

# Snowy River Rehabilitation Plan of Works



Department of  
Sustainability and  
Environment

DEPARTMENT OF  
PRIMARY INDUSTRIES

EAST GIPPSLAND  
CATCHMENT  
MANAGEMENT  
AUTHORITY

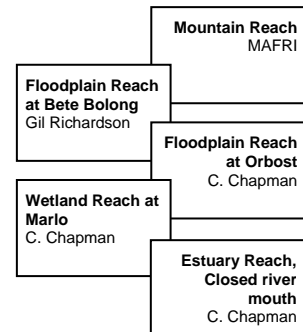


  
Parks  
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## 1 INTRODUCTION

From the slopes of Mount Kosciusko in NSW to Marlo on the East Gippsland coast in Victoria, the Snowy River flows for over 500 kilometres through a broad range of landscapes including alpine meadows, snowgum woodlands, grassland plains, mountain forest, riparian forest, rainforest, floodplain agricultural land and coastal wetlands. Of the total 15,860 km<sup>2</sup> Snowy River catchment, 6,470 km<sup>2</sup> lies in Victoria and includes National Parks and Reserves, State forest, other Crown land and agricultural land.

The Snowy River flows within the traditional lands of Aboriginal people. The river is acknowledged as a traditional boundary between clans. It served as an important route for trade and for groups walking to the coast to collect seafood and to the mountains during festivals such as collecting Bogong moths.

Heritage River status applies to the entire Victorian length of the Snowy River because of its significant biological, geological, cultural, scenic and recreational values (LCC, 1991).

Reduced river flows due to the construction of the Snowy Mountains Hydro-electric Scheme in the 1960's, together with past land management practices have significantly altered the Snowy River's ecology over recent decades.

### 1.1 Purpose

This Plan of Works fulfils a need identified by Government agencies and community members to develop an overall integrated works plan to co-ordinate the implementation of all Snowy River Rehabilitation activities. The Plan represents a shared vision for the Snowy River's rehabilitation. It is a single comprehensive document describing all the rehabilitation activities aimed at improving the River's health and allows for the efficient co-ordination of rehabilitation works.

## 2 SNOWY RIVER REHABILITATION

### 2.1 Rehabilitation Vision

Improving the ecological health of the Snowy River has long been an objective of community members affected by the degraded river system. In 2001, the Victorian Government committed to undertaking a long term program of rehabilitation works on the Snowy River within Victoria.

**Snowy River Rehabilitation** is a multi-faceted, integrated program of rehabilitation works. It encompasses a diverse range of projects which will be implemented co-operatively by Government agencies, community groups and landowners. The program as a whole forms a major long-term commitment towards rehabilitation of the Snowy River.

A recently released Background Paper (EGCMA & DSE, 2003) summarised values and threats to the health of the Snowy River and identified various projects aimed at addressing these river health issues. The Background Paper, which was circulated for consultation, also outlined a broader community and Government vision for improving the ecological health of the Snowy River.

#### **Snowy River – A Rehabilitation Vision:**

The Snowy River will, as a result of long-term co-operative efforts by community members, landowners and Government, once again become an ecologically healthy waterway with:

- 28% average annual environmental flows;
- Diverse riverbed formations offering unimpeded fish passage;
- A fully vegetated, native species riparian corridor;
- Habitat for a diverse range of terrestrial and aquatic species;
- Ecologically diverse and healthy wetlands;
- Eradication of willows and other weeds; and
- Enhanced recreation and aesthetic appeal.

### 2.2 Rehabilitation Objective

The overarching objective of all rehabilitation activities undertaken along the Victorian section of the Snowy River is to:

#### **Snowy River Rehabilitation – Objective:**

Improve the ecological health of the Snowy River through implementation of in-stream, riparian and catchment works that complement the benefits of increased environmental flow releases.



**Figure 1:** Snowy River main stem from NSW border to Marlo (From: VWRDW, 2002)

### 3 HEALTH OF THE SNOWY RIVER

#### 3.1 River Health

The Victorian River Health Strategy (NRE, 2002) defines river health in terms of flow regimes, water quality, aquatic life, channel and bank characteristics, and riparian characteristics (Figure 2). For an ecologically healthy river these river health components must have the following attributes:

- The majority of plant and animal species in the river and riparian zone are native and the presence of exotic species is not a significant threat to the ecological integrity of the system;
- Natural ecosystem processes are maintained;
- Major natural habitat features are represented and are maintained over time;
- Native riparian vegetation communities exist sustainably for the majority of the river's length;
- Native fish and other fauna can move and migrate up and down the river;
- Linkages between river and floodplain and associated wetlands are able to maintain ecological processes;
- Natural linkages with the sea or terminal lakes are maintained; and
- Associated estuaries and terminal lake systems are productive ecosystems.

