THE COAST IS UNCLEAR

An uncertain future for nature along the Victorian coast

Chris Smyth

Victorian National Parks Association

The Victorian National Parks Association (VNPA) is Victoria's leading nature conservation organisation. VNPA is an independent, non-profit, membership-based group, which exists to protect Victoria's unique natural environment and biodiversity through the establishment and effective management of national parks, including marine national parks, conservation reserves and other measures. We will achieve our vision by facilitating strategic campaigns and education programs, developing policies, through hands-on conservation work, and by running bushwalking and outdoor activity programs which promote the care and enjoyment of Victoria's natural heritage.

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About the author

Chris Smyth is a marine and coastal environmental consultant, having previously worked on marine and coastal campaigns for the Victorian National Parks Association (VNPA) from 1999-2002, and the Australian Conservation Foundation (ACF) from 2002-2012. At ACF he focused on the establishment of the national marine reserves network, ecosystem-based regional marine planning, national oceans law reform and sustainable seafood assessment, while at VNPA he coordinated its campaigns for marine national parks in Victoria and an integrated national park at Point Nepean. Earlier professional work included 17 years as a geography teacher, and time as an environmental education consultant, editor and publishing and marketing coordinator at the Gould League of Victoria, *Habitat* magazine editor and senior manager at ACF, and the writer of many reports, submissions, articles and books on environmental themes. In the 1970s he directed the coastal environment study for the Victorian Public Interest Research Group, the results of which were published as *A coastal retreat*. He has maintained his interest in coastal planning and management ever since.

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Disclaimer

The VNPA has commissioned this report to generate public discussion on improving the conservation of coastal nature and reforming Victoria's coastal planning, protection and management framework. However, any opinions expressed in this report are those of the author and do not necessarily reflect the policies or opinions of the VNPA.

Cover design

John Sampson

Cover Photo

Excavators begin work on the Shire of East Gippsland's state-government-approved project to bury Bastion Point under tonnes of rock rubble, concrete and asphalt. Photo: Save Bastion Point.

Update

The coast is unclear was updated on 14 February 2014 to add material on the Warrnambool Golf Club expansion, the development of Point Lonsdale and Queenscliff lighthouse reserves, and residential development pressure on the Edithvale–Seaford Wetlands. The report now also includes an Appendix 3, which is a summary table of the proposed protected areas and the existing areas of coastal crown land that would be contained within them.

The coast is unclear

An uncertain future for nature along the Victorian coast

A review of nature conservation under Victoria's coastal planning, protection and management framework

Chris Smyth

February 2014

Stormy weather strikes the coast

On 14 January 2013, the Victorian environment minister, using his powers under the *Coastal Management Act 1995*, gave consent to the East Gippsland Shire Council's Option 3b proposal for a breakwater, boat ramp and beach road at Bastion Point, Mallacoota. In so doing, he approved the burial of a significant landscape, the town's only safe swimming beach, archaeological sites and a rare surfing break beneath tonnes of concrete, asphalt and rubble.

According to the minister, his decision was based on safety, the need to keep boats and swimmers apart. This was the same reason given by the planning minister in the previous Labor government, who approved the development in the face of clear evidence from an independent planning tribunal that the proposal had major safety issues of its own, along with devastating environmental impacts and no net economic benefit.

The significance of what may appear to be a one-off ministerial decision goes deeper, casting doubt on planning and management statutes and their ability to protect the coast at a time of mounting threats.

The Victorian government is also driving fundamental changes to the way planning works in Victoria, weakening planning zones and native vegetation management, and approving contentious development proposals in the face of community opposition.

This dash to develop will smash head-on with the coastal planning and management framework that has been reformed over the past two decades. That reform, initiated by a Coalition government, recognised the need to protect coastal nature and coastscapes, and to better engage local communities in looking after their local coasts. But it could all come to naught.

Pressure on the coast is not new. The Victorian coastline has for two centuries been impacted by European colonisation, agricultural development, population growth, urbanisation, industrialisation, land-based sources of pollution, poorly sited and engineered infrastructure, and invasive plants and animals. These still exist, but are now joined by climate change—the coast is where its impacts will be severely felt.

Wetlands have been drained, sand dune scrub cleared for housing and pasture, and mangroves and saltmarsh pushed aside for industrial development. Coastal habitats have become fragmented, with many now officially regarded as threatened. Animals dependent on those habitats, including the orange-bellied parrot, eastern bristlebird, fairy tern and hooded plover, are now also threatened.

What habitats remain are found in very narrow strips of public land, some of which are barely a few metres wide, squeezed between the shoreline and roads, housing, industry and cleared land, and increasingly under threat.

Coastal public land is again being viewed as cheap and available while also satisfying the three basic criteria for commercial development—position, position, position!

The decision to bury Bastion Point may be part of an emerging pattern. The government's encouragement of development inside national parks, especially those on the coast, is worrying, as have been the ministerial interventions to support inappropriate rezonings at Port Campbell and Cape Paterson, after independent planning panels had recommended against them, and the likely support for high rise towers at Point Nepean and elsewhere along the coast.

That is not to say that the previous Labor government is blameless. The approval of canal development at the Ramsar-listed Lonsdale Lakes, wind turbines at Cape Bridgewater, a desalination plant at Wonthaggi, a coast road at Point Gellibrand, the Bastion Point harbor development and the failure to establish a comprehensive and ongoing monitoring program for the Port Phillip Bay channel deepening project, are some of its decisions that have impacted on the coast.

Nor should it be said that the news is all bad—beacons of light glow in the gloom. To begin with, 96% of the coast is in public hands, even if it is only a very narrow strip under enormous pressure. Significant coastal habitats and coastscapes are now protected in a series of conservation reserves in places like Discovery Bay, Cape Liptrap and the Gippsland Lakes. Communities are working with local councils, catchment management authorities, coastal boards, government agencies and landholders to plant trees, pull weeds, build fences and monitor wildlife to improve the quality and extent of coastal nature.

But what is at stake if the Victorian coast continues its decline? Is it the summer seaside holiday on the beach, the dropping of a line for a feed of fish, a sunny retirement? All of these things and more; coastal nature underpins our economy and lifestyle.

Victorians do indeed love their coast— on average they visit it more than 20 times each year—but love can be lethal. Each poor planning and management decision adds to the pressure from previous ones—death by a thousand cuts.

With population growth, climate change and a development-focused government, the coastal decline will likely continue and possibly accelerate.

In 1881, a Victorian government showed remarkable foresight in reserving a narrow strip of crown land along almost the entire coast. Let's hope that in 2081 people will regard 2014 and the following decade as the time when Victoria turned the tide on coastal decline and a better future for the coast became clear.

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Key findings

The coast is unclear has reviewed coastal planning protection and management in Victoria, with the focus on the state of the nature along the coast, the threats facing it and how the current planning and management framework supports or undermines it. What follows are this review's key findings.

Key finding 1:Victoria has diverse coastal nature, with 95 ecological vegetation classes identified within 500 m of the shoreline including scrubs, shrublands, heathlands, forests, woodlands, grasslands, lagoons, wetlands and marshes. But the analysis also shows the considerable loss, fragmentation and degradation of coastal nature.

Key finding 2: Although significant stretches of the coastline have been given protection in national, state and coastal parks, beginning with Wilsons Promontory National Park in 1898, coastal nature is in need of greater protection on both public and private land.

Key finding 3: Victoria is entering a new phase of coastal development, including residential, tourism, industrial and port expansion, that will further damage the conservation and social values of the coast. The current resourcing of coastal planning, protection and management is inadequate to deal with these and other existing and emerging threats.

Key finding 4: All but 4% or approximately 80 km of the Victorian coast has publicly owned land abutting the high water mark. Of the 96% of the coastline in public hands, about two-thirds is in national, state and coastal parks, with the remainder in coastal crown land reserves.

Key finding 5: Coastal nature on coastal crown land is largely found in narrow strips squeezed between the sea and developed land. Coastal development and rising sea levels are increasing the squeeze on coastal nature. Their narrowness accentuates the edge effects of adjoining land uses and land use change, and leads to habitat loss, the invasion of weeds and pest animals, illegal grazing and indiscriminate access.

Key finding 6: Of the 95 EVCs found within 500 m of the coast, 27 coastal and 42 hinterland EVCs are either Endangered or Vulnerable in at least one of the bioregions in which they occur.

Key Finding 7: Coastal EVCs that are either Vulnerable or Endangered in two or more bioregions are Coast Banksia Woodland, Coastal Saltmarsh, Estuarine Wetland, Coastal Headland Scrub, Coastal Tussock Grassland, Coastal Saltmarsh/Mangrove Shrubland Mosaic, Coastal Alkaline Scrub and Coast Banksia Woodland/Coastal Dune Scrub Mosaic.

Key finding 8: Of the hinterland EVCs, those that are either Vulnerable or Endangered in two or more bioregions are Damp Sands Herb-rich Woodland, Lowland Forest, Herb-rich Foothill Forest, Damp Forest, Swamp Scrub, Plains Grassy Woodland, Wetland Formation, Plains Grassland, Damp Heath Scrub, Grassy Woodland, Shallow Freshwater Marsh, Heathy Woodland/Damp Heathy Woodland/Damp Heathland Mosaic, Aquatic Herbland, Freshwater Meadow and Deep Freshwater Marsh.

Key finding 9: Of the 95 EVCs identified only three have been listed as threatened in the *Flora and Fauna Guarantee Act 1995*, even though most have been assessed as either Endangered or Vulnerable in some of the bioregions. The listing of threatened coastal plant and animal species under the *Flora and Fauna Guarantee Act 1988* provides the opportunity for greater protection. However, due to a lack of political will and commitment, legislative weaknesses and inadequate resourcing, the act has failed to deliver on its promise.

Key finding 10: The two main drivers of change in the condition and extent of coastal nature, now and in the future, are climate change and the destruction, degradation and fragmentation of coastal nature caused by the land development, urbanisation and industrialisation stemming from population growth. Other threats are habitat loss and fragmentation, visitor pressure, invasive plants and animals including weeds, cats, dogs and foxes, drainage schemes, disturbance of habitats from indiscriminant access, grazing livestock, horseriding.

Key finding 11: The conservation status of many of the native animals and plants reliant on the coastal and hinterland EVCs on the coast as habitats are Rare, Near Threatened, Vulnerable, Endangered or Critically Endangered. For many their status has worsened. Prominent are birds that use beaches and sand dunes or depend on healthy coastal waters for food, and the many small mammals and birds that rely on the EVCs that are under pressure—heaths, grasslands, scrub and wetlands.

Key finding 12: Of the ten bioregions with coastal boundaries, those where the squeeze on coastal nature is most pronounced are the Warrnambool Plain (between Portland and Princetown), the Otway Plain (largely from Aireys Inlet to Altona) and the Gippsland Plain (from eastern Melbourne to the Gippsland Lakes).

Key finding 13: Although 96% of the coastal land abutting high water mark is publicly owned, 4% is not and that is mostly between Portland and Warrnambool, Clifton Springs to Point Henry, and along the eastern shore of Western Port where, in each case, very little of the original coastal nature remains. The conservation of coastal nature on private land is very low and Trust for Nature covenants are seldom used. Where they are in place, their habitat coverage represents only a tiny percentage of what remains.

Key finding 14: The environmental effects of climate change include increased flooding of low-lying areas, erosion of barrier dunes, inundation from storm surges, increased salinity in estuaries, rivers and bays, and the removal of beaches, sand dunes, saltmarshes and mangroves. This could lead to the collapse of ecosystems, a major

redistribution of coastal plants and animals, and the breaching of some barrier systems such as the Gippsland Lakes.

Key finding 15: The 100 or more small estuaries along the Victorian coast are critical to migratory fish, migratory birds as stopovers, saltmarsh species, commercial and recreational fishing, and as popular residential and recreational areas—they are the lifeblood of coastal communities. But estuaries are under enormous pressure from population growth, changes in catchment land use, landfill, urban encroachment, declining water quality, loss of habitat, divided agency responsibilities and a general lack of formal protection.

Key finding 16: The governance of coastal crown land reserves is overly complex with too many committees and management plans leading to duplication and lack of integrated planning and management

Key finding 17: There is inconsistent application by municipalities of planning scheme tools that could be better used to protect and expand coastal nature.

Key finding 18: Changes by the state government to native vegetation clearing regulations will cause a further decline in coastal and hinterland nature.

Key finding 19: Township boundaries, which have been gradually formalised in coastal planning schemes since 2005 to prevent unsustainable growth of coastal settlements and linear development, are now under threat by the demands of developers and decisions of the state government.

Key finding 20: Over many years, legislators have tried various ways to deal with the issues and threats facing the Victorian coast. As a result, Victoria now has a complex and disintegrated framework for planning, protection and management with many agencies, institutions and organisations involved. Integration of the diverse elements of the framework has been the aim of many governments, but to date they have been unable to find the formula for success.

Key finding 21: The Victorian coastal strategy has had a profound impact on the rhetoric and contents of coastal planning in Victoria. However, a number of weaknesses need addressing, including its nature conservation provisions, the over-long list of coastal-dependent uses, the concept of net community benefit, the lack of criteria for ecologically sustainable development, the absence of measurable objectives, targets and timelines, and its underlying inability to make any of its recommendations mandatory.

Key finding 22: Catchment management authorities have in recent years increased their efforts to improve the health of estuaries and coastal habitats but still require greater input of marine and coastal expertise on their boards and among their staff.

Key finding 23: Communities are working with local councils, catchment management authorities, regional coastal boards, government agencies and landholders to plant trees, pull weeds, build fences and monitor wildlife to improve the quality and extent of coastal nature.

Key finding 24: To enhance the protection, maintenance and restoration of coastal nature will require collaborative, well-planned, targeted and adequately resourced action in involving governments, private landowners, public land managers and the community, but this is being undermined by recent planning and development decisions.

Key finding 25: To reverse the decline in nature and to integrate and make more effective Victoria's coastal planning, protection and management framework will require legislative and institutional reform including the establishment of a Marine and Coastal Authority.

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Recommendations

This summary of recommendations follows the structure of the report, except for recommendations to reverse the decline of coastal nature and legislative and institutional reform, which head the list.

Reversing the decline in coastal nature

1. Ensure the conservation of 100% of the remaining coverage of each coastal EVC on coastal crown land reserves by expanding the coastal conservation estate to include those EVCs, by improving the management of those reserves and including abutting or nearby unreserved or reserved crown land, including state forest, that have coastal and hinterland EVCs present.

2. Increase the resourcing of coastal nature conservation programs, especially in the area of threatened ecological communities, species listings and the preparation and implementation of recovery plans under the *EPBC Act* and actions statements under the *Flora and Fauna Guarantee Act.*

3. Establish the comprehensive and ongoing scientific monitoring, mapping and investigation of coastal and marine habitats and ecological processes. The program would develop historical ecological baselines and a set of environmental indicators to assess trends in the health of marine and coastal habitats. This would be coordinated by the proposed Marine and Coastal Authority through its Marine and Coastal Information Service.

4. Provide ongoing and adequate resourcing of citizen science programs such as EstuaryWatch and ensure that the data is gathered in ways that will enable its effective use in marine and coastal planning, protection and management.

5. Ensure the adequate resourcing of community education and engagement programs, such as Coastcare, which promote the nature conservation values of the coast and provide opportunities for the community to become engaged in their protection.

6. Ensure that all invasive weeds of high risk to coastal nature are declared noxious weeds and adequately resourced eradication and control programs are initiated on public and private land along the coast. Such funding should ensure sufficient trained personnel and support for collaboration between public land managers and the owners of adjacent land.

7. Initiate an independent review of access tracks, car parks, roads, buildings, utilities and other infrastructure within and adjacent to coastal conservation and crown land reserves in order to plan for the relocation, reduction and better management of coastal infrastructure to minimise its impacts on the coast's natural values and to assist planned retreat responses to sea level rise.

8a. Assist coastal nature to adapt to sea level rise and other impacts of climate change by using a range of planning tools including:

- protected biolinks to link with current conservation areas
- rezoning areas that are likely to support coastal nature adaptation inland from the predicted new coastline
- overlays such as the Environmental Significance Overlay to prevent the development of the land directly behind coastal conservation to enable it to adapt and retreat.

8b. Conduct comprehensive mapping of current settlements, coastal nature and predicted sea level rise for the Victorian coastline, and combine this with mapping of where coastal settlements and nature can move to as a result of sea level rise.

9. Establish a Coastal Private Land Conservation Program to support conservation on private land abutting coastal conservation areas, coastal crown land reserves or the high water mark. The funds would be used to fence remnant areas, cover the costs of plantings to extend the cover of remnants or to re-establish vegetation cover, help to identify and fence boundaries between public and private coastal land to prevent illegal access by livestock, horses and unauthorised vehicles, eradicate or control invasive species, and establish wildlife corridors.

The initial focus of the program should be on the restoration of coastal nature in those bioregions where land clearance has reduced coastal nature to very narrow and fragmented strips or removed it completely i.e. Warrnambool Plain, Otway Plain, Victorian Volcanic Plain and Gippsland Plain.

The Coastal Private Land Conservation Program would not replace CoastalTender or the Saltmarsh Protection Project and may even provide resources to them. Its purpose is to significantly increase the resources to and raise the profile of the urgent need to restore coastal nature on private land.

10. Review statewide and regional policies promoting or driving population growth on the coast to develop mechanisms that slow growth and reduce its impacts.

Legislative and institutional reform

1. *Marine and Coastal Planning and Management Act.*

2. Marine and Coastal Authority.

3. Victorian Marine and Coastal Strategy.

4. Regional marine and coastal plans.

5. Marine and Coastal Research and Information Service.

6. Coastal Conservation Reserves and Coastal Recreation Reserves.

7. Coast Committees.

8. Coastal Infrastructure Agency.

Bridgewater Bioregion

1. Use the proposed Coastal Private Land Conservation Program to support collaborative projects between

land managers, private landholders and the local community to fence and restore degraded sites, control illegal stock entry, eradicate and manage invasive species, better manage horse riding and other disturbance of ground nesting animals, and establish wildlife corridors and buffers connecting with the Discovery Bay Coastal Park (especially around Cape Bridgewater and to the north and east of Cape Nelson). Under these arrangements, the program would cover the cost to landholders of establishing and maintaining the new vegetation.

2. Cancel any grazing licences that may remain in the Discovery Bay Coastal Park and delineate and fence boundaries along the private and public land interface.

3a. Amend the Rural Conservation Zone 1, which applies to Cape Bridgewater, to prohibit any further development of wind turbines.

3b. Enter arrangements with the energy company and the landholder that ensure the Cape Bridgewater wind turbines are removed at the end of their commercial life and that the land is restored (Coastal Alkaline Scrub is the original cover).

3c. Insert a 100 m buffer into the Environmental Significance Overlay on private land abutting the narrow Cape Bridgewater section of the Discovery Bay Coastal Park that would be fenced to allow for revegetation. This would provide additional protection to the Coastal Headland Scrub (V) and Spray Zone Coastal Shrubland (R).

4. Support with funding and other resources the continuation of the Glenelg Ark, Glenelg Alliance and Habitat 141 projects.

5. Investigate the purchase of the following parcels of land in the Bridgewater Bioregion and, if possible, secure the land, restore it and add it to the existing Discovery Bay Coastal Park:

- the inlying private land in the existing Discovery Bay Coastal Park north of Long Swamp and east of Lake Minibeong. This purchase would aid the conservation of Deep Freshwater Marsh (V) and Damp Sands Herb-rich Woodland (V), improve connectivity and reduce edge effects
- any other private land abutting the existing Discovery Bay Coastal Park when it becomes available for sale
- the small parcels of private land with Coastal Alkaline Scrub, Coastal Dune Scrub and remnants of Swamp Scrub (E and barely one-third in conservation reserves) along the western shores of the Bridgewater Lakes
- the large triangle of privately owned Coastal Alkaline Scrub behind the Bridgewater Bay settlement.

Glenelg Plain Bioregion

1a. Establish the Discovery Bay-Three Capes State Park by:

- merging the existing Discovery Bay Coastal Park, the Cape Nelson State Park and the Cape Nelson Lighthouse Reserve
- extending the new park to the east of She-oak Road, which is crown land currently within the Nelson Bay Coastal Reserve, to better protect the Coastal Sand Heathland (R but none in conservation reserves) and Coastal Headland Scrub (E and less than half in conservation reserves) in the Glenelg Bioregion
- adding the crown land in the Point Danger-Cape Sir William Grant area covered with Coastal Heathland Heathy Woodland/Damp Heathy Woodland/Damp Heathland Mosaic and Damp Heathland/Sand Heathland Mosaic (D with none in conservation reserves) to help protect Mellblom's spider-orchid and the nation's only mainland Australasian gannet colony.

2. Amend the zoning applying to the Portland Wind Energy Project IV to ensure that the wind turbines are removed at the end of their commercial life, the land is restored and it is added to the proposed Discovery Bay-Three Capes State Park.

3. Investigate the purchase of the freehold inlier within the existing Cape Nelson State Park and, if possible, secure the land, restore it and add it to the proposed Discovery Bay-Three Capes State Park. This will assist the survival of Coastal Mallee Scrub (E with barely half of its existing cover in conservation reserves in the Glenelg Bioregion).

Warrnambool Plain Bioregion

1. Ensure there are no further housing subdivisions along the Old Coach Road at Narrawong to reduce pressure on the very narrow coastal crown land reserve with remnant Coastal Dune Scrub (V with only 60% remaining in the bioregion and just 10% of that in conservation reserves).

2. Close the Old Coach Road reserve, add it to the existing coastal crown land reserve, and then fence and revegetate it. A walking track only should be provided for anglers wishing to access the beach. The Shire of Glenelg should apply a Vegetation Restoration Overlay that creates a 50-100 m buffer from the Old Coach Road on to the adjoining freehold land where no development can take place and indigenous vegetation should be restored.

3. Amend land-use zones in the planning schemes of the Shire of Glenelg, Shire of Moyne, the City of Warrnambool and the Shire of Corangamite to prohibit any further development of wind turbines on private land abutting coastal crown land or the high water mark.

4a. Establish the Yambuk Lake Coastal Park by including, in separate parcels, the Yambuk Coastal Reserve, The Crags Coastal Reserve, the Yambuk Lake Flora and Fauna Reserve, Yambuk Lake and the Yambuk Wetlands Nature Conservation Reserve. Private land could be purchased and added to this park to link the separate parcels (see Recommendation 16).

4b. Ensure that the volume of water in the Eumeralla and Shaw rivers, which flow into Yambuk Lake, are adequate to maintain a natural flooding cycle in the adjoining wetlands.

5. Reject the proposed subdivision at Mills Crescent, Port Fairy, to protect the Japanese snipe's most important site in Australia.

6a. Create the Belfast Coastal Park under the *National Parks Act 1975* to be managed by Parks Victoria. The new park would comprise the crown land and Belfast Lough in the existing Belfast Coastal Reserve, excluding the coastal strip between Port Fairy and the Port Fairy Golf Course. Also included in the new park would be the crown land at Griffiths Island and Shelly Cove, currently managed by the Shire of Moyne, and the crown land at Levy Point and Thunder Point, currently managed by the City of Warrnambool.

6b. Investigate relocation of the Port Fairy Golf Course and Port Fairy Airstrip, which would be followed by restoration of the land and its inclusion in the proposed Belfast Coastal Park.

7. Reject any future proposals for the establishment of a biodiesel plant at the Merri Wetlands and, with the company concerned, seek to find an alternative and less sensitive location for its existing rendering plant.

8. Add Lake Gillear, with its Aquatic Herbland (E and only 14 % left and only 54% in conservation reserves) and remnants of Swamp Scrub (E with only 7% left and just 5% in conservation reserves) and Damp Sands Herb-rich Woodland (E with only 8% left and just 12% in conservation reserves) to the existing Bay of Islands Coastal Park.

9. Reject any proposal to develop a coast road between the Bay of Islands Coastal Park and Warrnambool.

10. Include the current crown land reserves adjoining or near to the Port Campbell National Park within the park, each having been identified in the national park's management plan as potential inclusions. These include the Public Purposes Reserve and Public Park Reserve on Port Campbell Point, the Water Reserve (and Crown land**)** east of Port Campbell north of the Great Ocean Road alignment, the small, undeveloped areas of public land between the Great Ocean Road and the park within the township of Port Campbell, west of the Port Campbell Creek, including allotments 2 and 3, and the Loch Ard Public Cemetery.

11. Transfer the Commonwealth-owned rifle range near Two Mile Bay to Victoria, restore the land and add it to the Port Campbell National Park.

12a. Reject the tourism development options for the Port Campbell National Park and Bay of Islands Coastal Park proposed within the Shipwreck Coast master planning documents.

12b. Ensure that the final Shipwreck Coast Master Plan is used to informs not replaces the management plans for the two existing parks.

13a. Merge the Bay of Islands Coastal Park and the Port Campbell National Park to form the Twelve Apostles-Bay of Islands National Park.

13b. Widen the new national park with judicious purchases of private land and realignment of the Great Ocean Road.

14. Use the proposed Coastal Private Land Conservation Program to support collaborative projects between land managers, the Shire of Moyne, Warrnambool City Council, private landholders, Landcare groups, the local community and the Trust for Nature to reconnect coastal and hinterland nature on the Warrnambool Plain through the establishment of wildlife corridors, the rationalisation and reduction of access tracks in and abutting remnant coastal vegetation, the erection and maintenance of boundary fences, and the eradication and management of invasive species.

15. Build on and extend projects such as CoastalTender and the Saltmarsh Protection Program to continue re-establishing connections along the coast and the banks of the coastal rivers and their estuaries in the Warrnambool Plain Bioregion.

The priority EVCs in this project should be Estuarine Wetland, Coastal Dune Scrub, Damp Heath Scrub, Damp Sands Herb-rich Woodland, Swamp Scrub, Shallow Freshwater Marsh, Freshwater Meadow, Damp Sands Herb-rich Woodland/Damp Heathland/Damp Heathy Woodland Mosaic, Swamp Scrub/Aquatic Herbland Mosaic and Damp Heathland/Damp Heathy Woodland Mosaic.

16. Investigate the purchase of the following parcels of land in the Warrnambool Plain Bioregion and, if possible, secure the land, restore it and add it to the coastal conservation estate:

- the Coastal Dune Scrub remnants on freehold land between Lake Yambuk and Cape Reamur, and the cleared freehold land between those remnants, and add it to the proposed Yambuk Lake Coastal Park
- land that abuts the cliff edge between the Starlight Cave and the western end of the Bay of Islands Coastal Park, to a width of 100 m from the cliff, and add it to the existing Bay of Islands Coastal Park, along with the cave, and revegetate the Coastal Headland Scrub/Coastal Tussock Grassland Mosaic and Damp Sands Herb-rich Woodland found in the vicinity
- the land above the Starlight Cave maternity cave and for it to be fenced, revegetated and added to the existing Bay of Islands Coastal Park
- land between Lake Gillear and the Bay of Islands Coastal Park and establish a planted and fenced wildlife corridor to the Coastal Headland Scrub/Coastal Tussock Grassland Mosaic (V) found on the coast. Add it to the existing Bay of Islands Coastal Park
- private undeveloped land on the Port Campbell headland to protect nursery habitat of the southern brown bandicoot
- land to the north of the existing Port Campbell National Park for the purpose of realigning the Great Ocean Road. The land between the new road and the current park boundary should be included in the park and the Coastal Headland Scrub (V) and Coastal Tussock Grassland (V) restored.

Otway Ranges Bioregion

1. Ensure that there is an independent, transparent and rigorous environmental assessment of the

proposed upgrade of the Great Ocean Road, including a comprehensive analysis of the impacts on coastal nature along its route, and robust and transparent public consultation processes.

2. Ensure the continuation of existing planning scheme provisions that limit the growth of coastal townships along the Great Ocean Road's route through the Otway Ranges Bioregion between Eastern View and Marengo. No new coastal subdivisions should be allowed in the Otway Ranges Bioregion between Eastern View and Kennett River, and between Princetown and Marengo.

3. Ensure that park managers and adjoining rural landholders have sufficient ongoing resources to eradicate or control invasive pests in the Great Otway National Park and Otway Forest Park, including in coastal areas.

4. Ensure that the easing of restrictions on land development and land-use change in the Rural Conservation Zone does not allow resort and hotel developments or the installation of wind turbines on private land between existing townships on the Great Ocean Road.

5. Ensure that commercial accommodation developments, such as hotels and resorts, are not allowed within the Great Otway National Park and Otway Forest Park. Any future tourist developments should be confined to the existing main settlements along the Great Ocean Road and be at heights and spatial extents appropriate for the landscape.

Otway Plain Bioregion

1. Amend the Rural Conservation Zone applying to private and cleared land in the Johanna and Horden Vale areas, and between Marengo and Skenes Creek, to prohibit the construction of wind turbines and other development projects in the viewshed of the coast.

2. Ensure the continuation of existing planning scheme provisions that limit the growth of coastal townships in the Otway Plain Bioregion. No new coastal subdivisions should be allowed between Eastern View and Geelong, or from Geelong to Altona.

3a. Prohibit any future expansion of the Alcoa coal mine at Anglesea and add the heathland currently leased by Alcoa and outside the mine pit to the Great Otway National Park.

3b. Reject the application by Alcoa to sell electricity into the electricity grid from its Anglesea power station.

4a. Amend the management plan of the Bells Beach Recreational Surfing Reserve to ensure that its vision, objectives and actions are consistent with the Bells Sanctuary Charter i.e. 'respect, protect and cultivate all elements of Indigenous and surfing heritage in harmony with the natural, coastal and marine environments'.

4b. Ensure that the Traditional Owners and the recreational surfing groups are given key roles in the ongoing management of Bells Beach.

4c. Encourage the owners of land adjoining the Bells Beach Recreational Surfing Reserve to become involved in the development of a Bells Beach precinct plan covering the reserve and its viewshed. As part of the proposed plan, participating landholders would be provided with the necessary resources, from the proposed Coastal Private Land Conservation Program, to protect and enhance the remnant Coastal Headland Scrub on their properties to improve the connectivity and scenic quality in the precinct.

4d. Encourage the protection and extension of coastal nature within the Bells Beach precinct by applying the Environmental Significance Overlay to the reserve and adjoining vegetation on private land, applying the Significant Landscape Overlay to the reserve, and extending the Vegetation Protection Overlay to cover all remnant vegetation on private land and in the Public Purposes Reserve (Bells Beach Creek) across the road from Bells Beach. Further, ensure that Rural Conservation Zone on the private land opposite the reserve does not allow for development that will degrade the reserve and its viewshed.

4e. Reconfigure the car parking arrangements at the Bells Beach Recreational Surfing Reserve to minimise their impact on native vegetation.

5. Ensure that the Spring Creek housing development does not proceed by approving the C66 Amendment to the Surf Coast Shire planning scheme.

6a. Create the Geelong and Bellarine Wetlands State Park to ensure that the wetland remnants of Geelong and the Bellarine Peninsula are protected and conserved at a time when the Geelong region is experiencing rapid population growth and urban expansion, much of which will occur on the peninsula.

In the Lake Connewarre area, for example, the new park would assist the protection of Coastal Saltmarsh/Mangrove Shrubland Mosaic (E) and remnants of Coastal Alkaline Scrub (E), which are also scattered across the cleared land surrounding the reserve, and patches of Mangrove Shrubland (V) along the Barwon River, Plains Grassland (E with only 3% left and 2% in conservation reserves), Plains Grassy Woodland (E with only 38% left and just 20% in conservation reserves) and Grassy Woodland (E with only 7% left and 1% in conservation reserves) on the private land surrounding the reserve which is mostly zoned Farming Zone.

The Geelong and Bellarine Wetlands State Park would be created by integrating the following within one park (in separate parcels): Lake Connewarre Wildlife Reserve (the game reserve would be degazetted), including Reedy Lake, Hospital Swamp and Murtnaghurt Lagoon; Salt Lagoon-St Leonards Wildlife Reserve; Swan Bay-Edwards Point Wildlife Reserve; the Barwon River estuary; Sand Island (near Swan Island); Swan Island (see Recommendation 6e) Lonsdale Lakes Wildlife Reserve; Lakers Cutting; south-western shores of Swan Bay; Freshwater Lake; Thompson Creek and Karaaf Wetlands at Breamlea (Breamlea Flora and Fauna Reserve); the Geelong

Saltworks at Moolap (see Recommendation 6c) and the Point Henry wetlands (see Recommendation 6d).

Management of the new Geelong and Bellarine Wetlands State Park would also require:

- sufficient resources for Parks Victoria for management and to work with adjoining landholders, local municipalities and state government agencies to ensure that stormwater pollution, invasive species, urban encroachment and other threats are quickly resolved
- identification and formalisation of the new state park boundaries with appropriate fencing to ensure there is no encroachment from adjoining land uses
- prevention of unauthorised access
- restoration of native habitats.

6b. Use the City of Greater Geelong planning scheme to establish a buffer of 50–100 m around Lake Connewarre to prevent further development along its shoreline, especially on:

- land zoned Farming Zone that surrounds the current Lake Connewarre Wildlife Reserve and which has remnants of Endangered indigenous vegetation that would be linked through restoration
- land zoned Rural Conservation Zone and Farming Zone abutting Murtnaghurt Lagoon.

6c. Prevent development of the Geelong Saltworks at Moolap and investigate its purchase for inclusion in the Geelong and Bellarine Wetlands State Park to improve the protection of the Endangered Coastal Saltmarsh/Mangrove Shrubland Mosaic.

6d. Secure the Point Henry wetlands by negotiating with Alcoa for their inclusion in the Geelong and Bellarine Wetlands State Park.

6e. Seek the transfer of the Commonwealth land on Swan Island currently used for training by the Department of Defence. After its return, the land shoud be restored and added to the proposed Geelong and Bellarine Wetlands State Park.

7. Merge the Barwon Coast and Bellarine Bayside committees of management to form the Barwon-Bellarine Coast Committee and transfer management responsibility for Buckley Park and the coastal reserves in Point Lonsdale and Queenscliff to the new committee from the City of Greater Geelong and the Borough of Queenscliff respectively.

8. Ensure that in the future event of the Western Treatment Plant closing, the land should be added to the proposed Port Phillip Wetlands State Park (see Recommendation 3 under Victorian Volcanic Plain) to provide the long-term protection of Ramsar sites.

9. Investigate the purchase of the following parcels of land and, if feasible, purchase them:

- land along the Aire River between the bridge and the river mouth to rehabilitate natural flows within the wetlands
- land bordering Lake Connewarre Wildlife Reserve
- Rural Conservation Zone 11 land between the western end of the Lonsdale Golf Course and the Collendina Caravan Park, and south of Lake Victoria, after which the quarry is closed, the land is restored and it is added to the proposed Coastal Recreation Reserve to be managed by the proposed Barwon-Bellarine Coast Committee.

Victorian Volcanic Plain Bioregion

1. Use the proposed Coastal Private Land Conservation Program to support a collaborative project between the Shire of Glenelg, the Glenelg Hopkins Catchment Management Authority and the local community to remove or reduce the threats and enhance the habitats of Fawthrop Lagoon in Portland. Project works would include invasive species control and the reinstatement of more natural water flows to conserve the lagoon's Estuarine Wetland and the Swamp Scrub and Herb-rich Foothill Forest (V) along and north of the Wattle Hill Creek.

2a. Create the Port Phillip Wetlands State Park to give stronger protection to the Ramsar sites between Limeburners Bay and the Jawbone Flora and Fauna Reserve. It would include the Limeburners Lagoon (Hovells Creek) Flora and Fauna Reserve, Avalon Coastal Reserve, Point Lillias, Point Wilson (currently Commonwealth land; see Recommendation 2b below), the Avalon Saltworks, The Spit Wildlife Reserve, the Point Cook Coastal Park and Cheetham Wetlands, Altona Coastal Park and the Jawbone Flora and Fauna Reserve.

The new coastal park would protect Coastal Saltmarsh/Mangrove Shrubland Mosaic (E and 32% is in conservation reserves), Coastal Tussock Grassland (V with only 38% in conservation reserves), Plains Grassy Woodland (E and just 3% in conservation reserves), Plains Grassland (E and only 3% in conservation reserves) and Mangrove Shrubland (V with only 7% in conservation reserves).

2b. Transfer the Commonwealth land at Point Wilson to Victoria for inclusion in the proposed Port Phillip Wetlands State Park.

2c. Ensure that there are sufficient personnel and other resources to continue the environmental enhancement programs focusing on water quality improvements, invasive species control and continuing conservation of Coastal Saltmarsh (V), Coastal Alkaline Scrub (E) and Mangrove Shrubland/Coastal Saltmarsh/Berm Grassy Shrubland/Estuarine Flats (E) at the existing Point Cook Coastal Park and Cheetham Wetlands.

3. Protect Western Port and the western shores of Port Phillip Bay from port development, with any expansion of port infrastructure in Victoria focused on the consolidation of port operations in Port Phillip Bay, Geelong and Portland.

4. Use the proposed Coastal Private Land Conservation Program to support a collaborative project between The City of Hobsons Bay, the Port Phillip and Western Port Catchment Authority, Parks Victoria and nearby landholders and local friends groups to further improve the water and habitat quality of Kororoit Creek, and

restore and protect Coastal Saltmarsh, Coastal Alkaline Scrub, Mangrove Shrubland and Plains Grassland in the existing Altona Coastal Park and the Jawbone Flora and Fauna Reserve.

Gippsland Plain Bioregion

1. Abandon construction of the Southern Peninsula Aquatic Centre on the Rosebud coastal reserve.

2. Use the proposed Coastal Private Land Conservation Program to support collaborative projects between Parks Victoria, relevant municipalities and catchment management authorities, private landholders and the community to:

- improve the quality and extent of Coast Banksia Woodland and Coastal Alkaline Scrub (coastal moonah woodland community) across the Mornington Peninsula
- enhance coastal nature along the shoreline of Western Port
- control weeds, pest animals, and domestic dogs and cats, and to protect the breeding sites and habitats of coastal fauna along the Cape Liptrap Coastal Park
- enhance the natural values of Shallow Inlet catchment and develop wildlife corridors between Shallow Inlet and Walkerville, and from Shallow Inlet to Corner Inlet
- rehabilitate coastal nature around the shorelines of the Gippsland Lakes.

3a. Make use of the Environmental Significance Overlay, the Land Subject to Inundation Overlay, the Green Wedge Zone, rezonings in the Shire of Mornington Peninsula planning scheme, and the preparation and implementation of an integrated swamp management plan to prevent any further development, drainage or infilling of the Tootgarook Swamp.

3b. Ensure that any future extension of the Mornington Peninsula Freeway avoids damage to the Tootgarook Swamp.

4. Abandon expansion of the Port of Hastings, focusing instead on the consolidation of ports at Melbourne, Geelong and Portland.

5a. Investigate the purchase of private land of conservation value on French Island to add to the French Island National Park.

5b. Provide the necessary funding and other resources to support the eradication of invasive species on French Island, including feral cats.

6. Establish the North Western Port Coastal Park from Quail Island to Tooradin Airport, and the Reef Island Bass River Coastal Park. The new coastal parks would be listed in Schedule III of the *National Parks Act 1975*.

7. Apply an Environmental Significance Overlay on the private land abutting the high water mark between Tooradin and San Remo. The overlay would establish a 100 m buffer zone where no development is allowed and where landholders are provided with the necessary resources to rehabilitate the land with indigenous vegetation.

8. Conduct environmental audits of the sea walls along the shorelines of Western Port, Anderson Inlet and Corner Inlet to determine the environmental, social and economic costs and benefits of their removal or retention.

9a. Review the governance arrangements for the Phillip Island Nature Parks including consideration of its own governing statute.

9b. Support with funding and other resources the upgrade of the Phillip Island Nature Parks ageing infrastructure, while also ensuring that the organisation is able to set visitor entry fees that reflect its operational costs.

10. Merge the Punchbowl Coastal Reserve, Kilcunda-Harmers Haven Coastal Reserve, Kilcunda Coastal Reserve, Kilcunda Nature Conservation Reserve, Bunurong Coastal Reserve, Wonthaggi Heathlands Nature Conservation Reserve, Cape Paterson Nature Conservation Reserve and Bunurong Marine Park to create the San Remo-Cape Paterson Coastal Park, and include the new park in Schedule 3 of the *National Parks Act 1975*.

11. Ensure that the Bass Coast Rural Land Use Strategy and associated planning scheme amendments preclude large-scale and linear tourism development in the Farming Zone and Rural Activity Zone along the Shire of Bass Coast's coastline between the existing coastal settlements.

12. Amend the Cape Liptrap Coastal Park management plan to ban pipi harvesting from the Venus Bay section, while also committing adequate resources to the scientific research of pipi harvesting and its wider ecological impacts in the park.

13. Rename Shallow Inlet Marine and Coastal Park the Shallow Inlet Coastal Park and include it in Section III of the *National Parks Act 1975*.

14. Merge the Corner Inlet Marine and Coastal Park, the Nooramunga Marine and Coastal Park, the Nooramunga Flora and Fauna Reserve, coastal crown land of conservation value along the margins of Corner Inlet, the Wilsons Promontory Marine Park and Wilsons Promontory Marine Reserve to form the Corner Inlet-Nooramunga Coastal Park and include the new park in Schedule 3 of the *National Parks Act 1975*.

15. Reject any further expansion of Port Anthony and the development of a port at McGauran's Beach.

16a. Allocate sufficient resources to the implementation of the Gippsland Lakes Environmental Strategy.

16b. Prepare a strategic planning document for the Gippsland Lakes that synthesises the objectives, actions, targets, indicators and timelines of the various other strategies (referred to in the strategy) with the Gippsland Lakes Environmental Strategy.

16c. Reform the governance arrangements for the Gippsland Lakes and catchment (see Part 6). In summary this would include:

- establishment of a new catchment

management authority covering the entire Gippsland Lakes catchment (requiring a reduction to the east of the East Gippsland authority and reduction to the west of the West Gippsland authority)
- establishment of one local government area encompassing the catchment of the Gippsland Lakes (perhaps by expanding the Shire of Wellington to the east and reducing the Shire of East Gippsland to the east)
- establishment of a Gippsland Lakes Coast Committee to manage the coastal public land with a recreational focus bordering lakes Victoria and King including at Eagle Point, Paynesville, Newlands Arm, Raymond Island, Metung, Nungurner, Loch Sport and Lakes Entrance
- expansion of the Gippsland Lakes Coastal Park (see Recommendation 16).

The new Gippsland Lakes Catchment Management Authority would work with the proposed Marine and Coastal Authority (responsible for the proposed Coastal Crown and Waters Reserve outlined in Part 6) to establish an integrated Gippsland Lakes regional catchment, coastal and marine plan.

16d. Conduct a new and independent environmental audit of the Gippsland Lakes (building on the 2001 CSIRO study) to establish baselines for monitoring and evaluating progress in the implementation of the Gippsland Lakes Environmental Strategy.

16e. Prioritise the filling of knowledge gaps (identified by the Gippsland Lakes Environmental Strategy) and a comprehensive review of salinity reduction options in the 2014-15 round of projects funded by the Gippsland Lakes Environment Fund.

16f. Expand the membership of the Gippsland Lakes Ministerial Advisory Committee to include representatives of Traditional Owners and the community environment sector, and an ecologist with marine, estuarine or freshwater expertise.

17.Expand the Gippsland Lakes Coastal Park to include:

- game reserves at Clydebank Morass, Heart Morass and Dowd Morass on the western shore of Lake Wellington, Lake Coleman, Lake Coleman West, Blond Bay, McLeods Morass and Jones Bay
- Gippsland Lakes Reserves and Streamside Reserves (see Appendix 3) around lakes Coleman, Wellington, Victoria and King including Flanagan, Fraser and Rigby islands near Lakes Entrance
- any other coastal public land along the shores of Lake Wellington, Lake King and Lake Victoria of conservation value and not the responsibility of the proposed Gippsland Lakes Coast Committee (see Recommendation in 'Coastal public land')
- land purchased by the Shire of Wellington in the restructure of the subdivisions along the Ninety-mile Beach
- Lakes Entrance-Lake Tyers Coastal Reserve.

Strzelecki Ranges Bioregion

1. Use the Coastal Private Land Conservation Program to support collaborative projects between park managers, adjoining landholders and the local community to create wildlife corridors connecting with the Cape Liptrap Coastal Park, to adequately fence the park boundary to minimise encroachment and the impacts of adjoining private land use, to restore vegetation and to eradicate and control pest plants and animals.

2. Establish a single community-based committee of management (Coast Committee, see Part 6) to manage the coastal reserve between Walkerville South and Sandy Point.

Wilsons Promontory Bioregion

1. Prohibit any further commercial development within the Wilsons Promontory National Park.

East Gippsland Lowlands Bioregion

1a. Support with funding and resources collaborative projects between land managers and the local community to enhance coastal nature in the Lake Tyers area and to control invasive species.

1b. Abandon plans to prescribe burn the bushland at Red Bluff, Lake Tyers Beach, and slash the targeted undergrowth instead.

1c. Amend the Environmental Significance Overlay applying to private land abutting the coastal crown land reserve and the western shoreline of Lake Tyers behind the township of Lake Tyers Beach (cleared land proposed for subdivision). This would establish a 50–100 m buffer zone where development cannot occur and where rehabilitation of indigenous vegetation should be encouraged. The private landholder should be given access to sufficient resources to achieve that rehabilitation, in collaboration with the local community, and to also establish a wildlife corridor across the cleared land.

2. Establish the Ewing Morass-Cape Conran Coastal Park by merging Ewing Morass Wildlife Reserve, Lake Corringle Wildlife Reserve, First and Second Island Flora Reserve, Marlo Coastal Reserve and Cape Conran Coastal Park and list it in Schedule III of the *National Parks Act 1975*.

3. Abandon the Option 3b Bastion Point harbour development at Mallacoota and initiate a process that establishes a lower cost and sustainable alternative that will have community support. Repair any damage to the area's environment caused by the initial construction works.

Coastal public land

1. Abandon any plans to allow commercial tourism development within the coastal conservation estate.

2a. Reduce the complexity in the mix of parks and reserves and their regulations (or lack thereof) on the coast by:

- expanding existing parks to include adjacent or nearby reserves with conservation values e.g. nature conservation reserves, wildlife reserves and lighthouse reserves
- creating new parks and reserves that combine several existing reserves of conservation value.

Bioregion-specific recommendations in this harmonisation of the coastal conservation estate are found in each bioregional profile in Part 2 of this report.

The expanded and new national parks and state parks shoud remain in Schedule II and IIB of the *National Parks Act 1975*, while the recommended new and expanded coastal parks should be inserted in Schedule III.

2b. Maintain park management plans as the key document for ensuring that nature conservation, the prime objective of the parks, is achieved.

2c. Amend the name of marine and coastal parks to coastal parks[1] to differentiate them from marine national parks and sanctuaries, and transfer them to Schedule III of the *National Parks Act 1975*.

3a. Establish Coastal Conservation Reserves and Coastal Recreation Reserves to clarify and simplify the purposes and management of coastal crown land reserves, using the reports and maps of coastal conservation/protection and recreation zones prepared by the Land Conservation Council, Environment Conservation and the Victorian Coastal Council to guide the identification reserve boundaries. An example would be from Lang Lang to Stockyard Point in Western Port Bay.

3b. Assign management responsibility for the Coastal Conservation Reserves to Parks Victoria, while that for the Coastal Recreation Reserves would be assigned to the proposed Coast Committees.

3c. Prepare a management plan for each reserve or groups of reserves and provide them with regulations supported by legislation to facilitate management.

4a. Reduce the number of coastal committees of management by merging those along the following sections of coast to form Coast Committees:

- Narrawong to Port Fairy
- Adding Wye River to the Otway Coast
- Breamlea to Clifton Springs (merging Barwon Coast and Bellarine Bayside committees)
- Mt Eliza to Mt Martha
- Safety Beach to Portsea
- Flinders to Hastings
- Cannons Creek to Coronet Bay
- San Remo to Inverloch
- Walkerville to Sandy Point
- Seaspray to Loch Sport
- Port Franklin to Woodside Beach
- Gippsland Lakes (settlements and recreation areas inside Gippsland Lakes and including Lake Tyers Beach).

[1] Marine areas are already included in the boundaries of coastal reserves and in the coastal zones of municipal planning schemes. Zoning within the new parks should be able to ensure the appropriate management for the marine and coastal areas within them.

The Coast Committees would manage the Coastal Recreation Reserves (see above and recommendation 7 in Part 6 of this report for more details). The proposed Marine and Coastal Authority (see Recommendation 1 in Part 6 of this report) would oversee the operations of the new Coast Committees.

4b. Ensure that the process and outcome of the committee of management merging process maintains the engagement of local communities.

5. Ensure that all parks and reserves on coastal public land are covered by up-to-date management plans and publicly accessible web-based information about their location, values and management.

Guaranteeing coastal nature

1. Amend the *Flora and Fauna Guarantee Act 1988* and its implementation to:

- improve and accelerate the listing process
- provide a greater focus on ecosystems rather than individual species
- develop a state biodiversity strategy
- make better use of critical habitat determinations, interim conservation orders and other conservation measures
- establish a regulatory framework appropriate to rapid climate change
- include penalties for infringements under the act in relation to fauna, currently only available under the *Wildlife Act 1975*
- provide adequate resources to implement the act
- publicly release data on government orders, offences, permits and unprotected wildlife, as well as lists of conservation reserves and game reserves and their management plans
- prepare a compliance and enforcement policy and annual reporting on its implementation.

Statewide planning

1. Include in the Victorian Planning Provisions, the State Planning Framework and coastal municipal planning scheme, an objective that aims to protect existing coastal nature, reverse its decline and help it adapt and move inland in response to sea level rise and other climate change impacts.

2. Strengthen the decision guidelines within the clauses of the State Planning Policy Framework, where they apply to coastal areas, to encourage the restoration of EVCs along the coast on public and private land.

3. Strengthen the provisions within the Vegetation Protection Overlay in the Victorian Planning Provisions and have it applied to all coastal and hinterland EVCs within 500 m of the coast on private and public land. Application of the overlay to public land should encourage the removal of threats such as poorly placed access tracks, car parks, roads and structures.

4. Strengthen the Environmental Significance Overlay within the Victorian Planning Provisions to include a mandatory 100 m buffer zone on private land abutting the high water mark, abutting a coastal conservation

area, coastal reserve or coastal crown land reserve, and stream banks and estuaries. Within that buffer:

- development would not be permitted
- actions to remove and control weeds and pest animals would be required to reduce threats and encourage vegetation maintenance and restoration
- vegetation restoration would be encouraged with financial assistance from the Coastal Private Land Conservation Program
- the buffer and boundaries between private and public land would be fenced to encourage vegetation restoration.

The buffer in the Shire of Moyne Environmental Significance Overlay should be used as a model. Private landholders affected by the overlay buffer should be resourced to restore the coastal and hinterland EVCs in the buffer, using funds from the proposed Coastal Private Land Conservation Program.

5. Strengthen the permitted clearing regulations as proposed in Table 31 and amend provisions in the State Planning Policy Framework to ensure that the clearing of coastal EVC regrowth requires a permit.

6. Apply the overlays for Environmental Significance, Significant Landscape and Vegetation Protection to coastal public and private land to ensure consistent recognition and protection of coastal nature.

7a. Insert the Coastal Conservation Zone, Coastal Adaptation Zone and the Coastal Hazard Overlay into the Victorian Planning Provisions, and amend the Public Conservation and Resource Zone and Rural Conservation Zone as recommended by the Coastal Climate Change Advisory Committee.

7b. Insert a new clause into the Victorian Planning Provisions with objectives, methodology and process for cost-benefit analyses of coastal infrastructure projects that include ecosystem services valuation.

7c. Insert a new objective into Section 4(c) of the *Planning and Environment Act 1987* that would be to identify and plan for the potential impacts of climate change in order to minimise risks to human health and safety and to ecological communities, as per the recommendation of the Coastal Climate Change Advisory Committee**.**

Victorian coastal strategies

1. Rename the *Victorian coastal strategy 2014* to the *Victorian marine and coastal strategy 2014*.

2. Amend the desired outcomes, policies and actions for the four hierarchical principles in the manner suggested by the bold and italicised text in tables 43–61 in Appendix 2.

3. Establish sets of criteria to determine:

- the ecologically sustainability of ports, coastal settlements and fishing
- net community benefit and coastal-dependency.

4. Strengthen the policies for decision-making and actions for coastal nature conservation on coastal crown land reserves and the coastal conservation estate.

5. Ensure that the implementation and evaluation of the *Victorian coastal strategy 2014*, and the various other strategies and plans relied on by it, are monitored, evaluated and reported on with the regular public release of progress on implementation, and community engagement is included in the evaluation processes.

6. Ensure that the integration of coastal, marine and catchment planning and management goes beyond collaboration and is driven by one agency responsible for statewide marine and coastal planning (see Part 6 for proposed legislative and institutional reforms e.g. Marine and Coastal Authority).

Coastal action plans

1. Amend the *Coastal Management Act 1995* to require the production of one regional marine and coastal strategy per region rather than multiple coastal action, estuary and boating action plans.

2. Split the three coastal regions into six, with their boundaries aligned with those of the catchment management authorities along the coast and the proposed Gippsland Lakes catchment management authority (see Recommendation 3 in the 'Catchment management authorities' section).

3. Ensure proposals for new boating infrastructure undergo a comprehensive and independent environmental assessment that includes an assessment of the environmental impacts of the boat-based recreational fishing enabled by the provision of that boating infrastructure.

4. Establish the boat carrying capacity of Port Phillip Bay, Western Port and other estuaries in Victoria, in relation to recreational fishing, and set limits on boat numbers in those water bodies consistent with that carrying capacity.

5a. Ensure that coastal estuaries and wetlands are given priority in Regional Waterway Strategies and that Estuary Management Plans are prepared for each estuary. The plans should be based on the best-available science and apply management zones to manage protection and use.

5b. Ensure that coastal estuaries and wetlands receive adequate volumes of environmental water.

6. Prepare and implement a State Environment Protection Policy for Victoria's 100+ estuaries.

Coastal management plans

1. Merge existing committees of management to form a smaller number of Coast Committees, each with responsibility over the combined areas of the committees they are replacing (see Recommendation 4a in 'Coastal public land' and Part 6 for details).

2. Establish a consistent approach to the preparation, objectives, contents and implementation of coastal management plans for coastal crown land reserves that are the responsibility of Coast Committees. This report proposes that those reserves be called Coastal Recreation Reserves (see Recommendations 3a–3d in 'Coastal public land'), and that a key objective should

be the protection of coastal nature that occurs within their boundaries.

Catchment management authorities

1. Ensure all coastal regional catchment authorities have at least one-third of their board members with coastal or marine expertise.

2. Ensure that catchment management authorities are designated as referral bodies in relation to applications for native vegetation clearing permits.

3. Investigate the reconfiguration of the boundaries of the catchment management authorities and municipalities in the Gippsland Lakes. The investigation should consider:

- establishment of the Gippsland Lakes Catchment Management Authority and the Shire of Gippsland Lakes, both with boundaries encompassing the catchment of the Gippsland Lakes
- returning the East Gippsland Shire Council to the boundaries of the Shire of Orbost, with the East Gippsland Catchment Management Authority given the same boundary
- expanding the Shire of Wellington to the east to the new western boundary of the East Gippsland Shire.

4. Ensure that regional catchment strategies are consistent in terms of their underlying principles, structures and contents.

5. Ensure that the websites of the regional catchment authorities give sufficient weight to coastal and marine policies and actions.

6. Investigate the purchase of land that will support the objectives of the regional catchment strategies to protect estuaries and other coastal habitats.

Local government

1. Increase the application of coastal planning scheme overlays to enhance the protection of coastal nature.

2. Ensure that all coastal townships have secure township boundaries and that the planning of land use along the coast between those boundaries supports the retention and gradual expansion of coastal nature.

3. Ensure that coastal municipalities include 100 m buffers in the Environmental Significance Overlay applied to private land to provide greater protection for coastal and hinterland EVCs and their restoration along waterways, surrounding estuaries and abutting coastal crown land or the high water mark. Use the Shire of Moyne overlay as a model.

4. Review the statewide and regional policies encouraging population growth along the coast and take action to slow that growth and reduce its impacts.

5. Amend the public land zones to Public Conservation Zone and Public Recreation and Resource Zone to better reflect and integrate with the management of the coastal conservation estate.

6. Investigate the creation of a:

- West Coast Shire by amalgamating coastal sections of Corangamite Shire, Moyne Shire and the City of Warrnambool
- new shire combining coastal elements of the Bass Coast and South Gippsland shires
- new Gippsland Lakes shire by adjusting Wellington and East Gippsland shires.

Landholders

1. Establish a Coastal Private Land Conservation Program to support coastal nature conservation on private land abutting coastal conservation areas, coastal crown land reserves or the high water mark.

The funds would be used to fence remnant areas, cover the costs of new plantings, help to identify and fence boundaries between public and private coastal land to prevent illegal access by livestock, horses and unauthorised vehicles, eradicate or control invasive species, and establish wildlife corridors. Where a boundary fence is incorrectly aligned, the necessary adjustments should be made. In some locations, where realignment would include cleared land in the reserve but exclude land of high conservation value, land swaps should be investigated.

The initial focus of the program should be on the restoration of coastal nature in those bioregions where land clearance has reduced coastal nature to very narrow and fragmented strips or removed it completely i.e. Warrnambool Plain, Otway Plain, Victorian Volcanic Plain and Gippsland Plain.

2. Investigate the purchase or leasing of privately owned coastal land. The initial focus should be on private land inliers within reserves and land directly abutting the boundaries of coastal conservation areas. By entering into leasing arrangements, the Victorian government and its agencies would be effectively paying landholders not to develop their land and to allow for government-funded fencing and vegetation restoration.

3. Ensure that there are sufficient resources to continue and expand the CoastalTender and Saltmarsh Protection projects, with an emphasis on significantly increasing the area of EVCs protected on private land abutting the high water mark and coastal conservation and crown land reserves. The Coastal Private Land Conservation Program would not replace these programs and may provide resources to them.

4. Continue to develop innovative ways to engage private landholders in the protection, restoration and expansion of coastal nature, especially in collaborative projects.

5. Strengthen the permitted clearing regulations (see Recommendation 5 in 'Statewide planning').

Community

1. Ensure ongoing and adequate funds to maintain and expand Coastcare, especially into more isolated areas where volunteer capacity is currently limited, and increase the number of Coastcare coordinators.

2. Support with funding and other resources collaborative projects between groups, park managers and private landholders to protect and expand coastal nature.

Executive summary

Part 1 Introduction

The first part of *The coast is unclear* considers the evolution of the Victorian coast's natural, social, and economic settings, the key threats to the coast and the benefits from conserving coastal nature.

Part 1 begins with a quick coastal flyby to highlight the landforms found along Victoria's 2000-kilometre coast. Wide sandy beaches, sweeping bays, giant active sand dunes, sheer vertical cliffs, rock platforms, boulder-strewn beaches, extensive tidal flats and coastal lagoons and estuaries are the landforms that comprise the natural setting in which human use and development has occurred.

For thousands of years the Victorian coast provided food, raw materials and cultural and spiritual connections for Indigenous communities. But the arrival of sealers and whalers at the beginning of the 19th century, followed by waves of European settlement, impacted heavily on the communities, their close coastal connections, and on the nature of the coast and hinterland on which they relied.

Pastoralism, closer settlement, forestry, fishing, shipping and trade infrastructure, the spread of rail lines and roads, continuing population growth, urbanisation, industrialisation, coastal development, tourism, land-based pollution and invasive pests have taken their toll, while the impacts of climate change are now emerging and set to worsen.

Although people along Victoria's coast are now more connected than ever before, connectivity for the coast's plants and animals has declined, with shelter, resting and stopover points and feeding areas disappearing, and coastal nature becoming highly fragmented.

The two main drivers of change in the condition and extent of coastal nature are climate change and the destruction, degradation and fragmentation of coastal nature caused by the land development, urbanisation and industrialisation stemming from population growth. Increasing demands for coastal tourism developments and the infrastructure to service them, including new and upgraded roads, will place further pressure on coastal nature.

A rise in sea levels, increased storm frequency and intensity, storm surges, higher temperatures, altered wind strengths and directions, and reduced rainfall and declining coastal river flows are predicted for the coast under various climate change scenarios.

The environmental effects of these changes include increased flooding of low-lying areas, erosion of barrier dunes, inundation from storm surges, increased salinity in estuaries, rivers and bays, and the removal of beaches, sand dunes, saltmarshes and mangroves. This could lead to the collapse of ecosystems, a major redistribution of coastal plants and animals, and the breaching of some barrier systems such as the Gippsland Lakes. Sea level rise will also cover low-lying shore platforms, removing a significant coastal habitat and also a major attraction for coastal residents and holidaymakers—rock-pool rambling.

The issues impacting on the coast have over the years spawned various plans, strategies, legislation and institutions, often the result of community pressure. These figure prominently in the discussions that follow in this report.

Part 1 of *The coast is unclear* concludes with a consideration of the economic value of provisioning, regulatory, habitat and cultural services provided by coastal ecosystems, highlighting that the conservation of coastal habitats is not just good for the plants and animals living there, it is also critical to the health of our economy and lifestyle.

Part 2 State of the nature on Victoria's coast

Part 2 of *The coast is unclear* opens by defining the coast for this report and then outlines the parameters—bioregions, ecological vegetation classes, conservation status and threatened species—used in analysing the state of the nature on Victoria's coast in each of ten bioregions with coastal boundaries: Bridgewater, Glenelg Plain, Warrnambool Plain, Otway Ranges, Otway Plain, Victorian Volcanic Plain, Gippsland Plain, Strzelecki Ranges, Wilsons Promontory and East Gippsland Lowlands.

Profiles of the ten bioregions then follow. Under the heading 'The natural state of play', the bioregion is briefly described before an analysis of the conservation status of the ecological vegetation classes (EVCs) found within 500 m of the coast. These EVCs are listed in a table that also indicates their pre-1750s and current extent in hectares, the percentage of their pre-1750s coverage remaining, their areas in public and private ownership, the percentage of the remaining cover being conserved in conservation reserves or under Trust for Nature covenants, and their conservation status: Endangered, Vulnerable, Depleted and Rare.

The analysis reveals a rich diversity of coastal nature, with 95 ecological vegetation classes identified within 500 m of the shoreline including scrubs, shrublands, heathlands, forests, woodlands, grasslands, lagoons, wetlands and marshes. But the analysis also shows the considerable loss, fragmentation and degradation of coastal nature.

The bioregions with coastal boundaries most impacted by European settlement and ongoing coastal development are the Warrnambool Plain, Otway Plain, Victorian Volcanic Plain and the Gippsland Plain. These four bioregions are now in need of major collaborative projects involving governments, landowners and the community which aim to protect and restore vegetation and improve the health of coastal and hinterland ecosystems.

The levels of protection in conservation reserves for threatened ecological vegetation classes along the coast, except for the Wilsons Promontory Bioregion, range from zero to 100% but many are below 20%.

Again, it is the plains rather than the ranges with the worst records, and the hinterland EVCs are the least protected—they are largely on private land. Within each bioregional profile there are recommendations for new conservation reserves and other measures to improve the conservation of coastal nature in that bioregion.

Of the 95[2] EVCs identified, 27 coastal and 42 hinterland EVCs are either Endangered or Vulnerable in at least one of the bioregions in which they occur.

Coastal EVCs that are either Vulnerable or Endangered in two or more bioregions are Coast Banksia Woodland, Coastal Saltmarsh, Estuarine Wetland, Coastal Headland Scrub, Coastal Tussock Grassland, Coastal Saltmarsh/Mangrove Shrubland Mosaic, Coastal Alkaline Scrub and Coast Banksia Woodland/Coastal Dune Scrub Mosaic.

Hinterland EVCs either Vulnerable or Endangered in two or more bioregions are Damp Sands Herb-rich Woodland, Lowland Forest, Herb-rich Foothill Forest, Damp Forest, Swamp Scrub, Plains Grassy Woodland, Wetland Formation, Plains Grassland, Damp Heath Scrub, Grassy Woodland, Shallow Freshwater Marsh, Heathy Woodland/Damp Heathy Woodland/Damp Heathland Mosaic, Aquatic Herbland, Freshwater Meadow and Deep Freshwater Marsh.

'The pathways of change' section in each bioregional profile describes the distribution of the EVCs within 500 m of the coast, sites of biological significance, including plant and animal species of interest, the main land uses, major threats and the various pathways along which positive and negative changes to the bioregion's coastal nature have been occurring.

The 'Threats summary' simply lists in dot-point form the threats to coastal nature mentioned in the bioregional profile.

The 'Recommendations' section contains bioregion-specific recommendations for improving the condition, extent and management of coastal nature.

Part 2 of *The coast is unclear* ends by summarising the decline of coastal nature and making general recommendations for reversing that trend and improving coastal nature conservation.

Part 3 The Victorian government and coastal nature conservation

Part 3 in *The coast is unclear* considers the future for coastal nature in the context of the legislative and regulatory frameworks used by the Victorian government, and the role that it plays in conservation. Its actions can be pivotal in the conservation and degradation of coastal nature.

The focus of this analysis is on the institutional arrangements and planning, protection and management processes established by seven Victorian statutes: *National Parks Act 1975*, *Crown Land (Reserves) Act 1975, Flora and Fauna Guarantee Act 1988*, *Planning and Environment Act 1987*, *Coastal Management Act 1995* and the *Catchment and Land Protection Act 1994* and the *Wildlife Act 1974*.

Over the years, legislators have tried various ways to deal with the issues and threats facing the Victorian coast. As a result we now have a complex and disintegrated framework for planning, protection and management with many agencies, institutions and organisations involved. Integration of the diverse elements of the framework has been the aim of many governments, but to date they have been unable to find the formula for success.

To enhance the protection, maintenance and restoration of coastal nature will require collaborative, well-planned and adequately resourced government action, but this is being undermined by recent planning and development decisions.

The *National Parks Act 1975* and *Crown Land (Reserves) Act 1975* provide the legislative basis for the establishment and management of Victoria's coastal conservation areas and coastal crown land reserves. About two-thirds of the coastline has been given protection in national, state and coastal parks, beginning with the Wilsons Promontory National Park in 1898. But as the analysis in Part 2 has shown, coastal nature is in need of greater protection on both public and private land.

Coastal crown land reserves are narrow strips of public land under increasing pressure from demands for their use. This accentuates the edge effects of adjoining land uses and leads to habitat loss, the invasion of weeds and pest animals, illegal grazing and indiscriminate access.

There are many committees of management with delegated management responsibility for coastal crown land reserves. They provide an opportunity for people to be involved in coastal planning and management. However, there are far too many to ensure consistent, integrated and adequately resourced management of coastal public land.

The listing of threatened coastal plant and animal species under the *Flora and Fauna Guarantee Act 1988* provides the opportunity for greater protection. However, the analysis in Part 3 shows that due to a lack of political will and commitment, legislative weaknesses and inadequate resourcing, the act has failed to deliver on its promise. Reform of the *Flora and Fauna Guarantee Act* and a commitment from government are essential to enhance and expand nature conservation across Victoria and along the coast. The act's implementation, transparency, accountability, monitoring and enforcement need substantive improvements.

Under the Victorian Planning Provisions and State Planning Policy Framework established by the *Planning and Environment Act 1987,* coastal planning has had a far more targeted approach in recent years. However, this has not stopped major projects that have had or will have environmental impacts. Recent changes to coastal planning zones and native vegetation clearing regulations will lead to further fragmentation and loss of coastal nature.

Victoria is entering a new phase of coastal development, including residential, tourism, industrial and port expansion, that will further damage the

[2] This was the number of EVCs identified using the publicly available coarse-scale maps. A finer-scale analysis would yield a greater number of EVCs along the coast.

conservation and social values of the coast. The current resourcing of coastal planning, protection and management is inadequate to deal with these and other existing and emerging threats.

The *Coastal Management Act 1995* ushered in a new focus on coastal planning and management that has had a positive influence on strategic and statutory coastal planning but its limitations are now exposed.

The act established the Victorian Coastal Council, which is responsible for the preparation of the *Victorian coastal strategy*. The strategy has had a profound impact on the rhetoric and contents of coastal planning in Victoria. However, a number of weaknesses need addressing, including its lack of nature conservation policies and actions, the over-long list of coastal-dependent uses, the concept of net community benefit, the lack of criteria for ecologically sustainable development and more specifically coastal settlements, fisheries and ports, the absence of measurable objectives, targets and timelines, and its underlying inability to make any of its recommendations mandatory. Unfortunately, the *Draft 2013 Victorian coastal strategy* to be finalised early in 2014 has failed to address these.

The Coast is unclear also reviews a number of the many coastal action plans, estuary plans, boating plans and management plans that have been prepared to improve coastal planning and management. These were prepared during a time of available federal and state funding. This has supported a costly system with many agencies and committees of management involved in delivering coastal management. In more austere times and budget surpluses, there will be need for a restructuring of coastal management, a streamlining of its functions, and a reduction in the number of coastal action and management plans.

The 100 or more small estuaries along the Victorian coast are critical to migratory fish, migratory birds as stopovers, saltmarsh species, commercial and recreational fishing, and as popular residential and recreational areas—they are the lifeblood of coastal communities. But estuaries are under enormous pressure from population growth, changes in catchment land use, landfill, urban encroachment, declining water quality, loss of habitat, divided agency responsibilities and a general lack of formal protection.

Catchment management authorities established under the *Catchment and Land Protection Act* have struggled to ensure an adequate focus on the coast. This has been slowly improving but they are not the appropriate body for coastal planning and management due to their largely rural focus and lack of coastal and marine expertise on their boards and within their staff. Their role should focus on ensuring high quality and sufficient environmental flows to improve the health of the estuaries within their regions.

Part 4 Local government and coastal nature conservation

Coastal municipalities play a critical role in the strategic and statutory coastal planning and coastal crown land reserve management.

Coastal municipalities use a variety of planning tools to guide development along the coast but their application is inconsistent. Some wish to advance inappropriate coastal development, while others are under increasing pressure to allow more coastal development.

Having 21 municipalities with coastal boundaries, some of which have short stretches and limited interest in the coast due to their dominant rural or urban characters, is far too many for consistent, integrated and effective coastal planning and management.

Nineteen of the 21 municipalities along Victoria's coast have also been delegated responsibility for the management of coastal crown land reserves. Where these are semi-urbanised or non-urban reserves containing coastal nature, and where the council is also proposing land development within or adjacent to the crown land reserves or conservation reserves, conflicts of interest have arisen.

Part 5 Landholders and the community in coastal nature conservation

Although 96% of the coastal land abutting high water mark is publicly owned, 4% is not and it is mostly between Portland and Warrnambool, Clifton Springs to Point Henry, and along the eastern shore of Western Port where very little of the original coastal nature remains. The conservation of coastal nature on private land is very low and Trust for Nature covenants seldom used. Where they are in place, their habitat coverage represents only a tiny percentage of what remains.

Coastal communities are engaged in coastal planning and management through local environment and Coastcare groups. Communities are working with local councils, catchment management authorities, regional coastal boards, government agencies and landholders to plant trees, pull weeds, build fences and monitor wildlife to improve the quality and extent of coastal nature. Community groups play a very important role in environmental enhancement projects along the coast but there are few volunteers available along isolated sections.

Part 6 Coastal legislative and institutional reform

To enhance the protection, maintenance and restoration of coastal nature will require collaborative, well-planned and adequately resourced actions by all levels of government, the community and landholders. It will also require integrated planning and management, the aim of many a legislator and policy maker down though the years. But integrated coastal zone management is unachievable under the current coastal planning and management structures in Victoria. There are too many responsible agencies, municipalities, committees of management and planning and management processes.

Part 6 of *The coast is unclear* proposes major legislative and institutional reform to address this and the many issues that have been discussed in the preceding parts

1–5. It outlines the purposes of the proposed Marine and Coastal Planning and Management Act, which would establish the Marine and Coastal Authority charged with planning for and managing the use of the coastal crown land and coastal waters. As part of its functions it would prepare the Victorian marine and coastal strategy, and regional marine and coastal plans. A Marine and Coastal Information Service would be established within the Marine and Coastal Authority to conduct research and gather, analyse and release environmental, social and economic data on marine and coastal environments.

A Coastal Infrastructure Agency would also be established within the new institutional arrangements to carry out works, assess (design and construct?) and manage boating infrastructure, coastal defensive/protection works, artificial reefs and the planned retreat of coastal infrastructure for all coastal locations except for the major ports of Portland, Geelong, Melbourne and Hastings.

Part 1 Introduction

This part considers the evolution of the current natural, social, and economic settings along the Victorian coast, and the benefits from conserving coastal nature.

The disappearing coast

A Victorian coastal flyby

This journey along Victoria's 2000-kilometre, south-facing coastline begins in the west at the South Australian border. Wide sandy beaches, giant active sand dunes and occasional dune limestone headlands unfold along Discovery Bay on its way to Cape Bridgewater.

At Cape Bridgewater, where Victoria's highest coastal cliffs are found, the bedrock is volcanic but covered by stable sand dunes under pasture. Volcanic rocks also form the bases of Cape Nelson and Sir William Grant but they are capped with marine and dune limestones.

Further east, the sandy beaches and low-lying foreshore dunes of Portland Bay curve towards Port Fairy and then to the dune limestone cliffs of Levy and Thunder points at Warrnambool.

The coast changes dramatically from Warrnambool to Moonlight Head; spectacular 30-60 m cliffs, rock stacks and gorges are etched into dune and marine limestones. The eight Twelve Apostles are some of the spectacular highlights along this internationally renowned cliffline.

The coast of the Otway Ranges begins at Moonlight Head, with cliffs carved from freshwater sandstone. Except for the floodplains at the mouths of the Johanna and Aire rivers and at Apollo Bay, the sandstone cliffs are almost continuous to Eastern View. Rock platforms sit at their bases; beaches are few, appearing only at the mouths of coastal streams flowing down the southerly slopes of the Otway Ranges, one of the wettest areas of the state.

Between Eastern View and Point Lonsdale, sandy beaches are interspersed with limestone cliffs and headlands at Aireys Inlet, Anglesea, Point Addis, Bells Beach and Barwon Bluff.

The large estuaries of Port Phillip and Western Port dominate Victoria's central coast. The western shoreline of Port Phillip Bay is largely flat and low-lying with wetlands, saltmarshes, mangroves and mudflats, while the eastern side has long sandy beaches and some sandstone cliffs.

Dune limestone cliffs and sand dunes run from Point Nepean, at Port Phillip Heads, along the open coast to the Rye Back Beach and then Flinders and the entrance to Western Port.

Saltmarsh, mangroves, seagrasses and mudflats are found in intertidal areas covering 40% of Western Port. This shallow bay contains two large islands, French and Phillip, with intertidal flats on their northern shores and basalt cliffs along their southern coasts.

The coast between San Remo and Inverloch begins with sandstone cliffs and rock stacks, but from Cape Paterson it is low lying with sandy beaches backed by sand dunes.

The town of Inverloch sprawls along the northern shore of Anderson Inlet, a large coastal lagoon enclosed by the sand dune barrier of Point Smythe. The sandy beaches and active sand dunes of Venus Bay roll out along the barrier's ocean side. Venus Bay ends abruptly at Cape Liptrap, a headland with high sandstone cliffs on its western side and lower limestone cliffs along the eastern shoreline.

A short stretch of beach and a coastal lagoon at Shallow Inlet separates Cape Liptrap from the flat and sandy Yanakie Isthmus, which joins Wilsons Promontory to the Victorian mainland. Steep plunging granite cliffs and dunes run along the promontory's western side, but beaches with swamps behind are found on the east.

Saltmarsh, mangroves and seagrasses grow in the shallow but broad Corner Inlet, separated from Bass Strait by a low-lying dune barrier and islands called Dog and Little Dog, Snake and Little Snake, Clonmel, Sunday and Saint Margaret.

McLoughlins Beach marks the beginning of the long and wide Ninety-mile Beach. Behind the beach are large sand dunes forming the barrier to the Gippsland Lakes, a series of large coastal lagoons between Sale and Lakes Entrance. The Ninety-Mile Beach ends at Marlo after passing Lake Tyers and Ewing Morass. Water drains from the morass into Lake Corringle, the remnant of a once larger estuary at the mouth of the Snowy River where it enters Bass Strait at Marlo.

Between Marlo and Cape Howe there are broad dune systems interspersed with granite and quartzite headlands at Cape Conran, Point Hicks, Rame Head and Bastion Point, and small estuaries at the mouths of the Bemm and Cann rivers. The larger estuary of Mallacoota Inlet formed as the last Ice Age waned and rising seas drowned the lower reaches of the Genoa River. Huge mobile sand dunes stretch from Mallacoota to Cape Howe, which marks the coastal border with New South Wales.

Coastal dispossession and development

The evolving coast

As the last Ice Age was coming to an end 20 000 years ago, Bass Strait did not exist, Port Phillip Bay was simply part of the Yarra River's floodplain, sea level was about 100 metres lower and the Victorian coast was many kilometres south of where it is today.

Once the ice began to melt and the seas rose, water flooded what were then the valleys of the Glenelg, Gellibrand, Yarra, Thompson and Genoa rivers, surrounded rocky hills to form Wilsons Promontory and the islands of Bass Strait, filled Port Phillip Bay, Western Port and Corner Inlet, and threw up sand barriers to enclose the Gippsland Lakes. The rising waters came to rest at what we now call the Victorian coast about 6 000 years ago.

Even though these changes were very slow, they would have affected the passing generations of Indigenous communities living along the coast. The sea gradually rose and submerged food sites, camping sites and burial grounds, but the communities gradually

adapted. Wetlands, mangroves, saltmarsh, heathland and sand dunes were also slowly on the move.

For the Kirrae Wirrung, Gunditjmara and Gadabanud in the west, the Wathaurong and Boonerwrung around Port Philip and Western Port, and the Tatungoloong, Bratowooloong, Krauatungalung and Bidawal of Gippsland, the evolving coast continued to provide food, raw materials and cultural and spiritual connections. Abalone and rock lobster were plucked from shore platforms, eels harvested from fish traps, fish speared in the estuaries scattered along the coast, grasses used to fashion baskets, and bark peeled from trees to make canoes and shelters.

The coast was their focus—20% of Victoria's archaeological sites are found inland within one kilometre of the coast, while many are submerged beneath coastal waters.

Sealers and whalers arrive

When William Dutton and other sealers and whalers arrived in south-west Victoria around 1800, disruption, disease and death quickly followed for the coastal tribes. The Convincing Ground at Allestree, several kilometres east of Portland, is where Victoria's first recorded massacre occurred in 1833 or 1834.

Violence towards Indigenous communities symbolised this first contact along the Victorian coast, reflected by the naming of Massacre Bay, the Bay of Martyrs and Massacre Point near Peterborough, and the 20-year Eumeralla Wars between the Gunditjmara and European colonists at Yambuk, beginning in 1842.

At the same time, small settlements began to form around seal processing plants and whaling stations at what would later become the towns of Portland, Port Fairy, Warrnambool and Apollo Bay. A plant was soon established to process fur seals killed on Griffith Island, a few metres from the mainland at Port Fairy, and southern right whales were harpooned offshore. It operated until 1843.

By the 1830s the seals of Bass Strait had been all but wiped out, but whaling continued to provide an economic base for the coastal towns until the 1850s, by which time whales too had become scarce.

Graziers and gold miners

During the sealing and whaling era, and beginning in the 1830s, further impetus was given to coastal settlements by the movement of pastoralists into western and eastern Victoria. Edward Henty at Portland, David Fisher, James Strachan and George Russell at Geelong, the McHaffie brothers at Phillip Island, Samuel Anderson at San Remo and Inverloch, and the Ewing brothers at Lakes Entrance, all established pastoral runs for sheep and cattle.

The early settlers were focused on resource exploitation, not conservation, and were encouraged by the colonial government in their pursuits. As well as devastating consequences for seal and whale populations, the expansion of coastal settlements was also impacting on the coast's terrestrial habitats.

Squatters were not the only people reshaping the land. Workers from the Port Fairy whaling station cleared land when establishing small farms across the Moyne River around the beginning of the 1840s. Wetlands there were also drained in the 1840s, while the Mornington Peninsula was cleared of sheoaks to fire up local lime kilns supplying building materials for a rapidly growing Melbourne. Forests in the Otway Ranges, the South Gippsland Highlands, East Gippsland and western Victoria were also being cut down for domestic construction and export.

Sheep and cattle graziers were dependent on the export of their product, and villages with ports already established for the sealing and whaling industry became focal points for trade. The coastal towns were made more resilient by the 1850s gold rushes as thousands of immigrants—all arriving by sea—flooded through ports such as Warrnambool and Port Fairy on their way to the goldfields.

But as the gold petered out, and unemployed miners began drifting away from the goldfields, the Victorian government carved up the hinterland for the ex-miners to establish small farms by clearing local forests. The out-of-work miners knew little about farming and there enterprise was short-lived. Not so the environmental impacts.

First signs of coastal conservation

Throughout the nineteenth century, the rapid development of Victoria had been given strong impetus by the selling (alienation or appropriation) of crown land. But recognition of the need to keep some land for public purposes was also growing. Crown frontages had been established to support water transport and land access, but in the 1860s parks and gardens on some of Melbourne's beaches were also reserved, and other reservations proclaimed along parts of Port Philip Bay, Western Port and shores facing Bass Strait.

In June 1873 all 'unappropriated' crown lands along Port Phillip Bay's shoreline were permanently[3] reserved. Then, in a remarkable piece of foresight, on 23 May 1881, the Victorian government reserved all unalienated land within one-and-a-half chains of the colony's 'rivers, rivulets, creeks, channels, aqueducts, lakes, reservoirs, swamps, inlets, loughs and straits'[4].

Interest in the natural environment and the need to conserve it was growing, and in 1880 Victoria's first conservation group, the Fields Naturalist Club of Victoria, was born. For more than 130 years it has been a powerful voice for creating conservation reserves, including the state's first national park at Wilsons Promontory in 1898.

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[3] Public lands and waters can be permanently and temporarily reserved or remain unreserved. Temporary reservations can be revoked by notice in the Victorian Government Gazette, whereas the revocation of a permanently reserved parcel of public land or water requires parliamentary approval. This affords permanently reserved areas greater protection but that is always dependent on the balance of power across both houses of parliament.

[4] Public Record Office of Victoria, 'Function VF 236, Coastal management', http://www.access.prov.vic.gov.au/public/component/daPublicBaseContainer?component=daViewFunction&breadcrumbPath=Home/Access%20the%20Collection/Browse%20The%20Collection/Function%20Details&entityId=236, Public Record Office of Victoria, Melbourne

Growing coastal towns

Towards the late nineteenth century the growth of forestry and commercial fishing was further stimulating port towns, as were the road and rail networks used to transport goods to and from the wharves.

San Remo, Inverloch and Mallacoota grew as agricultural and timber products and locally caught fish were shipped from their ports. Commercial fishing began at Lakes Entrance in the 1870s, and was given greater certainty in 1889 with the construction of the permanent artificial opening to the Gippsland Lakes. The local discovery of coal and the establishment of a King George whiting fishery in the early twentieth century further boosted San Remo's deep-water port; fish were sent by rail to the Melbourne markets.

But there were other reasons for the establishment and growth of coastal towns. For Peterbrough, the 1885 wrecking of the schooner *Schomberg* attracted visitors to see it, with many deciding to stay. Although Queenscliff and Point Lonsdale were pastoral runs in the 1830s, and later became fishing villages, the 1860s construction of lighthouses, the 1880s establishment of a military fort at Queenscliff, and the construction of the railway line from Geelong, were key to their development.

In the 1880s Alex and Donald MacRea, and their cousin Alex MacLennan, established Wye River, Kennett River and Separation Creek as bases for their farming and fishing operations. Around the same time a US-based Methodist community established Ocean Grove.

Anglesea was becoming a popular recreational fishing spot for Geelong residents in the 1880s. Barwon Heads, a fishing village from the 1870s, emerged as a tourism centre after the 1920s. Phillip Island's population took rapidly expanded after an access track was built in the 1920s to what is now the internationally famous colony of little penguins.

The Thompsons Creek, north of Torquay, was becoming popular for campers in the 1870s, and some erected huts to make their regular stays more comfortable. Houses appeared during the 1930s depression, built by squatters with nowhere else to live and who subsisted on what they could catch and gather in the nearby swamp, creek and sea. In 1942, a strip of crown land behind a tall sand dune was surveyed and freehold allotments sold to prospective residents of Breamlea, where a post office opened in 1947.

Tourism and trains

Each wave of development in coastal towns was largely based around resource extraction of the hinterland or coastal waters, but during the 1850s another economic driver was emerging—coastal tourism.

As Melbourne grew with the gold rushes, agricultural development and the rise of manufacturing, train lines began rolling out along the Port Phillip Bay shoreline. In the 1850s and 1860s, suburban trains began taking beachgoers on day trips to the increasingly popular seaside destinations of Williamstown, Port Melbourne, St Kilda, Brighton and Sandringham. In the 1880s and 1890s they rattled out to Mordialloc, Frankston, Mornington and Stony Point. Geelong was connected to Newport and then Melbourne by rail between 1859 and 1861, and then to Queenscliff in 1879.

Further afield, Portland was linked to Melbourne via Ararat in 1877, and rail lines from Melbourne arrived in Warrnambool and Port Fairy in 1890. In the 1890s, tourists took the train to Timboon and then a tramway to Port Campbell to marvel at the Twelve Apostles (in those days there were nine).

As well as tourists, new rail lines were transporting the products of local farmers and fishers that had earlier been the cargo of ships. At Port Fairy, the 1890 arrival of the railway line to Melbourne enabled commercial fishers to get their barracouta catch to the Melbourne market in good condition, and the number of fishing boats increased from six to 30 by 1900[5].

Lakes Entrance had become an important shipping port by 1860, with steamers operating through the Gippsland Lakes system. But tourism did not expand there until the 1878 extension of the rail line to Sale, where passengers boarded steamboats to ply the lakes' calm waters. However, it was short-lived. After the entrance to the Gippsland Lakes was permanently opened in 1889, the water levels of the lakes dropped, becoming even shallower as silt flowed in from cleared catchments, and shipping declined.

Auto freedom

Although steamships and early railways transported many tourists to coastal towns, it was not until the arrival of the private motor vehicle that tourism became a dominant economic driver and a potent force in coastal economic development.

The Great Ocean Road, completed in 1932 when it reached Apollo Bay, forever changed the face of the Otway Ranges coast, encouraging new subdivisions and turning otherwise sleepy villages into popular holiday destinations.

As the car advanced and independent travel became the norm, motels were replacing guesthouses, and many travellers began to tow their accommodation behind the car or strapped on its roof, along with surfboards and later kayaks and windsurfers. In response, caravan parks and camping grounds sprang up on coastal crown land reserves. Tourism was no longer the preserve of the wealthy, and coastal towns continued to grow in response, aided by the establishment of national parks like those at Wilsons Promontory and Port Campbell.

Riding the waves

With a long, southerly facing coastline, numerous headlands with reefs and pocket beaches, and deep water offshore lessening the drag on approaching swells, Victoria is blessed for surfing spots. Close to 180 are listed on the surftweeter.com website, with most west of Wilsons Promontory.

Surfing in Australia was given impetus by the 1914 visit of Duke Kahanamoku, the Hawaiian surfing legend. The following year the first Australian surfing championships were held.

[5] http://www.travelling-australia.info/InfsheetsP/Portfairy.html

In the 1920s there were people surfing the Summerland Peninsula at Phillip Island. Torquay locals were challenging the big waves at Bells Beach in the 1930s. From the 1960s onwards Bells Beach—and Torquay—became a focus for surfing culture. A cottage industry sprang up to supply the growing number of surfers with boards, gear and clothing and has grown into a big business with a global reach.

In 1993, SurfWorld Museum was established at Torquay to celebrate the heritage of surfing, and in 1994 the Surf Coast Shire was born by the amalgamation of the shires of Winchelsea and Barrabool, and part of the City of South Barwon. It extends from Torquay to Lorne, which has also been dubbed the Surf Coast tourism region, both acknowledging the regional significance of surfing.

Subdividing the coast

The rollout of roads for the motorcar, increasing wealth and the continuing desire of people to visit or live by the coast, saw many real-estate developments appear in the 1950s and 1960s. To lure buyers, developers created 'towns' without adequate infrastructure or services but with romantic names such as Golden Beach, Paradise Beach and The Honeysuckles—and it worked.

Recent migrants to Australia were charmed by the idea of a coastal retreat on the fragile outer barrier of the Gippsland Lakes. Thousands of beach blocks were sold but very few were ever built on due to concerns for the sensitive environment, the lack of infrastructure and the threat of flooding and erosion. After decades of wrangling between local councils, landowners and planning authorities, restructuring of the barrier-dune blocks is now occurring.

Land subdivisions were also beginning to appear at Port Fairy, along the Great Ocean Road at Wye and Kennett rivers, Fairhaven, Aireys Inlet and Anglesea, and in South Gippsland at Cape Paterson, Inverloch, Walkerville, Venus Bay and Promontory View.

At the same time that coastal land was being subdivided, there was also progress in coastal conservation. The Victorian National Parks Association was formed in 1952 and four years later Croajingolong and The Lakes national parks, both in East Gippsland, were established.

Industrial development, coastal activism and reform

The spectre of linear coastal development on the coast began to worry many Victorians and was to later influence coastal planning policies of the Victorian government, but not before its big ideas for Western Port surfaced.

In the 1960s then Victorian Premier, Henry Bolte, had bold plans to develop Western Port as the Ruhr of Victoria. British Petroleum had bought land at Crib Point and signed a deal with the government for deep-water anchorage. This was followed by state approval for a steelworks and further port facilities at Long Island in 1967. Mangroves, saltmarshes and seagrasses from Hastings to Crib Point made way for a steelworks, gas and oil refineries, jetties and tank farms.

But the big Bolte vision was never fully realised after a massive community campaign against it by groups including the Westernport and Peninsula Protection Council. Formed in 1971, the council continues to fight for the region's protection.

The Western Port campaign, and the emergence of other local environment groups along the coast, eventually forced changes in the way the state government and local municipalities viewed the coast, with various legislative and institutional arrangements put in place for more effective planning and management.

The community campaign to protect Western Port may have influenced the establishment of the Western Port Regional Planning Authority (1970-1981), which joined similar authorities for Geelong, the Loddon Campaspe and the Yarra Valley-Dandenong Ranges. Each was created by the Coalition government led by Bolte's successor, Sir Rupert Hamer, but fell foul of landholders and developers and were all abolished by the early 1980s.

A major environmental study of Western Port by Shapiro[6] in the 1970s changed the way Victorians viewed the mud and mangroves of that often-maligned but fragile area. A four-year CSIRO study of Port Phillip Bay[7] in the 1990s had a similar influence. Both encouraged greater consideration of the environment in coastal policy, planning and management. But they were one-off studies and Victoria is yet to establish comprehensive and ongoing investigation and monitoring of the coast's natural values and threats.

Conflicting uses and impacts along the coast have often troubled legislators and there are now many statutes that influence coastal planning and management, including those associated with conservation, planning, port development, transport and local government. However, today's legislative and institutional arrangements for the coast are largely the result of the passing and intersection of the *National Parks Act 1975*, the *Planning and Environment Act 1987*, the *Catchment and Land Protection Act 1994*, the *Coastal Management Act 1995,* the *Crown Land (Reserves) Act 1978* and the *Wildlife Act 1974.* The influence, implementation and implications of these statutes figure very much in the discussions that follow in this report.

Coastal connections and disconnections

Sealing and whaling, pastoralism, forestry, closer settlement, fishing, rail and road extensions, urbanisation and tourism have left their mark on Victoria's coast. The legacy lives on and is now being extended by new waves of coastal development.

Ports that were once drivers of economic development in coastal towns have either declined or been adapted to suit the new wave of coastal tourism in which marinas, harbors, boat ramps and jetties cater for

[6] Shapiro, M. ed., 1975, *Westernport Bay Environmental Study, 1973-1974*, Environmental Study Series No. 502, Ministry for Conservation, Victoria

[7] CSIRO Australia 1996, *Port Phillip Bay Environmental Study*, prepared for Melbourne Water, CSIRO, Hobart

yachts, pleasure craft and recreational fishing boats. Others have become transformed into powerhouse ports at Melbourne, Geelong and Portland, and there are corporate and political campaigns underway to make either Western Port or western Port Phillip Bay the next site for major shipping infrastructure.

As Melbourne and Victoria's population has grown, along with improved access made possible by the motor car, the coast is now 'closer' and more accessible for holidays, retirement, commuting and, for some, a second house down by the sea.

Gravel tracks have become arterial roads, divided highways have replaced single lanes, and freeways now give faster access to the coast. Hamlets have turned into villages, villages into towns and towns into cities. Houses have spread along the Mornington Peninsula, swamping individual townships in a continuous strip of development. Torquay and the Bellarine Peninsula are heading in the same direction, and the gap between Geelong and Melbourne is closing. Coastal populations and urbanisation continue to expand and people along Victoria's coast are now far more connected than before.

At the same time, connectivity for the coast's plants and animals has declined, with shelter, breeding and feeding areas, and resting and stopover points, disappearing. The successive waves of development in Victoria's coastal towns have indeed left their mark: fragmented and disconnected nature.

In 2007, the engineering and environmental consultancy firm, URS, conducted an analysis of trends along the Victorian coastal zone, which it defined as the land and water stretching five kilometres inland and 5.5 kilometres out to sea (the boundary of state waters with Commonwealth waters). One of the most telling findings of the study, and one which indicates what will be the cause of any future losses of coastal nature, was:

> *All in all, the geographical analysis paints a picture of the ecosystems along the coast as being largely situated on public land, which suggests that, on one hand, they are well protected especially in the half of the public land that is national parks and the five Ramsar areas along the coast. On the other hand, one third of the area is found within 5 km of built-up areas, which is known to threaten healthy ecosystems. This may partly explain why around one fourth of the area is showing some degradation; coastal scrubs and woodlands are especially depleted, as well as mangroves. This influences the services they provide e.g. recreation or storm protection and therefore also the value of the coast. The conclusion is that even though most areas are protected, serious pressures exist to ecosystem health from proximity to built-up areas. This may explain the low conservation status of some of the coastal ecosystems*[8].

Some government agencies are aware of the issues facing the conservation values of the coast. In various action plans and strategies they have indicated that pressures are mounting and that the coast's natural values could be in decline. The *Mt Eliza Point Nepean coastal action plan: 2021*, published by the Central Coastal Board in 2005, states:

> *Over the past twenty years, while substantial improvements have been made, the natural landscape has suffered and begun to deteriorate in many locations. Specific environmental issues of major concern along the coast include:*
>
> - *continuing fragmentation of habitat and consequent biodiversity loss*
> - *alteration of ecological processes along the coast due to human development*
> - *weed and pest animal invasion causing landscape changes to coastal environments*
> - *deteriorating water quality and quantity due to the impact of coastal catchments and other human development*
> - *damming and other water allocation decisions have led to inadequate water flows, or water flows that are significantly altered, leading to damage or destruction of ecological systems in and along streams*[9].

To these issues the *Central-west Victoria regional coastal action plan,* published by the Western Coastal Board in 2003 added land clearing for agriculture and forestry, unsustainable land-use practices and recreation and tourism activities. It went further:

> *Coastal habitats with their indigenous plant and animal populations are becoming increasingly fragmented and isolated, with reduced natural ranges and consequent loss to their genetic diversity. In coastal townships the greatest fragmentation comes from increased sub-division and density of residential development. Vegetation is being cleared as part of fire risk management, and non-indigenous garden varieties continue to be planted which spread and out-compete with indigenous plants. Access tracks in and between coastal towns also fragment and disturb these environments, providing pathways for weeds and feral animals.*
>
> *In the region's rural areas water is not only a very valuable commodity for agriculture and human consumption, it also sustains a diversity of aquatic habitats from the upper catchments to the sea. Continuing degradation of water quality and the reduced natural water flow from unsustainable catchment land-use practices are reducing the available habitat for aquatic plants and animals. Due to the linked nature of these environments, estuary, intertidal and marine environments are also impacted upon by these land and upper catchment activities*[10].

Sadly, these observations of a decade ago can still be made, and it is likely that the situation will worsen with the Victorian government's approach towards coastal planning and development. But the two main drivers of change in coastal nature, now and in the future, are climate change and the destruction,

[8] URS 2007, *Final Report, Assessing the value of coast to Victoria*, prepared for the Victorian Coastal Council and Department of Sustainability and Environment, Melbourne, p. 3.1

[9] Central Coastal Board 2005, *Mt Eliza Point Nepean coastal action plan: 2021*, Central Coastal Board, Melbourne, p. 2

[10] Western Coastal Board 2003, *Central west Victoria regional coastal action plan*, Western Coastal Board, Geelong, p. 29

degradation and fragmentation of coastal nature caused by the land development, urbanisation and industrialisation stemming from population growth.

Population growth and coastal development

Australia is an island nation with more than 85% of the population living within 50 kilometres of the coast, mostly in the states of Queensland, New South Wales and Victoria. The bulk of Victoria's coastal population is concentrated in Geelong, Melbourne and the Mornington Peninsula, where steady growth has been occurring for many years, but regional centres such as Warrnambool, Phillip Island and Lakes Entrance are also expanding.

Table 1 shows that the population of most coastal towns has been steadily growing but is far from uniform. The populations of some, like Apollo Bay, Aireys Inlet and Port Albert, are showing decline or are relatively flat. Others, for which the detailed time series data was unavailable—Rosebud, Mornington, and Phillip Island—have since 1961 grown by three, four and eight times respectively. Towns like Ocean Grove, for which growth had slowed, appear to be expanding again.

Distance from Melbourne, ease of access, topography and geology can all influence population growth in coastal areas. Coastal towns were generally located at the mouths of rivers or on the shores of bays to exploit opportunities for export and import by shipping and fishing, to source freshwater and to enable waste disposal from new factories.

Before the arrival of the Car Age, Victorians had made their way to the coast by foot, horse, wagon, train and boat. But with the freedom granted by the motorcar, the frequency and number of visits, the distances travelled, and the time spent changed dramatically through the twentieth century. It also gave rise to the holiday house that could be visited on weekends and holidays but could later become the place to retire.

Coastal development— agricultural, urban, industrial and tourist—has led to the loss, fragmentation and narrowing of coastal habitats. Much of the remnant coastal habitats exist in a narrow strip along the coast under pressure from roads, car parks, caravan parks, public buildings, access tracks, weeds and vandalism.

Weeds find their way into the coastal reserves from nearby farms and gardens and outcompete indigenous vegetation and prevent regeneration. Feral foxes, dogs and cats prey on small mammals, birds and reptiles, and rabbits eat new plants before they have the chance to establish. Wandering livestock trample dune vegetation and estuary shorelines—the increased nutrients encourage weed growth and eutrophication.

The 2008 Victorian *State of the environment report*[11] cited that between 1980 and 2004, the length of the state's urbanised coast had increased from 270 to 311 km or 17% of the coastline. On 31 December 2011 *The Age* reported:

> *Seaside communities from Seaford to Inverloch are expected to absorb another 50 000 homes in the two decades between 2006 and 2026 as the ''suburbanisation'' of Victoria's coastal areas intensifies. The Bass Coast area in particular is expecting big population growth well beyond the Victorian average and will accommodate an additional 13 400 homes by the middle of the next decade*[12].

The coast is clearly popular with Victorians. A 2012 Ipsos survey[13] of community attitudes towards coastal and marine environments found that:

- 84% made at least one trip to the coast, with the average being 23.4 trips per year
- 57% of Victorians had made an overnight trip to the Victorian coast in the last twelve months, with the average being 5.6 trips
- Phillip Island (7%); Sorrento (6%); Lorne (5%); Torquay (5%); and Apollo Bay (5%) were the most frequently visited
- 26% of those living within five kilometres of the coast reported visiting their local foreshore daily, while 86% visited at least once a month
- the top three things that contribute to a good coastal or marine experience were clean/clear water (37%), a lack of litter/rubbish/debris (37%) and a pristine/unspoilt/undeveloped/natural environment (22%)
- 63% spent their time walking or hiking, 52% swimming and 31% engaged in nature-based activities/appreciation.

The results of this survey, and the apparent desire by most Victorians to visit coastal areas for passive nature-based recreation in a clean and unspoilt environment, would appear to be at odds with the policies and proposals for commercial development being pushed by government and developers.

Climate change

Signs of change

A rise in sea levels, increased storm frequency and intensity, storm surges, higher temperatures, altered wind strengths and directions, and reduced rainfall and declining coastal river flows are predicted along the Victorian coast under various climate change scenarios. These changes will have major impacts on coastal nature as well as urban and industrial development and infrastructure.

As noted by the *Coastal hazard guide* released by the Future Coasts Project (now ended due to the removal of funding by the state government), there are three main impacts of climate change on the shoreline:

- *erosion: the short-term retreat of sandy shorelines as a result of storm effects and climatic variations*
- *recession: the progressive and ongoing retreat of the shoreline*
- *coastal inundation: the temporary or permanent*

[11] Commissioner for Environmental Sustainability 2008, *State of the environment report 2008,* Commissioner for Environmental Sustainability, Melbourne, p. 434

[12] Dowling, J. 2011, 'Wise planning will ensure surf 'burbs are not just Waverleys by the waves', *The Age,* 31 December 2011

[13] Ipsos 2012, *Executive summary coastal and marine environment community attitudes and behaviour, (Wave Four) report*, prepared for Victorian Coastal Council, Ipsos Project: 11-000498-01, Ipsos Australia, Richmond, pp. 2–3

flooding of low-lying areas caused by high sea level events, with or without the impacts of rainfall in coastal catchments[14].

An analysis of the impacts of climate change and coastal subsidence for Gippsland[15], estimated that by 2070 West Gippsland air temperature is expected to increase from between 0.7°C and 4.3°C, while rainfall could increase by 10% or decline by 25%. East Gippsland, however, could experience a temperature increase of between 0.8°C and 5.0°C, and rainfall increasing or decreasing by 25%.

For south-west Victoria it is predicted that:

By 2030: average temperature rise of almost 1°C; increased number of hot days (over 30°C); warmer winters (+ 0.7°C); 7% decrease in spring rainfall and 4% decrease in annual rainfall

By 2070: average temperature increase of 2.4°C; increased number of hot days from current 17 to 28; further reduction in annual rainfall which will come in short sharp bursts; higher evaporation; lower flows in waterways; runoff into the Hopkins River system could drop by 50% due to lower rainfall and increased water demands from a higher population

By 2100: sea level could be 75 cm higher, with a 2.2 m rise during storm surges[16].

Climate change will also affect wave patterns and the longshore transport of sand. The climate change analysis for Gippsland mentioned above also predicted that to the west and east of Wilsons Promontory there would be increases in sediment transport and the seasonal variability of beach and dune profiles. In particular, locations to the east of Wilsons Promontory could experience 'a significant increase in eastward sediment transport, resulting in possible erosion at the western end of beach cells and deposition towards the east'[17].

These changes would exacerbate coastal erosion caused by a 0.79 m sea level rise, the report predicting that on sandy shorelines erosion could be up to 79 m by 2100. Its modeling also 'indicated that a 0.8 m sea level rise coinciding with a 1-in-100 year storm and flooding in Lake Reeve could result in several breaches of the barrier dunes protecting Lake Reeve'[18] in the Gippsland Lakes.

Coastal areas at risk

The impacts of rising sea levels, and the increased energy of wave attack and storm surges will vary depending on the nature of the coast. Sandy beaches, sand dunes, 'soft' cliffs and low-lying shore platforms, saltmarshes, estuarine wetlands and mangroves will be impacted far more than coasts with 'hard' cliffs and raised shore platforms. Low-lying shore platforms such as those at Airey's Inlet and Ricketts Point will likely disappear, removing rock-pool rambling from the to-do list on beach holidays.

Along Victoria's 2000-kilometre coastline, around 30% is sand backed by sand dunes, and a further 21% is sandy beaches with rock behind them. Soft cliffs like those at Port Campbell and Anglesea represent 6%, and hard cliffs 22%. Muddy shores, such as in Western Port, on the western shore of Port Phillip Bay and in Corner Inlet comprise 22%. Within those hard and soft coasts there are also engineered sections that account for 8% of Victoria's shoreline and include harbours, marinas and boating infrastructure, breakwaters, seawalls, groynes and training works.

With 73% of the Victorian coastline being sandy or soft, and with each centimetre rise in sea level predicted to cause sandy shoreline recession from 50-100 centimetres[19], climate change could put at risk billions of dollars of coastal housing and infrastructure, while more storms could increase runoff, sedimentation and pollution in estuaries, bays and on reefs.

Victoria's Future Coasts Project[20] produced maps that predicted the extent of coastal inundation from rising sea levels combined with storm surge. Coastal locations that could experience inundation from rising sea levels include, from west to east:

West coast: Nelson River estuary; Fawthrop Lagoon; Surry River estuary; Yambuk Lake and lower reaches of the Eumeralla River; Belfast Lough at Port Fairy; low-lying land abutting Armstrong Bay west of Warrnambool; Curdies Inlet at Peterborough; Aire River Wetlands; Barham River at Apollo Bay; Painkalac Creek at Aireys Inlet; Anglesea River

Bellarine Peninsula: wetlands behind Breamlea; Lake Connewarre and adjoining wetlands at Ocean Grove; Lonsdale Lakes; Swan Bay; St Leonards to Portarlington; Geelong Saltworks

Western shoreline of Port Phillip Bay: wetlands from Limeburners Bay to Lake Borrie and to Point Cook and Cheetham Wetlands

Eastern shoreline: Edithvale-Seaford Wetlands

Western Port: entire shoreline with large areas at Tooradin, Lang Lang, Bass River mouth and at Rhyll on Phillip Island

East coast: Powlett River wetlands; Anderson Inlet and Tarwin Lower; Shallow Inlet; all shores of Corner Inlet and its islands; all wetlands behind Ninety-mile Beach; all of the Gippsland Lakes; Snowy River between Marlo and Orbost; Sydenham Inlet; Mallacoota Inlet.

In a first-pass assessment of the risks to coastal infrastructure by the Australian government, completed in 2009, the following predictions were

[14] Department of Sustainability and Environment 2012, *Victorian coastal hazard guide*, Department of Sustainability and Environment, Melbourne, p. 3

[15] Gippsland Coastal Board, *Climate change, sea level rise and coastal subsidence along the Gippsland coast*, Gippsland Coastal Board, Bairnsdale, p. 14

[16] Warrnambool City Council, *Climate change action plan*, Warrnambool City Council, Warrnambool, p. 8

[17] Gippsland Coastal Board, *Climate change, sea level rise and coastal subsidence along the Gippsland coast*, Gippsland Coastal Board, Bairnsdale, p. 83

[18] ibid., p. 79

[19] ibid., p. 76

[20] Government of Victoria, 'Future Coasts Program: Victorian Coastal Inundation Dataset', www.climatechange.vic.gov.au/adapting-to-climate-change/future-coasts/victorian-coastal-inundation-dataset

made for Victoria's coast under a climate change scenario of a 1.1 m rise in sea level combined with a 1-in-100 storm-tide allowance by 2100:

> *Between 27 600 and 44 600 residential buildings in Victoria may be at risk of inundation from a sea-level rise of 1.1 metres and storm tide associated with a 1-in-100 year storm. The current replacement value of the residential buildings at risk is between $6.5 billion and $10.3 billion. Local government areas (LGA) of Kingston, Hobsons Bay, Greater Geelong, Wellington and Port Phillip collectively represent close to 70 per cent of the residential buildings at risk in Victoria. There are approximately 4 700 residential buildings located within 110 metres of 'soft' erodible shorelines*[21].

Commercial buildings, roads, light industrial buildings and rail could also be severely affected. For the Surf Coast Shire the estimate for affected commercial buildings was up to 417, while for the Shire of East Gippsland the figure was 384. For light industrial buildings the number that could be affected was up to 374 in the City of Greater Geelong, 280 in the City of Frankston and 132 in the City of Kingston. The Shire of Wellington would have up to 775 km of its roads at risk, Greater Geelong 457 km and East Gippsland 417 km.

The analysis also reported on other studies that found:

- under existing climate and 1-in-100-year flood events there are 191 houses at risk in the Shire of Moyne, which could increase up to 517 with a 1.2 m rise in sea level and a 0.1 m storm surge, representing 15% of the shire's residential properties
- coastal erosion and storm surge will threaten icons such as Luna Park, the St Kilda Baths, St Kilda Pier and Marina, Acland Street, the Catani Gardens and Beaconsfield Parade, and properties along the Elwood Canal. Eroding beaches will be unable to move inland, especially in the areas of Middle Park and St Kilda, and the lost beaches will no longer afford protection to infrastructure behind them
- the area of low-lying coastal land that will be flooded by a 1-in-100 year flood event will increase by 63% by 2070 in Western Port. This could see 1 000 dwellings and property worth $780 million affected by inundation, including 37 km of roads. In addition, flooding storm surges associated with 1-in-100-year events could become 1-in-20-year events
- 1-in-100-year storm surge events could also impact the Nepean Highway, and the Bluescope Steel and the Esso-BHP-Billiton facilities in Western Port.

The predicted inundation levels worsen in these areas when storm surges are factored into the modelling. For example, in the low-lying municipality of the City of Port Phillip, there are 4 000 houses currently at risk of a 1-in-100 year flood event, but this could increase due to storm surge and increased stormwater flooding associated with climate change.

It is not just houses, factories, shops and roads that are at risk. Coastal infrastructure also includes sea walls, canals, roads, bridges, groynes, power lines and phone lines, water and sewer mains, septic tanks, gas pipelines, stormwater drains, walking tracks, picnic sites, jetties, marinas, breakwaters and navigation aids, and surf lifesaving, yachting and boat club facilities and clubrooms.

For highly urbanised areas abutting the coast, there will likely be demands for major defensive structures. These could play havoc with beaches and other coastal habitats upstream and downstream of the structure, as has been seen in many such projects in Port Phillip Bay and elsewhere along the Victorian coast. Priority areas for defense and retreat will have to be identified, and the issue of coastal dependency—what uses and structures really are reliant on a coastal location—will have to be addressed. Should coastal defensive structures be built at taxpayer expense to protect infrastructure that need not be there?

Climate change impacts and coastal nature

Coastal developments valued in the tens of billions are at risk of flooding and erosion due to climate change. But before the advancing waves and rising floodwaters attack the infrastructure, they will have already removed beaches, sand dunes, saltmarshes and mangroves and the animals and plants living within them.

The environmental effects of these predicted changes in coastal processes include increased flooding of low-lying areas, erosion of barrier dunes, inundation from storm surges and increased salinity in estuaries, rivers and bays, the collapse of ecosystems and a major redistribution of coastal plants and animals.

Three-quarters of the Gippsland shoreline is highly erodible: sand dunes and beaches occupy 78% and alluvial and colluvial sediments 13%, while only 9% comprises granite and volcanic rocks[22]. The bulk of the soft sediments are along the Ninety-mile Beach, the barrier system for the Gippsland Lakes. Larger floods flowing into the lakes, combined with rising sea levels entering them, and exacerbated by coastal subsidence occurring in the region, could lead to breaching of the lakes' dune barrier.

Climate change will influence sea levels and beach erosion, but it will also increase pressure on coastal nature in other ways.

Animals and plants living in sand dunes, on windswept cliff tops and in shallow and ephemeral swamps have adapted to extreme conditions. Climate change could increase the pressures on them by increasing temperatures, strengthening winds and reducing water supplies. But there are limits to adaptation, especially

[21] Department of Climate Change 2009, *Risks to Australia's coast: a first pass national assessment*, Department of Climate Change, Canberra, p. 92

[22] Gippsland Coastal Board 2008, *Climate change, sea level rise and coastal subsidence along the Gippsland coast*, Gippsland Coastal Board, Lakes Entrance, p. 75

in the very short time frames predicted for climate change. Erosion, inundation and changing rainfall and wind patterns will increase the stresses on plants and animals; they may succumb to invasive species more adaptable to the new conditions.

Moving inland, and possibly upwards, could be possible where vegetated hinterlands are found, such as in the Great Otway, Wilsons Promontory and Croajingolong national parks, but most areas of coastal vegetation are narrow with urban development or cleared areas behind them. For example, in Corner Inlet, levee banks prevent tidal inundation and severely limit the potential for saltmarsh and mangroves to move inland.

Where no development exists, then sand dunes, beaches, mangroves and estuarine wetlands may move inland horizontally, but will likely replace other habitats such as saltmarshes, grasslands, scrub and woodlands. Vertical migration could also be possible for mangroves if there is a sufficient supply of sediments to accumulate and form a new platform for plant growth. What is more likely is the loss of mangroves and saltmarshes, releasing the carbon stored in the sediments beneath them, adding to greenhouse pollution and removing their future carbon storage potential.

Higher temperatures and reduced water flows will lead to increases in estuarine salinity and a drying of coastal swamps and lagoons, causing reduced seabird numbers already under pressure from the relocation of nearshore fish stocks affected by rising ocean temperatures. Increased proportions of nutrients in estuaries and lagoons will likely increase the incidence of algal blooms.

Reduced river flows may also cause the mouths of estuaries to remain closed for longer periods. This could lead to increased pressure from landholders for artificial openings of the mouths to remove floodwaters from their land. But the rapid outflow of water can lead to fish kills and other impacts in the estuary.

It could be thought that habitats on cliff tops will be little affected by climate change, but as well as being affected by reduced rainfall and rising air temperatures, those growing on soft cliffs will be impacted by increased cliff recession.

The benefits from conserving coastal nature

The coast is not just a great place for a real estate deal, retirement or a weekend get-away. Coastal ecosystems have far more to offer, including:

Provisioning services: raw materials for agriculture, fisheries, petroleum and new medicines, as well as places for recreation, cultural activities and tourism

Regulatory services: flood control, carbon storage, water treatment, erosion control and protection from extreme weather events

Habitat services: places for animals and plants to live, and a diverse genetic pool that may provide the raw materials for developments in provisioning services such as food

Cultural services: places for recreation, aesthetic appreciation and spiritual experiences.

The conservation and restoration of coastal habitats is not just good for the plants and animals living there, it is critical to the health of our economy and lifestyle.

Table 2 summarises the ecosystem services provided by six coastal habitats that are ascribed little or no value when proposals for coastal development are considered. To address this lack of valuation, and to ensure that coastal and marine ecosystems are given greater weight in the cost-benefit analyses of coastal development, economists have tried to place a dollar value on these natural systems. In the past, cost-benefit analyses have excluded the cost of losing ecosystem services and inflated the real benefits of development projects. The actual costs have only become clearer when the environment has been damaged and people have begun to suffer.

The Centre for Policy Development estimates that the ecosystem services provided by Australia's oceans are each year worth $25 billion[23]. They include food, raw materials, climate regulation, lifecycle maintenance, biological control and recreation.

In the *World atlas of mangroves*[24], the value of mangroves was estimated to be $US2 000–9 000 per ha, while Costanza et al (1997) valued estuaries at $US22 832[25] per ha because of the benefits they give to fisheries, tourism and shore protection.

Mangrove Watch Australia[26] has indicated that Victoria has mangroves covering about 6 300 ha. Based on the lower estimate of $US2 000 per ha, the annual ecosystem service value of Victoria's mangroves would be almost $12.6 million.

With most of Victoria's mangroves found in Western Port and Corner Inlet, the loss of such values should be included in any cost-benefit analyses of future port and other coastal development in those fragile areas.

Seagrasses and mangroves are major contributors to the mitigation of carbon pollution, able to store carbon in the wet soil beneath them for thousands of years. Efforts to measure the amount of carbon stored within these sediments continues. Once known, it can be matched with the market price of carbon to determine the dollar value of their carbon-storage capacity.

There are also more than 100 bays, inlets and estuaries in Victoria ranging in area from 100 ha to almost 200 000 ha. Based on the above estimates, even the smallest would be annually valued at nearly $US2.3 million, while Port Phillip Bay and Western Port, with areas of 193 000 ha and 68 000 ha respectively, would each year be worth $US4.4 billion and $US1.6 billion for their ecosystem services. An economic analysis of

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[23] Eadie, L. and Hoisington, C. 2011, *Stocking up: securing our marine economy*, Centre for Policy Development, Sydney, p.6

[24] Spalding, M., Kainuma, M. and Collins, L. 2010, *World atlas of mangroves*, Earthscan from Routledge, London, PowerPoint presentation at launching ceremony at CBD COP 10 in Nagoya

[25] Costanza et al 1997, 'The value of the world's ecosystems services and natural capital', *Nature* 387, pp. 253–260, p. 256

[26] www.mangrovewatch.org.au/index.php?option=com_content&view=category&layout=blog&id=86&Itemid=300203

the value of Western Port's ecosystem services estimated them to be worth from $AUD205 million and $AUD1.6 billion in 2004 dollars[27].

Some will argue that these values are far too high for estuaries and mangroves. They are included here to highlight the need to better protect Victoria's coastal ecosystems, and to urge similar evaluation techniques for Victoria's coastal ecosystems as recommended by Blakely and Scarborough (2010):

> *While the triple bottom line is now entrenched in the collective thinking of coastal planners and managers, the actual decisions that balance social, economic and environmental values are few and far between. Yet the majority of national, State, regional and local strategies, such as the* Victorian Coastal Strategy *(2008), place prominent importance on the proper consideration of the economic, environmental, social and cultural values of the coast. Economic value is a critical consideration in coastal planning and management, and is viewed by many as the "deal-breaker" in the decision-making process. However, the full economic value of the coast is not well understood. This is highlighted by the paucity of economic data on both the use and non-use values that relate to coastal environments, resources and communities…The paper concludes by suggesting priorities for the research agenda for the work which needs to be done to enhance our knowledge of the economic value of the coast to enable decisions to be made consistent with the intent of our coastal strategies[28].*

To the ecosystem services that coastal nature provides can be added the following benefits from the conservation of coastal nature:

- improving the conservation status of threatened ecological vegetation classes and plant and animal species
- improving the quality, quantity and connectivity of coastal nature
- building the resilience of coastal nature to climate change through the recovery of native plant and animal populations
- providing opportunities for animals and plants to adapt to rising sea levels, changed weather patterns, reduced rainfall and increasing temperatures
- reducing pest animal and plant invasions in natural areas and contributing to their reduction in agricultural areas
- reducing the threat of fire and soil erosion
- providing a buffer for inland nature and infrastructure against the effects of sea-level rise and storm surge
- enhancing the ecological and social values of coastal nature and the experience of visitors to the coast
- assisting Australia meet its international obligations to protect migratory birds.

Fortunately for Victoria, most—96%—of a long and narrow strip of coastal land abutting the high water mark is reserved in public ownership, while some coastal nature has been protected in national parks and other conservation reserves. But the national parks are not necessarily safe from future development, and the fragmentation of nature on the remainder of the coast appears set to worsen.

This report assesses the threats to nature on the coast and recommends how it can be protected and expanded. The threats can be at the local scale, such as land clearing, or much broader as with climate change. Both scales will be considered here, especially when preparing recommendations for reform of Victoria's coastal planning, protection and management framework.

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[27] Australian Conservation Foundation 2013, *The ecosystem service value of Westernport Bay*, prepared for the Westernport and Peninsula Protection Council, Australian Conservation Foundation, Carlton, p. 5

[28] Blackley, S. and Scarborough, H. 2010, *Assessing the economic value of the western Victorian coast: putting our mouth where our money is*, prepared for the NSW Coastal Conference, November 2010, p.1

Table 1 Populations of selected Victorian coastal towns 1981-2011

Town Name	1961	1981	1986	1991	1996	2001	2006	2011
Aireys Inlet/Fairhaven		289	542	742	842	1,024	1,115	1 071
Anglesea		1 461	1 652	1,977	2,023	2,203	2,148	2 454
Apollo Bay		921	890	898	983	1,193	1,278	1 094
Balnarring		1 060	1 551	1,834	1,961	1,963	1,893	2 126
Barwon Heads		1 289	1 712	1,966	2,198	2,600	2,865	3 536
Blind Bight		- -	- -	751	773	1,001	1,275	1 238
Cannons Creek		- -	- -	- -	- -	481	495	557
Cape Paterson		239	440	517	593	648	645	718
Cape Schanck		- -	- -	- -	233	299	344	362
Clifton Springs		2 227	3 657	5,847	6,651	7,302	7,995	7 153
Corinella		173	235	340	391	478	495	629
Coronet Bay		193	342	504	520	622	630	709
Cowes		1 563	2 251	2,658	3,060	3,571	4,139	4 310
Dromana	1 151	3 146	4 199	4377	4332	4990	4817	5 126
Rosebud	3 726							12 501
Rye	1 338	3 928	5 578	6848	7461	8259	8652	8 160
Sorrento	2 152							1 448
Hastings	6 903							8 685
Mornington	4 886							22 421
Phillip Island	1 241							9 406
Flinders		380	453	451	501	511	531	622
Geelong		126 795	127 143	129 977	128 307	131 295	136 518	143 921
Golden Beach-Paradise Beach		- -	- -	- -	- -	- -	286	331
Grantville		195	323	383	389	401	458	506
Indented Head		390	496	505	414	544	572	920
Inverloch		1 523	1 838	2 195	2 448	3 742	3 541	4 458
Kilcunda		- -	- -	- -	- -	230	245	321
Lake Tyers Beach		- -	267	335	369	517	528	597
Lakes Entrance	1 602	3 414	4 104	4 622	5 248	5 503	5 645	5 965
Lang Lang		582	569	696	825	921	894	1 006
Loch Sport		251	514	700	791	949	736	689
Lorne	1 080	902	954	1 143	1 082	1 216	1 054	1 046
Mallacoota		726	826	961	982	1 041	932	1 031
Marengo		- -	- -	- -	- -	190	249	218
Marlo		316	318	380	322	353	343	438
Metung		395	520	536	635	655	712	1 010
Narrawong		- -	- -	- -	- -	175	179	351
Newhaven-Cape Woolamai		505	731	980	1 091	1 371	1 607	n/a
Newlands Arm		- -	- -	- -	- -	397	389	500
Ocean Grove	1 609	5 651	7 161	8 319	9 312	10 226	10 767	12 555
Paynesville		1 608	2 224	2 459	2 689	2 861	3 233	3 236
Peterborough		- -	- -	- -	- -	148	226	142
Pioneer Bay		- -	- -	- -	- -	- -	366	330
Port Albert		267	280	307	248	224	237	246
Port Campbell		227	280	288	340	459	431	260
Port Fairy	2 426	2 110	2 373	2 338	2 490	2 560	2 631	2 835
Port Franklin		126	154	133	117	126	115	n/a
Port Welshpool		259	243	241	229	216	178	179
Portarlington	1 003	1 863	2 271	2 553	2 407	2 686	2 847	3 147
Portland	6 014	9 418	11 024	10 188	9 752	9 584	9 716	9 950
Queenscliff-Point Lonsdale		3 420	3 739	3 681	3 832	3 743	3 774	3 880
Rhyll		164	245	338	402	449	452	539
San Remo		467	581	686	665	868	899	1 083
Sandy Point		- -	- -	- -	- -	- -	221	197
Seaspray		261	244	233	216	208	178	316
Shoreham		- -	- -	297	370	416	844	434
Skenes Creek		- -	- -	- -	- -	- -	106	426
Smiths Beach		81	133	148	219	217	208	225
Somers		608	758	873	963	1 274	1 267	1 427
St Leonards		981	1 274	1 315	1 325	1 452	1 528	2 000

Town Name	1961	1981	1986	1991	1996	2001	2006	2011
Sunset Strip		- -	- -	- -	169	209	298	338
Surf Beach-Sunderland Bay		172	226	326	314	642	532	694
Tooradin		564	655	667	650	643	745	931
Torquay	1 097	2 954	3 749	4 968	6 567	8 018	9 468	10 142
Venus Bay		125	200	296	385	441	470	589
Warneet		- -	- -	- -	- -	455	492	465
Warrnambool	15 712	21 401	22 697	23 947	25 412	25 882	28 029	29 284

Source: Australian Bureau of Statistics, *Coastal report: towns in time*, ABS, Canberra, and ABS 2011 Census Quickstats (www.censusdata.abs.gov.au/census_services/getproduct/census/2011/quickstat), Commonwealth Bureau of Census and Statistics 1963, 'Analysis of population in local government areas and in non-municipal towns of 1,000 persons or more', *Census of the Commonwealth of Australia, 30th June 1961, Volume II, Victoria, Part I*, CBCS, Canberra, Australia.

Table 2 Coastal ecosystem services

Ecosystem services	All coastal ecosystems	Estuaries and saltmarshes	Mangroves	Rocky shores, beaches and mudflats	Dunes	Seagrass	Coastal scrub, heath and woodland
Provisioning							
Food		X		X			
Fibre							
Oil and Gas	X						
Wind and wave power	X						
Market recreation		X		X	X	X	X
Regulatory							
Climate regulation	X						
Storm protection		X	X	X			
Erosion control					X	X	X
Water purification and waste assimilation		X	X				
Shoreline stabilisation				X	X	X	
Nutrient cycling		X	X			X	
Habitat							
Fish nursery		X	X			X	
Shelter	X	X	X	X	X	X	X
Genetic pool	X	X	X	X	X	X	X
Cultural							
Non-market recreation		X		X	X	X	X
Visual amenity		X		X	X		X
Cultural heritage	X						
Health benefits	X						

Source: URS 2007, *Final Report, Assessing the value of coast to Victoria*, prepared for the Victorian Coastal Council and Department of Sustainability and Environment, URS, Southbank, adapted from the Millenium Ecosystem Assessment.

Part 2 State of the nature on Victoria's coast

This part outlines the parameters for analysing Victoria's coastal nature and then describes its distribution and conservation status in each of ten bioregional profiles, before making bioregion-specific and later general recommendations to improve its condition and extent.

Map 1: Bioregions of Victoria

Source: http://vro.dpi.vic.gov.au/dpi/vro/map_documents.nsf/pages/bioregions

Bioregional profiling

Defining the coast and its nature

The coast is where the sea meets the land, but how much sea and how much land? The *Macquarie dictionary* defines the coast as 'the land next to the sea; the seashore'.

The *Coastal Management Act 1995* defines coastal Crown Land as:

- *any land reserved under the* Crown Land (Reserves) Act 1978 *for the protection of the coastline*
- *any Crown land within 200 metres of the high water mark:*
  - *of the coastal waters of Victoria*
  - *or any sea within the limits of Victoria*
- *the sea-bed of the coastal waters of Victoria*
- *the sea-bed of any sea within the limits of Victoria*
- *any Crown land which is declared by the Governor in Council to be coastal Crown land but does not include any land which the Governor in Council declares not to be coastal Crown land for the purposes of this Act*[29].

The Victorian Government Architect says that:

> *The Victorian coast is broadly defined to include the sea and seabed to the State limit (5.5 kilometres from the high water mark), and all land and inland waters within the coastal catchment*[30].

The *Draft Victorian coastal strategy 2013* is consistent with this but provides more detail on the geographical scope of its influence on coastal—and marine—planning and management:

- *the marine environment: nearshore marine environment*
- *the seabed, and waters out to the State limit of three nautical miles (5.5 kilometres)*
- *foreshores: or coastal Crown land up to 200 metres seaward from the high water mark*
- *coastal hinterland: land directly influenced by the sea or directly influencing the coastline, and with critical impacts on the foreshore and nearshore environment (these influences range from visual to drainage impacts)*
- *catchments: rivers and drainage systems that affect the coastal zone, including estuaries*
- *private and public land and all systems that impact on the coast and marine environment*[31].

[29] Government of Victoria 1995, *Coastal Management Act 1995,* Melbourne, pp. 2–3

[30] Office of the Victorian Government Architect, *Good design + the coast*, Issue No 03, Melbourne

[31] Victorian Coastal Council 2013, *Draft Victorian coastal strategy 2013,* Victorian Coastal Council, Melbourne, p. 8

Much of this report will focus on what it defines as 'coastal and 'hinterland' ecological vegetation classes (EVCs) found on public and private land within 500 m of the coast.

A 'coastal' EVC is found only on the coast, growing on landforms such as sand dunes, cliff tops and estuaries. Coastal Dune Scrub, Coast Banksia Woodland, Coast Sand Heathland, Coastal Headland Scrub and Coastal Tussock Grassland are some of the 'coastal' EVCs (see Table 3).

A 'hinterland' EVC is more typical of inland areas but may grow on the coast where the landform and climate are suitable. Where found along the coasts of the Otway and Strzelecki ranges, and Wilsons Promontory and East Gippsland, hinterland EVCs include Lowland Forest, Gully Woodland, Riparian Forest and Wet Forest, while those that grow on plains that reach the coast are remnants of Swamp Scrub, Grassy Woodland and Plains Grassland.

Identifying bioregions

Since the colonial government became the state government, Victorian administrations have created, altered and abolished regions and subregions to suit their particular administrative purposes. Although natural features such as lakes, rivers, coastlines and mountain ranges have often influenced their boundary setting, it is only more recently that bioregional boundaries have been used to provide some scientific logic in the choice of administrative regions.

When sea level began to rise around 20 000 years ago, the advancing waters began sculpting a new coastline for Victoria. Cliffs and shore platforms were etched in soft sandstones and limestones, waves, currents and winds turned the eroded sediments—and the silt dumped by coastal rivers—into beaches and sand dunes. The rising waters also surrounded rocky granite outcrops to form islands, fed intertidal rockpools on basalt outcrops, flooded the lower reaches of rivers, and threw up sand barriers to form bays, estuaries and coastal lagoons, while mudflats and sandflats appeared in low-lying coastal margins.

Climate, aspect and soil development combine with coastal landforms to create suitable spaces for plants and animals to live. The result is a complex natural world now straining under the weight of urban, rural and industrial development. To simplify the complexity, and to help build their knowledge, scientists have divided the natural world into bioregions and described the ecosystems, habitats and species within them.

The *Interim Biogeographic Regionalisation of Australia Version 7*[32] identified 89 regions and 419 subregions across Australia. Of the 89 regions, there are six with subregions that strike the Victorian coast. The six regions and their 10 subregions are:

Narracorte Coastal Plain: Bridgewater and the Glenelg Plain
South-east Coastal Plain: Warrnambool Plain, Otway Plain and the Gippsland Plain
Southern Volcanic Plain: Victorian Volcanic Plain
South-eastern Highlands: Otway Ranges and the Strzelecki Ranges
Furneaux: Wilsons Promontory
South-east Corner: East Gippsland Lowlands.

There are also five marine bioregions—Otway, Central Victoria, Flinders, Twofold Shelf and Victorian Embayments. All but Flinders strike the Victorian coast. The Environment Conservation Council used these five marine bioregions when determining the representativeness of Victoria's marine national parks network in coastal waters. However, they are not the focus of this report, which directs its attention to terrestrial and intertidal nature along the coast.

The terrestrial subregions in Map 1 form the bioregional structure around which much of the most recent scientific knowledge has been gathered and described. They provide the structure to this part of the report when describing Victoria's coastal nature and its values, distribution and conservation status.

As shown by the names of the bioregions—ranges, plains, uplands and promontory—landform is a critical element when determining their boundaries, but those boundaries also reflect the distribution patterns of climate, soils, animals and plants. Patterns at a more local scale are found where the sea meets the land, and where landforms, climate, soils, aspect, animals and plants interact with the marine environment.

EVCs and their coastal distribution

Although bioregions are more than just plants, most of the recent coastal scientific research on the coast has focused on them through the mapping of Ecological Vegetation Classes (EVCs). EVCs are part of a vegetation classification system used in Victoria to identify different groupings of plant communities based on their structure, ecology and floristic and environmental associations.

The Department of Environment and Primary Industries has mapped EVCs across the state, estimating their current extent and pre-1750 coverage and assessing their conservation status within each of Victoria's 28 bioregions. The EVCs are used here to describe the different natural settings in each bioregion, to provide a sense of how nature varies along the coast, and to assess how it is placed in terms of its conservation.

Of the 300 EVCs described for Victoria, this report identified 95 as being within 500 m of the state's shoreline or coast and these are listed in Table 3. The identification of the EVCs has been carried out using 1:100 000 maps generated by the Victorian National Parks Association (VNPA) from the Department of Environment and Primary Industries website[33].

For this report, the shoreline coincides with the coastline marked on the EVC maps. In most cases the shoreline will approximate the high water mark on beaches, shore platforms and at the base of primary sand dunes. However, for those EVCs that appear on

[32] Australian Government 2012, *Interim Biogeographic Regionalisation of Australia Version 7*, Australian Government, Canberra

[33] Department of Environment and Primary Industries website: www.depi.vic.gov.au

cliff tops well way from the high water mark, or that straddle the zone between low and high water marks, in those cases the 500 m band is presumed to begin at where the EVC meets the edge of the water or the cliff.

Thirty-four of the EVCs identified by this report are intrinsically linked to the coast and only found there, but the remaining 61 are 'hinterland' EVCs with largely inland ranges that reach the coast. In some places, the distance of 'coastal' EVCs from the shoreline may only be a few metres, but most are generally within 100-200 m of it, the exceptions being those found in large dune fields or estuaries.

The distance of 500 m from the shoreline was chosen for this analysis to ensure that hinterland EVCs, which are very much a part of the coastal landscape and contribute to its environmental and social amenity, were also captured by the study (recommendations for their protection will also be made in this report).

Land use and land-use change within 500 m of the shoreline is responsible for many of the threats now facing coastal nature. Analysis of these land uses and threats will help an understanding of the opportunities that may or may not be available for coastal nature to adapt to climate change. Of course, threats to coastal nature also come from much further field. These will also be considered, but a 500 m zone was seen as one that would capture many of the issues for resolution on the coast.

