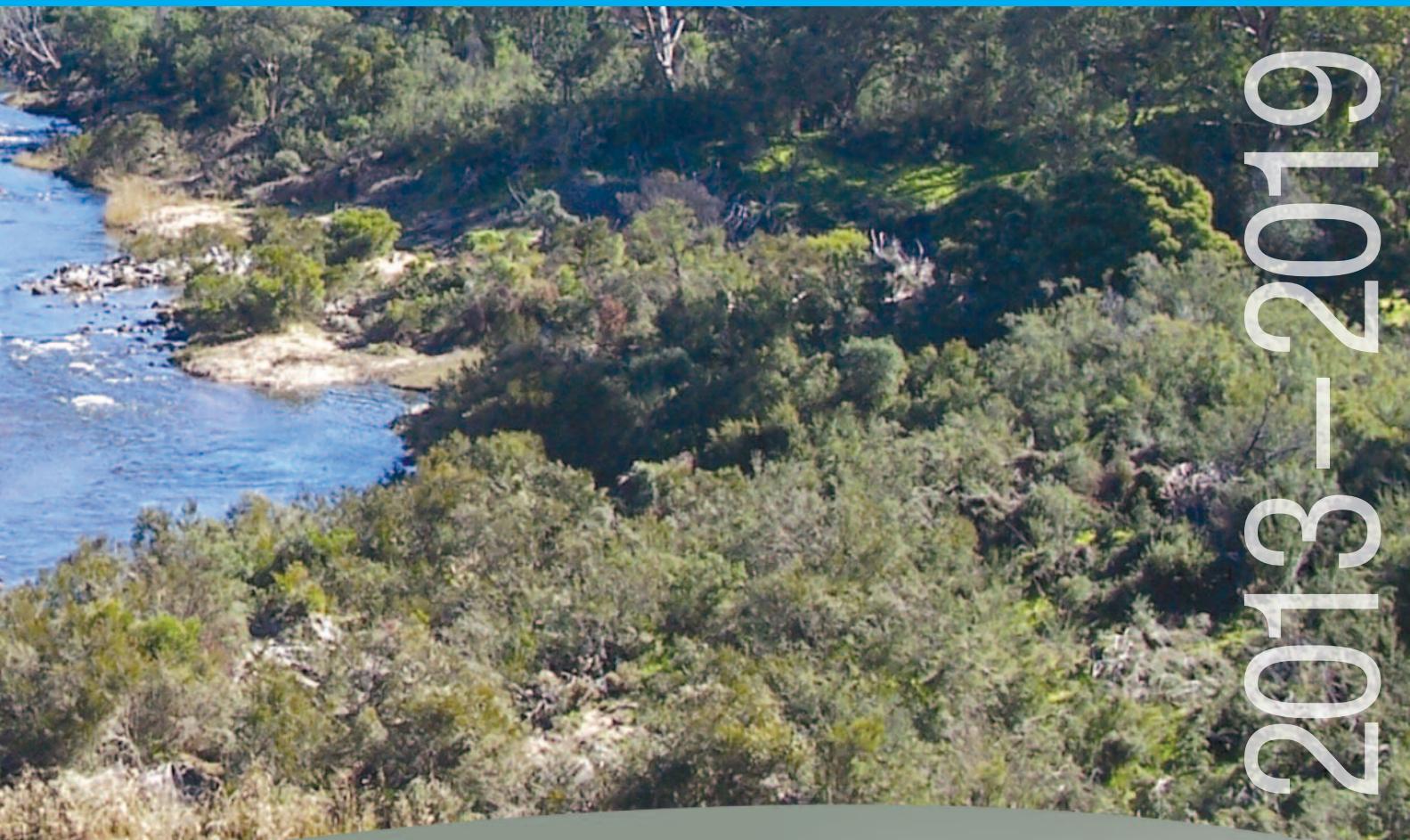
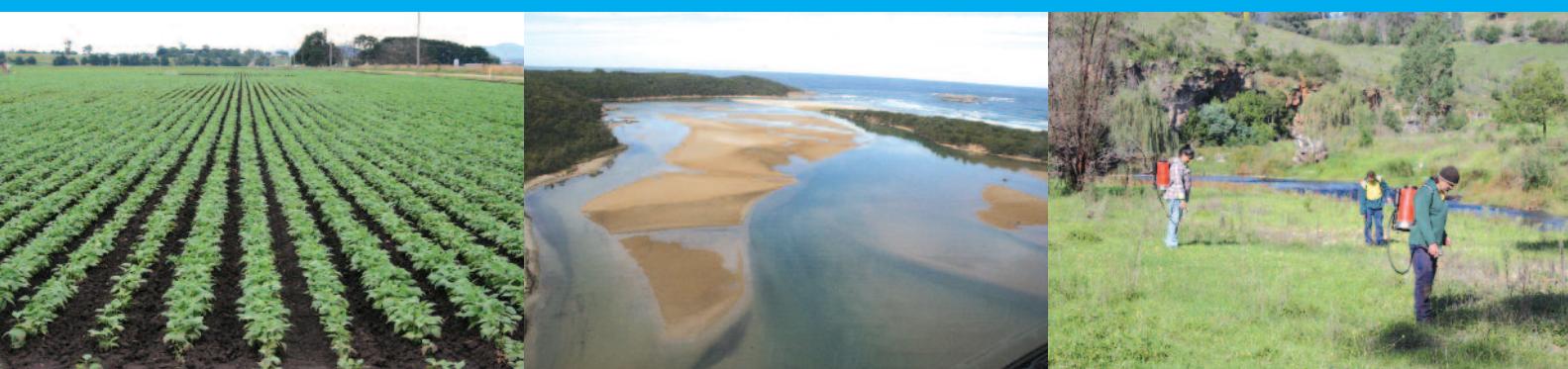


East Gippsland Regional Catchment Strategy



2013-2019

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The level of government investment in the implementation of this strategy is contingent on budgets and government priorities.

East Gippsland Regional Catchment Strategy

2013–2019

East Gippsland Catchment Management Authority
May 2013

EAST GIPPSLAND
CATCHMENT
MANAGEMENT
AUTHORITY



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Vision

The 2033 environment

A rich, biologically diverse region, managed on sound scientific principles in a way that responds to the values and needs of its human communities; a place where residents and visitors alike respect and conserve its natural wealth, as the foundation of their well-being; a place whose people, acting for all Australians, accept collective responsibility for the region's future.

Chairman's foreword

I am proud to present the 2013 East Gippsland Regional Catchment Strategy (RCS). The RCS has been prepared by the East Gippsland Catchment Management Authority on behalf of the East Gippsland region. It has been developed with strong input from the regional community, delivery partners and other agencies involved in catchment planning.

Our region is the environmental 'jewel in the crown' in Victoria. It contains a wealth of significant natural assets including rivers, wetlands and many national parks and reserves. It is the only place on mainland Australia where the continuity of natural ecosystems – from the alps to the sea – still exists.

The natural resources of the region are used to generate wealth in many ways. For instance, the major river floodplains are used for intensive horticulture, the alpine areas for recreational activities, and the foothills for grazing and timber production.

The 2013 RCS marks the next era for integrated catchment management. Its priority management objectives recognise and balance the need to both sustain the productive values of the region, and to manage threats to the region's terrestrial and aquatic environments.

The RCS recognises that some threats require active management. Pest plants and animals pose a significant threat to biodiversity, erosion and sediment impact on water quality in rivers and estuaries, and the loss of areas of remnant vegetation can lead to degradation of our land and soils.

The management of our assets is a responsibility that we all share. This can be done most effectively when individuals, community groups and land and water management agencies work in partnership to achieve agreed outcomes.

I would like to thank the individuals, community groups and management agencies who contributed to the development of the RCS, including those who commented on the draft version.

The challenge now is to implement the proposals outlined in the RCS. I invite you all, as individuals, as community groups and as agencies to contribute to the maintenance and improvement of the environmental and productive assets on which our prosperity and way of life depends.

Dr Peter Veenker, Chair
East Gippsland Catchment Management Authority

Summary

This is the third regional catchment strategy for East Gippsland. The first was published in June 1997 by the then East Gippsland Regional Catchment and Land Protection Board. The second was published in June 2005.

East Gippsland is about 83% public land, little changed from its form 200 years ago. About 41,000 people now live along the coastal plains or the strips of farming land up the river valleys and on the mountain plateaux.

In East Gippsland we highly value the productive use of our region's assets. This use includes farming, tourism, manufacturing, lifestyle and conservation, to name a few.

The role of the regional catchment strategy is not to define issues at a local scale but to prioritise tasks required to maintain our ability to utilise our assets in an ongoing way without adverse impact on others.

It does not override or inform change to laws and regulations.

This document raises issues that require discussion within the region to further inform our strategic thinking.

The earlier regional catchment strategies allowed us to develop a long-term strategic picture for managing our natural assets which is now further advanced in this third version.

This strategy sets out the high level priorities for the East Gippsland region for the next six years. It provides an integrated planning framework for managing land, water and biodiversity in the region, in line with the requirements of the *Catchment and Land Protection Act 1994*.

The strategy works exclusively at a strategic level. It:

- sets strategic directions and identifies strategic actions
- directs the future development of sub-strategies and plans
- sets broad priorities with principles and directions for implementation
- sets priorities for 'landscape scale' programs of management
- establishes the principles for monitoring and evaluating its effectiveness.

The views of the East Gippsland community have been incorporated into the strategy.

Since the 2005 regional catchment strategy, consultation programs have included targeted landholder interviews, consultations during development of regional plans and strategies, media campaigns, as well as an on-going program to continuously inform the regional community about the strategy, and to record community views.

During the development of the strategy, community consultations included a series of 'open houses'. Stakeholders, particularly delivery partners in land management, were consulted during workshops. Other regional partner organisations were also informed and consulted about the strategy, including the GunaiKurnai Land and Waters Aboriginal Corporation.

In preparing the strategy, the natural assets of East Gippsland were assessed using the 'asset based approach'. Regional workshops were conducted in two stages, attended by relevant partners (regional and state agencies and non-government organisations) and external scientists, through which integrated objectives were developed, in four 'landscape areas'. Management programs for each landscape area were then developed.

The landscape areas were:

- Gippsland Lakes and Hinterland (GLH)
- Gippsland Lakes Upper Catchment (GLUC)
- East Coast (EC)
- Far East Catchments (FEC)

Objectives and management programs applying to the whole region were also developed. The integrated objectives for each landscape area program are shown below (Figures 1.1 to 1.4). The numbering of the objectives does not imply a priority order.

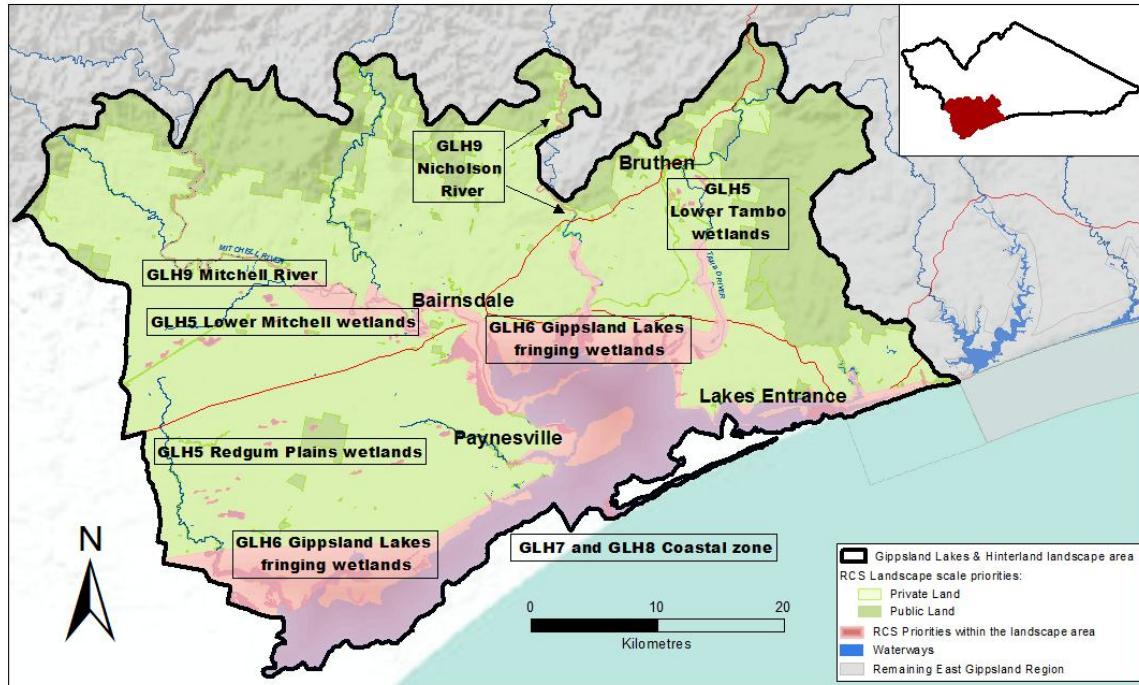


Figure 1.1 Gippsland Lakes and Hinterland landscape area showing priority areas

Gippsland Lakes and Hinterland program	
GLH1	Targeted improvement of the productive values and stability of agricultural land and soils
GLH2	Targeted improvement of the condition, security, diversity and connectivity of native vegetation
GLH3	Targeted improvement of the status of threatened species and communities
GLH4	Targeted improvement of the water quality and freshwater flow regime of the Gippsland Lakes
GLH5	Improved knowledge of location, condition and risks to wetlands on the Redgum Plains, Lower Mitchell and Lower Tambo rivers
GLH6	Targeted provision of appropriate freshwater and salinity regimes for selected fringing wetlands of the Gippsland Lakes
GLH7	Increased sustainability of land use, with development in appropriate nodes along the Gippsland Lakes coastline
GLH8	Plan for adaptation of Gippsland Lakes communities to changing conditions along the coastline
GLH9	Targeted improvement in the condition of the Nicholson and Mitchell rivers

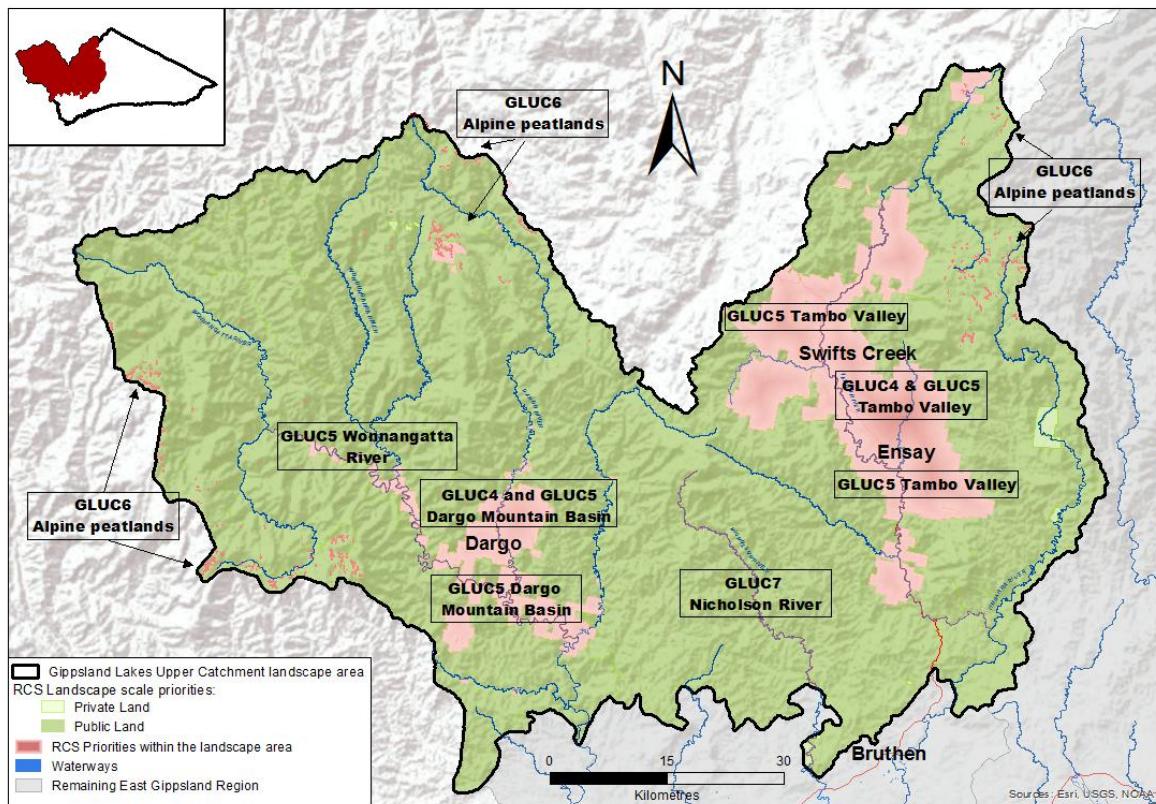


Figure 1.2 Gippsland Lakes Upper Catchment showing priority areas

Gippsland Lakes Upper Catchment program	
GLUC1	Maintenance and targeted improvement of the condition, security, diversity and integrity of natural ecosystems and the status of threatened species and communities
GLUC2	Maintenance of soil condition and stability on public land
GLUC3	Targeted protection of the water quality and freshwater flow regime of the Gippsland Lakes
GLUC4	Targeted improvement of the productive values and stability of the Dargo Mountain Basin and Tambo Valley agricultural land and soils
GLUC5	Targeted improvement of the condition, security, diversity and connectivity of native vegetation within the Dargo Mountain Basin and Tambo Valley, and along the Wonnangatta River
GLUC6	Targeted improvement of the condition of Alpine peatlands
GLUC7	Targeted improvement of the condition of the waterways in the upper catchment to the Gippsland Lakes, particularly along the Mitchell and Nicholson rivers

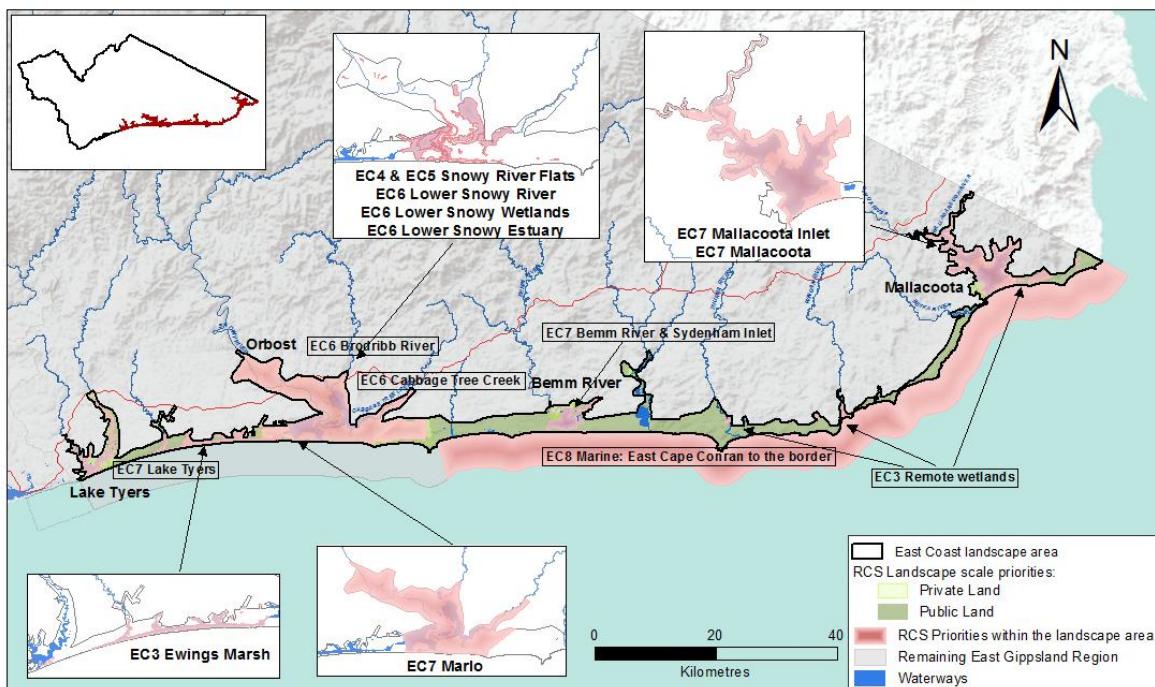


Figure 1.3 East Coast showing priority areas

East Coast program	
EC1	Maintenance and targeted improvement of the condition, security, diversity and integrity of natural ecosystems and the status of threatened species and communities
EC2	Improved understanding of the effects of coastal processes and acceleration of these changes on susceptible species and communities with high natural values
EC3	Improved knowledge of risks, and maintenance of the condition of wetlands between Lake Tyers and the Snowy River, near the Thirra and Wingan rivers, and east of Mallacoota
EC4	Targeted improvement of the productive values and stability of Lower Snowy agricultural land and soils
EC5	Improved awareness of the implications of disturbing potential acid sulfate soils by the landholders of the lower Snowy agricultural land
EC6	Targeted improvement of the condition, security, diversity and connectivity of wetland and riparian (estuarine and riverine) native vegetation in the Lower Snowy and Brodribb rivers and Cabbage Tree Creek
EC7	Increased sustainability of land use, with development in appropriate nodes adjacent to townships along the East Coast
EC8	Improved knowledge of risks, and maintenance of the condition of the Croajingolong and Cape Howe marine assets