An **ecologically healthy river** is one that retains, and is able to sustain into the future, the major ecological features and processes that would have existed prior to European settlement. However, the Victorian River Health Strategy recognises that for substantially modified rivers, such as the Snowy, the concept of returning them to a pre-

European state may not be possible. River rehabilitation in such circumstances should aim for an ecologically healthy state that most closely represents natural hydrological and biological conditions given the constraints imposed by river regulation and other competing demands.

The ecological restoration of rivers throughout Victoria is built on the foundation of long-term support, commitment and willingness by both the community and Government to achieve ecologically sustainable improvements in river health.

The Draft East Gippsland River Health Strategy (EGCMA, 2002) establishes a Vision and outlines regional priorities for river management, in partnership with the community, across East Gippsland. Priorities for the Snowy Basin include continuing to seek environmental flows, trial and implementation (if appropriate) of in-stream works, riparian land management, weed management and management of erodible soils.

#### 3.2 Water Diversion from the Snowy River

Construction in the 1960's of the Snowy Mountains Hydro-electric Scheme and the subsequent diversion of the Snowy River at Jindabyne Dam, together with diversion of Cobbon Creek and Mowamba River (immediately downstream of Jindabyne Dam), resulted in a dramatic reduction in the Snowy River's natural flow.

The Jindabyne Dam and associated diversions reduced the mean annual flow of the Snowy at Jindabyne from 1250 gigalitres per year to 10 gigalitres per year (SGCMC, 1996), or approximately 1% of the original mean annual natural flow at Jindabyne Dam. However, due

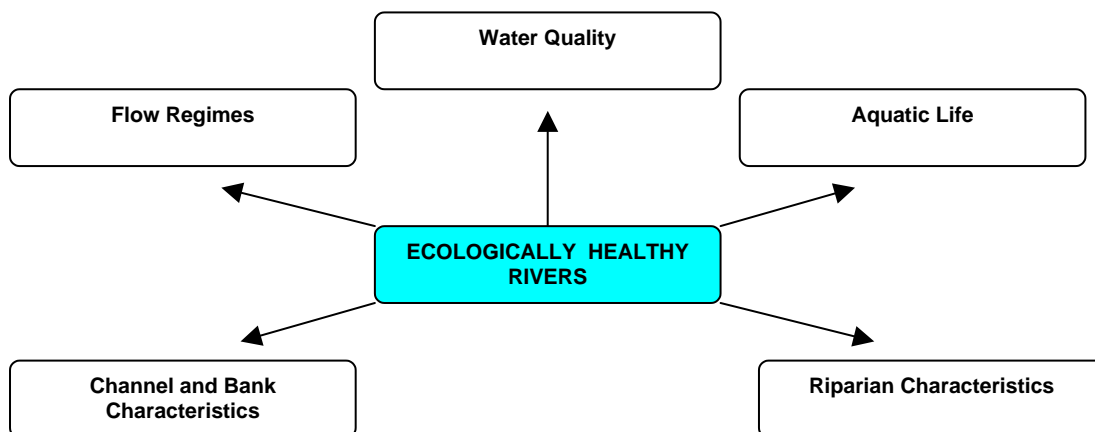


Figure 2: Components of an ecologically healthy river

to tributary inflows downstream of Jindabyne, the mean annual flow at Jarrahmond (near Orbost) was reduced to approximately 55 % of its original natural flow (James, 1989).

River diversion at Jindabyne Dam also altered flow conditions in the Snowy River by removing peak discharges associated with spring melt of mountain snow, resulting in significantly reduced frequency and variability of flushing flows.

