

Natural Resources Report Card 2007



Gippsland integrated
natural resources
forum

Please refer to the 2007 Report Card colour brochure for a graphic representation of the Environmental Condition and Stewardship Rating of the Report Card's eighteen natural assets

Produced by the Gippsland Integrated Natural Resources Forum

16 Hotham Street
Traralgon, Victoria 3785
Telephone: 5175 7800 or 5152 0400
www.ginrf.org.au

Data and information provided by GINRF member organisations

FORWARD

Gippsland is fortunate to have a rich variety of natural features. The Gippsland Natural Resources Report Card in this, its fifth year, presents an assessment of the environmental condition and stewardship of 18 key natural assets that symbolise the region's diversity.

The majority of these natural assets are in good condition, not only being significant from an environmental perspective, but also providing the basis for economic stability and social wellbeing.

Recent natural events have, however, demonstrated the sensitive nature of our region's natural resources and the linkages that exist between them. A prolonged period of below average rainfall, the extensive Alpine bush fires in 2003, the Moondarra fires and the recent Great Divide fires have together impacted on river flows, water storage levels, biodiversity values, catchment condition and water quality. These impacts are reflected in this year's reduced condition ratings for the Alpine National Park, Thomson River, and Mitchell River. The Gippsland Lakes on the other hand continue to benefit from reduced nutrient input due to low river flows.

We continue to make good progress with strong stewardship of most assets. Co-operative efforts between different government agencies and with the community are highlighted by increased ratings for the Mitchell River (relating to post-fire rehabilitation and recovery) and for Coastal Living (where the development of Urban Design Frameworks will provide important strategic tools to manage increasing coastal population pressures). Environmental flows, although reduced in volume, have again been released in the Thomson River and continued work to reduce off-site impacts from the Macalister Irrigation District will have downstream benefits, particularly for the Gippsland Lakes. We remain confident that strong stewardship will result in improved environmental conditions, however the outcome of our investment and restoration work will in some cases not be evident for many years to come.

There is more work to do in managing a number of assets such as Corner Inlet and Latrobe Group Aquifer. We also face significant future challenges in meeting the demands of ongoing fire recovery, the impacts of climate change, potential long term reduced river flows from the effects of broad scale fires, meeting our energy needs and in securing the region's water supplies for industry, agriculture and human consumption.

Gippslanders have demonstrated enormous co-operation and resilience during recent times of adversity brought on by drought and bush fires. The challenge is now to harness this spirit of mutual benefit, strengthen teamwork and work together innovatively across government, industry and the community to improve the condition of natural resources throughout the region.

Preparation of the Gippsland Natural Resources Report Card involves the support of many organisations - their efforts are gratefully appreciated. I welcome feedback on the Card's role and content leading into a review prior to preparation of next year's edition.

Keith Hamilton

Chair - Gippsland Integrated Natural Resources Forum

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1. INTRODUCTION

The Gippsland Integrated Natural Resources Forum (GINRF) is pleased to present the fifth Natural Resources Report Card for the Gippsland Region.

The 2007 Report Card provides an update on what has been achieved over the past twelve months and identifies future challenges in managing eighteen of Gippsland's natural assets. These eighteen natural assets have been selected to represent the richness and diversity of the Gippsland region. Each asset is rated both for its environmental condition and the level of stewardship (Stewardship refers to how well the community, government and industry are actively managing natural resources throughout the region in an integrated manner).

The purpose of the Gippsland Natural Resources Report Card is threefold;

1. Foster the strategic integration of natural resource management,
2. Provide a credible, independent and regular evaluation of natural resource management in Gippsland, and
3. Cultivate a strong regional identity for Gippsland based on natural resources.

The past 12 months has been a significant challenge for much of the region, with continued below average rainfall, low river flows, and the Great Divide bushfires affecting several of the Report Card's assets.

For 2007, there are three natural assets with altered condition ratings:

- Thomson River,
- Alpine National Park, and
- Mitchell River.

Two natural assets have an altered stewardship rating for 2007:

- Coastal Living, and
- Mitchell River.

This document serves as a companion to the 2007 Natural Resources Report Card colour brochure, providing more detailed information about each asset and the Report Card methodology. For the first time, this year's Report Card highlights assets within the Corner Inlet catchment with a fish symbol. Assets within the Gippsland Lakes catchment are illustrated with a pelican symbol.

2. WHAT HAS CHANGED SINCE THE 2006 REPORT CARD WAS PUBLISHED?

Prolonged below average rainfall, low river flows and the Great Divide bushfires have significantly influenced the Gippsland region over the past 12 months – not only from an natural resource management perspective, but also economically and socially.

A summary of these and other key issues affecting the region over the past 12 months is provided below.

- Rainfall across the region has been well below average, with some locations recording the lowest or near-lowest monthly totals on record.
- River flows and many water storage levels have been the lowest or near-lowest on record. Irrigators have had reduced entitlements and communities throughout Gippsland have been placed on domestic water restrictions.
- The Great Divide bushfires burnt throughout December 2005 and January 2006, affecting State forest, National Parks and private land. The fires not only impacted significantly on natural assets, but also destroyed a number of homes, thousands of heads of stock, hundreds of hectares of pasture and other commercial values such as plantations, timber-forests and beehives. In total, fires of the Great Divide South Complex (approximating the Gippsland region) burnt approximately 670,000 hectares.
- Fire has had a dramatic impact on the Alpine National Park, the Latrobe, Thomson and Mitchell River catchments, and to a lesser extent the Gippsland Lakes. Impacts include: loss of vegetation, habitat and biodiversity; exposure of soils, erosion and sedimentation; reduced water quality; and diminished aquatic habitat.
- Rainfall events following the fires resulted in significant erosion, sediment transport, in-stream debris and very high turbidity – thereby reducing water quality and the availability of suitable water for domestic supply purposes.
- A major multi-agency recovery program is being implemented across fire affected areas of Gippsland. Interagency co-operation has been a hallmark of both the fire response and recovery process.
- East and West Gippsland Catchment Management Authorities are preparing Dry Inflow Contingency Plans in order to better manage and implement actions required due to drought conditions.
- Southern Rural Water has prepared the MID 2030 Discussion Paper, which outlines opportunities for upgrade of irrigation and drainage systems to ensure the that the Macalister Irrigation District meets modern irrigation requirements, improves on-farm productivity and enhances farmer lifestyle.

- Nutrient discharges (phosphorus load) from the Macalister Irrigation District have been reduced substantially for the first half of 2006/07 (to approximately 25% of historic values) as a combined result of channel automation, real time monitoring of outfalls, on-farm nutrient reduction activities and unprecedented low flows in drainage systems.
- Environment Protection Authority monitoring for the past 12 months indicates a reduction of 64% nitrogen and 73% phosphorus loads entering the Lakes – due largely to a 51% reduction in volume of inflowing river water. The Gippsland Lakes have not experienced a widespread blue-green algal bloom in the past 12 months.
- Environmental flow releases continue to be made to the Thomson River. However, due to prolonged low flow conditions, interim changes have been made to the 2006/07 Thomson River Annual Watering Plan for environmental water released from Thomson Reservoir. Releases for the remainder of the 2006/07 watering year will be based on the natural inflows to the storage. Under these arrangements a natural rainfall event will become the trigger for an environmental flow release.
- The Central Region Sustainable Water Strategy has been finalised and endorsed by its stakeholders.
- The Multiple Outcomes for the Strzelecki Ranges project has been initiated to address threatening land management processes in the eastern Strzelecki Ranges.
- West Gippsland Catchment Management Authority are developing a Land and Water Management Plan for the Macalister Irrigation District and surrounding dryland and irrigation areas.
- Environmental Management Systems and Market Based Instruments for agriculture are being implemented with stakeholders by the West Gippsland Catchment Management Authority, centred largely on the area impacting on Corner Inlet.
- Several Marine National Park Management Plans have now been finalised after having been released as drafts for public comment.
- A discussion paper regarding the implications of climate change, sea level rise and altered weather patterns on geomorphological aspects of the Gippsland coast has been released by the Gippsland Coastal Board.
- Urban Design Frameworks have been prepared for several settlements in Bass Coast Shire and South Gippsland Shire.
- East and West Gippsland River Health Strategies are being implemented, including the Gippsland's Water Quality Action Plan.

3. MAJOR CHALLENGES FOR THE YEAR AHEAD

Throughout Gippsland, the management of natural resource assets making up the Report Card will continue to achieve considerable milestones in the year ahead. There are, however, a number of challenges that will be faced, including:

- Continuing to implement a coordinated response to the many and varied fire recovery and rehabilitation works.
- Managing the impacts of ongoing drought if 'normal' rainfall patterns do not return, particularly regarding stream flows, river health, irrigation, agricultural productivity, and potable water supply storages.
- Managing poor river water quality as sediment continues to be washed down from the catchments of the Latrobe, Thomson, Macalister and Mitchell Rivers. A possible breakdown of the prevailing El Nino Southern Oscillation (ENSO) conditions could see larger rainfall events mobilising significant sediment volumes (and nutrients) into the Gippsland Lakes before the catchments revegetate.
- Better understanding the implications of potential longer-term reductions in stream flows / yields as a consequence of catchment-wide fires and subsequent forest regeneration. Existing research into the effects of the 2003 Alpine Fires should be extended to also consider the recent Great Divide fires.
- Harnessing the opportunity to significantly address pest plant and animal management needs in fire-affected areas that would normally be far less accessible.
- Commence development of the Gippsland Region Sustainable Water Strategy – which will need to achieve a balance between the often competing demands for water resources from different sectors, eg consumptive use, agricultural use, recreational use and for environmental flows.
- Defining environmental flows for the Latrobe River.
- Securing previously agreed environmental flows for the Snowy River.
- Understanding how the Latrobe Valley brown coal power industry can best participate in the emerging national carbon emissions trading scheme.
- Continuing to formulate and implement a sustainable response to anticipated climate change impacts, including rainfall patterns, stream flows, flood levels, coastal erosion, and bushfire frequency.
- Participating in the Victorian Government's recently announced Land and Biodiversity White Paper process.
- Continuing to finalise, implement and review the many management plans / strategies for natural resource management throughout Gippsland.

4. 2007 REPORT CARD IN FOCUS

The eighteen natural assets in this Report Card are readily recognisable and represent Gippsland's rich, diverse natural landscape. The Report Card focuses on the environmental condition of each natural asset and the integrated management of the natural resources themselves by government agencies, industry and community stakeholders.

The table below lists the Condition and Stewardship rating for each natural asset. Assets are listed approximately from west to east. For 2007, there are three natural assets with altered condition ratings:

- Thomson River,
- Alpine National Park, and
- Mitchell River.

Two natural assets have with an altered stewardship rating for 2007:

- Coastal Living, and
- Mitchell River.

Natural Asset	Condition Rating					Stewardship Rating				
	Altered ratings for 2007 are highlighted					Altered ratings for 2007 are highlighted				
	03	04	05	06	2007	03	04	05	06	2007
Coastal Living	C	C	C	C	C	★★	★★	★★	★★	★★ 1/2
Wilson's Promontory	B	B	B	A	A	★★★	★★★	★★★	★★★★	★★★★
Corner Inlet				C	C	★★★	★★★	★★★	★★	★★
Strzelecki Ranges			C	C	C			★★★	★★★	★★★
Non-irrigated Dairy Farming of W&S Gippsland	C	C	C	C	C	★★★	★★★	★★★	★★★	★★★
Brown Coal based Energy Industry	D	D	D	D	D	★★★★	★★★★	★★★★	★★★★	★★★★
Latrobe Group Aquifer				F	F				★★	★★
Latrobe River		D	D	D	D		★★★	★★★	★★★	★★★
Thomson River	C-	C-	C-	C-	D	★★★	★★★	★★★ 1/2	★★★★	★★★★
Macalister Irrigation District	D-	D	D+	D+	D+	★★★	★★★	★★★ 1/2	★★★ 1/2	★★★ 1/2
The Gippsland Lakes	C	C+	C+	C+	C+	★★	★★★	★★★	★★★ 1/2	★★★ 1/2
Ninety Mile Beach		B	B	B	B		★★★	★★★	★★★	★★★
Alpine National Park	B	B-	B-	B-	C	★★★	★★★	★★★	★★★★	★★★★
Batuluk Cultural Trail			B	B	B		★★★	★★★	★★★	★★★
Mitchell River	B	B	B	B	D	★★★	★★★	★★★	★★★	★★★ 1/2
Snowy River	C	C	C	C	C	★★★	★★★★	★★★★	★★★★	★★★★
Forests of East Gippsland	B	B	B	B	B	★★★★	★★★★	★★★★	★★★★	★★★★
Coastal Parks of Far East Gippsland	A	A	A	A	A	★★★	★★★	★★★	★★★	★★★

Corner Inlet was separated from Wilson's Promontory in the 2006 assessment.

5. RATING SYSTEM

Condition Rating System

An assessment is made about the overall environmental condition of each natural asset by measuring against land, water, biodiversity and air indicators. The immediate locality of both the asset and offsite impacts is considered.

Rating	Description	Definition
A	Excellent	Environmental values are in good to excellent condition. No adverse offsite impacts.
B	Good	Most environmental values are good. Minimal offsite impact
C	Reasonable	Some environmental values are indicated as poor, but are recoverable. Some offsite impacts.
D	Poor	Many environmental values are poor. Improvement of assets needs addressing. Several adverse offsite impacts.
F	Degraded	Natural values are degraded. Extensive offsite impacts.

Stewardship Rating System

Stewardship may be defined as: "The careful and responsible management of the natural asset by a range of government, industry and community stakeholders entrusted with its care". Stewardship performance for each asset is measured against a simple adaptive management process (planning, implementing, evaluating and improving) and the level of effective partnership activity across community, government and industry.

Rating	Description	Definition
*****	Fully integrated	Stewardship process is complete with high quality, significantly impacting the asset condition. High level of government, community and industry engagement.
****	Mostly integrated	Complete with average/good quality of most parts of the stewardship process, having potential to improve the asset condition. Some evidence of partnership arrangements.
***	Some integration	Most parts of the stewardship process complete with average/poor quality, having unclear impacts on the condition. Government, community and industry engagement may be fragmented. Weak partnerships.
**	Little integration	Gap in one or more of the processes and low quality is hampering effective stewardship of the natural asset. There is danger of contributing to asset condition decline.
*	No integration	Significant gaps in the stewardship process. Contributing to decline in asset condition

Further detailed information regarding the Report Card rating method was presented in the 2006 Report Card, or is available from Gippsland Integrated Natural Resources Forum.

6. CONDITION AND STEWARDSHIP OF INDIVIDUAL NATURAL ASSETS

Details of each individual natural asset are provided in the following sections. Assets are listed approximately from west to east.

