

For more information contact the Parks Victoria Information Centre on 13 1963, or visit www.parkweb.vic.gov.au

Barwon Bluff Marine Sanctuary



Management Plan April 2007

**BARWON BLUFF MARINE SANCTUARY
MANAGEMENT PLAN**



April 2007

Published in April 2007 by Parks Victoria
Level 10, 535 Bourke Street, Melbourne, Victoria, 3000

Parks Victoria, 2007, Barwon Bluff Marine Sanctuary Management Plan, Parks Victoria

Cover: Kelp Forest, Barwon Bluff Marine Sanctuary (Photo: Travis Lee)

Barwon Bluff Marine Sanctuary management plan:

Bibliography.

ISBN 9780731183678.

1. Marine parks and reserves – Victoria - Management. 2.

Barwon Bluff Marine Sanctuary (Vic.). I. Parks Victoria.

333.916416

Acknowledgements:

Acknowledgement of *Country* — In their rich culture, Indigenous Australians are intrinsically connected to the continent, including the area now known as Victoria. Parks Victoria recognises that the sanctuary is part of *Country* of the Wathaurong people.

Parks Victoria is grateful to all those organisations and individuals who have contributed to this Final Management Plan. Special thanks go to members of the Barwon Bluff Marine Sanctuary Management Plan Advisory Group, Warren Chapman, Rhonda Coffey, Tara Ellard, Adam Ford, Alex Giannuzzi, Bob Jordon, Robert Kuebler, Dianne Moore, Alan Ray and Mark Rodrigue.

Note:

Technical terms used in this plan are explained in the **Glossary** at the end of the plan.

Disclaimers:

This plan is prepared without prejudice to any negotiated or litigated outcome of any native title determination applications covering land or waters within the plan's area. It is acknowledged that any future outcomes of native title determination applications may necessitate amendment of this plan; and the implementation of this plan may require further notifications under the procedures in Division 3 of Part 2 of the *Native Title Act 1993* (Cwlth).

The plan is also prepared without prejudice to any future negotiated outcomes between the Government/s and Victorian Indigenous communities. It is acknowledged that such negotiated outcomes may necessitate amendment of this plan.

Every effort has been made to ensure that the information in this plan is accurate. Parks Victoria does not guarantee that the publication is without flaw of any kind and therefore disclaims all liability for any error, loss or other consequence that may arise from you relying on any information in the publication.

Printed on 100% recycled paper to help save our natural environment

FOREWORD

Barwon Bluff Marine Sanctuary protects a system of intertidal and subtidal reefs and beach areas extending from the base of The Bluff where the Barwon River meets Bass Strait.

The sanctuary supports an abundance of fish and invertebrates, a colourful and diverse range of algae, and visiting marine mammals. The beaches and intertidal platforms provide habitat for migratory and threatened seabirds and shorebirds.

The sanctuary is valued by the community and has long been used by schools and other groups for marine education. The spectacular subtidal reefs provide a scenic location for snorkelling and diving.

The care of Barwon Bluff Marine Sanctuary is not a task for the government alone, nor only for those who live on the coast. It is a task for the whole Victorian community. This Management Plan sets out the ways in which we can work together to learn about, protect and sustain an important part of our marine environment.

I thank the Barwon Bluff Marine Sanctuary Management Plan Advisory Group for their valuable contribution to the plan, and also those individuals and organisations who made submissions on the draft plan, and I look forward to the community's ongoing support for the management of Barwon Bluff Marine Sanctuary.

JOHN THWAITES MP
Minister for Environment,
Water and Climate Change

APPROVED MANAGEMENT PLAN

This Management Plan has been prepared under section 17D of the *National Parks Act 1975* (Vic.) and is approved for implementation.

The plan provides the basis for the future management of Barwon Bluff Marine Sanctuary. It was finalised following consideration of the 12 submissions received on the Draft Management Plan.

PETER HARRIS
Secretary to the
Department of Sustainability and Environment

MARK STONE
Chief Executive
Parks Victoria

INTRODUCTION TO THE MARINE ENVIRONMENT

Victorians are custodians of some of the most remarkable, diverse, and culturally important marine environments on Earth. These include deep open water, shallow embayments, rocky reefs, canyons, seagrass meadows, tidal sandflats and mudflats, and estuaries, and they support more than 12 000 known species. Around 90% of these marine species are found only in the waters of southern Australia.

Broadly speaking, Victoria has responsibility for the waters which extend offshore to three nautical miles and cover around 70 000 square kilometres. Marine National Parks and Marine Sanctuaries make up about 5% of this area, but protect a range of significant species and important habitats, as well as maritime artefacts and evidence of past Indigenous occupation and use.

The vast three-dimensional marine environment has characteristics that are very different from those of the land and atmosphere. The fundamental physical properties — pressure, temperature, salinity, density and availability of nutrients and gases — are all very different. There are also great differences in the types of substrates, and the physical and biological processes that occur, such as tides, currents, light penetration, erosion, sedimentation, oxygen uptake, life cycles and even the food chains.

The organisms that occupy the marine environment are different as well. On land vascular plants dominate, but in marine habitats they are much less common. In most marine environments their ecological roles in photosynthesis and oxygen production are undertaken by algae, which range in size from giant kelps to minute single-celled species. Other single-celled organisms such as diatoms, cyanobacteria, dinoflagellates and forams, together with invertebrate larvae and marine fungi, make up most of the abundant marine plankton that is the basis of all marine food chains.

As on land, invertebrates, including molluscs (e.g. octopuses, abalones, snails), crustaceans (e.g. crabs, lobsters, tiny amphipods) and echinoderms (e.g. sea cucumbers, sea stars and sea urchins), dominate the marine fauna, but insects — the most abundant invertebrates on

land — are almost absent. The dominant vertebrates are fish, although mammals and reptiles also inhabit the marine environment and many birds inhabit both realms.

Although they are very different physically and biologically, the land, atmosphere and marine environments are interconnected. Water and gases are transferred between oceans and the atmosphere. There are animals with both marine and freshwater life stages, and some species breed in estuaries where fresh water from the land mixes with oceanic salt water. Fresh water and sediments from catchments far inland are dispersed into coastal waters, bringing with them nutrients needed to maintain inshore marine ecosystems but also pollution from human activities.

The sea interconnects marine habitats over great distances. Tides and currents move sediments, plankton and organic matter into and through habitats, along with flotsam, jetsam, ballast water and oils from catchments or inshore waters, released from ships on the open seas or washed from the shores of other countries. Many marine animals migrate long distances, passing freely into and out of Victorian waters and spending much of their lives in the open ocean.

A vision for Victoria's system of Marine National Parks and Marine Sanctuaries

‘A world-class system of Marine National Parks and Marine Sanctuaries that conserves the diversity of Victoria's marine environments, protected and enjoyed by Victorians and visitors, forever.’

This vision is detailed in the *Victoria's System of Marine National Parks and Marine Sanctuaries, Management Strategy 2003–2010* (Parks Victoria 2003a). It is described in the following extract:

‘The vision for Victoria's system of Marine National Parks and Marine Sanctuaries is to maintain marine ecosystems in their natural state, enjoyed by visitors and protected from the effects of inappropriate activities. The system will safeguard representative examples of undisturbed natural marine habitats, respect cultural heritage values, and be a place of inspiration, enjoyment and renewal for all

people. The system will complement our world-class national parks system on land.

This vision aims to preserve the diversity of our marine environment, its flora and fauna, its natural beauty, and the diversity of activities that may be enjoyed there. It is a vision that invites all Victorians to become involved, to take pride in our Marine National Parks and Marine Sanctuaries, and to share in their stewardship.’

Contribution of Barwon Bluff Marine Sanctuary to the statewide system

Barwon Bluff Marine Sanctuary is significant in the statewide system for its valuable contribution to marine education.

Implications for management

The differences and connections in the marine environment mean that Victoria’s Marine National Parks and Marine Sanctuaries must be managed somewhat differently from land environments. Natural, recreational and cultural values may be affected by the use of both land and marine areas some distance away, over which sanctuary managers have no direct control. Impacts on one marine habitat can quickly affect another, and human activities and natural events on land and in the atmosphere can have widespread consequences for the marine environment. Boundaries in the ocean can be difficult to define, and the effects of human activities can be hidden from view.

Like the atmosphere, but in contrast to land, the marine environment is a common resource which is rarely in private ownership, and there are few natural or artificial barriers to movement. Many of the strategies used to concentrate the impacts of recreational activities in terrestrial parks (e.g. the creation of walking tracks and picnic areas) are not feasible in the marine context.

Conserving historic and cultural places and objects is also a challenge because it is difficult to identify an underwater place or monitor activities that take place on the open sea or under water. *Sea Country*, and cultural association to, or past use of, underwater places which were exposed before the sea level rose, must also be considered.

The long-term protection of the Marine National Parks and Marine Sanctuaries relies on the support and goodwill of the community, together with the help of coastal managers and government agencies. This plan seeks to foster a strong sense of custodianship of Barwon Bluff Marine Sanctuary and to strengthen its protection while respecting cultural and community associations with the area.

SUMMARY

Barwon Bluff Marine Sanctuary (17 ha) is located at Barwon Heads, where the Barwon River enters Bass Strait. The sanctuary protects a system of intertidal and subtidal reefs and beach areas at the foot of the Barwon Heads Bluff.

The reef system at the base of The Bluff forks east and west. The eastern reef is basalt, formed by a lava flow from Mount Dunned, near Geelong, around 1–2 million years ago. The western reef is sandstone that extends 10 metres into the subtidal zone.

The sanctuary's waters protect numerous fish and invertebrate species, a colourful and diverse range of algae, and visiting marine mammals. The beaches and intertidal platforms provide roosting, feeding and breeding areas for migratory and threatened seabirds and shorebirds.

The intertidal area has long been used and valued by schools and other groups for marine education. The accessibility of the subtidal reefs from the shore provides opportunities for snorkelling and diving.

Indigenous tradition indicates that Barwon Bluff Marine Sanctuary is part of *Country* of the Wathaurong people, who continue to have a close relationship with the sanctuary.

The former Environment Conservation Council recommended that the sanctuary be included into Victoria's system of Marine National Parks and Marine Sanctuaries for its values for marine education.

Key elements of the plan include:

- protection of natural processes, biodiversity and ecological communities
- protection of Indigenous places and objects
- recognition of Indigenous cultural heritage for the sanctuary, and respect for the views of the Traditional Owners and cultural obligations of Indigenous peoples
- reflection and integration of Indigenous knowledge, interests and rights in the land and aspirations for the sanctuary, in all planning and management
- respect for Indigenous knowledge relating to *Country*, and promotion and interpretation in accordance with the views of the Traditional Owners
- research and monitoring to improve the scientific basis for management
- maintenance and promotion of opportunities for marine education
- promotion of opportunities for communities, groups, individuals and agencies to learn about the values of the sanctuary and to work together and with Parks Victoria to achieve common goals for the sanctuary
- management of sustainable recreational and educational activities within the sanctuary, with minimal impact on the sanctuary's values
- interpretation and promotion of the sanctuary's values and its recreational and tourism opportunities, and the fostering of community appreciation and awareness
- support and encouragement of Friends and volunteer groups, and the promotion of opportunities for the community to work together and with Parks Victoria to achieve common goals for the sanctuary
- collaboration with agencies, the community and other stakeholders to enhance the sanctuary's management.

CONTENTS

FOREWORD	iii
APPROVED MANAGEMENT PLAN	iv
INTRODUCTION TO THE MARINE ENVIRONMENT	v
SUMMARY	vii
1 INTRODUCTION	1
1.1 Location and planning area	1
1.2 Creation of the sanctuary	1
1.3 Plan development	1
2 BASIS	2
2.1 Regional context	2
2.2 Sanctuary significance and values	2
2.3 Evidence of past use	3
2.4 The sanctuary visitor	3
2.5 Legislation and ECC recommendations	4
2.6 Policies and guidelines	5
3 STRATEGIC DIRECTIONS	6
3.1 Sanctuary vision	6
3.2 Zoning	6
3.3 Management directions	6
4 STRATEGIES FOR NATURAL VALUES CONSERVATION	10
4.1 Geological and geomorphological features	10
4.2 Catchment and water quality	11
4.3 Hydrodynamics	12
4.4 Habitats and communities	13
4.5 Landscape and seascape	16
4.6 Marine pests	17
5 STRATEGIES FOR CULTURAL VALUES CONSERVATION	20
5.1 Indigenous cultural heritage	20
5.2 Maritime and other cultural heritage	21
6 STRATEGIES FOR VISITORS	23
6.1 Information, education and interpretation	23
6.2 Access	25
6.3 Shore-based activities and swimming	26
6.4 Recreational boating and surface water sports	27
6.5 Diving and snorkelling	28
6.6 Dog walking and horse riding	30
6.7 Tourism services	31
6.8 Public safety	32

7	STRATEGIES FOR AUTHORISED AND ADJACENT USES	34
7.1	Authorised uses	34
7.2	Boundaries and adjacent uses	34
8	STRATEGIES FOR COMMUNITY AWARENESS AND INVOLVEMENT	36
8.1	Community awareness	36
8.2	Community participation	37
8.3	Agency partnerships	38
9	PLAN IMPLEMENTATION	41
9.1	Delivery and reporting	41
9.2	Plan amendment	41
9.3	Evaluation and review	42
	REFERENCES	43
	GLOSSARY	46
	APPENDICES	
1	Management objectives for marine sanctuaries	49
2	Submissions on the Draft Management Plan	50
	TABLE	
1	Summary of recreational opportunities	8
	FIGURES	
1	Location	End of plan
2	Barwon Bluff Marine Sanctuary	"

1 INTRODUCTION

1.1 Location and planning area

Barwon Bluff Marine Sanctuary (17 ha) is located at Barwon Heads, approximately 100 kilometres south-west of Melbourne (figure 1). The sanctuary incorporates the rocky shores around the base of the headland at the mouth of the Barwon River, including a small section of riverbank beach, basalt and sandstone reefs at the base of 'The Bluff', 400 metres of beach fronting Bass Strait, and the waters extending 400 metres to the east and south (section 7.2).

'The Bluff' is the local name for the coastal Crown land incorporating the headland abutting the sanctuary. The highest point is known as Mount Colite. The eastern tip of The Bluff is known as Point Flinders (figure 2).

1.2 Creation of the sanctuary

Barwon Bluff Marine Sanctuary forms part of the system of 13 Marine National Parks and 11 Marine Sanctuaries in Victorian waters. The selection of these areas was based on more than 10 years of research, investigation and community consultation by the former Land Conservation Council (LCC) and Environment Conservation Council (ECC), summarised in the Marine, Coastal and Estuarine Investigation Final Report (ECC 2000). The recommendations of the ECC accepted by government (Government of Victoria 2002) included reservation of the sanctuary under the *National Parks Act 1975* (Vic.). Barwon Bluff Marine Sanctuary was included on Schedule 8 of the National Parks Act on 16 November 2002 (appendix 1).

When created, much stronger penalties were applied to all forms of fishing, including shellfish collection, in Marine National Parks or Marine Sanctuaries than apply for taking or damaging fauna, plants or objects from these areas.

1.3 Plan development

This first management plan for the sanctuary was prepared by Parks Victoria, with significant input from the Barwon Bluff Marine Sanctuary Management Plan Advisory Group and other stakeholders. It takes into account existing information, reports and

research findings that relate to the sanctuary and is informed and supported by a range of best practice management systems.

The strategies outlined in this plan have been guided by the statewide *Victoria's System of Marine National Parks and Marine Sanctuaries, Management Strategy 2003–2010* (Parks Victoria 2003a).

The plan is a strategic guide for future management of the sanctuary. As a public document, the plan establishes how Parks Victoria will protect the natural and cultural values of the sanctuary, and describes the services and facilities that will be provided to help visitors to enjoy, appreciate and understand the sanctuary in ways that are consistent with this. The plan also serves to inform and encourage cooperative land management and participation in community-based programs between Parks Victoria and the managers of areas adjacent to the sanctuary.

As a working document for the sanctuary, the plan informs Parks Victoria's development of Corporate Plans, serves as a framework for subsequent detailed planning and governs management activities.

This plan was published as a draft plan for public comment in 2006, and 12 submissions were received (appendix 2). Where necessary, further consultation with the community and stakeholders was undertaken.

Key changes made to the Draft Plan in preparing this Final Management Plan included the detection of marine pests as part of community monitoring programs and friends group activities, and stronger mechanisms to better manage visits by school groups and monitor trampling impacts.

This final management plan will direct future management of the Barwon Bluff Marine Sanctuary, until reviewed.

2.1 Regional context

Barwon Bluff Marine Sanctuary forms part of a representative system of 13 Marine National Parks and 11 Marine Sanctuaries in Victoria, established within the broader context of a National Representative System of Marine Protected Areas (NRSMPA). The establishment of an NRSMPA contributes to the establishment of a global representative system of marine protected areas (ANZECC TFMPA 1999).

Barwon Bluff Marine Sanctuary is one of eight Marine National Parks and Marine Sanctuaries in the Central Victoria marine bioregion, as identified by the Interim Marine and Coastal Regionalisation for Australia (IMCRA). This regionalisation identified 60 marine bioregions, five of which apply to Victorian waters (IMCRA Technical Group 1998). Barwon Bluff Marine Sanctuary protects approximately 0.004% of the Central Victoria marine bioregion.

The Central Victoria bioregion encompasses the open coastline from Cape Otway to Cape Liptrap, west of Wilsons Promontory. The bioregion is relatively exposed to swells and weather from the south-west and is characterised by shallow nearshore reefs and sandy beaches along with large areas of sand and patchy, low profile reefs offshore. The marine flora and fauna are a diverse mixture of species from the adjacent biogeographical provinces in addition to cosmopolitan southern Australian species (Parks Victoria 2003a).

Indigenous tradition indicates that the sanctuary is part of *Country* of the Wathaurong people (section 5.1), who maintain a relationship with the area and seek opportunities to fully restore their relationship with it.

The sanctuary is within the Barwon Basin of the Corangamite Catchment Region, which is the Corangamite Catchment Management Authority's area of responsibility. Land use within the basin is predominantly agricultural, although urban development is rapidly expanding. Because it is at the mouth of the Barwon River, the sanctuary is influenced by activities within the basin.

The sanctuary is adjacent to Barwon Heads Park, which includes The Bluff, the abutting coastal and river estuary beaches and dunes, a caravan park and ovals. The Park is Crown land managed by the Barwon Coast Committee of Management (BCCM).

Barwon Bluff Marine Sanctuary protects 610 metres of the coastline surrounding The Bluff and is complemented by a number of other nearby parks, including:

- Port Phillip Heads Marine National Park, comprising separate areas at Point Lonsdale, Mud Islands, Swan Bay, Popes Eye, Portsea Hole and Point Nepean.
- Lake Connewarre State Game Reserve, on the lower reaches of the Barwon River, which is part of the Port Phillip (Western Shoreline) and Bellarine Peninsula Ramsar Site. The Reserve contains one of the largest estuaries in Victoria and is listed on the Register of the National Estate for its wetland values.
- Lake Victoria – Lonsdale Lakes Wildlife Reserve on the Bellarine Peninsula, which contains a system of wetlands and dunes with remnant vegetation that provides significant habitat for migratory and resident birds.

