VICTORIAN COASTAL STRATEGY 2014

ACKNOWLEDGMENT OF COUNTRY AND INDIGENOUS AUSTRALIANS

The Victorian Coastal Council respectfully acknowledges the original custodians of what is now known as Victoria; their rich culture, deep affinity with the land and sea and spiritual connection to it.

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Victorian Coastal Council

State Government Victoria

Casterton
Coleraine
Lake Bolac
BALLARAT
Ballan
Gisborne
Bacchus Marsh
Meredith
Melbourne
Bannockburn
GEELONG
Portarlington
Mortlake
Heywood
Terang
Camperdown
Winchelsea
Ocean Grove
Queenscliff
Portland
Port Fairy
Koroit
WARRNAMBOOL
Cobden
Colac
Torquay
Anglesea
Forrest
Lorne
Port Campbell
Apollo Bay
Drouin
Moe
Traralgon
Trafalgar
Morwell
Churchill
Rosedale
Maffra
Stratford
Sale
Bairnsdale
Paynesville
Lakes Entrance
Orbost
Mallacoota
Cowes
Korrumburra
Mirboo North
San Remo
Wonthaggi
Leongatha
Inverloch
Foster
Yarram

1 2 3 4 5 6 7 8 9 10 11

Victorians considered climate change and sea level rise to pose a threat to the Victorian coast

Over four-in-five Victorians reported having made at least one day trip to the coast in the last twelve months

87% are satisfied with their coastal experience

Victorians value the character of coastal settlements

The natural features of the Victorian coastal and marine environment are extremely important to Victorians

The flora and fauna that live in marine environments are important to all Victorians

The top three things that contribute to a good coastal or marine experience all relate to a clean and unspoilt environment

0 25 50 100 km

Legend

Settlement role

- ★ Regional city
- ● Regional centre
- ○ Town or District town or Key Hinterland town
- ⊙ Small town or Small settlement or Rural centre
- • Settlement

- ◯ Major growth or Promote growth
- ○ Medium growth or Support growth
- ✺ Sustainable change or Low growth or Limited growth
- Urban growth boundary

Note: The Coastal Settlement Framework will be confirmed in the final Regional Growth Plans

- Marine National Parks
- Multiple use marine protected areas
- Marine Sanctuaries (1–11)
- National park and state park
- State forest
- Coastal park
- Coastal reserve
- Other public land
- Limit of Victorian water 3 nautical miles

MAP 1 THE VICTORIAN COAST – COASTAL SETTLEMENT FRAMEWORK AND INDICATIVE LAND CATEGORIES

FOREWORD

The *Coastal Management Act (1995)* requires a long term vision for Victoria's coasts. The Victorian Government has delivered on this requirement having developed the most comprehensive coastal strategy to date.

The strength of the 2014 Strategy comes from extensive consultation with stakeholders, consideration of more than 100 public submissions, the latest scientific evidence and regular social research.

The Victorian Coastal Council, in partnership with the three Regional Coastal Boards, conducted a series of information sessions at six locations across the State. These sessions provided opportunities for participation in metropolitan and regional Victoria. We asked Victorians what they wanted in their coastal strategy and I am confident that this document faithfully reflects those views.

Reviewed every five years, and in its fourth iteration, the 2014 Strategy investigates a broader range of possible changes and impacts not considered in earlier strategies. This is a forward looking document that has a clear focus on five significant themes:

1. Managing population growth,
2. Adapting to a changing climate,
3. Managing coastal land and infrastructure,
4. Valuing the natural environment, and
5. Integrating marine planning.

These are the contemporary issues that Victorians expect their state and local governments to plan for on their behalf.

Designed primarily for local government, committees of management and key coastal decision makers, the 2014 Strategy will assist in the critical work of managing our coastline. This is a foundation document that opens up areas for potential further investigation and examination. It will also assist in the development of localised *Regional Coastal Plans* and *Coastal Management Plans*.

One of the biggest challenges highlighted in this Strategy relates to the ongoing use of the coast including the growing cost of providing and maintaining coastal infrastructure. The Victorian Government is investing over $44 million in protecting coastal assets, renourishing beaches, rejuvenating park and tourism facilities and improving access and safety along our coast. The Victorian Government is committed to preserving what is one of Victoria's most beautiful natural assets.

By adopting a balanced, consultative approach, we have come a long way in coastal planning. In 2012, the Government revised the State Planning Policy Framework to plan for incremental sea level of not less than 0.2m by 2040 for urban infill areas.

This was closely followed by the release of the *Victorian Coastal Inundation Dataset* and the *Victorian Coastal Hazard Guide* to support practical climate change adaptation planning for local government, town planners and developers.

In 2013, the Government released Victoria's first state-wide *Climate Change Adaptation Plan* and will soon release further guidance on the roles and responsibilities shared between state and local governments to formalise our commitment to working together to prepare for climate related events and disasters.

It is important to recognise that our coastal areas are not static environments. They change with the influence of wind, tides, waves and weather systems making them highly dynamic. Within reason we must plan for and adapt to what are naturally occurring changes and focus efforts on areas where major infrastructure and precious environments are at risk.

Victorians have a very strong connection with their coasts. It is a special place where we visit, work, holiday and live. By adopting a sustainable and balanced approach while working in close partnership with local government, business and communities, we will meet future challenges head on so that our coasts can be enjoyed for generations to come.

THE HON RYAN SMITH MP
Minister for Environment and Climate Change

STRATEGY AT A GLANCE

STRATEGY AT A GLANCE

VISION A healthy coast, appreciated by all, now and in the future

Coastal Management Act 1995

- Protection of signficant environmental & cultural features
- Clear directions for future use
- Sustainable use of natural coastal resources
- Suitable development

KEY ISSUES

HIERARCHY OF PRINCIPLES

Value & Protect	Plan & Act	Use & Enjoy
Valuing the coast	Coastal hazards & processes	Coastal buildings, infrastructure & management
Marine environments	Coastal settlements	Visitation & tourism
Wetlands & estuaries	Port precincts	Access to the coast
Onshore environments	Research & knowledge sharing	Boating & water-based activities
Catchments & water quality	Community participation	Fishing & aquaculture
Heritage		Coastal energy resources

DESIRED OUTCOMES, POLICIES & ACTIONS

IMPLEMENTATION Monitoring, evalutation & reporting

‹ **Cape Howe** Neville Rosengren

CONTENTS

STRUCTURE

VISION

INTRODUCTION

VICTORIA'S COAST
- IMPORTANCE OF THE COAST
- KEY ISSUES

HIERARCHY OF PRINCIPLES

LEAD & PARTNER AGENTS

VALUE & PROTECT

PRINCIPLE 1: ENSURE PROTECTION OF SIGNIFICANT ENVIRONMENTAL AND CULTURAL VALUES
VALUING THE COAST
MARINE ENVIRONMENTS
WETLANDS AND ESTUARIES
ONSHORE ENVIRONMENTS
CATCHMENTS AND WATER QUALITY
HERITAGE

PLAN & ACT

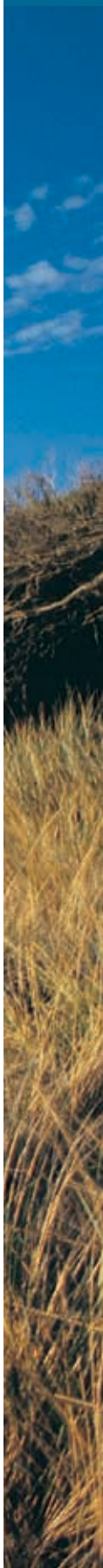
PRINCIPLE 2: UNDERTAKE INTEGRATED PLANNING AND PROVIDE CLEAR DIRECTION FOR THE FUTURE
COASTAL HAZARDS AND PROCESSES
COASTAL SETTLEMENTS AND COMMUNITIES
PORT PRECINCTS
RESEARCH AND KNOWLEDGE SHARING
COMMUNITY PARTICIPATION

USE & ENJOY

PRINCIPLE 3: ENSURE THE SUSTAINABLE USE OF NATURAL COASTAL RESOURCES
... only after the above principles have been addressed then
PRINCIPLE 4: ENSURE DEVELOPMENT ON THE COAST IS LOCATED WITHIN EXISTING, MODIFIED AND RESILIENT ENVIRONMENTS WHERE THE DEMAND FOR DEVELOPMENT IS EVIDENT AND ANY IMPACTS CAN BE MANAGED SUSTAINABLY
COASTAL BUILDINGS, INFRASTRUCTURE AND MANAGEMENT
VISITATION AND TOURISM
ACCESS TO THE COAST
BOATING AND WATER-BASED ACTIVITIES
FISHING AND AQUACULTURE
COASTAL ENERGY RESOURCES

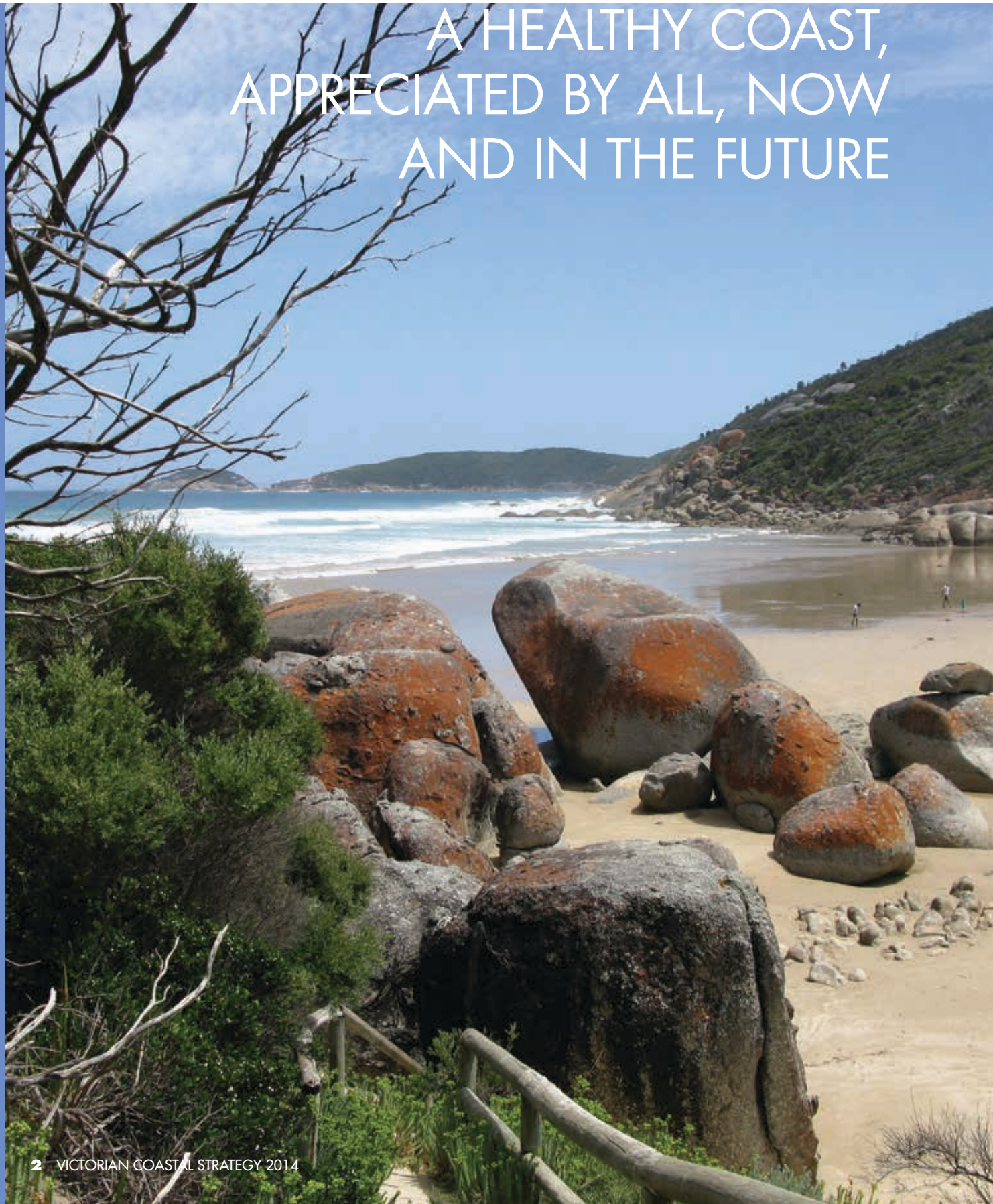
IMPLEMENTATION

MONITORING, EVALUATION AND REPORTING



VISION

A HEALTHY COAST, APPRECIATED BY ALL, NOW AND IN THE FUTURE



VISION

A HEALTHY COAST, APPRECIATED BY ALL, NOW AND IN THE FUTURE

A healthy coast

- Natural coastal processes support habitat, biodiversity and the quality of life for Victorians
- Victorians understand the intrinsic value of coastal and marine environments and want to protect and preserve them
- Areas of coast are reserved primarily for biodiversity conservation, and significant environmental, cultural, geological and landscape features are protected
- There is a diversity of habitats: seagrass meadows, sandy beaches, rocky reefs, saltmarsh and mangrove fields, dunes, woodland and heathland, supporting resilient communities of indigenous plants and animals
- Beaches, estuarine and marine waters are clean and healthy
- Coastal infrastructure takes into account the natural shifts and changes of the coastline
- The vast majority of Victoria's coastline remains in public ownership reserved as Crown land

Appreciated by all

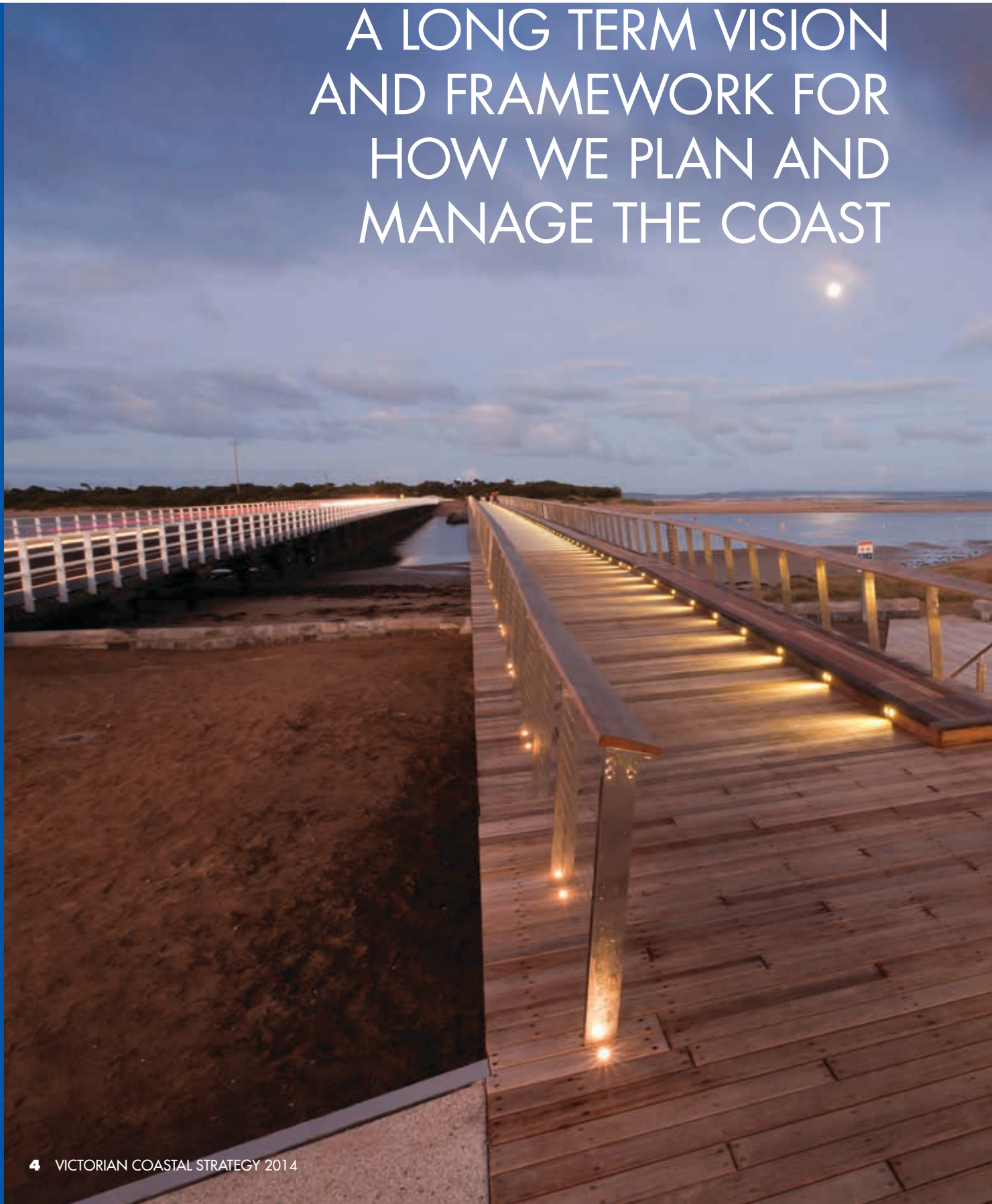
- Victorians appreciate healthy coastal and marine environments, actively participating in their management and protection
- A wide range of experiences is available on the Victorian coast, from remote wilderness to city beaches, township promenades and ports
- Local communities and visitors enjoy the coast, co-existing in balance with a diversity of plants and animals
- Some areas are easily accessible, while others have minimal or no access to maintain natural and cultural values
- Facilities that support coastal and marine recreation, such as life-saving clubs and yacht clubs, are appropriately sited, attractive, and designed and managed to meet a range of community needs
- Buildings and infrastructure are exemplary in siting, design, materials and environmental standards; they can adapt to natural coastal processes and have defined, but limited, ecological footprints
- Coastal cities, towns and settlements have distinctive characters, separated by natural or rural landscapes

Now and in the future

- Best available science and expertise informs coastal planning, management and decision-making
- Coastal planning and management is funded to meet its responsibilities, strategic and long-term in outlook, and integrated across all levels of government, industry, the community and land tenures
- Traditional Owners are actively involved in management of the coast and their aspirations for coast and sea country are respected and valued
- Coastal resources are sustainably used to ensure protection of environmental, economic and social benefits now and in the future
- Adaptation of communities, settlements and ecosystems to a changing climate is considered in all aspects of planning and management on the coast
- Monitoring, evaluation and reporting are used to measure progress and success

‹ **Whisky Bay, Wilson Promontory** Nicola Waldron

A LONG TERM VISION AND FRAMEWORK FOR HOW WE PLAN AND MANAGE THE COAST



INTRODUCTION

In the second reading speech introducing the Coastal Management Bill on 21 March 1995 former Minister for Conservation and Environment, the Hon Mark Birrell MLC, said:

> *"Our coasts are coming under increasing pressure for a variety of uses, which can result in land use conflicts and the degradation of coastal habitat. The challenge is to ensure that its many attributes are managed in a sustainable fashion and that decisions about competing uses are balanced in the interests of all Victorians".*

This continues to be the primary objective of the Victorian Coastal Strategy.

The *Coastal Management Act 1995* (the Act) requires the Victorian Coastal Strategy to provide for the long-term planning of the Victorian coast, in order to:

- ensure the protection of significant environmental features
- provide clear direction for the future use of the coast, including the marine environment
- identify suitable development areas and development opportunities
- ensure the sustainable use of natural coastal resources.

The Act requires the Victorian Coastal Council (VCC) to review the Victorian Coastal Strategy every five years. This enables emerging coastal issues to be dealt with within the context of the Act requirements.

The *Victorian Coastal Strategy 2014* (the Strategy) sets a long term vision and framework for how we plan and manage the coast, guided by the Hierarchy of Principles, policies and actions.

The Strategy also identifies five key issues that need to be addressed if our coast is to continue to provide benefits to all Victorians into the future.

The five key and interrelated issues are:

- Managing population growth
- Adapting to a changing climate
- Managing coastal land and infrastructure
- Valuing the natural environment
- Integrating marine planning

These are directed towards ensuring that coastal planning and management:

- reflects the dynamic, complex and interconnected nature of coastal and marine habitats; and
- addresses risks posed to coastal habitats and environmental resources by a changing climate, increasing coastal population pressures, and the growing cost of providing and maintaining coastal infrastructure.

These issues require further analysis and discussion before changes are made, but changes are needed to bring about improvements in governance, finance and management along the coast, and a better appreciation of the measurable and non-measurable benefits of the coast.

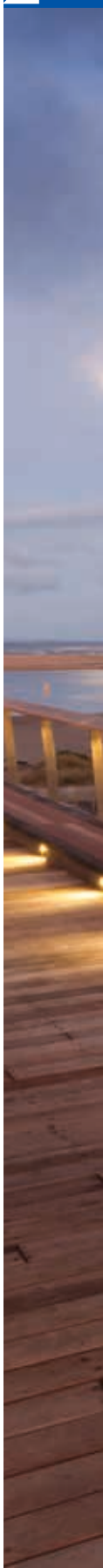
Victorians have a strong connection with the coast. It is a special place for us to visit, holiday, work, and live. We enjoy the recreational and lifestyle opportunities it provides and we appreciate the diverse landscapes and seascapes. We place a high value on clean and healthy beaches and water, which are integral to our use and enjoyment. Traditional Owners have a very strong continuing and dynamic connection with the coast.

Coastal and marine environments are made up of ecosystems that are of value in their own right (i.e. they have intrinsic value). Over 12,000 species of plants and animals are supported by marine environments in Victoria, with eighty percent of these occurring nowhere else on earth (VNPA 2010).

We also appreciate that we all stand to benefit from the ecosystem goods and services, and flow-on economic gains, that a healthy coast provides. The total value of ecosystem goods and services provided by the Victorian coast is estimated to be $18.3 billion per annum (WorleyParsons 2013). Examples include fisheries and natural protection from erosion and inundation.

Of the total value, commercial ecosystem goods and services from Victoria's coast contribute $9.9 billion per annum to our economy. Non-commercial goods and services (i.e. goods and services that are not traded commercially) are conservatively estimated at $8.4 billion per annum (WorleyParsons 2013).

Maintaining a healthy coast is a shared responsibility – the community, all levels of government, and businesses have roles to play. In Victoria we are fortunate to have a longstanding legacy of communities and individuals being involved in caring for the coast. Around 9,000 Victorians are members of coastal groups, from Coastcare to Committees of Management and Regional Coastal Boards. Together they champion, conserve, and manage the coast on our



‹ Barwon Heads Bridge and William Buckley Bridge Peter Elliott Architecture and Urban Development with VicRoads

behalf. Victorians are also linked to the coast through local communities, broader interest groups, and other regional and statewide bodies.

The latest social research commissioned by the VCC (Ipsos 2012) shows that over eighty-four percent of Victorians made at least one day trip to the coast in the last twelve months. Overall, people were very satisfied with their experience, rating it either 'excellent' or 'very good'. Their accounts suggest the most enjoyable aspects of their coastal experience involved the 'atmosphere/scenery', followed by 'spending time with family/friends', 'walking/hiking'.

Victorians considered that the most important contributing factors to good coastal management were 'clean water', 'lack of rubbish' and an 'unspoilt/undeveloped/natural environment.' Nonetheless, they were also concerned about pollution, the pressure of recreational use, and the need for towns to retain their sense of character. This Strategy aims to address these concerns.

PURPOSE OF THE STRATEGY

The purpose of the Strategy is to:

- provide *guidance* for agencies and statutory decision-making along the coast and in marine and estuarine environments
- provide a *framework* for related Regional Coastal Plans, Regional Growth Plans, Regional Catchment Strategies, Local Planning Schemes, and Management Plans for coastal Crown land
- *engage* the community to continue to value the coast and marine environments and to participate in its planning and management.

The Strategy also provides guidance for planning and management frameworks where these exist outside the *Coastal Management Act 1995*. Where decisions are made outside the framework of the Act, project sponsors and decision makers are to take into account the Hierarchy of Principles and the policies set out in the Strategy.

WHAT IS MEANT BY 'THE COAST'

The coast does not exist in isolation. A broad definition of the coast allows flexibility in application and should be applied relative to the context, issue or location in question.

For the purposes of this Strategy, references to 'the coast' encompass coastal, estuarine and marine environments on both public and private land. This applies to:

- the marine environment – nearshore marine environment, the seabed, and waters out to the State limit of three nautical miles (5.5 kilometres)
- foreshores – or coastal Crown land up to 200 metres from the high water mark
- coastal hinterland – land directly influenced by the sea or directly influencing the coastline, and with critical impacts on the foreshore and nearshore environment (these influences range from visual to drainage impacts)
- catchments – rivers and drainage systems that affect the coastal zone, including estuaries
- atmosphere – near, around and over the coast as defined above

COASTAL PLANNING AND MANAGEMENT FRAMEWORK

The *Coastal Management Act 1995* establishes the legislative framework for planning and managing the coast of Victoria. The Act enables a four-tiered approach with policies, plans and tools at a state, regional, local and site level.

The broader land use planning system is important for the implementation of the Strategy, Coastal Action Plans (now Regional Coastal Plans) and Coastal Management Plans. The relationship between these policies and plans (refer Figure 1) is through:

- the State Planning Policy Framework which requires coastal planning to be consistent with the Strategy and any relevant Regional Coastal Plans
- sections of local planning schemes through Municipal Strategic Statements and Local Planning Policy Frameworks
- approvals for land use and development on private and Crown land on the coast, being required under the *Planning and Environment Act 1987*, the T*raditional Owner Settlement Act 2010* and the *Native Title Act 1993*
- management of coastal Crown land under the *National Parks Act 1975* and the *Crown Land (Reserves) Act 1978*

There are a number of other Acts, strategies and plans used to ensure that the coast remains in a healthy state. Appendix A sets out a list of relevant legislation and documents, and Appendix B details the range of groups involved in coastal management and planning in Victoria.

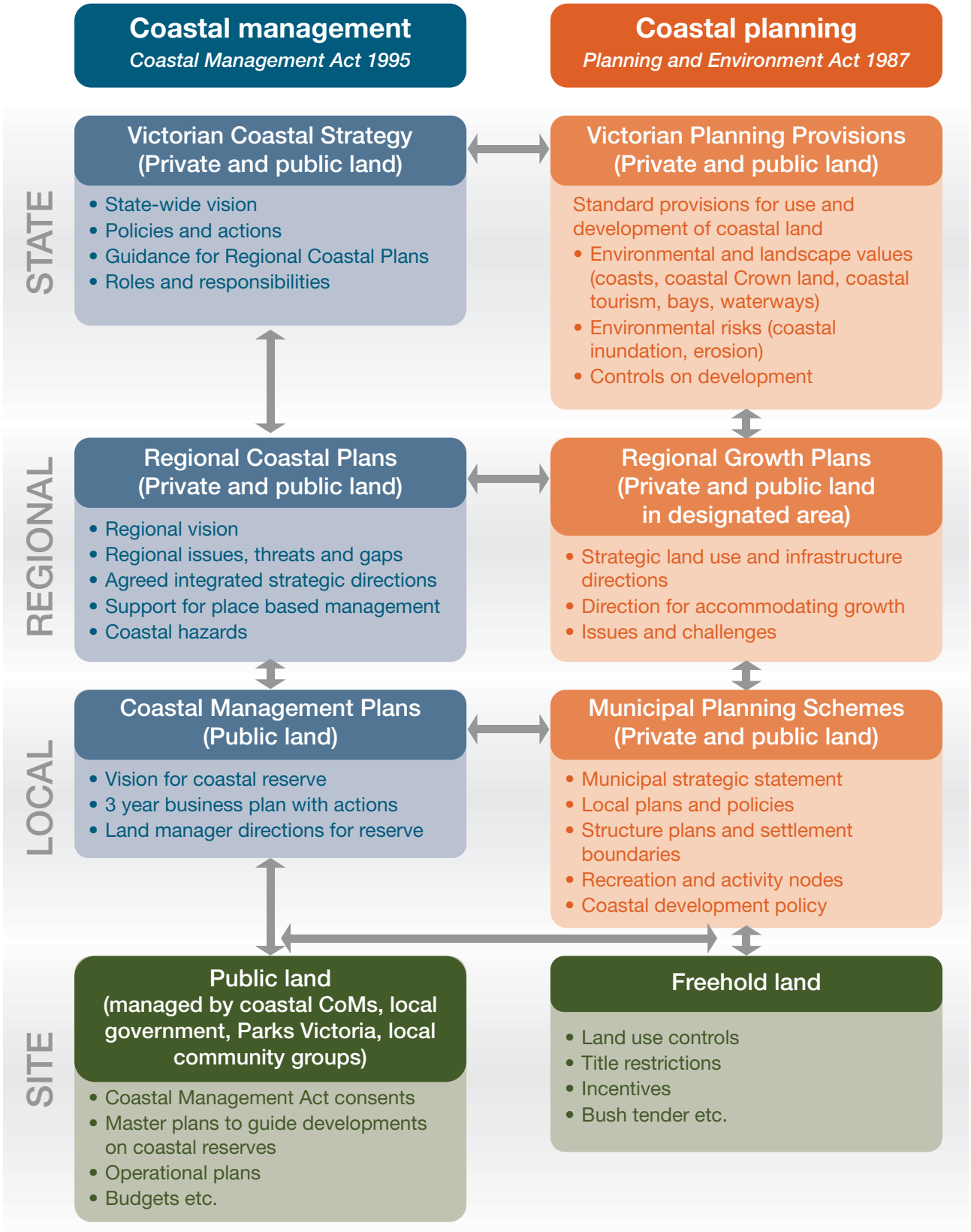


Figure 1: Coastal management and planning connections in Victoria

WORKING WITH REGIONAL COASTAL BOARDS

The Victorian coast is made up of three regions – the west, central and Gippsland. Each region has a Regional Coastal Board (RCB) with members appointed by the Minister for Environment and Climate Change, based on their experience and expertise in areas such as local government, coastal planning and management, tourism and recreational use of the coast. RCBs build networks and partnerships, engage stakeholders, and work to ensure the co-ordination of coastal and marine planning and management of the coast in their region.

While the VCC works with many partners, our partnerships with RCBs are paramount. Regional coastal planning is a critical part of the planning framework identified in the *Coastal Management Act 1995*, translating state-wide direction into regional priorities and informing local planners and managers. While this Strategy establishes principles and policies, these need to be applied locally with the benefit of local knowledge and in the context of local conditions.

Regional Coastal Plans

The Minister for Environment and Climate Change, the Hon Ryan Smith MP, has directed each RCB to prepare an integrated Regional Coastal Plan for its region. The Regional Coastal Plans will translate the high-level strategic advice and direction of this Strategy into a regional context and guide decision makers in coastal Committees of Management, local government and other bodies.

The RCBs are developing Regional Coastal Plans with support from the Department of Environment and Primary Industries (DEPI) and the VCC. The RCBs will work closely with key agencies with responsibility for coastal land management, in particular:

- state government departments
- local governments
- coastal catchment management authorities
- Parks Victoria
- commercial and local port authorities
- coastal Committees of Management
- Traditional Owner Land Management Boards
- community groups.

Everyone with an interest in the coast will be invited to provide input to the development of the plans. Addressing the key coastal issues at a regional level has many benefits, such as the potential to develop complementary and shared approaches, limiting duplication, and a focus for agreeing on action across management boundaries.

It is proposed that Regional Coastal Plans will:

- identify and articulate key regional values, issues and priorities for collaborative action
- set the regional vision, guiding principles and strategic directions that will be applied locally
- build on existing regional and local plans and strategies, make linkages, and identify and address gaps
- clarify and confirm the roles and responsibilities of agencies and stakeholders
- include effective regional coordination and implementation arrangements including monitoring, evaluation and reporting.

ACHIEVEMENTS OF VICTORIAN COASTAL STRATEGIES

Previous Victorian Coastal Strategies (1997, 2002, 2008) have provided a strong, positive platform on which to build this fourth Victorian Coastal Strategy.

The vision and core principles used in previous Strategies recognise that the conservation of coastal habitat and ecosystems is central to our social and economic needs, and they remain important to this Strategy.

Achievements of previous Strategies have been wide ranging. They include establishment of a Hierarchy of Principles that guides effective coastal planning and decision-making in accordance with the objectives of the *Coastal Management Act 1995*. The Hierarchy of Principles for decision-making on the coast is:

1. Ensure protection of significant environmental and cultural values
2. Undertake integrated planning and provide clear direction for the future
3. Ensure the sustainable use of natural coastal resources

When the above principles have been considered and addressed then…

4. Ensure development on the coast is located within existing, modified and resilient environments where the demand for development is evident and any impacts can be managed sustainably

The development and application of previous Victorian Coastal Strategies has enabled more informed discussion and debate about coastal development and the need for effective coastal planning.

Following release of the 1997 Strategy, siting and design guidelines for structures on the Victorian coast and landscape setting types were developed. These assist coastal planners and managers to implement the Victorian Coastal Strategy by ensuring sympathetic development that complements the surrounding landscape and results in excellence in design and, more generally, by raising awareness of the importance of achieving sensitive design and development along the Victorian coast.

The establishment and refinement of criteria for use and development on coastal Crown land is another significant achievement. The criteria provide coastal managers with guidance to ensure precious and limited coastal Crown land is used wisely, development contributes to the public values of an area and the siting of development is appropriate.

Past Strategies have engaged and empowered local community groups, and influenced coastal planning schemes, municipal strategic statements and local policies. The strategic and policy directions in the Strategy have also been considered by coastal planning bodies and the Victorian Civil and Administrative Tribunal (VCAT).

The Coastal Spaces initiative, undertaken in 2005 and 2006 developed innovative approaches to coastal planning, such as development of township boundaries, and assessment of significant coastal landscapes was embedded in the 2008 Strategy to support implementation by local councils.

Achievements of the 2008 Strategy

The 2008 Strategy's sea level rise planning benchmark for Victoria of not less than 0.8m by 2100 has been implemented in the State Planning Policy Framework to provide greater certainty for decision makers, industry and the community.

The *Victorian Coastal Inundation Dataset* and the *Victorian Coastal Hazard Guide* were released in 2012 by the Future Coasts program to provide a high level assessment of potential risks from sea level rise and improve understanding of coastal hazards. Also part of the Future Coasts program were the four pilot Local Coastal Hazard Assessments (LCHA) which have been or are continuing to be prepared. The Port Fairy LHCA released in 2012 has provided valuable information to plan for adapting to the impacts of climate change at a local level.

Managing population growth

The Victorian Government has continued to work with local councils to protect the character of coastal townships and landscapes. Planning measures have also been undertaken to address 'old and inappropriate subdivisions' along the Ninety Mile Beach.

Boating Coastal Action Plans have been prepared by the Regional Coastal Boards for Gippsland, Central and South West regions and provide a strategic context for the planning and delivering of sustainable boating facilities to be enjoyed across the state.

Valuing the natural environment

To improve our understanding of the social values and ecosystem goods and services of Victoria's coast, the *Coastal and Marine Attitudes & Behaviours Report 2012* and *Assessing the Value of the Coast to Victoria Report 2013* were commissioned by the VCC. These reports provide a greater understanding of what the community values about the coast as well as providing an estimate of the economic value of the ecosystem goods and services provided by Victoria's coast.

To enhance the integration of catchment-to-coast management, the latest round of Regional Catchment Strategies development by Catchment Management Authorities along the coast identified and included actions to protect marine and coastal assets.

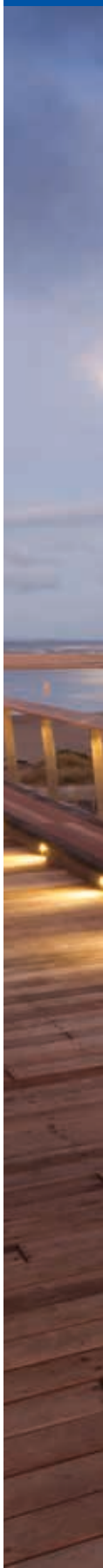
Managing coastal land and infrastructure

DEPI has completed 15 beach renourishment projects since 2008 which have been an effective way of providing protection of our coastal foreshores and improving the public amenity of our beaches.

Since 2011, the Victorian Government has allocated more than $1m for Coastcare Victoria, supporting thousands of community volunteers to undertake activities such as revegetating coastal areas, building boardwalks, monitoring native shorebirds and animals and protecting cultural sites.

Integrated marine planning

Enhanced spatial information on Victoria's marine biodiversity and ecosystems has been developed and significant marine natural assets were identified in 2012 by Parks Victoria in partnership with Deakin University. The VEAC Marine Investigation was released in 2014 which provides a review of the management of marine protected areas and makes recommendations for improved integrated management.