### 3.3 Current Ecological Condition

Reduction of natural river flows and the effect throughout the catchment of other human activities (removal of river snags / large woody debris, modification of riparian vegetation, modification to

natural flood flow paths and channel levees, land clearing and land management practices) has had a significant adverse impact on the ecological condition of the Snowy River in Victoria. A number of studies (SRICCC, 1993; IDA, 1995 & 1998; SGCMC, 1996) have found all river health components of the Snowy to be degraded due to:

- Altered Flow Regimes
  - Altered total and seasonal flow patterns
  - Saline tidal water intrusion into wetlands and lower river reaches
- Reduced In-stream Values
  - Altered bed morphology
  - Adverse impact on fish migration and other aquatic fauna habitat
  - Reduction in macroinvertebrate populations
- Reduced Riparian Values
  - Loss of riparian vegetation
  - Increased bank erosion
  - Increased weed infestation
- Reduced Wetland Values
  - Altered wetland hydrology and increased eutrophication potential
  - Altered wetland vegetation
  - Reduced wetland habitat
- Reduced Water Quality
  - Increased water temperature and stratification
  - Increased nutrients and sediment

When assessed against the criteria for an ecologically healthy river, the interaction

between human activities and the response of the Snowy River and its biota has resulted in a markedly degraded river system. This is clearly demonstrated by the Index of Stream Condition (ISC), which for the Snowy River within Victoria is "poor" (VWRDW, 2002).

### 3.4 Environmental Flows and Rehabilitation Works

Common principles of river rehabilitation

emphasise that improvements in river health rely upon a combination of returning minimum environmental flows together with in-stream and catchment remedial works.

Improving the ecological health of the Snowy

River by addressing the issues identified in section 3.3 therefore requires the concurrent release of minimum environmental flows from Jindabyne Dam and the implementation of in-stream works and remedial catchment management practices.

#### 3.4.1 Environmental Flows

The Expert Panel Environmental Flow Assessment of the Snowy River Below Jindabyne Dam (SGCMC, 1996) found that the environmental flow conditions required to rehabilitate the Snowy's health should include seasonally variable minimum daily base flows totalling approximately 330 gegalitres a year at Jindabyne Dam and achievement of specific high flow / flood events. The minimum environmental flow required is equivalent to 28% of the original mean annual natural flow at Jindabyne.

In December 2000, the Victorian, New South Wales and Commonwealth Governments agreed to increase the Snowy River flow by 21% within ten years of corporatisation of Snowy Hydro-electric Authority, increasing to 28% in the longer term through joint Government and private investment water savings projects. An interim target has been set to achieve 15% of original flow levels within seven years of corporatisation.

Corporatisation of Snowy Hydro-electric Authority occurred in June 2002.



Photo: D. Kleinitz





**Figure 3:** Jindabyne Dam – Proposed outlet structure and auxiliary spillway (Source: Snowy Hydro)

Increased flows will be achieved primarily through implementing water savings improvement works in northern Victoria and southern New South Wales. In Victoria, water savings projects centre on reducing losses through water transmission and include the construction of pipelines at Woorinen, Normanville and Tungamah, the Improved Water Measurement Project and the decommissioning of Lake Mokoan.

The first return of environmental flows to the Snowy River occurred in August 2002, when the Mowamba aqueduct was closed, allowing up to 38 gigalitres a year from the Mowamba River to flow directly into the Snowy below Jindabyne Dam, rather than be diverted into the Snowy Mountains Hydro-electric Scheme. These returned flows have re-established an ecological link along the Snowy River between alpine environments and the coast.

Future environmental flow releases will primarily be made through a new spillway and outlet on the Jindabyne township side of the existing Jindabyne dam wall (Figure 3). Construction is scheduled for completion in 2005. Water will be drawn from near the reservoir surface to avoid adverse ecological impacts of cold bottom waters.

In addition to the agreed Snowy River environmental flows, the Victorian, New South Wales and Commonwealth Governments agreed to release an additional 70 gigalitres of water per annum into the River Murray and about 120 gigalitres of water into the alpine rivers within the Kosciuszko National Park.

The Government's commitment to the return of environmental flows to the Snowy River recognises the River's special status in the Victorian River Health Strategy in terms of reduced flows and the need for rehabilitation works, and as a Heritage River.

### 3.4.2 Remediation Works

In-stream and catchment remedial works aimed at complementing the release of environmental flows are being implemented co-operatively as separate programs by both the Victoria and New South Wales Governments.