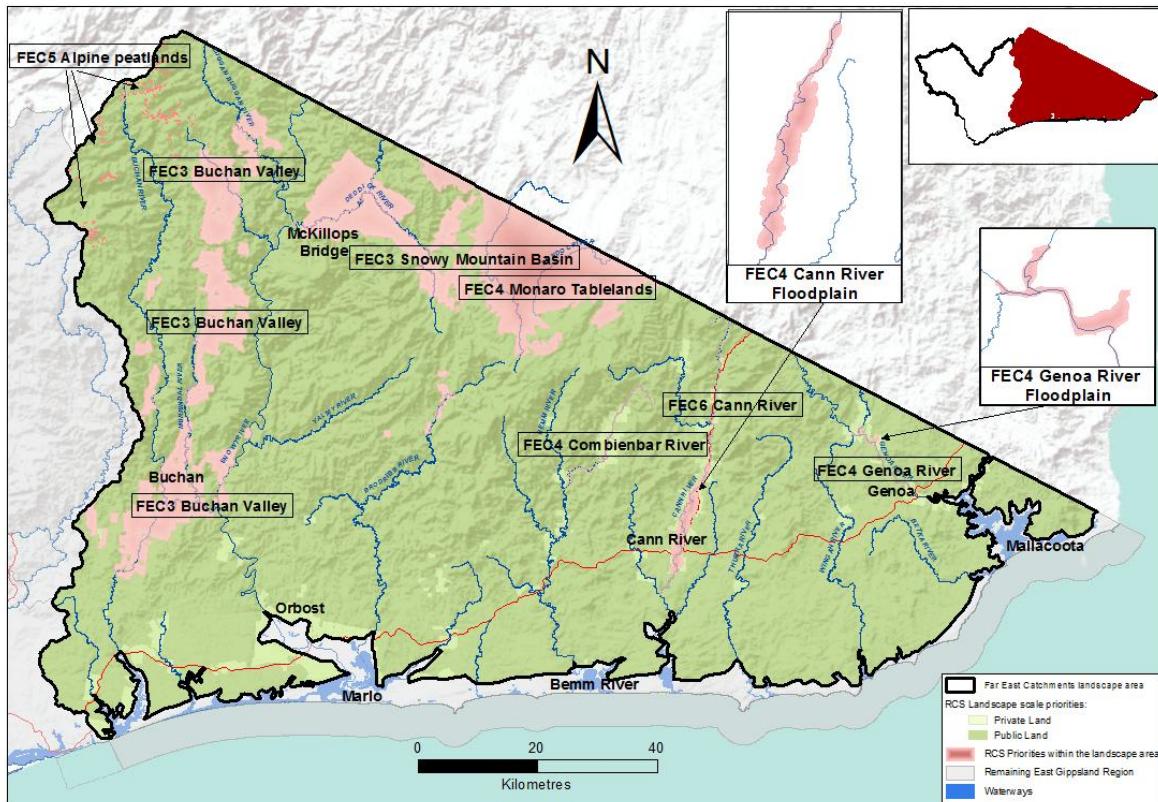


Figure 1.4 Far East Catchments showing priority areas

Far East Catchments program	
FEC1	Maintenance and targeted improvement of the condition, security, diversity and integrity of natural ecosystems and the status of threatened species and communities
FEC2	Maintenance of soil condition and stability on public land
FEC3	Targeted improvement of the productive values and stability of the Snowy Mountain Basin and Buchan Valley agricultural land and soils
FEC4	Targeted improvement of the condition, security, diversity and connectivity of native vegetation within the Monaro Tablelands, floodplains of the Cann and Genoa rivers and along the Combienbar River
FEC5	Targeted improvement of the condition of Alpine peatlands
FEC6	Targeted improvement in the condition of the upstream reaches of the Cann River

Region-wide program	
RW1	Establishment of an effective biosecurity approach to invasive plants and animals management in East Gippsland
RW2	Maintenance of the productive values and stability of agricultural land and soils
RW3	Limit the risk of pathogen movement (e.g. Myrtle Rust and Phytophthora root rot) in terrestrial environments
RW4	Implement fire management regimes that promote the resilience and health of natural ecosystems

1 Overview of the strategy

1.1 Purpose

The 2013 regional catchment strategy (RCS) provides an integrated planning framework for managing land, water and biodiversity in the East Gippsland region for the next six years. In line with the requirements of the *Catchment and Land Protection Act 1994* (CaLP Act), the principal objectives of the strategy are to:

- establish a framework for the integrated and coordinated management of catchments; and,
- establish processes that can be used to assess the condition of the region's land and water resources, and the effectiveness of land protection measures

The RCS presents a planning framework which focuses on maintaining the condition and productivity (sustainability) of the natural assets of the region. The RCS uses a risk based prioritisation process, based on an assessment of 'the land and water resources of the catchments of the region and how they are used' (CaLP Act).

In developing future management priorities, the RCS does not focus on the resources drawn from the natural assets, or the social or economic benefits which are derived from that use.

1.2 What is included in the RCS

The RCS works exclusively at a strategic level. It:

- sets strategic direction and identifies strategic actions
- provides direction for the future development of plans
- sets broad priorities with principles and directions for implementation
- sets priorities for 'landscape scale' programs of management
- establishes the principles for monitoring and evaluating its effectiveness.

1.3 What is not included in the RCS

The RCS does not aim to provide detailed information at the level that could be expected in action plans. The East Gippsland CMA Board has provided resources for implementation planning to begin immediately following completion of the RCS.

The document raises issues that require discussion within the region to further inform our strategic thinking.

1.4 Structure of the report

Chapters 1 to 4 contain background material. As most of this has not changed significantly since the 2005 RCS, it has been kept brief.

Chapter 5 explains the processes used to develop the strategy.

Chapter 6 details the results of the analysis and priority setting undertaken in preparing the strategy. It lists the natural values of each landscape area, the objectives for protecting them, and the actions needed to meet the objectives.

Chapter 7 describes the implementation arrangements for the RCS, and outlines the proposed program for the monitoring, evaluation and review of its implementation.

The details of the information and processes used in preparing the strategy will be contained in a separate supporting document.

2 Context of this RCS

2.1 History

The first *East Gippsland Regional Catchment Strategy* was published in June 1997 by the East Gippsland Regional Catchment and Land Protection Board. The Board was then replaced by the East Gippsland Catchment Management Authority (EGCMA).

The second RCS was published in June 2005. The 2005 strategy used the concept of natural ‘assets’ as the basis for management. Groups of similar assets (‘asset classes’) could consist of a number of areas of land or water which were widely separated. Within each asset class ‘management units’ were defined using geographical boundaries. There were six asset classes identified – freehold land, state forests, parks, coastal and marine, catchments and groundwater.

Section 5.1 of this RCS contains a summary of the review of the 2005 strategy which was prepared in November 2009.

2.2 Legislative context

The development of a regional catchment strategy is a requirement of the *Catchment and Land Protection Act 1994*. Each of the ten catchment management authorities in Victoria must prepare a regional catchment strategy for its region and coordinate and monitor its implementation.

The Victorian Catchment Management Council (VCMC) has prepared a set of guidelines for catchment management authorities to follow when developing their strategies. The guidelines provide a minimum set of requirements for an RCS to receive approval from the Minister for Environment and Climate Change and the Minister for Water.

The following is a list of the main legislation, in addition to the CaLP Act, which has been taken into account during the development of this catchment strategy:

<i>Aboriginal Heritage Act 2006</i>	<i>Parks Victoria Act 1998</i>
<i>Climate Change Act 2010</i>	<i>Planning and Environment Act 1987</i>
<i>Coastal Management Act 1995</i>	<i>References Areas Act 1978</i>
<i>Conservation, Forests and Lands Act 1987</i>	<i>Sustainable Forests (Timber) Act 2004</i>
<i>Crown Land (Reserves) Act 1978</i>	<i>Traditional Owner Settlement Act 2010</i>
<i>Environment Effects Act 1978</i>	<i>Victorian Environmental Assessment Council Act 2001</i>
<i>Environment Protection Act 1970</i>	<i>Water Act 1989</i>
<i>Environment Protection and Biodiversity Conservation Act 1999 (Cwlth)</i>	<i>Wildlife Act 1975</i>
<i>Fisheries Act 1995</i>	
<i>Flora and Fauna Guarantee Act 1988</i>	
<i>Forests Act 1958</i>	
<i>Heritage Act 1995</i>	
<i>Heritage Rivers Act 1992</i>	
<i>Marine Act 1988</i>	
<i>National Parks Act 1975</i>	
<i>Native Title Act 1993</i>	

2.3 Compliance requirements

The RCS has been prepared in accordance with the guidelines issued by the Victorian Catchment Management Council (VCMC 2011), and standards set by the Department of Environment and Primary Industries (DEPI; formerly Department of Sustainability and Environment (DSE)).

2.4 RCS context

The RCS relates to international and national agreements, a significant body of legislation, and a large number of other strategies, frameworks and plans. The context of the RCS in relation to these other documents is described in Appendix 1.

3 People and partnerships

Within the East Gippsland region, natural resource management (NRM) is undertaken as a partnership between government agencies and the community. The size of the region, its large areas of remote and inaccessible public land, and its relatively small population have highlighted partnerships as being the most effective approach. Many issues requiring management act at a scale which is beyond the ability of individuals, or individual agencies, to address.

3.1 Community relationships in East Gippsland

In East Gippsland we pride ourselves on our ability to work together. Effective management of threats to natural values can involve working across and beyond organisational and regional boundaries. As a result the East Gippsland community and relevant agencies maintain strong relationships with neighbouring regions.

The East Gippsland community:

- actively identifies and fosters the relationships necessary to support effective partnerships
- shares investment, resources and information.

Considerable experience in integrating works among multiple partners on a landscape scale has been gained through the ‘Protecting the Best’ and ‘Highlands Down’ initiatives, that are focused on maintaining the high value ecosystems in the region from the threats posed by existing and emerging pest plants.

The Highlands Down and Protecting the Best initiatives

Highlands Down and Protecting the Best are both landscape scale initiatives applying to all land tenures that aim to protect high value ecosystems and biodiversity values in Eastern Victoria from the threats posed by existing and emerging weeds and pest animals.

Both initiatives apply at a multi-regional scale since the biodiversity values that they seek to protect extend beyond regional boundaries, as do the invasive plants and animals threats to these values.

As the instigator of the Highlands Down and Protecting the Best concepts, the EGCMA has been active in promoting these initiatives in the East Gippsland region. These initiatives have provided a catalyst for renewed collaboration by a number of natural resource management agencies involved with weed and pest animal management on public and private land. Individual agencies contribute to the Highlands Down and Protecting the Best objectives by delivering on-ground works in their area of responsibility using available funds from a mix of internal and external sources.

Other successful examples of landscape scale partnership programs in the region are the ‘Back from the Brink’ vegetation and species management program in the Gippsland Lakes hinterland, and the ‘Southern Ark’ predator control program in the Far East Catchments landscape area.

3.2 Partners

There are many organisations and individuals involved in managing the region’s natural assets. By providing clear objectives and priorities over the next six years, the RCS will unify and coordinate their management efforts.

On public land these unified objectives are achieved by establishing strong and effective partnerships with the agencies responsible for managing public land including DEPI, Parks Victoria, water authorities, and local government.

On freehold land, each individual landholder is responsible for the management of natural assets on their land within the law, subject to the caveat that their actions do not cause deleterious effects or costs to others.

Some landholders choose to become involved in collective action through community groups such as Landcare groups, and conservation management networks. In East Gippsland, partnerships are established between these community groups and agencies when interest in shared outcomes overlap. Many successful partnerships are formed between agencies, groups and individual landowners.

3.3 Aboriginal culture and Country

Aboriginal people have a strong cultural association with the natural resources and landscape of the East Gippsland region. Protecting cultural heritage and maintaining ‘connection to Country’ are fundamental to retaining cultural links for present and future generations of Aboriginal people, since their culture and the environment are so closely linked.

Aboriginal people have a legitimate aspiration to participate in the management of the region’s natural resources, and this aspiration is acknowledged by natural resource management agencies. Aboriginal participation in natural resource management will be improved by meaningful engagement in NRM decision making processes and the encouragement of opportunities for Aboriginal people to work in the NRM sector.

3.4 Traditional owners and native title

In October 2010, the Federal Court made a determination (FCA1144) that native title exists over much of Gippsland and is held by the Gunaikurnai people (those persons who identify as Gunai, Kurnai, or Gunai/Kurnai). The court recognised the Gunaikurnai Land and Waters Aboriginal Corporation as the sole holder and representative body of these native title rights and interests on behalf of all Gunaikurnai people.

At the same time, the State of Victoria entered into a recognition and settlement agreement with the corporation under the *Traditional Owner Settlement Act 2010*. The agreement includes:

- a number of cultural recognition and strengthening initiatives
- the transfer of 10 parks and reserves to the Gunaikurnai as ‘Aboriginal title’ and establishment of a traditional owner land management board for joint management with the state
- rights to use crown land for traditional purposes, including hunting, fishing, camping and gathering in accordance with existing laws
- funding for economic development to meet their obligations under the agreement.

These outcomes settle a native title claim dating back to 1997. The agreement only applies to crown land. There is no effect on private land, and all existing rights and interests in crown lands and national parks are protected.

The Gunaikurnai Land and Waters Aboriginal Corporation is also the appointed Registered Aboriginal Party under the *Aboriginal Heritage Act 2006* for the Gunai/Kurnai native title area.

As the recognised traditional owner entity for the Gunaikurnai native title determination area, Gunaikurnai Land and Waters Aboriginal Corporation is responsible for native title, cultural

heritage, land, natural resource management, business, employment, economic development and capacity building matters that affect the Gunaikurnai community.

The areas subject to the Gunaikurnai native title consent determination and settlement agreement are fully detailed in the federal court's formal consent determination. The external boundary of the determination area extends from Yarragon east to Orbost, and from Mt Hotham south to the coast between Toora and Marlo. The Gunaikurnai native title determination area thus extends across most of the western half of the region.

In the east of the region, there are a number of Aboriginal groups asserting interest in claiming recognition as traditional owners.

4 Regional overview

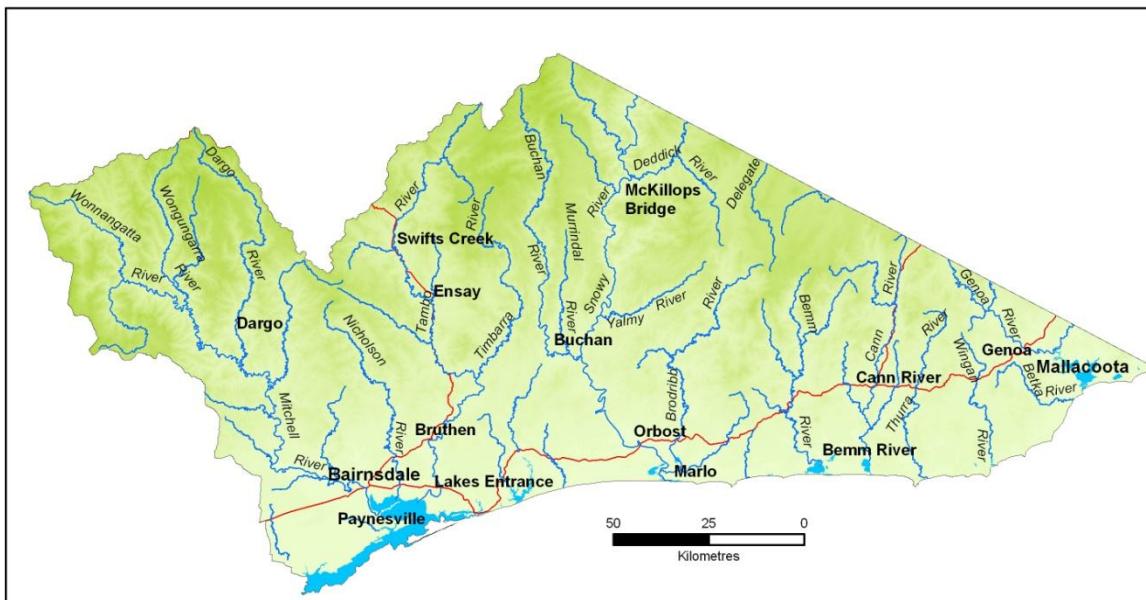


Figure 4.1 The East Gippsland Catchment Management Authority region

4.1 Environmental

The East Gippsland Catchment Management region covers 2.2 million hectares of land, lakes and coastal waters in eastern Victoria. The region covers about 10% of Victoria.

The region is entirely south of the Great Dividing Range and includes the catchments of streams from the Mitchell River eastwards to the Victoria–New South Wales border.

The northern boundary is formed by the Great Dividing Range where mountains rise to elevations of 1500 metres. The southern boundary is located three nautical miles (5.5 km) off the coast.

Rivers generally run from north to south, rising in the alpine reaches and progressing through lowland forests to coastal estuaries in the south.

About 83% of the land is in public ownership, mainly as state forests, national and coastal parks, and marine national parks and virtually all of this remains clothed in native vegetation. The region contains a number of significant natural assets including declared ‘heritage rivers’, Ramsar listed wetlands and many national parks and reserves, stretching from sub-alpine environments to the coast. It is the only place on mainland Australia where such continuity of natural ecosystems – from the alps to the sea – still exists. This, and the biogeographic location of the region (overlapping cool and warm temperate zones, with their associated plants and animals) help make the region a major reservoir for native biodiversity – about 3000 plant species grow here, and there are nearly 500 species of terrestrial vertebrate animals, several hundred species of fish in the rivers, lakes and ocean and a vast and as yet uncounted invertebrate fauna.

Private land covers 17% of the region. Grazing occupies the largest area and there are significant productive areas of irrigated horticulture and dairying on the floodplains of the Snowy and Mitchell rivers.

East Gippsland is generally sheltered by topography from both the winter cold fronts and the rain-bearing north-westerly winds that produce precipitation over the Great Dividing Range. However, low pressure systems off the east coast can be responsible for extremely heavy rainfall events in East Gippsland. These events may bring rainfall in excess of 100 mm in 24

hours, with the second highest Victorian daily rainfall on record at Nowa Nowa of 275.1 mm (11 March 1906).¹ East Gippsland has the greatest frequency of 24-hour rainfall in excess of 75 mm in Victoria (Linforth 1969).

This rainfall variability gives rise to droughts and floods that have an effect on waterway health, fire and land management. There is potential for this variability to further increase under the influence of climate change. Projected climate change effects for East Gippsland are available from the Victorian climate change website (<www.climatechange.vic.gov.au>).

Significant projected climate change effects for East Gippsland include:

- | | |
|--------------|--|
| Water | By 2030, average annual runoff into the Mitchell River is expected to decrease by up to 25%, while runoff into the Tambo and Snowy rivers is expected to decrease by as much as 35%. |
| Agriculture | For dryland cropping, reductions in rainfall and increases in evaporation directly contribute to reductions in soil moisture. Irrigated agriculture is likely to be affected by tighter constraints on water allocations. Increased heat stress on dairy cattle has the potential to reduce milk production. |
| Biodiversity | Projected climate change will influence the composition of ecosystems and their distribution by altering water flows in rivers and wetlands and the occurrence of bushfires, snow and floods. In addition, projected climate change is also likely to amplify existing threats such as habitat loss and invasive species, making their effects considerably worse. |
| Coasts | During this century, the Victorian coastline can expect greater inundation and erosion. Sea level rise combined with increased storm events and storm surges will result in damaging waves, wind and flooding, erosion and damage to infrastructure and coastal and marine ecosystems. |
| Marine | The marine environment will be affected by increased sea temperatures, changing sea currents and acidification of the ocean. |

Significant region-wide issues are discussed further in Section 6.2

4.2 Social

The region includes most of the East Gippsland Shire, the northern part of the Wellington Shire, and that part of the Alpine Shire south of the Great Dividing Range. It abuts the Wangaratta Shire in the north-east and the New South Wales shires of Snowy River, Bombala and Eden Valley.

In 2011, the East Gippsland local government area had a population of 44,700 people (DPCD 2012), with the major population centres being Bairnsdale, Lakes Entrance, Paynesville, Orbost and Mallacoota. There are many smaller towns such as Bruthen, Cann River, Dargo, Ensay and Swifts Creek, with some situated in remote locations.