UNDERPINNING THE STRATEGY

Review, research and engagement

The development of this Strategy has been informed by:

- a comprehensive review of relevant documentation, in particular the previous three Victorian Coastal Strategies and current State and National policies
- the best scientific information & technical reports. The range of material reflects the complexity of coastal issues and the challenge of integration across different planning and management sectors. Reports are available at **www.vcc.vic.gov.au**
  - *Assessing the Value of the Coast to Victoria* (WorleyParsons 2013)
  - *Coastal and Marine Attitudes & Behaviours Report: Wave 4* (Ipsos 2012)
  - *Derivation of Victorian Sea Level Planning Allowances* (Hunter 2013)
  - *Derivation of Victorian Sea Level Planning Allowances: IPCC AR5 Update* (Hunter 2014)
  - *Emerging Scientific Issues on Victoria's Coast: 2011 Update* (VCC 2011)
  - *Population & Settlement Along the Victorian Coast* (DTPLI (a) 2013)
  - *Victorian Coastal Strategy 2008 Mid-Term Review* (VCC 2012)
- substantial community and stakeholder feedback to the Draft Victorian Coastal Strategy 2013, obtained through various engagement methods. The experience, ideas and input received from submissions on the Draft have been important in developing this Strategy.
- other policies and initiatives that directly or indirectly affect the coast, including:
  - *A Cleaner Yarra & Port Phillip Bay* (DSE (b) 2012)
  - *Coastcare Victoria Strategy 2011–2015* (DSE (a) 2011)
  - *Environmental Partnerships (2012)* (DSE (c) 2012)
  - *Melbourne's Water Future (2013)*
  - *Plan Melbourne (2014)* (DTPLI 2014)
  - Reforms to Planning Zones
  - Regional Catchment Strategies (2013)
  - Regional Coastal Plans (previously known as Coastal Action Plans)
  - Regional Growth Plans
  - Regional Waterway Strategies
  - *The Victorian Waterway Management Strategy (2013)* (DEPI (b) 2013)
  - *Tourism Investment Opportunities of Significance in National Parks Guidelines (2013)* (DSE (a) 2013)
  - *VEAC Marine Investigation* (VEAC 2014)
  - *Victorian Climate Change Adaptation Plan* (2013) (DSE (b) 2013)
  - *Victorian Coastal Hazard Guide (2012)* (DSE (f) 2012)

The Council sought and received feedback about the extent to which the Strategy supports these initiatives.

Integrated Coastal Zone Management

Underpinning this Strategy and influencing the way we manage the coast is the concept of Integrated Coastal Zone Management (ICZM) – refer Figure 2.

Coastal processes are not bounded by land tenure, land management, jurisdictional or policy boundaries. ICZM is about working across a geographic area (land to sea), across different land tenures (public and private), and across organisations and jurisdictions (national, state, regional & local).

Boardwalk at the Nobbies, Phillip Island Phillip Island Nature Park

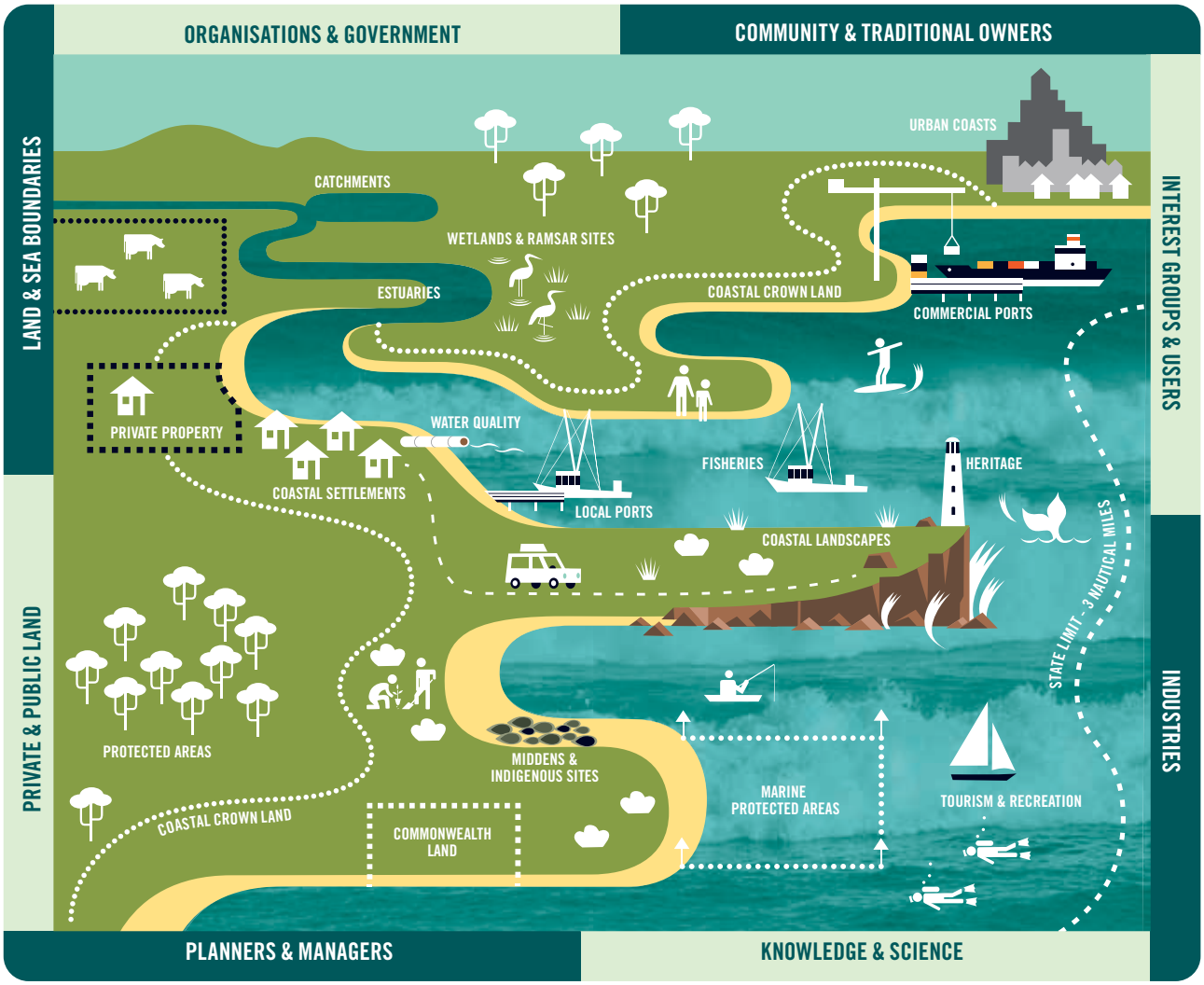


Figure 2 Integrated Coastal Zone Management in Victoria

ICZM is the basis for coastal planning and management in Victoria and is achieved through formal and informal collaboration and coordination between all the different groups who use and manage the coast.

Ecologically Sustainable Development

Sustainable development is defined in this Strategy as development that meets the following principles as per the *Environmental Protection and Biodiversity Conservation Act 1999* (Cwth):

- Decision making processes should effectively integrate both long term and short term economic, environmental, social and equitable considerations
- If there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation (precautionary principle)
- The current generation should ensure that the health, diversity and productivity of the environment are maintained or enhanced for the benefit of future generations (intergenerational equity)
- The conservation of biological diversity and ecological integrity should be a fundamental consideration in decision-making
- Improved valuation, pricing and incentive mechanisms should be promoted.

THE COAST PROVIDES SOCIAL, CULTURAL, ECONOMIC AND ENVIRONMENTAL BENEFITS FOR ALL VICTORIANS

THE IMPORTANCE OF THE COAST

The coast provides social, cultural, economic and environment benefits for all Victorians (Figure 3). Understanding these benefits and the different values is essential for effective decision-making.

ENVIRONMENTAL VALUES

Victoria's coast supports a diverse range of ecosystems and biodiversity along its 2,512 kilometre length (mainland and island length combined). Geological features, including cliffs and coastal plains, form the underlying structure for a range of habitats. Reef systems, seagrass beds, kelp forests, sponge gardens, intertidal rock platforms and other habitats support the world's largest diversity of red and brown seaweeds, sea mosses, crabs, shrimps and sea squirts. The marine environment also supports mammals including dolphins, whales and seals. Recent marine mapping has discovered previously unexplored seascapes and communities of organisms new to science.

There are about 123 bays, inlets and estuaries, varying in water area from around one square kilometre to 2,000 square kilometres. Estuaries are important sites for fish spawning or as nursery grounds, and offer abundant resources for shorebirds and waterbirds. Inter-tidal zones are also significant for flora and fauna. Different levels and frequencies of inundation by seawater create different habitats that support a diversity of species and life stages.

Ecosystems on the foreshore and hinterland vary greatly. Water flows from rivers are essential to provide areas of nutrient richness for supporting fish and marine bird populations. Saltmarsh and mangroves provide the energy for ecosystems such as Western Port, parts of Port Phillip Bay and the Gippsland Lakes. They are also important nesting grounds for a broad range of waterbirds and waders, and feeding grounds for migratory species.

Beaches large and small, and the dune systems behind them, offer nesting and foraging habitat. Small offshore islands play a critical role in supporting bird species by providing rookeries. Microclimates develop in the swales behind dune systems, and small pockets of threatened coastal Moonah woodland still survive in habitats like this, with a succession to woodland further inland. In other parts, coastal woodlands extend almost to the beach, and coastal heathlands are common on cliff tops and rocky headlands.

The protection and maintenance of the fundamental landforms, habitats and natural systems on the coast is essential for the benefits they provide to all Victorians. There is a strong link between the quality of the coastal environment and the desire to protect it.

SOCIAL AND CULTURAL VALUES

Over the past decade our desire to experience and enjoy the coast has grown significantly. Eighty-five percent of the country's population lives within 50 kilometres of the coast, and approximately four out of five Victorians visit the coast every year (Ipsos 2012). Most Victorians living close to the coast visit regularly, largely to enjoy a clean, healthy, natural environment.

In Victoria, the coast is largely accessible and provides a wide range of experiences from busy city beaches to smaller seaside settlements and remote wilderness areas. There are some sections of coast, especially in the east, which are largely inaccessible. This isolation is an important value in itself and is to be protected.

Healthy coastal and marine ecosystems provide significant social and cultural value for Victorians. The coast's natural aesthetics, cultural heritage, and range of recreational pursuits make it attractive and valuable for residents, visitors and tourists. Research has demonstrated that there is a strong and important link between the quality of the coastal environment and the quality of life for many Victorians.

Coastal heritage values play an important role in creating our sense of place and defining who we are. There are past and present traditions of Traditional Owners, places created by early and recent settlers, and customs, celebrations and special characteristics that build community pride and enhance social cohesion. Recreational activities and values include fishing, swimming and snorkelling, surfing, boating, diving, and the use of coastal caravan and camping parks.

ECONOMIC VALUES

A diverse range of economic activity occurs on the Victorian coast. Commercial uses include recreation, coastal tourism and ecotourism, shipping, petroleum extraction and commercial fishing, each of which has direct and indirect benefits to local, regional and national economies.

The value of coastal commercial activities is around $9.8 billion per annum (WorleyParsons 2013). Of the industries examined, petroleum, tourism and commercial ports are the largest, each contributing more than $3 billion annually to the economy.

‹ Male weedy sea dragon (*Phyllopteryx taeniolatus*) at Flinders Pier Richard Wylie

The petroleum sector encompasses the exploration, appraisal, development, construction and production of natural gas and petroleum liquid resources. While much of the production occurs beyond the three nautical mile limit of State waters, the product is brought onshore in Victoria for refining, storage and distribution.

The tourism industry is by far the largest contributor to employment, with an estimated 23,000 jobs created directly.

Victoria's ports consist of four main commercial trading ports – Melbourne, Geelong, Portland and Hastings – which handle the bulk of commercial trade, and fourteen local ports that primarily serve as commercial fishing and recreational boating hubs. Local ports also support charter operations, berthing for vessels associated with offshore industries and vessel servicing.

Victoria's commercial fisheries occur within State waters (to three nautical miles) or in some cases beyond, and in bays, inlets and estuaries. The most valuable wild-caught fishery sectors are abalone ($24 million) and rock lobster ($15.8 million). Aquaculture production provides a further $11.8 million (WorleyParsons 2013).

Coastal recreation is valued at $2.4 billion per annum (WorleyParson, 2013). This represents the willingness of people to pay for coastal recreation opportunities over and above what they actually spend on tourism.

Coastal and marine ecosystems provide significant benefit to the community through natural storm protection, flood and disease control, nutrient cycling, habitat and biodiversity. The total estimated value of these non-commercial coastal uses to Victoria is $8.4 billion per year (WorleyParsons 2013).

Estuaries/rivers are a valuable habitat type at $2.5 billion per annum, while seagrass habitats are valued at around $1.8 billion per annum (WorleyParsons 2013). Recent work shows that seagrass, mangroves and saltmarsh are potentially larger sinks for carbon than tropical rainforests (Fourqurean et. al 2012).

Aerial view of Sorrento Murray Adams

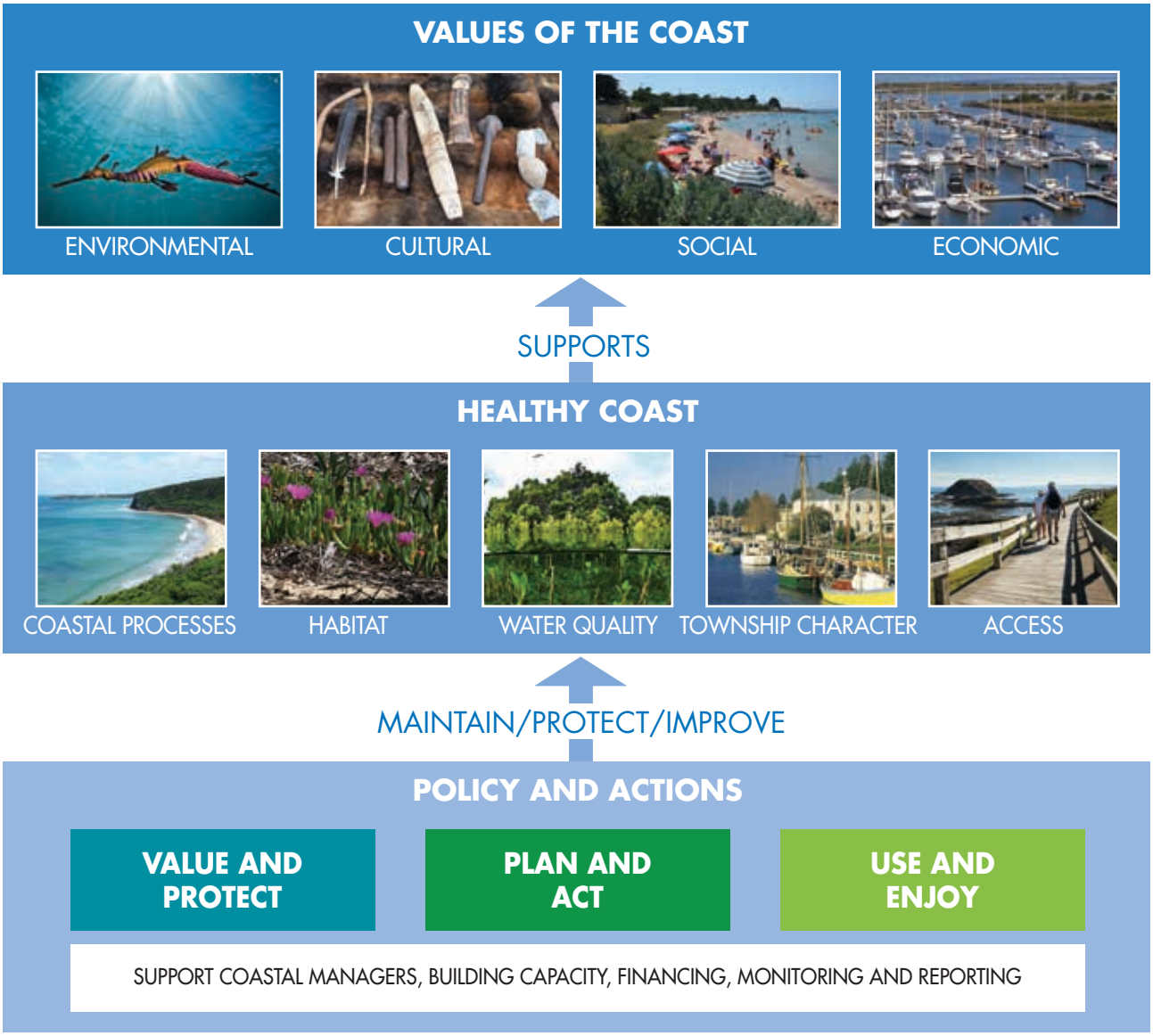


Figure 3: A healthy coast supports a range of community values. Policies and actions are set out in the Strategy to maintain, protect and improve the health of the coast

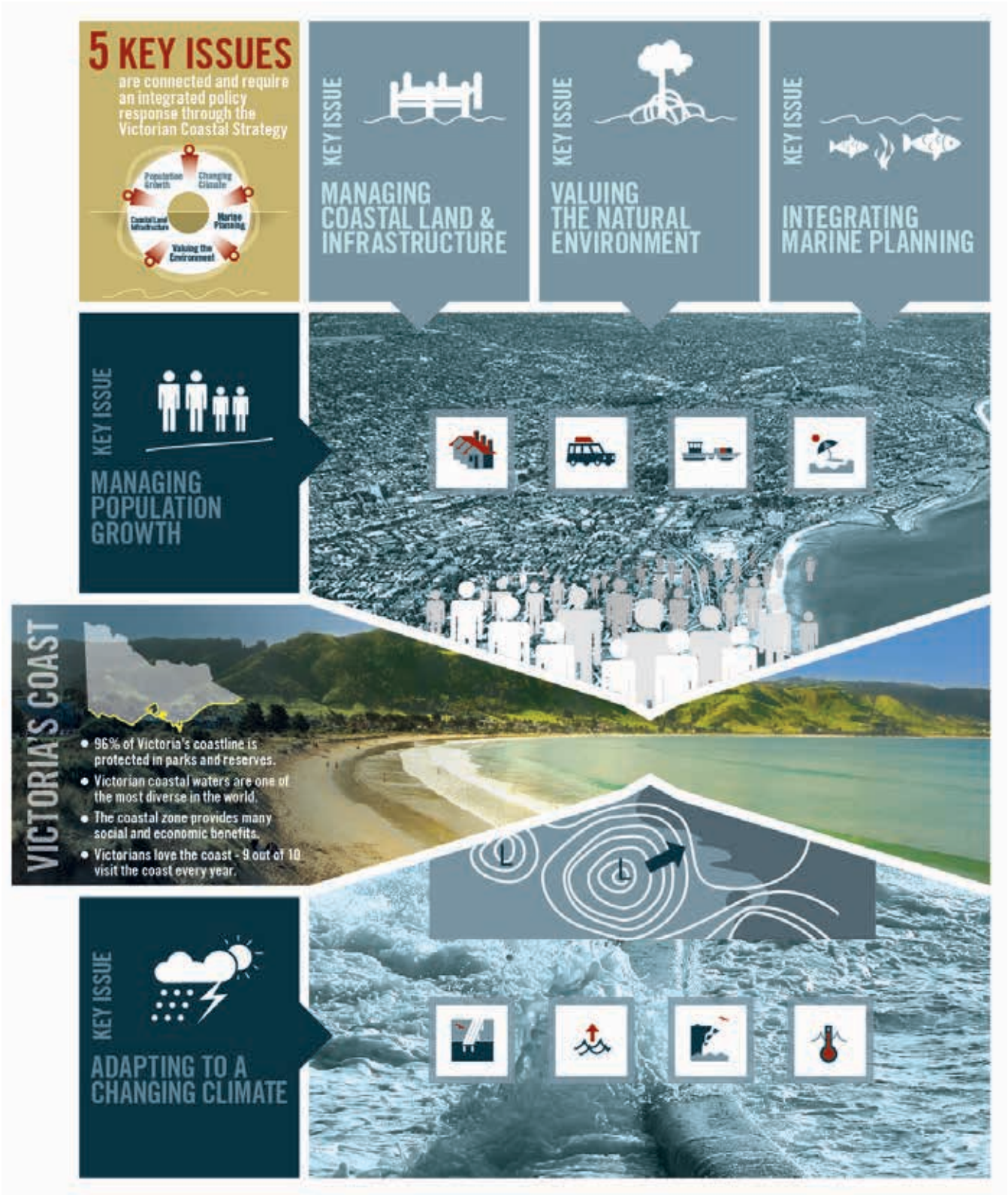


Figure 4: Five key issues and their interrelationships

KEY ISSUES

Both the natural and built environments on the coast are under pressure from population growth, the competing demands placed on such a limited resource, a changing climate, ageing infrastructure, and at times, fragmented governance systems and financing arrangements.

The Strategy provides policies and actions for managing these pressures so that the coast can remain biologically and culturally healthy, rich and diverse both now and in the future. With the Victorian planning system, it also provides for a framework for sustainable residential, recreational and economic development on the coast.

This section provides a summary of five key interrelated issues, represented in Figure 4. These issues need to be addressed to ensure the coast's biodiversity is protected and its other attributes can continue to be enjoyed into the future. Reflecting their interrelationship, desired outcomes and actions arising from these key issues are highlighted at the end of this section.

The five key issues are:

- Managing population growth
- Adapting to a changing climate
- Managing coastal land and infrastructure
- Valuing the natural environment
- Integrating marine planning

MANAGING POPULATION GROWTH

Growth in both resident (permanent and non-permanent) and visitor populations on the coast must be planned for and managed.

Unlike coastal areas in most other Australian jurisdictions, the majority of the Victorian coast (ninety-six percent) is public land. This legacy places Victoria in a unique position to be able to adapt better to the pressures of managing population growth on the coast in the context of a changing climate.

Public ownership of coastal land, and the freedom of access that derives from this, is a deeply held value of the Victorian community. Coastal public land and adjoining waters need to be protected from the intrusion of private ownership or 'single user' facilities. In situations where public land erodes so as to prevent public access to the foreshore, the incorporation of abutting private land should be negotiated as opportunities arise.

Residential population

Resident populations on the Victorian coast have continued to grow over the past decade, although growth rates have fluctuated. Settlement planning has introduced limitations on where residential development can occur. Coastal settlements have been encouraged to grow inland rather than extend along the coast (DTPLI (a) 2013). This has largely been a consequence of previous Victorian Coastal Strategies, together with the implementation of work through the Coastal Spaces program (2006).

Some coastal areas such as the Surf Coast, Bellarine Peninsula, Bass Coast and Mornington Peninsula show strong residential growth. Improved access to Geelong and Melbourne has enhanced their attraction as residential commuter locations. As a result, these areas have become new centres for concentration of coastal population in the state (Figure 5), and this trend is expected to continue.

Over the last five years, Victoria has focussed on managing population and growth on the coast by implementing significant landscape overlays and defining settlement boundaries. This approach will continue over the next five years. Growth should occur in designated areas consistent with maintaining settlement character. Where settlement boundaries are extended, growth should be in areas where there will be little impact on the coast and abutting coast-sensitive land. Natural geomorphic boundaries and permanently reserved parks and conservation reserves are the preferred form of settlement boundaries where there

is a case for extension. Regional Growth Plans encourage population growth inland from the coast to alleviate pressure for coastal settlement growth.

Coastal settlements continue to experience seasonal population fluctuations. The 2011 census counted a total of 35,800 unoccupied dwellings along Victoria's coastal settlements (excluding Melbourne and Geelong). This represents an average winter vacancy rate of around 37 percent. A study into the impact of non-resident populations on coastal communities has found that a large number of people were absent from these communities when the 2011 census data was collected. A survey of more than 2,100 non-resident property owners in coastal areas around Australia found that nearly seventy percent of their properties were not occupied on the night the 2011 census was conducted. If the census was conducted in summer rather than winter a much larger percentage of these properties would be occupied, and we would get a totally different picture of the population numbers in coastal council areas. For example, when you add people 'absent' from the census to the number of tourists staying in these communities the population of the Mornington Peninsula Shire would have increased by more than 30,000 (Hugo & Harris 2013).

Over the past two decades, the population in our coastal towns has 'aged', with an increase in the proportion of the population aged 75 years or more. Of the 56 settlements along the coast (excluding Melbourne), 41 have above-average-age populations aged 75 years or more. As our coastal population ages, this demographic group will have more time to devote to recreational activities such as walking, swimming and fishing. Increased population using the coast will place pressure on its limited natural resources. This demographic change highlights the importance of directing the location of new infrastructure in line with the coastal settlement framework (Map 1). This consolidates major infrastructure into key coastal settlements.

Business on the coast is also changing over time. While some industries close or relocate, others will emerge that have potential for future growth. With changing economies and population, issues such as waste management and access to power and water need to be carefully considered.

Visitor population

Growth in the number of visitors to the coast creates valuable local jobs and increased local economic activity. There are substantial local and broader community private and public benefits as a consequence of all Victorians having access to the coast for passive and active uses. Examples of passive uses include walking and swimming; examples of active uses include fishing and boating.

However, meeting the needs of seasonal visitors during peak holiday periods can create significant challenges in popular visitor locations, particularly the Mornington Peninsula and Bellarine Peninsula, where visitor numbers can impact on the way of life of permanent residents. Infrastructure such as roads, water supply, sewerage and power supply needs to be built to meet peak demand periods, adding to the costs of these services and creating pressure on the very aesthetic, cultural, and environmental values that attract visitors.

Figure 5: Population change along the Victorian Coast, 2001 to 2010.

Source: ABS Regional Population Growth Australia, cat. no. 3218, Statistical Local Areas, referenced in DTPLI (2013a)

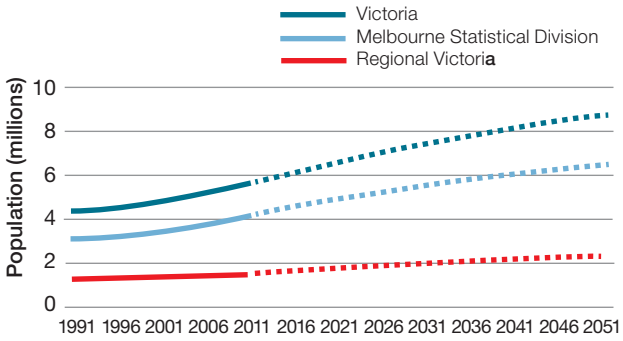
Careful planning and execution is required to meet visitor needs, preserve the significant natural values and ecosystems of the coast, and maximise the economic benefit of visitor activity, consistent with the Hierarchy of Principles set out in this Strategy. Whilst the coast should be accessible to all, protection of its character, flora and fauna requires that there will be places where only a limited number of people will be able to access it.

Melbourne's forecast fifty percent population growth to 2050, from approximately 4 million to approximately 6 million (Figure 6, *Plan Melbourne 2014*), will greatly increase the number of visits to the coast and the demand for coastal infrastructure and facilities. The location of that growth (particularly within the metropolitan boundary west of Melbourne) and improvements in road access to the coast, will lead to more visits to Port Phillip Bay and Western Port, the Bellarine Peninsula, Mornington Peninsula, Bass Coast and Surf Coast.

The scale of this increase in visitor use will require a more integrated approach to coastal planning, management and the provision of visitor infrastructure. The near-Melbourne coast is a metropolitan asset and it should be managed and funded on that basis, with all private, local or broader community beneficiaries contributing appropriately.

To cope with increased visitation of this scale we will need a better understanding of the capacity of different coastal areas to support coastal experiences. More 'hard choices' about general and restricted access and investment in facilities will have to be made, particularly in view of possible changes to coastal access, and risks associated with a changing climate. These choices, often leading to significant investment, will have to be made across the boundaries of current coastal management entities.

Figure 6: Historical and projected population 1991 - 2051.



Source: Plan Melbourne 2014

In summary, the metropolitan coastline and the two bays will come under significant visitor pressure due to increased passive and active recreational demand, generated as a consequence of the growth of urban Melbourne. A different approach to coastal management and funding will be needed in order to ensure that infrastructure and coastal management can respond to this demand and, at the same time, protect the natural assets that the community values so highly. Strengthening existing structures (or introducing new 'co ordination' entities) may not achieve this so a new approach to managing the near-metropolitan coast may be needed.

ADAPTING TO A CHANGING CLIMATE

The coast is not static. It moves with the influence of tides, wind, waves and weather systems. Interactions between coastal processes and different landforms (e.g. sandy beaches, rocky headlands, low-lying mud flats and estuaries) create complex and dynamic systems. The sea and coastal waters are also dynamic, and by their very nature physical, chemical and biological processes are connected.

When any of these systems has a negative impact on life, property or other assets it represents a hazard. Hazards such as erosion of beaches and cliffs, inundation and storm surge have always been present and require consideration in planning and managing the coast. These existing coastal hazards may worsen as a result of a changing climate.

A changing climate brings with it the potential for significant changes to Victoria's coast and marine environments. Changes are already being observed. These include the southerly migration of species of sea urchins into the east of the State, new fish species in Port Phillip Bay, and changes in oceanic plankton communities. During this century the Victorian coast will be impacted by sea level rise, increased storm surge, changing sea temperatures, altered rainfall and ocean acidification. The interaction of these dynamic elements increases the complexity of managing the coast. There will be implications for coastal biodiversity, how we use and enjoy the coast, coastal infrastructure and facilities, and the costs and risks to which Victorians are exposed.

While Victorians agree that the coast is, or is likely to be, affected by sea level rise, exactly how changes will affect

use is not well understood by the general community (Ipsos 2012). Sea level rise can be projected into the future. It is more difficult, however, to understand the combined impact and interaction of the dynamic elements of sea level rise, other consequences of a changing climate, and coastal movement. This necessitates a precautionary approach to intervention with coastal processes. Interventions themselves may have coastal hazard consequences. By allowing natural coastal processes to take place, costs of intervention and any necessary ongoing maintenance are reduced and coastal ecosystems continue to provide a broad range of benefits. This is not to say that intervention will not be warranted in some situations, however natural processes are the preferred response to coastal hazards.

The potential impacts of a changing climate on the coast are summarised in Table 1. Further information can be found in Appendix C.

Table 1: Summary of the impacts a changing climate can have on the coast

Measures	Impacts
Sea level rise	More frequent and extensive inundation of low-lying areas Cliff, beach and foreshore erosion Altered saltmarsh and mangrove habitats Loss of, damage to, and reduced functionality of, infrastructure e.g. seawalls, jetties, roads, walking tracks, beach access, dune fencing, navigation aids and drainage systems Loss of and damage to private property, and changes to land use Loss of coastal habitat for biodiversity e.g. roosting and nesting sites for shorebirds/seabirds, intertidal areas, saltmarshes and coastal wetlands Loss of significant heritage sites Loss of coastal Crown land for tourism and recreation
More frequent and extreme storm events	Intense and destructive flooding of land and buildings on the coast and in areas where drainage systems lose their functionality Loss of and damage to private and public property and infrastructure Beach, foreshore and cliff erosion Pollution from sewer overflows Inundation of low-lying coastal environments
Changing sea temperatures	Species distribution shifts Spread of invasive species and diseases Increased sea surface temperatures and altered currents Changes in flowering, breeding and migration e.g. phytoplankton blooms
Altered patterns of wet and dry periods	Changed salinity, nutrient and sediment flows Changed estuaries, greater extremes of high and low freshwater input Reduced water clarity Increased frequency and intensity of fires on land, with impacts beyond the coast Increased visitation to the coast in hot, dry periods
Ocean acidification	Impacts on early life stages of species, particularly plankton Loss of plankton base for food webs Damage to infrastructure

Sea level rise planning benchmarks

While there are instances of sea level rise around the globe, recorded increases vary widely due to factors such as prevailing winds, changing ocean currents and the gravitational pull of the polar ice sheets. Monitoring stations at Lorne and Stony Point have recorded rises of 2.8 mm/year and 2.4mm/year respectively since 1991 (DSE (b) 2011).

Sea level rise will inundate some coastal foreshores, and coastlines are expected to retreat. With a changing climate, more frequent storm events will become more intense and new areas will be more severely affected. Sea level rise will increase the risk of public and private land and property being eroded and lost or flooded in extreme events. A sea level rise planning benchmark manages these risks for new development, provides consistency for decision-making and reduces the level of uncertainty for public infrastructure providers, land managers, individuals, businesses and communities.

To inform this Strategy and in light of the recent release of the IPCC Fifth Assessment Report, the VCC commissioned an update to key sections of the report, *Derivation of Victorian Sea Level Planning Allowances* (Hunter 2013). The update *Derivation of Victorian Sea Level Planning Allowances: IPCC 5AR* (Hunter 2014) provides the most recent sea level rise projections as they relate to the coast of Victoria. The model used for these forecasts considers:

- the latest projections of regional sea level rise by the IPCC Fifth Assessment Report
- additional contributions to account for vertical land motion caused by past and ongoing changes in land ice melt
- present statistics of storm tides (combination of tides and storm surges), which have been derived from tide gauge observations in Victoria and storm modelling for Australia
- a time period starting at 2010.

The Hunter reports suggest planning benchmarks for Victoria include to plan for sea level rise of not less than 0.8 metres by 2100. It was also noted that planning for sea level rise of 0.9m by 2100 is a more conservative option. The emerging science is pointing towards separate sea level rise projections for the western coast and the eastern coast of Victoria.

This work is broadly consistent with the current Victorian planning benchmarks

- to plan for sea level rise of not less than 0.8 metres by 2100 and
- to plan for sea level rise of not less than 0.2 metres by 2040 for urban infill areas

It is important to note that these benchmarks are for a horizon up to 2100. Sea level rise is likely to continue beyond this horizon. As the science continues to emerge, it is important that sea level rise planning benchmarks are reviewed and updated.

Storm surge at Eastern View, Fairhaven Rob Gell

Adaptation

Adapting to changes in climate means acting to reduce risks, increase resilience, and take advantage of any new opportunities. In this context, adaptation applies to all aspects of the coast including biodiversity, settlements, land use and economic activity.

Victoria's Climate Change Adaptation Plan 2013 (DSE (b) 2013) sets out how the Victorian Government is managing the risks of a changing climate to our assets, essential infrastructure and services. It outlines six key strategies for considering adaptation:

1. Managing risks to public assets and services
2. Managing risks to natural, cultural and heritage assets and natural resource-based industries
3. Building disaster resilience and integrated emergency management
4. Improving access to research and information for decision making
5. Supporting private sector adaptation
6. Strengthening partnerships with local government and communities.

The Adaptation Plan will help Victoria minimise the costs of potential impacts, and harness opportunities that might arise from changes in our climate, such as increased habitat range and populations for some fish species which could create or reposition fisheries industries. The Plan recognises that we all have a role to play in understanding the impacts of a changing climate, increasing our resilience to climate risks, and acting to manage risks. This includes all levels of government, business, communities and individuals. It provides guidance on roles and responsibilities. In addition, it highlights adaptation action happening in Victoria's regions, and showcases state and local government, as well as private sector, action to build climate resilience.

To assist in planning for sea level rise and coastal hazards, the Victorian Government initiated the *Future Coasts Program*. The Program has delivered a package of tools to support decision-making, including inundation maps (Victorian coastal inundation dataset), planning notes and guidelines (*Victorian Coastal Hazard Guide* – DSE (f) 2012).

In 2010, the Coastal Climate Change Advisory Committee made recommendations regarding planning for the impacts of a changing climate along Victoria's coast. A number of recommendations have been incorporated into existing frameworks and policies following the Response from the Minister for Planning in June 2012. The recommendations have also informed the policies and actions that respond to coastal hazards and processes in this Strategy.

There have also been a number of additional tools developed, such as *Pathways for Decision-making* by the Australian Government (2014), and adaptation plans developed at a local government level. A Climate Change Adaptation Toolkit (2012) has been developed by the City of Greater Geelong, RMIT and Net Balance Foundation to facilitate robust decision-making processes and to integrate climate change adaptation across the City of Greater Geelong. It was developed for use by local government and is relevant to a wider range of organisations to assist them in planning to adapt to the impacts of a changing climate.

Most of these tools are focused on assessing impacts at an individual site level as part of the statutory planning system. While this is important, more attention needs to be given to the broader impacts of a changing climate and adaptation at the community level. Recent work by Barnett et al. (2012) goes some way towards addressing this by developing an approach for identifying the social and equity outcomes of various strategies to adapt to rising sea levels.

To assist with longer-term adaptation at a local and regional level, the Victorian Government is working with local councils and port managers to produce Local Coastal Hazard Assessments (LCHAs). There are four LCHAs that are currently underway or have been completed – Bellarine Corio Bay, Gippsland Lakes-Ninety Mile Beach, Port Fairy and Western Port. Once these pilot projects are complete, the learnings and outcomes will be used to guide application of this approach in other locations.

The learnings and outcomes of the LCHAs are proposed to be reviewed and documented by DEPI and project partners through a project called the *Victorian Local Coastal Hazard Assessment: Review of Technical Approaches and Lessons Learned*. The project aims to identify key information to share with coastal agencies across Victoria and would include discussion on: the types of coast included in the state-wide program (e.g. open coast and embayments); use of technical experts; resources and collaboration; and a comparison of technical assessment methods undertaken across the four LCHA pilot projects.

Collaboration across agencies and communities is critical for adapting to the impacts of a changing climate. The decision-making process is complex and the impacts on existing infrastructure, settlements, community resources and natural systems need to be considered, with adaptation options investigated.

A summary of tools from the Future Coasts Program is provided in Appendix D.

MANAGING COASTAL LAND AND INFRASTRUCTURE

The medium- and longer-term impacts of a changing climate and increased population and visitor demand will see increasing pressure on coastal managers to protect Crown and private land and coastal infrastructure. It will also see an increasing need to renew and replace assets that are lost through increased erosion, inundation or old age. There will also be demands for new infrastructure and facilities to cater for the growing demand for access to the beach and water for active and passive recreation.

New public buildings and facilities, including roads and drainage systems, and planning for new private development, must take account of increased coastal hazards. The replacement and upgrade of existing infrastructure and public facilities will be a more complex task. There will be inevitable pressure on coastal managers to undertake works to protect privately owned land and buildings threatened by coastal processes.