The New South Wales Department of Infrastructure, Planning and Natural Resources, the Victorian Department of Sustainability and Environment and the East Gippsland Catchment Management Authority, are together supporting a *Benchmarking and Environmental Flow Response Monitoring*

*Project* aimed at assessing the response of the entire Snowy River to the release of environmental flows. This work is based on before and after comparisons of river condition at selected sites, with reference to other undiverted rivers. Results will assist in determining the optimal pattern of environmental flow releases, and importantly will demonstrate to the public that environmental objectives are being achieved.

New South Wales management agencies have been engaged in a program of environmental rehabilitation works along the Snowy River, including within Kosciusko National Park, since an initial river survey in 1996. The rehabilitation works have, by 2004 included removal of willow, blackberry and other weeds (100km of river treated within NSW below Jindabyne Dam), and planting and seeding with native riparian vegetation (50,000 native trees planted).

Remedial works within Victoria have been integrated into the multi-faceted Snowy River Rehabilitation program, which will be implemented through this Plan of Works. Individual projects making up the Plan are described in sections 4 and 6.

### **3.5 Existing Snowy River Management Plans and Strategies**

Snowy River Rehabilitation is not a new concept nor a recent development. Numerous research documents, management plans and strategies have been prepared over the past 10 to 15 years, all in-part aimed at improving the ecological health of the Snowy River. Snowy River Rehabilitation provides the mechanism by which many of the objectives and recommendations contained in these existing documents can continue to be delivered. Considerable work has already been completed by the former Snowy River Improvement Trust and more recently by the East Gippsland Catchment Management Authority, including riparian revegetation, bank stabilisation, willow removal, and establishment of an in-stream rehabilitation trial administered by the Trial Project Management Committee.

Existing plans and strategies that form the basis of current and future river health rehabilitation activities on the Snowy River include:

- Lower Snowy River Management Plan: Vegetation and Frontage Management (CFL, 1990)
- Lower Snowy River Wetlands Proposed Management Plan (DCE, 1992)

- Rainforest of the Lower Snowy River (Peel & Coram, 1993)
- Snowy River National Park Management Plan (DCNR, 1995)
- Waterway Management in the Snowy River Catchment (IDA, 1995)
- East Gippsland Regional Catchment Strategy (EGCMA, 1997)
- Snowy River Rehabilitation Concept Plan (IDA, 1998) – incorporates a summary of previous management recommendations
- East Gippsland River Health Strategy – Draft (EGCMA, 2002)
- Integrated Coastal Planning for Gippsland: Coastal Action Plan (GCB, 2002)

## **4 SNOWY RIVER REHABILITATION: PLAN OF WORKS**

### **4.1 Purpose**

This Plan of Works fulfils a need identified by Government agencies and community members to develop an overall integrated works plan to co-ordinate the implementation of all Snowy River Rehabilitation activities. The Plan has been prepared co-operatively by Government agencies to improve the health of the Snowy River within Victoria and focuses primarily on the main stem of the Snowy from the NSW border to Marlo, and secondly on tributary rivers and streams where remedial action will lead to an improvement in the health of the Snowy and associated wetlands.

The Plan is a works program comprising a variety of targeted projects, each seeking to improve the health of the Snowy River by improving one or more of the ecological requirements for river health (Figures 4).

### **4.2 Rehabilitation Projects**

Table 1 lists the projects that together make up the integrated program of Snowy River Rehabilitation. Listed is each project's title, its aim, a brief description, the targeted river health issues, and the organisation(s) responsible for implementation.

Project Summary Sheets in Section 6 provide additional detailed information for each separate rehabilitation project.

Figure 4: River Health Rehabilitation Components



**Issues**

- Altered bed morphology
- Adverse impact on fish migration and other aquatic fauna habitat
- Reduction in macro-invertebrate populations

**Issues**

- Altered wetland hydrology and increased eutrophication potential
- Altered wetland vegetation
- Reduced wetland habitat



# Snowy River Rehabilitation



**Issues**

- Loss of riparian vegetation
- Increased bank erosion
- Increased weed infestation

**Issues**

- Increased nutrients and sediment
- Increased water temperature and stratification



**Issues**

- Increase awareness of river health issues
- Demonstration of rehabilitation
- Engaging community in rehabilitation and monitoring



In addition to the river health rehabilitation projects, there are a number of concurrent projects that will focus on Community Education & Participation, and Cultural & Heritage Management.