Over the next 20 years, the population of the area is projected to increase by an average of 1.6% per annum, compared to the projected increase for Victoria of 1.3% per annum (DPCD 2012).

Aboriginal people have a strong cultural association with the natural resources and landscape of the East Gippsland region (see Chapter 3).

¹ Bureau of Meteorology web site

4.3 Economic

At the time of the 2006 census, the regional labour force was 16,923 people (of this, 52% were employed full time, 34% part time and 6% were unemployed. The remainder were employed away from home or did not state their hours worked).

The most common occupations for employed people were managers, technicians and trade, professionals, labourers, clerical and administrative, sales, community and personal service, and machinery operators and drivers.

When compared with the rest of Australia, there were higher percentages of people employed as managers, labourers, and community and personal service, and lower percentages of people employed as professionals and clerical and administrative workers.

Research and analysis of labour supply and skills shortages in East Gippsland undertaken by the Department of Employment, Education and Workplace Relations in 2008 (226 employers, in eight main industries) revealed that 61% of employers had recruited or attempted to recruit in the past 12 months, 9% of vacancies were not filled (the highest proportion of vacancies in the construction and manufacturing industries), 15% of employers reported one or more unfilled vacancies, and 60% of recruiting employers reported recruitment was difficult.

In the 2006 census data, individual and family incomes were substantially lower in East Gippsland than in the rest of Australia.

Economic profiling for the East Gippsland Shire in 2011 indicated that the major industries were construction, agriculture, forestry and fishery, health care and social assistance, retail, manufacturing, accommodation and food services, and education and training.

In 2008, the value of agricultural commodities for East Gippsland was \$155 million annually, consisting of crops, livestock and livestock products (East Gippsland Shire Council 2008).

Victoria's largest offshore commercial fishing fleet is based at Lakes Entrance. The port handles about 10,500 tonnes of seafood annually with a landed value of \$25 million (Lakes Entrance Fishermans Cooperative Society Ltd 2011).

Manufacturing is East Gippsland's largest sector by output, with the main products being fruit and vegetable products, ships and boats, sawmill products, bakery products and processed seafood.

Some leading manufacturing brands that operate in East Gippsland are Patties Foods (pastry products), Lakes Entrance Fishermen's Co-operative Society (processed seafood) and One Harvest Vegco (horticultural products).

The tourism industry attracted 1.1 million visitors in 2010, contributing \$273 million to the regional economy. Major tourist destinations are Lakes Entrance, Metung and Paynesville on the Gippsland Lakes, and Mallacoota in the east. Nature based tourism is an important component of the total tourism industry.

5 Development of the RCS

5.1 Review of the 2005 RCS

The 2005 regional catchment strategy was reviewed in November 2009. The review concluded that the main achievements of the 2005 RCS were that it:

- became the vehicle to explain and advocate for integrated strategic natural resource management
- put forward regional strategic priorities for natural resource management
- developed an asset framework, providing:
 - geographically defined descriptions of the region's natural resource assets
 - a basis for prioritisation
- developed an implementation framework, which has underpinned investment
- established the concept of cross-tenure and cross-asset programs of work, focused on addressing common forms of decline in asset condition.

The review felt that the 2005 RCS was not 'collectively owned' by regional stakeholders, and noted the extent to which DEPI and Parks Victoria worked outside the RCS process.

Suggested improvements for the new RCS were that it should:

- become a truly strategic document
- address new and emerging issues, particularly climate change
- have an improved target framework
- include a monitoring, evaluation and reporting (MER) framework.

5.2 RCS development principles

The principles followed in developing the 2013 RCS were that it must:

- be based on the assessment of the natural assets of East Gippsland
- examine asset values, their condition, and threats to their condition
- apply across the region, regardless of ownership and management
- use the best available data and information
- identify critical gaps in data and information
- be consistent with relevant Victorian legislation, policies and strategies. In particular:
 - guidelines developed by the Victorian Catchment Management Council for preparation of an RCS (VCMC 2011)
 - guidelines and standards developed by DEPI (formerly DSE); where approved by the VCMC
- consider the views of the East Gippsland community.

5.3 The assets of East Gippsland

The natural assets of the region were systematically assessed (using an 'asset based approach'). Assets were considered in seven groupings or 'asset classes' – Terrestrial environments, Rivers, Wetlands, Estuaries, Coasts, Marine, and Soil/land.

While this approach enabled assessment of each of the asset classes individually, the development of the RCS's integrated planning framework also required subsequent re-combining of the asset information. These steps were important to ensure that the RCS developed an appropriate understanding of regional issues which recognised the complex inter-relationships between asset classes.

The best available data and information have been used. Details of the data and information used, as well as maps of the asset classes will be contained in a separate supporting document.

A brief description of the natural assets of East Gippsland assets follows.

Terrestrial environments asset class

The East Gippsland terrestrial environment is dominated by native vegetation, which covers about 85% of the region; most of this is public land in state forest and national and other parks and reserves.

The cleared, agricultural lands are concentrated on the Gippsland Plains, the Mitchell and Tambo river valleys and the Monaro Tablelands, where the original open grassy woodland lent itself to grazing, and in the fertile river valleys where rich alluvial soil has supported the development of intensive agriculture.

The native vegetation includes extensive heathlands, woodlands and forest on the coastal plain, a wide belt of dry and damp forest in the foothills, and highlands and tablelands covered in tall wet forest. The higher peaks on the northern edge of the region support sub-alpine and alpine vegetation and there are several rain shadow areas covered in dry woodland. The extent, continuity and diversity of natural ecosystems make the region nationally significant as a reservoir for temperate zone biodiversity.

Apart from on the Gippsland Plains in the south-west and on the Monaro Tablelands in the north-east, cleared areas occupy only small patches within the extensive native vegetation; this is in contrast to the pattern of the landscape in most of the rest of Victoria. Loss of native vegetation is only a major biodiversity conservation problem on the plains and in the river valleys. However, the intact areas are subject to a number of threats that compromise natural values. Most prominent of these are introduced (invasive) plants and animals, which displace, or prey upon, native species. Fire is also a pervasive influence with the potential to change vegetation structure and influence species distribution.

For the East Gippsland RCS, 'Species, populations and communities' were not considered as an asset class, but as values within other asset classes, and the 'Terrestrial environments' asset class is equivalent to the 'Terrestrial habitat' asset class referred to in the DSE asset based approach guidelines (DSE 2011a).

Rivers

By a number of criteria, the rivers of East Gippsland are remarkable natural assets of the entire Victorian community. Six heritage rivers are located within the East Gippsland basins, several catchments are almost totally free of human disturbance, and East Gippsland has a much higher proportion of streams in 'Excellent' or 'Good' condition, defined using the Index of Stream Condition Assessment (DSE, 2005), than the rest of the state.

The Mitchell River is one of only two 'iconic' river systems in the state recognised in the *Victorian River Health Strategy*. A number of East Gippsland rivers drain into the internationally significant Gippsland Lakes system. Many of the rivers in the east of the region are classified as either in 'near pristine' or 'largely unmodified' condition.

Wetlands

East Gippsland has three broad types of wetland: coastal, plains and sub-alpine.

Coastal wetlands tend to be larger, more persistent water bodies which range from fresh through to saline. Many are ecologically associated with estuaries and are of national or international importance for waterbird habitat.

Plains and sub-alpine wetlands are generally smaller, more ephemeral and fresh. They provide important habitat for frogs and a diversity of native vegetation.

All three wetland types support species and/or communities of bioregional, state and/or national conservation significance. Invasive flora and fauna, changes in water regime and soil disturbance are threats common to each wetland type. Recreational pressure can be high on coastal and sub-alpine wetlands, and the latter is particularly susceptible to inappropriate fire regimes. The status of plains wetlands in the East Gippsland region is not well understood.

Estuaries

East Gippsland is well endowed with highly valued estuaries. They range from the largest and most modified in the west of the region, the Gippsland Lakes, to a series of smaller estuaries that are in a condition close to pristine, protected within national park in the east. Many of the region's estuaries provide important waterbird habitat, especially during drought. The mid-sized estuaries such as Snowy River and Sydenham Inlet are of national importance, and the Gippsland Lakes are internationally significant. Most estuaries in the region are valued for recreational purposes: boating, fishing and camping are popular pursuits. Some estuaries, particularly the Gippsland Lakes, contribute significantly to the regional economy by providing recreation and tourism opportunities, and aesthetically pleasing sites for urban development. Altered connectivity to the marine environment has modified environmental conditions in some of East Gippsland's estuaries. Catchment based changes such as vegetation clearance, livestock access and water harvesting also affect the condition of some of East Gippsland's estuaries.

Coasts

The East Gippsland coast includes some of Victoria's most picturesque landscapes including systems of dunes, rocky headlands, cliffs, marshes and sandy beaches. The coast and its hinterland supports a variety of vegetation communities. These include Warm Temperate Rainforest, Littoral Rainforest, many forms of coastal woodlands, shrublands, wetlands and dunal vegetation.

Much of the coastline is formed from mobile sand dunes shifting gradually eastward. However, in the far east the coastline is punctuated by rocky headlands and outcrops. Croajingolong National Park, together with New South Wales Nadgee Nature Reserve, is part of the largest coastal conservation reserve on the south-eastern Australian mainland, protecting much of this largely untouched environment.

Victoria's tourism industry has aptly named the East Gippsland coast as the 'Wilderness Coast'. The natural landscapes and seascapes and unspoilt wild beauty of the region's coastal environment provide many recreational opportunities and tourism is growing at a modest rate (GCB 2000). Recreational pursuits include sightseeing, beach going, swimming, camping and bushwalking. Recreational fishing also continues to grow, with commercially operated recreational fishing and offshore diving trips becoming increasingly popular. Recreational boating is a significant activity at these locations and the demand for infrastructure is steadily increasing.

Marine

The significance of the region's marine environment has been recognised with the establishment of representative marine national parks including Point Hicks and Cape Howe, and marine sanctuaries including Beware Reef.

The East Gippsland marine environment is a mixing point for the warm East Australian current, temperate southern waters that wash over Bass Strait and cool waters from deep sea upwellings. These upwellings are known to provide nutrients to inshore ecosystems, contributing to a very productive ecosystem. The region therefore contains a rich diversity of plant and animal species and is highly productive. About 90 to 95% of the marine species in the region are endemic to southern Australia.

The catchment, estuarine, coastal and marine environments of the region form parts of a single system (WorleyParsons 2011). The downstream environments are highly influenced by conditions and activities upstream. Each has significant intrinsic value and provides critical nursery habitats for juvenile fish. These environments and the species they support also play an essential role in the food chain of the region's ecosystems, providing a large and diverse food source for other valued species higher in the food chain, particularly birds and fish.

This highly productive environment supports a number of important recreational and commercial fisheries from which a significant income is derived. The natural and largely 'untouched' features of much of the region also provide considerable tourism opportunities.

Significant oil and gas reserves are located outside Victorian coastal waters. The development and servicing of these fields provide employment in the region. While some facilities currently exist, the progressive development of this industry may increase demands for pipelines and onshore processing.

The role of the RCS, in relation to the marine asset class, is to focus on reducing catchment based risks to marine natural assets.

Soil/land

Soils in the eastern part of the East Gippsland region are well structured and fertile with high organic matter content (Sargeant 2011).

In the west of the region, soils are generally low in organic matter content, are lightly textured and prone to erosion. The lowlands in this part of the region are characterised by soils of uniform texture contrast. These lowlands, which represent the majority of freehold land in the region, are mainly used for broad scale grazing of sheep and cattle, with intensive horticulture and cropping being limited to the more fertile soils found in the river valleys and on the Redgum Plains. In general, the lowland soils have the potential for increased agricultural production in the future.

The soils of East Gippsland have been formed from hard rock or from loose material transported by water or wind, or collected from higher up a slope. The main hard rock groupings across the region are:

- Igneous rocks: Granites (e.g. Swifts Creek and Dargo) and basalts (e.g. Gelantipy)
- Sedimentary rock: Limestone (e.g. Buchan)
- Metamorphic rock: gneiss and quartzite (e.g. Ensay North).

5.4 RCS development process

The RCS was developed in three stages over two years (Figure 5.4.1).



Figure 5.4.1 RCS development process

During the development of the strategy, all relevant asset classes were described and mapped. Further detail will be contained in a separate supporting document. Prioritisation within the RCS development process was based on the following principles:

- implementation of the asset based approach
- use of the best available data and information to inform decision making
- open communication and regular engagement with regional asset managers and selected scientists to build understanding
- use of existing methods and tools to inform the application of the asset based approach (e.g. the ‘Aquatic value identification and risk assessment’ (AVIRA) approach (Peters et al. 2009) based on the AS/NZS ISO 3100 *Risk management – Principles and guidelines*).

Foundation stage

Asset significance

Significant assets were identified and mapped based on five criteria:

- productive agricultural land
- formally recognised significance (e.g. legislative protection)
- presence of rare or threatened species, communities or ecosystems
- condition
- other ‘significant’ values (e.g. geological significance, drought refuge).

Regional assets which did not meet any one of the significance criteria were not considered further.

In this stage input from the community and the knowledge of local managers was considered.

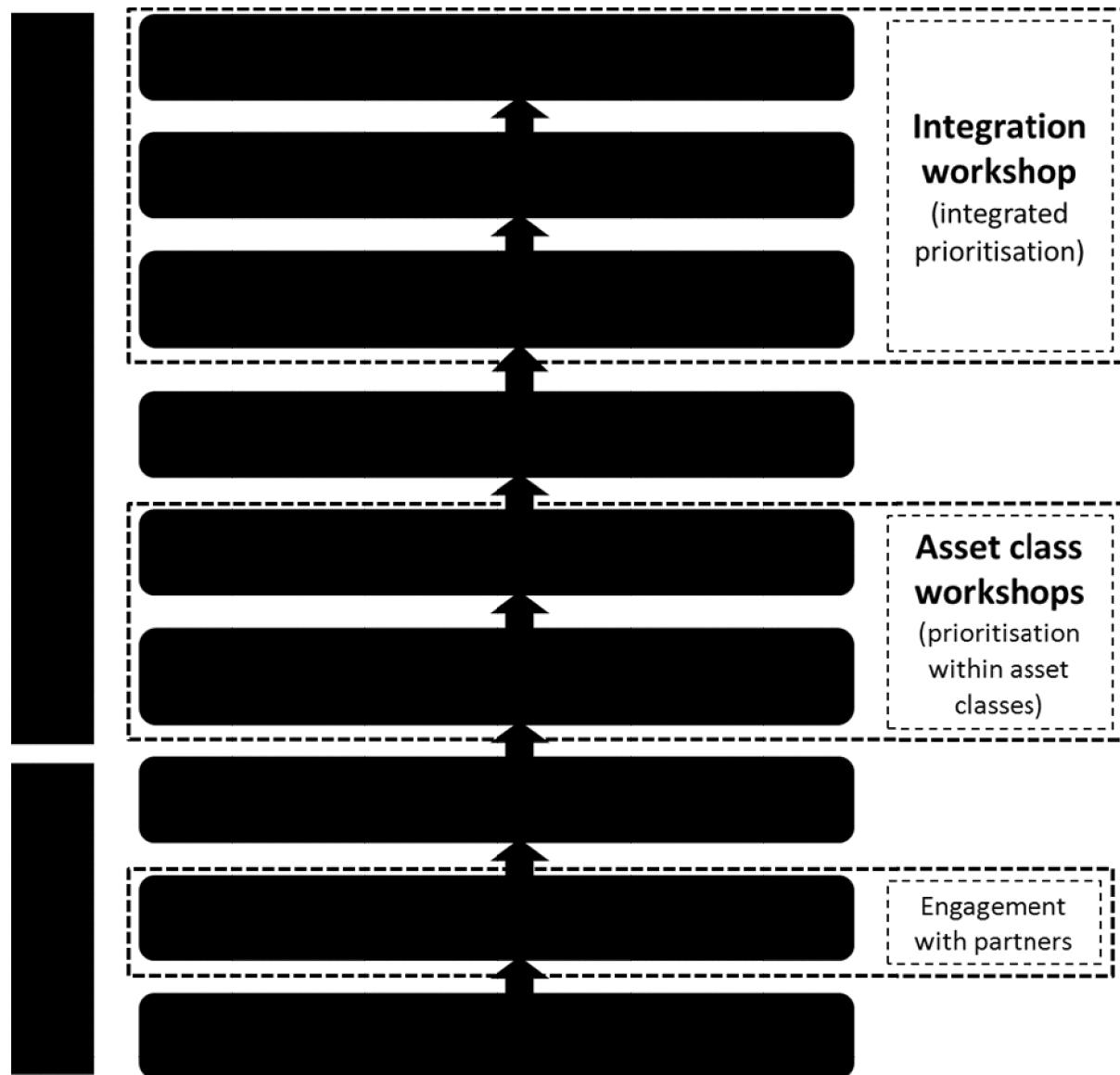


Figure 5.4.2 RCS priority setting process used to identify management priorities

Data collection and risk assessment

Available information on the important values of all significant assets was collected, as well as threats to those values. The value and threat information was assessed and scored to estimate the condition of each asset. Scores were assigned in consultation with relevant regional asset managers. Where no regional data were available, scoring was based on judgements from relevant regional and state agency partners.

Risk assessments were conducted on each significant asset. The assessment procedure was adapted from the AVIRA process (Peters et al. 2009), producing draft management objectives for further consideration. Asset class objectives were developed for consideration and guidance in asset class and integration workshops.

Analysis and priority setting stage

Asset class workshops

The aim of the ‘asset class workshops’ was for knowledgeable and experienced staff from relevant partners (regional and state agencies and non-government organisations) and external scientists to:

- review value and threat scores and risk assessments in a workshop setting
- set objectives for the condition of each asset and identify actions to achieve the objective, for each asset class.

Where possible, the ‘condition trajectory’ (i.e. the likely trend in condition over the next 20 years under current management) was described. Integrated strategic natural values maps (NaturePrint v2.0), developed by DEPI (formerly DSE); DSE 2011b) assisted the review of value scores in the terrestrial environments asset class workshop . The risk assessment process, in addition to considering value and threat scores, took account of the extent of their ‘association’ (i.e. the extent to which each threat could affect each value). Objectives for the condition of each asset were developed based on the risk assessments (and draft management objectives) and local knowledge. These assessments were the product of the value scores, threat scores and degree of association.

The technical and socio-economic feasibility of achieving the objectives was also assessed. The objectives were then prioritised, based on the asset values, level of risk, the technical and social feasibility of achieving the objective, and the knowledge of relevant regional asset managers.

Workshops were conducted for each individual asset class. The output from each of these workshops was a list of the priority objectives for their asset class.

Integration workshop

The principal aim of the ‘integration workshop’ was to aggregate priority objectives from each asset class, and where possible, integrate them with objectives from other asset classes, identifying where they overlapped geographically within the region, and identifying the actions required to achieve the objectives. Prior to the workshop, based on a review of the information from each asset class, the East Gippsland region was divided into four ‘landscape areas’, which were identified based on the following factors:

- where the asset based approach identified areas having similar objectives and management themes
- where local knowledge of the region and its communities, as well as consultation with public land managers indicated common interests and goals.

The size of landscape areas were set at a manageable scale for implementation, large enough to be effective.

The landscape areas adopted for the integration process were:

- Gippsland Lakes and Hinterland
- Gippsland Lakes Upper Catchment
- East Coast
- Far East Catchments.