The 1:100 000 map scale used in this report's EVC distribution analysis is quite coarse and limits the identification of separate EVCs that may cover small areas. The result is that in some cases the EVCs are indicated as mosaics, combinations of EVCs that cannot be identified separately at the scale used; they could be if observed on the ground.

The use of finer scale maps would have enabled the identification of smaller patches of EVCs where there are highly localised variations in topography, aspect, microclimate etc. For example, the vegetation along the Bells Beach Creek is for this report classified as Coastal Headland Scrub. However, the plants confined to the creek's margins are not found elsewhere at Bells Beach, with ground surveys suggesting it is a different EVC.

But these are not publicly available, and such an analysis is beyond the scope of this report, which aims to describe the broad sweep of coastal nature to aid identification of what needs protection and enhancement. Future coastal nature restoration programs would require finer-scale mapping and fieldwork to ensure a strong scientific basis for conservation programs[34].

EVCs and coastal landforms

Coastal landforms influence the type and distribution of EVCs along the coast. Coastal landforms include sand dunes and beaches, cliff tops, cliffs and shore platforms, estuaries and lagoons, and mud flats and sand flats. Each of these can vary in size, shape, structure and aspect. In some places there may simply be one small sand dune at the back of a beach, while elsewhere a series of parallel sand dunes may stretch inland for more than a kilometre. Sheer cliffs with flat tops are carved from soft limestones, while often those sloping down to the shoreline are formed from harder granites and sandstones.

These factors influence what is able to grow on coastal landforms. A sheer cliff exposed to the wind will likely have few plants on its face, while those plants at the cliff top exposed to salt-laden spray could be stunted. Grasses may grow on a primary dune but woodland could exist in the sheltered area behind it. Animals can also affect the type of plant cover, as in the case of Bird Colony Succulent Herbland at the penguin colony on Phillip Island.

For those EVCs that are intrinsically coastal, the connection between landform and EVCs can be summarised in general terms as follows:

> *Sand dunes*: Coastal Dune Scrub/Coastal Dune Grassland Mosaic, Coast Banksia Woodland, Coastal Sand Heathland, Wet Swale Herbland, Bird Colony Succulent Herbland, Coastal Dune Scrub, Coastal Tussock Grassland, Calcareous Swale Grassland, Berm Grassy Shrubland, Coastal Mallee Scrub, Coastal Alkaline Scrub, Coastal Dune Grassland, Bird Colony Succulent Herbland/Coastal Tussock Grassland Mosaic, Coast Banksia Woodland/Coastal Dune Scrub Mosaic, Coastal Dune Scrub/Bird Colony Succulent Herbland Mosaic.
> *Cliff tops*: Coastal Headland Scrub, Coastal Headland Scrub/Coastal Tussock Grassland Mosaic, Spray Zone Coastal Shrubland.
> *Estuaries, lagoons, intertidal flats and river banks*: Estuarine Wetland, Coastal Lagoon Wetland, Estuarine Scrub, Estuarine Wetland/Estuarine Swamp Scrub Mosaic, Estuarine Flats Grassland, Damp Heath Scrub, Coast Gully Thicket, Coastal Saltmarsh, Mangrove Shrubland, Coastal Saltmarsh/Mangrove Shrubland Mosaic, Mangrove Shrubland/Coastal Saltmarsh/Berm Grassy Shrubland/Estuarine Flats Mosaic and Mangrove Shrubland/Estuarine Flats Grassland Mosaic and Coast Gully Thicket.

There will be many localised instances where these generalisations do not hold, especially where landforms merge, such as dunes with estuaries and lagoons and dunes with cliff tops. These EVCs include Coast Banksia Woodland/Swamp Scrub Mosaic, Coastal Saltmarsh/Coastal Dune Grassland/Coastal Dune Scrub/Coastal Headland Scrub Mosaic, Coastal Headland Scrub/Coast Banksia Woodland Mosaic and Coast Banksia Woodland/Swamp Scrub Mosaic.

The threats facing coastal EVCs are strongly influenced by the nature of the landform where they grow. Sand dunes are very easily destabilised by grazing, pedestrian access, and the construction of housing and roads. Estuaries and lagoons are impacted by drainage schemes, landfill and catchment-based pollution. Cliff-top vegetation may fare better because of the difficulty of access in many places, but where the scenery is dramatic, as along the Great Ocean Road and at the

[34] No on-ground fieldwork has been conducted for this report. Instead, published material (see References) and the analysis of satellite maps and GIS-generated EVC maps to determine the state of the nature along the Victorian coast. Detailed site surveys would be required for future habitat protection and restoration programs.

Twelve Apostles, the vegetation can be reduced to a very narrow and fragmented strip squeezed between the sea and a coast road.

Bioregional profiles

This report presents a profile for each Victorian bioregion with a coastal boundary, and each profile is divided into four main sections: 'The natural state of play', 'The pathways of change', 'Threats summary' and 'Recommendations'.

'The natural state of play' section briefly describes the bioregion and analyses the conservation status of the EVCs found within 500 m of the coast. The EVCs are listed in a table that also indicates their pre-1750 and current extent in hectares[35], the percentage of their pre-1750 coverage remaining, their areas in public and private ownership, the percentage of that cover being conserved in conservation reserves or under Trust for Nature covenants, and their conservation status: Endangered, Vulnerable, Depleted and Rare. Table 4 defines each conservation status category.

'The pathways of change' section describes the distribution of the EVCs growing within 500 m of the coast, sites of biological significance, including plant and animal species of interest, the main land uses, major threats and the various pathways along which positive and negative changes to the bioregion's coastal nature have been occurring. It uses extracts from scientific reports, planning documents and media stories, as well as the results of discussions with people engaged in coastal planning, protection and management to build a narrative of change and its consequences.

The 'Threats summary' simply lists in dot-point form the threats to coastal nature mentioned in the bioregional profile.

The 'Recommendations' section contains bioregion-specific recommendations for improving the condition, extent and management of coastal nature.

In June 2010, the Victorian Environment Assessment Council released its *Remnant native vegetation investigation discussion paper*[36], an analysis of Victoria's bioregions and the characteristics of their remnant vegetation. The council assessed the level of landscape fragmentation caused by clearing, buildings, roads and infrastructure in each bioregion, and to what extent each bioregion was covered by native vegetation and non-native vegetation. The fragmentation assessments from that report are referred to in each of the profiles.

It should be noted that:

- those EVCs that are found within a bioregion but not within 500 metres of the coast are not listed
- the area in hectares listed for each EVC is that for the entire bioregion, not just for the bioregion's land surface within 500 metres of the coast. However, the remnants of most coastal EVCs are wholly within 500 m of the coast, the focus of this report
- at the first mention of a native species, both the common name and scientific name are used in the text. Subsequent references to that species use only its common name
- the conservation status of each species is identified in brackets on only the first mention of that species. Table 27 summarises the conservation status for each of the threatened species referred to in the text
- the narrative of each bioregional profile describes EVC distributions and issues from west to east along the coast
- when reference is made to the percentage cover of EVCs in conservation reserves, such reserves include national, state and coastal parks, nature conservation reserves, flora and fauna reserves and wildlife reserves, but do not include coastal crown land reserves, foreshore reserves, state forest and other crown land on the coast.

Other measures of diversity

The purpose of this report's EVC distribution analysis is to illustrate the coast's diverse nature, but this can also be measured in other ways.

In 1971, many nations from around the world gathered in the Iranian city of Ramsar, where they signed a convention to help stop the loss of wetlands and conserve what remained. Known as the Ramsar Convention, it commits signatory nations to identify and protect internationally significant wetland sites.

Victoria has 11 wetland sites of international significance under the Ramsar Convention, with five found along the coast: Port Phillip (western shoreline) and Bellarine Peninsula; Edithvale-Seaford Wetlands; Western Port; Corner Inlet; Gippsland Lakes.

Birdlife International, in cooperation with Birds Australia, has identified 314 areas around Australia that are important to birds, and many coincide with Ramsar sites.

In Victoria there are 20 Important Bird Areas along the coast: Discovery Bay to Piccaninnie Ponds; Lawrence Rocks; Yambuk; Port Fairy to Warrnambool; Otway Ranges; Bellarine Wetlands; Swan Bay and Port Phillip Bay Islands; Werribee and Avalon; Cheetham and Altona; Carrum Wetlands; Western Port; Phillip Island; Anderson Inlet; Shallow Inlet; Wilsons Promontory Islands; Corner Inlet; Gippsland Lakes; Lower Brodribb River; Gabo and Tullaberga Islands; Nadgee to Mallacoota.

Although without legal status, recognition as an Important Bird Area is a constant reminder to land managers and planners that the area has high conservation values.

The lives of seals and seabirds illustrate their interconnection between coastal and marine environments; they live on land, often on islands, but feed in the surrounding waters. Two well-known species are the little penguin and short-tailed shearwater (mutton bird). Colonies for both are found at Deen Maar, Griffith Island (Port Fairy) and Phillip

[35] The source for the area statistics in the table that begins each bioregional profile is the Trust for Nature *Bioregion and subregion EVC representation*

[36] Victorian Environment Assessment Council 2010, *Remnant native vegetation investigation: discussion paper*, VEAC, Melbourne

Island, the islands of Wilsons Promontory and Corner Inlet, and Gabo Island. Little penguin colonies are also found at Lawrence Rocks, Portland, Middle and Merri islands, the Bay of Islands, Twelve Apostles, and the Apollo Bay and St Kilda breakwaters. Mutton birds live in colonies on Mutton Bird Island at the Twelve Apostles, and at French Island.

Other seabirds with breeding colonies along the coast include the little tern (islands in Gippsland Lakes and estuaries from Lake Tyers to Mallacoota Inlet), Australasian gannet (Point Danger at Portland; Lawrence Rocks off Portland, and Popes Eye and Wedge Light in Port Phillip Bay) and white-faced storm petrel (Mud Islands and South Channel Fort in Port Phillip Bay, and Tullaberga Island near Mallacoota).

There are six Australian fur seal breeding colonies at Cape Bridgewater and Deen Maar (Lady Julia Percy Island), both in south-west Victoria, Seal Rocks at Phillip Island, Kanowna Island near Wilsons Promontory, Rag Island in Corner Inlet, and the Skerries off Wingan Inlet in East Gippsland.

The key species and the main threats to Ramsar sites, Important Bird Areas and bird and seal breeding colonies are also described within each of the bioregional profiles.

Conservation status of EVCs and plant and animal species

The conservation status for each rare and threatened species listed in the bioregional profiles is taken from the advisory lists of threatened Victorian plants[37] and invertebrate[38] and vertebrate[39] animals, each of which was published by the Department of Sustainability and Environment (now the Department of Environment and Primary Industries).

The conservation status for each species mentioned in the text appears in brackets after the scientific name. The acronyms used and their meanings are as follows: CE: Critically Endangered; E: Endangered; V: Vulnerable; NT: Near Threatened; R: Rare; DD: Data Deficient; K: Poorly Known.

An underlined acronym indicates that the conservation status has worsened since the 1993 publication of the 'Sites of biological interest' in the Land Conservation Council *Marine and coastal investigation descriptive report*[40], which identified the conservation status, as it was then, for the threatened plants and animals of significance at each site. The acronym is also underlined in

27. It should be noted that not all of the plants and animals in Table 27 were referred to in the 1993 'Sites of biological interest'. Additional species have been sourced from the advisory lists mentioned above.

Protecting and restoring coastal nature

The ten bioregional profiles that follow demonstrate the diverse nature of the Victorian coast. Of the coast's 2 000 km, 96% is publicly owned, two-thirds of that is within conservation parks and reserves and the remainder in crown land reserves of varying status and management. The resulting mix of reserves is complex, many areas do not have management plans or regulations, and few have any publicly available information about their values or any public persona.

A number of bioregion-specific recommendations are made in the following bioregional profiles to:

- simplify the complex categorisation of coastal nature on crown land
- consolidate the protection and management of coastal nature and, from that base, expand its cover
- integrate the protection and management of coastal nature and increase its effectiveness
- ensure that each area of coastal nature has clear objectives and regulations that drive its protection and management
- elevate the protection status of areas of coastal nature
- increase awareness in the community of the conservation values of coastal nature.

To achieve these aims there are recommendations to expand parks, create new ones (by adding other crown land or purchased private land) and merge existing ones in the coastal conservation estate, and establish two new categories of reserves—Coastal Conservation Reserve and Coastal Recreation Reserve—for the one-third of coastal crown land outside the conservation estate. A full list of the proposed protected areas, and the existing crown land areas to be included within them, can be found in Appendix 3. There are also recommendations to improve the condition and extent of coastal nature on private land abutting those reserves or the high water mark.

Restoration projects will be required where coastal vegetation has been removed, fragmented or degraded. Although wildlife corridors stretching inland from the coast and across the hinterland are critical for survival of hinterland EVCs, and allow for inland migration of coastal nature in response to the rising sea levels associated with climate change, there should be a particular emphasis on enhancing connectivity along the coast through restoration projects.

According to the *Biodiversity action plan* for the Otway Plain Bioregion, the guidelines for successful restoration projects are to:

- *increase the size of patches of remnant vegetation*
- *increase connectivity in the landscape using corridors and stepping stones of habitat*
- *increase tree cover*

[37] Department of Sustainability and Environment 2005, *Advisory list of rare or threatened plants in Victoria-2005,* Department of Sustainability and Environment, Melbourne
[38] id., 2009, *Advisory list of threatened invertebrate fauna in Victoria-2009,* Department of Sustainability and Environment, Melbourne
[39] id., 2013, *Advisory list of threatened vertebrate fauna in Victoria-2013,* Department of Sustainability and Environment, Melbourne
[40] Land Conservation Council 1993, *Marine, coastal and estuarine investigation discussion paper*, Land Conservation Council, Melbourne

- *give priority to restoring and reconnecting sites in the best condition*
- *focus restoration in parts of the landscape that offer the best prospects and the "lowest cost" options*
- *provide buffers around remnant vegetation to reduce infiltration of undesirable effects*
- *restore and protect native vegetation along waterways and wetland margins*
- *focus on priority taxa*[41].

In *The coast is unclear* the priority taxa are the threatened plant and animal species and EVCs for which the recommended conservation measures are proposed to protect and enhance. The threatened species found along the coast are listed in Table 27, while threatened coastal and hinterland EVCS are listed in tables 20 and 21.

The coast is unclear makes a number of recommendations in the bioregional profiles to investigate the purchase of parcels of private land along the coast to further nature conservation and to make the boundaries of coastal reserves, national parks etc. more environmentally effective. This may prove expensive due to the real estate value of coastal land, and so other mechanisms will also be needed to secure the conservation of privately owned coastal vegetation. If the land were to be purchased, the Coastal Private Land Conservation Program proposed by this report could provide the funds.

The objective of Coastal Private Land Conservation Program would be to secure the conservation of remnants of coastal vegetation on private land and could comprise strategic purchases and the permanent protection of high-value coastal remnants by:

- purchase via Trust for Nature revolving funds, and a high-priority government coastal land acquisition fund
- market-based covenanting projects involving local councils, the state government, Trust for Nature and interested landholders
- incentives for private landholders to conserve remnant coastal vegetation through the allocation of funds for fencing and other conservation measures
- the use of coastal planning tools such as overlays and buffer zones that limit development and encourage revegetation.

[41] Department of Natural Resources and Environment 2002, *Biodiversity action planning: strategic overview for the Otway Plain Bioregion*, Parks, Flora and Fauna Division, Department of Natural Resources and Environment, Melbourne, p. 89

Table 3 Coastal and hinterland EVCs within 500 m of the coast

Ecological Vegetation Class	General features
Coastal (34)	
1 Coastal Dune Scrub/Coastal Dune Grassland Mosaic	Scrub, heath and grassland growing on foredunes and secondary dunes. Mix of EVC 160 and EVC 879
2 Coast Banksia Woodland	Found along or near the coast behind secondary and tertiary sand dunes and usually associated with EVC 1
5 Coastal Sand Heathland	Grows on headlands exposed to wind and salt spray
9 Coastal Saltmarsh	Found on low energy shorelines flooded each day by the incoming tide
10 Estuarine Wetland	Grows on the edges of estuaries, creeks, rivers and lagoons where drainage is poor and salinity is intermediate
11 Coastal Lagoon Wetland	This vegetation grows on the edges of freshwater lagoons that have formed behind sand dune barriers
12 Wet Swale Herbland	These aquatic grasses, sedges and herbs grow in the troughs between sand dune ridges where coastal lagoons form
140 Mangrove Shrubland	Mangroves grow on the mudflats of low energy coastlines
155 Bird Colony Succulent Herbland	This herbland grows in the nutrient enriched and burrowed sands beneath short-tailed shearwater and little penguin colonies
160 Coastal Dune Scrub	Grows on secondary dunes exposed to wind and salt spray.
161 Coastal Headland Scrub	Found on rocky headlands and cliff tops exposed to strong winds and salt spray.
162 Coastal Headland Scrub/Coastal Tussock Grassland Mosaic	Mix of EVC 161 and EVC 163
163 Coastal Tussock Grassland	Found on exposed coastal headlands and cliffs
165 Damp Heath Scrub	Shrubland found in damp areas of flat or gentle slopes at or near the coast where rainfall is high and drainage is absent
181 Coast Gully Thicket	Grows along coastal drainage lines and small creeks
302 Coastal Saltmarsh/Mangrove Shrubland Mosaic	Mix of EVC 9 and EVC 140
309 Calcareous Swale Grassland	A low coastal grassland with shrubs in the swales of alkaline sand dunes
311 Berm Grassy Shrubland	A low shrubland with a ground layer of grasses and herbs on sandy deposits formed by low wave energy in sheltered areas
665 Coastal Mallee Scrub	This vegetation class grows only at Cape Nelson, where its height has been restricted to barely four metres due to its exposure to winds and salt spray
692 Mangrove Shrubland/Coastal Saltmarsh/Berm Grassy Shrubland/Estuarine Flats	Mix of EVC 140, EVC 9, EVC 311 and EVC 914
858 Coastal Alkaline Scrub	Grows on sand dune ridges and in swales
876 Spray Zone Coastal Shrubland	Found on highly exposed coastal headlands where wind, salt spray and runoff restrict its height to below one metre. It is usually associated with Coastal Headland Scrub
879 Coastal Dune Grassland	Grows on the foredunes behind sandy beaches
900 Coastal Saltmarsh/Coastal Dune Grassland/Coastal Dune Scrub/Coastal Headland Scrub Mosaic	Mix of EVC 9, EVC 879, EVC 160 and EVC 161
903 Mangrove Shrubland/Estuarine Flats Grassland Mosaic	Mix of EVC 140 and EVC 914
904 Coast Banksia Woodland/Swamp Scrub Mosaic	Mix of EVC 2 and EVC 53
909 Coastal Dune Scrub/Bird Colony Succulent Herbland Mosaic	Mix of EVC 160 and EVC 155
910 Bird Colony Succulent Herbland/Coastal Tussock Grassland Mosaic	Mix of EVC 155 and EVC 163
914 Estuarine Flats Grassland	Usually found on sandy higher ground inland from Coastal Saltmarsh and which is occasionally flooded by tides
919 Coastal Headland Scrub/Coast Banksia Woodland Mosaic	Mix of EVC 161 and EVC 2
921 Coast Banksia Woodland/Coastal Dune Scrub Mosaic	Mix of EVC 2 and EVC 160
922 Coastal Alkaline Scrub/Bird Colony Succulent Herbland Mosaic	Mix of EVC 858 and EVC 155
935 Estuarine Wetland/Estuarine Swamp Scrub Mosaic	Mix of EVC 10 and EVC 53
953 Estuarine Scrub	Grows at the edges of estuaries, creeks, rivers and lagoons, often with Estuarine Wetland
Hinterland (61)	
3 Damp Sands Herb-rich Woodland	Eucalypt and banksia woodland or open forest on sand flats, tertiary dunes and moderately fertile and drained soils
6 Sand Heathland	Treeless heathland on deep infertile sands
7 Clay Heathland	Found where drainage is impeded
8 Wet Heathland	This heathland is found on waterlogged and infertile soils in depressions or on flats and lower slopes
13 Brackish Sedgeland	Sedgeland dominated by moisture-dependent sedges with a grassy or herbaceous ground-layer.
14 Banksia Woodland	Saw banksia, *Banksia serrata*, dominates this woodland found on well-drained sandy soils
15 Limestone Box Forest	Found along coastal streams, gullies and lakes
16 Lowland Forest	Widespread eucalypt forest found in areas with relatively high rainfall on soils that are reasonably fertile and moderately well drained

Ecological Vegetation Class	General features
17 Riparian Scrub Complex	This dense scrub is found on less fertile and waterlogged soils along the creeks of lowland plains and low hills
18 Riparian Forest	This tall forest dominated by eucalypts, and with wattles beneath, is found along rivers on alluvial soil
21 Shrubby Dry Forest	This eucalypt forest prefers ridges and upper slopes with high rainfall and shallow infertile soils
22 Grassy Dry Forest	A eucalypt forest found on varied slopes, elevations and soils with a diverse ground layer of herbs and grasses
23 Herb-rich Foothill Forest	An open forest or woodland with a diverse ground layer of herbs and grasses in areas of moderate to high rainfall
29 Damp Forest	A mix of wet and dry eucalypt forest types that is found from sea level to higher elevations
30 Wet Forest	High rainfall, low cloud cover and fertile, well-drained soils in sheltered gullies are favoured by this forest with tall eucalypts, a broad-leaved understory and a ground layer dominated by tree ferns
32 Warm Temperate Rainforest	A closed forest of non-eucalypt trees, ferns and climbers found in lowland areas along steam and in small gullies
45 Shrubby Foothill Forest	A diverse shrubby understorey is found in this open eucalypt forest that occurs on low to moderate slopes
48 Heathy Woodland	A low woodland of eucalypts growing on nutrient-poor sands and clays and with a diverse shrub layer and sparse ground cover
53 Swamp Scrub	Woolly tea-tree *Leptospermun lanigerum* and/or paperbarks *Melaleuca* species form dense thickets in this closed scrub found at low elevations on alluvial or poorly drained soils along streams
55 Plains Grassy Woodland	A rich, grassy ground cover is found in this open eucalypt woodland occurring on poorly drained but fertile soils in relatively flat areas at low elevations
56 Floodplain Riparian Woodland	An open forest or woodland of eucalypts on fertile alluvial soils along larger rivers and creeks where elevation and rainfall are relatively low
72 Granitic Hills Woodland	A low woodland with stunted trees found on granitic rocky outcrops
73 Rocky Outcrop Shrubland/Rocky Outcrop Herbland Mosaic	This mix of shrub and shrub-free covers is found in areas of low rainfall and shallow or almost absent soils
74 Wetland Formation	Shrubs and trees are absent from where this mix of freshwater wetlands containing herbland, sedgeland and rushland are found in depressions with standing water
83 Swampy Riparian Woodland	A woodland with an understory of shrubs and a ground cover of tussock grasses and sedges found along streams on foothills and plains
125 Plains Grassy Wetland	Treeless vegetation dominated by largely grasses and herbs but with shrubs and trees occasionally present
132 Plains Grassland	Treeless vegetation dominated by largely grasses and herbs but with shrubs and trees occasionally present
151 Plains Grassy Forest	An open forest with a diverse ground layer of sedges, grasses and herbs found on lowland plains and river terraces in gravelly sandy clays
175 Grassy Woodland	This open eucalypt woodland with a diverse mix of grasses and herbs is found on gentle slopes or undulating hills
191 Riparian Scrub	This dense shrubland with a sedge understorey is found on waterlogged sites along streams
200 Shallow Freshwater Marsh	Aquatic herbs and sedges dominate this herbland found in permanent and semi-permanent wetlands of no more than 50 cm depth on volcanic plains
201 Shrubby Wet Forest	A tall eucalypt forest with a broad-leaved understorey of shrubs and a ground cover rich in tree ferns
259 Plains Grassy Woodland/Gilgai Wetland Mosaic	Mix of EVC 55 and EVC 956
307 Sand Heathland/Wet Heathland Mosaic	Found on undulating flats or lower slopes in poorly or well-drained areas
316 Shrubby Damp Forest	Although this forest of eucalypts, wattles, shrubs and sparse grasses and herbs is usually found at around 500 m above sea level and in areas of high rainfall, it occasionally appears along the coast
638 Swamp Scrub/Wet Heathland Mosaic	Combination of EVC 53 and EVC 8
647 Plains Sedgy Wetland	Wet depressions on the plains bioregions are where the sedgy herbs of this wetland are found, occasionally with eucalypts, tea-tree and paperbarks on the fringes in higher rainfall areas
650 Heathy Woodland/Damp Heathy Woodland/Damp Heathland Mosaic	Mix of EVC 48, EVC 793 and EVC 710
653 Aquatic Herbland	Sedges dominate this herbland found in permanent to semi-permanent wetlands
680 Freshwater Meadow	Sedges dominate this herbland found in permanent to semi-permanent wetlands
681 Deep Freshwater Marsh	Sedges dominate this herbland found in permanent to semi-permanent wetlands
686 Wet Heathland/Damp Heathland Mosaic	Combination of characteristics of EVC 8 and EVC 710
687 Swamp Scrub/Plains Grassland Mosaic	Combination of characteristics of EVC 53 and EVC 132
691 Aquatic Herbland/Plains Sedgy Wetland Mosaic	Mix of characteristics of EVC 653 and EVC 647
695 Dry Valley Forest/Swamp Scrub/Warm Temperate Rainforest Mosaic	Mix of EVC 169 (not described), EVC 53 and EVC 32
710 Damp Heathland (not found separately, only in matrix)	A tall heathland with a dense ground layer of rushes and sedges that grows in areas of low nutrients that are wet in winter and dry in summer
713 Damp Sands Herb-rich Woodland/Damp Heathland/Damp Heathy Woodland Mosaic	Mix of EVC 3, EVC 710 and EVC 793
719 Grassy Woodland/Damp Sands Herb-rich Woodland Mosaic	Mix of EVC 175 and EVC 3
720 Swamp Scrub/Aquatic Herbland Mosaic	Mix of EVC 53 and EVC 653

Ecological Vegetation Class	General features
746 Damp Heathland/Damp Heathy Woodland Mosaic	Mix of EVC 710 and EVC 793
762 Damp Heathland/Sand Heathland Mosaic	Mix of characteristics of EVC 710 and EVC 6
793 Damp Heathy Woodland	Areas wet in winter and dry in summer are favored by this woodland, which has a tall and dense heathy understorey, and grasses, herbs and small shrubs on the ground
795 Lowland Forest/Damp Sands Herb-rich Woodland Mosaic	Mix of EVC 16 and EVC 3
878 Damp Sands Herb-rich Woodland/Swamp Scrub Complex	Mix of EVC 3 and EVC 53
881 Damp Sands Herb-rich Woodland/Heathy Woodland Mosaic	Mix of EVC 3 and EVC 48
892 Heathy Woodland/Sand Heathland Mosaic	Mix of EVC 48 and EVC 6
897 Plains Grassland/Plains Grassy Woodland Mosaic	Mix of EVC 132 and EVC 55
902 Gully Woodland	Moderately steep gullies with sands and silts are where this woodland or open forest is found with its small tree and shrub layer, and grass and sedge understorey
925 Damp Sands Herb-rich Woodland/Swamp Scrub Mosaic	Mix of EVC 3 and EVC 53
937 Swampy Woodland	Tussock grasses and sedges often dominate the ground layer of this open eucalypt woodland found in poorly drained areas
1106 Damp Heathy Woodland/Lowland Forest Mosaic	Mix of EVC 793 and EVC 16

Source: EVC profiles on the Department of Environment and Primary Industries website: www.dse.vic.gov.au/conservation-and-environment/native-vegetation-groups-for-victoria/ecological-vegetation-class-evc-benchmarks-by-bioregion.

Table 4 Bioregional conservation status of EVCs: definitions

Status	Criteria
Endangered	Contracted to less than 10% of former range; OR Less than 10% pre-European extent remains; OR Combination of depletion, degradation, current threats and rarity is comparable overall to the above: • 10 to 30% pre-European extent remains and severely degraded over a majority of this area; or • naturally restricted EVC reduced to 30% or less of former range and moderately degraded over a majority of this area; or • rare EVC cleared and/or moderately degraded over a majority of former area
Vulnerable	10 to 30% pre-European extent remains; OR Combination of depletion, degradation, current threats and rarity is comparable overall to the above: • greater than 30% and up to 50% pre-European extent remains and moderately degraded over a majority of this area; or • greater than 50% pre-European extent remains and severely degraded over a majority of this area; or • naturally restricted EVC where greater than 30% pre-European extent remains and moderately degraded over a majority of this area; or • rare EVC cleared and/or moderately degraded over a minority of former area
Depleted	Greater than 30% and up to 50% pre-European extent remains; OR Combination of depletion, degradation and current threats is comparable overall to the above and: • greater than 50% pre-European extent remains and moderately degraded over a majority of this area
Rare	Rare EVC (as defined by geographic occurrence) but neither depleted, degraded nor currently threatened to an extent that would qualify as Endangered, Vulnerable or Depleted
Least Concern	Greater than 50% pre-European extent remains and subject to little to no degradation over a majority of this area

Source: www.dse.vic.gov.au/conservation-and-environment/native-vegetation-groups-for-victoria/ecological-vegetation-class-evc-benchmarks-by-bioregion.

Bioregional profile 1: Bridgewater

Table 5 EVCs on the coast in the Bridgewater Bioregion

EVC	Pre-1750 (ha)	Current (ha)	% left	Public land (ha)	Private land (ha)	% conserved	Conservation status
Coastal (6)							
9 Coastal Saltmarsh	26	25	96%	21	4	83%	Vulnerable
10 Estuarine Wetland	5	5	100%	5	0 (0.1)	100%	Endangered
160 Coastal Dune Scrub	1 660	1605	97%		32	98%	Least Concern
161 Coastal Headland Scrub	181	150	82%	140	10	93%	Vulnerable
858 Coastal Alkaline Scrub	13 430	9 378	70%	7141	2237	73%	Least Concern
876 Spray Zone Coastal Shrubland	81	77	95%	77	0	100%	Rare
Hinterland (7)							
3 Damp Sands Herb-rich Woodland	836	288	34%	139	131	52%	Vulnerable
23 Herb-rich Foothill Forest	176	41	23%	13	28	32%	Vulnerable
53 Swamp Scrub	65	57	88%	21	36	37%	Endangered
200 Shallow Freshwater Marsh	28	23	83%	0	22	1%	Endangered
650 Heathy Woodland/Damp Heathy Woodland/Damp Heathland Mosaic	12	8	67%	0	8	0%	Vulnerable
680 Freshwater Meadow	11	10	91%	10	0	100%	Endangered
681 Deep Freshwater Marsh	1 398	1 195	86%	131	164	86%	Vulnerable

Source: Trust for Nature 'Bioregion and subregion EVC representation' on Excel spread sheets and EVC maps generated by VNPA from the Department of Environment and Primary Industries website. Note: The number in brackets in the 'Private land' column is the area in hectares under Trust for Nature covenants.

The natural state of play

Covering just 18 110 ha, the long and narrow Bridgewater Bioregion between the South Australian Border and Cape Nelson is the smallest[42] of the bioregions with a coastal boundary. Although it is a plain formed by volcanic activity that poured lava across earlier deposits of limestone, it is dominated by Victoria's largest active dune system, much of which is bare sand, and a series of freshwater lagoons.

Native vegetation covers 68.5% of the bioregion, with 80% of that on public land, and the Victorian Environment Assessment Council assessed it as 100% fragmented. Most of the public land is found inside the Discovery Bay Coastal Park, which stretches from the South Australian border and across the Glenelg Plain Bioregion to Cape Sir William Grant near Portland. Plantation forestry and livestock grazing are the main land uses on the private land abutting the coastal park's boundaries, with Nelson and Bridgewater Bay are the bioregion's only coastal settlements.

Six coastal and seven hinterland EVCs have been identified as occurring within 500 m of the coast in the Bridgewater Bioregion, and these are listed in Table 5, along with estimates of their pre-1750 and current extent, land tenure, conservation status and the percentage of the remaining native vegetation protected within conservation reserves.

Of the 13 EVCs identified, ten are assessed as threatened (either Endangered or Vulnerable). Except for Coastal Alkaline Scrub, which has lost 30% of its cover, the decline in coastal EVCs has been relatively small compared with pre-1750 levels. This is also the case for the hinterland EVCs, with the exception of Herb-rich Foothill Forest and Damp sands Herb-rich Woodland, which now stand at 23% and 34% of their pre-1750 levels respectively.

One of the six coastal EVCs is considered Endangered, two are Vulnerable, one is Rare and two are of Least Concern. Their level of protection in conservation reserves is high, ranging from 70–100%, largely due to their inclusion within the Discovery Bay Coastal Park. Where the coastal EVCs occur on private land, those landowners have not used Trust for Nature covenants to conserve them, except for 0.1 ha of Estuarine Wetland.

Of the seven hinterland EVCs, four are Endangered and three are Vulnerable. Their protection in conservation reserves ranges from zero and 1% for Shallow Freshwater Marsh and Heathy Woodland/Damp Heathy Woodland/Damp Heathland Mosaic, 32% for Herb-rich Foothill Forest, and as high as 100% for Freshwater Meadow.

The pathways of change

South Australia to the Glenelg River mouth

The Discovery Bay Coastal Park is barely 200 m wide between the state border and the Glenelg River mouth but widens as the estuary approaches. Coastal Dune Scrub is backed by a narrow band of Deep Freshwater Marsh, both of which are also found on the western shore of the estuary. However most of the land beyond 200 m from the coast is cleared. The drainage of saltmarsh for conversion to pasture for cattle grazing is a major threat for saltmarsh on private land behind the coastal park.

The mouth of the Glenelg River has patches of Coastal Saltmarsh, Swamp Scrub and Coastal Alkaline Scrub on its shoreline, and was described by the Land Conservation Council (1993) as being a site of biological significance, with flora and fauna of state and regional significance respectively. Its relatively undisturbed coastal lagoon, saltmarsh and intact dunes support significant plant species including the leafy greenhood *Pterostylis cucullata* (E) and the coast dandelion *Taraxacum cygnorum* (E). It is also a rich habitat for waterfowl and waders, and the orange-bellied parrot *Neophrema chrysogaster* (CE), little tern *Sterna albifrons sinensi* (V), hooded plover *Thinornis*

[42] The Strzelecki Ranges Bioregion has a far shorter coastal boundary but is much larger in area.

rubricollis rubricollis (V) and four-toed skink *Hemiergis peronii* (NT).

A total of 31 fish species have been recorded in the Glenelg River's estuary, including the spotted galaxias *Galaxias truttaceus*, Australian grayling *Prototroctes maraena* (V) and river blackfish *Gadopsis marmoratus*, and three listed invertebrates, Glenelg River spiny cray *Euastacus bispinosis* (E), Glenelg freshwater mussel *Hyridella glenelgensis* (CE) and yellow sedge skipper butterfly *Hesperilla flavescens flavescens* (V).

Discovery Bay

Wide sandy beaches sweep around the curve of Discovery Bay east of the Glenelg River's mouth. A 200 m band of Coastal Dune Scrub on the primary dune is backed by Deep Freshwater Marsh in the Long Swamp, which is found in the swale between the dunes.

Long Swamp supports flora and fauna of state significance, with plants including prickly raspwort *Haloragis myriocarpa* (V), oval-leaf logania *Logania ovata* (R), maroon leek-orchid *Prasophyllum frenchii* (E) and the swamp greenhood *Pterosytlis tenuissima* (V), and fauna including the swamp antechinus *Antechinus minimus* (NT), rufous bristlebird *Dasyornis broadbenti caryochrous* (NT), Australasian bittern *Botaurus poiciloptilus* (E) and breeding chestnut teal *Anas castanea*. The swamp is also considered to host the most westerly population of the eastern subspecies of the ground parrot *Pezoporus wallicus* (E), and its last remaining Victorian population west of Cape Otway.

As the Long Swamp ends, Coastal Alkaline Scrub appears, in some places extending three kilometres inland. Vast areas of bare and mobile sand dominate the eastern two-thirds of Discovery Bay. Their use by dune buggies in the past added to their instability.

In the Long Swamp and Lake Minibeong area there are two large parcels of private grazing land surrounded by the coastal park on three sides. As Farming Zone in the Glenelg Shire's planning scheme, the areas can be used for livestock production and pine plantations and add to the edge effects for such a narrow park.

At least 24 weeds have been identified for the coastal park and include the native plants coast wattle *Acacia sophorae* and coast tea-tree *Leptospermum laevigatum*, and the exotics such as radiata pine *Pinus radiata* wildlings, myrtle leaf milkwort, African boxthorn *Lycium ferrocissimum*, bridal creeper *Myrsiphyllum asparagoides*, kikuyu grass *Pennisetum clandestinum,* marram grass *Ammophila arenarea,* Paterson's curse *Echium plantagineum* and various species of thistles spread from adjacent private land.

The coastline from Discovery Bay to Piccaninnie Ponds has been recognised by Birdlife International and Birds Australia as an Important Bird Area, serving as habitat for the orange-bellied parrot, Australasian bittern, hooded plover, rufous bristlebird and the striated fieldwren *Calamanthus fuliginosus*. The main threats are 'disturbance associated with recreational use, predation by foxes and cats, and the degradation of habitat by invasive weeds, rabbits, sheep and feral goats'[43].

[43] www.birdata.com.au/iba.vm

The band of Coastal Dune Scrub broadens to 500 m at the Bridgewater Lakes but comes to an abrupt end at the cliffs of the Cape Bridgewater promontory. The dune lakes and freshwater swamps fringed by moonah scrub have flora of state and fauna of regional significance, with notable plant species being the coast helmet-orchid *Corybas despectans* (V), wiry bog-sedge *Schoenus carsei* (R) and leafy greenhood, and animals including the swamp antechinus and Australasian bittern.

In 2009 the Discovery Bay Coastal Park, Lower Glenelg National Park and the Crawford River Regional Park were together assessed as a critical aquatic system by the federal government. Their environmental values were assessed as critical to the Australian lifestyle and economy, and internationally important sites for flora, fauna and cultural heritage. In response, the Glenelg Hopkins Catchment Management Authority, Parks Victoria, the Department of Environment and Primary Industries and local municipalities formed the Glenelg Alliance to work with private and pubic land managers to address key threats to the aquatic system. Recent federally funded projects in Discovery Bay Coastal Park have included:

- treatment of bridal creeper and blackberry
- trapping, mapping and monitoring of feral pigs
- control of pine wildlings
- cat and fox trapping as part of the Glenelg Ark project, which aims to recover populations of the southern brown bandicoot *Isoodon obesulus obesulus* (NT), long-nosed potoroo *Potorous tridactylus tridactylus* (NT) and other native mammals, reptiles and birds in south-west Victoria.

The Victorian government no longer recognises the critical aquatic system assessment process and this now jeopardises these projects.

Cape Bridgewater

Heading south from the Bridgewater Lakes, sand dunes are replaced by cliffs and the vegetation changes. Coastal Dune Scrub has disappeared and a very narrow strip of Coastal Headland Scrub skirts the Cape Bridgewater promontory, with a small patch of Spray Zone Coastal Shrubland between it and the cliff edge in the cape's south-west corner. Behind both is Coastal Alkaline Scrub, which becomes fragmented and replaced by cleared land that covers most of Cape Bridgewater. At the cape itself, a large patch of Herb-rich Foothill Forest is growing behind the Coastal Headland Scrub.

Although the Discovery Bay Coastal Park is very narrow around Cape Bridgewater, it generally contains all coverage of the cliff-top EVCs and the Herb-rich Foothill Forest, but considerable areas of Coastal Alkaline Scrub are found on adjacent private land.

The presence of the four-toed skink, a possible roost for the southern bent wing bat *Miniopterus schreibersii bassanii* (E), and the last mainland hauling ground for the Australian fur seal *Arctocephalus pusillus,* give rise to Cape Bridgewater having fauna of probable state significance. About 1 000 Australian and New Zealand fur seals *Arctocephalus forsteri* (V) have formed a colony on the rock platforms and in the sea cave at the foot of the cliffs.

Wind turbines

Cape Bridgewater has the highest coastal cliffs in Victoria and is arguably one of the state's most scenic coastlines. In combination with Cape Nelson and Cape Sir William Grant, the landscape of the three capes was the first to be classified by the National Trust's Victorian division. This significant landscape has been undermined by the installation of wind turbines on the western side of Cape Bridgewater, part of the larger Portland Wind Project that has also constructed wind turbines at Cape Nelson and is building others on Cape Sir William Grant. The 29 wind turbines at Cape Bridgewater are within Coastal Alkaline Scrub remnants and require a network of access roads to service them.

At the time that the Cape Bridgewater wind turbines were proposed, Ted Baillieu, the former Victorian premier and then the state opposition spokesperson on planning, said in an opinion piece in *The Age* on 20 September 2003:

> *At present, Victoria has just 27 operating turbines: 14 at Codrington near Warrnambool, one on the Bellarine Peninsula and 12 at Toora in South Gippsland. Each turbine stands between 100 and 130 metres. That's the equivalent of a 35 to 40-storey building. They're big, these turbines. Very big. Much bigger, even, than a jumbo jet. And the next generation promises to be bigger still. So where will they go? On the coast, says the industry. Blows a bit harder there. Fine, says Steve Bracks. Hang on a minute. Did you say on the coast? You bet. Right there overlooking some of our most treasured landscapes. Wilson's Promontory. The Great Ocean Road at Nirranda. The Bay of Islands. Discovery Bay. Cape Bridgewater. Logans Beach. Corner Inlet. Bald Hills. Kilcunda. Indeed, Planning Minister Mary Delahunty approved 120 turbines on the capes at Portland against the recommendations of a Victorian Civil and Administrative Tribunal hearing and of a government-appointed panel. The visual impact of hundreds of huge steel turbines is set to destroy the very wild, natural landscape values that make Victoria's coastline one of our greatest treasures and one of our great tourism drawcards. Industrialising our coast is dumb. It is dangerous and it is hypocritical. Destroying the environment to save the environment is right up there with the great idiocies of the modern age*[44].

When Baillieu became Premier, he rewrote wind turbine regulations:

> *…in August, Baillieu announced new wind-farm reforms. Planning laws banned wind farms at tourist sites like the Great Ocean Road and gave households a right of veto over turbines within two kilometres of their home. At a young age my parents took me on holidays to Cape Bridgewater in the state's west. Home to a large seal colony and the highest coastal cliff in Victoria, the once stunning landscape is now the site of a wind farm as part of the Portland Wind Project. Orwellian in stature, wind turbines can be ugly constructs, which in this case eroded Bridgewater's pristine quality. We've stopped going*[45].

What the proponents of wind energy failed to realise was that coastal communities had been fighting for decades for better coastal planning to protect coastal nature and coastscapes from urbanisation and industrialisation. Wind turbines on the coast were anathema to this.

The use of wind should be part of Victoria's renewable energy future, but the resistance from coastal communities provided the opportunity for draconian statewide planning regulations for new wind turbine projects.

Proposed Bridgewater subdivision

Where the Bridgewater Bay Foreshore Reserve briefly interrupts the Discovery Bay Coastal Park, lawns and a motley collection of buildings and car parking spaces occupy much of the available coastal crown land reserve. Behind are the small settlement of Bridgewater and a large, triangular area of privately owned Coastal Alkaline Scrub. In the past this remnant has been the subject of proposals for subdivision, the most recent and unsuccessful in 2003.

Although approved by the Glenelg Shire Council, the Cape Bridgewater subdivision proposed in 2003 was opposed by the then Department of Sustainability and Environment, the National Trust's Victorian division and the Portland Historic Buildings Restoration Committee. The National Trust said that the development would have 'severe and irreversible impact on the classified landscapes (of Cape Bridgewater)[46]', while the Department's arguments against it included:

> *The proposal is sited in an area with significant ecological values and it is highly likely development of the realigned allotments would have an unacceptable impact on those values. The proposal facilitates linear development adjacent to Bridgewater Bay and outside an established coastal settlement and is therefore not consistent with the Victorian Coastal Strategy, or the objectives of the State Planning Policy Framework in relation to coastal areas. The proposal is not consistent with subdivision controls outlined in the schedule to the Glenelg Planning Scheme Environmental Rural Zone*[47].

The Environmental Rural Zone mentioned by the Department is now Rural Conservation Zone 1 in the Glenelg Shire Council planning scheme. It extends across Cape Bridgewater to where the wind turbines are located—they are allowed in this zone after the issuing of a permit.

Recent state government changes to rural zones in the State Planning Policy Framework have also made it easier to increase the size of existing dwellings and to develop accommodation and tourist facilities in this zone, and would continue to allow wind turbine

[44] Baillieu, T. 2003, 'Don't ruin our coast with wind farms', *The Age*, 20 September 2003

[45] Krushke, D. 2012, 'Evaluating Baillieu', *Farrago*, 17 May 2012, http://union.unimelb.edu.au/farrago/politics/evaluating-baillieu

[46] Meldrum, B. 2003, 'Bridgewater development not on', *Spectator-Observer Partnership*, 27 October 2003

[47] Meldrum, loc. cit.

construction once a planning permit was received. Part 3 of this report provides more detail on the changes to rural zones.

The Coastal Dune Scrub returns after the Bridgewater Road-Bridgewater Lakes Road. It is again backed by Coastal Alkaline Scrub, which becomes extensive in the Discovery Bay Coastal Park but ends before reaching the Glenelg Plain Bioregion on the approach to Cape Nelson.

Corridors for wildlife

The coast along the Glenelg Plain Bioregion, and the adjoining Bridgewater and Warrnambool Plain bioregions, is part of what is called the Kanawinka Coast region of the Habitat 141 project, 'a 50-year visionary initiative to restore and reconnect the iconic landscapes that straddle the SA and Victorian borders to the NSW rangelands.

> *The section of coastline between Portland and Warrnambool is included due to the presence of several important coastal assets in common with the Glenelg Plain, for example wetlands and saltmarsh areas that provide feeding habitat for the Orange-bellied Parrot, estuaries similar in ecological character to the Glenelg River estuary and coastal cliffs and escarpments that provide habitat for nesting raptors, seabirds and spray-zone vegetation communities.*[48]

The focus of the Habitat 141 Project is reconnecting fragmented landscapes along longitude 141°E for which the:

> *...Australian Government's Threatened Species Scientific Committee has identified the broader region as one of Australia's 15 biodiversity hotspots (DEHWA 2009), indicating that it has a high number of endemic species and that the current or predicted future level of threat to biodiversity is high.*[49]

Threats summary

The current threats for coastal nature in the Bridgewater Bioregion include:

- illegal and licensed grazing activities in conservation reserves
- encroachment of pine plantations leading to pine invasion of Discovery Bay Coastal Park
- invasive weeds and dogs, cats, foxes and horses, cattle and rabbits degrading habitats
- off-road motor bikes, trail bikes, mountain bikes and 4WD vehicles leading to erosion, damage to vegetation and archaeological sites, and disturbance of ground-nesting birds and other fauna
- pedestrian access to sensitive areas along cliff tops and through dunes, as well as unregulated and informal paths
- edge effects of narrow strips of coastal vegetation, especially around Cape Bridgewater and the presence of inliers of private land within the Discovery Bay section of the coastal park.

[48] http://conpro.tnc.org/1652/, loc. cit.
[49] http://conpro.tnc.org/1652/, loc. cit.

Recommendations

The following recommendations are aimed at generating discussion about the ways in which the conservation of coastal nature can be strengthened in the Bridgewater Bioregion.

1. Use the proposed Coastal Private Land Conservation Program to support collaborative projects between land managers, private landholders and the local community to fence and restore degraded sites, control illegal stock entry, eradicate and manage invasive species, better manage horse riding and other disturbance of ground nesting animals, and establish wildlife corridors and buffers connecting with the Discovery Bay Coastal Park (especially around Cape Bridgewater and to the north and east of Cape Nelson). Under these arrangements, the program would cover the cost to landholders of establishing and maintaining the new vegetation.

2. Cancel any grazing licences that may remain in the Discovery Bay Coastal Park and clearly define and fence boundaries along the interface of private and public land.

3a. Amend the Rural Conservation Zone 1, which applies to Cape Bridgewater, to prohibit any further development of wind turbines.

3b. Enter arrangements with the energy company and the landholder that ensure the Cape Bridgewater wind turbines are removed at the end of their commercial life and that the land is restored (Coastal Alkaline Scrub is the original cover).

3c. Insert a 100 m buffer into the Environmental Significance Overlay on private land abutting the narrow Cape Bridgewater section of the Discovery Bay Coastal Park that would be fenced to allow for revegetation. This would provide additional protection to the Coastal Headland Scrub (V) and Spray Zone Coastal Shrubland (R).

4. Support with funding and other resources the continuation of the Glenelg Ark, Glenelg Alliance and Habitat 141 projects.

5. Investigate the purchase of the following parcels of land in the Bridgewater Bioregion and, if possible, secure the land, restore it and add it to the existing Discovery Bay Coastal Park:

- the inlying private land in the existing Discovery Bay Coastal Park north of Long Swamp and east of Lake Minibeong. This purchase would aid the conservation of Deep Freshwater Marsh (V) and Damp Sands Herb-rich Woodland (V), improve connectivity and reduce edge effects
- any other private land abutting the existing Discovery Bay Coastal Park when it becomes available for sale
- the small parcels of private land with Coastal Alkaline Scrub, Coastal Dune Scrub and remnants of Swamp Scrub (E and barely one-third in conservation reserves) along the western shores of the Bridgewater Lakes
- the large triangle of privately owned Coastal Alkaline Scrub behind the Bridgewater Bay settlement.

Bioregional profile 2: Glenelg Plain

Table 6 EVCs on the coast in the Glenelg Plain Bioregion

EVC	Pre-1750 (ha)	Current (ha)	% left	Public land (ha)	Private land (ha)	% conserved	Conservation status
Coastal (4)							
5 Coastal Sand Heathland	33	33	100%	17	16	0%	Rare
161 Coastal Headland Scrub	507	478	94%	265	69	43%	Endangered
665 Coastal Mallee Scrub	597	369	62%	206	163	55%	Endangered
876 Spray Zone Coastal Shrubland	25	25	100%	25	0	89%	Endangered
Hinterland (5)							
3 Damp Sands Herb-rich Woodland	73790	22536	31%	11374	10962 (82)	30%	Vulnerable
6 Sand Heathland	1386	1229	89%	1182	46	56%	Rare
200 Shallow Freshwater Marsh	975	329	34%	101	199	13%	Endangered
650 Heathy Woodland/Damp Heathy Woodland/Damp Heathland Mosaic	25507	15667	61%	111167	4371 (11)	12%	Vulnerable
762 Damp Heathland/Sand Heathland Mosaic	813	787	97%	690	1	0%	Depleted

Source: Trust for Nature 'Bioregion and subregion EVC representation' on Excel spread sheets and EVC maps generated by VNPA from the Department of Environment and Primary Industries website. Note: The number in brackets in the 'Private land' column is the area in hectares under Trust for Nature covenants.

The natural state of play

The Glenelg Plain Bioregion is a series of low and parallel dune limestone ridges in south-west Victoria that cover 398 828 ha but only appear on the coast between Cape Nelson and Portland. The bioregion has 46.5% of its area under native vegetation cover—three-quarters of that is on public land—and its landscape has been assessed as 100% fragmented. The main land uses other than conservation are pine and blue gum plantations and sheep grazing.

Five coastal and five hinterland EVCs occur within 500 m of the coast in the Glenelg Plain Bioregion. These are listed in Table 6, along with estimates of their pre-1750 and current extent, land tenure, conservation status and the percentage of remaining vegetation in conservation reserves and under Trust for Nature covenants.

Of the nine EVCs, six are assessed as threatened. Except for Coastal Mallee Scrub, which has lost about 40% of its original cover, there has been little or no reduction in the cover of coastal EVCs compared with their pre-1750 levels. The story for hinterland EVCs is far less positive, with Damp Sands Herb-rich Woodland and Shallow Freshwater Marsh with only 31% and 34% remaining.

Three of the four coastal EVCs are considered Endangered, but their level of protection in conservation reserves is mixed. Less than half of the Coastal Headland Scrub is under conservation, a little more than half for Coastal Mallee Scrub, and almost 90% of Spray Zone Coastal Shrubland. Coastal Sand Heathland, which is assessed as Rare, has no conservation reserve protection. Where the coastal EVCs occur on private land, those landowners have not entered into Trust for Nature covenants.

The conservation status of the hinterland EVCs ranges across Rare, Depleted and Vulnerable. Their protection in conservation reserves is at a very low level, ranging from zero to a little over 50%. Private ownership of Damp Sand Heathland and Heathy Woodland/Damp Heathy Woodland/Damp Heathland Mosaic across the bioregion is substantial (15 333 ha), but fewer than 100 ha are covered by Trust for Nature covenants.

The pathways of change

Cape Nelson

The beginning of the Glenelg Plain Bioregion at Cape Nelson marks the end of the long stretch of Coastal Dune Scrub and Coastal Alkaline Scrub of the Bridgewater Bioregion. Coastal Headland Scrub and Coastal Mallee Scrub replace both and grow atop Cape Nelson State Park's sheer basalt and dune limestone cliffs.

Coastal Headland Scrub grows around three sides of the Cape Nelson State Park in a narrow band, except where a short strip of Spray Zone Coastal Shrubland occurs on the southern boundary. A relatively large area of cleared private land exists inside the park, while the heritage-listed Cape Nelson lighthouse stands proud at the cape's tip.

The flora of Cape Nelson State Park is of state significance. Here is the eastern range limit of the coast gum *Eucalyptus diversifolia* subsp. *megacarpa* (V), which dominates the Coastal Mallee Scrub. The intact cliff vegetation includes coast ground-berry *Acrotiche cordata* (R), Mellblom's spider-orchid *Caladenia hastata* (E), small bog-sedge *Schoenus deformis* (V), drooping velvet-bush *Lasiopetalum schulzenii* (R) and morning flag *Orthrosanthus multiflorus* (R). The presence of the rufous bristlebird and heath mouse *Pseudomys shortridgei* (NT), make this park of regional significance for its fauna.

The indigenous plants of Cape Nelson State Park, and the adjoining areas of Discovery Bay Coastal Park, are impacted by weed invasions which include boneseed *Chrysanthemoides monilifera,* coast wattle, coast tea-tree, myrtle leaf milkwort, bridal creeper, kikuyu grass, mirror bush *Coprosma repens* and various species of thistles.

Nelson Bay and Cape Sir William Grant

East of the Cape Nelson Lighthouse Reserve, the Discovery Bay Coastal Park returns in a narrow band following the shoreline of Nelson Bay. Accompanying it is Coastal Headland Scrub, backed first by Coastal Mallee Scrub and then Sand Heathland with patches of Damp Sands Herb-rich Woodland and cleared land. A coastal road along the cliff top bisects the coastal vegetation between Cape Nelson and Cape Sir William Grant, accentuating the edge effects of what is a very narrow coastal park.

Cape Sir William Grant is largely covered in Coastal Headland Scrub, except for the site of a bluestone quarry. The hinterland has Heathy Woodland/Damp Heathy Woodland/Damp Heathland Mosaic and Coastal Sand Heathland, with Damp Heathland/Sand Heathland Mosaic found nearest the cape and across to Point Danger.

Land from north of Cape Nelson through to Cape Sir William Grant is being used to establish Pacific Hydro's Portland Wind Energy Project IV, with construction of 23 wind turbines having begun in October 2013 and planned for completion by mid-2015. The Clean Energy Finance Corporation provided $70 m in debt financing to the project.

Pacific Hydro reduced the number of turbines in this location after the state government introduced a new set-back policy for their siting:

> *Formalising a set-back policy that stops the construction of wind farms within two kilometres of houses without the consent of residents, the government is understood to be responding to complaints about noise, visual quality and possible health effects from the rotation of the giant blades*[50].

The company and environmentalists questioned the government decision:

> *"This decision, intended to appease a handful of anti-wind farm advocates, will play out badly for the government," Victorian Friends of the Earth spokesman Cam Walker said. "The majority of Victorians want action on climate change and understand that we must speed up our transition to low carbon energy sources like wind. This policy will send investment and jobs interstate, and rural councils and landowners will miss out on the substantial income that comes with the development of wind farms"*[51].

At Cape Sir William Grant the turbines will be constructed within Coastal Headland Scrub (E) and Heathy Woodland/Damp Heathy Woodland/Damp Heathland Mosaic (V) zoned Public Use Zone 1, Farming Zone and Industrial Zone 2 in the Glenelg Shire Planning Scheme but along the boundary of coastal crown land also containing those two EVCs and Coastal Sand Heathland (R). Although the number of turbines has been reduced, their presence will severely scar the National Trust-classified landscape from Cape Nelson to Point Danger.

[50] Robertson, S. 2011, 'Pac Hydro winds down Local wind project to continue, despite ruling, but no new projects envisaged in Victoria', Portland Observer, 31 August 2011

[51] Robertson, loc. cit.

The National Trust landscape classification in the late 1970s was the first of its kind in Victoria and recognised the significance of the capes Bridgewater, Nelson and Sir William Grant to the coastal landscape. But as Bren Jarrett, a former president of the Portland Branch of the National Trust Victoria lamented, in his submission to a senate inquiry into rural wind farms:

> *As built, the wind farm on Cape Bridgewater not only dominates what were previously the outstanding, broadscale views in the area of Bridgewater Lakes but it includes component windmills that are visually intrusive into the Discovery Bay Coastal Park, particularly in the area of 'The Blowhole" and the "Petrified Forest" where the narrow park edging the Southern Ocean is typically less than 300 metres in width and windmills more than 100 metres in height have been placed less than 100 metres from the park boundary and its constant stream of daily visitors. Noise from these already-rusting windmills is clearly audible in the public car park at The Blowholes over which they loom.*
>
> *On Cape Nelson the historic Cape Nelson Lighthouse, formerly dominating its dramatic landscape, is now overwhelmed by windmills in a landscape that has lost its former 'roaring forties' character and is now reduced to a theme park for windmills. In South Portland there is a series of windmills in place with more to be erected at Cape Grant*[52].

Point Danger

A large area of Damp Heathland/Sand Heathland Mosaic at Point Danger was removed by the construction of the Alcoa aluminium smelter in the 1980s. It occurred after a long but eventually unsuccessful campaign of opposition that included the occupation of the site by the local Indigenous community.

Remnant Coastal Sand Heathland is found on the cliff top between the smelter and Coastal Headland Scrub. Point Danger's flora remains of state significance—Mellblom's spider-orchid grows in the species-rich heathland and cliff vegetation.

The presence of the swamp antechinus, heath mouse and rufous bristlebird at Point Danger is of regional significance, and it is where Australasian gannets established their only Australian mainland colony in 1996. The colony was formed by the spillover of birds from the larger colony of 6 000 birds on Lawrence Rocks, two kilometres offshore. Two maremma sheep dogs guard the Point Danger colony from attack by foxes and feral cats, while at Lawrence Rocks the main threat is disturbance from the unauthorised access by recreational boaters.

Sea Country

Although the relationship that Indigenous people had with their Sea Country was violently interrupted by the arrival of European settlers, their cultural and spiritual connections held strong. The passing of the federal *Native Title Act 1993* finally recognised the rights and interests of Aboriginal and Torres Strait islanders to

[52] Jarrett, B. 2011, Submission to Senate Standing Committee on Community Affairs, Inquiry into the social and economic impacts of rural wind farms, 9 April 2011

Australia's land and waters. In south-west Victoria, the native title claim of the Gunditjmara People was determined in 2007. It covers the coast from the South Australian border to Warrnambool and recognises their ongoing connection with their Sea Country. An analysis of the *Native Title Act 1993,* which also influences outcomes for the Victorian coast, is beyond the scope of this report.

Threats summary

The current threats for coastal nature in the Glenelg Plain Bioregion include:

- dogs, cats and foxes preying on small animals and horses disturbing habitats
- weed invasions
- edge effects of narrow strips of coastal vegetation and the inlier of private land in Cape Nelson State Park
- future expansion of industry in the Point Danger-Cape Sir William Grant area
- Industrial Zone 2 covering Coastal Headland Scrub at Cape Sir William Grant and the approved construction of wind turbines there.

Recommendations

The following recommendations are aimed at generating discussion about the ways in which the conservation of coastal nature can be strengthened in the Glenelg Plain Bioregion.

1a. Establish the Discovery Bay-Three Capes State Park by:

- merging the existing Discovery Bay Coastal Park, the Cape Nelson State Park and the Cape Nelson Lighthouse Reserve
- extending the new park to the east of She-oak Road, which is crown land currently within the Nelson Bay Coastal Reserve, to better protect the Coastal Sand Heathland (R but none in conservation reserves) and Coastal Headland Scrub (E and less than half in conservation reserves) in the Glenelg Bioregion
- adding the crown land in the Point Danger-Cape Sir William Grant area covered with Coastal Heathland Heathy Woodland/Damp Heathy Woodland/Damp Heathland Mosaic and Damp Heathland/Sand Heathland Mosaic (D with none in conservation reserves) to help in the protection of Mellblom's spider-orchid and the nation's only mainland Australasian gannet colony.

2. Amend the zoning applying to the Portland Wind Energy Project IV to ensure that the wind turbines are removed at the end of their commercial life, the land is restored and it is added to the proposed Discovery Bay-Three Capes State Park.

3. Investigate the purchase of the freehold inlier within the existing Cape Nelson State Park and, if possible, secure the land, restore it and add it to the proposed Discovery Bay-Three Capes State Park. This will assist the survival of Coastal Mallee Scrub (E with barely half of its existing cover in conservation reserves in the Glenelg Bioregion).

Bioregional profile 3: Warrnambool Plain

Table 7 EVCs on the coast in the Warrnambool Plain Bioregion

EVC	Pre-1750 (ha)	Current (ha)	% left	Public land (ha)	Private land (ha)	% conserved	Conservation status
Coastal (9)							
1 Coastal Dune Scrub/Coastal Dune Grassland Mosaic	607	361	59%	322	39	89%	Vulnerable
10 Estuarine Wetland	1 201	799	67%	390	360	18%	Depleted
155 Bird Colony Succulent Herbland	2	2	100%	0	2	0%	Vulnerable
160 Coastal Dune Scrub	3 407	2 053	60%	1 353	630	10%	Depleted
161 Coastal Headland Scrub	2 285	1 351	59%	1 208	129	88%	Vulnerable
162 Coastal Headland Scrub/Coastal Tussock Grassland Mosaic	1 489	824	55%	615	209	75%	Vulnerable
163 Coastal Tussock Grassland	469	421	90%	417	3	99%	Vulnerable
165 Damp Heath Scrub	15 829	2 195	14%	1 175	1020	53%	Vulnerable
181 Coast Gully Thicket	345	202	59%	180	21	85%	Endangered
Hinterland (10)							
3 Damp Sands Herb-rich Woodland	12 676	1 038	8%	112	852 (92)	12%	Endangered
16 Lowland Forest	54 543	12 709	23%	7110	5 580 (67)	43%	Vulnerable
23 Herb-rich Foothill Forest	36 240	9 402	26%	4 574	4 789 (33)	35%	Vulnerable
53 Swamp Scrub	17 223	1 154	7%	164	984 (2)	5%	Endangered
200 Shallow Freshwater Marsh	1 314	58	4%	3	56	0%	Endangered
653 Aquatic Herbland	218	31	14%	17	10	54%	Endangered
680 Freshwater Meadow	395	26	7%	0	22	0%	Endangered
713 Damp Sands Herb-rich Woodland/Damp Heathland/Damp Heathy Woodland Mosaic	55 336	3841	7%	392	3 424	4%	Endangered
720 Swamp Scrub/Aquatic Herbland Mosaic	2302	830	36%	310	520	1%	Endangered
746 Damp Heathland/Damp Heathy Woodland Mosaic	16777	926	6%	7	917 (13)	2%	Endangered

Source: Trust for Nature 'Bioregion and subregion EVC representation' on Excel spread sheets and EVC maps generated by VNPA from the Department of Environment and Primary Industries website. Note: The number in brackets in the 'Private land' column is the area in hectares under Trust for Nature covenants.

The natural state of play

The Warrnambool Plain Bioregion covers 264 110 ha from Portland to Moonlight Head near Princetown. Only 17% of its pre-1750 vegetation cover remains, the legacy of extensive clearing for pasture, livestock grazing and dairy farming. The main coastal settlements are Allestree, Narrawong, Yambuk, Port Fairy, Warrnambool, Peterborough, Port Campbell and Princetown. This landscape is 100% fragmented, with almost half the remnant vegetation on private land.

Nine coastal and 10 hinterland EVCs occur within 500 m of the coast in the Warrnambool Plain Bioregion and are listed in Table 7, along with estimates of their pre-1750 and current extent, land tenure, conservation status and the percentage of remnant vegetation in conservation reserves and under Trust for Nature covenants.

Seventeen of the 19 EVCs are assessed as threatened. In contrast with the previous two bioregions, and with the exceptions of Bird Colony Succulent Herbland and Coastal Tussock Grassland, coastal and hinterland EVCs have suffered very large losses compared with their pre-1750 coverage.

Six of the nine coastal EVCs are considered Vulnerable, two are Depleted and one is Endangered. However, five of the nine have relatively high percentages of their remaining cover in conservation reserves, largely in the Port Campbell National Park, Bay of Islands Coastal Park and the Yambuk Flora and Fauna Reserve. Only a small percentage of Estuarine Wetland (18%) and Coastal Dune Scrub (10%) are so protected, and Bird Colony Succulent Herbland, although small in area, is entirely on private land and unprotected. Where the coastal EVCs occur on private land, none are protected under Trust for Nature covenants.

Of the 10 hinterland EVCs, eight have been assessed as Endangered and two as Vulnerable. For most, only small percentages of their existing cover are found in conservation reserves, whereas Aquatic Herbland has half so protected. For four of the 10 hinterland EVCs, small percentages of their cover on private land are protected under Trust for Nature covenants.

The pathways of change

Dutton Way to Narrawong

A very narrow strip of Coastal Dune Scrub runs along the Dutton Way, east of Portland, with cleared land and housing directly behind. The scrub disappears between Church Camp Road and the end of Snapper Point Drive, before reappearing as a narrow strip to the mouth of the Surry River at Narrawong. Small patches of Swamp Scrub are found within 500 m of the high water mark to

the west of the Surry River estuary, where a small area of Freshwater Meadow is found.

The Old Coach Road

A sandy track known as the Old Coach Road separates the coastal crown land reserve and private land from Allestree to Narrawong. The vegetation along the road is the largest remnant of Coastal Dune Scrub between Portland and Narrawong. But it has been degraded by past land use and is set to fragment further, squeezed between housing development and the ever-present process of coastal erosion. As one Shire of Glenelg councillor was reported as saying in 2003, the 'whole area is conducive to subdividing as there is a lot of demand for coastal blocks[53]'.

The Coastal Seafarms abalone farm is on freehold land abutting the high water mark at the western end of the Old Coach Road. The site was part of a larger parcel of private land between the shoreline and the Princes Highway. The Shire of Glenelg gave a commitment to the abalone farm to upgrade an existing limestone track between the farm and the Princes Highway, and replace the need to use the Old Coach Road.

For many years the Old Coach Road had been used as an access route for landholders but also for local anglers to four favorite fishing spots. Today, the coastal crown land reserve in front of the road bears the scars of indiscriminate access with informal car parks and trails throughout the Coastal Dune Scrub. Some time ago, when the road to the Princes Highway was being upgraded, it was proposed that the road reserve west of the abalone farm be closed to traffic, while between the farm and Narrawong it could be sold or leased to adjoining landowners. This incensed the anglers who, in 2003, used earth moving machinery to 'improve' the surface and alignment of the road reserve to provide continuing access. This involved realigning 'the road to create a single passage along the road reserve so anglers would travel along that path, rather than through the coastal reserve…[to]… protect a vegetation corridor for the orange bellied parrot.[54] The anglers said that this had caused little damage to remnant vegetation as the area had been ploughed and grazed in the past. However, according to local reports the work was not approved by either the Department of Sustainability and Environment or the local council.

This was not the last time that earth moving equipment would be used on this section of coast.

The Convincing Ground

The Convincing Ground is at the eastern end of Beach Road and the 4.5 kilometre rock rubble wall that has been progressively extended since the 1960s to protect coastal housing and infrastructure from beach erosion. The erosion began after the 1960 construction of the Portland Harbour, the breakwaters of which altered the direction and energy of the waves approaching Dutton Way, washing away the beach, roads, house blocks and houses. As well as the rock wall, sand dredged from Portland Harbour had been used to renourish the beaches to defend the land behind from wave attack.

The Convincing Ground is where 60-200 members of the Kilcarerr Gundidj tribe were massacred around 1833 and 1834 during a dispute with whalers over the ownership of a beached whale. In 2003, the Shire of Glenelg approved an 8-block subdivision of a 44-hectare parcel of land containing the Convincing Ground:

> *The Maher subdivision application was registered and approved on the same day in November 2003 which, DWEC* [Dhauwurd-Warrung Elders Corporation] *chief executive officer Kelvin King said, showed a lack of due process and appeared to have ignored the natural and cultural heritage implications associated with the development.*
> *"It clearly states there was no consultation with any party concerned whatsoever," Mr King said.*
> *The National Trust of Australia (Portland) president Gordon Stokes said the methods used in the approval process were very dubious.*
> *"The planning processes involved are considered very questionable by the National Trust, and the same day registration and approval effectively blocks out any input from stakeholders."*[55]

Bulldozers had begun clearing the Convincing Ground site before the developer was alerted to the site's significance and that his action was in breach of the Victorian *Heritage Act 1995*. After much debate and negotiation, and appearances at the Victorian Civil and Administrative Tribunal, the developer agreed in 2007 to a development plan put forward by the Gundidj Mara People that retained part of the site as public land with a committee of management to take care of it.

Narrawong housing developments

Development of the coast along the Dutton Way and out to Narrawong is clearly fraught with great risk. A Special Use Zone had for some time frozen any development on land most vulnerable to erosion. But that left more than 500 house blocks vacant and on which landowners wished to build. To manage an assessment process for planning permit applications

[53] Wallace, J. 2003, 'Roadworks finally link highway and coast', *Spectator-Observer Partnership*, 16 May 2003
[54] Wallace, loc. cit.

[55] *Spectator Observer Partnership* 2005, 'Approval process in question. Legal action being considered over Convincing Ground development', *Spectator Observer Partnership*, 26 January 2005

for house construction, the Shire of Glenelg in 2007 introduced Development Plan Overlay 7, which required extensive documentation to accompany the applications before they would be considered. The landowners were infuriated.

In 2008 the then planning minister approved house construction on 24 blocks but left another 525 in limbo. At the November 2010 state election the Coalition committed to removal of the overlay, doing so a month after assuming office:

> *The Baillieu government has acted swiftly to uphold the rights of these landowners who have suffered years of uncertainty, family distress and heartache at the hands of the previous Labor government," Mr Guy told* The Standard*. "We are now looking forward to being able to provide (landowners) with the opportunity to do what you should be able to do, and that is to have the right to build something on your own land*[56]*.*

Such a decision could come at great cost to Victorian taxpayers. A study of erosion and flooding along the Dutton Way coast, commissioned by the Glenelg Shire Council in 2010, mapped the likely positions of the shoreline in the years 2030, 2070 and 2100, taking into account the impacts of sea-level rise, shoreline erosion and increased storm intensity. The erosion study estimated that by 2030, different sites along the shoreline would recede from 43 m to 63 m by 2030, from 124 m to 146 m by 2070, and from 183 m to 211 m by 2100, with the damage bill being $101 million, $158 million and $168 million respectively.

The 2010 erosion study assessed four adaptation options that ranged from do nothing to a major project that would reconstruct and extend the rock walls, with additional groynes, to the mouth of the Surry River at an estimated coast of $125 million. It also suggested four planning options that ranged from do nothing to prohibiting further development.

In response, the shire developed a decision matrix that measured the level of risk to property access, and the risk of flood and erosion, when considering applications for subdivision and house construction. However, in 2012, the planning minister called in and then overturned the Glenelg Shire's rejection of a rezoning application that would enable housing on the freehold coastal land west of the Surry River's mouth. The land sits behind the Old Coach Road and the narrow coastal reserve highly vulnerable to erosion from future rises in sea level. According to the Victorian Environment Defenders Office:

> *The Minister amended the Glenelg Planning Scheme to allow development of 10 houses and a subdivision in Narrawong without a planning permit. The decision was made 2 business days before a hearing in the Victorian Civil and Administrative Tribunal, testing his decision to approve these developments, was due to commence. The planning scheme amendments have effectively removed the ability of VCAT to turn its independent, expert eye to reviewing the Minister's decision. The decision has left members of the local Narrawong community feeling robbed of their right to have their day in VCAT, where their arguments for protection of the environment and cultural heritage could be heard*[57]*.*

The Shire of Glenelg based its rejection of the rezoning application on the analysis carried out by the 2010 erosion study, which indicated the land could be partially eroded by 2070 and completely gone by 2100.

The decision was consistent with the *Victorian coastal strategy 2008* and the previous government's planning provision that aimed to prevent development on land vulnerable to a 0.8 m sea level rise by 2100. For similar reasons an independent planning panel, the Shire of Glenelg and the previous planning minister had rejected an earlier application for construction of the first house on a subdivision to the east of the Surry River mouth.

However, the 0.8 m benchmark now only applies to greenfields development outside existing settlements. Developers of infill areas within settlements now need only satisfy the new benchmark of a 0.2 m rise in sea level by 2040. This follows a recommendation from the Coastal Climate Change Advisory Committee that interim sea level rise benchmarks of 0.2 m by 2040 and 0.5 m by 2070 be added to the 0.8 m figure to provide 'more focus for decision makers in the short and medium time and will help to achieve the balance sought in managing risk whilst allowing some acceptable level of development'[58]. The danger is that it will open up sensitive areas to development where it had been prevented by the longer-term benchmark.

According to the Victorian EDO, the minister's decision on land to the west of the Surry River mouth 'was based on an assumption that we only need to plan for 20 years into the future—whatever happens after that is for future generations to deal with'[59].

ABC News reported that when removing the Glenelg Shire's powers in relation to the Narrawong proposal, the minister 'said landowners should be allowed to build houses, but they would have to be "relocatable" because of the threat of rising sea levels, storm surges and erosion'[60].

On 9 July 2013 *The Standard* reported that the Shire of Glenelg and the planning minister had agreed on how to allow future coastal development between Portland and Narrawong:

> *Glenelg mayor Karen Stephens said the move would unlock the land for developers…The new planning regulations will exclude council's liability for the area and enforce a build-at-your-own-risk policy.*

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[56] Weaver, A. 2010, 'Housing ban thrown out', *The Standard*, 17 December 2010

[57] Milner, F. 2012, 'Planning minister dodges scrutiny of decision', Environment Defenders Office website, www.edovic.org.au/blog/planning-minister-dodges-scrutiny-decision, 11 October 2012

[58] Coastal Climate Change Advisory Committee 2010, *Issues and options paper: main report*, February 2010, Planning Panels Victoria, Melbourne, p. 53

[59] Croggon, N. 2012, 'Protecting Victoria's coast', Environment Defenders Office website, www.edovic.org.au/blog/protecting-victorias-coast, 20 September 2012

[60] Bell, F. 2012, 'Minister scuttles housing appeal', *ABC News* website, www.abc.net.au/news/2012-10-04/minister-scuttles-portland-housing-appeal/4294672, 4 October 2012

The decision angered local campaigners against the development, led by Protect the Surry River president Martin Boyer. Mr Boyer argued new houses would come under attack from rising seas and dune erosion, leaving owners no other option but to put up a rock wall over the coming decades. This in turn would lead to wave energy wearing out land around the Surry River mouth, further down the coastline[61].

A few kilometres to the west is the 4.5 km rock wall defending low-lying coastal land on Dutton Way, a wall that would coast an estimated $125 million to extend to Narrawong. Such an extensive now seems inevitable.

But the impacts of climate change and the costs of protecting poorly sited developments are not the only issues here. The development will also encourage weed invasion and feral animal predation in the very narrow strip of vegetation on the coastal crown land reserve, inhibit the migration of flora and fauna inland as sea level rises, and prevent revegetation needed to improve habitats and connectivity for coastal wildlife. Planning decisions like this will lead to linear coastal development that is inconsistent with what has been the aim of coastal planning for decades.

The Surry River and artificial entrance openings

The Surry River enters Portland Bay at Narrawong. Native fish found in the river's estuary include Australian smelt *Retropinna semoni,* black bream *Acanthopagrus butcheri,* blue spot goby *Pseudogobius olorum,* bridled goby *Amoya bifrenatus,* common galaxias *Galaxias maculatus,* eastern Australian salmon *Arripis trutta,* flatheaded gudgeon *Philypnodon grandiceps,* short-finned eel *Anguilla australis, s*mall mouthed hardyhead *Atherinosoma microstoma, s*outhern pygmy perch *Nannoperca australis,* Tamar River goby *Favonogobius tamarensis,* tupong *Pseudaphritis urvillii* and yellow-eye mullet *Aldrichetta forsteri.*

An estimated 20-30 000 fish were killed when the Surry River mouth, which is closed most of the time, was artificially opened without permission in July 2005. Oxygenated water rushed out to sea and left fish in the estuary gasping for air. The forced opening of estuaries is a highly contentious issue in western Victoria. Often they have been executed by landholders upstream unhappy with flooding of their low-lying land.

In recent years catchment management authorities in Victoria have taken responsibility for the management of estuary openings. The Glenelg Hopkins Catchment Management Authority issues a permit for an artificial opening only after certain criteria have been met. The criteria include the reaching of a specific water level, the potential impact of flooding, and the volume of freshwater flow, estuarine water quality and the risk to aquatic life. Once a trigger water level is reached, a further assessment is carried out in consultation with landholders before a final decision is made. The authority now publishes monthly data on water quality for each of the estuaries in its region, which extends from the South Australian border to Princetown, east of Port Campbell.

In their report on artificial openings, Barton and Sherwood (2004) raised concerns about the process of establishing water level triggers and the assessment process prior to the approval of artificial openings:

The point at which artificial opening of estuary entrances is triggered under management license conditions has been determined according to anthropogenic concerns, such as inundation of farmland, rather than by reference to the consequences of the trigger level on estuarine ecology, particularly wildlife or wetland habitat. Inadequate records of natural and artificial openings and a lack of relevant research mean that it is nearly impossible to say what the impacts of artificial opening have been, what the natural regime was or what the best managed entrance opening regime has been. Artificial opening goes back at least 50 years in most estuaries, and it is not known if the frequency of mouth opening has changed over this time[62].

To address these and other concerns about the environmental impacts of the artificial opening of estuaries, Arundel (2005) developed the Estuary Entrance Management Support System:

…a decision support tool that will guide estuary managers when making the decision whether or not to artificially open an estuary. The EEMSS ensures a consistent process is followed each time so all assets are considered and openings are safe and effective. The EEMSS also provides a means of storing data that can be used to inform future management decisions and allow agencies to better target monitoring programs[63].

The Glenelg Hopkins Catchment Management Authority has developed management plans for each of the estuaries in its jurisdiction to improve the decision-making process for artificial openings. The authority's management plan for the Surry River estuary followed the Surry River Restoration Plan 2000. This laid the groundwork for the Surry to the Sea project initiated by the Surry River Landcare Group in 2001-2002. The highly successful outcome of the project was the fencing and revegetation of 90% of private estuary frontage and 75% of private river frontage upstream of the estuary[64].

Another significant estuary project being carried out by the authority is the mapping of fringing EVCs at 1:5 000 scale. Maps have been completed for the lower Glenelg River, Long Swamp, Yambuk Lake and the wetlands of the Surry and Fitzroy river estuaries. As the authority acknowledges on its website, its estuary management plans:

…have highlighted a general lack of baseline information relating to estuary values, especially with regard to the extent and condition of aquatic and

[61] McComish, S. 2013, 'Guy helps free up Narrawong property for development', *The Standard*, 9 July 2013

[62] Barton, J. and Sherwood, J. 2004, *Estuary opening management in western Victoria: an information analysis*, Parks Victoria Technical Series Number 15, Parks Victoria, Melbourne, p. III

[63] Arundell, H. 2006, *Estuary entrance management support system*, Deakin University, Warrnambool, p.1

[64] Glenelg Hopkins Catchment Management Authority 2007, *Surry River estuary management plan*, Glenelg Hopkins Catchment Management Authority, p.13

fringing vegetation which is a vital component of the overall habitat value of estuaries. This has been a major limitation with regard to establishing what the real priorities for investment in estuary health are[65].

Narrawong to Lake Yambuk

From Narrawong to the Fitzroy River, the Coastal Dune Scrub widens with Freshwater Marsh, Damp Sands Herb-rich Woodland, Swamp Scrub, Swamp Scrub/Aquatic Herbland Mosaic and cleared land directly behind it. The river runs parallel to the dunes for about three kilometres before reaching its mouth where a patch of Estuarine Wetland is found. The spot-tailed quoll *Dasyurus maculatus maculatus* (E) has been recorded here, and the estuary supports the pouched lamprey *Geotria australis,* yarra pigmy perch *Nannoperca obscura* (V) and the river blackfish.

According to the *Fitzroy estuary management plan*[66] prepared by the Glenelg Hopkins Catchment Management Authority, land use changes within the catchment led to a 3.5% decrease in flows between 1990 and 2006. These flows will continue to fall as the cover of native vegetation and plantations increases in the catchment, and climate change reduces rainfall. Such changes could further reduce water quality and increase eutrophication in the estuary.

The main tributary of the Fitzroy River is the Darlot Creek, which has been used for millennia by short-finned eels returning there along the East Australian Current after spawning in the Coral Sea. The Gunditjmara People began constructing fish traps along the creek and at Lake Condah, the creek's source, about 8 000 years ago in what is now regarded as one of the world's most ancient farming activities.

Heading east from the Fitzroy River mouth towards Yambuk, the coastal crown land reserve, where it does exist, is barely 50-100 metres wide. Coastal Dune Scrub runs along the coast as a very narrow strip, which broadens in some places and is replaced by cleared land elsewhere, especially where private land abuts the high water mark.

The 453 ha of rolling sand dunes, limestone ridges and farmland to the west of Yambuk Lake were declared as Australia's first Indigenous Protected Area in 1997. The land, which was purchased with funds from the federal government by the Framlingham Aboriginal Trust four years earlier, had been grazed for more than a century, cleared of its vegetation, drained of its wetlands, and infested by rabbits and weeds. Since then the trust has transformed the land with revegetation and rabbit and weed control, and entered into a contract with Pacific Hydro to install 12 wind turbines to generate income for the protected area. More than 100 bird species have been recorded there, including the magpie goose *Anseranas semipalmata (NT)* and orange-bellied parrot.

Members of the Framlingham Aboriginal Trust and the Winda Mara Aboriginal Corporation prepared the 2004 Kooyang Sea Country plan, the first of its kind in Australia. The plan covers the land within the boundaries of the Glenelg Hopkins and Corangamite catchment management authorities and out to the edge of the continental shelf. The focus of its strategies and actions are participation in decision-making, commercial/economic opportunities, environmental impacts, cultural heritage management, research needs and implementation support. Sea Country plans also aim 'to help others develop greater understanding of Indigenous peoples' sea country interests and responsibilities'[67].

The Eumeralla and Shaw rivers flow south across farmland on the Warrnambool Plain and join at Yambuk Lake, a public purposes reserve managed by Parks Victoria and which is listed in the national Directory of Important Wetlands[68]. The estuary and dunes at its mouth have been recognised as an Important Bird Area because of wintering orange-bellied parrots, breeding hooded plover, and regular sightings of the Australasian bittern.

Nearby cypress trees are used as nesting sites for the great egret *Ardea alba*, Australian white ibis *Threskiornis molucca*, straw-necked ibis *Threskiornis spinicollis*, royal spoonbill *Platalea regia* (R) and nankeen night heron *Nycticorax caledonicus hillii* (NT*)*. Other birds include the blue-billed duck *Oxyura australis* (E), freckled duck *Stictonetta naevosa* (E), yellow-nosed albatross *Thalassarche chlororhynchos* (V), intermediate egret *Ardea intermedia* (E), little egret *Egretta garzetta* (E), Lewin's rail *Rallus pectoralis* (V), great knot, *Calidris tenuirostris* (E) and painted snipe *Rostratula benghalensis.*

The Eumeralla River is a stronghold of the dwarf galaxias *Galaxiella pusilla* (E), and also hosts the yarra pigmy perch and 22 other native fish. According to Birds Australia, threats to the habitats and species at Yambuk Lake include the 'manipulation of water levels in the Eumeralla River-Lake Yambuk system, grazing and trampling of wetland habitat by livestock, disturbance of nesting hooded plovers by beach users and dogs, and disturbance or accidental mortality of birds by duck shooters'[69].

Lake Yambuk to Port Fairy

The Coastal Dune Scrub continues east from Yambuk Lake. Its condition degrades where private land and a private access track abut the high water mark, but then improves significantly at the Yambuk Flora and Fauna Reserve where it is up to one kilometre wide. Private land returns to the east of the reserve and The Crags, a small council reserve with low broken cliffs, small island stacks and shallow rock pools in dune limestone. It is the only public access to the coast between Yambuk Lake and Port Fairy, with the remaining coast having private land abutting the high water mark.

Visible from The Crags is Australia's only offshore volcano and its largest Australian fur seal colony. Although it was once covered in thick coastal scrub,

[65] id., 2006, www.ghcma.vic.gov.au/coast-and-marine/estuaries/estuary-habitat-mapping/
[66] id., 2006, *Fitzroy estuary management plan*

[67] Department of Sustainability, Environment, Water Population and Communities 2013, 'Kooyang Sea Country Plan', www.environment.gov.au/coasts/mbp/publications/south-east/kooyang-plan.html, Canberra
[68] Environment Australia 2001, *A directory of important wetlands in Australia*, Third Edition, Environment Australia, Canberra
[69] www.birdata.com.au/iba.vm

Deen Maar Island—formerly known as Lady Julia Percy Island—was laid bare by pigs, rabbits, sealers and guano workers. Colonies of the little penguins, common diving-petrel, fairy prion and short-tailed shearwater are also found on the island.

Private land returns between The Crags and Cape Reamur, with a remnant of Coastal Dune Scrub similar in size to the Yambuk Flora and Fauna Reserve. Dune blowouts are extensive in this remnant vegetation, but it is characteristic of what was once common along the Warrnambool Plain's coast and is of regional significance.

From Cape Reamur the coast again becomes low lying with sandy beaches and dunes occasionally punctuated by small dune limestone headlands with rocky shores of basalt—coastal outcrops of the Victorian Volcanic Plain are covered by the sands of the Warrnambool Plain in and near Port Fairy.

Aquaculture and a deadly abalone virus

The Coastal Dune Scrub is now narrow to non-existent largely because cleared private land abuts the high water mark. However, small patches of Coastal Headland Scrub/Coastal Tussock Grassland Mosaic are found with the Coastal Dune Scrub on the approach to Port Fairy. The Shire of Moyne coastal action plan noted that in 2004:

> *Urban finger development has spread westward onto the primary dune system from Port Fairy and poses similar problems to industry development[70].*

But in the same plan the council believed that the private land abutting the high water mark also presented a development opportunity:

> *Moyne Shire is fortunate in having a large section of coast west of Port Fairy that is in private ownership to the high water mark and is in most places away from tourist destinations and viewing locations. Public access to the coast is only available at The Crags and Yambuk. This section of coast has the potential to provide land for industry[71].*

According to the plan, 'the section of land east of Cape Reamur to Port Fairy provides opportunities for industry that meets ESD principles such as aquaculture'[72].

The sentiments in this plan predated the ecological disaster caused by the establishment of an abalone farm on private land abutting the high water mark at Taylor Bay, between Cape Reamur and Port Fairy. The plant pumped seawater from Taylor Bay and dumped liquid waste into the adjacent Drain Bay. In 2006 the discharges apparently became contaminated with the herpes-like abalone ganglioneuritis virus, which quickly spread to abalone in the wild.

The virus wiped out up to 90% of wild abalone stocks and forced the closure of the western region's abalone diving industry, led to substantial loss of income, loss of jobs, a reduction in abalone license values—in 2002-2003 the individual abalone licence quota was 280 t but in 2011 it was just 27.3 t—and until recently was the subject of a class action in the Victorian Supreme Court by 10 abalone licence holders against the state government:

> *An $82 million class action is seeking compensation after the wipeout of one-third of Australia's abalone industry following the Victorian government's alleged failure to control an outbreak of a herpes-like virus. Maurice Blackburn is acting on behalf of 10 licence-holders who controlled 32 per cent of Australia's abalone exports. Those exports generated $70 million annually.*
> *Maurice Blackburn principal Jacob Varghese said the owner of the farm, Southern Ocean Mariculture, reported the outbreak to the Department of Primary Industries, but the DPI failed to shut down the farm, allowing it to continue to pump contaminated water into the ocean.[73]*

But on 7 November 2013, Supreme Court Justice David Beach found that the state government had not been negligent when he ruled against the class action, saying that 'one could only speculate how the disease came to be in the area and the plaintiff did not show the state had failed in its duty of care'[74]. He went on to say that 'the Government did its best to understand a difficult and changing set of circumstances and that it is only hindsight that permits criticism to be levelled'[75]. At time of printing, the abalone divers were considering whether to appeal the decision.

Port Fairy

The remains of vegetation in Port Fairy

Almost nothing remains of the pre-1750 vegetation cover at Port Fairy, where the Moyne River enters the sea through the Belfast Lough. Before settlers arrived, Damp Sands Herb-rich Woodland and Estuarine Wetland covered the land along the river and around the lough. Swamp Scrub and Aquatic Herbland grew further inland, Coastal Dune Scrub, Coastal Headland Scrub and Coastal Tussock Grassland Mosaic were found along the shorelines, and Bird Colony Succulent Herbland at South Beach.

Today, a few scattered remnants of Coastal Dune Scrub are found at either end of Port Fairy Bay, small fragments of Estuarine Wetland in the south and north of the estuary, and patches of Damp Sands Herb-rich Woodland in the town and along the river and lough.

The Bird Colony Succulent Herbland has gone from South Beach, but there is now a large area around the Griffiths Island lighthouse where short-tailed shearwaters have established a colony in sand accumulated since the construction of the harbour training walls at the mouth of the Moyne River.

Land use in the Moyne River's 800-km^2 catchment now comprises agriculture (cattle grazing), which covers

[70] Moyne Shire 2001, *Moyne Shire coastal action plan*, Moyne Shire, Port Fairy, p. 35
[71] ibid., p. 16
[72] ibid., p. 15

[73] Lynch, J. 2013, 'Abalone chiefs in class action over ravaging disease', Sydney Morning Herald, 19 August 2013
[74] ABC News 2013, 'Divers lose class action against Victorian Government over deadly abalone virus', 7 November 2013, www.abc.net.au/news.
[75] ABC News, loc. cit.

99.2%, urban development (0.3%) and nature conservation (0.2%)[76], and may explain the high nutrient enrichment of the estuary.

The remnant native vegetation in Port Fairy is regionally significant (saltmarsh has a restricted range in western Victoria), while the fauna is of state significance due to the Griffith Island colonies of little penguin *Eudyptula minor* and short-tailed shearwater.

The basalt peppercress *Lepidium hyssopifolium* (E) is found growing on the eastern margin of the lough, and the clover glycine *Glycine latrobeana* (V) in grassy areas. The grey tailed-tattler *Tringa brevipes* (CE), intermediate egret and king quail *Coturnix chinensis* (E) are found on Griffiths Island, the blue-billed duck (E), fairy tern *Sterna nereis nereis* (E), gull-billed tern *Gelochelidon nilotica* (E) and little egret are recorded in the Sandy Cove area, and the Australasian shoveller *Anas rhynchotis* (V), hooded plover and fairy prion *Pachyptila turtur* (V) occur along the coastal strip.

Latham's snipe and its most important habitat

Although the landscape of Port Fairy is mapped as being part of the Warrnambool Plain, the bedrock beneath the town is basalt and it outcrops along much of the local shoreline. A small outcrop has also been identified along Mills Crescent on the western side of the township, where there is a remnant of Grassy Knoll Shrubland (E on the Victorian Volcanic Plain) and the 7.5 ha shire-owned Powling Street Wetland.

A proposal to subdivide residential-zoned land in Mills Crescent into 32 house sites threatens both the shrubland and wetland; the South Beach Wetland and Landcare Group, along with Birds Australia, have been campaigning to halt the subdivision.

At the centre of the dispute is the fate of a small migratory wader bird, Latham's snipe *Gallinago hardwickii* (NT). The Powling Street Wetland is its most important site in Australia—more than 100 snipe visit over spring and summer but up to 430 have been recorded recently. According to Birds Australia:

> *The subdivision would result in the loss of 40 per cent of the wetland system, including three ephemeral wetlands. There will be no restrictions on public access to the wetland and no restrictions on pet ownership. The council will be allowed to mow a five to ten metre strip around the perimeter of the remaining wetland even though mown grassland can be unsuitable for snipe for many months[77].*

Birds Australia believes the federal environment department's approval of the subdivision would 'appear to have completely ignored the recommendations of a study they [the department] commissioned which clearly stated that "any loss of snipe habitat is likely to impact on the population that uses this wetland complex'"[78]

Birds Australia also reports that:

> *…Latham's snipe is the only one of the 36 species of migratory shorebirds protected under the EPBC Act and Australia's migratory bird agreements with China, Japan and Korea, that has its own criteria for identifying 'important habitat'. The draft EPBC policy guidelines are very clear—any site that regularly supports 18 or more Latham's Snipe should be considered as nationally important habitat for the species.*
> *It all seems pretty straightforward. If we want to protect Latham's Snipe, we need to protect sites that regularly support 18 or more snipe from being cleared, drained or degraded, and from activities that will lead to increased disturbance or mortality of birds[79].*

Birds Australia goes on to state that:

> *No one really understands why the birds keep coming back to this small suburban wetland year after year. But shorebird experts agree that it's an exceptional, unique site that should be protected for the snipe—a bit of a 'no brainer'[80].*

The Shire of Moyne's approval of the subdivision has not stopped the campaign of the South Beach Wetland and Landcare Group, which announced in November 2013 that it had appealed to the Victorian Civil and Administrative Tribunal, 'saying the development is a threat to the bird's habitat and increases the risk of flooding in the area'[81]. The tribunal hearing is scheduled for late February 2014.

Griffiths Island and Belfast Lough

Griffiths Island, named after the one-time owner of the whaling station operating there until the 1840s, is home to thousands of short-tailed shearwaters that nest inside burrows in the sand dunes. During the breeding season, from September to April, the birds fly out each day in search of food, returning at dusk to feed their chicks.

Griffiths and Rabbit islands, now joined by a causeway, were temporarily reserved for a public park in 1902, while the temporary reservation of Sandy Cove and the Back Passage followed in 1904. The island is now a public park managed by the Shire of Moyne, as is the Sandy Cove Reserve, a section of the Belfast Coastal Reserve and parts of the Belfast Lough.

The Belfast Lough, the estuarine lagoon two kilometres upstream from the Moyne River's mouth and within the Belfast Coastal Reserve, has Estuarine Wetland margins with Coastal Dune Scrub on the dunes between it and the sea.

Before the construction of the Port Fairy harbour, the margins of the lough were most likely covered in common reed with scrub of woolly tea tree and eucalypt forest. But the permanent and dredged harbour entrance has allowed seawater to reach

[76] Ecos Environmental Consulting 2006, *Belfast Lough & Moyne River Estuary EMP*, prepared for Moyne Shire Council, Ecos Environmental Consulting, North Balwyn, p.15
[77] Lau, J., 2013, 'The end of a fairy tale?', http://birdlife.org.au/australian-birdlife/detail/the-end-of-a-fairy-tale
[78] Lau, loc. cit.
[79] Lau, loc. cit.
[80] Lau, loc. cit.
[81] *ABC News* 2013, 'VCAT to hear opposition to Port Fairy development', *ABC News*, 12 November 2013, http://www.abc.net.au/news/2013-11-12/vcat-to-hear-plea-to-save-port-fairy-wetland-from/5085206, 1 June 2013.

further into the lough, and salt-intolerant reeds have been replaced by saltmarsh.

An environmental management plan prepared for the Belfast Lough in 2006 expressed concerns about future urban development of the Belfast Lough's catchment:

> *…there is an increasing likelihood that unless appropriate planning steps are taken soon, more land around the Moyne River and Belfast Lough will be set aside for use as a built environment. If it was to be further developed, it would reduce the area for restoration of the vegetation around the lough and river and diminish opportunities for biodiversity restoration*[82].

The report went on to say that the Belfast Lough area 'could be further degraded by nutrient input and disturbance if the local catchment of the lough is further developed'[83], and that development of the Port Fairy Bay sand dune 'could see the loss of sensitive vegetation communities and associated flora and fauna biodiversity'[84].

There were also concerns expressed about the potential impacts of increasing recreational activity around the Belfast Lough:

> *If recreational use of the lough and river were to be encouraged this could lead to an increase in environmental impacts, principally through trampling of sensitive vegetation, littering, and spreading of weeds unless appropriate planning and management controls were implemented.*[85]

Management plan actions recommended by the report included:

- long-term monitoring of water quality in and upstream of the estuary
- removal of grazing from areas prone to inundation
- revegetation of drainage lines and improving floristic structural diversity
- regular weed monitoring and control
- restriction on boat launching points
- no further clearing of coastal vegetation
- relocation and revegetation of the air strip south of Belfast Lough, which 'is incompatible with the vegetation restoration of this section of the lough'[86].
- application of an Environmental Significance Overlay to control development
- adaptive management supported by comprehensive and ongoing monitoring of threatening processes, loss of biodiversity, changes in land use, erosion, and the quality of inland, estuarine and marine waters
- formalisation of collaborative and integrated planning between agencies.

In 2009 the Shire of Moyne introduced an Environmental Significance Overlay across the area, which established development controls and decision guidelines designed to the protect the natural values of land within 100 m of the coast, river banks, estuaries and wetlands. This is further discussed in Part 4.

The Belfast Lough, Yambuk Lake and the estuarine and coastal margins of the Fitzroy and Surry rivers will be increasingly flooded by the rising sea levels and storm surges associated with climate change according to maps created by the Future Coasts Project[87]. At the same time, the estuaries will experience low freshwater flows and increasing salinities. Predicted reductions in rainfall and increases in air temperatures will also severely affect plant and animal life on the sand dune barriers of the estuaries.

Erosion along East Beach

The Shire of Moyne and the residents of Port Fairy are in the frontline of the battle between coastal development and natural coastal processes, the outcomes of which will be heavily influenced by climate change.

Another battleground is the East Beach sand dune, which has been eroding from 10 to 30 centimetres each year for the past 150 years, and where there were once three parallel sand dunes—today there is one. The remaining sand was stabilised by the planting of marram grass, possibly in the 1870s or 1880s.

The loss of the dunes was in large part caused by the development of the town's port, which saw the installation of training walls on the Moyne River between 1869 and 1874, and the closing of the South-west Passage between Griffith Island and the mainland in 1925 by the construction of a causeway. The new infrastructure reduced sand supplies to the East Beach sand dunes and redirected wave advance.

East Beach was not always top of mind for Port Fairy locals; South Beach was the favoured swimming beach in the town. Access to the beach was across a rocky ford until 1857, when a wooden bridge was built. But still, few people ventured across the bridge to East Beach:

> *It took until after the Second World War for the land on the East Beach to become an attractive address for the people of the new town of Port Fairy. With land and building materials cheap, holiday homes started to spring up along the beachfront and the East Beach had taken its first steps into becoming one of the most important parts of Port Fairy*[88].

The construction of houses continued through the remainder of the twentieth century, spurred on by the 'sea change' phenomenon. Even so, vacant lots remain, with their owners for several years being prevented from building houses. This was due to planning authority concerns about the risk of erosion and inundation by sea level rise, supported by the previous Labor government's 0.8 m sea level rise by 2100 benchmark designed to prevent buildings being built on at-risk land.

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[82] Ecos Environmental Consulting, op. cit. p.52
[83] ibid., p. 60
[84] Ecos Environmental Consulting, loc. cit.
[85] Ecos Environmental Consulting, loc. cit.
[86] ibid., p. 52
[87] Government of Victoria, 'Future coasts project', www.climatechange.vic.gov.au/adapting-to-climate-change/future-coasts
[88] Brady, A. 2013, 'Bridging the gap in Port Fairy', The Moyne Gazette, 28 August 2013.

The current government has adopted a benchmark of 0.2 m rise in sea level by 2040 for infill developments in existing coastal towns, which may now allow more houses to be built on the East Beach dune. It has, however, retained the 0.8 m by 2100 benchmark for new coastal developments outside existing townships, which had been the basis for a planning panel's 2009 rejection of a proposed 22-lot residential subdivision on 4.2 ha of sand dunes at the beach's eastern end.

To protect the current houses on the East Beach dune, which in 2007 was estimated to have a value of $87 million, a rock revetment wall has been progressively constructed along the toe of the dune from the 1950s onwards—a newspaper report in 1958 indicated that dune erosion had become a big issue:

> *Erosion at East Beach is so serious that the borough council has decided to close portion of the carriageway along the cliffs to vehicular traffic. Serious inroads have been made into the cliffs by high seas. The erosion has been helped by the fact that tracks had been cut down to the beach. Councillor Reardon said that in recent years erosion has eaten more than 10 feet into the cliffs*[89].

The *Port Fairy East Beach coastal erosion engineering and feasibility study*[90] revealed in 2007 that the rock wall, which now extends for three kilometres along East Beach, was poorly designed and constructed, in poor condition and would give only limited protection in the future. The study report recommended a beach renourishment project, using sand from various sources in nearshore waters, in areas where it had built up around Griffith Island and the port, and from further afield. As part of this defensive strategy, the Shire of Moyne sought funding in 2012 to transport dredge spoil from the Port of Warrnambool to dump on East Beach.

As the erosion continued, another past planning mistake was exposed when an old rubbish tip and dumping site for night soil in the dunes was undermined. As *The Standard* reported in August 2011:

> *Rising tides have carved back dunes by several metres in less than 12 months, exposing the first of hundreds of tonnes of old metal, rusted waste pans, broken bottles and other decayed rubbish*[91].

The opening of the tip on the East Beach sand dune in the early 1980s was at a time when the fragile nature of sand dune habitats was well known. Even so, it was not until 1998 that the tip was closed.

Port Fairy is now a town that is acutely aware of its changing coastline due to the combined effects of climate change and inappropriate coastal development:

> *This is the dilemma, laments Brett Stonestreet, chief executive of Moyne Shire, which takes in Port Fairy. 'Council is concerned that there will be restrictions on development, but it also acknowledges that the coastline is a pristine environment and it is something we need to secure for the future*[92].

In June 2013, the Shire of Moyne released a major coastal hazard study[93] for its entire coastline, which mapped the areas that will be most impacted by coastal erosion and flooding. *ABC News* reported at the time:

> *The town has long-struggled with tidal erosion, especially at East Beach, where a seawall has been built to counter the problem. The consultants found if the sea level rises 80 centimetres by 2080, up to 390 buildings could be vulnerable to flooding. The consultants say some of the report's findings are disturbing and a huge amount of adaptation planning is needed*[94].

Port Fairy to Warrnambool

Between the eastern end of Port Fairy's housing and Reef Point, Coastal Dune Scrub is wedged between a coast road and the shoreline. Nearby it has been cleared for the Port Fairy Golf Course, while further east there are patches of Swamp Scrub/Aquatic Herbland Mosaic and Damp Sands Herb-rich Woodland found behind the Coastal Dune Scrub.

The Coastal Dune Scrub is badly degraded between the Port Fairy Golf Course and Killarney Beach, and criss-crossed with ad-hoc access tracks. The sandy Basin Track runs east from the Killarney Beach and parallel to the coast, bisecting the Coastal Dune Scrub to provide access to the beach at Sister Rock. Beyond Sister Rock, the Coastal Dune Scrub narrows considerably and is replaced briefly by Swamp Scrub/Aquatic Herbland Mosaic before dominating the shoreline to Warrnambool and extending to widths of almost one kilometre. Between Rutledges Cutting and the western boundary of Warrnambool, numerous access tracks have contributed to the loss of vegetation in large areas of the dunes.

Belfast Coastal Reserve

Crown land within the 20-kilometre long and 1500 ha Belfast Coastal Reserve between Port Fairy and Warrnambool was first reserved in August 1879, along with many other unappropriated 'Crown Lands situated on the shore of Bass Strait and the Southern Ocean'[95]. It was 'permanently reserved for protection of the coastline' in 1984 on the recommendation of the Land Conservation Council in its 1978 Corangamite investigation. The council had recommended that the crown land from Sandy Cove to the Hopkins River be permanently reserved as the Port Fairy-Warrnambool Coastal Reserve.

Since then there have been a number of additions to the Belfast Coastal Reserve, including those made

[89] *The Age* 1958, 'Port fairy closes part of beach', *The Age*, 2 June 1958
[90] BMT WBM Pty Ltd 2007, *Port Fairy East Beach coastal erosion engineering and feasibility study, prepared for the Moyne Shire Council,* BMT WBM Pty Ltd, Melbourne
[91] Sinnott, A. and Pech, J. 2011, 'Erosion turns Port Fairy beach into a tip', *The Standard*, 17 October 2011
[92] Greenblat, E. and Craig, N. 2008, 'Coastal development all at sea over climate', *The Age*, 13 September 2008
[93] Water Research Laboratory 2013, *Future coasts: Port fairy coastal hazard assessment*, Water Research Laboratory, School of Civil and Environmental Engineering, University of New South Wales, Manly Vale
[94] *ABC News* 2013, 'Report says hundreds of buildings vulnerable to flooding from rising sea levels at Port Fairy', 28 May 2013
[95] *Victoria government gazette* 1879, Lands temporarily reserved from sale etc.' *Victoria government gazette*, 11 August 1879, http://gazette.slv.vic.gov.au, p. 2045

possible by the purchase of farmland adjoining Saltwater and Kelly's swamps on the Merri River floodplain south of Tower Hill. The funds to purchase the land were provided by a federally funded project to protect and expand parrot habitat.

In 2008, the reserve's management passed from the Shire of Moyne to Parks Victoria, the shire acknowledging at the time that the parks agency had 'specialist skills and expertise' that would allow them to manage 'important coastal habitat' and a 'significant coastal reserve with endangered species'[96].

Although it is reserved for protection of the coastline under the *Crown Land (Reserves) Act 1978*, the Belfast Coastal Reserve is given little protection by the statute. The reserve would gain greater protection if specific regulations for its management were listed in the government gazette, but this, as with most coastal reserves in Victoria, has not occurred.

The lack of regulation makes it very difficult to manage such uses as horse riding, which can disturb nesting birds. But habitat disturbance by fossicking is also an issue at times, not by prospectors seeking valuable minerals but people hoping to find the legendary Mahogany Ship, supposedly a Portuguese caravel that came to grief in the 1500s. If it were so, the story of European arrival in Australia would need rewriting.

Mid-nineteenth century newspaper accounts quoting people claiming to have seen the wreck of a large ship in the dunes have inspired a steady stream of fossickers:

> *As early as 1847, local newspapers reported a (for the times) massive wreck in the sand, as big as 300 tonnes. Not a new wreck – something old. Something very old, uncovered by a storm or a king tide. Whalers who saw the wreck claimed it was made of a dark wood (though they never said Mahogany), and fancied it was of Spanish design. Naturally, they thought it might be full of gold.*
>
> *An endless parade of wreck-hunters has marched around on those dunes, with serious expeditions mounted in the 1990s unable to reach a definite conclusion either way[97].*

There are three sites of biological significance within the Belfast Coastal Reserve:

- Killarney Reef is of state faunal significance for the breeding sites of lesser crested terns *Sterna bengalensis* and silver gulls *Chroicocephalus novaehollandiae*
- Armstrong Bay has flora and fauna of regional significance, its wetland sedge/herbland complex, Coastal Dune Scrub and Coastal Tussock Grassland representing depleted vegetation types in western Victoria. The coast ballart *Exocarpus syrticola* (R) also grows there
- Rutledge's Cutting, where the nationally important Saltwater and Kelly swamps drain into Armstrong Bay, has saltmarsh of local significance, but fauna of state significance, including lesser crested tern, silver gull and hooded plover breeding sites, and recorded sightings of the orange-bellied parrot.

In summer, orange-bellied parrots leave their breeding grounds in the button-grass plains on Tasmania's south-west coast. They are heading for the Victorian and South Australian coasts to spend the winter before returning to Tasmania in November. Although Yambuck Lake is regarded as the most significant site for parrots on the south-west coast of Victoria, Rutledge's Cutting and Killarney Beach are also important.

Important Bird Area status has been given to the Port Fairy-Warrnambool coastline due to the presence of the wintering orange-bellied parrots and breeding populations of hooded plovers. However, there are a number of threats including feral cats, drainage 'degradation of habitat by livestock, disturbance of birds and/or dune communities by recreational activities (e.g. walking, fishing, horse riding, illegal vehicle use), disturbance of birds by horses, uncontrolled dogs and potentially by light aircraft, and degradation of habitat by introduced plants such as marram grass'[98].

The major threats to the orange-bellied parrot's survival are the size of its population, which numbers around 200 in the wild, the loss and fragmentation of its saltmarsh habitat where it feeds on glassworts, seablight, saltbushes and sea-heath, and invasive weeds.

One of the weeds of concern is sicilian sea-lavender, *Liminium hyblaeum*, a garden escapee now infesting areas of saltmarsh in the Moyne River estuary at Port Fairy. It is the largest infestation in Victoria and extends along five kilometres of coastline as well as on Middle Island, in the Merri River estuary and near Rutledge's Cutting. The weed can tolerate high salinities and very harsh conditions, and can completely cover saltmarshes, exclude other plants, reduce biodiversity and remove food sources for species such as the orange-bellied parrot.

Sicilian sea-lavender is native to the east coast of Sicily and has been spread by birds at Middle Island and by rabbits at the Geelong Saltworks in Moolap, on road equipment at The Grotto near Port Campbell, in imported soil at Loch Ard Gorge, from gardens and by tourists in Port Fairy, and possibly by people counting orange-bellied parrots. It is a high-risk weed that threatens to spread across large areas of Victoria's coastal saltmarsh if unchecked—it has recently emerged on Phillip Island.

Although sicilian sea-lavender is included in the Victorian government's 2008 *Advisory list of environmental weeds of coastal plains and heathy forests bioregions of Victoria*[99], it is only referred to as

[96] Shire of Moyne 2008, 'Parks Victoria to take over management of the Port Fairy–Warrnambool Coastal Reserve', http://www.moyne.vic.gov.au/Page/page.asp?page_Id=1775&h=0, 26 August 2008

[97] Fordham, A. 2012, 'The Mahogany Ship', http://scienceillustrated.com.au/blog/in-the-mag/vintage/the-mahogany-ship/, *Science Illustrated*, 11 December 2012.

[98] www.birdata.com.au/iba.vm

[99] Department of Sustainability and Environment 2008, *Advisory list of environmental weeds of coastal plains and heathy forests bioregions of Victoria,* Department of Sustainability and Environment, Melbourne

one of the 'lower risk weeds' and is yet to be declared a noxious weed, which limits any agency or landholder commitment to its eradication and control.

Merri Wetlands and a meatworks

Kelly Swamp is within the Belfast Coastal Reserve and is also part of the Merri Wetlands along the Merri River as it nears the coast. The swamp occupies the old course of the river, which used to discharge into the ocean at Rutledge's Cutting. The current river mouth is next to Merri Island, the Merri Island Marine Sanctuary and Warrnambool Harbour.

Between sand dunes at Levy Point and the shore of the Merri Wetlands, Midfield Meats established a rendering plant to service its abattoirs in the City of Warrnambool (Levy Point marks the western boundary between the Shire of Moyne and the City of Warrnambool).

In 2009 the company was cautioned for dumping fill at the Levy Point plant:

> *Midfield Meat has been ordered to stop dumping soil near its rendering factory at Levys Point in Warrnambool. Concerned local residents alerted the city council and* The Standard *three weeks ago when dozens of truckloads of fill was unloaded in ponds. The dumping stopped after a council officer's initial investigation and then resumed.*
> *Residents have been keeping a close watch on the site since Midfield International applied earlier this year for a permit to build a biodiesel factory adjacent to the rendering plant*[100]

Although the company withdrew its application for the biodiesel plant in early 2011, it may still proceed with the project in the future:

> *Community groups which had united in a two-year battle against the proposal yesterday applauded the decision and hoped it would eventually be followed by relocating a rendering plant away from the environmentally-sensitive area. However, their celebrations could be short-lived because Midfield Meat International yesterday indicated it had not buried the idea of expanding its facilities at Levys Point*[101].

The company's preferred location is inappropriate and would entrench industrial development in a sensitive environment. Relocation of the existing rendering plant to a site where expansion can occur would be the best option.

City of Warrnambool

The coastal boundary of the City of Warrnambool runs from Levy Point in the west to just past Lake Gillear in the east. A vegetation analysis conducted by Biosis in 2011 identified 98 native plants, 108 exotic plants and 15 EVCs along the coast (note that the coarser scale analysis used by this report identified four).

Among the native plants along the city's shoreline, six are of state significance: coast bitter-bush *Adriana quadripartite* (V); coast fescue *Austrofestuca littoralis* (R); salt blown-grass *Lachnagrostis robusta* (R); coast bush-pea *Pultenaea canaliculata* (R); coast twin-leaf *Zygophyllum billardierei* (R); coast stackhousia *Stackhousia spathulata* (K). Of the 108 exotic plants, the most invasive include Italian buckthorn *Rhamnus alaternus*, African boxthorn, sweet pittosporum *Pittosporum undulatum*, mirror bush, tree mallow *Lavatera arborea*, bridal creeper and the rodondo creeper *Drosanthemum candens.*

The stretch of coast from Levy Point and past Thunder Point, the Merri River estuary, and Middle and Merri islands to Lady Bay, contain the most diverse sites along the City of Warrnambool coastline.

Thunder Point has fauna of regional significance with hooded plovers nesting on the beaches. Until its partial collapse in the late 1990s, the Thunder Point Blowhole was used as a maternity cave for the southern bent-wing bat *Miniopterus schreibersii bassanii* (CE). Middle and Merri Islands support little penguin colonies that are of regional significance. Since 2006, trained maremma dogs have been used to guard the little penguins from attacks by foxes, a project coordinated by the Warrnambool Coastcare Landcare Group. The result, penguin numbers have increased from 70 to 170 pairs.

This stretch of coastline is also under pressure from a number of competing interests, including the Warrnambool Golf Club, which has a number of fairways cut into dune vegetation and now wishes to establish more near the Wannon Water Plant. However:

> *A confidential preliminary report on Crown land in Warrnambool's south identifies parts of the course for potential expansion of the Thunder Point coastal reserve and also has ramifications for the trotting club site and mountain bike track. The club, which has leased Crown land since 1928, fears loss of the greens would trigger refusal of its long-held ambitions to build an international-class course on an adjacent strip of coastal vegetation*[102].

The issue coincides with the City of Warrnambool's preparation of the Warrnambool coastal management plan 2013 draft, for which public consultation ended in November 2013. The plan identifies the golf club area as part of the South Warrnambool Crown Land Precinct, which has key management issues including development pressure, lease arrangement for facilities, competing uses and conservation management of native flora and fauna. With the fragmentation and decline of coastal nature on the Warrnambool Plain, any further loss should be avoided, the fairways in the dunes returned to coastal vegetation and the golf club encouraged to expand onto less sensitive land. The relocation of the Wannon Water Plant and the nearby harness racing track, followed by land restoration, should also be encouraged as they too are not coastally dependent.

Further east, strips of Estuarine Wetland are found near the mouth of the Merri River at Warrnambool, while Coastal Dune Scrub with Damp Sands Herb-rich Woodland behind stretch along Lady Bay between the Merri and Hopkins River mouths. Extensive clearing has occurred in the middle and upper catchment of the

[100] Collins, P. 2009, 'Caution for Midfield as residents monitor dumping', *The Standard*, 17 September 2009
[101] Collins, P. 2011, 'Controversial biodiesel plant shelved', *The Standard*, 16 February 2011

[102] Collins, P. 2013, Warrnambool Golf Club faces the fight of its life over land', *The Standard*, 18 May 2013

Merri River to establish dairy, wool, lamb, beef and crop production, while urbanisation is spreading in the lower catchment where riverside vegetation has been largely removed and the water quality has been assessed as poor[103].

Primary school students from Warrnambool had been breeding leafhopper bugs for the biological control of bridal creeper, which has infested the South Warrnambool Wetlands at the mouth of the Merri River[104]. The creeper, which smothers native vegetation, came to Australia in the 1870s, was popular in bridal bouquets and is grown in local gardens from where this infestation was probably sourced. The Victorian government removed funding for the students' leafhopper bug breeding program without notice in 2012.

Like the East Beach shoreline at Port Fairy, and the Dutton Way shoreline at Portland, the Lady Bay shoreline has suffered significant erosion since the construction of port facilities. The Port of Warrnambool began with jetty construction in the 1850s, to which a breakwater, causeway and viaduct were later added. The breakwater interfered with the longshore drift of sand along Lady Bay; sand accumulated inside it and starved beaches to the east. The result has been a 300-metre reduction in the width of the Lady Bay sand dunes and beach. The erosion continues.

Although coast tea-tree is indigenous to Victoria's coast east of Anglesea, it was introduced to south-west Victoria, along with the introduced marram grass, *Ammophila arenaria,* as a dune stabilising plant. In the late nineteenth century the use of marram grass was recommended by Victoria's first Government Botanist, Baron von Mueller, to stabilise dune erosion in Port Fairy. It was also used at Warrnambool after grazing removed dune vegetation and the bare sand had blown into the main street of Warrnambool.

In November 2013, the Warrnambool Coastcare Landcare Group celebrated the tenth anniversary of its Reveg the Flume project, which has been replacing the introduced marram grass with indigenous vegetation along 2-3 km of sand behind the primary dune of Lady Bay. The project has been very successful, planting tens of thousands of plants, engaging hundreds of local people each year, and encouraging the return of native birds and mammals, including the swamp wallaby.

Warrnambool to Peterborough

East of the Hopkins River mouth, sand dunes and Coastal Dune Scrub quickly disappear and are replaced by high limestone cliffs topped by cleared land and tiny remnants of Coastal Headland Scrub/Coastal Tussock Grassland Mosaic. The mosaic broadens out once inside the Bay of Islands Coastal Park where it is backed by cleared land and occasional patches of Damp Sands Herb-rich Woodland.

The Bay of Islands Coastal Reserve was permanently reserved in 1982 and 1984, but this 33-kilometre stretch of coast, 950 ha in area, did not become a coastal park until 1997.

Starlight Cave, in the cliffs near Lake Gillear, is one of only two maternity caves of the southern bent-wing bat found in Australia, the other is at Narracoorte in South Australia. The bats leave the cave at night to feed on mosquitoes, moths and beetles caught in flight.

Although it is sometimes referred to as the common bent-wing bat, it is far from common and is listed as Critically Endangered under both the Victorian *Flora and Fauna Guarantee Act 1988* and the federal *Environment Protection and Biodiversity Conservation Act 1999*. Numbers across Australia once numbered 200 000 but are now thought to be fewer than 25 000, with 10-15 000 counted at Starlight Cave in the summer of 2011-2012.

The main threats to the southern bent-wing bat are disturbance by visitors to the cave, which could cause the bats to abandon it, damage to the cave from the use of equipment on the land surface above, insecticides, feral rats, cats and foxes and the loss and fragmentation of treed and wetland habitats where they catch their prey; the bats do not fly across cleared areas.

At Point Mepunga the flora is of regional significance, with low open shrubland on karstic topography being a very restricted vegetation type. A large patch of Coastal Dune Scrub appears at Flaxmans Hill, with Damp Sands Herb-rich Woodland/Damp Heathland/Damp Heathy Woodland Mosaic and Swamp Scrub behind it. From Flaxman's Hill to Armstrongs Creek the coastal cliff vegetation and remnant heathland on the cliff-top are of regional significance. So too is the fauna, with a little penguin colony near Flaxman's Hill.

Heading further east, strips of Coastal Dune Scrub and Coastal Headland Scrub/Coastal Tussock Grassland Mosaic alternate for about seven kilometres, after which the mosaic continues as a narrow strip backed by cleared land to six kilometres west of Peterborough. From there, Coastal Headland Scrub replaces the mosaic and, in some places, is broader than 500 m. In other places cleared land and patches of Damp Heathland/Damp Heathy Woodland Mosaic are found behind it.

The Bay of Island Coastal Park comes to an end at Curdies Inlet, a relatively large estuary at the mouth of the Curdies River at Peterborough. Along the western shoreline the land is freehold and zoned Farming Zone within the Shire of Moyne planning scheme. The land on the eastern side of the inlet is within the Shire of Corangamite and zoned Rural Conservation Zone, as is the inlet itself, suggesting that it is privately owned. However, the waters of the Curdies Inlet are part of the Peterborough Coastal Reserve and publicly owned.

Estuarine Wetland surrounds the Curdies Inlet, along with patches of Herb-rich Foothill Forest and Damp Heath Scrub. Barton and Sherwood (2004) reported that the extensive clearing for dairy farms in post-war soldier settlement schemes took its toll on the estuary:

> *The condition of the freshwater environment of the Curdies River, immediately above the estuary is poor. The ISC* [Index of Stream Condition*] assessment of this reach of the Curdies indicated that whilst the*

[103] Warrnambool City Council, *Warrnambool City Council Merri River restoration strategy*, Warrnambool City Council, Warrnambool, p.4

[104] *WeedsNews* 2010, 'Warrnambool students and leaf hoppers do their part for nature', *WeedsNews* 1303, 9 November 2010, http://invasivespecies.org.au/traction/permalink/WeedsNews1303

hydrology of the river was good, water quality, stream side zone, and aquatic life were poor to very poor (Victorian Water Resources Data Warehouse 2002). Surveys of water quality by Deakin University have also shown that the river is degraded, with high nutrient levels (Maher 2001). Its waters consistently exceed State water quality guidelines[105].

The elevated nutrient levels in the estuary have at times led to blue-green algal blooms—in 1991 and 1998 the estuary was closed to recreational fishing, boating and swimming due to concern about the effects of toxic algae.

The Curdies Inlet estuary was one of five surveyed by Barton and Sherwood (2004) in their analysis of artificial estuary openings. By comparing pre-1750 EVC coverage with the current coverage, they determined that there had been huge losses of vegetation in each of the estuary catchments:

All EVC areas are considerably smaller and more fragmented now than in the pre-1750 distribution. The preferential clearing of flat, floodplain areas is evident for the Gellibrand and Aire estuarine catchments. Of the five estuarine catchments the loss of EVC area and types in the Curdies and Fitzroy estuaries is particularly noticeable. Gellibrand estuary had a varied mosaic of EVCs and seems to have kept at least a small example of each. The EVC most affected seems to be the loss of large areas of Damp Heath Scrub to the West of Curdies Inlet. The introduction of marram grass in 1883 has also had a major impact on the Coastal Dune Scrub Mosaic; it has stabilised dunes, but has also created monospecific communities on the dunes. Swamp scrub vegetation type is severely depleted within the region and its protection requires urgent action. This vegetation contains a range of species that have National and State wide conservation status: swamp greenhood, small-sickle greenhood, swamp antechinus, swamp skink, variegated pigmy perch, southern emu wren, rufous bristlebird, olive whistler (Glenelg form), and barred galaxias. The long-term security of these species is dependent on the conservation of these areas[106].

Port Campbell National Park

A narrow but valuable strip

At 1 830 ha, the Port Campbell National Park may seem small, but its internationally famous and spectacular coastline of sheer limestone cliffs, rocks stacks and gorges stretches for 27 kilometres. At one point it is only six metres wide, while at another it reaches a maximum width of two kilometres.

The park, which was established in 1964, begins on the eastern side of the Curdies River, where a long sand dune covered in Coastal Dune Scrub/Coastal Dune Grassland Mosaic has restricted the waterway's access to the sea.

East from Peterborough the Great Ocean Road hugs the cliffline—in places it is at risk of being undermined by cliff erosion. The Coastal Dune Scrub/Coastal Dune Grassland Mosaic narrows and is then separated from the coast by Coastal Tussock Grassland on sloping cliff edges, with extensive patches of Coastal Headland Scrub further back interspersed with bands of Coast Gully Thicket and Damp Heath Scrub. The coastal vegetation is often less than 100 metres wide but sometimes extends up to a kilometre inland. The mosaic briefly reappears at Two Mile Bay along a raised beach at the base of an ancient cliff covered in Coastal Headland Scrub.

The small township of Port Campbell is located on the eastern side of Port Campbell Creek. It is a base for people visiting the nearby Twelve Apostles and the many other spectacular coastal landforms carved from soft marine limestone. Estuarine Wetland is found along the creek, but from there to Princetown, parallel bands of Coastal Tussock Grassland and Coastal Headland Scrub predominate, sometimes broad, but at other times less than 100 metres wide (from Twelve Apostles to Gibson Steps) where cleared land occurs.

From Gibson Steps the cliffs become sandstone, some sheer and others crumbling, separated from the shore by rocky terraces. Here Coastal Headland Scrub is replaced by a short and narrow band of Coastal Tussock Grassland, which at first is backed by cleared land and then later a broadening strip of Coastal Dune Scrub/Coastal Dune Grassland Mosaic. The Port Campbell National Park ends at Point Ronald, Princetown, where the Gellibrand River enters the sea.

The flora and fauna of the Port Campbell cliffs and hinterland are of state significance. The cliff vegetation backed by species-rich heathland and forest, marsh vegetation and dune vegetation contains the lax twin-sedge *Baumea laxa* (R), swamp diuris *Diuris palustris* (V), coast ballart, square raspwort *Haloragis exalata* (V), oval-leaf logania (R), morning flag, lime fern *Pneumatopteris pennigera* (E), tiny arrowgrass *Triglochin minutissima* (R), scented spider-orchid *Caladenia fragrantissima* (E), swamp greenhood, clover glycine (V) and the metallic sun-orchid *Thelymitra epipactoides* (E). The clover glycine and metallic sun-orchid grow in both the Port Campbell National Park and the Bay of Islands Coastal Park.

The habitats found in the Port Campbell cliffs are also important for the rufous bristlebird, swamp antechinus and southern brown bandicoot *Isoodon obesulus* (NT), and there are breeding sites for the little penguin, black-faced cormorant *Phalacrocorax fuscescens* (NT), short-tailed shearwater *Puffinus tenuirostris* and peregrine falcon *Falco peregrinus.*

Since 2009, the Port Campbell Community Group has been monitoring southern brown bandicoots in the area. The group discovered a breeding colony on crown and private land on the Port Campbell headland. But the Shire of Corangamite has issued a permit for construction of a house on the private land. This will remove part of the bandicoots' nursery habitat and could potentially lead to calls by the house owner for a firebreak to be cleared on the adjoining crown land to satisfy fire regulations; further habitat degradation would occur.

Rezoning and tourism development

The tourism industry has for many years been calling for more accommodation and tourism infrastructure

[105] Barton, J. and Sherwood, J. op. cit., p.75
[106] ibid., p. 41

along the iconic Port Campbell National Park coast, and now, with the Victorian government's development focus, those calls are becoming louder and gaining a positive response from developers.

In the face of strong community opposition, there has been a long-standing proposal for a four-storey hotel complex with nine shops and a 200-seat restaurant. The development would require a 10-metre-deep excavation below ground level on the headland at Port Campbell, excavation that geologists have warned is 'high risk and may accelerate the collapse of the unstable sea caverned headland'[107].

The land was put up for auction in October 2013 but passed in, and the permit to progress the development has now expired. Not so the enthusiasm for coastal development along this magnificent coastline.

In 2012 the state government approved land rezonings to stimulate commercial tourist development between Peterborough and Moonlight Head under the Corangamite Shire Council's 2012 Planning Scheme Amendment C30. *The Age* reported in March 2012 that:

> *Swaths of farmland along the Great Ocean Road are set to be developed for resort-style hotels, "high-end, nature-based tourism accommodation" and other tourism facilities as part of a massive plan to boost the area's economic development. In far-reaching planning changes, Corangamite Shire Council has sent an application to the Baillieu government to rezone about 1155 hectares of land across 20 sites—including key sites along the Great Ocean Road—to allow for more tourism accommodation. Sites include 50 hectares to the west of Port Campbell targeted for a four-or-five-star, resort-style hotel development. Other areas include sites near Peterborough, Skipton, Mount Elephant, Mount Widderin Caves, Timboon, Princetown East and Moonlight West (south-east of Princetown). An expert planning panel last year advised the council against rezonings at six of the sites — including the Port Campbell west site — but last month the council rejected the advice and voted to rezone all 20 sites[108].*

Half of the 20 sites proposed for rezoning were inland, with the other half were on the coast near Peterborough, Port Campbell, Princetown and Moonlight Head. The panel recommended against rezoning six of the coastal sites from the existing Rural Conservation Zone to either Rural Activity Zone or Special Use Zone.

Most of the coastal proposals had preferred future uses for the land that included an education centre, interpretive centre, group accommodation, residential hotel, backpackers and bed and breakfast accommodations. The panel recommended against these six rezonings or for their modification because of:

- inconsistency with policy development for tourism in the Great Ocean Road region
- visual impacts of future development
- encouragement of linear development
- potential impacts on the interface with either the Port Campbell or Great Otway national park boundaries
- absence of definite proposals for development, which suggested they were speculative
- proximity, in one case, to the Port Campbell Water Reclamation Plant (sewerage farm), which would have required 500-metre buffers that were unachievable on the subject land.

Later in August of that year *The Age* reported that a new tourism blueprint for the Great Ocean Road was focusing on tourism developments similar to the preferred uses in the rezoning proposals:

> *A new tourism blueprint for the Great Ocean Road is calling for a big jump in resort tourism facilities to be built along the world-class route to accommodate more than 10 million visitors a year by 2030. The report, funded by industry and state and federal governments, calls for an additional 3440 guest rooms in the Great Ocean Road region over the next 20 years. Under a high growth visitor estimate, up to four new ''large resorts'', five new backpacker hostels, five new caravan or tourist parks, up to a dozen new hotels, 50 bed and breakfasts and 90 farm-stay accommodation options would be required, the report states. Priority projects around the Great Ocean Road include a $100 million Port Campbell Precinct and Loch Ard Interpretive Centre and a $35 million Great Ocean Road tourist resort near Port Campbell[109].*

The Age also revealed that 'Councils have already begun lodging applications for greater development along the Great Ocean Road' and subsequently reported in November 2012 that:

> *Planning Minister Matthew Guy has approved the rezoning of more than a dozen parcels of farming and coastal land along the Great Ocean Road that will be targeted for high-end resorts and hotels[110].*

This decision, like that at Narrawong discussed previously, contrasted with the minister's comments in *The Age* in December 2011:

> *Planning Minister Matthew Guy said the government would release a <u>new coastal development strategy</u> early next year. He said the strategy would investigate predicted sea-level rises and have tougher planning rules for developments outside existing town boundaries. Mr Guy also cautioned against coastal sprawl.*
> *''We have to be careful about linear growth along the coast,'' he said. ''In the long term it may make sense for councils to plan for inland development rather than linear development along the coast.''[111]*

The text underlined here indicates that the planning minister views the *Victorian coastal strategy* as having a development focus.

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[107] Save the Port Campbell Headland 2013, www.portcampbell.org/?page_id=14
[108] Dowling, J. 2012, 'Resorts plan for Great Ocean Road', *The Age*, 26 March 2012
[109] id., 'Resort tourism plan for Great Ocean Road', *The Age*, 20 August 2012
[110] Perkins, M. 2012, 'Anger over Great Ocean Road rezonings', *The Age*, 13 November 2012
[111] Dowling, J. 2011, 'Wise planning will ensure surf "burbs" are not just Waverleys by the waves', *The Age*, 21 December 2011

Shipwreck Coast Master Plan

The $150 million Port Campbell Precinct proposal is listed in the state government's 2012 *Great Ocean Road Destination Management Plan* as a 'game changer project' and includes construction of a multi-storey Loch Ard Interpretive Centre on farmland north of the road.

In addition, Parks Victoria, Tourism Victoria and the shires of Moyne and Corangamite are currently developing the *Shipwreck Coast tourism master plan* for 28 km of coastline between Princetown and Boat Bay, west of Peterborough (the entire Shipwreck Coast is a 160-kilometre stretch between Princetown and Port Fairy). The planning process has three elements:

- *Master plan for the Shipwreck Coast. While there have been various plans for different sites over the years, there is a need for an agreed, overall plan which brings together the ideas for different sites and looks at the relationships between them.*
- *Plans for the interface between the parks and the townships of Princetown, Port Campbell and Peterborough.*
- *Detailed site plans for key visitor sites such as Loch Ard Gorge, the Twelve Apostles and Bay of Islands, to better define the varied types of visitor experiences and consider the facilities required to support these.*[112]

The master planning process has so far comprised public consultation to identify issues and opportunities, the development of a vision, objectives and key directions, and a set of draft concepts. A draft master plan is due for release in January 2014 for public comment, and a final master plan will be open for further public comment in April 2014. According to the stage one report:

> *This world-class landscape needs a visionary plan for the future to help protect the region's extensive natural and cultural assets and provide rich and engaging visitor experiences to support a sustainable tourism industry and the regional economy*[113]*.*

The initial focus of the master planning process was the public land and waters contained within the Port Campbell National Park, the Bay of Islands Coastal Park, the Arches Marine Sanctuary and the Twelve Apostles Marine National Park, but the latter two were seldom mentioned after that and have been deleted from the current vision.