Projects will be developed and implemented progressively over a long term period. Some projects have already commenced. Others are only proposed and may not be funded. There is also scope for additional projects to be included as they are identified by stakeholder and community groups. A number of projects require assessment and verification of ecological, technical and logistical aspects through adaptive management trials prior to being fully implemented. Other projects are better understood and can proceed without further research or evaluation.

#### 4.3 Co-ordination and Implementation

Overall co-ordination of the Plan will be provided by an Agency Steering Committee with representation from:

- Department of Sustainability and Environment
- East Gippsland Catchment Management Authority
- Parks Victoria
- Department of Primary Industries
- Gippsland Coastal Board
- East Gippsland Shire
- Environment Protection Authority

The Steering Committee will ensure projects address priority river health issues identified by all stakeholders, and that rehabilitation works are integrated and systematically implemented to obtain maximum value for effort by taking advantage of any synergies that exist between different projects, agencies and land tenures. Each agency will also ensure input from its representative community-based groups such as the Snowy Catchment Management Group. Individual rehabilitation projects, such as the trial of in-stream structures (Lower Snowy Rehabilitation Trial Project) may have separate steering committees, community reference groups or scientific reference panels.

Development and implementation of individual projects will be undertaken on a project basis by the most appropriate agency or group based on land tenure, expertise, and resources.

Because Snowy River Rehabilitation is a long term program of works, the Plan of Works will form a dynamic planning and communication tool. It will be reviewed and updated regularly as individual projects reach certain milestones, or as additional projects are added.



Figure 5: Progressive long-term improvement in river health with gradual reduction in rehabilitation effort.

**Table 1. Snowy River Rehabilitation - Individual Projects**

River Health Component	Targeted River Health Issues	Rehabilitation Project Title	Proj No.#	Lead Agency (Partners)	Project Description / Objective	Links to other Projects	Geographic Scope
In-stream Management	<ul style="list-style-type: none"> <li>Altered bed morphology</li> <li>Adverse impact on fish migration and other aquatic fauna habitat</li> <li>Reduction in macroinvertebrate populations</li> </ul>	Instream Habitat Improvement	IV1	DSE (EGCMA)	Improve instream aquatic habitat and fish passage through works, large woody debris and associated revegetation. Currently underway and funded to \$1.7M. Note: A Lower Snowy Rehabilitation Trial of techniques will commence upon completion of detailed design and modelling. Broadscale implementation will be dependent on favourable trial results.	IV2, IV3, IV4, RM2, RM4, RM5, RM6, RM7, CM1, CM3, CM4,	Floodplain
		Estuary Perch Investigation Project	IV2	DPI MAFRI	Investigation into Estuary Perch populations, habitat requirements, recruitment of young and migration patterns. Currently underway.	IV4, IV1, WM1, CM1, CM4,	Estuary
		Australian Bass Investigation Project	IV3	DPI MAFRI	Investigation into Australian Bass populations, habitat requirements, recruitment of young and migration patterns. Currently underway	IV4, IV1, WM1, CM1, CM4,	Mountain Floodplain Estuary
		Native Fish Recruitment Project	IV4	DPI MAFRI	Recruit and release Australian Bass into the Snowy to ensure survival of populations.	IV3, IV1, WM1, CM1, CM4,	Mountain Floodplain Estuary
Riparian Management	<ul style="list-style-type: none"> <li>Loss of riparian vegetation</li> <li>Increased bank erosion</li> <li>Increased weed infestation</li> </ul>	Riparian and Rainforest Restoration Trial Project	RM1	EGCMA (DPI, DSE, LV)	Re-establishment of Riparian and Rainforest species through adaptive management techniques. Currently underway and funded to \$288,000 in 04/05.	RM2, RM3, RM4, RM5, RM6, RM7, RM8, WM1, WQ1, CM2, CM3, CM4,	Floodplain Estuary
		Broadscale Riparian Rainforest Restoration Project	RM2	EGCMA (DPI, DSE, LV)	Riparian Rainforest revegetation and habitat restoration following the Riparian and Rainforest Restoration Trial. To be implemented at the conclusion of RM1 Trial.	RM1, RM3, RM4, RM5, RM6, RM7, RM8, WM1, WQ1, CM2, CM3, CM4,	Mountain Floodplain Estuary
		Protection of salt-tolerant Rainforest Seed Stocks	RM3	EGCMA, PV	Urgent weed control to protect remnants on First and Second Island, and secure seed supply for the continuation of rehabilitation	RM1, RM2,	Estuary
		Riparian, Aquatic and Semi-aquatic seed collection	RM4	EGCMA	Seed supply for the revegetation of significant sections of the Snowy River.	IV1, RM1, RM2,	Mountain Floodplain Estuary