6.1. COASTAL LIVING

Condition Rating					Stewardship Rating				
03	04	05	06	2007	03	04	05	06	2007
C	C	C	C	C	★★	★★	★★	★★	★★ 1/2

Asset Description

The Coastal Living asset includes Phillip Island and other coastal settlements such as San Remo, Wonthaggi, Cape Paterson, Inverloch and Venus Bay. It also includes important coastal natural assets such as Bunurong Marine National Park, Churchill Island Marine National Park, Anderson Inlet and Cape Liptrap Coastal Park.

Bioregion reference: Gippsland Plain and Strzelecki Ranges

Condition Summary

Coastal living areas of Bass Coast and Phillip Island hold many natural values, but increases in permanent and seasonal population brings with it pressure for development, potentially threatening land, water and biodiversity values. The current environmental values and features found at Cape Liptrap Coastal Park indicate good condition (SKM 2003). Some dryland salinity has been mapped in the Wonthaggi/Inverloch region, including areas of high to very high salinity risk (SKM 2003). The main concern for development of this area is the management of wastewater, stormwater and sewerage. Fragmentation of remnant native vegetation and dune erosion is also of concern (Phillip Island and San Remo Design Framework 2003).

Condition Evidence Summary

Indicator Theme	Score	Weight %	Key Evidence	Evidence Source	Data Comment
Land	Reasonable	40	Assumed		
Water	Poor	30	Index of Stream Condition for Bass and Powlett Rivers (2004) All reaches in the Moderate to Very Poor range. Water Quality Bass River – attainment of SEPP – nutrients: low, turbidity/suspended solids: high &	DSE (2004) ISC2: Index of Stream Condition: The Second Benchmark of Victorian River condition. Water Ecoscience (2002) Victorian Water Quality Monitoring Annual Report	Method different to 1999 ISC, not directly comparable.

			physical parameters: low		
Biodiversity	Reasonable-Good	30	Assumed		
Air	NA	0			

Key Condition Summary Points

- Water quality poor
- High population growth and development pressures threaten land water and biodiversity values.

Stewardship

The stewardship task is very complex and urgent for this asset. It is complex due to the location and the multiple boundaries of various responsible agencies such as Catchment Management Authorities, Government departments and Shire Councils. It is urgent because of rapid urban development and the range of potentially competing interests and impacts on the natural environment.

Bass Coast Shire Council is participating in the National Sea Change Initiative. The Victorian Government Coastal Spaces project recommends that a comprehensive land use supply and demand study be undertaken for Bass Coast Shire (Victorian Coastal Council, 2006). Recently completed Urban Design Frameworks (2006) for several settlements in Bass Coast Shire and South Gippsland Shire, together with corresponding amendments to planning schemes, will provide enhanced strategic planning guidance for coastal urban development. The Bass Coast Shire Municipal Strategic Statement (MSS) recognises both the Port Phillip & Westernport Catchment Management Authority and the West Gippsland Catchment Management Authority as a means to achieving better integration between the MSS and Regional Catchment Strategies. The municipality also conducts a successful Land Management Biodiversity Incentive Scheme for private landholders (Bass Coast Shire Council, 2004).

The Gippsland Coastal Agencies Liaison Group provides a professional network for staff involved in the management of natural assets around the Gippsland coast. The group serves an important networking and information-sharing role for the management of the Coastal Living asset.

Stewardship Evidence Summary

Indicator Theme	Score	Key Evidence
Plan	Reasonable-Good	Bass Coast Strategic Framework for Coastal Towns (2005) Review of the Municipal Strategic statement – Bass Coast Shire (2003) Bunurong Marine National Park Management Plan (2006) Urban Design Frameworks prepared by Bass Coast Shire and South Gippsland Shire (2006). Planning scheme amendments.
Implement	Reasonable	Coast Action/Coastcare Programs Land Management Biodiversity Incentive Scheme
Evaluate	Reasonable	Coastal Spaces Recommendations Report (2006) Land Management Biodiversity Incentive Scheme Review
Improve	Poor	
Partnerships	Poor	Coastal Agencies Liaison Group

Key Stewardship Summary Points

- Completion of Urban Design Frameworks for coastal settlements.
- Improved integration of land use planning and environmental management by community, industry and government.
- Local planning scheme amendments and land demand/supply study will increase protection of natural values.

For more information

- Bass Coast Shire Council www.basscoast.vic.gov.au (03) 5671 2211
- South Gippsland Shire Council www.southgippsland.vic.gov.au (03) 5662 9200
- Parks Victoria Information Centre 13 1963 or www.parkweb.vic.gov.au
- West Gippsland Catchment Management Authority (03) 5175 7800 or www.wgcma.vic.gov.au
- Port Phillip and Westernport Catchment Management Authority (03) 9785 0183 or www.ppwcm.vic.gov.au/

6.2. WILSON'S PROMONTORY

Condition Rating					Stewardship Rating				
03*	04*	05*	06	2007	03*	04*	05*	06	2007
B	B	B-	A	A	★★ ★	★★ ★	★★ ★	★★ ★★	★★ ★★

* Includes Corner Inlet rating in previous years

Asset Description

The southernmost point of the Australian mainland, Wilson's Promontory (affectionately known to Victorians as 'the Prom') is arguably the most loved national park in Victoria. Its 130 km coastline is framed by granite headlands, mountains, forests and fern gullies. Tidal River, 30 km inside the park boundary, is the focus for tourism and recreation. The park contains the largest coastal wilderness area in Victoria (Parks Victoria website).

Wilson's Promontory was separated from Corner Inlet in the 2006 Report Card.

Bioregion reference: Wilson's Promontory.

Condition Summary

The long-standing national park status of Wilson's Promontory has preserved 100% of pre-European vegetation in many areas and no less than 83% in other locations.

The 2005 fire in Wilson's Promontory National Park burnt from Tidal River to Waterloo Bay in the east and the Lightstation to the south. Approximately 6,200ha (13%) of the park was burnt. The fire and subsequent recovery has created a mosaic of unburnt, burnt and recovering vegetation (Parks Victoria 2005).

Generally, 90% of the fire-affected area has regenerated very well. Vegetation regeneration is slower in some areas, such as Norman Point, due to the exposure to harsh weather conditions.

Monitoring of post fire recovery is continuing at key sites, including the back of Oberon Bay, which is dominated by Coastal Dune Scrub Mosaic. Coastal Banksia Woodland EVC (ecological vegetation class) is also being monitored due to slower regeneration. Other flora and fauna being monitored include Coastal Tea-tree Scrub (to help provide direction on vegetation management on the Yanakie Isthmus), and the occurrence / distribution of birds and small mammals.

Condition Evidence Summary

Indicator Theme	Score	Weight %	Key Evidence	Evidence Source	Data Comment
Land	Excellent	30	Assumed		
Water	Good	30	Index of Stream Condition for Tidal River and Barry Creek (2004) Barry Creek measures for EC, pH, Phos &	DSE (2004) ISC2: Index of Stream Condition: The Second Benchmark of Victorian River condition. West Gippsland Waterwatch Data Report (2003)	Method different to 1999 ISC, not directly comparable. Reach # 23, 24 in Sth Gippsland Basin

			Turbidity (2003)		
Biodiversity	Excellent	40	Extent of Native Vegetation with reference to pre-1750 Fish Mammals	SKM (2003) Renewal of the West Gippsland Regional Catchment Strategy – State of the Catchment	Parks Victoria Wilson's Promontory Park Management Plan
Air	NA	0			

Key Condition Summary Points

- The long-standing national park status has preserved 100% of pre-European vegetation in many areas and no less than 83% in other locations.
- Good post-fire recovery of biological values.

Stewardship Summary

The majority of Wilson's Promontory is managed by Parks Victoria. The Wilson's Promontory National Park management plan was renewed in 2002, with an increased focus on integrated management and preventing inappropriate commercial development within the park (Parks Victoria, 2002). A management plan has also been prepared for the Wilson's Promontory Marine Protected Areas (Parks Victoria, 2004). Both plans emphasise the need for a collaborative approach to planning and management by responsible organisations, both in the immediate location and throughout the catchment. The plans recognise the West Gippsland Regional Catchment Strategy (WGCMA, 2003) and Integrated Coastal Planning for Gippsland - Coastal Action Plan (Gippsland Coastal Board, 2002) as two key mechanisms to achieve integrated outcomes.

Management activities have been initiated or intensified following the 2005 fire. Monitoring for post fire recovery is being undertaken at key sites and partnerships with indigenous communities have been strengthened.

The Prom will be a Centre of Excellence, developing best practices in park management systems, including on ground environmental management actions, staff training and education, nature based tourism, research and monitoring.

Stewardship Evidence Summary

Indicator Theme	Score	Key Evidence
Plan	Good	Wilson's Promontory Marine National Park, Marine Park & Marine Reserve Management Plan (2004) Wilson's Promontory National Park Management Plan (2002) Wilson's Promontory National Park Ecological Burn Plan
Implement	Good	Parks Victoria annual environmental planning and works program (Environmental Action Plan). Parks Victoria fox control program. Parks Victoria Wilson's Promontory rabbit control action plan 2003-2006
Evaluate	Reasonable	Post fire key vegetation community monitoring with South Gippsland Conservation Society.
Improve	Good	Centre of Excellence - developing best practices in park management systems, including on ground environmental management actions, staff training and education, nature based tourism, research and monitoring. Ongoing scientific monitoring and evaluation of post fire ecological recovery.
Partnerships	Good	Post Fire Recovery Indigenous Working group

Key Stewardship Summary Points

- Strengthened monitoring and partnerships post-fire
- Centre of Excellence for National Park management

For more information

- Parks Victoria Information Centre 13 1963 or visit www.parkweb.vic.gov.au

6.3. CORNER INLET

Condition Rating					Stewardship Rating				
03*	04*	05*	06	2007	03*	04*	05*	06	2007
B	B	B-	C	C	★★ ★	★★ ★	★★ ★	★★	★★

* Included in Wilson's Promontory ratings in previous years

Asset Description

Corner Inlet is listed as a Ramsar wetland and has been declared a biosphere reserve under UNESCO 'Man and the Biosphere' program. The area assessed includes Corner Inlet and Nooramunga coastal area, as covered by the Ramsar wetland boundary.

Corner Inlet was separated from the Wilson's Promontory asset in the 2006 Report Card.

Bioregion reference: Wilson's Promontory and Gippsland Plain

Condition Summary

The CSIRO environmental audit confirms the need to reduce nutrient and sediment loads to Corner Inlet (CSIRO, 2005). Monitoring has recorded sediments and nutrients entering Corner Inlet from the southern flanks of the Strzelecki Ranges, and there is concern regarding the potential impacts of sea walls on fish breeding and habitat (SKM, 2003). Some decline in sea grass and the presence of environmental weeds such as *Spartina* also potentially threaten biodiversity values.

Indigenous cultural values are in part protected by Parks plans (SKM, 2003).

Condition Evidence Summary

Indicator Theme	Score	Weight %	Key Evidence	Evidence Source	Data Comment
Land	Reasonable	10	Assumed		No data found
Water	Reasonable	50	Index of Stream Condition for reaches entering Corner Inlet & Nooramunga (2004) Water Quality (2002) – nutrients poor, other parameters excellent (Turbidity, DO, Phos)	DSE (2004) ISC2: Index of Stream Condition: The Second Benchmark of Victorian River condition. Water Ecoscience (2002) Victorian Water Quality Monitoring Annual Report West Gippsland Waterwatch Data Report (2003)	Method different to 1999 ISC, not directly comparable. Reach # 20, 21, 25, 27, 28, 33, 36 in SG Basin Interpreted data from monitoring stations leading into Corner Inlet
Biodiversity	Good	40	Shoreline Vegetation & Seagrass Marine Invertebrates Marine Pests –	Corner Inlet Ramsar Site Strategic Plan (1999). Parks Victoria Corner Inlet Marine National Park Management Plan (2005). Parks Victoria	Description Description

			<i>Spartina</i> Fish	WGCMA partnership <i>Spartina</i> control program FCC Annual Report 2003/04 & 2004/05	Catch & Effort Data for Commercial species past 20 years
Air	NA	0			

Key Condition Summary Points

- Reasonable environmental condition evidenced by fish stocks and some water quality parameters
- Serious concerns about nutrients and sediments entering Corner Inlet and the presence of environmental weeds (*Spartina*).

Stewardship Summary

Corner Inlet falls within the boundaries of South Gippsland Shire Council and West Gippsland Catchment Management Authority. The Corner Inlet Marine National Park Management Plan (Parks Victoria, 2005) emphasises the need for a collaborative approach to planning and management by responsible organisations, both in the immediate location and throughout the catchment. The plan recognises the West Gippsland Regional Catchment Strategy (WGCMA, 2004) and Integrated Coastal Planning for Gippsland - Coastal Action Plan (Gippsland Coastal Board, 2002) as two mechanisms to achieve integrated outcomes. In addition, the West Gippsland River Health Strategy identifies Corner Inlet and Nooramunga Marine and Coastal Park as high priority areas (WGCMA, 2005).

The CSIRO environmental audit makes recommendations regarding better planning to improve land use management practices, drainage planning and improved monitoring and mapping of Corner Inlet (CSIRO, 2005).

Stewardship Evidence Summary

Indicator Theme	Score	Key Evidence
Plan	Reasonable	<ul style="list-style-type: none"> - Corner Inlet Marine National Park Management Plan (2005) - Corner Inlet Ramsar Site Strategic Management Plan (2002) - West Gippsland River Health Strategy (2005) - Gippsland's Water Quality Action Plan (2005) - Gippsland Ports Safety and Environmental Management Plan – South Gippsland (2005) - Gippsland Estuaries Coastal Action Plan (2006) - South Gippsland Stormwater Management Plan - Corner Inlet Fisheries Habitat Association Environmental Management Plan (2004)
Implement	Reasonable	<ul style="list-style-type: none"> - <i>Spartina</i> mapping and spraying - partnership project between Parks Victoria and West Gippsland CMA - River Health on-ground works program – South Gippsland - Achieving Water Quality Outcomes in South Gippsland through nutrient extension with dairy farmers
Evaluate	Poor	<ul style="list-style-type: none"> Corner Inlet Environmental Audit (2005) West Gippsland Waterwatch Nooramunga Corner Inlet Volunteer Monitoring Project Seagrass Monitoring project - Statewide Sea Search monitoring program.
Improve	Poor	
Partnerships	Poor	Coastal Agencies Liaison Group <i>Spartina</i> control program – Parks Victoria and West Gippsland CMA

Key Stewardship Summary Points

- Urgent need for co-ordinated monitoring planning and implementation effort to protect values and manage threats.
- Environmental Audit recommends improved monitoring and reduction of nutrient and sediment loads.