Presently the cost of maintaining facilities on the coast rests with a range of state authorities and other entities such as Committees of Management, port managers, Parks Victoria, DEPI, and local government. Under current arrangements some coastal managers generate significant revenue for reinvestment on their reserves, whilst adjoining reserves may have relatively little revenue but a greater need for investment in coastal land and infrastructure.

Under these arrangements, there is limited funding for the works that will be required to renew and replace existing public assets and to build new facilities.

Into the future the cost of maintaining and replacing existing facilities (such as piers, boat launching and related facilities) and providing new facilities and protective works to meet the needs of a growing urban population will increasingly be beyond the capacity of appointed coastal managers. In addition, there are significant costs associated with providing navigational aids and safety signage associated with the need to ensure safe vessel operations in coastal precincts. These facilities are often enjoyed by visitors from outside the local area who do not contribute to the funding of such facilities. The challenge of financing the facilities required to cater for large numbers of 'day visitors' to the beach and foreshore, and protecting sensitive coastal environments, should not be left to near urban and near Melbourne municipalities.

The coast close to the Melbourne metropolitan area is a metropolitan asset, but the costs associated with the

Queenscliff Marina and Swan Bay Tony Cavanagh

protection, maintenance and improvement of that asset fall disproportionately on the communities of that coast.

If the coastal resources that maintain biological diversity such as saltmarshes and mangroves are to adapt to the impacts of sea level rise and urban encroachment, outlays to 'buy-back' land will be required. Also in some circumstances incorporation of private land, to replace eroded public land, may be warranted to ensure community access to parts of the beach.

In locations where coastal protection works are considered appropriate, such works may provide local and/or private benefit by protecting property. Such beneficiaries can reasonably expect to contribute to the capital and maintenance costs of works that protect their assets.

In many situations coastal facilities and infrastructure also provide benefit for all Victorians, not just those residing in the local area. Where there is a broader public benefit from protection works and publicly accessible infrastructure (such as the maintenance of coastal amenities used by the general public, or ensuring public access to the coast) there should be a proportionate contribution from broader public beneficiaries.

Financing of coastal infrastructure in the short, medium and long term will require a range of options and may involve both public and private entities. Options to be investigated could include development contributions, charges and levies or a dedicated long-term fund. Changes to Grants Commission formulae might be considered to give greater weight to the coastal (and broader environmental) responsibilities of local governments, and seasonal populations.

Development contributions play an important role in the planning and development system in Victoria. They enable contributions towards infrastructure such as community and sports facilities, roads and open space, the need for which arises from the development of land. Detailed work has been undertaken to determine how best to reform the existing development contributions system in Victoria to ensure a more streamlined, transparent and equitable framework exists to support growth.

Development contributions within a coastal context should be further explored to consider opportunities to fund vital community infrastructure requirements and possible coastal protection works. Charges and levies are a potential mechanism to generate revenue from private, local or broader community beneficiaries of particular projects. Implementing charges or levies for coastal protection works may be complex. The process would best be undertaken within a set of broadly endorsed 'principles' to ensure a consistent approach.

Impacts of a changing climate, including sea level rise, will threaten infrastructure, community facilities, public and private land that is on or near the coast. Installation and maintenance of protective works (if these are an appropriate form of adaptation) or relocating roads and other urban services will be expensive and potentially beyond the capacity of 'single-year' budgets of responsible entities.

Twelve Apostles Mark Cuthell, Corangamite Shire Council

The challenge of financing coastal protection and infrastructure is a long-term one that requires a long-term solution. Annual, ad hoc allocations from State and local government budgets that face a range of other immediate pressures are unlikely to be sustainable into the future.

A broader, and long-term, approach to setting priorities for and financing new and existing coastal protection, infrastructure and user facilities is warranted – for example a Future Fund.

VALUING THE NATURAL ENVIRONMENT

The Victorian coast is made up of a diversity of ecosystems and habitats. These natural ecological systems are of intrinsic value and provide a range of goods and services that benefit human society – 'ecosystem goods and services'. They support commercial and non-commercial uses of the coast. The Millennium Ecosystem Assessment (2005) divided the range of ecosystem services into four broad categories:

Regulating services
Regulation of ecosystem processes
(e.g. storm protection, erosion buffers, flood and disease control)

Supporting services
Necessary for the production of all other ecosystem services
(e.g. habitat, biodiversity, nutrient cycling, biogeochemical services)

Provisioning services
Products from nature such as food
(e.g. pharmaceuticals, fisheries, shells, sand and lime, gas/oil)

Cultural services
Non-material benefits
(e.g. recreation opportunities, educational, aesthetics, spiritual values, amenity)

Provisioning and cultural services are dependent upon regulating and supporting services. This has important implications for decision-making about use and management of coastal ecosystems, particularly when there are competing demands.

The connection between commercial and non-commercial uses is important and can be illustrated by considering fisheries and ports. Fisheries provide an estimated $68 million value to the Victorian economy (WorleyParsons 2013). Running such industries efficiently and competitively requires coastal infrastructure such as jetties, ports, and navigational aids.

The provision of coastal infrastructure may affect coastal ecosystems such as seagrass meadows or saltmarsh and in turn the ecosystem goods and services they provide. WorleyParsons (2013) estimate the value of Victorian seagrass meadows at around $1.8 billion per annum. If these ecosystems provide services such as fish breeding grounds or storm protection barriers then their value (and the cost of losing them) is a critical component of maintaining a sustainable fishery industry and protecting the investment in coastal infrastructure.

Decision-making frameworks need to encompass such interdependent interactions, and allow for an understanding of the full costs and benefits that are inherent in the use of ecosystem goods and services for commercial and community benefit. Cost-benefit analyses of coastal use and development proposals need to assess objectively and transparently the real value of natural ecosystem goods and services, as well as economic benefits and costs.

The report commissioned by the VCC, *Assessing the Value of the Coast to Victoria* (WorleyParsons 2013), is a first step in highlighting the value of coastal ecosystems goods and services in Victoria. These value estimates are likely to be conservative due to our limited understanding of coastal ecosystems, and due to difficulties associated with ascribing value to natural systems.

It should also be recognised that coastal ecosystems are of value in their own right (intrinsic value) and that valuing ecosystem services is not intended to be a substitute for intrinsic value. Both should be a consideration in decision-making.

We should aim to refine and develop appropriate processes and methods for considering objectively and transparently the full value of natural coastal resources in both complex and more straightforward proposals.

INTEGRATING MARINE PLANNING

Victoria's marine environment covers more than 10,000 square kilometres, extending three nautical miles from the coastline. Habitats include reefs, kelp forests, deep sponge gardens, sandy plains, seagrass meadows and open water.

Marine and coastal ecosystems are dynamic by nature. They comprise complex and interlinked physical, chemical and biological processes. These processes occur both within the water (marine, estuarine and freshwater) and across the interface between onshore and aquatic environments. Ecologically healthy, rich and diverse coastal ecosystems are dependent on how we manage the whole coast – and all of its interconnected systems.

Victoria shares a unique marine environment with the rest of southern Australia. These marine ecosystems are as distinctly Australian as our terrestrial plants and animals. There are also areas of seabed with heritage significance, such as areas once used by ancestors of Traditional Owners, historic shipwrecks, other archaeological sites and submerged cultural heritage sites.

The marine environment provides a range of ecosystem goods and services that provide benefits to Victorians. These ecosystem goods and services support fisheries, aquaculture, tourism, recreation, access for international and interstate trade, natural coastal defences, and carbon storage.

Threats to marine environments are numerous. They arise from biophysical factors such as a changing climate, and from human activities such as increasing demand for marine uses and activities, marine pollution and debris, catchment impacts on water quality and quantity, and invasion of marine pests and diseases.

The impact of these threats can be heightened by cumulative (over time) or combined (simultaneous) changes in threats. Many of these impacts are difficult to anticipate as thresholds and tipping points for species and systems are poorly understood. Additionally, threats can originate far from the location at which an impact is observed.

Planning and managing for cumulative and combined impacts is crucial to the ecological health and diversity of marine environments and consequently the ecosystem goods and services they provide. The current approach to marine planning in Victoria is 'issue' or 'stakeholder' focused. Fisheries, marine protected areas, resource extraction, ports and shipping, tourism, catchment management and safe navigation for vessels are generally considered individually, particularly on the open coast. This approach limits our capacity to address the overlapping and cumulative impacts from combined threats and can reduce the efficiency and effectiveness of marine planning and management.

On the land side local government has the task of ensuring that, for example, land use decisions are cognisant of traffic, noise, emissions and broader amenity impacts and for enforcing breaches of the rules. There is a limited equivalent integrating role on the 'water-side'.

To achieve our Vision, it is important that all marine stakeholders work together to sustain the ecological health and diversity of Victoria's marine environments. Within Port Phillip Bay, the *Cleaner Yarra River* and *Port Phillip Bay Plan of Action 2012* is fostering integration across stakeholders and could be a model for other areas of the coast.

An improved approach to marine planning would:

- provide shared objectives that reflect the aspirations of Victorians
- consider marine environments at a 'whole of ecosystem' level
- use guiding principles for integrated, ecosystem-based management across sectors (Appendix E)
- integrate science and best operational practice to support planning and decision making
- provide a shared spatial basis for decision-making
- identify areas of environmental, cultural and economic significance
- identify areas for new uses and for the co-location of existing uses
- increase certainty for managers and developers by streamlining and consolidating approval and consent processes, while maintaining best practice and standards.

INTEGRATION OF KEY ISSUES

It is a challenge to deal in a cohesive and integrated way with the five key issues of managing population growth, adapting to a changing climate, managing coastal land and infrastructure, valuing the natural environment, and integrating marine planning.

Victorians know what they want from the coast – a clean coast with development generally in existing towns, and natural areas protected (Ipsos 2012). The apolitical nature of Victorian Coastal Strategies over the last 20 years reflects this. Inevitably though, given the ecological, social, cultural and economic importance of the coast, and the different interests of Victorians in the coast, disputes will arise as to appropriate use and management of the coast. Managing these disputes to achieve the best outcome for all Victorians is the role of government, and one element of that is endorsement of this Strategy.

Implementation of the desired outcomes and proposed actions set out in this Strategy will lead to more informed and consistent coastal and marine decisions focussed on long-term outcomes. Reasons for decisions and the priorities for action on the coast will be transparent and accountabilities for outcomes clearer.

Together with the policies and actions detailed in the Strategy, the VCC provides the following guidance to address the five key issues.

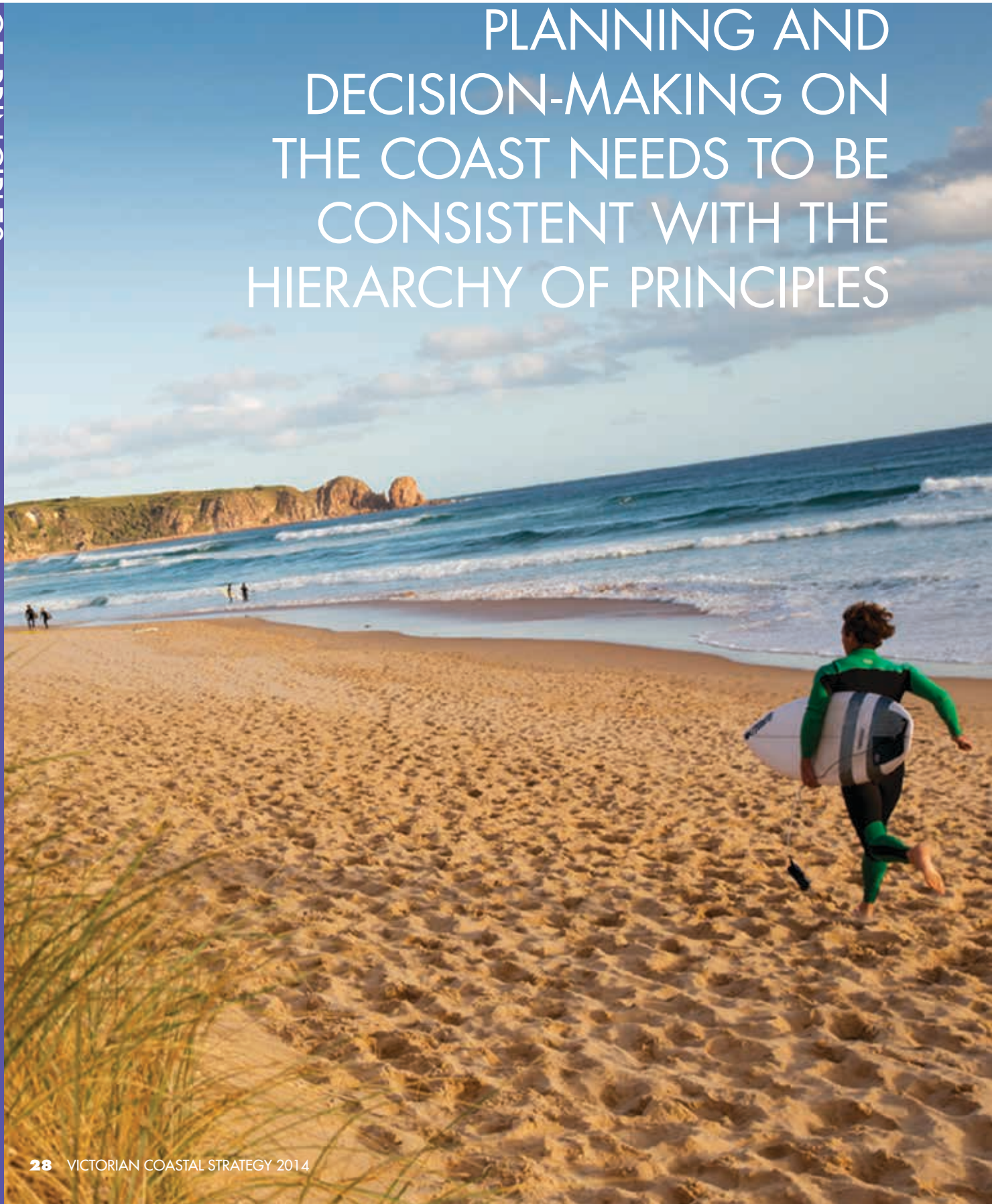
Desired outcomes

1. The full value of coastal and marine environmental resources are explicitly taken into account in planning for coastal development
2. Coastal governance and funding arrangements align funding and capacity with accountability so the ecological integrity of coastal waters, estuaries, wetlands and terrestrial environments are managed as a total system
3. Collaboration across agencies and communities enables effective adaptation to impacts of a changing climate on infrastructure, settlements, community resources and natural systems
4. Integration across marine planning stakeholders enables planning and managing for cumulative and combined impacts and continued provision of ecosystem goods and services
5. Sea level rise planning policy benchmarks in the State Policy Planning Framework are updated and enhanced in light of emerging scientific evidence
6. Growth of coastal settlements are consistent with the strategic directions for settlements identified in the Regional Growth Plans, and non-urban breaks are maintained between coastal settlements to preserve the character of the coastline
7. New development, reuse and redevelopment on the coast:
   a. has a demonstrated need to be located on the coast
   b. protects environmentally and culturally significant places
   c. accommodates biodiversity, connectivity and adaptation
   d. does not interfere with natural coastal processes, and
   e. avoids areas subject to coastal hazards
8. 'High-use' coastal locations that support visitor populations are managed to ensure maintenance of the values associated with the area. Coastal managers identify when the carrying capacity of a location is reached and initiate action to minimise visitor impacts, guiding visitors to alternative locations where appropriate
9. New private structures that provide no public benefit are not permitted
10. In situations where public land erodes or accretes, public access to the foreshore is maintained. This may include the incorporation of abutting private land

Actions

1. Undertake an analysis of options for:
   a. improved governance, regulatory and funding arrangements for coastal Crown land, and
   b. integrated marine planning and improved governance of coastal waters (**DEPI**, VCC, PV, DTPLI, CoMs, MAV, DTF, TSV)
2. Review and update planning benchmarks for sea level rise as part of future reviews of the Victorian Coastal Strategy. This includes investigating methods for deriving more detailed sea level planning allowances based on the systematic techniques developed by Hunter, 2014 (**DEPI**)
3. Coastal managers identify locations where visitor impacts may exceed the carrying capacity and initiate access controls where and as necessary (**DEPI**, CoMs)
4. Develop and implement environmental value measurement systems and environmental accounts that are consistent with international systems (**DEPI**, VCC)
5. Investigate legislative changes to ensure ongoing access to beaches and/or coastal Crown land. This may include implementing measures to address ambulatory titles (**DEPI**)

PLANNING AND DECISION-MAKING ON THE COAST NEEDS TO BE CONSISTENT WITH THE HIERARCHY OF PRINCIPLES



HIERARCHY OF PRINCIPLES

Managing the coast now and in the future requires responses to the many ongoing pressures we face. To assist with this, previous Strategies have introduced a Hierarchy of Principles. This Strategy continues a Hierarchy of Principles and recognises that the foundation of coastal planning and management is a healthy coastal and marine environment.

The Hierarchy of Principles gives effect to the directions in the *Coastal Management Act 1995* and is included in the State Planning Policy Framework and in planning schemes across Victoria. Planning and decision making on the coast needs to be guided by and consistent with the Hierarchy of Principles.

The policies and actions in the Strategy have been grouped into three sections that align with the Hierarchy of Principles:

VALUE & PROTECT

1 ENSURE THE PROTECTION OF SIGNIFICANT ENVIRONMENTAL AND CULTURAL VALUES

The starting point is recognising and protecting what we value on the coast, based on identification and sound understanding of coastal and marine features and processes, vulnerabilities and risks

PLAN & ACT

2 UNDERTAKE INTEGRATED PLANNING AND PROVIDE CLEAR DIRECTION FOR THE FUTURE

This highlights the importance of having integrated policies, plans and strategies that respond to the major issues affecting coastal and marine environments, provide clear direction for protection, management and sustainable development, and involve coastal stakeholders and the broader community

USE & ENJOY

3 ENSURE THE SUSTAINABLE USE OF NATURAL COASTAL RESOURCES

This emphasises that natural coastal resources are a limited and valuable public resource, and if developed or used, this should be done wisely and deliver proven net community and public benefit for current and future generations

Only when the above principles have been considered and addressed:

4 ENSURE DEVELOPMENT ON THE COAST IS LOCATED WITHIN EXISTING, MODIFIED AND RESILIENT ENVIRONMENTS WHERE THE DEMAND FOR DEVELOPMENT IS EVIDENT AND ANY IMPACTS CAN BE MANAGED SUSTAINABLY

This aims to ensure that development on and adjacent to the coast is of high quality design, sensitively sited, suitable and sustainable over the longer term. Development on coastal Crown land must have a demonstrated need to be located on the coast and a demonstrated public benefit.

‹ **Cape Woolamai Beach, Phillip Island** David Hannah

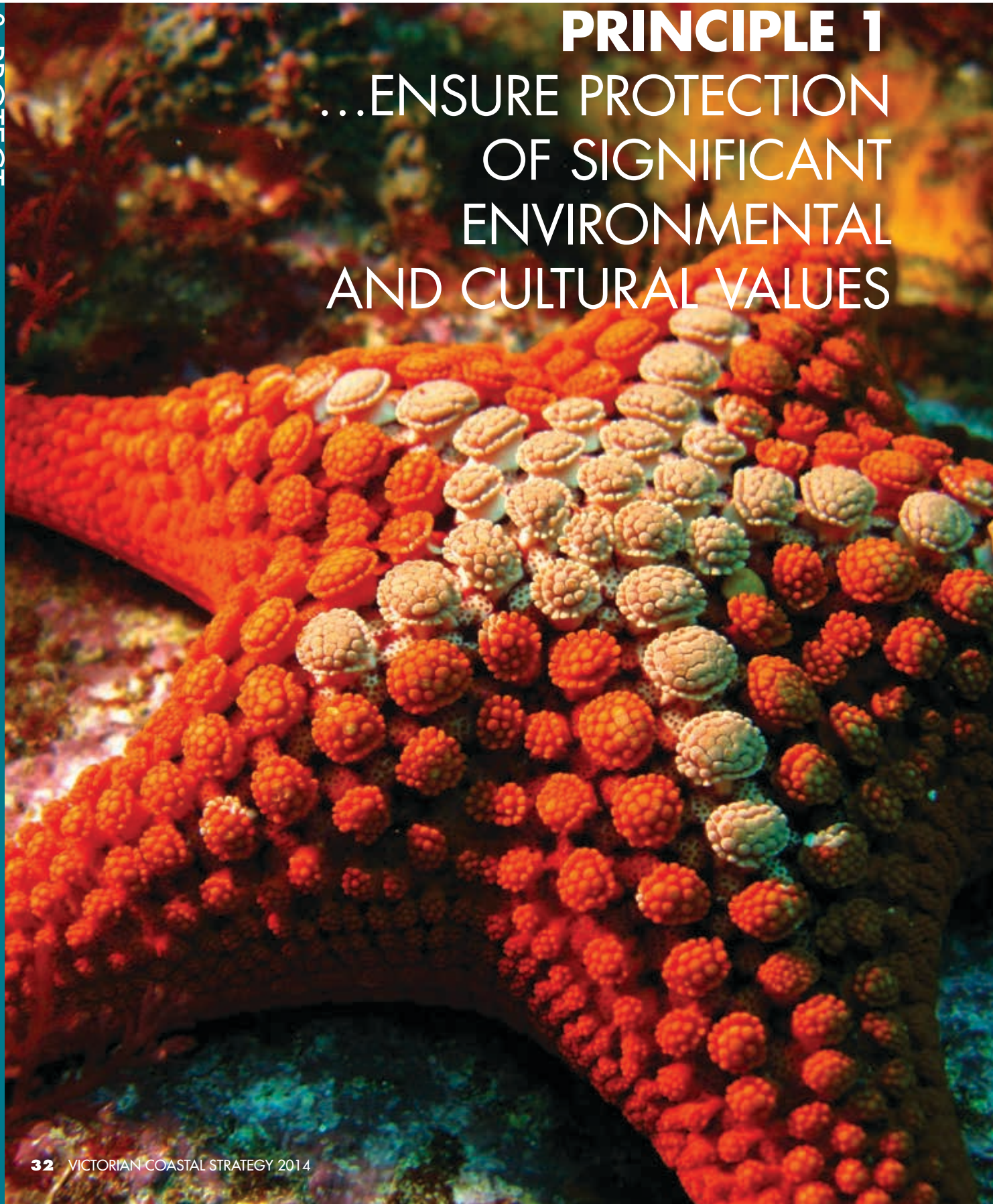
LEAD AND PARTNER AGENTS

In the Strategy the primary agency (lead agent) accountable for each action is listed first, in bold, followed by the major stakeholders (partner agents) who will assist the lead agency in completing or implementing that action, e.g. (**DEPI**, LG, PV, CoM).

Not all organisations or groups who will be involved or consulted can be listed. It is acknowledged that other groups will play a vital role in informing and achieving these actions.

ABM	Association of Bayside Municipalities http://abm.org.au/
CMA	Catchment Management Authorities http://www.depi.vic.gov.au/water/governing-water-resources/catchment-management-authorities
CoM	Committees of Management http://www.depi.vic.gov.au/forestry-and-land-use/coasts/coastal-committees-of-management
DEPI	Department of Environment and Primary Industries http://www.depi.vic.gov.au/
DSDBI	Department of State Development, Business and Innovation http://www.dsdbi.vic.gov.au/our-department
DTF	Department of Treasury and Finance http://www.dtf.vic.gov.au/Home
DTPLI	Department of Transport ,Planning and Local Infrastructure http://www.dtpli.vic.gov.au
EPA	Environment Protection Authority http://www.epa.vic.gov.au/
GLMAC	Gippsland Lakes Ministerial Advisory Committee http://www.gippslandlakes.net.au/
HV	Heritage Victoria http://www.dtpli.vic.gov.au/heritage
ICC	Implementation Coordinating Committee
LG	Local Government http://www.dtpli.vic.gov.au/localgovernment
MAV	Municipal Association Victoria http://www.mav.asn.au
MW	Melbourne Water http://www.melbournewater.com.au
NGO	Non-government organisations
OAAV	Office of Aboriginal Affairs Victoria http://www.dpc.vic.gov.au/index.php/aboriginal-affairs/aboriginal-affairs-overview
OVGA	Office of the Victorian Government Architect http://www.ovga.vic.gov.au/
PV	Parks Victoria http://parkweb.vic.gov.au/
Port Managers	http://www.transport.vic.gov.au/freight/ports
RCB	Regional Coastal Boards http://www.wcb.vic.gov.au/ http://www.ccb.vic.gov.au/ http://www.gcb.vic.gov.au/
RTB	Regional Tourism Boards http://www.tourism.vic.gov.au/tourism-industry/industry-contacts/regional-tourism-contacts.html
TSV	Transport Safety Victoria http://www.transportsafety.vic.gov.au/
TV	Tourism Victoria http://www.tourism.vic.gov.au/
TFN	Trust for Nature http://www.trustfornature.org.au/
Universities & independent researchers	
VAHC	Victorian Aboriginal Heritage Council http://www.dpc.vic.gov.au/index.php/aboriginal-affairs/victorian-aboriginal-heritage-council
VCC	Victorian Coastal Council http://www.vcc.vic.gov.au/
VEAC	Victorian Environmental Assessment Council http://www.veac.vic.gov.au/

‹ **Beach-nesting bird workshop at Point Lonsdale** Glenn Ehmke, Birdlife Australia



PRINCIPLE 1
...ENSURE PROTECTION OF SIGNIFICANT ENVIRONMENTAL AND CULTURAL VALUES

VALUE AND PROTECT

1.1 VALUING THE COAST

Desired outcomes

1. Victorians value the intrinsic characteristics of coastal and marine environments, habitats, ecosystems and biodiversity
2. The environmental value of coastal resources is recognised and appreciated, and their protection is paramount
3. Use of best practice methods for conducting cost-benefit analyses for coastal use and development ensures that the economic benefits (including ecosystem goods and services) and costs are assessed objectively and transparently

Understanding the true value of coastal and marine ecosystems

The natural features of the coast are extremely important to Victorians (Ipsos 2012). Coastal and marine environments are made up of ecosystems that have value in their own right (i.e. intrinsic value). When healthy, these ecosystems also provide free 'natural capital' to Victoria via a range of direct and indirect benefits termed 'ecosystem goods and services'. Ecosystem goods and services support the quality of life for Victorians, can assist in adapting to a changing climate and management of risks along the coast.

However, many ecosystem goods and services are not recognised or adequately considered when making decisions on the coast. This is because some are easy to quantify (e.g. total catch of a commercial fishery per annum) while others cannot be easily quantified or even observed (e.g. the value of carbon permanently stored in saltmarsh habitat). They can, however, be described and explained in terms that the community, as potential users of the goods and services, can identify with. For example:

- mangroves and sand dunes offer physical protection from erosion caused by storm surges by dissipating wave energy
- coastal wetlands reduce the impact of catchment flooding
- coastal landscapes and biodiversity provide aesthetic, therapeutic and psychological wellbeing benefits
- seagrass stabilises the seabed, is a primary source of marine and onshore food webs, is a nursery ground for supporting commercial and recreational fish populations, and
- marine and coastal organisms in the sediments associated with seagrass, saltmarsh and mangrove habitats can capture and store biological carbon (sometimes called 'Blue Carbon') at high rates. Rates of carbon capture and storage by seagrass may equal or exceed those of tropical forests (Macleod et. al 2011).

Penguin in jumper Phillip Island Nature Park

‹ **Seastar (*Nectria ocellata*) in Port Phillip Bay** Nicola Waldron

Ensuring the benefits of coastal and marine ecosystems remain will require continued planning to maximise ecosystem resilience and allow for adaptation. The true value of ecosystems will need to be considered over the long term and when making decisions about use and development.

Informing decision-making

One of the most difficult aspects of decision-making for coastal and marine environments is integrating objectively and transparently the assessment of economic benefits and costs associated with use and development and the true value of these natural ecosystems. For example, if an area of mangrove forest provides a community benefit in the form of natural storm protection, how can this ecosystem service be objectively considered in a cost-benefit analysis of a potential use or development on coastal Crown land, such as a marina?

Decision-makers need to consider the true value of coastal and marine environments when weighing up the costs and benefits of proposed use and development over the long term. There needs to be a balance between maintaining healthy functioning ecosystems to ensure they continue to provide both intrinsic value and ecosystem goods and services, and the economic benefits of expanding use and development.

Economists have devised a range of methods for estimating the value of ecosystem goods and services that can assist decision makers. These economic valuation methods attempt to elicit public preferences for changes in the state of the environment in monetary terms. Some caution in the application of these methods is required, given the often limited understanding of ecosystems and inherent difficulties and costs associated with quantifying their true value. The main types of economic valuation methods available for estimating public preferences for changes in ecosystem services are Revealed Preference, Stated Preference and Value Transfer (WorleyParsons 2013).

Policy for decision-making

1. Decisions involving coastal and marine natural resources take into account the full value of ecosystem goods and services provided by coastal and marine environments commensurate to the scale and value of the use or development. Factors to consider include:
   a. adequate assessment of the link between the function of natural ecosystems and the goods and services they provide
   b. objective and transparent cost-benefit analysis that includes the value of ecosystem goods and services
   c. use of guiding principles for ecosystem-based management (Appendix E)
2. The concept of ecosystem goods and services is used as a tool to increase awareness of the true value of ecologically healthy and diverse coastal and marine ecosystems.

Actions

1. Develop and implement environmental value measurement systems and environmental accounts that are consistent with international systems and which:
   a. establish clear standards for reporting on the condition and value (environmental, social, cultural and economic) of coastal and marine assets and for identifying and explaining changes over time (**DEPI**, DTF)
   b. ensure cost-benefit analysis of coastal use and development proposals include environmental values (**DEPI**)
2. Understand and reflect the nature of ecosystem goods and services in Regional Coastal Plans, Regional Catchment Strategies and Coastal Management Plans (**RCBs**, DEPI, CMAs, CoMs, LGs, PV)

1.2 MARINE ENVIRONMENTS

Desired outcomes

1. Coastal waters, estuaries, wetlands and onshore environments are planned and managed to promote healthy, rich and diverse marine ecosystems that support connectivity, adaptation and build resilience to a changing climate
2. An integrated marine planning system for Victoria's coastal waters, estuaries and intertidal areas includes and complements a well-managed, comprehensive, adequate and representative system of Marine National Parks and Sanctuaries

Victoria's marine environment covers more than 10,000 square kilometres, extending three nautical miles from the coastline. Habitats include reefs, kelp forests, deep sponge gardens, sandy plains, seagrass meadows and open water. Parts of the marine environment are recognised as Ramsar sites (Western Port, Corner Inlet and nearshore areas along the western shore of Port Phillip Bay). Other areas are very productive and support fisheries and internationally significant/threatened species such as blue whales and southern right whales.

Most waters are shallow, but some areas reach depths of more than 100 metres. These unique environments are inherently connected to onshore coastal environments, wetlands, estuaries and catchments. Over 12,000 species of plants and animals are supported by marine environments in Victoria, with eighty percent occurring nowhere else on earth (VNPA, 2010).

Marine National Parks and Sanctuaries, which are primarily established to provide added protection to examples of biological diversity, cover around five per cent of the State's coastal waters and are highly supported by the community (Ipsos 2012). The remaining ninety-five per cent of marine areas also provide significant intrinsic and community value, as demonstrated through work completed by DEPI that identified significant natural marine assets along the Victorian coast (refer Map 2a).

The Minister for Environment and Climate Change requested the Victorian Environmental Assessment Council (VEAC) investigate the outcomes of the establishment of Victoria's existing marine protected areas. The investigation covered the 13 marine national parks, 11 marine sanctuaries, and 6 marine parks, marine reserves or marine and coastal parks established under schedules seven, eight and four respectively of the *National Parks Act 1975*. The Final Report was provided to the Minister on 14 April 2014. Government will consider the report and provide a response to the recommendations.

In addition to their intrinsic value, marine environments provide ecosystem goods and services that benefit the Victorian community (e.g. fisheries, aquaculture, tourism, recreation, natural coastal defences, and carbon storage). These benefits depend on ecologically healthy and resilient marine ecosystems.

Significant, broad-scale impacts on the health and resilience of marine environments are likely to occur across Victoria as a result of:

- a changing climate
- high demand for, and diversification of, marine uses and activities
- marine pollution and catchment impacts on water quality
- invasion of marine pests and diseases

A changing climate

A changing climate could have a range of impacts (Table 2). Impacts include sea level rise as well as changes in ocean currents, temperature, salinity, pH (acidity) and freshwater inputs. Each of these has the potential to affect ecological processes and marine biodiversity. Changes to marine biodiversity in Victoria are already being observed, including range expansions of pelagic fish and decrease in populations of southern rock lobster (CES, 2012).

Victoria's unique cold-temperate water species are considered particularly vulnerable to changes in currents and warmer waters, given the lack of continental shelf habitat further south for migration. There may also be barriers to the inland migration of marine and intertidal habitats in response to rising sea levels, such as seawalls, coastal development, land use, or artificially renourished beaches. Barriers may already exist or may result from coastal adaptation responses.

A changing climate may result in the loss of marine species that are endemic to Victorian waters. It might also lead to the emergence of species not currently found along our coast. This has the potential to affect state and regional communities that depend on industries such as fisheries, aquaculture and tourism.

High demand for, and diversification of, marine resource use and activities

As the population of Victoria grows, the demand on marine environments will continue to grow for use, such as boating or tourism, and resource extraction such as fishing or marine energy.

The provision of access to marine environments can require ongoing maintenance activities such as dredging which, if not appropriately managed, can disturb seabed and associated biodiversity, reduce water quality, smother seabed communities, impact on submerged heritages sites, and potentially expose coastal acid sulfate soils.

Demand must be managed in ways that protect the long-term ecological health of the marine environment while also minimising or avoiding conflict between different users and managing the safety risks of increased waterway usage. The potential impacts of increased tourism, shipping, and recreational pursuits must be managed through a combination of strategic planning, operational management, regulation and compliance activities.

The water quality of the marine environment is potentially impacted by pollutants from both terrestrial (land-based) sources and marine sources. Marine pollution generated from land-based activities includes stormwater runoff, litter such as plastic or debris, industrial and household discharges. Poor land management practices can result in diffuse or point sources of pollution. Pollution generated in the marine environment is from activities such as shipping, boating, oil and gas exploration, fishing, and aquaculture.

Pollution can result in:

- reduced water quality
- injury or loss of marine life such as fish, mammals and birds
- habitat loss and degradation
- changes to the distribution, abundance and health of species
- incorporation of toxic chemicals into marine animals, and
- bioaccumulation of toxins in marine species consumed by humans.

Sources and pathways of marine pollution need to be identified and abatement measures implemented, rather than just trying to address pollution at the end point.

Invasion of marine pests and diseases

Marine pests can attach themselves to boat hulls and equipment, fishing gear and other equipment. Pests and diseases can also be transported and introduced by shipping and boating movements, such as via bilge and ballast water, and by aquaculture. Diseases can originate from onshore and offshore sources. A changing climate is likely to alter ocean currents which may bring new marine pests and diseases or expand the range of those already identified.

Once established, removal of marine pests and diseases is rarely viable and they can spread to other locations along the coast. At least 100 marine organisms have become established in Port Phillip Bay, mostly as a result of shipping traffic through the Port of Melbourne (Museum Victoria 2014). These include crabs, sponges, algae, worms, molluscs, sea stars and fish.

Table 2: Impacts of a changing climate on the marine environment

Threatening effect	Potential Impact
Sea level rise and storm surge	Loss of and damage to habitats, particularly in near shore and intertidal areas
Warming sea temperatures/ changes in ocean currents and upwellings	Changes in salinity, and distribution and abundance of marine habitats, plants and animals, including pests and diseases Potential alteration in nutrient availability from upwellings
Ocean acidification	Some marine animals will be unable to produce shells and skeletons, resulting in disrupted/changed food chains
Changes to rainfall patterns	Changes in delivery of nutrients from catchment runoff Loss of connection between essential climate/ weather/ seasonal events affecting marine plants and animals
Coastal Acid Sulfate Soils (CASS)	Potential to increase CASS exposure and can lead to risks to public safety, infrastructure and biodiversity

The introduction of marine pests and diseases can lead to changes in or loss of habitat; changes to marine communities (e.g. consuming or competing with native species) and food chains; and pathogens and parasites.

While protocols and approaches exist for addressing marine pests, coordination between agencies and their effectiveness under future climatic conditions is unclear.

Integrated marine planning

Planning to address these impacts and responding to emergency events, such as fish deaths, marine entanglements, pests and pollution events, is crucial to ensuring the ecological health and resilience of Victoria's marine environments. It is important that government, industry and community work together to ensure the long term health, productivity and resilience of Victoria's marine environments, and their ability to adapt to a changing climate. Planning and decision making will need to be supported by an improved scientific understanding of marine ecosystems and the threat posed by cumulative impacts.