Sanctuary waters are within the local port of Barwon Heads.

The sanctuary is within Tourism Victoria's Melbourne's Bays and Peninsulas product region. Camping and accommodation areas close to the sanctuary include caravan parks, bed & breakfast and holiday house accommodation at Barwon Heads and Ocean Grove. Melbourne's Bays and Peninsulas product region receives 16% of all tourist visits to Victoria, including 2.2 million domestic overnight visitors, 6.7 million domestic day visitors and 53 000 international overnight visitors (Tourism Victoria 2003a).

2.2 Sanctuary significance and values

Barwon Bluff Marine Sanctuary makes a valuable contribution to Victoria's parks and reserves system, which aims to protect viable

representative samples of the State's natural marine and terrestrial environments. The parks and reserves system also provides opportunities for visitors to enjoy and appreciate natural and cultural values, and many make important contributions to tourism.

Barwon Bluff Marine Sanctuary is assigned the International Union for the Conservation of Nature and Natural Resources (IUCN) Category III (National Monument) of the United Nation's List of National Parks and Protected Areas. Category III areas are managed primarily for conservation of specific natural features.

The area included in the sanctuary is significant to many people in the community, especially the Wathaurong people. A number of community groups and individuals, particularly among residents of Barwon Heads township, and the education and research communities, have strong historical associations with the sanctuary area. Parks Victoria respects the community's traditional and historical associations with the sanctuary area.

Important values for the sanctuary are listed below.

Natural values

- Intertidal reef platforms with a high diversity of invertebrate fauna and flora.
- Subtidal reefs that support diverse and abundant flora, including kelps, other brown algae, and green and red algae.
- Calcarenite and basalt reefs extending from The Bluff that are of regional geological significance.
- Intertidal habitats that support resident and migratory shorebirds, including threatened species.
- Subtidal habitats that support sedentary fish and are also used by migratory fish and marine mammals.
- Marine habitats and species that are of scientific interest and valuable for marine education.

Recreational and tourism values

- Opportunities for underwater recreation, including visits to subtidal communities that are easily accessible from the shore.
- Outstanding coastal vistas, seascapes and underwater scenery.

Cultural values

- An important landmark and area for gathering fish and shellfish for the Wathaurong people.
- A strong historic and ongoing connection with marine education.
- Remnants from the *Earl of Charlemont*, a heritage-listed shipwreck.

2.3 Evidence of past use

The coast adjoining the sanctuary contains middens and artefacts which provide evidence of the extensive history of use of the area by the Wathaurong people (section 5.1).

The waters around the sanctuary have been used since European settlement as a passage to the entrance to Port Phillip.

Barwon Heads was a productive fishing port from the 1920s onwards, supporting abalone, Rock Lobster and Barracouta fisheries.

The strong association of educational institutions with the sanctuary is evidence of its long history of use as a venue for marine education and interpretation.

2.4 The sanctuary visitor

Visitors to the sanctuary enjoy a variety of recreational activities, including sightseeing, beach walking, intertidal exploration, bird watching, swimming, snorkelling, diving and surfing.

Visitor numbers for the sanctuary are not known, but are likely to be high. Other marine national parks and marine sanctuaries in Victoria are estimated to receive a total of between 185 000 and 450 000 visits per year (Parks Victoria 2005a).

Many visitors come to the sanctuary from Melbourne and central Victoria during the summer and Easter holiday periods. A significant number of these visitors are drawn by the natural and cultural values and

recreational opportunities in and around Barwon Heads, including the beaches, riverbanks, surf and cafes.

Outside holiday periods, there are fewer visitors, and they are mostly residents of Barwon Heads, Ocean Grove, and other parts of the Bellarine Peninsula and Geelong. A large percentage of residents in these areas regularly visit the sanctuary.

School groups, either self-guided or led by licensed tour operators, are a major source of visitors to the sanctuary. A large percentage of schools are repeat visitors to the sanctuary.

The forecast residential population growth for the Barwon coastal region (until 2031) is 1.05% (DSE 2004a). Because the sanctuary is less than two kilometres from Barwon Heads, which has one of the highest forecast growths in the region, it is likely that visitation to the sanctuary will increase with the population growth of Barwon Heads.

2.5 Legislation and ECC recommendations

Legislation

Barwon Bluff Marine Sanctuary is reserved and managed under the provisions of the National Parks Act. The Act requires the Secretary to the Department of Sustainability and Environment (DSE) to preserve and protect the natural condition of the sanctuary and its natural and other features and, subject to this, to provide for the use of the sanctuary by the public for enjoyment, recreation and education. Appropriate research activities are also provided for under the Act. The National Parks (Park) Regulations 2003 apply to the sanctuary.

All forms of extraction, including recreational and commercial fishing and shellfish collection are prohibited within the sanctuary under the National Parks Act. A Statewide Compliance Strategy (Parks Victoria 2002b) and a Regional Compliance Plan (Parks Victoria 2003d) have been developed in partnership with the Department of Primary Industries (DPI) – Fisheries Victoria to manage compliance with the no-fishing provisions within the sanctuary (section 8.3).

The objects and provisions of the National Parks Act set the framework for the

management of Barwon Bluff Marine Sanctuary (appendix 1). Specific legislation and ECC recommendations accepted by government also govern particular aspects of the management of the sanctuary, as described below and in subsequent sections of the plan.

The *Coastal Management Act 1995* (Vic.) applies to the use and any development of the whole of the sanctuary.

The *Archaeological and Aboriginal Relics Preservation Act 1972* (Vic.) and the *Aboriginal and Torres Strait Islander Heritage Protection Act 1984* (Cwlth) apply to the sanctuary and protect all Aboriginal cultural heritage values, including places and objects (section 5.1).

The *Environment Protection and Biodiversity Conservation Act 1999* (Cwlth) applies to the whole of the sanctuary with respect to actions that have, will have, or are likely to have a significant impact on matters of national environmental significance, including listed threatened species and communities and listed migratory species in the sanctuary.

The *Native Title Act 1993* (Cwlth) applies to the management of the sanctuary.

The *Parks Victoria Act 1998* (Vic.) enables management services for Barwon Bluff Marine Sanctuary to be provided by Parks Victoria on behalf of the Secretary to DSE.

Other legislation, and policies and guidelines (section 2.6) at both the Commonwealth and State levels apply to management of the sanctuary and specific activities and uses.

ECC recommendations

The former Environment Conservation Council (ECC), in its *Marine, Coastal and Estuarine Investigation Final Report* (ECC 2000), recommended the creation of Barwon Bluff Marine Sanctuary for its values for marine education.

The ECC also made a number of recommendations that relate to the sanctuary. The recommendations included:

- B6 Use of Barwon Bluff Marine Sanctuary in accordance with the general recommendations for Marine Sanctuaries.

- R3 Planning and management relating to traditional interests and uses in coastal marine areas to be based on recognition and respect for the traditional relationship of Aboriginal people with the land and sea.
- R13 Further research to be undertaken on biological community composition and structure, both within and external to marine protected areas, with an emphasis on assessing the impacts of harvesting marine fauna.
- R14 Assessments to be made and strategies developed for protection of vulnerable or threatened marine species and communities, using the provisions of the *Flora and Fauna Guarantee Act 1988* (Vic.) as appropriate.
- R18 Measures to be implemented by responsible agencies to reduce the risk of marine pest species arriving in Victoria, and to ensure a rapid and effective response in the event of an introduction.
- R26 Public land and waters continue to be available for a wide range of tourism and recreational uses. Development should not preclude public access to foreshore and offshore areas, other than to meet safety and security requirements that cannot be achieved in other ways.

- *Indigenous Partnership Strategy and Action Plan* (Parks Victoria 2005b)
- *Guidelines for Working with Aboriginal Communities and Protection of Cultural Sites* (Parks Victoria 2002a)
- *Victoria's Biodiversity Strategy* (NRE 1997a)
- *National Strategy for the Conservation of Australia's Biological Diversity* (ANZECC 2001)
- *Heritage Management Strategy* (Parks Victoria 2003b)
- *Victoria's Heritage – Strengthening our Communities* (Heritage Victoria 2006)
- *National Strategy for Ecologically Sustainable Development* (COAG 1992).

The sanctuary is also managed within a broader context of a number of other plans and strategies, including:

- *Corangamite Regional Catchment Strategy* (CCMA 2003)
- *Lake Connemara State Game Reserve Management Plan* (DCNR 1993)
- *Nature Based Tourism — Directions and Opportunities for Victoria 2000–2003* (Tourism Victoria 2003b)
- *Victorian Coastal Strategy* (VCC 2002)
- *State Environment Protection Policy (Waters of Victoria)*
- *Policy for Sustainable Recreation and Tourism on Victoria's Public Land* (NRE 2002)
- *The Bluff Conservation Management Plan* (BCCM 1997) (under review)
- *The Port of Barwon Heads Safety and Environmental Management Plan* (BCCM in prep.).

All of these recommendations were accepted by the State Government in 2002 (Government of Victoria 2002).

2.6 Policies and guidelines

The sanctuary is managed in accordance with Parks Victoria's operational policies and, as appropriate, with other relevant policies and guidelines, including:

- *Victoria's System of Marine National Parks and Marine Sanctuaries Management Strategy 2003–2010* (Parks Victoria 2003a)

3 STRATEGIC DIRECTIONS

3.1 Sanctuary vision

A future visitor to Barwon Bluff Marine Sanctuary finds a flourishing community of diverse and abundant marine life representative of the Central Victoria bioregion. The rugged cliffs that form The Bluff are a sentinel below which the sandstone and basalt reefs form intricate habitats.

An abundance of marine algal species thrive, including Giant and Bull Kelp forests in deep water and carpets of Neptune's Necklace in the shallows. Visitors come and go with the tides; beach walkers and surfers enjoy the tranquil sunrise, snorkellers and divers explore the kaleidoscope below the waves, children are guided to the discovery of nature, artists are inspired and walkers are invigorated by the ocean's energy.

Well-defined access unobtrusively incorporates warnings to visitors of the quickly changeable nature of ocean conditions.

The sanctuary makes a valuable contribution to the community throughout the region and beyond by engaging it in learning about marine conservation in a setting increasingly valued for that purpose.

Natural communities respond to natural events and cycles, fully protected from damaging and extractive activities.

Partnerships between the local community and management agencies support broad and frequent dialogue that develops ongoing effective responses and solutions to threats to the sanctuary.

As the base of the important landmark of The Bluff, the sanctuary continues its important role in Indigenous culture and is interpreted, respected and conserved. The evidence of the treacherous risks to shipping within the sanctuary's boundaries is used to successfully interpret maritime heritage.

3.2 Zoning

A park management zoning scheme is normally used to define areas where various types and levels of use are appropriate. However, management zones do not need to be defined in Marine National Parks and Marine

Sanctuaries because the management aims for these areas are clearly outlined in the National Parks Act and are consistent across all Marine National Parks and Marine Sanctuaries (section 2.5 and appendix 1).

3.3 Management directions

Major management directions for the sanctuary are outlined below.

Natural values conservation

- Natural processes, including competition, predation, recruitment and disturbance, will be protected to ensure an overall benefit to the biodiversity and variety of marine ecological communities in the sanctuary.
- Identified threats to the sanctuary will be minimised through addressing the outcomes of ongoing monitoring, risk assessment and, where feasible, complementary adjacent, coastal and catchment management.
- The beach and intertidal reefs will be managed to enable seabirds and shorebirds to feed, roost and breed.
- Compliance with legislated provisions that prohibit extractive activities, including fishing and shellfish collection, will be ensured through education, information, community support, and improved surveillance and enforcement.
- Impacts of changes to water quality will be minimised through cooperation with catchment managers and other relevant agencies.
- Research and monitoring to improve the scientific basis for management, including baseline data collection, marine habitat mapping and threat assessment, will be undertaken as outlined in the statewide Management Strategy (Parks Victoria 2003a) and through collaborative research links.
- Impacts on coastal vistas, seascapes and underwater scenery will be minimised through the application of minimal-impact guidelines within the sanctuary and

cooperation with adjacent coastal land managers in relation to planning and developments outside the sanctuary.

Cultural values conservation

- Indigenous places and objects will be protected from interference or damaging activities.
- The Traditional Owners' knowledge, interests and rights in the waters and land, and aspirations for *Country*, will be reflected in the sanctuary's management, in accordance with legislation and policies.
- Indigenous cultural obligations relating to *Country* will be respected, and the Traditional Owners' knowledge will be promoted and interpreted in accordance with their views.
- Research into the Indigenous and historic cultural heritage of the sanctuary will be encouraged and supported as appropriate, in consultation with the Indigenous and wider communities.
- Historic relics and places will be conserved by protecting them from damaging or inappropriate activities.

The sanctuary visit

- Visitor management will focus on facilitating education and interpretation into the sanctuary's natural and cultural values, particularly raising visitors' awareness of the sanctuary's special values and the wider importance of the conservation of Victoria's marine environment.
- Visitor understanding and appreciation will be enhanced by a range of information services and interpretation and education programs.
- An increased understanding of visitor numbers, interests, needs and activities will be sought.
- Recreation opportunities will be provided in accordance with table 1.

- Visitors will be guided through information, interpretation and education to adopt minimal-impact behaviours.
- Visitors, including tour operators, will be encouraged to adopt minimal impact techniques and to adhere to industry-developed standards appropriate to their activity.
- Visitors will have opportunities to observe marine life, enjoy water sports and participate in other recreational activities that are compatible with management objectives (appendix 1).

Community awareness and involvement

- Friends, volunteers and other interest groups will be encouraged to develop an understanding and appreciation of the sanctuary's values and the rich and diverse knowledge and aspirations of the Traditional Owners.
- An awareness and understanding of the sanctuary and its management, and a sense of custodianship, will be encouraged among local communities and visitors.
- Strong relationships will be developed and maintained with people, groups and communities with strong relationships with, or interests in, the sanctuary, as a basis for encouraging their participation in its management.
- Strong collaborative partnerships will be developed with the Traditional Owners to facilitate the reflection of their knowledge, rights, and interests and aspirations in the sanctuary's planning and management.
- Collaborative partnerships will be established with relevant agencies to progress areas of mutual interest which strengthen the protection of the sanctuary.
- Ongoing opportunities will be provided for communities, groups, individuals and other agencies to share their interests and concerns relating to the sanctuary with the sanctuary's management.

TABLE 1 SUMMARY OF RECREATIONAL OPPORTUNITIES

ACTIVITY	SANCTUARY
Aircraft landing/launching (including hang-gliding and paragliding)	N
Beachcombing (no collecting)	Y
Bait collection	N
Bird watching	Y
Boating (section 6.4)	
Kite-boarding / wind-surfing	Y
Motorised boating	Y
Non-motorised boating (canoe, kayak, surf-ski)	Y
Personal Watercraft (PWC)	Y
Sailing	Y
Wake boarding / water skiing (section 6.3)	Y
Boat operation (sections 6.2 & 6.4)	
Anchoring	Y
Landing	Y
Launching motorised vessels (no facilities)	N
Launching non-motorised vessels (no facilities, no trailers)	Y
Mooring (private)	N
Camping	N
Collection of animals, seaweed, shells and driftwood	N
Cycling	N
Diving and snorkelling (sections 6.2 & 6.5)	Y
Dog walking (section 6.6)	N
Driving on beaches	N
Educational/guided activities (sections 6.1, 6.3 & 6.7)	Y
Feeding wildlife	N
Filming & photography	Y
Fires on beaches	N
Fishing (all forms)	N
Fossil / artefact collection	N
Horse riding	N
Licensed tours (section 6.7)	Y
Nature photography, painting,	Y
Picnicking	Y
Prospecting and metal detecting	N
Rock-climbing / abseiling	N
Rock-pool rambling (section 6.3)	Y
Scenic viewing	Y
Shell collecting	N

Table 1 (cont'd)

ACTIVITY	SANCTUARY
Surfing / boogie boarding (section 6.3)	Y
Swimming (sections 6.3 and 6.8)	Y
Walking (intertidal zone – soft)	Y
Walking (intertidal zone – rocky)	Y
Whale / dolphin / seal watching (section 4.4)	Y

Note: The use of chainsaws and generators is prohibited within the sanctuary.

Key:

Y Yes, subject to overlay prescriptions and conditions prescribed by legislation, permits or elsewhere in the plan as indicated.

N Not permitted.

4 STRATEGIES FOR NATURAL VALUES CONSERVATION

4.1 Geological and geomorphological features

Geological and geomorphological processes, including tectonic movement, lava flows, dune accretion and erosion and deposition from the Barwon River, have shaped the sanctuary's environment (Bird 1993).

Located at the southern point of the Bellarine Peninsula, the sanctuary shares and exhibits the region's complex geology that can be traced back to the Cretaceous period (65 million to 146 million years ago) when Australia split from Antarctica. During this period, a rift valley formed between the two continents and was filled by sediments from fast-flowing river systems. These sandstone and mudstone sediments underlie the entire Bellarine Peninsula.

In the mid-Miocene (7 million to 23 million years ago), rising sea inundated the entire peninsula, and the coastline. As the sea receded during the Pliocene (1.8 million to 7 million years ago) it left behind a deposit of sand that now covers much of the Bellarine Peninsula.

In the late Pliocene or early Pleistocene (about 1.8 million years ago), southerly lava flows from eruptions at Mount Dunned progressed toward The Bluff, forming the basalt reefs and boulders in the sanctuary's east.

The shore platforms of the sanctuary and the beach and dune formations in and around the sanctuary are indicative of the sea level fluctuations from the mid-Miocene onwards. The flatter sandstone platform and reef in the west of the sanctuary overlie the basalt and slope gently into the subtidal region. A protected bay lies between the basalt boulders to the east and the sandstone on the western side of Point Flinders. During periods of lower sea level, high winds formed the dunes behind the sanctuary. The aeolian calcarenite capping of The Bluff resulted from the high calcium carbonate content of the sands.

The calcarenite coastal bluff within and outside the sanctuary is of regional / local significance for its visible sections of Pleistocene dune calcarenite with interbedded palaeosols, resting upon basalt. The calcarenite

outcrops on the shore and forms reefs off the mouth of Barwon River (Buckley 1993).

On rocky coasts such as those bordering Bass Strait, coastal erosion can result in dramatic rock formations in areas of the coastline that contain rocks with different resistances to erosion. The softer areas erode much faster than the harder ones, which can result in interesting landforms such as tunnels, caves, bridges and columns. Natural processes such as waves, winds, rain and tides constantly erode the cliff face of The Bluff into the sea (section 6.8 and 7.2). Large storm-generated waves may permanently remove sediment and rocks, or temporarily redistribute coastal sediments. Disturbance from human activities can also cause or accelerate coastal erosion.