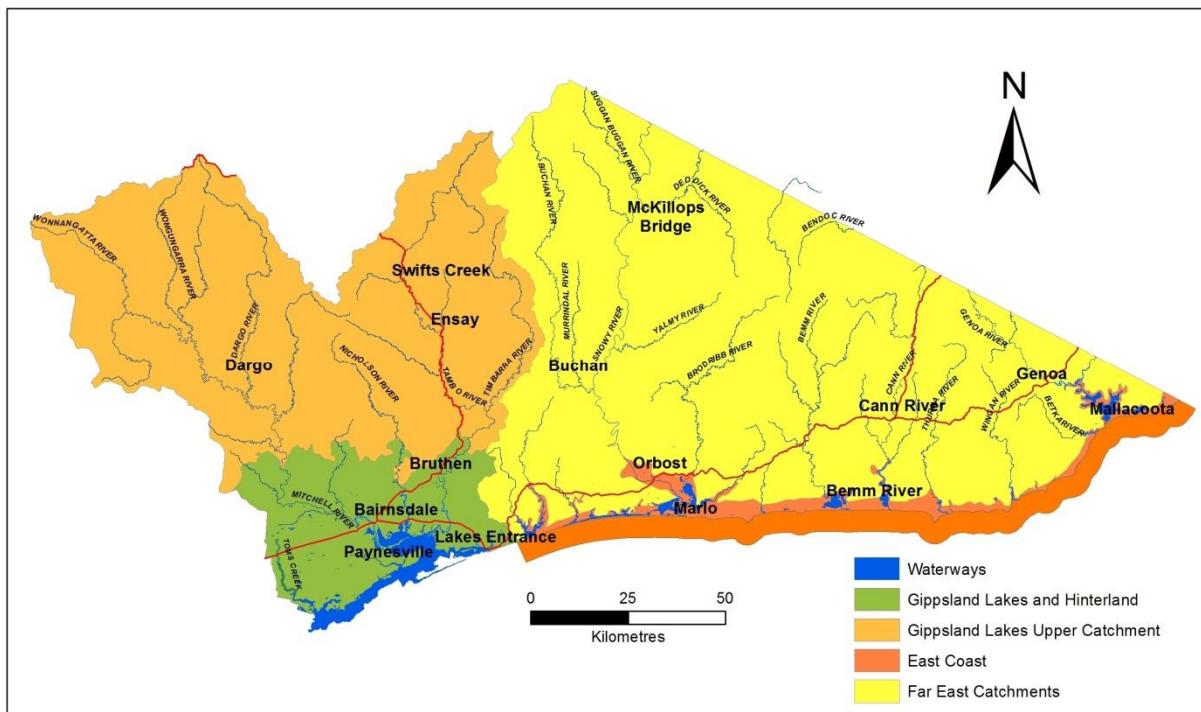


Figure 5.4.3 Map of landscape areas

For each landscape area, participants:

- identified priority areas *within* the landscape area:

Where multiple priority objectives overlapped within the landscape area, objectives were integrated among asset classes. In these areas, synergies and linkages (e.g. physical and functional connectivity, similar requirements for management action, feasibility, and mutual benefits) were sought from workshop participants, and were used as the basis for integration of multiple objectives. Priority objectives from a single asset class, applying to an area within the landscape, were also retained, where they could not be integrated with others.

- identified *landscape scale* priority objectives:

Where multiple priority objectives applied to the whole landscape, synergies and linkages were sought, and where possible, objectives were integrated. Priority objectives from a single asset class, applying to the whole landscape, were also retained, where they could not be integrated with others.

Integrated strategic natural values maps developed by DEPI (formerly DSE); DSE 2011b) were reviewed during the workshop to assist with objective setting and mapping.

At the end of the integration workshop, a decision was taken to develop the RCS programs based on the boundaries of the landscape areas for two principal reasons:

- landscape areas were found to be at a useful scale for implementation
 - integrated objectives developed within each landscape area were distinct from those for other landscape areas (Figure 5.4.3).

A region-wide priority program was also developed. This program outlines high level objectives and associated management actions that were identified through workshops which are applicable at a *regional scale*.

Case study on integrated objective development - 'River asset'

Introduction

Reference to Figures 5.4.1 and 5.4.2 will assist in understanding this section.

A 'river asset' was chosen to illustrate how the final *integrated* objectives were derived. 'Assets' within the river asset class were determined based on sub-catchments (drainage) such that all significant streams and rivers within a sub-catchment were treated as one asset.

A draft list of values and threats was developed, based on those listed for use in the AVIRA process (Peters 2011). A group of relevant agency partners selected the most important values and threats. Data and information (from DEPI datasets(GIS)), EGCMA, the *Index of Stream Condition*, EPA, Waterwatch and the AVIRA database) on each of the values and threats were collected for each asset and draft scores were developed, on a 1 to 5 scale. Where no data were available, judgements were made, and scores were restricted to 'high' (5) 'medium' (3) and 'low' (1). Value and threat scores were put into a risk assessment process, which was based on the AVIRA risk assessment process (Peters et al 2009).

Redgum Plains river asset

The 'Redgum Plains' river asset is used here in this case study.

The lower reaches of Toms Creek and Forge Creek were considered significant within this river asset. Data from both reaches were collated, scores were averaged, and input into the risk assessment (Table 5.4.1).

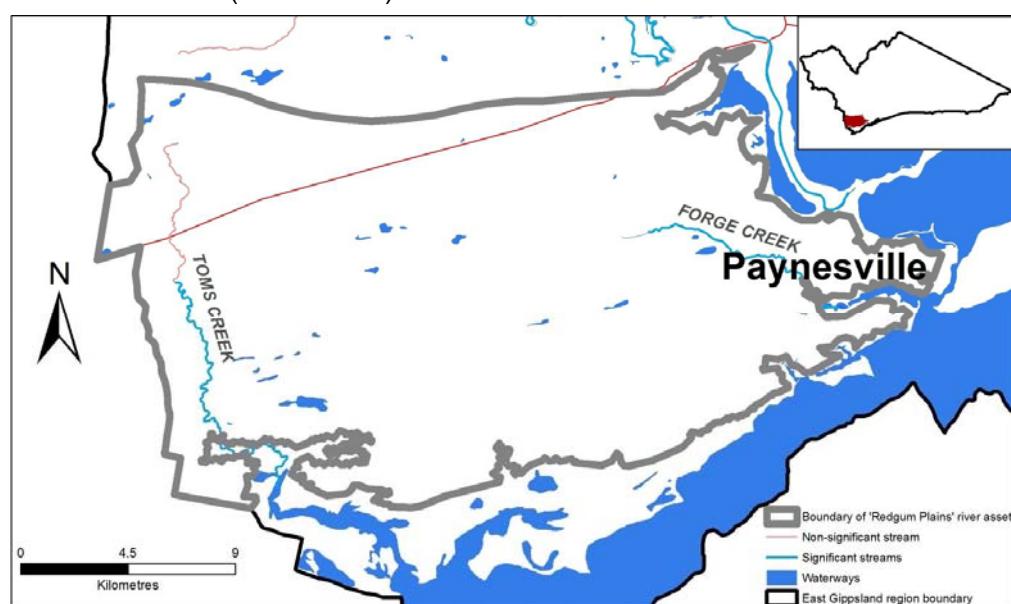


Figure 5.4.4 Streams considered in the 'Redgum Plains' river asset

In the 'rivers' asset class workshop (24 February 2012) each value and threat score was reviewed, as well as the risk assessment for each asset (Table 5.4.1). Objectives were developed to address the most important risks to assets (e.g. degraded water quality, invasive terrestrial fauna, barriers to fish migration, loss of in-stream habitat, and invasive flora (Table 5.4.2). The assessment of the condition trajectory, based on group judgement, was that current condition is poor to moderate, but improving slowly under current management interventions.

Table 5.4.1 Risk assessment of the ‘Redgum Plains’ river asset

River threats											
River values	Scores	3	5	1	5	0	3	3	5	1	Development
Significant riparian ecological vegetation classes (EVCs)	5	Low	Moderate	Very low	No risk	No risk	Very low	Moderate	Very high	Very low	
Aquatic invertebrate community condition	No data	Low – fill data gap	Very high – fill data gap	No risk	High – fill data gap	No risk	Moderate – fill data gap	Low – fill data gap	Moderate – fill data gap	No risk	
Significant amphibians	1	No risk	No risk	No risk	No risk	No risk	No risk	No risk	No risk	No risk	
Significant migratory fish	1	No risk	No risk	No risk	No risk	No risk	No risk	No risk	No risk	No risk	
Riparian vegetation condition	3	No risk	Very low	No risk	No risk	No risk	No risk	Very low	Moderate	No risk	
Drought refuges	3	Very low	Moderate	No risk	Moderate	No risk	Very low	No risk	Very low	No risk	

Table 5.4.2 Objectives set in the ‘rivers’ asset class workshop

River asset	Objective	Theme of actions	Category
Redgum Plains	Improve the current water quality for the Gippsland Lakes and receiving environments.	Encourage match of land capability and land use In-stream stabilisation erosion works	Immediate action
	Improve diversity, connectivity and extent of native riparian vegetation.	Landholder engagement and agreements Review plans Integrate restoration with other vegetation programs and link riparian and terrestrial corridors Restoration and revegetation Invasive plants and animals – grazers, predators, high threat weeds	Immediate action
	Improve capacity for fish migration from Forge Creek to Newlands Arm.	Research	Research and investigate

Objectives were prioritised by the EGCMA Regional Water Programs Manager based on the values, risks, technical and social feasibility of achieving the objective, local knowledge and experience, as well as considering the evaluation of the *East Gippsland Regional River Health Strategy 2005-2010* (EGCMA 2008). The priority objective was identified as ‘improve diversity, connectivity and extent of riparian vegetation’ (Table 5.4.2).

The priority objectives were then brought to the integration workshop, and were aggregated, and where possible, integrated, with objectives from other asset classes within each landscape area. In the workshop, the priority objective for the Redgum Plains river asset was integrated with priority objectives for the Redgum Plains terrestrial environment asset and Soil/land (Table 5.4.3).

Table 5.4.3 Priority objectives for assets on the Redgum Plains in Terrestrial environments and Soil/land asset classes

Asset class	Asset	Priority objective
Soil/land	Redgum Plains	Maintain appropriate ground cover to improve and maintain productive values minimising the threat of erosion (Action integrated was ' establish trees in vulnerable areas').
Terrestrial environments	Redgum Plains	Improve condition, connectivity and extent of native vegetation on private and public land (all actions for this objective were integrated).

These objectives were integrated into the two landscape scale objectives for the Gippsland Lakes and Hinterland (Table 5.4.4). They also contributed benefits to other integrated objectives, such as those focused on improving the quality of water entering the Gippsland Lakes.

Table 5.4.4 Integrated landscape scale objective for the Gippsland Lakes and Hinterland

GLH2	Targeted improvement of the condition, security, diversity and connectivity of native vegetation	Prepare a 10 year plan that establishes priorities for investment into the establishment and maintenance of areas of native vegetation in the Gippsland Lakes and Hinterland, particularly on the Redgum Plains, with focus on the following:
		GLH2.1 • existing native vegetation patches on the Redgum Plains with potential for connection
		GLH2.2 • native vegetation where land meets water in riparian, wetland and estuarine environments (e.g. stream corridors, fringing wetlands of the Gippsland Lakes)
		GLH2.3 • areas susceptible to wind erosion.
		GLH2.4 Develop and improve partnerships to better integrate the planning and delivery of works and programs among all partners within the region and across regional boundaries and to foster shared ownership and responsibility, and where opportunities are available, on freehold land in partnership with landholders.
		GLH2.5 Investigate opportunities for a multi-region approach to further address landscape scale issues (particularly in and around the Gippsland Lakes).
		GLH2.6 Prioritise invasive plant and animal programs of surveillance, monitoring and treatment in accordance with the <i>East Gippsland Invasive Plants and Animals Plan</i> (EGCMA 2011).
GLH3	Targeted improvement of the status of threatened species and communities	Prioritise protection and recovery of threatened species and communities, to include the following:
		GLH3.1 • Manage priority threatened species and communities that require direct intervention to support their recovery
		GLH3.2 • Implement direct interventions where needed, as guided by recovery plans and action statements
		GLH3.3 • Improve integration of threatened species and community recovery activities with other land management programs.
		GLH3.4 Prioritise invasive plant and animal programs of surveillance, monitoring and treatment in accordance with the <i>East Gippsland Invasive Plants and Animals Plan</i> (EGCMA 2011).

The integrated objectives produced from the workshop were used as the basis for developing the priority programs in each landscape area, described in Chapter 6.

5.5 Consultation

Recognising its responsibility for development and renewal of the RCS on behalf of the region, the EGCMA has implemented programs since the 2005 RCS to inform the regional community about the RCS, and to record community views.

The EGCMA also ensures that community and stakeholder views are continuously recorded as part of day-to-day operations.

Interviews were conducted with 306 landholders between October 2007 and June 2010 to enable the EGCMA to gain a greater understanding of issues important to landholders, and of landholders' understanding of natural resource management.

Print media campaigns and books (Pearson 2008; 2009) have sought to inform the community about the RCS.

Community input and guidance has been a feature in the development of regional plans and strategies (*East Gippsland Regional River Health Strategy* (EGCMA 2006); *Gippsland Coastal and Marine Asset Report* (GCB 2011); *East Gippsland Invasive Plants and Animal Plan* (EGCMA 2011)). The data and information collected in these consultations have been reconsidered in the process of preparing the RCS.

Consultations were also conducted through representation in workshops by stakeholders, particularly delivery partners in land management. Other regional partner organisations were also informed about the RCS and consulted. Consultation also took place with the Gunaikurnai Land and Waters Aboriginal Corporation.

Consultation during RCS development

When the draft RCS was released, community and stakeholder consultations ('open house') were held at four locations in the region.

Consultation meetings were also held with representatives from other agencies, including delivery partners in land management and other regional partner organisations.

The comments made at these meetings were recorded, and considered in the development of the final version of the RCS.

Proposed consultation arrangements during implementation

On behalf of the region, the EGCMA intends continuing with programs to inform the regional community about the RCS, including print media campaigns and publications. In addition, current program of continuously recording community views as part of day-to-day operations will be continued.

Regional plans and strategies to be developed during the life of this RCS will continue to seek community input and guidance.

On-going consultation with delivery partners will be improved by the proposed partnership implementation arrangements (see Chapter 7).

6 Management priorities

6.1 Introduction

Program descriptions

This section presents the priorities for strategic management of natural assets in the region over the next six years. Programs are described for each of the ‘landscape areas’, together with a region-wide priority program.

The programs apply to all land regardless of management or ownership. Programs provide integrated delivery of the work of a number of regional partners by coordinating planning, investment, management, monitoring, evaluation and reporting.

Programs are ‘landscape’ in scale because:

- of the spatial extent of many of the assets being managed
- this is the scale required to have a significant effect on the long-term condition of the assets being managed
- of the efficiencies of integration and coordinated delivery which can be realised at this scale.

Programs have been developed using the principles of the successful ‘Highlands Down’ and ‘Protecting the Best’ landscape scale programs which have been in place in the region over recent years.

Each program includes objectives set for a 20-year timeframe, providing long-term direction for management. Management actions are set for a six-year timeframe, the life of the RCS. They are the most effective management activities that can be undertaken in this period, which contribute to the achievement of the 20-year objectives.

Within all programs, priority objectives are derived from:

- the priority risks identified
- knowledge gained from existing landscape programs within the region
- an understanding of relationships between cause and effect, where available, or where not available, assumptions and judgements based on the collective experience of the region’s experienced natural resource managers.

The regional programs provide a balance between objectives for maintaining assets in good condition and those for reducing significant risks to the condition of assets.

The region-wide program is focused on risks that occur at a regional scale.

The priority management programs for the region, together with those for each of the four areas, are described in sections 6.3 to 6.7.

6.2 Region-wide values, threats and issues

The approaches taken to region-wide threats are described below. A number of threats act at, or greater than, the scale of the East Gippsland region. To effectively address these threats, region-wide responses are required.

Climate change

In compliance with the *Climate Change Act 2010*, the 2013 East Gippsland RCS has regard for climate change through the consideration of threats and effects resulting from climate change throughout the priority setting process. At all workshops, participants were required to consider climate change in every judgement and decision, particularly when considering

values, threats and condition trajectories and determining risks, setting objectives and developing management actions.

Participants were asked to consider climate change effects that are likely to become apparent over the next 20 years, but base their judgements and decisions on the timescale of the RCS (the next six years). The projected climate change effects for East Gippsland were provided to all participants as a reference (<www.climatechange.vic.gov.au>).

Fire

The large alpine fires of 2002–03 and 2006–07 demonstrated the extent to which fire shapes our region, and the landscape scale of its impact.

Fire management (including planned burning) is an essential part of the life of the East Gippsland bush. Effective fire management promotes the resilience and health of natural ecosystems by creating desirable growth stage distributions.

In East Gippsland, fire management is moving towards being carried out on a ‘whole of landscape’ basis, regardless of ownership, guided by the *Gippsland Regional Strategic Fire Management Plan* (GRSFMP 2011) and the *Code of Practice for Bushfire Management on Public Land* (DSE 2012).

While fire management will focus on the preservation of human life as the top priority (Fire Services Commissioner 2011, Victorian Bushfires Royal Commission 2009), priority will also be given to protection of essential and community infrastructure, industries, the economy and to implementing appropriate fire regimes to protect natural resources and where practical, to improve them.

Furthermore, where opportunities are available, fire management will aim to improve biodiversity on freehold land in partnership with landholders. Two common examples of inappropriate fire are high intensity large scale bushfires and long-term absence of fire in fire dependent ecosystems.

Fire management (including planned burning) will aim to protect from inappropriate fire regimes:

- water supplies and their catchments including the Gippsland Lakes and other waterways
- significant environmental assets, including significant species and communities.

In East Gippsland, fire recovery activities need to be timely and effective. Floods which follow large bushfires have high potential to affect communities and environments by transporting large quantities of sediment and nutrients from burnt catchments.

Groundwater

Groundwater is important for sustaining communities, agriculture and groundwater dependent ecosystems. The policy framework and objectives of the *Gippsland Region Sustainable Water Strategy* (DSE 2011c) have been adopted.

Each of the integrated objectives has been reviewed for consistency with the strategy, particularly in regard to the future protection of groundwater quality and quantity.

Carbon sequestration

In the future, carbon sequestration in the East Gippsland region could provide an opportunity for offsetting carbon emissions from other sectors of the Australian economy. When carbon sequestration policy frameworks become available, a plan will be developed for the region. As far as possible, the objectives of the proposed carbon plan will be aligned with the objectives of this RCS.

Wild dogs

Control of wild dogs will be addressed through implementation of the Victorian wild dog management program administered by the Department of Environment and Primary Industries.

Social and economic considerations

Detailed consideration of social and economic values is beyond the scope of this RCS. However, workshop participants, particularly in the Soil/land asset class, recognised that the long-term productivity of soil and land assets are fundamental to sustaining the social and economic values of communities.

At a strategic level, a *Gippsland Integrated Land Use Plan* is currently being developed. This is one of eight regional growth plans being developed across Victoria. It will identify preferred locations for particular land uses and development in both rural and urban areas, at a regional scale.

Additionally, the East Gippsland Shire, which covers 84% of the EGCMA region, is currently updating its *Municipal Strategic Statement* (East Gippsland Shire Council 2006). The RCS will not duplicate the work of these projects, but rather will integrate with them.

6.3 Region-wide program

Overview

The East Gippsland regional program is an integrated program to address strategic priority issues which are region wide. It applies to all land, regardless of management or ownership.

In developing the priority regional management programs, the approaches to region-wide issues (described in Section 6.2), have been taken into account.

Regional priority program

Component 1: Invasive plants and animals

A regional invasive plants and animals plan (EGCMA 2011), was prepared in 2010. The plan uses the ‘biosecurity approach’ (DPI 2009b), as its rationale. Based on data and information reviewed and risk assessments undertaken during RCS development, implementation of the invasive plants and animals plan is a high priority for the East Gippsland region.

Of particular importance is the establishment of an integrated multi-agency approach to detecting and eradicating new and emerging invasive plants and animals before they become established. Such an approach is essential to achieving the priority objectives in the preceding four programs which were focused on maintaining:

- the productive capacity of agricultural land
- the high quality of large areas of native vegetation.

Table 6.3.1 Objectives and management actions relating to invasive plants and animals

Objectives (20-year)		Management actions (Six-year)	
RW1	Establish an effective biosecurity approach to invasive plants and animals management in East Gippsland	RW1.1	Implement the East Gippsland Invasive Plants and Animals Plan (EGCMA 2011).
		RW1.2	Investigate and quantify the effect of deer on high value natural assets and plan appropriate control measures.
		RW1.3	Develop urgent response protocols (or publicise where existing) for new and emerging invasive plants and animals.
		RW1.4	Investigate and prioritise actions to manage the changing distribution of new and emerging plants and animals as a result of climate change.
		RW1.5	Establish a process to facilitate interagency cooperation for new invasive plants and animals

Component 2: Soils

Based on data and information reviewed and risk assessments undertaken during RCS development, a regional approach to managing the Soil/land asset is required. While different objectives apply to soils on private and public land, the regional strategic approach is the maintenance of soil health.

Table 6.3.2 Objectives and management actions relating to soils

Objectives (20-year)		Management actions (Six-year)	
Soils on private land			
RW2	Maintenance of the productive values and stability of agricultural land and soils	RW2.1	Encourage the adoption of best management practices.
		RW2.2	Assess agricultural land for its viability and ability to maintain its future productivity under changing climatic conditions.

Component 3: Pathogens

Based on discussions undertaken during RCS development, a regional approach to managing the spread of pathogens in terrestrial environments is required.