For more information

- Parks Victoria Foster (03) 5683 9007 or visit www.parkweb.vic.gov.au
- West Gippsland Catchment Management Authority (03) 5175 7800 or www.wgcma.vic.gov.au

6.4. STRZELECKI RANGES

Condition Rating					Stewardship Rating				
03	04	05	06	2007	03	04	05	06	2007
		C	C	C			★★ ★	★★ ★	★★★

Asset Description

The Strzelecki Ranges Report Card asset is a subset of the Strzelecki Ranges Bioregion, and overlaps with a small portion of the Non-Irrigated Dairy Farming asset. Much of the region is private freehold land dominated by rural-residential living, agricultural land and private forestry. Small pockets of public land also exist.

Tarra Bulga National Park (1,522 ha) is recognised for its important remnant vegetation, characteristic of the Strzelecki Ranges prior to 1750; including fern gullies, excellent examples of mature forest and Cool Temperate Rainforest remnants (Parks Victoria 2000).

Bioregion Reference: Strzelecki Ranges

Condition Summary

Large-scale clearing has left only approximately 26% of vegetation cover, with less than 2% of the bioregion in formal reserves (Biodiversity Action Planning, 2004). There is a high risk of water erosion (SKM 2003). Water quality is generally good except for high nutrient loads which have the potential to cause significant offsite impacts on rivers in the lower catchment, Corner Inlet and the Gippsland Lakes (Water Ecoscience Pty Ltd, 2002; James and Biersch, 2004).

The extent/condition of remnant vegetation cover (poor), threatened flora species (good), threatened fauna species (poor), and pest plants and animals (poor) is described in (Boyle and Lowe 2004). A small amount of remnant vegetation is well reserved in Tarra Bulga National Park.

Condition Evidence Summary

Indicator Theme	Score	Weight %	Key Evidence	Evidence Source	Data Comment
Land	Reasonable	30	Water Erosion – high risk Multiple Outcomes for the Strzelecki Ranges 2007.	SKM (2003) WGCMA, 2007	
Water	Reasonable-Good	30	Index of Stream Condition (2004) for upper Franklin Creek, Albert, Jack & Tarra Rivers, Merriman & Bruthen Creeks, Upper Morwell river, middle Creek, Traralgon Creek (good to moderate) Water Quality data 2002, Upper Tarra River,	DSE (2004) ISC2: Index of Stream Condition: The Second Benchmark of Victorian River condition. Water Ecoscience	Method different to 1999 ISC, not directly comparable. Reaches 22, 26, 30, 32, 35, 41, 38 in South Gippsland Basin Reaches 20, 22, 12 in Latrobe Basin

			nutrients (low), physical parameters (high), suspended solids/turbidity (high)	(2002) Victorian Water Quality Monitoring Annual Report	
Biodiversity	Reasonable-Poor	40	Remnant vegetation (poor), Threatened flora (good), Threatened fauna (poor), Pest plants and animals (poor)	Boyle & Lowe (2004) Biodiversity Action Planning Strategic Overview for the Strzelecki Ranges Bioregion	
Air	NA	0			

Key Condition Summary Points

- Extensive clearing over the past century has resulted in land erosion.
- Area is crucial catchment for Corner Inlet and Gippsland Lakes
- Remnant vegetation is well reserved in Tarra Bulga National Park

Stewardship Summary

The Strzelecki Ranges Bioregion Action plan provides a comprehensive regional overview of planning and management of native biodiversity. The plan also outlines management responses for public land (including State forest), local government and private land. More detailed action planning is required at the landscape and local area scales for this action plan to take effect (Boyle and Lowe 2004).

Partnership projects between private forestry, Greening Australia, private landholders and Monash University are making progress in restoration and protection. In addition, HVP Plantations (formerly Grand Ridge Plantations) has become the first major forest manager in Australia to receive Forest Stewardship Council certification, which recognises high standards and continuous improvement in forest management and environmental performance.

The West Gippsland Catchment Management Authority has developed the Grand Ridge Project Plan – Multiple Outcomes for the Strzelecki Ranges, in order to address threatening processes in the eastern Strzeleckis over the next 5 years. This plan will balance production and conservation in a manner and at a scale that is sustainable, while providing local employment and maintaining key “off-site” services, including recharge control, water filtration and carbon sequestration.

The Cores and Links Project, a partnership between HVP Plantations (formerly Grand Ridge Plantations), DSE, local government and community groups, will further improve protection and connectivity of core high biodiversity areas while balancing commercial timber production needs.

Stewardship Evidence Summary

Indicator Theme	Score	Key Evidence
Plan	Reasonable	Strzelecki Bioregion Action Plan Tarra Bulga National Park Management Plan
Implement	Reasonable	Revegetation of Steep Slopes project Cores and Links Project South Gippsland Indigenous Seedbank
Evaluate	Reasonable	Revegetation of Steep Slopes project
Improve	Reasonable	HVP Plantations Forest Stewardship Council certification
Partnerships	Reasonable	Multiple Outcomes for the Strzelecki Ranges Proj. Cores and Links Project Revegetation of Steep Slopes project

Key Stewardship Summary Points

- Private landholders, the private forestry industry and Government are working together to revegetate steep slopes.

For more information

- Parks Victoria Information Centre 13 1963 or www.parkweb.vic.gov.au
- HVP Plantations (03) 5134 3433
- Greening Australia (South East Region – Victoria) (03) 5662 5201

6.5. NON-IRRIGATED DAIRY FARMING OF WEST AND SOUTH GIPPSLAND

Condition Rating					Stewardship Rating				
03	04	05	06	2007	03	04	05	06	2007
C	C	C	C	C	★★ ★	★★ ★	★★ ★	★★ ★	★★★

Asset Description

Covering the western rolling hills of the Strzelecki ranges, this asset area includes farming districts and townships of Warragul, Drouin, Leongatha, Korumburra, Mirboo North, Thorpdale and Meeniyan. It has a high natural annual rainfall so is not generally irrigated for pasture. Most agricultural land is used for dairy farming with some horticulture and viticulture. An increasing proportion is also being used for rural living as the metropolitan fringe extends eastwards from Melbourne.

Bioregion reference: Strzelecki Ranges and Gippsland Plain

Condition Summary

A long history of extensive clearing has left only between 10-50% of remnant vegetation in this area. (Victorian Catchment Management Council, 2002) Most of the land is privately owned and primarily used for non-irrigated dairy farming and some horticulture. Urban growth is also a feature of this area as the metropolitan fringe extends further towards Gippsland. Water quality varies across the area - several river reaches showing poor condition (ISC2, 2004). There is a high risk of water erosion and some evidence of soil contamination (Victorian Catchment Management Council, 2002; SKM, 2003)

The Environment Protection Authority has recently assessed about 10% of farms and most failed legislative dairy effluent requirements. A program to establish on-farm Environmental Management Systems has been implemented with farmers.

Condition Evidence Summary

Indicator Theme	Score	Weight %	Key Evidence	Evidence Source	Data Comment
Land	Reasonable	40	Soil Erosion – Wind and Water	VCMC The health of our Catchments (2002)	
Water	Poor - Reasonable	40	Index of Stream Condition for Tarwin River East & West Branches, Fish Creek & Tarago River (2004) All reaches in the Moderate to Poor range (2 very poor reaches). Water Quality – Tarwin River	DSE (2004) ISC2: Index of Stream Condition: The Second Benchmark of Victorian River condition. Water Ecoscience	Method different to 1999 ISC, not directly comparable.

			attainment of SEPP – nutrients: low, turbidity/suspended solids: high & physical parameters: high Lower Tarago River – low attainment of all SEPP	(2002) Victorian Water Quality Monitoring Annual Report	
Biodiversity	Poor	20	Native Vegetation Extent with reference to pre 1750	VCMC The health of our Catchments (2002)	From DSE GIS corporate database. Interpretation of map showing remnant cover by bioregion.
Air	NA	0			

Key Condition Summary Points

- Little remnant vegetation resulting in poor biodiversity values and high risk of erosion
- Water quality poor with degraded riparian zones

Stewardship Summary

This area mostly falls within the West Gippsland CMA region, with some falling within the Port Phillip and Westernport CMA region. South Gippsland and Baw Baw Shire Councils both have responsibilities in this area. The West Gippsland Regional Catchment Strategy recognises the dairying industry as part of the key 'Production' asset for the region and also refers to the agricultural uses of land and water (WGCMA, 2003).

Gippsdairy has developed a 'Regional Natural Resource Action Plan' for the Gippsland dairy industry as part of the national project: "Sustaining our Natural Resources – Dairying for Tomorrow" (NRM Consulting & Terry Makin & Associates, 2001). The action plan identifies whole farm planning, land use change and local planning, sustainable productivity, water use efficiency, nutrient management, effluent management, biodiversity and land protection as the key issues for action.

The Gippsland Dairy Riparian Project is designed to demonstrate productive and sustainable management of rivers and riparian areas by the dairy industry. GippsDairy, Dairy Research and Development Corporation (DRDC), Department of Primary Industries (DPI), West Gippsland Catchment Management Authority (CMA), Land and Water Australia support this project. Waterwatch and Melbourne University also assist with monitoring water quality at the sites, and developing the triple bottom line cost: benefit analysis. (Gippsdairy 2004). DPI, indicates that younger farmers are beginning to look favourably at nutrient management as it saves them money but to older farmers (average age 58) this issue conflicts with their lifestyle culture. EPA inspectors are affecting about 10% of farmers/year on legislative aspects of effluent/nutrient management. Such partnerships will take some time to develop.

Department of Primary Industries indicates partnership at government level is strong, however willingness by older farmers to adopt new management practices has slower rate of take up.

Stewardship Evidence Summary

Indicator Theme	Score	Key Evidence
Plan	Reasonable	GippsDairy Regional Natural Resource Action Plan (2001 under review)
Implement	Good	River Health On-ground works program – South Gippsland GipRIP project (established 2002 – ongoing)
Evaluate	Reasonable	Water quality monitoring EPA Dairy Effluent Auditing GipRIP project (established 2002 – ongoing)
Improve	Reasonable	EMS (Beef and Lamb) DPI Ellinbank nutrient research program GipRIP project (established 2002 – ongoing)
Partnerships	Reasonable	GipRIP project (established 2002 – ongoing) Dairy Effluent (DPI, EPA)

Key Stewardship Summary Points

- GipRIP project demonstrates potential of integrated approach to environmental care on dairy farms
- Potential for broader integration and partnerships between management agencies

For more information

- DPI Ellinbank (03) 5624 2222
- Gippsdairy (03) 5622 6014, www.gippsdairy.org.au

6.6. BROWN COAL BASED ENERGY INDUSTRY

Condition Rating					Stewardship Rating				
03	04	05	06	2007	03	04	05	06	2007
D	D	D	D	D	★★	★★	★★	★★	★★
					★★	★★	★★	★★	★★

Asset Description

This asset is based in the Latrobe Valley, producing approximately 90% of Victoria's total electricity generation. Coalfields extend over the Latrobe City and Wellington Shire municipal boundaries. Three electricity generation companies operate in this area: Loy Yang Power, TRUenergy Yallourn, and International Power Hazelwood.

Bioregion reference: Strzelecki Ranges and Gippsland Plain

Condition Summary

Brown coal fired power stations in the Latrobe Valley account for over half of Victoria's total greenhouse gas emissions (SKM, 2003). Trends for air quality in the region indicate that harmful air pollutants are remaining at acceptable levels. Visibility-reducing particles remain an issue but have been decreasing over the past 20 years and are often dependent on the incidence of fires and the prevailing weather conditions. Power stations are high users of both surface water and deep groundwater from Latrobe Group Aquifer (approx 25000ML/yr), along with offshore gas and oil miners, resulting in local land subsidence (SKM, 2003).

Condition Evidence Summary

Indicator Theme	Score	Weight %	Key Evidence	Evidence Source	Data Comment
Land	Poor	25	Subsidence	SKM (2003) Renewal of West Gippsland Regional Catchment Strategy – State of the Catchment	Description
Water	Poor	25	Index of Stream Condition for Morwell River, Traralgon Creek, Flynn's Creek (2004) All reaches in the Moderate to Poor range. Groundwater Quantity - poor	DSE (2004) ISC2: Index of Stream Condition: The Second Benchmark of Victorian River condition. CSIRO (2004) <i>Falling Water levels in the Latrobe Aquifer, Gippsland Basin</i>	Method different to 1999 ISC, not directly comparable. Reach # 4, 18, 15, 11 8
Biodiversity	Poor	10	Assumed		
Air	Poor	40	Greenhouse Gas emissions – 85% of Gippsland's emissions, 67% of Victoria's emissions from stationary energy production Air Quality	National Carbon Accounting System (NCAS) (2002)	Uses CO ² equivalent measure

Key Condition Summary Points

- High users of surface and ground water with land subsidence implications
- Main contributor to Gippsland and Victoria's greenhouse gas emissions.

Stewardship Summary

The three electricity generation companies in the Gippsland region operate under accredited licences and Environmental Management Systems. The West Gippsland Regional Catchment Strategy refers to the brown coal based energy industry across three assets: Land, Atmosphere and Climate, and Production (WGCMA, 2003). The Regional Catchment Strategy draws targets related to greenhouse gas emissions from the Victorian Greenhouse Strategy (DNRE, 2002). As part of the Australian Government's Regional Minerals Program, the Latrobe Valley 2100 Coal Resource project (LV 2100) has developed a strategy to guide planning and sustainable mine development practices for brown coal in the Latrobe Valley (DPI, 2005).

Energy Summit, undertaken in recent years as part of the Gippsland Energy Challenge project, explore changes to the energy industry and their potential impacts on the Gippsland region. Priority areas identified include: Future of Brown Coal, Greenhouse, Geo sequestration of CO₂, Investment in New Energy plant, Gippsland's preparedness for expansion, Gippsland Engagement and Future Energy Summit. An Energy Policy for the Gippsland region has recently been endorsed by the Gippsland Local Government Network.

Prolonged low river flows have influenced operational aspects of power generation in the Latrobe valley. The brown coal power industry continues to reduce total water discharges to waterways.

The Eastern Water Recycling Proposal , if developed, would provide highly treated recycled wastewater from an upgraded Eastern Treatment Plant, at Curram in Melbourne, for possible use by industry, including existing power stations if the treated water is of an acceptable standard.

Loy yang Power is the recent winner of a Gold Strzelecki Award for Industry Best Practice. Loy Yang Power has developed and implemented an Environmental Management System which meets international standards, and which sets out an environmental policy, objectives and targets, and programs for environmental management.