According to Indigenous tradition, geomorphological features of the landscape result from the activities of ancestral spirits in the *Dreamtime*.

Aims

- Protect the geological and geomorphological features of the sanctuary from the impacts of human activity.
- Increase knowledge of the geological and geomorphological significance of the sanctuary.

Management strategies

- *Encourage research to identify landforms of special significance to Traditional Owners, and protect them from damaging or inappropriate activities (sections 5.1 and 8.2).*
- *Allow natural geological and geomorphological processes to continue without human interference.*
- *Manage visitor activities to protect unique geomorphological features from damage (sections 6.1, 7.2 and 8.2).*
- *Include information on the unique geology and geomorphology of the sanctuary in interpretation services.*
- *Consider the significance of landforms to Traditional Owners in interpreting the planning area and implementing*

management programs (sections 4.5, 5.1, 6.1 and 8.2).

4.2 Catchment and water quality

The sanctuary is within the Barwon Basin of the Corangamite catchment (365 000 ha) for which the Corangamite Catchment Management Authority (CMA) is responsible for overall land management coordination. Agriculture occurs over 73% of the catchment and urban development is expanding rapidly, but there are still areas with remnant natural and semi-natural vegetation scattered through the catchment (CCMA 2003). The catchment has a population of 325 000 people and has received approximately 600–800 mm rainfall annually, draining predominantly into the Barwon River which in turn discharges into the ocean adjacent to the sanctuary.

Water quality in the sanctuary is dominated by the waters of Bass Strait and the Southern Ocean. However, an ecological risk assessment of the sanctuary (section 4.4) has identified potential increases in nutrients from the Barwon River as threatening processes to the water quality within the sanctuary that are likely to result in changes to its ecological processes. The impact of the discharge of waste water from the Black Rock Ocean Outfall near Breamlea which is managed by Barwon Water is considered to be minimal and will continue to be monitored.

The Barwon River carries waterway and agricultural run off as well as stormwater from Geelong and its surrounding suburbs through Reedy Lake and Lake Connewarre into Bass Strait at the eastern side of the sanctuary. Streams in the water supply catchment areas of the Barwon Basin are in excellent or good condition, however most streams in the lower Barwon Basin are in marginal to poor condition (CCMA 2003).

Reedy Lake and Lake Connewarre act as a filtration system capturing nutrients and sediments. High flow events may contribute to litter, fine sediments and nutrients being washed down stream into the Barwon Estuary which may decrease water quality and provide conditions conducive to algal blooms.

The Corangamite CMA is responsible for the management of the Barwon River. Parks

Victoria is responsible for the management of Reedy Lake and Lake Connewarre.

Stormwater drains discharging into the Barwon River around Geelong and its surrounding suburbs do not have gross pollutant traps installed, allowing pollutants and litter to enter the river. Stormwater also discharges into Barwon River at five sites in and around the town of Barwon Heads, upstream of the sanctuary. There are no direct stormwater discharge points into the sanctuary. The City of Greater Geelong is responsible for stormwater management and the development of a stormwater quality management plan to minimise the impacts of stormwater on the receiving environment in the municipality (CoGG 2002).

Sanctuary water quality could also be reduced by marine chemical pollution or litter from recreational or commercial boats or land-based visitors in or near the sanctuary. The waters of the sanctuary are protected by The State Environment Protection Policy (Waters of Victoria) gazetted under the *Environment Protection Act 1970* (Vic.), which provides a coordinated approach for the protection and, where necessary, rehabilitation of the health of Victoria's water environments. Under the policy, vessels must have on-board containment facilities that prevent the discharge of wastes or sewage into water (section 6.3). The sanctuary is at risk of marine pollution incidents from ships passing along the western seaboard to access Port Phillip.

Responses to marine pollution incidents often require a diverse range of skills and resources involving coordination between different agencies (section 8.3). As the manager of 70% of Victoria's coastal areas, Parks Victoria plays a significant support role in the response to marine pollution incidents. The responsibilities for responding to emergency incidents in Victoria and Victorian waters are outlined in the Emergency Management Act 1986 (Vic.). In Victorian waters, the Victorian Marine Pollution Contingency Plan (VICPLAN) (MSV 2002) outlines broad response arrangements to a potential oil or chemical spill (section 8.3).

Litter in the sanctuary may be derived from urban areas and transported through stormwater systems, rivers and waterways, discarded from vessels within in or near the

sanctuary, or discarded by visitors to the sanctuary, from nearby piers and adjacent areas. Under the *Environment Protection Act 1970* (Vic.), littering and the discharge of wastes from vessels is illegal. More information about the sources of litter is required to develop targeted preventative programs. Litter on shorelines may injure people and animals, especially birds (section 4.4), and lead to the recirculation of litter into the marine environment.

Aims

- Protect and maintain water quality within the sanctuary to ensure that sanctuary values are protected.
- Minimise the impact of threatening processes from catchment-derived activities.

Management strategies

- *Regularly observe and record significant river flow events and other potential sources of pollution that may affect water quality in the sanctuary, including incidents of marine pollution.*
- *Liaise with the Corangamite CMA, CoGG and other relevant organisations on the management of Barwon River, Reedy Lake, Lake Connewarre and other catchment issues as necessary to minimise threats to water quality in the sanctuary.*
- *Liaise with CoGG to seek the installation of gross pollutant traps on stormwater drains entering Barwon River.*
- *Remove accumulated litter from accessible intertidal areas within the sanctuary where necessary to ensure public safety and protect sanctuary values.*
- *Investigate sources of litter within the sanctuary and liaise with BCCM and CoGG to minimise litter within the sanctuary.*
- *Encourage the participation of community groups in litter investigation and collection programs in the sanctuary, subject to safety considerations.*
- *Permit mechanical beach-cleaning activities below the high water mark only where necessary to ensure public health*

and safety or as part of an emergency response such as to oil or chemical spills (section 7.1).

- *Incorporate water quality and catchment issues in interpretation and education programs and liaise with relevant agencies to communicate benefits to the sanctuary in wider community education programs (section 6.1 and 8.3).*
- *Respond to marine incidents within the sanctuary in accordance with the Emergency Management Act and the Victorian Marine Pollution Contingency Plan (VICPLAN) (MSV 2002).*

4.3 Hydrodynamics

East of Point Flinders, the sanctuary's shores within the Barwon River are relatively calm, influenced predominantly by tidal currents and the flow of water from Barwon River (figure 2). The entrance to the Barwon River is unique as it is the only river in Victoria which flows unbarred into the ocean. West of Point Flinders the intertidal platforms and beach are exposed to persistent high-energy south-westerly swells in Bass Strait, with an average wave height of 1.7 metres (Short 1996).

The sanctuary is predominantly intertidal, with a tidal variation of approximately 2.1 metres during spring tides and 0.7 metres in neap tides. The waters of the sanctuary are shallow and extend to a depth of 10 metres. Average surface water temperatures are 13.5 °C in winter and 17.5 °C in summer.

Wind and wave action influence the beaches, affecting grain size, deposition and erosion. Natural hydrodynamic events such as storm surges displace seaweed and kelp communities, erode beaches and deposit sand over the reefs. However, human-induced changes to local hydrodynamic processes could affect the values of the sanctuary. River retaining walls have already been built at the base of the primary dune north of the sanctuary to minimise undercutting of The Bluff.

Other potentially threatening processes to the hydrodynamics of the sanctuary include sea-level rise and altered current flows. Because human-induced changes to local hydrodynamic processes could affect the values of the sanctuary, any proposals for new infrastructure, including artificial reefs, will

generally be inappropriate in Marine National Parks or Marine Sanctuaries.

Aim

- Minimise the impacts on sanctuary values from human-induced changes to local hydrodynamic processes.

Management strategies

- *Do not permit the construction of infrastructure that could interfere with hydrodynamics within the sanctuary.*
- *Provide advice on planning applications for developments that could affect sanctuary hydrodynamic processes, where appropriate (section 7.2).*
- *Encourage research into natural and unnatural hydrodynamic processes to increase knowledge and understanding that will help guide the future management of the sanctuary.*

4.4 Habitats and communities

Barwon Bluff Marine Sanctuary covers only 17 ha yet supports a large diversity of marine habitats and species, particularly in intertidal areas. The diversity of habitats results from the unique geology of both basalt and sandstone shore platforms in the sanctuary (section 4.1) and the presence of arches, gutters and corridors in the subtidal areas (section 4.5). There are also extensive sandflats between basalt boulders on the eastern reef.

The intertidal flora is dominated by the brown alga, Neptune's Necklace, which forms a complete carpet in some areas. Foliose coralline algae are present between and beneath the Neptune's Necklace. The red turf alga, *Gelidium pusillum*, is common, and Sea Lettuce is also present.

Most intertidal invertebrates occur in both basalt and sandstone habitats, although some species such as the Black Nerite snail appear to prefer the basalt.

The intertidal invertebrate fauna includes many gastropods, including grazers such as limpets (e.g. *Cellana tramoserica*), top shells and coniwinks as well as carnivores such as dog whelks and scavengers such as *Cominella lineolata*. Close to high-tide levels, Blue Periwinkles, mussels and barnacles are

common. Around mid-tide levels, tubeworms form encrusting calcareous masses that provide microhabitats for other invertebrates such as crabs, worms and amphipods. In the low intertidal levels, and in rock-pools that retain water at low tide, limpets are still common along with other gastropods including Elephant Snails, Warreners and dog whelks. Rock-pools also contain anemones such as the beautiful Waratah Anemone, and seastars and crabs. At very low tide levels there is a rim of Sea Squirts (Cunjevoi).

The range of habitats in areas dominated by basalt boulders creates excellent environments for crabs, seastars and sessile animals. The sandy patches between basalt boulders support a diverse assemblage of worms and numerous crustaceans such as the Soldier Crab and the Bass Yabbie.

Intertidal rock-pools may also contain fish species, predominantly the Tasmanian Blenny and Southern Crested Weedfish, and trapped juvenile Sweep and other reef species.

The moderately sheltered subtidal bay between the sandstone and basalt reefs is dominated by a forest of Giant String Kelp with patches of Bull Kelp around the fringes. Outer sections of both the basalt and sandstone reefs are fringed at moderate depth by thick stands of Bull Kelp. Many of the algae of the lower intertidal region extend into the subtidal zone.

Subtidal fauna include, prominently the Black-lip Abalone, sponges and sea tulips, and there is wide range of seastars, including the Eleven-armed Seastar. The Maori Octopus inhabits crevices in the reef and is often seen around the rock-pools at low tide in the evening.

There are many species of reef fish among the Giant Kelp and other subtidal flora, including Sweep, Wrasses, Herring Cale, Scaly Fin, and several species of leatherjackets. Eagle Rays and Cat and Swell Sharks are also often seen in the deeper sections of the sanctuary.

The water column of the sanctuary has both planktonic and free-swimming species. Planktonic species are poor swimmers and are largely dependent on currents for movement, nutrients and food. Plankton primarily consists of microscopic animals, such as copepods, and plants, such as diatoms. Larger animals, such as jellyfish and ctenophores, also form part of the plankton. Many organisms spend the early

stage of their life in the plankton before returning as recruits to the adult habitat. Common free-swimming animals observed in the sanctuary, including squid, sharks, and bony fish such as whiting, garfish and Australian Salmon.

Marine mammals that may pass through the sanctuary include Dolphins, Killer Whales and the threatened Australian Fur Seal, Humpback Whale and Southern Right Whale. All whales and dolphins are protected under the *Wildlife Act 1975* (Vic.) and the *Wildlife (Whale) Regulations 1998* (Vic.). Under this legislation the minimum approach distances for whales and dolphins are 30 m for swimmers and divers, 50 m for surfers and 100 m for recreational and commercial vessels, including personal water craft and motorised swimming aids.

The *Victorian Cetacean Contingency Plan* (NRE 1999c) specifies arrangements for dealing with marine mammals that become stranded, entrapped, entangled or wounded. The *Wildlife Response Plan for Oil Spills* (NRE 1997b) guides the rescue and treatment of injured or oiled wildlife.

The sanctuary's beaches and rocky shores provide valuable habitat for shorebirds and seabirds. Thirteen threatened species have been recorded in and around the sanctuary, including the Caspian Tern and Great Egret. Hooded Plovers nest near the sanctuary (Plummer et. al. 2003).

Birds are threatened by predation by foxes and cats, and vulnerable to annoyance from dogs and disturbance from human activities including boating activities (section 6.6), littering (section 4.2) and rock-pool rambling (section 6.3). Disturbance to birds can result in species no longer visiting a site, a decline in species numbers and low body weight in migratory birds. The exclusion of dogs from the sanctuary would reduce the level of disturbance to birds and may assist in maintaining or increasing their abundance within the sanctuary (section 6.6).

The diversity and abundance of aquatic species and seabirds and shorebirds in the sanctuary provided an important seasonal food source of traditional significance to the Wathaurong people. The extensive shell middens adjacent

to the sanctuary reflect the important cultural values of the area.

All species recorded within the sanctuary that are listed as threatened or protected by international agreements or other legislation (e.g. JAMBA, CAMBA) are either birds or large marine mammals such as the Australian Fur Seal. This reflects the current vertebrate focus of threatened species management. Management of marine ecological communities within the sanctuary, rather than threatened species, is more likely to lead to a higher level of success in protecting and enhancing threatened species populations. Whole-of-habitat management may also result in the protection of species not yet identified because of their rarity, cryptic nature, or lack of search effort.

All forms of extraction, including recreational and commercial fishing, are prohibited within the sanctuary. The feeding of animals, including fish and birds, is not permitted in Marine National Parks or Marine Sanctuaries.

An ecological risk assessment, conducted by the University of Melbourne and involving Parks Victoria staff, members of the Barwon Bluff Marine Sanctuary Management Plan Advisory Group and others from the community with special knowledge of the sanctuary, identified the key threatening processes to habitats and communities, as follows:

- trampling and other activities of visitors, particularly organised education groups and water-based activities, which can result in changes in species composition and loss of abundance and diversity of organisms
- illegal harvesting, which reduces species abundance
- knowledge gaps, particularly a lack of accurate baseline data, which hinders appropriate management and protection of natural values.

The high and increasing levels of trampling on the sanctuary's intertidal areas associated with shore-based activities (section 6.3) could result in irreversible damage to intertidal habitat and declines in flora and fauna diversity and abundance (Povey & Keogh 1991). Local residents and educators who visit the sanctuary

regularly have expressed concerns about the sustainability of the increase in visitors to the sanctuary's intertidal environment.

It is common on particular days during the first school term for several large groups of students to mass on the sanctuary's shore platforms. Such levels of shore-based activities affect not only the vigour of the intertidal flora and fauna but also visitors' experience of the sanctuary and the marine environment.

Impacts of visitor activities are most evident on frequently exposed sections of the intertidal platform and after peak visitor periods. For example, at the end of summer the mats of Neptune's Necklace are distinctly worn around large accessible platforms, along through-traffic 'pathways' and around large rock-pools.

Current levels of snorkelling and diving are not known to be causing unacceptable impacts on the sanctuary.

Changes to water quality will affect the relative abundance of flora in intertidal areas and have the potential to modify subtidal reefs of the sanctuary (section 4.2).

Little quantitative data on the habitats and communities of the sanctuary is available, despite the sanctuary's popularity as a site for education. The Marine Discovery Centre at Queenscliff has undertaken the most extensive survey of the reefs. Monitoring locations in the sandstone intertidal areas were established in 2001 as part of the 'Rocky Shores' project (section 6.1). The data collected by students participating in the project is provided on-line as an aid to learning about the diversity of the sanctuary and the improvement of students' field skills in biology. Information on habitats and communities gathered by Friends of The Bluff's 'Living on the Edge' project is provided on-line to the community (sections 6.1 and 8.2). Community monitoring programs such as Reefwatch and Sea Search can also provide information about the flora and fauna of the sanctuary and make a valuable contribution to the monitoring of the sanctuary and other management programs (section 8.2).

Current research and ongoing monitoring is directed by the Statewide Strategy (Parks Victoria 2003a) and is targeted at collecting baseline biological information for the sanctuary that will be used to build knowledge, identify threats, understand long-term changes

in population abundances, community structure and ecological processes in the life of this plan. Long-term intertidal and subtidal reef monitoring sites have been established within the sanctuary (Edmunds et al. 2004). To understand the sanctuary within a broader context, monitoring compares these with sites outside the sanctuary boundaries. This work will assist in identifying indicator species and habitats. The results, available on Parks Victoria's website, will enable an assessment of the ecological condition of the sanctuary to be made.

Aims

- Protect marine ecological communities and indigenous flora and fauna, and allow natural processes to continue.
- Improve knowledge of marine ecological communities, flora and fauna and threatening processes to improve the management, protection and appreciation of the sanctuary.

Management strategies

- *Manage shore-based activities, to minimise impacts on flora and fauna and communities, and maintain seabird and shorebird roosting and feeding habitat. Pay particular attention to non-compliance with no-take provisions, education and other group activities, and other activities involving trampling (sections 6.1, 6.3, 6.4, and 8.3).*
- *Continue to implement the Victorian Government's Intertidal Reef monitoring program in and around the sanctuary.*
- *Map habitats at scales suitable for management purposes, in accordance with statewide habitat mapping programs.*
- *Ensure sightings of marine flora and fauna are recorded on the Parks Victoria Environmental Information System and, DSE statewide databases (section 8.3).*
- *Work with seabird and shorebird conservation organisations to support bird monitoring programs within the sanctuary.*
- *Promote and support opportunities for community participation in monitoring programs within the sanctuary (section 8.2).*

- *Encourage research into key threatening processes, in particular:*
 - *trampling, its relationship with the information, interpretation and education services provided, and an appropriate carrying capacity for the intertidal area*
 - *the extent and impact of illegal harvesting on populations.*
- *Undertake regular risk assessments to assess the major threats to the sanctuary, and review management programs where necessary to arrest any observed declines in flora or fauna populations relating to human activities.*
- *Encourage research to identify Indigenous knowledge relating to communities and species (sections 5.1 and 8.2).*
- *Reflect Indigenous knowledge of communities and species in management practices as appropriate.*
- *Respect the cultural obligations of Traditional Owners in relation to plants and animals and reflect their significance in all management and visitor activities.*
- *Ensure all visitors comply with the Wildlife Act, Fisheries Act and Wildlife (Whale) Regulations when observing marine life, particularly compliance with no-fishing provisions (section 8.3).*
- *Respond to cetacean incidents in accordance with the Victorian Cetacean Contingency Plan (section 8.3).*

4.5 Landscape and seascape

For many people, views of the sanctuary evoke an emotional or spiritual response. Local residents, holidaymakers and educators have a strong affinity with the sanctuary's land and seascapes. Walkers, snorkellers and divers treasure the ready access to views of the diverse marine life.

The Bluff and Barwon River are significant landmarks, meeting places and harvest grounds for the Wathaurong people. The landscape and seascape are intrinsic elements of *Country* for the Wathaurong people and are significant for Indigenous communities.