Table 6.2.3 Objectives and management actions relating to pathogens

Objectives (20-year)		Management actions (Six-year)	
RW3	Limit the risk of pathogen movement (e.g. Myrtle Rust and Phytophthora root rot) in terrestrial environments	RW3.1	Share knowledge and increase awareness among agencies on location of priority pathogens.
		RW3.2	Educate field staff on pathogen identification.
		RW3.3	Encourage ongoing monitoring by land managers.
		RW3.4	Develop protocols when occurrence detected.
		RW3.5	Ensure that compliance with appropriate environmental code of practice for the management of phytophthora is audited

Component 4: Fire

Based on the regional approach to fire outlined in Section 6.2, and data and information reviewed and risk assessments undertaken during RCS development, some region-wide objectives for fire management were identified.

Table 6.3.4 Objectives and management actions relating to fire management

Objectives (20-year)		Management actions (Six-year)	
RW4	Implement fire management regimes that promote the resilience and health of natural ecosystems	RW4.1	Implement the <i>Gippsland Regional Strategic Fire Management Plan</i> (GRSFMP, 2011) and the <i>Code of Practice for Bushfire Management on Public Land</i> (DSE 2006).
		RW4.2	Support the delivery of a fire management program which aims to minimise the impact of major bushfires on human life, communities and infrastructure while maximising biodiversity outcomes.

Program implementation

Implementation arrangements for the RCS are described in Chapter 7.

Principal partners in delivery of the region-wide program will be Parks Victoria, DEPI, CFA, DTPLI, EGSC, Gunaikurnai Land and Waters Aboriginal Corporation, other traditional owners, Landcare, and delegated Crown land managers (e.g. Committees of Management (CoMs)).

The coordinating agency will be the EGCMA.

6.4 Gippsland Lakes and Hinterland program

Overview

The Gippsland Lakes and Hinterland program aims to balance the maintenance of land productivity and sustainable growth with improving natural values. It applies to all land, regardless of management or ownership.

The Gippsland Lakes and Hinterland landscape area includes:

- the eastern section of the Gippsland Lakes system including Lake Victoria and Lake King
- the adjoining terrestrial environments extending west to the catchment of Toms Creek, east to Lakes Entrance, and bounded to the north by the foothills (Figure 6.4.1).

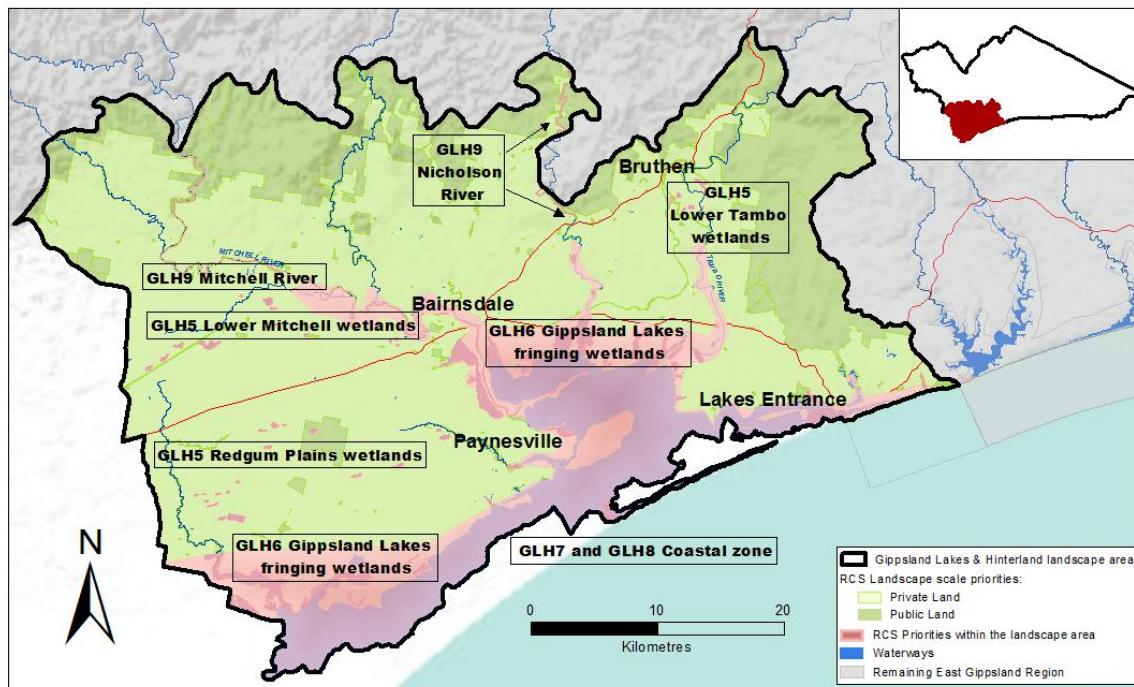


Figure 6.4.1 Gippsland Lakes and Hinterland area showing priority areas

The Gippsland Lakes and its fringing wetlands are internationally recognised through listing under the Ramsar Convention, and are of high social and environmental value to the region. The lower reaches of major tributary river systems, including the heritage listed Mitchell River, flow through the program area and are major contributors of freshwater inflows to the Gippsland Lakes.

The hinterland supports a diverse range of important flora and fauna, including many rare and threatened species. Habitat for these species is often limited to remnant areas of native vegetation, including the threatened Gippsland Red Gum Grassy Woodland and Associated Native Grassland ecological community, which is listed under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

The Gippsland Lakes and Hinterland landscape area is the most modified part of the East Gippsland region, and is the centre of development and tourism. It includes the urban centres of Bairnsdale, Lakes Entrance and Paynesville. The anticipated growth in population has the potential to affect significant natural values, including threatened species and communities, water regimes and water quality. Increased development also has the potential to adversely affect the productive capacity of agricultural land in the area.

The Western section of the Gippsland Lakes system, including Lake Wellington and the section of the 90 Mile beach west of Lakes Entrance, is in the West Gippsland CMA region.

Condition

The assets of the Gippsland Lakes and Hinterland landscape area are generally in moderate to good condition. (EGCMA 2009, GLCT 2011, EGCMA 2010a, DSE 2004). Based on data and information reviewed and risk assessments undertaken during RCS development, it is not clear if current management is sufficient to arrest decline in native vegetation condition, but significant decline in condition is likely without continued active management.

Values

The Gippsland Lakes and Hinterland landscape area has significant environmental values within the Coastal, Terrestrial environments, Estuaries, Rivers, Wetlands, and Soil/land asset classes.

The majority of the agricultural land in the East Gippsland region lies within the area, including the highly productive floodplains of the Mitchell and Tambo rivers, covering 54% of the landscape area.

The Gippsland Lakes and their fringing wetlands are the receiving environments for all water from the hinterland. There is, therefore, a strong relationship between the health of the Gippsland Lakes and wetlands and the environmental condition of the hinterland.

Features of significance and the criteria by which they have been selected (see Section 5.4), are summarised below.

Table 6.4.1 Features of significance in the Gippsland Lakes and Hinterland

Significance criteria	Type of feature	Description and location
Formally recognised significance	National parks and reserves	Approximately 7.5% of the Gippsland Lakes and Hinterland area is part of a national park or reserve (~15,640 ha).
	Trust for Nature covenants	Approximately 0.8% of the Gippsland Lakes and Hinterland area is covenanted between landholders and Trust for Nature (~1,750 ha).
	Ramsar listed wetland	Gippsland Lakes (Estuary) and fringing wetlands including Lake Bunga
	Directory of Important Wetlands	Lake King wetlands, Lake Victoria wetlands, Lindenow Wildlife Sanctuary, Macleod Morass, Tambo River, Lake Bunga
	Victorian Heritage River	Mitchell River
	Special protection zones (SPZs) and special management zones (SMZs)	Approximately 6% of the Gippsland Lakes and Hinterland area is part of either an SPZ or SMZ, based on environmental values (~12,730 ha).
Rare or threatened species, communities and ecosystems	EPBC ⁺ listed ecological communities	EPBC ⁺ listed critically endangered ecological communities: <ul style="list-style-type: none"> • Gippsland Red Gum Grassy Woodland and Associated Native Grassland ecological community • Littoral Rainforest and Coastal Vine Thickets.
	Rare or threatened species	Recorded in the Gippsland Lakes and Hinterland area: Flora: <ul style="list-style-type: none"> • 10 endangered and 19 vulnerable species on the DEPI Victorian advisory list • 4 endangered and 6 vulnerable EPBC⁺ listed species • 17 FFG* listed species. Fauna: <ul style="list-style-type: none"> • 5 critically endangered, 22 endangered and 37 vulnerable species on the DEPI Victorian advisory list • 4 endangered and 16 vulnerable EPBC⁺ listed species • 56 FFG* listed species.
	Significant ecological vegetation classes	Approximately 20% (~40,950 ha) of the Gippsland Lakes and Hinterland area is covered by EVCs with a bioregional conservation status of rare, endangered, depleted or vulnerable, of which 0.4% is rare (~890 ha), 6.1% is endangered (~12,670 ha), 5.8% is depleted (~12,020 ha), and 7.4% is vulnerable (~15,380 ha) based on modelled state data.
Condition	River and stream condition	Of the 14 river reaches in the Gippsland Lakes and Hinterland area, 4 reaches (29%) are in good condition, and none are in excellent condition.

Significance criteria	Type of feature	Description and location
	Wetland condition	Of the 222 wetlands in the Gippsland Lakes and Hinterland area, the condition of only 4 have been measured, and of these 1 (25%) is in good condition, and none are in excellent condition.
	Native vegetation condition	Approximately 35% of the area of native vegetation in the Gippsland Lakes and Hinterland area is in 'good' condition (~72,460 ha) based on modelled habitat hectares scores ≥ 60 , from state datasets.
Productive land	Productive agricultural land	Approximately 54% of the Gippsland Lakes and Hinterland area is productive agricultural land (~108,510 ha).
Other	Geological significance	Over 12,400 ha identified as areas of geological significance, primarily surrounding the Gippsland Lakes (Rosengren 2011). Internationally recognised feature of geomorphic significance (Mitchell River Silt Jetties).

⁺EPBC – Environmental Protection and Biodiversity Conservation Act 1999 (Cwlth); * FFG – Flora and Fauna Guarantee Act 1988

Threats

Within the Gippsland Lakes and Hinterland landscape area, risk assessments undertaken during RCS development showed that:

- the principal threats to important environmental and land production values are:
 - invasive plants and animals (particularly to threatened species and ecological communities)
 - increasing salinity in estuaries and wetlands
 - degraded water quality (nutrients and sediment)
 - the effects of grazing stock on riparian and wetland vegetation
 - more variable freshwater inflows and their effect on vegetation communities (wetlands) and significant fauna
 - soil compaction, salinity and erosion
 - acid sulfate soils
 - disturbance from recreational activities
 - loss of native vegetation remnants
 - development and population growth
 - coastal erosion.
- priority emerging threats with the potential to significantly affect environmental and land production values are:
 - the effects of climate change on sea level rise
 - reductions in freshwater flows
 - inappropriate fire regimes
 - the spread and increasing populations of invasive animals (particularly deer)
 - continued change in salinity levels in the Gippsland Lakes and its effect on ecological communities, particularly in wetland and estuarine environments.

Objectives

The objectives and management actions for the Gippsland Lakes and Hinterland landscape area are summarised below. Objectives which apply to the entire landscape area are described first ('Landscape scale'), followed by objectives which apply to specific areas (see Figure 6.4.1).

Table 6.4.2 Objectives and management actions for the Gippsland Lakes and Hinterland (not in priority order)

Objectives (20-year)		Management actions (six-year)
Apply across the whole landscape area		
GLH1	Targeted improvement of the productive values and stability of agricultural land and soils	Encourage best practice, maintaining appropriate ground cover, minimising the threat from erosion in accordance with the <i>East Gippsland Soil Erosion Management Plan</i> (DPI 2009a), by doing the following:
		GLH1.1 • undertake soil testing and encourage appropriate response where remedial action or change of practice is advisable.
		GLH1.2 • encourage appropriate grazing management and species selection and management.
		GLH1.3 • establish perennial vegetation in vulnerable areas on the Redgum Plains.
		GLH1.4 • remediate gully and tunnel erosion at high priority sites identified in the <i>East Gippsland Soil Erosion Management Plan</i> (DPI 2009a)
GLH2	Targeted improvement of the condition, security, diversity and connectivity of native vegetation	Prepare a 10 year plan that establishes priorities for investment into the establishment and maintenance of areas of native vegetation in the Gippsland Lakes and Hinterland, particularly on the Redgum Plains, with focus on the following:
		GLH2.1 • existing native vegetation patches on the Redgum Plains with potential for connection
		GLH2.2 • native vegetation where land meets water in riparian, wetland and estuarine environments (e.g. stream corridors, fringing wetlands of the Gippsland Lakes)
		GLH2.3 • areas susceptible to wind erosion.
		GLH2.4 Develop and improve partnerships to better integrate the planning and delivery of works and programs among all partners within the region and across regional boundaries and to foster shared ownership and responsibility, and where opportunities are available, on freehold land in partnership with landholders.
		GLH2.5 Investigate opportunities for a multi-region approach to further address landscape scale issues (particularly in and around the Gippsland Lakes)
		GLH2.6 Prioritise invasive plant and animal programs of surveillance, monitoring and treatment in accordance with the <i>East Gippsland Invasive Plants and Animals Plan</i> (EGCMA 2011).
GLH3	Targeted improvement of the status of threatened species and communities	Prioritise protection and recovery of threatened species and communities, to include the following:
		GLH3.1 • manage priority threatened species and communities that require direct intervention to support their recovery
		GLH3.2 • implement direct interventions where needed, as guided by recovery plans and action statements
		GLH3.3 • improve integration of threatened species and community recovery activities with other land management programs.
		GLH3.4 Prioritise invasive plant and animal programs of surveillance, monitoring and treatment in accordance with the <i>East Gippsland Invasive Plants and Animals Plan</i> (EGCMA 2011).

Objectives (20-year)		Management actions (six-year)	
GLH4	Targeted improvement of the water quality and freshwater flow regime of the Gippsland Lakes	GLH4.1	Prepare and implement the <i>Gippsland Lakes Environmental Strategy</i> (GLMAC, in prep) and the <i>Regional Waterway Management Strategy</i> (EGCMA, in prep)
		GLH4.2	Implement the <i>Gippsland Region Sustainable Water Strategy</i> (DSE 2011c) and the <i>East Gippsland Soil Erosion Management Plan</i> (DPI 2009a).
		GLH4.3	Complete the current study (Lindenow valley water security project) on the Mitchell River.
Apply to only part of the landscape area			
GLH5	Improved knowledge of location, condition and risks to wetlands on the Redgum Plains, Lower Mitchell and Lower Tambo rivers	GLH5.1	Identify location and conduct condition assessment of wetlands.
		GLH5.2	Plan future measures to improve condition and address risks.
GLH6	Targeted provision of appropriate freshwater and salinity regimes for selected fringing wetlands of the Gippsland Lakes	GLH6.1	Identify appropriate wetlands for action, which may include those with lower connectivity to the lakes and those close to alternative freshwater sources and implement appropriate regime, where feasible.
GLH7	Increased sustainability of land use, with development in appropriate nodes along the Gippsland Lakes coastline	GLH7.1	Prepare and implement the <i>Gippsland Lakes Environmental Strategy</i> (GLMAC, in prep), and support the preparation and implementation of the <i>Gippsland Integrated Land Use Plan</i> (DTPLI, in prep)
		GLH7.2	Improve integration between NRM agencies and local government and planning within and among regions.
		GLH7.3	Improve consideration and knowledge of natural values, high value agricultural productive land and potential acid sulfate soils in local government planning, to ensure that development occurs in appropriate nodes.
		GLH7.4	Ensure that NRM agency involvement in future planning (review of <i>Municipal Strategic Statement</i> (East Gippsland Shire Council 2006)).
GLH8	Plan for adaptation of Gippsland Lakes communities to changing conditions along the coastline	GLH8.1	Complete adaptation planning for Gippsland Lakes communities led by the East Gippsland Shire.
		GLH8.2	Prepare and implement the <i>Gippsland Lakes Environmental Strategy</i> (GLMAC, in prep).
GLH9	Targeted improvement in the condition of the Nicholson and Mitchell rivers	GLH9.1	Develop and improve partnerships to foster shared ownership and responsibility for sites and to better integrate the planning and delivery of works and programs.
		GLH9.2	Complete riparian connection along the river from source to lakes through partnerships with landholders, stock exclusion, revegetation and invasive plant and animal programs of surveillance, monitoring and treatment.

Program implementation

Principal partners in the delivery of the Gippsland Lakes and Hinterland program will be the Gippsland Lakes Ministerial Advisory Committee, DEPI, Parks Victoria, DTPLI, Gippsland Coastal Board, EGSC, East Gippsland Water, Gippsland Ports, Gunaikurnai Land and Waters Aboriginal Corporation, Gippsland Plains Conservation Management Network, Trust for Nature, Southern Farming Systems, Greening Australia, Landcare, delegated Crown land managers (e.g. CoMs), and other community groups and landholders.

The coordinating agency will be the EGCMA.

Program delivery will be coordinated with the WGCMA.

Implementation arrangements for the RCS are described in Chapter 7.

6.5 Gippsland Lakes Upper Catchment program

Overview

The Gippsland Lakes Upper Catchment program is an integrated landscape scale program for managing the significant natural assets of the upper catchments of the Gippsland Lakes which are within the East Gippsland region. It applies to all land, regardless of management or ownership. The program is focused on maintaining the condition of this significant landscape, with its large and continuous native vegetation communities and ecosystems, by taking a ‘whole of landscape’ approach to addressing threats.

The Gippsland Lakes Upper Catchment landscape area includes the upper catchments of the Mitchell, Nicholson and Tambo rivers. It is bounded to the north by the Great Dividing Range, and to the east and west by catchment boundaries. The southern boundary is the foothills to the north of the Gippsland plains (Figure 6.5.1) The area is strongly connected to, and supports the values of, the Gippsland Lakes and Hinterland landscape area downstream (described in Section 6.4). Water from these catchments provides a range of beneficial uses to downstream communities and environments.

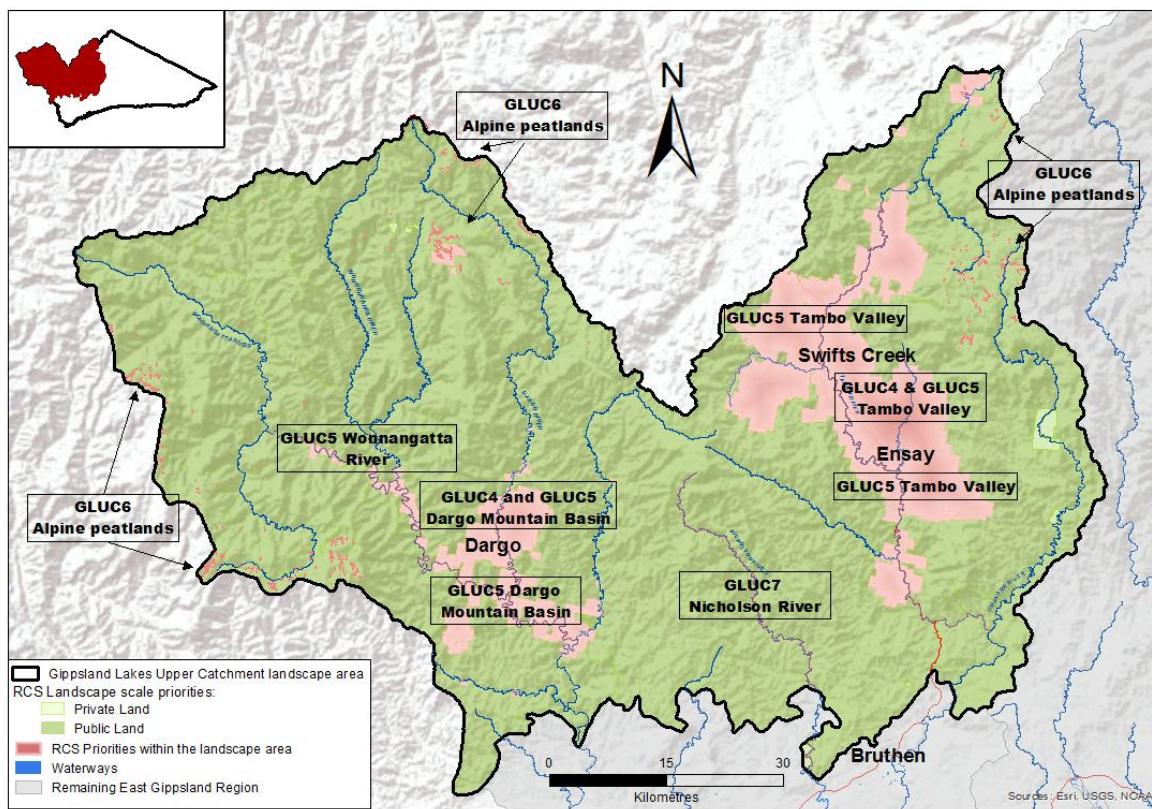


Figure 6.5.1 Gippsland Lakes Upper Catchment landscape area showing priority areas

The majority of land within the area is forested public land, including the Alpine National Park and the heritage listed Mitchell and Wonnangatta rivers. This environment is home to many rare and threatened species.

