as Landcare.

A summary of funding sources available is provided in Table 28.1.

**Table 28.1 Current Victorian and Australian Government and Regional Fund Sources**

#### **Victorian Government Funding**

##### **State River Health Investment**

The State Government provides ongoing funding to Catchment Management Authorities specifically for river restoration and management through two funding sources, namely:

- Healthy Waterways Program
- Water Statutory Functions

##### **Victorian Water Trust (VWT)**

Investment in large scale projects with a focus on innovation, partnerships and leverage of funds. Funds available \$320 million between 2003 and 2013 The Victorian Water Trust funds cover three key areas

- Water Smart Gardens and Homes
- Water Smart Farms
- Healthy Rivers Initiative

##### **Our Water Our Future**

Investment will be allocated across five headline expenditure categories: Total funds available \$225 million to 2008.

- Contribution to COAG Living Murray
- Smart urban water initiative and recycling
- Protecting and repairing our water resources
- Boosting existing water smart farms program and the sustainable irrigated and agricultural land management initiative
- Water security for cities, farms and the environment

##### **Stormwater and Urban Water Conservation Fund**

Aims to conserve water supplies and develop new water sources, particularly by taking advantage of stormwater. Total funds available \$10 million between 2004 and 2007.

#### **Australian Government Funding**

##### **Natural Heritage Trust**

The focus is restoration and conservation of Australia's environment and natural resources, with specific attention to integrated solutions that involve all stakeholders in formulating and delivering solutions. Total funding available is \$3 billion between 2001 and 2008.

##### **Australian Envirofund**

The Australian Envirofund is the local action component of the Federal Government's \$3 billion NHT. It helps communities undertake local projects aimed at conserving biodiversity and promoting sustainable resource use. Total funds of \$20 million annually, sourced from the Federal Government's National Heritage Trust (NHT).

**Table 28.1 (cont) - Current Victorian and Australian Government and Regional Fund Sources**

**National Action Plan (NAP) for Salinity and Water Quality**

The development and application of regional solutions to salinity and water quality problems, with an emphasis on the cooperation of all regional stakeholders in the development of salinity solutions. Total funds available are \$1.4 billion over seven years, provided by the Federal Government's National Heritage Trust, and the Victorian Government.

**Australian Government Water Fund (National Water Commission)**

Three key areas of funding Water Smart Australia, Raising national water standards, Australian water fund communities. Total funds available, \$2 billion over five years 2004-2009, provided by the Federal Government.

- *Water Smart Australia Grants* For large projects on-ground water resource projects that make a significant contribution to the sustainable and efficient management of water resources in rural, regional and urban areas.
- *Raising National Water Standards* Investment in Australia's national capacity to measure, monitor and manage its water resources. These investments will be designed to help achieve National Water Initiative outcomes
- *Australian Government Community Water Grants Program* Community based projects that involve practical on-ground works, which address conservation and protection of water resources.

**National Landcare program**

Focus to increase the profitability, competitiveness and sustainability of Australian primary industries. Funds available \$159 million from 2004-2008.

**Regional Sources of Funds**

**Local Government**

As a key regional local coordinating body local government is able to provide limited funding for works or as a co-contributor to support river health improvement projects.

**Industry Bodies**

Primary industry bodies such as the Victorian Farmers Federation and WestVic Dairy may provide a co-contribution of funds as part of industry based initiatives.

**Private Industry**

Major private industry bodies such as Alcoa, Mitre 10, Westpac, Banrock Station, oil and gas companies are increasingly developing partnerships with community based organizations to support local environmental restoration efforts.

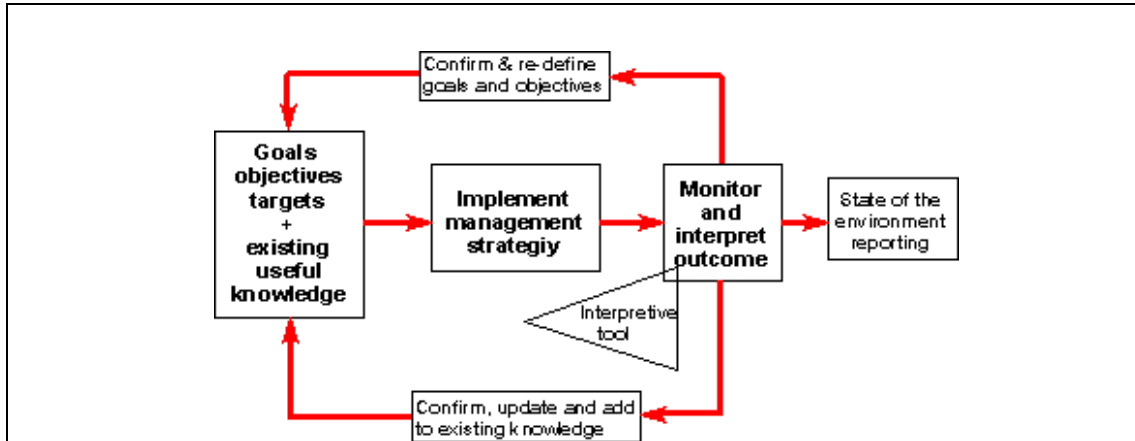
**Philanthropic**

These trusts provide significant funds to environmental restoration works associated with community based groups e.g. MA Ingram Trust.