Stewardship Evidence Summary

Indicator Theme	Score	Key Evidence
Plan	Good	Gippsland Energy Policy LV2100 Coal Resources Project
Implement	Good-Reasonable	Traralgon Creek Rehabilitation Project Morwell River Diversion
Evaluate	Good-Excellent	Latrobe Valley Air Quality Monitoring Network Gippsland Regional Water Monitoring Partnership
Improve	Good-Excellent	Environmental Management Systems
Partnerships	Reasonable	Community partnerships such as Waterwatch Water and Air quality monitoring partnerships

Key Stewardship Summary Points

- Electricity generation companies operate under accredited licences and Environmental Management Systems

For more information

- Powerworks Energy Technology Centre www.powerworks.com.au
- Loy Yang Power www.loyyangpower.com.au
- TRUenergy Yallourn www.truenergy.com.au/Production/Yallourn/index.xhtml
- International Power, Hazelwood www.hazelwoodpower.com.au
- Latrobe City www.latrobe.vic.gov.au/

6.7. THE LATROBE GROUP AQUIFER

Information provided by Sinclair Knight Merz (SKM) Consultants in 2006).

Condition Rating					Stewardship Rating				
03	04	05	06	2007	03	04	05	06	2007
			F	F				★★	★★

Asset description

The Latrobe Group Aquifer is the deepest groundwater bearing rock layers within the Gippsland sedimentary basin. The aquifer contains good quality groundwater onshore and massive hydrocarbon resources offshore (Holdgate, 2003) where it is the main source of oil and gas in the Bass Strait oil fields. The salinity of the groundwater within the aquifer is typically below 500mg/L making it suitable for most uses. Bore yields vary between 5 and 100 litres per second.

Significant groundwater recharge to the Latrobe Group occurs where it outcrops around the northern and western margins of the Gippsland Basin. Recharge to the aquifer also occurs through vertical leakage from overlying aquifers (eg. Balook Formation).

Current Uses:

The Latrobe Group Aquifer supports a variety of industries across South and Central Gippsland. Total groundwater extraction from the aquifer is approximately 120,000ML/year. The largest portion of this stems from offshore oil and gas production, with extraction rates of approximately 90,000ML/year. Offshore oil and gas production is expected to cease by the year 2023, although additional reserves are being actively explored.

Extraction rates associated with coalmine dewatering in the Latrobe Valley range from 20,000 to 30,000ML/year. In the Yarram area, approximately 5,000ML per year are used for irrigation purposes with a further 3,00ML/year for consumptive purposes.

Condition summary

Over the past 30 years, groundwater levels in the Latrobe Group Aquifer have declined by an average of approximately 1.1 meters per year (SKM, 2004). This decline is due to the extraction rate exceeding the rate of recharge to the aquifer CSIRO (2004): recharge 80,000ML/year versus total extraction approximately 120,000ML/year.

Impacts of declining groundwater levels include:

- Groundwater quality that is likely to decline due to a range of reasons associated with the heavy human impact on the aquifer;
- Economic impacts on the Yarram irrigation industry as producers have to drill deeper bores for irrigation;
- Impacts on groundwater-surface water interaction where stream base flows could be reduced as they cross the near-surface Latrobe Group and Balook Formation. The loss of base flow during the summer months will be a significant issue because reduction of flow during low flow periods can impact significantly on river ecology. It could also impact on the reliability of surface water supplies for urban, stock and domestic and irrigation purposes;
- Salt water intrusion in the offshore and near shore areas due to a lowering of hydrostatic pressure; and
- Land Subsidence due to compaction of overlying strata associated with falling groundwater levels.

There are studies in development to quantify subsidence levels associated with the draw down of groundwater. The Gippsland coast is considered to be particularly vulnerable to subsidence, since the Gippsland Lakes are separated from the ocean by a narrow, low sand barrier.

Condition Evidence Summary

Indicator Theme	Score	Weight %	Key Evidence	Evidence Source	Data Comment
Land	Poor-Reasonable	10	Potential subsidence	Comparison of 2005 survey results to 2002 baseline survey undertaken on behalf of Department of Primary Industries	Time between data measurements is relatively small compared to length of time anticipated for subsidence to occur. Need a longer period to determine long term subsidence rates. Modelling suggests there is a high risk of at least some subsidence over the next 25 years.
Water	Degraded	90	Sustained groundwater level decline averaging 1.1m/year across the region	Water level data from State Observation Bore Network	Spread of observation bores is adequate to conclude the groundwater level decline is sustained both spatially and temporally.
Biodiversity	NA	0			
Air	NA	0			

Key condition summary points

- Groundwater level decline in the Latrobe Group Aquifer averaging approximately 1.1m per year for last 30 years.
- Groundwater level decline impacts on groundwater based irrigators in the Yarram region, is likely to result in reduced baseflow to streams in the Tarra River area and has the potential to cause land subsidence (only detected so far around Latrobe Valley Mines)

Stewardship summary

On-shore management of aquifer and land subsidence

Victoria's approach to groundwater resources management is to define 'Groundwater Management Areas (GMA)' for aquifers with a high use/potential for high use. A geographic boundary and a vertical depth extent define GMAs that are assigned a 'Permissible Annual Volume (PAV) - loosely a measure of the sustainable yield from the given aquifer. The PAV is based on the net annual recharge to the aquifer - usually calculated as the vertical recharge for "unconfined aquifers" connected to surface processes, and the volume of throughflow for "confined aquifers" separated from surface processes. The PAV is a difficult parameter to estimate and there is generally a high degree of associated uncertainty.

The Rural Water Authorities use the PAV values to define the maximum allowable groundwater allocation within any one GMA. In some cases, the PAV figures were calculated too late to restrict allocations, resulting in some GMAs being over-allocated. Ideally, when the allocation in a GMA reaches 70% of the PAV, a 'Water Supply Protection Area (WSPA)' can be declared. A WSPA requires a government appointed management committee to compile a Groundwater Management Plan for the region to ensure long-term sustainability of the resource.

Southern Rural Water (SRW) is the agency responsible for the issuing and management of groundwater licences for on-shore extraction. Under the direction of the Department of Sustainability and Environment, SRW is also responsible for developing a formal groundwater management plan for the Yarram Water Supply Protection Area. The committee is currently finalising this plan.

Off-shore management of aquifer

The management of offshore gas, oil and groundwater extraction is a joint Commonwealth/State responsibility under the Commonwealth Petroleum Submerged Lands Act that covers the area greater than three nautical miles off-shore. The Department of Primary Industries is the State Government authority responsible for administering the State responsibilities as part of this Act.

Commonwealth funding of \$5.2 million for research was announced in early 2007, although at present there is no known formal management plan or investigation work being undertaken to address the offshore contribution to the observed on-shore decline in groundwater levels.

Stewardship Evidence Summary

Indicator Theme	Score	Key Evidence	Comment
Plan	Reasonable-Poor	Groundwater Management Plan currently being developed for the Yarram WSPA.	No formal management plan to manage effects of off-shore extraction. No formal management plan for Stratford GMA. Commonwealth Govn. has allocated \$5.2 million for a study into the declining water levels of the aquifer and the potential for subsidence.
Implement	Poor	Current actions restricted to freeze on additional licence in Yarram and Stratford GMAs.	No actions to mitigate effects of off-shore gas and oil extraction on the

			observed on-shore decline in groundwater levels
Evaluate	Reasonable	Adequate groundwater monitoring network. Commencement of subsidence monitoring with baseline survey in 2003 and follow up survey in late 2005.	
Improve	Poor	Monitoring used to assess the sustainability of the current extraction and potential for subsidence.	
Partnerships	Poor	Yarram WSPA community based committee formed and begun to develop the Yarram Groundwater Management Plan	

Key Stewardship Summary Points

- Groundwater Management Plan currently being developed for the Yarram WSPA by a Government appointed community and agency group. No date is available for completion.
- Monitoring program established to determine the amount of coastal land subsidence;
- Department of Sustainability and Environment is currently reviewing the impact of declining groundwater levels on Yarram groundwater irrigators

For more information

On-shore:

Groundwater management:

- Southern Rural Water: (03) 5139 3100
- Department of Sustainability and Environment: (03) 9637 8000

Subsidence:

- Department of Primary Industries: (03) 9637 8000
- Gippsland Coastal Board www.gcb.vic.gov.au (03) 5152 0451

Off-shore:

- Department of Primary Industries: (03) 9637 8000

6.8. LATROBE RIVER

Condition Rating					Stewardship Rating				
03	04	05	06	2007	03	04	05	06	2007
	D	D	D	D		★★ ★	★★ ★	★★ ★	★★ ★

Asset Description

The Latrobe River Basin includes the Latrobe, Tanjil, Tyers, Moe, Morwell, and Traralgon river systems. Rivers of the Latrobe rise on the southern side of the Great Dividing Range and the northern side of the Strzelecki Ranges, draining Lake Wellington, the westernmost of the interconnected Gippsland Lakes. Rivers of the Latrobe Basin are characterised by their large size and capacity, forested upper reaches, extensive floodplain areas in the middle reaches, and connectivity with freshwater marshes and the Gippsland Lakes Ramsar wetland environment in the lower reaches.

Bioregion reference: Highlands- Southern Fall, Gippsland Plain

Condition Summary

The Latrobe River has been identified as a stressed river system (WGCMA, 2004). Index of Stream Condition indicates moderate or poor condition for 65% of the length of the Latrobe River and reaches (DSE, 2005). The West Gippsland River Health Strategy identifies several high to very high risks to the river health of Latrobe including: bed instability, bank erosion, channel modification, flow deviation, water quality, exotic flora, degraded riparian vegetation, stock access, loss of in-stream habitat, wetland connectivity and introduced fauna. The Upper Latrobe River sub-catchment is recognised as a representative river within the Victorian River Health Strategy. The entire Latrobe system has a significant influence on the Ramsar listed Gippsland lakes area. There is high risk to river and lake health from regulation of environmental flows and outflows from Thomson and Macalister River systems (WGCMA, 2004).

Significant economic value is generated through the supply of water for residential areas, power and paper production and water for irrigation purposes.

Condition Evidence Summary

Indicator Theme	Score	Weight %	Key Evidence	Evidence Source	Data Comment
Land	Poor	10	Assumed		
Water	Poor	60	Index of Stream Condition for Latrobe River (2004) Stream condition % length: 5% Excellent 30 % Good 35 % Moderate 30 % Poor Water Quality – Latrobe River attainment of SEPP –	DSE (2004) ISC2: Index of Stream Condition: The Second Benchmark of Victorian River condition. Water Ecoscience	Method different to 1999 ISC, not directly comparable.

			nutrients: low, turbidity/suspended solids: medium & physical parameters: medium-high	(2002) Victorian Water Quality Monitoring Annual Report	
Biodiversity	Poor	30	Assumed		
Air	NA	0			

Key Condition Summary Points

- Flow stressed river due to multiple domestic, industrial and agricultural uses
- Poor water quality

Stewardship Summary

Management of the Latrobe River involves several large, intensive users including industry, residents and farmers. Some management plans and programs have achieved improvement in environmental condition, particularly through management of sewerage, wastewater and urban run-off. However, further integrated management effort is required to address the 'stressed river' status of the Latrobe.

The West Gippsland River Health Strategy gives high priority to five of the eleven reaches (total of 115km) in the Lower Latrobe, three of seven reaches (total of 60km) in the Upper Latrobe in addition to reaches on the Morwell River and Traralgon Creek, and Lake Wellington. An environmental flow assessment for the Latrobe downstream of Tanjil River confluence including Dowd and Heart Morasses and the Sale Common, is under review. The Central Sustainable Water Strategy allows for a temporary allocation for seven years of 10,000ML per year for environmental flows from unallocated water in Blue Rock dam and unused entitlement at Lake Narracan, pending further research (DSE, 2006).

Stewardship Evidence Summary

Indicator Theme	Score	Key Evidence
Plan	Reasonable	Central Region Sustainable Water Strategy West Gippsland Regional River Health Strategy Securing our Water Future Together – White Paper Gippsland's Water Quality Action Plan
Implement	Good	River Health On-ground Works Program – Latrobe Basin \$1.5 million over two years
Evaluate	Reasonable	Environmental Flow Assessment Gippsland Regional Water Monitoring Partnership
Improve	Reasonable	Central Region Sustainable Water Strategy
Partnerships	Reasonable	Gippsland Regional Water Monitoring Partnership

Key Stewardship Summary Points

- Environmental flow assessment under review.
- Further integrated management effort is required to address the 'stressed river' status of the Latrobe

For more information

- West Gippsland Catchment Management Authority (03) 5175 7800 or www.wgcma.vic.gov.au
- Department of Sustainability and Environment – Central Region Sustainable Water Strategy www.dse.vic.gov.au

6.9. THOMSON RIVER

Condition Rating					Stewardship Rating				
03	04	05	06	2007	03	04	05	06	2007
C-	C-	C-	C-	D	★★ ★	★★ ★	★★ ★1/2	★★ ★★	★★ ★★

Asset Description

The Thomson River flows from Mt Gregory (3,200m) to Sale, where it joins the Latrobe River. The Thomson Reservoir is the largest structure in the catchment, with a capacity of over 1,100GL. From the Thomson Reservoir to Cowwarr Weir, the Thomson River is a fast flowing stream with a rock, gravel and sand bottom, flowing in a confined valley through steep forested country. The major natural features of the river in this section are the Narrows, where the river has formed a gorge, and the inflow of the Aberfeldy River. Downstream of Cowwarr Weir, the river flows through flatter undulating country. Cowwarr Weir marks a major regulation point, with flows divided between two river channels – the 29 km Old Thomson channel, and the shorter 14 km section of Rainbow Creek – and diversion channels. Rainbow Creek was formed due to a channel avulsion during floods in 1952. Rainbow Creek and the Old Thomson River rejoin near Heyfield. From Cowwarr Weir to the Latrobe River, agriculture dominates the landscape, with several rural towns and major population centres lower in the catchment.

Bioregion reference: Highlands-Southern Fall and Gippsland Plain

Condition Summary

The Thomson is classed as a heritage river (between Thomson Dam and Cowwarr Weir), normally exhibiting good water quality, generally good stream substrate and instream habitat, and high quality riparian vegetation in the upper reaches (Sadler and Doeg, 1998). The middle to lower reaches exhibit high levels of phosphorus and turbidity, with increasing salinity (EC) in the lower reaches. Significant loss of riparian vegetation has occurred in the lower reaches, and there are some issues about water course and bed/bank stability (SKM, 2003). The Thomson Macalister Environmental Flows Task Force reported that health of the Thomson and Macalister Rivers has been degraded by human activity as evidenced by:

- reduction in abundance and distribution of native fish species throughout the catchment;
- reductions in the in-stream and riparian habitats;
- reductions in water quality in downstream reaches; and
- increases in the abundance and distribution of exotic fish species (Thomson Macalister Environmental Flows Task Force, 2004).