Areas of land used for agriculture, largely devoid of trees, sit within the large areas of native forest and woodland. They are located primarily in river valleys and are mostly used for agricultural production. They include the Dargo and Wonnangatta valleys in the Mitchell catchment, and Ensay and Swifts Creek in the Tambo Valley.

Condition

The assets of the Gippsland Lakes Upper Catchment area are generally in good environmental condition (EGCMA 2009, GINRF 2011).

Based on data and information reviewed and risk assessments undertaken during RCS development, the current condition is being maintained in the majority of the program area. Deteriorating condition under current management is being observed in some areas. In the absence of continued active management, condition is likely to decline in particular areas and ecosystems, given the extensive scale of disturbance (floods and bushfire) in recent years.

Values

The Gippsland Lakes Upper Catchment landscape area contains significant environmental values within the Terrestrial environments, Rivers, Wetlands, and Soil/land asset classes. About 16% of the area is productive agricultural land.

The area has high environmental values because of its size, and the limited extent of modification or disturbance from human activities.

Features of significance and the criteria by which they have been selected (see Section 5.4), are summarised below.

Table 6.5.1 Features of significance in the Gippsland Lakes Upper Catchment

Significance criteria	Type of feature	Description and location
Formally recognised significance	National parks and reserves	Approximately 26.6% of the Gippsland Lakes Upper Catchment area is part of a national park or reserve (~185,590 ha).
	Trust for Nature covenants	Approximately 0.3% of the Gippsland Lakes Upper Catchment area is covenanted between landholders and Trust for Nature (~2,210 ha).
	Directory of Important Wetlands	Nunniong Plateau peatlands, Wongungarra River, Wonnangatta River
	Victorian Heritage River	Mitchell and Wonnangatta rivers
	Special protection zones and special management zones	19% of the Gippsland Lakes Upper Catchment area is part of either an SPZ or SMZ, based on environmental values (134,925 ha).
Rare or threatened species, communities and ecosystems	EPBC ⁺ listed ecological communities	EPBC ⁺ listed critically endangered ecological communities: • White Box –Yellow Box – Blakely's Red Gum Grassy Woodland and Derived Native Grassland. EPBC ⁺ listed endangered ecological communities: • Alpine Sphagnum Bogs and Associated Fens • Silurian Limestone Pomaderris Shrubland of the South East Corner and Australian Alps Bioregion.
	Rare or threatened species	Recorded in the Gippsland Lakes Upper Catchment area: Flora: • 1 presumed extinct, 10 endangered and 55 vulnerable species on the DEPI Victorian advisory list • 1 endangered and 16 vulnerable EPBC ⁺ listed species • 33 FFG* listed species. Fauna: • 9 critically endangered, 8 endangered and 21 vulnerable species on the DEPI Victorian advisory list • 7 endangered and 7 vulnerable EPBC ⁺ listed species • 37 FFG* listed species.

Significance criteria	Type of feature	Description and location
	Significant EVCs	Approximately 7.9% (~55,350 ha) of the Gippsland Lakes Upper Catchment area is covered by EVCs with a bioregional conservation status of rare, endangered, depleted or vulnerable, of which 1.6% is rare (~11,020 ha), 0.2% is endangered (~1,150 ha), 4.2% is depleted (~28,960 ha), and 2.0% is vulnerable (~14,210 ha) based on modelled state data.
Condition	River and stream condition	Of the 35 river reaches in the Gippsland Lakes Upper Catchment area, 15 reaches (43%) are in good condition, and 8 reaches (23%) are in excellent condition.
	Wetland condition	Of the 578 wetlands in the Gippsland Lakes Upper Catchment area, the condition of only 4 have been measured, and of these 1 (25%) is in good condition, and 3 (75%) are in excellent condition.
	Native vegetation condition	Approximately 89% of the area of native vegetation in the Gippsland Lakes Upper Catchment area is in 'good' condition (622,450 ha) based on modelled habitat hectares scores ≥ 60 , from state datasets.
Productive land	Productive agricultural land	16% of the Gippsland Lakes Upper Catchment area is productive agricultural land (108,510 ha).

* NFSR – Natural features and scenic reserve; ⁺EPBC – Environmental Protection and Biodiversity Conservation Act 1999 (Cwlth); ^{*}FFG – Flora and Fauna Guarantee Act 1988

Threats

Within the Gippsland Lakes Upper Catchment area, risk assessments undertaken during RCS development showed that:

- the principal threats affecting important land production and natural values are:
 - soil erosion
 - inappropriate fire regimes
 - cleared riparian zones
 - invasive plants and animals – particularly predators (dogs, foxes) and hard hooved grazers (horses, deer, cattle, pigs and goats)
 - soil acidity and compaction.
- the priority emerging threat with the potential to significantly affect environmental and land production values within the Gippsland Lakes Upper Catchment landscape area is the emergence of new pest plant and animal species.

Objectives

The priority management objectives, and their associated management actions developed for the Gippsland Lakes Upper Catchment landscape area are summarised below.

Objectives which apply to the entire Gippsland Lakes Upper Catchment area are described first ('Landscape scale'), followed by objectives which apply to specific areas (Figure 6.5.1).

Table 6.5.2 Objectives and management actions for the Gippsland Lakes Upper Catchment (not in priority order)

Objectives (20-year)		Management actions (six-year)
Apply across the whole landscape area		
GLUC1	Maintenance and targeted improvement of the condition, security, diversity and integrity of natural ecosystems and the status of threatened species and communities	Prioritise protection and recovery of threatened species and communities, to include the following:
		GLUC1.1 • manage priority threatened species and communities that require direct intervention to support their recovery.
		GLUC1.2 • implement direct interventions where needed, as guided by recovery plans and action statements.
		GLUC1.3 • improve integration of threatened species and community recovery activities with other land management programs.
		GLUC1.4 Prioritise invasive plant and animal programs of surveillance, monitoring and treatment in accordance with the <i>East Gippsland Invasive Plants and Animals Plan</i> (EGCMA 2011).
		GLUC1.5 Develop and improve partnerships to better integrate the planning and delivery of works and programs within the region and across regional boundaries.
		GLUC1.6 Investigate opportunities for a multi-region approach to further address landscape scale issues (particularly in alpine environments and the Gippsland Lakes).
GLUC2	Maintenance of soil condition and stability on public land	Reduce erosion from soils on public land in particular after intense bushfires followed by high runoff events, (reducing offsite effects, while ensuring public safety) by doing the following:
		GLUC2.1 • prioritise appropriate road maintenance regimes for the overall road and tracks network on public land
		GLUC2.2 • maintain road and tracks network condition to support fire management
		GLUC2.3 • ensure that compliance with fire codes of practice is audited (bushfire and planned burning)
		GLUC2.4 • ensure that compliance with codes of practice for timber haulage and harvesting is audited
		GLUC2.5 • use 'rapid risk assessment methods' for natural disaster recovery.
GLUC3	Targeted protection of the water quality and freshwater flow regime of the Gippsland Lakes	GLUC3.1 Implement the <i>Gippsland Region Sustainable Water Strategy</i> (DSE 2011c) and the <i>East Gippsland Soil Erosion Management Plan</i> (DPI 2009a).
		GLUC3.2 Prepare and implement the <i>Gippsland Lakes Environmental Strategy</i> (GLMAC, in prep), and the <i>Regional Waterway Management Strategy</i> (EGCMA, in prep).
Apply to only part of the landscape area		
GLUC4	Targeted improvement of the productive values and stability of the Dargo Mountain Basin and Tambo Valley agricultural land and soils	Encourage best practice, maintaining appropriate ground cover, minimising the threat from erosion in accordance with the EGSEMP by doing the following:
		GLUC4.1 • undertake soil testing and encourage appropriate response where remedial action or change of practice is advisable
		GLUC4.2 • encourage appropriate grazing management and species selection and management
		GLUC4.3 • remediate gully and tunnel erosion at high priority sites identified in the EGSEMP.
GLUC5	Targeted improvement of the condition, security, diversity and connectivity of native vegetation	GLUC5.1 Develop and improve partnerships to foster shared ownership and responsibility for sites with landholders and to better integrate the planning and delivery of works and programs among all partners.

Objectives (20-year)	Management actions (six-year)		
within the Dargo Mountain Basin and Tambo Valley, and along the Wonnangatta River	GLUC5.2	Improve condition of the Upper Mitchell, Upper Tambo, Dargo and Wonnangatta rivers through partnerships with landholders, stock exclusion, revegetation and invasive plant and animal programs of surveillance, monitoring and treatment.	
	GLUC5.3	Prioritise and improve the condition and extent of rare and threatened vegetation communities in the Tambo Valley.	
GLUC6 Targeted improvement of the condition of Alpine peatlands	GLUC6.1	Manage and where possible, reduce the effects of disturbance caused by hard hooved grazers, invasive flora and visitors on Alpine peatlands.	
	GLUC6.2	Apply appropriate fire management regimes and practices around Alpine peatlands.	
	GLUC6.3	Implement actions identified in the <i>Victorian Peatlands Spatial Action Plan</i> (Parks Victoria, in prep).	
GLUC7 Targeted improvement of the condition of the waterways in the upper catchment to the Gippsland Lakes, particularly along the Mitchell and Nicholson rivers	GLUC7.1	Develop and improve partnerships to foster shared ownership and responsibility for sites and to better integrate the planning and delivery of works and programs.	
	GLUC7.2	Complete riparian connection along the rivers from source to lakes through partnerships with landholders, stock exclusion, revegetation and invasive plant and animal programs of surveillance, monitoring and treatment.	
	GLUC7.3	Support the removal of the Nicholson River dam.	

Program implementation

Principal partners in the delivery of the Gippsland Lakes Upper Catchment program will be the WGCMA, North East CMA, Gippsland Lakes Management Advisory Committee, Parks Victoria, DEPI, WSC, EGSC, Gunaikurnai Land and Waters Aboriginal Corporation, Conservation Management Network, Trust for Nature, Landcare, delegated Crown land managers (e.g. CoMs), and other community groups and landholders.

The coordinating agency will be the EGCMA.

Program delivery will be coordinated with the WGCMA and North East CMA.

Implementation arrangements for the RCS are described in Chapter 7.

6.6 East Coast program

Overview

The East Coast program is an integrated landscape scale program for managing the significant natural assets of the area. It applies to all land, regardless of management or ownership. The program is focused on maintaining natural assets in the landscape in good condition, while facilitating community and recreational use.

The East Coast landscape area includes East Gippsland's open coastline, its adjoining coastal environments, and marine habitats. The area defined includes Lake Tyers at its western margin, and extends east to the New South Wales border (Figure 6.6.1).

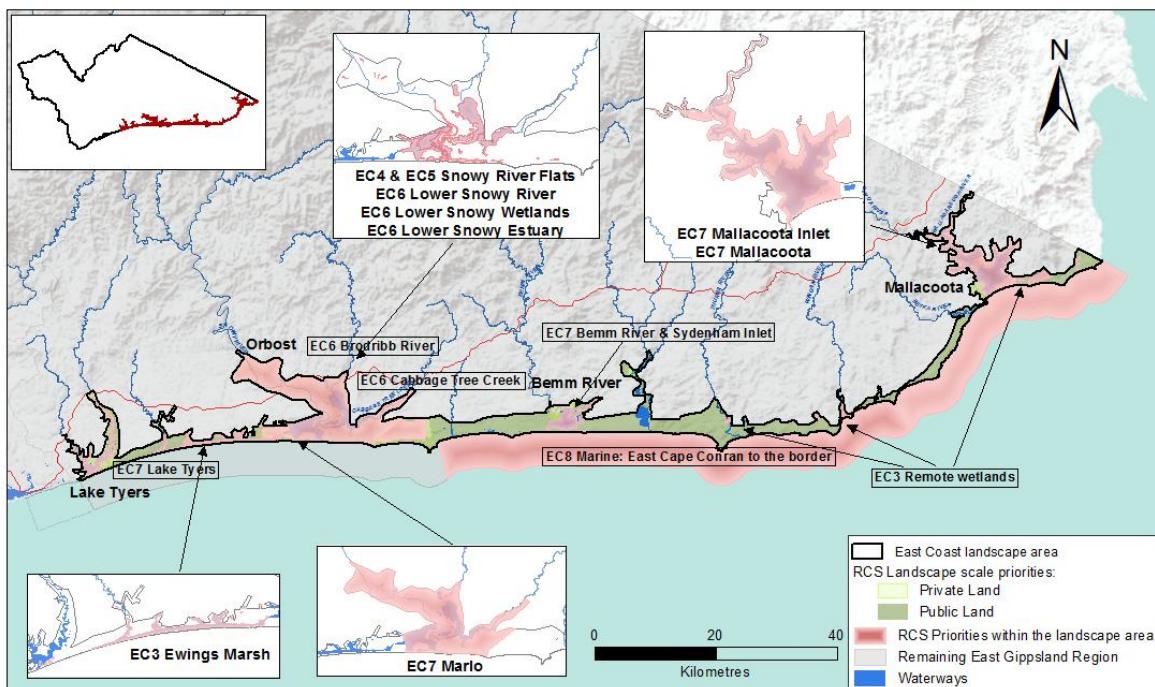


Figure 6.6.1 East Coast landscape area showing priority areas

The inland extent of the program area is defined by landscapes that are ‘functionally related’ to the coast. The program area includes significant and diverse coastal, estuarine, marine and related freshwater and terrestrial ecosystems.

The majority of land within the East Coast landscape area is within protected areas or conservation reserves, including the internationally listed UNESCO Croajingolong Biosphere Reserve and Lake Tyers which is listed under the Ramsar Convention. Other areas include Ewings Marsh Wildlife Reserve, the Snowy River estuary, and Cape Conran Coastal Park. The eastern margin of the East Coast landscape area is within the Croajingolong National Park, and adjoins the Nardoo Nature Reserve in southern New South Wales. The adjoining marine environment includes Beware Reef Marine Sanctuary, and Point Hicks and Cape Howe marine parks.

The major areas of settlement are Mallacoota township, Orbost and the Snowy River floodplain and Marlo area. Smaller communities and settlements exist at Bemm River and Tamboon Inlet.

Condition

The assets of the East Coast landscape area are generally in good condition. (EGCMA 2009, EGCMA 2010b, GCB 2011, Edmunds et al 2010). Most catchments within and upstream of the East Coast area have low levels of modification and disturbance, resulting in natural flow regimes, healthy riparian ecosystems, and generally good water quality.

Based on data and information reviewed and risk assessments undertaken during RCS development, the condition of the area is being maintained under current management, but it is likely to decline without continued active management.

Values

The East Coast landscape area contains significant environmental values within the Coastal, Marine, Terrestrial environments, Estuaries, Rivers and Wetlands asset classes. About 18% of the area is productive agricultural land.

The environmental values within this area are high because of the extent of the area and the limited disturbance from human activities. The values reflect the importance of the interaction and co-dependence of ecosystems and is one of the reasons that much of the East Coast area is contained within national parks and reserves systems.

Features of significance and the criteria by which they have been selected (see Section 5.4), are summarised below.

Table 6.6.1 Features of significance in the East Coast

Significance criteria	Type of feature	Description and location
Formally recognised significance	National parks and reserves	Approximately 62.2% of the East Coast area is part of a national park or reserve (~41,160 ha).
	Trust for Nature covenants	Approximately 0.9% of the East Coast area is covenanted between landholders and Trust for Nature (~610 ha).
	Ramsar listed wetland	Lake Tyers (as part of the Gippsland Lakes Ramsar site)
	Directory of Important Wetlands	Lake Tyers, Lower Snowy River Wetlands System, Ewings Marsh (Morass), Mallacoota Inlet Wetlands, Sydenham Inlet Wetlands, Tamboon Inlet Wetlands, Genoa River, Benedore River, Thurra River
	Victorian Heritage River	Bemm River, Snowy River
	Special protection zones and special management zones	2% of the East Coast area is part of either an SPZ or SMZ, based on environmental values (1,201 ha).
Rare or threatened species, communities and ecosystems	EPBC ⁺ listed ecological communities	EPBC ⁺ listed critically endangered ecological communities: • Littoral Rainforest and Coastal Vine Thickets.
	Rare or threatened species	Recorded in the East Coast area: Flora: • 1 presumed extinct, 9 endangered and 38 vulnerable species on the DEPI Victorian advisory list • 1 endangered and 4 vulnerable EPBC ⁺ listed species • 17 FFG* listed species. Fauna: • 6 critically endangered, 18 endangered, and 42 vulnerable species on the DEPI Victorian advisory list • 1 critically endangered, 8 endangered and 13 vulnerable EPBC ⁺ listed species • 61 FFG* listed species.
	Significant EVCs	Approximately 14.1% (~9,300 ha) of the East Coast area is covered by EVCs with a bioregional conservation status of rare, depleted or vulnerable, of which 1.2% is rare (~820 ha), 4.6% is depleted (~3,040 ha), and 8.2% is vulnerable (~5,430 ha) based on modelled state data.
Condition	River and stream condition	Of the 29 river reaches in the East Coast area, 10 reaches (35%) are in good condition, and 5 reaches (17%) are in excellent condition.
	Wetland condition	Of the 140 wetlands in the East Coast area, the condition of only 4 have been measured, and of these none are in good condition, and 3 (75%) are in excellent condition.

Significance criteria	Type of feature	Description and location
	Native vegetation condition	Approximately 70% of the area of native vegetation in the East Coast area is in 'good' condition (46,110 ha) based on modelled habitat hectares scores ≥ 60 , from state datasets.
Productive land	Productive agricultural land	18% of the East Coast area is productive agricultural land (12,200 ha).
Other	DEPI marine assets	Cape Conran, Beware Reef, Point Hicks Reefs, Skerries Offshore Islands, Secret Beach Intertidal Reed, Bastion Point Intertidal Reef, Gabo Island, Cape Howe and Iron Prince Reef, Star Bank (granite outcrops), Croajingolong Reefs, Bemm River Reef Upwelling Communities, Mallacoota Inlet, Sydenham Inlet, Red Bluff – Shelley Beach.
	Geological significance	Over 35,400 ha identified as areas of geological significance, (Rosengren 2011).

⁺EPBC – Environmental Protection and Biodiversity Conservation Act 1999 (Cwlth); * FFG – Flora and Fauna Guarantee Act 1988

Threats

Within the East Coast landscape area, risk assessments undertaken during RCS development showed that:

- the principal current threats affecting important environmental and land production values are
 - invasive plants and animals
 - the elevated sediment levels in the Cann and Genoa rivers
 - the altered flow regime and increasing salinity in the Lower Snowy River
 - inappropriate fire regimes
 - disturbance from recreational activities
 - coastal erosion
 - the introduction of marine pests.
- priority emerging threats with the potential to significantly affect environmental and land production values within the East Coast area are:
 - the introduction and establishment of new pest plant and animal species (either from interstate or with changing climatic conditions)
 - the effects of climate change on sea level rise
 - threats from coastal development and uncontrolled access to the coast
 - threats from acid sulfate soils
 - threats of accelerated coastal erosion on susceptible ecological communities.

Objectives

The priority management objectives, and their associated management actions developed for the East Coast landscape area are summarised below.

Objectives which apply to the entire East Coast landscape area are described first ('Landscape scale') followed by objectives which apply to specific areas (Figure 6.6.1).