The sanctuary and its surrounds offer excellent landscape and seascape views, which range from broad vistas to detailed views.

The shoreline views vary as the sanctuary is approached from the west, from vast surf beach and ocean waters to gentle sandstone platforms (which appear to change with the tides and seasons) and then basalt boulders that extend into the sea half way around The Bluff.

From a distance, the reefs of The Bluff resemble a pair of pincers, one of sandstone and one of basalt (Parks Victoria 2003c) (figure 2). Between them is a colourful scene formed by the complex geomorphology of sandstone gutters and arches and the invertebrates and algae that occur there. From a boat, The Bluff appears as a sentinel which merges with the natural vegetation that now dominates the adjacent coastal reserve.

Key visual features of the landscape and seascape include:

- the entrance to Port Phillip
- the Barwon estuary and Lake Murtnagurt
- Cape Schanck to the east and Point Addis and Cape Otway to the west (Bird 1993)
- sandy spits and long sandy beaches
- distinctive combination of tones and textures in intertidal areas, such as sandstone seasonally carpeted with Neptune's Necklace alongside dramatic black basalt boulders
- ocean swells rolling and breaking on reefs, platforms and beaches
- a kaleidoscope of underwater colour.

The scenery can be enjoyed from various vantage points, including:

- The Bluff circuit walk north of the sanctuary
- the shoreline, intertidal platforms or boats on the water
- below the waterline in the sanctuary.

The landscape of the coastal setting including the sanctuary is sensitive to developments around the Barwon Heads township. Visual intrusions in the low coastal vegetation are highly visible over long distances. The cliff warning signage around the base of The Bluff

creates a visual intrusion, as can boundary markers and water safety and other regulatory signage.

Landscape character types are used to broadly characterise different landscape types (DSE 2006). The sanctuary is within Bellarine Peninsula Landscape Character Type 3 Coastal Cliffs and Dunes of regional significance (DSE 2006). Further details about landscape management objectives and guidelines are provided in the Municipal Reference Document for the area.

The City of Greater Geelong's planning scheme (CoGG 2000) provides the framework for assessing developments proposed for the municipality. The coastal land abutting the sanctuary is zoned Public Conservation and Resource. An environmental significance overlay and a design and development overlay also apply to this area. They provide additional controls to the underlying zone for the protection of landscape from inappropriate developments.

The Victorian Coastal Council's *Siting and Design Guidelines for the Victorian Coast* (VCC 1998) provide guidelines to assist in the protection of coastal landscape values (section 7.2).

The cooperation of all agencies with responsibility for planning and management of the sanctuary and its geographical setting will help to protect landscape values (section 8.3).

Aims

- Protect landscape and seascape values within the sanctuary, including the natural beauty and character.
- Minimise visual impacts on the seascape and landscape from management activities and any future developments.

Management strategies

- *Ensure that external agencies whose activities could affect landscape and seascape values consider the importance of those values in planning and managing their activities (section 7.2).*
- *Consider and respect the significance of landscape to the Traditional Owners in planning and implementing management activities, including interpretation and*

education programs (sections 4.1, 5.1, 6.1 and 8.2).

- *Seek improvements to access facilities, particularly the rationalisation of signage at access points, to minimise their impacts on the coastal landscape and visitor experience (sections 6.1 and 6.2).*
- *Where appropriate, provide advice on planning applications for developments that could affect the landscapes and seascapes of the sanctuary (section 7.2).*

4.6 Marine pests

Over 100 exotic marine species are known to have become established in Victorian marine waters (Hewitt et al. 1999). Some have become marine pests.

There are no known records of introduced marine pests in Barwon Bluff Marine Sanctuary. A number of introduced marine pests have the potential to colonise within the sanctuary, both from waters within Port Phillip Bay and the ocean waters of Bass Strait (figure 2). Marine pests can be transported into the sanctuary on contaminated vessels, through ballast water and on diving and snorkelling equipment.

Marine pests can have a devastating impact on Marine National Parks and Marine Sanctuaries. The introduction of marine pests into Victorian waters is listed as a potentially threatening process on Schedule 3 of the Flora and Fauna Guarantee Act. Victoria's management priorities in relation to marine pests are set out in an Action Statement prepared under the Act (NRE 1999a).

Preventing marine pest invasions is the most effective management option. Prevention involves reducing the risk that a pest will be introduced to the sanctuary. In a very limited number of cases, with specific criteria, control measures may be attempted for established pest populations, generally as part of a coordinated regional or national response. However, experience elsewhere has shown that proposals to control established marine pests need to consider fully their likely effectiveness.

The interconnectedness of the marine environment and the ability of many marine pests to migrate over long distances mean that

control measures may be feasible only in limited circumstances. For example, using techniques that are successful on land, such as physical removal by hand, might make the situation worse, as some marine pests regenerate fully from fragments dislodged during removal. Where implemented, control measures will meet national guidelines for managing marine pests. Because of the possibility of misidentifications or exacerbation of the pest problem, control measures will need to be part of authorised programs. In some cases, further nationally coordinated research is required into control measures.

Victorian marine pest emergency management arrangements (*Interim Victorian Protocol for Managing Exotic Marine Organism Incursions* (NRE 1999b)) will form the basis for responding to new introductions and existing incursions of marine pests. The adoption of the *Waste Management Policy (Ships' Ballast Water)* (EPA 2004) policy for Victorian waters will help reduce the risk of marine pest incursions from ships' ballast water. Emergency responses to marine pest outbreaks in Victoria are managed as part of agreed national arrangements for marine pest emergencies. The Consultative Committee for Introduced Marine Pest Emergencies provides national oversight. Parks Victoria actively supports the protocol, by adopting best practice within the organisation and educating and informing the community about prevention measures.

Vessel cleaning and maintenance guidelines to help prevent the spread of marine pests (DSE 2004b) aim to reduce the risk of spreading marine introduced pests by providing practical solutions for cleaning gear and hulls. Supporting initiatives include *Cleaner Marinas: EPA Guidelines for Protecting Victoria's Marinas* (EPA 1998).

Parks Victoria Rangers, Fisheries Victoria Fisheries Officers, community-based organisations (e.g. dive clubs), and visitors play an important role in the monitoring and early detection of marine introduced pests.

Aims

- Minimise the risk of introduction of marine pests by human activities, and their subsequent establishment in the sanctuary.

- Establish arrangements for the detection of new incursions within the sanctuary in support of Victorian marine pest management arrangements.
- Implement national or Victoria-wide control arrangements as they relate to the sanctuary.

Management strategies

- *Support DSE in educating Parks Victoria and Fisheries Victoria staff and the community to identify marine pests and methods of preventing their spread.*
- *Encourage and support Friends and community groups such as Sea Search and Reef Watch, researchers, regular users, licensed tour operators and contractors to integrate the identification of marine pests into their activities and to monitor for and report marine pests in the sanctuary.*
- *Ensure that the detection of marine pests is reported in accordance with Victorian pest management arrangements and recorded on Parks Victoria's Environmental Information System and other relevant databases.*
- *Manage all pest incursions in accordance with the Interim Victorian Protocol (NRE 1999b) (section 8.3).*
- *Establish an ongoing program to minimise the risk of marine pest introductions and subsequent spread that addresses improving the understanding of the potential means of introduction and spread and formalising arrangements for prevention, reporting, monitoring and response.*
- *Undertake pest programs only where research indicates that control or eradication is feasible and likely to be effective or as part of a coordinated regional or national response.*
- *Avoid translocation or new introductions by promoting boat-cleaning protocols for all recreational boats and contractors (section 6.3) in accordance with the DSE brochure 'Aquatic Pests: Treat 'em mean – keep your boat clean'.*
- *Ensure that management vessels operating in the sanctuary are maintained according*

to Victorian Government boat-cleaning protocols (DSE 2004).

- *Include boat-cleaning protocols in contracts, licences or permits of contracted vessels, research vessels and licensed tour operator vessels operating in the sanctuary.*
- *Ensure that any new marine infrastructure within the sanctuary is treated to remove any marine pests.*
- *Encourage the use of clean diving practices to prevent the spread of marine pests, including washing equipment and vessels in fresh water and removing any materials from equipment and vessels (section 6.5).*

5 STRATEGIES FOR CULTURAL VALUES CONSERVATION

5.1 Indigenous cultural heritage

Barwon Bluff Marine Sanctuary is part of *Country* of the Wathaurong people, who are one of the five language groups of the Kulin people of central Victoria. *Country* of the Wathaurong people includes the coastal areas between Werribee River and Lorne, inland to Colac, Cressy and Ballarat. Wathaurong people have an ongoing relationship with their *Country*.

The Bengalat balug, one of 27 clans that make up the Wathaurong language group, are most closely related to the sanctuary area. They congregated seasonally in and around the sanctuary and feasted on the abundant fish speared in the river and ocean, shellfish gathered from rock-platforms and birds hunted along the beach and abutting coastal lands.

The importance of Barwon Heads as an Aboriginal place is demonstrated by the middens and artefacts found throughout The Bluff. There are no registered Aboriginal sites within the sanctuary.

All Indigenous places and objects are protected under the Archaeological and Aboriginal Relics Preservation Act and the Aboriginal and Torres Strait Islander Heritage Protection Act. It is an offence to damage, interfere with or endanger an Aboriginal site, place or object without obtaining prior written consent from the scheduled Aboriginal community.

Issues relating to the protection of cultural heritage and the involvement of the scheduled Aboriginal community are approached in accordance with these Acts. Under the Commonwealth Act, the Wathaurong Aboriginal Cooperative is the scheduled Aboriginal community.

Issues relating to native title are dealt with according to the Native Title Act (section 2.5).

Parks Victoria respects the views of the Traditional Owners and seeks to reflect their knowledge, interests, rights and aspirations for *Country* in planning and management of the sanctuary (Parks Victoria 2005b).

Aims

- Protect Indigenous places and objects from interference or damaging activities.
- Support the views of the Traditional Owners in managing the sanctuary.

Management strategies

- *Protect Indigenous places and objects from disturbance and damage, in partnership with the Traditional Owners and in cooperation with Wathaurong Aboriginal Cooperative and AAV (section 8.3), in accordance with:*
 - *relevant legislation including the Archaeological and Aboriginal Relics Preservation Act and Aboriginal and Torres Strait Islander Heritage Protection Act*
 - *Parks Victoria's Guidelines for Working with Aboriginal Communities and Protection of Cultural Sites (Parks Victoria 2002a).*
- *Ensure that all management actions are in accordance with the Native Title Act.*
- *Respect the views of the Traditional Owners and the cultural obligations of Indigenous communities.*
- *Reflect the Traditional Owners' knowledge, interests, rights and aspirations for Country in all planning and management of the sanctuary, in consultation with the Traditional Owners and the Wathaurong Aboriginal Cooperative and in accordance with Parks Victoria's operational policies (sections 4.1, 4.4, 4.5, 6.1, 7.1 and 8.2).*
- *Assess annual sanctuary programs to integrate relevant Indigenous practices and minimise the potential for impacts from management activities on Indigenous cultural heritage, in consultation with the Traditional Owners, and the Wathaurong Aboriginal Cooperative.*
- *Maintain confidentiality concerning Indigenous cultural obligations, knowledge, places, objects and aspirations, in accordance with the views*

of the Traditional Owners (sections 6.1 and 8.2).

- Where appropriate, encourage research into the Indigenous cultural heritage relating to the sanctuary in collaboration with the relevant Indigenous communities and in liaison with AAV (section 8.3). Use results to target protection and other management activities (sections 6.1, 6.2, 7.1 and 7.2).
- Work with the Traditional Owners to assess and identify Indigenous cultural heritage suitable for promotion and interpretation (sections 6.1 and 8.2).

5.2 Maritime and other cultural heritage

William Buckley is the first European known to have visited Barwon Heads, in 1803. He is reported to have swum across the Barwon River near the coast en route from Point Lonsdale to Kaaraf (Bream Creek) after escaping from Sullivans Bay (Sorrento) penal compound (BCCM 2002).

The first official European land exploration of the Barwon Coast was led by John Helder Wedge in 1835. Wedge was accompanied by William Buckley, Alexander Thompson, and three Aboriginal men whose names are not known. Barwon Heads township was surveyed in 1870 but did not develop into a village until the 1890s when agricultural land was sold and subdivided along the Barwon River.

The Barwon Heads Park (The Bluff) was reserved for public purposes in 1880 and the Barwon Heads riverbank and beaches became popular for swimming and sunbathing. The area now has high social and cultural value as a place for passive recreation and the educational opportunities it provides.

The sanctuary has been used for marine education for many years, and its values for marine education were central to the ECC's recommendation for its inclusion in Victoria's system of Marine National Parks and Marine Sanctuaries in 2000 (ECC 2000).

The wreck of the *Earl of Charlemont* is located around the eastern boundary of the sanctuary. The ship left Liverpool, England, carrying 366 passengers and 37 crew on 13 March 1853. It struck the reef south-west of the sanctuary

(now known as Charlemont Reef) and was carried onto the reef platforms of The Bluff close to the eastern boundary during the night of Saturday 18 June 1853 (Latter 2002). The passengers and crew were landed safely on The Bluff. Descendants of passengers from the *Earl of Charlemont* still live in the Barwon Heads area.

The wreck site is subject to sanding, but sometimes artefacts, including chain, pieces of iron and other small metal objects, can be seen. For most of the year the wreck lies sanded, and is difficult to access due to breaking surf, although artefacts scattered from the wreck may be seen in the sanctuary (Anderson & Cahir 2003).

The *South Milton* also struck Charlemont Reef but lies in an area west of sanctuary. The 607 ton barque struck the reef, before swinging into deepwater and sinking on the 10 April 1886, while on a voyage from Cardiff to Melbourne with a cargo of sugar. The SS *Orungal* was wrecked in the area east of sanctuary in 1940. Its boilers can still be seen at low tide.

A ship graveyard was established in the waters south-west of the sanctuary in the early 1900s. A number of vessels, including the *Hygeia*, *Julia Percy* and *Lady Loch* were scuttled there (Pescott & City of South Barwon 1985).

Heritage Victoria has primary responsibility for the management of shipwrecks and other maritime artefacts within the sanctuary. Parks Victoria has established a memorandum of understanding with Heritage Victoria which identifies respective roles and responsibilities with regard to protection, compliance and interpretation of shipwrecks, shipwreck artefacts and other archaeological sites within the boundaries of Marine National Parks and Marine Sanctuaries.

Aims

- Conserve and protect places and values of historic and cultural significance.
- Encourage learning and understanding about maritime and other historic heritage of the sanctuary.

Management strategies

- Manage places and values of historic and cultural significance in accordance with

the Burra Charter of Australia ICOMOS, the provisions of the Heritage Act 1995 (Vic.) and the Historic Shipwrecks Act 1976 (Cwlth), Parks Victoria's Heritage Management Strategy (Parks Victoria 2003b).

- *Encourage documentation of the history of past use and activity in the sanctuary and adjoining coastal area by local historical groups, and protect any historic places and objects that may be discovered from damaging or inappropriate activities.*
- *Protect remnants of the wreck of the Earl of Charlemont, and other historic relics that may be discovered, from damaging or inappropriate activities.*
- *In accordance with the memorandum of understanding, monitor shipwrecks and support Heritage Victoria's maritime heritage protection and research programs. Consult Heritage Victoria about management activities that might affect known wrecks.*
- *Report concerns about shipwreck or relic damage, whether by the environment or human activity, to Heritage Victoria's Maritime Heritage Unit.*
- *Support dive clubs in locating, photographing and reporting the condition of historic shipwrecks, and record this and other information about heritage values in Parks Victoria's Asset Management System to help monitor shipwrecks.*
- *Include historic heritage information in education, information and interpretation programs for the sanctuary (section 6.1).*
- *Support continued use of the sanctuary for maritime education.*

6 STRATEGIES FOR VISITORS

6.1 Information, education and interpretation

Providing information, interpretation and education can help orientate and inform visitors, increase visitor enjoyment and satisfaction, foster an understanding and appreciation of the sanctuary's special natural and cultural values, build understanding of management activities, and help visitors experience the sanctuary in a safe and appropriate manner. Parks Victoria delivers information, interpretation and education to visitors by various means, including its website, ranger patrols, Park Notes, signage, displays, tourism brochures and other publications. These services may be developed and provided in collaboration with licensed tour operators, the local community and other agencies.

Having a representative system of Marine National Parks and Marine Sanctuaries in Victoria presents wonderful opportunities to communicate the features and benefits of a statewide system of marine protected areas to visitors and the broader community. Barwon Bluff Marine Sanctuary presents opportunities to raise awareness about the importance and significance of Marine Sanctuaries to marine conservation across the bioregion and the State. The sanctuary was recommended for inclusion into Victoria's system of Marine National Parks and Marine Sanctuaries because of its value to marine education. The intertidal areas are used extensively for interpretation and education, particularly by schools.

Pre-visit information is supplied to visitors before they enter the sanctuary, primarily to inform them of the purpose of the sanctuary, its location and boundaries, and to familiarise them with safe, legal and appropriate behaviour within the sanctuary. A Park Note containing pre-visit information about the sanctuary is available at the Parks Victoria office at Queenscliff, the Queenscliff Visitor Information Centre, the Marine Discovery Centre, Barwon Heads and Riverview Family Caravan Park offices, and the Barwon Estuary Heritage Centre (Lobster Pot), and on the

Parks Victoria website
(www.parkweb.vic.gov.au).

Signage, including boundary markers (section 7.2) and totems, and information panels, inform visitors of sanctuary boundaries and regulations, and are important in achieving compliance.

Information and interpretive panels that incorporate information on the sanctuary's location and boundaries, natural values, recreational opportunities, visitor safety and compliance are located at the major access points to the sanctuary (section 6.2). There are opportunities to provide site-specific information on the values of and threats to the sanctuary at the access points to the sanctuary below the emergency access markers 27W and 28W, and at the viewing platform west of 28W. Signs can detract from the landscape and seascape values of the sanctuary and surrounds (section 4.5).

The BBCM has planned a self-guided interpretive trail for The Bluff, which includes interpretive themes that relate to the sanctuary and could assist in raising visitor awareness of sanctuary values.

The development and implementation of an integrated signage, information and interpretation strategy for the Barwon Bluff area with the Barwon Coast Committee of Management (BCCM) could optimise the efficiency of delivery of information and interpretation to visitors, while minimising the impact on the landscape and seascape (section 7.2).

The Friends of The Bluff (section 8.2) have developed 'Living on the Edge', an interactive inventory CD and website that interprets the natural and cultural values of the sanctuary. 'Living on the Edge' is recognised as an outstanding communication tool, and Friends of The Bluff won the 2005 Banksia Environmental Award for Leadership in Protecting Coastal and Marine Environments for the production of the CD and website. 'Living on the Edge' was designed to inspire and educate visitors and the wider community to protect and conserve the biodiversity of the

sanctuary and to enable the sanctuary to be interpreted with no impact on its values.