River Health Component	Targeted River Health Issues	Rehabilitation Project Title	Proj No.#	Lead Agency (Partners)	Project Description / Objective	Links to other Projects	Geographic Scope	
Wetlands Management	<ul style="list-style-type: none"> <li>Altered wetland hydrology and increased eutrophication potential</li> <li>Altered wetland vegetation</li> <li>Reduced wetland habitat</li> </ul>	Transition to natural river banks from Willow Landscapes trial	RM5	EGCMA	Replacement of willows by culling and under-planting trial on the Snowy River Floodplain.	IV1, IV2, RM1, RM2, RM4, RM6, RM7, RM8, WQ1, CM1, CM2, CM4,	Floodplain	
		Crown Land Frontage Audit	RM6	Land Vic (EGCMA, DPI)	Assessment of river frontage boundary locations and development of standard protocols and landholder management agreements. Currently underway and funded to \$196,955 for 04/05.	IV1, RM1, RM2, RM4, RM5, RM7, RM8, WQ1, CM2, CM3,	Mountain Floodplain Estuary	
		Fencing and Off-Stream Watering Project	RM7	DPI (EGCMA, LV)	Incentive program designed to encourage removal of stock from all high priority riparian areas in the Snowy Catchment.	IV1, IV2, RM1, RM2, RM4, RM5, RM6, RM8, WM1, WQ1, WQ4, CM1, CM2, CM3,	Mountain Floodplain Estuary	
		Willow Eradication Project	RM8	EGCMA (PV)	Eradication of willow and other non-native invasive tree species along the length of the Snowy and its major tributaries. Currently underway and funded to \$501,000 in 04/05.	IV1, IV2, RM1, RM2, RM5, RM6, RM7, WQ1, CM1, CM2, CM4,	Mountain Floodplain	
		Wetlands Restoration Project	WM1	DPI (EGCMA, DSE, GCB, PV)	Management of sensitive wetlands through works including stock exclusion, revegetation, pest plant and animal control, and public education. Options for management of private land wetlands will also be examined.	IV2, IV3, RM4, RM6, RM7 RM8, WQ1, WQ2, WQ3, WQ4, CM3, CM4,	Floodplain Estuary	

River Health Component	Targeted River Health Issues	Rehabilitation Project Title	Proj No.#	Lead Agency (Partners)	Project Description / Objective	Links to other Projects	Geographic Scope
Water Quality	<ul style="list-style-type: none"> <li>Increased water temperature and stratification</li> <li>Increased nutrients and sediment</li> </ul>	Erosion, Sediment and Nutrient Management	WQ1	EGCMA (DPI)	Management of erosion processes and sediment / nutrient sources both on the floodplain and in the upper catchment. Currently underway with funding and priorities aligned to East Gippsland River Health Strategy.	IV1, IV2, RM1, RM2, RM6, RM7, CM2, CM4	Mountain Floodplain (including tributaries)
		Stormwater Management Project	WQ2	EG Shire (EPA, EGCMA)	Improve quality of stormwater discharge from urban areas within the Snowy catchment.	WM1, CM2, CM3, CM4	Floodplain Estuary
		Dairy Effluent Audit	WQ3	EPA (DPI)	Audit of some 35 farms in the Snowy Catchment for compliance with dairy effluent discharge criteria.	WM1, WQ4, CM2,	Floodplain Estuary
		Managing On-Farm Nutrient Sources Project	WQ4	DPI (EPA)	Extension program to reduce potential adverse impact of on-farm nutrient sources from the Snowy River floodplain.	RM1, RM2, RM7, WM1, WQ1, WQ3, CM2,	Floodplain Estuary
Community Education and Monitoring		Benchmarking & Flow Response Monitoring Project	CM1	NSW DIPNR (DSE, EGCMA)	Collect comparative data to advise on the pattern of environmental flow releases and their adequacy for ecological benefits. Currently underway.	IV1, RM1, RM2, RM7, RM8, WQ4, CM4	Mountain Floodplain Estuary
		River Health Monitoring	CM2	EGCMA	Monitoring "Index of Stream Condition" (ISC) every five years. Currently underway.	IV1, RM1, RM2, RM7, RM8, WQ4, CM4	Mountain Floodplain Estuary
		Rehabilitation Demonstration and Education	CM3	DSE (EGCMA)	Rehabilitation demonstration site at Forest Park, Orbost. Includes demonstration of river and wetland rehab works on the ground, as well as possible demonstrations/activities at the Rainforest Centre (or similar).	IV1, RM1, RM2, RM6, RM7, RM8, WM1, WQ1, WQ2, CM4,	Floodplain
		Schools Education Project	CM4	Orbost Schools Cluster (DSE, EGCMA)	Science and River Health educational programs conducted at schools. Currently underway and funded for three years (\$132,000).	IV1, IV2, IV3, IV4, RM1, RM2, RM3, RM4, RM5, RM6, RM7, RM8, WM1, WQ1, WQ2, WQ3, WQ4, CM1, CM2, CM3, CM4,	Mountain Floodplain Estuary