The master plan stage one report bemoans the linear nature of parks because it pressures coastal values and undermines the visitor experience. The linear nature is the result of past settlement and clearing of the Warrnambool Plain, the retention of only a narrow strip of public land and the construction of the Great Ocean Road along the public land boundary to link Princetown, Port Campbell and Peterborough.

But in response, the master planning documents propose solutions that focus tourism development within the Port Campbell and Bay of Islands parks. Such a focus will accentuate the linear visitor experience, place excessive pressure on the coastal nature within the two parks, and add to the linear coastal development already being encouraged by the recent rezonings on adjoining and nearby private land mentioned earlier.

The list of documents deemed relevant to the master planning process also underline that focus; largely state and local government reports favouring tourism development in or adjacent to national parks. The *Victorian coastal strategy* is not included in the list.

The master plan stage one report also outlines a major change in the management planning for national parks:

> *The Port Campbell National Park and Bay of Island Coastal Park Management Plan 1998 provides the policy and management context for the development of the master plan. This management plan is now 14 years old and will be updated by a landscape scale management plan for the entire South-West Region.*
>
> *In this context it is envisaged that the master plan will provide the direction setting, programming and management framework to guide Parks Victoria for the Shipwreck Coast at a park level and to inform management and capital works programs for the shires and other state and local government agencies*[114]*.*

This has profound implications for national parks and, as the master plan documents conclude, will 'present the potential basis for a structural shift in the way we approach the planning, design and management of our National Parks and how they interface with local towns and hinterland areas'[115].

Although the integration of park management with strategic regional planning should be a key objective in a marine and coastal planning framework, it should not be at the expense of the prime objective of national parks, which is to conserve nature (and in some cases cultural heritage), and its replacement with a multi-faceted regional economic development plan designed to satisfy commercial interests. Under such an approach, the work of park managers will be driven by the need to service visitors rather than the protection of coastal nature. This misallocation is likely already occurring and will worsen if the master plan is implemented in its current form.

The following extracts from the stage one document indicates the direction of the master planning process:

> *The 28 kilometres of the Shipwreck Coast spanning from Princetown to the Bay of Islands is a wonderful place. While its intrinsic nature and character have made it a much-visited attraction, to some people it has been considered to over promise and under deliver on its overall visitor experience.*
>
> *…there is a widening gap between what people are looking for in their visitor experiences and what is currently being offered by way of accommodation, local 'place' and produce and the logistics of simply getting to the coast, navigating and interpreting it.*

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[112] Shipwreck Coast your plan 2013, http://shipwreckcoastyourplan.com.au/master_plan.php#.UhsIwuBK6fQ

[113] McGregor Coxall 2013,a *Shipwreck Coast Master Plan Stage One*, prepared for Parks Victoria, McGregor Coxall, Melbourne, p.2

[114] ibid., p. 4

[115] ibid., p. 9

The conditions contributing to this tourism offer can also potentially be some of the very factors that people living in local communities find attractive. The area's quiet, relaxed and laid back attitude are defining elements of its nature and character and some of the reasons why many locals call the region and it's townships home. Another contributing viewpoint that influences perception comes from many people and stakeholders who would like to see National Parks untouched and feel that any development of Parks is detrimental.

The gap between the external pressures, local perception and beliefs on what National Parks should or should not be is one of the defining elements of the master plan[116].

On the area's accommodation the master plan states:

There is a shortage of suitable accommodation and this will be exacerbated in the future as demand grows. Visitors have a preference for accommodation that is close to the ocean, provides ocean views and is present within a rural setting. Opportunities for accommodation that cater to nature-based tourism, for example associated with the Great Ocean Walk, in key townships and/or locations within or adjacent to the National Parks could be explored. Specifically, there is a need for additional Bed and Breakfast establishments and resort accommodation[117].

Clearly the master planning process is seeking to fill the 'gap between the external pressures, local perception and beliefs on what National Parks should or should not be' with tourist developments within the parks and on adjoining private land that will cater for 'some people' who consider the parks 'over promise and underdeliver' and 'have a preference for accommodation that is close to the ocean', and to support the new government attitude towards national parks that will 'propose sensible and sensitive developments in national parks provided they complement environmental, heritage and other values and generate a net public benefit'[118].

After the presentation of the issues and opportunities in stage one, the shorter stage two report presents a vision with its eye clearly on tourist development:

Enhance and enrich the Shipwreck Coast experience as a distinctive and remarkable world class destination underpinned by the character of its hinterland and local towns coupled with the conservation and protection of its national, coastal and marine parks[119].

To support the vision there are five objectives:

1. *Conserve and protect the national, coastal and marine parks*
2. *Support and enrich the coast's local and hinterland communities*
3. *Create a distinctive visitor experience at a world class destination*
4. *Benefit from tourism*
5. *Create long-term value for Victoria, its south-west region and the local communities[120].*

For each objective there is a number of key directions for guidance of the master plan. For example:

Explore long-term land tenure and development models that utilise the relationship of the rural and coastal land adjacent to the linear parks[121].

However, in the consultation materials presented in the planning reports' appendices, this key direction was significantly changed and could be read as focusing on altering land tenure within the parks:

Explore different land tenure and development models to achieve best use and value for the parks[122].

A review of the consultation results presented in the stage one and two reports and appendices indicates that those consulted were keen to see the environment within the parks protected. There was no push for development within the parks, but there were a number of comments against it.

The Port Campbell area receives more than 2.6 million visitors each year, but the master planning process is looking to increase this by encouraging more people who will hopefully stay longer (most people pass through the area in a day):

There is a potential for 'natural' growth in domestic visitation as the population increases. The Investment and Regulatory Reform Working Group (2011) have forecast on this basis an increase of 2.4 million from 7.2 million to be 9.6 million visits to 2030. If the region is able to increase its share of the Australian market this increases to growth of 3.3 million for the region to be 10.5 million visits[123].

But the master planning documents also acknowledge 'obstacles' to growth which include:

A key threat to the relative attractiveness of the area is the possibility of exceeding the area's 'environmental capacity'. This is to say that visitor numbers and behaviours may reach a point where the quality of the experience is diminished for everyone. Examples for some sectors may include helicopter flights and or the traffic congestion in some locations.

Coastal erosion is a natural process that has continually created and destroyed the landscape features of the coastline. This process has had a profound effect and will most likely accelerate its rate of impact with the effects of climate change. This poses a threat to the man made infrastructure on the coast including the GOR itself. The slivers of national park may become unviable as habitats in the not too distant future. It is arguable that some sections are of insufficient width already[124].

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[116] ibid., p. 8
[117] ibid., p. 20
[118] ibid., p. 9
[119] McGregor Coxall 2013b, *Shipwreck Coast Master Plan, Master Plan Stage Two Report*, prepared for Parks Victoria, McGregor Coxall, Melbourne p. 4
[120] ibid., pp. 6-10
[121] ibid., p. 9
[122] McGregor Coxall 2013c, *Shipwreck Coast Master Plan, Master Plan Stage Two Report Appendix 02,* prepared for Parks Victoria, McGregor Coxall, Melbourne, p. 11.
[123] McGregor Coxall 2013b, op. cit., p. 19
[124] McGregor Coxall 2013b, loc. cit.

Is the 'environmental capacity' of the two parks being exceeded? It may well be so but there have been no studies conducted to determine that capacity, research that is essential before any development occurs in the area. The 'insufficient width' is one of the major threats to coastal nature in the two parks. Flanked by land development on one side and coastal erosion on the other, and coupled with the impact of millions of visitors each year, the coastal nature is being squeezed; a process set to accelerate should the development options of the master plan proceed. The 'slivers of national park' could very quickly become 'unviable'.

Rather than applying more pressure on the two parks, tourist development should be directed to the three existing townships outside. Further, the parks are in need of inland expansion by the purchase of private land on their northern boundaries and the inclusion of nearby parcels of public land. For example, in the master planning process it has been proposed that the Port Campbell Rifle Range (Commonwealth-owned land) west of Port Campbell and near Two Mile Bay be used for an up-market tourist venture, a spa resort. It would be better that this high-conservation-value land were added to the national park and restored.

The purchase of private land and its addition to the national park would also overcome the concern that 'slivers of national park' could become 'unviable'. It is the focus of the master planning process on commercial tourism development within the national park that could very quickly make it ecologically unviable.

The final set of documents currently available on the Parks Victoria website refers to a number of draft concepts for the master plan.

The first concept considers access and largely focuses on the Great Ocean Road, which the consultants suggest should be embedded 'in the parks so that it can be experienced in new ways'[125]. Four options are raised; three have varying degrees of hinterland transport but the Great Ocean Road remains central.

The second concept is framed around the three townships with ideas to give each town a distinctive focus, while the third concept focuses on the visitor experience, which is divided into 'road' and 'park' experiences.

There are two options proposed for the 'road' experience. The first is status quo, while the second option proposes greater diversity in transport routes in the hinterland but with the Great Ocean Road embedded in the parks and linking various park experiences.

The 'Visitor experience park' concept focuses on visitor information and accommodation-based, experience-based and ancillary and support facilities. A series of photos from Australia and overseas, some extreme in scale, design and location, are used to illustrate what the infrastructure may look like.

The proposed new visitor information would be based in four site-specific information pods along the coast, providing information relevant to each pod's location.

But it is the proposed accommodation-based, experience-based and ancillary and support facilities that takes the master plan into the realm of major public and commercial tourism development within the parks, completely divorced from the vast bulk of comments received in the public consultations. The options for accommodation-based facilities[126] would each have a low visual impact or be of high quality architecture and not exceed three storeys in height. They include a large conference centre, a large high-end resort with an excellent outlook, a medium to large eco-resort, small to medium budget accommodation and small self-contained accommodation such as B&B, cottages and farmstays.

In addition there were proposals for hikers and cycle huts—single units with low environmental impacts and weather and vandal proof—and small-scale camping and 'glamping' facilities with very low environmental and visual impacts.

The experience-based facilities[127] include:

- at least one medium to large visitor/interpretive centre
- a medium to large museum/gallery
- a medium-sized café/kiosk/restaurant with good outlook
- lookouts, a medium-sized spa and a medium-sized golf course, all with excellent outlooks
- small boating and marine facilities.

The proposed ancillary and support facilities include toilets, boardwalks, trails, steps, shelters, rest areas, picnic areas, parking, seating, transportation, bus stops and ticket booths[128].

The planning documents are unclear as to how many of the accommodation-based and experience-based options are intended for development within the parks and how many in the hinterland and townships. However, based on the general tone of the master planning documents, most options could be intended for inside the parks.

At the Twelve Apostles Visitor Centre, visitors have the opportunity to take a scenic helicopter flight along the coast. The incessant noise of the helicopter operation is a constant reminder that the park managers only manage the park's land, not the air above it. Although land-based tour operators must follow park management regulations, this is not the case for the helicopter flights—the heliport is on private land and, once in the air, the only rules that apply are those for air traffic control and safety. In this case, as the master plan states, 'the quality of the experience is diminished for everyone'.

The current state government push for commercial tourism development in national parks, along with the development focus of Tourism Victoria and the Shire of Corangamite, is cause for concern that the master plan and the other planning processes mentioned, will usher in inappropriate and excessive development of this internationally significant coastline.

Princetown to Moonlight Head

The Gellibrand River flows through dense forest in the

[125] http://shipwreckcoastyourplan.com.au/

[126] http://shipwreckcoastyourplan.com.au/

[127] http://shipwreckcoastyourplan.com.au/

[128] http://shipwreckcoastyourplan.com.au/

Otway Ranges and irrigated farmland across its floodplain before entering the sea at the tiny settlement of Princetown. The Princetown Wetlands have been recognised nationally in the directory of important Australian wetlands, have extensive beds of common reed *Phragmites australis*, meadows of beaded glasswort *Sarcocornia quinqueflora*, and the swamp greenhood.

Twenty species of fish have been recorded in the Gellibrand River's estuary, including Victoria's largest population of river blackfish, giving it high importance in the conservation of native fish. However, in a 2002 report cited in Barton, J. and Sherwood, J. (2004)[129], although water quality and river aquatic life were rated good, the hydrology was altered and the physical form and streamside zone were poor. Stock access to the riparian zone was of concern, as were the reduced summer flows into the estuary due to water extraction for irrigation upstream.

With the seasonal closure of the Gellibrand River's mouth, flooding of former wetlands converted to farmland can occur as far as 10 kilometres upstream, and occasionally covers the Great Ocean Road. Many years ago, a tunnel was dug through Point Ronald to release the water but almost immediately silted up. Past artificial openings of the mouth have led to major fish kills, including the loss of large numbers of common galaxias *Galaxias maculatus*, Australian smelt *Retropinna semoni* and gudgeon in April 2000.

The Gellibrand River is one of many sites being monitored by volunteers in the EstuaryWatch[130] program initiated in 2006 by the Corangamite Catchment Management Authority and now operating in estuaries of the other catchment management authorities. According to the Corangamite CMA's website, the aim of the program is to:

> *'Raise awareness and provide educational opportunities to the community in estuarine environments, and enable communities and stakeholders to better inform decision making on estuarine health'.*[131]

EstuaryWatch groups collect estuarine water quality data and enter it on an interactive database on the EstuaryWatch website. They also measure changing water levels and vegetation condition, and record whether river mouths are open or closed. In the Corangamite region alone there are 12 EstuaryWatch groups.

The Great Otway National Park first appears in the final stretch of coastline of the Warrnambool Plain between Princetown and Moonlight Head. Coastal Dune Scrub/Coastal Dune Grassland Mosaic, Coastal Headland Scrub and Coastal Tussock Grassland appear at the beginning of this stretch, but then Coastal Tussock Grassland occurs in a broad band backed by patches of Damp Sands Herb-rich Woodland, Heathy Woodland, Coastal Headland Scrub/Coastal Tussock Grassland Mosaic and Lowland Forest (a large strip of which comes to the shoreline), before an extensive patch of Coastal Headland Scrub is found at The Gables near Moonlight Head.

Impacts of private land to high water mark

As already mentioned, the coast of the Warrnambool Plain Bioregion is remarkable for the amount of private land abutting the high water mark. Over several sections it totals approximately 30 kilometres in length, which is more than one third of the 4% of Victoria's coast that has private land to the high water mark. This has caused a significant narrowing and fragmentation of the coastal EVCs, and in some places they have been cleared completely. Table 8 identifies those stretches of private land abutting the high water mark between Portland and Princetown, with information on the EVCs present, the length of coast, and the land-use zoning, which in all cases but one is Farming Zone.

In its native vegetation management plan[132], the Glenelg Hopkins Catchment Management Authority provides further insight into the impact that private landholdings have had on sections of coast between Portland and Warrnambool on the Warrnambool Plain. The loss of coastal EVCs along these sections is:

Surry River (Portland to Narrawong): only 2% of pre-1750s Coastal Dune Scrub remains

Darlot Creek (Framlingham to Tyrendarra): just 1.7% of Coastal Headland Scrub is left, while Estuarine Wetland is down to 25% and Coastal Dune Scrub 27%

Eumeralla River (Tyrendarra to Aringa): Estuarine Wetland is down to 29% and Coastal Dune Scrub to 35%

Moyne River (Aringa to Port Fairy): Estuarine Wetland is at 11%, Coastal Headland Scrub/Coastal Tussock Grassland Mosaic 10.3% and Coastal Dune Scrub is at 33%

Hopkins River/Brucknell Creek (Warrnambool to Bay of Islands Coastal Park): Coastal Headland Scrub/Coastal Tussock Grassland Mosaic is down to 20%, Coastal Dune Scrub is at 26% and Coastal Headland Scrub is 40%.

Threats summary

The current threats for nature along the Warrnambool Plain bioregion include:

- severe fragmentation and absence of coastal vegetation in many places, accentuating the edge effects
- high percentage of the coast with private land abutting high water mark. This creates opportunities for land subdivision and the intensification of land use behind the coastal crown land reserve or where it abuts high water mark, leading to linear
- development and urbanisation
- tourist developments within conservation reserves or abutting their boundaries

[129] Barton, J. and Sherwood, J. 2004, op. cit. p. 84, citing Water Resources Data Warehouse Annual Report 2002, www.vicwaterdata.net/vicwaterdata/home.aspx

[130] www.estuarywatch.com.au/pls/ewprod/f?p=102:1:6126298991596591

[131] http://www.ccma.vic.gov.au/What-we-do/Community/EstuaryWatch.aspx

[132] Glenelg Hopkins Catchment Management Authority 2006, *Glenelg Hopkins native vegetation plan*, Glenelg Hopkins Catchment Management Authority, Hamilton

- sea level rise, erosion and inundation associated with climate change leading to sand dune and beach erosion that undermines coastal habitats
- degradation of existing vegetation with indiscriminate access tracks
- unauthorised openings of estuaries
- estuarine water quality issues, including algal blooms and increased salinity levels, due to high sediment and nutrient loads and declining water flows from changed catchment conditions
- coastal defense works leading to changed coastal processes and the loss of beach and sand dune habitats
- illegal removal of orchids (Port Campbell)
- disturbance of coastal habitats by grazing, clearing and burning
- disturbance of coastal habitats by weed invasion: sicilian sea-lavender, coast wattle, brown-top bent *Agrostis capillaris,* mirror bush, kikuyu grass, radiata pine, purple groundsel S*enecio elegans,* buffalo grass *Stenotaphrum secundatum,* ragwort *Senecio jacobea,* coast tea-tree, bridal creeper and pampas grass *Cortaderia selloana*
- predation of small animals by cats and foxes
- drainage of wetlands and livestock access to riparian habitats
- disturbance of land and damage to revegetation projects by rabbits
- vegetation removal and degradation for road realignments, access roads, car parks, gravel stockpiles and on disused road alignments
- disturbance of nesting birds such as hooded plovers by horses, dogs and beach users
- disturbance or accidental shooting of birds by duck shooters
- traffic hazards for native fauna on coastal roads
- proposed coast road between Warrnambool and Bay of Islands Coastal Park.

Recommendations

The following recommendations are aimed at generating discussion about the ways in which the conservation of coastal nature can be strengthened in the Warrnambool Plain Bioregion.

1. Ensure there are no further housing subdivisions along the Old Coach Road at Narrawong to reduce pressure on the very narrow coastal crown land reserve with remnant Coastal Dune Scrub (V with only 60% remaining in the bioregion and just 10% of that in conservation reserves).

2. Close the Old Coach Road reserve, add it to the existing coastal crown land reserve, and then fence and revegetate it. A walking track only should be provided for anglers wishing to access the beach. The Shire of Glenelg should apply a Vegetation Restoration Overlay that creates a 50-100 m buffer from the Old Coach Road on to the adjoining freehold land where no development can take place and indigenous vegetation should be restored.

3. Amend land-use zones in the planning schemes of the Shire of Glenelg, Shire of Moyne, the City of Warrnambool and the Shire of Corangamite to prohibit any further development of wind turbines on private land abutting coastal crown land or the high water mark.

4a. Establish the Yambuk Lake Coastal Park by including, in separate parcels, the Yambuk Coastal Reserve, The Crags Coastal Reserve, the Yambuk Lake Flora and Fauna Reserve, Yambuk Lake and the Yambuk Wetlands Nature Conservation Reserve. Private land could be purchased and added to this park to link the separate parcels (see Recommendation 16).

4b. Ensure that the volume of water in the Eumeralla and Shaw rivers, which flow into Yambuk Lake, are adequate to maintain a natural flooding cycle in the adjoining wetlands.

5. Reject the proposed subdivision at Mills Crescent, Port Fairy, to protect the Japanese snipe's most important site in Australia.

6a. Create the Belfast Coastal Park under the *National Parks Act 1975* to be managed by Parks Victoria. The new park would comprise the crown land and Belfast Lough in the existing Belfast Coastal Reserve, excluding the coastal strip between Port Fairy and the Port Fairy Golf Course. Also included in the new park would be the crown land at Griffiths Island and Shelly Cove, currently managed by the Shire of Moyne, and the crown land at Levy Point and Thunder Point, currently managed by the City of Warrnambool.

6b. Investigate relocation of the Port Fairy Golf Course and Port Fairy Airstrip, which would be followed by restoration of the land and its inclusion in the proposed Belfast Coastal Park.

7. Reject any future proposals for the establishment of a biodiesel plant at the Merri Wetlands and, with the company concerned, seek to find an alternative and less sensitive location for its existing rendering plant.

8. Add Lake Gillear, with its Aquatic Herbland (E and only 14 % left and only 54% in conservation reserves) and remnants of Swamp Scrub (E with only 7% left and just 5% in conservation reserves) and Damp Sands Herb-rich Woodland (E with only 8% left and just 12% in conservation reserves) to the existing Bay of Islands Coastal Park.

9. Reject any proposal to develop a coast road between the Bay of Islands Coastal Park and Warrnambool.

10. Include the current crown land reserves adjoining or near to the Port Campbell National Park within the park, each having been identified in the national park's management plan as potential inclusions. These include the Public Purposes Reserve and Public Park Reserve on Port Campbell Point, the Water Reserve (and Crown land**)** east of Port Campbell north of the Great Ocean Road alignment, the small, undeveloped areas of public land between the Great Ocean Road and the park within the township of Port Campbell, west of the Port Campbell Creek, including allotments 2 and 3, and the Loch Ard Public Cemetery.

11. Transfer the Commonwealth-owned rifle range near Two Mile Bay to Victoria, restore the land and add it to the Port Campbell National Park.

12a. Reject the tourism development options for the Port Campbell National Park and Bay of Islands Coastal

Park proposed within the Shipwreck Coast master planning documents.

12b. Ensure that the final Shipwreck Coast Master Plan is used to informs not replaces the management plans for the two existing parks.

13a. Merge the Bay of Islands Coastal Park and the Port Campbell National Park to form the Twelve Apostles-Bay of Islands National Park.

13b. Widen the new national park with judicious purchases of private land and realignment of the Great Ocean Road.

14. Use the proposed Coastal Private Land Conservation Program to support collaborative projects between land managers, the Shire of Moyne, Warrnambool City Council, private landholders, Landcare groups, the local community and the Trust for Nature to reconnect coastal and hinterland nature on the Warrnambool Plain through the establishment of wildlife corridors, the rationalisation and reduction of access tracks in and abutting remnant coastal vegetation, the erection and maintenance of boundary fences, and the eradication and management of invasive species.

15. Build on and extend projects such as CoastalTender and the Saltmarsh Protection Program to continue re-establishing connections along the coast and the banks of the coastal rivers and their estuaries in the Warrnambool Plain Bioregion.

The priority EVCs in this project should be Estuarine Wetland, Coastal Dune Scrub, Damp Heath Scrub, Damp Sands Herb-rich Woodland, Swamp Scrub, Shallow Freshwater Marsh, Freshwater Meadow, Damp Sands Herb-rich Woodland/Damp Heathland/Damp Heathy Woodland Mosaic, Swamp Scrub/Aquatic Herbland Mosaic and Damp Heathland/Damp Heathy Woodland Mosaic.

16. Investigate the purchase of the following parcels of land in the Warrnambool Plain Bioregion and, if possible, secure the land, restore it and add it to the coastal conservation estate:

- the Coastal Dune Scrub remnants on freehold land between Lake Yambuk and Cape Reamur, and the cleared freehold land between those remnants, and add it to the proposed Yambuk Lake Coastal Park
- land that abuts the cliff edge between the Starlight Cave and the western end of the Bay of Islands Coastal Park, to a width of 100 m from the cliff, and add it to the existing Bay of Islands Coastal Park, along with the cave, and revegetate the Coastal Headland Scrub/Coastal Tussock Grassland Mosaic and Damp Sands Herb-rich Woodland found in the vicinity
- the land above the Starlight Cave maternity cave and for it to be fenced, revegetated and added to the existing Bay of Islands Coastal Park
- land between Lake Gillear and the Bay of Islands Coastal Park and establish a planted and fenced wildlife corridor to the Coastal Headland Scrub/Coastal Tussock Grassland Mosaic (V) found on the coast. Add it to the existing Bay of Islands Coastal Park
- private undeveloped land on the Port Campbell headland to protect nursery habitat of the southern brown bandicoot
- land to the north of the existing Port Campbell National Park for the purpose of realigning the Great Ocean Road. The land between the new road and the current park boundary should be included in the park and the Coastal Headland Scrub (V) and Coastal Tussock Grassland (V) restored.

Table 8 Private land abutting the coast in the Warrnambool Plain Bioregion

Location	Features
Allestree (eastern end of Matheson Street to Snapper Point Road)	This six-kilometre stretch of coast has Coastal Dune Scrub and cleared land abutting the high water mark and small patches of Damp Sands Herb-rich Woodland Swamp Scrub and Coastal Dune Scrub with housing and further cleared land behind. The land-use zoning is Farming Zone
Narrawong (end Davis Lane)-Boundary Road (boundary with Moyne Shire), including Fitzroy River mouth	After some cleared land, Coastal Dune Scrub runs as a narrow and almost continuous band along this 10-kilometre-long section of coastline until it broadens out at the eastern end. Found behind the dune scrub are Damp Sands Herb-rich Woodland, Estuarine wetland, patches of Swamp Scrub, Shallow Freshwater Marsh, Swamp Scrub/Aquatic Herbland Mosaic amid cleared land
East of Yambuk Lake-Yambuk Flora and Fauna Reserve	A short section of coastline from one to two kilometres in length with patches of Coastal Dune Scrub but it is almost entirely cleared. The land-use zoning is Farming Zone
Yambuk Flora and Fauna Reserve (east boundary)-Crags Road	Narrow patches of Coastal Dune Scrub are found along this one kilometre of coast but it is mostly cleared. The land-use zoning is Farming Zone
Crags Road-130m west of Anna Catherine Drive, Port Fairy	Cleared land dominates this 10-kilometre section of the coast with only very narrow and patchy occurrences of Coastal Dune Scrub, except at Cape Reamur where it is extensive, two patches of Coastal Headland Scrub/Coastal Tussock Grassland between Cape Reamur and Port Fairy, some Aquatic Herbland west of Port Fairy, and several tiny patches of Damp Sands Herb-rich Woodland within 500 m of the high water mark. The land-use zoning is mostly Farming Zone, with Rural Living Zone just west of Port Fairy
Western end Hendersons Way to Logans Beach Public Park and Recreation Zone	This short, 500-metre section of coast has Coastal Dune Scrub and housing closest to the shore with a tiny patch of Damp Sands Herb-rich Woodland, cleared land and further housing behind. The land use zoning is Rural Living Zone
Logans Beach Public Park and Recreation Zone-Bay of Islands Coastal Park	This roughly eight-kilometre section has an extremely narrow and patchy strip of Coastal Dune Scrub for one third of its length and patches of Damp Sands Herb-rich Woodland and Coastal Headland Scrub/Coastal Tussock Grassland Mosaic, but it is mostly cleared land. The land-use zoning is Farming Zone

Source: Planning scheme maps of the Shire of Moyne http://planningschemes.dpcd.vic.gov.au/moyne/home.html and City of Warrnambool http://planningschemes.dpcd.vic.gov.au/warrnambool/home.html.

Bioregional profile 4: Otway Ranges

Table 9 EVCs on the coast in the Otway Ranges Bioregion

EVC	Pre-1750 (ha)	Current (ha)	% left	Public land (ha)	Private land (ha)	% conserved	Conservation status
Coastal (6)							
1 Coastal Dune Scrub/Coastal Dune Grassland Mosaic	88	47	53%	43	4	43%	Depleted
10 Estuarine Wetland	3	3	100%	3	0	58%	Endangered
140 Mangrove Shrubland	64	59	93%	49	11	82%	Vulnerable
161 Coastal Headland Scrub	1 818	1 447	80%	900	547 (33)	55%	Depleted
163 Coastal Tussock Grassland	62	56	90%	41	15 (6)	80%	Vulnerable
165 Damp Heath Scrub	66	26	39%	7	19 (2)	33%	Endangered
Hinterland (13)							
3 Damp Sands Herb-rich Woodland	430	363	84%	272	92 (1)	71%	Vulnerable
8 Wet Heathland	198	185	93%	167	18	85%	Least Concern
16 Lowland Forest	2 294	2 104	92%	1 770	334 (1)	60%	Depleted
18 Riparian Forest	2 983	2 655	89%	2 167	488	43%	Least Concern
21 Shrubby Dry Forest	1019	1 019	100%	1012	6	98%	Least Concern
22 Grassy Dry Forest	291	278	96%	217	62	65%	Depleted
23 Herb-rich Foothill Forest	236	177	75%	125	32	64%	Depleted
30 Wet Forest	50 923	42 097	83%	33 989	8 109 (144)	69%	Least Concern
45 Shrubby Foothill Forest	33 766	27 455	81%	21 375	6 080 (35)	58%	Least Concern
48 Heathy Woodland	414	412	100%	384	28 (13)	84%	Least Concern
53 Swamp Scrub	217	78	36%	28	49	10%	Endangered
175 Grassy Woodland	6	0	0%	0	0	0%	Endangered
201 Shrubby Wet Forest	37 885	32 726	86%	26 283	6 443 (54)	54%	Least Concern

Source: Trust for Nature 'Bioregion and subregion EVC representation' on Excel spread sheets and EVC maps generated by VNPA from the Department of Environment and Primary Industries website. Note: The number in brackets in the 'Private land' column is the area in hectares under Trust for Nature covenants.

The natural state of play

The Otway Ranges Bioregion, running from Princetown to Eastern View, was formed 30 million years ago with the uplift of freshwater sandstones and siltstones deposited 75 million years before. It covers 149 755 ha and has native vegetation growing on 76.1% of its area. With almost three-quarters of its vegetation on public land, mostly in the Great Otway National Park and the Otway Forest Park, the bioregion's fragmentation was assessed as only 68.5%.

Conservation, sheep and dairy cattle grazing, softwood plantations and hardwood forestry, which began in the 1850s, and coast-based tourism, are the bioregion's main land uses. The Great Otway National Park occupies most of the 100-kilometre coast, with the exception of the small coastal villages of Skenes Creek, Kennett River and Wye River and the town of Lorne (Apollo Bay is in the Otway Plain Bioregion).

Six coastal and 13 hinterland EVCs occur within 500 m of the coast in the Otway Ranges Bioregion, and these are listed in Table 9, along with estimates of their pre-1750 and current extent, land tenure and conservation status. The smaller proportion of coastal EVCs in this bioregion, in contrast to the bioregions of the plains, is due to its mountainous topography and high rainfall, which have allowed hinterland EVCs to extend their range to the coast.

Eight of the 19 EVCs are threatened. Three of the five coastal EVCs are considered Vulnerable, one is Depleted and two are Endangered. For each of the coastal EVCs bar Coastal Tussock Grassland and Coastal Saltmarsh/Mangrove Shrubland Mosaic, less than 60% of their cover is in conservation reserves, while three of the five found on private land have some of their cover protected under Trust for Nature covenants.

Of the 13 hinterland EVCs, seven have been assessed as of Least Concern, one as Vulnerable, three as Depleted and two as Endangered. Eight hinterland EVCs have 60% or more of their cover in conservation reserves, largely due to the presence of the Great Otway National Park (the Otway Forest Park is not a conservation reserve).

Where Coastal Headland Scrub, Coastal Tussock Grassland and Damp Heath Scrub occur on private land, some of their cover is given protection under Trust for Nature covenants. Such arrangements are also in place for six of the 13 hinterland EVCs, but again it only represents small percentages of what is found on private land in the bioregion.

The pathways of change

The Gables to Shelly Beach

The Great Otway National Park, which begins as a relatively narrow strip of vegetation on the eastern bank of the Gellibrand River at Princetown, broadens out between Wreck Beach and The Gables, the western boundary of the Otway Ranges Bioregion.

From Moonlight Head to the Johanna River there are vertical cliffs up to 50 m high carved in sandstones and mudstones with sea caves, rock stacks and deep gutters on the shore platform, huge landslips and boulder-strewn beaches. This scene is quite different to the coast typical of the bioregion east of Cape Otway, where the vegetated slopes of the Otway Ranges slope steeply to raised shore platforms below.

At The Gables, the excellent examples of western Victoria's coastal scrub and heathland communities are of state significance, while the fauna is of regional significance and includes the broad-toothed rat *Mastacomys fuscus* (E) and swamp antechinus.

From The Gables to the Johanna River there is a broad band of Coastal Headland Scrub, which in some places extends for more than a kilometre inland. Within this band are occasional patches of Coastal Tussock Grassland, Damp Sands Herb-rich Woodland and Shrubby Foothill Forest, with some cleared land outside the park boundary.

Cape Volney is the probable location for a southern bent-wing bat roosting site that is of regional significance. From Cape Volney to Johanna Beach, the largely intact coastal cliff vegetation is of regional significance, as is the fauna that includes swamp antechinus, hooded plover and rufous bristlebird. At Johanna Beach, the Otway Ranges Bioregion gives way to the Otway Plain Bioregion before returning at Point Franklin.

Point Franklin is covered in Coastal Dune Scrub/Coastal Dune Grassland Mosaic with a narrow strip of Coastal Headland Scrub that continues to Shelly Beach, backed by Damp Sands Herb-rich Woodland, Shrubby Foothill Forest, Wet Heathland and occasional Wet Forest and Riparian Forest along the coastal streams.

The intact woodland, forest and scrub from Point Franklin to Shelly Beach is of state significance and includes Brooker's gum *Eucalyptus brookeriana* (R), bog gum *Eucalyptus kitsoniana* (R) and coast correa *Correa backhousiana* var. b*ackhousiana* (V). The high vertebrate species richness is of national significance and includes the broad-toothed rat, swamp antechinus, ground parrot and rufous bristlebird.

The rufous bristlebird and the striated fieldwren are two of the bird species present in the Otway Ranges Bioregion that have led to its recognition as an Important Bird Area. Threats to the two birds and their habitats include weeds, feral animals, cinnamon fungus *Phytophthora cinnamomi* and over-frequent and intense fires.

At Shelly Beach the Otway Ranges Bioregion gives way to the Otway Plain Bioregion again, before returning at Skenes Creek.

The Great Ocean Road: Skenes Creek to Eastern View

From Skenes Creek to Cape Patton, Coastal Headland Scrub runs in a strip between the Great Ocean Road and the high water mark, its width depending on the proximity of the road to the shore. Cleared land dominates the north side of the road, with remnants of Damp Sands Herb-rich Woodland, Shrubby Foothill Forest and Wet Forest.

At Cape Patton, where the road briefly heads inland, there is a large area of Shrubby Foothill Forest down to the shoreline. Soon after the road returns, as does a narrow and patchy band of Coastal Headland Scrub backed by Damp Sands Herb-rich Woodland, Grassy Dry Forest, Herb-rich Foothill Forest, Shrubby Foothill Forest and Shrubby Wet Forest. Cleared land occurs at each of the settlements along the coast, including Kennett River, Wye River and Lorne.

The Lorne foreshore has a very narrow strip of Coastal Dune Scrub/Coastal Dune Grassland Mosaic at the rear of the beach, and a little Estuarine Wetland along the Erskine River. From Lorne to Eastern View, the Great Ocean Road again hugs the shoreline, with a narrow strip of Coastal Headland Scrub backed by Damp Sands Herb-rich Woodland, Shrubby Dry Forest, Shrubby Foothill Forest and small patches of cleared land.

The intact forest and coastal scrub communities from Cape Patton to Lorne are of state significance, as is the fauna, which includes the swamp antechinus, rufous bristlebird, a southern bent-wing bat roosting cave near Cape Patton, and the only records for the smoky mouse *Pseudomys fumeus* in western Victoria. It has been recorded twice in the Otways since surveys in 1937. However, according to a 2006 background paper[133] to the mouse's recovery plan, a survey prior to the paper's completion failed to find any.

The coastal scrub and its fauna between Lorne and Aireys Inlet are of regional significance and include the swamp antechinus and rufous bristlebird.

The Great Ocean Road runs for almost 250 kilometres between Port Campbell and Anglesea, but its most famous section is between Eastern View and Kennett River, where unemployed workers during The Great Depression carved its route from the steep slopes of the Otway Ranges. Narrow and winding, cut into cliffs that plunge down to wild water at the shore below, the road is a dramatic drawcard for tourists to the region. But it is beset with maintenance and safety issues and an ongoing problem of landslides.

It has often been said by coastal planners that Great Ocean Road would never have been built if it had been subjected to the coastal planning standards of today. Instead, access to the coast would have been by feeder roads from an inland highway. That may be so, and it would be encouraging to think that such an historic outcome could have materialised. But the road is here to stay, so much so that a group of councils has proposed a major upgrade, which again seems to fall into step with the general push for coastal development along the coasts of the Otway Ranges and Warrnambool bioregions.

The G21 Geelong Region Alliance comprises the shires of Colac-Otway, Surf Coast and Golden Plains, the Borough of Queenscliffe and the City of Greater Geelong. One of their 16 priority projects is the Great Ocean Road Upgrade that would cost $50 million over five years to complete. According to the G21 website, the upgrade would comprise the following:

- *increased safety measures including an increase in bypass opportunities*

[133] Menkhorst, P. and Broome, L. 2006, *Background and implementation information for the smoky mouse* Pseudomys fumeus *National Recovery Plan*, Department of Sustainability and Environment, Melbourne

- *remedial works to landslip risk areas*
- *improvement to the road surface*
- *improved drainage*
- *wider sealed shoulders for cyclists*
- *general maintenance, pruning of trees and grooming vegetation*
- *vegetation and facilities improvements to road reserves*[134].

Although the alliance insists that protecting the area's natural attractions is a core aim, the Great Ocean Road upgrade could reduce and fragment coastal nature along the road's route with widening, realignments, rest areas and efforts to minimise landslides, as well as from the increased coastal development it would spawn. As is happening between Peterborough and Moonlight Head, where rezonings have been won to intensify land use abutting the coast, landowners along this section of the Great Ocean Road may also be considering their development options.

The Rural Conservation Zone applies to most of the coastal private land on the edges of existing townships such as Skenes Creek, Kennett and Wye rivers, and between Lorne and Eastern View, and much of that land is already cleared. This is also the case for private land in the Cape Otway, Glenaire and Johanna Beach areas of the adjoining Otway Plain.

Recent state-government amendments to the Rural Conservation Zone have made land-use change without rezoning far easier by removing prohibitions on the development of accommodation such as hotels and resorts, and allowing larger extensions to existing buildings. One feature that has not changed with the zoning amendments is that wind turbines can be installed after the issuing of a planning permit.

Land-use change could also come to the Great Otway National Park in response to state government encouragement of commercial tourism in national parks:

> *The State Government has opened up national parks, including the Great Otway National Park, for possible tourism development such as "eco-tourism" resorts, in an attempt to "unlock" the revenue-boosting potential of Victoria's public land.*
>
> *Otway Ranges Environment Network's Simon Birrell said his group supported making the Otways more accessible to people, but warned developers the community would aggressively oppose any "inappropriate" developments on public land.*
>
> *"If they're going to just turn up there with ideas about building this and bulldozing that, then they're going to run into huge problems," Mr Birrell said.*
>
> *"If they think they're going to waltz in there and build a Gold Coast in the Otways just because the government gives them the green light, they've got to seek a mandate from the community*[135]*.*

[134] http://www.g21.com.au/great-ocean-road-upgrade
[135] Barnes, S. 2013, 'National park builders face backlash', *Colac Herald*, 5 April 2013

Threats summary

The threats to nature along the coast of the Otway Ranges Bioregion include:

- fox and cat predation of small mammals, birds and reptiles
- disturbance of habitats and wildlife by feral goats and pigs
- horseriding on beaches disturbing nesting birds such as the hooded plover
- rabbits preventing plant regeneration, causing erosion and encouraging the spread of weeds
- poor condition of vegetation close to the Great Ocean Road and townships due to visitor pressure, pests and altered fire regimes
- impacts from the infrastructure and other coastal developments in response to increased visitor numbers
- changing land use within or on the edge of the Great Otway National Park or along the route of the Great Ocean Road
- fragmentation of vegetation and an accentuation of edge effects
- invasion by cinnamon fungus *Phytopthora cinnamomi* at several coastal heathland and woodland sites which can cause plant dieback and death
- invasive weeds such as myrtle wilt, blackberry, boneseed, bridal creeper, sweet pittosporum, ragwort and sea spurge
- unauthorised vehicular roads and tracks and informal walking tracks leading to erosion, the spread of weeds and loss of habitat
- Great Ocean Road upgrades, realignments and landslips along its route.

Recommendations

The following recommendations are aimed at generating discussion about the ways in which the conservation of coastal nature can be strengthened in the Otway Ranges Bioregion.

1. Ensure that there is an independent, transparent and rigorous environmental assessment of the proposed upgrade of the Great Ocean Road, including a comprehensive analysis of the impacts on coastal nature along its route, and robust and transparent public consultation processes.

2. Ensure the continuation of existing planning scheme provisions that limit the growth of coastal townships along the Great Ocean Road's route through the Otway Ranges Bioregion between Eastern View and Marengo. No new coastal subdivisions should be allowed in the Otway Ranges Bioregion between Eastern View and Kennett River, and between Princetown and Marengo.

3. Ensure that park managers and adjoining rural landholders have sufficient ongoing resources to eradicate or control invasive pests in the Great Otway National Park and Otway Forest Park, including in coastal areas.

4. Ensure that the easing of restrictions on land development and land-use change in the Rural

Conservation Zone does not allow resort and hotel developments or the installation of wind turbines on private land between existing townships on the Great Ocean Road.

5. Ensure that commercial accommodation developments, such as hotels and resorts, are not allowed within the Great Otway National Park and Otway Forest Park. Any future tourist developments should be confined to the existing main settlements along the Great Ocean Road and be at heights and spatial extents appropriate for the landscape.

Bioregional profile 5: Otway Plain

Table 10 EVCs on the coast in the Otway Plain Bioregion

EVC	Pre-1750 (ha)	Current (ha)	% left	Public land (ha)	Private land (ha)	% conserved	Conservation status
Coastal (8)							
1 Coastal Dune Scrub/Coastal Dune Grassland Mosaic	2 049	1 365	67%	1 237	77	56%	Depleted
9 Coastal Saltmarsh	725	108	15%	93	15	11%	Endangered
10 Estuarine Wetland	81	74	91%	58	16	62%	Depleted
161 Coastal Headland Scrub	799	671	84%	471	82 (20)	73%	Vulnerable
163 Coastal Tussock Grassland	113	77	68%	44	32 (19)	46%	Vulnerable
165 Damp Heath Scrub*	497	85	17%	34	52 (6)	38%	Endangered
302 Coastal Saltmarsh/Mangrove Shrubland Mosaic	4 047	3 071	76%	2121	888 (90)	69%	Endangered
858 Coastal Alkaline Scrub	4 657	1 106	24%	298	755 (22)	12%	Endangered
Hinterland (14)							
3 Damp Sands Herb-rich Woodland	3 711	1 634	44%	716	915 (34)	37%	Vulnerable
6 Sand Heathland	176	172	98%	168	14 (3)	88%	Rare
17 Riparian Scrub/Swampy Riparian Woodland Complex	5 662	4 281	76%	3 404	878 (5.1)	42%	Depleted
21 Shrubby Dry Forest	1 063	844	79%	373	471 (107)	57%	Least Concern
23 Herb-rich Foothill Forest	3 330	1 988	60%	1337	651	42%	Vulnerable
30 Wet Forest	308	275	89%	34	41	81%	Least Concern
45 Shrubby Foothill Forest	1 624	1 202	74%	191	511 (14)	47%	Least Concern
48 Heathy Woodland	26 525	22 625	85%	18 835	3785 (223)	51%	Least Concern
53 Swamp Scrub	1 888	723	38%	184	539	20%	Vulnerable
55 Plains Grassy Woodland	17 193	1 018	6%	263	736 (0.2)	6%	Endangered
74 Wetland Formation	233	221	95%	188	31	83%	Endangered
132 Plains Grassland	4 426	142	3%	17	124	2%	Endangered
175 Grassy Woodland	79 132	5320	7%	567	4742 (6)	1%	Endangered
647 Plains Sedgy Wetland	405	75	19%	40	32	14%	Endangered

Source: Trust for Nature 'Bioregion and subregion EVC representation' on Excel spread sheets and EVC maps generated by VNPA from the Department of Environment and Primary Industries website. Note: The number in brackets in the 'Private land' column is the area in hectares under Trust for Nature covenants. Note: * Except for its occurrence in the Greater Grampians Bioregion, Damp Heath Scrub is only found at or near the coast in bioregions with coastal boundaries and in this report has been classified as a coastal EVC.

The natural state of play

Most of the Otway Plain Bioregion's 237 190 ha lie north of the Otway Ranges Bioregion, but it strikes appear on the coast between Johanna River and Point Franklin, surrounding the coastal town of Apollo Bay, from Eastern View around the Bellarine Peninsula to Limeburners Point, and finally between Lake Borrie and the Werribee River.

Native vegetation covers 32.5% of the bioregion, with most of the larger patches adjoining the Otway Ranges Bioregion, and almost two-thirds of that on private land. The Victorian Environment Assessment Council assessed the bioregion's landscape fragmentation at 96%.

Grazing cropping and dairying are the main agricultural uses, but there is also wine growing on the Bellarine Peninsula and market gardens on the Werribee River's floodplain. Urbanisation is increasing on the Bellarine Peninsula as Geelong grows, and there are many coastal settlements including Apollo Bay, Aireys Inlet, Anglesea, Torquay, Barwon Heads, Ocean Grove, Point Lonsdale, Queenscliff, St Leonards, Portarlington, Indented Head and Clifton Springs. The Alcoa brown coalmine and power station are located behind Anglesea and their operation provides power for the company's aluminium smelter at Point Henry in Geelong.

Eight coastal and 14 hinterland EVCs occur within 500 m of the coast, and these are listed in Table 10, along with estimates of their pre-1750 and current extent, land tenure and conservation status.

Fifteen of the 22 EVCs are assessed as threatened. Of the coastal EVCs, Coastal Saltmarsh, Damp Heath Scrub and Coastal Alkaline Scrub have suffered heavy percentage losses in cover compared with pre-1750 levels. For the hinterland EVCs, the scrub, woodlands and grasslands have suffered the highest losses.

Four of the eight coastal EVCs are considered Endangered, two are Vulnerable and two are Depleted. Their protection in conservation reserves is mixed. Coastal Saltmarsh, Coastal Alkaline Scrub and Coastal Tussock Grassland have very low percentages protected, while Coastal Dune Scrub/Coastal Grassland Mosaic, Coastal Headland Scrub and Coastal Saltmarsh/Mangrove Shrubland Mosaic have more than half of their cover in conservation reserves. Five of the eight coastal EVCs have small percentages of their cover on private land protected under Trust for Nature covenants.

Of the 14 hinterland EVCs, five have been assessed as Endangered, three as Vulnerable, four as of Least Concern, one as Depleted and one as Rare. Except for Sand Heathland and Wetland Formation, most have low percentages of their cover in conservation reserves. Trust for Nature covenants are giving some protection to eight hinterland EVCs on private land, but again these represent only small percentages of their cover.

The pathways of change

Johanna River to Point Franklin

Coastal Headland Scrub and then Coastal Dune Scrub/Coastal Dune Grassland Mosaic form a narrow strip along the Johanna River and Johanna Beach area, backed by an extensive cleared area with patches of Shrubby Foothill Forest. But from there to the Aire River valley, the cleared land disappears and is replaced by broad areas of Coastal Headland Scrub with Shrubby Foothill Forest, Damp Heath Scrub and Heathy Woodland.

A cove of dinosaurs

The coast between Johanna and Glenaire is largely inaccessible to the public and could explain why the now internationally famous fossils of the boulder-strewn and rocky Dinosaur Cove, to the east of Rotten Point, were not discovered until 1980. Although the fossils were found in the sandstones and siltstones of the Otway Ranges, the overlying landscape is of the Otway Plain Bioregion.

The fossils include those of hypsilophodontid dinosaurs that roamed the area at a time when the land was within the Antarctic Circle but warmer than today. Even so, these polar dinosaurs would have known snow and ice. Two of them, *Leaellynasuara amicagraphica* and *Atlascopcosaurus loadsi* were named after Tim and Leaellyn, the children of Museum of Victoria palaeontologists Tom Rich and Pat Vickers-Rich, who discovered the fossils.

Discoveries continue at Dinosaur Cove and, in 2010, the southern hemisphere's first tyrannosaur fossil, a three-metre-long ancestor of *Tyrannosaurus rex*, was unearthed. The cove is now regarded as Victoria's most important fossil site and of international significance. In its 2000 *Marine, estuarine and coastal investigation*, the Environment Conservation Council recommended Dinosaur Cove be declared a Special Management Area to help conserve the site, but it is now within the Great Otway National Park.

Aire River wetlands and estuary

The landscape opens up at the Aire River valley, with Coastal Headland Scrub and Coastal Dune Scrub/Coastal Dune Grassland Mosaic and cleared land found on the western side of the river's mouth, while to its east and to Point Flinders, there is a band of Coastal Dune Scrub/Coastal Dune Grassland Mosaic more than 500 m wide.

The Aire River estuary has a rich fish fauna including the pouched lamprey, Australian mudfish *Neochanna cleaveri* (CE), mountain galaxias *Galaxias olidus*, spotted galaxias, Australian grayling, yarra pigmy perch and river blackfish. The otway black snail *Victaphanta compacta* (E) is also found there.

Drainage schemes and clearing have removed much of the vegetation upstream on the Aire River floodplain, where the land use is a mix of grazing, national park, state forest and softwood plantations. A 200-metre wide corridor along the river's 35-kilometre length is listed under the *Heritage Rivers Act 1992*. The Act precludes timber harvesting, impoundments along the river's course and dams in its catchment, and insists that any new water diversions 'must not significantly impair the nature conservation, recreation, scenic or cultural heritage attributes of the area'[136].

The Lower Aire River Wetlands, including lakes Hordern, Craven and Costin, and the entire river, is listed in the national directory of important wetlands. The lakes and part of the river's course are also included within the Aire River Wildlife Reserve, which was established in 1979 between the Great Ocean Road and the river's mouth. An area of the wildlife reserve is also a game reserve where duck hunters shoot black duck, chestnut teal, grey teal, maned duck, blue-winged shoveller and mountain duck. The mouth naturally opens and closes throughout the year, but artificial openings also occur and have killed mullet, salmon and bream.

There is limited knowledge about the impacts of artificial river mouth openings and the general workings of this estuary, as is the case for Victoria's other small estuaries. In 2008, a major analysis[137] of estuaries in Victoria concluded that there was a lack of data on water quality and biota, estuarine condition, the number and size of estuaries, how they function and the threats they face.

Point Flinders to Point Franklin

From Point Flinders to Cape Otway there is a strip of Coastal Headland Scrub and then Coastal Dune Scrub/Coastal Dune Grassland Mosaic, both backed by Damp Sands Herb-rich Woodland. Between Cape Otway and Point Franklin there are narrow and alternating strips of Coastal Headland Scrub, Coastal Dune Scrub/Coastal Dune Grassland Mosaic and Coastal Tussock Grassland, backed by extensive cleared land and some Damp Sands Herb-rich Woodland.

Flora of state significance is found between Rotten Point and Point Franklin. The calcarenite vegetation, including the medium-size shrubs of the woolly daisy-bush *Olearia lanuginose*-club-moss daisy-bush *Olearia lepidophylla* complex, has possible floristic links with the Mallee. The dune vegetation at the Aire River mouth, and the non-calcarenite heathland, woodland, forest and coastal scrub above Rotten Point, are also significant, as are the coast correa and coast ballart found there.

The Otway Ranges Bioregion returns briefly between Point Franklin and Shelly Beach before again being replaced by the Otway Plain Bioregion between Shelly Beach and Skenes Creek.

Shelly Beach to Skenes Creek

After Shelly Beach there is a very narrow strip of Coastal Dune Scrub/Coastal Dune Grassland Mosaic, followed by Coastal Headland Scrub, with cleared land behind them. Just west of Marengo, a fragmented strip of Coastal Headland Scrub is backed by Shrubby Foothill Forest and Damp Heath Scrub, before disappearing at Marengo Reefs and being replaced by

[136] Government of Victoria 1992, *Heritage Rivers Act 1992,* Government of Victoria, Melbourne

[137] Barton, J., Pope, A., Quinn, G. and Sherwood, J. 2008, *Identifying threats to the ecological condition of Victorian estuaries*, Department of Sustainability and Environment Technical Report, Department of Sustainability and Environment, Melbourne

an extremely narrow and broken strip of Coastal Dune Scrub/Coastal Dune Grassland Mosaic.

Apollo Bay developments

Swamp Scrub is found along the Barham River, and a patch of Coastal Headland Scrub near the Apollo Bay Harbour, but from there the Coastal Dune Scrub/Coastal Dune Grassland Mosaic continues along the foreshore in front of the Apollo Bay township and cleared land. About half way between Apollo Bay and Skenes Creek, the Coastal Headland Scrub reappears alone on the low dune along the shores of Apollo Bay.

The town of Apollo Bay is one of those low-lying coastal settlements at risk from rising sea levels between now and the end of this century. The rising waters will exacerbate the already severe beach erosion that has been occurring along the Mounts Bay and Apollo Bay foreshores, threatening the Great Ocean Road, public buildings, sewerage infrastructure, stormwater drains and paths.

When the Apollo Bay Harbour was built in the 1950s, its entrance immediately began to fill with sand. A permanent dredge was installed to remove the sand and dump it north of the breakwater. Over time the dumped sand built up to 150 m in width, providing enough space for additional holes on the local golf course and a series of public buildings on the foreshore. Further north, the Apollo Bay beach was starved of sand and the narrow foreshore between it and the Great Ocean Road began to severely erode. The beach is now maintained by dumping sand removed from outside the south-east corner of the harbour.

Sand has also been accumulating behind a small breakwater at Point Bunbury built to reduce the flow of sand into the harbour. Coastal Dune Scrub/Coastal Dune Grassland Mosaic has now colonised this sand in the northern section of the Mounts Bay Beach at the entrance to the Barham River. But in the central section of Mounts Bay, the beach is severely eroded and threatens the Great Ocean Road between the Barham River Bridge and Marengo.

The Apollo Bay Harbour's impact on coastal nature is mixed, with some losses and gains along Mounts Bay, however it may in the future have a significant impact on marine life. The outbreak of Japanese kelp *Undaria pinnatifida* inside the harbour threatens to outcompete native seaweeds in the area and reduce food available to plant-eating marine animals such as luderick and abalone.

Up until its appearance at Apollo Bay, the only other known Victorian occurrence of the Japanese kelp was inside Port Phillip Bay. This rapidly spreading golden brown seaweed initially entered Australia in the discharge of a ship's ballast-water at Triabunna in Tasmania. However, its arrival at Apollo Bay was likely on the hull of a fishing boat or recreational pleasure craft.

In future, boat owners, divers and recreational fishers will need to be vigilant to ensure their equipment has been cleaned before reuse—in November 2012 the kelp on the hull of a boat in Warrnambool Harbour was successfully removed without spreading.

The G21 Geelong Region Alliance proposed a multi-million dollar expansion of the Apollo Bay Harbour as one of its priority projects, in the hope that it would encourage tourists to stay longer and spend more money in the local economy. The upgrade would include a new dredge and:

- *public infrastructure development including new internal promenade sea wall and harbour management compound, expansion of the boat ramp and parking facilities, realignment of dangerous harbour road entrance, walking trails and new sailing club facilities*
- *support for inclusion of funding for further implementation works in forward estimates*
- *commitment of funding to support a private investment Expression of Interest process*[138].

The development proposal aimed 'to integrate the harbour and the town', but the town risked being overwhelmed. The Shire of Colac Otway responded to community concerns in February 2012 by removing the alliance's proposed hotel from the planning scheme amendment for upgrading the harbour.

Although a township boundary has been established for Apollo Bay in the Shire of Colac Otway planning scheme, the surrounding cleared flat land and foothills of the Otway Ranges are zoned Rural Conservation Zone. This zone allows wind turbines, but after recent state government amendments to rural planning zones, resort and hotel accommodations with no mention of height limits are also permitted.

The development of the Apollo Bay Harbour, and the proposed upgrade of the Great Ocean Road, could see increased pressure to develop the land surrounding the town with few restrictions on significant land-use change. Although the land is almost all cleared, commercial development may severely limit the potential for future revegetation and wildlife corridor projects.

In 2005, the Coastal Spaces Initiative[139] identified Apollo Bay as having the potential for moderate spatial growth. This was used in the supporting arguments for the Great Ocean Green development proposed for the Barham River floodplain: an 18-hole championship golf course, clubhouse, associated tourist facilities and 537 residential lots.

The Colac Otway Shire Council supported the proposal and progressed it further in 2008 with the adoption of Amendment C29 to the planning scheme. When adopting the amendment, the council claimed that the 'long term residential growth forecasts of the State Government for Apollo Bay can now be met'[140] and

[138] G21 Geelong Region Alliance 2013, 'Apollo Bay harbour precinct', www.g21.com.au/apollo-bay-harbour-precinct

[139] The Coastal Spaces Initiative was a joint project between the Victorian Coastal Council and the Department of Sustainability & Environment. It aimed to help coastal councils protect the character of coastal townships and the open spaces between towns along the coast. It recommended that a significant landscape overlay and township growth boundaries be included in the State Planning Policy Framework so that coastal municipalities could insert them into their planning schemes.

[140] www.colacotway.vic.gov.au/page/page.asp?page_Id=2477, 'Amendment C29 - Great Ocean Green', 4 December 2008

that 'a significant number of new jobs will be created during and post construction'[141].

Great Ocean Green was to be built on a floodplain adjacent to an estuary, which was clearly inconsistent with the *Victorian coastal strategy* provisions on areas vulnerable to climate change.

The proposed development split the town and the council—three councillors were sacked after failure to attend a meeting about the controversial development and another councillor happened to be one of the developers. In 2009, the then planning minister rejected the rezoning:

> *I consider the substantial risk of flooding and the excessive scale of engineering works required for a residential development in this sensitive location outweigh the potential benefits of the proposal*[142].

At Skenes Creek, the Otway Plain Bioregion makes way for the Otway Ranges Bioregion, which continues to Eastern View.

Eastern View to Bells Beach

Eastern View to Painkalac Creek

The Great Ocean Road runs close to the shoreline between Eastern View and Aireys Inlet. Only a patchy strip of Coastal Dune Scrub/Coastal Dune Grassland Mosaic exists there, disappearing altogether along some stretches. North of the road there is Heathy Woodland, but this is quickly replaced by cleared land on the approaches to Moggs Creek, Fairhaven and Aireys Inlet. There is an extensive area of Coastal Tussock Grassland at Painkalac Creek, and patches of Riparian Scrub/Swampy Riparian Woodland Complex, Heathy Woodland, cleared land and the Aireys Inlet township behind Coastal Headland Scrub to the east of Split Rock.

The small estuary, saltmarsh (rare in the Otway region) and dune vegetation at the mouth of Painkalac Creek has flora of regional and state significance and fauna of regional significance. Plant species include bassian pomaderis *Pomaderis oraria* subsp. *oraria* (R), while animal species include the broad-toothed rat. Some landfill has removed saltmarsh on its eastern shore, but the Surf Coast Shire has established reserves north and south of the Great Ocean Road where it crosses the estuary.

Fairhaven Surf Life Saving Club

Established in 1957, the Fairhaven Surf Life Saving Club patrols part of a beach that stretches for six kilometres west to Eastern View. For many years its clubhouse, built in 1960, has been threatened by beach erosion, having been built atop a sand dune shoreward of the Great Ocean Road.

In 2011 the club received planning approval to build a new $4 m clubhouse on the same site, with the club contributing $2 m, the state government $1.8 m and the Surf Coast Shire $240 000. But that same year a king tide washed away part of the sand dune, causing a delay in construction, as did the discovery of asbestos on the site. But in late December 2013, December it was finally opened for business:

> *The new clubhouse will have two levels, lower ground level and ground level, and a free-standing patrol tower which will be connected by stairs to the lower ground level. This level will also house emergency services, patrols, training, administration and equipment. The ground level will be for meetings, social gatherings, awards events and has a fully equipped kitchen. Outdoors, a decking runs between the tower and main building, and the front has a sunset bar*[143].

Although the clubhouse is set back a little further from the beach than the original building, and has a self-supporting footing structure, it remains on the sand dune which will continue to be threatened by beach erosion, king tides and the rise in sea level associated with climate change. It is a large investment to put at risk, especially when the planned retreat of coastal infrastructure will need to be implemented in coming years due to climate change.

Aireys Inlet to Anglesea

From Aireys Inlet, the Great Ocean Road briefly moves inland and gives way to a broad band of Coastal Headland Scrub and Heathy Woodland. At Urquhart Bluff the flora and fauna is of national significance. The coastal scrub on the dunes, and the species-rich heathland on the slopes have the Otway grey-gum *Eucalyptus litoralis* and the blotched sun-orchid *Thelmytra benthamiana* (V) growing there, while the swamp antechinus and rufous bristlebird are also found in what is a rich site for small mammals. For many years this heathland was threatened by a housing project but most of the land is now included in the Great Otway National Park.

From Urquhart Bluff to Anglesea, a very narrow strip of Coastal Dune Scrub/Coastal Dune Grassland Mosaic is wedged between the Great Ocean Road and the shoreline, with an extensive area of Heathy Woodland and patches of Sand Heathland and Riparian Scrub/Swampy Riparian Woodland Complex to its north.

At Point Roadknight, a boat ramp built in 1961 interfered with sand drift and led to the erosion of cliffs further north. This undermined a landslip caused by urban stormwater runoff along Melba Parade, which threatened houses and required rock walling to prevent any further slipping, again revealing the folly of building too close to the coast.

The Coastal Dune Scrub/Coastal Grassland Mosaic continues and becomes a large area around the Anglesea River mouth, where small patches of Coastal Alkaline Scrub, Estuarine Wetland and Sand Heathland are also located; patches of Heathy Woodland are scattered throughout Anglesea. In previous times, some of the wetland on the western bank of the river was filled for a park and roadway.

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[141] Pritz, T. 2009, 'Madden rejects Apollo Bay's Great Ocean Green', *Geelong Advertiser* 11 June 2009

[142] Pritz, loc. cit.

[143] AGBEngineering 2014, http://agbengineering.com.au/project/fairhaven-surf-life-saving-club

Alcoa power station and open cut mine
Since 1968, Alcoa has operated an open-cut coal mine in 300 ha of heathland north of Anglesea, having been granted a fifty-year lease on 7 221 ha in 1961 to build a 150-megawatt power station for the Point Henry aluminium smelter in Geelong 35 kilometres away. Recently it applied to the Victorian government for a new 50-year lease and permission to extend the open cut further into the heathland.

The species richness of the heathland is of national and international significance and contains 700 plants species, including one-third (100) of Victoria's orchid species. Four species, the Anglesea (Otway) grey gum *Eucalyptus litoralis*, the Anglesea grevillea *Grevillea infecunda*, the Anglesea leek orchid *Prasophyllum spp. aff. odoratum* and the large bearded greenhood (Anglesea) *Pterostylis sp. aff plumose,* are found nowhere else.

Local and state environment groups, including the Geelong Environment Council, the Anglesea and Aireys Inlet Society for the Protection of Flora and Fauna, the Victorian National Parks Association, and the Friends of the Eastern Otway wish to see all the heathland outside the mine site removed from the lease and added to the Great Otway National Park. The groups have also urged that in any new lease:

- *Alcoa is to utilise the existing coal mine site, digging deeper for coal, rather than destroying heathland to expand the current site*
- *It should run for no more than 10 years until alternative energy sources can be found to power the smelter*
- *The rest of the current lease site be immediately added to the Great Otway National Park and managed by Parks Victoria*
- *No further heathland is destroyed*
- *No sale or sub-lease of the coal mine area managed by Alcoa is permitted*
- *Alcoa must further investigate the use of natural gas and renewable energy sources to power its Pt Henry smelter.*[144]

Alcoa recently announced that it would focus on deepening rather than expanding the mine site and, with the future of its Point Henry smelter now in doubt, is seeking permission to sell the generated energy into the electricity grid. Surf Coast Air Action has called for Alcoa's application to be rejected:

> *Ms Morahan says Alcoa's application should be rejected on economic and social grounds.*
> *"We've got a situation where in order to support a struggling industry, residents and visitors to Anglesea have to pay the cost, and that is the cost of our health," she said*[145].

Anglesea to Bells Beach
Sheer and highly erodible sandstone cliffs between Anglesea and the Scout Camp have had their degraded Coastal Headland Scrub and Heathy Woodland restored by a successful community project. The scrub and woodland continues to Bells Beach, with occasional patches of Coastal Tussock Grassland and Heathy Woodland, and patches of Grassy Woodland and Shrubby Dry Forest behind.

Between Anglesea and Bells Beach the Coastal Headland Scrub on the exposed cliff faces and terraced slopes, the species-rich heathland on the cliff tops, and the forest dominated by messmate *Eucalyptus obliqua* and red ironbark *Eucalyptus tricarpa* (V)—part of an isolated occurrence in the western Otways—are of state significance. Regionally significant fauna includes the rufous bristlebird.

Bells Beach Recreational Surfing Reserve

Bells Beach, a mecca for surfers the world over, is a pocket beach found between two headlands west of Torquay. Its unique combination of powerful southern ocean swells, a steep sandy beach and rocky reefs at the foot of Bells Headland produces waves of international renown. Its iconic cultural status has been recognised by its listing on the Victorian and national heritage registers, and it was the world's first declared surfing recreation reserve.

Bells Beach was a local surfing spot from the late 1930s but was 'discovered' in 1960s when surfers bush-bashed a road out to it from Jan Juc. This has now been in part revegetated and forms the route of the 'Surf Coast Walk', which begins at Jan Juc and goes all the way to Moggs Creek west of Airey's Inlet.

The Bells Beach Surfing Recreation Reserve was gazetted in 1971 to recognise recreational surfing as the priority activity. In 2011 it was listed on the National Heritage Register, having been part of the Geelong Environment Council's nomination of the Great Ocean Road.

The reserve comprises 50 ha of permanently reserved coastal crown land (for coastline protection) between the Southside car park, the boundary with the Great Otway National Park, and The Wave, a concrete structure announcing the reserve's northern entrance.

Coastal Headland Scrub, which is Vulnerable on the Otway Plain, covers most of the reserve and extends across Bones Road along the Bells Beach Creek, which flows onto Bells Beach and is in the reserve, and on adjoining private land, parts of which are cleared. The Surf Coast Shire is responsible for the reserve's management under the *Crown Land (Reserves) Act 1978*.

Surfers Appreciating the Natural Environment (SANE), a long-time community voice for restoring the vegetation at Bells Beach, has been working with the Surfrider Foundation Surf Coast Branch and, more recently, the Bells Beach Preservation Society, to protect the values of Bells Beach. Members of SANE have planted more than 100 000 plants and removed countless invasive weeds since the group formed in 1988. Of the 30 environmental weeds recorded at Bells Beach, the most difficult to remove are serrated tussock *Nassella trichotoma*, Chilean needlegrass *Nassella neesiana*, gazania *Gazania* spp., genista *Genista linifolia* and many Liliaceae species including watsonia *Watsonia merriana* var. *bulbilifera*.

Richard Bennett, President of the Surfrider Foundation branch said:

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[144] www.geelongenvironment.org.au/Main.asp?_=Anglesea%20Heathlands&FormID=5

[145] Paul, M. 2013, 'Anglesea residents object to Alcoa's plans to generate electricity', ABC News, 19 December 2013

Along with Surfers Appreciating the Natural Environment (SANE) and other local community groups, we've conducted beach cleanups, removed weeds, contributed to native revegetation projects, collaborated on the 'Spirit of Surfing' initiative, created community awareness about current and future issues for Bells and surrounds," Mr Bennett said.

Bells resonates deeply within the hearts and minds of surfers worldwide and visiting non-surfers too can sense the mystical aura that surrounds this sacred surfing sanctuary, but the ever increasing human impacts at Bells are showing."

During Easter each year, thousands of people are drawn to Bells Beach to watch the annual Rip Curl Pro Surfing Classic (formerly the Bells Beach Surf Classic which was first held in 1961). To cater for these crowds—the event is licensed under the *Crown Lands (Reserves) Act 1978* for 7 000 people—and the steady stream of sightseeing touring buses, the cliff tops on the eastern side of Bells Beach have been covered in asphalt car parks (cleared private land on the western side of Bones Road is used as overflow parking during the Easter event). This pressure of visitor numbers is degrading the natural and cultural values of Bells Beach and, as *The Age* reported in March 2012:

Now the iconic beach is struggling to cope with 1 million visitors each year, which has fuelled tensions between tourism operators and many board-riders, who reckon their 'sacred site' is being destroyed by as many as 50 tourist buses each day'[146].

There are deep concerns held by locals about the future of this iconic area. These include stormwater erosion of the cliffs, unregulated, unlicensed and dangerous touring buses and the infrastructure that may be put in place to cater for them—signage, speed humps and pedestrian crossings—the impact of commercial surfing events on the reserve and its recreational users, and the fracturing of the rich and highly valued recreational surfing heritage and culture.

The Surf Coast Shire prepared a coastal management plan for the Bells Beach Surfing Recreation Reserve in 2010, but it was shelved after fierce opposition in the local community to commercial development of the area. To assist resolution of the issues, the recreational surfing groups then developed a vision for Bells Beach in May 2013 and approached the Surf Coast Shire for support. The vision states that:

The Bells Sanctuary will respect, protect and cultivate all elements of indigenous and surfing heritage in harmony with the natural coastal and marine environment[147].

The council responded by announcing the establishment of a 'visioning' task force to advise on the plan's implementation. But the membership finalised by the council in December 2013 excluded any representatives from the recreational surfing community, although an event-focused surfing group is a member, and largely comprises people with commercial and event interests in Bells Beach.

However, early in 2014 the Surf Coast Shire offered just one place on the Task Force for someone to represent SANE, the Surfrider Foundation Surf Coast Branch and the Bells Beach Preservation Society.

The Surf Coast Shire has made some efforts to manage and reduce the use of Bells Beach by touring buses and, at the same time, raise funds for management. In May 2012 it began to issue commercial touring bus operators with licenses for the use of Bells Beach. It planned to issue up to 30 and had hoped to raise $20 000 per year, but in September 2013 it reported that only eight had been issued with revenue raised less than $7 000 (the cost to establish the system is likely to have been many times this). Although another eight applications are pending, the council will not issue any more until it has received and considered the report of the visioning task force. In the meantime, the reserve will continue to be used by unauthorised touring buses and the council can do little to stop them:

Local laws officers are unable to issue infringement notices due to a deficiency in the Crown Land (Reserves) Act 1978 *and can only take offending operators to court. Shire chief executive officer Stephen Wall said the council presently did not have the tools to enforce the system it had put in place but proposed changes should provide some answers*[148].

In the long-term the local recreational surfing groups wish to see a change in the management model and a new management plan that ensures the protection of marine and coastal nature and the cultural values of the Traditional Owners and recreational surfers at Bells Beach. The model should empower local stewardship, particularly by local volunteer groups, and embody the core values of nature, cultural heritage and recreational surfing at Bells Beach.

Bells Beach to Point Lonsdale

Torquay under growing pressures

From Bells Beach a narrow band of Coastal Headland Scrub backed by extensive cleared land and urban areas continues to Torquay where it is replaced by a narrow and fragmented strip of Coastal Alkaline Scrub to Darian Road, Torquay.

Scattered scrub grows by the fairways of the Torquay Golf Course, which is situated behind the Jan Juc Beach and on the western bank of Spring Creek. Overlooking the golf course is the RACV's new behemoth of a resort. It now dominates the skyline at a scale inappropriate to its location; the start of the journey along the iconic Great Ocean Road (the resort's address is 1 Great Ocean Road).

A proposed rezoning of a 600-hectare parcel of farmland at Spring Creek, west of Torquay and along the Great Ocean Road, again highlighted the pressures being placed on local councils to stretch the settlement boundaries of coastal towns.

In 2009, the Surf Coast Shire rejected a proposed planning scheme amendment that would lead to 6 400 houses being built on the land. Two years later, the developers returned with a scaled-down version

[146] Houston, C. 2012, 'Battle in pipeline as waves of tourists hit Bells Beach', *The Age*, 25 March 2012

[147] Bells Sanctuary Charter 2013

[148] Taylor, J. 'Bells tour bus licences extended', Surf Coast Times, 3 September 2013

covering 240 ha and including 1 900 home sites. This received the support of the state's planning minister, who reportedly had threatened to call in the proposal for ministerial amendment should the council fail to support it:

> *Mr Guy has told the Surf Coast Shire Council that 'ministerial amendment' to planning controls for the land is warranted to 'respond to the urgent need to address housing affordability, facilitate the establishment of new schools, and proactively manage growth for Torquay-Jan Juc'[149].*

The community reaction was swift and the minister stepped back, later supporting the Surf Coast Shire's efforts to limit the town's growth on its western boundary and exclude the land at Spring Creek for future expansion[150].

However, this issue is not going away as Torquay continues to experience rapid population growth:

> *Torquay had a static population of 6695 in 2006. By 2011, it was 10,142.*
> *Permanent residents now stand at about 15,000, according to the state government.*
> *Throw in a large Deakin University student population and swarms of holidaymakers during school breaks and summer, and you can see why nervous locals claim the once tiny town regularly has 20,000 lining up for milk and bread at the cramped shopping centre[151].*

An independent planning panel was established by the minister to review the proposed Spring Creek development and recommended that it proceed as the 'logical next step' in the growth of Torquay. But in December 2013, as reported in The Age in January 2014:

> *…the Surf Coast Council voted four to three against the panel's recommendations - and asked Guy to veto any such development, on the basis that Spring Creek is an important fire break in a high-risk area, and the area lacks schools and transport.*
> *Instead of supporting the council, as he had done a year ago, Guy accused some of the councillors, as Labor Party members, of playing politics.*
> *The apparent shifting position of the Planning Minister means the residents are not sure what the future holds for the town. This insecurity was heightened by the scale of an RACV resort to be built against the backdrop of the Torquay and Jan Juc beaches. It was originally approved by the council as a three-storey development. The developers then went to VCAT and secured five storeys.*
> *''It's left Torquay feeling vulnerable,'' says Andrew Cherubin, vice-president of the 3228 Ratepayer's Association and a long-term surfer[152].*

Karaaf Wetlands

From Darian Road, Coastal Dune Scrub/Coastal Grassland Mosaic continues, backed by cleared and urban land with patches of Grassy Woodland until Breamlea, where Coastal Alkaline Scrub, Grassy Woodland and Coastal Saltmarsh/Mangrove Shrubland Mosaic appear. A small 'dry' saltmarsh at Thompsons Creek, Breamlea, is of regional significance, as is the site's potential for the orange-bellied parrot and the presence of the hooded plover.

The Karaaf Wetlands, which are in the Thompsons Creek estuary at Breamlea, contain both wet and dry saltmarshes[153] and adjoin *Poa* grassland and dunes with coastal moonah. In the 1950s, the Point Impossible Road was bulldozed though the wetlands, severely restricting tidal flows from entering it and thus damaging the saltmarshes. In 2004, the Corangamite Catchment Management Authority installed larger box culverts to increase tidal flow and the saltmarshes have returned.

Lake Connewarre wetlands

Between Breamlea and Point Lonsdale, a patchy strip of Dune Scrub/Coastal Dune Grassland Mosaic continues backed by Coastal Alkaline Scrub and cleared land. The large and relatively undisturbed estuary and coastal lagoon at Lake Connewarre and the Barwon River have one of the most diverse saltmarsh areas in Australia—the flora is of national significance. Several vegetation communities, such as silky wilsonia *Wilsonia humilus* herbland and Australian salt-grass *Distichlis distichophylla* grassland, are rare elsewhere in Victoria.

There is extensive brackish/freshwater swamp at Reedy Lake and coastal moonah along the Barwon River. Here also is the southern range limit for glasswort *Tecticornia halocnemoides* and tangled lignum *Muehlenbeckia florulenta*. Other significant plant species include coast bitter-bush and tiny arrowgrass. The fauna at this Ramsar site is of international significance, important for waders and waterbirds and critical for the wintering orange-bellied parrot.

The Reedy Lake–Lake Connewarre complex is part of the Port Phillip and Bellarine Peninsula Ramsar site. Threats include invasive species such as *Spartina* spp. and spiny rush *Juncus acutus,* which is also found at Thompsons Creek to Thirteenth Beach and in Murtnaghurt Lagoon, Lonsdale Lakes and Swan Bay. Rabbits, foxes, cats and carp, water extraction from catchments and the expansion of Geelong and Barwon Heads are also threatening the system, while drainage for pasture establishment, and some landfill, has also affected margins of Lake Connewarre, Reedy Lake, Salt Swamp, the Barwon River and Murtnaghurt Lagoon.

The wetlands complex is also the Lake Connewarre State Game Reserve, where duck shooting is allowed for 12 weeks each year. In 2011, the Coalition Against Duck Shooting took unsuccessful court action to stop duck hunting in the game reserve, as reported by the *Star Community* on 20 January 2011:

> *Coalition Against Duck Shooting's Laurie Levy said*

[149] Dowling, J. 2011, 'Planning minister faces anger over Torquay plan', *The Age*, 2 July 2011
[150] Donovan, S. 2012, 'Torquay farmland set for protection', *ABC AM*, 3 December 2012
[151] Elder, J. 2014, 'For Torquay, growth is a delicate balancing act', *The Age*, 5 January 2014
[152] Elder, loc. cit.

[153] Dry saltmarshes are further from the shoreline in the upper areas of the saltmarsh where they experience tidal inundation rarely or infrequently. Wet saltmarshes experience regular tidal inundation.

the group was preparing its case to force hunters away from Reedy Lake, Hospital Swamp and Lake Connewarre. The plan for the court case follows animal welfare activists slamming the State Government for reinstating a 12-week duck season this year. Mr Levy believed the three waterways, all part of Lake Connewarre State Game Reserve, near Leopold, 'must be protected' as home to some of Australia's most endangered birds. 'Brolgas, magpie geese, bitterns, little bitterns and the freckled duck are all often mistaken and get illegally shot,' he said. 'The wetland is also the feeding ground for the orange bellied parrot.'[154]

By March 2013 it was estimated[155] that there were 450 duck shooters in the reserve at the beginning of the 12-week duck season. With a bag limit of ten ducks per shooter and in a relatively small wetland, the potential impact on ducks and wetland habitat is high. Duck shooting is incompatible with the growth of the urban areas surrounding the lake and the proposal for a walking trail weaving through it.

Murtnaghurt Lagoon is a small but rich area of saltmarsh containing 70% of Victoria's saltmarsh species. It is connected to the Barwon River by a narrow saltmarsh corridor running north through agricultural land used for grazing. In the past it has been used by duck hunters and as a shell-grit quarry and racing track. It is now surrounded by private land zoned Rural Conservation and the Thirteenth Beach Golf Resort, a large area of which, on the lagoon's northern side, remains as pasture and yet to be developed. Potential development could include hotels and additional resort buildings. The threat of continued urbanisation of the area would add to the already significant threats from stormwater runoff, invasive weeds and cats.

Losing saltmarsh and moonah at Lonsdale Lakes

There are areas of Coastal Saltmarsh/Mangrove Shrubland Mosaic at Barwon Heads and the Lonsdale Lakes, as well as patches of Grassy Woodland, Wetland Formation and Plains Grassland. The flora of the dry saltmarsh and moonah dune scrub at Lonsdale Lakes is of regional significance, while the fauna is of state significance and includes a wintering site for orange-bellied parrots.

The Lonsdale Lakes were once joined to Swan Bay by an area of saltmarsh, but this was partly filled for Point Lonsdale's expansion. Other local areas of saltmarsh were drained to establish pasture or have been impacted by road construction. Even so, the lakes retain significant natural values and are part of the Bellarine Wetlands and a Ramsar site. However, these values were unable to stop Stockland's The Point, a development of 598 residential lots, 170 retirement units and a 120-bed aged-care facility built in and around the tidal channel connecting the lakes to Swan Bay.

The development initially proposed in 2002 was scaled back in 2006 after community opposition.

The community was not alone in voicing its opposition to the development. In 2006, Ted Baillieu, the then-State Opposition Leader, is quoted as saying that the proposed development " ... breaches town boundaries, it contradicts coastal policy and it threatens internationally recognised wetlands". The final report of the Select Committee on Public Land Management in September 2008 said that the Stockland proposal "could have adverse impacts on public lands adjacent to the development, particularly the integrity of Swan Bay and may contravene Australian's obligations under the Ramsar Convention on Migratory Birds."[156]

One of the reasons The Point was eventually approved in 2010, after an earlier and larger proposal had been rejected, was that the land had been zoned Residential for more than 20 years. As Boon et al (2011) concluded, the:

Stockland case highlights the situation that a pre-existing residential zoning weakens the ability of planning authorities to reject developments, primarily because the underlying zoning inevitably promotes future land-use and investment expectations.[157]

An independent planning panel appointed by the then planning minister in 2008, recommended in favour of the development. When accepting the panel's recommendation:

...the Minister justified the development with statements that it would create over 8000 full and part-time jobs and when completed and generate about $40 million in benefits a year to the local community.

These predictions appear to have been excessively optimistic. According to one recent media report, 500 of the house lots still remain unsold and after suffering a $147 million loss for the six months to the end of last year, Stockland announced that it was selling a number of residential developments, including the Point[158]*.*

The outcome of the development for coastal nature would be 'the loss of ~ 2.3 ha of Coastal Saltmarsh, and the potential degradation of retained areas of saltmarsh adjoining the development, as well as the removal of ~32 ha of Saline Aquatic Meadow and ~7.5 ha of Coast Moonah Woodland'[159].

In February 2013, it was announced that Stockland was selling the $300-million development where 500 of the 760 original allotments remained unsold. The new owners, Moremac, will apparently continue with the development as Stockland planned it. The Swan Bay Environment Association remains concerned about the impacts the development will have on Swan Bay, in particular Lakers Cutting:

Lakers Cutting appears particularly vulnerable as all nutrients from the Stockland's development will

[154] Pearson, E. 2011, 'Activists 'aim for court ban', http://bellarine.starcommunity.com.au/indy/2011-01-20/activists-aim-for-court-ban/, *Star Community*, January 2011

[155] *Surf Coast Times* 2013, 'Open season on ducks', *Surf Coast Times*, 28 March 2013

[156] Swan Bay Environment Association 2013, Newsletter No. 65, December 2013, p. 2

[157] Boon P. et al 2010, *Mangroves and coastal saltmarsh of victoria: distribution, condition, threats and management,* Institute for Sustainability and Innovation, Victoria University, Melbourne, p. 207

[158] Swan Bay Environment Association 2013, op. cit. p. 2

[159] Boon, loc. cit.

be discharged into it directly, it is shallow, warm in summer, and it has limited tidal water exchange with Swan Bay due to the shallow sill at its eastern end. In the worst case scenario high nutrient discharges to Lakers Cutting could result in excessive algal growth, lack of oxygen, the death of most of the fauna, and very unpleasant smells[160].

Buckley Park

Buckley Park Foreshore Reserve contains coastal dunes of 10-20 m in height between Ocean Grove and Point Lonsdale, a distance of five kilometres. Dune Scrub/Coastal Dune Grassland Mosaic is found on the face of the dune, with Coastal Alkaline Scrub (coastal moonah community) behind, and a rich mix of native flora and fauna. Although relatively stable, a number of active dune blowouts occur, likely caused and accentuated by numerous uncontrolled pedestrian paths, trail bikes and sand boarding.

North of the narrow reserve's boundary there is cleared land, a quarry, a caravan park and farming. The houses of Point Lonsdale are encroaching and leading to rubbish dumping, garden weed invasions and cat attacks on native animals in the reserve. Marram grass and saw thistle are typical weed species of the Dune Scrub/Coastal Dune Grassland Mosaic, while weeds in the Coastal Alkaline Scrub are boneseed, myrtle leaf milkwort and bridal creeper.

Point Lonsdale to Geelong

Point Lonsdale and Queenscliff erosion

Coastal engineering works in the past at Point Lonsdale and Queenscliff have shown the risks to coastal values from interfering with coastal processes.

The Point Lonsdale beach and cliffs were eroding in the 1930s. Timber groynes were built on the beach to hold the sand, and a rock wall was installed to protect the base of the cliffs. But the wall cut off the beach's sand source, and the waves bouncing off it scoured the beach even more. Sand dunes to the north became starved of sand, and masonry and timber walling was again used in the 1940s in a failed attempt to halt the process—the erosion moved further north. This cycle of new walling and subsequent erosion continued throughout the 1960s and 1970s until, in 2000, the timber groynes were removed and replaced by three stone groynes that have encouraged some sand buildup.

Breakwaters were constructed to help maintain the entrance to Queenscliff Harbour in 1935. They led to major changes in the movement of sand, with sand buildup south of the breakwaters (they had blocked the northerly drift of sand) creating 'new' land used for building construction. But the sand began to move across and block the entrance, the breakwaters were extended and an ongoing cycle of dredging and dumping of sand continues.

Lighthouse reserves

The Point Lonsdale and Queenscliff lighthouse reserves are under threat of development that could be inappropriate to their natural and built heritage.

Responsibility for the reserves was in 2012 handed from the Port of Melbourne Corporation to the Borough of Queenscliffe, which then announced the preparation of a new management plan that could involve private commercial tourism development:

A report to Borough of Queenscliffe Council on 19 December 2012 suggested the provision of high-quality, environmentally-friendly tourist accommodation at these sites will boost the local and regional economy which is highly reliant on tourism, both within the Borough of Queenscliffe and the Bellarine Peninsula. Tourism-based retail and accommodation is critical to the local economy in the Borough of Queenscliffe. However, the Borough has experienced a decline of over 40% in overnight tourism over the past 15 years in 5-star hotel accommodation and 3 to 5-star eco-friendly self contained accommodation[161]

Consultants were engaged to prepare concept plans for ecotourism accommodation at Queenscliff and broader options for Point Lonsdale that could include eco-accommodation, retail hospitality, enhancement of open space and community facilities.

The smaller Queenscliffe Lighthouse Reserve (1.6 ha) has remnant coastal vegetation surrounded by car parks, playing fields and urban development. Coastal vegetation is under increasing stress and management should be about maximising its coverage.

The larger Point Lonsdale Lighthouse Reserve (6.6. ha) comprises the last manned lighthouse in Victoria, disused cabins and an ecologically sensitive coastal landscape of sand dunes and heathland. The precinct is recognised as having architectural, historical and archaeological significance and is abutted by the Port Phillip Heads Marine National Park on two sides.

Public consultation revealed that the community was opposed to commercial development other than perhaps a small cafe or kiosk, but the consultants put forward as their preferred option a 4–5 star spa resort because it would add to the regional tourism offerings, grow visitation, provide a destination for off-season visitors and generate the largest annual revenue, estimated to be $330-$470 000. This was compared with $25 000 maintenance costs for no development and $35 000 maintenance costs for a cafe kiosk ($4–6 000 revenue), eco-cabins ($20–40 000 revenue) or the boutique accommodation and spa[162].

When commenting on the consultants' preferred option the mayor of the borough said:

Open space will come at a cost to the Borough of Queenscliffe…if as a community it is a resounding 'we want absolutely northing down there' we might as well give the land back to DSE, they won't do anything with it, it will cost us $35 000-$50 000 to just mow it and maintain it[163].

[160] Swan Bay Environment Association 2012, Newsletter No 62, December 2012, p. 1

[161] Borough of Queenscliffe, http://www.queenscliffe.vic.gov.au/council/news-and-notices/current-projects/item/lighthouse-reserves-study

[162] Planisphere 2013, 'Point Lonsdale Lighthouse Reserve', Presentation to the Point Lonsdale PRG meeting, 16 December 2013

[163] The Rip Rumour 2014, 'Toc H Resort shock', *The Rip Rumour*, February 2014, p. 3

The attitude of the borough mayor is consistent with the view that coastal public land is a cost that must be met by development. It is the same view that has led to the development of many foreshore reserves, at the expense of coastal nature, to cover management costs. In this case, the revenue stream could be up to more than ten times the cost of simply 'mowing and maintaining' the reserve, which suggest the proposal is well in excess of what is needed to cover 'costs'. Always forgotten in such a view is that if it were not for coastal public land there would be very little coastal tourism.

The population growth of Geelong, the Bellarine Peninsula and coastal towns has led to the loss and fragmentation of habitats and placed increasing pressure on coastal nature. The two lighthouse reserves provide the Borough of Queenscliffe, Victoria's smallest municipality, with a remarkable opportunity to view coastal nature as an asset that needs to be maintained and expanded, just like any other of its investments in the community. It should abandon excessive development proposals for the lighthouse reserves and create management plans that focus on expanding coastal nature and public open space.

Providing up-market tourist accommodation on scarce public land at low cost because private operators are not doing it on costlier private land should not be seen as the function of municipalities. Regional population growth may also see tourism become a smaller part of the local economy as the towns are increasingly transformed into dormitory suburbs of the expanding Geelong.

If the borough is unable to refocus its strategy for the reserves to one of conservation rather than development, other management options should be considered. This report recommends the establishment of a Barwon-Bellarine Coast Committee to manage the coastal crown land reserves from Thirteenth Beach to Clifton Springs, including those in the Borough of Queenscliffe. Under this recommendation, management of the lighthouse reserves would be transferred to that proposed committee. Another option is to gazette them as Coastal Conservation Reserves, a new type of reserve also recommended by this report and to be managed by Parks Victoria.

Lighthouse reserves like those at Point Lonsdale, Queenscliff, Cape Nelson, Cape Schanck, Point Hicks and Gabo Island have a lesser level of protection than that of the Wilsons Promontory Lighthouse, which is within the national park there. At Aireys Inlet two of three lighthouse keepers' cottages were auctioned in 2004 (they and the main cottage were sold in 1935), leaving only the lighthouse at Split Point in public ownership, which was leased from the Victorian government by the Surf Coast Shire Council and then subleased to a tour operator.

Swan Bay

From Point Lonsdale, narrow strips and patches of Dune Scrub/Coastal Dune Grassland Mosaic continue through to Queenscliff and the southern shore of Swan Bay, backed by Coastal Alkaline Scrub and cleared and urbanised land.

Swan Bay's flora and fauna are of state and international significance respectively, and are part of the Port Phillip Bay (Western Shoreline) and Bellarine Peninsula Ramsar site. Living within substantial areas of wet and dry saltmarsh and dune scrub are coast bitter-bush, devious sea-wrack *Halophila decipiens* (K), sea water-mat *Lepilaena marina* (V) and tiny arrowgrass.

This Ramsar site is important for waders, waterbirds and other fauna and supports significant Australian populations of the pacific golden plover *Pluvialis fulva* (V), grey plover *Pluvialis squatarola* (E), lesser sand plover *Charadrius mongolus* (CE), double-banded plover and eastern curlew *Numenius madagascariensis* (V), and significant Victorian populations of the marsh sandpiper *Tringa stagnatilis* (V), grey-tailed tattler *Tringa brevipes* (CE) and red knot *Calidris canutus* (E), while the orange-bellied parrot uses it as winter habitat.

Swan Bay, its islands—Duck, Rabbit, Sand and Swan—and those of Port Phillip Bay–Mud Island, Pope's Eye, South Channel Island and Wedge Light—are also part of the Swan Bay and Port Philip Bay Islands Important Bird Area, which includes the Portarlington sewerage treatment works, Edwards Point, Freshwater Lake and Lake Victoria.

In addition to the birds mentioned above, this area also hosts fairy terns and more than 1% of the world's populations of the blue-billed duck, chestnut teal, Australian white ibis, straw-necked ibis, red-necked stint and silver gull *Chroicocephalus novaehollandiae*, the largest Victorian colony of the white-faced storm petrel *Pelagodroma marina* (V), and breeding colonies of the Australia pelican, silver gull, greater crested tern *Thalasseus bergii*, caspian tern and Australasian gannet *Morus serrator*. Birds Australia reports that the main threats here are disturbance of nesting waterbirds, the potential introduction of invasive alien species, rabbits and foxes, sea-level rise and the direct and indirect impacts of coastal developments[164].

Swan Bay to Point Henry

Between Swan Bay and St Leonards is a very narrow and patchy strip of Plains Grassy Woodland before Coastal Headland Scrub and Coastal Alkaline Scrub replace it at St Leonards; the St Leonards-Salt Lake's dry saltmarsh is of regional significance.

A large area of Coastal Saltmarsh/Mangrove Shrubland Mosaic and Coastal Alkaline Scrub occurs between St Leonards and Indented Head, but from there the scrub is extremely narrow and patchy to Portarlington. After Portarlington, the coastal vegetation exists as narrow, fragmented patches of Damp Sands Herb-rich Woodland, Grassy Woodland and Plains Grassy Woodland until reaching the wildlife reserve on the eastern side of Point Henry, where a large area of Coastal Alkaline Scrub is found.

A thin and patchy band of Coastal Alkaline Scrub continues around Point Henry until its replacement by Coastal Saltmarsh/Mangrove Shrubland Mosaic at the Geelong Saltworks in Moolap. The mosaic continues through to Limeburners Point, where there is a large area of Grassy Woodland and patches of Plains Grassy Woodland.

[164] www.birdata.com.au/iba.vm

The Geelong Saltworks

The flora of the disturbed saltmarsh at the Geelong Saltworks is of local significance but its fauna is nationally significant. It supports significant Australian populations of the pacific golden plover, red-necked avocet *Recurvirostra novaehollandiae*, common greenshank *Tringa nebularia* (V), curlew sandpiper *Calidris ferruginea* (E), sharp-tailed sandpiper *Calidris acuminata*, banded stilt *Cladorhynchus leucocephalus* and red-necked stint *Calidris ruficollis*, a significant Victorian population of the marsh sandpiper and also the Latham's snipe.

Like the saltmarsh of the Lonsdale Lakes, the saltmarsh at the Geelong Saltworks is also under threat, again highlighting the lack of support for such habitats in the planning system. As the *Geelong Advertiser* reported on 17 September 2012:

> *City Hall has announced plans for a multi-million dollar residential development at the disused saltworks site at Moolap. Described as a Sanctuary Lakes canal-style development, the site itself stretches for 3.5km east to west and would amount to a substantial-sized suburb. And, like Sanctuary Lakes, it could attract its own shopping centre and even feature a golf course.*
>
> *Geelong field naturalist Trevor Pescott said yesterday he would be disappointed if the saltworks site was developed.*
>
> *'It's too important as a habitat for a whole range of birds, and I would like to see it set aside as a wildlife reserve and managed as one," he said. "The Cheetham wetland at Altona is managed as a wetland.'*
>
> *Mr Pescott said he had been to the Moolap site quite a few times, and while there were no orange-bellied parrots in the area, there were a number of international migrating birds. These included sandpipers, stints and curlews that would be arriving in about a month. Mr Pescott said little terns had been known to nest in the area, which was unusual for this part of Victoria.*[165]

Population growth on the Bellarine Peninsula

The vegetation of the Bellarine Peninsula, which roughly runs from Breamlea and around Point Lonsdale to Geelong, has been devastated by past clearing practices and drainage schemes, and little of the pre-1750 EVCs remain. Those wetlands that still exist form the Bellarine Wetlands and have been recognised as an Important Bird Area. The wetlands include the Moolap Saltworks, intertidal mudflats at Point Henry and Corio Bay, Reedy Lake, Hospital Swamp, Lake Connewarre, Salt Swamp, Murtnaghurt Lagoon and the Barwon River estuary, and they support significant numbers of the orange-bellied parrot and Australasian bittern, and more than 1% of the world's chestnut teal, sharp-tailed sandpiper, red-necked stint and banded stilt.

However, the Bellarine Peninsula is now seen as accommodating much of the population growth of Geelong, which as *The Age* reports, will be substantial:

> *An extra 210,000 people are expected to be living in Geelong and surrounding areas by 2050, continuing the urbanisation of Victoria's coastal areas. The area stretching from Geelong to Cape Otway and inland to Cressy has 294,000 residents and is tipped to reach 400,000 by 2031 and half a million by 2050.*
>
> *The City of Greater Geelong is likely to absorb an additional 168,531 residents, Surf Coast Shire 22,443 residents, Golden Plains Shire 14,603 and Colac Otway Shire 5377 more residents. Other areas forecasts for population growth include another 15,241 residents in Torquay/Jan Juc. Ocean Grove will get an extra 13,860, Apollo Bay an extra 1333, Point Lonsdale 2353, St Leonards 5008 and Portarlington 3298.*
>
> *The report is not designed to encourage growth, 'rather it is a plan to manage the inevitability of growth'*[166].

In the same article, the state planning minister was reported as saying 'the urbanisation of Victoria's coastal regions was not inevitable:

> *The growth areas are not around the coast, they are around Lovely Banks, they are around Armstrong Creek and they are around Lara," he said. He said population growth in coastal towns could occur inland.*[167]

Lovely Banks is located well back from the coast, but Lara is on the Geelong Freeway between Melbourne and Geelong, not far from the western shoreline of Port Phillip Bay. Armstrong Creek flows down towards Torquay, and the coastal towns are set for significantly increased populations. Even if a growth area is not directly abutting the coast, it can still place great pressure on coastal values due to urbanisation, recreational activities and transport routes.

The Age article did not mention the large parcel of cleared land within the Clifton Springs township growth boundary, which will see the town expand west along the coast where most of the indigenous vegetation has been removed. Between Clifton Springs and Point Henry, there are two sections of coast totalling about nine kilometres that have private land abutting the high water mark and very little vegetation:

> *Spray Farm winery to Clifton Springs*: patches of Grassy Woodland surrounded by cleared land are found along this 2.5-kilometre section of coast. Land–use zoning is Farming Zone
>
> *Creek at western end of Avila Road Curlewis to Wildlife Reserve at Pont Henry*: a six-kilometre stretch of coast with patches of Plains Grassy Woodland and Grassy Woodland surrounded by cleared land. The land-use zoning is Farming Zone.

The Geelong regional growth plan has been developed by the G21 Geelong Region Alliance, which comprises the councils of Greater Geelong, Queenscliffe, Surf Coast, Colac Otway and Golden Plains. As well as the growth plan, the alliance has identified 16 priority projects, the two coastal ones being the development of walking trails, some of which are along the coast, and a major upgrade of the Great Ocean Road.

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[165] Begg, P. 2012, 'Residential plan for saltworks site', *Geelong Advertiser*, 17 September 2012

[166] Dowling, J. 2013, 'Geelong area to grow by 200 000', *The Age*, 12 April 2013

[167] Dowling, loc. cit.

Land clearance, population growth and urbanisation has left the City of Greater Geelong, which includes the Bellarine Peninsula, with less than 4% of its terrestrial pre-1750 vegetation cover[168]. Although one of the targets of the City of Greater Geelong's environment management strategy [169] is for no further species loss, it will be challenging to achieve as the trend in recent years has been for species to disappear from the region.

An analysis by Graeme Stockton[170] revealed that in the past few decades the following species had become locally extinct, experienced declines or were at critically low numbers:

- brush tailed phascogale, koala, sugar glider and marsupial mice have not been recorded at the Ocean Grove Nature Reserve since the 1970s
- bush curlew and common brown bandicoot have not been seen in the nature reserve since the 1990s
- kookaburras and restless flycatchers are down to one or two pairs on the peninsula.

The hooded plover relies on beach-nesting sites but these are disappearing due to disturbance by recreational activity, and predation by cats and dogs, both of which will increase with population growth on the Bellarine Peninsula whether that growth is on the coast or not. This is made worse by the very low breeding success for the birds. It is therefore likely that the hooded plover will disappear from the Bellarine peninsula in the next few years, along with the orange-bellied parrot for similar reasons.

Threatened native plants are also in very low numbers according to Graeme Stockton. The estimated number of individual plants listed below is fewer than the bracketed number:

- pale flax-lily *Dianella longifolia (50)*
- scaly buttons *Leptorrhynchus squamatus* (100)
- magenta storksbill *Pelargonium rodneyanum*, gone
- blue devil *Eryngium ovinum (50)*
- tufted bluebell *Wahlenbergia communis*, (200)
- small sheoak *Allocasuarina misera* (12)
- minnie daisy *Minuria leptophylla* (100)
- *Podolepis* sp., (100) and under serious threat from weed invasion
- Orchidaceae, most genera gone and the remainder under threat from weed invasion
- screw fern *Lindsea linearis*, almost gone
- snow daisy-bush *Olearia lirata* (20)
- smooth parrot pea *Dillwynia glaberrima* (100)
- pale turpentine bush *Beyeria leschenaultia* (20)
- prickly geebung *Persoonia juniperina* (20).

Water extractions from regional waterways will also impact on wetland and riparian habitats on the Bellarine Peninsula as Graeme Stockton notes:

> *Dewings Creek is a tributary to the Barwon River. Barwon Water is now re-directing 600 million litres per annum to Wurdi Boluc Reservoir. The Moorabool River has an average annual environmental flow shortfall of 20,000ML and the lower Barwon River through Geelong a 4,700ML shortfall. Anglesea Borefield Project is used to supplement water needs for Geelong's growing population.*
> *Geelong and regional Geelong is currently in a period of good rainfall—but as everyone knows this won't last forever. In the meantime we are aggressively pursuing a much larger human population base across the region when even now it is causing damage to our own waterway ecology; all this at a time when we have the perfect example of what water over-allocation looks like with the Murray Darling Basin[171].*

The challenge for the G21 alliance in planning for growth is to take the opportunity to drive protection and recovery of the coast and hinterland's natural values. This will require using the planning system to curb the excesses of developers and to encourage a rebirth of the coast's natural values.

As growth comes to the Bellarine Peninsula and the rest of the Victorian coast, conservationists will be told by planners and developers that they will need to compromise in their demands. But the art of compromise will always paint a bleak picture for nature. Developers can return to complete their dream but that is so much harder for nature.

From Limeburners Point the Victorian Volcanic Plain Bioregion reappears and continues to Lake Borrie where the Otway Plain Bioregion returns.

Lake Borrie to Williams RAAF Base

Land use change on the bay's western shoreline

From Lake Borrie to the Werribee River mouth there is an extremely narrow and fragmented strip of Coastal Saltmarsh/Mangrove Shrubland Mosaic and Coastal Saltmarsh, with patches of Plains Grassy Woodland and the 'wetlands' of the Western Treatment Plant. From there the limited Coastal Saltmarsh continues with cleared land and market gardens on the Werribee River floodplain.

For many years the low-lying and flat western shoreline of Port Phillip Bay, fringed by intertidal mudflats, saltmarsh and mangroves, has been largely out of site and neglected. The land between the Princes Freeway and the shoreline is used by the 10 500 hectare Western Treatment Plant, the 1 800-hectare Avalon Airport, about 3 000 ha of market gardens and a ramshackle line of 143 boat sheds at Campbells Cove. But the sprawling growth of Melbourne is now marching down the coast through Altona Meadows, Sanctuary Lakes, Point Cook and Werribee South, and from the opposite direction Geelong is expanding to meet it.

The $440 million Wyndham Cove harbour development, with 1 000 wet and 390 dry berths, a residential, commercial and marina complex, approximately 200 residential housing lots, 200 apartments and 27 terrace homes, two new public beaches, restaurants and cafés, is now under construction. Further land-use change could occur as

[168] City of Greater Geelong 2003, *Biodiversity Strategy*, City of Greater Geelong, Geelong
[169] City of Greater Geelong 2006, Environment Management Strategy 2006-2011, City of Greater Geelong, Geelong
[170] Stockton, G. 2012, GIO Geelong Growth Danger: 10 reasons to worry about the G21 growth plan, submission

[171] ibid., p. 4

the nearby market gardens experience even greater pressure from urbanisation.

Western Treatment Plant

The ponds of the Western Treatment Plant, and the saltmarsh, mangroves and mudflats, support the wintering orange-bellied parrot, and more than 1% of the world's populations of the blue-billed duck, musk dusk *Biziura lobata* (V), freckled duck and pink eared duck *Malacorhynchus membranaceus*, Australasian shelduck *Tadorna tadornoides*, chestnut teal *Anas castanea*, Australasian shoveller, hoary headed grebe *Poliocephalus poliocephalus*, red-necked stint *Calidris ruficollis* and sharp-tailed sandpiper *Calidris acuminata*.

Also using the area are the banded stilt *Cladorhynchus leucocephalus*, curlew sandpiper, red-capped plover *Charadrius ruficapillus*, double banded plover, black-fronted dotterel *Elseyornis melanops*, pied oystercatcher, red-necked avocet *Recurvirostra novaehollandiae*, black swan, hardhead *Aythya australis* (V), pacific black duck *Anas superciliosa* and great crested grebe *Podiceps cristatus*.

Wastewater is usually of concern for coastal wildlife, but discharges from the open-pond system support significant populations of waterfowl and migratory wader birds attracted to the nutrient-enriched food supply. In 1996, the Western Treatment Plant alone accounted for around half of the nutrients discharged into Port Phillip Bay. Since then, there have been substantial reductions to improve the health of local habitats. However, the cleaner wastewater may lead to fewer migratory waders and Melbourne Water, the operator of the plant, carefully monitors the situation.

Threats summary

Threats to coastal nature in the Otway Plain Bioregion are:

- vehicle access roads and tracks leading to habitat fragmentation and decline
- the historical clearing of most coastal and hinterland EVCs has left disconnected remnants suffering serious edge effects
- a long list of invasive weeds including blackberry *Rubus fruticosus*, myrtle-leaf milkwort *Polygala virgata*, sweet pittosporum, tutsan *Hypericum androsaemum*, cape wattle *Paraserianthes lophantha*, agapanthus *Asparagus praecox*, white arum lily *Zantedeschia aethiopica*, African boxthorn, spear thistle *Cirsium vulgare*, hare's-tail grass *Lagurus ovatus*, cocksfoot *Dactylis glomerata*, Yorkshire fog *Holcus lanatus*, boneseed, Italian buckthorn *Rhamnus alaternus,* bridal creeper
- damage to world class coastal vistas
- invasive marine pests e.g. Japanese kelp
- drainage and reconfiguration of wetland areas
- air pollution from the Alcoa plant at Anglesea
- littering including fishing gear
- livestock access to riparian zones
- artificial opening of estuaries
- coastal development and expansion of urban areas such as at Apollo Bay, Torquay and towns of the Bellarine Peninsula, Geelong and western shoreline of Port Phillip Bay
- fragmented and narrow strips of vegetation between coastal roads and the shore e.g. Great Ocean Road, Point Impossible Road
- visitor pressure for car parks and other infrastructure in iconic and fragile areas e.g. Bells Beach
- beaches and surrounding bush used as toilets
- vegetation trampling when beach users stray from designated pathways
- a relative lack of conservation reserves on coast
- alteration of wetland hydrology
- urban encroachment on wetlands such as Lake Connewarre, Murtnaghurt Lagoon, Lonsdale Lakes and Geelong Saltworks, and sand dunes such as at Buckley Park
- rabbits and carp degrading habitats
- foxes and cats preying on small animals
- water extraction from estuarine catchments
- landfill on the margins of wetlands
- coastal engineering works
- linear development e.g. Bellarine Peninsula
- disturbance of waders and waterfowl by shooters, boat users, anglers, off-road vehicles
- landfill and altered coastal process by ports and marinas e.g. Apollo Bay.

Recommendations

The following recommendations are aimed at generating discussion about the ways in which the conservation of coastal nature can be strengthened in the Otway Plain Bioregion.

1. Amend the Rural Conservation Zone applying to private and cleared land in the Johanna and Horden Vale areas, and between Marengo and Skenes Creek, to prohibit the construction of wind turbines and other development projects in the viewshed of the coast.

2. Ensure the continuation of existing planning scheme provisions that limit the growth of coastal townships in the Otway Plain Bioregion. No new coastal subdivisions should be allowed between Eastern View and Geelong, or from Geelong to Altona.

3a. Prohibit any future expansion of the Alcoa coal mine at Anglesea and add the heathland currently leased by Alcoa and outside the mine pit to the Great Otway National Park.

3b. Reject the application by Alcoa to sell electricity to the electricity grid from its Anglesea power station.

4a. Amend the management plan of the Bells Beach Recreational Surfing Reserve to ensure that its vision, objectives and actions are consistent with the Bells Sanctuary Charter i.e. 'respect, protect and cultivate all elements of Indigenous and surfing heritage in harmony with the natural, coastal and marine environments'.

4b. Ensure that the Traditional Owners and the recreational surfing groups are given key roles in the ongoing management of Bells Beach.

4c. Encourage the owners of land adjoining the Bells Beach Recreational Surfing Reserve to become involved in the development of a Bells Beach precinct plan covering the reserve and its viewshed. As part of the proposed plan, participating landholders would

be provided with the necessary resources, from the proposed Coastal Private Land Conservation Program, to protect and enhance the remnant Coastal Headland Scrub on their properties to improve the connectivity and scenic quality in the precinct.

4d. Encourage the protection and extension of coastal nature within the Bells Beach precinct by applying the Environmental Significance Overlay to the reserve and adjoining vegetation on private land, applying the Significant Landscape Overlay to the reserve, and extending the Vegetation Protection Overlay to cover all remnant vegetation on private land and in the Public Purposes Reserve (Bells Beach Creek) across the road from Bells Beach. Further, ensure that Rural Conservation Zone on the private land opposite the reserve does not allow for development that will degrade the reserve and its viewshed.

4e. Reconfigure the car parking arrangements at the Bells Beach Recreational Surfing Reserve to minimise their impact on native vegetation.

5. Ensure that the Spring Creek housing development does not proceed by approving the C66 Amendment to the Surf Coast Shire planning scheme.

6a. Create the Geelong and Bellarine Wetlands State Park to ensure that the wetland remnants of Geelong and the Bellarine Peninsula are protected and conserved at a time when the Geelong region is experiencing rapid population growth and urban expansion, much of which will occur on the peninsula.

In the Lake Connewarre area, for example, the new park would assist the protection of Coastal Saltmarsh/Mangrove Shrubland Mosaic (E) and remnants of Coastal Alkaline Scrub (E), which are also scattered across the cleared land surrounding the reserve, and patches of Mangrove Shrubland (V) along the Barwon River, Plains Grassland (E with only 3% left and 2% in conservation reserves), Plains Grassy Woodland (E with only 38% left and just 20% in conservation reserves) and Grassy Woodland (E with only 7% left and 1% in conservation reserves) on the private land surrounding the reserve which is mostly zoned Farming Zone.

The Geelong and Bellarine Wetlands State Park would be created by integrating the following within one park (in separate parcels): Lake Connewarre Wildlife Reserve (the game reserve would be degazetted), including Reedy Lake, Hospital Swamp and Murtnaghurt Lagoon; Salt Lagoon-St Leonards Wildlife Reserve; Swan Bay-Edwards Point Wildlife Reserve; the Barwon River estuary; Sand Island (near Swan Island); Swan Island (see Recommendation 6e) Lonsdale Lakes Wildlife Reserve; Lakers Cutting; south-western shores of Swan Bay; Freshwater Lake; Thompson Creek and Karaaf Wetlands at Breamlea (Breamlea Flora and Fauna Reserve); the Geelong Saltworks at Moolap (see Recommendation 6c) and the Point Henry wetlands (see Recommendation 6d).

Management of the new Geelong and Bellarine Wetlands State Park would also require:

- sufficient resources for Parks Victoria for management and to work with adjoining landholders, local municipalities and state government agencies to ensure that stormwater pollution, invasive species, urban encroachment and other threats are quickly resolved
- identification and formalisation of the new state park boundaries with appropriate fencing to ensure there is no encroachment from adjoining land uses
- prevention of unauthorised access
- restoration of native habitats.

6b. Use the City of Greater Geelong planning scheme to establish a buffer of 50–100 m around Lake Connewarre to prevent further development along its shoreline, especially on:

- land zoned Farming Zone surrounding Lake Connewarre Wildlife Reserve and which has remnants of Endangered indigenous vegetation that would be linked through restoration
- land zoned Rural Conservation Zone and Farming Zone abutting Murtnaghurt Lagoon.

6c. Prevent development of the Geelong Saltworks at Moolap and investigate its purchase for inclusion in the Geelong and Bellarine Wetlands State Park to improve the protection of the Endangered Coastal Saltmarsh/Mangrove Shrubland Mosaic.

6d. Secure the Point Henry wetlands by negotiating with Alcoa for their inclusion in the Geelong and Bellarine Wetlands State Park.

6e. Seek the transfer of the Commonwealth land on Swan Island currently used for training by the Department of Defence. After its return, the land shoud be restored and added to the proposed Geelong and Bellarine Wetlands State Park.

7. Merge the Barwon Coast and Bellarine Bayside committees of management to form the Barwon-Bellarine Coast Committee and transfer management responsibility for Buckley Park and the coastal reserves in Point Lonsdale and Queenscliff to the new committee from the City of Greater Geelong and the Borough of Queenscliff respectively.

8. Ensure that in the future event of the Western Treatment Plant closing, the land should be added to the proposed Port Phillip Wetlands State Park (see Recommendation 3 under Victorian Volcanic Plain) to provide the long-term protection of Ramsar sites.

9. Investigate the purchase of the following parcels of land and, if feasible, purchase them:

- land along the Aire River between the bridge and the river mouth to rehabilitate natural flows within the wetlands
- land bordering Lake Connewarre Wildlife Reserve
- Rural Conservation Zone 11 land between the western end of the Lonsdale Golf Course and the Collendina Caravan Park, and south of Lake Victoria, after which the quarry is closed, the land is restored and it is added to the proposed Coastal Recreation Reserve to be managed by the proposed Barwon-Bellarine Coast Committee.

Bioregional profile 6: Victorian Volcanic Plain

Table 11 EVCs on the coast in the Victorian Volcanic Plain Bioregion

EVC	Pre-1750 (ha)	Current (ha)	% left	Public land (ha)	Private land (ha)	% conserved	Conservation status
Coastal (10)							
9 Coastal Saltmarsh	2 294	1 052	46%	542	367	43%	Vulnerable
10 Estuarine Wetland	42	20	48%	0	1	0%	Endangered
140 Mangrove Shrubland	45	31	69%	10	19	7%	Vulnerable
161 Coastal Headland Scrub	20	7	35%	0	1	0%	Vulnerable
163 Coastal Tussock Grassland	127	36	28%	31	4	38%	Vulnerable
302 Coastal Saltmarsh/Mangrove Shrubland Mosaic	1 099	614	56%	487	126	32%	Endangered
692 Mangrove Shrubland/Coastal Saltmarsh/Berm Grassy Shrubland/Estuarine Flats	71	40	56%	41	0	71%	Endangered
858 Coastal Alkaline Scrub	377	38	10%	27	2	58%	Endangered
900 Coastal Saltmarsh/Coastal Dune Grassland/Coastal Dune Scrub/Coastal Headland Scrub Mosaic	21	5	24%	2	3	15%	Endangered
921 Coast Banksia Woodland/Coastal Dune Scrub Mosaic	6	2	33%	0	2	0%	Vulnerable
Hinterland (7)							
23 Herb-rich Foothill Forest	81 275	23 876	29%	9 464	14277 (247)	5%	Vulnerable
53 Swamp Scrub	28 933	3 710	13%	1 261	2385 (4)	26%	Endangered
55 Plains Grassy Woodland	716 941	60 046	8%	3 630	55 671 (125)	3%	Endangered
132 Plains Grassland	869 187	65 295	8%	3 850	61 092 (203)	3%	Endangered
175 Grassy Woodland	39 916	4 682	12%	316	4 247 (92)	5%	Endangered
653 Aquatic Herbland	194	100	52%	26	74	26%	Endangered
897 Plains Grassland/Plains Grassy Woodland Mosaic	4 892	276	6%	57	207	16%	Endangered

Source: Trust for Nature 'Bioregion and subregion EVC representation' on Excel spread sheets and EVC maps generated by VNPA from the Department of Environment and Primary Industries website. Note: The number in brackets in the 'Private land' column is the area in hectares under Trust for Nature covenants.

The natural state of play

The vast Victorian Volcanic Plain Bioregion began to form with the eruption of volcanoes beginning around five million years ago and continuing intermittently until a few thousand years ago.

Although its 2 355 732 ha dominates western Victoria's landscape, the bioregion only strikes the coast briefly at Portland, Port Fairy (outcrops mainly on the beach), between Breamlea and Barwon Heads, on the western shore of Port Phillip Bay between Point Henry and Lake Borrie, including Geelong, and from the Williams RAAF Base to the mouth of the Yarra River.

Of the bioregion's original vegetation, only 15.6% remains, with almost two-thirds on private land. Barely one per cent remains of the grasslands typical of its pre-1750 cover. The flat grasslands and their fertile soils attracted pastoral settlement for sheep grazing, and from the 1830s the land was sown with introduced pasture. Today, rapid urban encroachment is occurring along the bioregion's eastern edge where it reaches Port Phillip Bay.

There are no largely intact landscapes on the Victorian Volcanic Plain Bioregion and, as a consequence, its landscape fragmentation has been assessed at 100%.

The ten coastal and seven hinterland EVCs occurring within 500 m of the coast are listed in Table 11, along with estimates of their pre-1750 and current extent, land tenure and conservation status.

Each of the 17 EVCs is assessed as threatened, and all EVCs have suffered heavy percentage losses in comparison with their pre-1750 levels of cover.

Five of the ten coastal EVCs are considered Endangered; the other five are Vulnerable. Except for Mangrove Shrubland/Coastal Saltmarsh/Berm Grassy Shrubland/Estuarine Flats Mosaic and Coastal Alkaline Scrub, protection of the coastal EVCs in conservation reserves is low. None of the 10 coastal EVCs have any of their cover on private land protected under Trust for Nature covenants.

Of the seven hinterland EVCs, six have been assessed as Endangered and one as Vulnerable. All have very low percentages of their cover in conservation reserves. Trust for Nature covenants are giving some protection to five of the seven hinterland EVCs on private land, but again these represent small percentages of their cover.

The pathways of change

Portland

There is little vegetation to describe in the Portland section of the Victorian Volcanic Plain Bioregion.

Patches of Coastal Headland Scrub and Herb-rich Foothill Forest exist, and Estuarine Wetland occurs at Fawthrop Lagoon, but industry, the Portland urban area, a golf course and the Portland Harbour dominate the bioregion's coastal landscape there, while the foreshore area within the harbour is landscaped with lawns and public furniture.

Fawthrop Lagoon is surrounded by urban development, with a causeway running across its northern boundary and a railway line down its western shore. Although channeling has altered its hydrology—it was likely more brackish in earlier times—it appears to have retained its pre-1750s shape.

The margins of the Wattle Creek, which flows through it to Portland Bay, have Swamp Scrub and Damp Sands Herb-rich Forest growing along them; Fawthrop Lagoon is Estuarine Wetland. Birds using the lagoon include the black swan, royal spoonbill, Australian pelican, great egret, Australian ibis, swamp harrier, spotless crake, purple swamphen and pied oystercatcher, which are among the 56 native and exotic bird species listed on the Eremaea Birds website.[172]

Black Rock, Breamlea

At Breamlea, to the east of Torquay, a very brief coastal occurrence of the Victorian Volcanic Plain Bioregion has Coastal Dune Scrub/Coastal Dune Grassland Mosaic and patches of Coastal Tussock Grassland and Plains Grassland behind.

Black Rock is the site of the sewerage outfall for the Geelong Region. It was first constructed in 1915 to discharge untreated sewage into Bass Strait. This was upgraded to primary treatment in the 1970s in response to community concerns about the impact of the discharges on local fishers, swimmers and surfers using the area down to Point Impossible, a popular and safe swimming beach.

The primary treatment of sewage failed to allay community concerns. In 1989, the Black Rock Water Reclamation Plant began operation, providing secondary treatment of sewage, some of which was used to irrigate a Torquay flower nursery, while the remainder was discharged 1200 m out to see through a newly constructed pipeline.

The reclamation plant has now been joined by Barwon Water's Black Rock Recycled Water Plant, which opened in August 2013. It will treat secondary effluent from the water reclamation plant and process it into Class A drinking water for supply via a special pipe to the nearby urban growth area of Armstrong Creek. The ocean outfall will remain.

Limeburners Point to Lake Borrie

From Limeburners Point, between Point Henry and Geelong's central business district, the Geelong foreshore is largely landscaped with lawns, paving and park furniture, but there are occasional patches of Grassy Woodland. Coastal Saltmarsh and Coastal Saltmarsh/Mangrove Shrubland Mosaic begin to appear just after the Port of Geelong in Corio Bay, and they increase in area at Limeburners Bay.

Limeburners Bay, the estuary of Hovell's Creek, has flora of regional significance with an isolated occurrence of grey mangrove *Avicennia marina* (R), and wet and dry saltmarsh. The fauna is of national significance, the estuary being an important habitat for large numbers of waders, while the yellow sedge-skipper butterfly *Hesperilla flavescens* (V) is also present.

This stretch of coast is also part of the Werribee to Avalon Important Bird Area, which includes the Western Treatment Plant, The Spit Wildlife Reserve, Lake Borrie and intertidal mudflats at Point Wilson, Avalon and Limeburners Bay. Significant threats include:

- *disturbance by recreational visitors including fishing, boats, bait collection, off-road vehicles, personal watercraft and wind-surfers*
- *habitat degradation by invasive weeds and rabbits*
- *foxes preying on birds*
- *exposure to chemicals contained in effluent*
- *potential spills of oil, fuels and lubricants from accidents or disposal of ships' wastes*
- *reduction in the nutrient content of effluent discharged into Port Phillip Bay from upgrades to the Western Treatment Plant reducing levels of nitrogen in large lagoons and coast*[173]*.*

Between the Avalon Saltworks and the Western Treatment Plant is one of Australia's richest saltmarshes. Its flora is of national significance, while the fauna is of international significance. Here is the best development of dry saltmarsh and the largest area of *Tetricornia halocnemoides* marsh in coastal Victoria. Significant plant species include brittle greenhood and tiny arrowgrass.

This section of the Port Phillip Bay (Western Shoreline) and Bellarine Peninsula Ramsar site also hosts significant Australian populations of the pacific golden plover, sharp-tailed sandpiper, double-banded plover, curlew sandpiper, red-necked stint, red-necked avocet *Recurvirostra novaehollandiae*, pied oystercatcher *Haematopus longirostris* and common greenshank, and significant Victorian populations of the marsh sandpiper and grey-tailed tattler. The site is also significant for the orange-bellied parrot as winter habitat, and there are breeding colonies of the fairy tern and pied cormorant *Phalacrocorax varius* (NT).

All of this could all disappear as Melbourne rapidly 'rediscovers' the west. The Avalon Airport has plans for a major expansion, including two extra runways, a rail link and a motor sport facility. Further, there are now proposals for the Bay West port project, which is seen as an alternative to expanding the Port of Hastings in Western Port. There is little detail on the project, but would likely be located between Point Wilson and Lake Borrie. If that were the case, it could

[172] Eremaea Birds, http://www.eremaea.com/SiteSpeciesList.aspx?Site=4562

[173] www.birdata.com.au/iba.vm

mean the end of The Spit Wildlife Reserve and Lake Borrie, an artificial lake that is integral to the Western Treatment Plant, casting doubts on the plant's long-term future.

The Otway Plain Bioregion stretches from Lake Borrie to the Williams RAAF Base at Point Cook. From there the Victorian Volcanic Plain Bioregion runs all the way to the mouth of the Yarra River in the Port of Melbourne.

Point Cook to the mouth of the Yarra River

At Point Cook and the Cheetham Wetlands (formerly the Laverton Saltworks), there are extensive wetlands with large areas of Coastal Saltmarsh, strips of Coastal Alkaline Scrub and patches of Mangrove Shrubland/Coastal Saltmarsh/Berm Grassy Shrubland/Estuarine Flats. The wet and dry saltmarsh and dune vegetation is of state significance, while the fauna using this Ramsar site is internationally significant. It is an important habitat for large numbers of waders and waterbirds, while the RAAF Lake (east of the runways) is a roost for the double-banded plover and pacific golden plover. Other significant species include the orange-bellied parrot, striped legless lizard *Delma impar* (E) and the yellow sedge-skipper butterfly.

Vast areas of saltmarsh once lined the low-lying western shoreline of Port Philip Bay from the Yarra River mouth to south of Geelong. But from the late nineteenth century they became the focus of a thriving salt industry, being converted to saltworks at Laverton, at the Avalon Saltworks east of Limeburners Bay, and at Moolap, also known as the Geelong Saltworks near Point Henry. The Western Treatment Plant also replaced a large area of saltmarsh.

The Cheetham Wetlands, now within the Point Cook Coastal Park, were part of the complex of evaporation ponds and channels created in saltmarshes by Cheetham Salt Pty Ltd in the 1920s. The site of the salt refinery was in the upper marsh, which is now surrounded by the suburb of Sanctuary Lakes. Seawater from Port Phillip Bay was fed into the ponds where it evaporated; the dried salt was removed and taken to the refinery. The Saltworks closed down in the 1990s, but Parks Victoria continues to manipulate the seawater in the channels and ponds to ensure the wetlands are maintained for birdlife.

Urban encroachment, rabbits, predation by foxes and cats, weed invasion and the impact on water quality from stormwater, drainage and rubbish are the main threats to the Cheetham Wetlands. To combat these threats, Melbourne Water, Parks Victoria, the City of Hobsons Bay and the local community have been involved in projects to restore canopy plants and habitat connectivity, install rabbit-proof fences, regenerate saltmarsh, improve the quality of stormwater and remove weeds such as African boxthorn, which outcompetes thatching grass *Gahnia filum*, critical to the survival of the yellow sedge-skipper butterfly.

Patches of Coastal Saltmarsh are found along the Altona foreshore, Coastal Saltmarsh and Mangrove Shrubland at Kororoit Creek and Jawbone Flora and Fauna Reserve, Coast Banksia Woodland/Coastal Dune Scrub Mosaic, Plains Grassland/Plains Grassy Woodland Mosaic and Plains Grassland grow along the Williamstown foreshore, and Coastal Saltmarsh/Coastal Dune Grassland/Coastal Dune Scrub/Coastal Headland Scrub Mosaic appear between Williamstown and the Yarra River mouth.

From Altona to Williamstown the flora is of state significance and the fauna nationally significant. Here is the largest stand of grey mangrove in Port Phillip Bay, a unique occurrence on boulder substrate. There are also good examples of wet and dry saltmarsh, with significant plant species that include tiny arrowgrass. Also part of the Ramsar site, the area is an important feeding and roosting site for large numbers of waders and is occasionally visited by wintering orange-bellied parrots.

Jawbone Flora and Fauna Reserve was once part of the Merrett Rifle Range, which was established in 1877 and operated until 1990, when it was sold for redevelopment as the Rifle Range housing estate. In its time the rifle range was used by soldiers, police and school cadets, and was the shooting venue during Melbourne's hosting of the 1956 Olympics.

By preventing access to the shoreline, the Merrett Rifle Range helped conserve the coastal vegetation, which was retained as part of the redevelopment. Constructed lagoons fed by the housing estate's stormwater, and the removal of a concrete drain to form the Paisley-Challis wetlands, has helped make the reserve a haven for waterbirds and waders, with 120 species now recorded there. To the east of the reserve, the Williamstown High School has also established small wetland ponds to collect and filter stormwater before entering the reserve.

The Cheetham and Altona Important Bird Area includes the Jawbone Reserve, Altona Coastal Park, Rowden Swamp, Cheetham Wetlands, Truganina Swamp, Spectacle Lake and RAAF Lake, and supports more than 1% of the world's population of the red-necked stint, chestnut teal and pacific gull *Larus pacificus pacificus* (NT). Threats include polluted runoff from new urban development and the impact of increasing numbers of visitors.

Threats summary

Threats to coastal nature in the Victorian Volcanic Plain Bioregion include:

- the loss of vast amounts of coastal and hinterland EVCs leaving fragmented patches and strips of vegetation suffering from edge effects
- urban encroachment of the remaining wetlands
- continuing loss of saltmarsh
- rabbits disturbing habitats
- predation of small animals by foxes and cats
- stormwater and urban runoff, drainage and rubbish impacting on water quality
- weeds including African boxthorn, apple of sodom *Solanum linnaeanum*, spear thistle,

cat's ear *Hypochoeris radicata,* sea barley-grass *Critesion marinum*, buck's-horn plantain *Plantago coronopus,* water buttons *Cotula coronopifolia*, creeping bent *Agrostis stolonifera*, creeping buttercup *Ranunculus repens*, boneseed, myrtle-leaf milkwort, panic veldt-grass *Ehrharta erecta* var. *erecta*, blackberry, marram grass and Yorkshire fog
- increasing numbers of visitors
- disturbance of waders and waterfowl by boat users, anglers, off-road vehicles
- proposals for port and marina expansion
- limited number of conservation reserves.

Recommendations

The following recommendations are aimed at generating discussion about the ways in which the conservation of coastal nature can be strengthened in the Victorian Volcanic Plain Bioregion.

1. Use the proposed Coastal Private Land Conservation Program to support a collaborative project between the Shire of Glenelg, the Glenelg Hopkins Catchment Management Authority and the local community to remove or reduce the threats and enhance the habitats of Fawthrop Lagoon in Portland. Project works would include invasive species control and the reinstatement of more natural water flows to conserve the lagoon's Estuarine Wetland and the Swamp Scrub and Herb-rich Foothill Forest (V) along and north of the Wattle Hill Creek.

2a. Create the Port Phillip Wetlands State Park to give stronger protection to the Ramsar sites between Limeburners Bay and the Jawbone Flora and Fauna Reserve. It would include the Limeburners Lagoon (Hovells Creek) Flora and Fauna Reserve, Avalon Coastal Reserve, Point Lillias, Point Wilson (currently Commonwealth land; see Recommendation 2b below), the Avalon Saltworks, The Spit Wildlife Reserve, the Point Cook Coastal Park and Cheetham Wetlands, Altona Coastal Park and the Jawbone Flora and Fauna Reserve.

The state park would replace the existing Avalon Coastal Reserve and other coastal crown land reserves along that coastal strip. The new coastal park would protect Coastal Saltmarsh/Mangrove Shrubland Mosaic (E and 32% is in conservation reserves), Coastal Tussock Grassland (V with only 38% in conservation reserves), Plains Grassy Woodland (E and just 3% in conservation reserves), Plains Grassland (E and only 3% in conservation reserves) and Mangrove Shrubland (V with only 7% in conservation reserves).

2b. Transfer the Commonwealth land at Point Wilson to Victoria for inclusion in the proposed Port Phillip Wetlands State Park.

2c. Ensure that there are sufficient personnel and other resources to continue the environmental enhancement programs focusing on water quality improvements, invasive species control and continuing conservation of Coastal Saltmarsh (V), Coastal Alkaline Scrub (E) and Mangrove Shrubland/Coastal Saltmarsh/Berm Grassy Shrubland/Estuarine Flats (E) at the existing Point Cook Coastal Park and Cheetham Wetlands.

3. Protect Western Port and the western shores of Port Phillip Bay from port development, with any expansion of port infrastructure in Victoria focused on the consolidation of port operations in Port Phillip Bay, Geelong and Portland.

4. Use the proposed Coastal Private Land Conservation Program to support a collaborative project between The City of Hobsons Bay, the Port Phillip and Western Port Catchment Authority, Parks Victoria and nearby landholders and local friends groups to further improve the water and habitat quality of Kororoit Creek, and restore and protect Coastal Saltmarsh, Coastal Alkaline Scrub, Mangrove Shrubland and Plains Grassland in the existing Altona Coastal Park and the Jawbone Flora and Fauna Reserve.