The Marine Discovery Centre at Queenscliff provides face-to-face interpretation for approximately 8000 students annually and also runs school holiday programs in partnership with Parks Victoria and Coast Action / Coastcare. On request and where possible, Parks Victoria also provides interpretive walks in the sanctuary for groups.

The sanctuary is renowned, and has a long history, as an education venue because of its diverse geology, flora and fauna and proximity to Barwon Heads, Geelong, Melbourne and other major coastal towns. Marine education for school groups in the sanctuary is undertaken either as a structured process within a school curriculum or as an ad hoc excursion. An understanding of the context of education activities in the sanctuary is important for effectively minimising the impacts of education activities on the sanctuary's natural and cultural values, which are the basis of its attraction for education. Balancing conservation and the provision of education and interpretation is an ongoing challenge for Parks Victoria in managing the sanctuary.

Educating divers and snorkellers about minimal impact practices, particularly people new to these activities, will help minimise impacts and assist with sanctuary management.

Barwon Coast Committee of Management, which manages the Barwon Estuary Heritage Centre and the Barwon Heads Caravan Park, has the capacity to inform and educate large numbers of sanctuary visitors before they reach the sanctuary. The Heritage Centre displays interpretive material on a range of themes relevant to the Barwon Heads area, including marine conservation and diversity.

Trampling has the potential to threaten sensitive intertidal communities if visitor numbers and activities are not carefully managed (section 4.4 and 6.3). Parks Victoria has developed minimal impact guidelines (available on the Parks Victoria website, www.parkweb.vic.gov.au) in partnership with providers of education to help manage these activities, and works with the Department of Education to encourage schools to notify Parks Victoria (on 13 1963) of any intended school

group visits. Prior notification will allow teachers to obtain relevant education materials and advice on suitable sites, and will enable Parks Victoria to monitor the number and timing of visits.

Aims

- Promote and encourage visitors' discovery, enjoyment and appreciation of the sanctuary's natural and cultural values in a safe and sustainable manner through information, interpretation and education.
- Encourage public support for the sanctuary and sanctuary management practices.

Management strategies

- *Provide and support the provision of high-quality opportunities for a range of user groups to discover, experience and understand the sanctuary's natural and cultural values.*
- *Target visitors across the range of user groups through a range of tourism, information, interpretation and education media.*
- *Continue to provide opportunities for sustainable educational use of the sanctuary by school and community groups.*
- *Assist marine information, interpretation and education service providers to obtain and deliver accurate and appropriate information.*
- *Develop and deliver interpretation, information and education related to the following themes for the sanctuary:*
 - *significance of geology (section 4.1)*
 - *migratory shorebirds, diversity of habitats, and marine flora and fauna (section 4.4)*
 - *sensitivity of values and importance of minimising impacts (section 4.4 and 6.3)*
 - *Indigenous cultural heritage and maritime heritage (section 5.1 and 5.2)*
 - *interaction between the catchment and the marine environment (section 4.2).*
- *Inform visitors of the sensitive sanctuary values and the particular vulnerability of*

intertidal values, and promote greater appreciation of intertidal marine organisms, before they enter the sanctuary. Integrate minimal impact messages for intertidal areas into existing information, interpretation and education information and programs (section 4.4).

- *Promote the need for schools to notify Parks Victoria (on 13 1963) of any intended school group visits.*
- *Introduce a trial voluntary booking system for educational institutions and other organised groups to maximise visitor safety and satisfaction and protect the natural values of the sanctuary.*
- *Encourage organisations that carry out research, education or recreation activities that do not rely on the special values of the sanctuary to use suitable locations elsewhere.*
- *Encourage the use of the 'Living on the Edge' CD developed by the Friends of The Bluff (section 8.2) and other interactive databases such as the Surveying Southern Shores project to raise visitor awareness prior to visiting the sanctuary and, where appropriate, enable off-site interpretation.*
- *Promote the sanctuary as a destination for nature-based underwater recreation (section 6.5).*
- *Encourage the adoption of diving and snorkelling associations' codes, guidelines and standards (section 6.5).*
- *Collaborate with BBCM to integrate the signage, information, and interpretive facilities and services relating to The Bluff and sanctuary, and their access routes. If requested, give the BBCM appropriate assistance in developing interpretation services at The Bluff.*
- *Promote greater public understanding and appreciation of, and respect for, Indigenous culture by incorporating information about Indigenous culture, places and objects in information, interpretation and education programs, in collaboration and accordance with the views of the Traditional Owners (sections 5.1 and 8.2).*
- *Provide appropriate opportunities and encourage and support Indigenous communities to participate in the interpretation of Indigenous cultural heritage relating to the sanctuary, with the agreement of the Traditional Owners (section 8.2).*
- *Use Indigenous language for natural features, plants and animals in interpretive material and signs.*
- *Work in partnership with BBCM and managers of other information outlets to make information available about the sanctuary, particularly at local caravan parks and the Barwon Estuary Heritage Centre.*
- *Regularly evaluate information and interpretive services and facilities related to the sanctuary, and update information as appropriate.*

6.2 Access

The sanctuary can be visited on a day trip from Melbourne and is an easy drive from Geelong and towns on the Bellarine Peninsula. Visitors access the sanctuary mainly from the shore through the Barwon Heads township via Hitchcock Avenue, Ewing Blyth Drive and Bluff Road (figure 2).

Access to the eastern section of the sanctuary is via the promenade along the riverbank, Jetty Road, or Barwon Heads Caravan Park. The stairway at the 27W emergency access marker provides access to the riverbank near the eastern boundary. The closest vehicle access is from car parks on Bluff Road (via Ewing Blyth Drive). Access to the western section of the sanctuary is along Bluff Road where a car park and lookout are located above the 28W emergency access marker. These facilities position visitors above the sanctuary, and a stairway provides access to the beach and the sanctuary (figure 2). The cliff edges may be unstable and at risk of collapse and visitors accessing the sanctuary via The Bluff should use designated tracks and stay away from cliff edges (sections 6.8 and 7.2). The access facilities are above the high water mark, and are managed by BBCM (sections 7.2 and 8.3).

At low tide with calm seas the sanctuary's rock-platforms are accessible by walking, and visitors can walk the length of the sanctuary's

shoreline, around the tip of The Bluff. Otherwise, this walk is not possible. Visitors need to check tides, wind and swell conditions before proceeding to avoid disappointment or being stranded (section 6.8). Better data on the numbers of visitors using access facilities would assist Parks Victoria and BCCM to better manage the delivery of information about The Bluff and sanctuary to visitors.

Although the sanctuary is accessible by boat, few people visit the sanctuary this way. The shallow waters and subtidal reef systems limit access for vessels (section 6.4). Boat launching within the sanctuary is not encouraged because unpredictable open ocean conditions and the shallow rocky intertidal shoreline and reef systems make landing and launching vessels hazardous, and disembarking visitors would disturb shorebirds. The nearest boat launching facilities are the boat ramps on the Barwon River at Ocean Grove (City of Greater Geelong) and at Pelican Court and Minah Street in Barwon Heads (Parks Victoria). The Minah Street boat ramp is most suited to small craft.

Aim

- Facilitate access to the sanctuary while minimising the impact on the natural and cultural values of the sanctuary and abutting natural areas.

Management strategies

- *Promote the use of designated tracks by visitors entering the sanctuary from the shore (section 6.1).*
- *Encourage canoeists and sea kayakers to launch and or land on sandy beach areas within the sanctuary or outside the sanctuary to minimise impacts to reef areas.*
- *Encourage vessel operators to launch vessels, including canoes, outside the sanctuary at the boat launching ramps at Ocean Grove or at Pelican Court and Minah Street in Barwon Heads.*
- *Liaise with BCCM in the management of access points and nearby car parking areas to integrate access, present consistent messages, and minimise the impact of access on the natural and cultural values of the sanctuary.*

- *Monitor visitor numbers and work with BCCM to analyse visitor access patterns to the sanctuary.*
- *Investigate the potential to combine and or rationalise signage developed by BCCM and Parks Victoria at access points to improve their presentation and minimise their impact on landscape values and visitor experience (section 7.2).*
- *Liaise with the managers of local boat-launching facilities to ensure appropriate access to the sanctuary.*

6.3 Shore-based activities and swimming

The sanctuary attracts school groups, organised tour groups and individual residents and tourists. Visitors are attracted to the sanctuary by its diversity of marine life and the ease of access to its intertidal platforms at low tide (sections 6.1 and 6.5).

The sanctuary's beach and intertidal platforms offer excellent opportunities for marine education and discovery. For this purpose, thousands visit annually, and sometimes large numbers of students visit the sanctuary on particular days in the first school term (section 4.4).

The high and increasing levels of trampling and fossicking on intertidal areas associated with shore-based activities could lead to significant damage to fauna and flora and, at some sites, a reduction in biodiversity and reef habitats (Povey & Keogh 1991) (section 4.4). Visitors to the intertidal reefs could disturb roosting and feeding seabirds and shorebirds (section 4.4).

Swimming and surfing are not major activities within the sanctuary. The shores of the Barwon River directly east of the sanctuary offer good swimming, and there are excellent surfing opportunities at nearby Thirteenth Beach (figure 2). Visitors to the intertidal area of the sanctuary should be aware of the danger from potential rock-falls from the cliffs abutting the sanctuary (section 6.8).

All visitors should adopt minimal impact practices while in the sanctuary. Minimal impact guidelines developed by Parks Victoria (available on its website) provide information on minimal impact practices for visitors and

school groups. Better data on visitor numbers and their use of the sanctuary's intertidal areas would improve Parks Victoria's capacity to manage the impacts of visitors on the sanctuary and facilitate high-quality experiences for all visitors (section 6.1).

The intertidal collection of living or dead organisms and natural driftwood is prohibited within the sanctuary (section 4.4).

The lighting of fires within Marine National Parks and Marine Sanctuaries, including any beaches or islands, is not permitted except on board a vessel that is seaward of the mean high water mark.

Aim

- Encourage exploration and enjoyment of intertidal platform habitats within the sanctuary while minimising impacts on natural and cultural values.

Management strategies

- *Permit shore-based intertidal activities in accordance with table 2.*
- *Permit swimming and surfing within the sanctuary, but encourage swimming west of the sanctuary at the patrolled beach at Thirteenth Beach.*
- *Inform visitors about sensitive natural values and the vulnerability of intertidal values, and promote greater appreciation of intertidal marine organisms before they enter the sanctuary (section 6.1).*
- *Manage shore-based activities to reduce impacts on the intertidal natural values and minimise damage associated with trampling (section 4.4).*
- *Continue to allow sustainable use by schools, community groups and licensed tour groups in accordance with management objectives for the sanctuary (appendix 1). Manage group activities to ensure that:*
 - *school and licensed tour groups adopt Parks Victoria's minimal impact guidelines (section 6.1)*
 - *group leaders adequately supervise the activities of the participants*

- *the size of school groups engaged in education is limited to 30, and other groups to 25*
- *sanctuary locations used by groups are varied appropriately, especially during high use periods*
- *tour operators meet permit conditions (section 6.7).*
- *Undertake regular patrols during popular periods and times and during low tides to encourage appropriate visitor use.*
- *Undertake standardised monitoring of impacts of trampling on intertidal areas from educational use and review the effectiveness of management measures. If impacts increase, work with users to develop an appropriate carrying capacity for the reefs and consider limiting or reducing annual visitation numbers.*
- *Encourage research into the impacts of trampling on intertidal communities with a view to determining an appropriate carrying capacity for the site.*
- *Minimise disturbance to seabirds and shorebirds by encouraging visitors to avoid seabird and shorebird roosting and feeding habitats.*

6.4 Recreational boating and surface water sports

The sanctuary's waters are used for some boating activities, predominantly non-motorised boating such as sea kayaking and canoeing. Its shallow waters and subtidal reef systems limit access for vessels. Fishing occurs in the waters outside the sanctuary and fishing boats pass through the sanctuary en route to fishing locations. Personal watercraft (PWCs) are commonly used in areas outside the sanctuary, including the river mouth and the waters around Port Phillip Heads, and sometimes pass through the sanctuary en route to these areas. Divers and snorkellers who use the sanctuary most commonly access from the shore, accordingly the use of boating for diver and snorkellers access within the sanctuary is minimal (sections 6.2 and 6.5).

Boat launching and landing within the sanctuary is not encouraged, as the shoreline is predominantly rocky or environmentally sensitive and conditions are unpredictable

(section 6.2). The use of motorised boats in the sanctuary can conflict with other users, including swimmers (section 6.3), snorkellers and divers (section 6.8).

Marine Safety Victoria determines boating safety rules to establish speed limits, operating zones and conditions which are gazetted in the 'Vessel Operating and Zoning Rules for Victorian Waters'. All boating activities, including kayaking and canoeing, are subject to the Marine Act. As in all Victorian coastal waters, a speed limit of 5 knots applies in specified circumstances in the sanctuary (MSV 2005). Although conditions in the sanctuary are suitable for some boating activities, they can change quickly and create a safety hazard (section 6.8). BCCM is responsible for the management of port infrastructure and recreational boating, including navigational aids in the Port of Barwon Heads, under the *Port Services Act 1995* (Vic.) (section 8.3).

Where conditions are suitable for boating, vessels generally have minimal impact on the sanctuary's values, but vessels operated in shallow areas, particularly around shallow reefs, can damage the reefs and the associated flora and fauna. Anchoring can damage reefs, so vessel operators should avoid anchoring over reefs to minimise damage to these areas. The landing of boats, including sea kayaks or canoes, and launching of kite boards and wind surfers, can threaten sensitive areas such as seagrass through trampling. Private moorings will not be permitted within the sanctuary.

Both powered and unpowered vessels (including wind surfers and kite boards) can disturb roosting and feeding birds and marine mammals (section 4.4) through excessive vessel noise and fast movement.

Boats can introduce marine pests if boat-cleaning protocols are not followed (section 4.6), and fuel leaks, oil spills and the disposal of wastes or sewage could have a significant impact on water quality (section 4.2) and flora and fauna (section 4.4). State Environment Protection Policies prohibit vessel operators from discharging sewage, oil, garbage, sediment, litter or other wastes to surface waters in Victorian waters. While the EPA Victoria has primary responsibility for pollution management, Parks Victoria supports the provision of waste-receiving and pump-out

facilities at marinas, ports and other suitable sites (section 4.2).

Park Rangers, Victoria Police and Fisheries Officers undertake regular patrols by boat and have contact with recreational boat users. Patrols offer an opportunity for boat users to learn about the sanctuary.

Aim

- Provide for boating and water sports while minimising impacts on the sanctuary's natural values.

Management strategies

- *Permit boating and surface water sports in the sanctuary in accordance with table 2 and the 5 knot speed restriction within:*
 - *50 m of a swimmer*
 - *100 m of a vessel or buoy with a diver below signal*
 - *200 m of the shoreline*
 - *300 m of a whale or dolphin.*
- *Encourage vessel operators to use areas outside the sanctuary, to increase vessel operator safety and protect the natural values of the sanctuary.*
- *Permit anchoring within the sanctuary, but encourage vessel operators to anchor in sand or outside the sanctuary to minimise damage to reef areas.*
- *Monitor impacts on natural values from anchoring and if necessary take appropriate action to reduce impacts.*
- *Do not provide moorings in the sanctuary.*
- *Monitor the effects of boating on sensitive values such as birds, mammals and reef flora and fauna, to ensure that there are no adverse impacts on those values. If necessary manage boating to minimise impacts.*
- *Liaise with recreational vessel operators to promote safe and sustainable use of the sanctuary and to raise awareness of boat-cleaning protocols (section 4.6).*

6.5 Diving and snorkelling

During calm conditions the sanctuary provides excellent opportunities for underwater

recreation around subtidal reefs, and intertidal reefs (at high tide), which are easily accessed from the shore. The activities can also be undertaken with a licensed tour operator (section 6.7). Access to the sanctuary's waters is generally safest from the sandy areas.

Snorkelling and scuba diving enable visitors to experience underwater environments and view species and habitats that are difficult to see from above the surface, such as colourful Senator Wrasse, Maori Octopus, rays, sponges, corals and a vast array of marine algae. Two shipwrecks, the *Earl of Charlemont* and *South Milton*, are located on and around the boundaries of the sanctuary. The wrecks lie sanded up for most of the year and difficult to access due to breaking surf, however artefacts scattered from the wrecks may be seen in the sanctuary.

The provision of off-site information can guide and enhance this experience (section 6.1).

The potential for repetitive long-term damage to sensitive natural values makes the sanctuary an unsuitable site for development of an underwater diving or snorkelling trail.

Current levels of snorkelling and diving are not known to be causing unacceptable impacts on the sanctuary. The potential for damage to the reefs' natural and cultural values will be minimised if snorkellers and divers are well informed about the sanctuary's natural and cultural values and have a clear understanding of the impacts their activities may have on values, particularly over time (section 6.2).

Potential impacts from diving include intertidal trampling, wildlife disturbance and illegal removal of flora and fauna, and anchor damage (section 6.3). Educating divers and snorkellers about minimal impact practices and encouraging compliance with codes of practice will minimise adverse impacts and assist with sanctuary management.

Divers and snorkellers need to be aware of potential dangers, particularly from vessels passing through the sanctuary near dive sites (section 6.8). To ensure diver safety, divers should refer to the Scuba Divers Federation of Victoria's codes of practice for recreational scuba diving and related activities (SDFV 2005).

The risk of introducing marine pests into the sanctuary can be reduced if diving and snorkelling equipment is cleaned after use and dried prior to being used in the sanctuary.

Divers and snorkellers need to be aware of the no-fishing provisions in the sanctuary, and can assist in preventing the spread of and early detection of marine pests (sections 4.6 and 8.2), and the detection of unrecorded cultural places and objects.

Aim

- Encourage snorkelling and diving activities that have minimal impact on natural or cultural values.

Management strategies

- *Encourage recreational and educational diving and snorkelling in the sanctuary in accordance with table 2.*
- *Liaise with diving and snorkelling groups, licensed tour operators and individuals to encourage appropriate access to and use of the sanctuary. Encourage access to subtidal areas from the sandy area between the sandstone and basalt reefs.*
- *Support community groups, including Reefwatch and Sea Search to report any impacts from diving in the sanctuary.*
- *Encourage the adoption of minimal impact practices and promote compliance with the relevant codes of practice and Adventure Activity Standards (section 6.1).*
- *Encourage divers and snorkellers to become involved in Reefwatch and Sea Search in the sanctuary.*
- *Provide off-site information, including a link to the Friends of The Bluff website, to guide divers and snorkellers to suitable areas and underwater routes in the sanctuary.*
- *Do not install fixed structures that define an underwater trail within the sanctuary.*
- *Support dive clubs and industry representatives to develop a code of practice that promotes environmentally responsible diving practices.*

6.6 Dog walking and horse riding

Prior to the proclamation of the sanctuary in 2002, a declaration made by the City of Greater Geelong under the *Domestic (Feral and Nuisance) Animal Act 1994* (Vic.) prohibited dogs from beaches in the area between 18 December and 31 January, but otherwise permitted them as follows:

- 1–17 December and 1 February – 30 April — on the beach on leash
- 1 May – 30 November — on the beach under effective control.