Policy for decision-making

1. Marine environments are planned for, managed, and protected using an ecologically sustainable and integrated approach
2. The threats (including cumulative and combined) to marine environments are assessed and addressed at the scale most appropriate for system-wide management
3. Dredging projects meet best practice requirements and reflect the lessons learned from completed projects
4. A comprehensive, adequate and representative system of well-managed Marine National Parks and Sanctuaries is maintained and monitored
5. With an increased focus on risk, coastal and marine planners and managers collaborate with stakeholders to facilitate an all-hazards all-agencies approach to emergency management planning on the coast

Actions

1. Explore a range of integrated marine planning systems and recommend an appropriate system for Victoria (**DEPI**, VCC, VEAC)
2. Incorporate within Regional Coastal Plans information about marine areas with significant environmental, social, cultural and economic values, marine ecological and oceanographic processes, and potential threats (**RCBs**, DEPI, CMAs, OAAV, HV, LGs)
3. Implement agreed responses to the VEAC Marine Investigation into the management performance of Victoria's marine protected areas and the ongoing threats or challenges to their effective management (**PV**, DEPI, LGs, CoMs)
4. Update key policies and guidelines to include:
   a. best practice environmental guidelines for dredging to reflect the lessons learned from significant projects (e.g. Port of Melbourne Channel Deepening Project) and environmental management planning responses, new benchmarks in environmental controls for dredging activities, and relevant national guidelines (**EPA**, TSV, DEPI, PV)
   b. roles and responsibilities of DEPI, PV and TSV in environmental management, waterway management, planning and practice (**DEPI**, PV, TSV)
   c. protocols for preventing, detecting, reporting and responding to marine emergencies in state coastal waters, including marine pest incursions, pollution, diseases, and marine entanglement and marine incidents, with details of roles and responsibilities for detection and response (**DTPLI**, DEPI, PV, EPA, WCs, CMA, TSV)
5. Develop improved understanding about the amount of carbon stored in Victoria's marine and coastal ecosystems (**DEPI**, CMAs, Universities and independent researchers)
6. Communicate the benefits of Marine National Parks and Sanctuaries to the broad community, for example the benefits of protecting important habitat (**PV**, NGOs, DEPI)

1.3 WETLANDS AND ESTUARIES

Desired outcomes

1. Coastal waters, estuaries, wetlands and onshore environments are planned and managed to promote healthy, rich and diverse wetland and estuarine ecosystems that support connectivity and can adapt to a changing climate
2. The environmental condition of coastal wetlands and estuaries, including Ramsar sites, is maintained or improved
3. Access and use in wetlands and estuaries are well-managed, with appropriate tools such as disturbance buffers, to ensure protection of threatened plants and animals

There are more than 100 estuaries in Victoria, varying greatly in area, from large (e.g. Gippsland Lakes) to medium (e.g. Barwon River) and small (e.g. Wye and Balcombe Rivers) (refer Map 2a). Some of the most important wetlands in Victoria are located on the coast, including five that are of international importance (Ramsar sites) and eighteen of national importance. Saltmarsh habitat is listed as a threatened ecological community, with a vulnerable status, under the *Environment Protection and Biodiversity Conservation Act 1999* (Cwth).

Wetlands and estuaries are intrinsically valuable and provide an important range of ecosystem goods and services that benefit Victorians. For example, wetlands and estuaries are important as habitats, nursery areas and pollution filtration systems, provide natural defence against erosion, store carbon, and contribute to terrestrial and marine foodwebs. Wetlands (both natural and manmade) play an important role in keeping our marine environments healthy and can play a role in reducing the impacts of coastal flooding.

Wetlands and estuaries support tourism, recreational activities such as fishing and boating, and regional economies. Key threats to wetlands and estuaries include coastal development, sea level rise, invasive species, the disturbance of coastal acid sulfate soils and land-sourced pollution (e.g. nutrients, wastewater) via runoff or discharges.

Coastal settlements large and small, as well as farmlands, often surround wetlands and estuaries. If population growth is not managed carefully, this could adversely affect water quality and the environmental condition of wetlands and estuaries. Activities and infrastructure within the catchment and adjoining onshore environments, as well as within the wetlands and estuaries themselves, can affect the ecological health of wetlands and estuaries. In turn this can compromise the ability of wetlands and estuaries to provide ecosystem goods and services (Table 3).

Periodic closure of estuaries to the sea is a natural process for some Victorian estuaries. Closures can be problematic for human use of the estuary, and artificial openings may be required to provide access to harbours for boats, or alleviate

Tidal River, Wilson Promontory Nicola Waldron

Table 3: Impact of use and development on wetlands and estuaries

Activity	Impact
Artificial estuary entrance opening	Reduced water quality, de-oxygenation and changes in salinity that can cause interference with lifecycles and fish deaths
Climate change	Changes to salinity and inflow water regimes, permanent and/or more frequent inundation of wetlands, changes in water temperature and acidity (pH)
Habitat modification	Loss of plants, animals, invasion by weeds and pests, changes in turbidity
Recreation	Disturbance to plants and animals (e.g. shorebirds), changes in water quality
Infrastructure installation (e.g. concrete/ sand banks, channels, levees)	Barriers to habitat connectivity and species migration, disturbance of acid sulfate soils and changes in turbidity
Catchment use and development	Pollutants, toxicants, sediments, de-oxygenated water, nutrients entering wetlands, estuarine and marine waters through runoff, changes to salinity, water temperature and inflow water regimes

flooding of adjacent land. Artificial openings need to be carefully managed to avoid degrading the ecological health of the estuary. Where flooding has the possibility to impact on private property and infrastructure there may be community expectation (or a management obligation) to artificially open an estuary.

A changing climate will have an effect on the functioning and health of wetlands and estuaries. For example, greater erosion can lead to loss of saltmarsh; reduced freshwater flows into estuaries can change salinity regimes as can increased saltwater intrusion (as a result of sea level rise); and more intense storms can break through estuary entrances or create new entrances. Flooding and rain events are also expected to increase and this may lead to increased pressure on managers to artificially open estuaries due to risk to property and infrastructure.

Wetlands and estuaries need to be able to adapt if they are to continue to support biodiversity and provide community benefits. Their potential to adapt may be diminished by barriers of built infrastructure, such as roads, buildings, levees, and natural topography, such as hills. If wetlands and estuaries are unable to adapt and are therefore reduced across Victoria, fishing, tourism and infrastructure will all be affected.

White mangrove (*Avicennia marina*) Hobsons Bay City Council

Policy for decision-making

1. Integrated management of rivers, wetlands and estuaries is guided by the Victorian Waterway Management Strategy 2013
2. The impact of catchment activities on wetlands and estuaries is reduced by:
   a. providing adequate freshwater flows to protect, and where possible, improve the health of wetlands and estuaries
   b. minimising or avoiding pollution from new and existing developments
   c. reducing nutrient and sediment loads from new and existing developments
3. Planning decisions consider the impacts of development and a changing climate on wetlands and estuaries, in particular:
   a. promoting linkages across land tenure
   b. reducing the potential to fragment habitats or alter natural processes
   c. creating opportunities to increase habitat, re-connect fragmented habitats, and facilitate adaptation to a changing climate
   d. using the *Victorian Best Practice Guidelines for Assessing and Managing Coastal Acid Sulfate Soils 2010* (DSE (b) 2010) when making decisions about these soils
4. Management of wetlands and estuaries is encouraged by providing best practice guidelines, promoting the best available science and, when necessary, using regulations

This includes:

   a. conducting a risk-based assessment that considers the environmental, social and economic values of an estuary and safety issues to vessel operations and the general public when making a decision whether to open an estuary. The Estuary Entrance Management Support System (EEMSS) should be used by waterway managers to inform decisions about artificial estuary entrance openings, where possible
   b. using the *Environmental Water Quality Guidelines for Victorian Riverine Estuaries 2011* to identify management actions to improve estuary health, where sufficient monitoring data is available
   c. using the Estuary Environmental Flows Assessment Methodology (DSE (d) 2012) to improve our understanding of the environmental flow requirements of estuaries and the operational management of environmental water allocations
5. Where opportunities arise, inappropriate structures located in wetlands and estuaries that are interfering with natural processes are removed
6. Appropriate disturbance buffers are used to protect flora and fauna and enable co-existence of biodiversity and recreational users of wetlands and estuaries
7. Saltmarsh habitat is restored and reintroduced where possible

Actions

1. Identify high value coastal wetlands and estuaries that are vulnerable to sea level rise and quantify risks and opportunities for adaptation to predicted future salinity and water regimes (**DEPI**, CMAs, MW, RCBs, GLMAC)
2. Incorporate within Regional Coastal Plans information about wetlands and estuaries, including:
   a. significant environmental, social, cultural and economic values
   b. vulnerability to the potential impacts of a changing climate and population growth, use and development, and a process to regularly assess and review their condition (**RCBs**, DEPI, PV, CMAs, LGs)
3. Investigate removal of levee banks and other artificial structures that inhibit wetland migration / retreat (**CMAs**, WCs, RCBs, DEPI, PV, LGs)
4. Review and update current Estuary Management Plans and develop new plans as required (**CMAs**, WCs, PV)

1.4 ONSHORE ENVIRONMENTS

Desired outcomes

1. Ecological health, resilience and connectivity of onshore coastal environments is improved across land tenures
2. Access and use in onshore environments are well-managed, with appropriate tools such as disturbance buffers, to ensure protection of threatened plants and animals
3. A well-managed, comprehensive, adequate and representative system of coastal parks and reserves is complemented by off-reserve conservation actions

Victoria's onshore coastal environments contain a wide range of habitats including beaches, dune systems, woodlands, windswept cliff tops, heathlands and dry forests. These environments support a diversity of plants and animals including migratory shorebirds. Onshore environments also accommodate our coastal settlements.

Migratory birds are nationally significant under *Environment Protection and Biodiversity Conservation Act 1999* (Cwth) and many are listed as threatened. There are areas of the Victorian coast that are recognised as nationally or internationally important habitats or shorebird sites listed under the East Asian-Australian Partnership. There is a national wildlife conservation plan for migratory shorebirds.

Onshore environments are interlinked, and interact with coastal catchments, wetlands, estuaries and the marine environment. A key challenge is to maintain healthy and diverse onshore ecosystems, particularly in areas where access to the coast is in high demand. Population growth, increasing use and development pressures, pests and weeds, altered fire regimes and a changing climate both individually and collectively increase the risk that natural coastal habitats will be fragmented or lost. The biodiversity of Victoria's onshore environments will decline unless threats to onshore environments are appropriately planned for and managed.

Crown land reserves and National, State and Coastal Parks along the coast play a significant role in the protection of onshore environments. It is therefore important to maintain and enhance our coastal Crown land estate.

The impacts of a changing climate are predicted to result in a net loss of Crown land on the coast and, as a consequence, a loss of habitat to support coastal biodiversity. It will be important to determine what the current total area of coastal Crown land is, and which areas (as they relate to biodiversity and natural values) will be vulnerable to the impacts of climate change on the coast. While the scale of the challenge may be significant, the impacts of a changing climate may also create opportunities for positive land use change and enhanced habitat linkages to support biodiversity migration and adaptation strategies.

Barriers created by natural topography, roads, buildings, other infrastructure, and cleared land mean that the natural horizontal or vertical migration of ecological communities such as saltmarsh or mangroves may be hindered or prevented. This is of particular importance when considering the adaptation of onshore environments to future conditions such as increased sea level rise and frequency of inundation.

The introduction of weeds, including Marram grass, sea wheat-grass, and species not endemic to the location (e.g. Coastal tea tree in western Victoria) into dune systems is also changing coastal habitats. These weeds can modify dune morphology and can impact on natural coastal processes, such as erosion and beach dynamics (Cousens et al 2012).

Emergencies such as fires and exposure of coastal acid sulfate soils also have the ability to change coastal habitats. Coastal and marine planners and managers need to be well prepared for emergency events and capable of preventing, minimising, preparing for, responding to, and recovering from these events.

The use and enjoyment of the coast can also threaten environmental values unless well planned for and managed. Recreational activities and visitor behaviour can disturb wildlife and damage vegetation. With more people wanting to use the coast there is the potential for increasing levels and frequency of disturbance to coastal biodiversity. A balance between coastal access and management of recreation users and conserving natural values needs to be achieved to ensure co-existence.

NaturePrint is an approach developed by DEPI to integrate and analyse the best state-wide information about biodiversity values at the landscape scale. Strategic Natural Values maps created from NaturePrint capture information about biodiversity values, habitat condition and connectivity. This information may be useful to provide an initial indication of which onshore coastal areas make a high contribution to biodiversity values (refer to Map 2b).

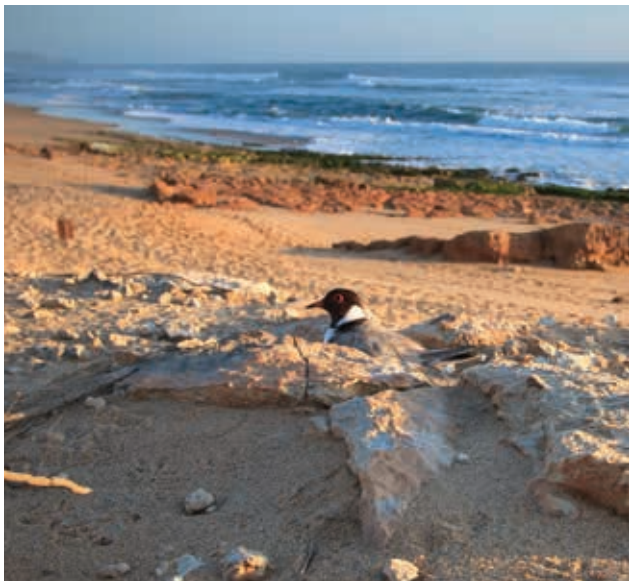
DEPI has also developed a methodology for identifying natural coastal assets. This methodology, if used in conjunction with information about areas of the coast vulnerable to inundation and areas of planned population growth, could potentially be used as the basis for identifying onshore environments which are most at risk from the impacts of a changing climate and increased use and development.

Policy for decision-making

1. The ecosystem goods and services provided by onshore environments are protected when assessing development proposals for the coast and hinterland and in decision-making about adaptation to a changing climate
2. The ecological integrity of onshore coastal environments is protected and improved
3. Fragmentation of the natural coastal environment is reduced and the connectivity of habitat corridors improved across coastal Crown and private land and between coastal and inland vegetation
4. Land owners, both private and public, are encouraged to re-vegetate and landscape their coastal land using species indigenous to the area and to control environmental weeds and pests, including inappropriate animals, on their land
5. Coastal ecosystems are considered in fuel reduction burning
6. The removal of indigenous coastal vegetation on coastal Crown land is avoided and coastal managers will only use indigenous local plants in revegetation works
7. Education and enforcement programs address illegal activities including foreshore vegetation removal and vandalism, illegal access and encroachment of private property and gardens onto coastal Crown land, and illegal dumping
8. Use and development on coastal Crown land is designed and located to minimise loss of habitat and biodiversity, encourage restoration and connectivity and enable onshore environments to adapt to a changing climate
9. Land managers actively identify and reduce the spread of invasive species by using best practices
10. Onshore coastal environments are supported to adapt to the impacts of a changing climate and population growth
11. Coastal planners and land managers work with private landowners to identify coastal areas of priority as they relate to biodiversity and natural values for protection and enhancement
12. In addition to highly protected areas, a well-managed, comprehensive, adequate and representative system of other coastal parks and reserves is maintained

Actions

1. Identify and address coastal areas of ecological significance that are vulnerable to the impacts of a changing climate, by:
   a. making use of existing information and methodologies
   b. incorporating these areas into Regional Coastal Plans, park management plans, and Coastal Management Plans
   c. considering these areas when developing a state coastal risk plan (**DEPI**, RCBs, PV, CoMs)
2. Develop decision-making tools and market-based instruments, such as a coastal tender program to protect existing habitats and to establish habitat linkages across private land and between Crown land and private land, to be developed in partnership with landowners and managers (**DEPI**, CMAs, CoMs, TFN)



Hooded Plover on a nest at Rye ocean beach
Glenn Ehmke, Birdlife Australia

1.5 CATCHMENTS AND WATER QUALITY

Desired outcomes

1. Strategic planning for catchment, coastal and marine management, and the prioritisation of on-ground works are integrated through improved planning and management frameworks, processes and collaboration between relevant agencies
2. The quality and quantity of water entering wetlands, estuaries and marine waters is improved on a priority basis through:
   a. improved wastewater and stormwater treatment and re-use, with a focus on urban growth areas in coastal catchments
   b. promotion of changes in land use and farming practices to reduce the impact of catchment discharges which have adverse effects on the health of coastal and marine ecosystems
   c. better understanding the volume of flow and the quality required to sustain ecologically functioning wetlands, estuaries and marine environments

Catchments are connected from top to bottom and what happens throughout the catchment has a strong influence on water quality in coastal wetlands, estuaries and marine waters. Healthy coastal wetlands, estuaries and marine environments provide important social, environmental, cultural and economic benefits – including safe and clean swimming, recreational and commercial fishing, aquaculture, and tourism potential.

Water quality (the physical, chemical and biological attributes of water) is a measure of waterway condition. Good water quality is vital for supporting healthy coastal wetlands, estuaries and marine environments and the flow on ecosystem goods and services of these environments provide that benefit to Victorians.

Many potential activities can affect water quality (Table 4). Pollutants that reduce water quality broadly fall into two categories – point sources (direct inputs of pollutants, e.g. sewerage outfalls) and diffuse sources (indirect inputs that occur when pollutants are carried in runoff or groundwater, e.g. stormwater). These discharges are regulated through the EPA and are also being addressed by the whole-of-water-cycle management approach described in *Melbourne's Water Future (DEPI (c) 2013)*.

The *National Water Quality Management Strategy* (1992–2013) provides the framework for improving water quality in Australian and New Zealand waterways. The policy framework is supported by the *Australian and New Zealand guidelines for fresh and marine water quality, 2000*.

The State Environmental Protection Policy (Waters of Victoria), referred to as SEPP (WoV), applies to all surface waters of Victoria and is the primary mechanism for managing water quality in Victoria. It provides a statutory framework and water quality objectives for the protection of the agreed uses and values of Victoria's fresh and marine water environments. The SEPP (WoV) also provides tools to manage water quality including licences on discharges, standards and encouraging best water quality management practice by industry. Specific schedules contain more detailed requirements that apply within individual catchments.

More detailed management frameworks and tools to reduce catchment impacts on downstream environments are provided through the *Victorian Waterway Management Strategy 2013* and regional Waterway Strategies (rWS). The *Environmental Water Quality Guidelines for Victorian Riverine Estuaries, 2011* support the sustainable management of Victoria's estuaries. These guidelines developed by the EPA provide a specific framework and tools for assessing the water quality of Victorian riverine estuaries.

There are five Catchment Management Authorities (CMAs) on the Victorian coast. Regional Catchment Strategies (RCS), which are prepared by CMAs demonstrate the connections between land, water and biodiversity, and the human and natural activities occurring there. RCS also outline what needs to be done to plan, manage, conserve and use natural assets (including marine and coastal natural assets).

RCS, rWS and Regional Coastal Plans (RCPs) need to interlink to recognise the physical, chemical and biological interactions between catchment and coastal processes. To support Integrated Coastal Zone Management, RCPs, RCS and rWS need to align planning and management objectives and priorities for improving marine, estuarine, wetland and waterway health. This will be a consideration in the development of RCPs.

CMAs, together in partnerships with landholders, community and government stakeholders have implemented a range of catchment based works and activities that benefit downstream estuarine and marine environments. Examples

Table 4: Impact of use and development on water quality

Activity	Impact
Agricultural practices	Excess nutrients can cause excessive algal blooms that result in fish deaths, loss of other native water plants, reduction in public amenity, and public health implications; chemicals including pesticides, herbicides, fungicides may result in loss of plants and animals
Disturbance of coastal acid sulfate soils	Release of acid and heavy metals may result in loss of plants and animals, corrosion of concrete and steel structures and impacts on human health
Changes to land use and habitat removal	Changes to land use and vegetation cover can increase turbidity; tree planting for carbon storage can reduce water inflow to catchments and linked wetlands, estuaries and marine environments
Urbanisation and Infrastructure	Stormwater runoff (input suspended solids organic pollutants, heavy metals and pathogens) can degrade marine habitats, cause a loss of plants and animals, or make swimming unpleasant and unhealthy; flooding or reduced freshwater inflows can affect natural biological processes (e.g. fish reproduction); circulation in harbours affects water quality
Sewage and wastewater discharge	High levels of nutrients, bacteria and other pollutants, heated water, highly saline water, may result in loss of plants and animals, public safety concerns

of these activities include the installation of fishways to allow for fish species to complete their life cycles in marine and freshwater systems.

A *Cleaner Yarra River* and *Port Phillip Bay Plan of Action, 2012* (DSE (b) 2012) has been established to address the issue of water quality in Port Phillip Bay. Partnerships between government, community and industry, and integration across sectors, are being strengthened through this Action Plan. Although Port Phillip Bay, Western Port and the Gippsland Lakes will continue to be a focus for actions to improve water quality, the challenges need to be addressed adequately across all areas, including areas of the open coast.

Aerial photo of Port Melbourne and Albert Park foreshore Port Phillip City Council

Policy for decision-making

1. Regional Catchment Strategies, regional Waterway Health Strategies, and Regional Coastal Plans have regard to the physical interactions between catchment and coastal processes and align management objectives, priorities and actions for improving marine, estuarine and waterway health
2. Plan and design new and renewal urban developments to minimise the effects of wastewater and stormwater discharge on marine and estuarine environments. Water conservation approaches will be considered to minimise discharge volumes. Water sensitive urban design principles are applied and, when opportunities arise, existing urban development is retrofitted to reduce the impact of wastewater and stormwater discharges (e.g. via litter traps, constructed wetlands)
3. All ocean outfalls are upgraded, and where possible best practice environmental water management is achieved by relocating to a non-sea or ocean disposal area for recycling and re-use
4. Water quality guidelines will be aligned with specific understanding of water quality impacts on marine and estuarine systems. Where such understanding is absent, targeted science and research is undertaken to inform water quality and discharge guidelines

Actions

1. Review, update and implement guidelines and requirements including:
   a. urban stormwater management for urban development, and facilitate and support best practice
   b. on-site wastewater management in sensitive areas of the coast
   c. State Environment Protection Policy (Waters of Victoria)
   d. Environmental Management Plan for Port Phillip Bay
   e. Environmental Management Plan for Corner Inlet & Western Port (**DEPI**, EPA, DTPLI, LG, MW, PV)
2. Review, revise (where necessary) and implement response plans and protocols for events such as mass fish deaths, marine pollution and algal blooms in bays and estuaries and on the open coast (**DEPI**, CMAs, PV, WCs, EPA, DTPLI)
3. Identify water quality hotspots for priority action in Regional Coastal Plans (**RCBs**, CMAs, WCs)

Gippsland Lakes, bounded by the 90 mile beach, Gippsland Destination Gippsland

1.6 HERITAGE

Desired outcomes

1. Aboriginal and historic cultural heritage places are identified, recorded and protected
2. The role of Traditional Owners in protecting and managing Aboriginal cultural heritage is recognised
3. Victorians work in partnership to take account of traditional and local knowledge, and to care for heritage on the coast

Coastal heritage plays an important role in creating our sense of place and defining who we are. It can take many forms including those of a physical or spiritual nature. Heritage plays a role in defining the character of coastal settlements and driving regional development and tourism. Heritage places include recreational assets, Aboriginal places, early settlement and contact sites, port and maritime infrastructure such as jetties and piers, shipbuilding yards, defence heritage sites, landscapes, lighthouses, and historic shipwrecks.

Aboriginal heritage

Aboriginal cultural heritage is a living culture and the story of Traditional Owners is inherent in the Victorian landscape. The Victorian coast is of great significance to Traditional Owners. Thousands of Aboriginal cultural heritage landscapes and places of significance are recorded along the coast and more continue to be found. The most visible examples of these are shell middens. Traditional Owners also have many traditional stories. However, changes in communities over time may lead to the disappearance of these stories if not passed on and shared.

Recognition of Aboriginal knowledge of, and aspirations for, country is an essential part of coastal natural resource management (e.g. Land Management Agreements, and involvement in fisheries management via the *Aboriginal Fishing Strategy 2012*).

Map 3a identifies areas of cultural heritage sensitivity as defined by the *Aboriginal Heritage Act 2006* (the AH Act). The Victorian Aboriginal Heritage Register contains detailed information on recorded Aboriginal places. Traditional Owners are also an important source of information especially in areas where nothing has been recorded to date. The AH Act also provides for the protection (through the AH Act's harm provisions) of Aboriginal cultural heritage in Victoria and the completion of Cultural Heritage Management Plans. Cultural Heritage Management Plans provide an assessment of whether or not there is any Aboriginal cultural heritage present in the area.

This further highlights the importance of undertaking good planning, including engagement with Traditional Owners with regard to activities impacting upon the coast.

Traditional Owners do not distinguish between land and sea; they see their traditional rights and responsibilities for 'country' extending across terrestrial, coastal and marine environments. Aboriginal cultural heritage in Victoria is a living culture based on the laws and customs of Traditional Owners; it is not solely of archaeological significance. Therefore, it is vital that Traditional Owners have a key role in protecting Aboriginal cultural heritage.

The AH Act recognises Traditional Owners as the primary guardians, keepers and knowledge holders of Aboriginal cultural heritage. In addition, the *Victorian Traditional Owner Settlement Act 2010* (TOS Act) provides a framework to recognise Traditional Owners (based on their traditional and cultural associations) for certain Crown land, and to advance reconciliation and promote good relations between the State and Traditional Owners. There is alignment between native title legislation, the TOS Act and the AH Act.

Traditional Owners of Victoria's coast formally recognised under the AH Act as Registered Aboriginal Parties (RAPs), some of whom have native title determinations and/or Recognition and Settlement Agreements under the TOS Act, are shown on Map 3b. As this also is continually being updated, please refer to the Registered Aboriginal Parties website (see references).

As well as those groups that have been formally recognised, there is a range of other Traditional Owner groups that assert interests over the Victorian coast. They include:

- Eastern Maar peoples (including Kirrae Wurrung, Peek Whurrong, Chap Whurrong, KuurnKopanNoot and YarroWaetch peoples)*
- Gadubanud peoples
- Woiwurrung peoples*
- Bunurong/Boon Wurrung peoples
- Nindi-NgujarnNgarigoMonero peoples
- Bidwell-Maap peoples
- Gunaikurnai peoples*

* *for additional areas beyond their formally recognised areas*

Other heritage

The Victorian Heritage Register, established under the *Heritage Act 1995*, lists heritage places that have been assessed to date and found to be of state significance. Heritage Victoria is responsible for maintaining this register and issuing permits for development of listed sites. Heritage Victoria also maintains a register of non-Aboriginal archaeological sites in the Heritage Inventory.

Under the *Environment Protection and Biodiversity Conservation Act 1999* (Cwth), there are several coastal places in Victoria listed on the National Heritage List. These include the Great Ocean Road and Scenic Environs, the Point Nepean Defence Sites and Quarantine Station, and HMVS Cerberus shipwreck.

The *Heritage Act 1995* provides protection for historic shipwrecks in Victoria's rivers, lakes and enclosed bays such as Port Phillip and Western Port. *The Historic Shipwrecks Act 1976* (Cwth) provides protection for all other historic shipwrecks located in Victorian coastal waters and is also administered by Heritage Victoria.

Heritage places of local significance are identified in Heritage Overlays in the local section of planning schemes.

Protection of heritage

A range of impacts can threaten heritage places. For example, visitation to heritage sites (known or unknown) can result in physical damage, degradation or loss. Planned works on the coast such as revegetation or new infrastructure projects can also have an impact. Natural coastal processes including erosion and inundation can also put heritage places at risk, and the rates of erosion and inundation are likely to increase with a changing climate.

Decisions are needed when heritage places are at risk. Depending on the nature of the risk, the heritage value and the movability of heritage objects, the management options include avoidance, removal, relocation or protection. With regard to Aboriginal heritage, consideration must be given to the Traditional Owners' wishes.

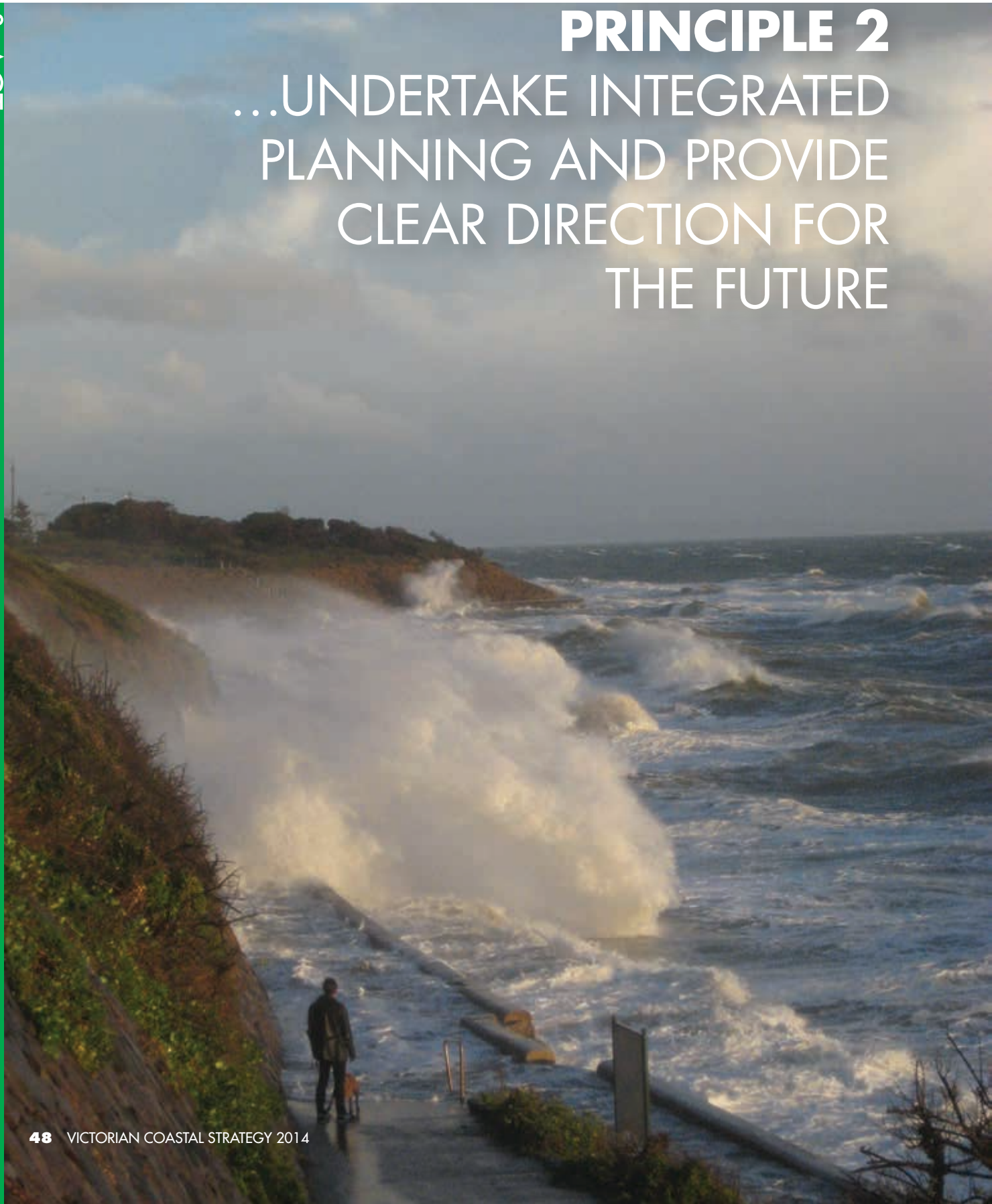
Policy for decision-making

1. Aboriginal and historic heritage places and landscapes are identified, protected and managed to reflect their heritage values
2. Traditional knowledge is integrated into coastal planning and management in partnership with Traditional Owners (particularly through the use of Regional Coastal Plans, Coastal Management Plans and management agreements over coastal Crown land)
3. Coastal Crown land parks and reserves are managed in consultation with Traditional Owners
4. The values of Aboriginal and historic heritage places on the coast, including built heritage, landscapes, and archaeology, including maritime heritage assets, are maintained and interpreted
5. Where heritage places are no longer required for their original purpose, encourage adaptive re-use that maintains their values and character and enhances their contribution to community activities, coastal tourism and sense of place
6. Decision-making considers Aboriginal and other heritage values of coastal and marine environments

Actions

1. Progressively update asset and heritage registers and local planning schemes by:
   a. undertaking comprehensive studies and statutory listing process (**OAAV**, **HV**, **LGs**)
   b. assessing the vulnerability of heritage places to climate change (**HV**,OAAV, LGs)
2. Pilot three indigenous knowledge hubs, to be maintained by Traditional Owners/RAPs involved in the co-management of public land, for the recording and sharing of local/regional traditional knowledge (**DEPI**, PV, OAAV, VAHC)
3. Undertake a strategic review of gaps in heritage recognition and protection (including Aboriginal, historic and shared value) along the coast (**LGs**, OAAV, HV, PV)
4. Incorporate cultural heritage and traditional knowledge into Regional Coastal Plans, Regional Catchment Strategies, Coastal Management Plans and management agreements (**RCBs**, CoMs, LGs, PV, CMAs)

PRINCIPLE 2
...UNDERTAKE INTEGRATED PLANNING AND PROVIDE CLEAR DIRECTION FOR THE FUTURE



PLAN AND ACT

2.1 COASTAL HAZARDS AND PROCESSES

Desired outcomes

1. Sea level rise and storm surge planning policy benchmarks and tools are updated in light of emerging scientific evidence
2. Development within sand dunes and in low lying coastal areas is avoided
3. Areas vulnerable to coastal hazards, as a consequence of a changing climate, are better understood
4. Natural coastal processes are adopted as the preferred form of defence against possible impacts of a changing climate
5 New development, reuse and redevelopment avoids areas subject to coastal hazards, does not interfere with natural coastal processes, and accommodates biodiversity connectivity and adaptation.

The coast is dynamic. It changes and moves with the influence of tides, wind, waves and weather systems. Interactions between these natural coastal processes and different landforms (sandy beaches, rocky headlands, low-lying mud flats and estuaries) create complex and dynamic systems.

The Victorian coast can be generally described as having mainly cliffs, bluffs and rock platforms along the west, sandy beaches along the east and a mix of both in Port Phillip Bay and Western Port with wetlands interspersed (Bird 1993).

Landforms along the coast continue to change in response to natural coastal processes. Natural coastal processes can cause areas of the coast to both be lost (erosion) and gained (accretion). In some areas, natural coastal processes have been modified through human intervention, such as by the installation of coastal infrastructure.

When coastal processes have a negative impact on life, property or other assets it represents a hazard. Hazards, such as erosion of beaches and cliffs and inundation, have always been and always will be present. Consequently, hazards require consideration and appropriate response in coastal planning, management and decision-making.

Changes in weather conditions can cause short term changes on the coast and create temporary hazards. For example, change in beach levels on a seawall can exceed 1 metre at times, there can be periodic cliff hazards, and coastal access can sometimes be lost through dune erosion.

There are a number of challenges associated with managing short term coastal changes, temporary hazards and their associated risks.

To reduce the risk of coastal hazards Victoria has had a longstanding policy to '*avoid development within sand dunes and in low lying coastal areas*'. This is a sensible, cost effective approach to the changing nature of the coastline but issues regarding land use on other vulnerable landforms such as cliffs have not had the same attention. The first step to address this situation is to identify such areas.

A changing climate has the potential to make existing coastal hazards more severe and to bring about increased rates of erosion and more extensive inundation and flooding, in turn posing greater risks to life, property and coastal values e.g. biodiversity, tourism, amenity, fisheries (Table 5). An increase in coastal hazards will see significant pressure placed on authorities and land managers to make wise land use decisions which balance safety, current use and development opportunities and the long-term health and values of the coast.

Structures for the protection of private property should be located on private land (rather than coastal Crown land) and these structures are discouraged if they will have an impact on the surrounding coastline. If the private land is unable to physically support the structures, coastal Crown land could be considered if significant public benefit can be clearly demonstrated. Examples of significant public benefit include the protection of environmental or cultural features along the coast. Given the dynamic nature of coastal processes, any proposal for protective works on private or public land should be considered and designed as part of a larger "whole of coastal cell system" e.g. headland to headland, not just for an individual site.

There will be pressure on the public sector to undertake works to reduce the effect of coastal processes on public and private land. As a general principle, works to reduce the effect of coastal processes should be avoided, particularly along the open ocean coast. This allows natural coastal processes to take their course and avoids impacts on other parts of the coast.

Financing of coastal infrastructure in the short, medium and long term will require a range of options and may involve both public and private entities. More investigation is needed for options to fund protective works and determine

‹ Storm at Black Rock, Port Phillip Bay Werner Hennecke

in what circumstances they apply. Options could include development contributions, charges and levies, or a dedicated long term fund.

Long term strategic adaptation approaches, rather than short term or one-off solutions, are needed to manage the impacts of a changing climate. Such approaches should be investigated in partnership with the affected communities. To assist in managing hazards, current sea level rise policy benchmarks in the State Planning Policy Framework (SPPF) should be retained, reviewed and updated as part of future reviews of the VCS.

Future Coasts Program

The Future Coasts Program was undertaken by the Victorian Government to help understand and plan for risks associated with sea level rise and storm surge. Tools developed through the Program (including the Victorian Coastal Inundation Dataset and the *Victorian Coastal Hazard Guide* – DSE (f) 2012) are now available. The tools provide mapping and guidance about the potential risks from sea level rise along the Victorian coast. These and other coastal climate decision-making tools are listed in Appendix D.

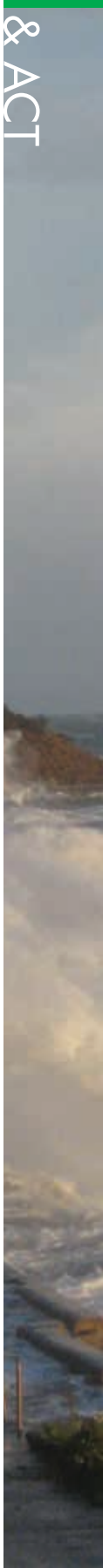
Sharing the learnings and outcomes of the state-wide Local Coastal Hazard Assessments with land managers along the coast can help inform other agencies undertaking similar exercises, as well as inform strategic planning for settlements and natural systems, and avoid increased risk exposure for future coastal development.