Bioregional profile 7: Gippsland Plain

Table 12 EVCs on the coast in the Gippsland Plain Bioregion

EVC	Pre-1750 (ha)	Current (ha)	% left	Public land (ha)	Private land (ha)	% conserved	Conservation status
Coastal (25)							
1 Coastal Dune Scrub/Coastal Dune Grassland Mosaic	10 510	8 177	78%	6 415	1 761 (7)	68%	Depleted
2 Coast Banksia Woodland	5 759	2 146	37%	1 345	801 (27)	36%	Vulnerable
9 Coastal Saltmarsh	10 508	8 549	81%	6 638	1 836 (29)	74%	Least Concern
10 Estuarine Wetland	7 851	5 750	73%	3 678	2 072 (46)	0%	Least Concern
12 Wet Swale Herbland	100	100	100%	100	0	100%	Rare
140 Mangrove Shrubland	3 681	3 156	86%	2 952	156	86%	Least Concern
155 Bird Colony Succulent Herbland	133	117	88%	117	0	0%	Rare
160 Coastal Dune Scrub	228	46	20%	32	14	68%	Depleted
161 Coastal Headland Scrub	1 797	1 285	72%	1 122	162	65%	Depleted
162 Coastal Headland Scrub/Coastal Tussock Grassland Mosaic	608	217	36%	169	48	30%	Depleted
163 Coastal Tussock Grassland	1 461	1 171	80%	1 150	22 (4)	83%	Vulnerable
302 Coastal Saltmarsh/Mangrove Shrubland Mosaic	603	298	49%	238	60	59%	Vulnerable
309 Calcareous Swale Grassland	558	556	100%	556	0	100%	Vulnerable
311 Berm Grassy Shrubland	140	84	60%	65	19	11%	Endangered
858 Coastal Alkaline Scrub	11 313	6 033	53%	4 610	1 413	73%	Vulnerable
875 Blocked Coastal Stream Swamp	29	29	100	29	0	100%	Rare
903 Mangrove Shrubland/Estuarine Flats Grassland Mosaic	76	76	100%	58	17	0%	Endangered
904 Coast Banksia Woodland/Swamp Scrub Mosaic	325	44	14%	9	35	19%	Vulnerable
909 Coastal Dune Scrub/Bird Colony Succulent Herbland Mosaic	140	131	94%	128	3	0%	Depleted
910 Bird Colony Succulent Herbland/Coastal Tussock Grassland Mosaic	35	19	54%	18	1	0%	Rare
914 Estuarine Flats Grassland	550	106	19%	40	65	36%	Endangered
919 Coastal Headland Scrub/Coast Banksia Woodland Mosaic	353	64	18%	0	63	1%	Vulnerable
921 Coast Banksia Woodland/Coastal Dune Scrub Mosaic	1 240	688	55%	548	140	4%	Vulnerable
922 Coastal Alkaline Scrub/Bird Colony Succulent Herbland Mosaic	107	45	42%	42	3	0%	Vulnerable
935 Estuarine Wetland/Estuarine Swamp Scrub Mosaic	532	249	47%	138	110	33%	Depleted
Hinterland (38)							
3 Damp Sands Herb-rich Woodland	56 506	20 281	36%	9 749	10 461 (259)	43%	Vulnerable
6 Sand Heathland	14 597	13 114	90%	11 815	1 290 (112)	87%	Rare
8 Wet Heathland	11 090	4 254	38%	2 966	1 287 (33)	59%	Depleted
15 Limestone Box Forest	1 166	551	47%	171	372 (35)	21%	Vulnerable
16 Lowland Forest	119 574	36 554	31%	16 407	20 059 (186)	18%	Vulnerable
23 Herb-rich Foothill Forest	9 756	3 163	32%	437	2 724 (15)	11%	Vulnerable
29 Damp Forest	7 121	2 789	39%	1 070	1 720 (13)	20%	Endangered
32 Warm Temperate Rainforest	544	308	57%	67	240 (29)	20%	Endangered
48 Heathy Woodland	3 874	502	13%	17	485 (444)	43%	Least Concern
53 Swamp Scrub	152 266	27 263	18%	12 483	14 694 (734)	35%	Endangered
55 Plains Grassy Woodland	153 946	20 503	13%	2 264	18 200 (213)	8%	Endangered
56 Floodplain Riparian Woodland	223 550	6 500	3%	2 165	4 190 (12)	5%	Endangered
74 Wetland Formation	1 289	969	75%	534	435 (139)	64%	Endangered
83 Swampy Riparian Woodland	27 445	5 268	19%	1 769	3 405 (21)	14%	Endangered

EVC	Pre-1750 (ha)	Current (ha)	% left	Public land (ha)	Private land (ha)	% conserved	Conservation status
125 Plains Grassy Wetland	5 316	405	8%	28	377 (0.2)	3%	Endangered
132 Plains Grassland	35 721	2 578	7%	458	2 104	15%	Endangered
151 Plains Grassy Forest	84 483	30 402	36%	16 369	13 966 (214)	7%	Vulnerable
175 Grassy Woodland	59 191	6 218	11%	773	5 427 (278)	6%	Endangered
191 Riparian Scrub	12 565	7 804	62%	5 887	1 898 (25)	53%	Vulnerable
259 Plains Grassy Woodland/Gilgai Wetland Mosaic	31 006	3 974	13%	135	3 821 (39)	1%	Endangered
307 Sand Heathland/Wet Heathland Mosaic	1 009	495	49%	403	91	76%	Depleted
316 Shrubby Damp Forest	243	116	48%	5	111 (3)	5%	Least Concern
638 Swamp Scrub/Wet Heathland Mosaic	1 402	240	17%	95	145	21%	Endangered
681 Deep Freshwater Marsh	8 173	6 408	78%	4 035	2 342 (18)	46%	Vulnerable
686 Wet Heathland/Damp Heathland Mosaic	7 085	413	6%	179	233 (3)	28%	Depleted
687 Swamp Scrub/Plains Grassland Mosaic	22 217	1 725	8%	326	1 394 (16)	3%	Endangered
691 Aquatic Herbland/Plains Sedgy Wetland Mosaic	1 154	765	66%	204	560	26%	Vulnerable
695 Dry Valley Forest/Swamp Scrub/Warm Temperate Rainforest Mosaic	4 458	552	12%	288	256	31%	Endangered
719 Grassy Woodland/Damp Sands Herb-rich Woodland Mosaic	2 678	15	1%	0	15	0%	Endangered
793 Damp Heathy Woodland	3 631	961	26%	391	568 (8)	37%	Vulnerable
795 Lowland Forest/Damp Sands Herb-rich Woodland Mosaic	24 908	10 286	41%	1 550	8 735 (715)	21%	Vulnerable
878 Damp Sands Herb-rich Woodland/Swamp Scrub Complex	5 104	628	12%	333	295	53%	Vulnerable
881 Damp Sands Herb-rich Woodland/Heathy Woodland Mosaic	1 743	98	6%	25	74	24%	Vulnerable
892 Heathy Woodland/Sand Heathland Mosaic	1 318	9	1%	0	9	0%	Least Concern
902 Gully Woodland	635	219	34%	123	35 (10)	57%	Endangered
925 Damp Sands Herb-rich Woodland/Swamp Scrub Mosaic	2 258	296	13%	193	103	20%	Endangered
937 Swampy Woodland	20 029	2 006	10%	330	1 576 (7)	15%	Endangered
1106 Damp Heathy Woodland/Lowland Forest Mosaic	46 356	5 383	12%	257	5 123 (61)	5%	Vulnerable

Source: Trust for Nature 'Bioregion and subregion EVC representation' on Excel spread sheets and EVC maps generated by VNPA from the Department of Environment and Primary Industries website. Note: The number in brackets in the 'Private land' column is the area in hectares under Trust for Nature covenants.

The natural state of play

The Gippsland Plain Bioregion is a vast coastal and alluvial plain of 1 208 072 ha with its coast dominated by barrier dunes, swamps and floodplains. It forms the eastern shoreline of Port Phillip Bay, including the Mornington Peninsula, surrounds Western Port, Anderson Inlet, Venus Bay, Shallow Inlet and Corner Inlet, connects Wilsons Promontory to the mainland and runs through the Latrobe Valley, Sale and Bairnsdale to the Gippsland Lakes. There are 27 river systems, 30 municipalities, three catchment management authorities and two coastal boards, and the rapidly growing capital city of Melbourne expanding into its western edge.

Freehold land covers 91% of the Gippsland Plain Bioregion, the landscape of which is now 100% fragmented. Native vegetation is found on just 25.6% of the bioregion, and almost half of that is on private land. Unlike the plains to the west of Melbourne, the Gippsland Plain Bioregion experienced European settlement later, with small family farms for dairying and cattle grazing established only in the 1860s.

There are many settlements along the coast of the Gippsland Plain and include Melbourne and its Mornington Peninsula suburbs from Safety Beach to Sorrento and along the western shore of Western Port, Cannons Creek, Tooradin, Grantville, Corinella, Coronet Bay and San Remo along the northern and western shores of Western Port, Cowes on Phillip Island, and then Cape Paterson, Inverloch, Venus Bay, Walkerville North and South, Waratah Bay, Port Franklin, Port Albert and Port Welshpool, Seaspray, Loch Sport and Lakes Entrance.

Twenty-five coastal and 38 hinterland EVCs occur within 500 m of the coast, and these are listed in Table 12, along with estimates of their pre-1750 and current extent, land tenure and conservation status.

Forty-three of the 63 EVCs are assessed as threatened. With few exceptions, most of the 63 EVCs have suffered very large percentage losses of cover compared with their pre-1750 levels. The exceptions are Wet Swale Herbland, Mangrove Shrubland/Estuarine Flats Grassland Mosaic, Coastal Dune Scrub/Bird Colony Succulent Herbland Mosaic

and Sand Heathland, and to a lesser extent, Coastal Dune Scrub/Coastal Dune Grassland Mosaic, Coastal Saltmarsh and Wetland Formation.

Three of the 25 coastal EVCs are Endangered, nine are Vulnerable, six are Depleted, four are Rare and another three are of Least Concern. The protection of the separate EVCs is relatively high due to the Point Nepean, Mornington Peninsula and Lakes national parks, and the Gippsland Lakes Coastal Park. However, the mosaic EVCs have very low or zero percentages in conservation reserves. Five coastal EVCs with cover found on private land have some protection under Trust for Nature covenants.

Of the 38 hinterland EVCs, 19 are considered Endangered, 12 are Vulnerable, two are Depleted, one is Rare and three are of Least Concern. Except for Sand Heathland, Sand Heathland/Wet Heathland Mosaic, Damp Sands Herb-rich Woodland/Swamp Scrub Complex and Gully Woodland, the percentages of their cover protected in conservation reserves are well below 50%.

Twenty-seven of the 38 hinterland EVCs have Trust for Nature covenants but, except for Heathy Woodland, these represent very small percentages of their cover.

The pathways of change

Eastern shoreline of Port Phillip Bay

Port Phillip Bay has a rich marine biodiversity with many species found nowhere else. A combination of seagrass meadows, sponge gardens, Ramsar-listed wetlands, sandflats, mudflats and subtidal and intertidal reefs are habitat for more than 300 species of fish, and hundreds of species of molluscs, crustaceans, seaweeds and seahorses.

The bay is also home to a major shipping port, recreational dive sector, significant commercial and recreational fishing and boating sectors, and is the recreational playground for millions of Melburnians and visitors who enjoy swimming and sailing in its waters and spending a day at one of its many beaches.

The western shoreline of Port Phillip Bay is low lying and flat with intertidal mudflats, saltmarshes and mangroves in the Otway and Victorian Volcanic plains bioregions. By contrast, the bay's eastern shoreline on the western edge of the Gippsland Plain is a mix of sandy beaches, cliffs and sand dunes.

The mouth of the Yarra River, which is inside the Port of Melbourne, marks the beginning of the Gippsland Plain. Except for a few clumps, it is devoid of native vegetation.

The Yarra was the dumping ground for the industrial wastes of tanneries, abattoirs and textile factories in the early years of Melbourne, and a liquid conveyor for the soil eroded from a catchment being rapidly cleared of its vegetation—all of which accumulated in the muddy and sandy beds of the river and bay.

Sandridge to Seaford

From Sandridge Beach, in the City of Port Phillip, and down to Frankston, the coastal crown land reserve is very narrow, wedged between the waters of the bay, Beach Road and Melbourne's urban area. Much of the reserve has been landscaped with lawns, park furniture, lifesaving, yachting and angling club buildings, boating infrastructure, car parks and roads. Tiny remnants of coastal EVCs do exist, but are often the result of plantings rather than being remnants of indigenous vegetation cover.

Along the shoreline of the City of Port Phillip, between the Port of Melbourne and Head Road Brighton, there are remnants of Coast Banksia Woodland/Coastal Dune Scrub Mosaic. On entering the City of Bayside, and as the sandy shoreline turns to cliffs, the Coastal Dune Scrub disappears and is replaced by less-fragmented Coastal Headland Scrub/Coast Banksia Woodland Mosaic. The remnant woodland and scrub mosaic at the Sandringham Foreshore Reserve is of regional significance, providing habitat for local native birds in an urban area.

In recent years there has been considerable redevelopment of the housing stock along Beach Road and some of the new residents in these multi-storey properties have sought to 'improve' their view of the bay by poisoning or cutting down trees on the public foreshore land opposite. The City of Bayside considers that tree vandalism, and erects large hoardings to alert passersby of the illegal removal of trees and backs this with fines of up to $10 000 for anyone found guilty.

Stokehouse redevelopment options

The destruction by fire of the St Kilda foreshore's iconic Stokehouse restaurant in January 2014 has ignited public debate about the future of the site. What began as an open teahouse in 1916, and became the Stokehouse in the 1960s, had only recently undergone one of what have been many renovations.

The current owners of the restaurant have a 21-year lease on the crown land site and have indicated they wish to rebuild; locals and the architectural community are now weighing in with advice on future designs:

> *Architects say the fire that burnt down St Kilda's much-loved Stokehouse restaurant on Friday night has provided an opportunity to build a new landmark beach destination on the foreshore.*
> *''It's about time inner Melbourne had a really exciting piece of beach architecture,'' said Philip Goad, professor of architecture at Melbourne University.*
> *He said Melbourne's bay boasted few remarkable pieces of architecture, although the Williamstown and Seaford lifesaving clubs were exceptions. ''If there is an opportunity to do something as good as the Seaford lifesaving club it should be considered,'' he said*[174]*.*

Fire also claimed the 99-year-old historic kiosk at the end of St Kilda Pier in 2003. It was eventually replaced by a replica, which is the outcome favoured by some for the Stokehouse:

> *Architect and former Port Phillip Council design chief Jim Holdsworth as a young architecture*

[174] Lucas, C 2014, 'Debate begins on rebuilding the destroyed Stokehouse restaurant', *The Age*, 20 January 2014

student sat on the Lower Esplanade's grassy slope watching another St Kilda building, the Palais de Danse, burn down in 1968. ''Then they built The Palace,'' said Mr Holdsworth, which also burnt in 2007. ''The demise of that dreadful shed nobody lamented.''

Mr Holdsworth said the Stokehouse should be immediately reconstructed ''as it was''. When the St Kilda Pier kiosk burnt, Mr Holdsworth argued a replica should be built. ''There were some pretty whacky ideas, which I opposed, simply because—like the Stokehouse—the building was lost through unfortunate circumstances.''[175]

A former councillor at City of Port Phillip had a slightly different view:

David Brand, a former councillor and an architect who lives near the site, said it was a unique chance to rebuild the venue, though this would be harder than with the pier kiosk. ''We had enormous documentation on it.'' The Stokehouse, which had many renovations, could not be accurately replicated, he said. He said it should be rebuilt along with the ''ugly, misplaced'' St Kilda Lifesaving Club next door. ''It is taking up really important foreshore land. It's a pity it didn't burn down instead.''

Whatever was built, Mr Brand said, it was ''important the architecture [complements] what was there before and it's not just an architect's wank''[176]*.*

The foreshore from Sandridge to Seaford is littered with buildings and associated infrastructure. Many are single-purpose while others have been repurposed, beginning as changing pavilions and toilet blocks but now functioning as cafes and restaurants. While Melbourne's population continues to grow, the public foreshore remains narrowly finite, and the demands on its limited space will intensify.

The Stokehouse fire provides an opportunity to contemplate different options for the spatial configuration and use of building footprints on coastal crown land reserves. Although a design competition has been ruled out, the state government and the City of Port Phillip could consider an option that involved the demolition of the St Kilda Life Saving Club and the construction of a multi-purpose building on a smaller combined footprint to function as a restaurant, life saving club etc. More public open space would be one of the benefits of such an approach.

Beach erosion and infrastructure

The beaches within the Port Phillip and Bayside municipalities have been experiencing erosion for many years. As far back as 1935, when the Foreshore Erosion Board was established, beach erosion on the bay's eastern shoreline was progressing at one foot per year, but had been reported as occurring since the 1850s[177].

None of this would be of any great concern but for the fact that urban, industrial and transport infrastructure abutted the crown land coastal reserve, and this was now threatened as the margin between the advancing shoreline and the infrastructure narrowed. Engineering responses to erosion issues simply created others due to the dynamic nature of wave and current movements, as happened at Point Lonsdale and Queenscliff discussed earlier. From Sandridge to Sorrento there are sea walls, groynes and breakwaters that have reduced sand supply and led to erosion downstream and upstream of the structures.

The problems for Hampton Beach had begun well before the construction of the Sandringham Harbour in 1945; it simply made matters worse. Beach Road was threatened during WWII and a sea wall was built at the base of Green Point. The cliffs were also graded to a gentler slope and planted out—a technique used along several sections of this coast. But the wall removed the soft sandstone cliffs as a source of sand and the beach disappeared. Once the Sandringham Harbour was constructed, it filled with the 'lost' sand that would have normally returned to Hampton in winter.

The final solution for Hampton Beach was to add it to the list of Melbourne's beaches in need of renourishment. The list was long then and continues to grow, with Table 14 showing that there are 30 beaches currently targeted for renourishment including Altona, Elwood, Mt Martha North, Portarlington, North Aspendale, Half Moon Bay and Eastern Beach in Geelong.

Port Phillip Bay's beaches are not alone, with some along Victoria's open coast also experiencing prolonged erosion, generated by infrastructure and defensive works interfering with sand supply and movement.

Seaford sand dunes

The cliffs disappear at Mentone; low sand dunes with a patchy strip of Coastal Dune Scrub and some Coast Banksia Woodland occur between Parkdale and Seaford.

The five-kilometre-long Seaford Foreshore Reserve from Seaford to Long Island was established in 1873 when all 'unappropriated' crown lands along Port Phillip Bay's shoreline were permanently reserved. At the northern end of the reserve the dunes are covered in Coastal Dune Scrub/Coastal Grassland Mosaic and then Coast Banksia Woodland/Coastal Dune Scrub Mosaic, separated from the Coast Banksia Woodland/Swamp Scrub Mosaic along the Kananook Creek by the Nepean Highway and an urban residential area.

The 50 ha of Coast Banksia Woodland in the Seaford Foreshore Reserve is the 'finest'[178] to be found in Melbourne and is of regional significance, providing important habitat for native birds in an urban area. The eastern yellow robin *Eopsaltria australis* and the

[175] Lucas, loc. cit.
[176] Lucas, loc. cit.
[177] Bird, E. 2011, *Changes on the coastline of Port Phillip Bay*, Office of the Environmental Monitor, Department of Sustainability and Environment, Melbourne, p. 5

[178] City of Frankston, *Seaford foreshore reserve*, brochure, www.frankston.vic.gov.au/library/scripts/objectifyMedia.aspx?file=pdf/269/89.pdf&siteID=18

yellow thornbill *Acanthiza nana* are among the 14 bird species that breed here among the coast tea-tree, coast beard-heath *Leucopogon parviflorus*, coast daisy-bush *Olearia axillaris* and coast banksia *Banksia integrifolia*. In total, more than 110 bird species have been recorded in the reserve, as well as White's skink and many other reptiles. The Friends of the Seaford Foreshore Reserve are actively engaged in the reserve's conservation, working to regenerate indigenous vegetation and remove weeds.

Carrum Carrum Swamp

An unlikely spot for an Important Bird Area on such a highly urbanised stretch of coast is the Carrum Wetlands, which are within the Edithvale-Seaford Wetlands Ramsar site. The site is a scattered series of wetland remnants of what was once the vast Carrum Carrum Swamp, which stretched 15 kilometres from Mordialloc to Frankston and up to eight kilometres wide. There is now just two small wetlands remaining, Edithvale at 101 ha and Seaford at 158 ha.

For thousands of years the Carrum Carrum Swamp had drained into Port Phillip Bay through the mouth of the Kananook Creek. But to empty the swamp for agricultural development, a new outlet was cut through sand dunes in 1873 at what became known as the Patterson Cut. Levees and other flood control works continued to alter the swamp's hydrology, while during the 1960s and 1970s more swamp was lost to housing. This included the bulldozing of a major waterbird habitat area in 1974 to make way for Victoria's first canal estate at Patterson Lakes.

Concerned residents began a successful campaign in the 1970s to gain formal protection for what was left of the Carrum Carrum Swamp. It was a difficult campaign, for as one writer of the campaign's history recorded, the people calling for protection were 'swimming against a tide of public opinion that deemed swamps to be unproductive, mosquito-ridden wastelands'[179]. But those remnants were recognised internationally when the Edithvale-Seaford Wetlands were listed as a Ramsar site in 2001, thanks to the efforts of the Friends of Edithvale-Seaford Wetlands that had formed in 1988.

The wetlands were listed because they are

- the last remaining examples of the Carrum Carrum Swamp
- support populations of the threatened Australasian bittern
- support more than 1% (2000 birds) of the sharp-tailed sandpiper.

Melbourne Water and the City of Frankston now manage the wetlands to maintain their function as a flood retarding basin and community recreation and school education site (a discovery centre was recently constructed that is jointly staffed by Melbourne Water and the friends group).

Significant plants in the wetlands include southern water-ribbons *Triglochin alcockiae* and the large river buttercup *Ranunculus papulentus* (K), while the more than 190 recorded animal species include the chestnut teal, blue-billed duck, Australasian bittern and sharp-tailed sandpiper, as well as the great egret *Ardea alba*, Baillon's crake *Porzana pusilla* (V), Lewin's rail *Lewinia pectoralis* (V), white-bellied sea-eagle *Haliaeetus leucogaster* (V) and the eastern grey kangaroo *Macropus giganteus*.

Birds Australia has identified many and varied threats to this Important Bird Area and these include:

- *potential risk of accidental chemical spillage from adjacent busy roads*
- *nutrient and sediment loads from stormwater inputs*
- *reduced freshwater inflow from off-site developments prevent a natural cycle of flooding and drying, especially at Seaford*
- *saline intrusions from ground water*
- *acid sulphate in the soil several metres below the surface is a potential risk*
- *spiny rush is a significant threat particularly at Seaford Wetlands*
- *fox population levels at all wetlands are relatively high*
- *reeds have spread across some formerly more open wetlands but are important for bitterns*
- *urban development and stormwater*
- *weeds, rabbits and foxes*[180].

Urban development continues to be the most pressing threat to the Edithvale-Seaford Wetlands. The City of Kingston's August 2013 rezoning of flood-prone land to residential in the wildlife corridor connecting Edithvale Wetlands with Bicentennial Park and Wannarkladdin Wetlands in Patterson Lakes is the most recent example. In February 2013 it was reported that:

> *Friends of Edithvale-Seaford Wetlands and the newly formed Kingston Residents' Association believe the 25-house development planned for 44 First Ave in Chelsea Heights could result in toxic acid sulphate soils being released into the Ramsar-listed wetlands, while increasing the flood risk to houses in the area*[181].

The Victorian Environment Defenders Office represented the friends group at the hearings held by the planning panel reviewing the planning scheme amendment:

> *The hearing…considered whether a patch of land next to the wetlands should be rezoned to allow residential development. We argued that it should not: it formed one of the last remaining buffers between the wetlands and its urban surroundings. The site in question was also on a floodplain—another reason, we stated, why it should be left alone, rather than being rezoned for more urban development. As part of its proposal, the developer offered to gift half of the site to Melbourne Water. We argued that while this was a great gesture, it was not enough to outweigh the impacts of developing the other part of the site.*

[179] Aqua Sense, 'Carrum Carrum Swamp', http://home.vicnet.net.au/~aquasens/carrumswamp.html

[180] www.birdata.com.au/iba.vm

[181] Wray-McCann, J. 2013, 'Housing plan raises fears for Edithvale wetlands', *Bayside Leader*, 20 February 2013

The hearing raised important questions about the role of the environment in planning. When planning our suburbs, how much do we value our important environmental features? Should we develop land wherever it is possible, or should we save some bits to protect what is environmentally important?[182]

These same questions are being asked all along the coast, with the establishment of buffers vital to the future of coastal nature.

Frankston to Mt Martha

Houses and boat sheds have been built among what are now highly degraded remnants of Coast Banksia Woodland/Coastal Dune Scrub Mosaic along the Frankston foreshore between Long Island and the mouth of the Kananook Creek.

A crown land reserve runs along both sides of the Kananook Creek before it enters Port Phillip Bay. Reports of the potential sale of a section of the reserve raises concerns about the precedent it may set for future sales of coastal crown land:

The Napthine government has pressed a bayside council to back the sale of waterfront Crown land to a Liberal Party activist and key supporter of maverick MP Geoff Shaw.

In an unusual New Year's Eve intervention, Environment Minister Ryan Smith wrote to the Frankston Council seeking support for sale of the land at the rear of homes in Gould Street, a well-to-do seaside pocket of Frankston also known as Long Island.

Frankston South Liberal Party branch treasurer Denise Bellmaine is one of a small group of residents seeking to gain control of Crown land that sits between their properties and Kananook Creek[183]*.*

The Age report added that:

The council has been pressing for residents to vacate the Crown land, and wants to revegetate the corridor to improve a walking track along Kananook Creek[184]*.*

Several days later the planned sale appeared in doubt[185]. Although the land in question has been the subject of a long-running dispute between the adjoining landowners and the City of Frankston, the potential sale of waterfront crown land could establish a precedent for the transfer of coastal crown land to adjoining landowners elsewhere.

Sandstone cliffs return south of the Kananook Creek at Olivers Hill and continue through Mount Eliza, Mornington and Mount Martha, ending at Safety Beach. In May 2013 the $80m Frankston Safe Harbour Project, which proposed filling in 21 ha of the Port Phillip Bay at the base of Olivers Hill, was shelved indefinitely after many years of community opposition. It was to include boat ramps, dual landing platforms, and up to 300 permanent wet berths for boat owners and public moorings.

Coastal Headland Scrub runs as an almost continuous and narrow strip between Olivers Hill and Mornington, backed by Plains Grassy Woodland, urban area and several patches of Coast Banksia Woodland and Gully Woodland. From Mount Eliza to Mount Martha, the flora is of regional significance and supports local native birds, as does the Balcombe Creek estuary at Mt Martha in remnants of Swamp Scrub and Coastal Saltmarsh.

Urban development constantly encroaches on the narrow strip of coastal crown land around Port Phillip Bay, but nothing quite like the 2011 construction by entrepreneur, Solomon Lew, of a $400 000 private pool straddling the crown land-private land interface at Mount Eliza:

In May last year, The Sunday Age revealed the pool had been built on Crown land and without planning permits, which prompted an unsuccessful bid by the Lews to buy the land from the Department of Sustainability and Environment. The Mornington Peninsula Shire Council also rebuffed a later attempt to lease the land for an initial payment of $250,000 and annual installments of $50,000 over 19 years. A private settlement with council was reached in October last year, which required the Lews to pay for the demolition of the pool and remediation of the foreshore land. It was also agreed the Lews would cover the council's legal fees, which are estimated at $200,000 and make a substantial donation to a charity on the peninsula[186]*.*

Southern shoreline of Port Phillip Bay

Martha Cove

The coast road that had retreated inland at Olivers Hill returns at Mornington and continues all the way to Point Nepean. Wedged between the road and the high water mark is a very narrow strip of Coastal Headland Scrub with very occasional patches of Plains Grassy Woodland and Gully Woodland.

In 2012, community opposition defeated a proposed marina at Mornington Pier, and funding subsequently received to repair the existing pier. At Safety Beach, the result was quite different.

Tassell's Creek flows into Port Phillip Bay at Safety Beach and was, until 2002, a wetland, open space and the last gap in suburbia between Portsea and Mount Martha. That changed when work began on creek began transforming the creek into the $650 million Martha Cove canal estate with 1 150 sites for houses and a 600-berth marina.

Martha Cove had received planning permission after consideration of an Assessment and Panel Report by the state's planning and housing minister in 1992:

I have assessed Martha Cove proposal on its merits and unique characteristics including the provision

[182] Croggon, N. 2013, 'Fighting for the last scrap of wetland buffer', 13 March 2013, http://www.edovic.org.au/blog/fighting-last-scrap-wetland-buffer

[183] Cook, H. and Millar, R. 2014a, 'Environment Minister Ryan Smith pushes Liberal activist land deal in Frankston', The Age, 11 January 2014

[184] Cook and Millar, loc. cit.

[185] Cook, H. and Millar, R. 2014b, 'Sale of Frankston Crown land now in doubt', *The Age*, 15 January 2014

[186] Houston, C. 2012, 'Pool that landed Lews in deep water demolished', *The Age*, 18 December 2012

for sorely needed boating facilities, especially a safe haven in the south-eastern part of Port Phillip Bay. On balance, I have supported the proposal because it capitalises on a unique opportunity to provide boating facilities without causing unacceptable environmental effects. I would not have supported the proposal if it did not contain these facilities.[187]

The minister's reasons for approving the project—safety and the provision of sorely needed facilities while at the same time claiming there would be little environmental impact—have been consistently used by proponents of boating infrastructure and approving ministers over many decades.

The canal development involved the digging of a 1.5 km long canal, two groynes off the beach, and rerouting the Point Nepean Road under the creek. During construction in 2004, homes in Safety Beach were flooded on two occasions because of inadequate holding dams. However, in 2005, the local council allowed the developers to extend the project into a rural zone, enabling more boat berths to be added to the estate.

As part of the canal development there were proposals for an offshore mussel farm, a 150-seat restaurant and 2 000 square metres of retail space. But by 2008-2009 the development company had fallen into financial trouble and was placed in receivership. In 2010, only one-third of the berths had been leased, and it was not until 2011 that the first houses were built.

Rosebud foreshore and aquatic centre

From Safety Beach to Tootgarook a narrow and compromised band of Coast Banksia Woodland is squeezed between the Point Nepean Road and the high water mark, with several patches of Swamp Scrub near Dromana and Gully Woodland near McCrae. A narrow ribbon of Coastal Alkaline Scrub stretches from Tootgarook through Rye, Blairgowrie and Sorrento to Point Nepean, where it dominates the national park.

The Rosebud Foreshore Reserve extends for six kilometres between McCrae and Tootgarook. The land behind the reserve is urbanised and becoming increasingly so, as is the rest of the southern shoreline of Port Phillip Bay. Former fishing villages of the nineteenth century are now part of one long urban sprawl between Safety Beach and Portsea, with remnant vegetation including Gully Woodland, Heathy Woodland, Grassy Woodland, Swamp Scrub, Coast Banksia Woodland, Coast Dune Scrub and Damp Sands Herb-rich Woodland under enormous pressure, and the demands on limited public space intense. Plains Grassland has all but disappeared due to development in Martha Cove and other residential areas.

As Melbourne expanded in the mid-nineteenth century, holidaymakers 'discovered' Rosebud and began to camp on its foreshore. That continues today and every summer hundreds of families set up camp among the Coast Banksia Woodland; some have been doing it for generations and often on the same site.

The almost 700 campsites on the Rosebud Foreshore Reserve, and those on nearby reserves with their associated car parks, roads and shower and toilet blocks, have had a huge impact on coastal vegetation. So have the boat sheds and other infrastructure for sailing and angling, as well as the lawns and playgrounds occupying this limited public space. Some of the vegetation near residential areas has also been illegally removed, coastal erosion is undercutting the foredune at the rear of the beach, and much of the reserve is now covered in exotic vegetation.

Despite these pressures, native flora and fauna still exist on the Rosebud Foreshore Reserve, but are at increasing risk from ongoing development in and adjacent to the reserve, including the proposed Southern Peninsula Aquatic Centre.

A 2005 feasibility study for the aquatic centre concluded that it would act 'as a catalyst for urban renewal in Rosebud and provide for leverage for tourism growth, regional population and economic development'. The study identified 10 possible sites, four of which were on the foreshore, including its preferred carnival/community hall site. The then Department of Sustainability and Environment responded to concerned residents in 2009, stating that the project was inconsistent with the *Victorian coastal strategy*[188]. But in March 2012, the Council voted to proceed with the project.

The council views the climate risk to the project as part of the balancing act between conservation and resource use. After considering a number of documents relating to climate risk, including the *Victorian coastal strategy 2008* and the 2009 *Rosebud foreshore climate change assessment*, it concluded in the coastal management plan that:

These documents provide guidance in tackling climate change issues. However, the Rosebud Foreshore Reserve must still cater for the current recreational needs of visitors. Climate change should not be viewed as a prohibition of community infrastructure and coastal facilities, however it is important to give balanced consideration to the risks and adaptation options available, particularly where major investment is proposed[189].

The council had also taken comfort in the conclusion of the climate change assessment that:

The analysis in this report shows that the site has a low vulnerability up to 2050, but this increases to moderate by 2070. A major feature contributing to the assessment of low vulnerability is the high capacity for adaptation should adverse impacts of climate change be identified[190].

The proposal to build the centre on the Rosebud Foreshore Reserve has caused huge division within the Rosebud community. Those arguing for the proposal said that the centre would:

- provide a safe swimming facility for children

[187] McCutcheon, A. 1992, Ministerial letter to Flinders Shire Council, 3 January 1992

[188] Perkins, M. 2012, 'Council set to vote on controversial Rosebud pool project', *The Age*, 12 June 2012

[189] Hansen Partnership, op. cit., p. 52

[190] Hansen Partnership, loc. cit.

- remove a derelict kindergarten, asphalt car park and grassed area, and restore the community hall
- revitalise the town with increased visitors and retail activity
- be inside an activity node identified by the coastal action plan for the area
- be consistent with the *Victorian coastal strategy 2008* and provide a 'net community benefit'.

Those against argued that the centre would:

- alienate significant and limited public open space for what was a commercial development
- put further pressure on coastal nature due to increased numbers of people using the reserve
- place a very expensive piece of infrastructure in harms way from the rising sea levels associated with climate change and require significant amounts of ratepayers funds to defend the site
- be better built on other available land within Rosebud.

The attraction of 'free' public land has seen coastal reserves across the state littered with infrastructure that locks up the land for sectional and at times commercial interests. But by the end of 2012, the business case for the aquatic centre was unraveling, with the council shelving the project while it investigated an alternative site it had just purchased in the centre of the Rosebud shopping centre. A geotechnical report had also shown that:

> *...there would be a 10-15 per cent increase in costs for the aquatic centre to be built on the foreshore compared with an inland site, as well as a 10 per cent increase in contingency costs, representing a total increase of $7.1 million on current estimates. The report stated that the foundations of foreshore site comprised 15 metres of sand and groundwater, making it difficult to build on*[191].

The story developed further during 2013 with the council rescinding its March 2012 motion of support for the aquatic centre's foreshore location. But on 10 December 2013 the Council announced on its website that the construction of the centre on the Rosebud Foreshore Reserve would proceed. In *The Age* of 14 December 2013, the shire mayor explained why:

> *Mornington Peninsula Shire mayor Antonella Celi said she had campaigned strongly for the Rosebud aquatic centre at the foreshore location for years. She said the site had excellent access on a bus route. Cr Celi said health professionals on the peninsula were desperately in need of an aquatic centre for rehabilitation services. She said the new centre would also benefit families and schools with learn-to-swim classes*[192].

Not one of the reasons given by the mayor justify a coastal reserve location, and community criticism of the shire's decision was also reported by *The Age*:

> *Alan Nelsen, secretary of the Mornington Peninsula Ratepayers and Residents Association, was scathing of the council approval.*
>
> *He said the development would be one of the largest on Victoria's coastline and went against state coastal management guidelines. The guidelines say new developments must be coast-dependent or, if not, bring a net community benefit.*
>
> *Dr Nelsen said there was already enough pressure on coastal areas from erosion, thanks to a rising sea level, boat clubs and boat ramps.*
>
> *Putting development on the foreshore that could go somewhere else ''means there will be no foreshore left''.*
>
> *''What sort of an example does this set for schools, hospitals, basketball stadiums on the foreshore if this is approved - it sets a disastrous precedent,'' he said.*
>
> *Councillor Tim Rodgers, who voted against the proposal, said building a swimming pool on a location ''that will take away our precious coastal foreshore is a disgrace''.*
>
> *Cr Rodgers said there had been no cost assigned to the project. ''We have written an open cheque for this decision,'' he said*[193].

The Shire of Mornington Peninsula's proposal for the aquatic centre on the Rosebud Foreshore Reserve highlights the risk of municipalities managing coastal crown land reserves when they are also promoting major development of the reserve and adjoining land. This mirrors the historic problems with committees of management developing revenue-generating uses such as camping grounds and caravan parks at the expense of coastal nature. It also points to the need to review the concepts of activity nodes and net community benefit contained within the *Victorian coastal strategy 2008*. This will be discussed in Part 3.

Tootgarook Swamp

Tootgarook Swamp is a Shallow Freshwater Marsh with some brackish sections between Rosebud and Boneo that once extended over more than 800 ha but is now covers just 381 ha due to agricultural and urban encroachment, infilling and drainage. As a peat-regenerating wetland, the swamp acts as a significant carbon storage site on the Mornington Peninsula, but such wetlands are the most threatened.

The swamp contains at least 14 threatened EVCs including Swamp Scrub, Aquatic Herbland and Reed Swamp, and its outflows to Port Phillip Bay, by way of underground seepage and along a channelised Chinaman's Creek, support seagrass meadows in Capel Sound. Ten rare and threatened bird species use the swamp, including the great egret and Australasian bittern, as well as the threatened white-footed dunnart, glossy grass skink and swamp skink. In total there have been 129 bird, 13 reptile, 12 mammal and nine frog species recorded in the swamp. It also acts as a flood-retarding basin, protecting downstream properties in Rosebud West and along Chinaman's Creek.

The Save Tootgarook Swamp, the Friends of Tootgarook Wetland Reserves and the Southern

[191] Robin, S. 2012, 'Rosebud aquatic centre site: shire backflips', *The Peninsula Weekly,* 3 October 2012

[192] Dowling, J. 2013, 'Mornington Peninsula divided over aquatic centre plan for Rosebud', *The Age*, 14 December 2013.

[193] Dowling, loc. cit.

Peninsula Indigenous Flora and Fauna Association, among others, have fought for some years to prevent further development, infilling and drainage.

In February 2013 it was announced by the Trust for Nature that:

> *The largest private landowner within Tootgarook Swamp has signed a conservation covenant agreement with Trust for Nature that will secure the long-term protection of most of the remaining wetland. The conservation covenant will ensure the property is managed to protect and improve more than 150ha of native wetland habitat.*
>
> *In addition to the threatened wetland communities the property also contains a large intact tract of the* Victorian Flora and Fauna Guarantee Act 1998 *listed Coastal Moonah, a threatened habitat, which is believed to have once covered 25,000ha of the Mornington Peninsula. But in 2002, only 1000ha of Moonah habitat was recorded*[194].

However, there is still more work to be done to increase the protection of Tootgarook Swamp:

> *Unfortunately a large portion of the* [northern] *Tootgarook Swamp is inappropriately zoned as residential and industrial, with roughly half of the actual swamp inside the green wedge and half within the urban growth boundary. Currently approximately 77 hectares is marked for future development proposals totalling almost a quarter of the entire swamp. After another almost 3 hectares was lost to a housing subdivision infill recently*[195].

The proposed extension of the Mornington Peninsula Freeway to Blairgowrie along the existing road reservation would cut through the northern part of the swamp. That area could also be affected by renewed residential development, made possible by the state government's introduction of a 0.2 m by 2040 sea-level-rise benchmark for infill coastal development.

The Shire of Mornington Peninsula is supporting community groups in their efforts to have the swamp added to the Ramsar list. Such a listing would give the swamp international recognition, but local activists wish to see an integrated swamp management plan prepared and use made of the municipal planning scheme to protect the swamp by:

- preventing further residential development by the rezoning of residential land on the swamp's northern boundary
- extending the area covered by the Land Subject to Inundation Overlay to more accurately reflect the swamp's flood regime
- rezoning council land currently zoned Industrial to prevent its development.

Sorrento and Portsea

Further west, the limits on publicly available beach space has become an issue at Sorrento and Portsea, where there are three short stretches of private land abutting the high water mark and where some landowners have viewed the beach in front as their own. The three stretches are:

- Sullivans Bay car park opposite Westmore Avenue/Point Nepean Road corner)-Eastern Sister (Sorrento): This 200-metre stretch of coastline has a narrow strip of Coastal Alkaline Scrub backed by urban development. The land use zoning is Residential 1 Zone
- Hotham Road (Portsea): a narrow band of Coastal Alkaline Scrub abuts this 50-metre coastal section with urban development behind it. The land use zoning is Business 1 Zone
- Hempston Avenue/Point MacArthur-St Aubins Way (Portsea): a two-kilometre shoreline with a narrow strip of Coastal Alkaline Scrub and urban development behind. The land use zoning is Residential 1 Zone.

If landowners at Portsea develop the private land to the high water mark, it further reduces coastal vegetation but also restricts access for the general public:

> *Billionaire trucking magnate Lindsay Fox has angered Portsea locals by grabbing a slice of land in front of his beachside mansion, sparking a Victorian Government investigation. In the latest salvo in a long-running war over the Point King beach, the Linfox boss has moved the fenceline in front of his luxurious boathouse forward an estimated 8m, according to the Herald Sun. Mr Fox has title over the land down to the waters of Port Phillip Bay, but despite the long-running fight the exact boundary has never been tested in court. Mr Fox has built a new brush fence and planted trees on the beach side of the fence. The move enlarges the grassy beachfront area that Mr Fox uses to land his helicopter when he visits his $20 million mansion on the clifftop above. During the decade-long stoush with neighbours and beachlovers Mr Fox has marked his claim to ownership of land down to the high-water mark by planting she-oaks and installing a chain-link fence. He has so far been stymied by opponents who say the beach, popular with families, is Crown land that should be open to the public. It is believed the new fence was put up about six months ago and some of the neighbours have also moved their fencelines*[196].

Channel deepening and Portsea Beach

The $1-billion Port Philip Bay channel-deepening project was designed to boost container trade and the Victorian economy, and maintain the Port of Melbourne's competitive position with other Australian ports. The shipping channels in the bay's north, south and its entrance at The Heads were deepened to a minimum depth of 17 metres, stirring up sediments, reducing water quality and threatening the remaining seagrass meadows.

[194] www.trustfornature.org.au/news/permanent-protection-of-tootgarook-swamp/

[195] www.savetootgarookswamp.org

[196] Butler, B. 2010, 'Lindsay Fox claims extra 8m of Portsea beach', *Herald Sun* 8 January 2010

Point Nepean and Point Lonsdale form the eastern and western sides of the opening to Port Phillip Bay—The Heads. At The Heads there is a 100-metre-deep canyon with steep walls, sheltered caves, ledges and overhangs covered by a community of sponge gardens that scientists regard as unique. The colourful sponges, branching soft corals, stalked ascidians and carpets of colourful anemones, along with fish and encrusting algae, provide spectacular scenery, popular dive sites and include 100 individual sponge species found nowhere else.

The Port Phillip Bay Channel Deepening Project removed 0.5 million cubic metres of dune limestone rock from the canyon and damaged the sponge gardens. VNPA and ACF successfully nominated the sponge gardens for listing as a threatened community under the Victorian *Flora and Fauna Guarantee Act*, but due to the convoluted assessment process this came too late to protect it from the channel-deepening project.

By affecting the speed of tidal flows, the dredging of the entrance to Port Phillip Bay may also be responsible for the subsequent and controversial loss of 20-30 m of the Portsea Beach a few months later in 2010. More than $3 million were spent defending and restoring the beach by dumping 1 000 giant 2.5-cubic-metre sandbags and 10 000 cubic metres of sand. The Portsea Jetty was also raised after it was being partially submerged during rough seas.

The government, the Port of Melbourne Corporation and its senior bureaucrats, including the Office of Environmental Monitor, have strenuously denied that the deepening of the entrance to Port Phillip Bay was responsible for the loss of the Portsea Beach, claiming that bad weather was the culprit.

But locals who are expert in navigating these waters, along with local business folk suffering economic losses due to an absent Portsea Beach, believed the deepening of the bay's entrance was involved and they were proven right. On 7 July 2013 *The Age* reported:

> *The dredging of Port Phillip Bay contributed to the destruction of Portsea front beach and other damage along the Mornington Peninsula, according to two confidential reports commissioned by the Victorian government*[197].

The study by Water Technology found that the project appears 'to have increased the size and velocity of waves reflected towards Portsea front beach'[198] and that 'wave energy had been redistributed along the Mornington Peninsula following the completion of the project'[199]. A second study carried out by CSIRO 'also found that dredging contributed to larger and more powerful swells at the southern end of the peninsula'[200].

A further comment by CSIRO pointed to the weakness of the channel-deepening project's monitoring program as there was an 'absence of long wave records at Portsea Beach that pre-date the erosion event and channel-deepening project'. The local MP and state education minister was reported as saying that there would be 'further monitoring of wave characteristics' but that may not be the end of spending on Portsea Beach. A study of future works to protect the beach found that:

> *Future sea level rise will result in further losses of the beach and may promote increased occurrence of ocean swell penetration to Portsea Front Beach. Without action, it is unlikely a beach will form and/or remain in front of the geo-bag seawall. Over longer periods (with raised sea levels), erosion of the western section of the beach is probable*[201].

There is also the issue of compensation for affected businesses:

> *Portsea Hotel owner and prominent businessman Chris Morris said he was considering legal action against the Port of Melbourne Corporation after a slump in trade at his beachfront hotel because of dwindling beach crowds and the relocation of the Portsea Swim Classic*[202].

In July 2013, *The Age* reported that the state government would again dump giant sand bags on the Portsea Beach against the advice of CSIRO that said it 'is likely that the construction of the sandbag retaining wall is exacerbating the problem, further eroding the beach in front of the wall and preventing any natural recovery'[203].

A cleaner Yarra River and Port Phillip Bay: a plan of action

The state government released this plan of action in 2012 after its preparation by the Government Task Force for the Yarra River and Port Phillip Bay. Its four priorities are:

- *Enable more effective coordination between government agencies in protecting water quality and providing timely information to communities about water quality events*
- *Manage threats to water quality, including pollution, litter and stormwater inputs by identifying new priority actions to address them*
- *Develop easier ways for the community to access information about water quality of the Yarra and the bay*
- *Support Victorians to take actions that care for and protect the Yarra and the bay*[204].

Under the action plan, the Department of Environment and Primary industries is the lead agency for the water quality management in the bay and Melbourne Water for the Yarra, while the

[197] Houston, C. 'Reports say wave surges hit Portsea', *The Sunday Age,* 7 July 2013
[198] Houston, loc. cit.
[199] Houston, loc. cit.
[200] Houston, loc. cit.

[201] Aurecon Australia 2012, Project: Portsea Beach Pre-Feasibility assessment of erosion response options, options assessment, prepared for the Department of Sustainability and Environment, Aurecon Australia, Brisbane, p. 23
[202] Houston, loc. cit.
[203] Houston C. 2013, 'Portsea retains sandbag wall against expert advice', *The Age*, 14 July 2013
[204] Department of Sustainability and Environment 2012, A cleaner Yarra River and Port Phillip Bay: a plan of action, Department of Sustainability and Environment, Melbourne, p. 2

Environment Protection Authority is the environmental regulator and assessor as well as an adviser on water quality issues. The Office of Living Victoria has been established to lead integrated water cycling.

The action plan also indicates that there will be an environment management plan for Port Phillip Bay, updated best-practice guidelines for dredging, a response plan for water quality events, encouraging stormwater water reuse and water sensitive design, targeting pollution hotspots, reducing litter, a one-stop-shop' for water quality information and advice, and encouragement of community participation.

This action plan is a very glossy document. With the exception of the environment management plan for Port Phillip Bay, which is a welcome action if it is independent, ecosystem-based marine spatial plan based on the best-available science and comprehensive monitoring, there is little that is not already being done by the various agencies and the community.

Point Nepean and Mornington Peninsula national parks

The Point Nepean and Sorrento Coastline has flora and fauna of state significance, with the vegetation characteristic of coastal areas and supporting species such as the venus hair-fern *Adiantum capillus-veneris* (E), coast bitter-bush, cream spider-orchid *Caledenia patersonii* (E), coast helmet-orchid, coast tobacco *Nicotiana maritime* (E), *Olearia* sp. aff. *lanuginosa*, netted brake *Pteris comans* (R) and the leafy greenhood. This coastal habitat provides important nesting sites for cormorants, gulls and terns, supports hooded plovers and significant Victorian populations of sooty oystercatchers *Haematopus fuliginosus*, and is the site of the only breeding attempt by the kelp gull *Larus dominicanus* in Port Phillip Bay.

Coastal moonah woodland

The Point Nepean National Park is covered in Coastal Alkaline Scrub, which is dominated by the coastal moonah woodland community now listed in the *Flora and Fauna Guarantee Act 1988* as threatened. The community is at less than 10% of its former range on the Mornington Peninsula, declining from 12 500 ha prior to European settlement to less than 1 000 ha today, and much of what remains is degraded.

Point Nepean and Mornington Peninsula national parks are now the stronghold for coastal moonah woodland, but small stands are also protected in Buckley Park Foreshore Reserve at Point Lonsdale, Tyrone Bushland Reserve at Rye, and within the Phillip Island Nature Parks. Other isolated stands grow in the Discovery Bay Coastal Park from the Bridgewater Lakes to as far west as the mouth of the Glenelg River, and at Warrnambool, Aireys Inlet, Anglesea, Point Addis, Jan Juc, Torquay, Breamlea, Barwon Heads, Queenscliff and Indented Head.

Like other native vegetation on coastal dunes, coastal moonah woodland provides a number of very important functions including dune and water table stabilisation, habitat for animals and plants and the insects that control pests, a buffer from harsh weather, nutrient cycling and soil development.

The coastal moonah woodland community also hosts a number of threatened species including scented spider-orchid, late helmet-orchid *Corybas* sp. aff. *diemenicus* (coastal) (E), coast helmet-orchid, swamp greenhood, leafy greenhood, coastal leek-orchid *Prasophyllum litorale* (V), rare bitter-bush, *Adriana quadripartita* (glabrous form) (E) and Bellarine yellow-gum *Eucalyptus leucoxylon* subsp. *bellarinensis* (E). Animals including the long-nosed bandicoot *Perameles nasuta*, southern forest bat *Vespadelus regulus*, black wallaby *Wallabia bicolour*, tree dragon *Amphibolurus muricatus*, White's skink *Liopholis whitii*, southern grass skink *Pseudemoia entrecasteauxii*, and the white-footed dunnart *Sminthopsis leucopus* (NT) are also found there.

The reasons for the decline, degradation and fragmentation of coastal moonah woodland include changes in soil nutrients, fire, grazing, residential development, the lack of natural regeneration and invasion by weeds such as Italian buckthorn which is difficult to remove, smothers surrounding vegetation and attracts blackbirds which carry in the seeds of other weeds. Bridal creeper, myrtle-leaf milkwort, boneseed, mirror bush and panic veldt-grass are other notable weeds.

In assessing the impact of residential development on coastal moonah woodland, the plan prepared for the community's recovery stated that:

> *Significant loss of this community has already occurred due to residential development and is likely to continue under existing planning arrangements. Residential development often results in the retention of a proportion of the large shrub and tree components of the community, but almost total loss of the smaller shrub and ground layer components. Regeneration of the retained taller components is rare (except Coast Tea-tree) within residential areas*[205].

The future for coastal moonah woodland has been improved with the return of all Commonwealth land on Point Nepean to Victoria, and its inclusion in an integrated Point Nepean National Park, after a successful campaign headed by VNPA.

Point Nepean and the Quarantine Station

Point Nepean's cultural heritage is remarkably diverse. For thousands of years it was within the realm of the Boonwerrung and used by the women as a mothering place. The arrival of sealers, whalers, European explorers and settlers from the late eighteenth century displaced the Boonwerrung, but they have always retained a connection that should now be strengthened by the establishment of the Point Nepean National Park.

This land was first called Point Nepean in 1802, when Lieutenant Murray sailed the *Lady Nelson* though the

[205] Department of Sustainability and Environment 2003, *Action Statement No. 141: Coastal moonah woodland*, *Flora and Fauna Guarantee Act 1988*, Department of Sustainability and Environment, Melbourne, p. 2

entrance to Port Phillip Bay. For settlers to Victoria it was one of the first places they saw—and for some it was their last as they succumbed to disease at the Quarantine Station operating there from 1854. The five double-storey hospital buildings, and the boiler house, washrooms and administrative headquarters were built from locally quarried dune limestone, which had also been the raw material for the lime kilns supplying the rapidly expanding Melbourne. Most of the sheoaks covering Point Nepean were cleared to fuel the kilns. The Quarantine Station also housed the Officer Cadet School and the School of Army Health from the 1950s until its closure in 1980; the two schools followed in 1985.

As part of its defense efforts, the Commonwealth government assumed ownership of Point Nepean in the 1870s and constructed gun batteries and fortifications at Fort Nepean and Eagles Nest near the entrance to Port Philip Bay. The artillery at the tip of Point Nepean fired the first shots in both World War I and II. They were removed after World War II and the land, in 1988, was returned to Victoria as part of Australia's Bicentennial celebrations and declared as the Point Nepean National Park.

But that left the Quarantine Station, the firing range and Police Point still in Commonwealth hands. Keen to raise revenue from the sale of the land, the Commonwealth offered it to Kennett and Bracks governments in 1998 and 2001 respectively. Both governments declined, believing that Victorians should not have to pay for the land and expressing concern about the legal liability for the unexploded ordnance on the firing range.

The Howard government pressed ahead with the land sale, announcing in 2002 that the remaining 311 ha of Commonwealth land, including the Quarantine Station, were on the market. But after a concerted community campaign headed by VNPA, the government withdrew the land from sale in 2003 and called for tenders to lease the area. A Queensland developer, FKP, was the successful bidder and had plans for a 250-bed resort and 11 new buildings, some multi-storey, under an 80-year lease.

The community campaign for an integrated national park at Point Nepean continued and the federal government finally announced in December 2003 that it would return the 205 ha firing range to the Victorian government, with funds to remove the ordnance, while giving 17.6 ha of land at Police Point to the Shire of Mornington Peninsula. But the government held on to the 90 ha containing the Quarantine Station and created a private trust to manage and develop it.

The community campaigners and the then Victorian government opposed the formation and operation of the trust and, at the 2007 federal election, the Labor Opposition committed to the return of the Quarantine Station and the dissolution of the trust. Two years later it fulfilled its commitment, the Point Nepean National Park was finally complete, and Parks Victoria was in charge of its management. A draft master plan was released in 2010, some non-heritage buildings were removed and walking trails constructed, water, sewerage, gas and electricity utilities upgraded, and the Quarantine Station opened to the public.

More recent developments at Point Nepean are far less encouraging. The Victorian government announced in 2013 that private commercial development by one or two investors would be allowed in the Quarantine Station on 99-year leases—virtually freehold—and with no height restrictions, jeopardising gains that have been made there in recent years. The announcement coincided with the release of state government policies for major commercial tourism development in national parks.

Point Nepean National Park is unique in Victoria's conservation estate because of the large number of heritage buildings within its Quarantine Station precinct. Such important heritage buildings require appropriate and adaptive reuse to help maintain them. They should be the only buildings used for the development of park-compatible uses. Constructing new buildings would undermine the integrity and fabric of the Quarantine Station. Proposals for a large jetty to be constructed in front of the Quarantine Station, and within the Ticonderoga Dolphin Sanctuary, would attract large numbers of boats and threaten the newly described burrunan dolphin, of which only 100 live in southern Port Phillip Bay.

Point Nepean to Flinders

Coastal Headland Scrub overlooks The Rip at Port Phillip Heads and then runs narrowly to Bushrangers Bay, east of Cape Schanck, backed by Coastal Alkaline Scrub in the Mornington Peninsula National Park. Although a patch of Coast Banksia Woodland heads inland from Bushrangers Bay, Coastal Headland Scrub/Coastal Tussock Grassland Mosaic with mostly cleared land and occasional patches of Swamp Scrub and Plains Grassy Woodland behind are the main vegetation types found on the way to Flinders. Coastal Headland Scrub returns at Flinders Point, with Coast Banksia Woodland on its westerly and northerly approaches.

Between Bushrangers Bay and Flinders there is a six-kilometre section where private cleared land comes to the edge of the cliffs.

In June 2013, Parks Victoria announced new regulations to control the impact of unleashed dogs on hooded plovers and other small nesting birds in the Mornington Peninsula National Park. Although the peninsula has one of the highest populations of hooded plovers in Victoria, it has very low breeding rates; unleashed dogs are considered one of the causes. Leashed dogs were previously allowed on beaches from sunrise to 9.00am, but this restriction was routinely ignored, and in December 2012 an unleashed dog killed a fledgling hooded plover. Leashed dogs will now be restricted to near built-up areas along the park's 14 km of coastline.

Western Port

Western Port is a Ramsar site and an Important Bird Area with fauna of international significance. It is also the third-most important overwintering site for waders in Victoria, and a stronghold for the whimbrel, eastern curlew, pied oystercatcher and royal spoonbill, while the pacific gull, fairy tern and

orange-bellied parrot also occur there. Ten species of waders are at their highest densities in Victoria, including the terek sandpiper *Xenus cinereus* (E*)*, eastern curlew, bar-tailed godwit *Limosa lapponica*, grey-tailed tattler and common greenshank.

Western and northern shores

Along the cliffs north of Flinders, Coastal Headland Scrub appears in several narrow strips with Coast Banksia Woodland. But halfway to Shoreham, it is replaced by a continuous band of Coast Banksia Woodland and patches of Plains Grassy Woodland with mostly cleared land behind all the way to the Naval Base at Cerberus.

On the way to Cerberus the dune scrub and woodland, saltmarsh and artificial freshwater wetlands of Coolart have flora of local significance and fauna of state significance. There have been more than 119 native bird species recorded there, along with breeding colonies of royal spoonbill, Australian white ibis, straw-necked ibis and the little pied cormorant *Microcarbo melanoleucos*. Also found there are Australasian bittern, Cape Barren goose *Cereopsis novaehollandiae* and the spotless crake *Porzana tabuensis*.

A rich mix of Coastal Dune Scrub/Coastal Grassland Mosaic, Coast Banksia Woodland, Swamp Scrub, Mangrove Shrubland, Plains Grassy Woodland and Coastal Saltmarsh is found on the Royal Australian Navy base at Cerberus. The Sandy Point flora is of state significance, while the presence of the white-footed dunnart gives the fauna regional significance. From there to Hastings, Coastal Saltmarsh and Mangrove Shrubland, with Plains Grassy Woodland, Heathy Woodland and Swamp Scrub grow in front of cleared and urban land.

Between Crib Point and Hastings the flora is of regional/state significance in the relatively undisturbed Coastal Dune Scrub, Banksia Woodland, Swamp Scrub, Coastal Saltmarsh and Mangroves Shrubland. The large remnants of native vegetation and the diversity of habitats are of regional significance and host the white-footed dunnart and swamp skink *Egernia coventryi* (V).

The western and northern shores of Western Port are of state significance for both flora and fauna due to a broad and almost continuous band of indigenous coastal vegetation. Here is the primary foraging and roosting site for migratory waders, and important roosting areas for cormorants, herons and egrets. For similar reasons, Quail and Chinaman islands are also considered to have flora of state and fauna of regional significance. Unfortunately, pigs have invaded Quail Island after being released there by a local wishing to create somewhere local to shoot them in the wild.

The northern shores of Western Port have a similar mix of EVCs to that between Crib Point and Hastings but they are spread across a broader area. Coastal Saltmarsh and Mangrove Shrubland, with Swamp Scrub, Heathy Woodland and Damp Sands Herb-rich Woodland again appear. At Warneet, the vegetation becomes patchier and, after Tooradin and the mouth of the Bunyip River, cleared land replaces many of the hinterland EVCs. Narrow parallel bands of Coastal Saltmarsh and Mangrove Shrubland are all that is found along the shore, with occasional patches of Swamp Scrub, Swampy Woodland and Berm Grassy Shrubland.

The delta of the Bunyip River is of scientific interest but not for its natural values. The delta's scientific interest lies in its stark reminder of the impact that drainage of the Koo Wee Rup Swamp has had on the region's natural systems. The delta is an unnatural build up of silt eroded from the river's catchment after the diversion, channelisation and drainage of the river's lower reaches that began in 1889.

Also contributing to the delta are the sediments eroded from the shoreline between the Tooradin Airport and Lang Lang Jetty, where the shoreline is receding at about one metre each year, another outcome of geomorphological processes that began with the draining of the Koo Wee Rup Swamp. The increased turbidity caused by the sedimentation has severely affected seagrass meadows in this sector of Western Port.

Although reclamation projects have caused a dieback of mangroves near the mouth of the Bunyip River, the north-eastern coast of Western Port in the Lang Lang area has seen an expansion of saltmarsh. This has been largely due to the drainage of the original paperbark swamps, the construction of earthen levee banks to prevent tidal incursions, and colonisation of the intertidal area by the saltmarsh. However, in the long-term the banks will prevent the inland migration of saltmarsh and mangroves responding to the rising sea levels associated with climate change.

Eastern shoreline

Heading south from the Bunyip River is a short stretch of Coastal Headland Scrub on the approach to Jam Jerrup, but then Coastal Saltmarsh and Mangrove Shrubland, with patches of Berm Grassy Shrubland, extend through to Grantville.

To this point, Western Port's shores have been flat, but at Grantville the coast turns westerly and low cliffs briefly appear. At the base of the cliffs is a narrow mix of Coastal Saltmarsh/Mangrove Shrubland Mosaic, Coastal Saltmarsh/Coastal Dune Grassland/Coastal Dune Scrub/Coastal Headland Scrub Mosaic. On the cliff tops there are occasional patches of Plains Grassy Woodland and Grassy Woodland with mostly cleared land.

Coastal Headland Scrub and Coast Banksia Woodland are found between Corinella and Coronet Bay, with patches of Plains Grassy Woodland but mostly cleared land and housing to the rear. The low-lying land has very small patches of Swamp Scrub, Plains Grassy Woodland and Berm Grassy Shrubland down to the Bass River mouth.

At the Bass River Mouth, an extensive area of Coastal Saltmarsh/Mangrove Shrubland Mosaic has flora and fauna of regional significance. This provides habitat for many bird species, including the orange-bellied parrot, and secondary feeding areas for migratory waders. Even so, conversion to pasture destroyed a large area of saltmarsh, sea walls constrain its growth, and *Spartin*a infestations compete for space with native plants.

There is almost no vegetation along the shoreline from Bass River to San Remo, with only occasional patches of Coastal Saltmarsh/Coastal Dune Grassland/Coastal Dune Scrub/Coastal Headland Scrub Mosaic and Swamp Scrub. At San Remo itself, a band of Coastal Dune Scrub/Coastal Grassland Mosaic is found with several patches of Grassy Woodland.

Along the northern and eastern shores of Western Port there are sections ranging from hundreds of metres to several kilometres where private land abuts the high water mark (see Table 15), the likely cause of narrow and fragmented patches of coastal nature. Intertidal vegetation, such as Coastal Saltmarsh and Mangrove Shrubland, dominate these stretches, while above the high tide mark the land is largely cleared. Again earthen sea walls have been built to prevent inland tidal flows and to allow the establishment of pasture, leading to further loss of coastal nature.

Threats to Western Port

Threats to Western Port, according to Birds Australia, include:

- *impact of any future extension to port facilities and impact of silting through dredging*
- *sediment loads from drains and streams, pollution from port facilities, agricultural run-off, and resultant impact on sea grass beds*
- *runoff from surrounding agricultural land and the grazing of saltmarsh*
- Spartina *spp. occurs in the mouth of the Bass River, and in inlets north of the bay, and has potential to infest intertidal flats*
- *infestation by foxes, domestic and feral cats and domestic dogs is high and increasing*[206].

In addition, the Ramsar site information sheet lists the following threats:

- *long term changes in the catchment including clearing of indigenous vegetation (particularly in the lower catchment) and construction of drains and channels leading to erosion and siltation*
- *impacts on intertidal areas due to vehicle access and grazing of stock (leading to compaction of soil and damage to vegetation)*
- *rubbish dumping*
- *construction of levee banks and drains*
- *the risk of oil spills associated with port development and shipping*[207].

Since European settlement, Mangrove Shrubland, Coastal Saltmarsh and Seagrass Meadows have suffered significant reductions due to agricultural, urban and industrial development within the Western Port's catchment and along its shoreline. According to Boon et al, saltmarshes continue to be grazed by livestock, covered by landowners creating pasture, and used for off-road recreational vehicles.

Erosion in the catchment and subsequent sedimentation of the bay occurred after drainage of the Koo Wee Rup Swamp in the nineteenth century, which was responsible for increased volumes of water and eroded sediments entering Western Port. These flowed along the eastern and southern shorelines, where they reduced water quality and degraded seagrass meadows. Large areas of seagrass were lost in the 1970s and 1980s due to increased turbidity and reduced light penetration, although there is now some recovery in the south-east section of Western Port.

Mangroves once grew along most of the Western Port shoreline but now barely cover 40%. Their demise began in the mid-nineteenth century when they were cleared and then burnt to make ash for soap production. The construction of harbour infrastructure at Stony Point and Crib Point in the first half of the twentieth century, followed by further landfill for industrial and port development along the Hastings shoreline in the 1960s, impacted further.

When Premier Henry Bolte was hoping to turn Western Port into the Ruhr of Victoria in the 1960s, 56 ha of saltmarsh was removed at Crib Point and Long Island, while the Cowes rubbish tip consumed another 5 ha and a sports ground several more. French Island was also in the mix, with BHP buying about 600 ha in the late 1960s with plans for a steel works. In other parts of the bay mangroves were cleared to create harbours for water access by small boats e.g. at Yaringa in 1967, and to extend the runway at Tooradin Airport. The loss of mangroves can lead to increased erosion, reduced shoreline protection and fewer fish breeding areas and affect commercial and recreational fisheries.

Port of Hastings expansion

The state government's fast-track expansion of the Port of Hastings as a major container port—it could eventually handle three times as many containers as the Port of Melbourne—includes upgraded road and rail corridors, channel dredging, land reclamation and the loss of 4–6 km of mangroves. Combined with the spread of Melbourne into its catchment—the City of Casey's population is growing at 3.3% per year—these developments will place enormous and increasing pressure on the bay's natural environment and reduce the area's social amenity.

In April 2013, the state government announced the allocation of $110 million over four years for the design and environmental assessment processes for the Port of Hastings expansion. Having the port infrastructure designed while environmental assessments are undertaken pre-empts the results of those assessments and undermines due process.

Shipping traffic is predicted to increase from the current 100 ships per year to 3 000 should expansion of the Port of Hastings proceed. According to a report[208] commissioned by VNPA and the Westernport and Peninsula Protection Council, this

[206] www.birdata.com.au/iba.vm

[207] Information Sheet on Ramsar Wetlands: Western Port, Victoria, 1999, www.dse.vic.gov.au/__data/assets/pdf_file/0008/100151/Western_Port_Information_Sheet.pdf

[208] Asia-Pacific Applied Science Associates 2013, *Quantitative assessment of exposure risks due to oil spills from shipping in Western Port Bay*, Asia-Pacific Applied Science Associates, East Perth

could expose Western Port's fragile marine and coastal environment to major damage from oil spills. The report, by Asia-Pacific Applied Science Associates, found that even relatively small amounts of oil spilled from Western Port shipping traffic—heavy fuel oil and diesel spills from container ships and port support vessels—could reach local shorelines within minutes and high conservation areas within less than six hours.

The VNPA-commissioned research modelled six credible oil spill scenarios based on 27 previous oil spill accidents across Australia since 1970. Computer modelling tracked the spills over a two-week period from two locations within Western Port. The modelling showed the Phillip Island Nature Parks would be vulnerable to oil spill contamination, and French Island Marine National Park at high risk of exposure.

Of 96 aquatic bird species identified for Western Port, 31 are listed as migratory species under the *EPBC Act*, 18 listed under the *Flora and Fauna Guarantee Act 1988* and 31 covered by international agreements. The port expansion would impact on these birds through:

- oil spills resulting in the matting of waterproof feathers, causing a loss in buoyancy and insulation, and also damage seagrasses and mangroves, the foraging and roosting habitats for aquatic birds (saltmarsh and subtidal habitats can take many years to recover from contamination)
- landfill, dredging and spoil dumping causing the direct loss of habitats while also increasing turbidity and reducing light to seagrasses, which would inhibit their growth
- the wakes of a growing number of vessels increasing turbidity while also eroding foraging and roosting areas along the western shores of French Island and at Long Point.

These impacts would occur after a period of sustained decline in the numbers of many aquatic bird species. A study by Hansen (2013)[209] found that 25 of 38 species with consistent data had experienced population declines, largely caused by the loss of seagrasses but also by other factors including the reduction of roosting and foraging areas, disturbance by recreational activity and predation by cats, foxes and black rats.

The redevelopment of the Port of Hastings has not received unanimous support from the freight business sector, having been dubbed a 'financial disaster' by one leading figure[210] and:

> *…privately criticised by business figures concerned about the lack of a standard-gauge rail link in the area and the fact that most of Melbourne's freight and logistics (including that of Toll) is already based in the west. But until now public criticism has been relatively muted[211].*

This criticism has given support to the Bay West port project on Port Phillip Bay's western shoreline between Point Wilson and the Werribee River. Although favoured by some business figures and the State Opposition, it too would have major environmental impacts on that Ramsar site.

Ramsar Protection Program

The Port Phillip and Western Port Catchment Management Authority initiated its three-year Ramsar Protection Program in 2010 aimed at reducing threats such as pest plants and animals, and increasing community understanding of the importance of wetlands in Western Port. The results[212] thus far have included:

- 7 684 ha of land managed for the control of foxes, rabbits, cats, goats, pigs and deer
- rat and fox control at Balnarring resulting in renewed sightings of the agile antechinus after a decade-long absence
- 344 ha fenced to exclude pests animals, stock and cats and dogs
- 578 cats removed from French Island and 65 from Phillip Island, with increased sightings of buff-banded rails and eastern water rats
- invasive grasses, broadleaf creepers and woody weeds removed from 1621 ha including bridal creeper, with native vegetation now reappearing
- boxthorn, polygala and kikuyu removed from areas on Phillip Island, improving habitat for short-tailed shearwaters and other migratory birds and native species.

Phillip Island

An island of remnant vegetation

Across a short bridge at San Remo lies Phillip Island, 23 km long and 9 km wide. Most of the island's original vegetation of Swamp Scrub and Grassy Woodland has been cleared but patches still remain along roads, on some properties and in conservation areas. On the north coast of the island, the vegetation types are typical of the Western Port shoreline, whereas the southern shoreline faces Bass Strait and has been carved from basalt rocks with sand dunes atop them.

South of the Phillip Island Road at Newhaven there is a narrow band of Coastal Dune Scrub/Coastal Grassland Mosaic with a large remnant of Swamp Scrub and patches of Plains Grassy Woodland behind it. The small town of Newhaven and cleared land occupies the northern side of the road, before Coastal Saltmarsh and Mangrove Shrubland appear on the shore opposite Churchill Island. This intertidal vegetation is also found on the southern shore of Churchill Island, which is largely covered in Plains Grassy Woodland with Coastal Headland Scrub growing along its northern cliffs.

The 50 ha of Churchill Island first appeared on maps in 1798, when George Bass and Matthew Flinders sailed into Western Port. Three years later

[209] Hansen, B. 2011, *Waterbird surveys of the Port of Hastings and the western region of Western Port,* Arthur Rylah Institute for Environmental Research, unpublished client report for the Port of Melbourne Corporation, Department of Sustainability and Environment, Heidelberg, Victoria

[210] Gordon, J. 2013, 'Port of Hastings plan "financial disaster"', *The Age*, 6 May 2013

[211] Gordon, loc. cit.

[212] Port Phillip and Western Port CMA 2013, Port Phillip and Western Port Ramsar Protection Program, brochure, Port Phillip and Western Port CMA, Melbourne

Lieutenant James Grant built a cottage, cleared the land and established Victoria's first European farm on what he named Churchill Island after his friend John Churchill. A later landowner built the Churchill Island Homestead in 1872, which is now a key part of the island's visitor attractions.

North from Newhaven to Rhyll, the headlands are cleared to their edges with only remnants of Plains Grassy Woodland and Swamp Scrub, while the low-lying areas between the headlands have broad strips of Coastal Saltmarsh and Mangrove Shrubland.

Extensive Mangrove Shrubland is found at Rhyll Inlet, which was saved from a marina development in 1968 after the formation of the Phillip Island Conservation Society. The establishment of the Conservation Hill Wildlife Reserve, which overlooks the inlet and a large area of Mangrove Shrubland/Estuarine Flats Grassland Mosaic, Damp Sands Herb-rich Woodland, Swamp Scrub and Wetland Formation, was another success story for the conservation group, which raised funds for the land's purchase. The reserve has flora of regional significance and fauna of state significance. More than 50 bird species have been recorded in this relatively small area, and there is a major breeding colony for royal spoonbills.

A narrow band of Coast Banksia Woodland runs along Phillip Island's northern shore between Rhyll and Silverleaves. It then alternates with Coastal Dune Scrub/Coastal Grassland Mosaic in front of the sprawling settlements of Cowes and Ventnor. From Ventnor to Seal Rocks, there are patches of Coast Banksia Woodland/Coastal Dune Scrub Mosaic with Swamp Scrub.

Coastal Tussock Grassland and Bird Colony Succulent Herbland—formed beneath the little penguin and short-tailed shearwater colonies—grows in a narrow band along the shoreline opposite Seal Rocks but broadens heading east. The fauna of Seal Rocks is of national significance, being the world's largest breeding colony of Australian fur seals *Arctocephalus pusillus doriferus*. It is also a breeding site for the sooty oystercatcher, and the only Victorian breeding site of the kelp gull.

Coastal Tussock Grassland and cleared land along the edge of basalt cliffs and small pocket beaches are found between Seal Rocks and Pyramid Rock. For most of the distance between Pyramid Rock and Cape Woolamai, the coastal vegetation is narrow with Coastal Headland Scrub/Coastal Tussock Grassland Mosaic, Plains Grassy Woodland, Swamp Scrub and cleared land.

Cape Woolamai is connected to Phillip Island by a sand isthmus where low sand dunes support large areas of Coastal Dune Scrub/Coastal Grassland Mosaic, Coastal Headland Scrub, Coastal Dune Scrub/Bird Colony Succulent Herbland Mosaic and a strip of Coastal Tussock Grassland around the cape itself.

A long sandy beach along the southern shore of the isthmus faces Bass Strait. It was the big attraction for developers who subdivided the land in the 1960s for the settlements of Smiths Beach, Sunset Strip, Sunderland Bay, Surf Beach and Cape Woolamai. For years these subdivisions remained largely empty. But as Melbourne spread south-east and roads were improved, Phillip Island became more accessible, retirement on the coast became a more viable option, and the subdivisions filled with houses.

Phillip Island's south and west coasts have flora and fauna of state significance. The remnants of Coastal Tussock Grassland, a rare EVC in Victoria, and Coastal Dune Scrub, host the most easterly occurrence of moonah *Melaleuca lanceolata*, and significant plants such as shore spleenwort *Asplenium obtusatum* (V), crimson berry *Leptecophylla juniperina* (V) and coast ballart. There are also major breeding colonies of the short-tailed shearwater and little penguin, a breeding colony for royal spoonbill, and nesting sites for hooded plover and the peregrine falcon.

The Phillip Island Important Bird Area supports more than 1% of the global populations of the little penguin, short-tailed shearwater and pacific gull, and has had infrequent visits from the orange-bellied parrot. The main threats are the 'impact of commercial fisheries and gill-nets, predation by foxes, cats, dogs and other birds including silver gull and kelp gull, and disturbance of nesting birds by dogs[213]'.

Development pressures

Phillip Island's population of approximately 8 000 (and 3.5 million visitors annually) is continuing to grow and that will increase pressure for rezoning and residential development.

In 2011, against departmental advice and the Bass Coast Shire's planning principles, the state's planning minister rezoned land at Ventnor for a housing development. Days later he reversed his decision amid a storm of protest from the local community, local council and American pop star Miley Cyrus, whose then boyfriend grew up on Phillip Island and was opposed to the development. She tweeted to her 2.5 million followers:

> *Phillip Island is such a magical place, it would be a shame to see it change…[214].*

The developer then sued the minister, with an out-of-court settlement announced in August 2013:

> *The taxpayer-funded deal with landowner John Cadogan and purchaser/developer Carley Nicholls, has in effect bought silence over Mr Guy's backflip on the rezoning of the farmland site in late 2011. He approved rezoning of the 24-hectare farmlet for housing - against the original advice of his department, the department's lawyers, the local Bass Coast shire, and two independent planning panels - but then scuttled the approval amid protests from within his own Liberal Party, the local community and celebrity tweeter Miley Cyrus.*
>
> *Under the deal the ownership of the Ventnor property will remain with Mr Cadogan, who will also receive cash compensation. Fairfax understands that in return for the compensation Mr Cadogan has agreed to rip up the sale*

[213] www.birdata.com.au/iba.vm

[214] Land.com.au 2011, 'Miley adds anger to Phillip Islanders' fury', www.land.com.au/miley-adds-anger-to-phillip-islanders-fury/

contract with Ms Nicholls, who will also receive compensation in a payout believed to total millions of dollars.[215]

Ombudsman Victoria is now investigating the case, while in January 2014, *The Age* reported that the planning minister was blocking the release of rezoning documents:

> *Planning Minister Matthew Guy has overridden his department to block the release of documents about his botched rezoning of farmland on Phillip Island.*
>
> *In September, Mr Guy's office authorised the planning department to manage a Fairfax freedom-of-information request for government documents generated when the minister first approved, and then backflipped on, the rezoning at Ventnor in 2011.*
>
> *The documents include an email from then premier Ted Baillieu's office to Mr Guy's office's titled ''Inappropriate action by your minister for planning/Ventnor, Phillip Island'*[216]*'.*

The Phillip Island community is actively voicing its concerns about development on the small island. In April 2010 *The Age* reported that the Bass Coast shire was in support of a Stony Point to Cowes car ferry service and a large terminal on the front beach of Cowes. But after a local community campaign, which saw hundreds protesting at the proposed terminal site, by July the council had rejected the proposal:

> *Bass Coast Council has ruled out a berth for a vehicle ferry at Cowes, Phillip Island. The council voted unanimously against building a new jetty at Cowes and said it would investigate establishing an exclusion zone for beaches near the town.*
>
> *The decision is a setback for Mornington Peninsula Shire which favoured the proposed service and had agreed to spend up to $235,000 on the $670,000 planning process, with Bass also contributing $235,000 and Tourism Victoria and Regional Development Victoria each contributing $100,000.*
>
> *If Bass had agreed to a berth at Cowes the state government would have been asked to pay the estimated $47 million to build ferry terminals at Stony Point and Cowes. Four private companies had responded to calls for expressions of interest in providing a boat and running the ferry service*[217]*.*

The Bass Coast Shire also recently declined to rezone land for the proposed Waterville at Cowes golf course and housing estate, a reversal of its attitude to the project in 2010 when it accepted an independent planning panel's recommendation to rezone the land and include it in the Cowes settlement boundary.

When the council exhibited the planning scheme amendment in 2013, there were 79 submissions with 47 opposed, but there was also a new set of councillors:

> *At Wednesday's council meeting, Cr Phil Wright moved an alternative motion to abandon the planning amendment. He argued the rezoning would harm the adjoining Rhyll wetlands, flora and fauna, and was of no benefit to the community.*
>
> *He also felt the council had been pressured by the alliance between the golf club and a private developer. "Changing the nature of golf membership will not be addressed with the approval. They need a new business model and to relocate to a more appropriate site using the rural land use strategy."*
>
> *The proposed estate has a complex planning history going back almost five years. In 2009, a planning panel concluded that expanding the golf course and integrating housing would enhance the viability of the golf club and "provide a new residential market currently not provided for on Phillip Island*"[218].

Phillip Island Nature Parks

Phillip Island is dependent on the little penguin, which for close to a century has underpinned the local economy. Each year the birds attract nearly two million visitors from around the world to watch their nightly parade up Summerland Beach, having returned from a day of diving for food to give their chicks.

In the 1980s it looked like the little penguin's days on Phillip Island were numbered. Nine of the island's ten penguin colonies had become extinct and the last one, at Summerland Beach, looked like going the same way. The causes were clear: loss of habitat from housing development, traffic travelling through the colony at night, fire, foxes and domestic pets.

The Summerland Estate had been subdivided in 1927; by the 1980s there were 190 houses in the middle of a little penguin colony. To restore the colony, the state government in 1985 began buying back the land and this was completed in 2010. It also initiated a $3.4-million habitat restoration program, which included undergrounding power, demolition of the houses, revegetation and pest control. Penguin numbers have now increased from 12 000 in the 1980s to 32 000 today.

During this period, the Phillip Island Nature Parks committee of management was established in 1996, replacing the Phillip Island Penguin Reserve Committee of Management that had been formed in 1984.

The new committee was given its own set of regulations and the responsibility to manage not just the penguin reserve but coastal crown land on Phillip Island up to 30 m from high water mark (between Ventnor and Silverleaves the Bass Coast Shire manages coastal public land). Over time, other crown land, council land e.g. Rhyll Tip, and some purchased private land have been added to the committee's responsibility.

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[215] Millar, R. 2013, 'Planning Minister faces attack over Phillip Island payout', The Age 21 August 2013

[216] Millar, R. 2014, 'Planning Minister Matthew Guy blocks release of Ventnor rezoning documents', The Age, 20 January 2014

[217] *Business Times* 2010, 'Shire rebuffs ferry plan', Business Times, No. 4 September 2010, http://businesstimes.net.au/2012/12/shire-rebuffs-ferry-plan/#.UsOu5ShK6fQ

[218] Watson C. 2013, 'Golf course estate hits the rough', *Bass Coast Post*, 22 November 2013, http://www.basscoastpost.com/golf-course-estate-hits-the-rough.html

Phillip Island Nature Parks has become the largest employer on Phillip Island, with more than 200 staff. Each year it generates $125 million for the Victorian economy, $64 million of which flows into the Bass Coast region, and it also funds $3.5 million of local conservation research and management.

Although Phillip Island's little penguin population numbers 32 000, many can be away at sea for extended periods, sometimes years. Based on the $125 m annual economic impact of the Philip Island Nature Parks, the 2 000 penguins that use the Penguin Parade to access their burrows are each worth $62 500 to Victoria.

Understanding the link between penguin numbers and events occurring within their ocean habitat is a focus of current research. Twenty years ago the mass death of pilchards across Australia's southern waters, caused by a virus escaping from tuna cages off Port Lincoln, led to a crash in penguin numbers. Pilchard numbers have now recovered, along with penguins, but the incident highlights the vulnerability of the penguins–and the Bass Coast and Victorian economies–to environmental shocks. This underlines the need for their interests to be paramount in any decision-making about the use of Western Port and the oceans to the south of Phillip Island.

Although Phillip Island Nature Parks serves as a committee of management under the *Crown Land (Reserves) Act 1978*, the large scale of its tourism operation and the scope of its conservation management are like that of no other such committee in Victoria. It is now seeking to upgrade its ageing tourism infrastructure e.g. the centre at the penguin parade, to ensure that it continues to provide a valued tourism experience and maintains revenue flows to support its conservation objectives. Although visitors have free entry to almost all of the areas under the committee's responsibility, as a self-funding organisation it is also seeking to ensure that entry fees to its main attraction, the penguin parade, are able to reflect ongoing increases in its operational costs.

French Island

French Island's isolation made early European settlement difficult. After squatters arrived in the 1840s to graze sheep, successive governments tried unsuccessfully to establish agriculture with land releases in the 1870s and 1890s. Attempts to establish saltworks from the 1870s to the 1890s also failed.

The failed attempts at land development meant that much of French Island's original vegetation was retained. After a long campaign by conservation groups, it was declared a state park in 1982 and a larger national park in 1997. The French Island National Park now covers about two-thirds of the island; more than 200 bird species and 400 plants species have been recorded within its borders.

The northern and western shores are dominated by broad bands of Mangrove Shrubland and Coastal Saltmarsh. But along the island's south-west shores there are patches of Swamp Scrub and Plains Grassy Woodland surrounded by extensive cleared areas, while in the south-eastern corner it is backed by large areas of Sand Heathland, Swamp Scrub, Wet Heathland and Heathy Woodland. These, along with Plains Grassy Woodland, Lowland Forest and Wetland Formation, are the dominant EVCs across the island.

The flora of French Island is of national and state significance, and the fauna of state significance. Significant plant species include the lizard orchid *Burnettia cuneata* (R), French Island spider-orchid *Caladenia insularis* (V), coast ballart, bog club-rush *Lycopodium serpentina* (R), viscid daisy bush *Olearia viscosa* (V), truncate leek orchid *Prasophyllum truncatum*, swamp onion-orchid *Hydrorchis orbicularis* (V), long pink bells *Tetratheca stenocarpa* (R), plum orchid *Thelymitra mucida* (V) and the small spotted sun-orchid *Thelymitra* sp. aff. *ixioides* (K).

French Island is a local stronghold for the long-nosed potoroo. It is also used for breeding by the caspian tern *Sterna caspia* (NT), fairy tern, Australian pelican *Pelecanus conspicillatus*, pied cormorant, royal spoonbill, blue-billed duck and the white-bellied sea-eagle. Other significant species include the orange-bellied parrot, king quail *Coturnix chinensis victoriae* (E), swamp skink and the glossy grass skink *Pseudemoia rawlinsoni* (NT).

San Remo to Wilsons Promontory

Desalination Plant

From San Remo to the Powlett River there is a narrow strip of Coastal Headland Scrub/Coastal Tussock Grassland Mosaic with patches of Grassy Woodland and Swampy Riparian Woodland backed by cleared land. At the estuary of the Powlett River, Coastal Dune Scrub/Coastal Grassland Mosaic and Coastal Saltmarsh are found with Swamp Scrub and Grassy Woodland.

Just 500 m east of the Powlett River mouth is the site of Victoria's first desalination plant on 260 ha of land behind Williamson's Beach. The $4 billion project was announced by the Bracks Labor government in 2007 during a period of severe drought when Melbourne's water storages fell to very low levels. However, by the time the plant was completed in 2012, the drought had broken, water storages were 80% full, and the Coalition government ordered that water production be put on indefinite standby. Under the contract with AquaSure, the consortium that built the plant, the government must pay the consortium $1.8 million for each day that it lies idle.

The desalination plant faced strong opposition from a local community concerned about:

- industrialisation of the coast
- the large volumes of highly saline waste to be discharged into the local marine environment
- the potential impact on marine life sucked into the inlet pipes and living near the waste discharge area
- greenhouse gas emissions during construction and operation
- an inadequate environmental assessment process
- the plant's high cost of producing water when water conservation measures could achieve a similar outcome more cheaply (a

number of such measures was announced by the state government on 1 July 2013 and include 'the greater use of rainwater, stormwater and wastewater to conserve the water in our dams for drinking')[219].

The plant has been constructed on farmland directly behind a band of vegetation on the narrow coastal crown land reserve, thus denying the opportunity for future habitat expansion in a revegetation program. However, at the time of construction, the company claimed in a fact sheet that:

> *The remaining 225 hectares will become a coastal park, home to more than 3.5 million trees and shrubs, wetlands, woodlands, constructed dunes and new paths for local cyclists, pedestrians and horse riders[220].*

Cape Paterson Ecovillage

From the Powlett River to Cape Paterson, Coast Banksia Woodland/Coastal Dune Scrub Mosaic is dominant and extends one kilometre inland with large remnants of Sand Heathland/Wet Heathland Mosaic. The cliffs of Cape Paterson have a very narrow strip of Coastal Headland Scrub with occasional patches of Damp Sands Herb-rich Woodland surrounded by cleared land.

For six years, developers of the Cape Paterson Ecovillage had been battling the local community and the recommendations of an independent planning panel over their planned coastal development.

The land in question was 40 ha in area and located on the western side of Cape Paterson, directly behind the vegetated Cape Paterson Coastal Reserve, managed by the local council, and the Kilcunda/Harmers Haven Coastal Reserve, managed by Parks Victoria. However the development site was outside the township boundary fixed by the Shire of Bass Coast only in January 2011, which aimed to limit linear sprawl along the coast.

This was a reversal of the council's previous support for the development, the rezoning and the westerly extension of the township boundary. The council has been persuaded by the arguments and recommendations of an independent planning panel set up in 2010 to review the proposal:

> *…the Panel is of the view that there are a number of factors which recommend against the Ecovillage proceeding on this site and in the manner proposed. In particular, the Panel is concerned that the proposal would have adverse off-site environmental effects, it would be subject to high fire risk, poorly integrated with the existing township, and would inappropriately fragment commercial and servicing facilities in the centre of Cape Paterson. Added to this are the concerns about loss of productive farmland and the dangerous nature of 'Second Surf Beach'. Further, there are uncertainties about whether the planned project would be implemented in the manner described.*
>
> *The Panel considers that on balance the special sustainability features of this project are insufficient to set aside the disadvantages of the development of this site on the western side of the township abutting the coastal reserve[221].*

and

> *Overall it is our view that the proposed Ecovillage development west of the township would have adverse offsite environmental effects including for the hooded plover as it would focus usage pressures on the abutting coastal reserve including the beach itself[222].*

However, the state's planning minister approved the rezoning of the land to Comprehensive Development Zone. This allowed what was claimed by the developers to be a carbon-neutral development of 192 houses, each potentially having a 7.5 star energy rating, 8 multi-dwelling sites, 20 ecolodges for group accommodation, resort facilities and revegetation of half the site.

Bass Coast Rural Land Use Strategy

In August 2013 the Shire of Bass Coast adopted its Rural Land Use Strategy with a vision to:

- *Protect the opportunity for agriculture*
- *Protect rural landscape and maintain green breaks between towns*
- *Provide for rural-based tourism*
- *Ensure that environmental values are protected and enhanced*
- *Protect the liveability of Bass Coast's rural areas[223].*

The strategy also noted the following environmental values as key rural land issues:

- *Managing the coastline, which contains the main proportion of significant habitat*
- *Protecting areas subject to future impacts as a result of climate change*
- *Halting the decline and fragmentation of indigenous vegetation*
- *Conserving and enhancing of the municipality's biodiversity*
- *Balancing the competing interests of protecting existing habitat and development pressures*
- *Maintaining water quality (avoiding increased concentrations of nutrients and suspended sediments) by better managing erosion, agriculture, forestry and urban uses*
- *Protecting estuarine, river and coastal environments, from pollution, high nutrient run off and flash flooding*
- *Managing environmental hazards including: the effects of climate change,*

[219] Government of Victoria 2013, 'Melbourne's water future', http://www.vic.gov.au/news/melbourne-s-water-future.html

[220] AquaSure, Victorian Desalination Project fact sheet: Frequently asked questions, www.aquasure.com.au/cms_files/FAQ.pdf, AquaSure

[221] Planning Panels Victoria 2010, *Bass Coast planning scheme amendments C53, C93 and C98 coastal towns and landscapes, and Cape Paterson Ecovillage: Panel report April 2010*, Planning Panels Victoria, Melbourne, p. 210

[222] ibid., p. 199

[223] Bass Coast Shire Council 2013a, *Bass Coast Rural Land Use Strategy*, Bass Coast Shire Council, Wonthaggi

increased areas affected by salinity, erosion and landslip, acid sulphate soils[224].

Of the three precincts defined by the strategy, Precinct 2 West and South of the Bass Highway, and Precinct 3 Phillip Island, contain the shire's coast. The strategy established Farming Zone minimum subdivision sizes of 40 ha for Precinct 3 and 80 ha for Precinct 2. Forty hectares is also the minimum for the Rural Activity Zone around Newhaven, Coronet Bay-Corinella and The Gurdies, but then rises to 260 ha for the coast between Cape Paterson and Inverloch.

The schedules for the zones are still under consideration but the key objectives for the Rural Activity Zone are:

- *Provide for the use of land for agriculture, and where appropriate, for other uses and development, which are compatible with agriculture and the environmental and landscape characteristics of the area*
- *Ensure that use and development do not adversely affect surrounding land uses*
- *Provide for the use and development of land for the specific purposes identified in a schedule to this zone*
- *Protect and enhance natural resources and the biodiversity of the area*[225].

The next steps in this planning process will be development of the planning tools to support the strategy, an early 2014 amendment to insert the strategy into the planning scheme, an independent planning panel's review of the amendment and then its final adoption by council mid-2014. The details within the schedules to each zone will be critical to the strategy's effectiveness in meeting its key objectives. The minimum subdivision of 260 ha between Cape Paterson and Inverloch will limit residential development but the strategy is somewhat inconclusive when it comes to the potential for large-scale resort development:

> *The Rural Tourism Development Strategy articulated the following direction for Inverloch-Cape Paterson Rural Tourism Investigation Precinct:*
>
> > *The precinct offers a high quality coastal environment suited to a range of large accommodation, recreation activities such as trail rides and golf course. It is envisaged that the precinct would have high demand from developers, however the focus should be tourism development only, residential development should be directed within the townships.*
>
> *The assessment of land supports tourism development in the precinct. However, given that large, resort style accommodation is already available within the precinct, further large scale development will need to be carefully considered*[226].

It is hoped that the 'large accommodation' seen as suitable for the coast in the tourism strategy is resisted by the schedule to the Rural Activity Zone, but the rural strategy's indication that 'large scale development will need to be carefully considered' does leave the door open for such development.

Anderson Inlet

The coast from San Remo to Anderson Inlet is called the Bunurong coastline and is recognised as having flora of regional significance and fauna of state significance. Its rich mix of heathlands, woodlands, grasslands and saltmarsh host the eastern spider-orchid *Caladenia fragrantissima* spp. *orientalis* (E), swamp onion-orchid, green leek-orchid *Prasophyllum lindleyanum* (V), truncate leek orchid *Prasophyllum truncatum* and the leafy greenhood. The peregrine falcon, swamp antechinus and nesting hooded plovers are also found there.

Approaching Anderson Inlet, the cliffs drop away and a narrow strip of Coastal Dune Scrub/Coastal Dune Grassland Mosaic runs along the shoreline to the entrance.

Anderson Inlet is the shallow estuary of the Tarwin River, and was created with the formation of the Point Smythe dune barrier. Patchy northern shoreline vegetation comprises Wet Heathland and Swamp Scrub. On the eastern shore grows Wet Heathland with small areas of Coastal Saltmarsh and Mangrove Shrubland. The southern shoreline initially has patches of Coast Banksia Woodland, Mangrove Shrubland and Estuarine Wetland/Estuarine Swamp Scrub Mosaic, but is then dominated by Coastal Saltmarsh and Mangrove Shrubland with Coastal Dune Scrub/Coastal Dune Grassland Mosaic inland.

This flora of Anderson Inlet is of regional significance and provides habitats for fauna of state significance. It is an important area for non-migratory waders and waterbirds, and the pacific golden plover, double-banded plover, eastern curlew, common greenshank and red-necked stint. The swamp antechinus and nesting peregrine falcon also occur there.

The Inlet is recognised as an Important Bird Area, supporting significant numbers of the red-necked stint and may occasionally have winter visits from the orange-bellied parrot. Threats to the area include:

- *pollution from the Tarwin River catchment*
- *boating can disrupt the feeding and roosting of birds and camping can result in degradation of vegetation and soil compaction. Invasion of cord-grass* Spartina *sp. in intertidal areas*
- *any development involving recovery of the foreshore and marshes would impact roosting waders and perhaps OBPs* [orange-bellied parrots][227].

Spartina was introduced to Victoria after farmers had unsuccessfully tried to use coastal saltmarsh for livestock grazing. Various species of *Spartina* were introduced to control erosion and convert the degraded land to pasture. But it subsequently invaded the remaining saltmarsh, which then fragmented and no longer protected the land behind.

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[224] ibid., p. 5.
[225] Shire of Bass Coast 2013b, *Rural land use strategy overview*, Shire of Bass Coast, Wonthaggi, p. 2
[226] Bass Coast Shire Council 2013a, p. 32

[227] www.birdata.com.au/iba.vm

Major infestations of *Spartina* are now found near the Bass River mouth and Moody's Inlet in Western Port, and in Anderson Inlet, Shallow Inlet, Corner Inlet and Nooramunga Marine and Coastal Park. The *Spartina* infestations reduce the size of fish breeding areas and the feeding sites and habitats for wading birds such as the eastern curlew. They also encourage sedimentation, reduce tidal inundation and restrict the growth of mangroves and saltmarsh.

The catchment of Anderson Inlet is virtually cleared of all native vegetation, while the inlet itself has suffered some of the largest losses of saltmarsh and mangroves of anywhere along the Victorian coast, mainly due to drainage schemes and the establishment of pasture.

A small remnant of the early vegetation cover in the catchment has been conserved at Screw Creek Flora and Fauna Reserve, recently extended after a 25-year campaign by the South Gippsland Conservation Society. The reserve's extension was into land previously zoned Rural, grazed by beef cattle and proposed for subdivision into one-acre allotments:

> *The new section more than doubles the size of the Screw Creek reserve and protects the higher reaches of the estuary and a large area of natural bushland upstream to the Bass Highway. In partnership with Parks Victoria, the South Gippsland Conservation Society have been actively involved at Screw Creek for many years, replanting local indigenous species and constructing tracks, boardwalks, fishing platforms, information shelters and seating. The reserve is visited by over 10,000 people each year and has won many awards.*

Levee banks extend for 30 km from Mahers Landing to the eastern edge of the Venus Bay settlement, built by local farmers after a storm surge in the 1960s flooded many low-lying farms. The levees restrict tidal movement and will limit the inland migration of shoreline vegetation as it responds to the rising sea levels associated with climate change.

The Cape Liptrap Coastal Park includes the ocean beaches and dunes of Venus Bay and the rocky shoreline of Cape Liptrap around to Walkerville. The Cape Liptrap section is within the Strzelecki Ranges Bioregion.

Venus Bay and pipis

From Point Smythe to Cape Liptrap, Coastal Dune Scrub/Coastal Dune Grassland Mosaic is dominant and in places extends more than one kilometre inland. Coastal Headland Scrub replaces it for a short distance along the low cliffs near Arch Rock, but then the mosaic returns before the boundary with the Strzelecki Ranges Bioregion. The Cape Liptrap Coastal Park stretches from Point Smythe to Waratah Bay and covers 4 1754 ha.

Pipis *Donax deltoides*, are small bivalve molluscs that live on beaches beneath the sand of the intertidal zone. They are popular as bait and increasingly as food. In South Australia, where they are known as the Goolwa cockle, they have long been harvested by commercial fishers and more recently by increasing numbers of recreational fishers. The combined effect has been overharvesting and the South Australian government has placed restrictions on their harvest.

Pipis are also harvested at Venus Bay, mostly by recreational fishers for bait and a rapidly increasing number of people for food. Although there are regulations for managing the recreational harvest of pipis, enforcing them is very difficult due to the isolation of Venus Bay—the two regional fisheries officers are a 90-minute drive away in Yarram.

Some of the harvesters arrive in family groups and just for the day. Others are well organised, using mobile phones to alert their colleagues of visits by fisheries officers, and then taking their haul—40-80 litres is not uncommon—to their cars before returning to the beach for more.

Anecdotal reports from local residents indicate that the intense overharvesting has caused pipi numbers to be well down in 2013.

Although a mollusc no-take zone (formerly known as a shellfish protection zone) applies to the section of the Cape Liptrap Coastal Park between Point Smythe and Arch Rock, it does not prohibit the harvesting of pipis. The establishment of an Intertidal Protected Area under the *Fisheries Act 1995* could be a solution, but except for those in Port Phillip Bay, which allow only marine worms, bass yabbies, squid, octopus and cuttlefish to be collected, it is legal to harvest pipis inside other intertidal protected areas.

The loss of pipis is of serious concern, but their reduced numbers and the behaviour of the harvesters has wider implications.

The beaches of Venus Bay are part of the Anderson Inlet Important Bird Area. Pipis are the main food source of the pied oystercatcher, but are also taken by other migratory shorebirds including the great knot, red knot and sanderling. Local birdwatchers have observed a reduction in the number of visiting shorebirds, with silver gulls now the dominant beach species.

The large numbers of people visiting the beach to harvest pipis directly impacts on nesting birds such as the hooded plover, whose breeding sites have been reduced from seven to two in recent years.

A statement by Birdlife Australia in August 2013 raised concerns about the impact of pipi harvesting in Venus Bay and cited a review of threats to the hooded plover:

> *Pipi collectors spend extended periods adjacent to and in front of nesting sites, leading to major disturbance of breeding birds. This can lead to nest abandonment or lethal cooling or over-heating of eggs and young and thus ultimately to reproductive failure. In practice this has required considerable efforts by Birds Australia volunteers, Fisheries and Parks Victoria to try and educate collectors about disturbing beach-nesting birds. This is not economically or logistically feasible for state agencies or volunteers to physically guard nests for the 63 days required per nest to successfully produce young.*
>
> *In a recent review of threats to Hooded Plovers*

across the Parks Victoria estate (Maguire et al. 2013), Cape Liptrap was revealed as having the highest number of people on average recorded in the vicinity of nesting sites. This average had the highest standard error, suggesting strong temporal variation in park use. Pipi collectors were revealed to be the key park users, a unique visitor profile compared to any other coastal park across Victoria. This collection appears to peak and overlap with the breeding season. Historically, this park had fewer users clustered around the surf flags and main access points, but in recent years Pipi harvesting has seen a massive rise in beach use that is highly dispersed across the key shorebird nesting and foraging areas (Maguire et al. 2013)[228].

As well as disturbing nesting birds, visitors are also damaging coastal habitats by using the beaches and dunes as toilets and for dumping litter.

The Friends of Venus Bay have been working to educate the community about the important values of the Cape Liptrap Coastal Park. The group has also been involved in migratory shorebird counts and nest protection programs, as well as in a fox control project that has trapped 200 foxes in recent years.

Cape Liptrap Coastal Park

The Point Smythe barrier, the dunes from Venus Bay to Cape Liptrap, and the coast from the cape to the settlement of Waratah Bay are protected within Cape Liptrap Coastal Park (Cape Liptrap to Waratah Bay are within the Strzelecki Ranges Bioregion).

Like most other parks along the coast, this one is long and narrow, with cleared private land behind and considerable edge effects. The interface between private land and the park is not always fenced, and this allows stock to graze the fragile dunes along with the introduced hog deer, damaging vegetation and disturbing ground nesting animals, and for pipi harvesters to access the beach through the dunes, especially at the 5-mile Track, where they have cut down vegetation.

The Friends of Cape Liptrap Peninsula have been working with Parks Victoria on a number of revegetation and weed control projects and hope to receive funding for such a project at 5-mile Beach.

The private land behind Cape Liptrap Coastal Park has been extensively cleared but one property adjoining the park is being transformed to the great benefit of coastal nature.

The rolling sandy hills on 'Windabandi' connect with the dunes of Cape Liptrap Coastal Park. With support from the Bush Tender Program, environment department staff, Greening Australia and the South Gippsland Landcare Network, its 40 hectares have been divided into a grazing block covering 60% of the property, and seven fenced conservation blocks which contain Coast Banksia Woodland and Coastal Dune Scrub. Management actions have involved the eradication of boxthorn, the annual control of blackberries and thistles and extensive plantings. A small area of wetland adjoining Fishers Lake has also been fenced to prevent livestock from entering. As the property owners, Ian and Mandy Gunn said in an article in a Humane Society International bulletin:

Windabandi runs into the Cape Liptrap Coastal Park and it is important that these links are maintained and extended so that small fragments of the ecosystem can combine into viable and healthy corridors for wildlife and native flora. The long term goal is that, with the support of the community and in balance with farming, significant areas can be protected and restored to guarantee the survival of our unique region's environment[229].

It is hoped that other landholders with properties abutting the Cape Liptrap Coastal Park will follow this approach.

Shallow Inlet

The Gippsland Plain reappears for a short distance between the Waratah Bay settlement and Wilsons Promontory. Its Yanakie Isthmus connects the Wilsons Promontory Bioregion to the Victorian mainland.

An extremely narrow strip of Swamp Scrub and Estuarine Wetland backed by cleared land is found between Waratah Bay and Shallow Inlet, which is enclosed by a dune barrier covered in Coastal Dune Scrub/Coastal Dune Grassland Mosaic.

The southern edge of Shallow Inlet has large areas of bare sand bordered by a narrow ribbon of Estuarine Wetland. Fringing the northern shore are Mangrove Shrubland, Coast Banksia Woodland, Coastal Saltmarsh and Estuarine Wetland, along with patches of Wet Heathland/Damp Heathland Mosaic and extensive cleared land. After extensive clearing, the catchment of Shallow Inlet is almost devoid of vegetation, while landfill for pasture establishment has removed large areas of saltmarsh and mangroves on its margins.

Shallow Inlet's flora is of regional significance and hosts the prom she-oak *Allocasuarina media* (K). Its fauna is of state significance, with habitat for migratory waders, the pacific golden plover, double-banded plover, eastern curlew, red-necked stint, curlew sandpiper and sanderling *Calitris alba* (NT), The swamp antechinus, Cape Barren goose and swamp skink also occur there, and in the past the orange-bellied parrot has used the inlet during winter.

Birds Australia has identified the main threats to this Important Bird Area as the increased use of the ocean beach for land yachting and the inlet for kitesurfing and windsurfing, grazing of the saltmarsh by cattle, agricultural run-off and *Spartina* infestations.

Between Shallow Inlet and the boundary with the Wilsons Promontory Bioregion to the south, Coastal Dune Scrub/Coastal Grassland Mosaic abuts the shoreline with Coastal Alkaline Scrub behind it. There are also several large dune blowouts and occasional patches of Calcareous Swale Grassland. To the east the Yanakie Isthmus is largely cleared of its native vegetation.

[228] Maguire, G. 2013, 'Re: Pipi (*Donax* spp.) harvesting as a key threatening process for shorebirds', Letter to whom it may concern, 5 August 2013, Birds Australia, Melbourne

[229] Gunn, I. and Gunn, M. 2008, 'Windabandi', *Humane Society International Technical Bulletin*, Issue 13 2008, p. 12

Corner Inlet

Corner Inlet is a large and shallow embayment with a low-lying shoreline of intertidal mudflats and extensive areas of seagrass meadows. On its western shoreline, which is the eastern side of the Yanakie Isthmus and just inside the Wilsons Promontory National Park, the shoreline vegetation comprises a mix of Estuarine Wetland, Coast Banksia Woodland, Blocked Coastal Stream Swamp—the only patch in Victoria—and Riparian Scrub, with a large area of Coastal Alkaline Scrub and bare sand at the national park's northern boundary.

From there, a broad strip of Coastal Saltmarsh and Estuarine Wetland appears, but on the approach to Duck Point, Damp Sands Herb-rich Woodland and Wet Heathland/Damp Heathland Mosaic replace it, while Coastal Tussock Grassland is found on the point itself. Heading west and then north, there are alternating strips of Wet Heathland/Damp Heathland Mosaic and Estuarine Wetland, with patches of Coast Banksia Woodland and Swamp Scrub backed by extensive cleared land.

Between Charles Hall Road and Foster Beach there is Mangrove Shrubland with patches of Estuarine Wetland, Coastal Tussock Grassland, Coastal Saltmarsh and Swamp Scrub growing along the shoreline. The Mangrove Shrubland continues narrowly between Foster Beach and Toora Beach, backed by cleared land with occasional areas of Swamp Scrub, Coastal Saltmarsh and Estuarine Wetland. Swamp Scrub dominates the coastal vegetation east of Toora Beach until some Heathy Woodland appears on the approach to Barry Beach.

From Barry Beach to McLoughlins Beach, the beginning of the Ninety-mile Beach, the coastal vegetation is largely Mangrove Shrubland, Coastal Saltmarsh, Estuarine Wetland, Wet Heathland, Heathy Woodland and Damp Sands Herb-rich Woodland/Swamp Scrub Complex with extensive areas of cleared land.

With flora of state significance and fauna of international significance, Corner Inlet has been listed as a Ramsar site and recognised as an Important Bird Area. In its expansive saltmarsh, mangroves and relatively undisturbed coastal vegetation are Victoria's most extensive intertidal mudflats, the world's most southern mangrove species, the grey mangrove, and Victoria's largest stand of *Posidonia* seagrass. This broad-leaved seagrass is one of the world's longest, growing up to a metre in length. It plays an important role in Corner Inlet by stabilising sediments and providing food and shelter for seastars, crabs, squid, pipefish, leatherjackets and other marine life.

Other significant plants found in Corner Inlet's coastal vegetation are the shore spleenwort, crimson berry, bushy peppercress *Lepidium desvauxii* (R), slender ruddyhood *Pterostylis aciculiformis* (K), shingle fireweed *Senecio diaschides* (R) and the tiny arrowgrass.

Corner Inlet is ideal habitat for resident and migratory waders and up to 50% of Victoria's migratory waders are found there including the grey plover, bar-tailed godwit, red knot and the great knot. It is also significant for the eastern curlew, sooty oystercatcher, lesser sand plover, double-banded plover, grey-tailed tattler, common greenshank, red-necked stint, curlew sandpiper, sanderling and the chestnut teal.

There are also breeding colonies in Corner Inlet for fairy tern, little tern, lesser-crested tern, caspian tern and the rufous night-heron *Nycticorax caledonicus*. Other significant species include the orange-bellied parrot (occasional sightings), hooded plover, ground parrot, white-bellied sea-eagle, swamp antechinus, new holland mouse *Pseudomys novaehollandiae* (V) and an Australian fur seal colony on Rag Island.

Posidonia seagrass was once extensive across Corner Inlet but is now restricted to a few mud banks, most likely due to heightened turbidity caused by increased runoff from the clearing of the inlet's catchment. Any further loss of *Posidonia* seagrass could impact the inlet, as could the following threats identified by Birdlife Australia:

- *pollution from agricultural run off*
- *recreational fishing line entanglement of pacific gulls*
- *the potential for oil spillages from either offshore drilling, accident or disposal of ship's waste*
- *additional industrial estates at Barry Beach and Port Welshpool may increase the risk of chemical and oil spills*
- *impact of introduced* Spartina*, sea spurge and broccoli weed on roosting, breeding and feeding sites*[230]*.*

Levee banks

European settlement of Corner Inlet's northern shore began in the 1840s, with closer settlement in the 1870s. The inlet's low-lying coastal saltmarshes were drained and converted to pasture, with coastal sea walls and levee banks built to keep the sea out. More earthen and grass covered walls were constructed in the 1970s between Foster and Agnes—stretching for 25 kilometres—protecting some 17 000 ha of land but significantly reducing the area of fish and bird habitats. There are approximately 65 kilometres of sea walls further east at Port Albert.

Many of the levee banks and walls have fallen into disrepair, and there has been intense local debate on who is responsible for levee maintenance and liable for any property damage should they fail to prevent floods, storm surges and sea level rises. In 2012 the Shire of Gippsland washed its hands of legal liability—it had been maintaining them with funds from a levy on the affected landholders—and the insurance industry indicated that landholders would be unable to insure their properties against the damage caused by gradual sea level rise[231].

By allowing the progressive subdivision of land behind the sea walls and the subsequent increase in the number of affected landholders—now 172 in the

[230] www.birdata.com.au/iba.vm
[231] *ABC News* 2012, 'Landholders told no insurance for gradual sea level rises', 30 October 2012

Foster to Agnes area alone—the Shire of South Gippsland has made the issue far more complex.

In a 2004 environmental audit of Corner Inlet the issue was clearly stated:

> *Despite the influx of seawater into the area being a natural process, the agriculture in this area is an asset potentially requiring protection from salinity depending on the economic, social and environmental costs and benefits. However, the draining of the area has also damaged the environmental significance of the coastal tidal flats reducing habitat and breeding grounds for birds and fish. Therefore, there is an important trade off between the environmental rehabilitation of the coastal flats and the continued protection of agricultural land in the region.*
>
> *The key knowledge gaps and barriers to adoption for the upgrading of sea walls is the lack of investigation and debate on the economic, social and environmental trade-offs between continued protection of agricultural land from sea water intrusion and the protection of environmental habitat; and the uncertainty about ownership and responsibility for maintenance and up-grade of existing drainage and sea wall infrastructure. Discussion around these issues needs to be opened up and supported by targeted research aimed at improving the knowledge of intertidal areas; specifically the value of mangroves and salt marsh in maintaining healthy aquatic environments*[232].

Parks and reserves in Corner Inlet

Corner Inlet has a complex collection of parks and reserves established under several statutes and managed by a number of different agencies: state and local government and community-based committees of management. There are the Corner Inlet Marine and Coastal Park and Nooramunga Marine and Coastal Park, both of which include terrestrial and marine habitats. Surrounding the inlet is the Port Franklin-Port Welshpool Coastal Reserve, while within it is the Corner Inlet Marine National park. To the south there is the Wilsons Promontory Marine Park and to the west Shallow Inlet Marine and Coastal Park.

The barrier islands now contained within the Nooramunga Marine and Coastal Park were temporarily reserved for wildlife purposes in December 1964, and regulations for the 'care protection and management' of the Nooramunga State Faunal Reserve were gazetted on 6 October 1965. The regulations prohibited, among other actions, the taking of fauna and flora, the removal of sand and soil, the use of firearms and the entry of dogs and cattle. Maximum penalties for infringements were set at five pounds for an on-the-spot fine and ten pounds if the matter was taken to court.

Twenty-one years later the Nooramunga Marine and Coastal Park was established by temporary reservation and inclusion in Schedule 4 of the *National Parks Act 1975*. It was created at the same time as Corner Inlet and Shallow Inlet marine and coastal parks, and the Wilsons Promontory Marine Park and Wilsons Promontory Marine Reserve. All were recommendations of the Land Conservation Council in its plans to establish a system of marine protected areas in Victoria (Bunurong Marine Park to the west was also created as part of the plans). Subsequently, the Environment Conservation Council in 2000 recommended a different model of marine protection, the 24 marine national parks and marine sanctuaries in existence today.

By falling out of favour, being temporarily reserved and lacking management plans, the purpose of the marine and coastal parks is now unclear. Their management is also undermined by their gazettal notice of 23 April 1986[233]:

> *Crown land temporarily reserved:*
> *(a) for conservation of areas of natural interest or beauty or scientific history or archaeological interest and areas for public recreation…<u>except any land reserved as a national park or declared or deemed to be reserved for any purpose under the</u>* <u>Crown Land (Reserves) Act 1978</u>…

The effect of the underlined text is to maintain the regulations made for the Nooramunga State Faunal Reserve in 1965, even though the barrier islands are now included within the Nooramunga Marine and Coastal Park, which also contains the waters in between. Those same infringement penalties set in 1965 continue to apply, although they are now $10 and $20 rather than five pounds and ten pounds. Such penalties are hardly a deterrent, and the cost of Parks Victoria taking infringers to court far outweighs the penalty that can be imposed.

Port Anthony and McGauran's Beach port proposals

Separating the Nooramunga and Corner Inlet marine and coastal parks are deeper waters used as the shipping channel for the Barry Beach terminal. The proposal for a $2-billion redevelopment and expansion of the small regional port of Port Anthony, near Barry Beach, to cater for coal exports from the Latrobe Valley, may remain just that if the Port of Hastings is expanded. The proposal, announced in 2009, involves construction of a one-kilometre conveyor belt and extensive channel dredging to allow the entry of larger ships to Corner Inlet, currently limited to vessels of less than 5 000 tonnes. The announcement roughly coincided with the promotion of carbon-capture and storage as a major solution to climate change that, if ever feasible, could encourage greater production of coal—and greater exports in need of a port.

But as the *Latrobe Valley Express* reported on 22 March 2012, 'further upgrading to facilitate large scale freight and commodity exports from Port Anthony at Barry's Beach, west of Port Welshpool, was still years away[234]. The port manager was reported as saying that the proposal 'would be subject to years of environmental impact studies, assessing demand of the port services, transport

[232] CSIRO 2005, *Corner Inlet environmental audit*, CSIRO Land and Water Client Report, prepared for the Gippsland Coastal Board, Lakes Entrance, p. 32

[233] Victorian Government Gazette 1986, 23 April 1986

[234] Nelson, L. 2012, 'Stage one of Port Anthony facility close', *Latrobe Valley Express*, 22 March 2012

route capabilities and private investment[235].' According to the newspaper 'the isolated location of the port in relation to the Latrobe Valley—on the other side of the Strzelecki Ranges—remains a significant challenge for the project's ability to attract potential emerging Latrobe Valley export industries[236].

In 2011 the Gippsland Coastal Board expressed grave concerns about the proposal:

> *Development of 'Port Anthony' could potentially have serious impacts on the environment and landscape of sensitive areas such as Wilsons Promontory National Park, Corner Inlet Marine National Park and Corner Inlet Marine and Coastal Park, as well as the nearby Nooramunga Marine and Coastal Park. Corner Inlet is a Ramsar wetland of international significance and has been identified as a 'coastal hot spot' by Commonwealth environmental funding programs. In addition, it has a major role in breeding and recruitment of fish species of importance to the commercial and recreational fishing industries. Regional natural resource management agencies have undertaken significant programs to reduce nutrient inflows to the Inlet and improve the health of its seagrass communities. Given its environmental significance, this Board believes that Corner Inlet is not an appropriate location for development of a major port facility[237].*

However, in its submission to Infrastructure Australia on 20 March 2013, the state government left the door open on the proposal:

> *The Victorian Government is also investing in Eastern Victoria and has committed $2 million to enable the completion of the first stage of the Port Anthony development in partnership with the private sector. The project provides enabling infrastructure that closes an infrastructure gap in the region, facilitates access to markets, including those that emerge in support of the transition to a low carbon economy, and opens up expansion opportunities for regional industry given Port Anthony's close proximity to possible export[238].*

The first stage of the Port Anthony development is almost complete and will each year provide for diesel fuel imports of up to one million litres and the export of up to one million tonnes of brown coal derivatives.

Further east, McGauran's Beach has been identified as the preferred site for the export of briquettes and fertilisers derived from Latrobe Valley coal. The $3-billion project would see a new rail line transport the product from the valley to a new port between Seaspray and Loch Sport on the Ninety-mile Beach.

The consultants who conducted the analysis believe that 30-50 million tonnes—16 trains of 90 carriages each per day—of the coal products could be eventually exported each year from McGauran's Beach, and that it was a more cost-effective option than either Port Anthony or the Port of Hastings:

> *In making a case for the concept, Mr McNaught pointed out limitations in other options, including the current Gippsland rail line, and a potential rail link to the Port of Hastings.*
>
> *"The Gippsland line is almost 100 per cent designed for passenger rail - you would struggle to get two million extra tonnes on the (Gippsland) rail line per annum," Mr McNaught said.*
>
> *"Do you spend the $1 billion on a rail link to Hastings that will only allow you 20 million tonne's worth (of export capacity), or do you look straight for the bigger picture."[239]*

The state government response to the proposal was that it had 'set out its port priorities for the next 50 years, and for us the Port of Hastings is clearly of the most benefit to Gippsland's position'[240].

Ninety-mile Beach

Along the dune barriers of the Ninety-mile Beach there is a mix of Coastal Dune Scrub/Coastal Dune Grassland Mosaic, Coastal Saltmarsh and Estuarine Wetland, with occasional patches of Coast Banksia Woodland, Swamp Scrub and Damp Sands Herb-rich Woodland. The scrub mosaic is in places very narrow and backed by cleared land and housing, which is surrounded by the Gippsland Lakes Coastal Park.

The saltmarsh, Coast Banksia Woodland and Coastal Dune Scrub remnants at the Jack Smith Lake State Game Reserve and Lake Dennison are of regional significance, while the fauna is of state significance. It is an important habitat for waterbirds and birds of prey, and a breeding colony for Australian pelican *Pelecanus conspicillatus*. Other significant species include the orange-bellied parrot, white-bellied sea-eagle, hooded plover and the glossy grass skink.

Subdividing sand dunes in the 1950s

During the 1950s and 1960s, real estate developers subdivided 25-kilometres of sand dunes behind Ninety-mile Beach into 23 major subdivisions, marketing them to newly arrived migrants as The Honeysuckles, Glomar Beach, Flamingo Beach, Paradise Beach and Golden Beach along the 'world's unique ninety-mile beach'. These were to be linked by the 'magnificent new shoreline drive to be 18 miles long' with 'superb highway planning' and '$550 000 of roads on the estate[241]. The marketing worked and thousands of vacant allotments were sold.

But once the owners started asking for permission to build on their allotments at Flamingo Beach and elsewhere, the authorities realised the impact of vast numbers of allotments with no services on fragile

[235] Nelson, loc. cit.
[236] Nelson, loc. cit.
[237] Gippsland Coastal Board 2011, *Submission to Inquiry into greenfields mineral exploration and project development in Victoria*, 26 August 2011, Gippsland Coastal Board, Lakes Entrance
[238] Government of Victoria 2012, *Victoria's Submission to Infrastructure Australia*, http://www.dpc.vic.gov.au/index.php/featured/infrastructure-australia-update/infrastructure-australia-exec-summary
[239] Nelson, L. 2013, Valley's $3 billion rail and port link', Latrobe Valley Express, 19 August 2013
[240] Nelson, loc. cit.
[241] Shire of Wellington 2013, 'Ninety-mile Beach Plan', http://www.ninetymilebeachplan.vic.gov.au/index.php?option=com_content&view=article&id=49&Itemid=56&lang=en

sand dunes along a coast road. For the next 50 years, attempts were made to resolve the issue as the vacant allotments passed from father to son, and from mother to daughter, in an ongoing battle between the landowners and the planners.

In 2012, the Shire of Wellington's C71 planning scheme amendment aimed to finally resolve the issue for the 11 800 allotments outside the established development areas between The Honeysuckles and Paradise Beach. Most of the allotments were deemed unsuited to development due to them being flood prone and on dunes that were of high ecological significance, poorly drained and unsuited to domestic waste disposal. The amendment was reviewed by an independent planning panel, which largely accepted the council's proposal. Of the panel's report, one of the shire's councillors said:

> *'The (panel) report squarely vindicates the landholders in their anger at the way in which they were so shockingly treated," he said.*
>
> *'They were sold a pup by what I think is a rapacious property developer, the marketing campaign was basically immoral, they were sold something which they could never hope to develop, in my belief, and the proper checks and balances weren't there to ensure those people were looked after.*
>
> *'The subdivisions were inappropriate, they are in appropriate now and in my belief they were essentially inappropriate then as well.'*[242]

The state government approved Amendment C71 in May 2013 and the local mayor hoped that it would end the long-running planning dispute:

> *Wellington Shire mayor Scott Rossetti said the attorney-general's approval brought a conclusion to a consistent planning process which commenced in the late 1970s.*
>
> *'Following years of uncertainty, we can finally provide land owners with a resolution, with the full support of the State Government.*
>
> *'Whilst we recognise it is not the conclusion which all land owners hoped for, we can be certain in the knowledge that our iconic, environmentally sensitive coastline is protected for our future generations.*
>
> *'In recognition of the fact that the land cannot be developed, we are providing affected land owners with the opportunity to voluntarily transfer their land to Council for an assistance payment, less any outstanding rates and charges.'*[243]

Gippsland Lakes

Ramsar and reserves

The barrier dunes of the Ninety-mile Beach enclose the Gippsland Lakes, a series of coastal lagoons with seven major rivers flowing into them from catchments covering 10% of Victoria. The flora of the lakes is of state significance, the fauna nationally so, and the wetlands extending east from Sale to Lake Tyers, and covering 600 square kilometres, are listed under the Ramsar Convention. The lakes have also been recognised as an Important Bird Area—they support more than 1% of the world's populations of black swan, chestnut teal and musk duck *Biziura lobata* (V), while many fairy terns are also found there.

The extensive saltmarsh and relatively undisturbed banksia woodland and dune scrub in the Gippsland Lakes area support significant plant species that include bushy peppercress and the ribbed thryptomeme *Thryptomene micrantha* (R). Some 40-50 000 ducks, swans, coots and other waterfowl are found on the lakes, a refuge for them in times of drought. Lake Reeve is one of the five most important areas in Victoria for migratory waders. Other significant fauna include the new holland mouse, hooded plover, Martin's toadlet *Uperoleia martini* (E) and Tyler's toadlet *Uperoleia tyleri* (DD), and about 50 of the recently described burrunan dolphin *Tursiops australis* (E).

The Gippsland Lakes Coastal Park covers 17 600 ha along the outer barrier dunes between Seaspray and Lakes Entrance, and includes the waters of Lake Reeve. Adjoining it is The Lakes National Park covering 2 400 ha on the inner barrier. The waters of the three main Gippsland Lakes— Wellington, Victoria and King—are not within the coastal or national park, although wildlife and game reserves are found at Lake Coleman and Lake Coleman West, Clydebank Morass, Heart Morass and Dowd Morass on the western shore of Lake Wellington, Lake Coleman, Blond Bay, McLeods Morass and Jones Bay.

There is a streamside reserve at Avon River and Gippsland Lakes Reserves at Tucker Swamp, Poddy Bay, The Dardanelles, Sale Camping, Andrew Bay-Grebe Bay, Clydebank Frontage, Avon-Perry River Delta, Swell Point-Roseneath Point, Salt Lake-Backwater Morass and Morley Swamp around Lake Wellington, Victoria Lagoon, Salt Lake-Backwater Morass, Backwater Morass, Steel Bay-Newland Backwater and Wattle Point in Lake Victoria, Raymond Island and then Point Fullerton, Eagle Point, Mitchell River Silt Jetties, Jones Bay, Nicholson Floodplain, Slaughterhouse Creek, Swan Reach Bay, Tambo Delta-Metung and Bancroft Bay-Kalimna, and Flanagan, Fraser and Rigby islands, all in Lake King.

Local shires once managed the Gippsland Lakes Reserves, but after local government mergers in the 1990s, their management passed to Parks Victoria. Established under the *Crown Lands (Reserves) Act 1978*, and containing lake margin habitats, there are no specific regulations for their management.

Threats to the Gippsland Lakes

There are many threats facing the wildlife in the lakes, some with a long history. The artificial and permanent opening of the lakes to the sea in 1889 dramatically increased salinity levels and caused the dieback of the common reed from the shoreline. This led to erosion, increased sedimentation and the loss of wetlands and habitats for birds, such as the little tern, and breeding sites for fish including black bream. Bank erosion is also caused by recreational vessel traffic and,

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[242] *Gippsland Times* 2013, 'Beach building blocked', *Gippsland Times*, 8 March 2013

[243] *Gippsland Times* 2013, Ninety Mile Beach controls approved', *Gippsland Times*, May 2013

according to Birds Australia, can in some places be measured in metres per year[244].

Catchment development caused an increase in nutrients and degraded water quality, while the construction of the Thompson Dam in the 1980s and water extraction from the Macalister and Latrobe rivers reduced freshwater flows and the frequency and duration of floods. Residential development and recreational activities are adding to these pressures.

Concerns about the poor health of the Gippsland Lakes and its causes were outlined by the State Development Committee in its fourth report[245] on the economic development of Gippsland in 1968. Some of its conclusions mentioned the chemical enrichment of Lake Wellington by fertiliser use in the catchment, and the connection between the artificial entrance, increased salinity, the loss of reeds and shoreline erosion.

The committee also urged caution on engineering solutions to reduce salinity due to their cost and potential problems from manipulation of the environment, and indicated that the pasture of the Dutson Downs Farm was unable to absorb all effluent conveyed to it, posing a threat to the lakes.

The Dutson Downs Farm was established in 1954 and covers more than 8 500 ha near Seaspray. It takes wastewater from the Latrobe Valley, including that from the Maryvale pulp mill, using settlement ponds to filter the water before spraying it on pasture. A soil and organic recycling facility creates compost from prescribed liquid and solid industrial waste.

For many years effluent was discharged from the farm into Lake Coleman, which led to a significant discolouration of the lake's water. Eventually a pipeline was constructed in 1990 to discharge the effluent one kilometre out to sea where it has impacted the limestone reef at the discharge point[246].

In 2001, CSIRO presented the findings of its two-year Gippsland Lakes Environmental Study:

- *Deteriorating water quality and more frequent and intense algal blooms are primarily related to nutrients entering the system.*
- *Increased freshwater flows are less effective at improving water quality than reducing nutrient inputs. However, environmental flows are still extremely important for river health, instream values and health of wetlands.*
- *The Lakes are subject to very high nutrient loads (five times higher than for Port Phillip Bay). Flushing rates are relatively low (five to nine months for a full interchange of water), so large amounts of nutrients are retained in the system. This continues to impact on water quality.*
- *Peak events (floods) account for 80% of annual nutrient loads.*
- *The Lakes system, particularly Lake Wellington, exhibits high levels of suspended sediment and low light intensities, which inhibits plant growth[247].*

A 2006 analysis of nutrient sources found that irrigation, grazing/pasture and forest production contributed 79% of the phosphorous and 75% of the nitrogen load[248].

Gippsland Lakes and Catchment Task Force

The Gippsland Lakes and Catchment Task Force was established in 2001 by the Victorian government as part of its Gippsland Lakes Rescue Package. With an independent chair, the membership of the Task Force comprised local government, catchment management authorities and water agencies, and the departments of Sustainability and Environment and Primary Industries. The aim of the Task Force was:

> *To protect the ecological health of the Gippsland Lakes by ensuring the adaptive integrated management of both the Lakes and the catchment[249].*

Actions designed to achieve that were to implement an action plan, facilitate integration and coordinate, monitor and evaluate. and identify and address key knowledge gaps.

The task force prepared the *Gippsland Lakes Future Directions Action Plan* in 2001. The plan's vision was:

> *The Lakes will continue to be a local, regional, national and international icon where everyone, individually and collectively, will be working to achieve common, community-owned objectives for the Gippsland Lakes and catchment[250].*

It had as an overall objective: 'To improve water quality in the Gippsland Lakes by implementing the findings of the Gippsland Lakes Environmental Study'. And a target of: 'By 2022, reduce nutrient loads entering the Gippsland Lakes by 40%'.

The plan had five themes, each with a key objective and specific programs. The themes were 'Nutrients and sediments', 'Water management', 'Capacity building', 'Wetlands biodiversity' and 'Planning, monitoring and evaluation'. The objectives included:

> *To establish a balance between freshwater and saltwater flows that will improve the overall ecological health of the Lakes and catchment streams*
>
> *To maintain and enhance the biodiversity of the Gippsland Lakes hinterland and wetlands*
>
> *Further develop and implement the framework for*

[244] www.birdata.com.au/iba.vm

[245] State Development Committee 1968, Fourth progress report OF THE State Development Committee on the economic development of Gippsland with particular reference to the control, maintenance, promotion and development of the Gippsland Lakes, State Development Committee, Melbourne

[246] Australian Paper Pty Ltd 2005, Commonwealth Referral Form Final 20050727-2, under EPBC Act 1999

[247] Department of Natural Resources and Environment 2001, *Gippsland Lakes future directions and actions plan*, Department of Natural Resources and Environment, Melbourne, p. 3

[248] Cottingham, P., Grayson, R., Ladson, T. and Tilleard, J. 2006, *Priority nutrient reduction activities for the Gippsland Lakes and catchments,* prepared for Gippsland Lakes Task Force, p. 7

[249] Hart, B 2008, *The Gippsland Lakes, a community forum*, slide presentation, slide 3, http://www.slideshare.net/hneg/professor-barry-hart-chair-gippsland-lakes-and-catchment-task-force-presentation

[250] Department of Natural Resources and Environment, loc. cit. p. 7

the coordinated management of the whole Gippsland Lakes catchment… [251]

In 2002–03 there were 33 projects valued at $2.7 million, the next year 28 at $3.2 million, then 30 at $3.7 million in 2004–05 and 32 at $3.2 million in 2005–06, with a further 14 supported in 2006–07. For the three years from 2006–07, a further $6 million was committed.

By the end of 2008 there had been $19.2 m allocated, with 75% spent on nutrient and sediment reductions targeting the Macalister Irrigation District, high rainfall dairy areas, tunnel erosion, foreshore protection, stormwater and wetlands. Monitoring of nutrient loads and in-lake conditions was established, and there were investigations into the role of lake sediments and the causes of algal blooms.

2008 was also the year of a severe and prolonged algal bloom, the result of the 2007 winter floods discharging into the lakes the nutrients freed by the 2006-7 bushfires. The direct economic impact of the bloom was estimated to be more than $18 m, and the image of the lakes portrayed in the media was of a dying system.

To counteract that image, the Chair of the Task Force, Professor Barry Hart, presented a different future for the lakes, one of a changing but not dying environment, in *The Age* in September 2008:

> *The lakes themselves will change due to a combination of rising sea levels and more intense storms. The sand barrier between the lakes and the ocean will be broken, probably in a number of places, with the lakes becoming a more marine system. This marine-dominated ecosystem will be in great shape with crystal-clear waters, increased numbers of fish, healthy seagrass beds and significantly reduced numbers of algal blooms. The catchment will also be transformed, with almost 40% of the presently denuded agricultural catchments covered by native vegetation, resulting in a more natural landscape with fewer nutrient inputs. The stimulus for these changes will be the flourishing carbon and biodiversity market. However, there will still be issues with higher temperatures and increased frequency of bushfires - and the resultant nutrients and sediment transported to the lakes by more frequent storms*[252].

In 2009, a major analysis of the key measure to tackle algal blooms, a reduction in the amount of phosphorous entering the Gippsland Lakes, was carried out using the Investment Framework for Environmental Resources (INFFER). The objective of the Gippsland Lakes future directions action plan was a 40% phosphorous reduction target. The INFFER analysis revealed that such a target would cost almost $1.34 billion over 20 years and require major land use change away from agriculture:

> *Based on the large P load coming from the irrigated dairy industry, retirement of irrigated dairy land (45,890 ha), plus additional retirement of 37,620 ha of dryland grazing land would reach the 40% target. The overall cost is estimated to be $1343million (BCI 0.02). Thus, whilst the 40% target appears technically feasible, the costs, socio-political risks and adoption challenges are enormous*[253].

The INFFER analysis indicated that reduction targets of 10% and 20% were cost effective and far more achievable, but would still require public investment of up to $80 million over five years. Any higher levels of reduction could not be justified by the cost-benefit analysis. Actions proposed for reaching the preferred targets focused on agricultural use and included conversion to pressurised irrigation, streambank stabilisation, irrigated dairy farm plans, water re-use and improved effluent management.

In 2011, the Gippsland Lakes and Catchment Task Force released its report card on the condition of the Gippsland Lakes based on six indicators:

> *Overall the condition of the Lakes has been rated as Moderate. The condition of Wetlands and Water Quality was highest rating - Good. Birds, Algal Blooms and Seagrass were rated - Moderate. Fish were rated - Poor*[254].

Gippsland Lakes Ministerial Advisory Committee

That same year the Minister for Environment and Climate Change announced the establishment of the Gippsland Lakes Ministerial Advisory Committee comprising 13 members with administrative, tourism, farming, forestry, fishing, ports, environmental audits, wildlife management planning, education and engineering backgrounds.

Since its formation, the committee has invited funding proposals and provided advice to the minister on the distribution of funds from the $10 m Gippsland Lakes Environment Fund, which was established by the government to fulfill an election commitment.