Storage levels in Thomson Reservoir during the 2006/7 year, due to drought conditions, were the lowest on record, triggering the implementation of level 3a restrictions for Melbourne Water users from April 2007. Passing flows have been released from Thomson Reservoir in accordance with the Thomson River Bulk Entitlement. Interim changes have been made to the 2006/07 Thomson River Annual Watering Plan for environmental water released from Thomson Reservoir. Releases for the remainder of the 2006/07 watering year will be based on the natural inflows to the storage. Under these arrangements a natural rainfall event will become

the trigger for an environmental flow release. A temporary Qualification of Rights issued for Melbourne Water will bring passing flows closer in line with those recommended by the Thomson Macalister Taskforce for the majority of the year but will see a reduction below this recommendation during the months of May and June of 2006/07 (WGCMA, 2007).

Southern Rural Water (SRW) have drawn on their drought reserve water supply held in Thomson Reservoir during 2006/7 for the Macalister Irrigation District with over 16,000ML of irrigation water delivered from the Thomson system since November 2006. SRW manages the delivery of passing flows for the Lower Thomson River using an 'or natural' clause, resulting in passing flows below Maffra varying between 50ML/d and 125ML/d.

In addition, the 2006/07 Great Divide bushfires affected approximately 62,700ha of vegetation throughout the catchment. Subsequent moderate rainfall events in the catchment has resulted in significant erosion, sediment transport, in-stream debris and very high turbidity. Cowwarr Weir in particular remains badly effected.

Drought stress is evident on revegetation projects and remnant vegetation in the lower reaches of the Thomson River. Terrestrial weed species are encroaching the river channel and in-stream habitats have been exposed.

The West Gippsland Catchment Management Authority's Dry In-Flow Contingency Plan 2007/08 reviews the Thomson River to ensure that environmental flows were delivered in a manner responsive to the current drought situation and in the most efficient manner to obtain priority ecological objectives. As the Environmental Water Reserve Manager, WGCMA has developed protocols for 'emergency' low flow situations, as indicated by monitoring programs.

Condition Evidence Summary

Indicator Theme	Score	Weight %	Key Evidence	Evidence Source	Data Comment
Land	Poor	10	Assumed		
Water	Poor	60	Index of Stream Condition for Thomson River Basin (2004) Stream condition % length: Water Quality – and quantity poor due to drought and 2006/07 fires followed by rainfalls.	DSE (2004) ISC2: Index of Stream Condition: The Second Benchmark of Victorian River condition. WGCMA DICP, 2007	Method different to 1999 ISC, not directly comparable.
Biodiversity	Poor	30	Assumed		
Air	NA	0			

Key Condition Summary Points

- First environmental flows (10,000ML) released. Second environmental flows reduced to 3,000ML.
- Benchmark of environmental condition taken and ongoing monitoring planned to assess impact of flows.
- Low rainfalls in catchment and 2006/07 fires greatly affected river system.

Stewardship Summary

In 2004, the Thomson Macalister Task Force concluded that river health will further decline if no management changes are implemented; and conditions are unlikely to improve under current management practices. The Task Force identified the necessary environmental water requirements of the Thomson and Macalister Rivers and made recommendations regarding flows for both systems (Thomson Macalister Environmental Flows Task Force, 2004).

The Victorian Government responded in the White Paper “Securing our Water Future Together” (2004) stating:

- The Government will aim to provide an average of 25,000ML of additional environmental flows annually to improve the health of the Thomson River, the Macalister River and Gippsland Lakes. The Government will also restore critical river and wetland habitat.
- The additional environmental flows will be provided in two stages:
 1. In the short term an additional:
 - 10,000ML will be provided for the Thomson River as a bulk entitlement for the environment; and
 - 5,000ML will be provided for the Macalister River, by the end of 2006. This will be recovered through a \$5 million project to improve distribution infrastructure in the Macalister Irrigation District.
 2. Within the next 10 years a further:
 - 8,000 ML will be provided for the Thomson River. This will be recovered from system savings. The process and schedule for recovery of this water will be determined in the 2005 Central Region Sustainable Water Strategy; and
 - 2,000 ML will be provided for the Macalister River. This will be recovered through water efficiency savings and the Government has committed \$3 million to the recovery of this water through improvements and modernising the water supply system of the Macalister Irrigation District (DSE, 2004).

The West Gippsland River Health Strategy has given highest priority to the protection of two (of four) reaches of the Upper Thomson, covering 20km of the river (WGCMA, 2004).

Monitoring of the effectiveness of environmental flow releases is ongoing.

Stewardship Evidence Summary

Indicator Theme	Score	Key Evidence
Plan	Good	Central Region Sustainable Water Strategy West Gippsland Regional River Health Strategy Securing our Water Future Together – White Paper Gippsland’s Water Quality Action Plan
Implement	Good	Improving environmental flows in the Thomson and Macalister Rivers River Health On-ground Works Program – Thomson Basin
Evaluate	Good	Water Quality and Quantity monitoring
Improve	Reasonable	Thomson Macalister Environmental Flows
Partnerships	Reasonable	Thomson Macalister Environmental Flows Taskforce

Key Stewardship Summary Points

- Environmental flows released.
- Benchmark of environmental condition taken and ongoing monitoring planned to assess impact of flows

For more information

- West Gippsland Catchment Management Authority (03) 5175 7800 or www.wgcma.vic.gov.au
- Melbourne Water www.melbournewater.com.au
- Southern Rural Water www.srw.com.au/

6.10. MACALISTER IRRIGATION DISTRICT

Condition Rating					Stewardship Rating				
03	04	05	06	2007	03	04	05	06	2007
D-	D	D+	D+	D+	★★ ★	★★ ★	★★ ★1/2	★★ ★1/2	★★ ★1/2

Asset Description

The Macalister Irrigation District (MID), located in central Gippsland, is the largest irrigation area south of the Great Dividing Range. The Macalister River is the main source of the district's irrigation water. The MID extends around the river for 53,000ha from Lake Glenmaggie to near Sale. Approximately 33,500ha are currently used for irrigation, and of this 90% are under pasture.

The main town in the MID and its business heart is Maffra, where Murray Goulburn Cooperative processes much of the milk produced by the district's dairy farmers. Other important centres are Stratford, Heyfield and Sale.

Bioregion reference: Gippsland Plain

Condition Summary

Intensive irrigated dairy farming and horticulture in the Macalister Irrigation District has resulted in poor environmental quality on-site and significant offsite impacts including high nutrient loads entering lower reaches of Macalister, Thomson and Latrobe Rivers. Significant irrigation-induced salinity exists (50,000ha with water table of 2m or less), exacerbated by extensive clearing and draining of wetlands. Water quality is poor with elevated turbidity levels. There is an upward trend in conductivity and increasing acidity (SKM, 2003; Victorian Catchment Management Council, 2002).

In-flow to Lake Glenmaggie during 2006/7 was the lowest on record with a total inflow of 65,000ML, compared with an average in-flow of around 450,000ML (14.44% of average flow). As a result, during 2006/7 there was no spill water from the Lake Glenmaggie weir wall directly into the Macalister River, which would normally provide a valuable spring fresh to lower river reaches. Passing flows released from Lake Glenmaggie by Southern Rural Water (SRW) have varied between 60ML/d and 9ML/d in accordance with the Thomson Macalister Bulk Entitlement.

In addition to drought, the 2006/07 Great Divide bushfires affected approximately 159,400ha of vegetation in the upper catchment. Storm events in early 2007 resulted in significant erosion, sediment and ash loads into Lake Glenmaggie. During the 2006/7-irrigation season there were extended and significant Blue Green Algae events in both Lake Glenmaggie and the irrigation channel network.

The combined effect of on-farm water savings, dairy effluent reduction programs and dry weather conditions has reduced nutrient loads exported from the Macalister Irrigation District. SRW conducts quarterly monitoring of Phosphorus leaving MID drains for SEPP requirements.

Condition Evidence Summary

Indicator Theme	Score	Weight %	Key Evidence	Evidence Source	Data Comment
Land	Poor	40	<p>Risk of Soil Erosion – water & wind</p> <p>Area affected by salinity</p> <p>Land suitability for purpose</p> <p>Phos levels were greatly improved due to unprecedented low flows and continued nutrient reduction activities.</p>	<p>SKM, Renewal of the West Gippsland Regional Catchment Strategy, State of the Catchment (2003)</p> <p>SKM, WGCMA West Gippsland Salinity Management Plan</p> <p>Creating Gippsland's Future (2003) West Gippsland CMA 2007.</p> <p>MID (Macalister Irrigation District) 2030 - Discussion Paper: An opportunity to maximise the full potential of the MID. 2007</p>	From Map
Water	Poor	40	<p>Index of Stream Condition for Macalister River (2004) All reaches in the Moderate to Poor range.</p> <p>Defined Environmental Flows</p> <p>Water Quality Macalister River – attainment of SEPP – nutrients: low, turbidity/suspended solids: medium & physical parameters: high.</p> <p>Very Poor water quality following 06/07 bush fires and subsequent storm events</p> <p>Offsite impact – poor 23% of P loads discharged into Gippsland Lakes is from MID, from less than 3% of catchment area</p>	<p>DSE (2004) ISC2: Index of Stream Condition: The Second Benchmark of Victorian River condition.</p> <p>Thomson Macalister Environmental Flows Task Force (2004)</p> <p>Water Ecoscience (2002) Victorian Water Quality Monitoring Annual Report West Gippsland Waterwatch Data report (2003)</p> <p>WGCMA DCIP, 2007</p> <p>EPA, MID Dairy Farms (2003) GLTD, 2002</p>	Method different to 1999 ISC, not directly comparable.
Biodiversity	Poor	20	Assumed		
Air	NA	0			

Key Condition Summary Points

- Most natural values are poor with high offsite impacts due to the highly modified landscape and intensive irrigated farming
- The combined effects of on-farm water savings, dairy effluent reduction programs and dry weather conditions have reduced nutrient loads from the Macalister Irrigation District.

- Very poor water quality following 06/07 Great Divide bush fires and subsequent storm events.

Stewardship

A Land and Water Management Plan is currently being developed for the Macalister Irrigation District and surrounding areas following the review of the Macalister Irrigation District Nutrient Reduction Plan. The primary goal of the Macalister Land and Water Management Plan is to integrate the management of natural resource issues impacting on priority assets within and surrounding the area. The plan aims to design a sustainable landscape taking into account the current land use and off-site impacts on priority assets with the implementation of management actions and mechanisms. The Gippsland Lakes will continue to be a key consideration within the plan and its development.

In excess of 250 farms have participated in an incentive scheme to reduce offsite impacts from the Macalister Irrigation district by installing re-use dams or converting to spray irrigation. There have also been a large number of whole farm plans completed in the district.

Nutrient discharges (phosphorus load) from the Macalister Irrigation District have been reduced substantially (to approximately 25% of historic values) for the first half of 2006/07 as a combined result of channel automation, real time monitoring of outfalls, nutrient reduction activities and unprecedented low flows in drainage systems.

Southern Rural Water has prepared the comprehensive MID 2030 Discussion Paper to outline opportunities for upgrade of irrigation and drainage systems to ensure the that Macalister Irrigation District meets modern irrigation requirements, improves on-farm productivity and enhances farmer lifestyle. The objective is to improve water delivery efficiency and achieve environmental outcomes, particularly reduction of nutrient export to waterways and the Gippsland Lakes. The Discussion Paper has been developed with extensive community and stakeholder input, including public consultation prior to finalisation of the MID 2030 strategy (SRW, 2007).

Southern Rural Water continues to build on previous achievements in automating the Macalister Irrigation District's Main Northern Channel and Valencia Creek channel as part of its Total Channel Control project. Water savings will contribute to environmental flow reserves.

Stewardship Evidence Summary

Indicator Theme	Score	Key Evidence
Plan	Reasonable	Macalister Land and Water Management Plan (in development) West Gippsland Salinity Management Plan MID 2030 Discussion Paper MID Nutrient Reduction Plan West Gippsland Soil Erosion Plan (under development) West Gippsland Wetlands Management Plan
Implement	Good	Incentives and Extension activities – implementation of the MID NRP Development of Whole Farm Plans & Effluent Management Plans Groundwater pumping Total Channel Control project Re-use systems and spray irrigation
Evaluate	Reasonable	Effluent Management Compliance for dairy production

		<p>systems in the MID – EPA Auditing ‘An overview of Whole Farm Planning programs in irrigation areas in Victoria’ Mid Term review into Water Smart Farms Funding (2005) Reuse Monitoring by DPI Gippsland Nutrient Extension Program Evaluation 2006 MID NRP Annual Report 2005/6</p>
Improve	Good	<p>Nutrient Loads per Drain Catchment Area Hydraulic Loading on farms Development of Irrigation Guidelines Variety of MID 2030 papers and projects Development of Whole Farm, Effluent Management, and Irrigation Farm Plans</p>
Partnerships	Reasonable	<p>Nutrient Technical Working Group Wellington Salinity Working Group Macalister Customer Consultative Committees Wellington Community Consultative Committee</p>

Key Stewardship Summary Points

- Total Channel Control project has returned water savings to environment
- Strategic Plans in development for future of MID.

For more information

- Department of Primary Industries, Maffra (03) 51470800
- West Gippsland Catchment Management Authority (03) 5175 7800 or www.wgcma.vic.gov.au
- Southern Rural Water (03) 5139 3100 www.srw.com.au

6.11. THE GIPPSLAND LAKES

Condition Rating					Stewardship Rating				
03	04	05	06	2007	03	04	05	06	2007
C	C+	C+	C+	C+	★★	★★ ★	★★ ★	★★ ★ 1/2	★★★ 1/2

Asset description

The Gippsland Lakes are a large coastal lake system situated on the southeastern coast of Victoria, Australia. Comprising three main lakes - Lake Wellington in the west, Lake Victoria, and Lake King in the east, the Lakes are the largest navigable estuarine lagoon system in Australia. The Lakes are approximately 70km long and 10km wide at the widest point and separated from Bass Strait by the narrow Ninety-Mile Beach and dune system. Up until 1889 the Lakes were predominantly a freshwater and marsh system. Since then a permanent opening to the sea has been established at Lakes Entrance, increasing average salinity (Gippsland Lakes and Catchments Taskforce, 2004).

Fresh water enters the lakes from six major river catchments: the Latrobe, Thomson-Macalister, Avon, Mitchell, Nicholson and Tambo, which together drain a catchment area of 20,600km². These rivers are the main source of fresh water to the Lakes and provide an important role in flushing the Lakes. This fresh water is also the source of most of the nutrient and sediment inputs to the Lakes.

The Gippsland Lakes maintains high recreation and tourism values based on the extensive and contiguous natural system of waterways. The area is listed as a Ramsar wetlands site, giving international recognition to the natural values and giving some indication of its ecological significance.