## 5 FUNDING

Snowy River Rehabilitation will be funded from sources including State or Commonwealth Government, private business, industry and philanthropic organisations. Full implementation will require continuing contributions from all levels of Government, the private sector and stakeholder communities.

Funding bodies will be expected to enter into long term funding commitments for individual rehabilitation projects to ensure ongoing co-ordination and success of Snowy River Rehabilitation as a whole.

## 6 DETAILED PROJECT SUMMARY SHEETS

Detailed summary sheets for all the rehabilitation projects listed in Table 1 are provided in the following pages. Each project is listed under the river health component that the works seek to address.

## 7 ABBREVIATIONS

<b>DIPNR</b>	Department of Infrastructure, Planning and Natural Resources (NSW)
<b>DPI</b>	Department of Primary Industries
<b>DSE</b>	Department of Sustainability and Environment
<b>EGCMA</b>	East Gippsland Catchment Management Authority
<b>EPA</b>	Environment Protection Authority
<b>GCB</b>	Gippsland Coastal Board
<b>LV</b>	Land Victoria
<b>MAFRI</b>	Marine and Freshwater Resources Institute
<b>PV</b>	Parks Victoria
<b>UDV</b>	United Dairyfarmers of Victoria
<b>VFF</b>	Victorian Farmers Federation

## 8 REFERENCE DOCUMENTS

- CFL, 1990. Department of Conservation Forests and Lands. Lower Snowy River Management Plan: Vegetation and Frontage Management.
- DCE, 1992. Department of Conservation and Environment. Lower Snowy River Wetlands Proposed Management Plan.
- DCNR, 1995. Department of Conservation and Natural Resources. Snowy River National Park Management Plan.
- EGCMA, 1997. East Gippsland Regional Catchment Strategy.
- EGCMA, 2002. East Gippsland Catchment Management Authority. East Gippsland River Health Strategy – Draft.
- EGCMA & DSE, 2003. East Gippsland Catchment Management Authority and Department of Sustainability and Environment. Snowy River Rehabilitation: Background Paper.
- GCB, 2002. Gippsland Coastal Board. Integrated Coastal Planning for Gippsland: Coastal Action Plan.
- IDA, 1995. Waterway Management in the Snowy River Catchment. Prepared for the Snowy River Improvement Trust.
- IDA, 1998. Snowy River Rehabilitation Concept Plan – Final Report. Prepared for the East Gippsland Catchment Management Authority.
- James, B., 1989. Snowy Mountains Scheme: Effects on Flow Regime of Lower Snowy River. Department of Water Resources. Victoria.
- LCC, 1991. Land Conservation Council of Victoria. Rivers and Streams Special Investigation – Final Recommendations.
- NRE, 2002. Department of Natural Resources and Environment. Victorian River Health Strategy.
- Peel, B. & Coram, J. Rainforest of the Lower Snowy River. Department of Conservation and Environment.
- SGCMC, 1996. Snowy Genoa Catchment Management Committee. Expert Panel Environmental Flow Assessment of the Snowy River Below Jindabyne Dam.
- SRICCC, 1993. Snowy River Interstate Catchment Co-ordination Committee. Resource Management Issues in the Snowy River Catchment.
- VWRDW, 2002. Victorian Water Resources Data Warehouse. Index of Stream Condition, based on 1999 Snowy River benchmark survey. [www.vicwaterdata.net/isc](http://www.vicwaterdata.net/isc)