Although the Coalition attacked 'Labor's neglect of the Gippsland Lakes'[255] during the 2010 election campaign, the environment fund's $10 million is half of what the Labor government spent during the life of the Task Force. But it and the Labor government's previous commitment is still well short of the investments possibly needed in future e.g. the INFERR estimate of $80 million for phosphate reduction.

Even so, the environment fund is a significant investment in the future of the lakes and, in August 2012, there were $847 500 allocated to eight projects targeting nutrient reductions, biodiversity enhancement, wetlands and meander restorations, meander fencing, community engagement, monitoring and evaluation of the economic impact of the 2011–12 algal bloom[256].

In July 2013 a further $100 000 was allocated to local

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[251] ibid., pp. 13–15

[252] Hart, B. 2008, 'Gippsland's lakes are changing, yes - but far from dying', *The Age*, 21 September 2008

[253] INFFER 2009, Report on the Gippsland Lakes INFFER analysis, www.inffer.org, p. 16

[254] Gippsland Lakes and Catchment Task Force 2011, *Gippsland Lakes natural assets report card*, Gippsland Lakes and Catchment Task Force, Melbourne

[255] Gippsland Lakes and Catchment Task Force, loc. cit.

[256] Napthine, D. 2012, *$10 m to restore and protect the Gippsland Lakes*, media release, http://www.premier.vic.gov.au/media-centre/media-releases/4607-10-million-to-restore-and-protect-gippsland-lakes.html

action projects, while in November 2013, another 18 projects received a total of $3 million for the restoration of wetlands, planting native vegetation, protecting threatened species and habitats, reducing inflows of silt and nutrients and controlling pests. Table 17 lists the projects and matches them with the relevant objectives of the Gippsland Lakes environment strategy.

Elevated nutrient levels and reduced levels of dissolved oxygen in sediments are bipartisan in their timing. In 2012, two years into the current state government's term of office, a huge algal bloom led to the closure of commercial fishing amid concerns for the health of the fishers and seafood consumers.

Gippsland Lakes Environment Strategy

Future allocations from the Gippsland Lakes Environment Fund will be guided by the objectives of the Gippsland Lakes Environment Strategy released in April 2013.

A review of the Gippsland Lakes Environment Strategy reveals the complexity of the issues facing the Gippsland Lakes and the diversity of stakeholders and agendas influencing their future. Although it is a strategic planning document, and is framed around the environment of the Gippsland Lakes, it has a broader scope, as the Minister for Regional and Rural Development clearly set this out in his foreword to the strategy:

> *Through the Gippsland Lakes Environmental Strategy, the Committee has put a focus on action to protect the health of the Lakes and catchment while promoting and supporting the continued economic benefits that come with recreational boating and water sports, fishing, and the many jobs that rely on growth in hospitality and tourism, marine activities and growth of the region.*
> *The Strategy aims to ensure that investment in the environmental and economic prosperity of the Lakes is balanced and complementary*[257]*.*

The vision outlined by the strategy is:

> *In 2032 the Gippsland Lakes are widely recognised and cherished for their outstanding natural beauty, environmental, social and economic values*[258]*.*

The strategy is structured around six themes:

- biodiversity and natural values
- regional economy
- social and cultural connections
- catchment and ecosystem dynamics
- community knowledge and engagement
- governance.

Within each theme the strategy briefly discusses 'values and condition' and 'issues and influence' before setting out a set of objectives for achieving the vision (see Table 17 for a list of the objectives) and also 'areas of focus' (actions).

Table 16 lists the ten major initiatives the strategy has 'identified to address the environmental, social and economic health of the Lakes and their communities'[259]. The strategy also identifies the key knowledge gaps that currently exist. They are:

- the ecological consequence of algal blooms
- the impacts of salinity management options
- the risk associated with contaminants
- sediment and nutrient movement and cycling
- ecological impacts of climate change
- the effect of stormwater and human waste (sewage and septic leakage) on the water quality of the Gippsland Lakes
- the economic impact of algal blooms and other natural disturbances (floods, storms etc.)
- key wetland habitats and fauna.

The Gippsland Lakes Environmental Strategy provides a good summary of the environmental issues facing the lakes and how they constrain the social, cultural and economic futures of the region. The objectives and areas of focus are generally sound but their achievement will face a number of challenges.

Does the state government have sufficient political will and stamina to drive the implementation of the strategy? Will it allocate sufficient resources to the strategy's implementation (there are no costs cited in the strategy)?

The use of various localised projects to engage the community in actions to address the health issues of the lakes is similar to the approach used by the Gippsland Lakes and Catchment Task Force. The projects thus far are focused on actions that in the main address objectives 1 and 4, Biodiversity and natural values' and 'Catchment and ecosystem dynamics' in the environmental strategy.

The choice of projects to be funded in the first two years of the environment fund give some indication of initial priorities. They are largely onground projects that engage landholders and the community, and cover catchment and land management activities to reduce sediments and nutrients, habitat improvements, foreshore improvements, community awareness on responsible use, school education resources and community appreciation of the lakes. However, few tackle the key knowledge gaps.

How will the prioritisation process work in the future when choices have to be made between various objectives and actions? Will the objectives with a foreshore development focus be given greater priority than some of the environmental objectives?

How will the implementation of the strategy be monitored and evaluated (there are no targets, timelines or indicators to measure the degree of achieving objectives and actions)? The lack of measurable objectives, timelines and targets is the major weaknesses of most coastal planning strategies. How will the implementation of other strategies linked to the environmental strategy be monitored and evaluated?

The other great challenge is how to reform the complex governance arrangements for the Gippsland Lakes (similar to many other places along the coast) but the strategy leaves that issue for further investigation.

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[257] Gippsland Lakes Ministerial Advisory Committee 2013, *Gippsland Lakes environmental strategy,* Gippsland Lakes Ministerial Advisory Committee, p. 5

[258] ibid., p. 13

[259] ibid., p. 26

The final challenge for the state government is how to deal with the three main causes of the problems facing the lakes: reduced flows of freshwater from the catchment, ongoing excessive inputs of nutrients and chemicals, and the increasing salinity of the lakes. Although some of the funded projects are small and localised responses to the second issue, there is a general acceptance in the strategy that environmental flows will not be achieved and that salinity will continue its rise.

Environmental flows and salinity

Growing populations require fresh water, and for Melbourne and Gippsland, that water is sourced from the catchment of the Gippsland Lakes. Diversions of water are also made for farm water supplies and irrigation. Combined, these actions have significantly reduced the flow of freshwater into the lakes.

In its analysis of environmental flows into Lake Wellington, the strategy reported that:

> *Climate change predictions are for a drier and hotter climate, this means greater evaporation, and for rising sea levels. These factors, combined with the current level of water extraction from the catchment means that the magic number of 130 GL/month will be reached for only one month every two years (SKM 2010). As a consequence Lake Wellington is expected to become more saline, with a greater range of salinity (SKM 2010).*
> *There is no feasible way of increasing river flows into the future to the level required to decrease salinity in Lake Wellington (SKM 2010).*
> *We need to set realistic management goals for Lake Wellington that provide the best ecological, social and economic outcomes for the system*[260].

When considering the nature of the black bream recreational and commercial fisheries in the Gippsland Lakes, the strategy concluded that freshwater flows were critical to the success of black bream reproduction. However, the data presented in the strategy showed a long-term decline in black bream populations. Although black bream numbers increased after the end of the El Nino driven 1997-2009 drought, the La Nina wet period will be short-lived as El Nino returns and climate change leads to further drying—the long-term declining trend of black bream populations may likely continue.

Reduced flows of freshwater accentuate the salinity problem for the Gippsland Lakes, which began with the creation of a permanent artificial entrance in 1889 but has been exacerbated by the 2008 decision to deepen and maintain the entrance at 6–7 m (previously it was approximately 2.5 m). Neither the federal nor the state government required an environmental effects statement for the project.

The Shire of East Gippsland pushed for the deepening of the entrance to create a 'deep-water port' to service fishing boats and also vessels travelling between Lakes Entrance and the oilrigs in Bass Strait. The resulting increase in tidal velocity carries salt and silt further into the lakes system.

[260] ibid., p. 69

The Environment Protection Authority implied that deepening the artificial entrance had modified the lakes when it released a summary of water quality monitoring results in May 2013:

> *Since the original policy was developed, the Gippsland Lakes and, to a greater extent, their catchment, have been modified. Land use has changed, population and water extraction have increased and the entrance has been dredged even deeper. This has led to a more profound modification of the Lakes' system from its original state. In addition, changing climatic conditions are adding extra pressure to the Lakes' integrity. Future management and policy will need to address these issues as well as community expectations of the Lakes*[261].

However, local pressure saw the EPA subsequently downplay the link between the entrance deepening and salinity in an addendum to the report. The underlined text above was changed to:

> *Land use has changed, population and water extraction have increased and the entrance has been dredged to maintain the traditional level of navigability. Together these have led to a profound modification of the Lakes' system from its original state in the 1880s*[262].

The reference to a 'traditional level of navigability' is misleading for the entrance depth of 6-7 m established by the 2008 deepening is more than double what had been the 'traditional' depth.

Even though the original text was ambiguous in its reference to deepening of the entrance and its link to modification of the lakes, the pressure to change the text and deny the obvious link casts doubt on whether policies that tackle the two large-scale issues of freshwater flows and salinity will be implemented.

On both issues, the strategy suggests that the trends cannot be reversed; the community will have to adapt to a Gippsland Lakes system becoming more marine. This approach is consistent with the findings of the Gippsland Lakes and Catchment Task Force. The strategy does raise the option of engineering solutions for the salinity problem and, although it raises concerns about what impacts those solutions may have, suggests that they should be investigated.

The Gippsland Lakes Environmental Strategy may lead stakeholders to believe that their existing uses will continue, that there will be no losers, only winners. But as the lakes move closer to a marine system, the black bream fishery will face serious threat and, if the barrier dunes were breached, the subdivisions on the Ninety-mile Beach would be seriously exposed.

By engaging landholders and communities in local projects supported by the Gippsland Lakes

[261] Environment Protection Authority 2013, *Gippsland Lakes Condition Report 1990-2011*, Environment Protection Authority, Melbourne, p. 26

[262] Environment Protection Authority 2013, *Addendum to Gippsland Lakes Condition Report 1990-2011*, Environment Protection Authority, Melbourne

Environment Fund, the participants are contributing to local improvements in environmental health. But 40% of the fund's $10 m is now spent with little progress on the issues of environmental flows and salinity, both of which could undermine the community projects, or on filling the gaps in knowledge.

In geological time, natural estuarine systems have relatively short lives, consumed by the sediments flowing in from their catchments. That would have eventually been the fate of the Gippsland Lakes if it were not for water diversions, artificial openings and dredging. The Gippsland Lakes are now a modified system that will require continuing human intervention to maintain them in a form that provides environmental, social, cultural and economic values. What that form is, and what those values become, will be an evolving story that will be written by the efforts made by governments, stakeholders and the community.

One of the State Development Committee's recommendations in 1968 was for the establishment of a statutory authority for the Gippsland Lakes and their surrounds, funded by a betterment rate levied on ratepayers and with powers to:

> *...control such matters as the provision of marine works, facilities, and services for professional and amateur fishermen and for boating enthusiasts generally, land subdivision, the provision of tourist amenities and the promotion of tourism, the containment of erosion and pollution, the provision of access to water frontages, the improvement and beautification of foreshores, and the balancing of demands for land utilization for various purposes*[263].

The authority would have comprised:

> *five (5) members, including one representative nominated by the Minister of Public Works from the Ports and Harbors Branch, one nominated by the Minister of Lands, one nominated by the Chief Secretary from the Fisheries and Wildlife Branch, one nominated by the Premier from the Tourist Development Authority, and one nominated jointly by the Shires of Bairnsdale, Avon, Rosedale, and Tambo*[264].

At the time the state government did not adopt the recommendation. However, the Coalition's election policy in 2010 promised what sounds similar to the proposed authority:

> *We will transform the Gippsland Lakes Taskforce into a new, higher level co-ordinating organisation, comprising of representatives of state and regional decision-making authorities, which reports directly to the Minister for the Environment*[265].

This report is also recommending reform of the legislative and institutional arrangements governing coastal planning and management in Victoria. These reforms, mentioned briefly in the bioregion-specific recommendations below, are dealt with in more detail in Part 6.

Threats summary

There are general and localised threats occurring in the Gippsland Plain Bioregion:

- increasing pressure on the narrow strip of coastal vegetation wedged between the shoreline
- urbanisation, industrialisation and coast roads leading to fragmentation and loss of vegetation extent and quality
- conflict over the allocation of a scarce public land resource along the coast
- recreational pressure inside and adjacent to conservation reserves and coastal crown land reserves
- invasion of coastal crown land by pest plants e.g. myrtle-leaf milkwort (outcompetes native plants for space), bridal creeper, dolichos pea *Dipogon lignosus,* coast tea-tree, *Spartina*, spear thistle *Cirsium vulgare*, ragwort, horehound *Marrubium vulgare*, belladonna lily *Amaryllis Belladonna,* African boxthorn, apple of sodom, pampas grass, agapanthus and mirror bush
- invasions of pest animals e.g. wandering dogs, cats and foxes preying on hooded plover, little tern, new holland mouse, long-nosed bandicoots and other ground-nesting animals, birds and reptiles
- feral pigs and goats disturbing habitats
- horses (and walkers) disturbing nesting sites for hooded plovers and other beach-nesting birds
- rabbits grazing on native plants, causing erosion and hampering revegetation
- illegal removal of vegetation to 'improve' views
- dune destabilisation due to inappropriate access, ad-hoc tracks and off-track access and horse riding
- inappropriate fire regimes
- livestock trampling vegetation and introducing weeds
- continuing urban expansion within catchments and coastal settlements
- changes in land use and increases in its intensity through rezonings
- edge effects on narrow coastal conservation areas
- land-based sources of pollution
- expansion of industrial and port areas
- boat access disturbing shoreline vegetation and causing erosion
- illegal off-road vehicle use causing soil erosion and vegetation damage
- poorly maintained fences between parks and adjoining private land
- stretches of coast where private land abuts the high water mark and where there is little or no coastal vegetation
- insufficient protection of existing coastal vegetation outside of conservation reserves
- dieback of vegetation used as roosting sites for seabirds

[263] ibid., p. 9
[264] State Development Committee 1968, loc. cit. p. 9
[265] Ryan, P 2010, *Coalition to invest $10 m to restore health of iconic Gippsland Lakes*, media release, http://www.peterryan.com.au/press_releases/coalition-to-invest-10m-to-restore-health-of-iconic-gippsland-lakes

- increasing salinity of the Gippsland Lakes leading to the loss of bank vegetation and erosion.

Recommendations

The following recommendations are aimed at generating discussion about the ways in which the conservation of coastal nature can be strengthened in the Gippsland Plain Bioregion.

1. Abandon construction of the Southern Peninsula Aquatic Centre on the Rosebud coastal reserve.

2. Use the proposed Coastal Private Land Conservation Program to support collaborative projects between Parks Victoria, relevant municipalities and catchment management authorities, private landholders and the community to:

- improve the quality and extent of Coast Banksia Woodland and Coastal Alkaline Scrub (coastal moonah woodland community) across the Mornington Peninsula
- enhance coastal nature along the shoreline of Western Port
- control weeds, pest animals, and domestic dogs and cats, and to protect the breeding sites and habitats of coastal fauna along the Cape Liptrap Coastal Park
- enhance the natural values of Shallow Inlet catchment and develop wildlife corridors between Shallow Inlet and Walkerville, and from Shallow Inlet to Corner Inlet
- rehabilitate coastal nature around the shorelines of the Gippsland Lakes.

3a. Make use of the Environmental Significance Overlay, the Land Subject to Inundation Overlay, the Green Wedge Zone, rezonings in the Shire of Mornington Peninsula planning scheme, and the preparation and implementation of an integrated swamp management plan to prevent any further development, drainage or infilling of the Tootgarook Swamp.

3b. Ensure that any future extension of the Mornington Peninsula Freeway avoids damage to the Tootgarook Swamp.

4. Abandon expansion of the Port of Hastings, focusing instead on the consolidation of ports at Melbourne, Geelong and Portland.

5a. Investigate the purchase of private land of conservation value on French Island to add to the French Island National Park.

5b. Provide the necessary funding and other resources to support the eradication of invasive species on French Island, including feral cats.

6. Establish the North Western Port Coastal Park from Quail Island to Tooradin Airport, and the Reef Island Bass River Coastal Park. The new coastal parks would be listed in Schedule III of the *National Parks Act 1975*.

7. Apply an Environmental Significance Overlay on the private land abutting the high water mark between Tooradin and San Remo. The overlay would establish a 100 m buffer zone where no development is allowed and where landholders are provided with the necessary resources to rehabilitate the land with indigenous vegetation.

8. Conduct environmental audits of the sea walls along the shorelines of Western Port, Anderson Inlet and Corner Inlet to determine the environmental, social and economic costs and benefits of their removal or retention.

9a. Review the governance arrangements for the Phillip Island Nature Parks including consideration of its own governing statute.

9b. Support with funding and other resources the upgrade of the Phillip Island Nature Parks ageing infrastructure, while also ensuring that the organisation is able to set visitor entry fees that reflect its operational costs.

10. Merge the Punchbowl Coastal Reserve, Kilcunda-Harmers Haven Coastal Reserve, Kilcunda Coastal Reserve, Kilcunda Nature Conservation Reserve, Bunurong Coastal Reserve, Wonthaggi Heathlands Nature Conservation Reserve, Cape Paterson Nature Conservation Reserve and Bunurong Marine Park to create the San Remo-Cape Paterson Coastal Park, and include the new park in Schedule 3 of the *National Parks Act 1975*.

11. Ensure that the Bass Coast Rural Land Use Strategy and associated planning scheme amendments preclude large-scale and linear tourism development in the Farming Zone and Rural Activity Zone along the Shire of Bass Coast's coastline between the existing coastal settlements.

12. Amend the Cape Liptrap Coastal Park management plan to ban pipi harvesting from the Venus Bay section, while also committing adequate resources to the scientific research of pipi harvesting and its wider ecological impacts in the park.

13. Rename Shallow Inlet Marine and Coastal Park the Shallow Inlet Coastal Park and include it in Section III of the *National Parks Act 1975*.

14. Merge the Corner Inlet Marine and Coastal Park, the Nooramunga Marine and Coastal Park, the Nooramunga Flora and Fauna Reserve, coastal crown land of conservation value along the margins of Corner Inlet, the Wilsons Promontory Marine Park and Wilsons Promontory Marine Reserve to form the Corner Inlet-Nooramunga Coastal Park and include the new park in Schedule 3 of the *National Parks Act 1975*.

15. Reject any further expansion of Port Anthony and the development of a port at McGauran's Beach.

16a. Allocate sufficient resources to the implementation of the Gippsland Lakes Environmental Strategy.

16b. Prepare a strategic planning document for the Gippsland Lakes that synthesises the objectives, actions, targets, indicators and timelines of the various other strategies (referred to in the strategy) with the Gippsland Lakes Environmental Strategy.

16c. Reform the governance arrangements for the Gippsland Lakes and catchment (see Part 6). In summary this would include:

- establishment of a new catchment management authority covering the entire Gippsland Lakes catchment (requiring a reduction to the east of the East Gippsland authority and reduction to the west of the West Gippsland authority)
- establishment of one local government area encompassing the catchment of the Gippsland Lakes (perhaps by expanding the Shire of Wellington to the east and reducing the Shire of East Gippsland to the east)
- establishment of a Gippsland Lakes Coast Committee to manage the coastal public land with a recreational focus bordering lakes Victoria and King including at Eagle Point, Paynesville, Newlands Arm, Raymond Island, Metung, Nungurner, Loch Sport and Lakes Entrance
- expansion of the Gippsland Lakes Coastal Park (see Recommendation 16).

The new Gippsland Lakes Catchment Management Authority would work with the proposed Marine and Coastal Authority (responsible for the proposed Coastal Crown and Waters Reserve outlined in Part 6) to establish an integrated Gippsland Lakes regional catchment, coastal and marine plan.

16d. Conduct a new and independent environmental audit of the Gippsland Lakes (building on the 2001 CSIRO study) to establish baselines for monitoring and evaluating progress in the implementation of the Gippsland Lakes Environmental Strategy.

16e. Prioritise the filling of knowledge gaps (identified by the Gippsland Lakes Environmental Strategy) and a comprehensive review of salinity reduction options in the 2014-15 round of projects funded by the Gippsland Lakes Environment Fund.

16f. Expand the membership of the Gippsland Lakes Ministerial Advisory Committee to include representatives of Traditional Owners and the community environment sector, and an ecologist with marine, estuarine or freshwater expertise.

17.Expand the Gippsland Lakes Coastal Park to include:

- game reserves at Clydebank Morass, Heart Morass and Dowd Morass on the western shore of Lake Wellington, Lake Coleman, Lake Coleman West, Blond Bay, McLeods Morass and Jones Bay
- Gippsland Lakes Reserves and Streamside Reserves (see Appendix 3) around lakes Coleman, Wellington, Victoria and King including Flanagan, Fraser and Rigby islands near Lakes Entrance
- any other coastal public land along the shores of Lake Wellington, Lake King and Lake Victoria of conservation value and not the responsibility of the proposed Gippsland Lakes Coast Committee (see Recommendation in 'Coastal public land')
- land purchased by the Shire of Wellington in the restructure of the subdivisions along the Ninety-mile Beach
- Lakes Entrance-Lake Tyers Coastal Reserve.

Table 13 Beach nourishment projects in Port Phillip Bay

Past projects	Future projects
Rye (1975)	Altona
Middle Park (1976)	Elwood
Mentone (1978)	Mt Martha North
Aspendale (1979) Sorrento (1980)	Portarlington
Parkdale (1981)	Half Moon Bay
Williamstown (1982)	North Aspendale
St Kilda (1982)	Eastern Beach Geelong
Altona (1982)	Portsea
West Rosebud (1982)	Brighton New St
Elwood (1983)	McCrae Beach
Brighton Park Street (1984)	St Helens
Blairgowrie (1984)	Werribee South
Geelong (1984)	Blairgowrie
Rosebud (1985)	Point Lonsdale
Sandringham Quiet Corner (1986)	Western Beach Geelong
Watkins Bay (1986)	Rippleside
Portarlington (1986)	Shelleys Beach
Brighton New Street (1987)	Moorpanyal
Altona South (1990)	Fishermans Beach
Geelong, Eastern Beach (1990)	Queenscliff
Sandringham, Edward Street (1993)	Marina Cove
Hampton (1997)	Parkdale
Rye (1999)	Sorrento
Sandridge (1999)	Mt Martha South
Middle Park (2001, 2005)	Rye
Sandringham Royal Parade (2009)	Altona Coastal Park
Rye (2010)	Williamstown
Rosebud (2010)	West Rosebud
Blairgowrie (2010)	Rosebud

Source: Department of Sustainability and Environment 2008, Review of Beach Nourishment Priorities for Port Phillip Bay, Volume 1: Main Report, April 2008, Department of Sustainability and Environment, Melbourne.

Table 14 Private land abutting the coast of Western Port

Location	Features
Esso-BHP-Billiton	Damp Sands Herb-rich Woodland, Coastal Saltmarsh, Heathy Woodland and Mangrove Shrubland grow close to the shoreline along this three-kilometre section of coast, with some Damp Sands Herb-rich Woodland and intense industrial development behind. The land use zoning is Special Use Zone 1 and Public Use Zone 7 for port and industrial development.
Lyalls Inlet to Cardinia Creek	Coastal Saltmarsh, Mangrove Shrubland, Estuarine Flats Grassland and cleared land are found along this 500-metre section of coast where private land abuts the high water mark. The land use zoning is Rural Conservation Zone 1.
Moody's Inlet-Bunyip River Mouth	A 1300-metre coastline with Coastal Saltmarsh; Mangrove Shrubland and cleared land with some Swamp Scrub. The land use zoning is Rural Conservation Zone 1.
750 m south of Lang Lang River to 600 m north of Lang Lang Jetty	A stretch of coast approximately 800 m long with Mangrove Shrubland, Berm Grassy Shrubland and Swampy Woodland nearest the shore and further Swampy Woodland and cleared land behind. The land use zoning is Rural Conservation Zone 1
Western end of Coastal Reserve at Grantville to Bayview Road at Tenby Point (PCRZ)	A 1500-metre coastal stretch with Coastal Saltmarsh, Swamp Scrub, Mangrove Shrubland and Berm Grassy Shrubland nearest the shore with cleared land; housing and some Grassy Woodland behind. The land use zoning is Farming Zone.
PCRZ at Bayview Road to Eastern end of coastal reserve at Corinella	Coastal Saltmarsh, Mangrove Shrubland and Grassy Woodland are found abutting the shoreline of this one-kilometre coastal stretch with cleared land and housing behind. The land use zoning is Farming Zone.
Norsemans Road-northern end of Champ Elysees Road, Coronet Bay	Coast Banksia Woodland and Berm Grassy Shrubland are found abutting the shoreline on the 350-metre stretch with housing and cleared land behind. The land use zoning is Residential Zone.
Southern end Champ Elysees Road to Bluff Road including Cobb Bluff	Plains Grassy Woodland, Coastal Headland Scrub, Berm Grassy Shrubland and cleared land abut the shoreline along this 4500-metre section with rare patches of Plains Grassy Woodland surrounded by cleared land. The land use zoning is Farming Zone.
Whistler Lane to Potts Road	A 1300-metre section with patches of Coastal Saltmarsh/Mangrove Shrubland Mosaic but mostly cleared land. The land use zoning is Farming Zone.
1800 m south of Bass River Mouth (west of Netherwood Lane) to xx m east of San Remo	Coastal Saltmarsh/Mangrove Shrubland Mosaic is found along the shoreline of this 2500-metre stretch with Coastal Saltmarsh, Swamp Scrub and cleared land behind. The land use zoning is Farming Zone.
Potters Hill Road (eastern San Remo)-Punch Bowl Road	Just over two kilometres in length, the shoreline of this section has Coastal Headland Scrub/Coastal Tussock Grassland Mosaic and Grassy Woodland, with cleared land surrounding patches of Grassy Woodland behind. The land use zoning is Farming Zone.

Source: Planning scheme maps for the Shire of Mornington Peninsula, City of Casey and the shires of Cardinia and Bass Coast at http://planningschemes.dpcd.vic.gov.au/

Table 15 Ten initiatives proposed in the Gippsland Lakes environmental strategy

Initiatives
1. Facilitate the preparation of a 'sustainable development plan' for the Gippsland Lakes and foreshores to identify appropriate development around the Lakes, integrate management of water- and land-based activities, protect sensitive areas, and provide greater certainty for development.
2. Support the review, implementation and monitoring of the Ramsar Management Plan (2003) to ensure continued regional, State-wide, national and international recognition of the Lakes.
3. Support further development of discovery and education experiences for the Lakes to provide interpretation facilities, to build community understanding and enhance the visitor experience.
4. Support and complement catchment works to minimise the transport of nutrients and sediments, intercept them closer to the source and decrease their movement from waterways to maintain the habitats of fringing wetlands and the water quality of the Lakes
5. Deliver an innovative community information and education program about the Lakes and catchment to build community understanding and participation in decision-making.
6. Develop a framework and mechanisms for coordinated planning and management of the Lakes and obtain support for its implementation across all levels of government.
7. Consolidate, refine and promote fisheries management arrangements to ensure a sustainable fishery.
8. Advocate for delivery of environmental flows to ensure healthy waterways, wetlands and Lakes.
9. Undertake an analysis to assess the costs, benefits and risks associated with engineering interventions to manage the condition of the Lakes.
10. Facilitate a targeted research and monitoring program to fill priority knowledge gaps and direct future management of critical issues including sediments, fish populations and change in vegetation communities.

Source: Gippsland Lakes Ministerial Advisory Committee 2013, Gippsland Lakes Environmental Strategy, Gippsland Lakes Ministerial Advisory Committee

Table 16 Objectives of the Gippsland Lakes Environmental Strategy and funded projects 2012–2013

Theme	Objectives (areas of focus)	Funded projects
1. Biodiversity and natural values	1.1: Manage the diverse range of significant habitats and landforms within and around the Lakes (environmental flows; water quality; erosion and deposition; monitoring and research) 1.2: Manage the diversity, population densities and distribution of flora and fauna within and around the Lakes (connectivity). 1.3: Manage populations of threatened species within the Lakes (monitoring; management). 1.4: Undertake research and monitoring to inform management of species that may have an adverse impact on ecological values (research; pest plant and animal control). 1.5: Better understand the ecological impacts	Care Group Projects: rehabilitation and protection of native vegetation, pest control, revegetation Lower Latrobe Estuary and Wetlands Restoration Meander Restoration along the Lower Latrobe River Landholders Fencing and Revegetating Gippsland Lakes Rivers Monitoring the environmental health of the Gippsland Lakes Gippsland Care Groups Caring for the Gippsland Lakes Enhancing the lower reaches of the Gippsland Lakes tributaries Flooding Creek Spillway Gippsland Care Groups Caring for the Gippsland Lakes: Innovative approaches to the restoration of the Lake Wellington Wetlands Conservation of the newly described Australian Burrunan dolphin Wetland wildlife hotspots and population trends in the Gippsland Lakes

Theme	Objectives (areas of focus)	Funded projects
	of key threats to the Lakes (algal blooms; contaminants; salinity; ecosystem understanding)	Invasive Pest Plant and Animal Strategy Research investigating key fish habitat and water quality issues Benchmarking wetland flora in Sale Common Dowd Morass and Heart Morass Fringing vegetation and its geomorphological importance for the Gippsland Lakes shoreline Goose Gully Rehabilitation Eastwood Improving habitat values for migratory birds Crescent Island and Pelican Island Shoreline protection and enhancement of key areas with the Gippsland Lakes
2. Regional economy	2.1: Identify and prioritise key on-water and land-based infrastructure improvements to support sustainable recreational and commercial use of the Lakes (navigability; infrastructure; land use and waterway planning; research). 2.2: Support a sustainable fishery for both commercial and recreational fishers (fishery management; infrastructure; experience; research). 2.3: Develop, enhance and market appropriate Lakes-based and nature-based tourism and recreation (marketing; investment; resilience; research). 2.4: Enhance the visual amenity of the Lakes and their foreshores (foreshore development).	Evaluating the economic and community impact of the 2011/12 Nodularia Algae Bloom Gippsland Lakes Sustainable Development Plan Evaluation of models for fish stock assessment to ensure accurate information is available to better manage the fishery Shoreline protection and enhancement of key areas of the Mitchell River Silt Jetties
3. Social and cultural connections	3.1: Identify, preserve and promote sites of Indigenous and non-Indigenous cultural heritage value with respect to sensitivities (partnerships; education and information; research). 3.2: Support creation of quality physical settings and opportunities for active lifestyle, social interaction and recreational activities on and around the Lakes and ensure managed access (participation; access).	Investigation of the Social and Economic Value of Boating and Fishing Round Head Aboriginal cultural heritage place management
4. Catchment and ecosystem dynamics	4.1: Consolidate existing knowledge, analyse threats and quantify risks to the Gippsland Lakes from catchment activities (central register of information; risk analysis). 4.2:Reduce nutrient, sediment and pollutant inflows into the rivers, wetlands and Lakes (urban stormwater; sewage and septic leakage; catchment management). 4.3: Understand, critically evaluate and predict those aspects of change that will most impact on the ecology of the Gippsland Lakes and examine adaptation options (environmental monitoring and reporting; climate change; salinity).	Nutrient Reduction in the Upper Gippsland Lakes Catchments Reducing the Loads: Upper Latrobe River soil management, revegetation and weed control Improving the Gippsland Lakes by Reducing Sedimentation through Improved Catchment Management Sustainable Lakes Management Centre of Excellence Feasibility Study New statutory water quality objectives for the Gippsland Lakes and catchments Core 4: Supporting logic to on farm decision making Lower Latrobe and Thomson River environmental flow response assessment
5. Community knowledge and engagement	5.1: Improve communication of key messages to the public. 5.2: Equip the community to take action to improve the health of the Gippsland Lakes and to respond to change. 5.3: Inspire the community to engage in knowledge sharing, participate in decision making and celebrate the values of the Gippsland Lakes.	Gippsland Care Groups Engaging the Community
6. Governance	6.1: Identify a preferred governance model that provides long-term continuity and mechanisms for integration and coordination of planning and management decisions affecting the Lakes. 6.2: Improve statutory instruments and the operation of planning policy, management decisions and environmental monitoring in guiding the future of the Lakes. 6.3: Increase and sustain enduring community and stakeholder awareness and understanding of decision- making processes.	

Source: Source: Gippsland Lakes Ministerial Advisory Committee 2013, Gippsland Lakes Environmental Strategy, Gippsland Lakes Ministerial Advisory Committee

Bioregional profile 8: Strzelecki Ranges

Table 17 EVCs on the coast in the Strzelecki Ranges Bioregion

EVC	Pre-1750 (ha)	Current (ha)	%left	Public land (ha)	Private land (ha)	% conserved	Conservation status
Coastal (3)							
2 Coast Banksia Woodland	130	69	53%	57	12	83%	Vulnerable
161 Coastal Headland Scrub	331	219	66%	135	83	62%	Vulnerable
163 Coastal Tussock Grassland	6	5	83%	5	0	100%	Depleted
Hinterland (3)							
29 Damp Forest	135 964	25 159	19%	4 062	20 719	4%	Endangered
307 Sand Heathland/Wet Heathland Mosaic	85	83	98%	79	4	95%	Least Concern
1106 Damp Heathy Woodland/Lowland Forest Mosaic	7 815	1 930	25%	936	994	48%	Vulnerable

Source: Trust for Nature 'Bioregion and subregion EVC representation' on Excel spread sheets and EVC maps generated by VNPA from the Department of Environment and Primary Industries website. Note: The number in brackets in 'Private land' column is the area in hectares under Trust for Nature covenants.

The natural state of play

The Strzelecki Ranges Bioregion was formed at the same time as the Otway Ranges, has similar geology and topography and covers 342 179 ha. It is exposed very briefly on the coast between Cape Liptrap and Waratah Bay in South Gippsland.

European settlement was delayed by the rugged nature of the topography, helping retain some of the vegetation in the east of the bioregion. However, extensive clearing elsewhere has left native vegetation covering only 30.9%, more than half of that on private land, and a landscape that is 100% fragmented. Plantation forestry, beef and dairy farming are the main land uses in the hinterland, while there are just two tiny settlements at Walkerville South and Walkerville. The Cape Liptrap Coastal Park protects much of what is left of the vegetation in the Strzelecki Ranges Bioregion.

Three coastal and three hinterland EVCs occur within 500 m of the coast and are listed in Table 17, along with estimates of their pre-1750 and current extent, land tenure and conservation status.

Four of the six EVCs are assessed as threatened. With the exception of Coastal Tussock Grassland and Sand Heathland/Wet Heathland Mosaic, each EVC has suffered heavy percentage losses compared with pre-1750 levels of cover. Two of the three coastal EVCs are considered Vulnerable, while one is Depleted, but their protection in conservation reserves is well above 50% due to the presence of the Cape Liptrap Coastal Park.

Of the three hinterland EVCs, one is Endangered and another Vulnerable, while the third is of Least Concern. Sand Heathland/Wet Heathland Mosaic has 95% of its cover in conservation reserves (Cape Liptrap Coastal Park), Damp Heathy Woodland/Lowland Forest Mosaic has half of its cover so protected, but for Damp Forest the figure is less than 5%. Trust for Nature covenants are not used by any of the landowners for the EVCs on their land.

The pathways of change

The Strzelecki Ranges Bioregion has a brief exposure on the coast, beginning just north of Cape Liptrap and extending around the cape and the Waratah Bay past the small coastal settlements of Walkerville South and Walkerville North before ending near the settlement of Waratah Bay, the eastern extent of the Cape Liptrap Coastal Park declared in 1997.

A narrow band of Coastal Headland Scrub runs around the cape with a patch of Coastal Tussock Grassland and three bands of Coast Banksia Woodland, behind which are cleared land and patches of Damp Heathy Woodland/Lowland Forest Mosaic and Damp Forest. The mosaic and the Damp Forest replace the Coastal Headland Scrub between Walkerville South and Walkerville North. For a short distance these two EVCs give way to a large patch of Coast Banksia Woodland with Sand Heathland/Wet Heathland Mosaic behind before reappearing and extending through to the settlement of Waratah Bay.

From Cape Liptrap to Waratah Bay, the flora and fauna are both of state significance. The diverse heathland, varied age classes and the near-coastal remnant of Warm Temperate Rainforest (not mapped by this report but identified in other reports) at Bear Gully include species such as bog gum, coast ballart and top bog-sedge *Schoenus turbinatus* (R). These habitats are used by the southern bent-wing bat, peregrine falcon, swamp antechinus and swamp skink.

From 1875 to 1926 the eastern cliffs of Cape Liptrap at Waratah (now Walkerville South) were a centre for quick-lime production centre, mining 400-million-year-old limestone from the local cliffs, processing it in six lime kilns fired by timber harvested from the surrounding area, and shipping it from a 350-metre-long jetty now long gone. The remains of the lime kilns in the cliffs are a striking reminder of the area's industrial and cultural heritage.

In 2011 the Friends of Cape Liptrap Peninsula and Parks Victoria rangers revegetated old vehicle tracks at the Cape Liptrap Lighthouse. This involved the laying of brush matting of local tea-tee and wattle species. The local park ranger was quoted on the Parks Victoria website as saying that:

> *Soon after the brush-matting was layered, I saw birds looking through the vegetation matting as well as small skinks moving around the surface.*

Bush rats will also be able to move across the old track where they wouldn't have before [266].

A free camping area at Bear Gully provides the only accommodation in the coastal park, with 35 campsites, toilet facilities and communal fireplaces nestled among a stand of coast banksias. Overcrowding, littering and the removal of vegetation for firewood (campers are supposed to bring firewood with them) have caused problems.

The provision of free campsites in national and state parks is under review by the state government, with the introduction of camping fees expected by 2015. In October 2013, the environment minister was quoted as saying to the Herald Sun:

> *'We found that out of 133 camping grounds, only 24 campsites charged a fee for the use of the facilities', Mr Smith said.*
> *The cost of providing and maintaining these facilities (is) outstripping the revenue generated by more than $10 million each and every year.'*[267]

In response to the review, the VNPA said:

> *One of the prime aims of the park system is to encourage people from all sections of the community to make use of parks, and to experience the great outdoors. We do not think the proposed fee structure facilitates that aim. Rather, it is likely to discourage visitation in many circumstances.*
> *We believe that any benefits from the proposed changes are few, and don't outweigh the disadvantages. Generally speaking, proposals to pay for park management through a user-pays scheme usually fail to reach objectives, often taking as much to administer as they bring in in return.*
> *We believe that the management of national parks should be funded from general government revenue, except where quite special services are provided*[268].

Introducing camp fees to Bear Gully may reduce the number of campers and therefore overcrowding and its impacts, but the collected fees may not cover the costs of collection, and campers paying fees may expect improved infrastructure that could also come at a cost to the environment.

Other campsites outside the coastal park are available in the area at Walkerville North and managed by the Walkerville Foreshore Reserve Committee of Management. It is responsible for 41.3 ha of coastal crown land along a 3.3 km stretch of coast between Walkerville North and Walkerville South. According to the committee's draft management plan, there are four goals to be met:

- *Protect and enhance natural, cultural and landscape values*
- *Sustainably manage coastal access and a range of compatible recreational facilities.*
- *Facilitate community involvement in coastal planning, management and appreciation.*
- *Manage the coast effectively and sustainably*[269].

Much of the committee's $350 000 annual revenue comes from fees for the 126 powered and unpowered camping sites and three cabins on its beachside camping reserve. The area is wedged between Bayside Road and the beach, the only other flat areas in the settlements.

For decades the camping reserve has been threatened by erosion. Over the years the committee has used rock rubble walling and later sand/clay mixtures to form a sand barrier to provide protection from the sea. But erosion will continue to be an issue while the camping reserve remains directly behind the beach.

The committee's draft management plan also highlights the threats facing coastal flora and fauna:

> *There are continuing threats from weed invasion, fire, climate change and human activity including development, damage caused by people walking off tracks, dumping of garden waste, the growing of invasive exotic species on adjacent land, and unauthorised pruning or removal of plants by adjacent property owners. There are opportunities to reduce these threats through community education programs and support for the reinstatement and protection of native vegetation…Pest animals include foxes, rabbits, cats, house mice, blackbirds and starlings*[270].

In 2005 the committee was seeking to improve boat-launching facilities and undertook several investigations to consider options ranging from a minor upgrade of the existing Walkerville South boat ramp to a larger facility including a breakwater. After what was a fierce local debate on the options—a community consultation process generated 481 submissions from locals and visitors—the committee opted for a minor upgrade.

The jurisdiction of the Walkerville Foreshore Reserve Committee ends about two kilometres north of Walkerville North, and the coastal park continues through to Waratah Bay. It is there that the Shire of South Gippsland manages the coastal reserve, but approaching Sandy Point the

[266] Parks Victoria 2012, 'Revegetation at the Cape Liptrap coastal park's lighthouse adds new life!', http://parkweb.vic.gov.au/about-us/news/revegetation-at-the-cape-liptrap-coastal-parks-lighthouse-adds-new-life!
[267] Johnston, M. 2013, Unhappy campers asked to pay to stay at more than 100 campgrounds', Herald Sun, 23 October 2013
[268] Victorian National Parks Association 2013, 'New park fees will hit traditional family campers', http://vnpa.org.au/page/nature-conservation/parks-protection/new-park-fees-will-hit-traditional-family-campers

[269] Walkerville Foreshore Reserve Committee of Management and Department of Sustainability and Environment 2012, *Draft Walkerville Foreshore Reserve Coastal Management Plan,* 20 December 2012, p. 5
[270] ibid., p. 17

community-based Sandy Point Foreshore Reserve Committee of Management assumes responsibility. These divided management arrangements over what is a relatively short stretch of coastline with a continuous sandy beach would benefit from review and restructure, as happened along the Great Ocean Road and the Bellarine Peninsula. Integrated management, resource sharing, streamlined processes and reduced costs of management planning would be some of the benefits.

Threats summary

Threats to coastal nature in the Strzelecki Ranges Bioregion include:

- increasing residential development and population in small rural holdings along the park boundary and at Waratah Bay
- land clearing and fire protection
- invasive species
- degradation from livestock grazing
- unauthorised vehicle and pedestrian access into the park from neighbouring properties
- edge effects of the narrow vegetation strip around Cape Liptrap backed by cleared land.

Recommendations

The following recommendations are aimed at generating discussion about the ways in which the conservation of coastal nature can be strengthened in the Strzelecki Ranges Bioregion.

1. Use the Coastal Private Land Conservation Program to support collaborative projects between park managers, adjoining landholders and the local community to create wildlife corridors connecting with the Cape Liptrap Coastal Park, to adequately fence the park boundary to minimise encroachment and the impacts of adjoining private land use, to restore vegetation and to eradicate and control pest plants and animals.

2. Establish a single community-based committee of management (Coast Committee, see Part 6) to manage the coastal reserve between Walkerville South and Sandy Point.

Bioregional profile 9: Wilsons Promontory

Table 18 EVCs on the coast in the Wilsons Promontory Bioregion

EVC	Pre-1750 (ha)	Current (ha)	% left	Public land (ha)	Private land (ha)	% conserved	Conservation status
Coastal (10)							
1 Coastal Dune Scrub/Coastal Dune Grassland Mosaic	1 481	1 477	100%	1 477	0	100%	Least Concern
2 Coast Banksia Woodland	289	288	100%	288	0	100%	Rare
5 Coastal Sand Heathland	23	21	93%	21	0	100%	Rare
9 Coastal Saltmarsh	129	129	100%	129	0	100%	Least Concern
10 Estuarine Wetland	220	220	100%	220	0	100%	Rare
11 Coastal Lagoon Wetland	59	59	100%	59	0	100%	Rare
12 Wet Swale Herbland	75	75	100%	75	0	100%	Rare
140 Mangrove Shrubland	15	15	100%	15	0	100%	Rare
161 Coastal Headland Scrub	404	392	97%	392	0	100%	Vulnerable
858 Coastal Alkaline Scrub	14	14	100%	14	0	100%	Depleted
Hinterland (10)							
6 Sand Heathland	769	769	100%	769	0	100%	Rare
8 Wet Heathland	5 953	5 953	100%	5 953	0	100%	Least Concern
16 Lowland Forest	3 872	3 870	100%	3 870	0	100%	Least Concern
29 Damp Forest	3 673	3 673	100%	3 673	0	100%	Least Concern
45 Shrubby Foothill Forest	3 783	3 783	100%	3 783	0	100%	Least Concern
48 Heathy Woodland	3 297	3 297	100%	3 297	0	100%	Least Concern
72 Granitic Hills Woodland	3 969	3 968	100%	3 968	0	100%	Least Concern
73 Rocky Outcrop Shrubland/Rocky Outcrop Herbland Mosaic	225	225	100%	225	0	100%	Least Concern
191 Riparian Scrub	2173	2172	100%	2172	0	100%	Least Concern
307 Sand Heathland/Wet Heathland Mosaic	3327	3326	100%	3326	0	100%	Rare

Source: Trust for Nature 'Bioregion and subregion EVC representation' on Excel spread sheets and EVC maps generated by VNPA from the Department of Environment and Primary Industries website. Note: The number in brackets in 'Private land' column is the area in hectares under Trust for Nature covenants.

The natural state of play

The Wilsons Promontory Bioregion is a spectacular area of rocky hills and granite headlands connected to the mainland by the Yanakie Isthmus, a sandy strip of land on the Gippsland Plain Bioregion. The bioregion covers 40 361 ha, all in public land, and has native vegetation covering 91.2%.

Just 1.7% of the Wilsons Promontory Bioregion's landscape is fragmented (in the lighthouse area and on the offshore islands), making it the most intact of the ten coastal bioregions, largely the result of its rugged topography and it being declared Victoria's first national park in 1898, now a haven for campers, bushwalkers and other holidaymakers. The bioregion is entirely contained within the park and, except for Tidal River, which is the base for park visitors, the bioregion has no coastal settlements.

Ten coastal and ten hinterland EVCs occur within 500 m of the coast, and these are listed in Table 18, along with estimates of their pre-1750 and current extent, land tenure and conservation status.

Only one of the 20 EVCs, Coastal Headland Scrub, is threatened. With the exception of several hectares, all have retained their pre-1750 coverage and their current cover is in conservation reserves. There is no private land in the bioregion.

The pathways of change

A long sandy beach runs from Walkerville past Shallow Inlet and Cotters Lake, ending at the granite headland of Tongue Point south of the Darby River's mouth, the northern boundary of the Wilsons Promontory Bioregion.

The Wilsons Promontory Bioregion's coastal flora is recognised as of national significance, while the fauna is of state significance. The coastal vegetation is highly diverse, with a wide range of habitats and the range limits for many species. Significant plant species include shore spleenwort, lax twig-sedge *Baumea laxa* (R), crimson berry, bog gum, brickmaker's sedge *Gahnia grandis* (V), bushy peppercress, swamp beard-heath *Leocopogon esquamatus* (R), coast ballart, cherry rice-flower *Pimelea drupacea* (V), slender mud-grass *Pseudoraphis paradoxa* (E), leafy greenhood, swamp greenhood and wiry bog-sedge.

There are also nesting sites for the white-bellied sea-eagle, peregrine falcon and hooded plover, while the swamp antechinus, new holland mouse, broad-toothed rat and swamp skink also live there.

From the mouth of the Darby River to Oberon Bay, Coastal Headland Scrub and particularly Coastal Dune Scrub/Coastal Dune Grassland Mosaic are the dominant vegetation types, but patches of Coast Banksia Woodland, Coastal Sand Heathland and Sand Heathland are also present, as well as extensive bare granite rock.

Tidal River flows across Norman Beach and into Norman Bay, two-thirds of the way down the western shoreline of Wilsons Promontory. Coast Banksia Woodland and Coastal Dune Scrub/Coastal Dune Grassland Mosaic grow on the sand dunes behind the beach.

The Wilsons Promontory National Park extends north beyond the bioregional boundary to what was once called the Yanakie Run, established by Richard Bennison in 1850 to graze sheep.

National park beginnings in Victoria

The temporary reservation of 36 842 ha at Wilsons Promontory in 1898 began the story of Victoria's national parks. The campaign to protect 'The Prom' had been led by the Field Naturalists Club of Victoria, which had to contend with proposals to subdivide the land into 1 000-acre blocks, to establish a resort town called Seaforth on the Singapore Peninsula, and at Waterloo Bay the resettlement of 1 000 crofters from the Isle of Skye.

The 'town' of Seaforth, located on the north-east peninsula of the promontory, comprised 316 allotments surveyed in 1891, with 38 put up for sale in 1892. The bank crash of 1893 may have scuttled the development, for even though a hotel and post office were built, nothing remained in 1906.

The area permanently reserved in 1905 in the Wilsons Promontory National Park was only 30 363 ha, with the Seaforth township reserve and a half-mile wide strip of land around The Prom's coast excluded. These were added three years later, with the exception of small parcels of land at Sealers and Refuge coves and Waterloo and Oberon bays, which were reserved for local fishers. These were eventually added to the park, which is now 49 049 ha in area.

The significance of The Prom's natural values was recognised early. Baron Ferdinand von Mueller, the state's first Government Botanist, made his initial visit there to collect specimens in 1853. John Gregory, who was in a party of field naturalists visiting the area in 1884 said:

> *We may safely commend the promontory as full of interest to naturalists of all persuasions. Practically inaccessible as it is at present we believe that a future awaits it as a summer haunt of lovers of nature, lovers of scenery*[271].

In 1909, the grasslands of the Yanakie Isthmus were made available for dairy cattle agistment, while land clearing began in the 1950s as part of soldier settlement schemes. The Yanakie Run was added to the national park in 1969, but grazing did not cease until 1992 after the Land Conservation Council recommended its end.

Development threat

The national park's administrative headquarters, 484 camping sites and roofed accommodation are located on the flat land along the Tidal River's small valley. In 1996, it was also the centre of a widespread community campaign against state government plans for large-scale commercial tourism development in the park, which were released in November that year. On 23 December 1996, *The Age* described the plans as:

> *...a 150-bed hotel to be built on a sand dune at Tidal River, and a 45-bed lodge, linked to three new huts in the southern section of the Prom at Home Cove, Little Oberon Bay and the Halfway Hut area. There would also be new tracks cut for commercial tours in remote parts of the park*[272].

This proposal also coincided with big plans for visitor centres at the Twelve Apostles, near Port Campbell, and The Nobbies on Phillip Island. The centre at The Nobbies was built but became an ongoing focus of controversy because of its environmental impacts and the financial dealings associated with it. The Port Campbell centre was never built, but there are now plans for a huge interpretive centre at Loch Ard Gorge and resorts along the Great Ocean Road.

Those campaigning against the tourism development at Tidal River argued that:

- the developers were to be given exclusive access to some areas of the national park
- the lodges were inappropriately located
- further strain would be placed on park infrastructure and facilities
- the hotel and lodges would lead to proposals for even further development
- the buildings would put excessive pressure on the park's already stretched natural values
- tourism would be better served by maintaining the park's environmental values, not by undermining them.

Then Director of VNPA, Doug Human, was reported in *The Age* as saying that:

> *...tourism should never come before conservation in national parks, and the best place for the accommodation developments was outside the park. 'These are not appropriate for national parks; national parks are about nature and conservation...*[273]*'.*

Two days before the 31 December closing date for public submissions on the proposed development, VNPA organised a gathering of 2 000 supporters at Norman Beach, where they stood and spelled out the message 'Hands Off'. By the middle of January 1997, the government had abandoned its development plans.

This was not the first commercial development proposed for the Prom—in the 1960s there were plans for a 600-bed hotel and golf course—and will not be the last.

Some of the protestors in December 1996 likely returned on 2 November 2013 to again protest a state government push for commercial development in national parks. This time 1 200 people used 12 000 torches to light up a human sign saying Hands Off Parks! VNPA's *Parkwatch* magazine reported:

> *The government's response was brief but telling: it simply said we were 'scare-mongering'. We think 99 year leases for private developers in parks are scary, and our concerns are real.*
>
> *There is no need for private development in parks. They cause problems in those few parks around the world where they do occur and they're generally being wound back wherever possible.*

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[271] Catrice, D. 1994, *Victoria's heritage: Wilsons Promontory National Park*, republished by Parks Victoria, Melbourne, p. 3

[272] Parsons, B. 1996, 'Time running out for The Prom, say campaigners', *The Age*, 23 December 1996

[273] Parsons, loc. cit.

The guidelines the government has issued for developments are inadequate, largely relying on immeasurable buzzwords like 'sustainable' and 'minimal impact'.

And even if the guidelines were impeccable, they have no long-term legislative clout. A commercial operator holding a 99-year lease in a national park won't give a hoot for those guidelines in 20 years' time[274].

As little as 1% of the 20 000 parks around the world have commercial tourism developments within them, and most of that is the legacy from land use prior to the park's declaration.

Most Victorian national parks are no more than a 25-minute drive from rural towns that will gladly welcome visitors and where tourism development should be encouraged. Yanakie is only four kilometres away from Shallow Inlet, Corner Inlet and the park's entrance. The town is centrally located for visits to The Prom or for fishing, boating, swimming and bushwalking, and its tourism focus is rapidly growing—a decade ago there were 10 tourist beds and now there are 440[275].

Acclimatising pests

Invasive plants have a long association with Wilsons Promontory National Park. Many came across from the cleared and grazed land on the Yanakie Isthmus, while people wishing to 'acclimatise' the park with game species, more in keeping with the English countryside, deliberately introduced others.

During the 1950s and 1960s, non-indigenous plants were also added to the park by its committee of management as part of a 'restocking' program which:

…treated the park as a kind of 'Noah's Ark'. According to the committee 'the ideal aim would be to make the Park a repository for breeding colonies of all those Victorian plants and animals which, in other parts of the State are in danger of extinction owing to destruction of natural habitats and other courses thus preserving them for posterity…[276]'.

Oberon Bay to Sealers Cove

From Oberon Bay to Waterloo Bay, the west coast's pocket beaches between granite headlands disappear, and steeply sloping granite cliffs plunging into Bass Strait dominate the south coast. Here the shoreline is largely a long and narrow strip of bare rock with Coastal Headland Scrub, Coastal Sand Heathland, Lowland Forest, Sand Heathland/Wet Heathland Mosaic and Granitic Hills Woodland behind.

At Waterloo Bay the sandy beaches have reappeared and stretch along much of the eastern shoreline, backed by Coastal Dune Scrub/Coastal Dune Grassland Mosaic and punctuated occasionally by granite headlands.

From Waterloo Bay, the coastal vegetation is mostly Lowland Forest with patches of Sand Heathland, Damp Forest and Warm Temperate Rainforest. Coastal Headland Scrub, Granitic Hills Woodland, Lowland Forest and Sand Heathland/Wet Heathland Mosaic are found from Cape Wellington to Sealers Cove. Coastal Dune Scrub/Coastal Dune Grassland Mosaic, Damp Forest and Riparian Scrub grow behind the beach at Sealers Cove, while Rocky Outcrop Shrubland/Rocky Outcrop Herbland Mosaic, Damp Forest and Shrubby Foothill Forest are found from there to Five-mile Beach.

Sealers Cove is one of The Prom's most iconic locations, a peaceful and beautiful end to several hours of walking from Tidal River. But a century before the national park was established, it was far from peaceful. Sealers had visited the nearby islands, slaughtered 9 000 seals and begun a 40-year period of sealing during which the cove was used as their base. In nearby Refuge Cove, a whaling station operated until the middle of the nineteenth century.

As the seals disappeared in the 1830s, so too did the sealers, and they were replaced at Sealers Cove by timber getters, who established a mill in 1853 around which grew a village of more than 60 residents. In 1906, the mill was destroyed by bushfire and the timber industry closed down.

The Sealers Cove walk is near the top of the things-to-do list in a park that has seen huge increases in visitor numbers over the years. In 1965 there were 71 000 visitors, almost three times more than in 1958. By 1965, visitor numbers had increased to 156 000, and in 1997 there were 370 000[277]. Today the figure is close to half a million, again proving that Victorians do love their national parks.

Five-mile Beach to Corner Inlet

Five-mile Beach is backed by narrow parallel bands of Coastal Dune Scrub/Coastal Dune Grassland Mosaic, Coastal Headland Scrub, Heathy Woodland and Sand Heathland/Wet Heathland Mosaic. From there, to the northern tip of the Hunter Hill area, Coastal Headland Scrub, Coastal Dune Scrub/Coastal Dune Grassland Mosaic and Granitic Hills Woodland, Sand Heathland and Sand Heathland/Wet Heathland Mosaic occur.

The north-east corner of the Wilsons Promontory Bioregion is covered in Coastal Dune Scrub/Coastal Dune Grassland Mosaic, Coast Banksia Woodland and Wet Swale Herbland. On the west coast of Hunter Hill, a broad band of Coastal Dune Scrub/Coastal Dune Grassland Mosaic occurs with Heathy Woodland, Sand Heathland, Granitic Hills Woodland and patches of Riparian Scrub.

The rush for gold came to Mount Singapore in 1866, when the Chancellor Gold Mining and Quartz Crushing Company was issued with a mining lease. The mine was never productive and closed four years later. Another attempt at mining was made in 1924 by the Mount Hunter Tin Mining Syndicate on a lease inside the national park. It too closed after just 12 months.

Heading west from Chinamans Beach and along Corner Inlet's southern shoreline, the vegetation is

[274] VNPA 2013, *Megaphone diplomacy: shining a light for parks*, *Parkwatch* No. 255 December 2013

[275] Wilsons Promontory and surrounds 2013, 'Yanakie', www.promcountry.com.au/yanakie

[276] ibid., p. 132

[277] Catrice, D. 2000, *Wilsons Promontory National Park: 1946 to 1998*, p. 138

mostly Coastal Saltmarsh and Estuarine Wetland, with patches of Wet Heathland, Mangrove Shrubland and Heathy Woodland to Millers Landing.

Threats summary

Threats to nature along the coast of the Wilsons Promontory Bioregion are largely those facing the national park:

- grazing pressure from native and introduced animals
- weeds including ragwort, fleabane, sea spurge and thistles
- vehicle access killing native animals
- rabbits disturbing habitats and foxes preying on small animals
- use of roads, tracks and trails leading to soil compaction and erosion
- development proposals.

Recommendations

The following recommendations are aimed at generating discussion about the ways in which the conservation of coastal nature can be strengthened in the Wilsons Promontory Bioregion.

1. Prohibit any further commercial development within the Wilsons Promontory National Park.

Bioregional profile 10: East Gippsland Lowlands

Table19 EVCs on the coast in the East Gippsland Lowlands Bioregion

EVC	Pre-1750 (ha)	Current (ha)	% left	Public land (ha)	Private land (ha)	% conserved	Conservation status
Coastal (7)							
1 Coastal Dune Scrub/Coastal Dune Grassland Mosaic	3 406	3 279	96%	3 274	1	86%	Least Concern
2 Coast Banksia Woodland	3 462	3 428	99%	3 355	73	93%	Least Concern
5 Coastal Sand Heathland	681	680	100%	680	0	100%	Rare
9 Coastal Saltmarsh	1 340	1 255	94%	906	340	57%	Depleted
10 Estuarine Wetland	856	831	97%	763	68	25%	Vulnerable
11 Coastal Lagoon Wetland	800	764	96%	672	70	85%	Vulnerable
12 Wet Swale Herbland	789	789	100%	789	0	100%	Vulnerable
Hinterland (11)							
3 Damp Sands Herb-rich Woodland	696	395	57%	247	147	59%	Vulnerable
7 Clay Heathland	1 992	1 531	77%	1 181	350 (8)	32%	Vulnerable
8 Wet Heathland	10 043	9 772	13%	9 540	232 (33)	53%	Least Concern
13 Brackish Sedgeland	195	195	100%	195	0	100%	Vulnerable
14 Banksia Woodland	40 405	38 852	96%	37 004	1849 (210)	60%	Least Concern
15 Limestone Box Forest	8654	6808	79%	4987	1802 (7)	39%	Vulnerable
16 Lowland Forest	313 385	282 030	90%	253 481	28531 (536)	20%	Least Concern
17 Riparian Scrub Complex	21 246	18 659	88%	17 016	1641 (0.1)	37%	Least Concern
21 Shrubby Dry Forest	266 477	260 522	98%	244 859	15663 (0.3)	17%	Least Concern
29 Damp Forest	40 037	39 702	99%	38 577	1126 (4)	22%	Least Concern
32 Warm Temperate Rainforest	2 232	2 192	98%	2 063	130 (10)	40%	Rare

Source: Trust for Nature 'Bioregion and subregion EVC representation' on Excel spread sheets and EVC maps generated by VNPA from the Department of Environment and Primary Industries website. Note: The number in brackets in 'Private land' column is the area in hectares under Trust for Nature covenants.

The natural state of play

The East Gippsland Lowlands Bioregion is 531 830 ha of gently undulating terraces, coastal plains, dunefields and inlets from Lakes Entrance to the New South Wales border. It has one of the most intact landscapes of the coastal bioregions, with fragmentation assessed by the Victorian Environment Assessment Council at only 32.8%.

The bioregion's native vegetation cover is 62.4%, of which three-fifths is on public land in national parks and state forests. Clearing has mainly occurred on the western edge, forestry has operated there largely since the 1950s, and farming is found on the coastal plains and river valleys. Croajingolong National Park occupies the southern coastal boundary of the bioregion, from Sydenham Inlet to Cape Howe, while coastal settlements are found at Lake Tyers, Marlo, Bemm River (Sydenham Inlet) and Mallacoota.

Seven coastal and 11 hinterland EVCs occur within 500 m of the coast, and these are listed in Table 19, along with estimates of their pre-1750 and current extent, land tenure and conservation status.

Seven of the 18 EVCs are assessed as threatened. The coastal EVCs have largely retained their pre-1750 levels of cover, and although the loss is greater for hinterland EVCs, their percentage retention of cover is still very high.

Three of the seven coastal EVCs are considered Vulnerable, while one is Depleted, one Rare, and another two of Least Concern. With the exception of Estuarine Wetland and Coastal Saltmarsh, their protection in conservation reserves is very high due to the Croajingolong National Park occupying the bioregion's coastal boundary, along with the Cape Conran Coastal Park and the Ewing Morass Wildlife Reserve (also a game reserve). None of the cover of coastal EVCs found on private land is protected by Trust for Nature covenants.

Of the 11 hinterland EVCs, four are Vulnerable, one is Rare and six are of Least Concern. Most have very low percentages of their cover protected in conservation reserves. Except for Brackish Sedgeland, Clay Heathland and Damp Sands Herb-rich Woodland, most have well below half of their cover protected in conservation reserves. Nine of the 11 hinterland EVCs have Trust for Nature covenants to conserve them but this represents very small percentages of their cover.

The pathways of change

Lake Tyers

Although Lake Tyers is often seen as being one of the Gippsland Lakes, it has a separate entrance and catchment. The lake roughly marks the beginning of the East Gippsland Lowlands Bioregion, the coastline of which is almost all contained within conservation reserves, be it a wildlife reserve, coastal park or national park.

The waves rolling in to Red Bluff have made it a mecca for surfers but the heathland and forest atop it are home to long-nosed potoroo, southern brown bandicoot and possibly the spotted quoll: its tracks were found on the beach below by members of the Lake Tyers Coast Action Group.

The volunteer group has installed a network of small cameras to monitor wildlife on Red Bluff, and have become concerned that prescribed burning proposed by the Department of Environment and Primary Industries will expose small mammals to attack by predators in the burnt areas and also encourage the regrowth of bracken. They would prefer to see the area slashed not burned.

The escarpment running between the township of Lake Tyers Beach and the shoreline is covered by a narrow strip of vegetation and is public land. To improve their views some residents have cut down trees on the reserve.

Pressure on coastal vegetation is set to increase as the township rapidly grows. Although currently only numbering about 500, the population could double or triple with the imminent subdivision of cleared land behind it.

The barrier enclosing Lake Tyers is covered by Coastal Dune Scrub/Coastal Dune Grassland Mosaic, with some Coastal Saltmarsh behind it on the estuary's edge, and Limestone Box Forest and Lowland Forest around the shoreline.

The flora of Lake Tyers, with its Warm Temperate Rainforest and Coastal Saltmarsh, is of regional significance, while the fauna is of state significance. There are breeding colonies of little tern and fairy tern, with other significant species including the new holland mouse and the eastern bristlebird *Dasyornis brachypterus brachypterus* (E).

The catchment of Lake Tyers is 470 km^2, largely forested and contained within state forest, land of the Lake Tyers Aboriginal Cooperative and the Lake Tyers State Park. The park occupies the shoreline of the Nowa Nowa and Toorloo arms, and the sand dune barrier enclosing the lake, but their waters and those of the main lake are within the Lake Tyers Fisheries Reserve, which seeks to enhance recreational fishing opportunities for anglers who target fish including dusky flathead *Platycephalus fuscus* and black bream.

The Lake Tyers State Park is jointly managed by the Gurnaikurnai people and Parks Victoria after a agreement between the traditional owners and the Victorian government under the *Traditional Owner Settlement Act 2010*.

Lake Tyers to Mallacoota

Between Lake Tyers and Cape Conran Coastal Park, the Ewing Morass dominates the coastscape, and has a long and narrow sand dune barrier with Coastal Dune Scrub/Coastal Dune Grassland Mosaic, and a northern shore with Coast Banksia Woodland, Limestone Box Forest and Damp Forest. Shooters in the Ewing Morass Game Reserve target pacific black duck, grey, teal, chestnut teal, mountain duck and the introduced hog deer *Axis porcinus*.

From Ewing Morass to Point Ricardo, just west of Cape Conran, the flora is of state significance and the fauna of regional and state significance. Saltmarsh is restricted in East Gippsland, while the relatively undisturbed primary dune scrub and sedgeland/herbland complex, heathland and woodland supports leafless tongue-orchid *Cryptostylis hunteriana* (E), swamp beard-heath, yellow milk-vine *Marsdenia flavescens* (R), slender mud-grass, cobra greenhood *Pterostylis grandiflora* (R) and the branched bur-reed *Sparganium erectum.* The diverse wetland habitats are also important for waterbirds and amphibians, including the Lewin's rail, square-tailed kite *Lophoictinia isura* (V), hooded plover and the spotless crake.

The iconic Snowy River enters Bass Strait at Marlo. West of the mouth and south of the Lake Corringle Wildlife Reserve, there is a mix of Coast Banksia Woodland and Coastal Dune Scrub/Coastal Dune Grassland Mosaic in front of extensive areas of Coastal Saltmarsh and patches of Damp Sands Herb-rich Woodland and Riparian Scrub Complex. To the east of the mouth, narrow strips of Coastal Dune Scrub/Coastal Dune Grassland Mosaic, Wet Heathland, Coastal Lagoon Wetland, Coast Banksia Woodland and patches of Riparian Scrub Complex are found.

The Cape Conran Coastal Park stretches from west of Point Ricardo to Sydenham Inlet. Coastal Dune Scrub/Coastal Dune Grassland Mosaic runs the entire length of this strip and is backed by patches of Coast Banksia Woodland, Riparian Scrub Complex, Wet Heathland and Banksia Woodland, with Coastal Saltmarsh on the southern shore of Sydenham Inlet.

From Point Ricardo to Wingan Inlet the flora and fauna are both of national significance. The coastal vegetation, including diverse coastal heathland, is in excellent condition and supports the spicy everlasting *Helichrysum argophyllum*, wiry stackhousia *Stackhousia nuda* (R*)* and giant triggerplant *Stylidium larcifolium* (V). These habitats are also important for waterbirds and amphibians, and provide nesting sites for little tern and fairy tern, as well as habitat for the ground parrot, Lewin's rail, square-tailed kite, hooded plover, spotless crake, Australasian bittern, glossy grass skink, swamp skink, Martin's toadlet and Tyler's toadlet.

The Skerries, a group of rocks offshore from Wingan Inlet, are of national significance, having breeding colonies for the Australian fur seal and crested tern, and a roosting site for the black-faced cormorant.

Croajingolong National Park occupies almost the entire length of the coast from Sydenham Inlet to Cape Howe, except for a short section of coastal crown land reserve at Mallacoota Inlet.

From Sydenham Inlet to Point Hicks there is a narrow strip of Coastal Dune Scrub/Coastal Dune Grassland Mosaic with large areas of Coast Banksia Woodland and some bare areas of sand. At Point Hicks the mosaic is extensive and has patches of Coast Banksia Woodland within it. Between Point Hicks and Sandpatch Point there are extensive areas of bare sand among the Coastal Dune Scrub/Coastal Dune Grassland Mosaic, with patches of Coastal Sand Heathland and Coastal Saltmarsh, Riparian Scrub Complex and large areas of Banksia Woodland.

Sandpatch Point is covered in Coastal Dune Scrub/Coastal Dune Grassland Mosaic backed by a large area of Coast Banksia Woodland. But soon after, Coastal Dune Scrub/Coastal Dune Grassland Mosaic

disappears and the shoreline vegetation is dominated by broad bands of Clay Heathland and then Wet Heathland, with patches of Banksia Woodland, Riparian Scrub Complex and Shrubby Dry Forest behind. The Coastal Dune Scrub/Coastal Dune Grassland Mosaic returns at the Betka River mouth, with some Estuarine Wetland, and then continues to Bastion Point with patches of Clay Heathland behind.

From Wingan Inlet to Mallacoota, the flora and fauna is of national significance, with species-rich and largely undisturbed vegetation including coastal heathland and Coastal Dune Scrub. Significant plant species include the shore spleenwort, sheath sedge *Cyathochaeta diandra* (R*)*, clustered darwinia *Darwinia camptostylis* (R), swamp beard-heath, hairy beard-heath *Leucopogon microphyllus* var. *pilibundus* (R), tiny logania, *Logania pusilla* (R), heathy mirbelia *Mirbelia rubiifolia* (V), tiny spyridium *Spyridium cinereum* (V) and wiry stackhousia. The caspian tern nests here, while the coastal heathland is critical habitat for the ground parrot, and the shoreline habitats are important for waders and breeding seabirds. Other significant fauna include the eastern bristlebird, turquoise parrot *Neophema pulchella* (NT), diamond python *Morelia spilota spilota* (E) and the swamp skink.

Bastion Point harbour development

The Shire of East Gippsland's Option 3b harbour development at Mallacoota was given *Coastal Management Act 1995* consent by the state government in January 2013 and is now under construction.

The act was designed to reenergise coastal planning and management in Victoria. Where developments were proposed on coastal crown land, the consent of the Minister under the act was to be given only to proposals proven to be appropriate, and consistent with the *Victorian coastal strategy*, the relevant coastal action plans and the purposes for which the land was reserved.

The act has not prevented Bastion Point from being buried under tonnes of rock rubble, concrete and asphalt with the construction of a boat ramp, breakwater and road along the beach. There has been overwhelming opposition to the development in the local community, which has proposed a safe and less costly alternative with far fewer impacts.

An independent planning panel found that the project would have no societal benefit. The panel also found that:

> *The Panel considers that the impact of the breakwaters in the new proposals will have considerable impact on the wilderness and landscape values of Bastion Point and an overall net detriment to tourism.*
> *The economic case for the project is very weak and likely to have a benefit cost ratio well below 1.*
> *The Panel does not consider the policy framework is as supportive of the development proposals as put in the Hearing by the Proponent.*
> *The new ramp proposals would provide a better facility at the actual launch and retrieval point but the Panel has serious concerns in relation to the safety of all the new proposals in relation to facility entry and exit.*
> *The Panel has concluded that the 'beach road' options will significantly reduce impacts on Aboriginal sites but that impacts on other cultural heritage values (such as Aboriginal 'sense of place') will remain.*
> *The environment effects of Options 1,2 and 3 as exhibited, Options 3a and 3b, and Option LS1 are such that there is no overall societal benefit in progressing these options further and they should be discarded*[278]*.*

The independent planning panel was established by then minister for planning in 2007, and it recommended a small-scale upgrade of the existing ramp. During its inquiry it received 482 submissions, 87% of which opposed Option 3b.

The planning minister rejected the planning panel's advice in June 2009 and supported Option 3b. At the same time, the then Minister for Ports committed $6.5 million for construction before the project had received consent under the *Coastal Management Act 1995*:

> *Mr Madden said the Brumby Labor Government was taking action to support delivery if necessary infrastructure required for safe commercial, fishing and recreational boating needs. 'After an extensive Environment Effects Study (EES), which included public hearings, I have disagreed with the panel report and conclude that doing nothing or a minor upgrade at the existing site would only increase the risk of swimmers and beach users sharing the ocean where boat launching occurs,' Mr Madden said*[279]*.*

A Supreme Court judicial review of the planning minister's decision, mounted by the Friends of Mallacoota, found that the minister's decision was 'surprising' and the panel report was 'a careful, fair, and balanced evaluation'[280].

Consent under the *Coastal Management Act* was not received by the time of the 2010 state election. The incoming Coalition government in 2010 initiated a review of the project, but the environment minister gave consent to the project in January 2013, citing safety concerns as the main reason for the decision.

Mallacoota to Cape Howe

East of Mallacoota the sand dunes are huge with extensive bare areas. Coastal Dune Scrub/Coastal Dune Grassland Mosaic is the main shoreline vegetation backed by Coast Banksia Woodland and patches of Coastal Saltmarsh and Brackish Sedgeland.

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[278] Planning Panels Victoria 2008, Ocean Access Boat Ramp, Bastion Point, Mallacoota, Environment Effects Statement East Gippsland Planning Scheme, Permit Application 162/2007/P, Panel Report, October 2008

[279] Minister for Planning 2009, 'Safety first for new Bastion Point boat ramp', http://archive.premier.vic.gov.au/component/content/article/7195.html

[280] Save Bastion Point Campaign 2010, *Save Bastion Point, Mallacoota, Victoria*, http://savebastionpoint.org/wp-content/uploads/2010/09/Polikit14panelLR.pdf

The dunes from Mallacoota to Cape Howe have flora and fauna of national significance and are part of the Nadgee to Mallacoota Important Bird Area. Here is habitat for migratory waders and breeding colonies of seabirds, and for significant species including the hooded plover, eastern curlew, eastern bristlebird, diamond python, she-oak skink *Cyclodomorphus casuarinae*, swamp skink, Tyler's toadlet and the ground parrot. The impact of fire is of concern for the eastern bristlebird, as is predation by foxes.

Threats summary

The threats to coastal nature in the East Gippsland Lowlands Bioregion are:

- pest plants including bridal creeper, cape ivy, dolichos pea and cinnamon fungus (especially between Mallacoota and Shipwreck Creek)
- recreational use in general
- harbour development at Bastion Point, Mallacoota
- increase in intensity of land-use on adjoining land and within catchments
- increasing numbers using coastal walking trails, dropping litter, using native vegetation for camp fires, and putting further pressure on sensitive coastal environments
- dog and fox predation on little terns and hooded plovers
- pigs and goats disturbing habitats
- fire
- boating activity disturbing breeding seabirds and degrading shorelines.

Recommendations

The following recommendations are aimed at generating discussion about the ways in which the conservation of coastal nature can be strengthened in the East Gippsland Lowlands Bioregion.

1a. Support with funding and resources collaborative projects between land managers and the local community to enhance coastal nature in the Lake Tyers area and to control invasive species.

1b. Abandon plans to prescribe burn the bushland at Red Bluff, Lake Tyers Beach, and slash the targeted undergrowth instead.

1c. Amend the Environmental Significance Overlay applying to private land abutting the coastal crown land reserve and the western shoreline of Lake Tyers behind the township of Lake Tyers Beach (cleared land proposed for subdivision). This would establish a 50–100 m buffer zone where development cannot occur and where rehabilitation of indigenous vegetation should be encouraged. The private landholder should be given access to sufficient resources to achieve that rehabilitation, in collaboration with the local community, and to also establish a wildlife corridor across the cleared land.

2. Establish the Ewing Morass-Cape Conran Coastal Park by merging Ewing Morass Wildlife Reserve, Lake Corringle Wildlife Reserve, First and Second Island Flora Reserve, Marlo Coastal Reserve and Cape Conran Coastal Park and list it in Schedule III of the *National Parks Act 1975*.

3. Abandon the Option 3b Bastion Point harbour development at Mallacoota and initiate a process that establishes a lower cost and sustainable alternative that will have community support. Repair any damage to the area's environment caused by the initial construction works.

Reversing the decline of coastal nature

Part 2 of *The coast is unclear* has shown that for vegetation cover across the ten bioregions, there are haves and have-nots. In general terms, the ranges are well off and the plains are in poverty. Although there are several reasons for this difference, a major factor is the timing of regional European settlement, which was directly influenced by topography and the type of vegetation covering the landscape.

Flat plains with woodlands, heaths, scrubs and grasslands were favoured over slopes and forests. They were settled first, for livestock grazing, because they were easier to clear and had relatively fertile soils. Forestry too has had its impacts, and more recently the spread of metropolitan Melbourne, Geelong and the larger coastal towns, road transport and tourism. More positively, the establishment of conservation reserves on the coast has helped give greater protection to some EVCs.

Except for the Wilsons Promontory Bioregion, almost all EVCs across all bioregions have suffered losses since European settlement. Some of those losses have been huge, especially for hinterland EVCs on the Warrnambool, Otway, Victorian Volcanic and Gippsland plains. Coastal EVCs have fared better in some bioregions, but their degree of loss and the resulting fragmentation are still considerable.

In general terms, hinterland EVCs are more threatened than coastal EVCs, while the protection of coastal and hinterland EVCs is mixed across the bioregions. Table 20 and 21 summarise the conservation status for each coastal and hinterland EVC found within 500 m of the shoreline in each of the bioregions they appear.

Coastal EVCs that are either Vulnerable or Endangered in two or more bioregions are:

- Coast Banksia Woodland
- Coastal Saltmarsh
- Estuarine Wetland
- Mangrove Shrubland
- Coastal Headland Scrub
- Coastal Tussock Grassland
- Coastal Saltmarsh/Mangrove Shrubland Mosaic
- Coastal Alkaline Scrub
- Coast Banksia Woodland/Coastal Dune Scrub Mosaic.

For the hinterland EVCs, those either Vulnerable or Endangered in two or more bioregions are:

- Damp Sands Herb-rich Woodland
- Lowland Forest
- Herb-rich Foothill Forest
- Damp Forest
- Swamp Scrub
- Plains Grassy Woodland
- Wetland Formation
- Plains Grassland
- Damp Heath Scrub
- Grassy Woodland
- Shallow Freshwater Marsh
- Heathy Woodland/Damp Heathy Woodland/Damp Heathland Mosaic
- Aquatic Herbland
- Freshwater Meadow
- Deep Freshwater Marsh.

Heath, grassland, scrub, estuarine and marsh are the most consistently threatened within the ten bioregions.

Of the above coastal EVCs, Estuarine Wetland is Endangered in four of the seven bioregions it is found, Coastal Headland Scrub is Vulnerable in six of the eight bioregions where it grows, Coastal Tussock Grassland is Vulnerable in five out of six bioregions, and Coastal Alkaline Scrub is Vulnerable or Endangered in three of five bioregions.

For hinterland EVCs, Damp Sands Herb-rich Woodland is Vulnerable in six of the seven bioregions it is found, while Endangered in the seventh. Herb-rich Foothill Forest is Vulnerable in five of the six bioregions, Swamp Scrub is Endangered in four out of five bioregions, and Vulnerable in the fifth, while Damp Heath Scrub is either Endangered or Vulnerable in its three bioregions. Plains Grassy Woodland, Plains Grassland and Shallow Freshwater Marsh are Endangered in each of the three bioregions where they grow, while Grassy Woodland is Endangered in the four bioregions where it is found.

The protection of the remaining cover of these EVCs in conservation reserves or under Trust for Nature covenants is mixed. Table 22 lists the percentages for each of these selected EVCs across the bioregions in which they occur along the coast. Again, the plains have the worst records, and the hinterland EVCs are the least protected being largely on private land.

Of the EVCs identified in tables 20 and 21, only three have been listed as threatened in the *Flora and Fauna Guarantee Act 1995*, even though most have been assessed as either Endangered or Vulnerable in some of the bioregions. Those listed are Coastal Moonah Woodland Community (predominantly *Melaleuca lanceolata* subsp. *lanceolata* and found within the Coastal Alkaline Scrub EVC), Plains Grassland (South Gippsland) Community, and Warm Temperate Rainforest (Coastal East Gippsland) Community.

When considering the conservation status of the native animals and plants reliant on these EVCs on the coast as habitats, it is not surprising that many have been assessed as Rare, Near Threatened, Vulnerable, Endangered or Critically Endangered. Table 27 lists these species and their conservation status; many have already been referred to in the bioregional profiles. It may not be a complete list as some threatened species found in hinterland EVCs are not included due to uncertainty as to whether their range is within the 500 m coastal strip that is the focus of this report.

There are several striking things revealed by this list:

- the conservation status for many species has worsened (see underlined conservation status)

- the prominence of birds that use beaches and sand dunes or that rely on healthy coastal waters for food
- the many small mammals and birds that rely on the EVCs under pressure—heaths, grasslands, scrub and wetlands.

An analysis by Boon et al[281] of changes in Victoria's coastal vegetation, which focused on saltmarsh and mangrove EVCs, found significant reductions in their spatial extent compared with pre-1750 cover. In this analysis, summarised in Table 24, the estimates were made for sections of coast not bioregions, but the table indicates the bioregion where they are found.

Coastal nature is under extreme pressure in Victoria. To better conserve it will require integrated and collaborative actions between all levels of government, greater investment and policy development, and increased protection. Increased protection can be achieved by enlarging the existing coastal conservation areas or by creating new ones, which should be accompanied by the restoration of coastal nature. The first step is to consolidate the protection of existing coastal nature and then begin to extend it.

There is also an urgent need to build our understanding of coastal nature and to fill the significant gaps in our knowledge. The 2013 Victorian State of the Environment report found that:

> *There is a lack of suitable data to adequately measure the condition and trends of Victoria's marine and coastal environments and the key resources they support. Despite the value of the marine and coastal environment, our knowledge and understanding – especially in regard to marine environments – is less developed than for terrestrial areas[282].*

Two key gaps in coastal knowledge identified by the report were:

- *Data on the condition of coastal land and marine and coastal ecosystems is not gathered in a comprehensive manner, making assessment of the condition of coastal and marine systems difficult.*
- *Water quality monitoring outside the main estuaries is uncoordinated and disparate[283].*

The report outlined the need for comprehensive monitoring:

> *Bays and ports are monitored relatively well, chiefly for water quality by the EPA and for pests by DEPI. Most other monitoring, however, is in response to events such as algal blooms and pest incursions, rather than as part of any ongoing data collection. Specifically, a strategic, fit- for-purpose, cross-agency monitoring, evaluation and reporting program for marine ecosystems is required to deliver the data necessary for a focused and effective management intervention[284].*

Recommendations

The following recommendations are aimed at generating discussion about the ways in which the conservation of coastal nature can be strengthened along the Victorian coast.

1. Ensure the conservation of 100% of the remaining coverage of each coastal EVC on coastal crown land reserves by expanding the coastal conservation estate to include those EVCs, by improving the management of those reserves and including abutting or nearby unreserved or reserved crown land, including state forest, that have coastal and hinterland EVCs present.

2. Increase the resourcing of coastal nature conservation programs, especially in the area of threatened ecological communities, species listings and the preparation and implementation of recovery plans under the *EPBC Act* and actions statements under the *Flora and Fauna Guarantee Act.*

3. Establish the comprehensive and ongoing scientific monitoring, mapping and investigation of coastal and marine habitats and ecological processes. The program would develop historical ecological baselines and a set of environmental indicators to assess trends in the health of marine and coastal habitats. This would be coordinated by the proposed Marine and Coastal Authority through its Marine and Coastal Information Service.

4. Provide ongoing and adequate resourcing of citizen science programs such as EstuaryWatch and ensure that the data is gathered in ways that will enable its effective use in marine and coastal planning, protection and management.

5. Ensure the adequate resourcing of community education and engagement programs, such as Coastcare, which promote the nature conservation values of the coast and provide opportunities for the community to become engaged in their protection.

6. Ensure that all invasive weeds of high risk to coastal nature are declared noxious weeds and adequately resourced eradication and control programs are initiated on public and private land along the coast. Such funding should ensure sufficient trained personnel and support for collaboration between public land managers and the owners of adjacent land.

7. Initiate an independent review of access tracks, car parks, roads, buildings, utilities and other infrastructure within and adjacent to coastal conservation and crown land reserves in order to plan for the relocation, reduction and better management of coastal infrastructure to minimise its impacts on the coast's natural values and to assist planned retreat responses to sea level rise.

8a. Assist coastal nature to adapt to sea level rise and other impacts of climate change by using a range of planning tools including:

- protected biolinks to link with current

[281] Boon P. et al 2010, *Mangroves and coastal saltmarsh of victoria: distribution, condition, threats and management*, Institute for Sustainability and Innovation, Victoria University, Melbourne

[282] Commissioner for Environmental Sustainability Victoria 2013, *State of the environment 2013 report*, p. 189

[283] Commissioner for Environmental Sustainability Victoria, loc. cit.

[284] ibid, p.223

conservation areas
- rezoning areas that are likely to support coastal nature adaptation inland from the predicted new coastline
- overlays such as the Environmental Significance Overlay to prevent the development of the land directly behind coastal conservation to enable it to adapt and retreat.

8b. Conduct comprehensive mapping of current settlements, coastal nature and predicted sea level rise for the Victorian coastline, and combine this with mapping of where coastal settlements and nature can move to as a result of sea level rise.

9. Establish a Coastal Private Land Conservation Program to support conservation on private land abutting coastal conservation areas, coastal crown land reserves or the high water mark. The funds would be used to fence remnant areas, cover the costs of plantings to extend the cover of remnants or to re-establish vegetation cover, help to identify and fence boundaries between public and private coastal land to prevent illegal access by livestock, horses and unauthorised vehicles, eradicate or control invasive species, and establish wildlife corridors.

The initial focus of the program should be on the restoration of coastal nature in those bioregions where land clearance has reduced coastal nature to very narrow and fragmented strips or removed it completely i.e. Warrnambool Plain, Otway Plain, Victorian Volcanic Plain and Gippsland Plain.

The Coastal Private Land Conservation Program would not replace CoastalTender or the Saltmarsh Protection Project and may even provide resources to them. Its purpose is to significantly increase the resources to and raise the profile of the urgent need to restore coastal nature on private land.

10. Review statewide and regional policies promoting or driving population growth on the coast to develop mechanisms that slow growth and reduce its impacts.

Table 20 Coastal EVCs: conservation status by bioregion

Ecological Vegetation Class	B	GL	WP	OR	OP	VP	GP	SR	WP	EG
1 Coastal Dune Scrub/Coastal Dune Grassland Mosaic			V	D	D		D		LC	LC
2 Coast Banksia Woodland							V	V	R	LC
5 Coastal Sand Heathland		R							R	R
9 Coastal Saltmarsh	V				E	V	LC		LC	D
10 Estuarine Wetland	E		D	E	E	E	LC		R	V
11 Coastal Lagoon Wetland									R	V
12 Wet Swale Headland							D		LC	V
140 Mangrove Shrubland					V	V	LC		R	
155 Bird Colony Succulent Herbland			V				R			
160 Coastal Dune Scrub	LC		D				D			
161 Coastal Headland Scrub	V	E	V	D	V	V	D	V	V	
162 Coastal Headland Scrub/Coastal Tussock Grassland Mosaic			V				D			
163 Coastal Tussock Grassland			V	V	V	V	V	D		
165 Damp Heath Scrub			V	E	E					
181 Coast Gully Thicket			E							
302 Coastal Saltmarsh/Mangrove Shrubland Mosaic					E	E	V			
309 Coastal Swale Grassland							V			
311 Berm Grassy Shrubland							E			
665 Coastal Mallee Scrub		E								
692 Mangrove Shrubland/Coastal Saltmarsh/Berm Grassy Shrubland/Estuarine Flats						E				
875 Blocked Coastal Stream Swamp							R			
858 Coastal Alkaline Scrub	LC				E	E	V		D	
876 Spray Zone Coastal Shrubland	R	E								
900 Coastal Saltmarsh/Coastal Dune Grassland/Coastal Dune Scrub/Coastal Headland Scrub Mosaic						E				
903 Mangrove Shrubland/Estuarine Flats Grassland Mosaic							E			
904 Coast Banksia Woodland/Swamp Scrub Mosaic							V			
909 Coastal Dune Scrub/Bird Colony Succulent Herbland Mosaic							D			
910 Bird Colony Succulent Herbland/Coastal Tussock Grassland Mosaic							R			
914 Estuarine Flats Grassland							E			
919 Coastal Headland Scrub/Coast Banksia Woodland Mosaic							V			
921 Coast Banksia Woodland/Coastal Dune Scrub Mosaic						V	V			
922 Coastal Alkaline Scrub/Bird Colony Succulent Herbland Mosaic							V			
935 Estuarine Wetland/Estuarine Swamp Scrub Mosaic							D			
953 Estuarine Scrub										

Source: Trust for Nature 'Bioregion and subregion EVC representation' on Excel spread sheets. Key to regional acronyms: B=Bridgewater; GL=Glenelg Plain; WP=Warrnambool Plain; OR=Otway Ranges; OP=Otway Plain; VP=Victorian Volcanic Plain; GP=Gippsland Plain; SR=Strzelecki Ranges; W=Wilsons Promontory; EG=East Gippsland Lowlands

Table 21 Hinterland EVCs: conservation status by bioregion

Ecological Vegetation Class	B	GL	WP	OR	OP	VP	GP	SR	W	EG
3 Damp Sands Herb-rich Woodland	V	V	E	V	V		V			V
6 Sand Heathland		R			R		R		R	
7 Clay Heathland										V
8 Wet Heathland				LC			D		LC	LC
13 Brackish Sedgeland										V
14 Banksia Woodland										LC
15 Limestone Box Forest							V			V
16 Lowland Forest			V	D			V		LC	LC
17 Riparian Scrub Complex					D					LC
18 Riparian Forest					LC					
21 Shrubby Dry Forest				LC	LC					LC
22 Grassy Dry Forest				D						
23 Herb-rich Foothill Forest	V		V	D	V	V	V			
29 Damp Forest							E	E	LC	LC
30 Wet Forest				LC	LC					
32 Warm Temperate Rainforest							E			R
45 Shrubby Foothill Forest				LC	LC				LC	
48 Heathy Woodland				LC	LC		LC		LC	
53 Swamp Scrub	E		E	E	V	E	E			
55 Plains Grassy Woodland					E	E	E			
56 Floodplain Riparian Woodland							E			
72 Granitic Hills Woodland									LC	
73 Rocky Outcrop Shrubland/Rocky Outcrop Herbland Mosaic									LC	
74 Wetland Formation					E		E			
83 Swampy Riparian Woodland							E			
125 Plains Grassy Wetland							E			
132 Plains Grassland					E	E	E			
151 Plains Grassy Forest							V			
175 Grassy Woodland				E	E	E	E			
191 Riparian Scrub									LC	
200 Shallow Freshwater Marsh	E	E	E							
201 Shrubby Wet Forest				LC						
259 Plains Grassy Woodland/Gilgai Wetland Mosaic							E			
307 Sand Heathland/Wet Heathland Mosaic							D		R	
311 Berm Grassy Shrubland							E			
316 Shrubby Damp Forest							LC			
638 Swamp Scrub/Wet Heathland Mosaic							E			
647 Plains Sedgy Wetland					E					
650 Heathy Woodland/Damp Heathy Woodland/Damp	V	V								
653 Aquatic Herbland			E			E				
680 Freshwater Meadow	E		E							
681 Deep Freshwater Marsh	V						V			
686 Wet Heathland/Damp Heathland Mosaic							D			
687 Swamp Scrub/Plains Grassland Mosaic							E			
691 Aquatic Herbland/Plains Sedgy Wetland Mosaic							V			
695 Dry Valley Forest/Swamp Scrub/Warm Temperate Rainforest Mosaic							E			
713 Damp Sands Herb-rich Woodland/Damp Heathland/Damp Heathy Woodland Mosaic			E							
719 Grassy Woodland/Damp Sands Herb-rich Woodland Mosaic							E			
720 Swamp Scrub/Aquatic Herbland Mosaic			E							
746 Damp Heathland/Damp Heathy Woodland Mosaic			E							
762 Damp Heathland/Sand Heathland Mosaic		D								
793 Damp Heathy Woodland							V			
795 Lowland Forest/Damp Sands Herb-rich Woodland Mosaic							V			
878 Damp Sands Herb-rich Woodland/Swamp Scrub Complex							V			
881 Damp Sands Herb-rich Woodland/Heathy Woodland Mosaic							V			
892 Heathy Woodland/Sand Heathland Mosaic							LC			
897 Plains Grassland/Plains Grassy Woodland Mosaic						E				
902 Gully Woodland							E			
925 Damp Sands Herb-rich Woodland/Swamp Scrub Mosaic							E			
937 Swampy Woodland							E			
1106 Damp Heathy Woodland/Lowland Forest Mosaic							V	V		

Source: Trust for Nature 'Bioregion and subregion EVC representation' on Excel spread sheets. Key to regional acronyms: B=Bridgewater; GL=Glenelg Plain; WP=Warrnambool Plain; OR=Otway Ranges; OP=Otway Plain; VP=Victorian Volcanic Plain;

GP=Gippsland Plain; SR=Strzelecki Ranges; W=Wilsons Promontory; EG=East Gippsland Lowlands.

Table 22 Extent of selected EVCs in conservation reserves and under covenants

Ecological Vegetation Class	B	GL	WP	OR	OP	VP	GP	SR	W	EG
Coastal										
Coast Banksia Woodland							36	83	100	93
Coastal Saltmarsh	83				11	43	74		100	57
Estuarine Wetland	100		18	58	62	0	0		100	25
Mangrove Shrubland					82	7	86		100	
Coastal Headland Scrub	93	43	88	55	73	0	65	62	100	
Coastal Tussock Grassland			99	80	46	38	83	100		
Coastal Saltmarsh/Mangrove Shrubland Mosaic										
Coastal Alkaline Scrub	73	68			12	58	73		100	
Coast Banksia Woodland/Coastal Dune Scrub Mosaic						0	4			
Hinterland										
Damp Sands Herb-rich Woodland	52	30	12	71	37		43			59
Lowland Forest	43	60			18		100	20		
Herb-rich Foothill Forest	32		35	64	42	5	11			
Damp Forest	20	4	100	22						
Swamp Scrub	37		5	10	20	26	35			
Plains Grassy Woodland					6	3	8			
Wetland Formation					83		64			
Plains Grassland					2	3	15			
Damp Heath Scrub			53	33	38					
Grassy Woodland				0	1	5	6			
Shallow Freshwater Marsh	1	13	0							
Heathy Woodland/Damp Heathy Woodland/ Damp Heathland Mosaic	0	12								
Aquatic Herbland			54			26				
Freshwater Meadow	100		0							
Deep Freshwater Marsh	86						46			

Source: Trust for Nature 'Bioregion and subregion EVC representation' on Excel spread sheets. Key to regional acronyms: B=Bridgewater; GL=Glenelg Plain; WP=Warrnambool Plain; OR=Otway Ranges; OP=Otway Plain; VP=Victorian Volcanic Plain; GP=Gippsland Plain; SR=Strzelecki Ranges; W=Wilsons Promontory; EG=East Gippsland Lowlands.

Table 23 Spatial changes in coastal saltmarsh and mangroves in Victoria

Sector	Pre-1750 Mangroves	Pre-1750 Saltmarsh	Retention Mangroves	Retention Saltmarsh	Bioregion
Glenelg		40		>10	Bridgewater
Fawthrop-Belfast		120		55	Victorian Volcanic Plain
Western estuaries		590		100	Warrnambool Plain
Aire-Gellibrand		220		100	Warrnambool Plain and Otway Plain
Surf Coast estuaries		30		100	Otway Plain
Breamlea		410		90	Otway Plain
Connewarre-Barwon	40	2 230	>100	90	Otway Plain
Lonsdale Lakes		390		40	Otway Plain
Salt Lagoon		40		90	Otway Plain
Swan Bay		560		85	Otway Plain
Mud Islands		40		90	Port Philip Bay
Port Phillip		3 710		50	Gippsland Plain
The Inlets	10	110	80	55	Gippsland Plain
Western Port	1 320	1 460	95	90	Gippsland Plain
French Island	480	1 010	100	100	Gippsland Plain
Rhyll Inlet	90	130	100	90	Gippsland Plain
Lang Lang coast		20		>100	Gippsland Plain
Bass River	10	230	>100	70	Gippsland Plain
Powlett-Kilcunda		200		35	Gippsland Plain
Anderson Inlet	130	1 120	>100	40	Gippsland Plain
Shallow Inlet	170	300	0	60	Gippsland Plain
Wilsons Promontory	50	130	100	100	Wilsons Promontory
Corner Inlet	1 060	1 350	100	>100	Gippsland Plain
Nooramunga coast	1 020	2 820	95	80	Gippsland Plain
Nooramunga islands	1 240	2 100	100	>100	Gippsland Plain
Jack Smith Lake		1 920		95	Gippsland Plain
Lake Reeve		3 530		85	Gippsland Plain
East Gippsland inlets		1 160		85	East Gippsland Lowlands

Source: Boon P. et al 2010, *Mangroves and coastal saltmarsh of victoria: distribution, condition, threats and management*, Institute for Sustainability and Innovation, Victoria University, Melbourne.

Part 3 The Victorian government and coastal nature conservation

This part considers the future for coastal nature in the context of the legislative and regulatory frameworks used by the state government and the role it plays in coastal nature conservation.

Coastal public land

Reserving crown land in the public interest

In the latter half of the nineteenth century the Victorian government began to create reserves on public land for parks, forests, hospitals, halls, sports grounds and ports.

Today one third of the state or about 8 000 000 ha are retained as public land, with one half of that reserved within national, state and other parks managed under the *National Parks Act 1978*.

Most of the remaining public land is within state forests and managed under the *Forests Act 1958*, but about 550 000 ha have been reserved under the *Crown Land (Reserves) Act 1978.* These reserves now number around 12 000 and include coastal crown land reserves—narrow strips of land along the Victorian coast. A small number of wildlife reserves have also been created along the coast under the *Wildlife Act 1975*.

The temporary and permanent reservation[285] of coastal crown land has a long history, beginning even before the establishment of the Victorian government in 1851. Crown land frontages to Port Phillip Bay were created as early as the late 1830s to facilitate water access and future development. As surveyors marked out the plans for a growing Melbourne, they usually set aside the coastal margins for public use. In the 1860s, strips along the Port Phillip Bay coast were reserved for parks, gardens and public recreation areas, followed by the permanent reservation of all unappropriated lands around the bay in June 1873.

The reservation from sale of unappropriated crown land on the shores of the Southern Ocean and Bass Strait occurred in 1879, two years prior to the blanket reservation of all unalienated crown land within one and a half chains of rivers, rivulets, creeks, channels, aqueducts, lakes, reservoirs, swamps, inlets, loughs and straits.

An analysis for this report has calculated that within a 200 m strip of land along Victoria's 2 000 km coastline, there are 51 353 ha of public and private land. Of that, 38 984 ha are public, with 33 815 ha of that, or 66% of the total strip area, in conservation reserves. To 500 m inland, the percentage of public lands fall to 52%, with that in conservation reserves dropping to 45%. This declining trend continues as the strip becomes wider.

Bodies building the conservation estate

For more than 40 years, Victoria has had the great benefit of independent public bodies to identify and then recommend the protection of crown land in conservation reserves. This began with the Land Conservation Council, which was replaced by the Environment Conservation Council in 1997, and which in turn was replaced by the Victorian Environment Assessment Council in 2002.

From 1971-1978, Land Conservation Council recommendations changed the way coastal areas were protected. The Council's initial reports and reviews on the South-west, Corangamite, Melbourne, South Gippsland and East Gippsland areas recommended national parks, coastal parks, marine and coastal parks, coastal reserves and nature conservation reserves. Successive state governments have implemented most recommendations.

The Environment Conservation Council (1997-2001) completed the Land Conservation Council's marine, estuarine and coastal investigation, recommending a network of marine national parks and marine sanctuaries that in 2012 celebrated its tenth anniversary.

Until recently, the focus of the Victorian Environment Assessment Council (2002-present) had been on inland areas of public land, but the 2011 Melbourne metropolitan review, the remnant native vegetation investigation and now its marine investigation have given the marine and coastal environment greater prominence in its work.

The recommendations on conservation and other crown land reserves made by the Land Conservation Council, the Environment Conservation Council and the Victorian Environment Assessment Council have been largely implemented though the *National Parks Act 1975* and the *Crown Land (Reserves) Act*, and to a much lesser extent, under the *Wildlife Act 1975.*

National Parks Act 1975

Parks and reserves on the coast

The *National Parks Act 1975* established the statutory basis for the protection, use and management of Victoria's national parks and other conservation reserves.

The *Parks Victoria Act 1998* established the management agency to manage Victoria's network of national, state, regional and metropolitan parks, other conservation reserves and many significant cultural assets in accordance with the provisions of the *National Parks Act* 1975 and the *Crown Land (Reserves) Act 1978*.

There are eight national parks found along the coast from Port Campbell National Park in the west to Croajingolong National Park in the east. The Port Campbell, Point Nepean, Mornington Peninsula, French Island and The Lakes national parks are truly of the coast, whereas the Great Otway, Wilson Promontory and Croajingolong national parks have hinterlands with diverse non-coastal ecosystems. Even so, their coastal areas are their most visited locations.

[285] Temporary reservations can be revoked by notice in the Victorian Government Gazette, whereas the revocation of a permanently reserved parcel of public land or water requires parliamentary approval. This affords permanently reserved areas greater protection but that is dependent on the balance of power across both houses of parliament.

The national parks are proclaimed in Schedule II of the *National Parks Act 1978*. Cape Nelson State Park, several kilometres to the west of Portland, and Lake Tyers State Park (formerly Lake Tyers Forest Park) are the only state parks on the coast. State parks are proclaimed under Schedule IIB of the *National Parks Act 1978*. National and state parks give the highest level of protection for natural and cultural heritage and usually do not permit forestry, grazing, hunting and mining.

There are five coastal parks that have been proclaimed under Schedule III of the *National Parks Act 1978*: Discovery Bay, Bay of Islands, Point Cook, Cape Liptrap and Gippsland Lakes coastal parks. The 70-ha Altona Coastal Park, between Altona and Williamstown, is not the same as the above five, having been temporarily reserved in April 1986 under the *Crown Lands (Reserves) Act 1978* and is managed by the City of Hobsons Bay.

Each of the national, state and coastal parks has had a management plan prepared but most are now in need of review. The management plan for Croajingolong National Park is dated 1996, those for Mornington Peninsula, Port Campbell and The Lakes national parks, and the Bay of Islands and Gippsland Lakes coastal parks, were finalised in 1998, while Wilson Promontory National Park, Cape Liptrap, Point Cook, Cape Conran and Discovery Bay coastal parks were completed in 2002, 2003, 2005, 2005 and 2006 respectively. The most recent are the plans for the Point Nepean and Great Otway national parks, both completed in 2009.

Victoria's three marine and coastal parks at Shallow Inlet, Corner Inlet and Nooramunga, the Bunurong and Wilsons Promontory marine parks, and the Wilsons Promontory Marine Reserve, are established under Schedule IV of the *National Parks Act 1978* and are assigned IUCN Category VI Protected Area Category. Except for the permanently reserved Wilsons Promontory Marine Park, each is temporarily reserved, while only the Bunurong Marine Park has a management plan, by virtue of it being included in the plan for the Bunurong Marine National Park.

Management plans are critical tools for directing management resources and actions but also for informing the community about the values the reserves are protecting. The Shipwreck Coast master-planning process indicates that Parks Victoria is significantly changing the way that park management plans will be prepared in the future. Rather than plans for individual parks, the planning process will now cover a number of parks and reserves across a larger landscape. The great risk in this new process is that the prime objective of the parks, which is to protect natural and cultural heritage, will be lost as tourism development and the management of visitors become the drivers of day-to-day management.

Protecting an area of the coast and threatened plants and animals within parks and reserves does not necessarily remove the threats they were or are continuing to face. By and large, the parks and reserves are long and narrow, accentuating the edge effects that include weed and feral animal invasions, bushfire, unregulated and inappropriate access, wandering stock and changes in the intensity of use within them or on adjoining land. Such changes within the parks and reserves include the commercial tourism developments the state government is encouraging.

Commercial tourist development in national parks

National parks and other conservation reserves along the Victorian coast are a refuge for many threatened species of flora and fauna, but plans by the Victorian government to encourage and allow major commercial tourist developments within, abutting or near to national parks further threatens their survival.

Due to their iconic status, Port Campbell, Great Otway, Point Nepean and Wilsons Promontory national parks are the most likely to be impacted by these developments.

The government policy was in response to a Victorian Competition and Efficiency Commission (VCEC) report, requested by the previous government, which recommended private tourism development in national parks:

> *The Commission recommends Government remove the prohibition on private development of tourist facilities in national parks where they complement environmental, heritage and other values, and generate a net public benefit. Such a change would complement reforms to land-use planning. While most tourist facilities can be located outside national parks, for a small number of facilities that meet the required environmental credentials the park is a superior location*[286].

At the time of the report's release, Associate Professor Sue Beeton and Dr Warwick Frost from the Tourism and Hospitality Research Unit in the School of Law and Management at La Trobe University, when publicly commenting on the recommendation, recalled the financial disaster of the Seal Rocks Sea Life Centre, built on public land on Phillip Island:

> *This groundbreaking public-private venture ultimately led the private operator to sue the Victorian government and win.*
>
> *The cost to the taxpayers was $55.9 million, quite the opposite of what the venture intended.*
>
> *This is old news, history, long forgotten. Particularly forgotten by the state government's Victorian Competition and Efficiency Commission. It is once again spruiking the need to open up parks for private developers*[287].

The two tourism researchers then went on to write:

> *One existing accommodation development in a national park, Mount Buffalo Chalet, has been a basket case for the past decade.*
>
> *There is a danger that some of these other proposed building projects would end up the same, as in the*

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[286] Victorian Competition and Efficiency Commission 2011, *Unlocking Victorian Tourism: An Inquiry into Victoria's tourism industry*, summary report, VCEC, Melbourne, p. 1.
[287] Beeton, C. and Frost, W. 2011, 'Our national parks are too precious to allow careless development', *The Age*, 25 August 2011.

case of Seal Rocks, and then not only do we lose out on our natural getaways but it could be a heavy bill for the taxpayer.

Aside from the economic considerations, opening up our national parks to commercial development is poor environmental judgment. These are fragile environments designated as worthy of preservation for future generations, which is why they were created as national parks.

The continuing development of tourism and recreational activities and businesses, particularly in regional areas, is important for Victoria's economic and social sustainability. However, there needs to be clear policy limits, broad community consultation and transparent decision-making[288].

But the current Victorian government responded to the VCEC report in 2012 by saying that it would:

…propose sensible and sensitive developments in national parks provided they complement environmental, heritage and other values and generate a net public benefit; and lease land within a national park for this development, provided they meet a set of guidelines and agree to a standard operating contract that includes incentives for the conservation and biodiversity protection of the national park'[289].

In 2013 the government released the *Tourism investment opportunities of significance in national parks guidelines*. In the foreword to the guidelines, the state environment minister said that:

Victorians are extremely fortunate to have so many beautiful national parks and other public land at our doorstep.

These unique places provide enormous environmental, social, cultural and economic benefits and memorable experiences to those who visit them.

The Victorian Government is working to unlock the tourism potential of Victoria's world class natural assets. We are supporting efforts to attract more visitors to our great state while maintaining important environmental safeguards[290].

Grave concerns were expressed about the government's policies in an open letter in August 2013 signed by 21 eminent Victorians:

Former state governor and Olympic legend John Landy has joined a group of eminent Victorians urging the Napthine government to abandon moves to open up national parks for tourism development.

In an open letter sent to Premier Denis Napthine on Sunday night the group, which also includes Nobel prizewinner Professor Peter Doherty, hit out at the development plans...[291]

In the letter the signatories said that 'allowing tourism development is risky, deprives Victorians of their public land and is not in keeping with the environmental values of national parks.

The Age also reported that:

The state government is opening up two-thirds of national park land for ''nature-based'' tourism development - including low-rise hotels, restaurants and jetties - and has called for potential developers to come forward. Under the changes, the government will grant leases in parks such as Wilsons Promontory and the Grampians to private companies for up to 99 years. Projects will need approval from the environment minister before they go ahead.

''In reality, a 99-year lease transfers ownership of a public asset, something we all own and can share, to a private benefit enjoyed by a privileged few,'' the letter says.

''Low-risk, attractive development could be encouraged in outstanding locations just outside our national parks,'' the letter says[292].

When interviewed by *The Age*, one of the letter's signatories, RMIT Professor Michael Buxton said:

…national parks were more crucial than ever in conserving biological diversity and landscapes.

''But on a broader level what worries me is this is part of a systematic destruction of the conservation state and environmental policy by this government,'' Professor Buxton said[293].

Coastal councils in western Victoria have expressed support for the government's proposals:

Corangamite Shire mayor Matt Makin—who also chairs the Great South Coast Group, a coalition of councils across Victoria's south-west—said councils had received ''significant interest'' from major development consortiums as well as individuals keen to build accommodation within the parks. Most suggestions have been for high-end accommodation—offering about 50 to 100 beds—and luxury recreational facilities such as golf courses and restaurants within the parks[294].

Support has also come from the Tourism Industry Council:

National parks have always been afforded legal protection in a bid to preserve their conservation value. Now, as Victorian Tourism Industry Council chief Dianne Smith says, the private sector has been ''given the key to unlock the door'' to real investment[295].

The key concerns about the government's recent announcement on commercial development in national parks are that:

- history shows that private development will continue to expand once it gains a

[288] Beeton and Frost, loc. cit.

[289] Department of Treasury and Finance 2012, *Victorian Government response to the Victorian Competition and Efficiency Commission's final report*, Department of Treasury and Finance, Melbourne, p. 4.

[290] Department of Sustainability and Environment 2013, *Tourism investment opportunities of significance in national parks guidelines,* Department of Sustainability and Environment, Melbourne, p. ii.

[291] Arup, T. 2013, 'National park plans "betrayal of public trust"'. The Age, 19 August 2013

[292] Arup, loc. cit.

[293] Arup, loc. cit.

[294] Wilkins, G. and Tomazin, F. 2013, 'Mind the gap: park tourism plan sparks green backlash', *The Age*, 2 September 2012

[295] Wilkins and Tomazin, loc. cit.

foothold in a national park, along with the infrastructure needed to support it. This will be made easier with the government giving investors 99-year leases—virtually freeholding and privatising the national park
- regional tourism does not need development in the national parks because infrastructure on private land or in nearby settlements and urban areas already exists and that is where further development should be encouraged
- overseas experience shows that private development in national parks largely benefits the investors and not the national park nor its visitors, and skews resources away from conservation management.

The government's *Tourism investment opportunities of significance in national parks guidelines*[296] are flawed because:

- they are vague and not measurable, especially the key criteria 'greatest net public benefit' (similar to the Victorian coastal strategy's similarly flawed net community benefit)
- the approval process lacks transparency and opportunities for the community to comment on ecological impacts
- the decision-making process is largely behind closed doors and at the discretion of the responsible minister
- the commercialisation of national parks was not a 2010 election policy commitment of the Coalition
- there is no funding model presented that would benefit the parks
- they ignore long-standing processes for park management.

In December 2013 the government was yet to receive any proposals for tourism development within the Otways, along the Great Ocean Road or in other parts of Victoria's coastal conservation estate, with operators saying 'while they support the changes, establishment costs, raising funds and financial viability are major hurdles[297].

But as *The Age* reported on 14 December 2013:

> *Several experienced operators have told Fairfax Media they have been discussing ideas with government for years and run rulers over potential projects on the Mornington Peninsula and the Great Ocean Road (and a government-initiated process to redevelop the former quarantine station at Point Nepean is under way). But while government and tourism authorities are still talking up potential benefits for the regions, the hurdles are significant. Large establishment and running costs, difficulty raising capital, fragmented marketing and potential complications for indigenous enterprises - encouraged by the guidelines - mean new ecotourism developments remain in the metaphoric wilderness. Meanwhile, the government's boast that the changes would drive growth in Chinese tourism has been dismissed as naive[298].*

In the same article *The Age* asked:

> *In the absence of clear evidence of pent-up demand from business or consumers for developing private tourism facilities in national parks, why did the Coalition bring on this political stoush?*[299]

According to Associate Professor Peter Christoff, who was quoted in the article, the answer is:

> *…all about playing to the National [party] component of the alliance, to satisfy what they thought were political demands - which may not even be strong political demands…*[300]

In 2013 the state environment minister amended the *Coastal Management Act 1995* to remove coastal national parks from the act's definition of coastal crown land. Under the act, any proposed development of coastal crown land as defined by the act must receive consent from the minister. Consent can either be given, given with conditions or refused, but the decision should be consistent with the Victorian coastal strategy and several other coastal policy documents. By amending the act in this way, that process will no longer apply in coastal national parks.

The Minister's action may simply be a procedural measure to remove duplication of assessments, but for some it raises doubts about the minister's commitment to protecting coastal national parks from the kinds of commercial development currently being urged by the state government.

Wildlife Act 1975

Wildlife reserves and flora and fauna reserves are established under the *Wildlife Act 1975*.

Along the Victorian coast there are 14 wildlife reserves: Lake Gillear; Princetown; Lake Connewarre; Lonsdale Lakes; Swan Bay-Edwards Point; Salt Lagoon-St Leonards; The Spit; Freshwater Swamp; Woodside Beach; Lake Dennison; Ewing Morass; Lake Corringle.

The Aire River, Lake Connewarre and Jack Smith Lake reserves are also game reserves and allow for seasonal duck hunting, as are the Balloong (west of Jack Smith Lake), Clydebank Morass, Heart Morass, Dowd Morass, Lake Coleman, Blond Bay, McLeods Morass and Jones Bay in the Gippsland Lakes, and Ewing Morass east of Lake Tyers.

Crown Land (Reserves) Act 1978

Of the more than 12 000 crown land reserves, 1 750 are managed by 1 250 community committees of

[296] Department of Sustainability and Environment 2013, *Tourism investment opportunities of significance in national parks guidelines,* Department of Sustainability and Environment, Melbourne
[297] McColl, G. 2013a, 'Development likely along Great Ocean Road', *The* Age, 14 December 2013

[298] McColl, G. 2013b, 'All quiet on the contested front', *The Age*, 14 December 2013.
[299] McColl 2013b, loc. cit.
[300] McColl 2013b, loc. cit.

management for such public purposes as halls, libraries, theatres, showgrounds, gardens, bushland protection, zoos, foreshore reserves, sports ovals, tennis courts, playgrounds, swimming pools and rail trails. Municipalities manage another 2 800 of the reserves, with the rest managed by state government agencies.

Nature conservation reserves

Reserves created under the fifth schedule of the *Crown Land (Reserves) Act 1978* include nature conservation reserves (including flora and fauna reserves), cultural and heritage reserves, natural features reserves, historic and cultural features reserves, the Murray River Park, forest parks and water reserves.

Nature conservation reserves are generally smaller than national and state parks, but they also have the conservation of biodiversity and areas of ecological significance as their primary purpose. Timber removal, grazing and hunting are generally not permitted. Although the *Crown Land (Reserves) Act 1978* specifies that management plans must be prepared for these reserves, none currently exist.

Those nature conservation reserves found along the coast are: Yambuk Wetlands; Marengo; North Western Port; Reef Island and Bass River Mouth; Kilcunda; Wonthaggi Heathlands; Cape Paterson.

There are also four flora and fauna reserves: Yambuk; Breamlea; Limeburners Lagoon (Hovells Creek); Jawbone.

There is also a long list of Gippsland Lakes Reserves that were managed by municipalities before the council mergers of the 1990s saw management of them transferred to Parks Victoria. Other than maps of their location, there is no other publicly available information about them.

Coastal crown land reserves

Areas of public land beyond the boundaries of the national parks, state parks, coastal parks, marine and coastal parks and wildlife reserves are managed under the *Crown Land (Reserves) Act 1978*. This statute provides the legislative arrangements for the reservation and management of crown land reserves.

The management of the environmental, conservation and recreational values of Victoria's coastal crown land reserves is the responsibility of the Department of Environment and Primary Industries. The Department directly manages coastal crown land reserves or delegates that responsibility to Parks Victoria, committees of management, local councils or other bodies. It also manages the process for ministerial consents under the *Coastal Management Act*, and appoints and oversees committees of management for crown land reserves.

The remaining coastal crown land reserves are managed by:

- Parks Victoria
- community committees of management and local municipalities appointed by the Minister for Environment and reporting directly to the Department of Environment and Primary Industries
- other government and corporatised bodies including Gippsland Ports and Phillip Island Nature Parks.

As well as the management of parks and reserves under the *National Parks Act 1975* and coastal crown land reserves under the *Crown Land (Reserves) Act 1978*, Parks Victoria has also been delegated responsibility for:

- recreational and other activities on waterways land in the Melbourne metropolitan area as defined in the *Water Industry Act 1994*
- piers and jetties in Port Phillip Bay and Western Port
- recreational boating in Port Phillip Bay and Western Port as a local port manager and waterways manager under the *Port Management Act 1995* and *Marine Act 1988* respectively.

Since then, there has been the ad-hoc establishment of other coastal crown land reserves for public purposes and coastal protection.

This evolutionary process has created a confusing patchwork of coastal crown land reserves with varying purposes, complex management arrangements, and largely inaccessible and complex maps for those unskilled in finding or reading parish plans and locating the Central Plan Office. Low resolution copies of the plans can be downloaded after a complex web-based process, in contrast to the simplicity of the Victorian planning schemes website.

Publicly accessible information about these reserves is limited unless a management plan has been prepared for them, but the website designed to give access to these, Coastlinks, is rarely updated and links to the management plans do not always work.

Coastal tenure and management becomes even more complicated when the patchwork of coastal crown land reserves is considered in conjunction with the previously discussed the national, state and coastal parks nature conservation reserves along the coast. Table 25 illustrates this patchwork by listing the reserves, and their areas, along the coast, in each bioregion and municipality. Some reserves are tiny, others adjoin several reserves at the same location, and there are also reserves used for golf courses, recreational reserves and bowling clubs.

To add to this complexity are the coastal reserves established after recommendations of the Land Conservation Council.

Coastal reserves

A number of 'coastal reserves' have been established on the recommendation of the Land Conservation Council. These 'new' reserves were to provide permanent reservation for existing temporary and permanent coastal crown land reserves located between coastal conservation reserves. The coastal reserves recommended by the councils include: Nelson Bay; Narrawong; Belfast; Peterborough; Elliott River-Addis Bay; Apollo Bay; Lorne-Anglesea; Lorne-Queenscliff; Western Port Intertidal;

Punchbowl; Kilcunda-Harmers Haven; Bunurong; Anderson Inlet; Port Franklin Port Welshpool; McLoughlins Beach/Seaspray; Lakes Entrance-Lake Tyers; Marlo.

It has been difficult to find information about these reserves and this list maybe incomplete.

When recommending the coastal reserves, the Land Conservation Council gave some guidance on their purpose and status:

> *A coastal reserve is an area of public land on the coast set aside primarily for public recreation, education, and inspiration in coastal environments. Coastal areas specifically reserved for some other purpose (national and State parks, flora reserve, recreation reserves, or major ports) would not be included in the coastal reserve*[301].

The Council also said that coastal reserves were to be used to:

- *provide opportunities for informal recreation and also for recreation related to enjoying and understanding nature*
- *protect and conserve natural coastal landscapes and ecosystems–and geomorphological, archaeological, and historical features - for public enjoyment and inspiration and for education and scientific study*
- *ensure the conservation of both aquatic terrestrial fauna and flora*
- *provide facilities for fishing and boating (including harbour facilities) together with the necessary navigational aids.*[302]

The council also stated that the policies for the coastal reserve should recognise the following principles:

- *new roads should not be sited along the coast, but rather should be located far enough back in the hinterland to avoid damaging sensitive environments or impairing the scenic qualities of the coastal landscape*
- *any major coastal development projects should be subject to a detailed environmental study prior to commencement by the body proposing such development (examples of such projects would include proposals for waste- disposal pipelines, jetties, mining, sea walls, etc.)*
- *occupation of coastal public land by individuals or organisations should be phased out, and no new occupation leases should be granted; certain coast-oriented uses such as yacht clubs and surf clubs could be permitted, subject to conditions laid down by the managing authority*
- *when camp sites and car parks are to be established on the coastal reserve, the managing authority should avoid locating these on sensitive areas or areas of importance for nature conservation, or of archaeological significance.*[303]

This report has found it difficult to establish the full history and implementation of the coastal reserves recommended by the Land Conservation Council.

The gazettal process for crown land reserves is opaque and complex. Except for the Nelson Bay, Bunurong and Kilcunda-Harmers Haven coastal reserves, which are included within the management plans for adjoining parks, none of the others have management plans, published management directions, information about their values or any regulations to assist their management. Other than the vague maps, establishment date and area on the Parks Victoria parkweb website, there is little to help the community understand their history, purpose or how they may differ from coastal crown land reserves.

However, the principles of management outlined by the Land Conservation Council should be used to underpin the future management of coastal crown land reserves.

Committees of management

The Department of Environment and Primary Industries has responsibility for the management of coastal crown land reserves but it has largely delegated that responsibility to Parks Victoria, local municipalities and community-based committees of management.

All but Cardinia and Wellington among the 21 coastal municipalities have committee of management responsibility for coastal crown land reserves along sections of their coastal boundaries. Other bodies with management responsibility for coastal crown land reserves are Gippsland Ports, Parks Victoria and Phillip Island Nature Parks.

Community-based committees of management are established under *the Crown Land (Reserves) Act 1978*. These committees of management have worked with the Department of Environment and Primary Industries, local municipalities and environmental consultants to develop coastal management plans that have improved the management of their reserves. There are management plans for most of the coastal crown land reserves (i.e. foreshore reserves) now managed by committees of management and coastal municipalities. These management plans are discussed later under 'Coastal management plans'.

Along the Victorian coast there are community committees of management at Nelson, Narrawong, Fitzroy River, Apollo Bay-Kennett River, Wye River, Great Ocean Road Coast, Barwon Coast, Bellarine Bayside Foreshore, Whitecliffs to Cameron Bight, Capel Sound, Dromana, Point King, Point Nepean, Somers, Point Leo, Shoreham, Merricks, Balnarring, Crib Point-Stony Point, Jacks Beach Bittern, Warneet, Cannons Creek, Tooradin, Lang Lang, Corinella, San Remo, Phillip Island, Kilcunda, Harmers Haven, Cape

[301] Land Conservation Council 1978, *Corangamite Area: final recommendations*, Land Conservation Council, Melbourne, p.39

[302] Land Conservation Council, loc. cit.

[303] Land Conservation Council, loc. cit.

Patterson, Walkerville, Sandy Point, Shallow Inlet, Port Franklin, Seaspray Reserves, Loch Sport and Marley Point.

In the past, local committees had management responsibility over relatively small sections of coastal crown land. The management skills of their membership were limited and, in some cases, the committees cleared coastal vegetation for revenue generating campsites and caravan parks to provide funds for management. The Victorian Public Interest Research Group catalogued these and many other instances of inadequate management in the 1970s report, *A coastal retreat*[304].

When the *Coastal Management Act 1995* was passed, one of the aims was to reduce the number of committees of management. Since then, a number of committees have been merged and the new committee given responsibility over a longer section of coast. This has occurred with the separate foreshore committees of management found between Apollo Bay and Kennett River, Lorne to Torquay, Barwon Heads and Ocean Grove, and Portarlington to St Leonards.

The merging of committees has brought with it the following benefits:

- streamlining the management planning processes by having one consultation and planning preparation process rather than many separate ones. This has a significant cost benefit if consultants are being engaged to run such processes, as well as time savings for all involved
- easing the allocation of resource use and the minimisation of impacts over a longer stretch of coastline because it gives more options for the management of access and demand
- allowing the pooling and more efficient use of resources e.g. funds, equipment, staff and volunteer skills, time and expertise
- creating a larger pool of potential members of the committee
- imbuing the committee with more significant influence within the planning and management system
- assisting the integration of coastal zone management by reducing the number of responsible bodies and allowing more strategic planning and more effective management day-to-day management
- reducing the complexity of coastal governance arrangements.

The coastal committees of management oversee the use of very popular, much loved and, in many cases, very sensitive coastal environments. The pressures on these important coastal areas will continue to increase. This requires effective, adequately resourced and integrated coastal management that can be best served by further mergers of the coastal community committees of management.

The Great Ocean Road Committee, the Otway Coastal Committee, and the Barwon Coastal Committee have shown that such a reorganisation can work, having been established by combining the geographical areas of responsibility of several committees of management.

There may be resistance from some committees concerned that local involvement and influence will be reduced. In moving towards the merger of committees, the consultation process and the institutional, governance, planning and management arrangements should be designed to ensure that the local communities remain engaged in what would be integrated management extending beyond the boundaries of their current foreshore reserve.

Camping grounds, revenue raising and risks from climate change

Victoria's coastal community committees of management number fewer than 40 but they generate 40% of the total revenue of all such committees across the state. The committees on the Bellarine Peninsula and along the Great Ocean Road, by themselves, account for 28% of the statewide revenues for all committees. Campsites on the reserves generate most of the revenue stream.

In a report prepared for the Western Coastal Board, it was estimated that 'coastal van parks in Warrnambool and Port Fairy on Victoria's Great Ocean Road generate at least $34 million in estimated economic benefits for the region'[305] with an asset value of $280 million and a profit stream of $1.1 million for local councils.

Camping grounds and caravan parks on coastal crown land reserves are part of the coastal infrastructure that is at risk from future erosion and inundation caused by predicted rises in sea level due to climate change. Table 24 lists those found in Victoria on coastal crown land. Most were established on narrow coastal crown land reserves rather than nearby private land because the public land was 'free' and the facilities would generate revenue to cover management costs. Being a more basic offering than commercial alternatives, establishment costs were minimised.

But the establishment of the parks, and the car parking, roads and buildings associated with them, on a very narrow coastal crown land reserve, has caused the loss of coastal vegetation and continues to threaten it today.

Camping and caravan sites are a use that is not coastal-dependent and could be provided on nearby private land, but supporters argue they provide affordable coastal holiday accommodation in places where the alternatives are expensive. However, the greatest threat to the continued use of scarce coastal crown land for camping and caravans is not the coastal planners or environment groups wishing to remove them, it's the coastal erosion associated with climate change:

> *CCPs* [coastal caravan parks] *are typically*

[304] Victorian Public Interest Group 1974, *A coastal retreat*, Victorian Public Interest Group Melbourne

[305] thegreynomads.com.au 2013, 'Coastal van parks deliver cash boost to communities', 29 April 2013

located close to foreshores, estuaries, bushland or environmentally sensitive areas and are therefore often exposed to potential changes to coastal climate conditions and their associated hazards such as sea level rise inundation, increased coastal erosion and flood inundation. These impacts will not be evenly spread across the economy or community[306].

By comparing maps of estimated coastal inundation with the list of camping and caravan parks in Table 24, it is clear that most will be at risk from the increased coastal erosion, storm surge and flooding associated with climate change. As the table shows, many of these parks are located near a beach—the main attraction for tourists—which means they are mostly found on or behind sand dunes or near the mouths of rivers, places where coastal erosion and flooding from climate change will be most severe.

The future of coastal camping and caravan parks need to be part of the discussion about the responses to inundation and erosion— adaptation, accommodation and planned retreat. The Western Coastal Board's report lists adaptation responses that include protection (sea walls and barriers, river and estuary levees), accommodation (beach renourishment, dune revegetation or restoration, relocation of facilities to areas of lower risk) and planned retreat (relocation, expansion further inland or do nothing).

In commenting on the findings of the report, the chair of the Western Coastal Board said:

> *"Caravan parks provide affordable holiday destinations and access to the coast's myriad recreation and tourism opportunities," she said. "However, the impact of climate change on our coast has the potential to diminish many of these values, so it is critical that we understand these values and make informed decisions."*[307]

The current value or replacement cost of coastal camping and caravan parks grounds, housing, transport infrastructure and other development at or near the shoreline can be estimated with some accuracy. Not so the environmental costs, and the great danger is that the undervaluing of the environment will continue when choosing coastal responses to climate change. That could come at a high cost environmentally, socially and economically.

Zoning coastal public land

The conservation estate provides high-level protection to some sections of the Victorian coast, but the remainder is coastal crown land reserves or private land. To better conserve coastal nature will require an increase in the level of protection for the coast outside the boundaries of the conservation estate. This can be achieved by:

- enlarging the reserve by including other parcels of crown land or adjoining private land that has been purchased
- creating new reserves
- improving management.

One way to encourage management improvement for coastal crown land reserves is by clarifying their purposes through the application of management zones.

The Land Conservation Council proposed two new coastal management zones in its *Marine, estuarine and coastal special investigation*, just before its replacement by the Environment Conservation Council in July 1997, and proposed their application to more than 40 locations (see Table 26). The Coastal Protection Zone would have been applied to sensitive areas, while existing settlement (activity nodes) and recreational nodes would be zoned Coastal Recreation Zones.

Significant lengths of Coastal Protection Zone were recommended for Portland Bay between Narrawong and Port Fairy, Armstrong Bay between Port Fairy and Warrnambool, along the Great Ocean Road between Skenes Creek and Cape Patton, along the western shores of Port Phillip Bay and the eastern shore of Western Port, from San Remo to Cape Paterson, along Waratah Bay and the Ninety-mile Beach, near Marlo and along the coast at Bastion Point, Mallacoota. Table 26 shows where each of the two zones was proposed along the Victorian coastal crown land reserves.

In its first coastal strategy, the Victorian Coastal Council in 1997 broadly mapped General Recreation Zones and General Protection Zones for coastal public land outside existing parks and conservation reserves. These were consistent with those mapped by the Land Conservation Council. The zones were defined in the strategy thus:

> *Coastal Recreation Zones: areas capable of sustaining recreational opportunities for large numbers of people. This zone should be managed to minimise impacts on remnant values and the coastal environment.*
> *Coastal Protection Zones: areas in relatively natural condition or which are significant for botanical, zoological, geological or geomorphological, archaeological or historical reasons, including sites or fragile environments that are sensitive to modification This zone should contain only limited, if any, visitor facilities and access and be managed to protect the natural values of the area*[308].

Within the 1997 strategy, the Council outlined a process for assessing development applications for the use of both private and public land along the coast. Proponents would make application to the local municipality, which was followed by a process including assessment, consultation and possible appeals by affected parties. The implication was that the two zones would be used in this process when making decisions on applications for the use of coastal public land.

The Environment Conservation Council continued with the *Marine, coastal and estuarine investigation*, published an interim report in 1998, a draft report in

[306] Western Coastal Board 2013, *Climate adaptation in coastal caravan parks: economic value and equity decision support framework, Report 3*, Western Coastal Board, Geelong, p. 5
[307] thegreynomads.com.au, loc. cit.
[308] Victorian Coastal Council 1997, *Victorian coastal strategy 1997*, Victorian Coastal Council, Melbourne, p. 31

1999 and a final report in August 2000. Included in its final report were maps showing the proposed locations for the Coastal Recreation and Coastal Protection zones. The Environment Conservation Council's definitions of the two zones were similar to those of the Victorian Coastal Council.

However, the locations of the zones in the Environment Conservation Council's maps differed significantly from those of the Land Conservation Council, replacing many Coastal Protection Zones with Coastal Recreation Zones, but also occasionally replacing a Recreation Zone with a Protection Zone. The likely reason for weakening the zonings along many stretches of coast could be found in the council's comment that 'the broad nature of the guidelines has given rise to uncertainty and anxiety in some local communities'. To further clarify the purpose of the coastal zoning it went on to say:

> *The coastal zoning applies to coastal public land outside parks and conservation reserves, and will not prevent fishing in adjacent waters.*
> *Recreation is an appropriate use in both Coastal Recreation and Coastal Protection Zones – it is the capacity for, and scale of associated development that will vary. For example, development of an intensive use such as a camping ground and associated facilities would not normally be appropriate in a Coastal Protection Zone. Development of any new facilities in an area zoned for Coastal Protection would need to be consistent with protection of the natural values of the area. In most cases this would already occur.*
> *Detailed local planning for individual coastal reserves, taking into account the broad directions of the coastal zoning, will be undertaken by local managers and will involve public consultation.*

Neither body attempted to prescribe the allowable activities, leaving flexibility in on-ground management to take into consideration the particular conservation, use and management circumstances of the site. Along with recommended locations for the zones, the Environment Conservation Council also recommended that they be incorporated within the Victorian Coastal Strategy and that:

> *Detailed planning for individual coastal reserves, including determination of uses to be permitted and guidelines for development of facilities, be undertaken through existing mechanism appropriate, including coastal action plans and reserve management plans. Such planning at the local level would involve public consultation*[309]*.*

A very coarse-scale map of the two zones was included within the 2002 *Victorian coastal strategy.* It lacked detail but was broadly consistent with the Environment Conservation Council's map and retained the definitions from the 1997 strategy.

Subsequently, two zones—Public Conservation and Resource Use Zone (PCRZ) and Public Park and Recreation Zone (PPRZ)—were introduced to the Victorian Planning Provisions for use in planning schemes across the state, not just in coastal areas. These are discussed further under 'Coastal planning schemes'.