DEPI and project partners from the Local Coastal Hazard Assessment Program are planning to undertake a project called the *Victorian Local Coastal Hazard Assessment: Review of Technical Approaches and Lessons Learned* that aims to identify key information to share with coastal agencies across Victoria. The project would include discussion on: the types of coast included in the state-wide program (e.g. open coast and embayments); use of technical experts; resources and collaboration; and a comparison of technical assessment methods undertaken across the four projects located at Bellarine Corio Bay, Gippsland Lakes-Ninety Mile Beach, Port Fairy and Western Port.

Ocean Drive (The Passage) is closed to the public in Port Fairy Tim Marshall

Table 5: Summary of impacts from coastal hazards

Loss of coastal Crown land and biodiversity	The coastal foreshore serves a number of purposes and is valued for its biodiversity and habitat, economic, recreational and community use, and as natural protection for property and assets. In some areas, rising sea levels and more severe storm events will cause the coastline to move inland and coastal Crown land, habitat, biodiversity and areas for public recreation may be lost. In areas where natural coastal processes occur over long geological timeframes to create habitat (e.g. intertidal rock platforms) change in sea level may occur too rapidly for adaptation to be possible. This in turn will have flow-on impacts for intertidal plants and animals.
Cliff hazards	Eroding cliffs are a natural feature of a coast moving toward equilibrium with sea level. They will continue to be a feature of the coast in the future. Sea level rise and ocean acidification will have an impact on the natural process of eroding cliffs.
Damage to public buildings and structures	A wide range of public buildings and structures on the coast provide access and amenity, and improve safety for users (e.g. Life Saving Clubs, boat ramps, jetties, toilet blocks, boardwalks and seawalls). Increased erosion and inundation can accelerate damage and failure of these buildings and structures, which in turn can compromise user safety and increase costs for maintenance and replacement.
Infrastructure damage	Increased erosion and inundation can damage roads, breakwaters and levees, undermine power lines, compromise sewerage and storm water systems, and make car parks, roads and property inaccessible.
Loss of private land and damage to private property	Private land and public land are both affected by the same coastal processes. Some private property owners are investigating installation of protection works to reduce erosion and inundation impacts on their land and property. Public bodies will be pressured to protect private land. Hard structures (e.g. a groyne or seawall) to reduce erosion in a particular area will commonly interfere with natural coastal processes elsewhere, which can result in the loss of beaches and foreshore areas. This can have a significant impact on access to and use of the foreshore by visitors and local communities. Additional issues arising from protection structures include responsibility for maintenance, and liability.
Damage to heritage places and values	In some areas, places or structures with significant heritage value are likely to be at risk from increased erosion or inundation. This applies to a wide range of places, from shoreline geological formations, Aboriginal middens and fossil sites, through to historic port facilities, defence sites and coastal shipwrecks.
Settlement scale coastal hazards impacts	Across Victoria, coastal settlements located in low-lying areas are already experiencing occasional inundation. The National Report Climate Change Risks to Australia's Coast (DCC 2009) suggests that between 27,600 and 44,600 residential buildings in Victoria may face risk of inundation from sea level rise. The current value of the residential buildings considered to be at risk is between $6.5 and $10.3 billion. Other towns, particularly those that were historically built on old sand dunes, are experiencing erosion of local beaches and soft sediment cliffs. For example, Dutton Way in Portland has been subject to long-term erosion, with a 4.5km informal sea wall being built over the years to protect a road and residential properties.
Threats to human health and safety	Severe flooding may lead to landslips and cliff collapses, drowning, exposure, or water-borne disease outbreaks. Significant damage to shelter and transport systems may lead to extended isolation of individuals or communities. These threats have significant potential to disrupt residents, visitors, tourists and industry, as well as ecosystem services.



Policy for decision-making

1. Plan for possible sea level rise of not less than 0.8 metres by 2100, and allow for the combined effects of tides, storm surges, coastal processes and local conditions such as topography and geology, when assessing risks and coastal impacts associated with climate change
2. In planning for possible sea level rise, an increase of 0.2 metres over current 1 in 100 year flood levels by 2040 may be used for new development in close proximity to existing development (urban infill)
3. For new greenfield development outside of town boundaries, plan for not less than 0.8 metre sea level rise by 2100
4. Consider the risks associated with climate change in planning and management decision-making processes.
5. Ensure that development or protective works seeking to respond to coastal hazard risks avoids detrimental impacts on coastal processes
6. Avoid development in sand dunes, in low lying coastal areas and in identified coastal hazard areas susceptible to inundation (both river and coastal), erosion, landslip/ landslide, coastal acid sulfate soils, bushfire and geotechnical risk
7. Structures to protect private property are not located on coastal Crown land unless private land is not physically capable of supporting the structure (e.g. cliff) and the use of the Crown land demonstrates significant public benefit (e.g. protection of environmental and cultural features of the coast)
8. Works to lessen the effect of coastal processes on public and private land are avoided, particularly along the open ocean coastline
9. As a general principle, use of the coast and the location and planned life-span of public and private assets respects natural coastal processes
10. Coastal planners and managers support community-based adaptation planning and consider a range of coastal risk factors and vulnerabilities to reduce those risks
11. The Crown does not have an obligation to reduce the impacts of coastal hazards, sea level rise and other natural processes on private property.
12. Avoid detrimental impacts on indigenous flora and fauna, coastal processes or neighbouring property or assets
13. Where coastal accretion occurs any resulting increase in beach or foreshore is considered for incorporation into the coastal Crown land estate to ensure benefit for all Victorians
14. Regional and local adaptation plans are used to inform the strategic planning and management of coastal hazards to private and public property
15. Investment in new and existing coastal infrastructure is based on a life cycle planning approach that takes account of:
    a. projected future erosion and inundation patterns – this planning incorporates scope for the removal and replacement of structures as may be necessary and the use of trigger points to initiate adaptation responses (including an assessment of acceptable level of risk and behaviour change)
    b. cost benefit analysis that takes into account social, environmental and economic values
    c. future operating and maintenance costs and accountabilities
    d. any statutory requirements to maintain coastal infrastructure

Actions

1. Review and update planning benchmarks for sea level rise as part of future reviews of the Victorian Coastal Strategy. This includes investigating methods for deriving more detailed sea level planning allowances based on the systematic techniques developed by Hunter, 2014 (**DEPI**)
2. Compile and share the findings and learning from the Local Coastal Hazard Assessment pilot projects, and other relevant work, to identify further areas across Victoria where this work can be used. Following this, determine the next steps required to progress agreed adaptation approaches and land use responses (**DEPI**, LGs, CoMs, CMAs, WCs)
3. Complete a review of the number and types (reservation status) of Crown land reserves along the Victorian coast. Once documented, identify reserves with high environmental, social and economic value and identify values at risk from the impacts of climate change (**DEPI**, VEAC, VCC, RCBs)
4. Develop Regional Coastal Risk Assessments to strategically and consistently identify and prioritise coastal hazards management for key public (environmental, cultural and economic) assets. Include information about natural and built assets at risk of loss from erosion, inundation and cliff hazards in Regional Coastal Plans and consider adaptation responses. Together, these plans will provide a statewide perspective of coastal risk in Victoria (**DEPI**, PV, HV, CMAs, WCs, LGs, CoMs)
5. Explore and implement options for maintaining or enhancing public benefits (environmental, social and economic) that are provided by coastal Crown land in situations where Crown land is likely to be at risk of loss due to the impacts of a changing climate (**DEPI**, PV, LGs, CoMs)
6. Use existing planning tools, such as the native vegetation precinct plans, to plan and manage for adaptation of natural coastal environments and to support broader integrated strategic planning (**LGs**, DTPLI)

Coastal cliff erosion at Demon's Bluff, near Anglesea Geoff Wescott

2.2 COASTAL SETTLEMENTS AND COMMUNITIES

Desired outcomes

1. Coastal settlements support the protection and enhancement of environmental, social and cultural and economic values of the coast
2. Non-urban breaks are maintained between coastal settlements to preserve the character of the coastline and coastal settlements
3. Settlement planning directs growth to areas suitable for accommodating sustainable growth

Victoria's coastal settlements play a variety of roles and functions. Settlements range from urban and regional centres (like Geelong and Warnambool) to smaller scenic towns (like Queenscliff, Port Fairy and Inverloch). Some towns have grown around commercial fishing or agriculture, such as Port Welshpool, others around their commercial port functions, such as Geelong, Hastings and Portland, while others are known for their surrounding landscapes, such as Wye River and Mallacoota.

The population living on or near the coast will continue to grow (*Plan Melbourne 2014*). There is continuing improvement in transport links to the coast with increased demand for recreational use along certain parts of Victoria's coast. As the coast is a finite resource with a limited carrying capacity, these growing pressures will have implications, particularly on the health of the coastal environment. Other impacts will be on economic, social and cultural values of the coast.

Urban coast

The metropolitan, urban and near-urban coastline has significant social, cultural and environmental values for the local community and visitors. It is vastly different to many other coastal areas in Victoria. The metropolitan and urban coastline around Melbourne and Geelong has been substantially developed and is highly modified in many areas with associated intensive levels of demand. The metropolitan and urban coast offer a unique experience of city life on the bay and play important functions as community open space, a social and cultural gathering place along with the conventional role of city and suburban beach.

The near-urban coastline such as Mornington Peninsula and Bellarine Peninsula can be easily reached by residents from metropolitan and urban areas. This coastline includes dynamic environments with diverse local economies, valued highly by residents. Many visitors also come to enjoy these areas with residents accommodating this extra demand.

The near-urban coast is also important for community open space and social and cultural gatherings. It provides more opportunity for flora and fauna habitat and the natural environment in comparison to the urban coast. The foreshore and water plays an important role in providing a sense of identity and place for those people and communities who live near or regularly visit the coast.

Non-urban breaks, settlement boundaries and coastal character

A coastal location remains a strong lifestyle choice for many people and growth in demand creates a challenge in meeting infrastructure and employment needs into the future. Coastal settlements need to be planned to reflect regional strengths and relationships. Hinterland townships, or larger regional towns, can form hubs for employment and the provision of health and education services.

The framework of coastal settlements is set out in the Regional Growth Plans that are being prepared for Victoria (Map 1). These Plans focus on planning for an adequate supply of residential, commercial and industrial land for the next 30–40 years. They will have an important role in reinforcing clear settlement boundaries, non-urban breaks between settlements, and relationships between settlements. It is critically important that Regional Growth Plans consider and are sensitive to coastal issues.

There is a range of different non-urban breaks between settlements along the Victorian coast. They are characterised by natural or rural landscapes that help shape and define settlements and their communities. Not only do these breaks provide increased amenity to those who live or visit these areas, they play an important part in providing links for wildlife habitat, appropriate disturbance buffers to support coastal biodiversity and ensuring coastal settlements maintain their own identity or character.

It is apparent that the character of coastal settlements is highly valued by Victorians (Ipsos, 2012). Victorians are keen for coastal towns to retain their (often longstanding) sense of character and not develop into sprawling or high-rise metropolises with too many people. There is continued strong support for developing inland, rather than creating a

continuous stretch of development along the coast. A range of options for housing within existing coastal settlements could be considered.

Some settlements will continue to face strong growth. The demand for new housing and infrastructure makes it challenging to maintain local environmental values and coastal character. Coastal settlement characteristics may include: architectural styles, patterns of subdivision, amounts of vegetation and spaces between buildings. Coastal communities need to identify the characteristics of their towns that they wish to protect to ensure that proposals respond to the desired landscape and built form character.

Defining the extent of growth of a coastal settlement is undertaken by defining a settlement boundary in a strategic plan. Introducing or reviewing a coastal settlement boundary for expansion, should identify:

- the desired future vision for a settlement
- its role and function in comparison with other settlements on a regional basis
- constraints of development such as topography, natural geomorphic features, native vegetation, rural land use activity and areas of environmental or landscape significance and sensitivity
- areas with susceptibility to flooding (both river and coastal inundation), landslip, erosion, coastal acid sulfate soils (CASS), salinity, wildfire or geotechnical risk
- the supply/demand of land within a 10 year planning horizon and opportunities for future growth (if any).

Melbourne's peri-urban region, including designated towns for growth, needs to be appropriately considered in planning. *Plan Melbourne* (DTPLI 2014) includes the need for councils to prepare a peri-urban policy statement and identify peri-urban growth areas.

Economic opportunities arising from coastal resources should be supported. The introduction of new rural zones will support new land use and development opportunities for tourism in regional coastal areas. The new rural zones will allow more flexibility in land use and development and allow a larger level of discretion in farming zones. It is important that this does not undermine open space between settlements, encourage clustering or the establishment of new activity areas.

Aerial view of Lakes Entrance Ken Stepnell

Activity nodes and recreation nodes

In coastal communities, recreation and tourism developments are focused around activity and recreation nodes. These create efficient relationships between buildings and infrastructure and they minimise development impacts on the coast.

Activity nodes provide for community recreation facilities and tourism activities. They are within settlements and are adjacent to the activity centres identified in planning schemes. They include public and private land (Figure 7).

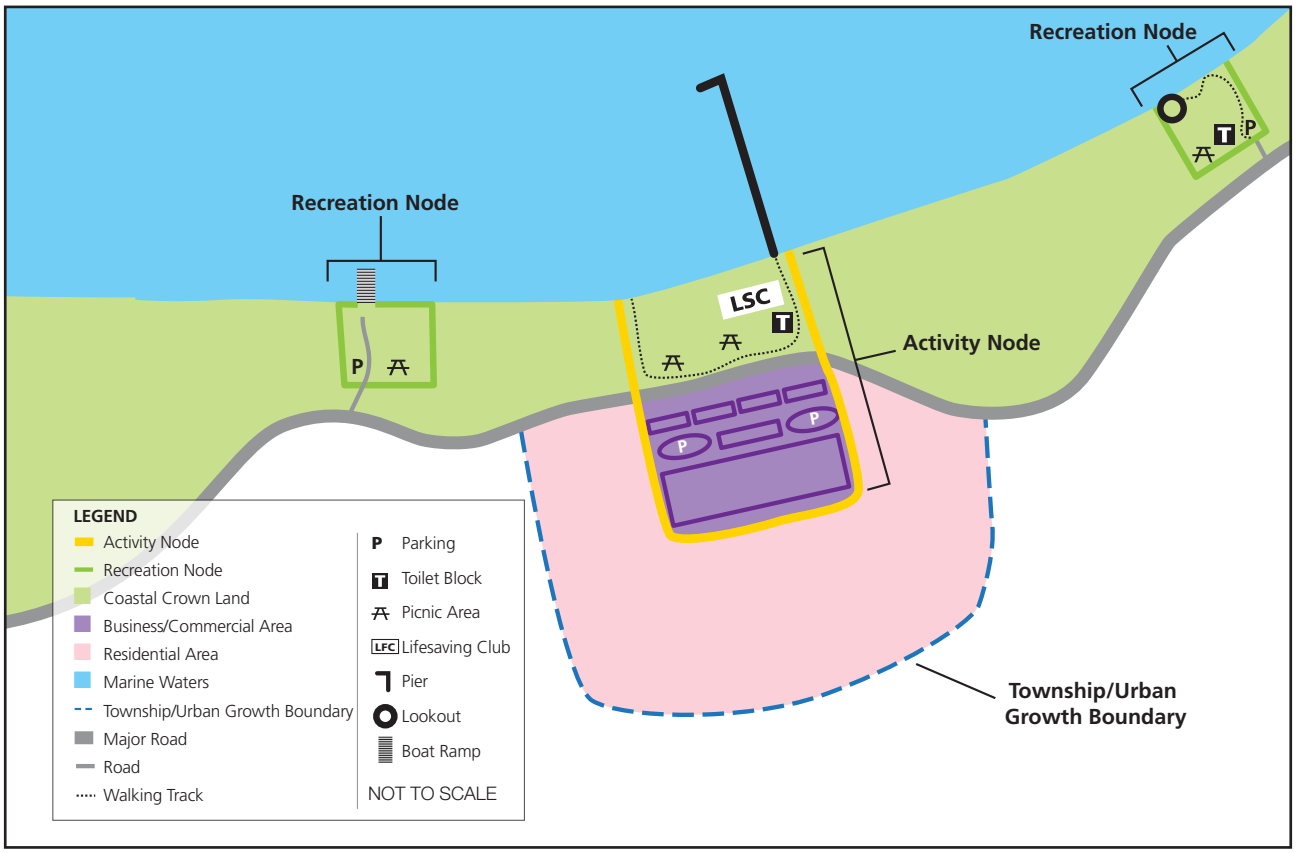
Recreation nodes are located on coastal Crown land, outside activity nodes. They provide access and infrastructure for recreation and water-related activities (see Figure 7). Coastal dependent activities (and use and development that support access or the functioning of coastal activities) may be sited in recreation nodes.

There are townships along the coast that have the potential to become more urbanised due to increasing numbers of residents (temporary and permanent) and visitors. Urbanisation may be in the form of development for more housing, either within existing boundaries or pressure to develop outside of these boundaries. It may also be in the form of developing more, or expanding existing, public facilities along the foreshore to provide local amenities, such as playgrounds, swimming pools and toilet blocks.

Environmental considerations

It is policy to identify and avoid development in areas susceptible to current and future flooding, landslip, erosion, bushfire or geotechnical risk and avoid disturbing CASS. Natural coastal processes, such as currents and long term sand movement cycles, also need to be considered prior to making decisions about development on the coast.

Figure 7: Diagrammatic representation of the spatial location and possible features of activity nodes and recreation nodes

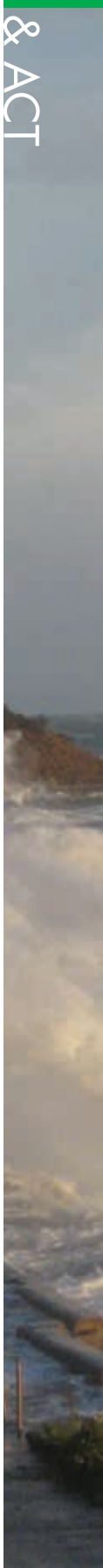


Policy for decision-making

1. Clear settlement boundaries are identified around coastal settlements to ensure that growth in coastal areas is planned and coastal values protected. Where no settlement boundary is identified, the extent of a settlement is defined by the extent of existing urban zoned land and any land identified on a plan in the planning scheme for future urban settlement.
2. Features and elements such as topography, estuaries, wetlands, native vegetation, areas of environmental, landscape or geological significance and sensitivity, and areas susceptible to flooding (both river and coastal inundation), landslip, erosion, coastal acid sulfate soils, salinity, bushfire or geotechnical risk are paramount when defining and redefining growth towns and coastal settlement boundaries
3. Coastal settlements and growth are appropriately planned and managed by:
   a. being consistent with the strategic directions for settlements identified in Regional Growth Plans and, where appropriate, identify suitable areas for sustainable visitor and tourist development along the coast
   b. supporting a network of diverse settlements as outlined within the Regional Growth Plans to provide for a broad range of opportunities and diversity
   c. implementing and reviewing coastal settlement boundaries as part of the settlement planning process, having regard to the best available information on sea-level rise and the risks and impacts of a changing climate
   d. facilitating growth into areas that do not threaten wetlands and estuaries
   e. directing residential, other urban development and infrastructure to areas within boundaries of existing settlements that are capable of accommodating growth
   f. encouraging urban renewal and redevelopment opportunities within existing settlements
   g. looking for opportunities to enhance non-coastal (hinterland) settlements inland from the coast with good existing road access to the coast
   h. considering the impact of inland (hinterland) settlement growth on coastal areas (e.g. increased demand for use, infrastructure and access)
   i. supporting development of innovative solutions to provide for increased visitation to the coast (e.g. park and ride facilities)
4. Avoid development on ridgelines, primary coastal dune systems and low lying coastal areas.
5. Existing non-urban breaks between all coastal settlements must be maintained to support community identity and inspire a sense of place
6. Avoid linear urban sprawl along the coastal edge and within rural landscapes, protect areas between settlements for non-urban use
7. Non-urban use and development between coastal settlements is retained and visually significant landscapes and views are protected
8. Decision-making regarding Coastal acid sulfate soils (CASS) must follow the principles in the *Victorian Coastal Acid Sulfate Soils Strategy 2009* (DES, 2009) and use the CASS risk identification and assessment process detailed in the *Victorian Best Practice Guidelines for Assessing and Managing Coastal Acid Sulfate Soils 2010* (DSE (b) 2010)
9. A consistent and coordinated approach is used to assess proposals for development such as artificial waterways and land reclamation. Ongoing management and maintenance responsibilities are clearly identified. Public benefit from such development should be proportionate to the scale of development proposed (i.e. there is a public saving or in-kind benefit to the public resulting from the development). It also includes the enhancement of habitat and native biodiversity

Action

1. Update the State Planning Policy Framework (SPPF) of the Victorian Planning Provisions (VPP) to include the policies for decision-making contained in the *Victorian Coastal Strategy 2014* (**DTPLI**)



2.3 PORT PRECINCTS

Desired outcomes

1. Victoria's local and commercial ports are planned, developed and managed taking into account the character, amenity and sustainability of the coast and their regions

Victoria's commercial trading ports and local ports play an important role in supporting the Victorian and Australian economies. They are also closely linked to and valued by their local and regional communities. Port precincts (commercial and local) are usually a direct interface with urban settlements and rely on those settlements for employment and related business.

Port managers are key players in working with those communities to achieve good social, environmental and economic outcomes for land use and transport planning. It is important that ports be planned and operated to complement each other in the context of the broader economy, transport networks and coastal environments within which they have evolved and to which they contribute. Maximising the benefits of ports to their communities and to the Victorian economy requires effective coordination of the system comprising the ports of Melbourne, Hastings, Geelong, Portland and the 14 local ports, recognising the unique roles and strengths of the individual ports.

It is important that the community is engaged in planning for development and renewal of our local and commercial ports.

Local ports

Local ports attract millions of visitors per annum, undertaking a range of commercial, recreational and tourism activities. They contain a variety of supporting infrastructure including lighthouses, wharves, piers, jetties, marinas, pump-out and refuelling, navigation, emergency response, maritime security, marine pollution response, vessel salvage, slipways, boat-lifting and boat repairs. Local ports are often considered within the relevant local planning scheme.

Local ports have also become tourist destinations, with thousands of people each year walking along or throwing a fishing line from piers and breakwaters in local port areas. Historic ports, such as Port Fairy, are places with significant heritage value and these attract valuable heritage-based tourism. Coastal infrastructure maintenance is important to keep these facilities in good order for these purposes.

Current local port and waterway management responsibilities extend over municipal boundaries and also include areas where other agencies have management responsibilities, such as Committees of Management and Parks Victoria.

Local ports can affect the amenity, use and enjoyment of nearby residential and other private land uses. Examples include more frequent activities associated with vessel servicing, maintenance, re-fuelling, and pump out facilities as well as less frequent localised dredging. Consultation, collaboration and integration among the various stakeholders are critical to balancing the diverse needs of user groups and contributing to the need for best practice.

Growth in population, recreational boat ownership, tourism and the potential expansion of the aquaculture industry, can all impact on the management of local ports and the maintenance and development of local port infrastructure. Planning for the development of local port infrastructure to meet community demands and expectations needs to be balanced with ensuring environmental and social values are understood and considered.

Commercial ports

The Port of Melbourne is the largest and the busiest container port in Australia. Together with the ports of Hastings, Geelong and Portland, these ports are Victoria's trading gateway to the world, providing access for exporters and importers in more than 300 markets internationally and interstate and for passenger services, including cruise shipping and Bass Strait ferries.

Victoria's freight task is forecast to triple between now and 2050. *Victoria – The Freight State* (DTPLI (b) 2013) and *Plan Melbourne* (DTPLI 2014) have been developed to plan for, and deliver adequate gateway capacity through commercial ports to accommodate this growth.

Over the last five years, development in commercial ports has included the deepening of shipping channels in Port Phillip Bay, expanded docking/storage/handling areas in the Port of Melbourne, construction of the Cliff Street overpass at the Port of Portland and improvements to rail operations into the Port of Geelong. Capacity at the Port of Melbourne is being increased through the Port Capacity Project. The Government has commenced work on developing the Port of Hastings to handle Victoria's long term container needs.

Other uses of ports

Other uses of ports include coastal cruise shipping which is an emerging market nationally. Geelong and Portland are existing cruise ship destinations. When cruise ships berth there can be temporary restrictions on public access to otherwise public areas for safety and security reasons. Similar arrangements apply to off-shore facilities and rigs which are towed to Geelong, Corner Inlet or Portland for servicing. Harbour masters play an important role in terms of their management responsibilities in coastal waters.

Safety and Management Plan and Environmental Management Plan

Under the *Port Management Act 1995*, all local and commercial port managers must prepare a Safety and Management Plan and Environmental Management Plan, known as a SEMP. These plans cover risks such as interactions between different uses (boating, swimming, angling), channel depths, oil spills, boat/ship litter, wash-down/cleaning activities, dredging, marine pests and amenity).

SEMPs are an important tool in promoting best safety and environmental performance across all aspects of port activity. These plans also ensure that the risk management process includes the mapping of key facilities and infrastructure vulnerable to extreme climate events.

As required by the *Maritime Transport and Offshore Facilities Security Act 2003* (Cwth), the ports of Melbourne, Geelong, Hastings and Portland are covered by maritime security plans prepared by each port manager and approved by the Federal Department of Infrastructure and Regional Development. Over the last decade, communities have noticed and, indeed, understood the need for restrictions on access to wharves and other areas around commercial ports. For local ports, on occasions, similar restrictions or special conditions may apply for and in the immediate vicinity of cruise ships while they visit our regional coastal areas.

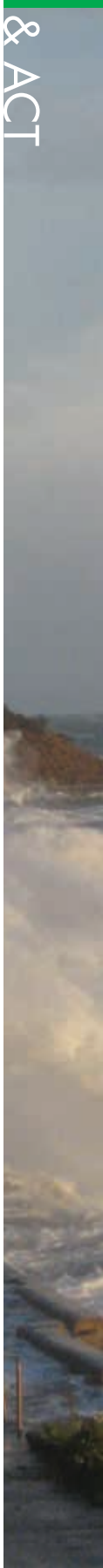
A changing climate, which can lead to increased inundation and erosion, will also affect the facilities and activities at local and commercial ports. In the future, the port managers responsible for managing both local and commercial ports will need to understand the likely impacts of a changing climate and develop adaptation responses.

Policy for decision-making

1. All local ports are operated efficiently and effectively, and contribute positively to local character, amenity, recreation, economy, and environmental values through collaboration and neighbourliness
2. All commercial ports are encouraged to explore opportunities during construction and ongoing operations to share experiences, scientific research and to contribute positively to community amenity, economic and environmental outcomes
3. Facilities at ports are managed to address safety and environmental risks and vulnerability in a changing climate.
4. Management and controls over dredging activities and the disposal of dredged sediments are in line with State dredging guidelines and reflect the lessons learned from completed projects.

Actions

1. Monitor risk mitigation strategies adopted by the local and commercial ports for port infrastructure identified as vulnerable to extreme climate events (**DTPLI**, Port Managers)
2. Within Regional Coastal Plans establish a strategic planning framework for local ports and plan for local port infrastructure to meet the current and future needs of recreation and tourism activities and to contribute positively to the local character (**RCBs**, DTPLI, Port Managers)



2.4 RESEARCH AND KNOWLEDGE SHARING

Desired outcomes

1. Understanding of coastal and marine environments and ecosystem functions is increased by research and monitoring including through community programs and partnerships
2. Scientists, policymakers and decision makers exchange knowledge in ways that ensure efforts on the coast are targeted, strategic, effective and efficient
3. The scientific and technical expertise of those working on coastal and marine matters is retained and renewed

Timely and good decision-making on the coast requires authoritative information based on science and evidence. It also requires the collection of scientific information, research and monitoring in an integrated and multidisciplinary way.

Information, scientific research and monitoring needs to be drawn from a range of disciplines including natural resource management, planning, water management, law, economics, sociology, earth sciences, tourism and others. However, often the sharing of information between planners, managers, industry and the broader Victorian community is difficult due to the number of different systems and research programs in place. Knowledge sharing and forming of partnerships encourage peer to peer learning that builds resilience and strong bonds within the community.

Citizen science programs which enable participation of the wider community in scientific projects contribute to information collection and monitoring of the coast. They also enable community participation and increase community understanding of marine and coastal environments.

The VCC's expert science panel is another mechanism that has been used to draw together information about the coast and marine environments from a range of technical disciplines. The science panel provides independent advice about emerging scientific issues and information gaps relating to the coast. The VCC has also been active in commissioning and publishing a number of reports. Refer to Appendix F for further information.

In addition, the Victorian Marine Science Consortium (VMSC) is a group of five Victorian tertiary institutions that, together with government agencies, operate marine teaching and research laboratories at Queenscliff. The aim of the VMSC is to foster marine science research and teaching and provide synergies between VMSC partners. It is important that these mechanisms are used to inform decision-makers and land managers in their work along the Victorian coast.

Mushroom Reef Marine Sanctuary, Summer by the Sea program Phillip Wierzbowski

The VCC Science Panel's *Emerging Scientific Issues Paper* (VCC, 2011) outlines the emerging issues and knowledge gaps relevant to Victoria's coast and marine environments:

Emerging environmental issues

- Understanding the effects of increased climatic variability
- Understanding the importance of links between catchments, estuaries and broader coastal waters for maintaining marine ecosystem health

Understanding the cumulative ecological consequences of coastal development to meet human needs

- Responding to emerging environmental issues
- Understanding the condition of Victoria's coastal environments
- Matching Victoria's technical capacity to scientific needs
- Continuing the operation of the science panel

Improved scientific information on coastal, estuarine and marine ecosystems and their underpinning ecological processes is required to:

- establish better baselines for actual changes and local variability in sea level rise, climate and non-climate drivers (to target further observation and monitoring)
- better understand and predict future change to natural and human systems (e.g. inventory of assets at risk), especially thresholds under multiple drivers of change
- inform decisions about adaptation actions
- monitor, evaluate and report on the effectiveness of marine and coastal policy, planning, management and projects

Research institutions, including the National Climate Change Adaptation Research Facility (NCCARF), lead the research community to generate information needed by decision-makers in government and in vulnerable sectors and communities to manage the risks of the impacts of a changing climate. At a state level, the Victorian Centre for Climate Change Adaptation Research (VCCAR) assisted government and other relevant agencies by undertaking climate change adaptation research. VCCAR has helped to improve government and community understanding about the potential impacts of climate change and adaptation options.

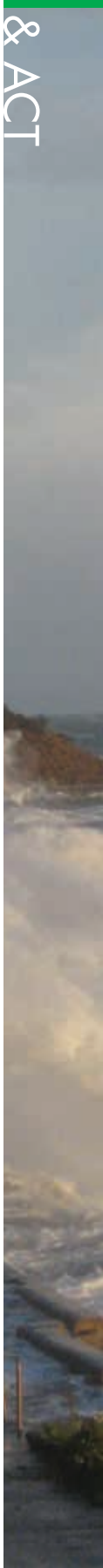
Strengthened coordination of data collection, improved information sharing, improved knowledge transfer and better-integrated communication can help to provide government, the community and industry with the best available information quickly and simply.

Policy for decision-making

1. Technical expertise within government is complemented with advice sourced from a diverse network of independent experts to monitor existing and emerging issues and assist with effective coastal, estuarine and marine management in Victoria
2. Decision-making is based on sound and effective science
3. The Victorian Coastal Council Science Panel is supported to provide technical advice and research. This is to address current and emerging issues for marine and coastal environments from a 'catchment-coast-ocean' perspective
4. On-going regional coordination and communication mechanisms are promoted to maximise knowledge transfer and practice around coastal and marine management and planning
5. Citizen science programs are used to:
   a. increase understanding and identification of coastal and marine environments and ecosystem functions
   b. build community stewardship, understanding and appreciation of natural coastal and marine ecosystems

Actions

1. Develop and promote the use of existing central platforms and databases for coastal planners and managers. These should bring together relevant marine, coastal and administrative data that is standardised, at an appropriate scale, and fit for purpose (**VCC**, DEPI, PV)
2. Develop an inventory of knowledge gaps and a collaborative research agenda (between researchers, managers and planners) to improve scientific baseline knowledge about coastal, estuarine and marine ecosystems, key ecological processes and the impacts of threats to the functioning of these ecosystems (**ICC**, VCC, DEPI)
3. Support active citizen science and monitoring programs to collect information for planning, management and decision making (**PV**, DEPI, CMAs, WCs)



2.5 COMMUNITY PARTICIPATION

Desired outcomes

1. Local communities value our natural coastal and marine landscapes, flora and fauna
2. Local communities actively participate in coastal and marine planning and management, informed by the best available science
3. Local community groups and volunteers are adequately supported and recognised for their involvement in caring for and managing marine and coastal environments

Local action and involvement in the management of our coasts is critical. There are more than 200 coastal community conservation organisations including Coastcare, coastal Landcare and 'friends' groups. There are also many community-based Committees of Management, large and small, through which people give thousands of hours of their time to managing hundreds of parcels of coastal Crown land. Victoria's coastal volunteer organisations annually contribute approximately $15 million in kind to the Victorian economy through their volunteer actions (Curtis and Curtis 2010)

Volunteers give generously of their time, knowledge, and energy to deliver on-ground projects that contribute to our knowledge, improve environmental outcomes and make a difference to local communities. The coastal volunteer movement has also grown and matured over time with today's groups successfully delivering on large and complex projects. Groups are also involved in more technical matters contributing to policy and planning development.

Challenges that our volunteer groups and Committees of Management face include:

- time consuming administrative and bureaucratic requirements
- ill-defined operating boundaries and discretions
- complex management issues and the impacts of a changing climate and increasing coastal hazards on their effectiveness
- the changing nature of volunteering to accommodate our busy lifestyles, such as people seeking one-off (episodic) volunteering opportunities rather than ongoing roles

Active community participation in coastal management is fundamental if our coastal and marine environments are to

Clean Up Ocean Grove Beach (litter) Ocean Grove Coastcare

be maintained in a healthy condition. Community involvement in 'hands-on' management (e.g. as part of a Coastcare group), in planning and decision-making (e.g. as a member of a Committee of Management), and in the collection of information about coastal and marine environments (e.g. via citizen science programs) will be supported by strengthening, and building on, existing programs.

The *Coastcare Victoria Strategy 2011–2015* (DSE (a) 2011) sets out directions for engaging volunteers, building their capacity, and supporting their participation. The *Coastal Environments Program* continues to provide support to the Coastcare Victoria program. There are a variety of coastal agencies and organisations that support community engagement through complementary programs, such as EstuaryWatch, grants, support for on-ground projects, and recognising the contribution of coastal volunteers.

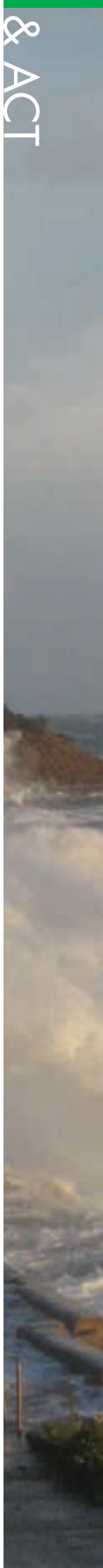
It is also important to recognise that while the role of volunteers is important, their capacity and capability can be limited. Volunteers need to be supported by government, business and community in order to flourish.