Table 6.6.2 Objectives and management actions for the East Coast (not in priority order)

Objectives (20-year)		Management actions (six-year)	
Apply across the whole landscape area			
EC1 Maintenance and targeted improvement of the condition, security, diversity and integrity of natural ecosystems and the status of threatened species and communities		Prioritise protection and recovery of threatened species and communities, to include the following:	
EC1.1		<ul style="list-style-type: none"> • manage priority threatened species and communities that require direct intervention to support their recovery 	
EC1.2		<ul style="list-style-type: none"> • implement direct interventions where needed, as guided by recovery plans and action statements 	
EC1.3		<ul style="list-style-type: none"> • improve integration of threatened species and community recovery activities with other land management programs 	
EC1.4		<ul style="list-style-type: none"> • support recovery of fauna threatened by fox predation by reducing fox abundance at a landscape scale. 	
EC1.5		Prioritise invasive plant and animal programs of surveillance, monitoring and treatment in accordance with the <i>East Gippsland Invasive Plants and Animals Plan</i> (EGCMA 2011).	
EC1.6		Develop and improve partnerships to better integrate the planning and delivery of works and programs within the region and across regional boundaries.	
EC1.7		Investigate opportunities for a multi-region approach to further address landscape scale issues.	
EC1.8		Develop and implement optimal fire management regime for coastal ecological communities.	
Manage the balance between recreational activity and maintaining natural values to include the following:			
EC1.9		<ul style="list-style-type: none"> • prioritise location of ‘access’ nodes to the coast, considering where there is potential for adverse effects on high natural values 	
EC1.10		<ul style="list-style-type: none"> • identify and implement actions derived from prioritisation which may include updating infrastructure or denying vehicle access. 	
EC2 Improved understanding of the effects of coastal processes and acceleration of these changes on susceptible species and communities with high natural values		EC2.1	Identify where acceleration of change in the coast and estuaries is likely to occur.
		EC2.2	Identify susceptible species and communities of high natural value.
		EC2.3	Establish a monitoring program for identified species and communities.
		EC2.4	Develop a plan to improve ability of species and communities to adapt to likely changes.
Apply to only part of the landscape area			
EC3 Improved knowledge of risks, and maintenance of the condition of wetlands between Lake Tyers and the Snowy River, near the Tharra and Wingan rivers, and east of Mallacoota		EC3.1	Conduct condition assessment.
		EC3.2	Conduct invasive plants and animals monitoring, assessment and treatment.
EC4 Targeted improvement of the productive values and stability of Lower Snowy agricultural land and soils		EC4.1	Assist landholders to adapt to increasing salinity in the lower parts of the floodplain.
		Encourage best practice, maintaining appropriate ground cover, minimising the threat from erosion in accordance with the <i>East Gippsland Soil Erosion Management Plan</i> (DPI 2009a), by doing the following:	
		EC4.2	<ul style="list-style-type: none"> • undertake soil testing and encourage appropriate response where remedial action or change of practice is advisable

Objectives (20-year)		Management actions (six-year)	
		EC4.3	<ul style="list-style-type: none"> encourage appropriate grazing management and species selection and management
EC5	Improved awareness of the implications of disturbing potential acid sulfate soils by the landholders of the lower Snowy agricultural land	EC5.1	<ul style="list-style-type: none"> survey and map potential acid sulfate soils in the Lower Snowy agricultural land to enable provision of advice
		EC5.2	<ul style="list-style-type: none"> provide for education of landholders and community on implications of disturbance of potential acid sulfate soils .
EC6	Targeted improvement of the condition, security, diversity and connectivity of wetland and riparian (estuarine and riverine) native vegetation in the Lower Snowy and Brodribb rivers and Cabbage Tree Creek	EC6.1	Develop and improve partnerships to foster shared ownership and responsibility for sites with landholders and to better integrate the planning and delivery of works and programs among all partners.
		EC6.2	Improve condition of the Lower Snowy and Brodribb rivers and of Cabbage Tree Creek through partnerships with landholders, stock exclusion, revegetation and invasive plant and animal programs of surveillance, monitoring and treatment.
		EC6.3	Prioritise protection and recovery of threatened species and communities.
EC7	Increased sustainability of land use, with development in appropriate nodes adjacent to townships along the East Coast	EC7.1	Support the preparation and implementation of the <i>Gippsland Integrated Land Use Plan</i> (DTPLI, in prep.).
		EC7.2	Improve integration between NRM agencies and local government and planning within and among regions.
		EC7.3	Improve consideration and knowledge of natural values, high value agricultural productive land and potential acid sulfate soils in local government planning, to ensure that development occurs in appropriate nodes.
		EC7.4	Ensure that NRM agency involvement in future planning (review of <i>Municipal Strategic Statement</i> (East Gippsland Shire Council 2006).
EC8	Improved knowledge of risks, and maintenance of the condition of the Croajingolong and Cape Howe marine assets	EC8.1	Identify species and habitats to use as indicator species and benchmarks for condition.
		EC8.2	Monitor and survey to investigate presence of pest species, and develop response protocols.
		EC8.3	Expand the range of sites currently monitored, to consider a wider variety of habitats, and continue monitoring existing sites

Program implementation

Principal partners in the delivery of the East Coast program will be Parks Victoria, Gippsland Coastal Board, DEPI, EGSC, DTPLI, Gunaikurnai Land and Waters Aboriginal Corporation, other traditional owners, Landcare, delegated Crown land managers (e.g. CoMs), and other community groups and landholders.

The coordinating agency will be the EGCMA.

Program delivery will be coordinated with the Southern Rivers CMA (New South Wales).

Implementation arrangements for the RCS are described in Chapter 7.

6.7 Far East Catchments program

Overview

The Far East Catchments program is an integrated landscape scale program for managing the significant natural assets of the catchments east of the Gippsland Lakes catchment. It applies to all land, regardless of management or ownership. The program is focused on maintaining the condition of this significant relatively undisturbed landscape, with its large and continuous extent of natural ecosystems, from the mountains to the coast.

The Far East Catchments landscape area includes the catchments of Lake Tyers and the Snowy River, through to the New South Wales border. The area ranges from sub-alpine and montane ecosystems to lowland foothills, forests and streams (Figure 6.7.1). Water from these catchments provides a range of beneficial uses to downstream communities and environments.

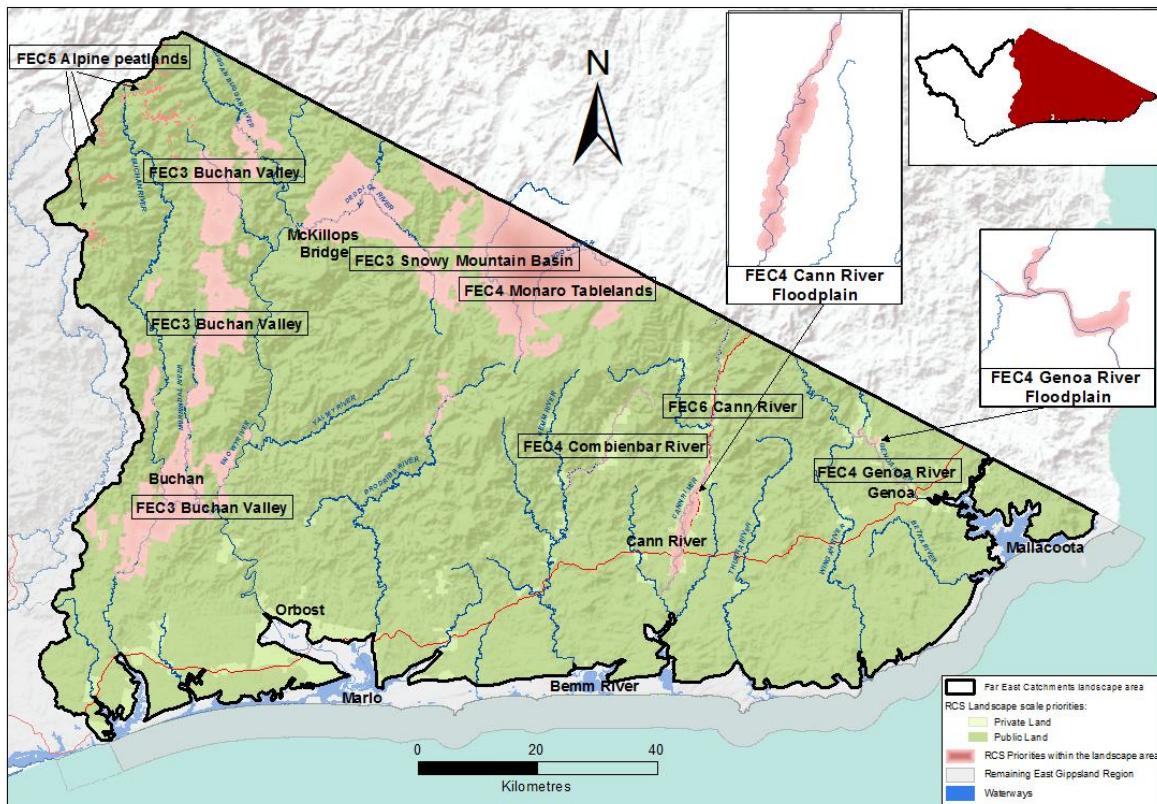


Figure 6.7.1 Far East Catchments landscape area showing priority areas

The Far East Catchments landscape area is characterised by large tracts of continuous native vegetation communities and ecosystems of highly quality, particularly rivers and streams. The majority of the area is public land, including the internationally listed UNESCO Croajingolong Biosphere Reserve, and significant areas such as the Croajingolong, Coopracambra, Errinundra, Snowy River and Alpine national parks.

Several areas of cleared land punctuate the landscape. These areas are used mostly for agricultural production. Most, such as Orbost, Cann River and Genoa, are located in river valleys. Isolated cleared areas in the uplands including Gelantipy and Amboyne are mostly used for grazing.

Five streams are recognised as Victorian ‘heritage rivers’, with the Snowy and Bemm rivers being recognised in their entirety. High value streams are a characteristic of the area, with many streams having largely unmodified catchments.

A number of streams cross the Victoria–New South Wales border, with the Snowy and Genoa rivers having the majority of their catchments in New South Wales.

Although largely unmodified, the values of the Far East Catchments area have the potential to be significantly affected by a number of new and emerging invasive plants and animals, including some from interstate.

Condition

The assets of the Far East Catchments landscape area are generally in good condition, except in some relatively small areas which have been modified (EGCMA 2009; GINRF 2011).

Based on data and information reviewed and risk assessments undertaken during development of the RCS, the current condition is being maintained in the majority of the program area. However, deteriorating condition under current management is being observed in some areas. In the absence of continued active management, condition is likely to decline in particular areas and ecosystems, particularly under the threat of invasive plants and animals.

Values

The Far East Catchments landscape area contains significant environmental values within the Terrestrial environments, Rivers, Wetlands, and Soil/land asset classes. About 11% of the area is productive agricultural land.

The dominant characteristics underpinning the high environmental value of the area are its large size, and the small extent of its modification. The area is strongly connected to, and supports the values of, the East Coast area downstream (described in Section 6.6).

Features of significance and the criteria by which they have been selected (see Section 5.4), are summarised below.

Table 6.7.1 Features of significance in the Far East Catchments

Significance criteria	Type of feature	Description and location
Formally recognised significance	National parks and reserves	Approximately 33.4% of the Far East Catchments area is part of a national park or reserve (~378,640 ha).
	Trust for Nature covenants	Approximately 0.1% of the Far East Catchments area is covenanted between landholders and Trust for Nature (~1,280 ha).
	Directory of Important Wetlands	Nunniong Plateau peatlands, Tea Tree Swamp (Delegate River), Genoa River, Bemm Goolengook, Arte, and Errinundra rivers, Snowy River, Suggan Buggan and Berrima rivers, Upper Buchan River
	Victorian Heritage River	Genoa River, Bemm, Goolengook, Arte and Errinundra Rivers, Snowy River, Suggan Buggan and Berrima Rivers, Upper Buchan River
	Special protection zones and special management zones	18% of the Far East Catchments area is part of either an SPZ or SMZ, based on environmental values (205,544 ha).
Rare or threatened species, communities and ecosystems	EPBC listed ecological communities	EPBC [~] listed critically endangered ecological communities: • White Box –Yellow Box – Blakely's Red Gum Grassy Woodland and Derived Native Grassland. EPBC [~] listed endangered ecological communities: • Alpine Sphagnum Bogs and Associated Fens • Natural Temperate Grasslands of the Southern Tablelands of NSW and the Australian Capital Territory.

Significance criteria	Type of feature	Description and location
	Rare or threatened species	Recorded in the Far East Catchments area: Flora: <ul style="list-style-type: none">• 2 presumed extinct, 35 endangered and 144 vulnerable species on the DEPI Victorian advisory list• 4 endangered and 15 vulnerable EPBC⁺ listed species• 61 FFG* listed species. Fauna: <ul style="list-style-type: none">• 6 critically endangered, 20 endangered and 39 vulnerable species on the DEPI Victorian advisory list• 8 endangered, and 12 vulnerable EPBC⁺ listed species• 65 FFG* listed species.
	Significant EVCs	Approximately 7.9% (~88,920 ha) of the area of native vegetation in the Far East Catchments area is covered by EVCs with a bioregional conservation status of rare, depleted or vulnerable, of which 1.3% is rare (~15,030 ha), 5.1% is depleted (~57,720 ha), and 1.4% is vulnerable (~15,860 ha) based on modelled state data.
Condition	River and stream condition	Of the 77 river reaches in the Far East Catchments area, 24 reaches (31%) are in good condition, and 37 (48%) are in excellent condition.
	Wetland condition	Of the 402 wetlands in the Far East Catchments area, the condition of only 4 have been measured, and of these 1 (25%) is in good condition, and 3 (75%) are in excellent condition.
	Native vegetation condition	Approximately 89% of the native vegetation in the Far East Catchments area is in 'good' condition (1,004,510 ha) based on modelled habitat hectares scores ≥ 60 , from state datasets.
Productive land	Productive agricultural land	11% of the Far East Catchments area is productive agricultural land (120,740 ha).

* NFSR – Natural features and scenic reserve; ⁺SSR – Streamside reserve; [~]EPBC – Environmental Protection and Biodiversity Conservation Act 1999 (CWLTH); * FFG – Flora and Fauna Guarantee Act 1988

Threats

Within the Far East Catchments landscape area, risk assessments undertaken during RCS development showed that:

- the principal current threats affecting important natural and land production values are:
 - soil erosion
 - inappropriate fire regimes
 - cleared riparian zone
 - invasive plants and animals – particularly predators (dogs, foxes) and hard hooved grazers (horses, deer, cattle, pigs and goats).
- the priority emerging threat with the potential to significantly affect environmental and land production values within the landscape area is the emergence of new pest plant and animal species.

Objectives

The priority management objectives, and their associated management actions developed for the Far East Catchments area are summarised below.

Objectives which apply to the entire Far East Catchments area are described first ('Landscape scale'), followed by objectives which apply to specific areas (Figure 6.7.1).

Table 6.7.2 Objectives and management actions for the Far East Catchments (not in priority order)

Objectives (20-year)		Management actions (six years)
Apply across the whole landscape area		
FEC1	Maintenance and targeted improvement of the condition, security, diversity and integrity of natural ecosystems and the status of threatened species and communities	Prioritise protection and recovery of threatened species and communities, to include the following:
		FEC1.1 • manage priority threatened species and communities that require direct intervention to support their recovery
		FEC1.2 • implement direct interventions where needed, as guided by recovery plans and action statements
		FEC1.3 • improve integration of threatened species and community recovery activities with other land management programs
		FEC1.4 • support recovery of fauna threatened by fox predation by reducing fox abundance at a landscape scale.
		FEC1.5 Prioritise invasive plant and animal programs of surveillance, monitoring and treatment in accordance with the <i>East Gippsland Invasive Plants and Animals Plan</i> (EGCMA 2011).
		FEC1.6 Develop and improve partnerships to better integrate the planning and delivery of works and programs within the region and across regional boundaries.
		FEC1.7 Investigate opportunities for a multi-region approach to further address landscape scale issues (particularly in alpine environments).
FEC2	Maintenance of soil condition and stability on public land	Reduce erosion from soils on public land in particular after intense bushfires followed by high run off events, (reducing offsite effects, while ensuring public safety) by doing the following:
		FEC2.1 • prioritise appropriate road maintenance regimes for the overall road and tracks network on public land.
		FEC2.2 • maintain road and tracks network condition to support fire management.
		FEC2.3 • ensure that compliance with fire codes of practice is audited (bushfire and planned burning).
		FEC2.4 • ensure that compliance with codes of practice for timber haulage and harvesting is audited.
		FEC2.5 • use 'rapid risk assessment methods' for natural disaster recovery.
Apply to only part of the landscape area		
FEC3	Targeted improvement of the productive values and stability of the Snowy Mountain Basin and Buchan Valley agricultural land and soils	Encourage best practice, maintaining appropriate ground cover, minimising the threat from erosion in accordance with the <i>East Gippsland Soil Erosion Management Plan</i> (DPI 2009a), by doing the following:
		FEC3.1 • undertake soil testing and encourage appropriate response where remedial action or change of practice is advisable
		FEC3.2 • encourage appropriate grazing management and species selection and management.
FEC4	Targeted improvement of the condition, security, diversity and connectivity of native vegetation within the Monaro Tablelands, floodplains of the Cann and Genoa rivers and along the Combienbar River	FEC4.1 Develop and improve partnerships to foster shared ownership and responsibility for sites with landholders and to better integrate the planning and delivery of works and programs among all partners.
		FEC4.2 Improve condition of the Cann floodplain, Combienbar floodplain, and Genoa floodplain through partnerships with landholders, stock exclusion, revegetation and invasive plant and animal programs of surveillance, monitoring and treatment.
		FEC4.3 Prioritise and improve the condition and extent of rare and threatened vegetation communities on the Monaro tablelands.

Objectives (20-year)		Management actions (six years)	
FEC5	Targeted improvement of the condition of Alpine peatlands	FEC5.1	Manage and where possible, reduce the effects of disturbance caused by hard hooved grazers, invasive flora and visitors on Alpine peatlands
		FEC5.2	Apply appropriate fire management regimes and practices around Alpine peatlands.
		FEC5.3	Implement actions identified in the <i>Victorian Peatlands Spatial Action Plan</i> (Parks Victoria, in prep.).
FEC6	Targeted improvement in the condition of the upstream reaches of the Cann River	FEC6.1	Develop and improve partnerships to foster shared ownership and responsibility for sites with landholders and to better integrate the planning and delivery of works and programs.
		FEC6.2	Improve condition of the upstream reaches of the Cann River through stabilisation works, partnerships with landholders, stock exclusion, revegetation and invasive plant and animal programs of surveillance, monitoring and treatment.

Program implementation

Principal partners in the delivery of the Far East Catchments program will be Parks Victoria, DEPI, EGSC, traditional owners, Genoa River Interstate Liaison Committee, New South Wales Office of Water, New South Wales Department of Environment and Heritage, Trust for Nature, Landcare, delegated Crown land managers (e.g. CoMs), other community groups and landholders.

The coordinating agency will be the EGCMA.

Program delivery will be coordinated with the Southern Rivers CMA (New South Wales).

Implementation arrangements for the RCS are described in Chapter 7.

7 Implementation, monitoring, evaluation and reporting

7.1 Implementation

Implementation planning

The EGCMA will prepare an RCS implementation planning framework by 30 December 2012 to ensure that the responsibilities for management actions are clearly established, implementation is focused and coordinated, and funding opportunities are identified. The framework will establish monitoring, evaluation and reporting (MER) requirements, and will be developed in conjunction with regional delivery partners.

The implementation plan will be regularly reviewed to maintain its currency and relevance. It will adapt to changes in resources, technology, sub strategy development and policy, and have the capacity to adapt to unforeseeable major disturbances such as fires or floods.

As described in Chapter 6, the objectives of the RCS and their associated management actions are framed in five programs – one which covers the entire region and four which are sub-regional. Many of the objectives that appear in one program have an associated objective in other programs. A table illustrating the associations and links between objectives and broader NRM themes is shown in Appendix 2.

Program working groups

The RCS will be implemented through partnerships involving:

- agencies with land management or other relevant legislated responsibilities in the five areas
- communities in the program areas
- other stakeholders such as non-government organisations, Landcare and other community groups.

To ensure that the RCS is implemented in an integrated manner, the EGCMA will establish program working groups (PWGs) made up of representatives from the delivery partners working on management actions associated with the five programs. This integration approach builds on previous and current collaboration practice in the region, evident most recently in the strong participation of delivery partners in the development of the RCS.

The program working groups will be responsible for coordinating specific aspects of RCS implementation within programs or themes (as shown in Appendix 2). These responsibilities will include developing:

- implementation targets
- action planning, updated annually
- targeted investment proposals
- integrated delivery arrangements
- coordinated monitoring and evaluation of implementation, including integrated reporting against targets
- adaptive management.

Targets

The ability to measure progress in RCS implementation will be improved by the setting of appropriate targets that express what management actions are intended to achieve over the

term of the RCS. Targets will be established to describe the expected cumulative results arising from project activities over a three-year to six-year time frame. Reporting against targets will have the additional benefit of showing the contribution of management actions to their associated objective.

To be effective as reporting and monitoring tools, targets need to be ‘SMART’ (Specific, Measurable, Agreed, Realistic, and Time-based). Thus, ‘By 2018, English Broom will be eradicated from the Wonnangatta–Moroka and Bogong management units of the Alpine National Park, such that only maintenance control will then be required’ is an example of how a target might be stated.

Once proposed by the program working groups and formally agreed to by the delivery partners concerned, targets will be endorsed by the EGCMA Board and incorporated into an East Gippsland target register. The target register will be monitored by the Board through progress reports provided by the working groups during the life of the RCS.

The 20-year objectives and the six-year management actions of the RCS will also be incorporated into the targets register. Any action plans developed during the term of the RCS will have objectives and targets which align with RCS objectives and their targets will be added to the target register.