This review believes that two types of reserve, not zones, should be established for grater certainty and simplicity in approach, and based on the work of the Land Conservation Council, Environment Conservation Council and the Victorian Coastal Council.

The Coastal Conservation Reserve would be established under the *Crown Land (Reserves) Act 1978* and include those sections of coast identified by the councils but that are yet to have been included in existing national, state and coastal parks or are not in the proposed new or expanded parks of this report. On this basis, the following coastal sections from Table 26 could be gazetted as Coastal Conservation Reserves:

Western: Double Corner; Narrawong West; Narrawong East, Fitzroy River; Mounts Bay; Point Impossible; Shortlands Bluff

Central: Mornington to Mt Martha; Manton Creek; Harris; Coles Beach; Merricks Beach; Somers; Woolleys Beach; Jacks Beach; Old Tyabb; Tyabb East; Lang Lang Beach/Jam Jerrup (would include to Stockyard Point); Grantville; Old Settlement; South Corinella; Andersons Peninsula; Griffith Point

Eastern: Cape Paterson to Anderson Inlet; Anderson Inlet; Fishermans Landing (inside Lake Tyers); Betka River; Karbeethong.

The Coastal Recreation Reserves would also be gazetted under the *Crown Land (Reserves) Act 1978* and cover those areas to be managed by the new Coast Committees formed from the merger of existing committees of management. This would include most of the areas listed in Table 26 under Coastal Recreation Zone.

Care would need to be taken to delineate boundaries between the Coastal Conservation Reserves and nearby Coastal Recreation Reserves. In the case of Western Port, where there could be multiple coastal conservation reserves along its shoreline, they could be named the Western Port Coastal Conservation Reserves with a consistent set of regulations and one integrated management plan.

Consistency of regulations supported by legislation, and reserve-specific manage plans, would be critical to the effective management of both reserve categories.

Recommendations

The following recommendations are aimed at generating discussion about the ways in which the conservation of coastal nature on coastal public land can be strengthened.

1. Abandon any plans to allow commercial tourism development within the coastal conservation estate.

2a. Reduce the complexity in the mix of parks and reserves and their regulations (or lack thereof) on the coast by:

- expanding existing parks to include adjacent or nearby reserves with conservation values e.g.

[309] Environment Conservation Council 2000, *Marine, coastal and estuarine investigation: final report*, Environment Conservation Council, Melbourne, p. 31

nature conservation reserves, wildlife reserves and lighthouse reserves
- creating new parks and reserves that combine several existing reserves of conservation value.

Bioregion-specific recommendations in this harmonisation of the coastal conservation estate are found in each bioregional profile in Part 2 of this report.

The expanded and new national parks and state parks shoud remain in Schedule II and IIB of the *National Parks Act 1975*, while the recommended new and expanded coastal parks should be inserted in Schedule III.

2b. Maintain park management plans as the key document for ensuring that nature conservation, the prime objective of the parks, is achieved.

2c. Amend the name of marine and coastal parks to coastal parks[310] to differentiate them from marine national parks and sanctuaries, and transfer them to Schedule III of the *National Parks Act 1975*.

3a. Establish Coastal Conservation Reserves and Coastal Recreation Reserves to clarify and simplify the purposes and management of coastal crown land reserves, using the reports and maps of coastal conservation/protection and recreation zones prepared by the Land Conservation Council, Environment Conservation and the Victorian Coastal Council to guide the identification reserve boundaries. An example would be from Lang Lang to Stockyard Point in Western Port Bay.

3b. Assign management responsibility for the Coastal Conservation Reserves (see page 154 for a potential list) to Parks Victoria, while that for the Coastal Recreation Reserves would be assigned to the proposed Coast Committees.

3c. Prepare a management plan for each reserve or groups of reserves and provide them with regulations supported by legislation to facilitate management.

4a. Reduce the number of coastal committees of management by merging those along the following sections of coast to form Coast Committees:

- Narrawong to Port Fairy
- Adding Wye River to the Otway Coast
- Breamlea to Clifton Springs (merging Barwon Coast and Bellarine Bayside committees)
- Mt Eliza to Mt Martha
- Safety Beach to Portsea
- Flinders to Hastings
- Cannons Creek to Coronet Bay
- San Remo to Inverloch
- Walkerville to Sandy Point
- Seaspray to Loch Sport
- Port Franklin to Woodside Beach
- Gippsland Lakes (settlements and recreation areas inside Gippsland Lakes and including Lake Tyers Beach).

The Coast Committees would manage the Coastal Recreation Reserves (see above and recommendation 7 in Part 6 of this report for more details). The proposed Marine and Coastal Authority (see Recommendation 1 in Part 6 of this report) would oversee the operations of the new Coast Committees.

4b. Ensure that the process and outcome of the committee of management merging process maintains the engagement of local communities.

5. Ensure that all parks and reserves on coastal public land are covered by up-to-date management plans and publicly accessible web-based information about their location, values and management.

[310] Marine areas are already included in the boundaries of coastal reserves and in the coastal zones of municipal planning schemes. Zoning within the new parks should be able to ensure the appropriate management for the marine and coastal areas within them.

Table 24 Camping and caravan parks on crown land coastal reserves

Park and camping ground	Management
Western	
Centenary Park Caravan Park (Portland)	Shire of Glenelg (cliff top)
Narrawong Camping and Caravan Park Reserve	Committee (river mouth)
Fitzroy River Camping Ground	Committee (river mouth)
Yambuk Public Purposes Reserve Caravan Park	Shire of Moyne (low-lying on bank of Lake Yambuk near mouth)
Port Fairy Gardens Caravan Park	Shire of Moyne (Belfast Lough shore behind barrier dune)
Killarney Recreation Reserve Caravan Park	Shire of Moyne (low-lying behind beach and low dunes)
Warrnambool Surfside Holiday Park	Warrnambool (behind sand dune)
Shipwreck Bay Holiday Park	City of Warrnambool (behind sand dune)
Peterborough Camping Reserve	Shire of Moyne (north of Great Ocean Road and cliffed coast)
Port Campbell Cabin and Camping Park	Parks Victoria (river bank)
Port Campbell Recreation Reserve	Committee (river bank)
Princetown Recreation (Marine) Reserve Caravan Park	Committee (river bank)
Marengo Holiday Park	Committee (elevated sandy area behind shore platform)
Apollo Bay Cricket & Recreation Reserve Caravan Park	Committee (river bank near river mouth)
Kennett River Foreshore Reserve Caravan Park	Committee (landward of Great Ocean Road, low lying close to beach)
Wye River Foreshore Reserve Caravan Park	Otway Coast Committee (river floodplain near river mouth)
Cumberland River Holiday Park	Committee (on river floodplain near river mouth)
Lorne Foreshore Reserve Caravan Park	Committee (bank of river estuary)
Kia-ora Caravan Park Reserve	Committee (bank of river estuary)
Anglesea Beachfront Family Caravan Park	Committee (river flood plain)
Eumeralla Scout Camp	Committee (soft and eroding cliff top)
Torquay Public Reserve	Surf Coast Council (near river and behind beach)
Breamlea Caravan Park	Committee (behind sand dune and adjacent to low-lying wetlands)
Barwon Heads Caravan Park	Committee (mouth of river)
Royal Park (Point Lonsdale)	Borough (behind Point Lonsdale Sea Wall)
Victoria Park (Queenscliff)	Borough of Queenscliffe (behind sand dune)
Indented Heads Batman Park Reserve Caravan Park	Committee (low-lying between coastal road and beach)
Portarlington Seaside Resort	Committee (low-lying behind beach
Riverside Camping Area	Committee (sand spit near mouth of Barwon River)
Central	
Dromana Foreshore Reserve Caravan Park	Committee (behind beach)
Rosebud Foreshore Camping Ground	Mornington Shire (behind beach)
Rye Foreshore Camping Ground	Committee (behind beach)
Tyrone Boat Ramp Caravan Park	Committee (behind beach)
Capel Sound Foreshores	Mornington Shire (behind beach)
Sorrento Foreshore Camping Ground	Mornington Shire (behind beach)
Shoreham Foreshore Reserve Caravan Park	Committee ((behind beach)
Point Leo Foreshore Reserve Caravan Park	Committee (behind sand dune?)
Balnarring Beach Caravan Park	Committee (adjacent to beach or set back between Merricks Creek and beach)
Stony Point Caravan Park	Committee (low-lying behind sea wall and intertidal flats)
Robertson Park and Caravan Park (Balnarring)	Committee (behind beach at Balnarring)
Lang Lang Foreshore Reserve Caravan Park	Committee (low-lying right on beach)
Corinella Caravan Park	Committee (low-lying near shoreline of intertidal flats)
San Remo Foreshore Caravan Park	Committee in dune vegetation directly behind ocean beach)
Cowes Caravan Park	Bass Coast (low-lying behind beach)
Phillip Island Caravan Park (Newhaven)	Bass Coast (behind sand dune)
Gippsland	
Kilcunda Foreshore and Caravan Park	Bass Coast (behind beach)
Cape Paterson Foreshore Caravan Park	Bass Coast (behind beach)
Inverloch Foreshore Camping	Bass Coast (behind beach)
Walkerville Foreshore Reserve Caravan Park	Committee (behind beach)
Waratah Bay Caravan Park	South Gippsland (behind beach)
Shallow Inlet Camping Ground	Committee (low-lying behind inlet intertidal shoreline)
Yanakie Caravan Park	South Gippsland (low-lying behind intertidal area of Corner Inlet)
Long Jetty Caravan Park (Port Welshpool)	South Gippsland (low-lying behind intertidal area of Corner Inlet)
Woodside Beach Caravan Park	Wellington (low-lying behind sand dune)
Seaspray Foreshore Reserves Caravan Park	Committee (low-lying behind sand dune)
Loch Sport Holiday Park	Wellington (low-lying shoreline of Lake Victoria)
Eastern Beach Caravan Park (Lakes Entrance)	East Gippsland (low-lying shoreline near Cunninghame Arm)
Lakes Entrance Recreation Reserve Caravan Park	Committee (low-lying on North Arm)
Marlo Oceanview Caravan and Camping Park	East Gippsland (behind dune near mouth of Snowy River)
Bemm River CaravanPark	East Gippsland (behind vegetation on shoreline of Sydenham Inlet)
Mallacoota Foreshore Camping Park	East Gippsland (low-lying on inlet shore; elevated land on clifftop)

Source: Department of Sustainability and Environment 2010, *Crown land caravan and camping parks Victoria*, map, Department of Sustainability and Environment, Melbourne.

Table 25 Coastal crown land reserves and conservation reserves

Bioregion	Municipality	Name of coastal or conservation reserve	Area (ha)
Bridgewater	Glenelg	Discovery Bay Coastal Park	104 600
		Cape Bridgewater Coastal Reserve	2.6
Glenelg	Glenelg	Cape Nelson State Park	210
		Nelson Bay Coastal Reserve	78.3
		Point Danger Coastal Reserve	4.7
		Point Danger Reserve	127.1
Victorian Volcanic Plain		Port of Portland-Vested Land	0.3
		Portland Bay Foreshore Reserve	9.5
		Portland Foreshore	0.0
		Portland Municipal Offices	0.1
		Centenary Park Caravan Park Portland	2.4
Warrnambool Plain	Glenelg	Dutton Way Foreshore Reserve	8.6
		Narrawong Coastal Reserve	102.9
		Tyrendarra Coastline Reserve	4.5
		(Eumeralla) Yambuk Coastal Reserve	3.7
	Moyne	Eumeralla (Yambuk) Coastal Reserve	0.0
		Yambuk Public Purposes Reserve	0.5
		Yambuk Flora and Fauna Reserve	143.0
		Port Fairy Coastal Reserve	65.3
		Belfast Coastal Reserve Coastal Reserve	89.1
		Coastal Reserve	5.0
		Port Fairy Golf Club	48.7
		Warrnambool-Port Fairy Coastal Reserve	0.2
		Mepunga Coastal Reserve	5.3
		Peterborough Coastal Reserve	1.9
		Peterborough Coastal Reserve	15.4
	Warrnambool	Shelly Beach	2.5
		Thunder Point Public Purposes Reserve	28.5
		Warrnambool Coastal Reserve	4.7
		Warrnambool Foreshore Reserve	106.2
	Corangamite	Peterborough Coastal Reserve	45.6
		Port Campbell Coastal Reserve	1.4
		Great Otway National Park	2,178.9
		Port Campbell National Park	1,245.4
Otway Plain	Colac Otway	Marengo Nature Conservation Reserve	5.6
		Apollo Bay Coastal Reserve	103.1
		Apollo Bay Cricket And Recreation Reserve	6.6
Otway Ranges	Colac Otway	Coastal Reserve	0.1
		Elliot River-Addis Bay Coastal Reserve	92.9
		Kennett River Coastal Reserve	14.2
		Wongarra Coastal Reserve	1,028.3
		Wye River Coastal Reserve	2.3
		Great Otway National Park	34,361.7
	Surf Coast	Lorne-Point Roadknight Coastal Reserve	1.5
		Lorne-Queenscliff Coastal Reserve	814.0
		Lorne Caravan Park	2.1
		Lorne Foreshore Reserve	3.4
Otway Plain	Surf Coast	Great Otway National Park	10,135.7
		Boonah Coastal Reserve	0.2
		Edna Bowman Nature Conservation Reserve	0.8
		Taylor Park	9.3
		Torquay Bowling Club	1.0
		Torquay Golf Club	7.0
		Breamlea Coastal Reserve	21.3
		Breamlea Flora and Fauna Reserve	128.3
	Queenscliffe	Lorne-Queenscliff Coastal Reserve	19.6
		Point Lonsdale Foreshore Reserve	47.9
		Queenscliff Foreshore Reserve	9.2
	Greater Geelong	Breamlea Flora and Fauna Reserve	64.1
		Breamlea Caravan Park	0.9
		Lorne-Queenscliff Coastal Reserve	100.9
		Begola Wetlands Ocean Grove	7.7
		Lonsdale Lakes Wildlife Reserve	193.7
		Swan Bay-Edwards Point Wildlife Reserve	266.0
		St Leonards Recreation and Lake Reserve	20.0
		Salt Lagoon, St Leonards Wildlife Reserve	64.8
		Indented Head Foreshore Reserve	0.3
		Portarlington Foreshore Reserve	22.9
		Point Henry Foreshore Reserve	7.9
		Port Phillip Bay Coastal Reserve	61.1
Victorian Volcanic Plain	Greater Geelong	Eastern Beach Recreation Reserve	12.2

Bioregion	Municipality	Name of coastal or conservation reserve	Area (ha)
		Moorpanyal Park	5.5
		Corio Bay Foreshore	0.1
		Corio Bay Foreshore Bay	2.6
		Corio Bay Foreshore Reserve	18.5
		Limeburners Lagoon (Hovells Creek) Flora and Fauna Reserve	29.6
		Avalon Coastal Reserve	360.5
		The Spit Wildlife Reserve	50.7
	Wyndham	Port Phillip Bay Coastal Reserve	17.0
		Werribee South Foreshore Reserve	3.5
		Werribee South Public Purposes Reserve	0.3
	Hobsons Bay	Altona Foreshore Reserve	8.6
		Coastal Reserve	0.0
		Esplanade Public Park	4.8
		Altona Coastal Park	67.0
		Jawbone Coastal Reserve	33.9
		Jawbone Flora and Fauna Reserve	20.7
		Newport Riverside Park	8.9
		Williamstown Anglers Club	0.1
		Williamstown Newport Foreshore	1.4
Gippsland Plain	Port Phillip	Port Melbourne, Albert and Middle Parks Foreshore	5.0
		Port Melbourne Foreshore	3.5
		South Melbourne Foreshore	2.2
		St Kilda Foreshore Reserve	0.0
		St Kilda Foreshore Reserve/Catani Gardens	2.7
		St Kilda Seabaths	0.5
		St Kilda Marina and Surrounding Foreshore	13.0
		Elwood Canal	0.4
		Elwood Park and Elwood Foreshore Reserve	0.9
	Bayside	Brighton Beach Foreshore Reserve	0.1
		Brighton Foreshore Reserve	1.9
		Green Point Reserve	1.0
		Beach Park-Sandringham	2.5
	Kingston	Mordialloc Foreshore Reserve	0.5
		Mordialloc Mentone Beach Park	4.2
		Seaford Foreshore	4.2
	Frankston	Seaford Foreshore	2.5
		Frankston Foreshore	3.7
		Frankston Foreshore Reserve	3.0
	Mornington Peninsula	Mt Eliza Foreshore Reserve	14.1
		Mornington Foreshore Reserve	14.5
		Mornington-Mt Martha Foreshore Reserve	15.9
		Mount Martha Nature Conservation Reserve	53.1
		Dromana Foreshore Reserve	1.3
		Dromana Recreation Reserve	1.1
		Port Phillip Bay Coastal Reserve	124.0
		Rye-Rosebud Foreshore Reserve	2.1
		Blairgowrie Foreshore Reserve	0.2
		Point Nepean National Park	414.3
		Mornington Peninsula National Park	987.1
		Flinders-Somers Coastal Reserve	116.1
		Somers Foreshore Reserve	14.4
		Crib Point Foreshore Reserve	0.1
		Tyabb Foreshore Reserve	2.1
		Western Port Coastal Reserve (Com)	98.5
		Westernport Marina	9.5
		North Western Port Nature Conservation Reserve	35.8
	French Island	Tankerton Jetty Public Purposes Reserve	2.5
		French Island National Park	2,369.6
	Casey	Coastal Reserve	2.6
		North Western Port Nature Conservation Reserve	223.0
		Sawtells Inlet Foreshore Reserve	1.1
		Tooradin Foreshore Reserve	0.0
		Western Port Coastal Reserve	32.0
		Western Port Intertidal Coastal Reserve	11.2
	Cardinia	Coastal Reserve	1.9
		North Western Port Nature Conservation Reserve	162.2
		Western Port Coastal Reserve	12.5
	Bass Coast	Western Port Coastal Reserve	68.4
		Western Port Intertidal Coastal Reserve	43.8
		Lang Lang Foreshore Reserve	0.6
		Western Port Foreshore Reserve Grantville Coast Reserve	0.2
		Hurdy Gurdy Creek Nature Conservation Reserve	37.1

Bioregion	Municipality	Name of coastal or conservation reserve	Area (ha)
		The Gurdies Nature Conservation Reserve	256.9
		Grantville Nature Conservation Reserve	384.1
		Reef Island And Bass River Mouth Nature Conservation Reserve	164.2
		Phillip Island Coastal Reserve	75.8
		Phillip Island Public Purposes Reserve	0.2
		San Remo-Pt Smythe Coastal Reserve	0.1
		San Remo Coastal Reserve	23.9
		Punchbowl Coastal Reserve	2.2
		Kilcunda-Harmers Haven Coastal Reserve	263.0
		Kilcunda Coastal Reserve	45.3
		Kilcunda Nature Conservation Reserve	4.3
		Bunurong Coastal Reserve	96.4
		Wonthaggi Heathlands Nature Conservation Reserve	136.4
		Cape Patterson Coastal Reserve	2.5
		Cape Patterson Nature Conservation Reserve	1.8
		Anderson Inlet Coastal Reserve	0.8
		Inverloch Coastal Reserve	39.4
	South Gippsland	Anderson Inlet Coastal Reserve	94.0
		Point Smythe Coastal Reserve	0.6
		Fisher Reserve-Foster Beach	0.8
		Foster Beach Recreation Reserve	1.0
		Port Franklin-Port Welshpool Coastal Reserve	50.5
		Port Franklin Public Purposes Reserve	1.0
		Port Welshpool Foreshore Reserve	4.9
		Port Welshpool Public Purposes Reserve	232.2
Strzelecki Ranges	South Gippsland	Walkerville Coastal Reserve	31.5
		Waratah Bay-Shallow Inlet Coastal Reserve	779.1
		Waratah Bay Foreshore Reserve	0.1
Wilsons Promontory		Wilsons Promontory National Park	47,082
Gippsland Plain	Wellington	Port Albert Public Purposes Reserve	44.8
		Woodside Fauna Reserve	11.1
		McLoughlins Beach-Seaspray Coastal Reserve	249.4
		Gippsland Lakes Coastal Park	17 600
	East Gippsland	Paynesville Foreshore Reserve	8.8
		Gippsland Lakes Foreshore Reserve	2.2
		Raymond Island Foreshore Reserve	1.5
		The Lakes National Park	269.6
East Gippsland Lowlands	East Gippsland	Lakes Entrance-Lake Tyers Coastal Res	199.0
		Lakes Entrance-Lake Tyers Coastal Reserve	121.5
		Marlo Coastal Reserve	466.9
		Marlo Coastal Reserve	6.8
		Bemm River Caravan Park	2.2
		Mallacoota Coastal Reserve	63.9
		Croajingolong National Park	52,736.1

Source:

Table 26 Land Conservation Council's Coastal Protection and Coastal Recreation zones

Coastal Protection Zone	Coastal Recreation Zone
Bridgewater Bioregion	
	Bridgewater Bay
Glenelg bioregion	
Nelson Bay	
Point Danger	Portland
Warrnambool Plain	
Double Corner	Narrawong
Narrawong West	Port Fairy
Narrawong East	Killarney Beach
Fitzroy River	Warrnambool
The Crags	Peterborough
Old Cemetery	
Griffiths Island	
Belfast Lough	
Port Fairy Bay	
Mills Reef	
Armstrong Bay	
Curdies Inlet	
Otway Plain	
Cape Otway	
Storm Point	
Mounts Bay	
Otway Ranges	
Falls	Apollo Bay/Skenes Creek

Coastal Protection Zone	Coastal Recreation Zone
Cape Patton	Kennett River
Settlement Creek	Wye River
Teddy's Lookout	Lorne
Reedy Creek to Cinema Point	Torquay
Cinema Point	Barwon Heads
Otway Plain	
Aireys Inlet to Anglesea	Eastern View – Fairhaven
Anglesea to Point Addis to Bells	Anglesea
The Steps (east of Bells Beach)	Bells Beach to Pt Impossible
Point Impossible	Point Lonsdale
Breamlea – 13th Beach	Queenscliff
Buckley Park	Portarlington-St Leonards
Shortlands Bluff Queenscliff	Clifton Springs
Victorian Volcanic Plain	
	Geelong/Corio Bay
	Werribee South
	Altona/Williamstown
Gippsland Plain	
Mornington to Mt Martha	Port Melbourne-Sandringham
Manton Creek	Mordialloc-Chelsea
Harris	Frankston
Coles Beach	Mt Eliza Mornington
Merricks Beach	Mt Martha
Somers	Safety Beach-Portsea
Woolleys Beach	Flinders
Jacks Beach	Shoreham
Old Tyabb	Point Leo
Tyabb East	Merricks Beach/Balnarring Beach
Rutherford Inlet	Somers
Sawtells Inlet	Stony Point
Lang Lang Beach/Jam Jerrup	Hastings
Grantville	Yaringa
Old Settlement	Cannons Creek/Warneet/Blind Bight
South Corinella	Tooradin
Andersons Peninsula	Corinella
Woolamai Waters	Coronet Bay
Griffith Point San Remo	San Remo
Eagles Nest	Newhaven
Kilcunda-Cape Paterson	Rhyll
Cape Paterson to Inverloch Andersons Inlet	Ventnor-Cowes
	Tankerton/Red Bluff French Island
	Cape Paterson
	Inverloch
Strzelecki Ranges	
	Walkerville
Gippsland Plain	
Sandy Point	Waratah Bay
Port Franklin	Port Franklin
Reeves Beach	Port Albert
Jack Smith Lake	Woodside Beach
McGaurans Beach	Seaspray
Lake Bunga	Lakes Entrance
East Gippsland Lowlands	
Fishermans Landing	
Lake Corringle	Lake Tyers
Snowy River	Marlo
Motts Beach	Mallacoota
Betka River	
Karbeethong	

Source: Environment Conservation Council 2000, *Marine, coastal and estuarine investigation: final report*, Environment Conservation Council, Melbourne.

Guaranteeing coastal nature

More than 500 plant and animal species have been listed under Victoria's *Flora and Fauna Guarantee Act 1988 (FFG Act)*. Table 27 displays those that are found along the coast and included in the state's threatened flora, invertebrate and vertebrate species advisory lists[311]. The table indicates their conservation status, whether they are listed under the *FFG Act*, and whether an action statement has been prepared to help species recovery.

The advisory lists are not statutory and so there are 'no direct legal requirements or consequences that flow from inclusion of a species in this advisory list, although they are afforded some protection through the Victoria's *Native vegetation management: a framework for action'*[312]. However, they:

> *…may be of use in a range of planning processes, such as the preparation of National Park Management Plans, local government planning schemes, regional catchment strategies and in setting priorities for actions to conserve biodiversity…and serve to increase community awareness of threatened species and may encourage community members to become involved in activities to protect threatened species, thereby reducing the risk of their conservation status worsening*[313].

Table 27 contains 167 plant species and 110 animal species that are found along the Victorian coast and which appear on the advisory lists[314]. Of the plants, 28 are Endangered, 49 Vulnerable, 81 Rare and 9 Poorly Known, and of the animals, 10 are Critically Endangered, 29 Endangered, 43 Vulnerable, 27 Near Threatened and one Data Deficient.

Of the plant species on the advisory list, only 34 are listed under the *FFG Act*, while 63 of the animal species are listed, with another three nominated for listing. When a species is listed, action statements must be prepared to help its recovery. Only 17 of the 34 plant and 29 of the 63 animal species listed have had action statements prepared for their recovery.

In May 2013, environment groups launched a lawsuit against the Department of Environment and Primary Industries over its alleged breach of the act in failing to prepare action statements for the glossy black cockatoo, the long-nosed potoroo, the eastern she-oak skink and the large brown tree frog, just four of the 300 or more listed species without them:

> *Felicity Millner, Principal Lawyer at the EDO, stated 'The Glossy Black Cockatoo has been on the threatened list for 18 years, and still does not have an Action Statement. The law says that Action Statements must be prepared as soon as possible after they have been listed'*[315]

The case was settled out of court in October, with the Department of Environment and Primary Industries committing to the completion of action plans for the four species by the middle of 2014, and by the end of 2013 to develop a plan on how it will complete plans for the remaining listed species:

> *A statement from the Department of Environment and Primary Industries confirmed there were 689 species, communities or processes (such as pollution of waterways or removal of species) that did require action statements. Of these, the department said 60 per cent had either been 'drafted, published or were due for review'.*
>
> *The statement said: 'DEPI is working hard to increase the number of action statements and is working closely with scientists, species recovery teams, government agencies and community organisations. High priority statements have been identified'*[316].

Concerns about the implementation of the *FFG Act* go back some years. In 2002, Lawyers for Forests reviewed its operation and found deficiencies stemming from the lack of political will and funding for its implementation, and its objects 'being overridden by objectives and interests of bodies with conflicting agendas, such as the forestry industry'[317]. Other deficiencies included:

- no need for public decision makers and decision-making bodies to consider the *FFG Act* in their decisions
- most offences under the act do not apply to private land owners
- no provisions for the protection of listed fauna, with offences in relation to fauna in the *Wildlife Act 1975*
- no timeframes for making decisions and taking actions
- no provision for actions by third parties
- no requirement for environmental impact assessment of activities with the potential to affect listed species.

Seven years later, the Victorian Auditor General found that action plans had not been prepared for at least half the species listed under the *FFG Act*, and clearing the backlog would take at least 20 years[318].

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[311] Department of Sustainability and Environment 2005, *Advisory list of rare or threatened plants in Victoria-2005,* Department of Sustainability and Environment, Melbourne. id. 2009, *Advisory list of threatened invertebrate fauna in Victoria-2009;* id. 2013, *Advisory list of threatened vertebrate fauna in Victoria-2013*

[312] The native vegetation management framework is being replaced by a much weaker set of permitted clearing regulations

[313] Department of Sustainability and Environment 2005, loc. cit.

[314] The species contained within Table 27 is not a complete list and should only be used as a guide.

[315] www.edovic.org.au/media-release/government-taken-court-not-following-its-own-threatened-species-laws

[316] Redfearn, G. 2013, 'Endangered animals languish in Victorian government limbo', *ABC News* 1 October 2013.

[317] Lawyers for Forests 2002, *Review of the* Flora and Fauna Guarantee Act 1988 (VIC), Lawyers for Forests, Victoria

[318] Sydes, B. 2013, 'A disappearing act–the sorry tale of

On the eve of the statute's 25th anniversary, the Victorian Environment Defenders Office (EDO) in 2012 reviewed whether its use had become more effective. The answer was no. Although the EDO believed that the passing of the *FFG Act* was a significant milestone for nature conservation in the state, successive governments had failed to deliver on its promise:

> *The law broke new ground. It introduced various tools and mechanisms based on the need for real action to protect flora and fauna. For example, the Act provided for 'threatening processes' to be listed and designated for special attention, a reflection of the need to deal with causes and not just consequences. Successive governments have failed to implement almost all of the key features of the legislation*[319].

The EDO went on to say:

> *The situation has continued to worsen. No new Action Statements have been released in recent years. It's easy and obvious in the circumstances to say that the legislation is out of date. Review and improvement would be most welcome–in fact the failure to do this in the last twenty-five years is a demonstration of the lack of seriousness with which successive governments have approached biodiversity conservation in Victoria. Much-needed reforms would include moving to a greater focus on ecosystems rather than individual species, as well as crafting a regulatory framework appropriate to rapid climate change. The problem is that at the moment there is no commitment either to properly implement existing laws or to reviewing and improving the Act. Current Victorian government policy, Environmental Partnerships strategy released in November last year [2011], is to 'prepare a road map to streamline the administration of the* Flora and Fauna Guarantee Act'*, a policy commitment that succeeds in being vague and non-committal and scary all at the same time. The law is not being implemented now–how can 'streamlining' possibly be the solution?*[320]

Reform of the *FFG Act,* and a commitment from government to implementation and ensuring compliance and enforcement, are essential to enhance and expand nature conservation across Victoria and along the coast.

Recommendations

The following recommendations are aimed at generating discussion about the ways in which the conservation of coastal nature can be strengthened by amending the *Flora and Fauna* 1. Amend the *Flora and Fauna Guarantee Act 1988* and its implementation to:

- improve and accelerate the listing process
- provide a greater focus on ecosystems rather than individual species
- develop a state biodiversity strategy
- make better use of critical habitat determinations, interim conservation orders and other conservation measures
- establish a regulatory framework appropriate to rapid climate change
- include penalties for infringements under the act in relation to fauna, currently only available under the *Wildlife Act 1975*
- provide adequate resources to implement the act
- publicly release data on government orders, offences, permits and unprotected wildlife, as well as lists of conservation reserves and game reserves and their management plans
- prepare a compliance and enforcement policy and annual reporting on its implementation.

Victoria's *Flora and Fauna Guarantee Act 1988*', Environment Defenders Office website, www.edovic.org.au/blog/disappearing-act-–-sorry-tale-victoria's-flora-and-fauna-guarantee-act-1988, 3 April 2013

[319] Sydes, loc. cit.

[320] Sydes, loc. cit.

Table 27 Conservation status of rare and threatened species on the Victorian coast

Common name	Species name	DEPI Advisory List	FFG listing	FFG Action Plan
Plants				
Adamson's blown grass	*Lachnagrostis adamsoni*	V	Yes	No
Austral toad-flax	*Thesium austral*	V	Yes	Yes
Basalt peppercress	*Lepidium hyssopifolium*	E	Yes	No
Basalt podolepis	*Podolepis* sp. 1	E		
Bassian pomaderris	*Pomaderris oraria* subsp. *oraria*	R		
Beaded glasswort	*Sarcocornia quinqueflora*	K	I	
Bellarine yellow-gum	*Eucalyptus leucoxylon* subsp. *bellarinensis*	E	Yes	Yes
Blackfellow's hemp	*Commersonia* sp. aff. *fraser*	V		
Blotched sun-orchid	*Thelmytra benthamiana*	V		
Bog club-rush	*Lycopodium serpentine*	R		
Bog gum	*Eucalyptus kitsoniana*	R		
Bonnet orchid	*Cryptostylis erecta*	E	Yes	No
Bower wattle	*Acacia subporosa*	R		
Brickmaker's sedge	*Gahnia grandis*	V		
Brittle greenhood	*Pterostylis truncate*	E	Yes	Yes
Brooker's gum	*Eucalyptus brookeriana*	R		
Brown guinea-flower	*Hibbertia rufa*	R		
Bushy peppercress	*Lepidium desvauxii*	R		
Button wrinklewort	*Rutidosis leptorhynchoides*	E	Yes	Yes
Cherry rice-flower	*Pimelea drupacea*	V		
Clover glycine	*Glycine latrobeana*	V	Yes	No
Clustered darwinia	*Darwinia camptostylis*	R		
Coast ballart	*Exocarpos syrticola*	R		
Coast bitter-bush	*Adriana quadripartite*	V		
Coast bush-pea	*Pultenaea canaliculata*	R		
Coast correa	*Correa backhousiana*	V		
Coast dandelion	*Taraxacum cygnorum*	E	Yes	Yes
Coast fescue	*Austrofestuca littoralis*	R		
Coast fireweed	*Senecio* X *orarius*	R		
Coast ground-berry	*Acrotiche cordata*	R		
Coast gum	*Eucalyptus diversifolia* subsp. *megacarpa*	V		
Coast helmet-orchid	*Corybas despectans*	V		
Coast needlewood	*Hakea decurrens* ssp. *platytaenia*	R		
Coast saltwort	*Salsola tragus* subsp. *pontica*	R		
Coast speedwell	*Veronica hillebrandii*	V		
Coast stackhousia	*Stackhousia spathulata*	K		
Coast tobacco	*Nicotiana maritime*	E		
Coast twin-leaf	*Zygophyllum billardierei*	R		
Coast wirilda	*Acacia retinodes* var. *unciflora*	R		
Coastal leek-orchid	*Prasophyllum litorale*	V	Yes	No
Cobra greenhood	*Pterostylis grandiflora*	R		
Compact bedstraw	*Galium compactum*	R		
Cream spider-orchid	*Caledenia patersonii* s.s.	E		
Creeping rush	Juncus revolutus	R		
Crimson berry	*Leptocephylla juniperina* subsp. *oxycedrus*	V		
Currant-wood	*Monotoca glauca*	R		
Daisy goodenia	*Goodenia bellidifolia* subsp. *bellidifolia*	R		
Devious sea-wrack	*Halophila decipiens*	K		
Drooping velvet-bush	*Lasiopetalum schulzenii*	R		
Dune poa	*Poa poiformis* var. *ramifer*	R		
Dwarf kerrawang	*Rulingia prostrate*	E	Yes	Yes
Eastern pomaderris	*Pomaderris discolor*	R		
Eastern spider-orchid	*Caladenia fragrantissima* subsp. *orientalis*	E	Yes	Yes
Eichler's raspwort	*Haloragis eichleri*	V		
Erect violet	*Hybanthus vernonii* subsp. *vernonii*	R		
Fluffy-fruit wood-sorrel	*Oxalis thompsoniae*	K		
Fragrant leek-orchid	*Prasophyllum suaveolens*	E	Yes	Yes
French Island spider-orchid	*Caladenia insularis*	V	Yes	No

Common name	Species name	DEPI Advisory List	FFG listing	FFG Action Plan
Fringed helmet-orchid	*Corybas fimbriatus*	R		
Fringed pennywort	*Hydrocotyle comocarpa*	V		
Giant honey-myrtle	*Melaleuca armillaris ssp. armillaris3*	R		
Giant triggerplant	*Stylidium larcifolium*	V		
Golden mistletoe	*Notothixos subaureus*	R		
Granite grevillea	*Grevillea neurophylla* subsp. *neurophylla*	R		
Green leek-orchid	*Prasophyllum lindleyanum*	V		
Green midge-orchid	*Corunastylis pumila*	R		
Grey mangrove	*Avicennia marina* susbsp. *australasica*	R		
Hairy beard-heath	*Leucopogon microphyllus* var. *pilibundus*	R		
Haifry shepherd's purse	*Microlepidium pilosulum*	E		
Heathy mirbelia	*Mirbelia rubiifolia*	V		
Hoary rapier-sedge	*Lepidosperma canescens*	R		
Lacy wedge-fern	*Lindsaea microphylla*	R		
Large-fruit fireweed	*Senecio macrocarpus*	E	Yes	Yes
Large river buttercup	*Ranunculus papulentus*	K		
Late helmet-orchid (coastal)	*Corybas* sp. aff. *diemenicus*	E	Yes	No
Lax twig-sedge	*Baumea laxa*	R		
Leafless tongue-orchid	*Cryptostylis hunteriana*	E	Yes	No
Leafy greenhood	*Pterostylis cucullata*	E	Yes	Yes
Lime fern	*Pneumatopteris pennigera*	E		
Lizard orchid	*Burnettia cuneata*	R		
Long pink-bells	*Tetratheca stenocarpa*	R		
Long rope-rush	*Calorophus elongates*	V		
Long-leaf star-hair	*Astrotricha* sp. aff. *longifolia*	V		
Maroon leek-orchid	*Prasophyllum frenchii*	E	Yes	Yes
Marsh bush-pea	*Almaleea paludosa*	R		
Marsh saltbush	*Atriplex paludosa* subsp. *paludosa*	R		
Mauve-tuft sun-orchid	*Thelymitra malvina*	V		
Mellblom's spider-orchid	*Caladenia hastate*	E	Yes	Yes
Metallic sun-orchid	*Thelymitra epipactoides*	E	Yes	Yes
Morning flag	*Orthrosanthus multiflorus*	R		
Naked sun-orchid	*Thelymitra circumsepta*	V		
Netted brake	*Pteris comans*	R		
Olax	*Olax stricta*	R		
Orange-tip finger-orchid	*Caladenia aurantiaca*	R		
Oval-leaf logania	*Logania ovate*	R		
Pale guinea-flower	*Hibbertia pallidiflora*	R		
Pale swamp everlasting	*Helichrysum* aff. *rutidolepis* (Lowland Swamps)	V		
Paperbark tea-tree	*Leptospermum trinervium*	R		
Peninsula daisy bush	*Olearia* sp. aff. *lanuginosa*	R		
Pink zieria	*Zieria veronicea* subsp. *veronicea*	R		
Plum orchid	*Thelymitra mucida*	V		
Prawn greenhood	*Pterostylis pedoglossa*	V		
Prickly arrowgrass	*Triglochin mucronata*	R		
Prickly podolobium	*Podolobium ilicifolium*	R		
Prickly raspwort	*Haloragis myriocarpa*	V		
Prom she-oak	*Allocasuarina media*	K		
Proud diuris	Diuris X fastidiosa	E		
Purple diuris	*Diuris punctata var. punctata*	V	Yes	Yes
Purple eyebright	*Euphrasia collina* ssp. *muelleri*	E	Yes	Yes
Rare bitter-bush	*Adriana quadripartite*	E	Yes	No
Razor sword-sedge	*Lepidosperma limicola*	R		
Red ironbark	*Eucalyptus* aff. *tricarpa*	V		
Ribbed thryptomene	*Thryptomene micrantha*	R		
Rock coral fern	*Gleichenia rupestris*	V		
Rock guinea-flower	*Hibbertia spathulata*	R		
Roundhead bristle-sedge	*Chorizandra sphaerocephala*	V	Yes	No
Rush lily	*Sowerbaea juncea*	R		
Salt blowngrass	*Lachnagrostis robusta*	R		

Common name	Species name	DEPI Advisory List	FFG listing	FFG Action Plan
Salt lawrencia	Lawrencia spicata	R		
Scented spider-orchid	*Caladenia fragrantissima* subsp. *fragrantissima*	E	Yes	No
Sea nymph	*Amphibolus Antarctica*	K		
Sea water-mat	*Lepilaena marina*	V	Nom	
Sheath sedge	*Cyathochaeta diandra*	R		
Shingle fireweed	*Senecio diaschides*	R		
Shining geebung	*Persoonia X lucida*	R		
Shore spleenwort	*Asplenium obtusatum* var. *northlandicum*	V		
Slender leek-orchid	*Prasophyllum parviflorum*	V		
Slender mud-grass	*Pseudoraphis paradoxa*	E	Yes	No
Slender pink fingers	*Caladenia vulgaris*	R		
Slender ruddyhood	*Pterostylis aciculiformis*	K		
Slender wire-lily	*Laxmannia gracilis*	R		
Small bog sedge	*Schoenus deformis*	V		
Small golden moths	Diuris sp. aff. lanceolata (Laverton)	V	Yes	No
Small milkwort	*Comesperma polygaloides*	V	Yes	Yes
Small spotted sun-orchid	*Thelymitra* sp. aff. *ixioides*	K		
Small-leaf star-hair	*Astrotricha parvifolia*	V		
Soft skullcap	*Scutellaria mollis*	R		
Southern xanthosia	*Xanthosia tasmanica*	R		
Spiny rice-flower	*Pimelea spinescens* subsp. *spinescens*	V	(Yes)	Yes
Square raspwort	*Haloragis exalata* subsp. *exalata* var. *exalata*	V		
Striped pomaderris	*Pomaderris pilifera*	R		
Swamp baeckea	*Baeckea linifolia*	R		
Swamp beard-heath	*Leocopogon esquamatus*	R		
Swamp diuris	*Diuris palustris*	V	Yes	No
Swamp greenhood	*Pterostylis tenuissima*	V		
Swamp onion-orchid	*Hydrorchis orbicularis*	V		
Swamp violet	*Viola caleyana*	R		
Sword bossiaea	*Bossiaea ensata*	R		
Tiny arrowgrass	*Triglochin minutissima*	R		
Tiny logania	*Logania pusilla*	R		
Tiny spyridium	*Spyridium cinereum*	V		
Toothed daisy-bush	*Olearia tomentosa*	R		
Top-bog sedge	*Schoenus turbinatus*	R		
Tough scurf-pea	*Cullen tenax*	E	Yes	No
Trailing guinea-flower	*Hibbertia dentate*	R		
Variable bossiaea	*Bossiaea heterophylla*	R		
Variable smoke-bush	*Conospermum taxifolium*	V		
Venus hair-fern	*Adiantum capillus-veneris*	E	Yes	No
Viscid daisy bush	*Olearia viscosa*	V		
White supplejack	*Ripogonum album1*	R		
Wiry bog-sedge	*Schoenus carsei*	R		
Wiry stackhousia	*Stackhousia nuda*	R		
Wiry wallaby-grass	*Plinthanthesis paradoxa*	V		
Yellow elderberry	*Sambucus australasica*	V	Yes	No
Yellow milk-vine	*Marsdenia flavescens*	R		
Yellow sea-lavender	*Limonium austral*	R		
Yellow-wood	*Acronychia oblongifolia*	R		
Animals				
Australasian bittern	*Botaurus poiciloptilus*	E	Yes	No
Australasian shoveller	*Anas rhynchotis**	V		
Australian grayling	*Prototroctes maraena*	V	Yes	No
Australian mudfish	*Neochanna cleaveri*	CE	Yes	Yes
Australian pratincole	Stiltia Isabella	NT		
Australian whitebait	*Lovettia sealii*	CE	Yes	No
Azure kingfisher	*Alcedo azura*	NT		
Baillon's crake	*Porzana pusilla*	V	Yes	No
Black falcon	*Falco subniger*	V		
Black-browed albatross	*Thalassarche melanophris*	V		

Common name	Species name	DEPI Advisory List	FFG listing	FFG Action Plan
Black-faced cormorant	*Phalacrocorax fuscescens*	NT		
Black-tailed godwit	Limosa limosa	V		
Blue-billed duck	*Oxyura australis*	E	Yes	Yes
Broad-toothed rat	*Mastacomys fuscus mordicus*	E	Nom	
Brolga	*Grus rubicundus*	V	Yes	Yes
Burrunan dolphin	*Tursiops australis*	E	Nom	
Bush stone-curlew	*Burhinus grallarius*	E	Yes	Yes
Caspian tern	*Sterna caspia*	NT	Yes	No
Common diving-petrel	*Pelecanoides urinatrix*	NT		
Common greenshank	*Tringa nebularia*	V		
Common sandpiper	*Actitis hypoleucos*	V		
Curlew sandpiper	*Calidris ferruginea*	E		
Diamond firetail	Stagonopleura guttata	NT	Yes	No
Diamond python	*Morelia spilota spilota*	E	Yes	Yes
Dwarf galaxias (Barwon River to Mitchell River)	*Galaxiella pusilla*	E	Yes	No
Eastern bristlebird	*Dasyornis brachypterus brachypterus*	E	Yes	Yes
Eastern curlew	*Numenius madagascariensis*	V		
Elegant parrot	Neophema elegans	V		
Fairy prion	*Pachyptila turtur**	V		
Fairy tern	*Sterna nereis nereis*	E	Yes	No
Four-toed skink	*Hemiergis peronei*	NT		
Freckled duck	*Stictonetta naevosa*	E		
Glenelg river spiny cray	*Euastacus bispinosis*	E	Yes	Yes
Glenelg freshwater mussel	*Hyridella glenelgensis*	CE	Yes	No
Glossy black-cockatoo	*Calyptorhynchus lathami lathami*	V	Yes	No
Glossy grass skink	*Pseudemoia rawlinsoni*	V		
Glossy ibis	*Plegadis falcinellus*	NT		
Great knot	*Calidris tenuirostris*	E	Yes	No
Green and golden bell frog	*Litoria aurea*	V		
Grey goshawk	*Accipiter novaehollandiae*	V	Yes	No
Grey plover	*Pluvialis squatarola*	E		
Grey-headed albatross	*Diomedea chrysostoma*	V	Yes	Yes
Grey-headed flying-fox	*Pteropus policephalus*	V	Yes	No
Grey-tailed tattler	*Tringa brevipes*	CE	Yes	No
Ground parrot	*Pezoporus wallicus wallicus*	E	Yes	No
Growling grass frog	*Litoria raniformis*	V	Yes	No
Gull-billed tern	*Sterna nilotica*	E	Yes	No
Hardhead	*Aythya australis*	V		
Heath mouse	*Pseudomys shortridgei*	NT	Yes	Yes
Hooded plover	*Thinornis rubricollis rubricollis*	V	Yes	Yes
Intermediate egret	*Ardea intermedia*	E	Yes	Yes
King quail	*Coturnix chinensis victoriae*	E	Yes	No
Lace monitor	*Varanus varius*	E		
Large-footed myotis	*Myotis macropus*	NT		
Latham's snipe	Gallinago hardwickii	NT	Nom	
Leathery turtle	*Dermochelys coriacea*	CE	Yes	Yes
Lesser sand plover	*Charadrius mongolus*	CE		
Lewin's rail	*Lewinia pectoralis*	V	Yes	No
Little egret	*Egretta garzetta*	E	Yes	Yes
Little tern	*Sterna albifrons sinensi*	**V**	Yes	Yes
Long-nosed potoroo	*Potorous tridactylus tridactylus*	NT	Yes	No
Marsh sandpiper	*Tringa stagnatilis*	V		
Martin's toadlet	*Uperoleia martini*	CE		
Musk duck	*Biziura lobata*	V		
Nankeen night heron	*Nycticorax caledonicus*	NT		
New holland mouse	*Pseudomys novaehollandiae*	**V**	Yes	Yes
New zealand fur seal	*Arctocephalus forsteri*	V		
Orange-bellied parrot	*Neophema chrysogaster*	CE	Yes	Yes
Otway black snail	*Victaphanta compacta*	E	Yes	No

Common name	Species name	DEPI Advisory List	FFG listing	FFG Action Plan
Pacific golden plover	*Pluvialis fulva*	V		
Pacific gull	*Larus pacificus*	NT		
Pied cormorant	*Phalacrocorax varius*	NT		
Powerful owl	*Ninox strenua*	V	Yes	Yes
Red knot	*Calidris canutus*	E		
Red-tailed black-cockatoo	*Calyptorhynchus banksii*	E	Yes	Yes
Regent honeyeater	*Xanthomyza Phrygia*	CE	Yes	Yes
Royal spoonbill	*Platalea regia*	NT		
Ruddy turnstone	*Arenaria interpres*	V		
Rufous bristlebird	*Dasyornis broadbenti caryochrous*	NT	Yes	Yes
Sanderling	*Calidris alba*	NT		
Shy albatross	*Diomedea cauta*	V	Yes	No
Smoky mouse	*Pseudomys fumeus*	E	Yes	Yes
Sooty oystercatcher	*Haematopus fuliginosus*	NT		
Southern bent-wing bat	*Miniopterus schreibersii bassanii*	CE	Yes	No
Southern brown bandicoot	*Isoodon obesulus obesulus*	NT	Yes	No
Southern giant-petrel	*Macronectes giganteus*	V	Yes	Yes
Speckled warbler	*Chthonicola sagittata*	V	Yes	No
Spot-tailed quoll	*Dasyurus maculatus*	E	Yes	Yes
Spotted harrier	Circus assimilis	NT		
Square-tailed kite	*Lophoictinia isura*	V	Yes	No
Striped legless lizard	*Delma impar*	E	Yes	Yes
Striped worm-lizard	*Aprasia striolata*	NT	Yes	No
Swamp antechinus	*Antechinus minimus maritimus*	NT	Yes	No
Swamp skink	*Egernia coventryi*	V	Yes	No
Swift parrot	*Lathamus discolor*	E	Yes	Yes
Terek sandpiper	*Xenus cinereus*	E	Yes	No
Turquoise parrot	*Neophema pulchella*	NT	Yes	No
Tyler's toadlet	*Uperoleia tyleri*	DD		
Variegated pygmy perch	*Nannopercha variegata*	V	Yes	Yes
Wandering albatross	*Diomedea exulans*	E	Yes	Yes
Whiskered tern	*Chlidonias hybridus*	NT		
White-bellied sea-eagle	*Haliaeetus leucogaster*	V	Yes	Yes
White-faced storm-petrel	*Pelagodroma marina*	V		
White-footed dunnart	*Sminthopsis leucopus*	NT	Yes	No
White-throated needle-tail	*Hirundapus caudacutus*	V		
White-winged black tern	Chlidonias leucopterus	NT		
Wood sandpiper	Tringa glareola	V		
Yarra pygmy perch	*Nannopercha obscura*	V	Yes	Yes
Yellow sedge-skipper butterfly	*Hesperilla flavescens flavescens* (V)	V	Yes	No
Yellow-nosed albatross	*Thalassarche chlororhynchos*	V	Yes (part)	No

Source: Department of Sustainability and Environment 2008, *Advisory list of environmental weeds of coastal plains and heathy forests bioregions of Victoria–2008*, Department of Sustainability and Environment, Melbourne. id., *Advisory list of threatened invertebrate fauna in Victoria-2009.* id. *Advisory list of threatened vertebrate fauna in Victoria-2013*. Land Conservation Council 1993, *Marine, coastal and estuarine investigation discussion paper*, Land Conservation Council, Melbourne. Management plans of national, state and coastal parks found along the Victorian coast.

Key to abbreviations: CE=Critically Endangered; E=Endangered; V=Vulnerable; NT=Near Threatened; R=Rare; DD=Date Deficient; DEPI=Department of Environment and Primary Industries; FFG=*Flora and Fauna Guarantee Act*. An underlined abbreviation indicates that the conservation status of that species has worsened since the publication of the 'Sites of biological interest' in Land Conservation Council 1993, *Marine, coastal and estuarine investigation discussion paper*, Land Conservation Council, Melbourne. A bold abbreviation indicates that the status has improved from Endangered to Vulnerable..

Statewide planning

The *Planning and Environment Act 1987* established the institutional arrangements, planning principles and planning processes that guide the planning, management and development of coastal land, especially within the preparation and implementation of municipal planning schemes. These schemes are strategic as well as statutory in their control of the use, development and protection of private and public land along the coast. The Department of Planning and Community Development, which is now part of the Department of Transport, Planning and Local Infrastructure, oversees planning in the state.

The Victorian Planning Provisions provide a consistent set of statewide planning standards for use by municipalities when preparing and implementing their planning schemes. The provisions include the State Planning Policy Framework, which outlines the strategic issues of state importance that must be considered when decisions are made, as well as the zones, overlays and other provisions that municipalities must choose from when preparing their local schemes.

The Victorian Planning Provisions also insist that each municipality develop a Local Planning Policy Framework that identifies future land use and development and explains the provisions of the planning scheme. This must be consistent with the state framework and also include a Municipal Strategic Statement and Local Planning Policies to outline the vision for the municipality.

The policies of the State Planning Policy Framework apply statewide, but as Table 28 shows, some of its clauses refer specifically to the Victorian coast. The objectives and strategies contained within the subclauses of Clause 11 Settlement and Clause 12 Environment and Landscape Values in Victoria's State Policy Planning Framework deal directly with coastal planning, while Clause 12 also provides planning guidance on the protection of native vegetation (this will soon be updated by the new 'permitted clearing regulations). Table 28 summarises these objectives and strategies.

The clauses provide clear statements of policy that should be used to protect and enhance nature along the coast. But they are subject to interpretation, and can be undermined by other state government policies including ministerial decisions on and government support for coastal development, on the nature of zoning used in planning schemes, and on regulations for the clearing of vegetation.

Planning zones

Part 2 of this report discussed a number of ministerial decisions, and state government support, for coastal developments that will impact on coastal nature. Soon after its election in 2010, the new state government also made significant changes to planning zones used in municipal planning schemes.

Table 29 outlines the changes made to the zones by the government which it claims will, among other things, cut red tape on additions to buildings, provide flexibility for future subdivision, attract and retain population in rural Victoria and make prohibited uses discretionary in all the rural zones [321].

Changing the minimum allotment size in subdivisions in the Rural Living Zone from 8 ha to 2 ha could impact on vegetation cover. Although a maximum height limit is set in the amended zones (except for the mixed use and low-density residential zones), the maximum height can be exceeded if allowed within a schedule to the zone in the planning scheme. Although height in itself does not necessarily impact on coastal nature, pressures could intensify if large-scale resort developments lead to increased numbers of people visiting the coast.

Although 96% of the coast is in public ownership, that leaves about 80 km of private land abutting high water mark. Much of this is found between Portland and Peterborough, and along the eastern shoreline of Western Port. Most of this land is zoned Farming Zone, however, Rural Living, Rural Conservation and Residential zones are also found abutting high water mark.

As well as the conditions of use applying to the zones, the zones themselves can be amended to higher intensity uses and usher in land-use change, one of the major threats to coastal nature. The Shire of Corangamite's C30 planning scheme amendment, which affected land between Peterborough and Moonlight Head, is one example of this. Although coastal planning schemes are essential for resource allocation and for striking a balance between competing and at times conflicting uses, they should be underpinned by a fundamental objective to protect and expand coastal nature.

Managing native vegetation clearance

The *Planning and Environment Act 1987* is also the statute under which the new 'permitted clearing regulations' will be administered. Landowners wishing to remove vegetation must make application to their local council. Until recently, this was done under the Native Vegetation Management Framework established by the previous state government, but the current government's 'permitted clearing regulations' will replace it.

The original framework was flawed but the new system will make it far easier for landowners to remove native vegetation from their properties. Although designed to 'cut green tape', the new regulations will 'cut green cover' on land. Table 30 summarises the new framework and indicates what aspects need to be strengthened, including an objective of net gain in vegetation cover, an independent regulator and new native vegetation legislation.

The State of the Environment Victoria report 2013 also identified weaknesses in the new regulations:

[321] Department of Planning and Community Development, 'Reformed rural zones', www.dpcd.vic.gov.au/planning/theplanningsystem/improving-the-system/new-zones-for-victoria/new-and-improved-rural-zones

It is recommended that the Victorian Government protect native vegetation on public and private land by amending permitted clearing regulations. The amendments will include:

- *recognising the contribution of native vegetation to all ecosystem services*
- *expanding the tools for clearing application assessments to include ground-truthing at all scales*
- *a requirement that all applications outline the steps that have been taken to avoid and minimise the extent of native vegetation that is proposed for clearing*[322].

The new regulations will make use of native vegetation maps prepared by the Department of Environment and Primary Industries, maps that have been shown to be inaccurate, as reported in *The Sunday Age* on 8 December 2013:

> *The petrolhead haven of Calder Park is normally dominated by drag racing and hot rods. But if state government mapping is to be believed, then the race track's infield is also the unlikely home for rare native plants.*
>
> *Over in Greensborough, the Yandell Reserve supports orchids known as Silurian striped greenhoods and is a breeding ground for the endangered Eltham copper butterfly. Yet the same maps record nothing of note.*
>
> *These are some of the errors conservationists and scientists say are peppered through Victoria's native vegetation maps, set to become the backbone of clearing laws under Napthine government changes.*
>
> *Conservationists fear this will see rare native flora wrongly removed because under the changes vegetation less than a hectare in size, and mapped as low risk, will no longer need an on-ground survey before it is cleared*[323].

The newspaper was reporting on a statement released by 100 leading scientists and 70 conservation groups urging the government to drop the proposed changes to native vegetation clearing regulations. *The Age* also reported that the Indigenous Flora and Fauna Association had 'found 50 sites of endangered vegetation wrongly mapped as low risk, including areas in Altona, Bulleen and Castlemaine. Association president Brian Bainbridge said the sites did not take long to find and are hardly a comprehensive list'[324].

Melbourne University ecologist Dr Yung En Chee, a signatory to the statement, expressed her concerns 'about the removal of an overall goal for a net gain in the extent and quality of native vegetation'[325], while the environment minister's office said that the 'maps were developed so landholders could easily access information, apply for a clearing permit and avoid the need for a costly consultant'[326].

[322] Commissioner of Environmental Sustainability 2013, Victoria state of the environment 2013, p. 247
[323] Arup, T. 2013, Ecologists see dangers in poor mapping of Victorian native vegetation, *The Sunday Age*, 8 December 2013
[324] Arup, loc. cit.
[325] Arup, loc. cit.
[326] Arup, loc. cit.

Responding to climate change

What should be done about the impacts of climate change along the coast? The three critical actions are:

- work towards mitigating climate change by reducing greenhouse pollution and increasing the use of renewable energy
- build an understanding of likely changes to coastal processes and their effect on coastal nature and infrastructure
- ensure that the legislative, institutional, policy and planning settings will ensure the objective and transparent analysis of protection and planned retreat responses.

The *Victoria State of the Environment 2013* report advocated serious consideration of planned retreat:

> *Although likely to be publicly and politically unpalatable, decisions such as planned retreat of coastal and bushfire prone communities, or moratoria on building permits, the reality is that these actions will need to be considered. These approaches can save lives, investments and possessions in the long term. They can also delay or eliminate the need for permanent and costly infrastructure investments by the State Government, and they are the decisions we need to be making now.*
>
> *Continued development in at-risk areas places many Victorian households at risk from coastal and river flooding due to the combination of long-term sustained sea-level rise and storm surges from increases in extreme weather.*
>
> *It is critical that Victoria adhere to the planning strategies stated in the* Victorian Coastal Strategy 2008 *and relevant sections of the Victorian Planning Provisions. In addition to a planning benchmark, specific triggers based on modelling, which mandate certain development regulations in coastal areas are desirable. For instance, if projected sea-level rise for a coastal area reaches 0.2 metres, specific flood protection building regulations must be applied to new and redevelopment (e.g. an 'x' centimetre rise in floor height for new buildings and renovations). If projected sea-level rise reaches 0.8 metres, a moratorium on all development must occur and if sea-level rise reaches 1.1 metres, retreat and relocation must begin to take place*[327]

But decisions by the state government are making it more difficult to adequately respond to climate change impacts on the coast. For example, the government's decision to allow housing along an eroding shoreline at Narrawong will reduce the options available to councils in planning for climate change along the coast.

In early 2010, the minister for planning in the previous state government appointed an expert committee to advise on how to deal with the coastal impacts of climate change. After a period of public consultation, the Coastal Climate Change Advisory Committee presented its final report in December 2010 to the planning

[327] Commissioner of Environmental Sustainability 2013, *State of the environment Victoria 2013*, Commissioner for Environmental Sustainability Victoria, Melbourne, p. 486

minister in the new state government. The report noted that:

> *The impacts of climate change over the next 90 years on the Victorian community and the Victorian environment are likely to result in significant changes to where and how we live. Nowhere will this be felt more keenly than on the coast where a significant proportion of the Victorian community lives*[328].

The report contained 32 recommendations, with those of particular relevance to this report being:

- amending the objectives of the *Planning and Environment Act 1987*, so that they 'identify and plan for the potential impacts of climate change in order to minimise risks to human health and safety and to ecological communities'
- amending coastal planning schemes to add sea-level rise figures of 0.2m by 2040 and 0.5m by 2070 to the existing requirement to consider a sea-level rise of 0.8m by 2100.
- new planning controls for protecting biodiversity and alerting stakeholders to the risks of building in coastal areas including:
  - Coastal Conservation Zone (CCZ) to protect natural coastal environments
  - Coastal Adaptation Zone (CAZ) to assist at risk communities adapt to climate change, including relocation
  - Coastal Hazard Overlay (CHO) to alert landowners and decision makers to coastal risks and hazards.

According to the committee:

> *Introducing a new zone like a CCZ could provide for the achievement of a relevant land use and development zoning tool, increase the ability of the zone to properly address coastal climate change impacts and avoid unforeseen consequences from interference with existing zone structures.*

Included in the final report was a draft Coastal Conservation Zone for insertion into the Victorian Planning Provisions, along with recommended amendments for the Public Conservation and Resource Zone and Rural Conservation Zone that would 'promote and facilitate the capacity and ability of natural systems and biodiversity on the coast and estuaries to adapt in response to projected sea level rise associated with climate change' [329].

The planning minister did not support the recommended Coastal Conservation Zone believing that the 'Rural Conservation may be used to deal with and respond to relevant conservation needs'[330].

In this regard it had been the committee's view that:

> *Amending an existing VPP zone like the RCZ - which has state wide use and is general in its intent to address a fundamentally coastal hazard risk – is not considered ideal, for a number of reasons. For example, in changing the table of land use to better reflect those land uses that should require a planning permit or perhaps be prohibited in coastal hazard areas may create unforeseen ramifications elsewhere across the State where the zone is applied. Or it may restrict the desirability of applying the zone in locations away from the coast*[331].

Although the minister adopted the recommended 0.2 m by 2040 sea-level-rise benchmark, it will be used to allow infill development in existing towns previously precluded by the longer-term benchmark. For example, this could lead to the residential development of low-lying land on the northern margins of Tootgarook Swamp. The 0.8 m benchmark will continue to apply but only to greenfield proposals between settlements.

The minister did not support the advisory committee's proposal for an additional benchmark of 0.5 m by 2070 or either the Coastal Conservation Zone, Coastal Adaptation Zone or Coastal Hazard Overlay. *The Age* reported that the minister's response suggested a winding back of development rules on the coast:

> *The Baillieu government will wind back rules making new property developments in seaside towns plan for sea-level rises caused by climate change, arguing they have hampered rural growth.*
> *Planning Minister Matthew Guy has also rejected recommendations of a major review that climate change should be specifically considered under state planning laws.*
> *Announcing the changes yesterday Mr Guy said the previous rules - which forced developers to factor in a sea-level rise of 80 centimetres by 2100 - had been too restrictive.*
> *''Regional Victoria bore the brunt of much of the previous Labor government's coastal planning paralysis with moratoriums and extreme controls which locked many towns out of being able to grow sensibly,'' he said*[332].

The committee had also recommended that:

> *A new objective be inserted at Section 4(c) of the Planning and Environment Act 1987 as follows:*
> *To identify and plan for the potential impacts of climate change in order to minimise risks to human health and safety and to ecological communities*[333].

However, the planning minister believed that the statute's existing objectives were adequate. According to the Victorian EDO:

> *…the Minister's response fails to recognise Victoria's coastal biodiversity, and the need to help it to deal with climate change impacts, and avoid coastal squeeze. The role of Councils and referral authorities in this process – their responsibilities and liabilities – still remains extremely unclear*[334].

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[328] Coastal Climate Change Advisory Committee 2010, *Final Report Volume 1*, *December 2010,* Planning Panels Victoria, Melbourne, p. 11

[329] ibid., p. 178

[330] Minister for Planning 2012, Coastal Climate Change Advisory Committee: Response from the Minister for Planning, p. 8

[331] Coastal Climate Change Advisory Committee, op.cit. p. 102

[332] Arup, T. 2012, 'State eases sea level regulations', *The Age*, 6 June 2012

[333] Coastal Climate Change Advisory Committee, op.cit. p. 32

[334] Croggon, N. 2012, 'Is the minister for planning actually planning for coastal climate change?', Environment Defenders Office website, www.edovic.org.au/blog/minister-planning-actually-planning-coastal-climate-change, 6 June 2012

Recommendations

The following recommendations are aimed at generating discussion about the ways in which the conservation of coastal nature can be strengthened by improvements to coastal planning.

1. Include in the Victorian Planning Provisions, the State Planning Framework and coastal municipal planning scheme, an objective that aims to protect existing coastal nature, reverse its decline and help it adapt and move inland in response to sea level rise and other climate change impacts.

2. Strengthen the decision guidelines within the clauses of the State Planning Policy Framework, where they apply to coastal areas, to encourage the restoration of EVCs along the coast on public and private land.

3. Strengthen the provisions within the Vegetation Protection Overlay in the Victorian Planning Provisions and have it applied to all coastal and hinterland EVCs within 500 m of the coast on private and public land. Application of the overlay to public land should encourage the removal of threats such as poorly placed access tracks, car parks, roads and structures.

4. Strengthen the Environmental Significance Overlay within the Victorian Planning Provisions to include a mandatory 100 m buffer zone on private land abutting the high water mark, abutting a coastal conservation reserve, coastal reserve or coastal crown land reserve, and stream banks and estuaries. Within that buffer:

- development would not be permitted
- actions to remove and control weeds and pest animals would be required to reduce threats and encourage vegetation maintenance and restoration
- vegetation restoration would be encouraged with financial assistance from the Coastal Private Land Conservation Program
- the buffer and boundaries between private and public land would be fenced to encourage vegetation restoration.

The buffer in the Shire of Moyne Environmental Significance Overlay should be used as a model. Private landholders affected by the overlay buffer should be resourced to restore the coastal and hinterland EVCs in the buffer, using funds from the proposed Coastal Private Land Conservation Program.

5. Strengthen the permitted clearing regulations as proposed in Table 31 and amend provisions in the State Planning Policy Framework to ensure that the clearing of coastal EVC regrowth requires a permit.

6. Apply the overlays for Environmental Significance, Significant Landscape and Vegetation Protection to coastal public and private land to ensure consistent recognition and protection of coastal nature.

7a. Insert the Coastal Conservation Zone, Coastal Adaptation Zone and the Coastal Hazard Overlay into the Victorian Planning Provisions, and amend the Public Conservation and Resource Zone and Rural Conservation Zone as recommended by the Coastal Climate Change Advisory Committee.

7b. Insert a new clause into the Victorian Planning Provisions with objectives, methodology and process for cost-benefit analyses of coastal infrastructure projects that include ecosystem services valuation.

7c. Insert a new objective into Section 4(c) of the *Planning and Environment Act 1987* that would be to identify and plan for the potential impacts of climate change in order to minimise risks to human health and safety and to ecological communities, as per the recommendation of the Coastal Climate Change Advisory Committee.

Table 28 Coast-relevant clauses in the State Planning Policy Framework

Clause	Objective	Strategies	Policy guidelines *
11 Settlement			
11.05-5 Coastal settlement	To plan for sustainable coastal development.	Support a network of diverse coastal settlements that provides for a broad range of housing types, economic opportunities and services. Direct residential and other urban development and infrastructure within defined settlement boundaries of existing settlements that are capable of accommodating growth. Avoid linear urban sprawl along the coastal edge and ribbon development within rural landscapes and protect areas between settlements for non-urban use. Avoid development on ridgelines, primary coastal dune systems and low lying coastal areas.	*Victorian Coastal Strategy* (Victorian Coastal Council, 2008).
12 Environmental and landscape values			
12.01 Biodiversity			
12.01-1 Protection of habitat	To assist the protection and conservation of biodiversity, including native vegetation retention and provision of habitats for native plants and animals and control of pest plants and animals.	Assist the protection of conservation values of national parks and conservation reserves Assist the conservation of the habitats of threatened and endangered species and communities as identified under the Flora and Fauna Guarantee Act 1988, including under-represented species such as native grasslands, grassy woodlands and wetlands Address potentially threatening processes identified under the Flora and Fauna Guarantee	

Clause	Objective	Strategies	Policy guidelines *
		Act 1988 Assist re-establishment of links between isolated habitat remnants. Ensure that any changes in land use or development would not adversely affect the habitat values of wetlands and wetland wildlife habitats designated under the Convention on Wetlands of International Importance (the Ramsar Convention) or utilised by species designated under the Japan-Australia Migratory Birds Agreement (JAMBA) or the China- Australia Migratory Birds Agreement (CAMBA). Consider the potential impacts of land use and development on the spread of plant and animal pests from areas of known infestation into natural ecosystems. Ensure that the siting of new buildings and works minimises the removal or fragmentation of native vegetation. Encourage the use of property vegetation plans or works programs. Consider the need to protect waterways and soil from degradation that may result from the loss of native vegetation and the use of voluntary conservation agreements.	
12.02 Coastal areas			
12.02-1 Protection of coastal areas	To recognise and enhance the value of the coastal areas to the community and ensure sustainable use of natural coastal resources	Land use and development planning is to be coordinated with the requirements of the Coastal Management Act 1995 to: • provide clear direction for the future sustainable use of the coast, including the marine environment, for recreation, conservation, tourism, commerce and similar uses in appropriate areas • protect and maintain areas of environmental significance • identify suitable areas and opportunities for improved facilities	*The Victorian Coastal Strategy*
12.02-2 Appropriate development of coastal areas	To ensure development conserves, protects and seeks to enhance coastal biodiversity and ecological values	Ensure development is sensitively sited and designed and respects the character of coastal settlements. Encourage revegetation of cleared land abutting coastal reserves. Maintain the natural drainage patterns, water quality and biodiversity within and adjacent to coastal estuaries, wetlands and waterways. Avoid disturbance of coastal acid sulfate soils. Protect cultural heritage places, including Aboriginal places, archaeological sites and historic shipwrecks.	*The Victorian Coastal Strategy* *The Coastal Spaces Landscape Assessment Study* (Department of Sustainability and Environment, 2006). Any relevant coastal action plan or management plan approved under the *Coastal Management Act 1995* or *National Parks Act 1975*.
12.02-3 Coastal Crown land	To achieve development that provides an environmental, social and economic balance.	Ensure that use and development on or adjacent to coastal foreshore Crown land: • Maintains safe, equitable public access and improves public benefit whilst protecting local environmental and social values. • Demonstrates need and coastal dependency. • Is located within a defined activity or recreation node.	*The Victorian Coastal Strategy* The purpose for which land is reserved under the *Crown Land (Reserves) Act 1978.* Any relevant coastal action plan or management plan approved under the *Coastal Management Act 1995* or *National Parks Act 1975*.
12.02-4 Coastal tourism	To encourage suitably located and designed coastal and marine tourism opportunities.	Ensure that a diverse range of accommodation options and coastal experience are maintained and provided for and that sites and facilities are accessible to all. Ensure tourism developments demonstrate a tourist accommodation need and support a nature-based approach within non-urban areas. Ensure developments are of an appropriate scale, use and intensity relative to its location and minimises impacts on the surrounding natural visual, environmental and coastal character.	*The Victorian Coastal Strategy* *The Coastal Spaces Landscape Assessment Study*
12.02-05 Bays	To improve the environmental health of the	Reduce major environmental pressures associated with urban growth and development	*Port Phillip and Westernport Regional Catchment Strategy*

Clause	Objective	Strategies	Policy guidelines *
	bays and their catchments.	within catchments of Port Phillip Bay and Western Port by: • Requiring growth area planning to protect significant natural assets. • Improving the quality of stormwater entering waterways, particularly that emanating from construction sites and road development. Improve waterway management arrangements for the whole of the Port Phillip Bay and Western Port catchments. Protect coastal and foreshore environments and improve public access and recreation facilities around Port Phillip Bay and Western Port by: • Requiring coastal planning and management to be consistent with the Victorian Coastal Strategy 2008. • Managing privately owned foreshore consistently with the adjoining public land.	(Port Phillip Regional Catchment and Land Protection Board, 1997).
12.02-06 The Great Ocean Road region	To manage the sustainable development of the Great Ocean Road region.	Protect public land and parks and identified significant landscapes. Ensure development responds to the identified landscape character of the area. Manage the impact of development on catchments and coastal areas. Manage the impact of development on the environmental and cultural values of the area. Manage the growth of towns Improve the management of access and transport Encourage sustainable tourism and resource use	*The Victorian Coastal Strategy* *The Great Ocean Road Landscape Assessment Study* (Department of Sustainability and Environment, 2004). *The Great Ocean Road Region - A Land Use and Transport Strategy* (Department of Sustainability and Environment, 2004).

Source: Victorian government, State Planning Policy Framework, http://planningschemes.dpcd.vic.gov.au/vpps/combinedPDFs/VPPs_All_Clauses.pdf. *(Planning must consider these as relevant.

Table 29 Changes to rural zones in the State Planning Policy Framework

Rural Activity Zone	Farming Zone	Rural Conservation Zone	Rural Living Zone
Purpose of this zone The Rural Activity Zone provides for the use of land for agriculture and other rural activities. **Key features** Changes to the existing Rural Activity Zone propose to: • exempt some farming related uses from a permit • reduce the restrictions for alterations and extensions to dwellings and farm buildings • remove the mandatory requirement for a s.173 agreement which restricts future subdivision applications after an initial subdivision is approved • remove the prohibition on different types of Accommodation, Retail and Warehouse uses • increase the threshold for persons that can be accommodated in a Bed and breakfast from 6 to 10 without a permit.	**Purpose of this zone** The Farming Zone provides for the use of land for agriculture. **Key features** Changes to the existing Farming Zone propose to: • promote retaining population to support existing rural communities • exempt some farming related uses from a permit • reduce the restrictions for alterations and extensions to dwellings and farm buildings • remove the mandatory requirement for a s.173 agreement which restricts future subdivision applications after an initial subdivision is approved • remove conditions which restrict and prohibit some uses • make less uses prohibited and more uses discretionary including retail and commercial uses • remove the prohibition on different types of accommodation allowing a permit application • remove the prohibition on schools allowing a permit application increase the threshold for persons that can be accommodated in a bed and breakfast from 6 to 10 without a permit.	**Purpose of this zone** The Rural Conservation Zone protects and enhances natural resources and the biodiversity of the area. **Key features** Changes to the existing Rural Conservation Zone propose to: • reduce the restrictions for alterations and extensions to dwellings and farm buildings • remove the mandatory requirement for a s.173 agreement which restricts future subdivision applications after an initial subdivision is approved • make less uses prohibited and more uses discretionary including retail and commercial uses • remove conditions which restrict and prohibit some uses • remove the prohibition on different types of accommodation allowing a permit application • remove the prohibition on schools allowing a permit application • increase the threshold for persons that can be accommodated in a Bed and breakfast from 6 to 10 without a permit.	**Purpose of this zone** The Rural Living Zone provides for residential use in a rural environment. **Key features** Changes to the existing Rural Living Zone propose to: • remove the mandatory requirement for a s.173 agreement which restricts future subdivision applications • reduce the restrictions for alterations and extensions to dwellings and farm buildings • reduce the minimum lot size for subdivision and construction of a single dwelling from eight hectares to two hectares • increase the threshold for persons that can be accommodated in a Bed and breakfast from 6 to 10 without a permit.

Source: Government of Victoria fact sheets, www.dpcd.vic.gov.au/planning/theplanningsystem/improving-the-system/new-zones-for-victoria.

Table 30 Improving the management of native vegetation

Issue	Government management	Appropriate management
Policy context	No clearly articulated policy context, other than minimising 'green tape'.	Achieve progressive reparation of native vegetation across landscapes. Respond to over-clearing and its impacts on e.g. biodiversity loss, erosion and salinity, water quality decline, and loss of amenity. Broad-based policy purposes: i.e. biodiversity and land protection functions. Include consideration of social and cultural elements and climate regulation etc. Undertake comprehensive study of the performance of the system (to date), work from this base and provide ecological policy context (not green tape agenda).
Overall objective	'No net loss in the contribution made by native vegetation to Victoria's biodiversity'.	Net gain in extent and quality of native vegetation across the landscape' Ensure the system provides consistent application of the objective so that everyone is treated fairly.
3-step approach (avoid-minimise-offset)	Remove requirement for avoidance/minimise destruction for majority (90% or more) of permit applications	Strengthen 3-step approach with requirement to avoid/minimise first. 3-step approach to be required for all applications. Clearing and offsetting should only be as a last resort.
Assessment and decision-making	Reliance on mapped and modelled data (Natureprint) in majority (90%) of permit applications. The instructions for NaturePrint state that it is not to be used at the fine scale or for statutory planning purposes.	Requirement for on-ground assessment to establish on-site values, these assessments include the review of mapping and available datasets, to inform permit decisions. Digital datasets alone not to be used for statutory planning (i.e. permit issuing) purposes. Expert on-site assessments should be retained.
Monitoring, compliance and enforcement	No details and no funding proposed	Systematic approach to monitoring, compliance and enforcement at both the local government and State levels which would include: o auditing of permit-holders performance o establishment of environmental monitors o establishment of independent Native Vegetation Regulator to oversee and implement monitoring etc. o publication and registration online of all relevant information o resources to local government to perform its duties. Regular reporting of the success of the system and also for the 'state of native vegetation/habitat' in Victoria, including estimates of illegal clearing.
Offsets system	Makes offsetting and trading of offsets easier with no rules provided on how offsets will be chosen. Offsets to focus on areas of 'high biodiversity value' but no information provided on how these areas will be determined	Make offsetting achieve genuine gains: o require offsets to be in addition to securing legal protection of native vegetation at offset site, i.e. the specified improvements must be achieved o require offsets to achieve gains in extent (via regeneration/revegetation) as well as in quality. o ensure that offsets are found with consideration for maintaining local natural values.
Governance of the system	No clear information provided on this.	Need for independent regulator, with a new stand-alone piece of Native Vegetation legislation Separate policy functions of government department and regulation of the native vegetation management system.

Source: Victorian National Parks Association 2013,

Victorian coastal strategies

Coastal Management Act 1995

When Mark Birrell, then Minister for Environment and Conservation, made his second reading speech on the *Coastal Management Bill 1995* on 21 March 1995, he said:

> *There can be no doubt of the great importance and value Victorians attach to our coastline. The coast contains many important features of ecological, geological and scientific interest, together with landscapes of scenic, archaeological and cultural significance. The 2000-kilometre coastline of Victoria is one of the state's most significant assets. The vast majority of Victorians live close to the coast. It is one of our leading tourism destinations, and it supports key port infrastructure. It provides enjoyment and recreation for a high proportion of Victorians.*
>
> *Our coasts are coming under increasing pressure for a variety of uses, which can result in land use conflicts and the degradation of coastal habitat. The challenge is to ensure that its many attributes are managed in a sustainable fashion and that decisions about competing uses are balanced in the interests of all Victorians.*
>
> *On coming to office in 1992 we inherited an unworkable system of coastal management, which had evolved without any sense of direction or purpose since last century. Today there are about 160 separate agencies, municipalities and committees of management involved in running the Victorian coast, operating under 29 separate acts of Parliament.*
>
> *Despite the multitude of agencies and legislation there has never been a coordinated strategy for the Victorian coast, and since the demise of the Port Phillip Authority in 1984 there has also been an absence of leadership. That ad hoc approach resulted in inappropriate subdivisions in sensitive habitats, ocean outfalls that contaminated popular swimming beaches with untreated sewage, lack of boating and associated recreation and tourist facilities and poorly sited and designed coastal structure.*
>
> *A major failing is the virtual exclusion of the Victorian public from coastal planning and management with limited opportunities for public involvement. There is also an appalling lack of information and educational effort in relation to the coast. It is essential that the trend away from public involvement be reversed as a matter of priority*[335].

The *Coastal Management Act 1995* established the institutional arrangements—Victorian Coastal Council and regional coastal boards—and processes for policy development and the preparation and implementation of coastal strategies, action plans and management plans.

The purposes of the *Coastal Management Act 1995* are to provide for:

- *coordinated strategic planning and management for the Victorian coast*
- *the preparation and implementation of management plans for coastal Crown land*
- *a coordinated approach to approvals for the use and development of coastal Crown land*[336].

The objectives of the act are to:

- *plan for and manage the use of Victoria's coastal resources on a sustainable basis for recreation, conservation, tourism, commerce and similar uses in appropriate areas*
- *protect and maintain areas of environmental significance on the coast including its ecological, geomorphological, geological, cultural and landscape features*
- *facilitate the development of a range of facilities for improved recreation and tourism*
- *to maintain and improve coastal water quality*
- *to improve public awareness and understanding of the coast and to involve the public in coastal planning and management*[337].

The statewide strategic coastal planning role rests with the Victorian Coastal Council, which prepares the *Victorian coastal strategy,* the key strategic planning document that sets the statewide policy framework for coastal planning and management. Oversight of the implementation of the strategies and plans rests with the three coastal boards in the Gippsland, Central and Western regions.

It is now almost two decades since the *Coastal Management Act 1995* came into force. Since then the Victorian Coastal Council has prepared three coastal strategies—in 1997, 2002 and 2008—and is now finalising a fourth after a period of public consultation that ended in December 2013.

The Coast is unclear now reviews the three coastal strategies and analyses the draft Victorian coastal strategy 2013. Subsequent sections will consider coastal action plans and coastal management plans.

Victorian coastal strategy 1997

The 1997 strategy's vision for Victoria's coast was:

> *The coast of Victoria will be a pleasure to experience by both present and future generations, respected by all and recognised as one of the nation's icons*[338].

No one would have argued with 'pleasure', 'respected', 'recognised' and 'icons', for these words could be all things to all people: ministers, developers, bureaucrats,

[335] Birrell, M. 1995, *Coastal Management Bill 1995*, Second Reading Speech, 21 May 1995

[336] Government of Victoria 1995, *Coastal Management Act 1995,* Government of Victoria, Melbourne, p. 1.

[337] ibid., p. 5

[338] Victorian Coastal Council 1997, *Victorian coastal strategy 1997*, Victorian Coastal Council, Melbourne, p. 2

tourist operators, park managers, community environment groups, etc.

But the vision said nothing about the tangible outcomes of strategic planning along the coast. What kind of experience would be pleasurable: five-star hospitality and a golf course or a walk along a pristine beach? What features would be iconic: high-rise resorts and major roads or restored coastal vegetation and sheer cliffs protected from development close to their edge? Why would the coast be given respect and who would give it: developers gaining rezonings to intensify use or schoolchildren removing invasive plants?

To provide answers to those and other questions the 1997 strategy[339] was structured around a hierarchy of four principles for coastal and marine management, all of which feature in subsequent strategies. They are:

Sustain: address threats to the coastal environment, improve water quality and increase awareness of coastal management issues

Protect: establish a representative system of coastal and marine parks and reserves, and protect sites of natural, cultural, historical, visual and built significance

Direct: establish an effective and efficient coastal planning system that ensures quality design and outcomes, defines activity nodes and areas for appropriate development, and minimises strip development

Develop: ensure appropriate commercial and recreational development of benefit to tourists and residents, and improve managed access to popular coastal areas.

As part of the 1997 strategy, 19 coastal areas were defined as priorities for the management of threats that included erosion/sedimentation turbidity, altered catchment hydrology, altered coastal processes, marine pollution, introduced marine organisms and inappropriate fire regimes.

To address processes that threatened coastal and marine biodiversity, the strategy urged the documentation of significant values, identification of significant threats, statewide management strategies for threats, the use of coastal action plans and municipal planning schemes, and the preparation of action statements for listed species under the *Flora and Fauna Guarantee Act 1988*.

To protect coastal habitats and their native fauna the strategy recommended the use of planning schemes to enhance wetland management, the setting of criteria for artificial estuary openings, rehabilitation of degraded and fragmented coastal strips, removal of livestock from primary dunes, weed control, mapping of coastal EVCs, control of feral animals, and efforts to develop complementary activities on private land adjoining the coast.

Mechanisms recommended for improvement of conservation on private coastal land included covenants, buybacks, land swaps, awareness programs and volunteer support for landholders in conservation projects.

[339] ibid., p. 8

The strategy also developed coastal public land zones (General Recreation Zone and General Protection Zone) for coastal planning schemes, defined activity nodes to 'direct future use and development outcomes to sites which are suitable and of strategic benefit', the use of buffer zones to manage the risk of coastline fluctuations, the use of setback lines for areas unsuited to coastal development, and clearly stated what the strategy meant by appropriate coastal development.

Recommendations were also made in the 1997 strategy to discourage coastal car parks and roads on primary dunes, and to encourage coordinated processes in the improved provision of boating infrastructure, tourism facilities and walking trails.

Victorian coastal strategy 2002

Five years later the *Victorian coastal strategy 2002* updated the 1997 vision for the coast:

> *This vision is wide-ranging and inclusive. It is a vision that preserves the diversity of our coast, its flora and fauna, its natural beauty, and the diversity of activities you'll find there. It is a vision which invites all Victorians to become involved, to take pride in our coast and to share in its stewardship.*

Biodiversity protection, diverse activities, community engagement and stewardship were the key elements of a vision that is some way from wide-ranging and inclusive.

However, the contents expanded on that of the 1997 strategy, providing more detail on the environmental, social and economic context for coastal issues and the future of coastal planning tasked to deal with them.

The 2002 strategy catalogued the multiple agencies with a coastal interest, demographic change along the coast, and the coast's economic values. It maintained the hierarchy of principles from 1997 but now referred to suitable development and made more prominent the concept of ecologically sustainable development. It also refined what was considered to be appropriate coastal development as that which:

- *enhances protection and rehabilitation of the environment and biodiversity*
- *results in increased public benefit having regard to the social, economic and environmental implications*
- *is sensitively sited and designed*
- *minimises public risk*
- *is set back from the coast as far as practicable in line with vulnerability assessments*
- *facilitates multiple-use of sites and existing infrastructure, without resulting in over-use*
- *facilitates improvements of sites or existing developments that have poor environmental or social performance*
- *is consistent with the requirements of coastal planning strategies and plans, and relevant planning schemes*[340].

[340] Victorian Coastal Council 2002, *Victorian coastal strategy 2002*, Victorian Coastal Council, Melbourne, p. 21

Although the hierarchy of principles was retained, it was not used to provide the structure to the strategy. Rather, the 2002 strategy outlined the objectives and actions to achieve its vision under six themes: marine and estuarine environments, natural onshore environment, people on the coast, access, built environment and coastal infrastructure, and coastal-dependent industry.

The actions for the conservation of biodiversity were couched in slightly different language or were updated in terms of their institutional arrangements and delivery mechanisms, but they were largely similar to those in the 1997 strategy.

In terms of coastal access, the 2002 strategy introduced the concepts of regional access strategies and local traffic management plans, encouraged alternative modes of transport, and stated that there should be no new roads parallel to the coast. It also mapped a hierarchy of boating facilities that would apply up until 2010.

The concept of activity nodes was initiated by the 1997 strategy, but the 2002 strategy went further by introducing the need for township growth boundaries to 'ensure that growth in coastal areas is planned, coastal values protected (e.g. environmental, scenic, cultural) and the needs of future generations respected'[341].

The 2002 strategy also focused on coastal-dependent use into which it included commercial and recreational fishing, port and boating infrastructure, aquaculture, energy, and cultural and nature-based tourism.

Victorian coastal strategy 2008

A new vision for the coast was created for the 2008 strategy:

> *A biologically and culturally rich, diverse coastal, estuarine and marine environment that is managed for its protection, sustainable use and enjoyment today and for future generations[342].*

This is the clearest and most targeted of the three visions and has protection, management, sustainable use and intergenerational equity as the key outcomes for coastal planning.

The 2008 strategy returned to the 1997 coastal strategy structure based on the hierarchy of four principles. It replaced the 2002 strategy's six themes with three significant coastal issues— climate change, population growth and marine ecological integrity— and to ecologically sustainable development and integrated coastal zone management it added two new key concepts: ecosystem-based management and adaptive management.

The hierarchy of principles was now presented as:

> *1. Provide for the protection of significant cultural and environmental values*
> *2. Undertake integrated planning and provide clear direction for the future*
> *3. Ensure the sustainable use of natural coastal resources*
> *4. Ensure suitable development on the coast[343].*

It also further refined the concept of appropriate development to mean that it:

- *is consistent with relevant coastal policies and plans*
- *responds to existing or preferred coastal character*
- *is functionally dependent upon a coastal location*
- *reverses or addresses coastal degradation*
- *demonstrates net community benefit, taking into consideration long term environmental, social and economic impacts[344].*

The 2008 strategy included more background material on coastal issues and actions, and expanded the treatment of marine, estuarine and wetland planning and management. It replaced 'objectives' with 'policies'; actions were designed to implement the policies. There was a new section on caravan parks and camping grounds, but less material on coastal-dependent use—only policies for ports and 'other significant coastal-dependent land use and development'. The appendices included maps labelled 'Coastal settlement framework: spatial growth management' indicating where high, moderate and low spatial growth could occur on the coast. The maps were the product of the *Coastal Spaces Initiative* of 2005.

The actions and policies of the 2008 strategy had similar sentiments to previous strategies. However, there was a greater focus on responses to climate change and marine issues, and updated delivery and institutional mechanisms.

Draft Victorian coastal strategy 2013

The draft Victorian Coastal Strategy 2013 was released for 12 weeks of public consultation in September 2013 and is due for finalisation in February 2014. This section briefly summarises its contents and then considers its strengths and weaknesses.

The 2013 draft coastal strategy opens with a new vision for the coast: *A healthy coast enjoyed by all now and in the future[345]*.

This is quite different to the more targeted one of the 2008 strategy: *A biologically and culturally rich, diverse coastal, estuarine and marine environment that is managed for its protection, sustainable use and enjoyment today and for future generations[346]*.

The 2013 vision is a less wordy harking back to the vagueness of the 1997 strategy: *The coast of Victoria will be a pleasure to experience by both present and future generations, respected by all and recognised as one of the nation's icons[347]*.

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[341] ibid. p. 39
[342] Victorian Coastal Council 2008, *Victorian coastal strategy 2008*, Victorian Coastal Council, Melbourne p. 18
[343] ibid., p.3
[344] ibid., p. 23
[345] Victorian Coastal Council 2013, *Draft Victorian coastal strategy 2008*, Victorian Coastal Council, Melbourne, p. 3
[346] Victorian Coastal Council 2008, p.18
[347] Victorian Coastal Council 1997, loc. cit.

However, the draft strategy then breaks the vision into its three key elements—'health', 'enjoyment' and 'now and in the future'—and provides details on what the strategy hopes to achieve for each.

For a 'healthy coast', the key points are that the coast should support the Victorian lifestyle, have its significant areas protected, its beaches, estuaries and marine waters clean and healthy, diverse coastal indigenous vegetation, and coastal engineering that considers natural coastal process.

The key points under 'enjoyed by all' are Victorians being proud of healthy coasts, respect for Traditional Owners, a wide range of coastal experiences, coastal access, well-located and well-designed support facilities and buildings, and separate coastal settlements with distinctive characters.

For 'now and in the future' the strategy emphasises the best-available science for decision-making in planning and management, the engagement of Aboriginal groups in management, the economic use of coastal resources consistent with sustaining a healthy and productive coast, long-term, holistic and integrated planning that is across jurisdictions and sectors, and adaptation in planning and management.

The new vision is generic and populist and, like the 1997 vision, could mean all things to all people. However, the breakdown of the key elements, which have also been reflected in part in earlier visions, is a useful addition by providing some targets that could be, with appropriate indicators, measured over time.

On page 11 the strategy states its purpose, which is to:

- *provide guidance for agencies and statutory decision-making along the coast and in marine and estuarine environments*
- *provide a framework for the development and implementation of other plans such as Coastal Action Plans and Coastal Management Plans and a coastal context for the development of related strategies like Regional Catchment Strategies, planning schemes and Regional Waterway Strategies*
- *engage the community to value the coast and marine environment and to participate in its planning and management.*

The strategy then refers to the underpinning of the strategy by Integrated Coastal Zone Management, briefly describes the planning framework and then outlines what its sees as the coast's important environmental, social, cultural and economic values.

The strategy identifies six key issues, up from the three—climate change, population growth and marine ecological integrity—of the 2008 strategy. They are:

> *1. Building our capacity to adapt to coastal hazards and to work with communities across all levels of government, on longer-term adaptation planning.*
> *2. Financing coastal infrastructure, and ensuring effective governance of the coast in the face of pressures, such as a growing population and aging infrastructure.*
> *3. Managing population growth on the metropolitan and regional coast, and the impact of increased use and visitation and sustaining coastal township character.*
> *4. Better understanding the real value of natural assets on the coast, and explicitly considering this value when assessing development proposals.*
> *5. A more integrated and holistic approach for planning and managing the marine environment.*
> *6. Ensuring a balance between local community, regional and state-wide decision-making authority, reflecting that historical settings may not be appropriate for the future.*

Each of the issues is then described and a desired outcome of addressing the issue recommended. The desired outcomes for each are:

> *1. Natural coastal processes are adopted as the preferred form of defence against possible impacts of a changing climate. New development (and alterations to existing development) avoids areas subject to coastal hazards and does not interfere with natural coastal processes.*
> *2. Financing arrangements for the protection and use of coastal land, and the provision and maintenance of coastal infrastructure, are adequate to address the impacts of a changing climate and population growth pressures.*
> *3. Sustainable coastal settlements are planned to support a healthy environment, a sustainable economy, and strong social and cultural values. Green breaks are used between coastal settlements to preserve the character of the coastline.*
> *4. Improved methods for valuing ecosystem services are used to allow the balance between competing coastal and marine values to be negotiated transparently and systematically.*
> *5. An integrated and holistic approach is used for the management and planning of the marine environment. Coastal waters, estuaries, wetlands and the terrestrial environment are managed to promote healthy marine ecosystems that support connectivity and adaptation.*
> *6. Local communities actively participate in coastal and marine management and planning. Integrated Coastal Action Plans balancing state-wide policies with regional and local priorities.*

The draft strategy then revisits the hierarchy of principles, which have been used throughout the various iterations of the coastal strategy and are fundamental to coastal planning and management of the Victorian coast. But like the draft 2013 vision, the principles have been shortened and popularised:

> *Principle 1 Provide for the protection of significant environmental and cultural values* is now 'value and protect'.
> *Principle 2 Undertake integrated planning and provide clear direction for the future* has been shortened to 'plan and act'.
> *Principle 3 Ensure the sustainable use of natural coastal resources*, and *Principle 4 Ensure development on the coast is located within existing modified and resilient environments where the demand for development is evident and the impact can be managed*, have been merged into 'use and enjoy'.

The first two principles do not lose their meanings in the abridgement, but principles 3 and 4 do by the removal of any reference to sustainability or appropriate development. This could simply be resolved by adding the word sustainably at the end of the term.

In pages 29-63 of the strategy, each of the four hierarchical principles is broken down into a series of key points for consideration and action, a brief outline of the issues and then desired outcomes, policies for decision making and a set of actions with the responsible lead agencies identified for their implementation.

Each of the desired outcomes, policies for decision making and the actions for each principle has been reviewed for this report. The results are presented here in a series of comments, and in Tables 43 to 61 in Appendix 2 to this report. Tables 43 to 61 uses italics to indicate text that should be removed for the final coastal strategy, bold text is new text for inclusion, and plain text indicates that this review regards the existing draft desired outcomes, policies and actions as sound.

In general, the following comments can be made about the desired outcomes, policies and actions put forward in this section of the draft coastal strategy:

- the conservation of coastal nature is rarely mentioned, nor is the coastal conservation estate
- coastal resource development is a dominant theme
- there are more policies than actions, raising doubts about the implementation process
- the implementation process is very much 'in-house' for the bureaucracy, with many actions delegated to the development-focused Department of Environment and Primary Industries
- there is a reliance of faith in existing strategies but no explanation as to how the objectives, policies and actions of those strategies fit with the coastal strategy
- there is a heavy influence from state government policy, with the strategy following rather than leading policy.

Principle 1 Value and Protect

Appreciating and valuing the coast: This subsection briefly states the value of coastal ecosystems before discussing trade offs between the environment and commercial development. The 'desired outcome' (see Table 43 in Appendix 2) indicates that for the strategy, every coastal decision is a trade off between conservation and development, which would appear to be a contradiction of Principle 1.

Better valuing natural ecosystems will, according to the strategy, give them a better position around the negotiating table. But even if negotiations are conducted 'transparently and systematically', there is no guarantee of conservation. One of the major issues with such negotiations is that the balance of power is clearly with development, the economic benefits are usually inflated and the social and economic costs minimised or largely ignored. This was evident in the cost-benefit analyses for both the Channel Deepening Project [348]and the Bastion Point development[349]; despite this, each proceeded.

Nothing in this subsection suggests that coastal national parks and conservation reserves should have any higher status in such negotiations. Will they too be subject to transparent and systematic negotiations over the commercial developments being pursued along the coast by the state government?

Scientists consider that for conservation to be effective, there should be a minimum percentage of natural ecosystems protected within reserves e.g. 20-30% of marine habitats, but this is not mentioned here. The inference from this subsection is that coastal ecosystems will be at risk of development whether within reserves or not.

The draft strategy also states that the new valuations of natural systems will 'assist in prioritising the allocation of resources to coastal and marine environmental activities'. Unfortunately the activities are not defined and 'assist in prioritising' could mean that their priority is downgraded. Those wishing to prevent an expansion of the reserve system will be encouraged by this subsection.

Cultural heritage: This subsection only desires to see significant cultural heritage protected when it is appropriate without indicating the circumstances when it is not. This is restated in the policy section, even though the subsection's introduction outlines the strength of the coastal connections and culture of Indigenous communities and the legal framework for their recognition.

Marine environments: Much of the introduction to this subsection considers the impacts of climate change, but nothing in the desired outcomes, policies or actions addresses them. And although there is welcome stress on the need to integrate marine planning and management, the strategy uses just one sentence to discuss it.

The 'integration' action in this subsection mentions development of a framework for integration of marine management (there are no such actions for terrestrial management), including agreed objectives and spatial maps. But as shown in the analysis of coastal action plans that follows this section, integration has been a repeated aim of coastal planning documents without success. Other than 'collaboration', the draft strategy does not propose any other effective integration mechanism.

For the marine management framework to be effective, integration needs to be locked in from the beginning. In Victoria's case that requires a revitalised framework that ensures strategic links between marine, coastal and catchment planning. Even so, the objectives must be measurable with clear targets and timelines, the spatial maps referred to should be used to delineate

[348] Economists at Large 2007, Channel deepening: Supplementary Environmental Effects Statement Expert Witness Presentation, Planning Panels Victoria 17 July 2007
[349] Save Bastion Point www.savebastionpoint.org.au

spatial management zones, and one agency driving planning, preferably a marine and coastal authority as proposed in Part 6 of this report. Without these features in the framework, the next coastal strategy in five year's time will again refer to the need for integration.

Wetlands and estuaries: The coverage of the issues facing estuaries is limited in this subsection's introduction and ignores land-based pollution, port development and drainage schemes. It does, however, note the issues caused by levees and other structures but fails to include any policies or actions regarding them. Although the policies included in this subsection are generally sound, there is only one limited action cited (on climate change), which raises doubts about how the policies will be implemented.

Onshore environments: Although 'onshore environments' are the dominant habitats of the Victorian coast, this section presents very few policies and actions for their protection and management. The introduction to this subsection is also limited in its scope, focusing unduly on the NaturePrint program and the DEPI asset identification process rather than acknowledging the significant role that the coastal conservation estate and public coastal land generally plays in protecting onshore environments. Although the desired outcome refers to the coastal conservation estate, there is little in the draft policies and actions that will work towards its ongoing protection and enhancement.

Catchments and water quality: Here is a reasonable summary of the issues but a reliance on existing strategies to address them. By focusing on water quality, the strategy fails to acknowledge the importance of environmental flows entering estuaries. More should also be made of the use of water sensitive design in the retrofitting of existing urban areas to reduce the impacts of stormwater pollution.

Principle 2: Plan and Act

Supporting community participation: The recent reduction in the number of Coastcare coordinators is the unfortunate backdrop to this subsection and undermines the sentiments of the second desired outcome, which is to support and recognise community involvement. The policies and actions do little to address this, focusing on awards, networking and longitudinal research, rather than putting more paid people on the ground to encourage and support volunteering, especially where isolation and small populations limit the number of volunteers.

Sustainable coastal settlements: One of the longer subsectional introductions, it deals with the role of coastal settlements, township boundaries and green breaks between them, and regional growth plans developed by the Department of Planning and Community Development.

According to the draft strategy 'Regional Growth Plans focus on planning for an adequate supply of residential and employment land for the next 30-40 years' and Map 1 in the strategy's appendices indicates that the settlements chosen for growth reflect current growth patterns.

Regional growth plans lock in population growth and allocating coastal and near-coastal land, such as Spring Creek at Torquay and Armstrong's Creek on the Bellarine Peninsula to 'residential and employment' uses, will inevitably impact on coastal nature.

The strategy goes on to state that 'Coastal communities need to identify the characteristics of their towns that they wish to protect' and that 'Economic opportunities arising from coastal resources should be supported. The introduction of new rural zones will support new land use and development opportunities for tourism in regional coastal areas'.

These two statements are of concern.

Does the first statement mean that coastal communities can also decide what town characteristics they do not wish to protect and will they be permitted to act on those decisions? The inference taken is that statewide and regional conservation objectives could be relegated to a lower priority.

The draft strategy does not indicate how the 'economic opportunities' referred to in the second statement will be identified, selected and supported, and what limits may be placed on such economic exploitation. Further, the new rural zones do open up land development opportunities, but that will undermine sound coastal planning and management. The strategy's 'green breaks' between coastal communities could very easily be sacrificed to tourism.

A list of environmental considerations and risks for development contains flooding, landslip, erosion, bushfire or geotechnical issues and acid sulphate soils, but there is little on the risk to onshore environments from coastal development.

Without a set of criteria by which to measure the ecological sustainability of coastal settlements, it is unclear what the draft strategy means by this term.

The focus of this subsection is on spatial growth and the maintenance of 'non-urban breaks', which are not necessarily natural environments. Here is a major contradiction in the overall strategy. On one hand it wishes to limit the spatial growth of coastal settlements, while on the other it is not discouraging development on public coastal land within or between those coastal settlements e.g. community benefit principle for buildings on coastal crown land, the siting of energy resource development and commercial development of the coastal conservation estate.

Some of the proposed policies are sound—it is pleasing to see the policy to prohibit canal estates—but they are being undermined by government policies that are encouraging linear development along the coast and which have been covered elsewhere in *The coast is unclear*.

Coastal hazards and natural coastal processes: The introduction to the desired outcomes, policies and

actions of this subsection gives some detail about the impacts from coastal hazards i.e. climate change. The government's new sea-level rise benchmark of 0.2 m by 2040 for infill in existing developed areas has been adopted by the draft strategy, and the maintenance of the 0.8 m by 2100 sea-level benchmark for greenfield areas. This may not be without its impact on remnant coastal nature in settled areas e.g. Tootgarook Swamp.

By referring to some natural coastal processes in the negative as coastal hazards e.g. erosion and inundation and sand dunes, this subsection could encourage the managers and/or owners of coastal infrastructure to demand defensive works for its protection.

Balancing decision making: It is unclear from the introduction to this subsection and its set of desired outcomes, policies and actions, as to what the draft strategy means by 'balancing decision making'. It does not appear to mean restoring the balance between development and conservation that for too long has favoured development? Nor does it appear to mean giving more power to communities—involvement does not necessarily translate to effective engagement.

Ensuring that local plans reflect statewide and regional principles is closer to the mark, although under 'Sustainable coastal settlements' the draft strategy says local communities should identify what characteristics of their community they wish to protect.

Based on the sole action in this subsection, which refers to business plans and generating sustainable revenue streams, it would appear that 'balancing the books' is what the draft strategy really means.

It is disappointing that the only action for 'balancing decision making' is the generation of a sustainable revenue stream, for it gives decision making a narrow development focus. The development of coastal crown land reserves for generating revenue to cover management costs has led to the loss of coastal nature.

Although the introduction to this subsection raises the possibility of merging committees of management, there is no reference to that in the subsequent policies and actions.

Research and knowledge sharing: This subsection's introduction refers to the need for improvements in scientific information on coastal, estuarine and marine ecosystems to establish better baselines and understandings, but the policies and actions largely stress the status quo despite there being reductions in the research capacity of government agencies.

Emergency management: Although emergencies are by definition sudden and spontaneous events, there is a requirement for training activities that can impact on marine and coastal environments. The Australian Navy has established many environmental strategies to ensure its training operations are minimal in their impact. Victoria's emergency services should do likewise. The other element that is ignored in this introduction is that development choices, such as the expansion of the Port of Hastings, can increase the risk of emergencies.

Principles 3 and 4: Use and Enjoy

Siting and design of buildings and infrastructure on the coast: The content of this subsection has been a focus in each of Victoria's coastal strategies and many planning documents that have gone before. However, in the 2008 strategy the idea of net community benefit was introduced to the discussion and is again prominent here as 'structures providing significant community benefit'.

The 'community benefit' idea undermines the concept that proposed uses of public coastal open space should be dependent on a coastal location. It could be seen as giving a green light to those government agencies, municipalities and developers who wish to see public coastal land developed for uses that do not require a coastal location but would cost a great deal more if they were to be built on nearby private land e.g. the aquatic centre at Rosebud.

It is therefore ironic to see in Policy 5 that 'Associated rentals, fees, rates and taxes will be competitively neutral to discourage the use of coastal Crown land as a cheap alternative to private land'.

Although activity nodes are described in this subsection's introduction as being located off coastal crown land and in coastal settlements, in Policy 3 they are referred to as being on coastal crown land. They should be on private land and this shoud be clarified in the final strategy.

Visitation and tourism: Here the draft strategy supports the coastal development policies of the state government in relation to commercial tourism development on coastal private land and in national parks.

Although the draft strategy indicates the need to balance private land development with the need to manage increasing pressures on coastal areas, it fails to make that point for development in national parks, merely stating that such development 'reflects the understanding that the provision of appropriate and environmentally sensitive tourism infrastructure can complement natural values, enhance visitor experiences, and encourage visitors to stay longer'[350].

Access on the coast: Debate about the type, location and scale of access to the coast has and will continue to be furious. But the inappropriate location of roads, car parks and structures along the coast has undermined nature conservation.

The construction of buildings for special interest groups, such as angling and boating clubs, has created inequity of coastal access. Just because coastal waters are needed for fishing, there is no need for an exclusively used angling or boating club building on scarce public open space on coastal crown land reserves.

[350] Victorian Coastal Council 2013, p. 57

Perhaps the complex issues and arguments surrounding access are the cause of the confusing second desired outcome.

In the first part it is saying that lifesaving, angling, yachting and boating clubs should be supported in their use of the coast. Does that mean that they can continue to have exclusive access to public coastal land to erect buildings for their exclusive use and to have infrastructure e.g. boat ramps and artificial reefs constructed to 'support' their use?

In the second part the access given to the clubs must be in ways that allow access and use by the broader community. Does that mean opening up the club buildings to broader community use, or consolidating multiple buildings into one to create smaller footprints and giving more open space to the broader community? The introduction and the subsequent policies and actions do nothing to clarify the statements.

Boating and water-based activities: Boating and water-based activities, and the infrastructure established to support them, have caused environmental impacts at many locations along the Victorian coast and reduced access by the broader community.

Although the introduction to this subsection is a good summary of the issues, there is heavy reliance on boating action plans that fail to adequately consider the broader marine impacts of the boating infrastructure and the water-based activities associated with it. One such impact is that of the recreational fishers who are supported by the infrastructure to catch unknown numbers of fish and of species for which there is currently insufficient scientific knowledge to understand the ecological impact.

Sustainable ports: This subsection's introduction simply describes the role of local and commercial ports in the Victorian economy without giving any indication of what is meant by 'sustainable ports'. This again highlights the failure of the strategy to define sustainability in any measurable way whether in relation to ports, fishing or coastal settlements.

Fishing and aquaculture: It is unclear whether the first desired outcome in this subsection means that fisheries management will have its own holistic ecosystem-based management framework or whether it will be part of a broad marine and coastal framework. The introduction to this subsection, which is a good summary of the issues, suggests it is the broader approach but it needs to be far clearer in the desired outcome.

The policies and actions in this subsection are insufficiently comprehensive to deal with the impacts of commercial and recreational fishing on the marine and coastal environment.

Coastal energy resources: The introduction to this subsection refers to tidal and wave energy and the extraction of oil and gas from offshore areas. No information is given on why coastal crown land need be used for the extraction of any of these energy resources.

Likely use of coastal land under this approach would be for transport, storage, processing and other related infrastructure. Such infrastructure should be located on adjacent private land set back from the coast. The only infrastructure on coastal crown land reserves that should be considered is an underground cable, in the case of wave and tidal energy, and an underground pipeline in the case of oil and gas. In both cases, alternatives for the distribution of energy resources across coastal crown land should be objectively assessed and be the preferred mechanism. Where energy resources are distributed under coastal crown land reserves, any land disturbance should be rehabilitated.

Implementation

The final section of the draft 2013 Victorian coastal strategy outlines the implementation framework for the strategy under three subheadings: Supporting coastal managers; Financing the coast; Priority actions.

Included is an action to reconvene the Victorian Coastal Strategy Implementation Coordinating Committee by the Department of Environment and Primary Industries and the Victorian Coastal Council to drive the implementation process. The committee comprises 16 agencies.

Five other key elements in the implementation process are:

- *building the capacity and supporting coastal managers*
- *long-term financing for managing the coast*
- *effective and efficient regulation*
- *monitoring and reporting to understand if we are achieving the vision*
- *a shared understanding of priority actions.*

For each of these elements the strategy also lists actions to fulfill them. For example, the actions for building capacity and supporting coastal managers are:

> *1. Identify demand and encourage educational and like institutions to offer training and development opportunities for the coastal workforce*
> *2. Coordinate the delivery of a Victorian Coastal Conference and support existing regional coastal forums and networks.*

And for long-term financing for managing the coast, the discussion for which suggests that some managers may have to be given responsibility for more reserves, the action is:

> *Undertake a review of the coastal management system to assess whether current governance and financing arrangements are optimal to address the impacts of a changing climate and population growth.*

There is sufficient evidence of the need for the further rationalisation of the number of organisations with responsibility for the management of coastal crown land, which the strategy estimates at being more than 60. This action ducks the issue by recommending a review, rather than a move to rationalise the number.

The final action in the strategy is the development of a monitoring, evaluation and reporting framework, which is a sensible recommendation, before the

strategy summarises seven priority actions for the six key issues with a listing of the lead agencies and the strategy's actions for which they are responsible. When prioritising the actions, the strategy also acknowledges that some 'actions are already part of organisational business plans, while others are more aspirational and will require opportunistic funding and a more concerted effort'[351]. It would be very useful to identify the actions in each of these categories within the body of the strategy.

Various appendices to the draft Victorian coastal strategy 2013 provide a glossary of terms, a listing of relevant legislation, role descriptions of various stakeholders, a brief summary of climate change impacts and ecosystem-based management principles, and a summary of monitoring for each of the four principles of the hierarchy. The strategy ends with maps of the coastal settlement framework and Aboriginal cultural heritage and traditional ownership.

Influence of Victorian coastal strategies

The various iterations of the Victorian coastal strategy have had a profound influence on the detail and direction of coastal planning and management in Victoria. The achievements of the strategies include:

- enhancing the debate about coastal development and the need for effective coastal planning to balance community and environmental needs, especially around the promotion of activity nodes
- identifying key issues that governments, agencies, statutory bodies, landowners and the community need to address, such as climate change, population growth, township boundaries and linear sprawl
- promoting the implementation of good public coastal policy such as the establishment of marine national parks
- having to be considered by coastal planning and management bodies in developing their planning schemes and assessing proposals (its included in the State Planning Policy Framework), thus creating a strong link between it and coastal planning outcomes
- initiating new approaches to coastal planning including the development of township boundaries
- influencing the rhetoric of coastal planning schemes, municipal strategic statements and local policies
- being considered by expert planning panels and the Victorian Civil and Administrative Tribunal (VCAT) to assess coastal planning scheme amendments and associated development proposals put before them
- encouraging greater statutory planning consideration of the impacts of sea level rise
- encouraging consolidation of urban development in existing settlements and protection of landscapes between settlements, supported by the Coastal Spaces Initiative
- specifying a future sea-level-rise benchmark of not less than 0.8m by 2100 to encourage consistency in decision making
- emboldening local community groups in their campaigns against inappropriate coastal development.

The implementation of the 2002 and 2008 strategies was greatly assisted by the Coastal Spaces Initiative in 2005, which drove the establishment of the coastal township boundaries and the use of the Significant Landscape Overlay.

The mid-term review of the 2008 strategy conducted by the Victorian Coastal Council found that '85% of the actions in the Strategy are complete, in progress or ongoing; the remaining actions are currently in the planning stage'[352]. The review included a list of VCAT and planning decisions influenced by the coastal strategy. These included amendments to planning schemes for the inclusion of environmental and landscape significance overlays and township growth boundaries, and the rejection of subdivisions at Newhaven, Port Fairy and Waratah Bay, and a golf course, resort and conference centre at Ventnor.

Weaknesses of the strategies

Results of review survey

Progress in the completion of recommended actions can be used as a measure of the success of the strategy, but:

- it is a quantitative rather than a qualitative measure. It does not measure the quality or priority of the actions, nor does it indicate how many were existing actions of lead agencies that were ongoing or to be completed whether the strategy existed or not
- none of the actions have measurable or mandatory targets or timelines (except the sea-level-rise benchmark inserted into the Victorian Planning Provisions).

During the mid-term review, a questionnaire was circulated to coastal planners and other stakeholders to get their qualitative views on the success of the 2008 strategy. The responses were largely positive and consistent with some of the achievements listed above. The main concerns raised by the respondents to the questionnaire were:

- a gap between the formulation of statewide coastal policies and their onground application in the regions; coastal action plans need to provide regional interpretations of the statewide strategy
- dated guidance documents e.g. siting and design guidelines, contained within the strategy
- the need to improve the:
  - coordination of the lead agencies within the strategy
  - capacity in coastal science, planning and management
  - adaptation planning for climate change

[351] Victorian Coastal Council 2013, op. cit. p.67

[352] Victorian Coastal Council 2012, *Mid-term review of the Victorian Coastal Strategy 2008*, Victorian Coastal Council, Melbourne, p. ii

- the need to establish the carrying capacities for coastal crown land reserves in the light of increasing visitor numbers
- the absence of a coordinated policy approach to renewable energy production on the coast
- inconsistent application of policies on coastal-dependent use; some non-dependent uses were being allowed on urban coasts but not on non-urban coasts.

These are all issues that should be dealt with by policies and actions within the draft 2013 strategy to be finalised in 2014, coastal action plans and coastal management plans.

Preventing inappropriate development

Another test of the strategy's success is to assess whether its use has been able to prevent developments that are inconsistent with its principles.

As noted previously, the construction of wind turbines along the coast has created community conflict and has been poorly dealt with by the three coastal strategies. Wind turbines at Codrington were installed in 2001, four years after the first strategy, at Cape Bridgewater in 2008, the year of the last strategy, and are now being built at Cape Sir William Grant. While the 1997 strategy was silent on wind energy, the 2002 strategy included two relevant actions:

> *6.5.1 Proposals for large scale sustainable energy systems on the coast shall be subject to comprehensive planning assessment and required to consider environmental impacts and benefits; social impacts and benefits; and economic impacts and benefits.*
>
> *6.5.2 Best practice guidelines on siting and design of wind farms will be developed. The cumulative impacts of adjoining proposals on coastal values and community enjoyment of the coast will be assessed*[353]*.*

But by 2008 the strategy had no specific reference to wind turbines and only one general policy (no actions) in relation to non-port, coastal-dependent use: 'Ensure proposals for large scale coastal-dependent use and development are subject to comprehensive planning assessment and consider environmental, social and economic effects'[354].

Other developments that have gone ahead since the first Victorian coastal strategy include:

- RACV resort at Inverloch, which added to the linear sprawl of the township, and the RACV resort at Torquay, which has degraded coastal vistas, especially after it won VCAT support for an increase from three to five storeys
- Lonsdale Lakes and Safety Beach canal estates, which damaged coastal wetlands (admittedly Safety Beach had planning approval in 1992 and Lonsdale Lakes had been zoned residential prior)
- Point Gellibrand coast road redevelopment which over-engineered and entrenched a parallel coast road rather than relocating it
- rezoning of land between Peterborough and Moonlight Head
- construction of the Wonthaggi desalination plant directly behind a narrow strip of coastal vegetation that has industrialised the rural coast between existing settlements
- Bastion Point boat ramp, breakwater and beach road
- Narrawong housing development
- Cape Paterson Ecovillage development
- Port of Hastings redevelopment
- Wyndham Cove and Frankston marinas and the Mornington Pier (the latter two have been shelved for the time being after strong community opposition).

The measure of the strategy's success or failure is heavily influenced by the interpretation of its principles by governments, local municipalities and developers, the political will of state and local governments, and the strength of community opposition to development proposals.

And therein lies its major weakness. Even though its principles, policies and proposed actions are generally sound, and under the State Planning Policy Framework it must be considered—but not necessarily followed—by various planning and management bodies in their decision-making, it is essentially a set of guidelines that have no mandatory policies or actions unless, except the 0.8 m by 2100 sea level rise benchmark. But the Victorian government's decision to adopt an additional benchmark of 0.2 m by 2040 may open up sensitive areas to development where it had previously been prevented.

The effectiveness of the coastal strategies also relies heavily on the continuing cooperation of the various lead agencies for its implementation, and the political commitment from government, especially from the planning minister.

Nature conservation

The draft 2013 Victorian coastal strategy is almost silent on the conservation of coastal nature. Policies and actions that refer directly or vaguely to the conservation of coastal nature are:

Policies

- *Avoid development in sand dunes, in low lying coastal areas and in identified coastal hazard areas susceptible to inundation (both river and coastal), erosion, landslip/ landslide, coastal acid sulfate soils, bushfire and geotechnical risk*
- *Those features of marine areas that provide significant environmental, social, cultural and economic value will be protected*
- *The impact of catchment pressures on priority wetlands and estuaries will be reduced by: a. providing adequate freshwater flows to protect, and where possible improve, the health of wetlands and estuaries; b. minimising or avoiding pollution from new developments; c. reducing nutrient and sediment loads from existing developments*
- *Land owners will be encouraged to revegetate*

[353] Victorian Coastal Council 2002, op. cit., p. 47
[354] Victorian Coastal Council 2008, op. cit., p. 66

and landscape using species of local provenance, and to eradicate environmental weeds on their property
- *Illegal foreshore vegetation removal and vandalism, illegal access and encroachment of private property and gardens onto coastal Crown land will be addressed through education and enforcement programs*
- *Participation of individuals and community groups in the care, protection and management of the marine and coastal environment will be encouraged and supported.*

Actions

- *Decision-making tools and market-based instruments, such as a coastal tender program, will be developed in partnership with landowners to protect existing habitats and to establish habitat linkages between Crown land and private land.*
- *Implement the Coastcare Victoria Strategy 2011–2015 and develop new pathways for coastal volunteers to continue their work and improve the coast for the benefit of all Victorians.*

Most of the strategies policies and actions in the draft 2013 strategy are more about the management of access, development, population growth and resource extraction, and identification and mapping of coastal values and assets.

The *Mt Eliza to Point Nepean coastal action plan* introduced the concept of vegetation nodes or zones when listing the benefits of the plan:

- *Rationalised areas of camping and the designation of vegetation zones should increase areas of foreshore regeneration for indigenous vegetation.*
- *Increased management of foreshore areas and designated vegetation zones will reduce the prevalence of exotic species.*
- *Designated vegetation nodes will ensure greater areas of habitat for indigenous fauna*[355].

These vegetation nodes or zones were not mentioned in either the *Victorian coastal strategy 2008* or the 2013 draft strategy, which appears to reflect a lessening of interest in the conservation of coastal nature.

Ecologically Sustainable Development (ESD)

According to the *Victorian coastal strategy 2008*, Ecologically Sustainable Development (ESD) is 'development that improves the total quality of life, now and in the future, in a way that maintains the ecological processes on which life depends'[356].

Such a definition provides plenty of wriggle room for developers and planners. What is required is a robust set of criteria that defines ecologically sustainable development. However, the concept is not mentioned at all in the 2013 draft strategy, although the word sustainable is used to describe settlements, ports and fishing. Economic development and tourism agencies and industry are driving land-use change on the coast. Although the coast provides many ecosystem services, and attempts have been made to put an economic value on them, it has been community interest in the environment and sustainability that has forced developers to imbue their proposals with messages of 'best-practice environmental features' and 'boosting the local economy'.

But with the completion of each coastal development, a new wave of settlers arrives who immediately wish to make the place more suited to their needs with new infrastructure, new services, suburban house designs and streetscapes, exotic gardens and greater access to the coast. This is not ESD.

Integrated coastal zone management

When trying to introduce an ESD or triple-bottom-line and integrated approach to Victoria's coastal planning and management, the challenge is the complexity of the arrangements. In his second reading speech on the *Coastal Management Bill 1995*, it was clear that Mark Birrell expected the *Coastal Management Act 1995* to reduce the complexity of management by reducing the number of bodies.

To some extent it has achieved this by reducing the number of committees of management at the local level, but there has been little change in the number of responsible government agencies. The act has not prevented the planning and management of Victoria's coast becoming more complex, and the vision of integrated coastal zone management is as illusory as ever.

The institutional arrangements and provisions for process established by the *Coastal Management Act 1995* have driven the preparation and implementation of the Victorian coastal strategy, regional coastal action plans, boating coastal action plans and estuary coastal action plans, and many coastal management plans. Perhaps there was no nature conservation action plan because one of the criticisms leveled at the plans was that they were too focused on the environment—they were too green. That criticism simply misses the point when the aim is to establish an ESD framework that by definition must be grounded in protection of the environment.

The coastal planning documents mention the need to integrate and to collaborate across the various agencies and bodies with some responsibility for the planning, protection and management of the coast. However, their proliferation, along with those by different agencies with different purposes, makes the coastal planning and management far more complex and expensive than it needs to be.

Further complexities have been introduced by the outcomes of the Coastal Spaces Initiative, the greater use of coastal planning scheme provisions such as zones and overlays, the intervention of ministers, the rulings of VCAT, the advice of planning panels, regional catchment strategies and the involvement of various government agencies.

As with previous coastal strategies, the 2013 draft sees integrated coastal zone management as its guiding concept:

[355] Central Coastal Board 2005, *Mt Eliza Point Nepean coastal action plan: 2021*, Central Coastal Board, Melbourne, p. 88
[356] ibid., p. 74

Underpinning this Strategy and influencing the way we manage the coast is the concept of 'Integrated Coastal Zone Management'.
Coastal processes are not bounded by land tenure, land management, jurisdictional or policy boundaries. Integrated Coastal Zone Management (ICZM) is about working across a geographic area (land to sea), across different land tenures (public and private), and across organisational and jurisdictions (national, State, regional & local).
ICZM is the basis for coastal planning and management in Victoria and is achieved through formal and informal collaboration and coordination between all the different groups who use and manage the coast.

As the authors of the *South-west coastal action plan* (SWCAP) found in 2002:

The successful implementation of the SWCAP will depend on the cooperation and partnership of Government and the regional community. It has established goals to improve integrated planning and management but is subject to resources and review[357]

It also noted that its role was to:

…facilitate the implementation of actions presented in the final SWCAP. These actions will require implementation by several State Government agencies, local government, the private sector, community groups and individuals[358]*.*

However, the action plan also acknowledged how difficult this would be:

An issue that became apparent during the development of the SWCAP was the way in which decision-making processes with respect to land and resource management are undertaken by managing agencies.

and…

many separate decisions are made with respect to the strategic planning, use, development, management and provision of access along the coast. Such decisions taken in their own right and on their own merits may appear reasonable but, when considered as a cumulative series of actions, may result in a significant impact on access to resources and the sustainable management of resources[359]*.*

This brings into question whether the coastal planning and management framework can implement integrated coastal zone management when many separate agencies deal with each component. There are simply too many agencies and processes for integration to be successfully implemented. The simple solution is to simplify the framework and integrate it from the start.

Activity and recreation nodes and appropriate coastal development

The Coastal Spaces Initiative identified 87 coastal settlements outside of the greater Melbourne region[360]. Each of these settlements was categorised as having either high, moderate or low spatial growth capacity. For example, Warrnambool had high spatial-growth capacity, Apollo Bay moderate and Loch Sport low.

The *Victorian coastal strategy 2008* defined activity nodes within these existing coastal settlements, and the 2013 draft strategy continues with this.

Activity nodes can include recreational facilities, tourist accommodation, public transport, ports and fishing infrastructure. Their objective is to 'provide a focus area for access to the coast, services, and social interaction within existing settlements and urban areas, and to link and integrate the public and private realms within this area'[361].

Recreational nodes, according to the strategy, are on coastal crown land outside the boundaries of activity nodes. They have high use and have recreational infrastructure such as boat ramps, walking paths, picnic and camping grounds and lifesaving clubs. Their objective is to 'provide access to recreation and water-related activities where a genuine need is identified through a strategic assessment, whilst limiting the scale and intensity of development to that which is appropriate to the area'[362].

Neither The *Victorian coastal strategy 2008* nor the 2013 draft strategy has defined the location or spatial boundaries of activity and recreation nodes. That is the task of the regional coastal boards in consultation with other government agencies and stakeholders, and by using coastal action plans and coastal management plans. Any development should be consistent with a set of 16 criteria for the use and development of coastal crown land. Not one of those criteria refers to the protection of coastal nature or the avoidance of its removal. One that comes close is 'ensures that off-site impacts of the use or development do not detrimentally affect coastal and marine natural and cultural values' [363], but that ignores the <u>on-site</u> impacts of any development on coastal nature.

Activity and recreation nodes are guiding coastal resource use, not coastal conservation, on coastal crown land reserves. The coastal strategy's maps used to illustrate their use in planning indicates that they should be relatively small areas within the larger coastal reserve. But as seen in the discussion about the *Rosebud Foreshore Reserve coastal management plan* in the 'Coastal management plans' section of this report, these campsites cover much of the land outside the nodes, a use that is typical of a recreational node. If the decision is made, rightly or wrongly to maintain large areas of camping in a coastal crown land reserve, then it should be called what it is, otherwise the community will be misled into thinking the management plan is more about conservation when it is not.

[357] Western Coastal Board 2002, *South-west Victoria coastal action plan*, Western Coastal Board, Geelong, p. 14
[358] loc. cit.
[359] ibid., p. 25

[360] The metropolitan Melbourne region was defined in *Melbourne 2030*, the strategic planning document of the previous state government that is not recognised by the current state government.
[361] Victorian Coastal Council 2008, p. 55
[362] Victorian Coastal Council 2008, loc. cit.
[363] ibid., p. 56

Coastal-dependent use and net community benefit

Victoria's coastal crown land reserves are very narrow strips with huge demands placed on their severely limited space. Often the demands for use have little to do with the land being on the coast, it is more about the land being 'free' or, in the case of some coastal settlements, it being the only public land available.

Over the years, coastal crown land reserves have been used for clubhouses, road realignments, power lines, telecommunications infrastructure, mini-golf, trampolines, tennis courts, bowling greens, car parks, toilet blocks, caravan parks and camping grounds. For these uses, the land has been seen as a 'free' alternative to paying market value for freehold land nearby. Establishing and maintaining camping grounds and caravan parks on coastal crown land reserves is also viewed as vital to providing affordable holiday accommodation for many visitors to the coast[364].

The view that coastal crown land reserves have no dollar value has led to their degradation in many coastal locations. Although the reserves are owned by all Victorians, successive governments for many decades have given space to special interest groups such as angling, bowling, tennis, yachting and surf life saving clubs that have constructed purpose-built clubrooms along the coast and, in the process, removed vegetation and severely limited public access.

In urbanised coastal crown land reserves, such as those along the eastern and southern shorelines of Port Phillip Bay, little native vegetation remains and the debate is more about resource allocation between competing uses for limited space. In semi-urban and non-urban coastal reserves, it is more a battle between reserve development and reserve conservation, and one of the arguments used to justify a particular use is its coastal dependency.

Those who argue that their use must be on the coast, i.e. it is coastal dependent, believe they should be given priority over those without an obvious need for the foreshore. But what is coastal-dependent use? In listing the criteria to be used when assessing whether proposed coastal developments are appropriate, the *Victorian coastal strategy 2008* created some confusion on the matter. The preamble to the criteria began:

> *Coastal-dependent land use and development on coastal Crown land includes boat ramps, surf clubs, yachting, boating or angling clubs, boathouses, ports and harbours, as well as recreational infrastructure to support beach-related activity such as change rooms or toilets, seating, barbeques, shade structures[365].*

But then vaguely qualified this by saying that:

> *Not all aspects of these facilities are coastal-dependent and a reasonable balance is required when determining their appropriateness and location[366].*

The strategy created an arguable list of coastal-dependent uses but then immediately qualifies it without clarifying what 'aspects of these facilities' are not coastal-dependent.

The 2013 draft strategy refers to coastal-dependent use just once, in the glossary. Instead, it refers to uses that 'need to be located near the water'. But like the 2008 strategy it then broadens this out to include those uses 'which significantly contribute to the social value of the area (e.g. the public enjoyment and appreciation of the coast')[367].

It lists those uses in need of a coastal location as: jetty, marina, mooring, boat ramp, boathouse, port, harbour, lookout towers of life saving clubs, marine rescue facility.

Those uses that do not need a coastal location but which support coastal activities and may be appropriate are listed as: toilet block, pathways, car parking, boating/yacht club, BBQ and play equipment, and (in urban settings) kiosk/café.

Those uses that do not need a coastal location, the strategy lists as: function centre, community hall, non-maritime industrial plant and storage, non-water-based sporting facility e.g. bowling green, sports field.

These lists provide greater clarity than the 2008 strategy, but later the draft 2013 strategy refers to other uses that are dependent on a coastal location: renewable energy technologies, infrastructure associated with gas and oil extraction, and aquaculture. The list is growing and largely covers most current uses plus several future ones. This could undermine efforts to remove structures in planned retreat responses to climate change and encourage protection responses, such as sea walls, to defend uses now listed as needing a coastal location.

There are few uses that are outright dependent on the coast. Just because some people use the beach to go recreational fishing, it should not entitle them to public land and public moneys to construct an angling club building. A marina is clearly dependent on being on the foreshore, but a palatial clubroom? Surf lifesavers need facilities on the beach, but do they need large clubhouses that have overnight accommodation and entertainment areas. And what of a swimming pool?

The coast is unclear contends that swimming pools, tennis courts, club buildings etc. are not coastal dependent. Rather than establishing new structures on the coast, governments should be working to reduce the number of non-dependent structures. There are three main reasons for doing this:

- removal of the structures would increase the space available to the general public. Such space will be in increasingly short supply and under greater pressure as Victoria's population continues to grow, and more people visit the coast
- rising sea levels will threaten many of the existing structures in the coming years. If the structures are no longer there, then there is no need for expensive coastal defense works (sea walls, groynes, breakwaters) to protect

[364] Reference Group on Caravan and Camping Parks on Coastal Crown Land, *Caravan and camping parks on coastal crown land*, Reference Group Report, Department of Sustainability and Environment, Melbourne
[365] Victorian Coastal Council 2008, loc. cit.
[366] Victorian Coastal Council 2008, loc. cit.
[367] Victorian Coastal Council 2013, op. cit, p. 53

them, works which will themselves can lead to the loss of beaches, dunes and coastal amenity
- the removal of the structures could be used to provide more space for coastal nature, either through revegetation programs or by colonisation of vegetation moving inland in response to rising sea levels. This can provide a buffer that protects coastal nature and the infrastructure behind it.

Mounting a case against the construction of new infrastructure on coastal reserves or its removal is made difficult by the draft 2013 strategy's list of uses needing a coastal location or ones that may be appropriate on the coast. But the list is becoming less relevant since the 2008 strategy introduced the concept of net community benefit for assessing new infrastructure, the removal of existing infrastructure and the prioritisation of uses in coastal resource allocation. The concept could be used to allow any development of coastal crown land as long as that development can be shown to result in net community benefit:

> *Opportunities for use and development on coastal Crown land are limited and competition for these opportunities can be intense in many locations. The limited land resources need to be used sparingly and for net community and public benefit*[368].
>
> *Recreation nodes are areas that have identified strategic priorities for the provision of existing recreation facilities and provide opportunities for the redevelopment or expansion of facilities for the net community and public benefit*[369].

The 2008 strategy listed 16 criteria for determining appropriate development on coastal crown land, but there was not one on how to measure net community benefit. The 2013 draft strategy includes a much longer list of 'criteria for use and development on coastal crown land (including reuse and redevelopment)', which is broken into the themes of 'Use of coastal Crown land', Siting and design', 'Access and use', Environmental impacts'. One of these criteria is:

> *Demonstrates responsiveness to the site values and that net community benefit results from the use and development being located on coastal Crown land (net community benefit will be determined by considering the likely environmental, social and economic outcomes of the proposal)*[370].

The measurement of net community benefit is open to considerable interpretation and manipulation, as seen in the proposal for the Southern Peninsula Aquatic Centre on the Rosebud Foreshore Reserve, which was discussed in Part 2 of *The coast is unclear*. It was also used in the supporting arguments for the Mornington Pier redevelopment in the *Net community benefit assessment planning report*[371]. Community opposition stopped that project and a simpler upgrade is now being carried out.