## 29 Monitoring and Evaluation

Monitoring and evaluation allow for the refinement of goals and objectives of projects and for increased knowledge of stream restoration or rehabilitation techniques (refer to Figure 29.1). Current natural resource

management directions indicate the importance of monitoring and evaluation as a process that forms the basis for, and directs, adaptive management (i.e. learning by doing).



**Figure 29.1 - Framework that incorporates the main characteristics of a successful monitoring program (Source: Bosch *et al.* 1996)**

### 29.1 Guiding Documents

#### 29.1.1 National Action Plan Monitoring, Evaluation and Reporting Strategy

As a funding source, the National Action Plan (NAP) sets requirements for the monitoring, evaluation and reporting of projects through its Monitoring, Evaluation and Reporting (MER) Strategy. The Strategy states that 'NAP places considerable emphasis on accountability, monitoring and evaluation of the impact of activities undertaken and their contribution toward outcomes.'

In this light, the Strategy states that emphasis will be given to the following aspects of projects:

- Demonstration of program impact;
- Increased accountability and reporting;
- Improved use of monitoring for strategic planning; and
- Utilisation of feedback to improve program/project delivery.

#### 29.1.2 Corangamite Regional Catchment Strategy

The Corangamite Regional Catchment Strategy (RCS) is an over-arching guiding document that sets priorities and principles for the management of the catchment. *Report 13 of the RCS - Monitoring and Evaluation for Natural Resources Management in the*

*Corangamite Region* - details a framework and process for building the overall monitoring and evaluation framework for the Region. This report, which will form the basis for developing the Monitoring and Evaluation Framework for the River Health Strategy:

- describes the types of indicators available for performance monitoring and assessment of biophysical and socio-economic assets and threats;
- identifies key assets under threat from human and/or natural disturbance in the Corangamite Region;
- identifies a preliminary set of indicators relevant to Corangamite Region management;
- identifies the process for finalising the set of key Regional indicators, including indicator categorisation (e.g. pressure, state/ condition, response, outcome, input, outcome indicators);
- describes the importance of performance evaluation (at project/ program level) in terms of RCS (and Supporting Strategies) appropriateness, effectiveness or impact, efficiency and sustainability; and
- identifies key performance indicators for evaluating the performance of both the Corangamite Regional Catchment Strategy and associated Supporting Strategies.

## 29.2 River Health Strategy Monitoring and Evaluation Framework

To measure progress, through implementation, towards achievement of targets within the Corangamite River Health Strategy, a framework for monitoring and evaluation has been developed. This framework will:

- use high quality baseline information as a basis for regional planning;
- make comparisons over time against pre-determined targets (both 5 year implementation targets and 10 year resource condition targets);
- assess the standard and performance of current and proposed waterway management practices;
- review processes to incorporate new information into the Strategy and river health works programs;
- ensure a long term process of community engagement and capacity and capability building; and
- record progress with implementation of the River Health Strategy.

### 29.2.1 Monitoring

Monitoring may be defined as the process of gathering information about a project over time and/or space. Measurement of parameters is ideally made before, during and after a project.

Monitoring activities have been developed and are detailed for each High Value Waterway in Section 23. The following provides a broad overview of these activities.

#### Hydrology

Flows are measured at a number of gauging stations throughout the region.

Monitoring flows will provide a baseline for any environmental flow allocations. The information will also be used to assess the achievement of the following MATs:

- number of rivers with negotiated environmental flow regimes; and
- number of rivers with improvements to environmental flow regimes.

#### Physical Form

Longitudinal and cross-sectional surveys assist stability investigations and provide baseline information on the current form of a waterway.

Sediment monitoring (particularly in estuaries) enables the determination of the rate of input from upper catchments.

In addition river surveys will identify impediments to the migration of fish as well as the condition of instream habitats. This information will be used to assess the achievement of the following MATs:

- number of barriers where fish passage restored
- increase in river length made accessible for fish movement
- length of river where instream habitat has been reinstated

#### Flora

Vegetation surveys are undertaken to provide information such as:

- EVC determination;
- weed identification;
- revegetation planning; and
- available habitat.

Post works surveys will be used to assess the achievement of the following MATs:

- area of riparian land under management agreements
- area of riparian land vegetated
- length of river subjected to riparian weed control

#### Fauna

Both terrestrial and aquatic surveys are important in providing baseline information such as distribution and assemblage as well as information on habitat aspects and threats. Surveys include:

- fish;
- platypus;
- birds; and
- aquatic macroinvertebrates.