Policy for decision-making

1. Participation of individuals and community groups in the care, protection, management and monitoring of marine and coastal environments is encouraged and supported (e.g. Coastcare, Landcare, RCPs, CMPs, RCSs, rWS)
2. Individuals and community groups are supported to foster stewardship for marine and coastal environments in the broader Victorian community

Actions

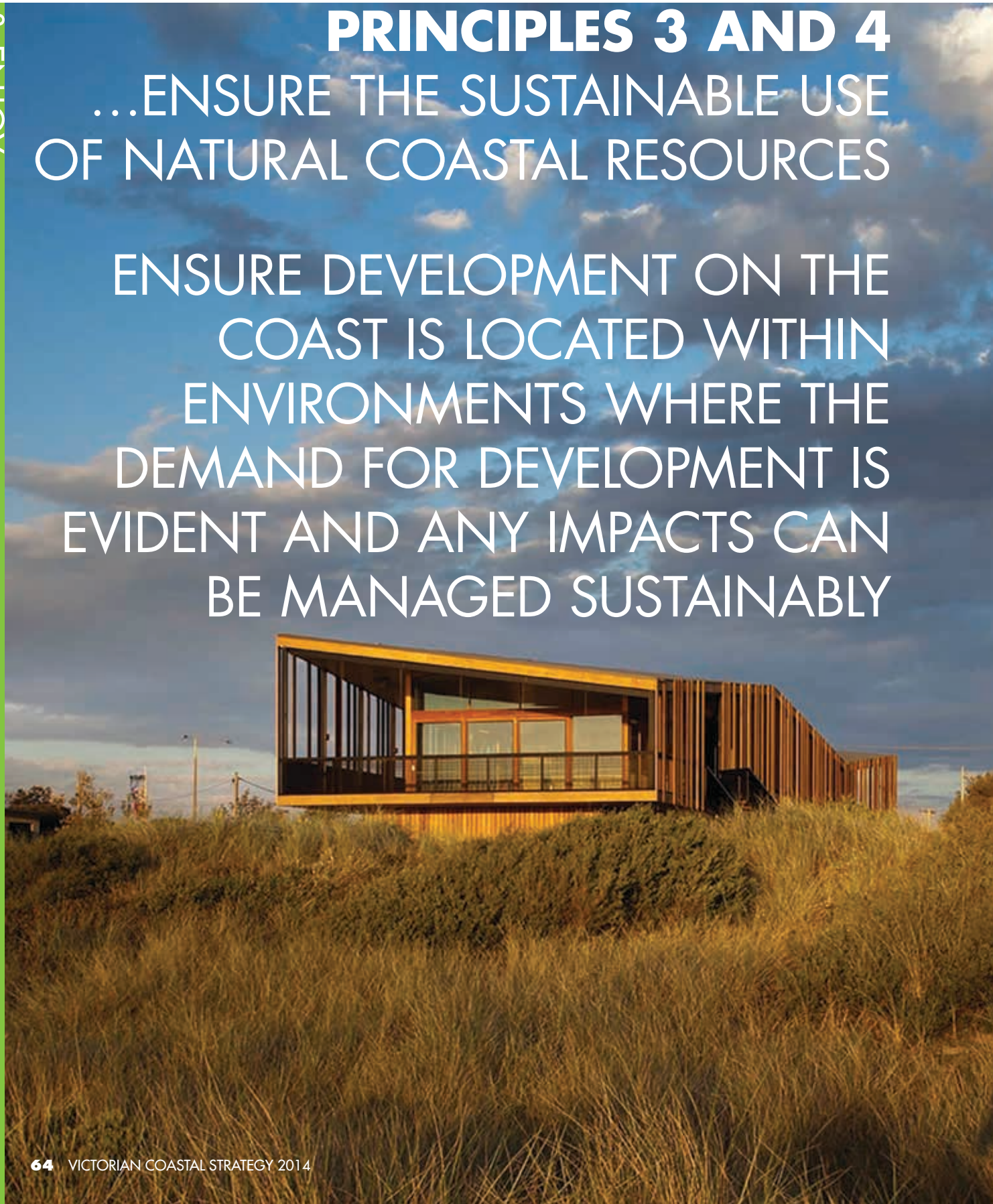
1. Implement the *Coastcare Victoria Strategy 2011–2015* (DSE (a) 2011) and develop new pathways and programs for coastal volunteers to continue their work (including monitoring activities) and improve the coast for the benefit of all Victorians (**DEPI**, PV, CoMs, LGs, CMAs, WCs)
2. Provide opportunities for networking and knowledge exchange between state, regional and local coastal communities, planners, managers and other stakeholders (**RCBs**, VCC, CoMs, LGs, CMAs)
3. Recognise and reward community leadership and innovation through annual coastal awards for excellence (**VCC**, RCBs)
4. Undertake longitudinal social research on community attitudes to Victorian coastal and marine environments, conservation and management, with an expanded emphasis on the extent and nature of community valuation of the coast (**VCC**, DEPI, PV)



PRINCIPLES 3 AND 4

...ENSURE THE SUSTAINABLE USE OF NATURAL COASTAL RESOURCES

ENSURE DEVELOPMENT ON THE COAST IS LOCATED WITHIN ENVIRONMENTS WHERE THE DEMAND FOR DEVELOPMENT IS EVIDENT AND ANY IMPACTS CAN BE MANAGED SUSTAINABLY



USE AND ENJOY

3.1 COASTAL BUILDINGS, INFRASTRUCTURE AND MANAGEMENT

Desired outcomes

1. New buildings and infrastructure exhibit excellence in siting and design that integrates with the coastal landscape and setting, while also avoiding environmental impacts
2. Planning for new buildings and infrastructure is managed across regional and local land administration boundaries
3. Coastal Crown land is not used for structures unless they provide significant community benefit, and their functionality depends on them being near the water

Buildings and infrastructure on land adjacent to coastal areas generally support the functioning of settlements. They include houses, cafés, retail outlets, port facilities, public halls and facilities for education, transport, health and industry.

While most (ninety-six percent) coastal land is reserved in public ownership and managed for its recreational values, development on adjacent land can affect the coast. Specific challenges include:

- identifying and considering important environmental and social values associated with the coast
- promoting excellence in siting and design of facilities so that they are sensitive to their coastal environment and the surrounding coastal character.

Within coastal settlements, activity nodes and recreational nodes are used to focus buildings and infrastructure in appropriate locations, thus minimising their impacts on the coast. Coastal dependent activities (and use and development that support access or the functioning of coastal activities) may be sited in recreation nodes.

Coastal Crown land reserves provide important public space. They are owned by all Victorians, and they provide for access and use of the coast by the community. However, the coastal public estate is limited in size, and it may be reduced over time as sea levels rise and the coastline retreats.

Seasonal and residential population increases in towns on and near the coast will lead to increased use and visitation. This in turn will generate demand for additional and improved facilities on coastal Crown land. However, the expansion of facilities and infrastructure to meet peak demand can impact on local communities and the important social and environmental values that attract people there in the first place.

Coastal Crown land is a precious and limited resource. Only buildings and infrastructure (temporary or permanent) that functionally need to be located near the water, or which significantly contribute to the social values of the area, such as the public enjoyment and appreciation of the coast, should be located on coastal Crown land. For example:

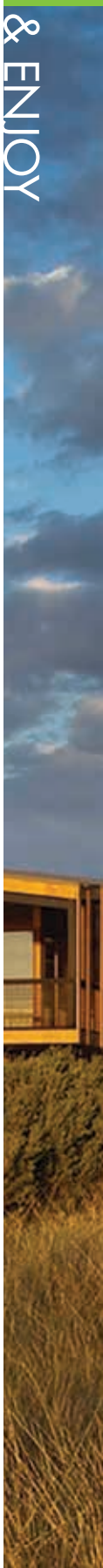
Usually located on coastal Crown land because of direct support of coastal activities	Jetty, pier, dock, marina, mooring, boat ramp, boathouse, harbour, navigation aids, lookout towers of Life Saving Clubs, marine rescue facility, museums
Not necessary to be on coastal Crown land but provide some support to the functioning of coastal activities and may be appropriate	Toilet block, pathways and boardwalks, car parking, equipment storage facilities, lookouts, BBQ and play equipment, and (in urban settings) kiosk/café/restaurant
Coastal Crown land location not necessary and no provision of support to coastal activity, to be relocated as the opportunity arises	Function centre, community hall, non-maritime industrial plant and storage, non-water-based sporting facility

As coastal Crown land is for all Victorians, criteria for the use and development on coastal Crown land must be used to balance the needs of the greater Victorian community with the interests of those potentially using the facility. On balance, there will be some areas of the coast that will be inappropriate for use and development.

Users of coastal Crown land for private purposes should be encouraged to demonstrate stewardship for the land and return benefit to other users of the coast. This could include volunteering for coastal revegetation work or contributing to public facilities.

Having first considered whether a building or infrastructure should be located on coastal Crown land, planners and managers must then assess:

- the impact on the surrounding environment and users
- the nature and extent of broader community benefit generated
- how it will be managed in the future.



‹ **Keast Park Community Pavilion** Frankston City Council

Criteria for use and development on coastal Crown land (including reuse and redevelopment)

The following steps provide guidance for assessing development proposals on coastal Crown land. These criteria for use and development apply to all coastal Crown land including the seabed.

1. An important step in applying these criteria is to understand the local context and values of the site. In some locations the environmental values of the land are highly significant, and any use and development must carefully consider the impact on these environmental values. In other locations, the social and cultural values may be more pronounced and may support a wider range of potential use and development.
2. Proposed new development, reuse and redevelopment on coastal Crown land must meet the following criteria and demonstrate, to the satisfaction of the decision-maker, a net community benefit.

Use of coastal Crown land

(These criteria should be considered as a 'package' rather than each being considered in isolation with a 'pass' or 'fail' outcome)

- Demonstrates need to be sited on the coast, based on support for, and direct linkage to, coastal activities
- Demonstrates that the use and development cannot be feasibly located elsewhere
- Demonstrates responsiveness to the site values
- Facilitates improvement of sites or developments which have poor environmental performance and/or which have limited benefit for the community
- Recognises nature conservation and biodiversity as primary values for use and management of coastal Crown land
- Is responsive to environmental, social, cultural and economic values of the location
- Enables equitable public access to the coast
- Is located in an Activity or Recreation node – Refer to Figure 7
- Involves consultation with the local and broader community
- Generates public benefits such as the avoidance of public outlays on otherwise desirable facilities and/or infrastructure.

Siting and design

- Exhibits excellence in siting and design which complements, or integrates with, the coastal landscape and setting
- Is consistent with local planning scheme requirements and *Siting and Design Guidelines for Structures on the Victorian Coast* (VCC, 1998) and *Good Design on the Coast* (VCC, 1998) available at **www.vcc.vic.gov.au**
- Incorporates ecologically sustainable design principles
- Maintains important public views, vistas and sightlines
- Avoids coastal hazards, and is set back as far as practicable from the coast and low lying areas
- Applies appropriate flood level benchmarks for floor levels
- Takes into consideration Bushfire Management Overlay requirements
- Facilitates and does not impede access to and along the shoreline and where appropriate consolidates building footprint to use Crown land efficiently and sparingly
- Contributes to the coastal environment through rejuvenation and adaptive re-use of heritage places
- Siting and design protects, enhances and supports the existing character of the coastal location
- Incorporates lifecycle costs in the design of infrastructure

Access and use

- Makes efficient use of the site, and facilitates multiple use and/or sharing of sites and infrastructure, including car parks
- Enhances public access to the coast and minimises loss of public open space
- Provides well designed, safe and convenient pedestrian access
- Encourages access by transport modes other than private vehicle
- Anticipates implications for the surrounding community of demand likely to be generated by the use and development
- Incorporates, to the extent practicable, the needs of accessibility and inclusion of people with varied levels of ability or physical capacity

Environmental impacts

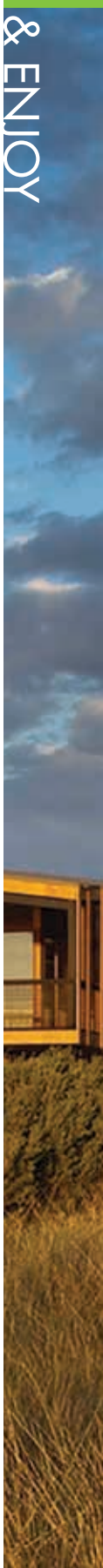
- Responds to risk of a changing climate including inundation and erosion based on current scientific knowledge
- Accommodates climate conditions in 20– 50 years' time and addresses adaptation requirements, including those of natural coastal habitats, based on best available science
- Ensures that off-site impacts of the use or development do not detrimentally affect coastal and marine environmental values
- Avoids disturbing coastal acid sulfate soils (CASS). If avoidance is not possible, is consistent with the Victorian *Best Practice Guidelines for Assessing and Managing Coastal Acid Sulfate Soils, 2010* (DSE (b) 2010) to avoid adverse impacts associated with the disturbance of CASS on the environment, humans and infrastructure
- Utilises local indigenous species in landscaping and re-vegetation to enhance built environments, provide habitat and support the resilience of the coast
- Incorporates environmentally sensitive design which minimises development impact and footprint, minimises disturbance to indigenous flora and fauna, and incorporates energy and materials efficiency and water sensitive design

Policy for decision-making

1. Provision or improvement of buildings and infrastructure on coastal Crown land is confined to structures and facilities providing significant net community benefit and to those whose functionality depends on them being near the water
2. In considering proposals the 'Criteria for Use and Development on coastal Crown land' are applied as appropriate
3. Buildings and infrastructure on coastal Crown land is located in activity nodes and recreation nodes, consistent with any relevant master plan. Consider alternatives to new infrastructure (such as park and ride).
4. Existing buildings and infrastructure that do not need to be located on the coast are, to the extent practical, relocated away from coastal Crown land when suitable opportunities arise
5. Leasing and licensing agreements on coastal Crown land (including renewals) must consider how they can contribute to achieving the outcomes and policies of the Victorian Coastal Strategy
6. Clear leasing and licensing agreements are established for commercial uses of coastal Crown land. Associated rentals, fees, rates and taxes should be competitively neutral to discourage the use of coastal Crown land as a cheap alternative to private land. The revenue raised should directed towards protecting, developing and maintaining the environment and infrastructure in accordance with approved management plans
7. New private structures on coastal Crown land that provide no public use benefit (e.g. private jetties, bathing boxes, boatsheds) are not permitted
8. The approvals process for new developments on private land in coastal areas must ensure that:
   a. materials, colours and finishes of new built form respond to coastal character using the guidelines contained in *Siting and Design Guidelines for Structures on the Victorian Coast* (VCC, 1998)
   b. new development is landscaped to be consistent with the surrounding landscape character and results in no net loss of onsite vegetation
   c. adequate permeable site area is maintained in keeping with the character of the settlement to maintain coastal character and minimise stormwater run-off
   d. new development does not impede access to coastal Crown land and minimises disturbance to native flora and fauna

Action

1. Revise the *Siting and Design Guidelines for Structures on the Victorian Coast* (VCC, 1998) to provide contemporary criteria and improved design guidance for coastal development (**VCC**, RCBs, LGs, DEPI, DTPLI, PV, HV, OVGA)



3.2 VISITATION AND TOURISM

Desired outcomes

1. A diverse range of visitor and tourist experiences is available in suitable locations
2. Visitor and tourism developments exhibit exemplary design standards, integrate with the surrounding coastal landscape and setting, and enhance environmental and heritage values
3. The carrying capacity of coastal locations designated for use and development determines the level of visitor and tourist services provided in that location

Many of Victoria's popular visitor and tourist destinations are on the coast, including the Great Ocean Road, Phillip Island Penguin Parade, Wilsons Promontory, the Gippsland Lakes, and Bells Beach. All of these attractions draw significant numbers of visitors seeking water-themed, heritage-focused, and nature-based tourism experiences.

Visitation and tourism is a key economic driver for Victoria and plays an important role in regional communities along the coast. Visitation and tourism encompasses a highly diverse range of experiences, from passive to very active, from urban to regional. These experiences go beyond good beaches and views, and connect visitors to the place, environment and culture past and present.

Recent changes proposed to rural planning zones increase discretion and flexibility for councils to consider tourism development in rural and farming areas. As a result, uses that were previously either restricted or prohibited, such as certain types of accommodation and some retail development, may now be considered, subject to planning permit application. This creates opportunities for additional nature-based, heritage-based or agricultural-based tourism, and 'eco' type hotel accommodation.

In coastal locations, these opportunities for quality visitor and tourist developments will need to be balanced with policies which protect significant coastal features and landscapes from the environmental impacts that can arise from high visitor numbers. The Victorian community is generally clear on what it deems appropriate services or facilities on undeveloped stretches of the Victorian coast (Ipsos 2012). However, the community can often have different opinions over development and expansion of facilities on the coast.

Councils and regional bodies must undertake strategic planning to identify opportunities and preferred locations for such visitor and tourist facilities and infrastructure. This should include planning for a range of markets including emerging mass type/scale tourism as well more 'boutique' eco-tourism, taking into account their differences and impacts on sensitive coastal environments.

Tourism Investment *Opportunities of Significance in National Parks Guidelines 2013* (DSE (a) 2013) reflect the understanding that the provision of appropriate and environmentally sensitive tourism infrastructure can complement natural values, enhance visitor experiences, and encourage visitors to stay longer.

St Kilda Promenade Port Phillip City Council

Crown land caravan parks and camping grounds

Caravan parks provide an affordable opportunity for many people to visit the coast. Some 84 caravan parks and camping grounds on coastal Crown land along the Victorian coast offer safe and affordable holiday experiences.

The *Value and Equity Adaptation Framework for Climate Adaptation: Coastal Caravan and Camping Parks case study* (WCB 2013) investigated the social and economic values associated with coastal caravan and camping parks in Victoria. The study also developed a decision support framework to assist people to bring that information into existing decision making for climate adaptation.

The policy statement *Improving Equity of Access to Crown Land Caravan and Camping Parks 2011* (DSE (e) 2012) produced by the Victorian Government aims to protect fair and equitable access to caravan and camping parks, promote better environmental outcomes, and assist in better management of demand for sites in peak holiday periods. The policy also discourages exclusive long-term occupancy, permanent residency, and individual profiteering.

Coastal managers generate significant revenue from caravan and camping parks. Maintenance requirements and demand for higher quality facilities continue to grow. Expenditure needs to be balanced with other priorities, such as environmental management, emergency management, and wastewater management.

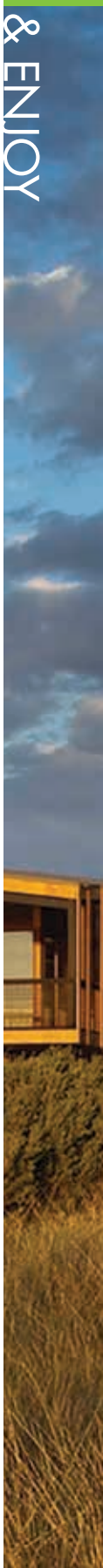
Best practice guidelines for caravan and camping park managers were prepared by the former Department of Sustainability and Environment in 2012 and are available on the DEPI website (DSE (a) 2012).

Policy for decision-making

1. Coastal recreation and tourism developments are sustainable and equitable, and respond to an identified demand
2. Private land is the preferred location for new tourism developments on the coast
3. Plans for visitor and tourist developments outside settlements must take into account:
   a. significant landscapes, ensuring that developments do not compromise the broader 'open space' characteristics of the coast
   b. protection of non-urban breaks between settlements and their significant values including areas of environmental and heritage sensitivity
   c. ensuring that tourism developments do not become new settlements or create linear coastal development
   d. impact on agricultural productivity of the area
   e. sensitive areas to be protected from damage and the introduction of pests and weeds
   f. best practice ecologically sustainable building and design standards to address overall impacts including waste, access, services, traffic (including cumulative impacts) and economic benefits

Actions

1. Coastal managers identify locations where visitor impacts may exceed the carrying capacity and initiate access controls where and as necessary (**DEPI**, CoMs)
2. Provide a framework for facilitation of tourism development along the coast through a range of mechanisms including RCPs, local planning schemes, master plans, coastal management plans and management of safety issues for vessel operators and the general public; a framework should include strategic planning for how increasing tourism and visitation will be experienced and managed along the coast (**RCBs**, LGs, DTPLI, DSDBI, PV, TV, RTBs, CoMs, VCC, DEPI)



3.3 ACCESS TO THE COAST

Desired outcomes

1. Communities access the coast in ways that minimise risks to public safety and protect coastal and marine environments
2. Community-based clubs (e.g. lifesaving clubs, sailing clubs) are supported in their use of the coast in ways that minimise environmental impacts, are within an appropriate spatial footprint, and provide coastal access and use for the broader community

Across Victoria some ninety-six percent of the coast is Crown land. Many parts of the coast are very accessible with high quality facilities. Other areas can only support minimal or no access to maintain a healthy environment, or for reasons of public safety or security. Access to the coast may be via walking, permitted vehicles and water based craft. Some areas may require seasonal closure to enable protection of threatened species or for public safety.

The remaining four percent of the coast is privately owned. Some privately owned areas can be difficult for the public to access (for example locations with steep cliffs), while others are used by the public e.g. Safety Beach on the Mornington Peninsula which is freehold land owned by local government.

A key challenge for land managers is to provide appropriate access in a way that minimises risk to public safety, can be maintained in the long-term, and protects the health of the surrounding environment. Community based clubs (e.g. lifesaving, angling, yachting and boating clubs) play an important role in facilitating coastal access and enjoyment.

It is neither possible, nor desirable, to provide a uniformly high level of access to all parts of the coast, and expectations for access must be balanced with other factors. A long-term strategic approach is needed to provide appropriate access that protects the coastal and marine environments and provides for increased visitation. To ensure that beaches remain available for public use and enjoyment, controls and legislative arrangements could be used to ensure ongoing access and/or Crown land ownership.

Infrastructure for access to the coast is planned to support coastal values e.g. feeder roads are planned to terminate at activity or recreation nodes. Management of car parking facilities and other infrastructure, including demand for new facilities, will need to be managed carefully in popular destinations to ensure that built infrastructure and parking does not impact on the environmental, social and cultural values of coastal and marine areas.

Accessibility and inclusion of people with varied levels of ability and cultural backgrounds needs to be taken into consideration at all publicly accessible sites along the coast. The social value this provides to the individual with a disability and their families and friends is significant. Accessibility and inclusion is a key consideration for the siting and design guidelines, and is encouraged in planning and design across the coast.

Wilsons Promontory Nicola Waldron

Policy for decision-making

1. Planning for access to the coast recognises that:
   a. some areas of the Victorian coast are vulnerable to erosion, inundation, landslip and as a result, not all areas of the coast can or should be accessible
   b. access may need to be controlled to ensure the protection of natural values and habitat supporting coastal and marine flora and fauna at critical life stages (e.g. migratory shorebird roosting and feeding areas, beach nesting shorebirds)
   c. the coast is a public resource, and public access should take precedence over private access and structures
   d. to the extent practicable, access should incorporate the needs of people with varied levels of ability or physical capacity, or different cultural backgrounds
   e. access points need to be sustainable in the long term and those that are not sustainable (such as ageing infrastructure that is a public safety risk) should be identified and planned for removal or refurbishment over time
   f. access needs to be designed in accordance with the Siting and Design Guidelines for Structures on the Victorian Coast and have minimal impact on coastal processes, biodiversity and cultural heritage
2. Public safety considerations and access for emergency events, pop-up seasonal uses (including large scale events) and contractors completing works are addressed within a risk management framework
3. Off-road access to coastal Crown land and beaches by private vehicles continue to be prohibited as supported by the *Land Conservation (Vehicle Control) Act 1972* and *Land Conservation (Vehicle Control) Regulations 2013*
4. Poorly used and poorly sited roads are identified and categorised for redesign, removal or relocation as required to achieve improved environmental, aesthetic and safety outcomes

Actions

1. Investigate legislative changes to ensure ongoing access to beaches and/or coastal Crown land. This may include implementing measures to address ambulatory titles (**DEPI**)
2. Implement programs that reduce risk from ageing infrastructure, aquatic safety, access and emergency events (**DEPI**, DTPLI, LGs, PV, CoMs)

Accessing the beach at Ocean Grove Disabled Surfers Association

3.4 BOATING AND WATER-BASED ACTIVITIES

Desired outcomes

1. A sustainable network of facilities for recreational boating and water-based activity is developed, responding to use and safety considerations, carrying capacity of coastal locations, coastal processes, and the environment
2. A balance is achieved between environmental values, general access to the coast, and access for boating and water-based activities

The variety of coastal waters in Victoria includes sheltered inlets, expansive bays (Port Phillip and Western Port) and the open coast, providing for diverse water-based experiences. Water-based activities along the coast range from swimming, surfing, windsurfing, diving and kayaking to boating, jet skiing and fishing, with new activities emerging, such as stand-up paddle boarding and kite surfing. These activities have increased in popularity and number in coastal areas and on waterways across Victoria.

Within Port Phillip Bay and Western Port, Parks Victoria manages boating and swimming zones as they are the waterway manager with the primary aim of providing a safe environment for water users. The zones apply conditions of operation and prohibit incompatible uses for safety reasons.

Boats can come in a wide variety of shapes, sizes and construction due to intended purpose. There were 166,709 boats with engines registered in 2011 (GCB 2013), and more than half of these were based in the central coastal region (CCB 2014). There has been a significant rise in recent years in the number of canoes, kayaks and other non-powered vessels on Gippsland waterways (GCB 2013). There are generally two types of boating – boats that can be transported by trailer and boats that are moored. Both of these types of boating have different requirements and impacts. About ninety-eight per cent of recreational boats can be transported by trailer, with the vast majority being power boats (CCB 2014). This highlights the generally mobile nature of recreational boaters. Direct expenditure on boating for 2005 was approximately $1.4 billion for powerboats (CCB 2007).

A variety of water-based clubs provide support for water-based activities. These include surf lifesaving, angling, sailing and boating clubs. As the coast is a finite resource and coastal populations and visitation to the coast continues to increase, there will be demand for additional boating facilities. This places pressure on funding the upgrade and maintenance of existing boating facilities. It will mean that people may have to wait (or wait longer) to use these facilities, for example, queuing to use a boat ramp or waiting for a car park. It also raises potential equity issues regarding the use of public boat launching and storage facilities. Managers of these facilities will need to look at potential ways to get more out of existing facilities and infrastructure. This will need to be balanced with potential separation of users at boating facilities for safety reasons.

Port Fairy Robert Blackburn

It is important to balance the needs of recreational boaters with those of biodiversity conservation and of other coastal user groups, particularly in sharing limited coastal Crown land and the water. While it is important that some boating facilities, such as boat ramps and jetties, are located on the coast, supporting facilities, such as toilets, car parks, and clubhouses, may be suitably located further inland and away from areas subject to coastal hazards.

With a growing population, demand will increase for current and emerging water-based activities. Increases in boat registrations, licences and ownership are placing more pressure on the existing and future capacity of facilities. Local land managers will need to cope with increased recreational pressures on a finite resource, and also with the potential that more businesses related to water based activities will want to establish themselves along the coast to cater for this demand. Tourism operators and businesses will need to play a role in creating awareness of coastal values and providing a sustainable coastal experience for visitors.

In all recreational boating activities the safety of boat users is paramount. Using boat ramps on the open coast usually requires extensive knowledge of, and experience with, local conditions. When assessing proposals to upgrade or develop facilities the safety of users must be considered.

Boating Coastal Action Plans (BCAPs) are useful in providing guidance for the planning, management and funding of recreational boating facilities (including new investment). They are also useful as a framework in which to consider the water quality, environmental, safety and shared-access issues associated with boating.

There are three BCAPs currently in place across Victoria (Gippsland, Central and West). The BCAP for Central is now a *Recreational Boating Facilities Framework* (CCB 2014). Together the BCAPs provide a 'whole of coast picture' for the management and improvement of boating facilities.

The development of new integrated Regional Coastal Plans will need to incorporate this BCAP information, by considering:

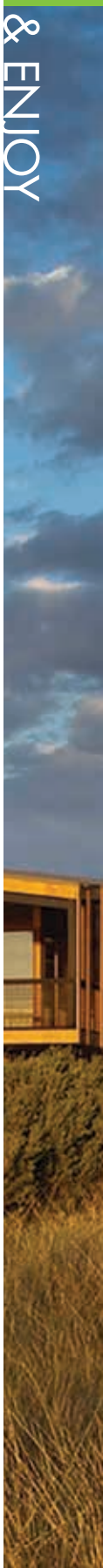
- matching boating demand with strategically and safely located facilities
- balancing boater and the needs of other users both on land and in the water
- providing access to the water for a range of boating users in accordance with the Recreational Boating Facility Hierarchy 2030 (see Map 4)
- minimising the impact of boating use and facilities on the environment.

Policy for decision-making

1. Strategically located boating and water-based activity facilities take into account the *Recreational Boating Facility Hierarchy 2030* (Map 4) and will respond to assessment of:
   a. use requirements of recreational boaters and water-based activity users
   b. carrying capacity of the coastal location
   c. protection of natural and cultural coastal and marine values, including needs of wildlife
   d. coastal processes, including sand movement
   e. needs of other users of coastal Crown land
2. For risk mitigation and to protect the environment, disposal facilities for effluent and fishing waste and on-water fuelling facilities are provided on a user pays basis at strategic boating locations
3. Dredging meets best practice requirements, appropriate to the level of risk associated with the project
4. Monitoring and assessment of numbers using facilities is used to estimate the carrying capacity of facilities and coastal waters and to inform adaptive management

Action

1. Incorporate existing Boating Coastal Action Plan information and the recreational boating framework into Regional Coastal Plans (**RCBs**, DTPLI).
2. Identify accountability for planning and management of boating activities (**DTPLI**, TSV, LGs, PV, CoMs, Waterway Managers)



3.5 FISHING AND AQUACULTURE

Desired outcomes

1. Commercial and recreational fisheries are managed within an ecosystem-based marine planning framework and are ecologically sustainable
2. An ecologically sustainable and viable aquaculture industry that uses low environmental impact production systems, is disease free, and implements best practice aquaculture and environmental management

Commercial and recreational fishing

Victoria's commercial and recreational fisheries are geographically extensive and diverse. The most valuable wild-caught fishery sectors per annum are abalone ($24 million) and rock lobster ($15.8 million). The economic value of commercial fishing operating out of Lakes Entrance has been estimated to be $27.5 million in 2012/13 (Econsearch & Roberts Evaluation 2014).

Aquaculture is worth an additional $11.8 million per annum (WorleyParsons 2013). Victoria exports abalone, rock lobster, eel, giant crab, scallop, urchin and jellyfish. As wild fishery stocks approach the limits of sustainable seafood supply, supporting wise consumer choice is becoming more important.

Recreational fishing is one of Victoria's favourite pastimes. The significance of recreational fishing to the community and economy is demonstrated by the purchase of 308,273 recreational fishing licences in the 2012/13 financial year, creating revenue of $6.89 million (DEPI (a) 2013). Popular recreational fishing areas include Port Phillip Bay and Western Port as well as regional areas such as Portland and Mallacoota.

Recreational fishers have an important role to play in the stewardship of Victoria's marine environments, particularly regarding the mitigation of negative environmental impacts. Marine debris is increasingly becoming an environmental issue, and responsible disposal of waste from recreational fishing can help to address this issue.

Without effective management and control, fisheries can become overfished, leading to significant ecological impacts, declining catches, the collapse of fishing industries and economic hardship for the communities they support.

Ecological impacts of fishing can include direct impacts on fish stocks and non-target species such as discards, bird and mammal entanglement, and general ecosystem effects.

A recent report on the status of key Australian fish stocks (Australian Government 2012) found that of 20 commercially wild-caught stocks (at a variety of levels) across Victoria, fourteen were considered sustainable, five were undefined and one was considered overfished. To continue to ensure future generations can enjoy the seafood and recreational benefits provided by the marine environment, it is important to manage fish stocks sustainably and the marine habitats in an integrated and ecosystem-based way. It is also important to foster stewardship by all users of the marine environment.

Commercial and recreational fisheries are dependent on good water quality and functioning marine ecosystems. Maintaining a healthy marine environment is one of the most effective ways of ensuring healthy fish populations, supporting productive fisheries and ensuring recreational benefits continue into the future.

Through revenue generated from the Recreational Fishing Licence Fund, fishers contribute to science and monitoring programs. These funds also support fisheries enforcement and education such as Fishcare through Fisheries Victoria. Since 2001 more than $4 million has been invested to improve recreational fishing facilities; many of these facilities are in coastal areas.

Recreational fishers should be provided with access to suitable facilities to dispose of waste such as fishing gear and discards. Use of these facilities can help to reduce marine pollution and the potential risks to marine biodiversity associated with such waste. The introduction of biodegradable hooks and lines should be promoted, as should the application of catch and release techniques that maximise survival of returned fish.

Artificial recreational fishing reefs have been established or proposed for a number of marine, coastal and estuarine environments. The deployment of artificial reefs is intended to provide hard surfaces where plants and animals attach. The accumulation of attached marine life in turn provides structure and food for fish. Long term benefits and values of artificial reefs need further investigation.

Aquaculture

The growth of the aquaculture industry is important for all Victorians that want a sustainable supply of fresh seafood for future generations. While not all aquaculture is directly dependent on healthy marine ecosystems (i.e. land-based facilities), good water quality is required. Aquaculture has the potential to pose risks to the Victorian fishing industry and marine environments in general. Water exchange needs to be managed, along with the potential for disease transfer, between aquaculture farms and the marine environment, particularly with the spread of ganglioneuritis virus, affecting both aquacultured and wild populations of abalone. Priority should be given to preventing potential disease and contamination to marine waters from aquaculture, such as via escapees, fish food waste, excreta, antibiotics, fungal diseases and pests.

A changing climate

The effects of a changing climate such as increased water temperatures and changes in ocean currents will have an impact on recreational and commercial fisheries. Some current target species will no longer be available while other new fisheries or aquaculture species may evolve due to increased habitat range and populations.

Management of fishing and aquaculture

As stated in the *Fisheries Act 1995*, fisheries management and monitoring is to be aligned with the principles of ecosystem-based management. Existing arrangements to manage fish resources in Victoria include statutory mechanisms such as under the *Fisheries Regulations 2009*, harvest strategies, monitoring and research of key fish species, compliance, and education.

Management controls for recreational fishing include seasonal and minimum size limits that are reviewed by Fisheries Victoria. Future management initiatives include improving estimates of recreational harvest levels for key fisheries, improving engagement via a Fisheries Advisory Council, and improving stock management through the preparation of further harvest strategies.

Management actions need to accommodate inherent differences between recreational and commercial fishers, such as the difference between being focused on enjoying the experience of fishing rather than being focused on generating a business return.

Management also needs to be informed by scientific understanding gained by monitoring data about the marine ecosystems that support different fisheries. Recreational fisheries are generally data poor. For some fish species, the catch from recreational fisheries can be equivalent to, or exceed, that of comparable commercial fisheries. For instance, in 2006–07 the estimated catch in Victoria of recreationally caught snapper was 480 tonnes compared to 90 tonnes caught commercially in 2009–10. Available monitoring data and anecdotal reports suggest that since 2007 recreational snapper catches are unlikely to have undergone further significant increases (Fisheries Status Report 2010). The Fisheries Research and Development

People fishing at Werribee beach Jon Hickman

Corporation is currently funding a research project to develop a multi-sectoral, multi-jurisdictional fishery framework for harvest management, governance and resource sharing for the south-eastern Australian 'western' snapper stock.

The Victorian Aquaculture Strategy (DPI 2008) is designed to manage the impacts of aquaculture. The Strategy's vision is to grow the value of aquaculture in a sustainable manner and includes key outcomes that are intended to deliver the vision.

Fishing and aquaculture need to be considered in an integrated marine planning framework that considers multiple species and marine uses.

Policy for decision-making

1. Strategic directions and priorities are used to manage significant risks to fisheries and aquaculture (including those risks resulting from a changing climate and poor water quality)
2. Biosecurity practices address the issues of water exchange and disease transfer between aquaculture farms and the marine environment. Land-based aquaculture with recirculating systems is preferred and should be encouraged
3. Fishing stocks are comprehensively assessed and managed by:
   a. identifying and managing important fish habitats
   b. support for research
   c. developing harvest strategies
   d. increasing focus on ecosystem impacts of commercial and recreational fishing
4. Safe and ecologically sustainable recreational fishing is supported. This may be through the provision of facilities, enforcement of regulations, monitoring, behaviour change initiatives (e.g. Seal the Loop, Anglers Diary) and the inclusion of information in the *Victorian Recreational Fishing Guide* (DEPI (b) 2014)
5. Animal welfare is considered in when managing and responding to marine life entanglement
6. The consumption of seafood from well-managed and ecologically sustainable fisheries and aquaculture operations is encouraged (e.g. by supporting fisheries accreditation programs, partnerships and consumer awareness raising programs)
7. Use of biodegradable hooks and fishing lines should be encouraged

Actions

1. Undertake research to identify threats to key habitats supporting fisheries resources, including biosecurity issues, and develop priority actions to address these threats. Investigate using a proportion of the revenue generated from fishing licences to support this research (**DEPI**)
2. Assess fish stocks, measure fish catches and conduct targeted and ongoing biological research for key commercial and recreational species and apply the results to ensure adaptive fisheries management (**DEPI**)
3. Undertake large scale quantitative surveys of recreational fishing participation, distribution and total catch every five years. These surveys could be conducted using existing mechanisms such as the fishing licence renewal process (**DEPI**)
4. Work with recreational fishers to build advocacy for the environment through the fish habitat network and by securing Recreational Fishing Licence co-investment (**DEPI**)
5. Implement the *Victorian Climate Change Strategy for Fisheries and Aquaculture 2008–2018* (DPI, 2008) to facilitate adaptation to the risks and impacts of a changing climate in both the commercial and recreational fishing sectors (**DEPI**)
6. Undertake best practice research, monitoring and evaluation of artificial reefs to determine their long-term ecological sustainability and value (**DEPI**)

3.6 COASTAL ENERGY RESOURCES

Desired outcomes

1. The full value of natural environments, their ecosystem goods and services and community values are considered when making decisions about use of coastal Crown land for energy resources
2. A process to enable assessment, approval and tenure allocation for marine energy projects
3. Improved integration between marine and coastal planning enables a more efficient and strategic approach to service offshore energy industry, while also minimising environmental, social and cultural impacts

Renewable energy

Ongoing natural processes provide opportunities to generate renewable energy. Supporting the development of new renewable energy technologies can assist in reducing carbon emissions into the atmosphere and encourage new coastal industries that contribute to local and regional development. Victoria's coast has potential to provide a variety of renewable energy sources including marine and wind energy. Marine energy includes wave, tidal, offshore wind energy. Wave energy has greatest potential in western Victoria and tidal energy resources are limited to the entrances to large bays and estuaries (DSE (a) 2010). When compared with other forms of renewable energy (e.g. wind, solar), marine energy is unique in that it requires the use of coastal Crown land seabed to harness renewable energy resources.

Prototype trials of both wave-energy and tidal-power capture technologies have been established in Victoria. Wave-energy capture mechanisms are emerging technologies and it is not clear when, or at what scale, these resources could be tapped in the future.