Bioregion reference: Gippsland Plain

Condition summary

An environmental audit by CSIRO in 1999 concluded that the Gippsland Lakes system was approaching a level of severe environmental damage that may be difficult to reverse. Long term changes in ecological character in the Gippsland Lakes were primarily attributed to changed water and salinity regimes associated with the permanent artificial entrance to the lakes from the sea, and reduced water quality and quantity associated with changed land and water use in the catchment. Severe and increasingly frequent algal blooms being the most noticeable symptom. There are high sediment and nutrient levels entering the Lakes system, some degradation of hinterland flora and fauna, and some indication of decline in fish numbers and seagrass (CSIRO, 1999). Shoreline erosion continues due to loss of saline intolerant fringing vegetation. Dryland salinity occurs in low lying areas around Lake Wellington (Bengworden area, Kilmany/Pearsondale and Lake Coleman, SKM 2003).

Data for the period show that while some water quality parameters are meeting State policy guidelines, SEPP guidelines for nutrients entering the Lakes are still not being met (Gippsland Lakes Task Force, 2004).

Environment Protection Authority monitoring for the past 12 months indicates a reduction of 64% nitrogen and 73% phosphorus loads entering the Lakes – due largely to a 51% reduction in volume of inflowing river water.

The last several years of drier conditions and low river flows have increased lake salinity levels, and coupled with on-farm water savings, has reduced nutrient input to the Lakes system, resulting in significantly fewer algal blooms.

Condition Evidence Summary

Indicator Theme	Score	Weight %	Key Evidence	Evidence Source	Data Comment
Land	Reasonable	10	Shoreline Erosion	Shore Erosion and Revegetation Strategy, 2002	No recent monitoring, slow rate of decline. Trials on foreshore erosion techniques funded and commenced in 2006. Basis for long-term implementation of erosion control of foreshore areas.
Water	Reasonable-good	50	Water Quality Data – including algal blooms (1999-2003) Wetland Health Data (1999-2004)	State of the Gippsland Lakes Report 2004	Water quantity and biological water quality data No blue/green algal blooms reported during period. EPA monitoring for past 12 months indicates reduction of 64% nitrogen and 73% phosphorus loads entering the Lakes – due largely to 51% reduction in volume of inflowing river water.
Biodiversity	Poor	40	Commercial Fish Stocks, Seagrass (1997) and Carp numbers	State of the Gippsland Lakes Report 2004	No additional data available. Missing recent seagrass and collated data for birds. More information about fish and the links to ecological health and habitat would be useful.
Air	NA	0			

Key condition summary points

- Reduce river inflows and increased marine influence on Lakes system
- Water quality improved but nutrient levels still high by State policy standards.
- Fewer Blue-Green algal blooms.

Stewardship summary

The findings of the CSIRO audit prompted the Victorian Government funded Gippsland Lakes Rescue Package - \$12.8 million and the development of the Gippsland Lakes Future Directions and Actions Plan - an overarching plan to provide a high level and integrated approach to the management of the Gippsland Lakes and their catchments. The Action Plan aims to reduce nutrient input to the Lakes by 40% by 2022. The Gippsland Lakes and Catchments Taskforce has been co-ordinating the implementation of this Plan. Taskforce membership includes government agencies and statutory authorities with responsibility in the Gippsland Lakes catchment. The implementation of the Future Directions and Actions Plan has recently independently been favourably evaluated by URS Australia (URS, 2006).

The Gippsland Lakes area is shared by both East and West Gippsland Catchment Management Authority areas. Both East and West Gippsland Regional Catchment Strategies acknowledge that integrated catchment management is required to care for and protect the Gippsland Lakes. (WGCMA 2004), (EGCMA 2005).

The State of the Gippsland Lakes report (2004) provided the first update on environmental condition of the Lakes since the CSIRO environmental audit. The report concludes that while currently available data give some indication of Lakes health, a more integrated and consistent monitoring program is required to gain a better picture of the environmental condition of the Gippsland Lakes (Gippsland Lakes and Catchments Taskforce, 2004).

The Gippsland Lakes Taskforce commissioned four bodies of work to refine the research investment strategy. This involved:

- Identify, using latest data, the 2-3 major sources of nutrients and TSS in each catchment. (Grayson, 2006)
- Estimating the likely costs of and reduction in Phosphorus loads to the Gippsland Lakes achievable by implementing Best Practice Management BMPs (Lasdson & Tilleard, 2006)
- For each priority source, identify which BMPs make the greatest impact on nutrient reductions and their associated costs (Cottingham, 2006)
- Synthesising the currently available information on sediment-bound nutrients in the Gippsland Lakes, to determine what is the relative importance of these sediment-bound nutrients in contributing to cyanobacterial blooms (blue-green algae) in the Lakes (Roberts & Longmore).

Several additional research projects are currently being developed to gain further improved understanding of the Gippsland Lakes' ecological functioning, and to improve best practice land management requirements.

Trials on foreshore erosion techniques commenced in 2006 and will provide the basis for long-term implementation of foreshore erosion control measures.

Stewardship Evidence Summary

Indicator Theme	Score	Key Evidence
Plan	Good	<ul style="list-style-type: none"> - Gippsland Lakes Future Directions & Actions Plan (2002) - Schedule F3 – SEPP Waters of Victoria – Gippsland Lakes and Catchment (1998) - Gippsland Lakes Ramsar Site – Strategic Management Plan (2003) - Long Term Management Plan for Dredging Lakes Entrance 2005-2015 (2005) - Gippsland Ports Safety & Environmental Management Plan: East Gippsland Ports (2005) - The Lakes National Park and Gippsland Lakes Coastal Park Management Plan (1998) Gippsland's Water Quality Action Plan (2005) Gippsland Lakes Coastal Action Plan – subject to review Funding obtained for development of ecological monitoring program for Gippsland Lakes - Funding obtained for development of ecological characteristics of Ramsar wetlands
Implement	Reasonable	<p>Ongoing investment in GLFD&AP projects by Taskforce</p> <p>Taskforce applied for State government committed a further \$6.0 million (over next three years) for ongoing implementation of the GLFD&AP (in addition to original Gippsland Lakes Rescue Package \$12.8 million over 5 years)</p> <p>Projects funded by Gippsland Lakes Rescue plus leverage from</p>

		private/other funding in the range of \$0.85 – \$1.35 for every \$1 of State Government funding) Environmental Water Reserve – Gippsland Lakes
Evaluate	Reasonable	State of the Gippsland Lakes Report 2004 Future Directions and Actions Plan Evaluation (2006). EPA Monitoring program (ongoing)
Improve	Good	Gippsland Lakes Research Program GL Taskforce commissioned four bodies of work to refine research investment strategy.
Partnerships	Good	Gippsland Lakes & Catchment Taskforce.

Key Stewardship Summary Points

- Independent evaluation (URS, 2006) shows good progress towards understanding nutrient impacts on Lakes, dynamics of the Lakes themselves, and in raising community awareness.
- More work to be done on the monitoring program, on-ground works and maintaining partnerships through the Gippsland Lakes & Catchment Taskforce.

For more information

- Gippsland Coastal Board, Gippsland Lakes Planning Officer, 5152 0400 or www.gcb.vic.gov.au

6.12. NINETY MILE BEACH

Condition Rating					Stewardship Rating				
03	04	05	06	2007	03	04	05	06	2007
	B	B	B	B		★★ ★	★★ ★	★★ ★	★★★

Asset Description

The Ninety-Mile Beach extends from McLaughlin's Beach in the south to Lakes Entrance in the north. It is comprised of coastal dunes separating the ocean from the Gippsland Lakes, Jack Smiths Lake and Lake Denison, and agricultural land.

Bioregion Reference: Gippsland Plain and Twofold Shelf

Condition Summary

Generally, Ninety Mile Beach and the immediate hinterland has had very little disturbance and are in very good condition. The subtidal sand community along Ninety Mile Beach is the most species-rich of its type in the world. (Parks Victoria, 2006 – Ninety Mile Marine National Park Management Plan). Protection of environmental values is afforded through the Lakes National Park, Gippsland Lakes Coastal Park and Ninety Mile Beach Marine National Park.

There is concern regarding potential coastal subsidence resulting from reduced water, oil and gas levels in the Latrobe Aquifer (SKM, 2003).

There are also potential risks to coastal settlements and environments from climate change-induced higher sea levels, increased storm intensity and altered erosion patterns (CSIRO, 2006).

Condition Evidence Summary

Indicator Theme	Score	Weight %	Key Evidence	Evidence Source	Data Comment
Land	Good	30	Salinity and Acidity mapping	SKM (2003) Renewal of the West Gippsland Regional Catchment Strategy – State of the Catchment	
Water	Good-reasonable	40	Index of Stream Condition (2004) for lower Bruthen Creek (moderate - very poor), Monkey Creek (good), Merriman Creek (moderate) Water Quality data 2002, Merriman Creek Groundwater Quantity	DSE (2004) ISC2: Index of Stream Condition: The Second Benchmark of Victorian River condition. Water Ecoscience (2002) Victorian Water Quality Monitoring Annual Report CSIRO Report (2004) Latrobe Aquifer	Method different to 1999 ISC, not directly comparable.
Biodiversity	Good - Excellent	30	Birds Fish Marine Mammals	Ninety Mile Beach Marine National Park Management Plan	Collated from various studies – no formal monitoring program

			Marine Invertebrates Marine Flora Foreshore Vegetation		
Air	NA	0			

Key Condition Summary Points

- Generally good condition due to little disturbance
- Concern regarding potential for coastal subsidence due to reduced aquifer levels
- Potential impact of sea level rise and storm surges associated with climate change

Stewardship Summary

The challenge to protect the environmental values of the Ninety-Mile Beach is complex due to the mix of influences from both private and public sectors. Parks Victoria's management plans for the Lakes National Park, Gippsland Lakes Coastal Park and Ninety Mile Beach Marine National Park provide management guidelines. The Integrated Coastal Planning for Gippsland - Coastal Action Plan makes recommendations relevant to planning and development along the coast. Ninety Mile Beach hosts a number of key infrastructure assets for the Gippsland region including Delray Beach Ocean Outfall, Saline Waste Outfall Pipeline to McGaurans Beach, Tasmanian Natural Gas Pipeline, Bass Strait oil/gas pipelines, and Basslink.

The recent Coastal Spaces project supports the Wellington Coast Subdivision Strategy recommendations to address the problem of old and inappropriate subdivisions along the Ninety Mile Beach. The strategy involves focussing development on the existing coastal settlements of Golden Beach/Paradise Beach and returning the areas in-between to either public land or management as large rural conservation lots. (DSE, 2006 – Coastal Spaces Recommendations Report).

An investigation of erosion history and future threats to Jack Smith Lake, Lake Denison and McGaurans Beach is underway (Parks Victoria, in prep).

Stewardship Evidence Summary

Indicator Theme	Score	Key Evidence
Plan	Reasonable	Ninety Mile Beach Marine National Park Management Plan Lakes National Park Management Plan Gippsland Lakes Coastal Park Management Plan Wellington Coast Subdivision Strategy Coastal Spaces Project Country Towns Water Supply and Sewerage Program Wellington and East Gippsland Shires Domestic Wastewater Management Strategy Gippsland Estuaries Coastal Action Plan
Implement	Reasonable	River Health On-ground works program – South Gippsland (Merriman Creek) 38,000 trees planted at Jack Smith Lake by Green Fleet in 2005 Jack Smith Lake fox & rabbit control Dune preservation works
Evaluate	Reasonable	Coastal Processes study - investigate dune erosion history along the Ninety Mile Beach Climate Change Impacts Study for the Gippsland Coast
Improve	Reasonable	Wellington Coast Subdivision Strategy Coastal Spaces Project Wellington and East Gippsland Shires Domestic

		Wastewater Management Strategy
Partnerships	Reasonable	Coastal Agencies Liaison Group

Key Stewardship Summary Points

- Stronger partnerships will protect environmental values through appropriate land use planning.
- Planning needs to factor in climate change risk and potential for coastal subsidence.

For more information

- Parks Victoria Information Centre 13 1963 or www.parkweb.vic.gov.au
- Gippsland Coastal Board (03) 5152 0451 www.gcb.vic.gov.au

6.13. ALPINE NATIONAL PARK

Condition Rating					Stewardship Rating				
03	04	05	06	2007	03	04	05	06	2007
B	B-	B-	B-	C	★★ ★	★★ ★	★★ ★	★★ ★★	★★ ★★

Asset Description

The Alpine National Park covers an area of 646,000ha. This Report Card mostly focuses on the Wonnangatta-Moroka and Bogong Units of the Alpine National Park. (approximately 380,000ha). These areas include several Wilderness Zones, Heritage Rivers and Natural Catchment Areas (Parks Victoria, 2000).

Bioregion reference: Victorian Alps and Highlands – Southern Fall

Condition summary

The Alpine National Park protects the state's highest mountains and extensive areas of highly diverse, often pristine alpine and sub alpine ecosystems.

The 2003 Eastern Victorian Fires burnt a combined total of 1.3million hectares of National Park, State Forest and private land in the North Eastern and East Gippsland regions of Victoria and Southern New South Wales. Approximately 500,000 hectares of National Park including 60% of the Alpine National Park were affected (Victorian Government 2003). The impact of the fires was widespread, including reduced water quality, fragmentation of vegetation, increased erosion and threats to endangered species in Gippsland's catchments. The main types of natural environments that were affected include eucalypt forests of the upper and lower slopes and the alpine grassland, shrubland, heathland and sphagnum bog vegetation communities at higher altitudes (Ministerial Taskforce on Bushfire Recovery, 2003).

The Great Divide Fires of 2006-07 again burnt a significant area of the Alpine National Park and adjoining Avon Wilderness Park. The fires have impacted, in places severely, on sensitive alpine species and communities. Catchment headwaters including alpine bogs have been affected and erosion, stream sedimentation and impacts on water quality have resulted. The varying intensities of the fire across the landscape has led to a mosaic of previously burnt, recently burnt and unburnt floristic communities - adding further complexity to the existing diverse habitats.

Rainfall events continue to mobilise sediment ash and debris months after the Great Divide Fires, impacting on numerous river systems flowing from the Alps and sub-Alps.

Erosion, increased sedimentation and nutrient loads, and altered river water yields are likely to be evident for decades (Sheridan et al, in press).

Condition Evidence Summary

Indicator Theme	Score	Weight %	Key Evidence	Evidence Source	Data Comment
Land	Reasonable-Good	25	Soil erosion risk - water	SKM (2004), Recovery Status of Streams and Catchments in East Gippsland Affected by 2003 Fires Sheridan et al, in press	Post 2003 fire assessment
Water	Poor-Very poor	25	Water Quality – Phos & Turbidity	Report: SKM (2004) as above. Parks Victoria, 2007	Post 2003 fire assessment
Biodiversity	Reasonable - Excellent	50	Native vegetation extent and quality, fauna, pest plants & animals	Parks Victoria (2000) State of the Parks, Groves (1998) Grazing in the high country SKM (2004) as above Parks Victoria, 2007	New State of the Parks due out later in 2007
Air	NA	0			

Key Condition Summary Points

- Base condition is good to excellent due to large areas that have been protected for a long period of time. Large scale bush fires in 2003 and 2006-07 has greatly altered, temporarily, the ecology and hydrology of the alpine National Park.
- Recovery from 2003 and 2006-07 fires is occurring but is slow and uneven, having adverse impacts on water quality and the risk of soil erosion.