#### Water Quality

A variety of approaches to monitoring water quality are either underway or planned as part of implementing the River Health Strategy. These include:

- monthly sampling at VWQMN sites using the standard set of surface water monitoring parameters;
- continuous and storm-based sampling to capture potential upstream inputs during and after storm events; and
- Waterwatch sampling that provides greater coverage of water quality across the region and can be site specific.

Water quality monitoring can be used to:

- confirm water quality status;
- identify causes and inputs;
- set baselines for stormwater management initiatives; and
- set baselines for estuary mouth opening protocols.

### 29.2.2 Evaluation

Evaluation is an extension of monitoring, in that the data obtained by monitoring is used to assess whether the project has been successful in achieving the predetermined objectives (i.e. whether it has met the identified parameters of a target or reference approach).

#### Hydrology

Flow information will be used to evaluate the effectiveness of releases on downstream flow

components (including duration and frequency). This evaluation will be used to assess the achievement of the following RCTs:

- establishment of Environmental Water Reserve and improved flow regimes achieving environmental flow objectives.

#### **Physical Form**

Evaluation of data collected before and after implementation of activities (such as stabilisation works or environmental flow releases) will be used to assess the achievement of the following RCTs:

- physical changes resulting from reinstatement of environmental flows
- length of river protection/improvement of physical form subindex (as measured by ISC).

#### **Flora**

Evaluation of site conditions before and after implementation will be used to assess the achievement of the following RCTs:

- length of river protection/improvement in riparian condition (as measured by ISC)

#### **Fauna**

Evaluation of fauna data will be used to determine the effectiveness of implementation programs (with regard to biological changes/character of macroinvertebrate, fish, platypus, or birds) and assess the achievement of the following RCTs:

- protection/improvement of aquatic life (as measured by ISC); and
- improved flow regimes achieving environmental flow objectives.

#### **Water Quality**

Evaluation of water quality data will determine changes resulting from activities (such as riparian management, erosion control and environmental flows) and assess the achievement of the following RCTs:

- reduction/improvement in nutrient loads/concentrations at key monitoring sites within catchments;
- reduction/improvement in salinity loads/concentrations at key monitoring sites within the catchments;
- reduction/improvement in sediment loads/concentrations at key monitoring sites within the catchments; and
- % of relevant SEPP (WoV) objectives met for key monitoring sites.

The monitoring and evaluation programs aim to assess activities against resource condition targets and waterway objectives. The monitoring components outlined under each of these programs have been designed to monitor across a wide variety of parameters including

- Index of Stream Condition
- the condition of priority assets including flora, fauna and wetland condition
- stakeholder and community values and perceptions
- Surveys of any potential artificial barriers to native fish passage;

- Native fish movement, species range, abundance and diversity;
- Baseline vegetation surveys;
- Range, abundance and health of platypus populations;
- Monitoring impacts from recreational activities and tourism;
- Monitoring physical and chemical parameters of estuary prior to and after any authorised artificial mouth openings.
- Water Quality monitoring including storm event monitoring.

### **29.2.3 Adaptive Management**

Adaptive management is the pathway to effective conservation, use and management of Australia's natural assets. In broad terms, adaptive management can be defined as '*a systematic process for continually improving management policies and practices by learning from the outcomes of operational programs*' (Bennett & Lawrence 2002).

The implementation of an adaptive management framework is based around action and learning. There are times where decisions need to be made without being able to implement extensive monitoring programs to measure ecosystem responses. The adoption of an adaptive management approach allows further actions to be based on an improved understanding of the system through the outcomes of monitoring and review leading to a cycle of continuous improvement in program engagement and delivery. The adoption of this approach to implement the strategy will be a key element to its success.

To ensure the Corangamite River Health Strategy implements an adaptive management approach to the design and implementation of the program, the Corangamite CMA will incorporate the following actions and processes as key components for the delivery of the program:

- undertake a comprehensive assessment of river health by the Index of Stream Condition in 2009.
- undertake an annual evaluation of the progress of the River Health Strategy to meeting targets and objectives and the effectiveness of management activities;
- adopt action learning cycles within all stages of strategy delivery to allow reflection and significant process, project and content learnings being gained throughout the life of the program; and
- develop stakeholder capacity and capability to create an adaptive management approach to implementation of the Corangamite River Health Strategy.

### **29.2.4 Review**

The Corangamite River Health Strategy will be updated every five years, based on changes in resource condition and progress to meeting

five year implementation targets. Changes in community attitudes and capacity will also be taken into account as part of the review process and the revision of regional river health targets.

The purpose of the review is to provide a formal process to incorporate new information gained through the implementation of the strategy, evaluation of project process and

delivery, monitoring of resource condition and new research.

In addition, the State Government intends to review the RiVERS database and will consider the inclusion of additional assets and threats as identified during the development of river health strategies across the state.