Dog walking is a popular activity along the Barwon River promenade and beach where it is permitted, subject to certain conditions. It is also permitted, subject to conditions, on the ocean beach abutting the sanctuary, on walking tracks linking the estuary and ocean beaches in Barwon Heads Park, and in the nearby Barwon Heads village. A minority of dogs are walked beyond the river promenade into the sanctuary area.

Dog owners have not always demonstrated awareness of their responsibility to adequately control their dogs on beaches around and within the sanctuary area; nor have they always demonstrated a willingness to comply. There have been several reported instances of dogs chasing shorebirds from their roosts on the beaches that are now within the sanctuary, and of visitors walking dogs off-leash when the regulations required that they be leashed.

The sanctuary includes important feeding, roosting and nesting sites for shorebirds and seabirds that complement those within the nearby Barwon River Estuary and Lake Connemara — parts of the Port Phillip Bay (Western Shoreline) and Bellarine Peninsula Ramsar site.

The beaches within the sanctuary are used as feeding areas by threatened shorebirds and seabirds, including the Hooded Plover.

Dogs conflict with nature conservation by disturbing and preying on birds and seals, and through faecal pollution. Dogs can also frighten children engaged in nature discovery and compromise the effectiveness of conservation messages delivered by rangers and other interpreters. The presence of dogs and dog excrement in the sanctuary may be a source of distress to visitors.

The sanctuary is reserved and managed under the National Parks Act (section 2.5). Under the Act and National Park (Park) Regulations 2003, a person must not bring a dog or a horse into a marine sanctuary or allow them to remain (except when confined to a vessel). In accordance with the Act and regulations, dogs are prohibited from the 610-metre section of beach within the sanctuary (figure 2). It is also an offence for a dog to harass or injure people or wildlife under the *Domestic (Feral and Nuisance) Animals Act 1994* (Vic.) and the *Wildlife Act 1975* (Vic.).

Alternative opportunities for dog walking in the area include the beach east of the sanctuary to the jetty (figure 2) and beach west of the sanctuary to the emergency access marker 30W. Under a plan prepared by BCCM, a walk linking the emergency access sites 27W and 29W will make it possible for dogs to be exercised on the beaches either side of the sanctuary and along a walking track linking the beaches across the Bluff. The manager of these areas, the City of Greater Geelong, requires that dogs in these areas are under effective control at all times.

The beaches within the sanctuary have had an historically low level of use by horse riders and trainers. Horses could damage and degrade intertidal areas by trampling flora and fauna, destabilising sand and disturbing or trampling birds. The presence of horses and horse manure can also reduce the quality of visitors' experience of the sanctuary.

Aim

- Protect the sanctuary's natural values and visitor experiences from impacts of dogs and horses.

Management strategies

- *Do not permit dogs or horses in the sanctuary unless they are confined to a vessel.*
- *Develop and implement an ongoing communication strategy in consultation with BCCM and City of Greater Geelong to educate visitors about the opportunities and responsibilities for dog walking around the sanctuary. In the strategy, include:*

- *reasons for dog exclusion in the sanctuary, including the impacts of dogs on sanctuary values and visitor experiences*
- *information about alternative locations where dogs can be exercised on the beach*
- *provision of information at access points about why dogs are not allowed in the sanctuary.*
- *Support BCCM in its promotion and management of a dog walking route across The Bluff.*
- *If required, develop a communication strategy to educate horse riders and trainers about the reasons for excluding horses from the sanctuary.*

6.7 Tourism services

Many visitors welcome opportunities to obtain guidance and support that enhances the experiences they have in visiting natural areas.

Licensed tour operators play a key role in nature-based tourism in Victoria by offering guided park tours and supported recreational activities, and information that promote park values and appropriate use.

Currently three licensed tour operators provide a range of activities in and around the sanctuary, including coastal walking, canoeing, snorkelling, diving and kayaking. Tour operators are required to hold a tour operator licence, including conditions aimed at ensuring that particular tour group activities are in accordance with the National Parks Act and the *Policy for Sustainable Recreation and Tourism on Public Land* (NRE 2002).

The sanctuary's intertidal natural values are at risk from the impacts of intertidal trampling (sections 4.4 and 6.3) and it is necessary to minimise this risk to the values.

There are opportunities for licensed tour operators to provide additional services for visitors in the sanctuary, especially in Indigenous interpretation and underwater recreation and interpretation.

It is important for the safety of tour groups that licensed tour operators who provide diving activities are familiar with, and ensure that tour groups comply with, the *Code of Practice for*

Commercial Providers of Recreational Snorkelling & Scuba Diving Services in Victoria (DIVA 2004) and that snorkelling groups comply with the *Snorkelling, Scuba Diving, and Wildlife Swims – Adventure Activity Standards* (ORC 2004) (section 6.5).

Parks Victoria works collaboratively with Tourism Alliance Victoria in administering the tour operator licensing system across Victoria's public land estate, including the sanctuary. Tourism Alliance Victoria is a membership-based industry association providing a representative and professional development role for tourism businesses.

Aim

- Provide opportunities for and encourage provision of licensed tourism services while minimising impacts on natural and cultural values of the sanctuary.

Management strategies

- *Ensure all tour operators using the sanctuary:*
 - *are licensed and comply with permit conditions*
 - *properly supervise tour groups*
 - *adopt the Parks Victoria minimal impact guidelines and Adventure Activity Standards and encourage tour participants to do so.*
- *Encourage licensed tour operators to develop and deliver a range of appropriate guided visitor activities for an appropriate number of visitors at appropriate sites that enhance the experiences of sanctuary visitors (sections 6.1 and 8.2).*
- *Encourage licensed tour operators, particularly Indigenous tour operators, to develop and deliver interpretive and educational tours that relate to Indigenous history and culture, and are in accordance with the views of the Traditional Owners.*
- *Do not encourage licensed tourism activities that have the potential to impact on intertidal areas and do not rely on the sanctuary's special values (section 4.4).*
- *Continue to work with licensed tour operators and the tourism industry to*

assist with the delivery of appropriate sanctuary information.

- *Monitor the effectiveness of tourism services in contributing to objects of the National Parks Act.*
- *Promote the use of licensed tours to enhance and maintain visitor safety.*

6.8 Public safety

All activities undertaken in the sanctuary, including beach walking, rock-rambling, bird watching, swimming, snorkelling, diving and boating, can involve inherent risks that are greater for those who are not aware of them.

The beaches within the sanctuary are rated as moderately safe, measured on a scale of ratings of safe, moderate safe, low safety and least safe, according to a survey of Victorian beaches (Short 1996). Beach and intertidal area hazards include slippery and sharp rocks, unstable cliffs, venomous animals, and tidal variations which can trap the unwary. Beaches in the sanctuary are not patrolled; the closest patrolled beach is Thirteenth Beach, approximately 3 km west of the sanctuary (figure 2).

Hazards for visitors and staff undertaking activities on or under water include strong currents, entanglement in kelp, marine animals, entrapment under ledges and crevices and exposure to cold. Large waves and strong rips and currents can be a hazard above and below the tideline in the areas directly exposed to Bass Strait.

Visitors need to be aware of hazards and monitor the unpredictable changes to weather and associated marine conditions to enjoy a safe visit. This is particularly important for those not familiar with local conditions. Shore-based visitors need to wear appropriate footwear and ensure adequate protection from the sun and wind. Rock falls from the cliffs can pose a danger to visitors to the sanctuary. Visitors should stay away from cliff edges and bases (sections 6.3 and 7.2).

Snorkellers, divers and swimmers need to undertake activities within their capabilities and under appropriate conditions. Vessel operators need to be aware of swimmers, snorkellers and divers in the water. Recreational boating accidents are highest in

Victoria during summer and most fatalities are associated with recreational vessels of less than 8 metres in length (Bugeja 2003). All powered recreational vessel operators operating in State waters are required to have a current licence.

Marine Safety Victoria conducts safety and awareness programs for recreational boat users, and the *Victorian Recreational Boating Safety Handbook* (MSV 2005) contains necessary safety information, and outlines the requirements for operating a recreational vessel in Victoria (section 6.4).

Public information and education programs involving the presentation of safety messages through signs, Park Notes and ranger patrols can be an effective way to promote safety (section 6.1). Extensive warning signage around cliffs adjacent to the sanctuary, and information boards at major access points to the sanctuary, alert visitors to the dangers of land slips (sections 4.1 and 7.2).

Visitors need to access this information before embarking on recreational activities in the sanctuary or obtain the guidance of licensed tour operators who have local knowledge and experience.

The responsibilities for responding to emergency incidents in Victoria and Victorian waters are outlined in the *Emergency Management Act 1986* (Vic.). Parks Victoria is not the lead agency for most emergency response situations. Instead, it supports other agencies, including the Department of Sustainability and Environment, Marine Safety Victoria, the Country Fire Authority, the State Emergency Service and Victoria Police, in emergency incidents where required.

Agencies, including Parks Victoria during normal operating hours, respond to incidents within the sanctuary in accordance with the *Bellarine Peninsula Emergency Management Plan* (Parks Victoria 2005c).

Under the *Port Services Act 1995* (Vic.), the BCCM is the local port manager, and it manages the safety and environment of the Barwon Heads port consistent with the port's Safety and Environment Management Plan (SEMP) (BCCM in prep).

Aims

- Promote visitor safety and awareness of safety issues and risks associated with access and use of the sanctuary.
- Promote and observe safe practices, and cooperate with emergency services.

Management strategies

- *Increase visitors' awareness of safety issues and potential hazards in the sanctuary, and encourage and model safe practices and cooperation with emergency services, through Park Notes, Parks Victoria's website and signs (section 6.1).*
- *In coordination with BCCM, provide and maintain safety information and signage for the sanctuary on designated access tracks (section 6.1).*
- *Support BCCM in the maintenance of emergency access markers 27W and 28W, and safety fencing and warning signs, along the cliffs of the Bluff.*

- *Cooperate with and support responsible agencies in emergency response.*
- *Ensure that Parks Victoria staff have adequate levels of training in emergency procedures.*
- *Liaise with the City of Greater Geelong to ensure that the Municipal Emergency Response Plan makes adequate provision for likely incidents in the sanctuary.*
- *Provide annual risk and emergency response briefings to volunteer groups operating within the sanctuary.*
- *Ensure licensed tour operators are made aware of the Bellarine Peninsula Emergency Management Plan, including the provisions relating to the sanctuary.*

7 STRATEGIES FOR AUTHORISED AND ADJACENT USES

7.1 Authorised uses

A number of uses and activities may be permitted in the sanctuary, subject to specified conditions to minimise impacts.

All research and monitoring planned in a Marine National Park or Marine Sanctuary by external organisations or individuals requires a research permit under the National Parks Act, issued by the Department of Sustainability and Environment.

Parks Victoria recognises the significant role that the filming and photography industry plays in the social and economic well-being of the community and, in providing for these activities, seeks to ensure the protection of the natural and cultural values of the planning area. This is achieved through a permit system for all filming and photography conducted as part of a trade or a business. Amateur photographers or people taking film or video for personal or hobby interest do not require a permit.

Protected areas are generally avoided as locations for Defence Force training exercises, although they occasionally host search and rescue, field navigation and incident response activities. Activities are subject to a permit with conditions to ensure that values of the sanctuary are protected.

Petroleum extraction, exploratory drilling, mineral exploration and mining, and invasive searching for or extraction of stone and other materials, are prohibited in the sanctuary under the National Parks Act. Petroleum exploration, such as seismic survey from an aircraft or from a vessel, that is carried out in a manner which does not detrimentally affect the seabed or any flora or fauna of the sanctuary may be allowed with the consent of the Minister. However, the Government has announced that it will not release any further areas in Victoria that contain Marine National Parks or Marine Sanctuaries for petroleum exploration. The construction of pipelines or seafloor cables is prohibited in any part of the sanctuary.

Aim

- Manage authorised uses in accordance with the National Parks Act and minimise their impact on sanctuary values.

Management strategies

- *Review all uses of the sanctuary that do not conform with the objectives of the National Parks Act. Allow uses to continue only in accordance with authorisations that are consistent with legislation, and include conditions that effectively minimise the impacts of uses on the sanctuary.*
- *Monitor authorised activities to ensure that conditions of authorisations are met. Assess the effectiveness of conditions of authorisations in protecting the sanctuary and, if necessary, review authorisations to arrest impacts.*
- *Permit Defence Force adventure training or field navigation exercises in the sanctuary in accordance with Parks Victoria's operational policies and relevant permit conditions.*

7.2 Boundaries and adjacent uses

The shore boundary of the sanctuary is the mean high water mark. In the river mouth the shore boundary of the sanctuary is indicated by a single yellow boundary marker at the mean high water mark on the riverbank. This boundary marker can be lined up with a regulatory totem located on the beach to form a line of sight along the north boundary that runs east–west (figure 2). The line of the southern boundary (perpendicular to the ocean beach) is indicated by two yellow triangular markers on the dune to the north of the sanctuary, one above the other, visible from the sea.

The location of the offshore boundary would be easier to identify and regulate if it were marked (section 6.1). However, buoys or pile markers placed in the sea are likely to be dislodged in strong seas with high swell and wave energy, and become hazards to boating and shipping.

State waters and the underlying sea bed adjoining the sanctuary are currently unreserved Crown land. The Government has accepted the ECC's recommendation that a Coastal Waters Reserve be established under the *Crown Land (Reserves) Act (1978 (Vic.))* for the major portion of Victoria's marine area not otherwise designated for a particular purpose, to provide for a diverse range of activities that are compatible with long-term sustainable use (ECC 2000).

The areas above the high water mark around the sanctuary, including the foreshores, dunes, cliffs, a caravan park and sports oval, are within the Barwon Heads Park ('The Bluff'), which is managed by the Barwon Coast Committee of Management (BCCM) (figure 2). The cliffs within the park are slowly eroding naturally (section 4.1), and rock-falls may present a danger to visitors to the area. The BCCM maintains the safety fencing and warning signs along the cliffs of The Bluff (section 6.1, 6.3 and 6.8). The Barwon River Estuary Heritage Centre is also operated by BCCM (section 6.1). The management objectives for both the sanctuary and the Barwon Heads Park would be more easily achieved if management of the areas were coordinated.

All local areas extending to 100 metres seaward of the high water mark are within the boundaries of the City of Greater Geelong Planning Scheme (CoGG 2000). The scheme provides a statutory framework for managing proposals and developments and uses. Under the scheme the sanctuary area within 100 metres of the shore and the abutting section of Barwon Heads Park are zoned Public Conservation and Resource.

Commercial and recreational fishing of Rock Lobster and Abalone occur on reefs and waters adjacent to the sanctuary but are prohibited in the sanctuary (section 2.5).

Aims

- Effectively communicate the location of the sanctuary boundaries.
- Minimise impacts on sanctuary values from adjacent uses and developments.

Management strategies

- *Maintain and if necessary improve boundary markers, signs and information about sanctuary boundaries to increase the visibility and knowledge of the boundaries.*
- *Seek to coordinate the management of the sanctuary and the Barwon Heads Park and the Port of Barwon through liaison with BCCM (section 8.3).*
- *Seek to ensure that the sanctuary's values are protected from impacts from developments or uses in nearby areas, by liaising with the proponents and assisting DSE to comment to the City of Greater Geelong on planning applications that could impact on the sanctuary (section 8.3).*
- *Regularly observe and record any impacts from adjacent land uses and take action to minimise the impacts as appropriate.*

8 STRATEGIES FOR COMMUNITY AWARENESS AND INVOLVEMENT

8.1 Community awareness

Raising the community's awareness of the sanctuary's values is an essential step in developing a sense of custodianship for the sanctuary and engagement in the area's management. The community is more likely to develop a sense of custodianship for the sanctuary if its views and values are respected and sanctuary-related social networks are encouraged and supported. A strong connection with the sanctuary among visitors, and in the local and wider community, assists in broader public education, raising awareness and reaching others in the community.

Networks among visitors, and the local community with strong relationships to the sanctuary, have potential as distribution channels for information and thus a means of raising awareness of the sanctuary in the wider community. Because of the diversity of marine values in the sanctuary and its wide appeal, visitor networks among the research and nature observation communities are particularly wide.

Education and interpretation programs (section 6.1) play an important role in raising the awareness of the sanctuary in the wider community. Parks Victoria aims to communicate the benefits of a healthy parks system and its contribution to the health of individuals and society through the 'Healthy Parks Healthy People' program.

Each year in March, the Barwon Heads community celebrates National Sea Week with a festival focusing on their local marine and coastal environment, called 'Festival of the Sea'. The Festival of the Sea aims to raise awareness and appreciation of the town's unique marine and coastal environment.

The community needs to be aware of the potential impacts of dogs on the natural values of the sanctuary's sandy beaches and intertidal platforms (section 6.6).

Aims

- Increase the community's awareness and understanding of the sanctuary's values and management activities.

- Build a sense of shared ownership and custodianship for the sanctuary in community groups and individuals.

Management strategies

- *Increase community awareness of significant sanctuary values and management issues and strategies by reporting through local media on significant wildlife activity, research programs, Friends of The Bluff activities, Reef Watch and Sea Search days.*
- *Promote opportunities for community members to improve sanctuary management by taking shared responsibility and becoming directly involved.*
- *Promote the personal benefits of assisting in sanctuary programs to community groups, in line with Healthy Parks Healthy People objectives.*
- *Host regular 'Sanctuary Information' sessions to inform interested groups from the local community on annual work programs, progress in implementing the management plan and the results of monitoring, and celebrate the achievements of Friends of The Bluff and other groups participating in the sanctuary's management.*
- *Actively support and promote Sea Search and Reef Watch programs and activities in the sanctuary.*
- *Cooperate with the City of Greater Geelong and BCCM to raise community understanding of the benefits of excluding dogs from the beaches and intertidal areas of the sanctuary.*
- *Support Department of Sustainability and Environment programs that encourage community cooperation in avoiding the translocation of marine pests at the local level (section 4.6).*
- *Support and participate in awareness-raising activities including Festival of the Sea.*

8.2 Community participation

The participation of community groups and individuals in the sanctuary's management is pivotal for the effective long-term planning, use and care of the sanctuary's values.

Volunteers and community groups make valuable contributions to sanctuary management projects. They bring diverse and valuable information, knowledge, skills and experience to the sanctuary that may otherwise not be available to the sanctuary's managers. Volunteers also bring great enthusiasm and can add valuable resources to assist with the care of the sanctuary.

The interests of community groups in the sanctuary often overlap and may not be complementary. There can be considerable mutual benefits where such groups work together and with Parks Victoria to achieve common goals.

The Friends of The Bluff have made an outstanding contribution to raising community awareness of the sanctuary through the production of the 'Living on the Edge' CD and website (section 6.1).