Stewardship Summary

Management plans exist for all four management units within the Alpine National Park (Parks Victoria, 2000).

The East Gippsland Regional Catchment Strategy refers to Alpine National Park in the Parks asset class, noting that it is timely to update park management plans following the 2003 fires (EGCMA, 2005).

A Strategic Plan has been approved for the Australian Alps National Parks Co-operative Management Program (2004 – 2007), providing integrated management across Victorian, NSW and ACT Alpine National Parks (Australian Alps National Parks. 2004).

The Victorian Government removed cattle grazing from the Alpine National Park in May 2005 (Alpine Grazing Taskforce, May 2005).

A detailed fire recovery program has been prepared by Parks Victoria, with tasks including significant catchment rehabilitation, pest plant and animal control and threatened species programs across the entire fire affected area. Several monitoring programs and further control works will continue into the future.

Cooperative efforts during and following bushfire events of recent years has strengthened inter-agency relationships and stewardship of the Alpine National Park.

Stewardship Evidence Summary

Indicator Theme	Score	Key Evidence
Plan	Good	<ul style="list-style-type: none"> - Alpine National Park Management Plan – Bogong, Wonnangatta-Moroka, Dartmouth, Cobberas-Tinagariny Management Plans - Fresh start – a healthy future - removal of grazing from the Alpine NP (2005) & High Country Initiatives Package - Alpine National Park Fire Recovery Plan(s) (2003 and 2007) - Strategic Plan 2004-2007 for the Australian Alps National Parks Cooperative Management Program
Implement	Good	<ul style="list-style-type: none"> - Parks Victorian environmental works program (Wonnangatta Environmental Action Plan - 2003 Fire recovery plan implementation completed 2005 - pest plant and animal management in response to removal of grazing - Alpine Bog Restoration project - English Broom control partnership - Feral Horse Management Program
Evaluate	Reasonable	Post Fire monitoring projects
Improve	Good	DSE & PV October 2005 Post Wildfire Indigenous Heritage Survey – Summary Report - Improving future land management practices
Partnerships	Good	<ul style="list-style-type: none"> - PV & DSE 2005 DVD - Dancing and the Devil Fire – Uncovering the hidden History of the Alps - English Broom control - Parks Victoria, Department of Sustainability and Environment, Department of Primary Industries, Friends of the Mitta Mitta, High Country Landcare Network, and private landholders

Key Stewardship Summary Points

- Cattle grazing removed from the Alpine National Park. Alpine grazing still occurs on public land in State Forests and private land.
- Largest fire recovery program planned and implemented in Australia following 2003 fires.
- Further recovery works being implemented following 2006-07 Great Divide Fires.

For more information

- Parks Victoria Information Centre 13 1963 or visit www.parkweb.vic.gov.au
- Australian Alps National Parks www.australialps.deh.gov.au

6.14. BATALUK CULTURAL TRAIL

Condition Rating					Stewardship Rating				
03	04	05	06	2007	03	04	05	06	2007
		B	B	B			★★ ★	★★ ★	★★★

Asset Description

The Bataluk Cultural Trail follows routes that Koori people of East Gippsland have been travelling along for over 18,000 years. The Trail extends from Sale through to Cape Conran, with eleven points that highlight indigenous cultural heritage in the Gippsland region. Established to maintain and promote key examples of aboriginal heritage, the trail winds its way through places such as The Knob Reserve, Den of Nargun, Howitt Park, Krowathunkoolong, Aboriginal Keeping Place and Museum, Legend Rock, Buchan Caves, Burnt Bridge Reserve and Moogji Aboriginal Council.

Condition Summary

Indigenous cultural heritage values are recognised by the high concentration of sites that include artefact scatters, shell middens, scarred trees, massacre sites and axe grinding grooves. (Bataluk Cultural Trail Brochure) Most of the cultural values are intact, but must be protected. Environmental condition is assumed to be good due to the protected locations of most of the Trail's sites. Although threats that apply to other protected areas such as pest plants and animals, human impact and fire would apply.

Key Condition Summary Points

- Good environmental condition due to protected locations of most sites
- High cultural values mostly intact

Stewardship Summary

Management arrangements are in place but there is a need to clarify responsibility and provide resources. Development of the Bataluk Cultural Trail was a joint initiative of the Far East Gippsland Aboriginal Corporation, Gippsland and East Gippsland Aboriginal Co-operative, Lake Tyers Aboriginal Trust, Moogji Aboriginal Council, Ramahyuck Aboriginal Corporation, Wellington Shire Council and East Gippsland Shire Council. The Trail passes through West and East Gippsland Regional Catchment Management areas and covers a range of public land types, potentially requiring the cooperative management effort of a number of Government departments (Bataluk Cultural Trail Brochure).

Ramahyuck District Aboriginal Corporation in collaboration with Athlete Development Australia, the Adventure Australia Foundation and the Bounce Back Foundation secured funding to undertake the Youth Leadership Program en route the Bataluk Cultural Trail, for two years. The project was the first of its kind and aimed at bringing the youth from Indigenous and non-Indigenous backgrounds on a common platform to undertake a study of the Gunai and Kurnai cultures of Gippsland while undergoing Leadership training in the great outdoors from leading Australian Athletes. (<http://www.ramahyuck.org/bataluk/bataluk.html>)

Key Stewardship Summary Points

- Potential to improve partnerships

For more information

- Ramahyuck District Aboriginal Corporation (03) 5143 1644,
www.ramahyuck.org/bataluk/bataluk.html
- Krowathunkooloong, the Keeping Place (03) 5152 1891
<http://www.gippslandinfo.com.au/Aboriginal/#>

6.15. MITCHELL RIVER

Condition Rating					Stewardship Rating				
03	04	05	06	2007	03	04	05	06	2007
B	B	B	B	D	★★ ★	★★ ★	★★ ★	★★ ★	★★ ★ ★1/2

Asset Description

The Mitchell River is one of two heritage river systems in Victoria recognised as having very high value, due to high conservation value, high level of naturalness of flows, significant fish habitat, relative intactness throughout the entire river system and significance for the Gippsland Lakes (DNRE, 2002). The Mitchell River basin also includes other rivers and creeks of significance such as Wongungarra River, Wonnangatta River, Dargo River and Wentworth River.

Bioregion reference: Highlands – Southern Fall and Gippsland Plain

Condition Summary

The environmental condition of the Mitchell River has suffered severely as a result of continued low river flows, the 2003 Alpine fires and the 2006/07 Great Divide Bushfires. Key points from East Gippsland Catchment Management Authority's Draft Dry Inflow Contingency Plan (EGCMA, 2007) include:

- River flows throughout the Mitchell River system have been extremely low for a prolonged period, especially late summer, early autumn and late Spring flows in 2006, and summer 2007 which were close to, or at historical lows.
- Flows at Glenaladale dropped in early February 2007 to less than 3% of the long term average, and less than 0.5 ML/d above the historical minimum for that month.
- Minimal seasonal variability and low flows resulted in extremely shallow water depths with extensive areas of exposed river bed.
- A qualification of rights by East Gippsland Water resulted in passing flows being reduced from 30 ML/d to 10 ML/d during December 2006 and early January 2007.
- Irrigators have experienced prolonged periods of restrictions and bans in recent years, a historically rare situation.
- A very large proportion of the catchment was burnt by the 2006/07 Great Divide Bushfires. Subsequent rainfall events and runoff over the fire-affected catchment transported vast amounts of ash, sediment and debris downstream. River water turbidity was recorded at 1000's NTU. Turbidity remains high after recent higher flow events following light to moderate rainfall. Turbid conditions are likely to remain for some time.
- In-stream habitat has been significantly affected by both low flows and consequences of the 2006/07 Great Divide Bushfires, including smothering of substrate with extremely fine, tacky sediment, lack of light penetration into the water column, stress to aquatic organisms (including fish, invertebrates and submerged plants), and algal blooms.
- Bairnsdale, Lakes Entrance and nearby urban centres supplied from the Mitchell River remain on stage 4 water restrictions due to the inability to divert and supply

potable water from the river. East Gippsland Water has implemented works to treat river water and to source alternative supplies.

Catchment regeneration is likely to adversely affect water yields from the Mitchell River for decades (Sheridan et al, in press).

Condition Evidence Summary

Indicator Theme	Score	Weight %	Key Evidence	Evidence Source	Data Comment
Land	Poor	10	Assumed		Significant portion of catchment affected by 2006/07 Great Divide Bushfires
Water	Poor	60	<p>Index of Stream Condition for Mitchell River Basin (2004) Stream condition % length: 27% Excellent 43 % Good 25 % Moderate 5% Poor</p> <p>Water Quality – attainment of SEPP – nutrients: low, turbidity/suspended solids: high & physical parameters: medium</p> <p>Historically low river flows</p>	<p>DSE (2004) ISC2: Index of Stream Condition: The Second Benchmark of Victorian River condition.</p> <p>Water Ecoscience (2002) Victorian Water Quality Monitoring Annual Report</p> <p>EGCMA DCIP, 2007</p>	<p>Significant portion of catchment affected by 2006/07 Great Divide Bushfires</p> <p>Method different to 1999 ISC, not directly comparable.</p> <p>2003 Fires have affected ISC scores for upper reaches. Note this data pre-dates 2006/7 Great Divide fires.</p> <p>Note this data pre-dates 2006/7 Great Divide fires.</p>
Biodiversity	Poor - Reasonable	30	Assumed		Significant portion of catchment affected by 2006/07 Great Divide Bushfires
Air	NA	0			

Key Condition Summary Points

- Environmental condition of the Mitchell River has suffered severely as a result of continued low river flows, the 2003 Alpine fires and the 2006/07 Great Divide Bushfires.
- Impacts likely to last for some time.
- Likely reduced water yields as catchment regenerates.
- Implications for river health and the Gippsland Lakes.

Stewardship Summary

The Mitchell River has been identified by SRW as a priority for developing a Streamflow Management Plan, to protect its ecological integrity. The East Gippsland Water Quality Action Plan targets nutrient reduction from forest and pastureland uses in the catchment (EGCMA & WGCMA, 2005). The East Gippsland Regional River Health Strategy gives priority to all actions in the Lower Mitchell, with a view to improving water quality flows into the Gippsland Lakes (EGCMA, 2005). The Mitchell River appears under the Catchments Asset Class in the East Gippsland Regional Catchment Strategy (EGCMA 2005).

The level of stewardship throughout the Mitchell River catchment has been greatly enhanced as a result of co-operative and lasting efforts, by all asset managers and the community, stemming from the need to manage the combined impacts of prolonged low flow conditions, severe fire and fire fighting efforts, and the associated impacts of sediment/nutrient loads.

Stewardship Evidence Summary

Indicator Theme	Score	Key Evidence
Plan	Reasonable-Good	Draft Dry Inflow Contingency Plan Fire Recovery Plan(s) Gippsland Water Quality Action Plan East Gippsland River Health Strategy Mitchell River National Park Management Plan
Implement	Reasonable-Good	Rehabilitation of cleared land to enhance threatened Mitchell River habitats Willow control work
Evaluate	Good	Fire Recovery Plan(s) Water Quality monitoring
Improve	Good	Catchment-wide river health improvement works
Partnerships	Good -Excellent	East Gippsland Catchment Management Authority, East Gippsland Water, Parks Victoria, Department of Sustainability and Environment, Parks Victoria, Southern Rural Water and the community working together on Fire Recover Gippsland Regional Water Monitoring Partnership.

Key Stewardship Summary Points

- Work continues on the lower Mitchell to improve riparian condition.
- Streamflow management plan to be developed.

For more information

- East Gippsland Catchment Management Authority, (03) 5152 0600, www.egcma.com.au
- East Gippsland Water, 1300 720 700, 03 5150 4444 or www.egwater.vic.gov.au
- Southern Rural Water (03) 5139 3100 www.srw.com.au

6.16. SNOWY RIVER

Condition Rating					Stewardship Rating				
03	04	05	06	2007	03	04	05	06	2007
C	C	C	C	C	★★ ★	★★ ★★	★★ ★★	★★ ★★	★★ ★★

Asset Description

The Snowy River flows for over 500 km through a broad range of landscapes from the slopes of Mount Kosciusko in NSW to Marlo on the East Gippsland coast. Reduced river flows, due to the 1960s Snowy Mountains Hydro-electric Scheme, together with past land management practices, have significantly altered the Snowy River's ecology over recent decades (East Gippsland Catchment Management Authority, and Department of Sustainability & Environment, 2003).

Bioregion reference: East Gippsland Uplands and East Gippsland Lowlands

Condition Summary

Rivers and creeks in the Snowy River system have 66% of their length in excellent or good condition and 32% in moderate to poor condition (ISC2). Most of the moderate to poor readings apply to the condition of the Snowy River itself, largely due to significantly reduced flows from the upstream extraction of water for the Snowy Hydro-electric Scheme (Victorian Government; Victorian Catchment Management Council, 2002).

Reduction of natural flows and the effect throughout the catchment of other human activities has had a significant adverse impact on the ecological condition of the Snowy River in Victoria. Several studies have found all river health components of the Snowy to have altered flow regimes and reduced in-stream values, riparian values, wetland values and water quality (East Gippsland Catchment Management Authority & Department of Sustainability and Environment, 2003). The Snowy River National Park protects natural values along part of the river's length in East Gippsland and it is listed as a heritage river in the Victorian River Health Strategy.

The 2003 Eastern Victorian Fires impacted upon the upper reaches and Snowy River National Park.

Condition Evidence Summary

Indicator Theme	Score	Weight %	Key Evidence	Evidence Source	Data Comment
Land	Good	10	Assumed		
Water	Reasonable	60	<p>Index of Stream Condition for Snowy River (2004) All reaches are moderate to poor (1 very poor due to fires)</p> <p>Water Quantity – flows - poor</p> <p>Water Quality –</p>	<p>DSE (2004) ISC2: Index of Stream Condition: The Second Benchmark of Victorian River condition.</p> <p>Assumed</p> <p>Water Ecoscience</p>	<p>Method different to 1999 ISC, not directly comparable.</p> <p>2003 Fires have affected ISC scores for upper reaches.</p>

			attainment of SEPP – nutrients: low, turbidity/suspended solids & physical parameters: high	(2002) Victorian Water Quality Monitoring Annual Report	Note this is pre-fire data.
Biodiversity	Good	30	Assumed		
Air	NA	0			

Key Condition Summary Points

- Extremely modified flow regimes.
- Willow infestations.
- Water quality poor in reaches affected by 2003 fires.