The net community benefit concept is essentially a cost-benefit analysis which, in theory, sounds reasonable, but cost-benefit analyses in practice have been used by governments, industry and other special interest groups to inflate and fudge the economic benefits of projects and devalue the social, environmental and economic costs. And even where a much-vaunted project has failed the cost-benefit analysis, it is still given the go-ahead, such as at Bastion Point in Mallacoota and the channel-deepening project in Port Phillip Bay.

This concept will be used more in the coming years as governments and developers seek to justify their coastal development projects on public and private land, including coastal national parks and the coastal crown land reserves. For them, the argument is no longer about coastal dependency, ecological sustainability or appropriateness. It is more that if the community derives a net benefit, however measured, from the development, it should then proceed. That jeopardises the gains that have been made in coastal planning and management in the past twenty years and could return Victoria to the 1950s, a time when subdivisions and roads were created on fragile coastal sand dunes because there was demand for them—and perhaps even a net community benefit.

Implementation

The implementation of any planning strategy can be difficult if the implementation and evaluation processes, the institutional arrangements and the available resource levels are inadequate.

In the 2013 draft strategy there are more policies than actions to implement them, and none have targets or timelines. There is also a reliance on other strategies to deliver some of the desired outcomes, but the quality of their objectives and actions, and the effectiveness of their implementation are not connected to the coastal strategy's implementation. As a minimum, the strategy should include in an appendix the key objectives and actions from each of the other strategies of relevance to implementation of the coastal strategy.

Further, the strategy acknowledges that a number of actions are already underway with existing agencies, again with no opportunity to determine the timeliness and effectiveness of the implementation of those actions and what priority they may have in that particular agency's agenda. The final strategy should ensure that the implementation process includes the review and evaluation on delivering these actions.

Implementation is to be overseen by an interdepartmental committee formed from the agencies responsible for delivery of the strategy's actions. There should be a public process and regular progress reports during the life of the strategy.

Finally, the draft strategy has been heavily influenced by state government policy that now has a focus on coastal development rather than the

[368] Victorian Coastal Council 2013, loc. cit.
[369] ibid., p. 55
[370] ibid., p. 54
[371] 10 Consulting Group 2010, *Amendment C107 Mornington Peninsula Planning Scheme, Mornington Safe Harbour*: *Net community benefit assessment planning report,* prepared for the Shire of Mornington Peninsula, 10 Consulting Group, South Melbourne

conservation of coastal nature. Therein lies the major threat to its implementation and effectiveness. The strategy is no longer a policy leader; rather it is a follower of government policy.

Maintaining the independence of the Victorian Coastal Council is vital, particularly in the preparation and formation of draft and final coastal strategies and the recommendations that are presented to the Minister for approval.

Recommendations

1. Rename the *Victorian coastal strategy 2014* to the *Victorian marine and coastal strategy 2014*.

2. Amend the desired outcomes, policies and actions for the four hierarchical principles in the manner suggested by the bold and italicised text in tables 43–61 in Appendix 2.

3. Establish sets of criteria to determine:

- the ecologically sustainability of ports, coastal settlements and fishing
- net community benefit and coastal-dependency.

4. Strengthen the policies for decision-making and actions for coastal nature conservation on coastal crown land reserves and the coastal conservation estate.

5. Ensure that the implementation and evaluation of the *Victorian coastal strategy 2014*, and the various other strategies and plans relied on by it, are monitored, evaluated and reported on with the regular public release of progress on implementation, and community engagement is included in the evaluation processes.

6. Ensure that the integration of coastal, marine and catchment planning and management goes beyond collaboration and is driven by one agency responsible for statewide marine and coastal planning (see Part 6 for proposed legislative and institutional reforms e.g. Marine and Coastal Authority).

Coastal action plans

The use of coastal action plans is a key tool in the regional implementation of the Victorian coastal strategy by regional coastal boards. The action plans cover crown land, freehold land and the marine environment and, under the *Coastal Management Act 1995*, they:

- *enable the broader principles and priorities of the VCS to be further developed and applied at a regional or local level, or for particular issues*
- *are consistent with the Victorian Coastal Strategy and play a key role in its implementation take a long term strategic view, clarify directions for future use and key actions required to achieve preferred outcomes*
- *are developed by or under the guidance of Regional Coastal Boards*
- *involve public consultation during preparation*
- *are referred to the Victorian Coastal Council for approval prior to referral by the Council to the Minister for endorsement*[372].

The coastal action plans completed to date are:

Western Region: Anglesea; Central West Victoria; Central West Victoria Estuaries; Glenelg Coastal Action Plan Implementation; Lorne; Moyne; Skenes Creek to Marengo; South West Victoria; South West Estuaries; Warrnambool; Western Victoria Boating

Central Region: Central Boating; Corio Bay; Mt Eliza to Point Nepean; Waterfront Geelong

Gippsland Region: Gippsland Boating; Gippsland Estuaries; Gippsland Lakes; Integrated Coastal Planning for Gippsland: Coastal Action Plan Implementation.

The Western region's coastal board has prepared more coastal action plans than the Central and Gippsland boards and at a variety of geographical scales: townships, shires and subregions. The state government approach in the future is to have just one coastal action plan prepared for each region.

The preparation of the plans by the regional coastal boards began with community, stakeholder and government agency consultation that raised many issues of concern. For the *South-west Victoria regional coastal action plan 2002*, stakeholders believed the plan needed to:

- incorporate clear roles and responsibilities, promote capacity building and offer improved skills and knowledge
- identify, recognise and protect significant environmental, social, cultural and economic values in any development proposal
- ensure appropriate access to coastal and marine areas, which is ecologically sustainable
- recognise and protect Aboriginal cultural heritage through consultation and involvement with local Aboriginal groups.

The *Shire of Moyne coastal action plan* was completed in 2001 and during its consultation stage the issues raised included soil conservation, water quality management issues, flora and fauna conservation, recreation and tourism threats and opportunities (nature and culture interpretation, rubbish policy, public toilets, the proposed Great Ocean Road extension, rehabilitation of public facilities), scenic resource values and management, cultural heritage and land use planning issues (private land to high water mark, subdivision, aquaculture, new municipal planning scheme).

Those involved in the consultation for the *Glenelg Shire coastal action plan* (2004) believed that 'consultation activities did not take adequate consideration of the opinions of different stakeholders and did not achieve a suitable balance between different uses or user groups or consistency in decision making applying to those uses'[373]. But they also wanted 'adequate access to the coast to facilitate appropriate recreational use such as fishing, surfing, swimming and walking along the beach for both local residents and tourists'[374] and improved infrastructure at Portland and Bridgewater beaches. Other issues that arose were artificial opening of estuaries, management of threatened species, impacts of large-scale development, opportunities and threats from tourism, and the need to recognise and protect Aboriginal culture.

Issues raised during consultation for the *Central-west Victoria coastal action plan 2003* were at a more general level, and included integrated coastal zone planning and management, biodiversity, Aboriginal cultural heritage, coastal land (improving access and managing increased and changing land uses), coastal waters (integrating the catchments to the coast) and human settlement (preserving coastal character, recognising land capability and applying best practice to off-site impacts).

Some of the issues raised in the *Skenes Creek Marengo coastal action plan 2005* were highly specific, largely because of the small area covered. Under the heading 'Boating and recreation', stakeholders raised the need for dealing with traffic circulation in Apollo Bay, expansion of the Apollo Bay golf course, improved revenue generation at Apollo Bay Harbour, bike paths, lack of disabled access car parking, and provision of facilities for the local boating club. Other issues raised were about water quality, fragmentation of coastal vegetation, pest plants and animals, and maintenance of landscape values.

Stakeholders consulted on the *Anglesea coastal action plan 1999* had a greater focus on environmental protection in the issues they raised, and their localised

[372] Government of Victoria 1995, *Coastal Management Act 1995,* Government of Victoria, Melbourne, p. 18

[373] Western Coastal Board and Glenelg Shire Council 2004, *Glenelg Shire coastal action plan*, Glenelg Shire Council, Portland, p. 14

[374] ibid., p.16

comments again reflected the small area covered by the plan:

- coastal infrastructure was in need of improvement but limiting its capacity could help control the impacts of access
- the Great Ocean Road causes congestion in the township and also directed people to sensitive areas
- safe but sustainable access to the coast was key, with access directed away from sensitive areas and the need for education about them
- the threat of tourism to town character
- better control of weeds
- ongoing education for visitors and residents as to the significant and dynamic nature of the Anglesea environment
- wider recognition of Aboriginal history and involvement of Aboriginal people in coastal planning and management.

The consultation processes for the plans highlighted the issues that continue to face governments, coastal planning and management agencies, stakeholders and the community. They also generated lengthy wish lists that were likely beyond the scope of the plan, e.g. traffic circulation within townships, and also raised issues that were in conflict, e.g. increasing public access to the coast and protecting threatened species and coastal vegetation. One consistent theme was recognition of the cultural connections that Indigenous people have with the coast, and the need for their engagement in coastal planning and management.

The purpose of the coastal action plans was to provide a high-level regional statement that would link the statewide principles of the Victorian coastal strategy with strategic coastal planning in the region. However, in their preparation they became a hybrid of strategic regional planning and local management, an outcome heavily influenced by the interests and agendas of those consulted and the geographical size of the area covered; the smaller the area the more localised and management-based the actions.

In preparing the plans the coastal board aimed to identify actions with timelines, targets and lead agencies responsible for their implementation. Other aims were to influence the preparation and implementation of coastal planning schemes, and work towards the integration of coastal zone management and the agencies and organisations involved in it. But the *South-west Victoria regional coastal action plan 2002* acknowledged:

> *Overall, management of the Victorian coast is based on a sectoral approach with discrete categories and functional areas with limited integration between agencies at the same level of governance. There is good vertical integration with well-recognised management structures within discrete units, planning and management agencies. However, there has traditionally been relatively weak and tenuous links between the different areas of resource management. These are generally informal, ad hoc and are not covered by legislative or regulatory arrangements. Most management decisions are dealt with on a functional basis by individual agencies*[375].

Estuary coastal action plans

Three coastal action plans specific to estuaries were prepared for the south-west and central west by the Western Coastal Board, and for the region covered by the Gippsland Coastal Board. In combination with the estuary management plans of some catchment management authorities and the focus on estuaries in the *Victorian coastal strategy 2008*, the profile of estuaries has been considerably raised, but more needs to be done.

In the *Central west estuary coastal action plan* the actions referred to:

- integrated planning and management
- the prioritising of estuary protection in planning schemes and the use of zones and overlays
- encouraging active engagement of Indigenous communities in estuary management
- expansion of the WaterWatch program.

Each of the 11 actions in the *South-west estuaries coastal action plan* simply referred to the preparation of an estuary management plan for each of the region's estuaries: Merri River; Lake Yambuk; Aire River; Hopkins River; Curdies Inlet; Glenelg River; Fitzroy River; Moyne River/Belfast Lough; Gellibrand River; Surry River; Fawthrop Lagoon/Wattle Hill Creek. Except for Fawthrop Lagoon, each of these management plans has been completed.

Population growth and changing land use within catchments is having major impacts on coastal nature in and around Victoria's estuaries. Although Victoria has three large estuaries—Port Phillip Bay, Western Port and the Gippsland Lakes—the rest of the more than 100 are small and often closed.

These small estuaries are critical to migratory fish, migratory birds as stopovers, saltmarsh species, commercial and recreational fishing, and as popular residential and recreational areas. In many ways their problems mirror those of the larger estuaries—catchment development, water pollution, loss of habitats, invasive pests and disruption of natural connections.

In a major analysis of estuary conditions, *Identifying threats to the ecological condition of Victorian estuaries* by Barton et al (2007), the following four major threats to the environmental condition of Victoria's estuaries were cited:

- *changes to patterns of fluvial catchment land use*
- *modifications to flow regimes*
- *increasing urbanisation of coastal regions including commercial and recreational activities*
- *modifications to the estuary mouth (more than half of the estuaries are naturally closed from time to time but some local landholders intervene and artificially open some of them with major negative consequences for wildlife within them)*[376].

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[375] Western Coastal Board 2002, *South-west Victorian coastal action plan 2002*, p. 7

[376] Barton, J., Pope, A., Quinn, G. and Sherwood, J. 2008, *Identifying threats to the ecological condition of Victorian estuaries*, Department of Sustainability and Environment Technical Report,

For catchments, the report said that their increasing urbanisation is leading to:

- *more intense recreational and commercial activity*
- *a greater extent of impervious surfaces (changing hydrology, including increasing variability in flow rate)*
- *creation of point source inputs (storm water drains)*
- *the loss of connectivity to floodplains (built banks, wetland reclamation)*
- *increased pressure on estuarine resources*[377].

Some of the key findings of the report were:

- *survey and assessment of published information on Victoria's estuaries revealed that existing data, especially for water quality and biota, do not cover spatial and temporal extents, or resolutions, to allow estuarine condition to be determined*
- *the lack of adequate water quality and biological data across enough estuaries and over a reasonable time period precluded tests of causal links between specific threats and indicators of estuarine condition based on broad-scale correlations using existing data*
- *the highest priorities for future work are to develop a framework for measuring estuarine condition*[378]*, analogous to the Index of Stream Condition and then to examine relationships between specific threats and indicators of ecological condition. When this has been addressed, targeted and effective catchment-based management of threats to estuaries will be possible*[379].

In the *Skenes Creek to Marengo coastal action plan* published by the Western Coastal Board in 2002, causes for the degradation of the Barham River and Wild Dog Creek were identified as including:

- *clearing of indigenous riparian vegetation has increased the rate and volume of surface flows resulting in increased sediment and nutrient loads*
- *stock (cattle and sheep) access in the upper and lower reaches of waterways has also contributed sediment and nutrients to waterways through degradation of stream banks and loss of riparian vegetation*
- *the application of chemicals and fertilisers for weed control and pasture improvement are entering waterways via three pathways – spray drift, leaching through groundwater and surface run-off carrying contaminants*
- *logging increases the quantity of water entering waterways and decreases the quality, through the input of sediment, nutrients, chemicals (from weed control), oil and other pollutants as a result of harvesting and transportation*
- *stormwater drainage into creeks carry a suite of undesirable substances – gross pollutants (e.g. litter) to dissolved substances (e.g. biocides, toxicants, nutrients, etc.)*
- *septic overflows are another direct pollution source to waterways*[380].

Table 31 provides measures of the quality of some estuaries, along with their catchment condition and the alteration to river flows. The general pattern is that those in areas with relatively well-vegetated catchments, such as in the Otway Ranges and East Gippsland Lowlands bioregions, are largely unmodified with catchment conditions excellent to good and their flow regimes little altered. However, those estuaries with catchments dominated by agricultural or urban development are modified or extensively modified, and catchment condition is moderate to poor with flow regimes that are more altered. These are generally found in the Warrnambool Plain, Otway Plain, Victorian Volcanic Plain and Gippsland Plain bioregions.

Estuaries need greater protection in the coastal planning system if they are to survive and continue to provide their many ecosystem services to the community.

There is a welcome focus on estuaries in the Victorian waterway management strategy released in October 2013. The vision of the strategy is:

> *Victoria's rivers, estuaries and wetlands are healthy and well-managed; supporting environmental, social, cultural and economic values that are able to be enjoyed by all communities*[381].

Management issues for estuaries are documented in one of the strategy's chapters with information about the values of estuaries, a framework for managing them, policies with actions and knowledge building and community engagement.

Regional catchment authorities will develop regional waterway strategies that will in part provide direction for estuary management and identify high-value estuaries and priority management activities. Estuary management plans may also be prepared:

> *Estuary Management Plans may also link to broader catchment management approaches to protect estuary condition, such as improved land management practices. These plans will need to consider and be considered in coastal management plans prepared by local land managers to ensure alignment of management activities*[382].

Policies specific to estuaries are included in the chapter. These cover:

- the management framework, which is directed by the waterway strategy and informed by the Victorian coastal strategy, regional coastal boards and coastal action plans regarding 'coastal landuse planning and sustainable development issues'
- artificial estuary entrance openings

Melbourne, p. iii

[377] ibid., p. 1

[378] This new index is being piloted and is referred to in the Victorian waterway management strategy

[379] Barton, op. cit., p. iii

[380] Western Coastal Board 2002, *Skenes Creek to Marengo coastal action plan*, Western Coastal Board, Geelong, p. 12

[381] Department of Environment and Primary Industries 2013, *Improving our waterways*: *Victorian waterway management strategy*, Department of Environment and Primary Industries, Melbourne p. 4

[382] ibid., p. 188

including risk-based assessments
- improving the environmental condition of priority estuaries, enhancing their connectivity, mitigation of climate change impacts and, where private land interface with priority estuaries, the potential for landholder agreements or land purchase to maintain the condition of the estuary
- setting water quality objectives using the *Environmental water quality guidelines for Victorian riverine estuaries* and the *Estuary environmental flows assessment methodology*
- priority to research on estuaries and climate change, estuary entrance opening and water harvesting in the catchment
- support for the EstuaryWatch program which involves the community in estuary monitoring and increases community awareness of estuary management.

These policies support the current efforts of regional catchment authorities in their management of estuaries. However, estuaries will continue to face significant threats. In November 2013 the *Victoria State of the Environment* report noted:

> *Data on the condition of estuaries has not been updated since the 2008 State of the Environment report. There remains little data available on the ecological condition of estuaries, although it is evident that most of Victoria's estuaries have been degraded. It is estimated that as many as half of Victoria's major estuaries are significantly modified…Smaller estuaries are the dominant estuary types in Victoria and are more prone to the effects of catchment modification such as land-use change and streamflow change [383].*

The strategy also includes a chapter on wetlands with policies to monitor Ramsar sites and give their protection high priority, but policy 12.4 is of concern:

> *If monitoring indicates the ecological character of a Ramsar site is likely to change or has changed, the Victorian Government will notify the Australian Government and develop a response strategy for the site and monitor the effectiveness of its implementation.*
> *If there are no feasible or cost-effective management response options to maintain the site's ecological character, Victoria will engage the Australian Government to agree on a process to review management objectives for the site. This will be done in consultation with the community and will be aimed at facilitating adaptation to a new ecological regime that maximises existing and likely future values.*
> *Deleting or restricting the boundary of a Ramsar site will only be investigated where irreversible change results in a loss of critical values to the extent that the Ramsar site fails to meet any of the Ramsar Convention criteria for identifying wetlands of international importance[384].*

This policy could see the government of the day ignore the need to protect Ramsar sites if they are seen to have alternative uses such as agricultural, industrial and tourism development and have been compromised by such development. In another policy, the strategy states that the government will only recommend the listing of a new Ramsar site if its owners or managers agree. This will limit the opportunities for future listings.

Other wetlands policies include providing assistance to landholders to protect high-value wetlands, promoting connectivity between wetlands, the mitigation of climate change impacts on coastal wetlands, minimising, not avoiding, the impacts of rural and irrigation drainage through risk management, and using market-based incentives to encourage wetlands restoration.

The tone of the chapter on wetlands is that wetlands are part of a productive agricultural landscape and will be managed in ways that minimise their impact on agriculture. This is also the case with the chapter on environmental water management, which indicates that water for securing environmental flows will only be delivered through water-saving infrastructure, not the reallocation of water entitlements, and it will only be delivered to priority waterways:

> *Policy 8.5: Environmental water management plans will be prepared for priority waterways that have environmental values at risk from altered water regimes (identified in regional Waterway Strategies) and are able to receive environmental water allocations[385].*

The strategy also indicates that major water recovery projects are complete, including 10 GL from the Latrobe River and 8 GL from the Thomson River, both of which flow into the Gippsland Lakes. As mentioned earlier, the Gippsland Lakes environmental strategy accepts that the necessary environmental flows for Lake Wellington will rarely be received.

Priority waterways are determined by the use of a suite of environmental, social, cultural and economic data and information about values, threats and risks. In the future, wetlands and estuaries will be considered as part of Regional Waterway Strategies. The great challenge for those charged with implementing the strategies is to ensure that priority is given to coastal streams and their wetlands and estuaries. For those waterways not viewed as a priority in the Regional Waterway Strategies (RWSs), the strategy states:

> *Waterways that are not a priority in the RWSs may still be a priority for local communities, who can apply for grants from local government, the Australian Government and private or philanthropic donors to undertake management activities[386].*

Such fundraising processes can be slow and often unsuccessful, while the estuaries and wetlands in need will continue to suffer.

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[383] Commissioner for Environmental Sustainability Victoria 2013, *Science policy people, Victoria State of the environment*, p. 172
[384] Department of Environment and Primary Industries 2013, op. cit., p. 173
[385] ibid., p. 102
[386] ibid., p. 50

Other challenges for managers will be whether they are able to establish historical ecological baselines, monitor a key set of environmental indicators, and have sufficient powers to effectively tackle existing and emerging threats.

Boating coastal action plans

Each of the Victorian coastal strategies has referred to boating and water-based activities along the coast. In response, the regional coastal boards have prepared boating coastal action plans for their regions in consultation with various stakeholders.

Table 32 lists the harbours, marinas and boat ramps on the crown land coastal reserves in just the Central Region, which includes Port Phillip Bay and Western Port. There are close to another 50 in the western region, and more than 100 sites in the Gippsland region. There is ongoing pressure from boating interests for an increase in the number of access points and the upgrade of facilities e.g. this call from the Country Alliance:

> *Victoria has fewer than 250 boat ramps and New South Wales has approximately 625 of a suitable standard. Country Alliance's policy is to double the number of boat ramps between 2015 and 2019. Each is to have at least three lanes, a pontoon and constructed to ensure boating safety. This is to be funded by the government with an initial allocation of $150m and managed by the Department of Treasury as matter of state economic importance[387].*

A review of the boating coastal action plans shows that environmental impacts have been considered, but these are either for the impacts on site, on coastal currents and sand movement, and how climate change may affect the infrastructure itself.

The aims of the boating coastal actions plans were to rationalise the provision of boating infrastructure and to establish criteria for the assessment of new structures and the expansion and upgrade of existing ones. The plans reordered existing structures into a hierarchy of importance: State Marine Precinct; Regional Boating Facility; District Boating Facility; Local Boating Facility; Informal Boating Facility. Where a facility is positioned on the hierarchy will influence whether it will be upgraded, downgraded or expanded in the future.

The boating coastal action plans were prepared separately and at different times to the coastal action plans and estuary coastal action plans and so were not integrated with them. Part 2 of *The coast is unclear* identified some of Victoria's marinas and boat ramps and their impacts.

None of the boating coastal action plans considered the impacts of the main aim of boat ramp users, which is to launch the boat and go fishing (except for a mention of the potential impact of boat strikes on dolphins in Gippsland). Nor is there any consideration given to identifying what the carrying capacity of Victoria's bays and estuaries are in relation to the number of boats using them and the impacts on marine life caused by their use.

As Ford and Gilmour (2013) observe, monitoring of the participation and catches of recreational fishers occurs, but there are no stock assessments of targeted species or a sound understanding of the ecological impacts of recreational fishing[388]. The monitoring of recreational fishing has failed to be translated into effective management.

Before any existing boat ramp is upgraded, or a new one is developed, an environmental impact assessment on the impact on marine life is essential. These assessments should be conducted regionally and, if the impact is deemed too great, restrictions should be placed on the number of recreational fishing boats accessing the launching facilities.

Greater consideration should also be given to the management arrangements at locations where there are multiple facilities managed by separate agencies. As Gippsland Ports noted:

> *There are many instances in Gippsland where management of ports, waterways and adjacent facilities involves co-ordination, co-operation and overlap of agency responsibilities and boundaries. Areas that have a particular land status involve direct management by multiple agencies. The roles and responsibilities of Gippsland Ports are not always entirely clear, particularly to members of the general public. The Port of Corner Inlet and Port Albert is an example. Several Marine/Coastal/National Parks managed by Parks Victoria exist in the area. Reserved Crown land is managed by the Department of Sustainability and Environment and South Gippsland Shire. Boundaries delineating areas of responsibility are not marked and overlap often occurs. Further complications develop when adjacent assets on the same foreshore are managed by different agencies, such as a Shire-managed boat ramp adjacent to a Gippsland Ports jetty or where two agencies manage part of a particular facility (e.g. Nicholson Landing).*
> *There are instances where the different objectives of managing agencies may compete and in these instances, Gippsland Ports acknowledges that consultation and liaison must occur from the outset. As an example while Gippsland Ports works to maintain navigable waterways, the Catchment Management Authorities work at providing habitat for fish. One authority seeks to remove debris while the other seeks to maintain or establish it[389].*

Parks Victoria also has management responsibilities for some boating infrastructure where they provide access to national parks such as in Mallacoota Inlet for Croajingolong National Park, but also in Port Phillip Bay and Western Port. It makes sense for the agency to

[387] www.countryalliance.org/index.php/policies/145-boat-ramps-we-want-to-double-their-number.html, 'Boat ramps: we want to double their number', 10 May 2012

[388] Ford, J. and Gilmour, P. 2013, *The state of recreational fishing in Victoria: a review of ecological sustainability and management options*, a report to the Victorian National Parks Association, Melbourne

[389] Gippsland Ports 2011, *Ports and waterway management plan*, Gippsland Ports, Bairnsdale, p. 7

manage the infrastructure within national parks, but the allocation of resources to manage these facilities outside parks takes them away from achieving the agency's core objective, which is to protect nature. As mentioned earlier, the use of boat ramps and other infrastructure can impact on the marine life that Parks Victoria is meant to conserve.

Coastal access and coastal action plans

The issue of increasing access to the coast was raised many times during coastal action plan consultations. The *South-west Victoria regional coastal action plan 2002*, when commenting on access, recognised the environmental costs of such a move:

> *Access to coastal and marine areas is considered by community and user groups to be a critical issue within the study area. There are many different forms of access to and along the coast including by air, vehicle (2WD and 4WD), pedestrian, boat (recreational, commercial and charter boat services), camel and horses. These forms of access can have negative environmental impacts and can also cause concerns for private landholders where private freehold title extends to high water mark on the open coast. Management decisions affecting access in parks along the coast have often been viewed as an incremental loss of recreational opportunities and facilities. However, decisions to restrict access are often made to ensure that the primary goal of managing public land with conservation-oriented tenure such as a national or coastal park is achieved, or to provide alternative, safer routes of access*[390].

However, the two actions under the 'access' section failed to resolve these issues and left it to a future coastal action plan to tackle:

> *8.7.4 All access points through public land should be addressed with clear management prescriptions.*
> *8.7.5 Develop an Integrated Coastal and Marine Access CAP for the region.*

Although the plan was prepared in 2002, a set of access guidelines was not drafted until 2006. Access was touched on in the *Victorian coastal strategy 2008*:

> *3.3.1a: Facilitate regional approaches to improve and rationalise access to and on the coast through the application of a coastal access decision-making tool.*

But in 2012, it was reported[391] that the access decision-making tool for land managers was yet to be prepared and no other information has become available on its progress.

In 2004, the Shire of Moyne approached access and coastal development in a somewhat different way in the *Moyne coastal action plan*:

> *Moyne Shire is fortunate in having a large section of coast west of Port Fairy that is in private ownership to the high water mark and is in most places away from tourist destinations and viewing locations. Public access to the coast is only available at The Crags and Yambuk. This section of coast has the potential to provide land for industry. River estuaries and adjacent wetlands can also provide the land base for aquaculture and consideration to planning issues and environmental safeguards for these locations needs to be included*[392].

Industrial development would have undermined coastal planning. The council subsequently adopted a different approach in its C21 Amendment to its planning scheme in 2009, which was discussed in Part 2 of this report.

Nature conservation and action plans

The provision of access can have a very large impact on coastal nature, but what actions were included in the coastal plans specifically about the conservation, enhancement and expansion of coastal nature? The only actions relevant to nature conservation in the *South-west Victoria regional coastal action plan 2002* were:

> *8.2.6. Investigate and apply incentive measures to encourage coastal biodiversity protection on freehold land.*
> *8.5.8. Develop and introduce Vegetation Protection and Environmental Significance Overlays into planning schemes to improve protection to significant values*[393].

Mechanisms to improve nature conservation on private coastal land, and the application of overlays to 'improve protection to significant values' will be discussed further in parts 4 and 5 of *The coast is unclear*.

An analysis of the nature conservation actions in each of the western region's coastal action plans reveals a mix of generic policies to protect and enhance nature with on-ground restoration projects in specific locations. Again, there was confusion about the role of coastal action plans and coastal management plans.

For each of the action plans mentioned below, the first number in brackets for each entry below is the total number of actions in the plan, while the subsequent numbers in brackets are those actions specific to nature conservation:

> *Anglesea* (96 actions): revegetation of specific areas (13); gathering data on flora and fauna (5); fencing and access restriction to protect habitat (2); protecting hooded plover habitat from dogs (1); policy of using only indigenous species in revegetation work (1)
>
> *Central West Regional* (45 actions): somewhat repetitive actions to develop policies to protect marine and coastal species, habitats and values (8); collecting data on marine and coastal natural values (1)
>
> *Glenelg* (58 actions): educating people about flora and fauna and threatening processes (3); enhancing coastal vegetation on private and coastal crown land (1); encouraging revegetation on public and private land (1); restricting access

[390] ibid., p. 26
[391] Western Coastal Board 2012, *Review of coastal action plans in Victoria's western coastal region*: *Appendix D*, Western Coastal Board, Geelong, p. 19
[392] Moyne Shire 2001, *Moyne Shire coastal action plan*, Moyne Shire, Port Fairy, p. 35
[393] Western Coastal Board 2002, op. cit. p. 17

to bird nesting areas (1); providing assistance for revegetation on private land (1); securing the little penguin population in Portland Harbour (1)

Lorne (48 actions): protecting the landscape (3); landscaping works (4); revegetation (1); protecting and enhancing the natural values of the Erskine River (1). [Note that the Lorne foreshore is semi-urbanised with fewer opportunities for actions to protect, enhance and expand coastal nature]

Moyne (67 actions): preparation of management plans to protect the natural values of specific coastal areas (9); fencing and revegetation (3); plans for revegetation (2); possible relocation of activities on adjoining freehold land adversely impacting reserves (1)

Skenes Creek to Marengo (79 actions): gathering data on natural values (1); protecting geological and geomorphological sites (3); protecting and enhancing sensitive coastal areas (3); protecting and expanding coastal nature (1); enhancing vegetation in specific areas (7); developing planning controls for protection of natural values (2)

South-west *regional* (25 actions): investigating incentives to encourage biodiversity protection on freehold land (1); investigating the need for protection of intertidal habitats (1); introduction into planning schemes of vegetation protection and environmental significance overlays (1)

Warrnambool (80 actions): protect scenic and environmental values (5); protecting hooded plover areas (2); revegetation and stabilisation of dunes (1); revegetation, rehabilitation and restoration of areas (9); establishing a buffer zone where development did not occur near Lake Gillear (1); protecting cliff top environments (1); protecting the area near Starlight Cave (1).

The results show that nature conservation was given serious but at times repetitive consideration in the action plans. Again the geographic scope of the plan heavily influenced whether the actions were regionally strategic or locally management-specific. Some of the actions were more suited to a local management plan.

Formal reviews of coastal action plans

In 2005, five of the western region's coastal action plans—Moyne Shire (2001), City of Warrnambool (1999), Skenes-Marengo (2005), Lorne (1998) and Anglesea (1999)—were separately reviewed. The reviews found that many of the actions had begun, were completed or were ongoing, the main measure of the successful implementation of the plans. For those actions either incomplete or dropped, the reviews found the main reasons to be:

- lack of funding, staff and volunteers to undertake works
- dependence upon the finalisation and/or implementation of other documents such as risk assessments, reports, strategies
- a review of the priority of actions by the lead agency that no longer considered them a priority
- confusion over the lead agency for implementation when multiple agencies were listed.

The reviews also considered the concerns raised by shires and agencies about the action plans. For example, the Shire of Moyne found the action plan covering its coastline aided funding bids but not strategic planning for coastal management. Another concern raised in the reviews was the high level of prescription for the actions when the plan was meant to be strategic, while those surveyed also considered there were too many actions, frequent repetition of actions, actions that were outdated or impossible to achieve, and actions with confusing priority ratings or unclear timelines.

In many cases the ongoing actions were already part of the core work of agencies involved e.g. councils should continue to enforce domestic animals bylaws. Their inclusion added to the number of actions and distorted the picture on what specific actions had been developed by the plan. Although it was important to note them in the planning documents, it made the plan look far more responsible for the actions rather than simply affirming the status quo.

The western region's coastal action plans were again reviewed in 2012. The review reported that more actions had been completed since the previous review, especially the estuary coastal action plans for which all 21 actions were finalised. The review also found that:

- there was support for some form of regional strategy
- the prescriptive nature of the plans was, on the one hand, useful for land managers but was also seen as diluting their value as strategic documents (also noted in the earlier review)
- the plans provided a focus for public participation
- the coastal boards lacked empowerment to lead and direct the planning process
- the loss of corporate knowledge i.e. loss of staff in a lead agency resulted in disinterest and a lack of ownership in the plan
- funding and capacity were critical for the effective implementation of the plans.

The last two dot points are of particular concern. As was discovered with the failed implementation of the National Cooperative Approach to Integrated Coastal Zone Management[394], profound and visionary strategies count for nothing if they are not backed up by resources, legislation, effective and integrated institutional arrangements and political will. Integration and collaboration is also dependent on the level of commitment from bureaucracies and their bureaucrats. What looked good in 2002 may no longer have support or may never have had support in the right places.

[394] Commonwealth of Australia 2006, *National cooperative approach to integrated coastal zone management: framework and implementation plan*, Commonwealth of Australia, Canberra

Difficulties for coastal action plans

One of the major difficulties for the preparation of the plans was determining their strategic scope. The more localised the plan, the more difficult this became, with actions often becoming on-ground projects. Consultation with stakeholders also raised issues, grievances and conflicts that required local remedies more suited to coastal management planning.

The name 'coastal action plan' has not helped. It sounds like an on-ground plan with key targets, timelines and measurable outcomes. It would have been far better to call them regional coastal strategies—an interpretation of the statewide coastal strategy within the regional setting—and leave the action planning to the management plans, drawing a clear distinction between the strategic planning of the strategies and the action planning of the management plans.

Having so many coastal action plans prepared in different years and at different scales inevitably created inconsistencies in their approaches. It also required considerable funding and capacity to complete and implement, with much of that funding from federal government programs. However, future budget austerity by governments will require a much more streamlined and targeted approach.

The plethora of plans, including stand-alone estuary and boating coastal action plans, also undermines the concept of integrated coastal zone management. There is a need for coastal management plans to deal with longer stretches of coast, and to include estuary and boating planning, rather than having them dealt with in separate plans as has thus far occurred.

The future approach by the government is expected to produce one coastal action plan prepared for each of the three coastal regions, with a clear emphasis on them being regionally strategic rather than locally prescriptive.

This report believes that the *Coastal Management Act 1995* should be amended to replace the coastal action plans with regional coastal strategies. These strategies could be either included in the statewide Victorian coastal strategy or as a separate strategic regional document. To effectively develop regional coastal strategies, the coastal regions need to be smaller. The current three regions are far too large to maintain a community of interest—people in South Gippsland are not all that interested in what is happening in East Gippsland, and those in Portland are not going to engage with people in Lorne—and involve two many councils, catchment management authorities and stakeholders to be effectively integrated.

Recommendations

The following recommendations are aimed at generating discussion about the ways in which the conservation of coastal nature can be strengthened by improving coastal action planning.

1. Amend the *Coastal Management Act 1995* to require the production of one regional marine and coastal strategy per region rather than multiple coastal action, estuary and boating action plans.

2. Split the three coastal regions into six, with their boundaries aligned with those of the catchment management authorities along the coast and the proposed Gippsland Lakes catchment management authority (see Recommendation 3 in the 'Catchment management authorities' section).

3. Ensure proposals for new boating infrastructure undergo a comprehensive and independent environmental assessment that includes an assessment of the environmental impacts of the boat-based recreational fishing enabled by the provision of that boating infrastructure.

4. Establish the boat carrying capacity of Port Phillip Bay, Western Port and other estuaries in Victoria, in relation to recreational fishing, and set limits on boat numbers in those water bodies consistent with that carrying capacity.

5a. Ensure that coastal estuaries and wetlands are given priority in Regional Waterway Strategies and that Estuary Management Plans are prepared for each estuary. The plans should be based on the best-available science and apply management zones to manage protection and use.

5b. Ensure that coastal estuaries and wetlands receive adequate volumes of environmental water.

6. Prepare and implement a State Environment Protection Policy for Victoria's 100+ estuaries.

Table 31 Condition of Victoria's estuaries and their catchments

Estuary	Near pristine	Largely unmodified	Modified	Extensively modified	Catchment condition	Altered flow	Bioregion
Glenelg River			X		Moderate	2	Bridgewater
Surry River		X			Moderate	6–7	Warrnambool Plain
Fitzroy River			X		Moderate	6–7	Warrnambool Plain
Lake Yambuk		X			Poor	4-5	Warrnambool Plain
Moyne River			X		Moderate	6–7	Warrnambool Plain
Merri River				X	Poor	2	Warrnambool Plain
Hopkins River			X		Poor	2	Warrnambool Plain
Curdies Inlet			X		Poor	3	Warrnambool Plain
Port Campbell River		X			n/a	n/a	Warrnambool Plain
Sherbrook River		X			n/a	n/a	Warrnambool Plain
Gellibrand River			X		Moderate	3	Warrnambool Plain

Estuary	Near pristine	Largely unmodified	Modified	Extensively modified	Catchment condition	Altered flow	Bioregion
Aire River			X		Moderate	8-10	Otway Plain
Barham River			X		Good	3	Otway Plain
Anderson Creek		X			Moderate	2	Otway Plain
Wild Dog Creek		X			n/a	n/a	Otway Plain
Skenes Creek			X		n/a	n/a	Otway Ranges
Grey River		X			n/a	n/a	Otway Ranges
Kennett River		X			Excellent	8-10	Otway Ranges
Jamieson River		X			n/a	n/a	Otway Ranges
St George River	X				Good	4-5	Otway Ranges
Erskine River		X			Excellent	8-10	Otway Ranges
Painkalac Creek		X			Moderate	2	Otway Plain
Anglcsea River			X		Excellent	8-10	Otway Plain
Spring Creek			X		Moderate	3	Otway Plain
Thompson Creek			X		Moderate	6-7	Otway Plain
Barwon River			X		Poor	1	Otway Plain
Port Phillip			X		Poor (Yarra, Kororoit, Balcombe, Hovell, Deep)	3 (Deep, Kororoit)	Otway Plain Victorian Volcanic Plain Gippsland Plain
Swan Bay			X		n/a	n/a	Otway Plain
Limeburners Bay			X			n/a	
Little River			X		Poor	1	
Werribee River			X		Poor	2	Otway Plain
Skeleton Creek			X		Poor	8-10	
Laverton Creek				X	n/a	n/a	Victorian Volcanic Plain
Kororoit Creek				X	Poor	3z	Victorian Volcanic Plain
Patterson River			X		n/a	n/a	Gippsland Plain
Western Port			X		Moderate (Cardinia, Bass) Poor (Lang Lang, Bunyip, Yallock)	4-5 (Cardinia) 3 (Bass, Lang Lang)	Gippsland Plain
Powlett River		X			Poor	3	Gippsland Plain
Anderson Inlet			X		Poor	2	Gippsland Plain
Shallow Inlet		X			n/a	n/a	Gippsland Plain
Tidal River		X			Good	8-10	Wilsons Promontory
Darby River		X			n/a	n/a	Wilsons Promontory
Corner Inlet		X			Good (Franklin) Moderate (Albert, Agnes, Tarra) Poor (Bennison)	4–5 (Albert, Agnes, Tarra, Franklin) 3 (Bennison)	Gippsland Plain
Jack Smith Lake	X				n/a	n/a	Gippsland Plain
Merriman Creek	X				Moderate		Gippsland Plain
Gippsland Lakes				X	Poor (Bruthen)	4-5 (Bruthen)	Gippsland Plain
Lake Tyers		X			Moderate	6–7	East Gippsland Lowlands
Snowy River			X		Moderate	4-5	East Gippsland Lowlands
Yeerung River	X				Good	8-10	East Gippsland Lowlands
Sydenham Inlet		X			Excellent	8-10	East Gippsland Lowlands
Tamboon Inlet		X			Moderate	8-10	East Gippsland Lowlands
Thurra River	X				Excellent	8-10	East Gippsland Lowlands
Basby Creek	X				n/a	n/a	East Gippsland Lowlands
Red River	X				n/a	n/a	East Gippsland Lowlands
Benedore River	X				n/a	n/a	East Gippsland Lowlands
Shipwreck Creek	X				n/a	n/a	East Gippsland Lowlands
Betka River	X				Excellent	6–7	East Gippsland Lowlands
Mallacoota	X				Excellent	8-10	East Gippsland Lowlands

Source: Barton, J., Pope, A., Quinn, G. and Sherwood, J. 2008, Identifying threats to the ecological condition of Victorian estuaries, Department of Sustainability and Environment Technical Report.

Table 32 Boating infrastructure in Port Phillip Bay and Western Port

Location	Status	Management
Queenscliff	Regional	Borough of Queenscliff
Queenscliff Harbour	Regional	Parks Victoria
Queenscliff Cruising Yacht Club	Regional	DEPI
Swan Bay	Local	Parks Victoria
St Leonard's	Regional	Bellarine Bayside Committee of Management
St Leonard's Pier (multipurpose)	Local	Parks Victoria
St Leonard's Yacht and Motor Squadron	Local	Bellarine Bayside Committee of Management
Indented Head	Local	Bellarine Bayside Committee of Management
Grassy Point	Informal	Bellarine Bayside Committee of Management
Portarlington (Fairfax Street)	Local	Bellarine Bayside Committee of Management
Portarlington (jetty)	District to Regional	Parks Victoria
Portarlington (Seaside Resort)	Regional	Bellarine Bayside Committee of Management
Point Richards	Regional	Bellarine Bayside Committee of Management
Clifton Springs (Boat Harbour)	District	City of Greater Geelong
Sands Caravan Park	Local	Private
Pelican Shores Caravan Park	Local	Private
Indented Head Boat Club	Local	Bellarine Bayside Committee of Management
Limeburner's Point	District	City of Greater Geelong
Royal Geelong Yacht Club (marina)	Regional	City of Greater Geelong
Steampacket Quay (jetty)	Regional	City of Greater Geelong
Cunningham Pier	Regional	Private
Western Beach (multipurpose)	Local	City of Greater Geelong
Rippleside (multipurpose)	District	DSE
St Helens Park (multipurpose)	District	City of Greater Geelong
North Shore	Local	City of Greater Geelong
Geelong Grammar School	Local	City of Greater Geelong
Lagoon Boat Club	Local	Yacht Club
Avalon Beach	Local	City of Greater Geelong/Private
Murtcairn Boat Launching	Local	Parks Victoria
Kirks Point	Local	Parks Victoria
Werribee River (ramp, jetty)	Local to Regional	Wyndham City Council/Parks Victoria
Altona Pier (jetty)	Local	Parks Victoria
Altona	District to Regional	Hobsons Bay City Council
Kororoit Creek Anglers Club (yacht club)	Local	Hobsons Bay City Council
Bayview Street (Moorings)	Local	DEPI
South Williamstown (jetty)	Local	Hobsons Bay City Council
Williamstown (multipurpose)	Regional	Parks Victoria
Parsons marina (marina)	Local	Parks Victoria
Newport Warmies Boat Ramp	District	City of Hobsons Bay
Flemington Race Course Landing (Floating landing)	Local	Parks Victoria
Footscray Wharves (marina)	Local	Port of Melbourne Corporation
Victoria Harbour (multipurpose)	Regional	Vic Urban
Yarras Edge (marina)	District	Private
Pier 35 (marina)	District	Port of Melbourne Corporation
Princes Pier (jetty)	District	Department of Infrastructure
Port Melbourne Yacht Club** (Yacht Club)	Local	Port Phillip City Council
Lagoon Pier (jetty)	Local	Parks Victoria
Kerferd Road Pier (jetty)	Local	Parks Victoria
St Kilda Harbour jetty, yacht club	Regional	Parks Victoria/ Port Phillip City Council
St Kilda Marina (multipurpose)	Regional	Port Phillip City Council
North Road	Local	Bayside City Council
Royal Brighton Yacht Club (yacht club)	District	Royal Brighton Yacht Club/Parks Victoria
Sandringham Boat Harbour (multipurpose: jetty, yacht club, boat ramp)	Regional	Parks Victoria/DEPI
Black Rock Yacht Club/Half Moon Bay (multipurpose: jetty, yacht club, harbour	Local	Parks Victoria/Bayside City Council
Beaumaris Motor Yacht Squadron	Local	DEPI
Beaumaris Yacht Club	Local	Bayside City Council
Edgewater (jetty)	Local	Private
Parkdale Yacht Club	Local	Kingston City Council
Mordialloc Creek (multipurpose: jetty, yacht club, ramp)	Regional	Kingston City Council/Parks Victoria
Chelsea yacht Club	Local	Kingston City Council
Patterson River (multipurpose: yacht club, ramp, marina)	Regional	Kingston City Council/Parks Victoria/Patterson Lakes Marina
Carrum Sailing Club	Local	Kingston City Council
Seaford Pier (jetty)	Local	Kingston City Council
Frankston Pier (multipurpose: jetty/boat ramp/yacht club)	District	Parks Victoria/Frankston City Council/Frankston Yacht Club
Frankston		Frankston City Council
Daveys Bay Boat Club	Local	DEPI
Canadian Bay	Local	Mornington Peninsula Shire Council

Location	Status	Management
Mornington Harbour (multipurpose: yacht club/jetty/ramp)	Regional	Mornington Peninsula Shire Council/Parks Victoria/Mornington Peninsula Shire Council
Fisherman's Beach	Local	Mornington Peninsula Shire Council
Mt Martha Yacht Club	Local	Mornington Peninsula Shire Council
Martha Cove	Regional	Mornington Peninsula Shire Council/Private
Safety Beach Boat Ramp	Local	Mornington Peninsula Shire Council
Dromana Pier (jetty)	Local	Parks Victoria
Anthony's Nose	Local	Dromana Foreshore Committee of Management
McCrae Yacht Club	Local	Mornington Peninsula Shire Council
Rosebud Jetty	Local	Mornington Peninsula Shire Council
Rosebud Motor Boat Squadron	Local	Mornington Peninsula Shire Council/DEPI
Tootgarook Boat Ramp	Local	Capel Sound Foreshore Committee of Management
Rye (multipurpose: ramp/jetty/yacht club)	District	Mornington Peninsula Shire Council/Parks Victoria/Mornington Peninsula Shire Council
Tyrone Road Ramp	Local	Whitecliffs- Cameron's Bight Foreshore Reserve Committee of Management
Blairgowrie Yacht Squadron	District	Whitecliffs- Cameron's Bight Foreshore Reserve Committee of Management
Cameron's Bight	Local	Whitecliffs- Cameron's Bight Foreshore Reserve Committee of Management
Sorrento Sailing Club	Local	Mornington Peninsula Shire Council
Sorrento (ramp/jetty)	District	Mornington Peninsula Shire Council/Parks Victoria
South Channel Fort (jetty)	Local	Parks Victoria
Portsea Pier (jetty)	Local	Parks Victoria
Flinders (multipurpose: ramp/yacht club/jetty	District	Mornington Peninsula Shire Council/Parks Victoria
Point Leo Boat Club	Local	Point Leo Committee of Management
Merricks Yacht Club	Local	Merricks Beach Committee of Management
Western Port Yacht Club	Local	Balnarring Foreshore Committee of Management
Somers Yacht Club	Local	Somers Foreshore Committee of Management
Stony Point (multipurpose: ramp/jetty)	District	Crib Point Stony Point Foreshore Committee of Management /Parks Victoria
Tankerton Jetty	Local	Parks Victoria
Hastings (multipurpose: marina/ramp/yacht club/marina		DEPI/Mornington Peninsula Shire Council/Parks Victoria
Yaringa Boat Harbour (marina)	District	DEPI/Private
The Bluff Jetty	Local	DEPI
Watsons Point Jetty	Local	DEPI
Warneet (jetty)	District	Parks Victoria/Warneet Foreshore Committee of Management
Blind Bight Boat Ramp	Local	Parks Victoria/ Tooradin Foreshore Committee of Management
Tooradin Boat Ramp	District to Regional	Tooradin Foreshore Committee of Management
French Island Barge Landing (jetty)(	Local	
Lang Lang (jetty/ramp	Local	Parks Victoria/Lang Lang Foreshore Committee of Management
Grantville	Local	Bass Coast Shire Council
Corinella	Local to District	Corinella Foreshore Reserve Committee of Management/Parks Victoria
Coronet Bay	Local	Coronet Bay Progress Association
San Remo (jetty)	District	Parks Victoria
Newhaven (multipurpose: jetty/marina/ramp	Regional	Parks Victoria/DEPI/Bass Coast Shire Council
Rhyll (ramp/jetty)	District	Bass Coast Shire Council/Parks Victoria
Cowes (multipurpose: jetty/yacht club	Regional	Parks Victoria/Bass Coast Shire Council
Cowes Boat Ramp	Local	Bass Coast Shire Council

Source: Central Coastal Board 2007, *Boating coastal action plan*, Central Coastal Board, Melbourne.

Coastal management plans

Under the *Coastal Management Act 1995*, coastal management plans:

- *provide direction for day to day management of an area of coast by appointed managers*
- *include a business plan which outlines management requirements, proposed works and budget priorities*
- *are developed by coastal managers in accordance with the* Coastal Management Act 1995
- *must be consistent with the VCS* [Victorian coastal strategy]*, CAPS* [coastal action plans] and relevant legislation
- *are approved by the Minister*[395]*.*

Coastal management plans prepared by the Department of Environment and Primary industries, committees of management or municipal councils in the three coastal regions include:

Western Region: Nelson; Levy Beach; Otway Coast; Great Ocean Road Coast; Bells Beach

Central Region: Breamlea; Barwon Coast; Buckley Park; Point Lonsdale Lighthouse and Foreshore; Queenscliffe; Bellarine; Limeburners Bay; Avalon Beach; Werribee South; Williamstown; City of Port Phillip; City of Bayside; Black Rock–Beaumaris; City of Kingston; Mt Eliza; Dromana; Rosebud; Capel Sound; White Cliffs to Camerons Bight; Portsea; Flinders; Shoreham; Merricks Beach; Somers and Balnarring; Cannons Creek; Lang Lang; Corinella; San Remo; Cape Patterson

Gippsland Region: Inverloch; Sandy Point; Shallow Inlet; Walkerville; Waratah Bay; Woodside Beach; Seaspray; Marlay Point; Lake Wellington Wetlands; Metung and Mosquito Point; Loch Sport; Lake Victoria; Lakes Entrance; Mallacoota.

Some of the plans listed above are for quite small reserves (e.g. Cannons Creek), while others cover the coast within a municipality (e.g. City of Port Phillip) or a stretch of coast now under the management of a committee formed by the merger of others (e.g. Great Ocean Road Coast Committee). The greater number of management plans for the central region, for which few coastal action plans were prepared, reflects the large number of community committees and municipalities managing separate coastal crown land reserves (often referred to as foreshore reserves).

For the purposes of this report, a small number of the above management plans have been reviewed. Those chosen represent different geographical scales of management, management structures, purposes and pressures, with at least one from each of the three coastal regions. They also represent plans prepared by:

- merged committees of management i.e. the Great Ocean Road Coast Committee
- coastal municipalities as committees of management i.e. the Shire of Mornington Peninsula at Rosebud and Portsea
- a series of separate community committees of management i.e. Dromana to Portsea
- the then Department of Sustainability and Environment either in lieu of or for community committees of management i.e. Sandy Point
- a committee of management with coastal nature conservation and nature-based tourism as its priorities i.e. the Phillip Island Nature Parks.

Great Ocean Road Coast Committee

The Great Ocean Road Coast Committee was formed by merging the committees of management for foreshore reserves along 37 km of coast between the Cumberland River, west of Lorne, and Point Impossible east of Torquay. The 506 ha under its jurisdiction include reserves at Lorne, Airey's Inlet, Anglesea and Torquay, which are interspersed with sections of the Great Otway National Park where it comes down to the shoreline.

Committee mergers have occurred elsewhere in the western region between Marengo and Separation Creek, between Breamlea and Barwon Heads, and from St Leonards to Portarlington. This approach has been little used in the central and eastern regions.

The Great Ocean Road Coast Committee's vision is:

> *Protect and enhance the breath taking and iconic coastline with its diverse community, natural environment and rich social and cultural history as custodians for current and future generations.*[396]

Its mission is*:*

> *Ensure appropriate use and effective management of the GORCC managed coast through advocacy and action.*[397]

The two main areas of operation for the committee are managing the coastal crown land reserves and managing its revenue streams, mainly the caravan and camping grounds in Torquay, Anglesea and Lorne which generate 60% of the committee's annual revenue of $7 million.

Although government grants are available from time to time for committees of management to carry out specific projects—for the Great Ocean Road Committee it comprises 22% of revenue—their business plans must ensure that ongoing management costs are covered by revenue generated by the committee. In the past, this has led to major environmental impacts as committees developed their reserves with camping and caravan sites.

Key challenges identified in the committee's 2013 coastal management plan were: climate change; population and development; protection of the natural environment; financial and other resources. The plan lists strategic responses for each of these challenges:

Climate change: understanding coastal vulnerability,

[395] Government of Victoria 1995, *Coastal Management Act 1995,* Government of Victoria, Melbourne, p. 22

[396] Great Ocean Road Coast Committee 2013, *Coastal management plan 2013*, Great Ocean Road Coast Committee, Torquay, p. 33

[397] Great Ocean Road Coast Committee, loc. cit.

adaptation planning, use of the best-available science and community consultation and engagement.

Population and development: research, appropriate and equitable access, community education on impacts and 'aiming to address detrimental impacts and maximise opportunities associated with increased population and development'.

Protection of the natural environment: prioritising protection and enhancement, better understanding of trends in natural values, targeting weeds and enforcing local laws that can be used to protect nature e.g. littering and dune access.

Financial and other resources: pursuing funding opportunities, effectively using resources, collaboration with volunteers and community groups.

The coastal management plan includes nine guiding principles, the first being that: 'The natural environment is the prime value of the GORCC managed coast and its protection and enhancement is of the highest priority'[398]. The other eight cover: protection of the coast's community, heritage and traditional values; economic values being used to support coastal protection; transparent and collaborative management; providing accessible and affordable recreation; fostering stewardship; consultation-based plans, decisions and actions; proactive leadership; and good governance.

The plan then outlines the key values for each of the four main geographical areas within its jurisdiction before discussing its three strategic priorities: the natural environment; community, heritage and traditions; and resourcing and business activities. These are followed by its three organisational capabilities that are stakeholder engagement, planning and governance arrangements. Actions for implementing the strategic framework are outlined, followed by the committee's business plan and a short section on monitoring and review.

The Great Ocean Road Committee's *Coastal management plan 2013* is a strategic planning document, rather than an on-ground management document, and provides an outline of the future direction of coastal management. On-ground management is described in the committee's *Environment and land management plan 2006*, the *Native vegetation and weed action plan 2009-2014*, and master plans for the Split Point lighthouse precinct (2008) and Taylor Park (2000).

The Great Ocean Road Coast Committee is a good model to use when reviewing and reforming the governance and management of coastal crown land reserves. However, there are some in the region who wish to see it disbanded and its responsibilities absorbed by the Surf Coast Shire:

> *The Great Ocean Road Coast Committee (GORCC) may be relieved of its responsibilities after a motion was passed with unanimous support at last weekend's Liberal Party state council in Lorne. The motion is for the Coalition government to initiate a pilot for a more efficient management model of specific Victorian council reserves under the Coastal Management Act 1995, specifically the coastal corridor now under the management of GORCC. In the pilot, the 43 kilometres of coastal foreshore that GORCC oversees would be transferred to the Surf Coast Shire. According to the motion, this would reduce the costs of administration and operation through economies of scale, use of shared resources (both equipment and labour) and more efficient "place management"*[399].

Local government has shown itself to be conflicted in terms of the conservation of coastal nature and coastal planning and management, e.g. Surf Coast Shire and Bells Beach, Shire of Mornington Peninsula and the Rosebud aquatic centre, Shire of Glenelg and wind turbines.

Removing the GORCC would begin to dismantle a community engagement model of coastal management that should be introduced elsewhere along the coast. This report believes that the merging of existing committees of management along the lines of the GORCC model, with direct reporting to the proposed Marine and Coastal Authority, would ensure more effective community engagement, integrated planning and management, economies of scale and the benefits from sharing resources.

Mornington Peninsula Shire at Rosebud and Sorrento

Rosebud Foreshore Reserve is coastal crown land permanently reserved for public purposes along six kilometres of the northern Mornington Peninsula between McCrae and Rosebud. It has been for many years a popular summer holiday camping area in the now remnant, highly modified but significant Coast Banksia Woodland. There are also remnants of Coastal Dune Grassland, Swamp Scrub and Estuarine Wetland, with at least 31 plant species of regional significance and a number of significant fauna species including the swamp skink.

As well as 650 camping sites and the associated infrastructure of toilet and shower blocks, the foreshore reserve also contains roads, car parks, playgrounds, the Rosebud Pier, the McCrae lighthouse, a number of privately owned bathing boxes, a memorial hall and yachting and lifesaving club buildings. Revenue from the camping sites and boat sheds exceeds $1 million each year.

The Rosebud Foreshore Reserve is a semi-urbanised section of coast that is threatened by increasing urbanisation as the Mornington Peninsula population grows. Threats include illegal vegetation removal, invasive species, habitat disturbance, and the impact of recreational activities on native vegetation protection, regeneration and restoration. The same can be said for the foreshore reserves to the west and east of Rosebud between Portsea and Safety Beach.

Under the *Crown Land (Reserves) Act 1978,* the responsible manager for the reserve is the Shire of Mornington Peninsula, while Parks Victoria manages the Rosebud Pier. The Shire of Mornington Peninsula's

[398] ibid., p.34

[399] Taylor, J. 2013, 'Landslide', *Surf Coast Times*, 5 December 2013

vision for the reserve was expressed in the coastal management plan prepared in 2012:

> *Overall, the Rosebud foreshore will reflect a careful balance between biodiversity conservation and the accommodation of increased demands for recreational pursuits, in the context of the potential threats of climate change*[400].

This was expanded further within the plan:

> *The Rosebud foreshore reserve will be a highly valued environmental and recreational asset for both the local community and visitors and will form an integral component of Rosebud's character. The Foreshore will be maintained and improved through better management practices that will ensure the protection and enhancement of ecological values that provide essential flora and fauna habitat. The community's understanding of the foreshore's values will be enhanced and the foreshore reserve will be better integrated with the Rosebud Activity Centre via improved and well defined links. The role of the foreshore as a recreation area will also be strengthened, consistent with its designation as a Coastal Recreation Zone, while impacts on the coastal environment will be minimised. Overall, the Rosebud foreshore will reflect a careful balance between biodiversity conservation and the accommodation of increased demands for recreational pursuits, in the context of the potential threats of climate change.*[401]

The purpose of the plan is to establish a long-term policy framework that includes:

- *the vision and objectives for the management of the Rosebud foreshore*
- *actions to protect and enhance its environmental, heritage and recreational values over the next 3 years and beyond*
- *a 3 year business plan that links actions with income and expenditure.*[402]

The plan builds on the *Mount Eliza to Point Nepean coastal action plan* by identifying activity nodes (Rosebud), recreation nodes (Boneo Road, Rosebud Pier and McCrae lighthouse, recreation areas (camping) and conservation areas (Chinaman's Creek, all coastal dune vegetation and all beaches for protection from development of recreational infrastructure). It is structured around the themes of natural environment, recreational facilities and activities, access and movement, safety and risk management, signage and public awareness, coastal infrastructure, climate change, and social and cultural heritage. Under each theme there is a discussion of existing conditions and management issues, followed by objectives with prioritised actions and time lines.

Key actions in the plan focus on establishing the Southern Peninsula Aquatic Centre, enhancing recreation nodes, reviewing the management arrangements for camping areas, using conservation measures to better protect biodiversity, and enhancing the Bay Trail.

An increasing demand for space for 'additional recreational facilities', combined with a narrowing of the reserve caused by climate change, will make it difficult to conserve the remaining coastal nature, which may conflict with the council's regional aspirations for Rosebud:

> *The combined area of the Activity and Recreation Nodes is proportionately very small (less than approximately 12.5% of 80 hectare foreshore area), but the nodes will provide a focus for managing recreational demand, establishing a strong image and enabling Rosebud to perform its intended role as the regional centre for the southern peninsula*[403].

The *Victorian coastal strategy 2008* defines recreation nodes as potentially including camping, as does the *Mt Eliza to Point Nepean coastal action plan*. In the *Rosebud Foreshore Reserve coastal management plan,* there is a small recreational node mapped in both the western and eastern halves of the foreshore reserve, and an activity node opposite the Rosebud shopping centre. Together the nodes may represent 12.5% of the reserve but recreational camping sites extend over a much larger area and, as the management plan states:

> *In order to service the camping activity, numerous toilet blocks are scattered throughout the grounds, most of which are only open during the camping season. Camping and its patronage apply pressure on the foreshore environment, particularly the sensitive vegetation areas located between the camping sites and the beach*[404].

Although the plan is committed to the three-step approach of avoid, minimise and offset the removal of native vegetation, it proposes that improvements to bay viewing opportunities be along the Point Nepean Road be investigated[405].

However, the Rosebud Foreshore Reserve's coastal management plan does include a number of actions to improve the quality of some coastal nature by fencing sensitive areas, weed control, plantings to restore degraded areas, possible removal of some bathing boxes in sensitive areas, and the replacement of some exotic trees with indigenous ones.

But the plan's aim of ensuring that there is no net loss of foreshore land available for recreational activity, and the action to provide additional recreational facilities in some locations, would suggest that the council might be seeking to secure a net gain of recreational facilities in the 80 ha of the reserve. This is confirmed by the council's proposal to establish the multi-million-dollar Southern Peninsula Aquatic Centre on the reserve, which was also included as a high priority in the coastal management plan.

The Shire of Mornington Peninsula also manages the Portsea Foreshore Reserve, which extends along 2.4 km of shoreline between Police Point and Hemston Avenue. The key objectives are almost identical to those for

[400] Hansen Partnership 2012, *Rosebud coastal management plan*, prepared for the Shire of Mornington Peninsula, Hansen Partnership, Melbourne, p. 5
[401] ibid., p. 4
[402] ibid., p. 10
[403] Hansen Partnership, loc. cit.
[404] ibid., p. 27
[405] ibid., p. 24

White Cliffs:

- *identifying and protecting the natural and cultural values of the area*
- *providing safe public access through the Reserve*
- *improving existing facilities, where appropriate*
- *monitoring and improving public safety*
- *encouraging community awareness and involvement*
- *reviewing funding opportunities and revenue structures.*[406]

The council's vision for the reserve is:

> *To use and manage the Portsea Foreshore Reserve so that natural values are protected, physical infrastructure maintained and future development balanced to recognise the beauty and natural values of the Foreshore Reserve.*[407]

Its two main sources of revenue, about $20 000 per year, are the fees from 82 bathing boxes and boat sheds, and events held on the reserve.

The Portsea Foreshore Reserve management plan wishes to protect cultural heritage sites, manage boat sheds and bathing boxes, deal with dog control issues and sympathetically design infrastructure, but it also wishes to 'communicate the enforcement implications of vegetation removal', 'minimise public risk associated with coastal erosion at Pt Franklin', and 'ensure Portsea Hotel patrons are contained within the Hotel property when consuming alcohol', to 'be informed of use and development applications within and adjacent to the Foreshore Reserve, and to 'minimise conflict between commercial and recreational activities on Portsea Pier'. Clearly there are unique issues to manage in Portsea.

Community committees of management: Dromana to Portsea

Between Safety Beach and Portsea, a distance of approximately 30 kilometres, there are multiple foreshore reserves and community committees of management at White Cliffs to Camerons Bight, Capel Sound and Dromana. The Shire of Mornington manages the Rosebud Foreshore Reserve as well as those at Portsea, Sorrento and Rye.

Like Rosebud Foreshore Reserve, revenue is generated from camp sites, boat sheds and bathing boxes, and like Rosebud they have management issues associated with the squeeze on limited public open space and remnant vegetation from recreational activities and urbanisation. As a consequence, their management plans are similar in thematic structure, objectives and actions.

At Dromana, the foreshore reserve is 3.2 km long, 28.5 ha in area and ranges from 35-50 m in width from the road to the edge of the beach. There are 203 boatsheds and 39 bathing boxes, or 10% of the total found along the shorelines of Port Phillip Bay and Western Port, and 46 caravan sites, all of which generates an annual income of approximately $280 000 each year. A second area of 13.7 ha, known as Latrobe Reserve, is also covered by the management plan for the Dromana reserve. The vision of the committee of management is:

> *To promote the image of Dromana by managing the foreshore to sustain and enhance the natural environment while providing a safe and attractive venue for a range of recreational opportunities.*[408]

Key actions and objectives in the Dromana management plan refer to continuing development of the Bay Trail and use of the foreshore for a caravan park, improving the function and appearance of picnic areas, interpreting Dromana history, continuing weed removal, protection of remnant vegetation and reestablishment of indigenous vegetation, improving maintenance, retaining and enhancing boatsheds, upgrading dispersed small car parks, retaining the Anthony's Nose boat ramp, and integrating foreshore and Dromana township planning with the foreshore as a focus.

Similarly, the White Cliffs to Cameron's Bight foreshore reserve management plan wants to maintain and encourage pride in the boatsheds, maintain Tyrone Boat ramp, develop full occupancy of the caravan park from December to April and maintain walking paths, tracks or board walks where appropriate, while maintaining the integrity of the native vegetation.

The White Cliffs to Camerons Bight Foreshore Reserve is 70 ha in area, with 178 camp sites and 139 privately owned boatsheds that generate annual revenue of close to $400 000 each year. The vision of the committee is like that at Dromana:

> *To manage the White Cliffs to Camerons Bight Foreshore Reserve to enhance the natural environment while providing a range of recreational opportunities and increasing the sustainability of amenities.*[409]

The committee is planning to develop clear and effective signage, standardise fencing, conduct a new vegetation management study and restore vegetation. The key objectives in its management plan are:

- *To protect and enhance the natural and cultural values and visual appearance of the reserve*
- *To provide safe and appropriate recreation and tourism experiences*
- *To ensure sustainable facilities and equitable access*
- *To increase community involvement in planning and management of the reserve*
- *To undertake effective business planning to ensure sound management arrangements.*[410]

The vision for the Capel Sound Foreshores Reserve is similar to that of White Cliffs to Cameron Bight:

> *To manage the foreshore to enhance and maintain the*

406 URS 2004, *Portsea Foreshore Reserve coastal management plan*, URS, Southbank, p. 12-2
407 ibid., p. 5-1

408 Dromana Foreshore Committee of Management, *Draft Dromana foreshore coastal management plan*, Dromana Foreshore Committee of Management, Dromana, p. 6
409 Department of Sustainability and Environment 2010, *White Cliffs to Camerons Bight Foreshore Reserves draft coastal management plan,* Department of Sustainability and Environment, Melbourne, p. 2
410 Department of Sustainability and Environment, loc. cit.

reserve's natural values (environmental resources) whilst providing for a range of recreational opportunities within a sustainable environmental, economic, social and cultural framework.[411]

Capel Sound Foreshores Reserve is permanently reserved for public purposes, covers 9 ha, is 3.75 km long, ranges in width from 150-200 m, and contains 92 boatsheds. The reserve combines the West Rosebud and Tootgarook foreshore reserves and is managed by a community committee. Fees from a caravan park, the boatsheds and boat ramp exceed $400 000 each year.

The committee of management at Capel Sound also wishes to renew fencing, install new signage, complete a flora and fauna study, revegetate with indigenous plants, upgrade the car park and redevelop its boat ramp.

The foreshore reserves from Safety Beach are all narrow, contain remnant Coast Banksia Woodland and other coastal vegetation, are linked by the Point Nepean Road and have many management issues in common because they are narrow strips of public land under increasing pressure. They also have similar visions, management structures and plans of management, and significant revenue streams.

Merging the committees of management between Safety Beach and Portsea into one coast committee, as with the Great Ocean Road Coast Committee, would enable the pooling of revenue, resources, personnel and expertise, the development of a broader and more strategic vision, and the establishment of consistent and region-wide efforts to protect, restore and monitor coastal vegetation. This would lead to the more effective and integrated management of the various demands for recreational activities on fragile and limited public land.

Department of Environment and Primary Industries[412]: Sandy Point Foreshore Reserve

The Sandy Point Foreshore Reserve covers the barrier dune enclosing Shallow Inlet, which is on the Yanakie Isthmus joining Wilsons Promontory to the Victorian mainland. The crown land within the 620 ha reserve was permanently reserved for the protection of the coastline in 1981 and 1984, and the management plan, which extends out to 600 m offshore, was finalised in 2010.

The Sandy Point Foreshore Committee of Management is responsible for the reserve to the low water mark, with summer parking fees the only source of revenue from the reserve. As a result, the plan was prepared for the committee by the then Department of Sustainability and Environment. It followed a simple format used by the department for other small reserves with little or no revenue sources. Accordingly, the plan was prepared to provide 'a strategic guide for the future management of Sandy Point Foreshore Reserve', with a scope that included:

- *establishing an overarching management objective for the reserve*
- *describing the natural, recreational and cultural values present within the study area*
- *identifying management issues impacting on these values*
- *outlining strategies to address specific management issues*
- *assigning responsibility for implementation of management strategies to the most appropriate group or authority/agency.*[413]

The plan also includes a long-term management objective to carefully balance the potentially competing pressures of recreational use, conservation of natural features and the protection of cultural values, with specific management objectives to:

- *provide for a range of recreation opportunities that do not conflict with other objectives*
- *enhance, conserve and protect biodiversity values, geomorphological values, natural features and landscape aesthetics of the foreshore reserve, to complement management of these values within Shallow Inlet Marine and Coastal Park*
- *conserve and protect all cultural and archaeological features*
- *enhance appreciation of the reserve's natural features through upgraded interpretative facilities*
- *establish agreed responsibility for upgrading and maintaining the foreshore, including all physical assets.*[414]

The focus of the plan's aims and actions was on-ground works under the headings of vehicle access and parking, visitor facilities, surf life saving club, pedestrian access, recreational activities, dogs, dune and beach management, flora and fauna management, pest plant and animal management, fire management, indigenous cultural heritage and native title, signage and interpretative information, and surrounding land.

The challenge for committees of management of small reserves is the development of a business plan when few revenue-raising opportunities exist. External grants are available but these are irregular and cannot be used to cover ongoing management costs. To overcome this issue, the Sandy Point plan's actions include:

- *investigate possibility of providing Sandy Point Foreshore Committee of Management with a fixed or recurring annual budget, possibly equivalent to the revenue collected from lease of Crown land to Waratah Beach Surf Life Saving Club*
- *investigate long term possibility of amending local administrative arrangements to enable funds from other nearby leased coastal Crown land to be directed towards Sandy Point Foreshore Reserve*
- *continue negotiations with South Gippsland*

[411] Department of Sustainability and Environment 2008, *Capel Sound foreshores reserves coastal management plan*, Department of Sustainability and Environment, Melbourne, p. 9

[412] This was the Department of Sustainability and Environment when this plan was prepared.

[413] Department of Sustainability and Environment 2010, *Sandy Point foreshore management plan*, Department of Sustainability and Environment, Melbourne, p. 5

[414] ibid., p. 10

Shire Council regarding future funding arrangements for management of recreation facilities at Surfers Walk

- *investigate the options for overall management of coastal reserves in the Waratah Bay area. This could allow for distribution of income to those reserves currently with no or low sources of revenue.*[415]

Sandy Point is at the end of a beach that extends west to Waratah Bay and Walkerville South. At each of the three locations there is a separate committee of management. The merger of the three would benefit management of the coastal crown land reserves in their care.

Phillip Island Nature Parks

The Phillip Island Nature Parks is a not-for-profit organisation established in 1996 by the state government to manage 1 800 ha of coastal crown land on Phillip Island, 120 km to the south-east of Melbourne and within Western Port. Its mission is similar to many other coastal committees of management:

> *To conserve and enhance the Nature Parks' environment for current and future generations, whilst achieving a balanced environmental, economic and social outcome.*[416]

But its vision is very different:

> *To be a world–recognised place of conservation excellence, providing outstanding and authentic experiences for all.*[417]

The reason, 32 000 little penguins visited by one third of tourists to Victoria and worth $125 million to the Victorian economy.

As already reported, the future for the little penguins looked grim in the 1980s, but a major program of land buybacks on the Summerland Peninsula, research and improved land management has seen their numbers almost double and the colony more secure.

But Phillip Island Nature Parks is not just about little penguins. The organisation also operates visitor centres at Churchill Island, the Koala Conservation Centre and The Nobbies, and manages most of the island's coastal crown land, with the exception of the urbanised strip from Silverleaves to Ventnor. With a large staff and considerable revenue, Phillip Island Nature Parks is in a very different position to other community-based committees of management.

The two key documents in support of management are the *Strategic plan 2012-2017* and the *Environment plan 2012-2017*. This is similar to the approach of the Great Ocean Road Coast Committee, which has a strategy-like coastal management plan and an environment and land management plan.

A thirteen-member reference group and the findings of extensive consultation guided the development of the strategic plan. It outlines the 'major steps to be taken in the next five years towards achieving a bold vision for the future of the Nature Parks, offering an enhanced, authentic and diverse visitor experience founded on the highest conservation principles and supported by a contemporary governance framework'.

However, there continues to be challenges:

> *Our physical infrastructure is ageing, and some of the visitor experiences we offer – notably at the Penguin Parade and the Nobbies – do not reflect our conservation ethos nor meet changing visitor expectations. Visitor surveys taken at the Penguin Parade show levels of dissatisfaction with the current experience and facilities. Despite the extraordinary advantage of our authentic setting and wildlife, the Nature Parks is not keeping pace with contemporary standards for quality nature–based destinations. The potential for visitors to immerse themselves and learn from the unique natural and cultural assets in our care is not fully realised. Opportunities to extend length of stay and develop quality experiences are limited by inadequate infrastructure. Projected increases in international tourism will place extra strain on our facilities.*[418]

The *Strategy plan 2002-2017* then outlines the actions needed to meet the challenges within six key areas: planning, conservation, visitor attractions and experience, community, organisation and governance.

The *Environment plan 2012-2017* is a comprehensive five-year planning framework for the Phillip Island Nature Parks Environment Department. It contains specific goals and actions for park-wide planning relating to paths and tracks, assets and access planning, visual amenity, and public land tour operator and activity provider licences. The plan also contains actions and goals on climate variation, a whole-of-island biodiversity management program with actions specific to little penguins, short-tailed shearwaters, hooded plovers, other birds, Australian fur seals, bats, reptiles, amphibians, freshwater fish, macro-invertebrates, koalas, swamp wallabies, Cape Barren geese, and threats such as invasive species, fire and pollution.

The environment plan identifies seven key management areas on the island: Summerland Peninsula; north-west beaches; south coast beaches; woodlands; Rhyll Inlet and Silverleaves Beach; Churchill Island and surrounds; Cape Woolamai. For each key area the plan identifies 'whole key area actions', goals (with timelines) and partners, and then for subareas it identifies values and issues along with subarea actions, goals and partners.

The governance arrangements of the Phillip Island Nature Parks are anchored in the *Crown Land (Reserves) Act 1978*, which is extremely limited in the support it gives to management bodies. Although specific regulatory arrangements have been gazetted for the Phillip Island Nature Parks, placing it ahead of most other coastal crown land reserves, the plan states that:

> *Beyond the responsibilities for land management defined under the CLRA [*Crown Land (Reserves) Act 1978*], the Nature Parks lacks any clear statement of its core purpose or priorities. Neither are its roles such as research, conservation, education, ecotourism or community obligations, defined. The CLRA also*

[415] ibid., p. 41
[416] Phillip Island Nature Parks 2012, *Strategic plan 2012–2017,* Phillip Island Nature Parks, Phillip Island, p.4
[417] Phillip Island Nature Parks, loc. cit.
[418] ibid., p. 7

restricts our ability to respond to market fluctuations by not allowing the Nature Parks' Board to determine entry fees for our ticketed visitor centres. As the vision for the future of the Nature Parks is implemented, particularly the anticipated investment in the Summerland Peninsula, it is vital that the organisation has clarity of its purpose and responsibilities, and operates within an appropriate legislative framework.[419]

The management planning processes carried out by Phillip Island Nature Parks are worthy of consideration by managers elsewhere along the coast. Even so, its work is restricted by current legislation an, as discussed in Part 2, it requires more flexibility in the setting of entry fees and an injection of funds to upgrade its ageing infrastructure.

Recommendations

The following recommendations are aimed at generating discussion about the ways in which the conservation of coastal nature can be strengthened by improving coastal management planning.

1. Merge existing committees of management to form a smaller number of Coast Committees, each with responsibility over the combined areas of the committees they are replacing (see Recommendation 4a in 'Coastal public land' and Part 6 for details).

2. Establish a consistent approach to the preparation, objectives, contents and implementation of coastal management plans for coastal crown land reserves that are the responsibility of Coast Committees. This report proposes that those reserves be called Coastal Recreation Reserves (see Recommendations 3a–3d in 'Coastal public land'), and that a key objective should be the protection of coastal nature that occurs within their boundaries.

[419] ibid., p. 20

Catchment management authorities

Origins of catchment management authorities

The Catchment and Land Protection Act 1994 established regional catchment management authorities and the arrangements for catchment management and planning, including the preparation of regional catchment strategies and action plans and:

- management of waterways within the catchment
- monitoring and reporting on the health of the catchment, particularly the condition and management of water resources
- reporting on outcomes to both the community and government.

Although the statute for creating them was passed in 1994, it was not until July 1997 that each of Victoria's ten catchment management authorities came into existence. Five of the ten authorities have coastal boundaries: Glenelg-Hopkins, Corangamite, Port Philip and Western Port, West Gippsland and East Gippsland.

Under the *Catchment and Land Protection Act 1994*, each authority must prepare a regional catchment strategy. Regional catchment strategies were completed by each of the five authorities in their first years of operation and have just been through review, redrafting and approval. At time of printing, all but the new strategy for the Port Phillip and Western Port authority had been approved.

Catchment management authority websites

Before briefly reviewing the regional catchment strategies, this report considers how coastal nature issues are dealt with on the websites of each authority.

The Glenelg Hopkins authority has a dedicated tab on the home page for coasts and marine with subsections on estuaries, artificial river openings, coastal connections and marine habitat mapping.

The 'Estuaries' sub section has downloadable pdfs of the estuary management plans prepared for the Glenelg, Surry and Fitzroy rivers, Eumeralla/Yambuk Lake, and Merri and Hopkins rivers. Those plans yet to be completed are for the Moyne River and Fawthrops Lagoon. The plans deal with water quality and quantity issues and artificial entrance openings. The authority has ongoing water quality monitoring programs in each estuary, with regular web-based reporting of the results in what it calls Estuary Update.

'Coastal Connections' is an irregular (June 2013? and October and November 2011 editions are the only ones available on the website) newsletter alerting the community to local news and events relating to estuaries.

'Artificial estuary openings' briefly describes the issues with openings, has a downloadable video on estuary ecosystems, and provides a phone number to call to report fish deaths.

'Marine habitat mapping' very briefly describes a joint project between the authority, Deakin University and others to map habitats in the marine waters off the region's coast.

The Corangamite Catchment Management Authority has a landing page for 'Coasts and Marine' under the 'What we do' tab on the website home page. The landing page has brief, downloadable two-page fact sheets on the coast, moonah woodland, coastal saltmarsh, coastal scrub and threatened fauna, a list of marine protected areas, and links to other relevant websites. There are also tabs on a coastal education kit, incentive programs such as the Saltmarsh Protection Project and CoastalTender, and quizzes and games on the orange-bellied parrot, saltmarsh and coastal vegetation. A landing page on EstuaryWatch, a program involving the community in the monitoring of estuaries, has a downloadable monitoring manual.

On the Port Phillip and Western Port authority website, the 'Our Region' tab on the home page has brief information about 'Bays and Coasts'. Under 'Our projects', there is information about community efforts to protect Ramsar-listed sites in the region.

There is nothing specifically referring to coasts or marine on the home or landing page tabs of the West Gippsland authority website. Nor do any of the projects and publications appear to be solely about marine and coastal issues.

The East Gippsland authority website also lacks any specific references to coasts and marine in any of its tabs and landing pages, with the focus being rivers.

In summary, the web sites of the Glenelg Hopkins and Corangamite catchment management authorities indicate a higher level of active interest in coastal and marine areas within their regions.

Regional catchment strategies

Under the *Catchment and Land Protection Act 1994,* a catchment management authority must prepare, then coordinate and monitor, the implementation of a regional catchment strategy which must:

> *(a) assess the land and water resources of the catchments in the region and how they are used*
>
> *(b) assess the nature, causes, extent and severity of land degradation of the catchments in the region and identify areas for priority attention*
>
> *(c) identify objectives for the quality of the land and water resources of the catchments in the region*
>
> *(d) set a program of measures to promote improved use of land and water resources and to treat land degradation*
>
> *(e) state the action necessary to implement the strategy and who should take it; and*
>
> *(f) specify procedures for monitoring the implementation of the strategy, achieving the land and water resource quality objectives and assessing the effectiveness of the program set*

under paragraph (d)

(g) provide for the review of the strategy.[420]

The legislation also requires that land managers and ministers must have regard for the regional catchment strategy when making decisions about land management in the region, A catchment management authority may also recommend amendments to a statutory planning scheme to give effect to the strategy, and the strategy may be incorporated into a state environment protection policy.

Four of the five catchment management authorities with coastal boundaries have had their latest regional catchment strategies approved by the Victorian government, and this section briefly reviews them in relation to their treatment of coastal nature.

Glenelg Hopkins

The catchment strategy for this region of 26 910 km^2 begins with a 50-year vision: 'Achieving a healthy and sustainable relationship between the natural environment and the community's use of land and water resources'. The authority hopes the vision will foster an environment where:

- *biodiversity thrives and clean water is available for environmental, economic and social uses*
- *environmental assets are valued and protected from threats, and the impacts of pest plants and animals are greatly reduced*
- *the community is proactive and aware, and understands that ecologically sustainable management of its natural resources is essential to a high quality of life.*[421]

The implementation of the strategy will be guided by the principles of sustainable development, ecological resilience, biodiversity [preserved], prevention [of ecosystem damage], community empowerment, indigenous knowledge, integrated management, targeted investment, accountability, administrative efficiency, and adaptation to climate change.

The strategy lists the challenges recognised by the previous strategy as being regional sustainability, biodiversity, waterway health and water quality, soil decline and soil salinity, and pest plants and animals. These are continuing issues, to which the new strategy also adds climate change, pressure on water resources and carbon sequestration activities.

On coastal areas the strategy says:

> *The coastal area of the Glenelg Hopkins catchment contributes significantly to the economic, cultural, environmental and recreational life of regional communities. Coastal areas, particularly around Warrnambool, are experiencing unprecedented increases in population and tourism activity. However, pollution, erosion and overdevelopment are perceived by the community to be major threats to the coastal environment.*[422]

In summary, the strategy believes that:

> *A key challenge is to continue to make natural resource management scientifically rigorous and socially relevant in the face of funding variations, lifestyle and population changes, climate variability and increasing demand for water resources. Achieving biodiversity improvements and farm productivity gains, and balancing public use and development with environmental protection of coasts and estuaries will also be major challenges.*[423]

The regional catchment strategy lists objectives and management measures for across the region and for specific segments, including estuaries and coasts.

The cross-region objectives are to protect and improve the region's waterways, wetlands and estuaries, reduce the impact of pest plants and animals on the region's natural resources and agricultural industries, maximise biodiversity benefits of sequestering carbon in the landscape and minimise adverse effects, and protect and manage the visual character of the landscape. Management measures revolve around other strategic documents and studies in partnership with other agencies.

For estuaries, of which there are eight major ones identified in the strategy, the objective is: 'By 2033, improve the condition of estuaries across the region as compared with the 2018 IEC [Index of Estuary Condition] assessment'[424]. The management measures include an estuaries strategic framework, the review of estuary management plans and revision of the *South west Victoria regional coastal action plan 2002*, the development of environmental significance overlays, strategic land purchases, implementation of the estuary entrance management support system, and estuarine research and monitoring.

For coasts, of which the strategy identifies 16 significant areas, the objective is: 'By 2033 maintain the condition of the coast and manage specific threats to improve condition where appropriate'[425]. The management measures include: revision of the *South west victoria regional coastal action plan 2002*, environmental significance overlays, coastal adaptation plans to manage impacts of sea level rise, monitoring and control of invasive species, promoting sustainable tourism and recreation, continuing to convene a marine, coastal and estuarine cross agency management coordination forum for the region, community consultation on coastal planning and management, and coastal research.

The strategy also recognises the need to protect coastal habitats under the terrestrial habitat and wetlands sections, with objectives to improve the condition of wetlands and to maintain the extent and improve the condition of terrestrial habitats. Management measures for terrestrial habitats include a regional biodiversity strategy, covenants on private land, fencing and other actions to protect vegetation and to maintain and increase the extent of habitats on public and private land. Wetland strategies and management plans, wetland restoration projects, a management

[420] Government of Victoria 1994, *Catchment and Land Protection Act 1994,* Government of Victoria, Melbourne
[421] Glenelg Hopkins Catchment Management Authority 2013, *Regional catchment strategy 2013–2019*, Glenelg Hopkins Catchment Management Authority, Hamilton, p. 1
[422] ibid., p. 12
[423] ibid., p. 13
[424] ibid., p. 37
[425] ibid., p. 42

framework for reinstating drained wetlands, best wetland management practices on private land, wetland-specific planning scheme overlays and land purchases for priority wetlands are the management measures for wetlands in the strategy.

The Glenelg Hopkins strategy summarises the natural resource management achievements in the region from 1997 to 2012, the result of the efforts of a wide range of stakeholders. Improved farming practices, riparian vegetation restoration, increased river flows, the removal of barriers to fish movements and water quality plans are catchment wide and do influence the coast, but those of specific interest for coastal nature in south-west Victoria are:

- approximately 70 ha of orange-bellied parrot habitat protected and enhanced
- pig trapping over 3,000 ha in the Discovery Bay Coastal Park
- six estuary management plans developed, estuary habitat mapped, and estuary entrance management support system introduced
- Glenelg Ark, Glenelg Eden and the Glenelg Alliance working towards the control of invasive plant and animal species in the lower Glenelg and Discovery Bay regions
- creating coastal connections to support community groups to protect, waterways, wetlands and terrestrial habitats along the coast
- regional biodiversity programs that have increased populations of the Endangered Mellblom's spider-orchid and eastern barred bandicoot.

Corangamite

The vision for the Corangamite regional catchment strategy is: 'A healthy Corangamite catchment valued by engaged communities'[426]. The goal is: 'Increase the protection, enhancement and restoration of valuable natural resources to improve the health and sustainable productivity of the Corangamite catchment'[427].

The strategy structures its objectives and actions around four foundations for change:

- *increased breadth and depth of participation*
- *increased investment and develop joint priorities*
- *improved integration and coordination*
- *increased and widely shared knowledge*.[428]

After outlining the natural values of the region, and listing threats similar to those mentioned in the Glenelg Hopkins strategy, the Corangamite strategy then lists objectives and actions for each natural resource category, which include rivers, estuaries and floodplains, wetlands, coasts, native vegetation, and threatened flora and fauna.

For rivers, estuaries and flood plains, the objectives include retaining the ecological function of riverine and estuarine floodplains, maintaining the resilience of indigenous aquatic and riparian flora and fauna to variable climatic conditions, and sustaining the viability of populations of rare and threatened native fish species for the long term. The actions include developing waterway and floodplain strategies, identifying and protecting a network of drought refuges, and meeting environmental water objectives.

For wetlands the objective is to: 'Maintain the extent of wetlands (by type) and improve their quality relative to 2009 benchmark data'[429]. The actions to achieve the objective are to develop and implement a waterway strategy, and continue to manage those wetlands listed in Ramsar or the Directory of Important Wetlands in Australia to protect and enhance their ecological character.

'Halt the decline in quality (condition) and extent of high value native vegetation and enhance its connectivity'[430] is the objective for native vegetation and actions include addressing the decline of native vegetation, a new biodiversity strategy, a native vegetation plan, and the development of planning instruments to ensure resource-use decisions avoid impacting high value native vegetation.

The objective for threatened flora and fauna is to 'Manage the threat of species extinction so that key populations are resilient and secure in the longer-term'[431], with actions that include implementing high-priority actions in the biodiversity conservation database, a biodiversity strategy and the building of knowledge on threatened species.

'Maintain the quality and extent of high value coastal assets'[432] is the objective for coasts, and the actions are to implement the *Victorian Coastal Strategy*, coastal action plans and an updated Marine and Coastal Biodiversity Strategy, and complete and implement the Victorian coastal asset-based framework when adapted to Corangamite.

The catchment-wide achievements for the Corangamite catchment cited in the strategy are similar to those listed by the Glenelg Hopkins authority. More specific to the Corangamite coast are the creation of EstuaryWatch and CoastalTender, and secured water entitlements for the lower Barwon wetlands.

West Gippsland

The vision for the West Gippsland regional catchment strategy is:

> *The people of Gippsland recognise the importance of our ecosystems, natural resource base, unique natural features and landscapes found within the region. Our inspired, knowledgeable, capable and resilient communities will ensure these continue to underpin the environmental, social, cultural and economic wealth of the region.*[433]

[426] Corangamite Catchment Management Authority 2013, *Corangamite regional catchment strategy 2013-2019*, Corangamite Catchment Management Authority, Colac, p. 51
[427] Corangamite Catchment Management Authority, loc. cit.
[428] Corangamite Catchment Management Authority, loc. cit.
[429] ibid., p. 54
[430] ibid., p. 55
[431] Corangamite Catchment Management Authority, loc. cit.
[432] Corangamite Catchment Management Authority, loc. cit.
[433] West Gippsland Catchment Management Authority 2013, *West Gippsland regional catchment strategy 2013-2019*, West Gippsland Catchment Management Authority, Traralgon, p. 4

The West Gippsland strategy very briefly describes the natural and cultural values of the region and their threats before considering in more detail the characteristics and key threats of eight Landscape Priority Areas. Those on the coast are the Bunurong, Corner Inlet Nooramunga, Mullungdung, Gippsland Lakes and Hinterland, and Wilsons Promontory landscape priority areas. The threats to these coastal areas are similar to those referred to in the previous strategies.

The strategy then summarises 21 objectives with 20-year timelines and the management measures to achieve them across the eight Landscape Priority Areas.

Those objectives across all landscape priority areas include:

- *improved conservation status of threatened species and communities in the landscape*
- *improved or maintained environmental condition of waterways, estuaries, wetlands and aquifers*
- *improved or maintained soil health*
- *improved quality of native vegetation in the landscape*
- *preservation of Aboriginal cultural heritage site*
- *minimise flood damage to the floodplain and its occupants*
- *Traditional Owners' knowledge and aspirations are incorporated into the management of the landscape.*[434]

For the coastal areas, except Wilsons Promontory, the common objectives were:

- *improved water quality in the landscape system*
- *increased native vegetation extent and connectivity across the landscape*
- *minimised disturbance of acid sulfate soils in the landscape.*[435]

Other objectives that relate to one or more of the coastal areas were:

- *improved coastal dune system integrity*
- *maintained integrity of biota and habitat within the marine ecosystem*
- *maintain extent and quality of significant native vegetation within the landscape*
- *reduced shoreline erosion of the Gippsland Lakes fringing wetlands (Lake Wellington wetlands and Lake Reeve)*
- *sustainable management of the Gippsland Lakes system during the long term transition to a saline system*
- *understand the implications of the transition of Jack Smith Lake from a freshwater system to an estuarine system*
- *understand the threats that seawalls pose to the coast and marine system in the long term.*[436]

Some of the management measures for these objectives included:

- replacing marram grass with indigenous grasses on dunes
- defined access within and restoration of dunes along Ninety-mile Beach
- implementing high priority actions of biodiversity conservation database
- research into nutrient sources
- reducing livestock access to marine and coastal habitats consistent with the regional waterway management strategy
- develop a program to protect, increase the extent and build ecological resilience of native vegetation, and create ecologically functional biolinks between patches of high conservation significance native vegetation
- monitoring of impacts of hard-hoofed animals on high conservation significance vegetation
- monitoring of waterways and estuaries to identify high risks from invasive plants and animals, inappropriate recreational use, sediment impacts after fire, and soil erosion
- investigate the ownership and management of seawalls, including maintenance requirements, and the risks they pose to the long-term adaptation of the Corner Inlet coast and marine system.

The strategy will be implemented according to six principles: Collaboration, Partnerships and Strategic Alignment, Adaptive Management, Best Management Practice Underpinned by Science, Floodplain Management, Targeted Investment, and Accountability.

To improve Corner Inlet's health, the West Gippsland Catchment Management Authority has, with a number of partners that include Parks Victoria and local Landcare groups, established the Corner Inlet Connections Program, which has been funded by the federal government's Caring for our Country program. Projects within the Connections Program have included fencing of saltmarsh on private land and riverbanks, large-scale spraying of *Spartina*, erosion control, improvement of farm effluent management, species monitoring, habitat mapping, fox baiting and blackberry control. The program is also preparing a water quality improvement plan that will:

> *…consolidate the most up-to-date knowledge and research to identify habitats at risk from poor water quality; the sources of the poor water quality; and, the most appropriate actions to address water quality issues. The plan will also establish targets, time frames, responsibilities, priorities and estimated costs associated with improving water quality in Corner Inlet*[437]*.*

East Gippsland

This catchment strategy has a similar structure to that for West Gippsland but has only four subregions: Gippsland Lakes and Hinterland, Gippsland Lakes Upper Catchment, East Coast and Far East Catchments.

The two of relevance to this report are Gippsland Lakes and Hinterland and the East Coast.

[434] ibid. pp. 63-70
[435] West Gippsland Catchment Management Authority, loc. cit.
[436] West Gippsland Catchment Management Authority, loc. cit.

[437] West Gippsland Catchment Management Authority, *Corner Inlet water quality improvement plan*, Corner Inlet Connections Fact Sheet, West Gippsland Catchment Management Authority, Traralgon

The 20-year objectives for the Gippsland Lakes and Hinterland include:

- *targeted improvement of the condition, security, diversity and connectivity of native vegetation*
- *targeted improvement of the status of threatened species and communities*
- *targeted improvement of the water quality and freshwater flow regime of the Gippsland Lakes*
- *targeted provision of appropriate freshwater and salinity regimes for selected fringing wetlands of the Gippsland Lakes*
- *increased sustainability of land use, with development in appropriate nodes along the Gippsland Lakes coastline*
- *plan for adaptation of Gippsland Lakes communities to changing conditions along the coastline.*[438]

Six-year management actions include:

- prioritising investment in establishing and maintaining areas of native vegetation, focusing on areas where land meets water or are susceptible to wind erosion
- prioritise threatened species needing direct intervention and improve integration of threatened species recovery programs
- prepare and implement the Gippsland Lakes environmental strategy, and implement the East Gippsland sustainable water and soil erosion strategies
- identify wetlands in need of action
- improve integration across NRM agencies.

The 20-year objectives for the East Coast include the first and fifth dot points for the other subregion as well as:

- *improved understanding of the effects of coastal processes and acceleration of these changes on susceptible species and communities with high natural values*
- *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*
- *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.*[439]

Six-year management actions include some of those for the Gippsland Lakes and Hinterland and also:

- reducing fox abundance
- managing the balance between recreational activity and the maintenance of natural values, including prioritising location of 'access' nodes to the coast, considering where there is potential for adverse effects on high natural values, and potentially updating infrastructure and denying vehicle access
- identifying where the acceleration of change in the coast and estuaries is likely to occur and the susceptible species and communities of high natural value
- establishing monitoring programs for identified species and communities
- developing a plan to improve the ability of species and communities to adapt to likely changes
- establishing partnerships with landowners to improve estuarine and riparian condition through fencing, revegetation and invasive species control
- improve consideration of natural values in local statutory planning to ensure development occurs in appropriate nodes.
- identify indicator species and habitats to use as benchmarks for condition
- expanding the monitoring of habitats and species, including invasive species.

In summary

Estuaries are the focus of many people who live, work and play along the coast. The work of catchment management authorities directly intersects with coastal planning and management because the quality of the receiving environments is critical to coastal nature, to commercial and recreational activities, and the coastal lifestyle of Victorians.

Improvements in the functioning of rivers in the regions are often the result of collaborative projects involving the authorities, landholders, Landcare and other community groups, with funding largely from the federal government.

The future challenges for each of the catchment management authorities and their new regional catchment strategies are:

- the ongoing need for significant resources to continue habitat improvement, mapping and monitoring programs
- the abandonment of the authorities as a referral agency in the state government's new permitted clearing regulations removes a major influence on habitat retention on private land in the catchment, and weakens their efforts to improve water quality and water flows from their catchments
- the large area of each authority's jurisdiction, with the coast being a tiny percentage of that area and which may suffer if limited budgets cause a reprioritisation of the strategy
- the reliance on the implementation of other strategies or the development of new ones. If these fail to be properly implemented, or overtime become less relevant, where does that leave the catchment management strategy?
- the reliance on various government agencies to implement the strategy, agencies with different agendas, personnel, budgets and priorities. As was seen in the discussion about coastal action plans, this can create issues for implementation
- the reliance on the continuing enthusiasm of currently active landholders and community groups and volunteers to implement many of the programs. If resources become limited and

[438] East Gippsland Catchment Management Authority 2013, *East Gippsland regional catchment strategy 2013–2019*, East Gippsland Catchment Management Authority, pp. 36-37
[439] ibid., pp. 46-47

participants reach burnout, will there be a new group of activists willing to engage?
- being able to integrate catchment management strategies with the Victorian coastal strategy, coastal action plans, coastal management plans and statutory municipal plans. Although there are cross-references between some of these documents, and in some cases the agencies and managers involved in consultation and implementation are the same, there is no guarantee of integration. Such integration is made more difficult because the authorities currently lack the necessary marine and coastal expertise.

In the early days of the five authorities, marine and coastal environments were barely in their strategic thinking. That has changed significantly, as illustrated by the various actions focusing on maintaining and improving the health of these environments. However, they are yet to incorporate the necessary marine and coastal expertise on their boards and in their staff. Most board members have primary industry backgrounds, either as producers, researchers and consultants.

According to Arron Wood, Chair of the Port Phillip and Western Port authority's Regional Catchment Strategy Committee, the strategies need to set measurable and achievable goals and establish realistic accountabilities with appropriate organisations:

> *The CMA can't compel organisations such as Melbourne Water, DSE, Parks Victoria and Councils to adopt and fulfill these accountabilities. But we know they will embrace the RCS if it matches their aspirations, helps them do their jobs better, and makes working together more effective than working alone. The measures and targets for environmental health in the RCS can provide guidance for planning local projects that contribute to outcomes of regional significance*[440].

The regional catchment strategy for Port Phillip and Western Port is yet to be approved and released, so it is not possible for this report to determine whether it will reflect the opinion contained in the above quote. But as seen with the coastal strategies, action plans and management plans, there are few measurable targets and a heavy reliance on the work of other agencies and existing and proposed strategic documents in their implementation.

Without statutory powers to enforce compliance with the strategies, the catchment management authorities—and also the Victorian Coastal Council and the regional coastal boards—will continue to rely on the goodwill of bureaucrats, landholders and the community to achieve their objectives.

Recommendations

The following recommendations are aimed at generating discussion about ways in which the conservation of coastal nature can be strengthened by improving catchment management planning.

1. Ensure all coastal regional catchment authorities have at least one-third of their board members with coastal or marine expertise.

2. Ensure that catchment management authorities are designated as referral bodies in relation to applications for native vegetation clearing permits.

3. Investigate the reconfiguration of the boundaries of the catchment management authorities and municipalities in the Gippsland Lakes. The investigation should consider:

- establishment of the Gippsland Lakes Catchment Management Authority and the Shire of Gippsland Lakes, both with boundaries encompassing the catchment of the Gippsland Lakes
- returning the East Gippsland Shire Council to the boundaries of the Shire of Orbost, with the East Gippsland Catchment Management Authority given the same boundary
- expanding the Shire of Wellington to the east to the new western boundary of the East Gippsland Shire.

4. Ensure that regional catchment strategies are consistent in terms of their underlying principles, structures and contents.

5. Ensure that the websites of the regional catchment authorities give sufficient weight to coastal and marine policies and actions.

6. Investigate the purchase of land that will support the objectives of the regional catchment strategies to protect estuaries and other coastal habitats.

[440] Wood, A. 2013, cited on Port Phillip and Western Port Catchment Management Authority website, www.ppwcma.vic.gov.au/environmental-planning.aspx

Part 4 Local government and coastal nature conservation

This part considers the role that coastal municipalities can play in nature conservation through statutory planning schemes and associated planning tools

Coastal planning schemes

Victoria's coastal municipalities

The third tier of government is well represented along the Victorian coast; there are 21 municipalities with coastal boundaries. Table 33 lists them and describes their key features, including their area, coastline length, population growth rates and land use.

At 20 931 km^2, the Shire of East Gippsland is the largest coastal municipality, while the Borough of Queenscliffe is the smallest covering just 11 km^2. French Island is the only coastal area not within a municipality, its governance carried out by the local community.

Those municipalities nearest to Melbourne, but beyond the eastern bayside suburbs, are experiencing the most rapid population growth and land use change from rural to urban. The City of Wyndham, on the western shore of Port Phillip Bay, is the fastest growing municipality in Australia. The City of Casey, with a short coastline along Western Port, is experiencing the second-fastest growth in Victoria. Most bayside suburbs have relatively short coastlines and intensive urban development, putting the squeeze on any remaining coastal nature on public land.

Municipalities with the largest populations are the cities of Casey, Greater Geelong and Wyndham, while those with the smallest populations are the shires of Moyne, Corangamite and Colac Otway.

Municipalities on the eastern shoreline of Port Phillip Bay have the shortest coastlines, ranging from 10 km for the cities of Frankston and Kingston, to 17 km for the City of Bayside. The Shire of Mornington Peninsula, which straddles the ridge between Port Phillip Bay and Western Port, has one of the longest at 190 km.

Further from Melbourne the municipalities have much longer coastlines—300 km and 220 km respectively for the shires of South Gippsland and East Gippsland. These long coastlines figure prominently in any discussions about tourism and economic development proposals such as tourist roads, ports, marinas and resorts. The extended length of their coastlines and the lower levels of urbanisation create perceived opportunities for coastal development and significant land-use change. Coastal issues now dominate much of their planning activities.

Except for the Colac Otway, Surf Coast and East Gippsland shires, the hinterlands of the rural shires are largely cleared of indigenous vegetation and used for livestock grazing. However, farms closer to the coast, such as in the Shire of South Gippsland, have been converted to smaller lifestyle properties.

The shape, size and topography of the municipalities and their distances from Melbourne have heavily influenced their paths of coastal development. More than half are found on the vast Gippsland Plain, which has made access to and development of the coast relatively easy. The same can be said of the Shire of Moyne and the City of Warrnambool on the Warrnambool Plain. Those with rugged topography, such as the Otway Ranges in the Shire of Colac Otway, or extensive intertidal flats rather than beaches, such as Corner Inlet in the Shire of South Gippsland, have had more restricted coastal development.

Each coastal municipality has many coastal issues to contend with and uses its planning scheme and other measures to manage them. This section considers the effectiveness of these measures in conserving coastal nature.

Planning scheme overlays

This report has already discussed the role of the state government in providing the statewide planning framework and heavily influencing the implementation and outcomes of coastal planning schemes.

Each Victorian municipality must prepare planning schemes based on the Victorian Planning Provisions and clauses in the State Planning Policy Framework. The planning schemes are used to manage land use and development within the boundaries of the municipalities to minimise conflict and impacts, and to provide certainty for the community. The planning schemes use various zones and overlays to control the location of land use and development.

Under the Victorian Planning Provisions, local municipalities have significant powers in the use of overlays in dealing with specific planning issues and increasing the attention given to particular places before planning decisions are made. These range from overlays for design and development conditions, vegetation protection, heritage, wildfire management and land subject to inundation, to overlays for significant landscapes and environmentally significant areas.

Table 34 lists the features of the Environmental Significance Overlay, Significant Landscape Overlay and the Vegetation Protection Overlay, which are of most significance to nature conservation along the coast. The table reveals that vegetation removal is possible on land affected by each of the overlays under a long list of exemptions. One of these is the removal of regrowth without a permit. This suggests that regrowth is worthless, but within any future vegetation restoration projects on cleared land abutting the coast, and for allowing coastal nature to move inland in response to a rising sea level, regrowth will be essential and should be given greater protection.

Significant Landscape Overlay

In 2005, the Coastal Spaces Initiative assessed the landscapes along the entire Victorian coastline as either of national, state and regional significance. It recommended that coastal planning schemes include a Significant Landscape Overlay, and that settlement boundaries be defined for coastal towns.

Table 35 lists the assessed landscapes, with those recommended by the Coastal Spaces Initiative for inclusion in local government planning schemes in italics. The remaining ones are within national parks and other conservation reserves, while the landscapes

of state and national significance along the Great Ocean Road had already been assessed in 2003 in the *Great Ocean Road Region Landscape Assessment Study*. Port Phillip Bay and Western Port were not included in the analysis conducted by the Coastal Spaces Initiative.

Although the coastal municipalities have applied planning zones to coastal crown land reserves and other public land, including conservation reserves, most have not applied the Significant Landscape Overlay to public land. The three exceptions are the City of Warrnambool, Borough of Queenscliffe and the Shire of Mornington Peninsula. According to the planning panel report on the Cape Patterson Ecovillage:

> *…there is a view by State agencies including DPCD that at least major Crown land areas should be omitted from SLOs (and other overlays) as these areas are subject to separate management arrangements which are thought to be adequate to address landscape protection as well as other planning outcomes.*[441]

The argument in favour of excluding crown land from the Significant Landscape Overlay, other overlays and some zones is that the government agencies responsible for crown land management are exempt from the planning controls. However, the planning panel reviewing the Shire of East Gippsland Amendment C68 took issue with this approach:

> …*the* Planning and Environment Act 1987 *establishes a principle that Planning Schemes generally apply to Crown land (Section 16) and an agreed Government protocol encourages Crown bodies to comply with the spirit or intents of Planning Scheme provisions, even where they are exempt from Planning Scheme requirements; The degree to which objectives of Crown land management coincide with objectives to protect the visual qualities of significant landscapes varies and there are examples of development of public land with adverse impacts on landscape values; The exclusion of Crown land from the overlays may give an inappropriate public message that – in an inequitable fashion - the Government is not prepared to subject itself to the same level of planning scrutiny as that to which private land owners are subjected...The exclusion of Crown land results in overlay maps that look unconvincing so far as comprehensive recognition of landscape value is concerned....; and Maps become hard to decipher, there is a risk of mapping errors and appropriate planning controls would be required if, as occurs from time to time, Crown land is disposed of.*[442]

Submitters to the Cape Patterson Ecovillage planning panel inquiry shared these views:

> *Submitters such as Ms Anwyn Martin, however, expressed concern about the omission of Crown land areas including Churchill Island and Rhyll Inlet from the SLOs. These comprise important coastal landscapes, she said, intimately linked with Western Port and its Ramsar Wetland status. Similar concerns were expressed in the submission from the National Trust who requested that the SLOs be extended over coastal hinterland areas, the Western Port coastline, Red Rocks on Phillip Island and to land west of Rhyll township which covers views over the Observation Point wetlands. Other submissions such as that from Mr Greg Price lamented the lack of leadership from the State government by not including important and well known coastal landscapes such as Cape Woolamai, The Nobbies and Churchill Island in the SLOs because of their Crown land status*[443].

The interpretation of the recommendations by the Coastal Spaces Initiative has been, by at least one municipality, self-serving. Around Mallacoota Inlet, the Shire of East Gippsland has only applied the Significant Landscape Overlay to the local golf course (which is zoned Farming Zone 1), and a hill overlooking the town. The coastal crown land reserve, the Mallacoota Inlet and Bastion Point have been ignored, so too Croajingolong National Park, which surrounds Mallacoota. Other councils have placed the Significant Landscape Overlay over water bodies and the coastal crown land reserve, but not the East Gippsland Shire Council.

The absence of Bastion Point from the overlay removed another hurdle for the council as it progressed the destruction of that site's significant landscape with its breakwater, boat ramp and beach road development. This again highlights the risk from allowing municipalities with a development focus to be delegated responsibility for the management of coastal crown land reserves.

Vegetation Protection Overlay

In an analysis of the role of local government in nature conservation (Cripps et al 1999), the authors considered a number of tools that are or could be made available to local government to conserve native vegetation. These included:

- grants to individuals and community organisations to carry out vegetation conservation works
- rate rebates for landholders conserving vegetation
- environmental levies to raise funds to resource vegetation conservation
- management agreements with landholders that place covenants on the land
- land purchases to secure areas of vegetation
- local laws designed to protect vegetation on council owned or managed land.

The analysis concluded that these mechanisms are available now to Victorian municipalities or, in the case of levies and covenants, may require legislative amendments to the *Local Government Act* (s162) and *Victorian Conservation Trust Act* respectively, to strengthen the powers and functions of local government in those areas.

[441] Planning Panels Victoria 2010, *Bass Coast planning scheme amendments C53, C93 and C98 coastal towns and landscapes, and Cape Paterson Ecovillage: Panel report April 2010*, Planning Panels Victoria, Melbourne, p. 38

[442] Planning Panels Victoria 2010, loc. cit.

[443] Planning Panels Victoria 2010, loc. cit.

Local government is also at the centre of the permit application process for vegetation clearance in their municipalities. As discussed earlier, the state government is introducing a deeply flawed set of 'permitted clearing regulations' but municipalities will retain their role in the permit approval process (catchment management authorities have been removed from the process).

As can be seen from Table 36, only eight of the 21 coastal municipalities and French Island are using the Vegetation Protection Overlay along the coast in their planning schemes. This may in part reflect the lack of vegetation cover in some of the municipalities, especially those on the Warrnambool, Otway, Victorian Volcanic and Gippsland plains where often remnant vegetation is only found along streamsides and roads.

The overlay's most comprehensive use is by the City of Bayside to support its efforts to protect remnant coastal vegetation from vandals, as well as preserve trees in the streetscapes of Black Rock and Beaumaris. In most other cases, it is used to protect treed streetscapes and roadsides. It is not used in those sections of the coast where private land abuts the high water mark or where there is no coastal crown land reserve. Except for the City of Bayside, it is not applied to coastal crown land reserves.

The Shire of Corangamite has used it in the Moonlight Head and Curdies River areas, while the Shire of Colac Otway has applied it to near Johanna and the lower reaches of Johanna River, near Cape Otway lighthouse and the lower reaches of the Ford River, west of Marengo and abutting the coastal crown land reserve, and along Skenes Creek.

For the shires of Surf Coast, City of Greater Geelong, the Borough of Queenscliffe, Shire of Mornington Peninsula, Bass Coast and East Gippsland, it is largely used in built-up areas such as Anglesea, Point Lonsdale, Mt Martha, Flinders, Balnarring, Phillip Island's subdivisions, Paynesville, Lake Tyers and Mallacoota. The Shire of East Gippsland has also used it at various points around the Gippsland Lakes and even near Bastion Point at Mallacoota, where the council is clearing indigenous vegetation to extend the car park accompanying its development of a boat ramp, breakwater and road on the beach.

The limited application of the Vegetation Protection Overlay by coastal municipalities, the focus on streetscape vegetation by those that do use it, and the avoidance of coastal crown land reserves, limits its usefulness as a protector of remnant indigenous coastal vegetation. It may be presumed by some that the managers of coastal crown land will ensure the protection of coastal vegetation, but history shows that this is not always the case. Where private land abuts the high water mark or coastal crown land, it is almost always cleared of all vegetation or reduced to supporting remnants.

If the state's planning bodies and coastal municipalities see little value in the broader application of the Vegetation Protection Overlay, and with its already long list of exemptions for clearing, then alternative mechanisms are needed to encourage the protection and restoration of coastal vegetation on private and public land. One such mechanism would be the consistent use of 100 m buffers in the Environmental Significance Overlay where private land abuts coastal crown land to encourage restoration.

Environmental Significance Overlay

The Environmental Significance Overlay is used by all but two of the coastal municipalities, the City of Hobsons Bay and the City of Kingston. Coastal streams and wetlands are a particular focus but Table 36 also reveals that in contrast to their application of the Significant Landscape Overlay, most coastal municipalities apply the Environmental Significance Overlay to coastal crown land reserves. Some even apply it to the coastal conservation estate.

The extent of the overlay's application to the coastal areas can vary considerably between the municipalities. The Shire of Glenelg broadly applies the overlay to coastal crown land, estuaries and streamsides, as does the Shire of Moyne. However, in the Shire of Corangamite, the overlay only covers Curdies Inlet and the estuary of the Gellibrand River, not the Port Campbell National Park. The Borough of Queenscliffe has extended the overlay into Lonsdale Bight and the waters of Swan Bay, and the Shire of Mornington Peninsula has included coastal waters out to 600 m offshore as well as coastal streams across the peninsula. The Shire of South Gippsland has recognised the environmental significance of its inlets, coastal crown land reserves, coastal streams and Wilson Promontory, but the Shire of East Gippsland again fails to give adequate recognition to the environmental significance of Mallacoota Inlet and its surrounds.

The Environmental Significance overlay is in wide use by coastal municipalities, but its application is inconsistent in terms of the types of environments recognised; again the list of exemptions and allowable uses is long. Although this and the Significant Landscape Overlay both publicly recognise the importance of environments and landscapes and give developers and other landowners pause for thought when considering development, they are largely reactive, waiting for a development proposal to test the parameters rather than driving improvements in the quality and extent of coastal nature within those environments and landscapes.

The operation of these overlays often simply requires a permit for development to proceed, but the schedule of the Shire of Moyne has a much stronger direction on coastal development and is unique in Victorian coastal planning.

A large percentage of the Shire of Moyne's coastline has private land abutting the high water mark. To the west of Port Fairy, single houses built on Rural Living Zone allotments are now part of linear sprawl along the coast. Each of these narrow rectangular blocks, which extend inland at right angles from the shoreline, has its house very close to the shoreline. Under the state government's new zoning arrangements, these could be further subdivided and the number of houses increased the linear sprawl extended. However, Amendment C21 to the Shire of Moyne's planning scheme aims to prevent this, having recognised that the 'area between Port Fairy and Yambuk is under pressure for isolated

residential use with existing lots having ocean frontage'[444].

The purpose of the Amendment C21 was to achieve 'improved recognition, protection and sustainable management of the coast, estuaries, coastal wetlands, coastal landscapes and remnant native vegetation along the coast and the Tower Hill reserve and the surrounding area'[445].

The amendment made changes to the Municipal Strategic Statement, extended the use of design and development, environmental significance and significant landscape overlays, and created a buffer zone that would protect remnant coastal vegetation on private land and allow it to move inland in response to rising sea levels.

The explanatory statement accompanying the amendment also acknowledged concerns with development between Port Fairy and Warrnambool:

> *Some recent development proposals for dwellings and other buildings and works have generated concerns over impacts on important viewlines from both the Princes Highway looking into the Tower Hill reserve from the south and those looking out from the reserve across towards the Killarney coast[446].*

Schedule 1 of the Shire of Moyne's Environmental Significance Overlay 1 Coastal Areas and Estuaries was inserted into the planning scheme in 2009. It covers private and public coastal land and, by establishing a 100-metre buffer, places significant restrictions on the location of development and infrastructure near the coastline and on the margins of estuaries and wetlands. One of its decision guidelines is:

> *The necessity of retaining a buffer zone from either the high water mark of the coast adequate to avoid coastal erosion hazard and coastal shoreline retreat or up to 100 metres from high water mark from an estuary or wetland for landward migration of wetland vegetation due to sea level rise including the benefit of implementing the buffer through an appropriate permit condition and requiring any such buffer to be fenced to exclude stock or vermin[447].*

East of Warrnambool there is also a number of long rectangular blocks at right angles to the shore. These two have long access roads that lead to a house near the shoreline. Although currently zoned Farming Zone, and largely cleared, the current trend for rezoning of land along the coast could see these blocks further subdivided, linear sprawl intensify, and the potential for revegetation diminished. Planning controls similar to those used by the Shire of Moyne, to the west of Warrnambool, should be applied here.

Although other coastal municipalities occasionally refer to buffers in a generic sense and usually in relation to watercourses, and the Shire of Colac Otway looks for a 50-metre buffer from wetlands, few even have overlays that refer to the coast specifically.

The Bass Coast Shire, which like Moyne has a large percentage of its low-lying coast with private land to the high water mark, has a Coastal Wetlands Overlay with a buffer to watercourses, roads and property boundaries. The Shire of South Gippsland, with extensive low-lying land on the shoreline of Corner Inlet, has a Coastal Settlements Overlay but only generic considerations on environmental impacts (as do most of the other municipalities).

The Shire of Wellington has a Wetlands Overlay which allows for the specification of a buffer zone, and a Coastal and Gippsland Lakes Environs Overlay that considers whether the proposal: 'Takes into account possible sea and water level rises when planning the siting and design of buildings and works'. The Shire of East Gippsland has a Sites of Biological Interest Overlay but no specific overlay for the coast or the Gippsland Lakes. The City of Wyndham has failed to use the overlay, even though its shoreline is part of a Ramsar site and of international significance.

Coastal township boundaries

The Coastal Spaces Initiative encouraged coastal municipalities to establish township boundaries to limit spatial growth and its impacts on coastal landscapes. In response, most municipalities have established town structure plans that include mapped township boundaries and inserted them into their planning schemes. The boundaries are largely based on existing subdivision, while in some there will be further growth allowed until it reaches the defined boundary.

The establishment of township or settlement boundaries can help manage urban growth and development, protect non-urban values (if the planning outside the boundary is robust), prevent urban sprawl and linear coastal development, encourage consolidation and increased population densities, give a clear direction for growth, provide economic certainty and optimise the use of infrastructure.

The application of township boundaries is mixed, as can be seen in Table 37. Those suburban councils on the eastern shoreline of Port Phillip Bay have little cause to use them, and simply refer to the generic statements under Clause 11 of the State Planning Policy Framework (SPPF11). But on the open coast their use by councils is yet to become unanimous.

Coastal townships in the shires of Colac Otway, Corangamite, Bass Coast and Wellington have been given township growth boundaries, while those for East Gippsland are in development. In some, like South Gippsland and Warrnambool, they simply refer to the generic SPPF 11, or as in Glenelg and Moyne, growth will be confined to existing urban growth areas. In others, such as the Surf Coast Shire and the City of Greater Geelong, not all townships are covered, while in Wyndham there is no mention of boundaries at all.

For any township growth boundary to be effective, the planning arrangements outside the boundary must also

[444] Shire of Moyne 2008, *Moyne planning scheme, Amendment C21, Authorisation No. A904, Explanatory report*, Shire of Moyne, Port Fairy, p. 2
[445] ibid., p. 9
[446] ibid., p. 8
[447] Moyne Shire 2013, *Moyne planning scheme: ordinance and maps*, http://planningschemes.dpcd.vic.gov.au/moyne/home.html

be rigorous to ensure that the purposes of the boundary, including landscape and nature protection, are fulfilled. Those boundaries are now being tested by pressure for coastal development.

The current zones used by municipalities between settlements are largely Rural Conservation Zone and Farming Zone. Recent amendments to these rural zones could undermine the purposes of the township boundaries. However, municipalities may be loath to resist rezonings and development proposals to avoid planning minister intervention. Ministerial decisions to allow housing at Narrawong, and rezoning of rural land from Peterborough to Moonlight Head and at Cape Paterson, and support for rezoning at Spring Creek in Torquay, will intensify land use on the coast and encourage linear sprawl.

As discussed earlier, the Cape Paterson township boundary was eventually extended to accommodate the construction of the Cape Paterson Ecovillage, in contradiction of the local council's position and the recommendation of an independent planning panel appointed by the planning minister who subsequently commented:

> *Mr Guy said the government doesn't always listen to independent planning panels.*
> *"It seeks information from them (planning panels), at the end of the day someone has to make a decision and that is either the council or myself, so in this case I've made a decision and we will indeed proceed with the project," Mr Guy said.*
> *"Some of the concerns, I'm not really sure I agree with. Whenever you look at a planning matter like this, there'll be subjective concerns.*
> *"Some people say to me it doesn't meet what they interpret as government policy in terms of following along the coast. It's not a linear development, it is in fact quite square in its nature and the interpretation of government policy is coming from people who are indeed, not the elected government."*[448]

In Torquay the community is currently waiting on another township boundary decision by the planning minister on the development of Spring Creek. In this case an independent planning panel recommended the opening of the land for residential development to the west of the current township boundary. The Surf Coast Shire rejected the planning panel's recommendation in December 2013, but as shown earlier, the planning minister has in the past expressed support for the development of the land.

The debate over the development has been caused by the Surf Coast Shire's new strategy for Torquay-Jan Juc, which has formed the basis for its C66 amendment to the local planning scheme. Within the existing scheme, the Spring Creek land was earmarked for future growth:

> *The Spring Creek corridor west of Duffields Road is an area identified for long term urban growth and as such is not identified as a 'potential future development area' for rural residential or rural living. The corridor has been mostly cleared of original vegetation save for remnant pockets along the creek and minor tributaries. A majority of the lots (particularly in their current shape and configuration) are not technically viable for agricultural uses*[449].

The C66 amendment:

> *…proposes to move Torquay's western town boundary back to Duffields Road to protect Spring Creek Valley west of Duffields Road from urban development; direct future growth to Torquay North, the Messmate Road area and a north east investigation area; plan for orderly retail development including maintaining the Torquay Town Centre's primacy whilst providing a new neighbour activity centre in Torquay North; provide for additional car parking for Torquay's town centre; and introduce a new suite of controls to protect neighbourhood development*[450]

Clearly the council's views on the future growth of Torquay-Jan Juc town had changed dramatically, in response to community concerns:

> *3228 Residents Association stated, increased population and development can lead to a loss of social cohesion amongst coastal communities and detract from their use and enjoyment of the coast, such as through overcrowding on beaches and loss of scenic coastal landscapes, views and vistas.*
> *This sentiment was also felt by Cr David Bell, who stated, ...it is the sun, sea, surf and the__ feeling that you have left the concrete jungle behind that attracts most people to Torquay. He described it as ...a lifting of the spirit when you are surrounded (by) the open spaces uncluttered by suburban development.*

But landholders who believed they could subdivide their land were displeased:

> *The Amendment attracted opposing submissions from a number of developers and landowners who had purchased land west of Spring Creek. These submissions raised the issue that Council had earmarked the land west of Spring Creek for development through strategic planning over a number of decades, and had later retracted from this stance*[451].

However, the panel recommend against the C66 amendment as it pertained to the development of Spring Creek:

> *The Panel considers, and most planning experts and the current planning scheme agree, that a residential future for the Spring Creek Valley is the most desirable. The Panel does not consider that retaining this land in broadhectare farming is a tenable option given its location and poor potential for agriculture. Similarly, developing the Valley in low density residential or rural residential would be a waste of the land resource*[452].

The panel also concluded:

> *The future of the Spring Creek Valley strongly*

[448] Foenander, C, 2011, 'Victory for controversial village', ABC Gippsland, 11 May 2011

[449] Panel Report 2013, Surf Coast Planning Scheme Amendment C66, Planning Panels Victoria, Melbourne, p.19
[450] ibid., p. i.
[451] ibid., p. 7
[452] ibid., p. 77

relates to the future growth of Torquay–Jan Juc as a whole. The Panel has had to consider whether the future proposed in the Amendment for the Spring Creek Valley is in the best interests of planning for Torquay–Jan Juc.
The Panel concludes that it is not. The Panel is not satisfied that there are substantive planning merits for the significant change in direction for an area that has been strategically[453].

There is some planning logic in the panel's arguments but they are within the context of past planning decisions and the prospect of ongoing population growth in Victoria and along its coast. Victoria's population is predicted to increase from 5.6 million to 7.3 million between 2012 and 2032. This growth and its associated settlement patterns are embedded in the coastal settlement frameworks of regional growth plans.

As already discussed, the rigidity of planning has meant that developments such as those at the Lonsdale Lakes and Martha Cove proceeded and with inevitable environmental impacts, while population growth is one of two key drivers in the loss of coastal nature; the other climate change.

These factors, should they continue, will make it very difficult for communities to change the future for their towns from one of growth and the loss of coastal nature and wellbeing to one that is ecologically sustainable. A major review of population growth and its impact on coastal nature and coastal communities is urgently required and efforts made to slow that growth.

Zones for coastal public land

Although residential, industrial, special use, farming, rural living and rural conservation zones can abut the coastal reserve and even extend to high water mark in some places, the public land zones of Public Conservation and Resource Zone (PCRZ) and Public Park and Recreation Zone (PPRZ) are used to give some planning direction to coastal public land. These prohibit some activities but allow others under permit or without a permit (see Table 38 for their features).

In contrast with the original Coastal Protection and Coastal Recreation zones proposed by the Land Conservation Council (see 'Coastal public land' section), more intensive development is allowed in the PCRZ than would be allowed in the council's Coastal Protection Zone—the list of allowable uses in the PCRZ is actually longer than for the PPRZ.

The two elements of the PCRZ, conservation and resource use, are in conflict and this should be addressed by their splitting into separate zones. It is also unclear how the zones are applied on a day-to-day basis in the management of coastal crown land by different agencies and bodies (coastal municipalities manage a few coastal crown land reserves but no areas within the coastal conservation estate), especially where they overlay existing management arrangements applying to the coastal conservation estate and extend into coastal waters.

There is some inconsistency in the application of the two zones across the 21 coastal municipalities, as shown in Table 39, but the PCRZ is usually applied to national parks, coastal parks, conservation reserves and less developed coastal sections, whereas the PPRZ is generally applied to recreation and settlement nodes, although some municipalities also apply it to bays, inlets and coastal lagoons, as the East Gippsland Shire Council does.

Not surprisingly, the cities of Port Phillip, Bayside and Kingston, with highly urbanised coastlines, do not use PCRZ, but the highly urbanised City of Frankston applies the zone to its entire coastline. With the exception of the Shire of Glenelg in south-west Victoria, which uses PPRZ, the rural municipalities with open coasts apply PCRZ to national parks and other conservation reserves.

The two municipalities with a series of coastal settlements separated by stretches of relatively natural coastline, the Surf Coast Shire and Shire of Bass Coast, have made alternating use of the two zones to express variations in natural and recreational values.

Along the eastern shoreline of Port Philip Bay, each municipality has extended the zones out to 600 m offshore, which was recommended in the *Victorian coastal strategy 200*8. With the exception of the open-coast southern shoreline of the Shire of Mornington Peninsula, and the waters off Torquay in the Surf Coast Shire, the 600 m extension is not in use by the councils with open-coast boundaries.

The Coastal Climate Change Advisory Committee believed that the two zones gave strong support to implementing strategic planning but required amendment to improve their 'relevance to climate change and its effects and impacts on natural environments, and to improve the opportunity for habitat linkages and movement'[454].

However, the application of the two generic zones to national parks and other conservation reserves fails to acknowledge the higher-level protection of the conservation reserves and the particular circumstances of their tenure and management status. It also further confuses these issues where the PCRZ is applied to crown land adjoining a conservation reserve without boundary delineation. It would be far more appropriate for the schemes to refer to national parks and conservation reserves by their name in the planning schemes, and to ensure their boundaries are clearly marked.

Although the two zones can be used to support coastal planning, the coastal public land should first be gazetted in a way that ensures clarity of purpose and provides regulations to support that purpose. In the 'Coastal public land' section, recommendations were made for the establishment of Coastal Conservation Reserves and Coastal Recreation Reserves to be managed by Parks Victoria and Coast Committees respectively.

If municipal planning schemes are to be applied to these reserves, then the titles of the public land zones and their provisions should reflect the purposes and

[453] Panel Report, loc. cit.

[454] Coastal Climate Change Advisory Committee, op. cit. p. 132

regulations as gazetted when the reserves were established. To assist this, the Public Conservation and Resource Zone could be amended to Public Conservation Zone, and the Public Park and Recreation Zone to Public Recreation and Resource Zone. There should also be consistency in how and where the zones are applied, especially in relation to their coverage of coastal waters, and clarity provided around the relationship between the provisions of the zones and the management plans of the conservation estate they cover.

Recommendations

The following recommendations are aimed at generating discussion about the ways in which the conservation of coastal nature can be strengthened by improvements to local government coastal planning.

1. Increase the application of coastal planning scheme overlays to enhance the protection of coastal nature.

2. Ensure that all coastal townships have secure township boundaries and that the planning of land use along the coast between those boundaries supports the retention and gradual expansion of coastal nature.

3. Ensure that coastal municipalities include 100 m buffers in the Environmental Significance Overlay applied to private land to provide greater protection for coastal and hinterland EVCs and their restoration along waterways, surrounding estuaries and abutting coastal crown land or the high water mark. Use the Shire of Moyne overlay as a model.

4. Review the statewide and regional policies encouraging population growth along the coast and take action to slow that growth and reduce its impacts.

5. Amend the public land zones to Public Conservation Zone and Public Recreation and Resource Zone to better reflect and integrate with the management of the coastal conservation estate.

6. Investigate the creation of a:

- West Coast Shire by amalgamating coastal sections of Corangamite Shire, Moyne Shire and the City of Warrnambool
- new shire combining coastal elements of the Bass Coast and South Gippsland shires
- new Gippsland Lakes shire by adjusting Wellington and East Gippsland shires.