Sea Search is a monitoring program whereby volunteers undertake systematic surveys in the sanctuary's intertidal environment in accordance with standard approved methodology as part of the Victorian Intertidal Reef Monitoring Program. The first Sea Search activity in the sanctuary was undertaken in November 2005 and is expected to become a regular local community activity. The results of Sea Search monitoring will provide information on the condition of the flora and fauna in the sanctuary and how it changes over time.

Reef Watch is a non-profit project developed by the Australian Marine Conservation Society and the Marine and Coastal Community Network and funded by the Federal and State Governments through Coast Action / Coastcare. The project calls on the voluntary assistance of Victorian divers to help describe and monitor marine life in a variety of habitats. Opportunities exist for Friends and volunteers to participate in Reef Watch programs in the sanctuary.

Other Coast Action / Coastcare programs work with a variety of volunteer groups and

community organisations to help protect, monitor, manage and restore coastal and marine environments. Coast Action / Coastcare also conducts education, training and interpretive programs.

The Traditional Owners have considerable interest in and aspirations for the sanctuary as part of *Country*. They are an important potential source of traditional knowledge about the area that has yet to be documented. A strong working relationship with Traditional Owners will be essential to the reflection of their views in the sanctuary's planning and management and reconciliation of their interests and aspirations with those of other members of the community.

Aims

- Encourage and support the active participation of community groups and volunteers, particularly Traditional Owners, in projects that contribute to or complement sanctuary programs.
- Inform, enrich and strengthen the sanctuary's management with the community's tradition, knowledge, experience, skills and enthusiasm, particularly that of the Traditional Owners.

Management strategies

- *Seek to maintain and strengthen relationships with Friends of The Bluff, Marine Discovery Centre, Reef Watch and Sea Search participants and volunteers and other community groups that use or have a particular interest in the sanctuary. Promote their activities and support such groups to work with each other and Parks Victoria to achieve shared goals for the sanctuary.*
- *Encourage and support Coast Action / Coastcare programs within the sanctuary, particularly focusing on community interpretation and education.*
- *Lead and support Sea Search activities in the sanctuary and report results of monitoring in local media and through community information sessions.*
- *Support and encourage community involvement in Reef Watch monitoring and*

recording programs and other programs using standard methods.

- *Continue to build a strong relationship with the Wathaurong people, and explore ways to involve and work with them in reflecting their knowledge, interests and rights in the waters and land, and aspirations for Country, in the management of the sanctuary (section 5.1).*
- *Liaise and cooperate as appropriate with the Wathaurong people in dealing with Indigenous cultural issues that relate to the sanctuary.*
- *Promote opportunities for community groups to assist Parks Victoria in the sanctuary's management.*
- *Encourage, support and promote the activities of the Friends of The Bluff in supporting and assisting the sanctuary's management.*
- *Encourage visitors to assist with compliance management by:*
 - *reporting illegal fishing to the Fisheries Victoria offence reporting hotline*
 - *reporting other offences against the National Parks Act to the Queenscliff Parks Victoria office.*
- *Promote opportunities among interested community groups and Parks Victoria's staff for sharing knowledge and increasing understanding and appreciation of each other's aspirations and goals for the sanctuary.*
- *Support initiatives for building the capacity of volunteers to contribute to care of the sanctuary through appropriate training and support.*
- *Encourage and support Friends and other interest groups and volunteers to develop an understanding and appreciation of the sanctuary's diverse values, including the rich Indigenous culture relating to the sanctuary.*
- *Encourage and support groups interested in undertaking related projects in the sanctuary to pursue funding jointly, including Parks Victoria grants.*

- *Provide opportunities for tertiary students to undertake volunteer work experience and research activities that assist sanctuary management and are consistent with the management plan, and provide them with encouragement and support.*

8.3 Agency partnerships

Although Parks Victoria is responsible for overall management of the sanctuary, other agencies are responsible for planning, managing or regulating certain activities in the sanctuary.

All activities relating to the sanctuary that are carried out by Parks Victoria or other agencies need to accord with all legislation and government policy and, as far as practicable, be consistent with agencies' policies and guidelines. To ensure this occurs, park staff must work closely with staff of relevant agencies and collaborate in implementing activities where appropriate.

The Department of Sustainability and Environment (DSE) establishes parks, oversees the management of land and resources of Victoria's coastal Crown land and waters, and provides strategic direction and policy advice for the management of the sanctuary, including marine flora and fauna values and threatening processes. Parks Victoria is a support agency for responses to oiled wildlife (section 4.4) and cetacean stranding or entanglement (section 4.4), operating at the direction of DSE.

As part of agreed service delivery arrangements, Fisheries Victoria – Department of Primary Industries has primary responsibility for enforcement to ensure compliance with the fishing prohibitions under the National Parks Act. Parks Victoria will continue to collaborate with Fisheries Victoria and Victoria Police in activities such as cooperative Ranger and Fisheries officer patrols and support arrangements in accordance with the Statewide Compliance Strategy (Parks Victoria 2002b) and the Regional Compliance Plan (Parks Victoria 2003d).

The Central Coastal Board provides direction and policy advice to facilitate sustainable development of the central coast of Victoria through the implementation of the Victorian Coastal Strategy (VCC 2002).

The Corangamite Catchment Management Authority is responsible for overall coordination of land management within the Corangamite catchment to ensure the sustainable development of land, vegetation and water resources within the region. This includes the preparation of a regional catchment strategy (section 4.2).

The Environment Protection Authority (EPA Victoria) has the primary responsibility for environment protection of all waters in Victoria and is responsible for administering and enforcing the Environment Protection Act, including all activities relating to the discharge of litter and waste to the environment (section 4.2). EPA Victoria also develops State Environment Protection Policies for state waters (section 4.2).

The Barwon Coast Committee of Management manages Barwon Heads Park. The park includes the infrastructure that provides access to the sanctuary, including the circuit walk and staircases at emergency access markers 27W and 28W (figure 2). BCCM works closely with Parks Victoria in the interests of the park and sanctuary. As the local authority under the Marine Act and the local port authority, BCCM is responsible for implementing marine safety and pollution initiatives (sections 4.2, 6.4 and 6.8).

Marine Safety Victoria is responsible at a statewide and regional level for responding to marine pollution incidents. Parks Victoria is a support agency, contributing on-site response and incident management as well as technical advice.

The City of Greater Geelong is the responsible authority for the City of Greater Geelong Planning Scheme, which covers the section of the sanctuary from the high water mark to 100 m seaward of the high water mark, and the abutting coastal areas (section 7.2).

Through Aboriginal Affairs Victoria (AAV), the Secretary to the Department for Victorian Communities (DVC) has responsibility for administering legislation protecting cultural heritage (sections 2.5 and 5.1) and advising Parks Victoria on Indigenous matters.

Heritage Victoria (DSE) is the central government agency that provides information and advice about places listed on the Victorian Heritage Register and Archaeological

Inventory. It supports the Heritage Council through research, recommends additions to the Register and issues permits for alterations to heritage places.

Tourism Victoria is the State government authority responsible for developing and marketing Victoria to Australian and international travellers.

Victorian agencies work cooperatively with the Commonwealth Department of the Environment and Water Resources on the management of regional ecosystem conservation issues.

The Marine Discovery Centre (MDC) at Queenscliff is the marine educational unit of the Department of Primary Industries research and development arm, Primary Industries Research, Victoria (PIRVic). MDC is licensed under Parks Victoria's licensed tour operator program to provide education services within the sanctuary. The education programs provided by MDC in the sanctuary make a valuable contribution to raising awareness of the sanctuary's natural values and of the diversity and significance of Victoria's marine environment, particularly among school-aged visitors.

Aim

- Enhance sanctuary management by collaborating with other agencies to ensure that they give appropriate consideration to sanctuary values in planning and implementing activities that relate to the sanctuary.

Management strategies

- *Work collaboratively with all agencies to ensure their activities accord with the aims for the sanctuary and the plan. In particular, work with:*
 - *DSE regarding future planning and management, including protection of marine flora and fauna from potentially threatening processes*
 - *Fisheries Victoria to implement the fishing prohibition and the Regional Compliance Plan*
 - *BCCM to enable effective management of the sanctuary interface with Barwon Heads Park, and the planning and*

- implementation of marine safety initiatives within the sanctuary and adjacent waters*
- *the Central Coastal Board on any future plans and strategies that relate to the sanctuary*
 - *Corangamite CMA to reduce the impacts of land use and management of the catchment on the sanctuary and development of appropriate actions in the Regional Catchment Strategy*
 - *EPA Victoria to minimise impacts associated with discharge of waste into the environment, particularly from the Black Rock Water Reclamation Plant ocean outfall and Barwon River*
 - *AAV on compliance with the relevant cultural heritage legislation and on issues relating to Indigenous affairs*
 - *Heritage Victoria on heritage management and compliance with the Heritage Act*
 - *State and regional tourism authorities to promote the sanctuary appropriately in regional visitor information centres and in regional tourism strategies*
 - *Marine Safety Victoria to help maximise visitor safety and compliance with boating and other associated regulations*
 - *the City of Greater Geelong regarding the administration of the planning scheme, including input into adjacent or nearby developments that may impact on the sanctuary (section 7.2) and management of stormwater (section 4.2)*
 - *the Commonwealth Department of the Environment and Water Resources on the management of regional ecosystem conservation issues*
 - *the Marine Discovery Centre to support the provision of educational services.*
 - *Update contingency plans for marine pollution incidents, such as oil and chemical spills, and cetacean / wildlife incidents as required, and communicate arrangements to staff, relevant agencies and interested parties.*

9 PLAN IMPLEMENTATION

9.1 Delivery and reporting

A range of approaches will be used to implement strategies in this plan. Some will be undertaken as part of routine management activities such as ranger visits; others will be addressed as part of regional programs undertaken across the State each year.

A priority list of all of the strategies in the plan will be used to guide routine management and identify detailed actions in annual regional programs. Priorities for regional programs vary from year to year, depending on available resources and government priorities.

At the end of each year, progress towards implementing strategies in the plan will be reviewed and the priority list updated. Staff report internally against 'on time and within budget' delivery of regional programs and whether the completed strategy has achieved the objective. Parks Victoria reports annually to government on the overall delivery of regional and divisional programs. This broader reporting on management performance is available in annual reports prepared on the National Parks Act and Parks Victoria.

During implementation of the plan, Parks Victoria will work in partnership with the Traditional Owners and the scheduled Aboriginal community. Ongoing collaborative activities with the relevant Indigenous communities, interested members of the community, scientists and agencies in realising the vision and management directions for the sanctuary will be especially important, as outlined in previous sections of the plan.

Implementation of the plan will be consistent with Parks Victoria's commitment to sustainable practices, which involves the delivery of operations, services and facilities in an ecologically and socially responsible manner with minimal use of expendable resources and minimal generation of waste.

In implementing the plan, management will respond to monitoring and research information as it emerges. Parks Victoria's environmental management framework makes this possible. Based on the International Standard for Environmental Management Systems (ISO 14001), the framework ensures

that the future condition of values is considered in identifying threats and developing actions to ameliorate them. Over time, the success of actions is reviewed against set objectives to ensure ongoing learning and refinement of management. The selection of actions and treatments of threats are guided by the precautionary principle. Management options are evaluated on the basis of least impact on the environment. Treatment of threats with a potential for serious damage that is not addressed in the plan will not be postponed for lack of information.

Parks Victoria will use a variety of means to report to the community about the progress of implementation of the plan. The primary means will be through routine liaison between Parks Victoria, interested groups and individuals from the local community and relevant government agencies. In addition to giving regular updates, there will be opportunities for input by interested members of the community into annual priority setting and feedback on management performance. Events such as Sanctuary open days and community and volunteer forums will offer similar opportunities for reporting and discussions about annual programs.

The results of monitoring and research work will continue to be available to the community as technical reports available on Parks Victoria's website (www.parkweb.vic.gov.au).

Parks Victoria will also report on evaluation of the plan (section 9.3) at the start of the new or revised plan, through routine liaison and community forums and in the subsequent draft plan.

Future reporting on the Statewide Strategy (Parks Victoria 2003a) and State of the Parks reports, which will be available on Parks Victoria's website, will also include information on management performance in the sanctuary.

9.2 Plan amendment

During the 10-year life of the plan, amendments to the plan may only be made by the Secretary to DSE, following an authorised process which includes community consultation.

Circumstances that might lead to amendment of the plan include:

- the results of monitoring or research, management experience or new information (such as greater understanding of new threatening processes) which indicate the need for a change in management direction
- significant changes in visitation or use
- a change in policy that calls into question plan objectives
- new legislation (such as significant boundary changes).

The plan may also be amended if an activity, development or use which conflicts with the provisions of the plan is approved by government (such as native title outcomes).

9.3 Evaluation and review

Periodically through the life of the plan, Parks Victoria will assess overall progress towards implementing the strategies in the plan and also assess progress towards achieving the plan vision and directions. These evaluations will inform a decision about whether a new or revised plan is required. The achievements of the plan will be assessed by considering performance areas such as the following.

Protecting natural values

- Overall benefit to biodiversity.
- Compliance with no-fishing provisions and sanctuary regulations.
- Timely management intervention to minimise threats.
- Minimal impact of permitted uses.

Protecting cultural values

- Progress towards working with Traditional Owners in managing the sanctuary and in protecting and interpreting Indigenous cultural heritage.
- Timely management intervention to avoid damaging activities and threats.

Managing recreation and visitor use

- Managing impact from visitors, including individuals and school and tour groups.
- Meeting community expectations in relation to Parks Victoria's management of the sanctuary.
- Improved community and visitor awareness.

Providing for research and promoting understanding

- Improving understanding of the composition and distribution of habitats and ecological processes.
- Ongoing Traditional Owners and other community participation.
- Clear identification of major knowledge gaps and threats.
- Methods for evaluating the benefits of the plan are likely to be refined over time. Parks Victoria partners external research agencies in establishing benchmarks and indicators for major communities and habitats. Through sound monitoring and assessment methods, this monitoring and research work will strengthen the basis for comparing management performance over time.

REFERENCES

- Anderson, R. & Cahir, A. 2003, *Surf Coast Wrecks*, Heritage Victoria, Melbourne.
- ANZECC TFMPA 1999, *Strategic Plan of Action for the National Representative System of Marine Protected Areas: A Guide for Action by Australian Governments*, Australian and New Zealand Environment and Conservation Council Task Force on Marine Protected Areas, Environment Australia, Canberra.
- ANZECC 2001, *National Strategy for the Conservation of Australia's Biological Diversity*, Australia and New Zealand Environment and Conservation Council, Environment Australia, Canberra.
- BCCM 1997, *The Bluff Conservation Management Plan 1997*, Barwon Coast Committee of Management.
- BCCM 2002, *The Pleasure Grounds of the Barwon Coast: A History*, Dr David Rowe for Barwon Coast Committee of Management, Barwon Heads, Victoria.
- BCCM in prep, *The Port of Barwon Heads Safety and Environmental Management Plan*, Barwon Coast Committee of Management.
- Bird, E.C.F. 1993, *The Coast of Victoria: The Shaping of Scenery*, Melbourne University Press, Carlton.
- Buckley, R.W. 1993, *Sites of Geological and Geomorphological Significance along the Victorian Coast*, Geological Survey of Victoria.
- Bugeja, L. 2003, *Recreational Vessel Fatalities in Victoria: 1999-2002*, State Coroner's Office, Department of Human Services and Marine Safety Victoria, Melbourne.
- CoGG 2000, *City of Greater Geelong Planning Scheme*, City of Greater Geelong, Geelong.
- CoGG 2002, *City of Greater Geelong Stormwater Management Plan, Volume II Final Report*, City of Greater Geelong, Geelong.
- COAG 1992, *National Strategy for Ecologically Sustainable Development*, Council of Australian Governments, Ecologically Sustainable Development Steering Committee.
- CCMA 2003, *Corangamite Regional Catchment Strategy 2003–2008*, Corangamite Catchment Management Authority, Colac.
- DCNR 1993, *Lake Connewarre State Game Reserve Management Plan*, Department of Conservation and Natural Resources, East Melbourne.
- DIVA 2004, *Code of Practice for Commercial Providers of Recreational Snorkelling & Scuba Diving Services in Victoria*. Dive Industry Victoria Association, Melbourne.
- DSE 2004a, *Victoria in Future – 2004 Population Projections*, Department of Sustainability and Environment, East Melbourne.
- DSE 2004b, *Aquatic Pests: Treat 'em Mean – Keep Your Boat Clean*, Department of Sustainability and Environment, East Melbourne.
- DSE 2006, *Coastal Spaces Landscape Assessment Study, Protection and Management of Victoria's Coastal Landscapes, State Overview Report, September 2006*, Department of Sustainability and Environment, East Melbourne.
- ECC 2000, *Marine, Coastal and Estuarine Investigation: Final Report*, Environment Conservation Council, East Melbourne.
- Edmunds, M., Hart, S., Elias, J. & Power, B. 2004, *Victorian Intertidal Reef Monitoring Program: The Reef Biota in Central Victoria and Port Philip Bay Marine Sanctuaries, Parks Victoria Technical Series No. 11*, Parks Victoria, Melbourne.
- EPA 1998, *Cleaner Marinas: EPA Guidelines for protecting Victoria's marinas*, EPA Publication No. 624, Environment Protection Authority Victoria, Southbank.
- EPA 2004, *Waste Management Policy (Ships' Ballast Water)*, Environment Protection Authority Victoria, Southbank.
- Government of Victoria 2002, *Government Response to the Environment Conservation*

- Councils Marine, Coastal and Estuarine Investigation Final Recommendations, State Government of Victoria, Melbourne.
- Heritage Victoria 2006, *Victoria's Heritage – Strengthening our Communities*, Heritage Victoria, Department of Sustainability and Environment, East Melbourne.
- Hewitt, C.L., Campbell, M.L., Thresher, R.E. & Martin, R.B. 1999, Marine Biological Invasions of Port Phillip Bay, *CRIMP Technical Report Number 20*, CSIRO Marine Research.
- IMCRA Technical Group 1998, *Interim Marine and Coastal Regionalisation for Australia: an ecosystem based classification for marine and coastal environments*, Interim Marine and Coastal Regionalisation for Australia Technical Group, Version 3.3, Environment Australia, Commonwealth Department of the Environment, Canberra.
- Latter B. 2002, *Breakers Ahead – Wreck of the Earl of Charlemont*, Brian Latter, Leopold, Victoria.
- MSV 2002, *Victorian Marine Pollution Contingency Plan (VICPLAN)*, Victorian (National Plan) Marine Pollution Committee, Marine Safety Victoria, Melbourne.
- MSV 2005, *Victorian Recreational Safety Boating Guide*, Marine Safety Victoria, Melbourne.
- NRE 1997a, *Victoria's Biodiversity Strategy: Directions in Management*, Department of Natural Resources and Environment, East Melbourne.
- NRE 1997b, *A Wildlife Response Plan for Oil Spills*, Department of Natural Resources and Environment, East Melbourne.
- NRE 1999a, Introduction of Exotic Organisms into Victorian Marine Waters, *FFG Action Statement No. 100*, Department of Natural Resources and Environment, East Melbourne.
- NRE 1999b, *Interim Victorian Protocol for Managing Exotic Marine Organisms Incursions*, Department of Natural Resources and Environment, East Melbourne.
- NRE 1999c, *The Victorian Cetacean Contingency Plan*, Department of Natural Resources and Environment, East Melbourne.
- NRE 2002, *Policy for Sustainable Recreation and Tourism on Victoria's Public Land*, Department of Natural Resources and Environment, East Melbourne.
- ORC 2004, *Snorkelling, SCUBA Diving and Wildlife Swims Adventure Activities Standards*, Outdoor Recreation Centre, Melbourne.
- Parks Victoria 2002a, Guidelines for Working with Aboriginal Communities and Protection of Cultural Sites, Parks Victoria, Melbourne (unpublished).
- Parks Victoria 2002b, Statewide Compliance Strategy, Parks Victoria, Melbourne (unpublished).
- Parks Victoria 2003a, *Victoria's System of Marine National Parks and Marine Sanctuaries, Management Strategy 2003 – 2010*, Parks Victoria, Melbourne.
- Parks Victoria 2003b, *Heritage Management Strategy*, Parks Victoria, Melbourne.
- Parks Victoria 2003c, *Barwon Bluff Marine Sanctuary Park Note*, Parks Victoria, Melbourne.
- Parks Victoria 2003d, City and Bays Regional Compliance Plan, Parks Victoria, Melbourne (unpublished).
- Parks Victoria 2005a, Marine National Parks and Marine Sanctuaries Visitor Services Strategy, Parks Victoria, Melbourne (unpublished).
- Parks Victoria 2005b, *Indigenous Partnership Strategy and Action Plan*, Parks Victoria, Melbourne.
- Parks Victoria 2005c, *Bellarine Peninsula Emergency Management Plan*, Parks Victoria, Queenscliff.
- Pescott, J. & City of South Barwon 1985, *South Barwon 1857–1985*, Neptune Press, South Barwon.
- Plummer, A., Morris, L., Blake, S. & Ball, D. 2003, Marine Natural Values Study Victorian Marine National Parks and Sanctuaries. *Parks Victoria Technical Series No. 1*, Parks Victoria, Melbourne.