There will be areas of the coast that are unsuitable for marine energy proposals including Marine National Parks and Sanctuaries, significant coastal landscapes areas and areas with incompatible uses. It will be necessary to ensure any decision-making about marine energy developments considers cumulative impacts and provides best public return for private use of coastal Crown land.

Beach along the Great Ocean Walk Mark Watson

Lessons learnt from overseas and experience in previous strategic planning to establish wind energy in Victoria (e.g. via the production of a state-wide 'wind atlas') and aquaculture zones can be used to assist in developing marine energy in Victoria. A Strategic Environmental Assessment approach may also be beneficial for areas of the coast with highly prospective marine energy sites. This approach can be used to provide greater certainty to local communities and proponents over future marine energy developments in a given location, saving time and money for industry and other stakeholders.

Petroleum and gas

Victoria's petroleum exploration and production industries are located mainly in the Gippsland and Otway Basins. Victoria has the second largest share of national petroleum sales, accounting for around $3.6 billion per year (WorleyParsons, 2013). While much of the production occurs in Commonwealth waters beyond Victoria's three-nautical-mile limit, the product is brought onshore into Victoria for refining, storage and distribution.

Victoria's gas production is increasing. In 2008 its annual production was worth over $1.1 billion (DPI, 2010), with the large majority coming from offshore and coastal areas.

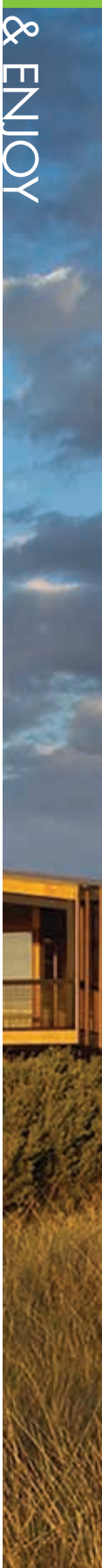
Policy for decision-making

1. Consideration of use and development of coastal Crown land (including the seabed) for the purpose of harnessing, extracting or transporting energy resources must:
   a. avoid unplanned development of facilities along the coast
   b. assess the potential for negative impacts on environmental, social, cultural and economic values (including coastal vistas)
   c. consider the potential for cumulative impacts resulting from multiple facilities
   d. give preference to private land in locating above-ground infrastructure
   e. ensure leasing and licensing arrangements for infrastructure on Crown land maximise the public benefits derived from private use of the land and minimises speculative behaviour

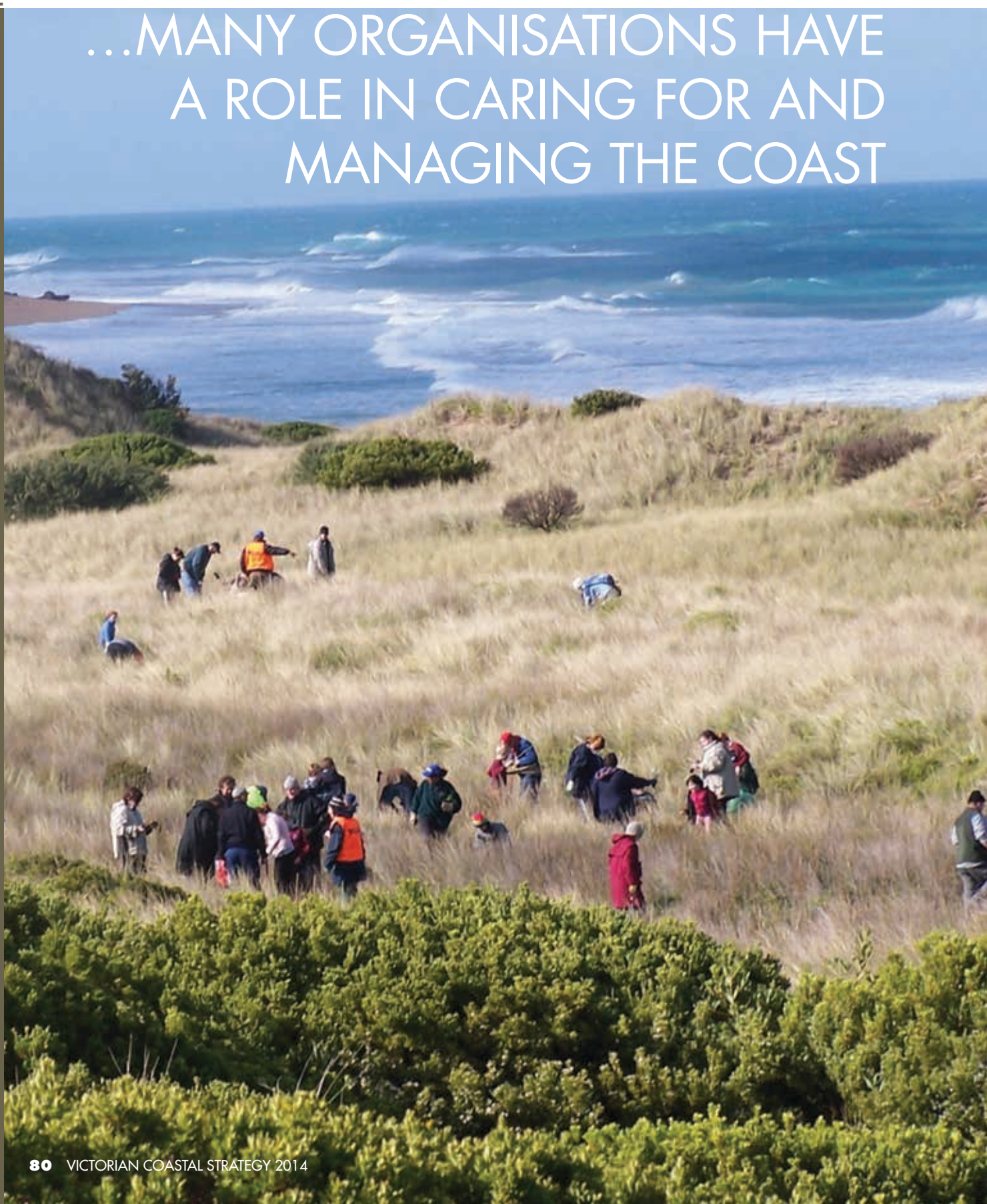
Actions

1. Develop a marine energy atlas to identify areas of the coast potentially suitable for marine energy developments (**DEPI**)
2. Develop a strategic and integrated process for assessing marine energy proposals. This should include details of any required impact assessments and approvals, and a mechanism for tenure allocation that:
   a. ensures the Victorian public receives the best outcome from private use of coastal Crown land, and
   b. prevents land banking (tying up parcels of seabed/land for future use so they cannot be utilised in the present) (**DEPI**, DSDBI, DTPLI)

Whale of a time Don Love



...MANY ORGANISATIONS HAVE A ROLE IN CARING FOR AND MANAGING THE COAST



IMPLEMENTATION

Many organisations have a role in caring for and managing the coast. These include volunteer groups, committees of management, local councils, catchment management authorities, regional coastal boards, government agencies and businesses and their representatives.

Key elements for the effective implementation of the Strategy include:

- lead agencies collaborating and working in partnership with clear accountability
- building the capacity of, and supporting, coastal managers
- long-term financing and capacity to undertake responsibilities
- effective regulation and enforcement
- a shared understanding of priority actions and how priorities are established.
- monitoring and reporting to understand if we are achieving the vision.

Lead and partner agencies have been assigned to actions based on a 'best fit' rationale. The VCC accepts that a number of actions will require resourcing. This particular issue will be explored in more detail when developing the Implementation Plan for the Strategy. All actions in the Strategy will be prioritised and have timeframes allocated for delivery.

4.1 IMPLEMENTATION COORDINATING COMMITTEE

In 2008, 16 organisations were identified with leadership or partnership responsibilities for implementing actions in the Victorian Coastal Strategy. Consequently, a Coordinating Committee was established to provide a 'whole of Strategy' implementation approach. The Committee developed an Implementation Plan that set out priority actions and identified gaps in resources and capacity to deliver on the Strategy.

The Coordinating Committee proved to be a useful vehicle for agencies to share ideas and coordinate the implementation of actions, especially in times of reduced funding and staff capacity. To build on this, the Implementation Coordinating Committee will be re-established to drive the implementation of the 2014 Strategy. The VCC will report annually to the Minister on progress towards implementation of the Strategy.

Table 8 sets out each agency's responsibilities for actions in this Strategy.

Actions

1. Reconvene and support the operation of the Victorian Coastal Strategy Implementation Coordinating Committee (**DEPI**, VCC)
2. Undertake an assessment of the potential cost and resource implications of all actions identified in this Strategy. Based on the outcome of this assessment, prepare an Implementation Plan within the first year after release of this Strategy. The Implementation Plan should outline clear responsibility and accountability with resources identified and timeframes for delivering the actions in the Strategy. The plan should also identify where business cases for particular actions may be needed (**ICC**)

‹ **People participating in coastal conservation** Coastcare Victoria

4.2 BUILDING CAPACITY AND SUPPORTING COASTAL MANAGERS

Within the many organisations involved in coastal management are scientists, policy officers, planners, infrastructure managers, engineers, facilitators and enforcement officers who work with each other and the community. For Victoria to remain at the forefront of delivering effective ICZM we need to ensure there is a skilled and knowledgeable workforce. This requires opportunities for learning through informal methods such as on the job, coaching and mentoring and formal learning such as degrees, diplomas and certificates, and opportunities to share experiences and hear the latest science.

Volunteer committees of management along the coast have similar needs but it can be difficult for them to respond to community needs to provide optimal public benefit. This may be because of a committee's limited skills base and capability to deliver long-term strategic planning. There may also be a lack of means to implement plans once developed. Following the recent Victorian Auditor General's report on *Oversight and Accountability of Committees of Management 2014* (VAGO 2014), DEPI has committed to a series of actions to help improve governance, oversight and support for committees of management.

Actions

1. Prepare guidance for the development of Coastal Management Plans and Regional Coastal Plans (**DEPI**, VCC, RCBs, ICC)
2. Host the national Coastal conference (Coast to Coast) in Victoria and a State coastal conference within the period of this Strategy (**VCC**, RCBs, DEPI, PV, LGs)
3. Support new and existing regional coastal forums and networks (**VCC**, RCBs, DEPI, PV, LGs)
4. Implement agreed actions related to coastal Committees of Management arising from the Victorian Auditor General's report on Oversight and Accountability of Committees of Management 2014 (**DEPI**)

4.3 EMERGENCY MANAGEMENT

A range of emergency events may occur on the coast, e.g. bushfire, oil spills, flooding, erosion, marine mammal stranding or entanglement, marine pest outbreaks, algal blooms and CASS events. With a changing climate, population growth and development pressures, there is a risk that some of these events will occur more often and with more severe consequences.

Preventing, preparing for, responding to, and recovering effectively from emergency events requires communities, industries and government agencies at all levels to work together to identify and minimise the likelihood and consequences of emergencies. There are a range of emergency management plans and processes already in existence for most local governments and communities.

The principles of community, collaboration and capability in the *Victorian Emergency Management Reform White Paper* (Victorian Government 2012) should guide strategic priorities for emergency management on the coast. There are a number of interrelated elements of emergency management and therefore specific actions are not identified in this Strategy.

4.4 EFFECTIVE REGULATION AND ENFORCEMENT

The requirement for regulation on the coast and on estuaries and sea water impacting on the coast emerges from State Government acts and regulations developed under those acts. In some circumstances Commonwealth legislation is also relevant. Regulations can also be established by local government.

The ambit of regulation and enforcement runs from establishing and enforcing planning legislation, to enforcement of fishing and other licence regulations, to investigating and enforcing illegal discharges, to ensuring safe passage for vessels entering ports, and many more. Regulation is more than just 'approval and enforcement'; it is the system and processes that are required of, and imposed on, an entity seeking an outcome.

The extent to which the purposes of regulation are achieved will be a function of the regulatory framework, the resources available to agencies responsible for enforcement, and the priority those agencies give to the task. Community acceptance of regulatory standards and the penalties that are, or might be, imposed are also factors that will determine the effectiveness of regulation. Regulation is not an end in itself and should also be proportionate to the risk or conduct that is being regulated.

In some circumstances regulatory approvals for activity on the coast might involve different levels of government, and different agencies of government. For example, an extension to a marina would require (at least) authorisation under the provisions of the *Planning and Environment Act 1987* and the *Coastal Management Act 1995*.

For users of the coast, the approvals needed for the use and development can be complicated to navigate. It is also important that regulations are enforced. Any issues associated with the current regulatory framework will be considered as part of the broader review of government regulatory and funding arrangements in action 1 in the integrated key issues section.

Actions

1. In the next survey of coastal and marine environment community attitudes and behaviour (Wave 5) test the relative importance and effectiveness of the enforcement of regulations across the range of activities that impact on the coast (**VCC**).

4.5 MONITORING, EVALUATION AND REPORTING (MER)

MER involves *Monitoring* (collection of data), *Evaluation* (assessment of the effectiveness of policies and actions), and *Reporting* (documentation of the monitoring and evaluation).

MER is about being clear on:

- what is to be achieved over a period of time (*vision and desired outcomes*)
- what will be measured (*indicators*); and
- who is responsible for delivery and measurement (*lead agency*).

While a degree of Monitoring, Evaluation and Reporting (MER) has occurred over the life of the three previous Strategies, development of a strategic MER framework for the 2014 Strategy will assist in understanding and communicating how we are progressing towards achieving our long-term vision and desired outcomes for the coast. Metadata (i.e. information about data) collected during this process will provide a valuable benchmark for future MER programs.

Scientific input will be required to formulate relevant indicators to help understand why intended outcomes were either achieved or not achieved in the evaluation phase. For example, biological indicators could be monitored as part of assessing the health of the coast. This may include apex predators, such as seals, and iconic species, such as hooded plovers, that could also act as 'coastal flagships' to help the community to understand the importance of these flagship species and the coastal and marine ecosystems they depend upon. Indicators will need to be agreed, fit for purpose and where possible consistent along the coast. Extensive work has already been undertaken by DEPI and waterway managers to develop a number of indices that can be used to measure condition of rivers, wetlands and estuaries over time. This work could be potentially incorporated and brought together with other information to provide a report on the condition of the Victorian coast over time.

Developing indicators and monitoring alone will not be enough to support management decisions. It is important that an integrated monitoring and research (science, economics and social) approach is taken to support coastal land managers. It is also important that access to this data is made available to those who need it and that as much data as possible is in a form that is fit for purpose. Data will need to be in a form that is able to assist policy makers and coastal land managers to improve policy and management of the coast. Some technical capacity within the relevant organisations will be required to develop and implement a MER framework.

People participating in coastal conservation Grainne Maguire, Birdlife Australia

This Strategy establishes a platform for consistent and cooperative coastal and marine planning, management and decision-making across a range of lead agencies. Accountability for actions, adherence to policy directions, and progress towards outcomes, rests not with the Strategy but with those lead agencies.

Reflecting this, coastal MER for Victoria will need to occur at three levels through:

- Victorian Coastal Strategy (state)
- Regional Coastal Plans (regional)
- Coastal Management Plans (local)

Information from RCSs, rWSs, Regional Growth Plans and local planning approvals could also be linked and should be considered in the development of coastal MER for Victoria.

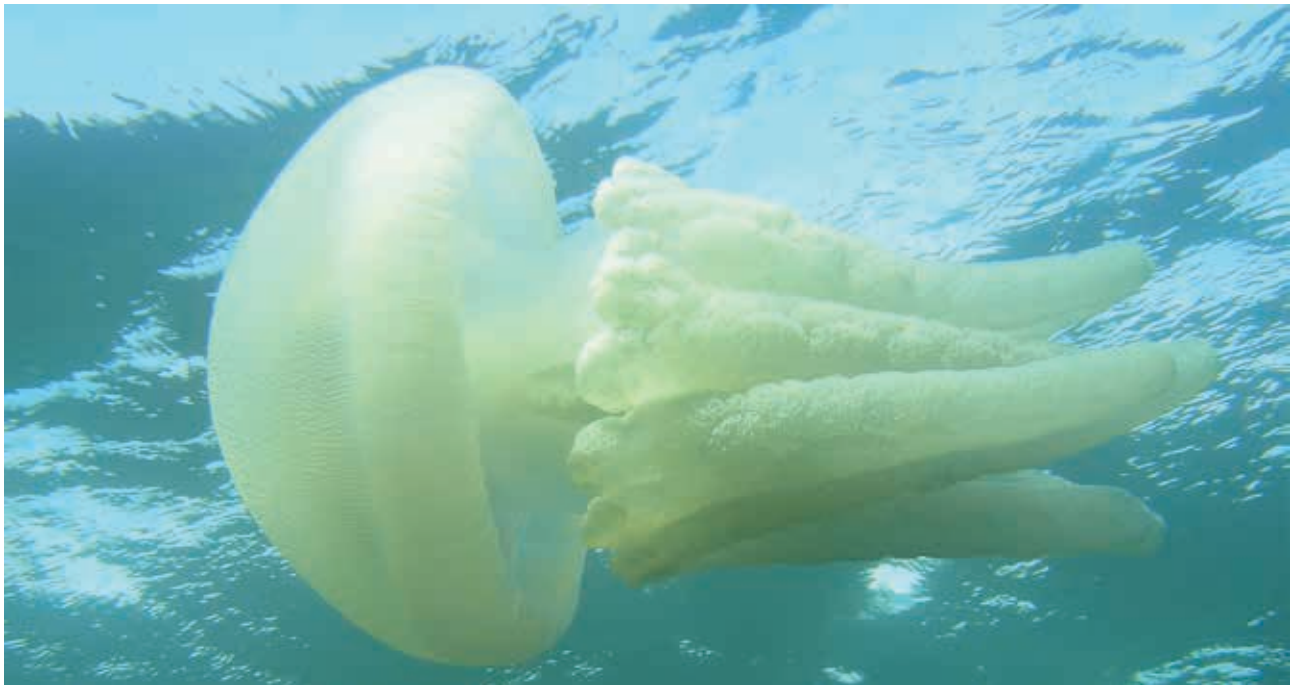
When supported by standards and criteria for the collection of marine and coastal data at local and regional scales, the framework can be used to provide a 'whole-of-coast, state-wide picture' of the health of Victoria's coastal and marine environments. Every five years, the Victorian Catchment Management Council prepares a report on the condition and management of Victoria's land and water resources. It is based on a mix of quantitative and qualitative data and expert opinion. It provides a good example that could be built upon for the coast and form the basis for developing a coastal condition report card.

This Strategy describes some elements for MER, including the vision, desired outcomes, and policy directions. The MER framework will be developed as part of the VCS implementation to guide actions as targets and provide a means of measuring progress. The outcomes of the MER for this Strategy will be used to guide the development of the next five-year Strategy. They will also provide evidence-based data for lead agencies to use as part of their strategic planning along the coast.

Appendices G and H provide possible first steps in developing a MER framework by setting out desired outcomes and criteria for developing indicators.

Actions

1. Develop and implement a MER framework for the Strategy (**VCC**, ICC, DEPI)
2. Establish an index of coastal condition that considers environmental, social and economic values (**VCC**, DEPI)
3. Publish the mid-term review together with a report card of outcomes and a statement of the major changes that have been evidenced along the coast for the life of Strategy with successes and learnings (**VCC**)



Jelly Blubber (*Catostylus mosaicus*), Ricketts Point Marine Sanctuary Nicola Waldron

LIST OF ACTIONS

Delivering on actions in the Strategy will progress our knowledge, capacity and effectiveness for maintaining a healthy and diverse coastal and marine environment. Some of these actions are already part of organisational business plans, while others are more aspirational and will require opportunistic funding and a more concerted effort.

While all the actions are to be implemented by lead and partner agencies, priority actions are those critical to addressing the five key issues identified in this Strategy. All actions are set out in the Table 8.

Table 8: Actions for implementation with lead and partner agencies

KEY ISSUES Action		Page Number	Lead Agent	Partner Agents
1	Undertake an analysis of options for: a. improved governance, regulatory and funding arrangements for coastal Crown land, and b. integrated marine planning and improved governance of coastal waters	**27**	**DEPI**	VCC, PV, DTPLI, CoMs, MAV, DTF, TSV
2	Review and update planning benchmarks for sea level rise every five years. This will include investigating methods for deriving more detailed sea level planning allowances based on the systematic techniques developed by Hunter, 2014	**27**	**DEPI**	
3	Coastal managers identify locations where visitor impacts may exceed the carrying capacity and initiate access controls where and as necessary	**27**	**DEPI**	CoMs
4	Develop and implement environmental value measurement systems and environmental accounts that are consistent with international systems	**27**	**DEPI**	VCC
5	Investigate legislative changes to ensure ongoing access to beaches and/or coastal Crown land. This may include implementing measures to address ambulatory titles	**27**	**DEPI**	

VALUE AND PROTECT Action		Page Number	Lead Agent	Partner Agents
Valuing the coast				
1	Develop and implement environmental value measurement systems and environmental accounts that are consistent with international systems and which: a. establish clear standards for reporting on the condition and value (environmental, social, cultural and economic) of coastal and marine assets and for identifying and explaining changes over time b. ensure cost-benefit analysis of coastal use and development proposals include environmental values	**34**	**1a. DEPI** **1b. DEPI**	1a. DTF
2	Understand and reflect the nature of ecosystem goods and services in Regional Coastal Plans, Regional Catchment Strategies and Coastal Management Plans	**34**	**RCBs**	DEPI, CMAs, CoMs, LGs, PV

VALUE AND PROTECT Action		Page Number	Lead Agent	Partner Agents
Marine environments				
1	Explore a range of integrated marine planning systems and recommend an appropriate system for Victoria	**37**	**DEPI**	VCC, VEAC
2	Incorporate within Regional Coastal Plans information about marine areas with significant environmental, social, cultural and economic values, marine ecological and oceanographic processes, and potential threats	**37**	**RCBs**	DEPI, CMAs, OAAV, HV, LGs
3	Implement agreed responses to the VEAC Marine Investigation into the management performance of Victoria's marine protected areas and the ongoing threats or challenges to their effective management	**37**	**PV**	DEPI, LGs, CoMs
4	Update key policies and guidelines to include: a. best practice environmental guidelines for dredging to reflect the lessons learned from significant projects (e.g. Port of Melbourne Channel Deepening Project) and environmental management planning responses, new benchmarks in environmental controls for dredging activities, and relevant national guidelines b. roles and responsibilities of DEPI, PV and TSV in environmental management, waterway management, planning and practice c. protocols for preventing, detecting, reporting and responding to marine emergencies in state coastal waters, including marine pest incursions, pollution, diseases, and marine entanglement, with details of roles and responsibilities for detection and response	**37**	**4a. EPA** **4b. DEPI** **4c. DTPLI**	4a. TSV, DEPI, PV 4b. PV, TSV 4c. DEPI, PV, EPA, WCs, CMA, TSV
5	Develop improved understanding about the amount of carbon stored in Victoria's marine and coastal ecosystems	**37**	**DEPI**	CMAs, Universities & independent researchers
6	Communicate the benefits of Marine National Parks and Sanctuaries to the broad community, for example the benefits of protecting important habitat	**37**	**PV**	NGOs, DEPI

VALUE AND PROTECT Action		Page Number	Lead Agent	Partner Agents
Wetlands and estuaries				
1	Identify high value coastal wetlands and estuaries that are vulnerable to sea level rise and quantify risks and opportunities for adaptation to predicted future salinity and water regimes	**40**	**DEPI**	CMAs, MW, RCBs, GLMAC
2	Incorporate within Regional Coastal Plans information about wetlands and estuaries, including: a. significant environmental, social, cultural and economic values b. vulnerability to the potential impacts of a changing climate and population growth, use and development, and a process to regularly assess and review their condition	**40**	**RCBs**	DEPI, PV, CMAs, LGs
3	Investigate removal of levee banks and other artificial structures that inhibit wetland migration / retreat	**40**	**CMAs**	WCs, RCBs, DEPI, PV, LGs
4	Review and update current Estuary Management Plans and develop new plans as required	**40**	**CMAs**	WCs, PV
Onshore environments				
1	Identify and address coastal areas of ecological significance that are vulnerable to the impacts of a changing climate, by: a. making use of existing information and methodologies b. incorporating these areas into Regional Coastal Plans, park management plans, and Coastal Management Plans c. considering these areas when developing a state coastal risk plan	**42**	**DEPI**	RCBs, PV, CoMs
2	Develop decision-making tools and market-based instruments, such as a coastal tender program to protect existing habitats and to establish habitat linkages across private land and between Crown land and private land, to be developed in partnership with landowners and managers	**42**	**DEPI**	CMAs, CoMs, TFN
Catchments and water quality				
1	Review, update and implement guidelines and requirements including: a. urban stormwater management for urban development, and facilitate and support best practice b. on-site wastewater management in sensitive areas of the coast c. State Environment Protection Policy (Waters of Victoria) d. Environmental Management Plan for Port Phillip Bay e. Environmental Management Plan for Corner Inlet & Western Port	**45**	**DEPI**	EPA, DTPLI, LG, MW, PV
2	Review, revise (where necessary) and implement response plans and protocols for events such as mass fish deaths, marine pollution and algal blooms in bays and estuaries and on the open coast	**45**	**DEPI**	CMAs, PV, WCs, EPA, DTPLI
3	Identify water quality hotspots for priority action in Regional Coastal Plans	**45**	**RCBs**	CMAs, WCs

VALUE AND PROTECT Action		Page Number	Lead Agent	Partner Agents
Heritage				
1	Progressively update asset and heritage registers and local planning schemes by: a. undertaking comprehensive studies and statutory listing process; and b. assessing the vulnerability of heritage places to climate change	**47**	**1a. OAAV. HV, LGs** **1b. HV**	1b. OAAV, LGs
2	Pilot three indigenous knowledge hubs, to be maintained by Traditional Owners/ RAPs involved in the co-management of public land, for the recording and sharing of local/regional traditional knowledge	**47**	**DEPI**	PV, OAAV, VAHC
3	Undertake a strategic review of gaps in heritage recognition and protection (including Aboriginal, historic and shared value) along the coast	**47**	**LG**	OAAV, HV, PV
4	Incorporate cultural heritage and traditional knowledge into Regional Coastal Plans, Regional Catchment Strategies, Coastal Management Plans and management agreements	**47**	**RCBs**	CoMs, LGs, PV, CMAs

PLAN AND ACT Action		Page Number	Lead Agent	Partner Agents
Coastal hazards and processes				
1	Review and update planning benchmarks for sea level rise as part of future reviews of the Victorian Coastal Strategy. This includes investigating methods for deriving more detailed sea level planning allowances based on the systematic techniques developed by Hunter, 2014	**53**	**DEPI**	
2	Compile and share the findings and learning from the Local Coastal Hazard Assessment pilot projects, and other relevant work, to identify further areas across Victoria where this work can be used. Following this, determine the next steps required to progress agreed adaptation approaches and land use responses	**53**	**DEPI**	LGs, CoMs, CMAs, WCs
3	Complete a review of the number and types (reservation status) of Crown land reserves along the Victorian coast. Once documented, identify reserves with high environmental, social and economic value and identify values at risk from the impacts of climate change	**53**	**DEPI**	VEAC, VCC, RCBs
4	Develop Regional Coastal Risk Assessments to strategically and consistently identify and prioritise coastal hazards management for key public (environmental, cultural and economic) assets. Include information about natural and built assets at risk of loss from erosion, inundation and cliff hazards in Regional Coastal Plans and consider adaptation responses. Together, these plans will provide a statewide perspective of coastal risk in Victoria	**53**	**DEPI**	PV, HV, CMAs, WCs, LGs, CoMs
5	Explore and implement options for maintaining or enhancing public benefits (environmental, social and economic) that are provided by coastal Crown land in situations where Crown land is likely to be at risk of loss due to the impacts of a changing climate	**53**	**DEPI**	PV, LGs, CoMs
6	Use existing planning tools, such as the native vegetation precinct plans, to plan and manage for adaptation of natural coastal environments and to support broader integrated strategic planning	**53**	**LGs**	DTPLI

PLAN AND ACT Action		Page Number	Lead Agent	Partner Agents
Coastal settlements and communities				
1	Update the State Planning Policy Framework (SPPF) of the Victorian Planning Provisions (VPP) to include the policies for decision-making contained in the Victorian Coastal Strategy 2014	**57**	**DTPLI**	
Port precincts				
1	Monitor risk mitigation strategies adopted by the local and commercial ports for port infrastructure identified as vulnerable to extreme climate events	**59**	**DTPLI**	Port Managers
2	Within Regional Coastal Plans establish a strategic planning framework for local ports and plan for local port infrastructure to meet the current and future needs of recreation and tourism activities and to contribute positively to the local character	**59**	**RCBs**	DTPLI, Port Managers
Research and knowledge sharing				
1	Develop and promote the use of existing central platforms and databases for coastal planners and managers. These should bring together relevant marine, coastal and administrative data that is standardised, at an appropriate scale, and fit for purpose	**61**	**VCC**	DEPI, PV
2	Develop an inventory of knowledge gaps and a collaborative research agenda (between researchers, managers and planners) to improve scientific baseline knowledge about coastal, estuarine and marine ecosystems, key ecological processes and the impacts of threats to the functioning of these ecosystems	**61**	**ICC**	VCC, DEPI
3	Support active citizen science and monitoring programs to collect information for planning, management and decision making	**61**	**PV**	DEPI, CMAs, WCs
Community participation				
1	Implement the Coastcare Victoria Strategy 2011–2015 (DSE (a) 2011) and develop new pathways and programs for coastal volunteers to continue their work (including monitoring activities) and improve the coast for the benefit of all Victorians	**63**	**DEPI**	PV, CoMs, LGs, CMAs, WCs
2	Provide opportunities for networking and knowledge exchange between state, regional and local coastal communities, planners, managers and other stakeholders	**63**	**RCBs**	VCC, CoMs, LGs, CMAs
3	Recognise and reward community leadership and innovation through annual coastal awards for excellence	**63**	**VCC**	RCBs
4	Undertake longitudinal social research on community attitudes to Victorian coastal and marine environments, conservation and management, with an expanded emphasis on the extent and nature of community valuation of the coast	**63**	**VCC**	DEPI, PV

USE AND ENJOY Action		Page Number	Lead Agent	Partner Agents
Coastal buildings, infrastructure and management				
1	Revise the Siting and Design Guidelines for Structures on the Victorian Coast (VCC, 1998) to provide contemporary criteria and improved design guidance for coastal development	**67**	**VCC**	RCBs, LGs, DEPI, DTPLI, PV, HV, OVGA
Visitation and tourism				
1	Coastal managers identify locations where visitor impacts may exceed the carrying capacity and initiate access controls where and as necessary	**69**	**DEPI**	CoMs
2	Provide a framework for facilitation of tourism development along the coast through a range of mechanisms including RCPs, local planning schemes, master plans and coastal management plans; a framework should include strategic planning for how increasing tourism and visitation will be experienced and managed along the coast	**69**	**RCBs**	LGs, DTPLI, DSDBI, PV, TV, RTBs, CoMs, VCC, DEPI
Access to the coast				
1	Investigate legislative changes to ensure ongoing access to beaches and/or coastal Crown land. This may include implementing measures to address ambulatory titles	**71**	**DEPI**	
2	Implement programs that reduce risk from ageing infrastructure, aquatic safety, access and emergency events	**71**	**DEPI**	DTPLI, LGs, PV, CoMs
Boating and water-based activities				
1	Incorporate existing Boating Coastal Action Plan information and the recreational boating framework into Regional Coastal Plans	**73**	**RCBs**	DTPLI
2	Identify accountability for planning and management of boating activities	**73**	**DTPLI**	TSV, LGs, PV, CoMs, Waterway Managers

USE AND ENJOY Action		Page Number	Lead Agent	Partner Agents
Fishing and aquaculture				
1	Undertake research to identify threats to key habitats supporting fisheries resources, including biosecurity issues, and develop priority actions to address these threats. Investigate using a proportion of the revenue generated from fishing licences to support this research	**76**	**DEPI**	
2	Assess fish stocks, measure fish catches and conduct targeted and ongoing biological research for key commercial and recreational species and apply the results to ensure adaptive fisheries management	**76**	**DEPI**	
3	Undertake large scale quantitative surveys of recreational fishing participation, distribution and total catch every five years. These surveys could be conducted using existing mechanisms such as the fishing licence renewal process	**76**	**DEPI**	
4	Work with recreational fishers to build advocacy for the environment through the fish habitat network and by securing Recreational Fishing Licence co-investment	**76**	**DEPI**	
5	Implement the Victorian Climate Change Strategy for Fisheries and Aquaculture 2008–2018 (DPI, 2008) to facilitate adaptation to the risks and impacts of a changing climate in both the commercial and recreational fishing sectors	**76**	**DEPI**	
6	Undertake best practice research, monitoring and evaluation of artificial reefs to determine their long-term ecological sustainability and value	**76**	**DEPI**	
Coastal energy resources				
1	Develop a marine energy atlas to identify areas of the coast potentially suitable for marine energy developments	**78**	**DEPI**	
2	Develop a strategic and integrated process for assessing marine energy proposals. This should include details of any required impact assessments and approvals, and a mechanism for tenure allocation that: a. ensures the Victorian public receives the best outcome from private use of coastal Crown land, and b. prevents land banking (tying up parcels of seabed/land for future use so they cannot be utilised in the present)	**78**	**DEPI**	DSDBI, DTPLI

IMPLEMENTATION Action		Page Number	Lead Agent	Partner Agents
Implementation Coordinating Committee				
1	Reconvene and support the operation of the Victorian Coastal Strategy Implementation Coordinating Committee	**81**	**DEPI**	VCC
2	Undertake an assessment of the potential cost and resource implications of all actions identified in this Strategy. Based on the outcome of this assessment, prepare an Implementation Plan within the first year after release of this Strategy. The Implementation Plan should outline clear responsibility and accountability with resources identified and timeframes for delivering the actions in the Strategy. The plan should also identify where business cases for particular actions may be needed	**81**	**ICC**	

IMPLEMENTATION Action		Page Number	Lead Agent	Partner Agents
Building capacity and supporting coastal managers				
1	Prepare guidance for the development of Coastal Management Plans and Regional Coastal Plans	**82**	**DEPI**	VCC, RCBs, ICC
2	Host the national Coastal conference (Coast to Coast) in Victoria and a State coastal conference within the period of this Strategy	**82**	**VCC**	RCBs, DEPI, PV, LGs
3	Support new and existing regional coastal forums and networks	**82**	**VCC**	RCBs, DEPI, PV, LGs
4	Implement agreed actions related to coastal Committees of Management arising from the Victorian Auditor General's report on Oversight and Accountability of Committees of Management 2014	**82**	**DEPI**	
Effective regulation and enforcement				
1	In the next survey of coastal and marine environment community attitudes and behaviour (Wave 5) test the relative importance and effectiveness of the enforcement of regulations across the range of activities that impact on the coast	**83**	**VCC**	
Monitoring, evaluation and reporting (MER)				
1	Develop and implement a MER framework for the Strategy	**85**	**VCC**	ICC, DEPI
2	Establish an index of coastal condition that considers environmental, social and economic values	**85**	**VCC**	DEPI
3	Publish the mid-term review together with a report card of outcomes and a statement of the major changes that have been evidenced along the coast for the life of Strategy with successes and learnings	**85**	**VCC**	

APPENDICES

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ACRONYMS

CASS **Coastal Acid Sulfate Soils**

CCB **Central Coastal Board** – See 'regional coastal board'. Region extends from Breamlea to Venus Bay.

CMA **Catchment Management Authority** – Established under the *Catchment and Land Protection Act 1994* to achieve integrated and sustainable catchment management. There are five coastal CMAs in Victoria.

CoM **Committee of Management** – Appointed to manage, maintain, improve and control coastal Crown land reserves.

CSIRO **Commonwealth Scientific and Industrial Research Organisation** – Australia's peak research organisation which provides scientific solutions to industry, governments and communities around the world.

DEPI **Department Environment and Primary Industries** – Responsible for the sustainable management of public land, water resources, climate change, bushfires, forests and ecosystems. Promotes the sustainable development of primary industries including fisheries, agriculture, forests, petroleum, minerals and energy

DTF **Department of Treasury and Finance** – Responsible for providing economic, financial and resource management advice to assist the Victorian Government deliver its policies

DTPLI **Department of Transport, Planning and Local Infrastructure** is responsible for Victoria's: transport infrastructure (including commercial ports, shipping channels and freight, roads and rail); land use planning including land administration, heritage, planning and building systems and environmental assessment; and local infrastructure needs including supporting local government, sport and recreation needs.

EBM **Ecosystem-based management**

EPA **Environment Protection Authority** – An independent statutory authority set up to prevent and control pollution on land, in water and air, and industrial noise.

GCB **Gippsland Coastal Board** – See 'regional coastal board'. Region extends from the New South Wales border to Venus Bay.

HV **Heritage Victoria** – Situated within DTPLI, manages historic shipwrecks and relics and recommend places and objects for inclusion on the Victorian Heritage Register. Heritage Victoria also issues permits for works to places on the Victorian Heritage Register and consents for archaeological places with historic values.

ICZM **Integrated coastal zone management**

IPCC **Intergovernmental Panel on Climate Change**

LCHA **Local Coastal Hazard Assessment**

LG **Local government** – Significant influence over coastal planning and management through planning controls on private and public land, local by-law regulations and many are appointed committees of management over foreshore areas. There are 22 coastal municipalities in Victoria.