Stewardship Summary

In December 2000, the Victorian, New South Wales and Commonwealth Governments agreed to increase Snowy River flows to 21% over the next 10 years, and committed to increase these flows to 28% in the longer term (EGCMA & Department of Sustainability and Environment, 2003).

In 2001, the Victorian Government committed to implementing a 10-year program of rehabilitation works on the Snowy River within Victoria. Snowy River Rehabilitation is a multifaceted, integrated program of rehabilitation works. It encompasses a diverse range of projects that will be implemented co-operatively by Government agencies, community groups and landowners. Snowy River Rehabilitation brings existing plans and strategies together with new initiatives aimed at improving the ecological health of the Snowy River.

Considerable work has already been completed by the former Snowy River Improvement Trust and more recently by the EGCMA, including: riparian revegetation; bank stabilisation; willow removal; and establishment of an in-stream rehabilitation trial.

Priority is given in the East Gippsland River Health Strategy to the rehabilitation of the lower Snowy River, associated with the continued return of an appropriate flow regime (EGCMA, 2004). To date, the agreed environmental flows have not be returned to the Snowy River.

Stewardship Evidence Summary

Indicator Theme	Score	Key Evidence
Plan	Excellent	Snowy River Rehabilitation Project East Gippsland River Health Strategy Gippsland Estuaries Coastal Action Plan Gippsland Ports Safety and Environmental Management Plan – East Gippsland
Implement	Good	Snowy River Rehabilitation Project - Plan of Works Snowy River fencing & off-stream watering incentive project Removal of Deddick Catchment Willows (Major tributary of the Snowy) Lower Snowy River Riparian Restoration Project Snowy River Australian Bass stocking East Gippsland Catchment Protection (erosion rehabilitation) Waterway Management in the Snowy Basin
Evaluate	Good	Lower Snowy River Riparian Restoration Project
Improve	Reasonable	Lower Snowy River Riparian Restoration Project
Partnerships	Excellent	Snowy River Rehabilitation Project

		Snowy River interstate Landcare Facilitation Snowy River Rehabilitation Engagement Plan
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Key Stewardship Summary Points

- High level of interstate and interagency cooperation.
- Rehabilitation work is showing early signs of improving environmental condition.
- Willows removed from riparian zone throughout catchment with subsequent riparian revegetation and bank stabilisation works.

For more information

- East Gippsland Catchment Management Authority, (03) 5152 0600, www.egcma.com.au
- Department of Sustainability and Environment, Orbost (03) 51611222
- Snowy Project Team, Department of Sustainability and Environment 13 6186

6.17. FORESTS OF EAST GIPPSLAND

Condition Rating					Stewardship Rating				
03	04	05	06	2007	03	04	05	06	2007
B	B	B	B	B	★★	★★	★★	★★	★★
					★★	★★	★★	★★	★★

Asset Description

The area used to describe the Forests of East Gippsland is the Forest Management Area (also used for the Regional Forest Agreement). The 1.2 million hectare of mostly forested area includes seven National Parks: Alpine (Cobberas – Tingaringy Unit), Snowy River, Errinundra, Coopracambra, Croajingalong, Alfred and Lind. (CRA, 1996).

Bioregion reference: Victorian Alps, East Gippsland Uplands, East Gippsland Lowlands and Monaro Tablelands

Condition summary

Coopracambra National Park is recognised as one of the largest areas of high quality wilderness in southeastern Australia (Parks Victoria, 2000). Other natural values in the Forest Management Area are protected in Special Protection Zones. Some 350,000ha of State Forest are available for harvesting in the General Management Zone (CRA 1996).

Commercial timber harvesting occurs in these areas under the Regional Forest Agreement and the Code of Forest Practices. The Victorian State Government's 'Our Forests, Our Future' policy of 2002 reduced the estimated annual sustainable yield in the East Gippsland Forest Management Area by 43% in the light of updated forest inventory data. (State of Victoria 2002).

An additional 40,000ha (approximately) of East Gippsland's forest was reserved under the recent National Parks and Biodiversity Policy Review of the Code of Forest Practices for Timber Production.

Areas of State forest affected by the 2003 Alpine bushfires have been salvaged logged.

VicForests has achieved certification under the Australian Forestry Standard

Condition Evidence Summary

Indicator Theme	Score	Weight %	Key Evidence	Evidence Source	Data Comment
Land	Good - Excellent	40	Assumed		
Water	Excellent	20	Index of Stream Condition for East Gippsland Basin (2004) Stream condition % length: 69% Excellent 30 % Good	DSE (2004) ISC2: Index of Stream Condition: The Second Benchmark of Victorian River condition.	Method different to 1999 ISC, not directly comparable.

			1 % Moderate		
Biodiversity	Good - Excellent	40	Assumed		
Air	NA	0			

Key Condition Summary Points

- Significant proportion of forested area supports high land, water and biodiversity values.
- Several ecosystems in pristine condition protected by National Parks and Special Protection Zones.
- Commercial timber harvesting in accordance with revised Code of Forest Practices for Timber Production.

Stewardship Summary

Department of Sustainability and Environment is responsible for managing the public native forest in the East Gippsland Forest Management Area for multiple uses, working from the 1995 Forest Management Plan. Many actions from the East Gippsland Forest Management Plan have been completed and most actions ongoing, with some zoning amendments made to reflect improved mapping (DSE, 2004). VicForests is responsible for the sustainable harvest and commercial sale of Victoria's forest timber, as well as forest rehabilitation and silviculture.

Stewardship Evidence Summary

Indicator Theme	Score	Key Evidence
Plan	Good	East Gippsland Forest Management Plan Coopracambra National Park Management Plan Errinundra National Park Management Plan VicForests Sustainable Forest Management Policy Our Forests, Our Future
Implement	Good	DSE Forests Vicforests
Evaluate	Good	Victoria's State of the Forest Report Monitoring Annual Harvest Performance 03/04 (Expert Independent Advisory Panel, May 2005) East Gippsland Environment and Heritage Report - Prepared for Regional Forest Agreement process.
Improve	Good	Monitoring Annual Harvest Performance Code of Forest Practice for Timber Production Environment Policy for Victoria's State Forests (ISO 14001 Cert under development)
Partnerships	Reasonable	DSE, VicForests, Parks Victoria

Key Stewardship Summary Points

- Very high proportion of public land.
- Changes to the institutional and governance arrangements have occurred in recent years.

For more information

- Department of Sustainability and Environment, Orbost, 51611222
www.dse.vic.gov.au/
- Parks Victoria Information Centre 13 1963 or www.parkweb.vic.gov.au
- VicForests – Bairnsdale, 5152 0400 www.vicforests.com.au/

6.18. COASTAL PARKS OF FAR EAST GIPPSLAND

Condition Rating					Stewardship Rating				
03	04	05	06	2007	03	04	05	06	2007
A	A	A	A	A	★★ ★	★★ ★	★★ ★	★★ ★	★★ ★

Asset Description

The main feature of this area is the Croajingalong National Park, which is recognised for protecting a significant representation of East Gippsland's diverse lowland forest, heath and coastal ecosystems. The park is part of a designated Biosphere Reserve under the UNESCO 'Man and the Biosphere' program (Parks Victoria, 2000). This area also contains one of several Natural Catchment Areas identified in East Gippsland and has a high concentration of near pristine estuarine areas (DNRE 2001, 2002). The Point Hicks Marine National Park and Cape Howe Marine National Park adjoin Croajingalong National Park.

Bioregion reference: East Gippsland Lowlands

Condition Summary

Available data indicates excellent stream condition over a significant proportion of river length in this area, reflecting the 'heritage' and 'ecologically healthy' status of many of the streams (EGCMA, 2004). Land and biodiversity values are also high due to the relatively undeveloped nature of the area and the high proportion of public land in parks and reserves. The Coastal Heathland vegetation community is extremely species-rich, covering up to 10% of Croajingalong National Park. Habitats supporting 43 species of Threatened native fauna including the Little Tern, Ground Parrot, Eastern Bristle bird, Eastern Broad Nosed Bat and Australian Fur Seal. Croajingalong National Park contains one third of Victoria's and one quarter of Australia's recorded bird species. It contains highly significant coastal streams and catchments which are relatively undisturbed with an absence of introduced fish species and good populations of native fish (EGCMA, 2004). Pest plants and animals are regarded as the major threat to ecological health (Parks Victoria, 2000).

Condition Evidence Summary

Indicator Theme	Score	Weight %	Key Evidence	Evidence Source	Data Comment
Land	Excellent	30	Wind erosion	East Gippsland RCS – Appendix 3, State of the Regional Environment	Descriptive evidence. No evidence for soil condition, salinity, acidity, contaminants or land use suitability
Water	Excellent	30	Index of Stream Condition for lower Bemm, Cann, Thurra, Wingan and Betka Rivers (2004)	DSE (2004) ISC2: Index of Stream Condition: The Second Benchmark of Victorian River condition.	Method different to 1999 ISC, not directly comparable. Reach # 2, 3, 12, 24, 26, 29 in EG Basin
Biodiversity	Excellent	40	Extent & Quality of Native Veg (1996) Birds (1996) Pest Plants and	Croajingalong National Park Management Plan East Gippsland	Descriptive evidence.

			Animals	RCS – Appendix 3, State of the Regional Environment	
Air	NA	0			

Key Condition Summary Points

- Near pristine estuarine areas
- Very good water quality
- Excellent habitat values with high flora and fauna diversity

Stewardship Summary

Parks Victoria plays a major role in the management of this area, working from National Park management plans. The East Gippsland Regional Catchment Strategy refers to this area in the Parks asset class, and the Croajingalong National Park asset management area (EGCMA, 2004) The East Gippsland Regional River Health Strategy gives priority to the control of weeds in this area, to prevent them from spreading to currently weed-free areas (EGCMA, 2004)

The Gippsland Estuaries Coastal Action Plan recommends high priority actions for Yeerung River, Dock, Sydenham and Tamboon Inlets, Thurra, Mueller, Wingan and Betka River estuaries and Mallacoota Inlet. (GCB & WGCMA, 2006).

Parks Victoria indicates there is increasing interstate cooperation and implementation of a series of integrated plans.

Stewardship Evidence Summary

Indicator Theme	Score	Key Evidence
Plan	Reasonable	- Croajingalong National Park Management Plan - Cape Conron Coastal Park Management Plan - Cape Howe Marine National Park Management Plan - Point Hicks Marine National Park Management Plan - Point Hicks Marine National Park Management Plan - East Gippsland Regional River Health Strategy - Gippsland Estuaries Coastal Action Plan
Implement	Good	Southern Ark predator control program
Evaluate	Reasonable	Water quality monitoring
Improve	Reasonable	
Partnerships	Reasonable	Parks Victoria, NSW National Parks Service, Southern Rivers CMA (NSW) and East Gippsland CMA are currently undertaking cross border works to control feral pigs and weeds.

Key Stewardship Summary Points

- Management intensity is low due to minimal human impact – main protection activity is pest plant and animal control.

For more information

- Parks Victoria Information Centre 13 1963 or www.parkweb.vic.gov.au
- East Gippsland Catchment Management Authority, 5152 0600, www.egcma.com.au.

7. REPORT CARD PURPOSE and DEVELOPMENT PROCESS

Report Card Purpose

The purpose of the report card is threefold:

1. Foster the strategic integration of natural resource management
 - Focus thinking, planning and action on collective natural assets that transcend organisational and geographical boundaries.
 - Provide a whole-of-Gippsland view of natural resource management
 - Evaluate the quality of existing strategic, management and research partnerships and identify synergies that would benefit from new partnership arrangements.

2. Provide a credible, independent and regular evaluation of natural resource management in Gippsland
 - Give an independent perspective on natural resource management in Gippsland
 - Provide accurate and timely information to members and other stakeholders
 - Identify gaps in knowledge, data, strategy and action

3. Cultivate a strong regional identity for Gippsland based on natural resources
 - Draw together existing information and present it in a useful and accessible format
 - Give a whole-of-Gippsland evaluation of performance against state, national and international indicators
 - Promote Gippsland's clean, green image to outsiders and to Gippslanders themselves

Key Stakeholders/Audience for the Report Card include:

- Members of the Gippsland Integrated Natural Resources Forum
- Victorian and Australian Government
- Investors in natural resource management throughout Gippsland
- Gippsland community
- Victorian community

Report Card Development Process

A small working party was formed to develop the first Natural Resources Report Card in March 2003, from open invitation to GINRF Reference Group members. Report card development followed an eight step process outlined in Environment Australia's "A Framework for Public Environmental Reporting", the Australian interpretation of the Global Reporting Initiative. The eight steps follow a plan, measure, report and review cycle. The review phase informed the development of the 2004 Report Card, adding three new assets and more detail to the condition and stewardship components of the companion document.

The 2005-2007 Report Cards development have followed the MERGe Framework developed by regional stakeholders to address monitoring, evaluation and reporting for Gippsland's natural resources (SKM, 2004).

About the Gippsland Integrated Natural Resources Forum

The Gippsland Integrated Natural Resources Forum is a whole-of-Gippsland approach to the management of the region's natural resources under the slogan *Catchment Health – Gippsland's Wealth*. The role of the Forum is to achieve a cooperative and strategic approach to natural resource management in the region.

The vision of the Forum is to: *"Unify the efforts of Gippsland's natural resource managers, to ensure the cultural, economic and social activity of Gippsland is conducted in harmony with its environment."*

The Forum has a membership of some sixty organisations including government departments, catchment management authorities, municipal councils, rural and urban water authorities, universities, private industry, regional development bodies, community based groups (such as Landcare), and cross agency groups (such as Gippsland Research Coordination Group). An Executive is drawn from the broader Forum membership, with a chair who is independent from member organisations: Mr. Keith Hamilton.

Future Review

Natural resource managers in the Gippsland region understand the importance of good information for good decision making. Project MERGe is addressing the information needs by implementing a Monitoring, Evaluation and Reporting Framework. The Framework has informed the development of this Report Card and the State of the Gippsland Lakes Report, and will be further implemented over the next twelve months.

A review of the Gippsland Natural Resources Report Card is proposed prior to preparation of the 2008 Report Card. Aspects that may be considered in undertaking the review could include re-examining which natural assets to include in the Report Card, and greater consideration of and alignment to other natural resource management reporting processes – including the MERGe framework and existing Key Performance Indicators and / or Targets.

Feedback

The Gippsland Integrated Natural Resources Forum welcomes feedback on the Report Card development process.

Written submissions can be mailed to:

Gippsland Integrated Natural Resources Forum
16 Hotham Street
Traralgon 3844
Attn. Mr. Chris Barry, GINRF Executive Officer
Phone: 5175 7800 or 5152 0400
Email: chris.barry@dse.vic.gov.au

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