-
- Povey, A. and Keogh, M. 1991, Effects of trampling on plant and animal populations on rocky shores, *OIKOS* **61**: 355–368.
- SDFV 2005, Codes of Practice: General Operating Guidelines for Recreational Scuba Diving and Related Activities, Scuba Divers Federation of Victoria, Melbourne.
- Short, D. 1996, *Beaches of the Victorian Coast and Port Phillip Bay; A guide to their nature, characteristics, surf and safety*, Surf Life Saving Australia and School of Geosciences, University of Sydney, Sydney.
- Tourism Victoria 2003a, *National Visitors Survey, Year Ending June 2003*, Bureau of Tourism Research, Melbourne.
- Tourism Victoria 2003b, *Nature Based Tourism – Directions and opportunities for Victoria 2000 – 2003*, Tourism Victoria, Melbourne.
- VCC 1998, *Siting and Design Guidelines for Structures on the Victorian Coast*, Victorian Coastal Council, State Government of Victoria, Melbourne.
- VCC 2002, *Victorian Coastal Strategy 2002*, Victorian Coastal Council, State Government of Victoria.

GLOSSARY

Aeolian calcarenite – rock sediment with a hardened sandy texture composed largely of calcium carbonate that is formed with influence by the wind.

Algae (seaweed) – plant-like organisms that use light energy to create food. Unlike plants, algae are not differentiated into roots, stems and leaves.

Ballast water – water carried in a ship's tanks for stability. Normally discharged to the sea when the ship is loaded, and can be contaminated with pollution or exotic organisms.

Biodiversity – the natural diversity of all life: the sum of all native species of flora and fauna, the genetic variation within them, their habitats and the ecosystems of which they are an integral part.

Bioregion – an area with unique underlying environmental and ecological features.

Bivalve – a type of mollusc with a pair of hinged shells (e.g. scallop, mussel).

Canopy – a structural overstorey (e.g. of kelp).

Catchment – the area of land that drains to a watercourse or estuary.

Coast – in broad terms, the sea and the seabed to the State limit (three nautical miles or 5.5 kilometres offshore) and the land and inland waters within the coastal catchment.

Coastline – generally, the line along which the land meets the sea.

Committee of Management – a committee appointed under the *Crown Land (Reserves) Act 1978* to manage reserved Crown land on behalf of the Minister. For coastal land, committees are either an agency (e.g. the local municipality, Parks Victoria) or a committee appointed through an expression of interest process.

Coralline algae – algae that contain calcified components. Can take a variety of forms.

Country – in Indigenous usage, all of nature, culture and spirituality relating to an area.

Crown land – land belonging to the State.

Customs – observances and practices of people (including land management and resource use) in accordance with tradition.

Delta – The flat area at the mouth of some rivers where the main stream splits up into several branches.

Diatom – A microscopic unicellular alga.

Dreaming – the primordial creative world of the spirit ancestors and the continuing reality for their totem ancestors.

Ecologically sustainable development (ESD) – development that improves the total quality of life both now and in the future, in a way that maintains the ecological processes on which life depends.

Ecosystem – a dynamic complex of interacting organisms and their associated non-living environment.

Effluent – a liquid, partially or completely treated or in its natural state, released into the environment from a water or sewage treatment plant.

Endemic – unique to a particular area, and not found naturally anywhere else.

Estuary – an inlet or river mouth that is influenced by tides and freshwater inputs from the catchment.

Exotic marine organism / species – refer to *Pest*.

Flotsam – In maritime law, applies to wreckage or cargo left floating on the sea after a shipwreck. The common phrase *flotsam and jetsam* is now used loosely to describe any objects found floating or washed (respectively) ashore. See also *Jetsam*.

Foreshore – generally, the land between a coastal road and the low water mark.

Geomorphology – the scientific study of landforms and geological formations and the processes that shape them.

Habitat – the preferred location or 'home' of an organism.

Heritage – a place, activity, cultural way of life, structure or group of structures that has aesthetic, historic, scientific or social value for past, present or future generations.

High water mark – the landward boundary of high water mark is the average of the highest tides (spring and neap).

Indigenous cultural heritage – all aspects of contemporary and traditional culture, and places and objects of significance to Indigenous people in accordance with tradition.

Indigenous people – people who are descendants of Aboriginal Australians.

Indigenous species – species that occur naturally in a region. See also endemic.

Infrastructure – physical structures that facilitate the human use of an area (e.g. roads, paths, toilet blocks).

Intertidal – the area between low and high tide levels, which is subject to daily changes in physical and biological conditions from tide movements.

Invertebrate – an animal without a backbone (e.g. worms, sponges).

Jetsam – In maritime law, applies to cargo or equipment thrown overboard from a ship in distress and either sunk or washed ashore. The common phrase *flotsam and jetsam* is now used loosely to describe any objects found floating or washed (respectively) ashore. See also *Flotsam*.

Marine National Park – in Victoria, highly protected areas reserved and managed under the National Parks Act that represent the range of marine environments in Victoria, and in which no fishing, extractive or damaging activities are allowed.

Marine protected area – a marine area that has some form of protection and is managed for conservation objectives.

Marine Sanctuary – in Victoria, a small, highly protected area reserved and managed under the National Parks Act to protect special values, and in which no fishing, extractive or damaging activities are allowed. These areas complement Marine National Parks.

Matters of national environmental significance – defined by the Environment Protection and Biodiversity Conservation Act to include: World Heritage Properties; Ramsar wetlands; nationally threatened species and communities; migratory species protected under international agreements; the Commonwealth marine environment; and, nuclear actions.

Microhabitat – a small area with distinct environmental features within a broad habitat type, e.g. rock-pool in an intertidal platform.

Midden – a mound or deposit containing the remains of shellfish eaten by Indigenous people. Coastal shell middens can consist of the shells and other remains from a single meal or many different meals eaten in the same location over many years. Middens can also contain other cultural items such as stone and bone artefacts.

Mollusc – broad group of animals including snails, sea slugs, squids, octopuses, cuttlefish and mussels.

Nature-based tourism – tourism that provides a range of experiences associated with the natural environment, generally related to outdoor activity.

Neap tides – tide occurring twice every month between spring tides, but slightly lower.

Outfall – the place where sewage is discharged to the ocean.

Pest – exotic organisms (plants, animals or pathogens) that, if introduced outside their natural or previous distribution, they cause significant changes to habitats, food chains, ecosystems or human health by feeding on or competing with native species. Can refer to either terrestrial or marine species.

Photosynthesis – the process by which organic molecules are made from carbon dioxide and water, using light energy. This process is essential for the growth and survival of plants and algae.

Ramsar Convention on Wetlands – an international agreement created in Ramsar, Iran, in 1971 to recognise wetlands of international importance.

Relevant Indigenous communities – includes the Traditional Owners and the scheduled Aboriginal community.

Remnant vegetation – remaining natural vegetation.

Scheduled Aboriginal community – body or bodies scheduled as the Local Aboriginal community under the Aboriginal and Torres Strait Islander Heritage Protection Act for the sanctuary.

Sediment – insoluble material carried in water, consisting mainly of particles derived from rock, soil and organic material; such material that has settled out of the water, onto the seabed.

Sedimentation – the deposition of sediment on a surface.

Sewage – household or commercial waste water including human and industrial wastes.

Sewerage – the system that facilitates the collection, transport, treatment and discharge of sewage.

Sponge – multicellular, filter-feeding animals with a variety of forms. Sponges are the simplest form of invertebrate life.

Spring tides – occur twice every month at new and full moon and are the highest tides.

Stakeholder – an individual or group that has a vested interest in, or may be affected by, a project or process.

Stormwater – runoff from land during and following rain. Stormwater carries accumulated material, which may include litter, soil, nutrients, pathogens, chemicals, pesticides, oils and grease.

Threatening process – a source of potential harm or a situation with a potential to cause loss.

Tradition – the body of knowledge, belief and customs that is passed from generation to generation.

Traditional Owners – communities of Indigenous people that reasonably assert a relationship with the sanctuary based on direct descent from the original Indigenous custodians of *Country*, in accordance with Indigenous tradition.

Translocation – the transfer of pests from one area to a new area.

Values – natural and cultural assets (e.g. historic artefacts, features, species, communities) that have been given worth or are considered to be desirable.

Water column – water habitat extending between the surface and the seabed.

Wrack – organic matter washed up on beaches.

Abbreviations

AAV – Aboriginal Affairs Victoria.

ANZECC – former Australian and New Zealand Environment and Conservation Council.

BCCM – Barwon Coast Committee of Management.

CCMA – Corangamite Catchment Management Authority.

CoGG – City of Greater Geelong.

CRIMP – Centre for Research on Introduced Marine Pests.

CSIRO – Commonwealth Scientific and Industrial Research Organisation.

DPI – Department of Primary Industries.

DSE – Department of Sustainability and Environment.

ECC – former Environment Conservation Council.

EPA – Environment Protection Authority Victoria.

IUCN – World Conservation Union (formerly International Union for the Conservation of Nature and Natural Resources).

NRSMPA – National Representative System of Marine Protected Areas.

PIRVic – Primary Industries Research Victoria.

APPENDIX 1 MANAGEMENT OBJECTIVES FOR MARINE SANCTUARIES

Management objectives for marine national parks and marine sanctuaries included on Schedule 7 or Schedule 8 of the National Parks Act are in Sections 4 and 17D as listed below. For an up-to-date copy of the *National Parks Act 1975* (Vic.), refer to Victorian Acts on the Victorian Legislation and Parliamentary Documents website (www.dms.dpc.vic.gov.au).

4. Objects of the Act

The objects of this Act are –

- (a) to make provision, in respect of national parks, State parks, marine national parks and marine sanctuaries –
 - (i) for the preservation and protection of the natural environment including wilderness areas and remote and natural areas in those parks;
 - (ii) for the protection and preservation of indigenous flora and fauna and of features of scenic or archaeological, ecological, geological, historic or other scientific interest in those parks; and
 - (iii) for the study of ecology, geology, botany, zoology and other sciences relating to the conservation of the natural environment in those parks; and
 - (iv) for the responsible management of the land in those parks;
- (c) to make provision in accordance with the foregoing for the use of parks by the public for the purposes of enjoyment, recreation or education, and for the encouragement and control of that use.

17D Marine national parks and marine sanctuaries

(3)(a) The Secretary, subject to this Act will ensure that each marine national park and marine sanctuary is controlled and managed in accordance with the objects of this Act in a manner that will –

- (i) preserve and protect the natural environment and indigenous flora and fauna of the park and any features of the park which are of geological, geomorphological, ecological, scenic, archaeological, historic or other scientific interest; and
- (ii) promote the prevention of the introduction of exotic flora and fauna into the park; and
- (iii) provide for the eradication or control of exotic flora and fauna found in the park; and
- (b) subject to paragraph (a) –
 - (i) provide for the use, enjoyment and understanding of Marine National Parks and Marine Sanctuaries by the public; and
 - (ii) promote an understanding of the purpose and significance of Marine National Parks and Marine Sanctuaries; and
- (c) prepare a plan of management in respect of each marine national park and each marine sanctuary.







APPENDIX 2 SUBMISSIONS ON THE DRAFT MANAGEMENT PLAN

A total of twelve submissions were received on the draft plan, comprising eleven from organisations (one of which was marked confidential) and one from individual.

ORGANISATION / GROUP	SUBMISSION NO.
Submissions from organisations	Total 11
Australian Marine Conservation Society	5
Barwon Coast Committee of Management	12
Department for Victorian Communities – Aboriginal Affairs Victoria	7
Department of Primary Industries – Fisheries Victoria	4
EPA Victoria	11
Field Naturalist Club of Victoria	9
Geelong Environment Council	10
Scuba Divers Federation of Victoria	8
Victorian Wader Study Group	2
Wathaurong Aboriginal Cooperative	3
Confidential submission	6
Submissions from individuals	Total 1
Jean and Jock Smith	1

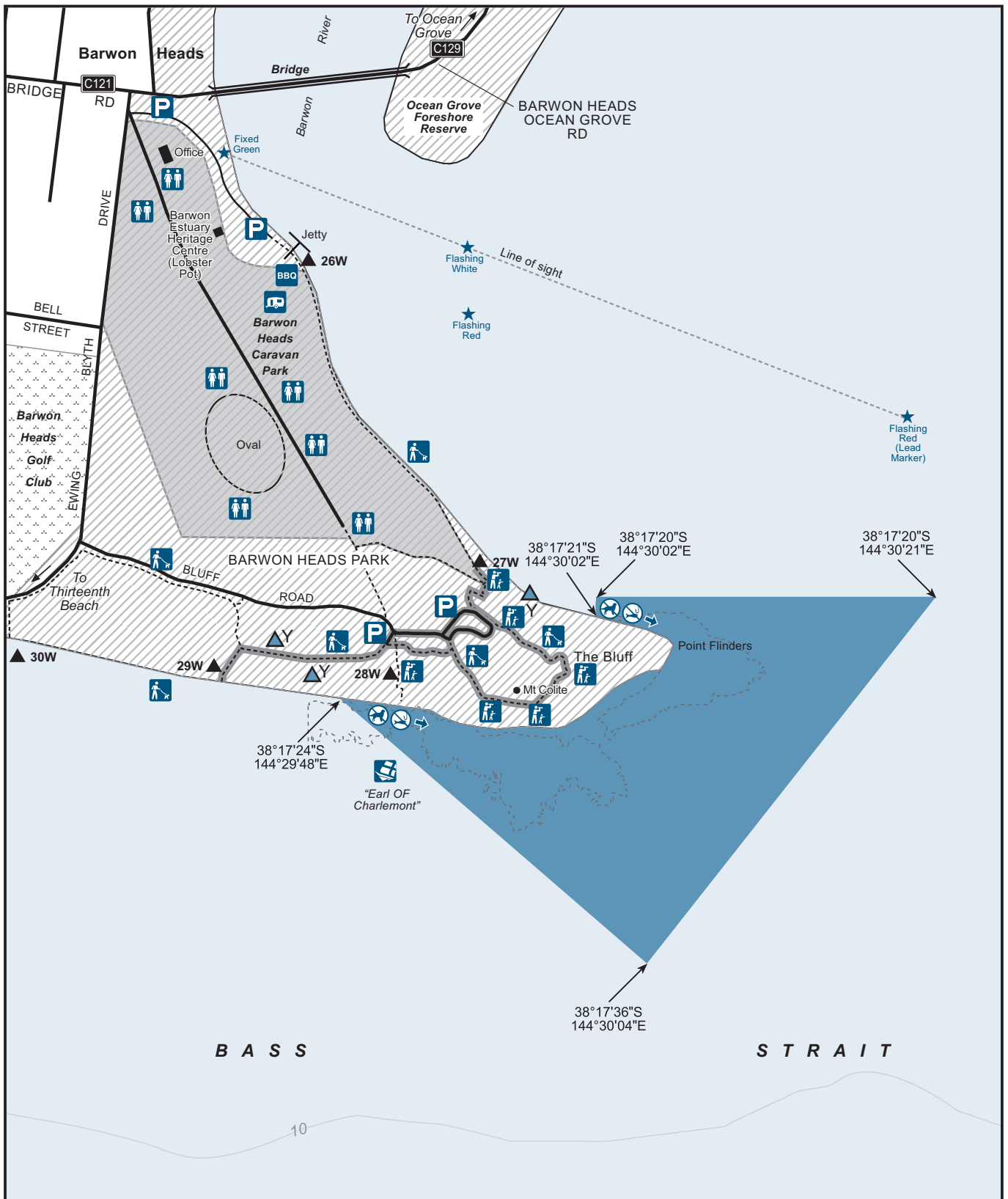


Figure 1
LOCATION
BARWON BLUFF MARINE SANCTUARY

-  Freeway/Highway
-  Major sealed road
-  Barwon Bluff Marine Sanctuary
-  Marine National Park & Marine Sanctuary
-  Other Parks
-  Waterbody



Cartography by Spatial Vision 2007
 M/7364



BARWON BLUFF MARINE SANCTUARY

Figure 2



Cartography by Spatial Vision 2007
M/7364

- Sealed road
- Unsealed road
- Walking track
- Depth contour
- Intertidal Reef / Platform
- 27W - 29W Link Walk
- Emergency Access Marker

- Barwon Bluff Marine Sanctuary
- Crown Land Reserve
- Camping & recreation area
- Barwon Heads Golf Course
- Shore boundary marker (Colour indicated by letter)
- Navigational Light
- Shipwreck

- ### Recreation Facilities
- Barbecue
 - Caravan Park
 - Carpark
 - Dogs permitted (Summer Restrictions Apply)
 - Lookout
 - Toilets
 - No Dogs
 - No Fishing