Table 33 Coastal municipalities in Victoria

Council	Description
Shire of Glenelg	The Shire of Glenelg is a rural municipality covering an area of 6 213 km^2 and containing a population of 19 575 (2011 census) in the south-west corner of Victoria. Its coastal boundary stretches from the South Australian and Victoria border to the western boundary of the Shire of Moyne east of Narrawong. The main towns are Heywood, Casterton and Portland. Rural land use comprises dryland grazing and forestry, commercial fishing is based at Portland, and there are extensive pine plantations to the north and south of the Portland-Nelson Road. Portland is the largest town (9 950 at 2011 Census), and is dominated by the deep-water Port of Portland and the Alcoa aluminium smelter. The Bridgewater, Glenelg Plain and Warrnambool Plain bioregions are found in the shire.
Shire of Moyne	Moyne Shire Council is a rural shire in south-west Victoria covering 5 479 km^2, with a coastline of 90 kilometres in length and a population of 15 956. The main towns are Port Fairy, Peterborough, Koroit and Mortlake. Rural industries are mainly grazing for wool and lamb, dairying, grain production and horticulture, with the coastal towns of Port Fairy (2 835 at 2011 census) and Peterborough reliant on tourism.
City of Warrnambool	The City of Warrnambool is a regional municipality of 121 km^2 with a short coastline bounded at each end by the Shire of Moyne Shire and a population of 32 026 (2011 census). It provides a servicing base for the dairy industry in its hinterland, and local manufacturing. It is popular as a retirement and tourism destination and a centre for tertiary education.
Shire of Corangamite	Corangamite Shire Council is 4 425 km^2 with a population of 16 377 (2011 Census). From the small coastal town of Port Campbell the shire stretches north to the larger inland towns of Camperdown, Terang, Cobden and Skipton, which act as bases for a farming community that produces milk, wool, beef, fat lamb and grain. The Great Ocean Road, the Twelve Apostles and the Port Campbell National Park are major tourism attractions along the shire's relatively short coastline.
Shire of Colac Otway	The Shire of Colac Otway is 3 416 km^2 in area with a population of 20 347 (2011 Census). The 90 kilometres of the Great Ocean Road, the coastline more generally and the Great Otway National Park are the shire's major tourism drawcards, while the rural sector is involved in the production of milk, beef, sheep, crops and timber. The main town is Colac, while coastal towns are found at Marengo, Apollo Bay, Kennett River and Wye River/Separation Creek.
Shire of Surf Coast	The Surf Coast Shire is 1 553 km^2 in area with a population of 25 868 (2011 census) and a coastline of 55 km. The Great Ocean Road runs along most of its entire length, and links the towns of Lorne, Airey's Inlet, Anglesea and Torquay/Jan Juc, which are popular retirement and tourism centres. Surfing has a strong following, and the internationally iconic Bells Beach is found a few kilometres west of Torquay.
Borough of Queenscliffe	At less than 11 km^2, the Borough of Queenscliffe is the smallest local government area in Victoria but is the municipality with the highest percentage of its area (8%) in coastal reserves under its care. Point Lonsdale and Queenscliff are the two towns found within the Borough, and at least 45% of their economies rely on tourism, the attractions being their village atmosphere, heritage buildings and bay and open coast beaches.
City of Greater Geelong	The City of Greater Geelong contains Victoria's second largest city (Geelong), is 1 240 km^2 in area and has a population of 210 873 (2011 Census). The city coastline stretches 45 km from the western shores of Port Phillip Bay, around Corio Bay and the Bellarine Peninsula and on to the open coast. It has a strong tertiary education sector but also a heavy manufacturing base, much of

Council	Description
	which is located along the coastal boundary.
City of Wyndham	For a municipality just a few kilometres from Melbourne's CBD, the City of Wyndham has a diverse mix of residential, agricultural and industrial land uses across an area of 542 km². Within the city are found Melbourne Water's Western Treatment Plant, the Laverton and Point Cook air bases, and a large area of market gardens, all of which abut the 25 kilometre long coastal boundary. In 2011 the city's population reached 161 557, but between 2006-2011 the population grew at 7.5% per annum, the highest of any municipality in Victoria. Sanctuary Lakes and Werribee South are the main suburbs found along the City of Wyndham's coastline.
City of Hobsons Bay	The City of Hobsons Bay has a 23 km long coastline bordering its 65 km² area on the northern shores of Port Phillip Bay. Altona and Williamstown are the two coastal suburbs of a region that has some of Victoria's largest manufacturing plants in motor vehicle, chemical, petroleum and transport equipment production. The municipality's population reached 83 864 in 2011.
City of Port Phillip	The City of Port Phillip covers 21 km² on the south-east edge of Melbourne's CBD. Its 11 km coastline connects suburbs such as Port Melbourne, South Melbourne, Middle Park, Albert Park, St Kilda and Elwood. At the last census its population stood at 91 369, a 1.4% annual increase from the 2006 Census, the inner city lifestyle being a strong attractor. Entertainment and leisure activities on and abutting the coast are strong economic drivers in Port Phillip, as well as warehousing and some manufacturing.
Bayside City Council	Bayside City's coastal boundary runs for 17 kilometres between Head Street in Elsternwick and Charman Road in Beaumaris. Just 36 km² in area, Bayside has a population of 91 813, with most of its land occupied by housing in suburbs such as Brighton, Hampton, Black Rock, Sandringham and Beaumaris.
City of Kingston	Automotive, printing, plastics and chemical manufacturing dominate the economic picture of Kingston City, which covers an area of 91 square kilometres on the south-eastern shores of Port Phillip Bay, and has a population of 142 426 and a coastline of just 10 kilometres in length with Mordialloc, Aspendale, Seaford and Carrum the main coastal suburbs.
City of Frankston	The City of Frankston has a population of 126 456 across its 131 km², and is a hub for tertiary education, construction, retail and manufacturing on the south-east shores of Port Phillip Bay. Its coastal boundary is just 10 km.
Shire of Mornington Peninsula	Western Port and Port Phillip bays are separated by the Shire of Mornington Peninsula, which covers 723 km² with a population of 144 608 (2011 Census) and a coastline of more than 190 km. The peninsula has been a popular tourist and retirement destination for many decades and what were once individual coastal towns from Mount Eliza to Portsea, and from Hastings to Flinders, are gradually becoming part of the larger Melbourne metropolitan area. Point Nepean and Mornington Peninsula national parks are significant natural features, while tourism, the building industry and iron and steel manufacturing adjacent to the Port of Hastings are the main industries.
City of Casey	The City of Casey's population of 252 380 (2011 census) is growing at 3.3% each year, the second fastest of any municipality in Victoria. Urban development is concentrated in the northern part of the city's 410km², with only the tiny settlements of Cannons Creek, Blind Bight, Warneet and Tooradin found along its 27 km coastal boundary. Building construction and agriculture are the cities main industries.
Shire of Cardinia	The Shire of Cardinia covers 1 280 km² from the Dandenong Ranges in the north to a 20-km coastline along the shores of Western Port. The population of 74 175 is spread across 30 communities, none of which could be considered coastal. Agriculture, food processing and automotive manufacture are the shire's main industries in what is one of Melbourne's growth corridors.
French Island	The French Island National Park occupies 70% of French Island's 111 km². As an unincorporated territory, French Island has no local government, being managed by its community, which numbered 116 people at the 2011 Census. As well as the national park, the island has a focus on ecotourism and organic farming.
Shire of Bass Coast	Tourism and cattle and dairy farming are the economic drivers for the Bass Coast Shire, which covers an area of 859 km² and has a coastline of more than 180 km. At the 2011 Census its population stood at 29 616. Of that, 29% were over the age of 60, while the annual population growth rate of 2.2% is one of the fastest in Victoria. During the summer tourist season, the shire's population swells to more than 60 000, many of who visit Phillip Island, where the internationally famous little penguin colony attracts 35% of Melbourne's international visitors.
Shire of South Gippsland	Beef production, dairying, forestry and fishing are important primary industries in the Shire of South Gippsland, which covers an area of 3 305 km² and has a population of 27 210 (2011 Census). The Shire has a coastal boundary that stretches for 300 kilometres between Point Smythe and the 90 Mile Beach, and includes Cape Liptrap, Waratah Bay, Wilsons Promontory and Corner Inlet. Venus Bay, Walkerville, Sandy Point, Port Franklin and Port Welshpool are some of the small coastal settlements that are popular holiday and retirement destinations.
Shire of Wellington	Wellington is a large shire of 10 989 km² with a population of 41 441 (2011 Census). There are small coastal townships scattered between Port Albert and Loch Sport on the sand dune barrier of the Gippsland Lakes, including McLoughlins Beach, Woodside, Seaspray and Loch Sport, along with scattered subdivisions such as The Honeysuckles, Paradise Beach, Glomar Beach and Golden Beach, the result of poor coastal planning in the 1950s and 1960s. Oil and gas production, centred on Bass Strait, and agriculture, are the main industries of the shire, for which Sale, the largest settlement with a population of 13 186 (2011 Census), is an important base with strong secondary and tertiary industry sectors. Lake Wellington, one of the seven lakes that comprise the Gippsland Lakes, is on the shire's eastern boundary, while the shores along the Ninety-mile Beach form most of its 154-kilometre coastal boundary.

Council	Description
Shire of East Gippsland	East Gippsland Shire is the second largest in Victoria covering 20 931 km² and supporting a population of 42 193, much of which is found between Bairnsdale and Lakes Entrance. The Shire boasts the Gippsland Lakes, East Gippsland forests, a 220 km coastline and Croajingolong National Park (75% of the Shire is public land in national parks and state reserves). Tourism, agriculture, horticulture, forestry, fishing and oil and gas production are the main economic drivers of the region.

Source: Websites of coastal municipalities, website of Department of Planning and Community Development: www.dpcd.vic.gov.au/localgovernment/find-your-local-council, broader web-based searches.

Table 34 Features of three planning scheme overlays

Zone or overlay	Purpose	Uses allowed without a permit	Uses allowed with a permit
Environmental Significance Overlay	To identify areas where the development of land may be affected by environmental constraints. To ensure that development is compatible with identified environmental values.	No permit is required to remove, destroy or lop vegetation to the minimum extent necessary if any of the following apply: Regrowth, bracken, noxious weeds, pest animal burrows, land use conditions, land management notice, planted vegetation, emergency works, fire protection, surveying, road safety, railways, stone extraction, stone exploration, mineral extraction, mineral exploration, geothermal energy exploration and extraction, greenhouse gas sequestration exploration, greenhouse gas sequestration.	Construct a building or construct or carry out works. This does not apply if a schedule to this overlay specifically states that a permit is not required. Construct a fence if specified in a schedule to this overlay, construct bicycle pathways and trails, subdivide land. This does not apply if a schedule to this overlay specifically states that a permit is not required. Remove, destroy or lop any vegetation, including dead vegetation. This does not apply if a schedule to this overlay specifically states that a permit is not required. To the removal, destruction or lopping of native vegetation in accordance with a native vegetation precinct plan specified in the schedule to Clause 52.16 of the planning scheme
Significant Landscape Overlay	To identify significant landscapes. To conserve and enhance the character of significant landscapes.	No permit is required to remove, destroy or lop vegetation to the minimum extent necessary if any of the following apply: Regrowth, bracken, noxious weeds, pest animal burrows, land use conditions, land management notice, planted vegetation, emergency works, fire protection, surveying, road safety, railways, stone extraction, stone exploration, mineral extraction, mineral exploration, geothermal energy exploration and extraction, greenhouse gas sequestration exploration, greenhouse gas sequestration.	A permit is required to: Construct a building or construct or carry out works. This does not apply if a schedule to this overlay specifically states that a permit is not required. To the conduct of agricultural activities including ploughing and fencing (but not the construction of dams) unless a specific requirement for that activity is specified in a schedule to this overlay. Construct a fence if specified in the schedule to this overlay. Remove, destroy or lop any vegetation specified in a schedule to this overlay. This does not apply if the table to Clause 42.03-3 specifically states that a permit is not required. To the removal, destruction or lopping of native vegetation in accordance with a native vegetation precinct plan specified in the schedule to Clause 52.16.
Vegetation protection overlay	To protect areas of significant vegetation. To ensure that development minimises loss of vegetation. To preserve existing trees and other vegetation. To recognise vegetation protection areas as locations of special significance, natural beauty, interest and importance. To maintain and enhance habitat and habitat corridors for indigenous fauna. To encourage the regeneration of native vegetation.	No permit is required to remove, destroy or lop vegetation to the minimum extent necessary if any of the following apply: Regrowth, bracken, noxious weeds, pest animal burrows, land use conditions, land management notice, planted vegetation, emergency works, fire protection, surveying, road safety, railways, stone extraction, stone exploration, mineral extraction, mineral exploration, geothermal energy exploration and extraction, greenhouse gas sequestration exploration, greenhouse gas sequestration.	A permit is required to remove, destroy or lop any vegetation specified in a schedule to this overlay. This does not apply if the table to Clause 42.02-3 specifically states that a permit is not required. To the removal, destruction or lopping of native vegetation in accordance with a native vegetation precinct plan specified in the schedule to Clause 52.16.

Source: Victorian government, State Planning Policy Framework, http://planningschemes.dpcd.vic.gov.au/vpps/combinedPDFs/VPPs_All_Clauses.pdf.

Table 35 Significant coastal landscapes and the Coastal Spaces Initiative

Region/Municipality	Landscapes of Regional Significance	Landscapes of State Significance	Landscapes of National significance
Western			
Shire of Glenelg	*Glenelg River Estuary and Surrounds* (SLO not applied)	Discovery Bay Coast (SLO not applied)	
	Narrawong Coast (SLO not applied)	*Bridgewater Lakes and Surrounds* (SLO not applied)	
		Cape Bridgewater and Cape Nelson (SLO not applied)	
Shire of Moyne	*Yambuk Lakes to Port Fairy Coast* (SLO applied but excludes crown land of Yambuk Lake and Yambuk Flora and Fauna Reserve)	*Tower Hill and Environs* (SLO applied but not along coast)	
	Port Fairy to Warrnambool Coast (SLO applied to hinterland but not coast)		
Great Ocean Road			
City of Warrnambool, Shire of Moyne and Shire of Corangamite		Coastal cliffs landscape (Warrnambool to Princetown) (City of Warrnambool applies to private and public land along coast but two shires only apply SLO to land behind Port Campbell National Park and Bay of Islands Coastal Park and thus exclude cliffs)	
Shite of Corangamite			Coastal cliffs and hinterland landscape (Port Campbell) (SLO applied only to private land behind Port Campbell National Park and thus excludes cliffs)
Shire of Colac Otway		Coastal landscape (Princetown to Cape Otway) (SLO applied to land behind coastline)	Cape Otway landscape (SLO largely applied)
		Otway Ranges landscape (SLO applied)	
		Aire Valley Marshes coastal landscape (Cape Otway to Marengo) (SLO excludes marshes and is applied to private land well behind coastline)	Landscape setting of whole precinct (Marengo-Skenes Creek) (SLO largely applied but excludes coastal crown land reserve)
			Landscape setting from west of Kennett River to Lorne (SLO applied to Kennett River and Wye River townships but not the coastal crown land reserve or coast between Wye River and Lorne)
Shire of Surf Coast		Great Ocean Road landscape (Lorne to Breamlea) (SLO applied in parts)	Bells Beach coastal landscape (SLO applied)
Bellarine			
City of Greater Geelong	Thirteenth Beach coast (SLO only applied to strip of houses behind coastal crown land reserve at eastern end of Thirteenth Beach)		
	Barwon River estuary (SLO applied to private land adjacent to eastern shoreline but not to waters or saltmarsh areas of estuary)		
	Lake Connewarre Escarpment (SLO applied to sloping private land surrounding lake but not waters)		
	Ocean Grove to Point Lonsdale (SLO applied to residential areas but excludes coastal crown land reserve)		
	Lake Victoria and Yarram Creek (SLO applied to land surrounding lake but excludes waters and coastal crown land to the south)		
City of Greater Geelong and Borough of Queenscliffe	*Swan Bay and Surrounds* (SLO applied to private land abutting coastal crown land reserve; includes Swan Bay waters opposite Borough)		
City of Greater Geelong	*Portarlington to Clifton Springs Coast* (SLO not applied)		

Region/Municipality	Landscapes of Regional Significance	Landscapes of State Significance	Landscapes of National significance
Borough of Queenscliffe		The Heads at Point Lonsdale (SLO applied to Point Lonsdale)	
Gippsland			
Shire of Bass Coast	*Phillip Island Eastern Coast* (SLO applied to private land only, not coastal crown land reserve)	*Phillip Island Western and Southern Coast* SLO applied to private land only, not coastal crown land) (	
	Churchill Island (SLO not applied)		
	*San Remo to Kilcunda Coast (*SLO applied to private land only, not coastal crown land reserve)		
	Kilcunda to Cape Paterson Coast SLO applied to private land only, not coastal crown land reserve)		
Shire of South Gippsland		*Cape Liptrap to Waratah Bay* (SLO applied only to private land and excludes Cape Liptrap Coastal Park)	
	Venus Bay Peninsula and Anderson Inlet (SLO applied only to private land and excludes Cape Liptrap Coastal Park and coastal crown land reserve)	Wilsons Promontory (SLO not applied)	
Shire of Wellington and Shire of East Gippsland	*Corner Inlet Amphitheatre*	Nooramunga Coast and Islands	
		Ninety Mile Beach (SLO partly applied)	
(SLO applied????)		*Gippsland Lakes*	
Shire of East Gippsland	*Metung*	*Mallacoota Inlet and Surrounds* (SLO barely applied)	
	Lake Tyers and Surrounds (SLO limited)	Cape Conran Coast (SLO not applied)	
	Snowy River Estuary and Surrounds (SLO applied)	Croajingolong Coast (SLO not applied	

Source: Department of Sustainability and Environment 2005, *Coastal spaces inception report May 2005*, Department of Sustainability and Environment, Melbourne.

Table 36 Planning overlays and coastal municipalities

Municipality	Environmental Significance Overlay	Significant Landscape Overlay	Vegetation Protection Overlay
Shire of Glenelg	Discovery Bay Coastal Park, coastal reserves, national parks, streamsides and estuaries	Nil	Nil
Shire of Moyne	Coastal crown land reserve and abutting private land including coastal streams and estuaries	Sections of coastal crown land reserve and abutting private land at Yambuk, abutting Bay of Islands Coastal Park, and around Peterborough	Nil
City of Warrnambool	Coastal crown land reserve, which covers only a narrow strip, as well as Farming Zone east of Warrnambool abutting high water mark, along with rivers.	Largely as for previous except for Hopkins River. Covers Farming Zone east of Warrnambool abutting high water mark	Nil
Shire of Corangamite	Coastal streams including Curdies Inlet and Gellibrand River estuary	Land abutting Great Ocean Road west of Port Campbell, land behind Port Campbell, and land north of Port Campbell National Park	Moonlight Head area and Curdies River
Shire of Colac Otway	Coastal streams to their mouths, Lower Aire River Wetlands	Coast west of Johanna River, Cape Otway area, Marengo and coast to Skenes Creek, Barham River valley, hills behind Apollo Bay, and Wye River and Kennett River townships. Excludes coastal crown land reserve	Near Johanna and the lower reaches of Johanna River, near Cape Otway lighthouse and lower reaches of Ford River, west of Marengo and abutting coastal reserve, and along Skenes Creek
Shire of Surf Coast	Coastal wetlands and streams, and Aireys Inlet, Eastern View, Moggs Creek and Fairhaven	Lorne township, Big Hill to Eastern View, Rural Zone near Urquhart Bluff, Anglesea township, land behind Bells Beach, and Jan Juc and Torquay townships	Behind Anglesea and well back behind Jan Juc and Bells Beach
City of Greater Geelong	Most of coastal land strip with exception of the Port of Geelong	Limited to Point Lonsdale, Ocean Grove and around Swan Bay	Along roadsides entering some coastal towns
Borough of Queenscliffe	Lonsdale Bight, coastal crown land reserve. Waters of Swan Bay,	Waters of Swan Bay, Lonsdale Bight, The Narrows, coastal	All of Point Lonsdale township and entrance to Queenscliffe

Municipality	Environmental Significance Overlay	Significant Landscape Overlay	Vegetation Protection Overlay
	The Narrows	crown land reserves	
City of Wyndham	Little River and Werribee River	Nil	Nil
City of Hobsons Bay	Nil	Nil	Nil
City of Port Phillip	Small site in Catani Gardens on coastal reserve at St Kilda	Nil	Nil
City of Bayside	Coastal crown land reserve at Beaumaris Bay	Small area inland near Ricketts Point	Entire coastal reserve and also in Black Rock and Beaumaris
City of Kingston	Nil	Nil	Nil
City of Frankston	Coastal crown land reserve	Oliver's Hill area	Nil
Shire of Mornington Peninsula	Coastal crown land reserve to 600 m inside bay and national parks, Mt Eliza to Mt Martha crown land coastal reserve to 600m, from Safety Beach to Point Nepean coastal reserve and one block back, Portsea town north of Point Nepean Road and through to Sorrento and Blairgowrie (and one house block south of PNT), large areas at St Andrews Beach, Cape Schanck, coastal streams east of Cape Schanck (to where they enter Mornington Peninsula National Park), Flinders, coastal towns on south coast and on Western Port (not Crib Point)	Arthurs Seat area, east of St Andrews Beach through to Cape Schanck to south of Stony Point, Flinders including coastal streams and coastal crown land reserve and sections of townships.	Mt Eliza but not the coastal crown land reserve, and Mornington but not Mt Martha. Extensive use from Dromana to Point Nepean but not on southern peninsula except for Flinders, Balnarring and Somers
City of Casey	Coastal crown land reserve and adjoining wetlands	As previous	Nil
Shire of Cardinia	Coastal crown land reserve from Lyalls Inlet through to Lang Lang Jetty and boundary with Bass Coast	West and east of Bunyip River mouth (joins with Casey SLO), east of Lang Lang	Nil
French Island	Coastal streams, wetlands and remnants on private land	Largely all private rural land outside coastal crown land reserves and French Island National Park	Nil
Shire of Bass Coast	Coastal crown land reserve	South-west coast, south and east coasts of Phillip Island, east coast of Phillip Island, Farming Zone east of San Remo, patchy use further and not on coastal crown land reserve, land behind coastal reserve between Cape Paterson and Inverloch, at Townshend Bluff, north-east shore of Anderson Inlet to Pound Creek	Beachcomber, Smiths Beach but not coastal crown land reserve, Sunderland Bay, Rhyll, Silverleaves, Cowes to Ventnor, Woolamai, Surf Beach and Newhaven
Shire of South Gippsland	Anderson Inlet, Tarwin River, Point Smythe, Venus Bay Coastal Park, Venus Bay township, Cape Liptrap, Waratah Bay township and surrounds and Promontory View, Sandy Point township and surrounds, Yanakie and Wilsons Promontory, Port Franklin township and along Corner Inlet, northern shore Corner Inlet, Barry's Beach to Port Welshpool, coastal streams	Private land at Anderson Inlet, Cape Liptrap, Waratah Bay, Sandy Point, Yanakie, coast and hinterland of Corner inlet	Nil
Shire of Wellington	Sunday Island, land abutting coastal crown land reserve at Port Albert, around Robertsons Beach, Manns Beach, shores of lake behind McLoughlin's Beach, behind 90-mile Beach east of McLoughlin's Beach, east and west of Woodside, Jack Smith Lake, dune barrier from Golden Beach to The Honeysuckles, patches around Seaspray, around the shores on Lake Reeve (and over Lake Reeve) and Lake Wellington	Used only along dune barrier from Golden Beach to Flamingo and Glomar Beach	Nil

Municipality	Environmental Significance Overlay	Significant Landscape Overlay	Vegetation Protection Overlay
Shire of East Gippsland	Port of Raymond Island, shoreline of and north of Lake King, Lakes Entrance (land abutting The Narrows and North Arm) Lakes Bunga to Lake Tyers, Lake Tyers barrier, Hospital Creek to the coast, Snowy River to Lake Corringle, Marlo to Cape Conran (not coastal crown land reserve), patches upstream on Genoa River, not much along streams	Lake King shoreline, north of Lake Tyers along Nowa Nowa Arm, surrounding Lake Corringle, behind Marlo, land behind Karbeethong, at Mallacoota, and the Mallacoota Golf Course	Some roads in Paynesville and Point King, Point Best, several other points around Gippsland Lakes, Bancroft Bay east of Metung, streets in Lake Tyers, western shore of Mallacoota Inlet including Bastion Point

Source: Planning scheme maps of the 21 coastal municipalities, www.planningschemes.dpcd.vic.gov.au/

Table 37 Township boundaries and design and development overlays by coastal municipalities

Council	Town Boundary	Design and Development Overlay/Development Plan Overlay
Shire of Glenelg	Future urban development is confined to the established urban growth areas associated with each township	Lower Cape Bridgewater abutting Discovery Bay and Bridgewater Bay and between there and Portland but not three capes area and hinterland. At Narrawong
Shire of Moyne	Concentrate coastal tourist and commercial recreation development within existing settlements or close to existing settlements where existing infrastructure and community services can be utilised. Maintain coastal settlements with little or no existing infrastructure at their present development density.	All of Port Fairy and west and north-east of town and Peterborough township/Nil
City of Warrnambool	Reference only to SPPF 11 with nothing specific to City	Small area along Merri River and western road exit from town. Developed areas facing Lady Bay and Merri River. Between Hopkins River and Logan Beach. Bordering Hopkins River on both sides. Much of city and eastern outskirts under DDO/ Northern bank Hopkins River. Compared to other municipalities, the City of Warrnambool has a relatively short section of coast as its southern boundary. However, no DDO or DPO on farming zone east of city beyond Logans Beach where freehold goes to HWM.
Shire of Corangamite	Mapped boundary for Princetown and Port Campbell in township structure plan not appearing to be statutory	Small patches of land on north side of Great Ocean Road. Southern section of Port Campbell township north of Great Ocean Road. Two freehold inliers within Great Otway National Park near Point Reginald/ Small area on eastern side of Port Campbell
Shire of Colac Otway	Utilise natural boundaries, where appropriate, to define settlement edges and set limits to urban expansion. Marengo and Apollo Bay, Skenes Creek, Kennett River, Separation Creek and Wye River have mapped settlement boundaries	Residential areas Marengo, Apollo Bay Skenes Creek, Kennett River, Wye River townships/ Northern end of Apollo Bay
Shire of Surf Coast	Mapped for Anglesea, Jan Juc Torquay and Lorne but not for Aireys Inlet to Eastern View	Residential areas of Lorne Parts of Eastern View but not Big Hill. Also Moggs Creek, Fairhaven and Aireys Inlet. Tiny areas in Anglesea. Narrow strip facing beach at Jan Juc. Several schedules over all of Torquay and Jan Juc. Not to west of Jan Juc/ Over north and western sides of Torquay. Small area on northern boundary of Jan Juc
Borough of Queenscliffe		
City of Greater Geelong	Clifton Springs, St Leonards, Indented Head and Ocean Grove have short-term and longer-term boundaries (vegetation enhancement on coastal edge). Considerable growth potential west of Drysdale, and Clifton Springs. Point Lonsdale with small reference to enhancing dune vegetation	Breamlea, northern section of Ocean Grove, couple of small areas in Barwon Heads, Point Lonsdale. Northern end of Swan Bay and into St Leonards. Indented Head, Clifton Springs, 50% of Portarlington. Sections of Geelong overlooking shoreline. Point Henry. Between Avalon Airport and Port Phillip Bay/ North of Ocean Grove residential area. Large area north-west of Point Lonsdale, large area west of Clifton Springs, another area around Curlewis, and between Avalon Airport and Port Phillip Bay
City of Wyndham	Only SPPF 11. This is a growth area	Nil/Werribee Harbour, Sanctuary Lakes
City of Hobsons Bay	SPPF 11	All freehold and crown land along coastal boundary of municipality/ Nil
City of Port Phillip	SPPF 11	Follows coastal strip and extends 600 metres offshore from Middle Park and south/Nil
City of Bayside	SPPF 11	Entire municipality to HWM covered/Nil
City of Kingston	SPPF 11	Coastal Strip of residential development and to HWM/Nil coastal
City of Frankston	SPPF 11	Narrow coastal strip along eastern side of Nepean Highway, not over coastal crown land reserve, Olivers Hill area/Nil coastal
Shire of Mornington	Reference to township boundaries in	Mt Eliza but not coastal reserve. Strip in Mornington parallel to coast. All of Mount Martha, Safety Beach, strip in McRae. Limited in

Council	Town Boundary	Design and Development Overlay/Development Plan Overlay
Peninsula	ordinance but there are no maps	Rosebud, extensive in Tootgarook and Rye, Blairgowrie, Sorrento and Portsea, St Andrews, Flinders, Shoreham, Pt Leo, Balnarring, Somers. Little in Crib Point, Hastings and Tyabb/Limited with some in Mt Martha
City of Casey	SPPF 11	Nil/Nil
Shire of Cardinia	SPPF 11	Nil on coast except Lang Lang/Nil on coast except for Lang Lang (not on coast)
French Island		
Shire of Bass Coast	The Gurdies, Pioneer Bay, Grantville, Tenby Point Corinella Coronet Bay, Newhaven, Rhyll, Cowes/Ventnor/Silverleaves/San Remo, Smiths Beach Sunderland Bay Surf Beach Sunset Strip, Kilcunda Harmers Haven, Cape Paterson Inverloch	Jam Jerrup, small patch at the Gurdies, coastal strip at Grantville, patch at Tenby Point, coastal strip at Corinella and Coronet Bay, all San Remo, Newhaven parallel to coast but not reserve, also Woolamai Waters, Surf Beach, Rhyll, Silverleaves, Cowes, Ventnor, small coastal strip at Sunset, coastal strip at Sunderland Bay. Section at Kilcunda. Coastal strip Harmers Haven, tiny area at Cape Paterson, coastal strip in Inverloch/ Grantville, astern end of San Remo, southern side of Cowes, north and west of Inverloch
Shire of South Gippsland	SPPF 11	Venus Bay, Waratah Bay, Sandy Point/ Patch in Waratah Bay
Shire of Wellington	Loch Sport, Woodside, The Honeysuckles, Golden Beach and Paradise Beach, McLoughlins Beach, Manns Beach, Seaspray (some urban growth possible between two envelopes), Robertsons Beach.	Not coastal reserve. Port Albert. Robertsons Beach, Manns Beach, McLoughlins Beach, Woodside Beach, Seaspray, The Honeysuckles, Golden Beach, Paradise Beach, large areas around northern and eastern shores of Lake Wellington. Loch Sport/ patch at Port Albert
Shire of East Gippsland	Being developed for Paynesville, and under C68, the Coastal Towns Urban Design Frameworks and the Coastal Spaces Landscape Assessment Study affects the coastal settlements of Gipsy Point, Mallacoota, Bemm River, Marlo, Corringle, Lake Tyers Beach, Lakes Entrance, Nungurner, Metung, Paynesville, Raymond Island, Eagle Point and Newlands Arm	Not coastal reserve. Paynesville and surrounds and Raymond Island, most of Metung, Nungurner. Kalimna. Large sections of Lakes Entrance. Cunninghame Arm at Lake Bunga. Lake Tyers abutting the coast. Most of Marlo. Large patch near Point Ricardo along Marlo-Cape Conran Road. Most of Bemm River. Large patch west of Betka River. Most of Mallacoota/patch at Kalimna, large area north of Lake Tyers abutting shoreline, middle of Marlo

Source: Planning scheme ordinances and maps of the 21 coastal municipalities, www.planningschemes.dpcd.vic.gov.au/.

Table 38 Features of PCRZ and PPRZ

Zone	Purpose	Uses allowed without a permit	Uses allowed with a permit	Uses prohibited
Public Conservation and Resource Zone	To protect and conserve the natural environment and natural processes for their historic, scientific, landscape, habitat or cultural values. To provide facilities which assist in public education and interpretation of the natural environment with minimal degradation of the natural environment or natural processes. To provide for appropriate resource based uses.	Boat launching facility, camping and caravan park, caretaker's house, car park, informal outdoor recreation, interpretation centre, jetty, kiosk, marine dredging, mooring pole, open sports ground, pier, pontoon, road, utility installation (other than telecommunications facility), mining, search for stone, apiculture	Emergency services facility, renewable energy facility (other than wind energy facility), wind energy facility, subdivision	Any use not allowed with or without a permit
Public Park and Recreation Zone	To recognise areas for public recreation and open space. To protect and conserve areas of significance where appropriate. To provide for commercial uses where appropriate.	Informal outdoor recreation, open sports ground, contractor's depot, heliport, office, retail premises, store	Contractor's depot, heliport and office may if certain conditions not met	Brothel, cinema-based entertainment facility, corrective institution, display home, funeral parlour, industry, saleyard, transport terminal (other than heliport), veterinary centre, warehouse (other than store)

Source: Victorian government, State Planning Policy Framework, http://planningschemes.dpcd.vic.gov.au/vpps/combinedPDFs/VPPs_All_Clauses.pdf.

Table 39 PCRZ and PPRZ by coastal municipalities

Municipality	Public Conservation and Resource Zone	Public Park and Recreation Zone
Shire of Glenelg	Nil	Discovery Bay Coastal Park, coastal reserves and national parks
Shire of Moyne	Coastal crown land reserve, nature conservation reserves, Moyne River at Port Fairy, coastal reserve east of Port Fairy, Bay of Islands Coastal Park	Coastal crown land reserve east of Port Fairy and Peterborough Coastal Reserve

Municipality	Public Conservation and Resource Zone	Public Park and Recreation Zone
City of Warrnambool	Coastal crown land reserve	Warrnambool Foreshore and Hopkins River
Shire of Corangamite	Coastal crown land reserve and Port Campbell National Park	Nil
Shire of Colac Otway	Coastal crown land reserve and Greater Otway National Park	Golf course and harbour at Apollo Bay
Shire of Surf Coast	Coastal waters and crown land reserve west of Lorne, waters at Lorne, Aireys Inlet, and from Aireys Inlet to Eastern View. Painkalac Creek mouth, coastal crown land reserve from Aireys Inlet to Anglesea, coastal crown land reserve and waters at Bells Beach, to 600 m offshore at Torquay, coastal crown land reserve from Torquay to Point Impossible	Lorne, Moggs Creek, Aireys Inlet, Jan Juc and Torquay coastal crown land reserves, and coastal crown land reserves from Aireys Inlet to Eastern View, and from Point Roadknight to the Anglesea River mouth
City of Greater Geelong	Coastal crown land reserve and waters along less developed shoreline, national parks and wetland areas	Developed coastal crown land reserve within Geelong and the coastal townships
City of Wyndham	Wetland areas. Much of the coast is a public use zone for sewerage treatment or Commonwealth land (RAAF base) that is not zoned	Werribee River mouth and coastal crown land reserve
City of Hobsons Bay	Altona Coastal Park, Kororoit Creek mouth and Jawbone Reserve, and wetlands south of Laverton on Wyndham City boundary. There is no coastal crown land reserve along Altona Beach	Williamstown coastal crown land reserve and Gellibrand Coastal Park
City of Port Phillip	Nil	Coastal crown land reserve and out to 600m
City of Bayside	Nil	Coastal crown land reserve and out to 600m
City of Kingston	Nil	Coastal crown land reserve and out to 600m
City of Frankston	Coastal crown land reserve and out to 600 m	Nil
Shire of Mornington Peninsula	Coastal waters out to 600 m and national park, and some coastal reserve on Western Port between townships	Coastal crown land reserve on northern side of Mornington Peninsula and the townships on the southern side
City of Casey	Coastal crown land reserve	Nil
Shire of Cardinia	Coastal crown land reserve except for a gap south of Lang Lang River	Nil
Shire of Bass Coast	Coastal crown land reserve, Rhyll Inlet and Rhyll coastal reserve, Sunderland, southern Phillip Island, Punchbowl Coastal Reserve, Kilcunda to Inverloch and shores of Anderson Inlet	Coastal crown land reserve east of Corinella, and at Coronet Bay, Grantville, Newhaven, Ventnor to Silverleaves, San Remo and Inverloch
Shire of South Gippsland	Coastal crown land reserve, coastal parks, national parks and coastal streams	Port Welshpool abutting coastal crown land reserve
Shire of Wellington	Coastal crown land reserves, coastal and marine and coastal parks	Limited use along coast
Shire of East Gippsland	Coastal crown land reserve and national and coastal parks, Lake Tyers	The waters of Lake Victoria, Lake King, Lake Bunga, Mallacoota Inlet and the coastal crown land reserve at townships.

Source: Planning scheme maps of the 21 coastal municipalities, www.planningschemes.dpcd.vic.gov.au/.

Part 5 Landholders, the community and coastal nature conservation

This part considers the role of private landholders in off-reserve nature conservation, and community engagement in nature conservation through Coastcare

Landholders

There are various incentives, market-based mechanisms and regulations that can be used in efforts to achieve greater nature conservation on private coastal land.

Trust for nature covenants

In Victoria, covenants are established between the landholder and the Trust for Nature under the *Victorian Conservation Trust Act 1972*. The use of Trust for Nature covenants is limited in its extent, especially for coastal EVCs. The iconic forest EVCs are more likely to be protected by covenants, but again this form of protection covers very few of the EVCs occurring on private land in the bioregions with coastal boundaries.

The total area under covenant for each of the bioregions is listed below, along with the EVCs under Trust for Nature covenants (coastal EVCs are underlined)[455]:

- *Bridgewater*: 0.1 ha for Estuarine Wetland
- *Glenelg Plain*: 93 ha for Damp Sands Herb-rich Woodland and Heathy Woodland/Damp Heathy Woodland/Damp Heathland Mosaic
- *Warrnambool Plain*: 210 ha for Damp Sands Herb-rich Woodland, Lowland Forest Herb-rich Foothill Forest, Swamp Scrub and Damp Heathland/Damp Heathy Woodland Mosaic
- *Otway Ranges*: 289 ha Damp Sands Herb-rich Woodland, Lowland Forest, Wet Forest, Shrubby Foothill Forest, Heathy Woodland, Coastal Headland Scrub, Coastal Tussock Grassland, Damp Heath Scrub and Shrubby Wet Forest
- *Otway Plain*: 548 ha Damp Sands Herb-rich Woodland, Sand Heathland, Riparian Scrub/Swampy Riparian Woodland Complex, Shrubby Dry Forest, Shrubby Foothill Forest, Heathy Woodland, Plains Grassy Woodland, Coastal Headland Scrub, *Coastal Tussock Grassland*, Damp Heath Scrub, Coastal Saltmarsh/Mangrove Shrubland Mosaic and Coastal Alkaline Scrub
- *Victorian Volcanic Plain*: 667 ha for Herb-rich Foothill Forest, Plains Grassy Woodland, Plains Grassland and Grassy Woodland
- *Gippsland Plain*: 3 480 ha Coastal Dune Scrub/Coastal Dune Grassland Mosaic, Coast Banksia Woodland (27), Damp Sands Herb-rich Woodland, Sand Heathland, Wet Heathland, Coastal Saltmarsh, Estuarine Wetland, Limestone Box Forest, Lowland Forest, Herb-rich Foothill Forest, Damp Forest, Warm Temperate Rainforest, Heathy Woodland, Swamp Scrub, Plains Grassy Woodland, Floodplain Riparian Woodland, Wetland Formation, Swampy Riparian Woodland, Plains Grassy Wetland, Plains Grassy Forest, Coastal Tussock Grassland, Grassy Woodland, Plains Grassy Woodland/Gilgai Wetland Mosaic, Shrubby Damp Forest, Deep Freshwater Marsh, Wet Heathland/Damp Heathland Mosaic, Swamp Scrub/Plains Grassland Mosaic, Damp Heathy Woodland, Lowland Forest/Damp Sands Herb-rich Woodland Mosaic, Gully Woodland, Swampy Woodland and Damp Heathy Woodland/Lowland Forest Mosaic
- *Strzelecki Ranges*: Nil
- *Wilsons Promontory*: Nil (all public land)
- *East Gippsland Lowlands*: 811 ha Clay Heathland, Wet Heathland, Banksia Woodland, Limestone Box Forest, Lowland Forest, Riparian Scrub Complex, Shrubby Dry Forest, Damp Forest and Warm Temperate Rainforest.

Tenders, auctions, purchases and leases

Another option to engage private landholders in nature conservation are vegetation auction processes such as BushBroker, where landholders bid for patches of vegetation to offset clearing on their own properties. However, because of that design, the transactional process will always lead to a loss of vegetation cover.

Gains in vegetation quantity and quality are the aim of several tendering programs that have in the past and recently been funding coast-based vegetation management projects.

BushTender is a state-funded competitive bidding system established in 2001. Landholders develop native vegetation management plans and nominate a price for providing services to better protect and improve the quality of native vegetation on their land. The management plans may involve feral animal and weed control, improved land management, fencing to control or exclude stock, and enhancement plantings.

The outcome from the 2008 BushTender South-west project was 2 800 ha, while for the 2006 BushTender Southern Victoria project, which covered a huge area stretching along the coast from Portland to the Gippsland Lakes and included the Otway and Strzelecki ranges, it was only 2 011 ha.

The publicly available information was inadequate to determine the projects within the coastal bioregions, but several weed control projects were funded near Cape Otway, Johanna River, Lorne, Cape Liptrap Coastal Park, Corner Inlet and the Ninety-mile Beach.

There were several successful bids to better manage Coastal Alkaline Scrub in the Bridgewater Bioregion by private landholders adjacent to the Discovery Bay Coastal Park. They covered 49 ha or 0.5% of the EVC's current cover in the bioregion.

A similar auctioning process is being used by the Corangamite Regional Catchment Management Authority in its CoastalTender program, which was established in 2010 with funds from the federal Caring

[455] Trust for Nature 2013, *TFN bioregion and subregion EVC representation*, Excel spreadsheets, Trust for Nature, Melbourne

for our Country program. It conducted a pilot in 2010 and a broader program in 2011, both seeking bids from private landowners and public land managers. The results[456] were:

> *Round one*: Forty registered expressions of interests from private landholders, committees of management and local government; eight sites totalling 166 ha successful; $269 680 invested in five–year landholder agreements
>
> *Round two*: 80 expressions of interest and 88 draft management plans; $1.58 million invested in five–year landholder agreements; 1 148.73 ha under contract (five years); three new properties under permanent protection; 17 land managers (public and private) under contract.

The Saltmarsh Protection Project was established in 2012 with federal and state funding. It aims to encourage landowners in the regions of the Corangamite, Glenelg Hopkins, Port Phillip and Western Port and West Gippsland catchment management authorities to improve the conservation and management of saltmarsh e.g. saltmarsh on public and private land at Venus Bay.

Another option to protect and expand coastal nature is to convert private land to public land in buybacks or land swaps. The buying back of coastal land is expensive in the short term but could have long-term benefits if the land were then to be used to protect or re-establish indigenous vegetation. Buybacks should initially focus on private land inliers and land directly abutting the boundaries of conservation reserves. A further option is for the state government and its agencies to enter into leasing agreements and other proprietary arrangements that would essentially pay owners of land abutting the high water mark or coastal crown land reserves not to develop the land and to allow for fencing and vegetation restoration.

Landcare projects and wildlife corridors

Vast wetlands once spread across the Warrnambool Plain, but these were drained and the adjoining scrub and woodland cleared to establish pasture. Swamp Scrub was common at the mouths of a number of estuaries in south-west Victoria before 1750 but, except for scattered patches along the coast and hinterland, only 7% remains on the Warrnambool Plain and it is now Endangered. Damp Heath Scrub, reduced to 14% of its pre-1750 coverage, is Vulnerable. Across Victoria, Swamp Scrub occupies just 5% of its pre-1750 area. To help its recovery, the Heytesbury Landcare Network established the Swamp Scrub Recovery Project in 2008:

> *…this vegetation community fulfills many important ecosystem services including filtering excess nutrient from waterways, preventing erosion and soil loss into waterways, providing habitat for a range of animals, fish and orchid species, one of which is endangered. Whilst south west Victoria contains a large percentage of remaining Swamp Scrub, much of it is under threat or stress due to stock grazing and trampling. Therefore, we are presented with a unique opportunity to prevent this important vegetation community and the rare and threatened orchids it harbours from disappearing forever[457].*

Landholders with Swamp Scrub on their property are funded by the project on a 1:3 basis to fence the area, remove weeds and to purchase indigenous seedlings for revegetation. For every $15 000 donated to the group, it is able to protect, restore and enhance one hectare of Swamp Scrub.

Since its formation in 1987, the Phillip Island Landcare Group has driven the planting of 800 000 indigenous plants across the island through individual property projects and the larger Wildlife Corridor project it began in 1997. Many of the plants used in the project would have been propagated in the Barb Martin Bush Bank, a community-run indigenous plants nursery established on the island in 1998.

Projects like the Wildlife Corridor project have a strong education element and have helped change attitudes on the island:

> *"The most important role of Landcare is to provide a conduit to dealing with landholders," says Ewen. "Through partnerships, we can push projects through and change ideas."*
> *An islander born and bred, Ewan has seen the revolutionary environmental changes across Phillip Island first-hand. "It's gone from skeptics through to everyone embracing the changes needed to restore the land." And he believes Landcare has been the driving force for this. "We are seen as a community action group – grass roots - and the partnership with the Nature Parks helps us to achieve outcomes for the whole of Phillip Island, we have a great relationship."[458]*

The Landcare group is working with Phillip Island Nature Parks to tackle the problem of pest animals such as foxes. In recent years the fox control program has removed up to 500 foxes, with current numbers now estimated at as low as 10. The next phase of the program aims to remove the remaining foxes and prevent their re-entry across the bridge joining the island to San Remo.

Weeds such as gorse and bridal creeper are also being targeted, as well as rabbits:

> *"We worked with five property owners to install the fence and it's a crucial part of breaking up rabbit infested areas into manageable areas," says Matt Stephenson, Landcare's Community Pest Plant and Animal Program Officer. Landcare member and landholder, Bill Cleeland worked with the team to*

[456] Australian Government 2013, 'Designer carrots: market-based instruments for NRM change', www.marketbasedinstruments.gov.au/MBIsinaction/Currentcasestudies/CorangamiteCoastalTender/tabid/385/Default.aspx

[457] Heytesbury District Landcare Network, *Wish you were here: corporate prospectus*, Heytesbury District Landcare Network, Timboon, Victoria, p. 8

[458] Phillip Island Nature Parks 2014, http://www.basscoastlandcare.org.au/index.php/component/k2/item/190-a-natural-partnership-phillip-island-nature-parks-and-phillip-island-landcare-group

install a section of the fence on his Surf Beach farm. "The rabbit proof fence at Churchill Island is a good example of how these measures can work and we are hoping for similar success on other parts of Phillip Island," says Bill[459].

Hurdles for nature conservation on private land

There will be a number of hurdles to overcome in efforts to improve nature conservation on private land along the coast. These include:

- the reluctance of landholders to maintain or enhance existing native vegetation on their land due to the cost, their land-use strategy, their desire to maintain broad access to the shoreline they abut, and the potential for future profits by converting the land to more intensive uses such as residential
- the limited budgets for governments to provide financial incentives for nature conservation
- the complexities of restoration projects including the choice of species, the infrastructure and workforce needed to establish and maintain the vegetation, and the impacts of weeds, pest animals and climate change.

Three sections of coastline where there is considerable private land abutting the high water mark or narrow coastal crown land reserves, and where coastal and hinterland EVCs are absent or under extreme stress, are:

- Portland to Princetown, effectively the coastal boundary of the Warrnambool Plain
- Portarlington to Point Henry, which is the northern shore of the Bellarine Peninsula and is on the Otway Plain
- the eastern shoreline of Western Port, which is on the Gippsland Plain.

There are of course other sections of the coast where there is need for greater native vegetation protection on private land, mostly on the Otway Plain, Victorian Volcanic Plain and Gippsland Plain.

None of these efforts will be helped by changes to the native vegetation clearing regulations or the changes to rural and urban zonings made recently by the state government and discussed earlier. The zoning changes remove the reference to s. 173 agreements of the *Planning and Environment Act*, which lay out the features of legal agreements between the landowner and the planning authority when subdividing land. Such agreements can be used to place restrictions on the subdivider, including references to the retention and restoration of native vegetation.

Recommendations

The following recommendations are aimed at generating discussion about the ways in which the conservation of coastal nature can be strengthened by engaging private landholders.

1. Increase the application of overlays in coastal municipalities to enhance the protection of coastal nature.

2. Ensure that all coastal townships have secure township boundaries and that the planning of land use along the coast between those boundaries supports the retention and gradual expansion of coastal nature.

3. Ensure that coastal municipalities include 100 m buffers in the Environmental Significance Overlay applied to private land to provide greater protection for coastal and hinterland EVCs and their restoration along waterways, surrounding estuaries and abutting coastal crown land or the high water mark. Use the Shire of Moyne overlay as a model.

4. Review the statewide and regional policies encouraging population growth along the coast and take action to slow that growth and reduce its impacts.

5. Investigate the creation of a:

- West Coast Shire by amalgamating the coastal section of the Corangamite Shire, Moyne Shire and the City of Warrnambool
- new shire combining coastal elements of the Bass Coast and South Gippsland shires
- new Gippsland Lakes shire by adjusting the boundaries of the Wellington and East Gippsland shires
- merger between the Borough of Queenscliffe and the City of Greater Geelong.

[459] Phillip Island Nature Parks, loc. cit.

Community

Many Australians see great benefits for themselves in being actively involved in the conservation of nature. In March 2013 the Australia Bureau of Statistics released the results of its analysis of community involvement in nature conservation activities. It found that:

- *In 2011-12, an estimated 8.1 million Australian adults (47%) had participated in nature conservation activities at home or on the farm in the last 12 months. Forty-three percent had planted or cared for Australian native trees or plants, and almost one in five (19%) had cared for Australian native wildlife. People living outside capital cities were more likely to have undertaken these activities than those living in capital cities (54% and 43% respectively)*
- *An estimated 4.5 million Australian adults (26%) could be encouraged to become more involved in nature conservation activities. Of these, an estimated 2.5 million indicated having more free time could encourage them to become more involved. Other motivators included: more information or advertising on environmental issues (10%); more environmental events in their local area (9%); seeing the direct benefits of personal efforts (7%); an increase in government rebates and incentives (6%); and having more money to contribute (6%)*[460].

Along the Victorian coast the community has continued to be engaged in various nature conservation projects, many initiated by local environment groups. On the Surf Coast alone there are '22 active environment groups who dedicate thousands of hours to conservation between Torquay and Lorne each year'[461].

Many coastal conservation projects are coordinated and funded through Coastcare, a federally funded program that began in 1995. The program is designed to improve the environment of coasts and educate and engage the community.

The on-ground Coastcare projects that communities carry out are a major component of local efforts to improve the coastal environment. An analysis of the grants over the past three years, summarised in Table 40, shows that the main issues that Coastcare projects tackle are weed control, establishing biolinks (improving connectivity) and vegetation restoration, with most activity between Apollo Bay and Inverloch.

The long-term viability of the program is threatened by Victorian government cuts to the number of Coastcare coordinators from seven to four during 2012:

> *Environmental experts looking after Victoria's endangered species and organising Coastcare volunteers are being shed as the state government's cuts to the public service bite.*
> *Jobs set to go so far include Coastcare facilitators in Victoria's south-west who help organise hundreds of volunteers doing unpaid conservation work on popular beaches along the Great Ocean Road and further west to the South Australian border.*
> *Lou Hollis, a Killarney Coastcare volunteer, told* The Saturday Age *the group would have to scale back its work if it could not get support. ''Most volunteer groups rely on having somebody to access to help with projects and funding opportunities,'' she said. ''By taking away the facilitator it shows the government has a total disregard for volunteers in the community.''*
> *Kristie King, a volunteer with Warrnambool Coastcare, said the decision to cut the facilitator was indiscriminate and would put undue pressure on volunteers to pick up the slack. ''Without access to a facilitator we are fearful we are going to see widespread volunteer burnout as they have take on more administration,'' she said*[462].

Recommendations

1. Ensure ongoing and adequate funds to maintain and expand Coastcare, especially into more isolated areas where volunteer capacity is currently limited, and increase the number of Coastcare coordinators.

2. Support with funding and other resources collaborative projects between groups such as Coastcare and Landcare, park managers and private landholders to protect and expand coastal nature.

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[460] Australian Bureau of Statistics 2013, *Community engagement with nature conservation, Australia, 2011-12*, 4602.0.00.002, ABS, Canberra

[461] *Surf Coast Times* 2013, 'Coast Conservation group directory launched', *Surf Coast Times*, 3 September 2013

[462] Arup, T. 2013, 'Green experts beached as job cuts bite', *The Age*, 7 April 2012

Table 40 Coastcare projects 2009-2012

Project type	Locations	
Weed control	Barwon Heads Lorne Harmers Haven Rock Point, Jan Juc Sandy Point Bass Coast	Red Rocks, Phillip Island Thunder Point, Warrnambool Bunurong Coast Balnarring Kilcunda Anglesea YMCA Camp
Biolink	Dromana Gippsland Lakes (Forge Creek) Venus Bay Somers	Mornington (Mills Beach) Surf Coast Jack Smiths Beach
Weed control and revegetation	Soapy Rocks, Anglesea Williams Road Beach, Mt Eliza Livingstone Island, Nelson Cape Paterson (dunes)	Sunshine Reserve, Mt Martha Merricks Beach Dromana Nelson-Discovery Bay
Restoration and biolink	Mt Martha Port Campbell	Gellibrand to Curdies Inlet (estuary care)
Restoration/Revegetation	Cape Paterson Flinders Marlo McRae Ventnor West (short-tailed shearwater) Princetown wetland Sands Road southern Otway (dunes) Fisherman's Beach, Torquay (moonah) Whitecliffs-Camerons Bight (moonah) Point Roadknight (dunes) Point Richards Portarlington (Damp Sands Herb-rich Woodland) Marlay Point Carisbrook Falls	Red Bluff, Mornington Shoreham (Coast Banksia Woodland Surf Coast (moonah) Capel Sound (orchids) Cape Liptrap lighthouse (heathland) Kilcunda Anglesea (moonah) Edwards Point (saltmarsh) Williams Road Beach, Mt Eliza Hopkins Point, Warrnambool (sand dunes) Somers School Camp Buckley Park (dunes) Narrawong (dunes) Yambuk (dunes)
Bat House	Eagle Point, Paynesville	
Penguin colony protection	St Kilda	
Environmental works and education	South-west Coast	
Community education	Indented Head (wetlands) Barwon Bluff Point Danger, Portland (weed control)	Fawthrop Lagoon, Portland Marine Discovery Centre (dunes)
Fox control	Point Danger, Portland	
Hooded plover protection	Cape Liptrap Mornington Peninsula	Wye River to Castles Beach Ventnor West
Short-tailed shearwater	Phillip Island, Cape Woolamai Phillip Island, Kitty Millers Bay	Phillip Island, Barry's Beach
Catchment improvement	Anderson Inlet	
Community engagement	Victorian estuaries	
Management/Maintenance	Mud Islands	Watkins Bay
Protection	Browns Creek Woongarra (culture and ecology) Corner Inlet and Nooramunga Marine and Coastal Park	Lake Connewarre (saltmarsh) Edithvale Seaford wetlands
Trails	Chinaman's Creek	Harmers Haven

Source: Department of Environment and Primary Industries website: www.dse.vic.gov.au/coasts-and-marine/coasts/coastcare/grants.

Part 6 Coastal legislative and institutional reform

This final part of The coast is unclear *outlines a number of legislative and institutional reforms considered essential to progress the conservation of coastal nature in Victoria*

Legislative and institutional reform

Over many years much has been said in various planning strategies and action plans of the need for an integrated approach to coastal planning and management. The solutions put forward usually revolve around collaboration, interdepartmental committees, hope and faith, just as in the 2013 draft of the Victorian coastal strategy.

The challenge is to integrate a disintegrated framework, the best way being to establish a framework that is integrated from the start. To effectively do so will require legislative and institutional reform. The following recommendations are aimed at generating discussion about what such reform could look like and how it might work. Table 41 summarises the recommended reform arrangements.

Recommendations

1. *Marine and Coastal Planning and Management Act*

The *Marine and Coastal Planning and Management Act* would replace the *Coastal Management Act* 1995 and also require amendments to the *Planning and Environment Act 1987*, the *Catchment and Land Protection Act 1994* and other intersecting statutes. The new Act would establish the Marine and Coastal Authority, which would have a statewide planning and management function for coastal crown land and coastal waters.

The act would have the following objects to:

(a) establish the functions and powers of the Marine and Coastal Authority and define its geographical scope

(b) ensure the ecologically sustainable use of Victoria's marine and coastal resources

(c) provide for integrated and cooperative ecosystem-based marine and coastal planning, protection and management of Victoria's marine and coastal environments involving governments, the community, marine and coastal industries and Indigenous peoples and that is fair, accountable and transparent

(d) increase security of access and certainty of process for marine-based and coast-based industries

(e) promote ecologically sustainable development and improvements in the economic, social and cultural wellbeing of regional coastal communities

(f) ensure that the management actions of government agencies operating in Victoria's Coastal Land and Waters Reserve (all coastal crown land and coastal waters out to the state limit of three nautical miles) are consistent with the principles and plans established in the act

(g) increase knowledge and understanding of Victoria's marine and coastal environment

(h) encourage community and industry stewardship of Victoria's marine and coastal environment

(i) ensure that Indigenous communities are engaged in regional marine and coastal planning and that their rights and knowledge are recognised and respected

(j) enable effective community engagement in coastal planning and management and conservation activities.

Underpinning the new legislation would be the principles of ecosystem-based marine and coastal management and ecologically sustainable development as its objects.

The principles of ecosystem-based management are to:

(a) maintain ecological processes in all areas of Victoria's marine and coastal environments including, for example, water and nutrient flows, community structures and food webs, and ecosystem links

(b) maintain the biological diversity of Victoria's marine and coastal ecosystems, including the capacity for evolutionary change

(c) maintain viable populations of all native species in Victoria's marine and coastal ecosystems in functioning biological communities

(d) manage the human use of marine and coastal resources and minimise its impacts on Victoria's marine and coastal ecosystems so that they do not degrade ecosystems function

(e) assess direct, indirect and cumulative impacts of human actions on Victoria's marine and coastal ecosystems.

The principles of ecologically sustainable development are to:

(a) ensure effective integration of both long-term and short-term economic, environmental, social and equitable considerations in decision-making processes

(b) ensure that if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation

(c) uphold the principle of intergenerational equity—that the present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations

(d) ensure that the conservation of biological diversity and ecological integrity should be a fundamental consideration in decision making

(e) promote improved valuation, pricing and incentive mechanisms.

2. Marine and Coastal Authority

The *Marine and Coastal Planning and Management Act* would establish the Marine and Coastal Authority, which would replace the Victorian Coastal Council and the three regional coastal boards.

The administrative structure of the new authority would be based on six regions: South-west, Otway, Central (Port Phillip Bay and Western Port), West Gippsland, Gippsland Lakes and East Gippsland. The boundaries of these would largely mirror those current ones for the catchment management authorities with coastal boundaries. The major exception would be in East Gippsland, where this report proposes a new catchment management authority covering the entire catchment of the Gippsland Lakes.

The Marine and Coastal Authority would be a statutory independent body with a board of eight members (including Chair) who have relevant expertise to oversee marine and coastal planning, protection and management. The Authority would report to Parliament through Premier and Cabinet.

The functions of the Marine and Coastal Authority would be to:

(a) administer the Act and any subordinate legislation or regulations made under it

(b) administer integrated marine and coastal planning and management processes in consultation with all relevant agencies and stakeholders

(c) delegate certain management responsibilities to state agencies, local municipalities or committees of management

(d) map the ecosystems in Victoria's Coastal Crown Land and Waters Reserve

(e) develop statewide environmental, social, economic and cultural operational principles for regional marine and coastal plans

(f) develop a set of planning zones with planning zone rules, objectives and targets including permissible and non-permissible uses in each of the zones

(g) develop, review and monitor the implementation of regional marine and coastal plans

(h) allocate marine and coastal natural resources for ecologically sustainable extractive and non-extractive uses in each regional marine and coastal plan

(i) conduct periodic review of State marine and coastal management agencies that are responsible for implementation of the regional marine and coastal plans with reference to a performance assessment system established by the Authority

(j) integrate data collection, research, information sharing, communications and education as part of the marine and coastal planning process and develop the full range of relevant knowledge to be applied to the planning and decision-making processes, including Indigenous knowledge

(k) ensure that Indigenous communities are given opportunities, with appropriate resources, to effectively engage in planning and management decision-making and actions in relation to their Sea Country

(l) prepare state of the marine and coastal environment reports every five years in accordance with the Act and for inclusion in the *Victorian state of the environment report*

(m) prepare marine and coastal policy statements on matters relevant to marine and coastal planning and management

(n) act as a referral body for marine, coastal and catchment development proposals that may impact on the Coastal Crown Land and Waters Reserve

(o) commission, support or fund the undertaking of marine and coastal research and communications and education programs of relevance to its functions

(p) liaise with the relevant catchment authority to ensure the integration of regional marine and coastal plans with regional catchment strategies

(q) establish regional marine and coastal advisory committees.

Regional offices of the Marine and Coastal Authority would work closely with the regional catchment management authorities to ensure that the quality and quantity of water entering coastal estuaries and coastal waters was adequate to maintain and then improve the health of those estuaries. The offices would also work regional marine and coastal advisory committees, coastal municipalities, Coast Committees and other agencies with relevant responsibilities to ensure an integrated planning, protection and management framework and processes. The regional offices would also be referral offices for planning amendments and coastal development proposals.

The *State of Environment Victoria* 2013 report argued the case for an integrated marine plan:

> *A key weakness in the management of our marine environment, outside protected areas, is the absence of a strategic plan. While some aspects of the marine environment are covered in other documents (e.g. Victorian Coastal Strategy 2008, policies for water quality), and RCSs provide for regional risk-based management, 80% of Victoria's marine waters fall outside the boundaries of existing statewide planning policies or management strategies. Such a marine management plan was also a key recommendation of the 2009 Land and Biodiversity White Paper, receiving broad support among the community and academia. Proper integration of policy and planning frameworks that affect the marine environment is also needed*[463].

Such a plan itself needs to be integrated with coastal and catchment planning. That would be the

[463] Commissioner of Environmental Sustainability 2013, *State of Environment Victoria*, p. 224

task of the Marine and Coastal Authority working with the catchment management authorities.

3. Marine and Coastal Strategy

Under the *Marine and Coastal Planning and Management Act,* the Victorian Coastal Strategy would become the Victorian marine and coastal strategy and be prepared and implemented by the Marine and Coastal Authority, which would replace the Victorian Coastal Council.

The new strategy would provide a statewide vision, principles and goals translated into regional strategies: Western, Otway, Central, West Gippsland, Gippsland Lakes and East Gippsland, with clearly targeted and adequately resourced implementation plans. This new feature of the strategy would guide the development of regional marine and coastal plans that would replace the existing regional coastal action plans.

The Victorian marine and coastal strategy would become the reference document for the coastal municipalities and agencies, with its principles inserted into the State Planning Policy Framework and subsequently coastal planning schemes.

4. Regional marine and coastal plans

The Marine and Coastal Authority would have responsibility for the planning and management of what would be defined by the Act as the Coastal Land and Waters Reserve. The reserve would cover all coastal waters to the boundary with Commonwealth waters (5.5 kilometres out to sea) and include coastal estuaries and all coastal crown land, excluding the coastal conservation estate.

The Marine and Coastal Authority would prepare and implement regional marine and coastal plans that would give a much clearer application of the strategy and better integrate planning for Victoria's marine environment with that for coasts and catchments.

The plans would create management zones on the land and in the water, and be integrated within new spatial marine and coastal planning processes.

Extending these and some new zones to the limit of state coastal waters (5.5 kilometres offshore), and with the identification of the responsible management agencies and the management arrangements that apply, would provide the strong basis needed to integrate the planning and management of the catchment-coast-ocean continuum. The use of such zones would support the reform and integration of the coastal planning and management framework.

Responsibility for the management of these zones would rest with the Marine and Coastal Authority, but the management functions would be delegated to other state government agencies and Coast Committees.

In each region the Marine and Coastal Authority would establish a Marine and Coastal Advisory Committee comprising representatives of the local council, parks agency, Coast Committee, catchment management authority and key stakeholders including, commercial and recreational fishers, tourism, conservation and Indigenous communities.

The process for developing a regional marine and coastal plan would follow a number of key steps:

- stakeholder engagement and community education (which would be ongoing throughout the process and be advised on by the advisory committee)
- identifying the region's environmental, social, cultural and economic values and the threats to them
- gathering environmental, social, cultural and economic data to establish baselines
- identifying and quantifying desired outcomes and the operational objectives, indicators, targets and timelines to achieve them
- assessing the risks to values, operational objectives, indicators, targets and timelines
- considering and selecting habitats for protection
- preparing spatial maps with management zones designed to achieve the desired outcomes by managing the ecologically sustainable use of the Coastal Crown Land and Waters Reserve
- designing research, information and monitoring systems, performance assessment and review systems, and a compliance strategy
- finalising the regional marine and coastal plan
- reviewing and evaluating the regional marine and coastal plan in five years.

5. Marine and Coastal Research and Information Service

There are many gaps in our scientific knowledge of coastal and marine environments. The Science Panel of the Victorian Coastal Council identified three emerging issues for which scientific understanding is inadequate. Common to each, the panel said:

> *…is the need to focus on processes that occur at long time scales and potentially over wide areas of the coast. Both of these dimensions will provide challenges to coastal management, as they operate at scales that cross jurisdictions and planning windows*[464]*.*

The three emerging issues[465] were:

- understanding the effects of increased climatic variability
- understanding the importance of links between catchments, estuaries and broader coastal waters for maintaining marine ecosystem health
- understanding the cumulative ecological consequences of coastal development to meet human needs.

There were three other panel concerns in terms of Victoria's technical capacity to respond to emerging environmental issues:

- understanding the condition of Victoria's coastal environments, and linking that to a clear decision-making framework

[464] Victorian Coastal Council Science Panel 2011, *Emerging scientific issues on Victoria's coast: 2011 update*, Victorian Coastal Council, Melbourne, p. iv.
[465] Victorian Coastal Council Science Panel, loc. cit.

- matching Victoria's technical capacity to meet scientific needs by maintaining and developing appropriate expertise
- the continuing operation of the Science Panel to provide independent, strategic, scientific advice for the whole coast.

The Marine and Coastal Research and Information Service would address these knowledge gaps and others, and improve the integration of research that is conducted in Victoria's marine and coastal areas. It would establish a consistent methodology and parameters for the environmental, social and economic research in Victoria's marine and coastal environments that it and other bodies would conduct. It would also be a clearing-house for advice to stakeholders, planning and management bodies and the broader community. The service would:

- prepare and implement a Marine and Coastal Research Strategy and Action Plan
- conduct comprehensive mapping of current settlements, 'coastal nature conservation priority areas', and predicted sea level rise for the whole Victorian coastline
- combine this with mapping of projections of where both settlements and biodiversity will, and can, move to as a result of sea level rise
- monitor the implementation of growth boundaries around existing settlements to ensure a balance between biodiversity protection and development priorities
- oversee marine and coastal research projects and be a source of funds for such projects
- liaise with research organisations to ensure the consistent application of research methodologies and the release of research findings into the public domain
- ensure that citizen science is encouraged and conducted in a way that the data gathered can be integrated with other data collected.

The information service would also develop a variety of public information resources and services that would act as a one-stop shop for information on coastal protection, planning and management. A dedicated website for the purpose would include:

- all current coastal planning, protection and management documents
- maps of all marine and coastal habitats with information about their natural values
- maps of all coastal conservation and crown land reserves
- development proposals for the coast
- data on threats and impacts along the coast.

6. Coastal Conservation Reserves and Coastal Recreation Reserves

The Land Conservation Council, Environment Conservation Council and the Victorian have each proposed Coastal Conservation or Protection and Coastal Recreation zones for coastal crown land, while the State Planning Policy Framework has the Public Park and Recreation Zone and the Public Conservation and Resource Zone, each of which has been applied to coastal crown land reserves and other crown land across the state. These zonings have limitations as discussed earlier in this report.

Those existing coastal crown land reserves that have conservation values and are in need of a conservation focus to management, as defined by the Land Conservation Council, should be managed by Parks Victoria, either by their incorporation into an existing park under the *National Parks Act 1975* or their gazettal as a Coastal Conservation Reserve and insertion into a schedule of the same statute.

Those existing coastal crown land reserves that have recreational values and are in need of a recreational focus to management, as defined by the Land Conservation Council, should be managed Coast Committees (see next recommendation) and gazetted as a Coastal Recreation Reserve under the *Crown Land (Reserves) Act 1978*.

The management of the two reserve categories should be consistent with that outlined in various Land Conservation Council reports and discussed earlier.

Coastal Conservation Reserves may be used for recreation, but it should only be at a scale and location that does not undermine its conservation values. Although the scale of recreational use of a Coastal Recreation Reserve will be larger, it may have conservation values that it will need to be protected by management.

The identification and then gazettal of Coastal Conservation Reserves and Coastal Recreation Reserves should follow a review of the recommendations made by the Land Conservation Council and Environment Conservation Council.

7. Coast Committees

A mix of bodies including the Department of Environment and Primary Industries, Parks Victoria, coastal municipalities and community-based committees of management currently manages coastal crown land reserves in Victoria.

This governance framework is in need of simplification, with greater integration, less duplication, more effective and targeted management and based in coastal communities. The merging of smaller committees of management to form the Otway Coast Committee, the Great Ocean Road Coast Committee, Barwon Coast and the Bellarine Bayside committees has proven beneficial in ways that have been discussed earlier in this report.

Recommended here is the consolidation and extension of this governance model to the remainder of the coastal crown land reserves that have a recreational focus along the Victorian coast i.e. Coastal Recreation Reserves as proposed in the previous recommendation.

The new committees of management would be known as Coast Committees and their members would be nominated by the community and appointed by the environment minister, while the proposed Marine and Coastal Authority would oversee their operations.

Although coastal municipalities may have a representative on the Coast Committee, the day-to-

management responsibility would be with the committee, not the council. However, as the council's ratepayers will likely be the major users of the reserve throughout much of the year, coastal municipalities should contribute funds to the management of the reserve in the committee's care.

There may be several places along the coast where the formation of a Coast Committee as described above may be difficult. One such place is Nelson, which is isolated from other reserves, as is Mallacoota. However, they would still be referred to as Coast Committees and the reserves under their care gazetted as a Coastal Recreation Reserve.

There are other reserves, such as those in the highly urbanised coast of Geelong and between Port Melbourne and Frankston, which are managed by city councils, that are likely best left with their existing management arrangements.

Coast Committees should be formed to manage the following semi-urban and non-urban sections of the Victorian coast that would be gazetted as Coastal Recreation Reserves[466]:

- Narrawong to Port Fairy
- Adding Wye River to the Otway Coast Committee
- Breamlea to Clifton Springs (a new Bellarine Peninsula Coast Committee merging the Barwon Coast and Bellarine Bayside committees)
- Mt Eliza to Mt Martha
- Safety Beach to Portsea
- Flinders to Hastings
- Cannons Creek to Coronet Bay
- San Remo to Inverloch
- Walkerville to Sandy Point
- Seaspray to Loch Sport
- Port Franklin to Woodside Beach
- Gippsland Lakes (settlements and recreation areas inside Gippsland Lakes and including Lake Tyers Beach).

8. Coastal Infrastructure Agency

Modelled on the US Army Corps of Engineers, and the Victorian Ports and Harbours Division of some years ago, the division would carry out works, assess (design and construct?) and manage boating infrastructure, coastal defensive/protection works, artificial reefs and the planned retreat of coastal infrastructure for all coastal locations except for the major ports of Portland, Geelong, Melbourne and Hastings.

This new division would replace the Victorian Channels Authority and Gippsland Ports but with an expanded remit including responsibility for jetties, piers and boat ramps currently managed by Parks Victoria, municipalities and committees of management. One of its primary objectives would be to ensure that coastal infrastructure is assessed, designed, constructed and maintained within the principles of ecologically sustainable development and ecosystem-based management

[466] Within these coastal sections there may also be stretches of coast that have been gazetted as Coastal Conservation Reserves and managed by Parks Victoria

Table 41 Reforming marine and coastal planning and management in Victoria

	Status quo	Reform
Key legislation	*Coastal Management Act 1995*	Marine and Coastal Planning and Management Act
	Catchment and Land Protection Act 1994	*Catchment and Land Protection Act 1994* (with amendments)
	Planning and Environment Act 1988	*Planning and Environment Act 1988* (with amendments)
	Crown Lands (Reserves) Act 1978	*Crown Lands (Reserves) Act 1978* (with amendments)
Institutions	Victorian Coastal Council	Marine and Coastal Authority
	Western Coastal Board Central Coastal Board Gippsland Coastal Board	Regional offices of Marine and Coastal Authority
	Catchment Management Authorities (5)	Catchment Management Authorities (6 including an additional one covering the entire catchment of the Gippsland Lakes). Would work closely with Marine and Coastal Authority to ensure integration of catchment, coastal and marine planning and management.
	Department of Environment and Primary Industries	Department of Environment and Primary Industries (but not lead or delegating agency for planning and management of the Coastal Crown Land and Waters Reserve)
	Parks Victoria	Parks Victoria (managing the conservation estate and Coastal Conservation Reserves; no longer boating infrastructure in Port Phillip Bay and Western Port, which would be managed by Coastal Infrastructure Division)
	Fisheries Victoria (Department of Environment and Primary Industries)	Fisheries Victoria (delegated by Marine and Coastal Authority for fisheries management and research within the context of the regional marine and coastal plans)
	Port authorities	Port authorities (operations should be consistent with the objectives of the regional marine and coastal plan)
	Environment Protection Authority	Environment Protection Authority (licensing and monitoring consistent with the objectives of the regional marine and coastal plan)
	Department of Planning and Community Development	Department of Planning and Community Development (coastal and catchment planning and development should be consistent with the objectives of the statewide marine and coastal strategy and the regional marine and coastal plan)
	Transport Safety Victoria	Transport Safety Victoria (operations should be consistent with the objectives of the regional marine and coastal plan)
	Victorian Regional Channels Authority (Geelong and Portland)	Victorian Regional Channels Authority (Geelong and Portland)
	Port of Melbourne Corporation	Port of Melbourne Corporation (operations should be consistent with the objectives of the regional marine and coastal plan)
	Rural and Urban Water Corporations	Rural and Urban Water Corporations (operations should be consistent with the objectives of the regional marine and coastal plan)
	Coastal committees of management (overseen by Department of Environment and Primary Industries)	Coast Committees (fewer in number and overseen by Marine and Coastal Authority)
Strategies and plans	Victorian Coastal Strategy	Victorian Marine and Coastal Strategy with regional implementation strategies
	Coastal Action Plans	Subsumed by Victorian Marine and Coastal Strategy and regional marine and coastal plans
	Coastal Management Plans	Coastal Management Plans (for longer sections of coast rather than one for each current foreshore reserve)
	Regional Catchment Strategies	Regional Catchment Strategies (integrated with marine and coastal strategy and regional marine and coastal plans); Regional Waterway Strategies and Estuary Management Plans (integrated with regional marine and coastal plans and coastal management plans)
Coastal management	Parks Victoria Local municipalities Committees of management	Parks Victoria (for all coastal conservation estate including new Coastal Conservation Reserves) Local councils (Coastal Recreation Reserves where it may not be practical to have a community-based Coast Committee) Committees of management (re-organised into a smaller number of Coast Committees for Coastal Recreation Reserves)
Oversight of committees of management	Department of Environment and Primary Industries of council-based and community-based committees of management	Marine and Coastal Authority through regional offices will oversee operations of Coast Committees managing Coastal Recreation Reserves (fewer committees with larger areas of responsibility)
Marine and coastal planning	Victorian Coastal Council Regional coastal boards Department of Environment and Primary Industries Parks Victoria Department of Planning and Community Development Local municipalities Committees of management	Marine and Coastal Authority Parks Victoria Department of Planning and Community Development Local municipalities Coast Committees Regional marine and coastal advisory committees
Estuary management	Department of Environment and Primary Industries Parks Victoria Committees of management	Marine and Coastal Authority Catchment management authorities upstream (should ensure estuaries receive water of adequate quality and quantity

	Status quo	Reform
	Catchment management authorities	consistent with targets in the regional marine and coastal plan)
Marine and coastal management	Department of Environment and Primary Industries (Fisheries Victoria) Parks Victoria Committees of management Local municipalities	Department of Environment and Primary Industries (Fisheries Victoria) would manage fisheries consistent with the objectives of the marine and coastal strategy and regional marine and coastal plans prepared by the Marine and Coastal Authority. Parks Victoria would continue to manage marine national parks and sanctuaries, coastal parks and Coastal Conservation Reserves Coast Committees would manage Coastal Recreation Reserves with oversight from Marine and Coastal Authority not Department of Environment and Primary Industries Local councils may be a Coast Committee where not practical for a community-based one or maybe represented on a Coast Committee or regional marine and coastal advisory committee

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Appendix 1: The Australian government and coastal nature conservation

The EPBC Act

The Australian government can influence the conservation of coastal nature through the:

- environmental impact assessment of projects with potential to impact on Matters of National Environmental Significance
- legislative listing of threatened plant and animal species, ecological communities and threatening processes found along the coast
- decisions made about the funding of regional infrastructure projects including ports and roads
- research into coastal vulnerability to climate change
- development of coastal policies such as the National Cooperative Approach to Integrated Coastal Zone Management.

The key piece of federal legislation that serves to engage the federal government in nature conservation on the Victorian coast is the *Environment Protection and Biodiversity Conservation Act 1999* (*EPBC Act*). Under the act the federal government can become involved through the referral of actions that may impact on Matters of National Environmental Significance, which includes listed threatened species, communities and threatening processes. When a species is listed as either Vulnerable or Endangered, a recovery plan must be prepared under Part 13, Division 5 of the *EPBC Act*.

Table 42 lists those species found along the Victorian coast listed as Critically Endangered, Endangered and Vulnerable under the *EPBC Act*. This table has been compiled using the Victorian advisory lists for threatened invertebrates, vertebrates and plants[467]. These species were then cross-referenced with the *EPBC Act* listings. There are no Victorian coastal ecological communities listed in schedules of the *EPBC Act*.

The table shows that 21 plant species and 28 animal species on the Victorian advisory lists are listed under the *EPBC Act.* Of the 21 plant species, one is Critically Endangered, 11 are Endangered and 9 are Vulnerable. Of the 28 animal species, two are Critically Endangered, 11 are Endangered and 15 are Vulnerable. Sixteen of the listed plant species and 13 of the listed animal species have had plans prepared for their recovery.

As was shown in the discussion about the listing process under Victoria's *FFG Act*, government agencies with responsibility for nature conservation have inadequate skills, personnel and resources to meet their legislative responsibilities. This also applies to implementation of the *EPBC Act*, and explains why there is a gap between the number of listed species and the number of prepared recovery plans. This was highlighted by the Australian Conservation Foundation's submission to the Senate inquiry into the *EPBC Act* in 2008:

> *This underinvestment affects just about every aspect of the policy response required if Australia is to genuinely address its environmental malaise–from a better understanding of our ecosystems through scientific research and baseline data capture to fostering more sustainable land use by landholders, large scale ecosystem restoration and expansion of successful Indigenous natural resource management initiatives*[468].

In 2007, the Australian National Audit Office itemised[469] the impacts of this under-investment, which included:

- excessive delays in listing threatened species, with an average processing time for fish species of four years
- only 22% of the 583 threatened species listed had recovery plans in place by the required deadlines
- a backlog of over 700 ecological communities was awaiting assessment, creating a risk that 'nationally significant ecological communities eligible for listing will not be listed in a reasonable timeframe'[470]
- DEWHA [now Department of Environment] did not have sufficient information to know whether conditions on approved actions were being met.

The future conservation of nature along the Victorian coast will require integrated and collaborative actions between all levels of government and must start with increases in the resourcing of nature conservation programs, especially in the area of threatened species listings and the preparation and implementation of recovery plans under the *EPBC Act*.

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[467] Department of Sustainability and Environment 2005, *Advisory list of rare or threatened plants in Victoria-2005,* Department of Sustainability and Environment, Melbourne. id. 2009, *Advisory list of threatened invertebrate fauna in Victoria-2009;* id. 2013, *Advisory list of threatened vertebrate fauna in Victoria-2013*

[468] Australian Conservation Foundation 2008, *Submission to the Senate Standing Committee on Environment, Communications and the Arts Inquiry into the operation of the Environment Protection and Biodiversity Conservation Act 1999*, September 2008, Australian Conservation Foundation, Melbourne

[469] Australian National Audit Office 2007, *The conservation and protection of national threatened species and ecological communities*, ANAO Report No. 31 2006-2007, available at www.anao.gov.au, Executive summary, pp. 13–28

[470] ibid., p. 18

Table 42 Threatened species along the Victorian coast listed under the *EPBC Act*

Common name	Species name	EPBC Act	Recovery Plan
Plants			
Adamson's blown grass	*Lachnagrostis adamsoni*	E	Yes
Austral toad-flax	*Thesium austral*	V	No
Basalt peppercress	Lepidium hyssopifolium	E	Yes
Button wrinklewort	*Rutidosis leptorhynchoides*	E	Yes
Clover glycine	*Glycine latrobeana*	V	Yes
Coast dandelion	*Taraxacum cygnorum*	V	Yes
Dwarf kerrawang	*Rulingia prostrate*	E	Yes
Eastern spider-orchid	*Caladenia fragrantissima* subsp. *orientalis*	E	Yes
Fragrant leek-orchid	*Prasophyllum suaveolens*	E	Yes
French Island spider-orchid	*Caladenia insularis*	V	Yes
Large-fruit fireweed	*Senecio macrocarpus*	V	Yes
Leafless tongue-orchid	*Cryptostylis hunteriana*	V	No
Leafy greenhood	*Pterostylis cucullata*	V	Yes
Maroon leek-orchid	*Prasophyllum frenchii*	E	Yes
Mellblom's spider-orchid	*Caladenia hastate*	E	Yes
Metallic sun-orchid	*Thelymitra epipactoides*	E	Yes
Purple eyebright	*Euphrasia collina* ssp. *muelleri*	E	Yes
Small golden moths	Diuris sp. aff. lanceolata (Laverton)	E	Yes
Spiny rice-flower	*Pimelea spinescens* subsp. *spinescens*	CR	No
Square raspwort	*Haloragis exalata* subsp. *exalata* var. *exalata*	V	No
Swamp greenhood	*Pterostylis tenuissima*	V	No
Animals			
Australasian bittern	*Botaurus poiciloptilus*	E	No
Australian grayling	*Prototroctes maraena*	V	Yes
Dwarf galaxias (Barwon River to Mitchell River)	*Galaxiella pusilla*	V	Yes
Eastern bristlebird	*Dasyornis brachypterus brachypterus*	E	No
Fairy prion	*Pachyptila turtur**	V	Yes
Fairy tern	*Sterna nereis nereis*	V	No
Green and golden bell frog	*Litoria aurea*	V	No
Grey-headed albatross	*Diomedea chrysostoma*	E	No
Grey-headed flying-fox	*Pteropus policephalus*	V	No
Growling grass frog	*Litoria raniformis*	E	No
Heath mouse	*Pseudomys shortridgei*	V	No
Leathery turtle	*Dermochelys coriacea*	V	No
Long-nosed potoroo	*Potorous tridactylus tridactylus*	V	No
Orange-bellied parrot	*Neophema chrysogaster*	CR	Yes
Red-tailed black-cockatoo	*Calyptorhynchus banksii*	E	No
Regent honeyeater	*Xanthomyza Phrygia*	E	Yes
Shy albatross	*Diomedea cauta*	V	Yes
Smoky mouse	*Pseudomys fumeus*	E	Yes
Southern bent-wing bat	*Miniopterus schreibersii bassanii*	CR	No
Southern brown bandicoot	*Isoodon obesulus obesulus*	E	No
Southern giant-petrel	*Macronectes giganteus*	E	Yes
Spot-tailed quoll	*Dasyurus maculatus*	E	No
Striped legless lizard	*Delma impar*	V	Yes
Swift parrot	*Lathamus discolor*	E	Yes
Variegated pygmy perch	*Nannopercha variegata*	V	Yes
Wandering albatross	*Diomedea exulans*	V	Yes
Yarra pygmy perch	*Nannopercha obscura*	V	Yes
Yellow-nosed albatross	*Thalassarche chlororhynchos*	V	No

Source: Department of Sustainability and Environment 2005, *Advisory list of rare or threatened plants in Victoria-2005,* Department of Sustainability and Environment, Melbourne. id. 2009, *Advisory list of threatened invertebrate fauna in Victoria-200,*. id. 2013, *Advisory list of threatened vertebrate fauna in Victoria-2013*. Federal Department of Environment website, http://www.environment.gov.au/legislation/environment-protection-and-biodiversity-conservation-act/about-epbc-act/epbc-act-lists

Appendix 2 Review of the Draft Victorian coastal strategy 2013

Table 43 Review of 'Appreciating and valuing the coast'

Desired outcomes, policies and actions	
Desired Outcome *Improved methods for valuing ecosystem services are used to allow the balance between competing coastal and marine values to be negotiated transparently and systematically* **Improved methods for conducting cost-benefit analyses for coastal developments will be initiated that are consistent with world's best practice, ensuring that the economic benefits and costs are accurately, objectively and transparently assessed and infused with the valuation of natural ecosystem services to reach and exceed minimum conservation benchmarks**	
Policy for decision making	**Actions**
1. **Calculate and include** *Consider* ecosystem service values of coastal and marine environments in decision making. This will require a description and adequate assessment of the link between the function of natural systems and the goods or services it provides. **2. Ecosystem service values will be infused within an objective, rigorous and transparent methodology and process for the cost-benefit analysis of coastal commercial and public infrastructure projects.**	1. Develop and implement environmental value measurement systems and environmental accounts that are consistent with international systems to: a. establish clear standards for reporting on the condition and value (natural, social, cultural and economic) of coastal and marine assets and identifying and explaining changes over time b. *assist in* **ensure high prioritisation is given to** *of* the allocation of resources to coastal and marine environmental activities **in the cost-benefit analyses of coastal development projects.** **2. Insert a new clause into the State Planning Policy Framework that outlines the objectives, methodology and process for the cost-benefit analyses to be conducted for coastal commercial and public infrastructure projects that should include the valuation of ecosystem services.** **3. Establish coastal conservation benchmarks to ensure that all remnant EVCs along the coast are given protection.**

Table 44 Review of 'Cultural heritage'

Desired outcomes, policies and actions	
Desired outcome Significant Aboriginal and Non-Aboriginal cultural heritage places are identified and protected, where appropriate. Victorians work in partnership to take account of local knowledge and to care for cultural heritage on the coast.	
Policy for decision making	**Actions**
1. Significant Aboriginal and non-Aboriginal cultural heritage places and landscapes will be identified and *where appropriate* protected. 2. Traditional knowledge will be integrated into coastal planning and management in partnership with Aboriginal communities (particularly through the use of Coastal Action Plans and Coastal Management Plans). 3. Where applicable, coastal Crown land parks and reserves will be co-managed with Traditional Owners 4. While maintaining the heritage and character values encourage the re-use and interpretation of built heritage places (within their horizontal and vertical footprints) for community use and coastal tourism **rather than allowing new structures.** **5. Existing cultural heritage buildings on Crown land will be, where possible, adaptively re-used to satisfy visitor needs. No new buildings will be constructed.** **6. The cultural heritage of lighthouse reserves will be given greater protection by incorporating them within adjoining national parks.**	1. Progressively update asset and heritage registers and local planning schemes following comprehensive identification, documentation and assessment of sites on the coast and underwater. In particular, undertake assessment of vulnerability of heritage places to impacts of a changing climate **and develop options for their protection and conservation.** 2. Pilot three indigenous knowledge hubs, to be maintained by Traditional Owners/RAPs involved in the co-management of public land, for the recording and sharing of local/regional traditional knowledge.

Table 45 Review of 'Marine environments'

Desired outcomes, policies and actions	
Desired Outcome • An integrated and holistic approach is used for the **protection**, management and planning of the marine environment • Coastal waters, estuaries, wetlands and the terrestrial environment are **protected and** managed to promote healthy marine ecosystems that support connectivity and adaptation **and build resilience to climate change**	
Policy for decision making	**Actions**
1. *Those features of m***M**arine areas *that* provide significant environmental, social, cultural and economic value**s and** will be protected, managed and planned **using an ecologically sustainable and integrated approach.** 2. The threats (including cumulative and combined) to marine environments will be assessed and addressed at the scale most appropriate for system-wide management. 3. All dredging **projects** will meet best practice requirements **after a rigorous, objective and transparent cost-benefit analysis has indicated they can proceed.**	1. Develop a framework for an integrated management approach to Victoria's marine environments **that is strategically linked with that for coastal and catchment areas**. This would include developing agreed **operational and measurable** objectives **with actions, timelines and targets for maintaining and improving** the health and **ensuring the ecologically sustainable** use of marine environments across all involved agencies and spatial maps that identify important environmental, social, cultural and economic features of marine environments. The maps are **to be used in a reformed spatial planning and management framework for Victoria's coastal**

4. A comprehensive, adequate and representative system of well-managed Marine National Parks and Sanctuaries will be maintained, monitored **and expanded where gaps in the protection of marine and coastal habitats are identified by a new independent inquiry into marine and coastal biodiversity across Victoria's coastal waters and coastal crown land.** **5. The resources allocated to marine scientific research will be substantially increased to fill identified knowledge gaps. These include the likely changes to coastal processes caused by climate change, how this will affect coastal nature and infrastructure in the future, and what role marine ecosystems can play in climate change mitigation and adaptation. This knowledge will be used to underpin ecologically sustainable marine protection, planning, management and use.** **6. The planning and management of marine waters will be integrated with that for coastal and catchment areas.**	**waters including bays and estuaries.** **2a. Establish Victoria's Coastal Crown Land and Waters Reserve to cover terrestrial crown land and all coastal waters, including bays and estuaries.** **2b. Establish the Marine and Coastal Authority to develop spatial marine plans and oversee the integrated protection, planning and management of the Coastal Crown Land and Waters Reserve under the new framework.** 3. As part of the development of the integrated and spatial **marine and coastal plan**, *integrated Coastal Action Plans* conduct a systematic biodiversity assessment program across Victoria's coastal waters and coastal crown land that maps all habitats at a fine scale. Include within this mapping exercise *identify* all marine and coastal areas **and** their *with significant* environmental, social, cultural and economic values. *Also map*, marine ecological and oceanographic processes, and potential threats. **Apply the spatial maps in a spatial planning process with operational objectives, management zones, measurable targets and clear timelines for action**, 4. Implement agreed responses to the VEAC Marine Investigation into the **management** performance *and management* of Victoria's marine protected areas and **the** ongoing threats or challenges to their effective management. 5. Update key policies and guidelines including: a. best practice environmental guidelines for dredging to reflect new benchmarks in environmental controls for dredging activities and relevant national guidelines b. protocols for detecting, reporting and responding to marine pest incursions **c. criteria for ecologically sustainable commercial and recreational fishing** **6. Develop criteria for assessing the boat carrying capacity of bays and estuaries.** 7. Develop improved understanding about the amount of carbon stored in Victoria's marine and coastal ecosystems (DEPI) **and ensure that this is included in any cost-benefit analyses of coastal and marine development projects** **8. Increase management resources to Parks Victoria to enable the agency to improve the management of marine national parks and sanctuaries.** **9. Improve marine and coastal research and science by developing standardised data collection protocols and a taxonomy service to allow for species identification and resourcing of a long-term scientific research and monitoring program.**

Table 46 Review of 'Wetlands and estuaries'

Desired outcomes, policies and actions	
Desired Outcome • The ecological condition of coastal wetlands and estuaries, including Ramsar sites is protected and improved • Coastal waters, estuaries, wetlands are managed in ways that support their natural connectivity thereby ensuring the future health and resilience of wetlands and estuaries	
Policy for decision making	**Actions**
1. The integrated management of wetland, rivers and estuaries will be guided by the Victorian Waterway Management Strategy 2013. 2. The impact of catchment pressures on priority wetlands and estuaries will be reduced by: a. providing adequate freshwater flows to protect, and where possible improve, the health of wetlands and estuaries b. minimising or avoiding pollution from new developments c. reducing nutrient and sediment loads from existing developments 3. Planning decisions should consider the impact of development on significant wetlands and estuaries in particular, linkages across land tenure, the potential to fragment connected habitats, and impact on their future adaption requirements. 4. Management of wetlands and estuaries will be encouraged by providing best practice guidelines, promoting the best available science and when necessary using regulations. This will include using: a. Estuary Entrance Management System to guide decision-making about the artificial opening of an estuary mouth b. Environmental Water Quality Guidelines for Victorian Riverine Estuaries 2010 to identify management actions to improve estuary health c. Estuary Environmental Flows Assessment Methodology to improve our understanding of the environmental flow requirements of estuaries and the operational management of environmental water allocations fishing regulations and education to support **ecologically** sustainable harvesting. **5. The restoration of formerly drained coastal wetland areas**	1. Regional Coastal Action Plans will identify significant wetlands and estuaries that are vulnerable to the potential impacts of a changing climate **and catchment development.** **2. Recognise the federal aquatic significance assessment process and adopt it for use in land management decision-making processes.** **3. Provide resources to coastal municipalities to investigate the removal of levees ands sea walls interrupting marine and coastal processes.** **4. Establish minimum benchmarks for the quantity and quality of freshwater flows entering estuaries.** **5. Establish a comprehensive scientific monitoring program in Victoria's estuaries** and ensure this underpins catchment, coastal and marine planning and management. **6. Subject land development projects in the catchments of estuaries to environmental impact assessments.** **7. Establish Estuary Management Plans for each of Victoria's 100+ estuaries to address pressures from population growth, changes in catchment land use, urban encroachment, competing and conflicting uses, declining water quality, loss of habitat, divided agency responsibilities and a changing climate.** **8. Ensure all catchment management authorities use the Estuary Entrance Management System when they are assessing artificial openings of estuaries.** **9. Prepare and implement a State Environment Protection Policy for Victoria's 100+ estuaries.** **10. Overhaul the management of estuaries to substantively reduce**

on coastal crown land reserves and abutting private land will be a key priority and supported with public funding. **6. Canal estates and the drainage of estuaries will be prohibited in Victoria.** **7. The removal of levees and sea walls that prevent tidal movement into saltmarsh, mangroves and other low-lying wetland areas will be encouraged and supported with public funding.** **8. Sufficient scientific expertise and resources will be provided to overcome data deficiencies on estuaries and apply that new knowledge to enhance estuary protection and management.**	**the number of agencies involved to improve management effectiveness.**

Table 47 Review of 'Onshore environments'

Desired outcomes, policies and actions	
Desired Outcome • Improved health, resilience and connectivity of onshore coastal environments across land tenures • A well-managed, comprehensive, adequate and representative system of coastal parks and reserves is complemented by off-reserve conservation actions	
Policy for decision making	**Actions**

1. The natural capital (ecosystem services) provided by onshore environments will be **given the highest priority** *considered* **in the cost-benefit analyses used** in assessing development proposals for coastal Crown land; *it will also be considered* **and** in decision-making about adaptation to a changing climate.
2. Land owners will be encouraged to revegetate and landscape their **coastal land,** using species of local provenance, and to eradicate environmental weeds on their property.
3. Illegal foreshore vegetation removal and vandalism, illegal access and encroachment of private property and gardens onto coastal Crown land **and illegal dumping** will be addressed through education and enforcement programs.
4. Public infrastructure projects such as roads, trails, utilities and car parks will be designed and located to avoid habitat loss and encourage the restoration of onshore environments.
5. A Coastal Private Land Conservation Program will be established to support collaborative projects between the Victorian government, local governments, private landholders, the local community and Trust for Nature to retain and/or restore coastal nature on private land. Under these arrangements, the state government will cover the cost to landholders of establishing and maintaining the new vegetation.
6. Coastal planners and land managers will work with private landholders to identify coastal nature priority areas for protection and restoration and then conserve and restore them.
7. A range of planning tools will be drawn on to best provide for coastal nature protection and its adaptation to predicted sea level rise. Such planning tools will include zones and overlays, protected biolinks and the rezoning of land, where necessary, to support coastal nature conservation.
8. Sufficient resources will be provided to park managers and adjoining landholders to fence and restore degraded sites, control illegal stock entry, eradicate and manage invasive species, better manage horse riding and other disturbance of ground nesting animals, and establish wildlife corridors.
9. The protection levels of coastal crown land reserves that contain coastal nature will be enhanced by their inclusion in adjoining or adjacent coastal and national parks.
10. The Rural Conservation Zone between existing townships on the Great Ocean Road will not be used to allow resort and hotel developments or the installation of wind turbines on private land.
11. Commercial accommodation developments, such as hotels and resorts, will not be allowed within the coastal conservation estate
12. Resourcing of coastal nature conservation programs will be increased, especially in the area of threatened ecological communities, species listings and the preparation and implementation of recovery plans under the *EPBC Act*, and actions statements under the *Flora and Fauna Guarantee Act.*
13. Sufficient funding will be provided for programs to remove or minimise the impacts of invasive species in coastal conservation and crown land reserves. Such funding will ensure that there are sufficient trained personnel and support for collaboration between public land managers and the owners of adjacent land.
14. All coastal conservation reserves and coastal crown land reserves will have management plans and publicly accessible
	1. Coastal Action Plans and park management plans will identify coastal areas of ecological significance at regional levels that require management.
	2. Make use of existing methodologies (developed by DEPI) to determine natural coastal assets across the state. Incorporate this knowledge into preparation of the state coastal risk plan.
	3. Decision-making tools and market-based instruments, such as a coastal tender program, will be developed in partnership with landowners to protect existing habitats and to establish habitat linkages **on private land** and between Crown land and private land.
	4. Provide adequate funds to maintain and expand the CoastalTender and the Saltmarsh Protection Project.
	5. Avoid the removal of indigenous coastal vegetation on coastal crown land reserves and private land abutting those reserves or the high-water mark.
	6. Replace existing exotic vegetation on coastal crown land reserves with indigenous vegetation.
	7. Establish a taskforce to identify the location of coastal nature protection and restoration priority areas and to oversee the process for increasing their protection from existing and future threats.
	8. Extend coastal conservation or crown land reserves to include abutting or nearby unreserved or reserved crown land, including state forest, that have coastal and hinterland EVCs present.
	9. Amend the Victorian Planning Provisions to strengthen the Environmental Significance Overlay within the State Planning Policy Framework to include a mandatory 100 m buffer zone on private land abutting the high water mark, abutting a coastal conservation reserve or coastal reserve, stream banks and estuaries. The buffer zone would limit development immediately adjacent to those reserves and be used to encourage vegetation restoration where clearing has occurred, and a reduction in the intensity of land uses adjacent to the reserve. The Shire of Moyne Environmental Significance Overlay shoud be used as a model.
	10. Independently review all access tracks, car parks, roads, buildings, utilities and infrastructure within and adjacent to coastal conservation and crown land reserves in order to relocate, reduce in number and better manage coastal infrastructure to minimise impacts on the natural values of the reserves.
	11. Assist coastal nature to adapt to sea level rise and other impacts of climate change by:
	• **using a range of planning tools including:**
	  • **protected biolinks to link with current conservation areas**
	  • **rezoning areas that are likely to support coastal nature adaptation inland from the predicted new coastline**
	  • **overlays such as the Environmental Significance Overlay and Public Acquisition Overlay to protect the area behind the conservation area from development so that nature can retreat and adapt.**
	• **conducting comprehensive mapping of current settlements, coastal nature protection and enhancement priority areas, and predicted sea level rise for the Victorian coastline**
	• **combining this with mapping of where coastal settlements and nature can move to as a result of sea level rise.**
	12. Declare as noxious weeds all invasive weeds of high risk to coastal nature and initiate adequately resourced eradication and control programs on public and private land along the coast.
	13. Amend the *Flora and Fauna Guarantee Act* to:
	• **improve and accelerate the listing process**

web-based information about their values. **15. Park managers will work with private landholders to identify and fence boundaries to prevent illegal access by livestock, horses and unauthorised commercial and recreational vehicles. Public funding will support these works.** **16. The conservation of 100% of the remaining coverage of each coastal EVC on coastal crown land reserves will be advanced by either expanding the coastal conservation estate to include those EVCs or by improving the management of those reserves.**	• **provide a greater focus on ecosystems rather than individual species** • **develop a state biodiversity strategy** • **make better use of critical habitat determinations, interim conservation orders and other conservation measures** • **establish a regulatory framework appropriate to rapid climate change** • **provide adequate resources to implement the act** • **publicly release data on government orders, offences, permits and unprotected wildlife, as well as lists of conservation reserves and game reserves and their management plans** • **prepare a compliance and enforcement policy and annual reporting on its implementation.** **14. Amend provisions in the State Planning Policy Framework to ensure that the clearing of coastal EVC regrowth requires a permit.** **15. Strengthen the decision guidelines within the clauses of the State Planning Policy Framework, where they apply to coastal areas, to encourage the restoration and revegetation of EVCs along the coast on public and private land.** **16. Ensure that coastal statutory zoning and overlays aim to allow coastal nature to remain in situ for as long as possible, and then assist its retreat to inland areas once sea level rise begins.** **17. Ensure that private landholders have access to sufficient resources to restore the indigenous vegetation on their properties.** **18. Strengthen the permitted clearing regulations to avoid the clearance of coastal nature.** **19. Apply the overlays for Environmental Significance, Significant Landscape and Vegetation Protection consistently to coastal public and private land.**

Table 48 Review of 'Catchments and water quality'

Desired outcomes, policies and actions	

Desired Outcome
• Strategic planning for catchment, coastal and marine management, and the prioritisation of on-ground works is integrated through improved planning and management **frameworks and processes** and collaboration between relevant agencies
• The quality **and quantity** of water entering wetlands, estuaries and marine waters is improved on a priority basis through:
  • improved wastewater and stormwater treatment and re-use, with a focus on urban growth areas in coastal catchments promotion of changes in land use and farming
  • practices to reduce the impact of catchment discharges which have adverse effects on the health of coastal and marine ecosystems
  • **establishing an adaptive benchmark for the volume and quality of flows entering the estuary that has to be met by catchment management authorities**	

Policy for decision making	**Actions**
1. Regional catchment strategies, regional waterway health strategies, and Regional Coastal Action Plans will have regard to the physical interactions between catchment and coastal processes and align management objectives**,** *and* priorities **and actions** for improving marine, estuarine and waterway health. 2. New and renewal urban developments will be planned and designed to *reduce* **avoid** the effects of wastewater and stormwater discharge on marine and estuarine environments. **3. Existing urban development will be retrofitted over time for water-sensitive design to reduce the impact of wastewater and stormwater discharges.**	1. Update guidelines and requirements including: a. urban stormwater management for new urban development, and facilitate and support best practice b. on-site wastewater management in sensitive areas of the coast c. State Environment Protection Policy (Waters of Victoria) d. Environmental Management Plan for Port Phillip Bay. 2. Review and revise regional response plans for events (such as mass fish deaths and algal blooms) in bays and estuaries and on the open coast. 3. Implement the Port Philip Bay marine algal bloom response protocol from A Cleaner Yarra River and Port Phillip Bay Plan of Action. 4. Expand the scope of waterway health strategies to include water quality **and quantity** from catchment inputs into bays and inlets. **5. Establish a comprehensive bays and estuaries monitoring program.** **6. Significantly reduce the number of stormwater outlets discharging into Port Phillip Bay by publicly funding water sensitive design projects to manage and reduce the impacts of stormwater pollution.**

Table 49 Review of 'Supporting community participation'

Desired outcomes, policies and actions	
Desired Outcome • Local communities actively participate in coastal and marine management and planning • Local communities groups and volunteers are adequately supported and recognised for their involvement in caring for and managing the marine and coastal environment	
Policy for decision making	**Actions**
1. Participation of individuals and community groups in the care, protection, **planning** and management of the marine and coastal environment will be encouraged and supported **with adequate resourcing** and statewide Coastcare Coordinators. **2.The information collected and collated from citizen science monitoring activities will be included in marine and coastal planning and management decision-making processes.**	1. Implement the Coastcare Victoria Strategy 2011–2015 and develop new pathways for coastal volunteers to continue their work and improve the coast for the benefit of all Victorians. 2. Provide opportunities for networking and knowledge exchange between state, regional and local coastal communities, planners, managers and other stakeholders. 3. Recognise and reward community leadership and innovation through annual coastal awards of excellence.

	4. Undertake longitudinal social research on community attitudes to Victorian coastal and marine environments, conservation and management, with an expanded emphasis on the extent and nature of community valuation of the coast, **and use the results to inform coastal community education and engagement programs.** **5. Develop mechanisms to encourage community engagement in remote coastal areas where there are currently few volunteers.** **6. Ensure that there are ongoing and adequate funds to maintain and expand the Coastcare program and to increase the number of Coastcare coordinators.**

Table 50 Review of 'Sustainable coastal settlements'

Desired outcomes, policies and actions	
Desired Outcome • Sustainable coastal settlements are planned to support a**n ecologically** sustainable economy, a healthy environment, and strong social and cultural values • **Coastal settlements are consolidated within existing township boundaries and planning frameworks ensure retention of coastal vegetation on private and public coastal land between the**m *Green breaks are used between coastal settlements* to preserve the character of the coastline	
Policy for decision making	**Actions**
1. Clear settlement boundaries will be identified around coastal settlements to ensure that growth in coastal areas is planned and coastal values protected. Where no settlement boundary is identified, the extent of a settlement will be defined by the extent of existing urban zoned land and any land identified on a plan in the planning scheme for future urban settlement. 2. Coastal settlements and growth will be appropriately planned and managed by: • supporting a network of diverse settlements as outlined within the Regional Growth Plans to provide for a broad range of opportunities and diversity • implementing and reviewing coastal settlement boundaries as part of the settlement planning process, having regard to the best available information on sea-level rise and the risks and impacts of a changing climate • facilitating growth into areas that will not threaten wetlands, **coastal vegetation** and estuaries • directing residential, other urban development and infrastructure within defined settlement boundaries of existing settlements that are capable of accommodating growth • encouraging urban renewal and redevelopment opportunities within existing settlements to **avoid** *reduce* the need to expand settlements. 4. Elements such as topography, estuaries, wetlands, native vegetation, areas of environmental or landscape significance and sensitivity and areas susceptible to flooding (both river and coastal inundation), landslip, erosion, coastal acid sulfate soils, salinity, wildfire or geotechnical risk must be considered when defining coastal settlement boundaries. 5. Existing non-urban breaks between all coastal settlements will be maintained to support community identity, inspire a sense of place and limit urban growth. 6. Linear development along the coastal edge and major transport routes and within rural landscapes will be avoided in order to preserve the areas between settlements for non-urban use. 7. Non-urban uses, **where ecologically sustainable**, between coastal settlements will be retained and visually significant landscapes, views and vistas will be protected. 8. Coastal acid sulfate soils (CASS) will not be deliberately disturbed and any development proposed near or on potential CASS must demonstrate that it will take all steps to avoid any disturbance by applying the best practice guidelines for managing CASS. 9. The development of new canal estates will be prohibited in order to protect coastal and estuarine environments.	1. Revise the State Planning Policy Framework (SPPF) in the Victorian Planning Provisions (VPP) to include the coastal policy statements contained in the Victorian Coastal Strategy 2013. **2. Establish a set of criteria to measure the ecological sustainability of coastal settlements** and apply these to each coastal settlement to identify gaps in their ecological sustainability and actions to address these.

Table 51 Review of 'Coastal hazards and natural coastal processes'

Desired outcomes, policies and actions	
Desired Outcome • Natural coastal processes are adopted as the preferred form of defense against possible impacts of a changing climate • New development (and alterations to existing development) avoids areas subject to coastal hazards and does not interfere with natural coastal processes	
Policy for decision making	**Actions**
1. Plan for possible sea level rise of 0.8 metres by 2100, and allow for the combined effects of tides, storm surges, coastal processes and local conditions such as topography and geology when assessing risks and coastal impacts associated with climate change. 2. In planning for possible sea level rise, an increase of 0.2 metres	1. Share the findings and learning from the local hazards assessment pilot projects and identify further areas across Victoria where this process can be used. 2. Identify areas of coastal land at risk of loss from erosion and inundation in Regional Coastal Action Plans and consider adaptation

over current 1 in 100 year flood levels by 2040 may be used for new development in close proximity to existing development (urban infill) 3. For new greenfield development outside of town boundaries, plan for not less than 0.8metre sea level rise by 2100. 4. *Consider* The risks associated with climate change **will be addressed** in planning and management decision-making processes. 5. Ensure that development or protective works seeking to respond to coastal hazard risks avoids detrimental impacts on coastal processes. 6. Avoid development in sand dunes, in low lying coastal areas and in identified coastal hazard areas susceptible to inundation (both river and coastal), erosion, landslip/ landslide, coastal acid sulfate soils, bushfire and geotechnical risk. 7. Use of the coast and the placement and life of assets, both public and private, will respect the natural dynamics of the coast. 8. The Crown does not have an obligation to reduce the impacts of coastal hazards, sea level rise and other natural processes on private property. 9. All protective works will aim to **avoid or** minimise detrimental impacts on coastal processes and neighbouring properties. 10. Regional and local adaptation plans will enable the strategic management of coastal hazards to private property. 11. Investment in coastal infrastructure, will be based on a life cycle planning approach that takes account of: a. projected future erosion and inundation patterns – this planning will incorporate scope for the removal and replacement of structures as may be necessary b. cost benefit analysis that takes into account social, environmental and economic values **and impacts** c. future operating and maintenance costs and accountabilities. **12. The design, location and purpose of all existing buildings on coastal reserves will be reviewed with a view to establishing single multi-purpose building rather than multiple single-purpose buildings e.g. surf life saving, sailing and angling club buildings when they are being replaced or removed. This will ensure there are fewer structures at risk, there is more publicly usable open space on coastal crown land, and opportunities will then exist for restoration of indigenous vegetation.** **13. Legislative, institutional, policy and strategic and statutory planning settings will ensure the objective and transparent analysis of the protection and planned retreat responses to climate change.**	responses **including planned retreat.** 3. Develop a State Coastal Risk Plan to strategically and consistently identify and prioritise coastal hazards and manage risks to key state coastal assets. 4. Explore management options for Crown land that may be eroded away – thereby limiting public access to the coast. **5. Review the siting of existing coastal structures that limit the adaptation of coastal habitats to climate change.** **6. Minimise the number of buildings and other structures on or adjacent to coastal crown land reserves vulnerable to sea level rise to reduce the need for defensive infrastructure.** **7. Review and update coastal hazard risk assessments on a regular basis.**

Table 52 Review of 'Balancing decision-making'

Desired outcomes, policies and actions	
Desired Outcome • Local communities actively participate in coastal and marine management and planning • Integrated Coastal Action Plans balancing state-wide policies with regional and local priorities • **The protection and restoration of coastal nature underpins decision making on coastal planning and management**	
Policy for decision making	**Actions**
1. Local communities, managers and planners will be involved in the preparation of regional and local strategic plans that set the aspirations and priorities for specific areas. **2. Coastal governance models will be improved to encourage effective community engagement in coastal management by the merger of some coastal crown land reserve committees to:** • **significantly reduce the number of management bodies responsible for the management of coastal crown land reserves** • **simplify and provide a clear direction for reserve management and also reduce the number and cost of coastal management plans that need preparation** • **enable stronger integration between the Victorian coastal strategy, regional coastal strategies and the coastal management plans** • **enable stronger integration between the Victorian coastal strategy, regional coastal strategies and the coastal reserve management plan** • **assist the integration of planning and management along the coastal sections.**	*1. Develop business models based on sustainable revenue streams with coastal managers.* **1. Provide sufficient resources to committees of management to ensure they do not have to develop and damage the coastal reserve to generate income.** **2. Increase the number of coastal regions in line with the boundaries of catchment management authorities to encourage more localised community engagement.**

Table 53 Review of 'Research and knowledge sharing'

Desired outcomes, policies and actions
Desired Outcome • Increased understanding and identification of coastal and marine **ecosystems, impacts and** issues through research and monitoring including

through community programs • Scientists, policymakers and decision makers exchange knowledge in ways that ensure our efforts on the coast are targeted, strategic and efficient	
Policy for decision making	**Actions**
1. Independent technical advice will be sourced from a diverse network of experts to monitor emerging issues and assist with effective coastal, estuarine and marine **planning and** management in Victoria. 2. Support the operation of the Victorian Coastal Council science panel in providing advice from a 'whole of coast' perspective. 3. Promote on-going regional coordination and communication mechanisms to maximise knowledge transfer and practice around coastal and marine management and planning.	1. Develop or promote the use of existing central platforms and databases for coastal planners and managers that brings together relevant marine, coastal and administrative data (VCC, DEPI). 2. Encourage collaboration between researchers and managers to review research needs for coastal, estuarine and marine ecosystems and key ecological processes. **3a. Undertake research into the long-term ecological sustainability of marine and coastal resource use.** **3b. Establish criteria for ecologically sustainable development that can be used to assess proposed coastal developments.** **3c. Overhaul the processes for identifying coastal-dependent uses and the concept of net community benefit.** **4. Resource a significant increase in marine and coastal scientific research to underpin regional marine and coastal planning, protection and management.** **5. Map all coastal nature at a fine scale for use in ensuring its protection and restoration.**

Table 54 Review of 'Emergency management'

Desired outcomes, policies and actions	
Desired Outcome Coastal and marine planners and managers are well prepared for emergency events and are capable of preventing, minimising, preparing for, responding to and recovering from these events	
Policy for decision making	**Actions**
1. With an increased focus on risk, coastal and marine planners and managers will collaborate with stakeholders to facilitate an all-hazards all-agencies approach to emergency management planning on the coast. 2. Responsible parties will support community-based planning to consider a range of coastal risk factors and vulnerabilities and identify how to mitigate those risks. **3. The choice of tools used to respond to the emergency will ensure that the response does not accentuate the environmental risk from the initial emergency e.g. oil spill clean up.** **4. The planning for coastal development will work to limit development that increases the environmental risk to marine and coastal ecosystems.**	**1. Establish environmental protocols for the training and operations of emergency services involved in coastal and marine ecosystems.**

Table 55 Review of 'Siting and design of buildings and infrastructure on the coast'

Desired outcomes, policies and actions	
Desired Outcome • New buildings and infrastructure exhibit excellence in siting and design which complement, or integrates with, the coastal landscape and setting, while also avoiding environmental impacts • The built environment on coastal Crown land is confined to structures *providing significant community benefit and to those* whose functionality depends on them being near the water	
Policy for decision making	**Actions**
1. Ensure the provision of buildings and infrastructure on coastal Crown land is confined to structures *providing significant community benefit and to those* whose functionality depends on them being near the water. 2. In considering proposals the 'Criteria for Use and Development on coastal Crown land' be applied as appropriate. 3. **Coastal-dependent** buildings and infrastructure on coastal Crown land will be located in *activity nodes and* recreation nodes, consistent with any relevant master plan **and kept to a minimum**. Existing buildings and infrastructure that do not need to be located on the coast will*, to the extent practical*, be relocated away from coastal Crown land *when suitable opportunities arise*. **Any modifications to the existing buildings should not extend their vertical or horizontal footprint unless that extension allows an equal reduction of the footprints of other existing buildings on the land.** 4. Leasing and licensing agreements on coastal Crown land (including renewals) must **ensure** *consider how* they *can* contribute to achieving the outcomes and policies of the Victorian Coastal Strategy. 5. Clear leasing and licensing agreements will be established for **ecologically sustainable** and **coastally dependent** commercial uses of coastal Crown **land and the adaptive re-use of existing buildings**. Associated rentals, fees, rates and taxes will be competitively neutral to discourage the use of coastal Crown land as a cheap alternative to private land. The revenue raised will be directed towards protecting, developing and maintaining the environment and infrastructure in accordance with approved management plans. 6. The approvals processes for new developments on private land in	1. Revise the Siting and Design Guidelines for Structures on the Victorian Coast to provide contemporary criteria and improved design guidance for coastal development. **2. Remove from each coastal reserve any infrastructure that is not dependent on a coastal location and restore the land with indigenous vegetation or use it to increase the availability of public open space.** **3. Amend the Rural Conservation Zone 1 to prohibit wind turbines on coastal private land.**

coastal areas will: • Ensure the materials, colours and finishes of new built form responds to coastal character using the guidelines contained in Siting and Design Guidelines for Structures on the Victorian Coast 1998 • Ensure new development is landscaped to be consistent with the surrounding landscape character and results in no net loss of onsite **native** vegetation • Ensure adequate permeable site area is maintained in keeping with the character of the settlement to maintain coastal character and minimize stormwater run-off • Ensure new development does not impede access to coastal Crown land. **7. No new buildings will be established on coastal crown land unless they are replacing an existing building (due to structural or design problems or increasing coastal hazard) and are sited within the existing footprint or within a footprint of the same or smaller area.**	

Table 56 Review of 'Visitation and tourism'

Desired outcomes, policies and actions	
Desired Outcome • A diverse range of visitor and tourist experiences is made available • Visitor and tourism developments exhibit exemplary design standards and reflect the surrounding landscape's environmental and heritage values **and are sited off coastal reserves**	
Policy for decision making	**Actions**
1. Strategically plan for and deliver **ecologically** sustainable and equitable coastal recreation and tourism opportunities *that respond to an identified demand.* 2. Private land will be the preferred location for new tourism developments, *Crown land in coastal hinterlands will only be considered for tourism developments where no suitable private land is available.* 3. Preference will be given to improving and upgrading existing visitor and tourist facilities in suitable locations **on private land**, rather than developing new facilities on Crown land. 4. Plans for visitor and tourist developments outside settlements will **only be considered for approval if they do not impact on** *take into account*: • significant landscapes, ensuring that developments do not compromise the broader 'open space' characteristics of the coast • *the* protection of non-urban areas between settlements and their significant values including areas of environmental and heritage sensitivity • *the impact on* agricultural productivity of the area • *tourism developments* • *and do not* **Nor should they** become new settlements or create linear coastal development **and they must use** best practice ecologically sustainable design **and operational** standards.	1. Suitable areas for **ecologically** sustainable visitor and tourist development **on private land** along the coast will be identified through Regional Coastal Action Plans and local planning schemes.

Table 57 Review of 'Access on the coast'

Desired outcomes, policies and actions	
Desired Outcome • Communities access the coast in ways that, minimise the risks to public safety and protect **and assist restoration of** coastal and marine environments • Community-based clubs such as lifesaving, angling, yachting and boating clubs are **limited** *supported* in their use of the coast **to ensure** *in ways that provide* access to and use of the coastal environment by the broader community	
Policy for decision making	**Actions**
1. Planning for access to the coast will recognise that: • some areas of the Victorian coast are vulnerable to erosion, inundation, landslip and as a result, not all areas of the coast can or should be accessible • access points shall be sustainable in the long term and those that are not sustainable (such as aging infrastructure that is a public safety risk) should be identified as such and their removal or refurbishment should be planned for over time • access shall be designed in accordance with the Siting and Design Guidelines for Structures on the Victorian Coast and should have minimal impact on the coastal environment • **coastal reserves are public places that are severely limited in area and under increasing pressure from population growth and the inappropriate placement of structures** • **many coastal reserves have threatened remnant native vegetation that should be protected and restored** • **as public open space, coastal reserves and structures on them should not be given over to exclusive use by special interest groups.** 2. Public safety considerations will be addressed within a risk	1. Establish priority areas for all mobility access needs **that avoid ecologically sensitive areas and threatened remnant vegetation.** 2. Implement programs that address **ecological and social** risk from ageing infrastructure, aquatic safety, access and emergency events.

management framework. 3. Off-road access to coastal Crown land and beaches by private vehicles is prohibited. 4. Poorly used and poorly sited roads will be identified and categorised for redesign, removal or relocation – as required to achieve improved environmental, aesthetic and safety outcomes. **5. Separate and multiple buildings each serving single users such as surf life saving, yachting and angling clubs will be reviewed and gradually repurposed or replaced by single multi-purpose buildings available for a variety of community-based groups.**	

Table 58 Review of 'Boating and water-based activities'

Desired outcomes, policies and actions	
Desired Outcome A network of recreational boating and water-based activity facilities that respond to *demand,* safety considerations, coastal processes and the natural environment **and their design, location, construction and operation are ecologically sustainable**	
Policy for decision making	**Actions**
1. Strategically located boating and water-based activity facilities will be provided in line with the Recreational Boating Facility Hierarchy (Map 4) in ways that respond to **objective** demand assessments **that consider all options for use including conservation**, protect natural coastal **and marine** values, **habitats and species** and consider other **marine and** coastal users needs. 2. Effluent disposal facilities will be provided at strategic boating locations to address illegal sewage discharge from boats on a user pays basis **3. The management arrangements for boating infrastructure where there are multiple facilities managed by separate agencies at the same location will be reviewed and rationalised.** **4. An Environmental Impact Assessment will be required for the upgrade of any existing boat ramp, marina or breakwater or the development of new ones and include assessment of the environmental impacts beyond the site of the infrastructure i.e. the impact on marine habitats and marine species from the recreational fishing supported by that infrastructure.** **5. The environmental impacts of boat-based recreational fishing and boating infrastructure will be monitored and assessed to determine the boat carrying capacity of Port Phillip Bay, Western Port and other estuaries. These assessments should be conducted regionally and, if the impact is deemed too great, restrictions should be placed on the size of facilities and the number of recreational fishing boats accessing them.**	1. Include Boating Coastal Action Plan information in the preparation of the new Regional Coastal Action Plans. **2. Combine boating, coastal and estuary action plans into one integrated marine and coastal regional plan.** **3. Scale back the Bastion Point development to one that is ecologically sustainable and has broad community acceptance.** **4. Establish comprehensive monitoring and assessment of boat-based recreational fishing and determine the boat and recreational fisher carrying capacities of Victoria's bays and estuaries. Apply the results when determining the location and size of the boating and water-based facilities network.**

Table 59 Review of 'Sustainable ports'

Desired outcomes, policies and actions	
Desired Outcome • Local and commercial ports are managed in ways that add to the character, amenity and sustainability of the coast	
Policy for decision making	**Actions**
1. All local ports to be operated efficiently and effectively, and to contribute positively to local character, amenity, recreation, economy, and environmental values. 2. All commercial ports should actively explore opportunities to contribute positively to community amenity, economic and environmental values. 3. Development, maintenance and management of local and commercial port infrastructure *to* **will** address safety and environmental risks and vulnerability to a changing climate. **4. All proposals for new and expanded ports, including marinas, breakwaters and boat ramps and their associated infrastructure on land and on water, will be subject to comprehensive and independent assessment using the full force of federal environmental laws and the highest level of assessment including environmental impact statements and rigorous, objective and transparent cost-benefit analyses. This assessment should also consider environmental impacts, risks and links to national transport planning.** **5. Any proposals for new or expanded ports will have to be consistent with the framework for an integrated management approach to Victoria's marine environments that is strategically linked with that for coastal and catchment areas.** **6. The development of any business case for new or expanded ports will need to include an economic assessment of both commercial and non commercial values, including ecosystem services.**	1. Monitor risk mitigation strategies adopted by the local and commercial ports for port infrastructure identified as vulnerable to extreme climate events. **2. Conduct quantitative risk assessment of oil spills for each Victorian port based on current and projected increases in shipping traffic.** **3. Conduct strategic and independent assessment of port traffic to determine future demand and port capacity requirements.** **4. Establish a set of science-based criteria to measure the ecological sustainability of ports for use in the assessment of existing ports and their expansion, and proposals for new ports.**

Table 60 Review of 'Fishing and aquaculture'

Desired outcomes, policies and actions	
Desired Outcome • Commercial and recreational fisheries are managed within a **broad, integrated, ecologically sustainable and ecosystem-based marine planning framework** *in a holistic, ecosystem-based management framework* • An ecologically sustainable and viable aquaculture industry uses low environmental impact production systems and implements best practice aquaculture and environmental management	
Policy for decision making	**Actions**
1. Strategic directions and priorities will be established for the management of significant risks to fisheries and aquaculture (including those risks resulting from a changing climate). 2. Biosecurity practices will be developed to address the issues of water exchange and disease transfer between aquaculture farms and the marine environment. 3. Fishing stocks will be comprehensively assessed and managed by: • identifying and managing important fish habitats • support for research • developing **ecologically sustainable** harvest strategies • increasing focus on ecosystem impacts of recreational fishing 4. Safe and **ecologically** sustainable recreational fishing will be supported through the provision of **ecologically sustainable** *suitable* facilities, the enforcement of regulations and the encouragement of recreational fishing stewardship, monitoring, and behaviour change initiatives (e.g. TanglerBin, Seal the Loop, Anglers Diary) and the inclusion of information (such as details of biodegradable hooks and line, catch and release techniques which maximise survival of returned fish) in the Victorian Recreational Fishing Guide. **Animal welfare will be a high priority in terms of effectively managing and responding to marine life entanglement issues.** 5. The consumption of seafood from well-managed **and ecologically sustainable** fisheries and aquaculture operations will be encouraged by supporting industry access to fisheries accreditation programs, partnerships between industry and retailers, consumer labelling and awareness raising programs. **7. Strategic directions and priorities will be established for the management of significant ecological risks from fisheries and aquaculture on marine habitats and ecosystems** **8. Land-based aquaculture with recirculating systems will be preferred.** **9. Areas where fishing is excluded, i.e. marine national parks and sanctuaries, will continue to be used as an integral part of the marine planning, protection and management framework and will be expanded, where necessary, to fill identified gaps in their habitat coverage.** **10. Stock enhancement proposals will be subjected to a public environment impact assessment process supported by an independent and thorough risk assessment** **11. The use of biodegradable hooks and fishing lines will be introduced gradually over the next five years, at which time they will become mandatory** **12. The improvement of ecosystem health and natural environmental productivity, encompassing marine, coastal and catchments areas, will be the focus of statewide and regional marine and coastal agencies.** **13. Location-specific ecological risk assessments of recreational fisheries e.g. bait collection of intertidal gastropods will be used and take a precautionary approach to unknown impacts e.g. trophic effects. Such assessments will better inform the nature of management responses required, whether monitoring programs, education campaigns, compliance activities or legislative changes.** **14. Seismic testing in state coastal waters will be prohibited.** **15. Any release of state coastal waters for offshore oil and gas petroleum exploration or extraction will only be considered after an independent and public environmental impact assessment process.**	1. Undertake research to identify threats to key habitats supporting fisheries resources and develop priority actions to address these. **This will include assessment of the threats from fishing.** 2. Assess fish stocks, measure fish catches and conduct targeted **and ongoing** biological research for key commercial and recreational species **and apply the results to adaptive fisheries management.** 3. Implement the Victorian Climate Change Strategy for Fisheries and Aquaculture 2008–2018 to facilitate adaptation to the risks and impacts of a changing climate in both the commercial and recreational fishing sectors. 4. Undertake research into the long-term ecological sustainability and value of artificial reefs and include the results in the preparation of environmental impact statements **and rigorous, objective and transparent cost-benefit analyses of proposals.** **5. Implement and resource a rapid response animal welfare team to deal with the entanglement of marine species from fishing lines** **6. Establish a set of criteria for the assessment of the ecological sustainability of commercial and recreational fisheries and apply it directly to fisheries management.** **7. Conduct large-scale quantitative surveys of recreational fishing participation and total catch every three to five years** **8. Re-establish the Port Phillip Bay annual trawl surveys to provide critical data on sand flathead stocks, non-target and rare species, and invasive species e.g. northern pacific seastar.** **9. Review the impacts of discarding target species of declining abundance (e.g. sand flathead, dusky flathead), and non-target species of naturally low abundance (e.g. rare rays or sharks) at the same time as reviewing the survival rates of key species caught using different gear types, with the intention of considering gear restrictions as management solutions for ecologically sustainable harvest strategies.** **10.Continue to resource education programs that teach best practice in maximising the survival of discarded fish.** **11. Establish a 'key fishery habitat' identification and conservation program.** **12. Establish a program to independently monitor the community ecology of important benthic and pelagic ecosystems to provide important benchmark data for establishing historical ecological baselines for monitoring ecosystem changes caused by commercial and recreational fishing.** **13. Establish a policy framework to follow up important risks uncovered in the fishery environmental risk assessment process and to apply management controls or regulations to reduce that risk.** **14. Investigate fisheries-independent monitoring options for key recreational species such as sand flathead, rock flathead, garfish and calamari.** **15. Introduce mandatory recreational fishing licences for all recreational fishers, with under 18 and over 65 fishers being free, in order to collect better information about recreational fish catch and participation levels**.

Table 61 Review of 'Coastal energy resources'

Desired outcomes, policies and actions	
Desired Outcome The full suite of community and ecosystem service values is considered when making decisions regarding the planning and management or development of coastal Crown land for energy resources	
Policy for decision making	**Actions**
1. In planning and decision-making about the use of coastal Crown land for the **transport of** energy resources, the full suite of ecosystem services and community values provided by marine and coastal environments will be **given high priority** *considered.* 2. When considering the use and development of coastal Crown land	1. Outline the environmental impact assessment and cost-benefit analyses for *process for assessment, approval and tenure allocation of Crown land for* marine energy activities.

for the distribution *purpose* of *harvesting* **extracted** marine energy **resources**, the following principles will be used to assist in decision-making • **all above ground infrastructure should be located on private land set back from the coast** • **wind turbines should not be located on coastal crown land or within the coastal viewshed** • **environmental impact statements and rigorous, transparent and objective cost-benefit analyses shoud be used to assess the design, location and operation of coastal energy resource exploitation projects whether on crown or private land** 3a. **The** leasing and licensing arrangements **for underground cables or pipelines** should maximise the public benefits derived from private use of coastal Crown land 3b. **The** negative impacts on environmental, social, cultural and economic values should be **avoided** *or minimised*.	

Appendix 3 Protected area recommendations

Table 62 lists the proposed areas for protection within the bioregion-specific profiles of *The coast is unclear*. The second column lists the existing protected areas and areas of crown land that would be included in the proposed protected areas, along with their current size, where available, in hectares.

Table 62 Protected area recommendations

Proposed new or expanded protected area	Existing areas	Size of existing areas (ha)
Bridgewater and Glenelg Plain bioregions		
Discovery Bay-Three Capes State Park	Discovery Bay Coastal Park	10 449
	Cape Nelson State Park	227
	Cape Nelson Lighthouse Reserve	29
	Nelson Bay Coastal Reserve	75
	Point Danger Coastal Reserve	14
Warrnambool Plain Bioregion		
Yambuk Coastal Park	Yambuk Lake	n/a
	Yambuk Flora and Fauna Reserve	140
	Yambuk Wetlands Nature Conservation Reserve	77
	The Crags Coastal Reserve	n/a
	Yambuk Coastal Reserve	53
Belfast Coastal Park	Belfast Coastal Reserve	831
	Griffith Island	43
	Shelly Cove	n/a
	Thunder Point Coastal Reserve	25
Port Campbell-Bay of Islands National Park	Bay of Islands Coastal Park	913
	Port Campbell National Park	2 310
	Port Campbell Rifle Range (Commonwealth land at Two Mile Bay)	n/a
	Public Purposes Reserve and Public Park Reserve on Port Campbell Point	n/a
	Water Reserve (and Crown land) east of Port Campbell north of the Great Ocean Road alignment	n/a
	Small, undeveloped areas of public land between the Great Ocean Road and the park within the township of Port Campbell, west of the Port Campbell Creek, including allotments 2 and 3, and the Loch Ard Public Cemetery	n/a
Otway Plain Bioregion		
Geelong and Bellarine Wetlands State Park	Lake Connewarre Wildlife Reserve (including Reedy Lake, Hospital Swamp and Murtnaghurt Lagoon)	3 696
	Salt Lagoon-St Leonards Wildlife Reserve	87
	Swan Bay-Edwards Point Wildlife Reserve	259
	Barwon River estuary	n/a
	Sand Island	n/a
	Swan Island (Commonwealth land)	223
	Lonsdale Lakes Wildlife Reserve	195
	Lakers Cutting	n/a
	South-western shores of Swan Bay	n/a
	Freshwater Lake	n/a
	Thompson Creek and Karaaf Wetlands at Breamlea (Breamlea Flora and Fauna Reserve)	214
Otway Plain and Victorian Volcanic Plain bioregions		
Port Phillip Wetlands State Park	Limeburners Lagoon (Hovells Creek) Flora and Fauna Reserve	30
	Avalon Coastal Reserve	368
	Avalon Saltworks	n/a
	Point Lillias	n/a
	Point Wilson (Commonwealth land)	262
	The Spit Wildlife Reserve	272
	Point Cook Coastal Park and Cheetham Wetlands	842
	Altona Coastal Park	70
	Jawbone Flora and Fauna Reserve	16
Gippsland Plain Bioregion		
North Western Port Coastal Park	North Western Port Nature Conservation Reserve	1 642
Reef Island-Bass River Mouth Coastal Park	Reef Island-Bass River Mouth Nature Conservation Reserve	173
San Remo-Cape Paterson Coastal Park	Punchbowl Coastal Reserve	87
	Kilcunda-Harmers Haven Coastal Reserve	759
	Kilcunda Coastal Reserve	63
	Kilcunda Nature Conservation Reserve	4
	Bunurong Coastal Reserve	102
	Wonthaggi Heathlands Nature Conservation Reserve	245
	Cape Paterson Nature Conservation Reserve	2
	Bunurong Marine Park	13

Shallow Inlet Coastal Park	Shallow Inlet Marine and Coastal Park	1 971
Corner Inlet-Nooramunga Coastal Park	Corner Inlet Marine and Coastal Park	537
	Nooramunga Marine and Coastal Park	11 826
	Wilsons Promontory Marine Park	48
	Wilsons Promontory Marine Reserve	3
	Coastal crown land of conservation value along the margins of Corner Inlet	
Gippsland Lakes Coastal Park	Gippsland Lakes Coastal Park	17 456
	Lake Coleman Wildlife/Game Reserve	2 096
	Lake Coleman West Wildlife/Game Reserve	53
	Victoria Lagoon Wildlife Reserve	56
	Clydebank Morass Wildlife/Game Reserve	1 451
	Heart Morass Wildlife/Game Reserve	375
	Dowd Morass Wildlife/Game Reserve	1 504
	Blond Bay Wildlife/Game Reserve	1 922
	McLeods Morass Wildlife/Game Reserve	540
	Jones Bay Wildlife/Game Reserve	120
	Avon River Streamside Reserve	2
	Tucker Swamp Gippsland Lakes Reserve	131
	Poddy Bay Gippsland Lakes Reserve	216
	The Dardanelles Gippsland Lakes Reserve	303
	Sale Camping Gippsland Lakes Reserve	36
	Andrew Bay-Grebe Bay Gippsland Lakes Reserve	172
	Lake Kakydra Gippsland Lakes Reserve	175
	Lake Melyandra Gippsland Lakes Reserve	60
	Clydebank Frontage Gippsland Lakes Reserve	76
	Avon-Perry River Delta Gippsland Lakes Reserve	169
	Swell Point-Roseneath Point Gippsland Lakes Reserve	165
	Salt Lake-Backwater Morass Gippsland Lakes Reserve	302
	Roseneath Point (1) Gippsland Lakes Reserve	8
	Roseneath Point (2) Gippsland Lakes Reserve	17
	Morley Swamp Gippsland Lakes Reserve	230
	Victoria Lagoon Gippsland Lakes Reserve	452
	Backwater Morass Gippsland Lakes Reserve	552
	Steel Bay-Newland Backwater Gippsland Lakes Reserve	231
	Blond Bay Gippsland Lakes Reserve	185
	Red Morass Gippsland Lakes Reserve	295
	Wattle Point Gippsland Lakes Reserve	85
	Raymond Island Gippsland Lakes Reserve	249
	Hollands Landing Gippsland Lakes Reserve	68
	Point Fullarton Gippsland Lakes Reserve	55
	Eagle Point Gippsland Lakes Reserve	55
	Mitchell River Silt Jetties Gippsland Lakes Reserve	276
	Jones Bay Gippsland Lakes Reserve	1 870
	Nicholson Floodplain Gippsland Lakes Reserve	51
	Slaughterhouse Creek Gippsland Lakes Reserve	130
	Swan Reach Bay Gippsland Lakes Reserve	33
	Tambo Delta-Metung Gippsland Lakes Reserve	n/a
	Nyerimilang Park Gippsland lakes Reserve	182
	Bancroft Bay-Kalimna Gippsland Lakes Reserve	65
	Flanagan Island Gippsland Lakes Reserve	43
	Fraser Island Gippsland Lakes Reserve	4
	Baxter Island Gippsland Lakes Reserve	4
	Rigby Island Gippsland Lakes Reserve	133
	Any other coastal public land along the shores of Lake Wellington, Lake King and Lake Victoria of conservation value and not the responsibility of the proposed Gippsland Lakes Coast Committee (see Recommendation in 'Coastal public land')	n/a
	Land purchased by the Shire of Wellington in the restructure of the subdivisions along the Ninety-mile Beach	n/a
	Lakes Entrance-Lake Tyers Coastal Reserve	344
East Gippsland Lowlands Bioregion		
Ewing Morass-Cape Conran Coastal Park	Ewing Morass Wildlife Reserve	6 805
	Cape Conran Coastal Park	11 569
	Lake Corringle Wildlife Reserve	921
	First and Second Island Flora Reserve	26
	Marlo Coastal Reserve	599