Resourcing implementation

Investment proposals to support actions of the RCS will be developed as investment opportunities arise. Project proposals will be prepared in conjunction with delivery partners and will be structured to reflect the RCS regional programs and their associated themes.

RCS implementation will be influenced by available funding and resources. The implementation approach that will be applied in East Gippsland will coordinate the prioritisation of management actions so that maximum benefit is achieved with the resources that are available.

Throughout the implementation of the RCS the EGCMA will work with our delivery partners to bring the best available information tools to support the establishment of annual priorities e.g. in the case of threatened species, populations or communities, using the ABC database and other tools such as the NaturePrint strategic values map. We will also seek to better describe assets using updated and new spatial datasets and tools as they become available.

7.2 Monitoring, evaluation and reporting

The MER component of the RCS implementation planning framework will describe how the implementation will be monitored and how the effectiveness of the contribution of the management actions towards the land and water resource objectives of the RCS will be assessed. The MER process also provides a consistent basis for communicating implementation results to stakeholders and funding investors.

Catchment management authorities and DEPI are currently developing a new MER framework which will apply to all NRM activities in Victoria. The EGCMA will comply with the new framework when it is in place.

The RCS MER planning will use program logic to describe the expected cause and effect relationships between management actions and their immediate outputs, and longer term objectives concerning asset condition. Describing program logic will provide a framework to monitor and evaluate the effectiveness of RCS implementation.

The EGCMA will coordinate with partner agencies to collect and collate the data needed for effective monitoring, evaluating and reporting.

Monitoring

The EGCMA will monitor the implementation of the RCS by collecting and collating quantitative measures from regional NRM agencies and partners.

In particular, monitoring will focus on measuring progress towards targets set in the RCS implementation planning.

Monitoring will contribute to the ability to apply adaptive management and be undertaken in an integrated manner to reflect the nature of the region's program delivery (multiple delivery partners, multiple investment sources).

Evaluation

Program evaluation will be used to test the validity of assumptions that underpin the program logic about how and why particular management activities will contribute to the RCS objectives.

Data from our monitoring activities will be used to consider evaluation questions, designed to affirm or adapt the assumptions upon which the program logic relies.

Examples of evaluation questions are:

- To what extent were the strategy implementation actions completed (during the life of the RCS)?
- How effective were the implemented measures (actions)?
- How have completed actions contributed towards the agreed targets and RCS objectives?

Program evaluation will make a significant contribution to the three-year and six-year RCS reviews.

Reporting

It is recognised that all delivery partners have internal reporting obligations for activities they undertake and have various arrangements to meet these obligations. A role of the EGCMA is to ensure that reporting obligations are met for funding that is directed to the region via the EGCMA, and to coordinate the development of a regional picture that reflects the aggregate of activities by delivery partners that contribute to the implementation of the RCS.

Reporting on RCS implementation will involve annual reporting of RCS management actions to delivery partners, the EGCMA Board and DEPI, complemented by more comprehensive three-year and six-year reporting of progress towards targets.

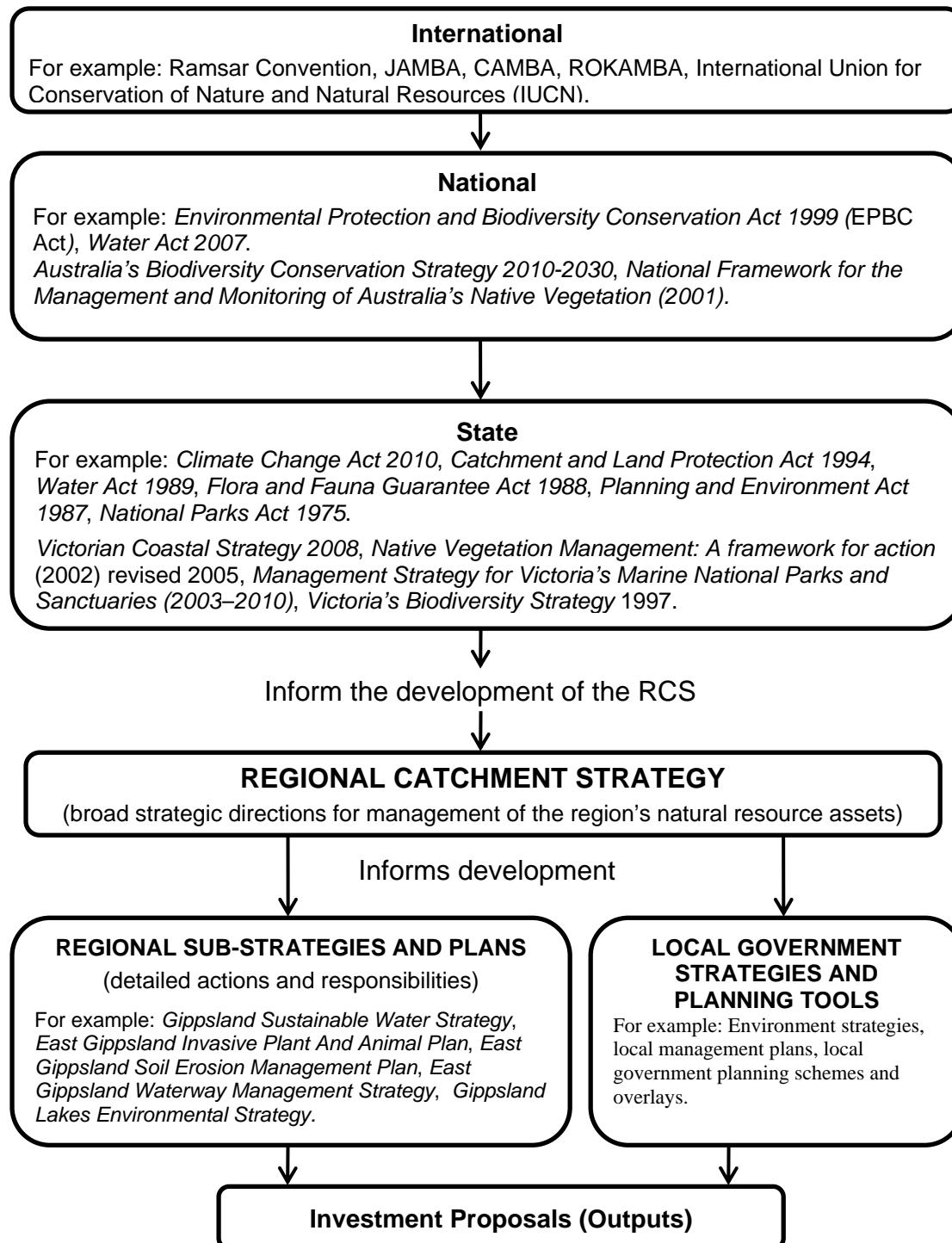
RCS review

In accordance with the CaLP Act, a mid-term evaluation of the RCS and its implementation will be completed by July 2015. A more comprehensive review of the RCS at the conclusion of its six-year term will be completed by July 2018.

Appendix 1

The RCS in context

This diagram shows how international, national and state legislation and agreements influence the RCS, and how the RCS relates to the development of regional and local government strategies and plans.



Appendix 2

This table shows the relationships between the RCS programs and various natural resource management themes.

Program Theme	Gippsland Lakes and Hinterland	Gippsland Lakes Upper Catchment	East Coast	Far East Catchments	Region-wide
Land health	GLH1. Targeted improvement of the productive values and stability of agricultural land and soils	GLUC4. Targeted improvement of the productive values and stability of the Dargo Mountain Basin and Tambo Valley agricultural land and soils	EC4. Targeted improvement of the productive values and stability of Lower Snowy agricultural land and soils	FEC3. Targeted improvement of the productive values and stability of the Snowy Mountain Basin and Buchan Valley agricultural land and soils	RW2. Maintenance of the productive values and stability of agricultural land and soils.
			EC5. Improved awareness of the implications of disturbing potential acid sulfate soils by the landholders of the lower Snowy agricultural land		
Environmental stewardship		GLUC2. Maintenance of soil condition and stability on public land		FEC2. Maintenance of soil condition and stability on public land	
Biodiversity	GLH2. Targeted improvement of the condition, security, diversity and connectivity of native vegetation	GLUC5. Targeted improvement of the condition, security, diversity and connectivity of native vegetation within the Dargo Mountain Basin and Tambo Valley, and along the Wonnangatta river	EC6. Targeted improvement of the condition, security, diversity and connectivity of wetland and riparian (estuarine and riverine) native vegetation in the Lower Snowy, Brodribb and Cabbage Tree Creek	FEC4. Targeted improvement of the condition, security, diversity and connectivity of native vegetation within the Monaro Tablelands, floodplains of the Cann and Genoa rivers and along the Combienbar River	RW3. Limit the risk of pathogen movement (e.g. Myrtle Rust and Phytophthora root rot) in terrestrial environments
	GLH3. Targeted improvement of the status of threatened species and communities				
		GLUC1. Maintenance and targeted improvement of the condition, security, diversity and integrity of natural ecosystems and the status of threatened species and communities	EC1. Maintenance and targeted improvement of the condition, security, diversity and integrity of natural ecosystems and the status of threatened species and communities	FEC1. Maintenance and targeted improvement of the condition, security, diversity and integrity of natural ecosystems and the status of threatened species and communities	RW1. Establish an effective biosecurity approach to invasive plants and animals management in East Gippsland.
			EC2. Improved understanding of the effects of coastal processes and acceleration of these changes on susceptible species and communities with high natural values.		RW4. Implement fire management regimes that promote the resilience and health of natural ecosystems.

Program Theme	Gippsland Lakes and Hinterland	Gippsland Lakes Upper Catchment	East Coast	Far East Catchments	Region-wide
Inland aquatic ecosystems	GLH4. Targeted improvement of the water quality and freshwater flow regime of the Gippsland Lakes	GLUC3. Targeted protection of the water quality and freshwater flow regime of the Gippsland Lakes			
	GLH9. Targeted improvement in the condition of the Nicholson and Mitchell rivers	GLUC7. Targeted improvement of the condition of the waterways in the upper catchment to the Gippsland Lakes, particularly along the Mitchell and Nicholson rivers		FEC6. Targeted improvement in the condition of the upstream reaches of the Cann River	
	GLH5. Improved knowledge of location, condition and risks to wetlands on the Redgum Plains, Lower Mitchell and Lower Tambo rivers.		EC3. Improved knowledge of risks, and maintenance of the condition of wetlands between Lake Tyers and the Snowy river, near the Thurra and Wingan rivers, and east of Mallacoota		
	GLH6. Targeted provision of appropriate freshwater and salinity regimes for selected fringing wetlands of the Gippsland Lakes	GLUC6. Targeted improvement of the condition of Alpine peatlands		FEC5. Targeted improvement of the condition of Alpine peatlands	
Coastal and marine	GLH7. Increased sustainability of land use, with development in appropriate nodes along the Gippsland Lakes coastline		EC7. Increased sustainability of land use, with development in appropriate nodes adjacent to townships along the East Coast		
	GLH8. Plan for adaptation of Gippsland Lakes communities to changing conditions along the coastline				
			EC8. Improved knowledge of risks, and maintenance of the condition of the Croajingolong and Cape Howe marine assets		

Shortened forms

AVIRA	Aquatic value identification and risk assessment approach
CaLP Act	<i>Catchment and Land Protection Act 1994</i>
CAMBA	China–Australia Migratory Bird Agreement
CoMs	Committees of Management (delegated managers of Crown land)
DEPI	Department of Environment and Primary Industries
DPCD	Department of Planning and Community Development (now DTPLI)
DPI	Department of Primary Industry (now DEPI)
DSE	Department of Sustainability and Environment (now DEPI)
DTPLI	Department of Transport, Planning and Local Infrastructure
EC	East Coast landscape area
EGCMA	East Gippsland Management Authority
EGSC	East Gippsland Shire Council
EGSEMP	East Gippsland Soil Erosion Management Plan
EPA	Environmental Protection Authority
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999 (Cwlth)</i>
EVC	Ecological vegetation class
FEC	Far East Catchments landscape area
FFG Act	<i>Flora and Fauna Guarantee Act 1988</i>
GCB	Gippsland Coastal Board
GINRF	Gippsland Integrated Natural Resources Forum
GLCT	Gippsland Lakes Catchment Taskforce
GLH	Gippsland Lakes and Hinterland landscape area
GLMAC	Gippsland Lakes Ministerial Advisory Committee
GLUC	Gippsland Lakes Upper Catchment landscape area
IUCN	International Union for Conservation of Nature and Natural Resources
JAMBA	Japan–Australia Migratory Bird Agreement
MER	Monitoring, evaluation and reporting
NFSR	Natural features and scenic reserve
NRM	Natural resource management
RCS	Regional catchment strategy
ROKAMBA	Republic of Korea–Australia Migratory Bird Agreement
SMZ/SPZ	Special management zone/ protection zone
SSR	Streamside reserve
VMC	Victorian Catchment Management Council
WGCM	West Gippsland Catchment Management Authority
WSC	Wellington Shire Council

Glossary

ABC database	A Department of Environment and Primary Industries spatial database of recommended actions for the conservation and recovery of threatened species in Victoria, annual action planning and recording of the results of those actions.
Asset	Tangible bio-physical elements of the environment that are valuable for their ecosystem services (DSE 2011a) Natural elements of the environment, with environmental, social and economic values.
Asset based approach	A systematic approach to managing natural resources in the most cost effective manner through identifying those features of a region or state (assets) that provide high value services, which are at high risk from threats and have feasible management actions.
Asset class	Categories of different types of natural assets such as Rivers, Estuaries, Wetlands, Coasts, Marine, Terrestrial Environments and Soil/land.
Biosecurity approach	The protection of the economy, the environment, social amenity or human health from negative impacts associated with the entry, establishment or spread of animal or plant pests and disease, or invasive plant and animal species. (DPI 2009b)
Biosphere reserve	A reserve that includes both protected areas and surrounding lands where management combines conservation and the sustainable use of natural resources.
Condition trajectory	The likely trend in condition of an asset over the next 20 years under current management.
Ecologically Healthy Waterway	A waterway which retains the major ecological features and functioning of that waterway prior to European settlement and which can sustain these characteristics into the future.
Ecological vegetation class	A classification of native vegetation based on a combination of floristic, life form and ecological characteristics.
Functional relationship	Defined, using both geomorphic and EVC criteria, in the <i>Gippsland Coastal and Marine Asset Report</i> (GCB 2011).
Growth stage distributions	The array of growth stages occurring within a vegetation community.
Heritage river	A river protected in Victoria for its special features under the <i>Heritage Rivers Act 1987</i> .
'Highlands Down' program	The name given to a strategic approach to the control of pest plants and animals which involves many land management agencies in the region.
Program logic	A description of the expected relationships between management actions, their outputs, and longer term management outcomes.
'Protecting the Best' program	The name given to a strategic approach to the control of pest plants and animals which involves many land management agencies in the region, and in southern New South Wales.
Ramsar Convention	An international treaty (Ramsar, Iran, 1971) for the conservation and sustainable utilisation of wetlands.
Rapid risk assessment methods	This refers to methods to perform rapid environmental risk assessment in emergency management of natural assets and aims to provide a seamless transition from response to emergency stabilisation to recovery.

References

- DPCD 2012, *Victoria In Future*, Department of Planning and Community Development.
- DPCD, in prep., *Gippsland Integrated Land Use Plan*, Department of Planning and Community Development.
- DPI 2009a, *East Gippsland Soil Erosion Management Plan*, Department of Primary Industries.
- 2009b, *Biosecurity Strategy for Victoria*, Department of Primary Industries.
- DSE 2004, *Red Gum Plains Biodiversity Action Plan*, Department of Sustainability and Environment.
- 2005, *The Index of Stream Condition: The Second Benchmark of Victorian River Condition*, Department of Sustainability and Environment.
- 2006, *Code of Practice for Fire Management on Public Land*, Department of Sustainability and Environment.
- 2008, *Climate Change in East Gippsland*, Department of Sustainability and Environment.
- 2011a, *The Asset-Based Approach to Priority Setting*, Department of Sustainability and Environment.
- 2011b, NaturePrint v2.0 GIS dataset, Department of Sustainability and Environment.
- 2011c, *Gippsland Region Sustainable Water Strategy*, Department of Sustainability and Environment.
- 2012, *Code of Practice for Bushfire Management on Public Land*, Department of Sustainability and Environment.
- East Gippsland Shire Council, 2006, *East Gippsland Shire Council Municipal Strategic Statement*, East Gippsland Shire Council Planning Scheme.
- 2008, *East Gippsland Data Report. Comparisons of REMPLAN datasets, 2001 – 2006 census data. Updated July 2008.* (discovereastgippsland.com.au/.../230_REMLAN%20comparis...)
- Edmunds, M, Mustoe, S, Stewart, K, Sheedy, E and Ong, J 2010, *VNPA Nature Conservation Review: Marine Conservation Priorities and Issues for Victoria*, report to Victorian National Parks Association, Australian Marine Ecology.
- EGCMA 2005 *East Gippsland Regional River Health Strategy 2005–2010*
- 2006 *East Gippsland Regional River Health Strategy*, East Gippsland Catchment Management Authority.
- 2008 *Evaluation: East Gippsland Regional River Health Strategy*, East Gippsland Catchment Management Authority.
- 2009 *East Gippsland State of the Catchment Report*, East Gippsland Catchment Management Authority.
- 2010a, *Understanding the Environmental Water Requirements of the Gippsland Lakes System*, East Gippsland Catchment Management Authority.
- 2010b, *Lower Snowy Flora and Fauna Study*, East Gippsland Catchment Management Authority.
- 2011, *East Gippsland Invasive Plants and Animals Plan*, East Gippsland Catchment Management Authority.
- in prep, *East Gippsland Regional Waterway Management Strategy*, East Gippsland Catchment Management Authority.

- Fire Services Commissioner 2011 *Bushfire Safety Policy Framework*, Fire Services Commissioner Victoria
- GCB 2000, *Gippsland Integrated Coastal Planning Project – technical papers*, Gippsland Coastal Board.
- 2011 *Gippsland Coastal and Marine Asset Report*, Gippsland Coastal Board.
- in preparation, *Boating Coastal Action Plan*, Gippsland Coastal Board.
- GINRF 2011 *Gippsland Natural Resources Report Card*, Gippsland Integrated Natural Resources Forum.
- GLCT 2011, *Gippsland Lakes Natural Assets Report Card*, Gippsland Lakes Catchment Taskforce.
- GLMAC, in prep, *Gippsland Lakes Environmental Strategy*
- GRSFMP 2011, *Gippsland Regional Strategic Fire Management Plan*, Gippsland Regional Strategic Fire Management Planning Committee.
- Lakes Entrance Fishermans Cooperative Society Ltd (LEFCOL) 2011. Submission to the Australian Government's National Food Plan green paper/white paper development process. (<http://www.daff.gov.au/nationalfoodplan/process-to-develop/issues-paper/submissions-received/lakes-entrance-fishermens-cooperative-society-limited>)
- Linforth 1969, cited in: Erskine WD, and ID&A Ltd (1997) *Cann River geomorphic assessment and implications for future stream management*, East Gippsland River Management Board and Department of Natural Resources and Environment.
- Parks Victoria, in prep, *Victorian Peatlands Spatial Action Plan*, Parks Victoria.
- Pearson, J 2008, *Regional Catchment Strategy. Improving Natural Resource Outcomes in East Gippsland*, East Gippsland Catchment Management Authority.
- 2009, *Improving East Gippsland Rivers. Priorities for River Health 2007–2012*, East Gippsland Catchment Management Authority.
- Peters, G, Doeg, T and Heron, S 2009, *Aquatic Value Identification and Risk Assessment (AVIRA) Risk Assessment Process*, report for the Department of Sustainability and Environment, Riverness Protection and Restoration Services.
- Peters, G 2011, *Aquatic Value Identification and Risk Assessment (AVIRA) Environmental, Social and Economic Values and Threats*. 2nd edition, report for the Department of Sustainability and Environment, Riverness Protection and Restoration Services.
- Rosengren, N 2011, GIS dataset on geological significance, personal dataset.
- Sargeant 2011, *Soils and landforms of the Bairnsdale and Dargo region – A guide to the major agricultural soils of East Gippsland*, Department of Primary Industries.
- VCMC 2011, *Regional Catchment Strategy Guidelines*, Victorian Catchment Management Council
- Victorian Bushfires Royal Commission 2009, *2009 Victorian Bushfires Royal Commission : final report*.
- WorleyParsons 2011, *The Gippsland Coastal and Marine Asset An Asset-based Approach for the Gippsland Region*, final report to the Gippsland Coastal Board. WorleyParsons.

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Gippsland Water Dragon (*Physignathus lesueurii howitti*)

Intensive horticulture at Lindenow

Thurra River Estuary

Environmental Works Crew, Moogji Aboriginal Council, Orbost

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