LPPF **Local Planning Policy Framework**

MW **Melbourne Water** – responsible for ensuring that the rivers, creeks, wetlands and estuaries in the Port Phillip and Western Port region are protected and improved on behalf of the community – a role that is undertaken by catchment management authorities in other regions. Melbourne Water's role in the region also includes the management of regional drainage, floodplains and water supply catchments, the treatment and supply of drinking and recycled water and the removal and treatment of most of Melbourne's sewage.

OAAV Office of **Aboriginal Affairs Victoria** – Central point of advice on all aspects of Aboriginal affairs in Victoria.

PV **Parks Victoria** – Established under the *Parks Victoria Act 1998* to provide services to the State for the management of parks, reserves, and other land.

RAP **Registered Aboriginal Party**

‹ Sea urchin Hobsons Bay City Council

RCB **Regional Coastal Board** – The Western, Central and Gippsland Regional Coastal Boards are established under the *Coastal Management Act 1995* as strategic coastal planning advisory bodies. Their main focus is advising the Minister and implementing the Victorian Coastal Strategy at the regional level through Regional Coastal Plans.

RCP **Regional Coastal Plan**

SEPP **State Environment Protection Policies** Prepared under the *Environment Protection Act 1970* to provide the leadership, legal and statutory basis for improving water quality in the marine environment.

rWS **regional Waterway Strategy**

SPPF **State Planning Policy Framework**

TSV **Transport Safety Victoria** is Victoria's integrated safety regulator for bus, maritime and rail transport. TSV administers bus, maritime and rail safety legislation that promotes transport safety outcomes in Victoria.

TV **Tourism Victoria** – Develops and markets Victoria as a premium tourist destination for Australian and international travellers.

VEAC **Victorian Environmental Assessment Council**

VCC **Victorian Coastal Council** The Victorian Coastal Council is appointed under the *Coastal Management Act 1995* as the peak body for the strategic planning and management of the Victorian coast, and to provide advice to the Minister for Environment and Climate Change. They have a number of responsibilities under the Act, including to prepare and submit to the Minister a draft Victorian Coastal Strategy. They are also responsible for the coordination and implementation of the Victorian Coastal Strategy.

VPP **Victoria planning provisions**

WCB **Western Coastal Board** – See 'RCB – Regional Coastal Board'. Region extends from Breamlea to the South Australian border.

***Carpobrotus rossii*, commonly known as karkalla or pig face** Fritz Balkau

GLOSSARY

Active uses of the coast
recreation activity requiring significant expenditure of energy or extractive by nature, for example, swimming, boating, fishing

Activity nodes
activity nodes are within existing coastal settlements and provide a focus area for access to the coast, services, and social interaction within coastal settlements and coastal urban areas, and link and integrate the public and private realms within this area.

Accretion
where a boundary between land and water alters so slowly that the change is not readily noticeable, the process is known to the Common Law as the "Doctrine of Accretion". The doctrine broadly provides that "gradual accretions of land from water belong to the owner of the land gradually added to and conversely, land encroached upon by water ceases to belong to the former owner" (VGS). The new owner holds the accreted area upon the same estate or tenure as the owner's other land. An important factor is that an alteration to a boundary must be "gradual and imperceptible" so that the change "cannot be seen as actually going on, though a visible increase (or decrease) is observable very year" (VGS). There have been court cases where advances by the water of 5.0 metres and 7.41 metres in a year satisfied the requirements of the doctrine (VGS).

Ambulatory boundaries
see accretion

Aquaculture
cultivation of fish, molluscs and other aquatic organisms in fresh or salt water for human use.

Biological diversity
the variety of life forms: the different plants, animals and microorganisms, the genes they contain, and the ecosystems they form. It is usually considered at three levels: genetic diversity, species diversity and ecosystem diversity.

Carbon sinks
natural or man-made systems that absorb and store carbon dioxide from the atmosphere, such as trees, plants and the oceans.

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

Coast (Victorian)
'the coast' encompass coastal, estuarine and marine environments on both public and private land. This applies to:

- the marine environment – nearshore marine environment, the seabed, and waters out to the State limit of three nautical miles (5.5 kilometres)
- foreshores – or coastal Crown land up to 200 metres from the high water mark
- coastal hinterland – land directly influenced by the sea or directly influencing the coastline, and with critical impacts on the foreshore and nearshore environment (these influences range from visual to drainage impacts, as illustrated in Figure 2)
- catchments – rivers and drainage systems that affect the coastal zone, including estuaries
- atmosphere – near, around and over the coast as defined above

Coastal acid sulfate soils
found in low-lying coastal areas these contain high concentrations of iron sulfates. Relatively harmless in their undisturbed (submerged) state, these soils produce and release large quantities of sulphuric acid when exposed to oxygen through excavation, dredging or drainage, detrimentally impacting coastal and marine environs.

Coastal Action Plan (CAP)
identifies strategic directions and objectives for use and development in a region or part of a region to facilitate recreational use and tourism, and to provide for protection and enhancement of significant features on the coast, including the marine environment. Following Ministerial direction in 2012 to develop an overarching Coastal Action Plan for each Regional Coastal Board region, Coastal Actions Plans are now referred to as Regional Coastal Plans. Coastal Action Plans approved prior to 2014 will continue to be referred to as CAPs.

Coastal-dependent use
uses, and associated infrastructure, which depend on the coasts' natural assets and could not take place at any other location.

Coastal infrastructure
are built assets, including buildings, peers, jetties, trails, roads, drains that are located on or nearby the coast

Coastal protection
measures aimed at protecting the coast against coastline retreat, therefore protecting housing, infrastructure, the coast and the hinterland from erosion often at the expense of losing the beach and the dynamic coastal landscape. Coastal protection can be both 'soft' e.g. revegetation or 'hard' structures e.g. seawalls or groynes.

Coastline
generally where the land meets the sea.

Committee of Management (CoM)
appointed under the *Crown Land (Reserves) Act 1978* (CLRA) to manage reserved Crown land on behalf of the Minister. For coastal land, committees are either an agency, such as Parks Victoria, Local Government, or community volunteers appointed through an expression of interest process. Gippsland Ports as a port and waterway manager is a CoM appointed under CLRA

Cost benefit analysis
cost benefit analyses mentioned in this Strategy will include social, environmental and economic benefits.

Crown land
public land not vested in a public authority, including land temporarily or permanently reserved under the *Crown Land (Reserves) Act 1978*.

Cultural heritage
qualities and attributes possessed by places and objects that have aesthetic, historic, scientific or social value for past, present or future generations.

Disturbance buffers
are often used to separate threatening stimuli, such as people, vehicles, dogs etc, from wildlife.

Eco-based tourism
a form of tourism that involves visiting natural areas

Ecosystem
all the organisms in a community, together with the associated physical environmental factors (living and non-living) with which they interact.

Ecosystem based management
an approach that seeks to manage human impacts in an ecosystem, at any scale from an ocean, to a bioregion, to a local estuary.

Ecosystem good and services
ecosystem goods (such as food) and services (such as waste assimilation) are the benefits people obtain, directly or indirectly from ecosystems. The services are classified into four different categories (regulating, supporting, provisioning and cultural services).

Ecological sustainable development
decision making processes should effectively integrate both long term and short term economic, environmental, social and equitable considerations. If there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation (i.e. the precautionary principle). The current generation should ensure that the health, diversity and productivity of the environment are maintained or enhanced for the benefit of future generations (intergenerational equity). The conservation of biological diversity and ecological integrity should be a fundamental consideration in decision making and improved valuation, pricing and incentive mechanisms should be promoted.

Effluent
a liquid, partially or completely treated or in its natural state, flowing from a water or sewage treatment plant.

Environmental weed
exotic or Australian native flora growing beyond their natural range that have, or have the potential to have, a detrimental effect on natural values.

Endemic
plant or animal native or restricted to a certain place

Erosion
the process of gradually wearing away by wind, water, or other natural agents.

Estuary
the zone where a river meets the sea, influenced by river flows and tides and characterised by a gradient from fresh to salt water.

Foreshore
the coastal fringe; generally the land between the coastal road and the low water mark.

Freehold land
refer to 'private land'.

Geomorphology
science of the evolution of landforms and geological formations and the processes that shape them.

Habitat
the area occupied by an organism or group of organisms.

Heritage place
a site, building or group of buildings, historic shipwreck, archaeological site or relic with aesthetic, historic, scientific or social value for present or future generations

High use
areas where visitation might exceed carrying capacity now or in the future.

Indigenous species
an organism which is native to a given region or ecosystem.

Infrastructure
physical structures which facilitate use of the coast, such as roads, paths, piers, toilet blocks.

Integrated coastal zone management (ICZM)
a framework that attempts to integrate planning and management in a region, such as the State of Victoria, across the land and sea interface and the private and public land interface, to treat the coastal zone (which includes the catchment) as one biophysical entity.

Intertidal zone
area between low and high tide which is subject to daily changes in physical and biological conditions from tide movement (also known as littoral zone).

Intrinsic value
value that the environment has "in itself" or "for its own sake".

Invasive species
an animal pest, weed or disease that can adversely affect indigenous species and ecosystems.

Marine National Park
highly protected areas reserved and managed under the *National Parks Act 1975* that represent the range of marine environments in Victoria, and in which no fishing, extractive or damaging activities are allowed.

Marine pest
refer to 'invasive species'.

Marine Protected Areas
highly significant marine and coastal areas distinguished by varying levels of protection. These include Marine National Parks, Marine Sanctuaries, Marine Parks, Marine and Coastal Parks and a Marine Reserve.

Marine Sanctuary
small, highly protected areas reserved and managed under the *National Parks Act 1975* to protect special values, and in which no fishing, extractive or damaging activities are allowed.

Master plan
a tool used to provide comprehensive guidance for the long term use and development of large sites on a broad, strategic level and ensure coordination of multiple stages of use and development. It is usually supported by further plans that provide detail on components of the masterplan.

Natural capital
the land, air, water, living organisms and all formations of the Earth's biosphere that provide us with ecosystem goods and services imperative for survival and well-being.

Nature-based tourism
tourism that relies on experiences directly related to natural features.

Net community benefit
is determined by considering the likely environmental, social and economic outcomes of a proposed use or development

Passive uses of the coast
are recreational activities that are non-structured in nature, for example, walking, picnicking

Peri-urban areas
comprise the hinterland beyond the metropolitan urban boundary

Planning scheme
is a legal document prepared by the local council or the Minister for Planning and approved by the Minister under the *Planning and Environment Act 1987*. A planning scheme sets out policy and requirements for use, development and protection of land. It consists of a written document and any maps and plans it refers to.

Private land
land under freehold tenure (privately owned).

Public land
unalienated land of the Crown (refer to Crown land) or land vested in a public authority.

Recreation nodes
areas located on coastal Crown land, outside of activity nodes and existing settlements which exhibit a high level of use and visitation for recreation and water-related activities.

Regional Coastal Plan
identifies strategic directions and objectives for use and development in a region or part of a region to facilitate recreational use and tourism, and to provide for protection and enhancement of significant features on the coast, including the marine environment. Prior to 2014, known as Coastal Action Plans (their statutory name under the *Coastal Management Act 1995*)

Registered Aboriginal Parties (RAPs)
determined by the Aboriginal heritage Council with important roles and functions in managing and protecting Aboriginal cultural heritage in Victoria under the *Aboriginal Heritage Act 2006.*

Remnant vegetation
indigenous vegetation that has not been cleared, modified or replanted.

Sediment
insoluble material suspended in water that contains mainly particles derived from rock, soil and organic material.

Settlement
development area that can include a regional city, regional centre, district town, town, hinterland town, small town, small settlement, rural centre.

Settlement boundary
the dividing line between areas where urban development is, or is expected, (the settlement) and areas where non-urban or rural expectations exist.

Sewage
household and commercial wastewater containing human or trade waste.

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

Social cohesion
the degree to which participants in social systems feel committed to the system and the wellbeing of other participants.

Stakeholders
individual or group with a vested interest in or affected by a project or process.

Stormwater
rainwater that runs off streets and gutters, enters drains and waterways and is eventually discharged to the sea; in Victoria, stormwater is mostly untreated but may be filtered by traps or wetlands.

Strategic Environmental Assessment
Strategic environmental assessment is a systematic decision support process, aiming to ensure that environmental and possibly other sustainability aspects are considered effectively in policy, planning and program making

Structure plans
planning tools that set out an integrated vision for the desired future development of a place, and establish a planning and management framework to guide development and land-use change in order to achieve stated environmental, social and economic objectives. Also known as township plans and urban design frameworks.

Subdivision
division of land into two or more lots with individual titles that can be sold.

Sustainable use
the use of resources in a way and at a rate that does not lead to the long term decline of biological diversity, thereby maintaining their potential to meet the needs and aspirations of present and future generations.

Urban growth boundary
a management tool used to contain urban areas and limit their expansion. It divides land that is urban – to be used for housing, shops, factories – from land that is non-urban and to be used for purposes such as conservation, agriculture, mineral extraction, airports and the like. An urban growth boundary encourages urban consolidation and protects valued non-urban areas from urban development.

Wetland
areas of marsh, fen, peatland or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, including areas of marine water the depth of which at low tide does not exceed six metres.

APPENDIX A LEGISLATION, PLANS, STRATEGIES, GUIDELINES

There are many federal and state Acts and regulations, and ongoing local, regional and state-wide policies, strategies and programs that have outcomes which are important to the health, enjoyment and sustainable use of our coastal, estuarine and marine environments. These include, but are not limited to:

Acts

- Aboriginal Heritage Act 2006
- Australian Maritime Safety Authority Act 1990 (Cwth)
- Catchment and land Protection Act 1994
- Coastal Management Act 1995
- Crown Land (Reserves) Act 1978
- Environment Effects Act 1978
- Environment Protection Act 1970
- Environmental Protection and Biodiversity Conservation Act 1999 (Cwth)
- Fisheries Act 1995
- Fisheries Management Act 1991 (Cwth)
- Flora and Fauna Guarantee Act 1988
- Heritage Act 1995
- Historic Shipwrecks Act 1976 (Cwth)
- Land Act 1958
- Land Conservation (Vehicle Control) Act 1972
- Major Transport Facilitation Act 2009
- Marine Safety Act 2010
- Marine (Drug Alcohol and Pollution Control) Act 1988
- Maritime Transport and Offshore Facilities Security Act 2003 (Cwth)
- National Parks Act 1975
- Native Title Act 1993 (Cwth)
- Planning and Environment Act 1987
- Pollution of Waters by Oil and Noxious Substances Act 1986
- Port Management Act 1995
- Transport Integration Act 2010
- Victorian Livestock Disease Control Act 1994
- Water Act 1989

Regulations

- Aboriginal Heritage Regulations 2007
- Environment Protection (Ships' Ballast Water) Regulations 2006
- Fisheries (Fees, Royalties and Levies) Regulations 2008
- Fisheries Regulations 2009
- Land Conservation (Vehicle Control) Regulations 2013
- Marine Safety Regulations 2012
- National Parks (Park) Regulations 2003
- Pollution of Waters by Oil and Noxious Substances Regulations 2002
- Port Management (Local Ports) Regulations 2004

Policy and strategies

- Aboriginal Fishing Strategy 2012
- Coastcare Victoria Strategy 2011 – 2015 (DSE (a) 2011) [now DEPI]
- Commercial port land-use strategies (port managers)
- Plan Melbourne (DTPLI 2014)
- Great Ocean Road Regional Strategy (DSE, 2004) [now DEPI]
- Landscape Assessments
- Melbourne's Water Future (2013)
- National Cooperative Approach to Integrated Coastal Zone Management – Framework and Implementation Plan (DEH, 2006) [now DSEWPaC]
- Port Development Strategy 2035 Vision (Port of Melbourne Corporation 2009)
- Port of Geelong – Port Land Use Strategy (Geelong Port and Department of Transport 2009)
- Port of Hastings Land Use and Transport Strategy (Port of Hastings Corporation 2009)
- Port of Portland – Port Land Use Strategy (Port of Portland Pty Limited 2009)
- Regional Catchment Strategies (CMAs)
- Regional Growth Plans which include the G21 RGP, Great South Coast RGP and the Gippsland RGP
- State Environment Protection Policies (EPA)
- Statement of Planning Policy No 1 – Western Port (1970 – varied 1976)
- Victoria's Biodiversity Strategy (DSE, 1997) [now DEPI]
- Victoria's Native Vegetation Management – A Framework for Action (DSE, 2002) [now DEPI]
- Victoria's System of Marine National Parks and Marine Sanctuaries – Management Strategy 2003–2010 (PV) (this will be updated once the VEAC marine investigation is complete)
- Victorian Aquaculture Strategy (DPI, 2008) [now DEPI]
- Victorian Coastal Strategy 2014 (DEPI, 2014)
- Victoria Planning Provisions, including the State Planning Policy Framework and the Local Planning Policy Framework
- Victorian Strategy for Coastal Acid Sulfate Soils (DSE (now DEPI), 2008)
- Victorian Waterway Management Strategy (DEPI 2013c) and Regional Waterway Strategies (CMAs) and Melbourne Water's policies in the Port Phillip and Western Port region

Plans

- Regional Coastal Plans (previously known as Coastal Action Plans) under the Coastal Management Act 1995 (RCBs)
- Management Plans under the Coastal Management Act 1995 (CoMs), Fisheries Act 1995 (DEPI), and the National Parks Act 1975 (PV).
- Port Phillip Bay Environmental Management Plan
- Port Safety and Environment Management Plans (commercial and local ports)
- Stormwater management plans (LG)
- Structure plans/township plans/urban design frameworks (LG)
- Victorian Marine Pollution Contingency Plan

Guidelines

- Best practice environmental management: guidelines for dredging (EPA)
- Committee of Management Responsibilities and Good Practice Guidelines (DEPI (a) 2014)
- Siting and Design Guidelines for Structures on the Victorian Coast (VCC, 1998)
- Urban stormwater best practice environmental management guidelines (EPA)
- Victorian Best Practice Guidelines for Assessing and Managing Coastal Acid Sulfate Soils

In addition, Australia is party to many international treaties which influence the use and management of coastal, estuarine and marine environments.

Port Phillip Aboriginal Cultural Heritage Project Phillip Wierzbowski

APPENDIX B WHO DOES WHAT

Many people and agencies have responsibility for, or interest in, coastal planning and management.

Owners

In Victoria the Minister for Environment and Climate Change has responsibility for all coastal Crown land on behalf of all Victorians. Some 96 per cent of the coastline is in public ownership, while 4 per cent is privately owned.

Communities

Coastal communities and coastal-based groups (e.g. Foreshore Advisory Groups) play crucial roles in coastal planning and management by contributing their time and efforts, local knowledge and expertise. Traditional Owners also play particular roles in planning and managing the coast, and making decisions about coastal resources.

Planners

A large number of agencies undertake planning which affects the coast, either directly or indirectly. Key legislation includes the *Coastal Management Act 1995*, *Planning and Environment Act 1987* and the *Catchment and Land Protection Act 1994.*

Local government has a role in considering and approving planning permits on coastal Crown land and private land, and in the nearshore environment, and preparing changes to the planning scheme.

The Department of Environment and Primary Industries has a role in considering and approving Coastal Management Act consents on coastal Crown land.

Government departments, regional coastal boards, local councils, catchment management authorities, Melbourne Water in the Port Phillip and Western Port region, and committees of management are involved in strategic planning be this at a state, regional or local level.

Public Land Managers

More than two-thirds of coastal Crown land is reserved as national park, coastal park, marine national park or marine sanctuary under the *National Parks Act 1975*. Parks Victoria manages this land. The remaining coastal Crown land is reserved under the *Crown Land (Reserves) Act 1978* for various public purposes. Committees of Management are appointed by the Minister to manage this land. A Committee of Management can be a voluntary community group, or an agency such as Parks Victoria or a local government body.

The Department of Environment and Primary Industries manages small areas of 'unreserved' Crown land along the foreshore, and most of the seabed.

Regulators

Other legislation stipulates how specific coastal uses and areas are managed, particularly where these have a significant effect on matters of environmental and cultural significance along the coast. This includes the *Heritage Act 1995*, the *Flora and Fauna Guarantee Act 1988*, the *Aboriginal Heritage Act 2006*, the *Environment Protection Act 1970*, the *Fisheries Act 1995*, *Marine Safety Act 2010*, the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*, the *Native Title Act 1993* and the *Historic Shipwrecks Act 1976*.

The Environment Protection Authority regulates marine and catchment based water quality. Port managers (local and commercial), waterway managers, harbour masters, Parks Victoria and Victoria Police regulate port and recreational boating use. Transport Safety Victoria is Victoria's integrated safety regulator for bus, maritime and rail transport. Waterways Managers appointed by the Minister for Ports under the *Marine Safety Act 2010* also regulate recreational and port boating use. The Australian Maritime Safety Authority promotes maritime safety and the protection of the marine environment. The Department of Environment and Primary Industries and a number of Commonwealth departments play a role in regulating environmental, cultural and fishing legislation.

Researchers

Non-government organisations and tertiary institutions play an important role in research, in association with government. This advances our knowledge and understanding of coastal and marine environments, and informs policy development and decision-making.

Business and Industry

Many businesses and industries are dependent on coastal location and resources, and have a critical interest in their coastal and marine environment. They provide employment and economic activity to the benefit of coastal and broader communities.

APPENDIX C BACKGROUND INFORMATION ON A CHANGING CLIMATE

Storm events and storm surge

Sea level rise may cause some areas on the coast to be permanently flooded by the sea, and other areas to be temporarily flooded during storm events.

Areas on the coast which are currently flooded during a storm tide may be flooded more often, and to a greater depth.

Storm surge is a temporarily higher sea level created from a low pressure weather system and intense winds. A storm surge will have maximum impact when combined with a high or king tide (known as a storm tide).

Flooding of the land by the sea due to storm tides can also be accompanied by flooding from rainfall. This can be particularly intense when large amounts of water from inland waterways are unable to drain to the sea because of an elevated sea level.

Refer Figure 8.

Sea surface temperature

There has been a recorded increase in sea surface temperatures around Australia since the early 20th century. The increase has been recorded as an average rise of 0.7°C per decade (comparing 1910–1929 with 1989–2008). This rate of warming is similar to the global average.

Although there is seasonal and spatial variation around Australia, the greatest warming is occurring in the south-west and south-east coasts.

Changes in sea surface temperature affect the strength of ocean currents, such as the East Australian Current, and this in turn affects cold water upwellings.

Ocean Acidification (decreased pH levels)

The natural biological processes of the ocean's carbon cycle result in net absorption of carbon dioxide from the atmosphere.

The ocean is a weak alkaline solution, with a pH of around 8.1. Adding increased amounts of carbon dioxide lowers the pH and makes the ocean more acidic. The pH of the oceans has been lowered by 0.1 pH unit from pre-industrial times. By the end of the century, the ocean's pH has the potential to drop to 0.2–0.3 units below pre-industrial levels (Australian Government (b) 2011).

Ocean acidification reduces availability of the carbonate ions on which many marine organisms rely to make shells and skeletons from calcium carbonate. Many types of organisms may be impacted by this, including zooplankton, coralline algae, crustaceans, echinoderms, fish and molluscs.

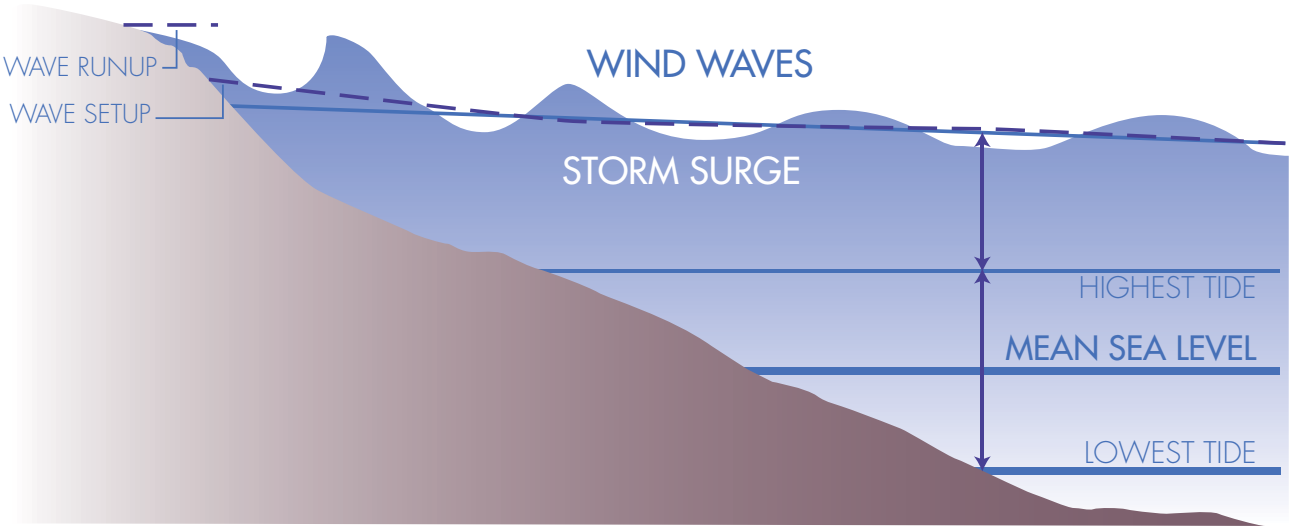

Figure 8: Impacts of tides, storm surge and waves on sea level rise (source: CSIRO, 2007)

APPENDIX D COASTAL CLIMATE DECISION-MAKING TOOLS

Type	Tool	Description/Applications
Mapping and information	Victorian coastal inundation dataset	*Strategic planning* Projection of land area which will be inundated in different timeframes (present, 2040, 2070, 2100) for state and regional strategic planning.
Planning	General Practice Planning Note – *Managing coastal hazards and the coastal impacts of climate change*	*Statutory and strategic planning* Guidance on managing coastal hazards, the decision-making process for assessing coastal hazard risk, planning for development in coastal areas.
	Ministerial Direction No 13 – *Managing coastal hazards and the coastal impacts of climate change*	*Statutory planning* Mandatory requirements for the consideration of the impacts of climate change on the coastal areas for amendments which would have the effect of allowing non-urban land to be used for an urban use and development.
	Government's response to Coastal Climate Change Advisory Committee Final Report – Changes to State Planning Policy Framework	*Statutory and strategic planning.* Revision of the State Planning Policy Framework for an interim planning benchmark of 0.2m for sea level rise by 2040 for infill development.
Guides	*Victorian Coastal Hazard Guide*	Best practice guidance on factors that need to be considered when assessing risks associated with coastal hazards.
	Guidelines for Coastal Catchment Management Authorities – assessing development in relation to sea level rise	*Statutory planning* Criteria for assessing development proposals that may potentially be affected by sea level rise (they do not apply to Melbourne Water).
	Planning for sea level rise – assessing development in areas prone to tidal inundation from sea level rise in the Port Philip and Western Port Region	*Statutory planning* To assist Melbourne Water Services Planners in assessing development proposals.
	Equitable Local Outcomes in Adaptation to Sea-Level Rise: Year 2 Project Report 2012. The University of Melbourne, Melbourne, Victoria	*Research* A more flexible approach to adaptation along the coast (Barnett et al 2012). The three year study working with communities across Gippsland has found that triggers for change can come much before the policy for 0.8m SLR. For example, the frequency of king tides or flooding combined with tides may influence when and what change a community is seeking. Agencies are now working to understand more about community perceptions of risk and incorporate this information into settlement planning as well as drawing on technical data and modelling.

APPENDIX E ECOSYSTEM BASED MANAGEMENT GUIDING PRINCIPLES

1. **Ecosystem conservation:** All planning and management arrangements give priority to conservation of ecosystem structure and functioning in order to maintain ecosystem services
2. **Adaptive management:** The management of human activities is modified in response to: feedback from monitoring, changes in knowledge about marine ecosystems, changes in societal values, and technological development
3. **Uncertainty and precaution:** The uncertainty which characterises our knowledge of marine ecosystems and our understanding of human interactions with marine ecosystems is recognised during decision-making, and the precautionary principle is applied in decision-making
4. **Comprehensive recognition of human uses and values:** Planning and management take into account all human uses and values in an ecosystem, including the cumulative effect of human uses. All relevant sectors are involved in decision-making.
5. **Cooperation and integration of management arrangements:** Planning and management arrangements embody inter-agency cooperation and integration across jurisdictional boundaries.

Coast fescue (*Poa billardierei*) Bev Wood, Barwon Coast

APPENDIX F VCC COMMISSIONED RESEARCH

Department of Transport, Planning and Local Infrastructure Spatial Analysis and Research Branch (August 2013) *Population and Settlement along the Victorian Coast:* Background Research Paper to inform the Victorian Coastal Strategy 2013

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APPENDIX G MONITORING AND REPORTING

Please note: To monitor and report on each desired outcome, will require indicators and an agent responsible for each indicator.

	Desired outcome
KEY ISSUES	The full value of coastal and marine environmental resources are explicitly taken into account in planning for coastal development
	Coastal governance and funding arrangements align funding and capacity with accountability to ensure the ecological integrity of coastal waters, estuaries, wetlands and terrestrial environments that are managed as a total system
	Collaboration across agencies and communities enables effective adaptation to impacts of a changing climate on infrastructure, settlements, community resources and natural systems
	Integration across marine planning stakeholders enables planning and managing for cumulative and combined impacts and continued provision of ecosystem goods and services
	Sea level rise planning policy benchmarks in the State Policy Planning Framework are updated and enhanced in light of emerging scientific evidence
	Growth of coastal settlements are consistent with the strategic directions for settlements identified in the Regional Growth Plans, and non-urban breaks are maintained between coastal settlements to preserve the character of the coastline
	New development, reuse and redevelopment on the coast: • has a demonstrated need to be located on the coast • protects environmentally and culturally significant places • accommodates biodiversity, connectivity and adaptation • does not interfere with natural coastal processes, and • avoids areas subject to coastal hazards
	'High-use' coastal locations that support visitor populations are managed to ensure maintenance of the values associated with the area. Coastal managers identify when the carrying capacity of a location is reached and initiate action to minimise visitor impacts, guiding visitors to alternative locations where appropriate
	New private structures that provide no public benefit are not be permitted
	In situations where public land erodes or accretes, public access to the foreshore is maintained. This may include the incorporation of abutting private land

	Theme	Desired outcome
VALUE & PROTECT	Valuing the coast	Victorians value the intrinsic characteristics of coastal and marine environments, habitats, ecosystems and biodiversity
		The environmental value of coastal resources is recognised and appreciated, and their protection is paramount
		Use of best practice methods for conducting cost-benefit analyses for coastal use and development ensures that the economic benefits (including ecosystem goods and services) and costs are assessed objectively and transparently
	Marine Environments	Coastal waters, estuaries, wetlands and onshore environments are planned and managed to promote healthy, rich and diverse marine ecosystems that support connectivity, adaptation and build resilience to a changing climate
		An integrated marine planning system for Victoria's coastal waters, estuaries and intertidal areas includes and complements a well-managed, comprehensive, adequate and representative system of Marine National Parks and Sanctuaries
	Wetlands & Estuaries	Coastal waters, estuaries, wetlands and onshore environments are planned and managed to promote healthy, rich and diverse wetland and estuarine ecosystems that support connectivity and can adapt to a changing climate
		The environmental condition of coastal wetlands and estuaries, including Ramsar sites, is maintained or improved
		Access and use in wetlands and estuaries are well-managed, with appropriate tools such as disturbance buffers, to ensure protection of threatened plants and animals
	Onshore Environments	Ecological health, resilience and connectivity of onshore coastal environments is improved across land tenures
		Access and use in onshore environments are well-managed, with appropriate tools such as disturbance buffers, to ensure protection of threatened plants and animals
		A well-managed, comprehensive, adequate and representative system of coastal parks and reserves is complemented by off-reserve conservation actions
	Catchments & Water Quality	Strategic planning for catchment, coastal and marine management, and the prioritisation of on-ground works are integrated through improved planning and management frameworks, processes and collaboration between relevant agencies The quality and quantity of water entering wetlands, estuaries and marine waters is improved on a priority basis through: • improved wastewater and stormwater treatment and re-use, with a focus on urban growth areas in coastal catchments • promotion of changes in land use and farming practices to reduce the impact of catchment discharges which have adverse effects on the health of coastal and marine ecosystems • better understanding the volume of flow and the quality required to sustain ecologically functioning wetlands, estuaries and marine environments
	Heritage	Aboriginal and historic cultural heritage places are identified, recorded and protected
		The role of Traditional Owners in protecting and managing Aboriginal cultural heritage is recognised
		Victorians work in partnership to take account of traditional and local knowledge, and to care for heritage on the coast

	Theme	Desired outcome
PLAN & ACT	Coastal Hazards & Processes	Sea level rise and storm surge planning policy benchmarks and tools are updated in light of emerging scientific evidence
		Development within sand dunes and in low lying coastal areas is avoided
		Areas vulnerable to coastal hazards, as a consequence of a changing climate, are better understood
		Natural coastal processes are adopted as the preferred form of defence against possible impacts of a changing climate
		New development, reuse and redevelopment avoids areas subject to coastal hazards, does not interfere with natural coastal processes, and accommodates biodiversity connectivity and adaptation
	Coastal Settlements & Communities	Coastal settlements support the protection and enhancement of environmental, social and cultural and economic values of the coast
		Non-urban breaks are maintained between coastal settlements to preserve the character of the coastline and coastal settlements
		Settlement planning directs growth to areas suitable for accommodating sustainable growth
	Port Precincts	Victoria's local and commercial ports are planned, developed and managed taking into account the character, amenity and sustainability of the coast and their regions
	Research & Knowledge Sharing	Understanding of coastal and marine environments and ecosystem functions is increased by research and monitoring including through community programs and partnerships
		Scientists, policymakers and decision makers exchange knowledge in ways that ensure efforts on the coast are targeted, strategic, effective and efficient
		The scientific and technical expertise of those working on coastal and marine matters is retained and renewed
	Community Participation	Local communities value our natural coastal and marine landscapes, flora and fauna
		Local communities actively participate in coastal and marine planning and management, informed by the best available science
		Local community groups and volunteers are adequately supported and recognised for their involvement in caring for and managing marine and coastal environments

	Theme	Desired outcome
USE & ENJOY	Coastal Buildings, Infrastructure & Management	New buildings and infrastructure exhibit excellence in siting and design that integrates with the coastal landscape and setting, while also avoiding environmental impacts
		Planning for new buildings and infrastructure is managed across regional and local land administration boundaries
		Coastal Crown land is not used for structures unless they provide significant community benefit, and their functionality depends on them being near the water
	Visitation & Tourism	A diverse range of visitor and tourist experiences is available in suitable locations
		Visitor and tourism developments exhibit exemplary design standards, integrate with the surrounding coastal landscape and setting, and enhance environmental and heritage values
		The carrying capacity of coastal locations designated for use and development determines the level of visitor and tourist services provided in that location
	Access to the coast	Communities access the coast in ways that minimise risks to public safety and protect coastal and marine environments
		Community-based clubs (e.g. lifesaving clubs, sailing clubs) are supported in their use of the coast in ways that minimise environmental impacts, are within an appropriate spatial footprint, and provide coastal access and use for the broader community
	Boating & Water-Based Activities	A sustainable network of facilities for recreational boating and water-based activity is developed, responding to use and safety considerations, carrying capacity of coastal locations, coastal processes, and the environment
		A balance is achieved between environmental values, general access to the coast, and access for boating and water-based activities
	Fishing & Aquaculture	Commercial and recreational fisheries are managed within an ecosystem-based marine planning framework and are ecologically sustainable
		An ecologically sustainable and viable aquaculture industry that uses low environmental impact production systems, is disease free, and implements best practice aquaculture and environmental management
	Coastal Energy Resources	The full value of natural environments, their ecosystem goods and services and community values are considered when making decisions about use of coastal Crown land for energy resources
		A process to enable assessment, approval and tenure allocation for marine energy projects
		Improved integration between marine and coastal planning enables a more efficient and strategic approach to service offshore energy industry, while also minimising environmental, social and cultural impacts

APPENDIX H EVALUATION

Evaluation assesses a number of aspects of a program or strategy, documenting for each aspect the answer to the question 'why' or 'why not?'

Evaluation aspects	Potential sources of data
Appropriateness • The extent to which the program is aligned with needs of intended beneficiaries • The extent to which the program complies with recognised best practice	Needs analysis Expert review Participatory planning Social or environmental impact assessment Internal reflection on processes and outcomes Periodic independent evaluation
Impact • How and to what extent the program has contributed to changing resource condition, practices, attitudes and behaviours. • Any unanticipated changes (positive or negative) which have resulted • The extent to which changes were directly or indirectly produced by the program	Monitoring condition of resources Expert review Internal reflection on processes and outcomes Periodic independent evaluation
Effectiveness • The extent to which planned actions and outputs were achieved • Whether the actions were the best way to maximise impact or whether alternative options may have been more effective • The extent to which the program achieved, or expected to achieve, its desired outcomes efficiently and in a sustainable way.	Review of logical relationships and causal links Research and large-scale data sources Expert review Internal reflection on processes and outcomes Periodic independent evaluation
Efficiency • The extent to which the program attained the highest value from available resources. • Ways in which resources may be used more productively and efficiently • What could be done differently to improve implementation and maximise impact, at an acceptable and sustainable cost.	Auditing and financial analysis Internal reflection on processes and outcomes Periodic independent evaluation
Legacy • Whether the impacts of the program will continue over time, and after the program ceases • How the legacy should be managed and by whom	Participatory planning and monitoring Internal reflection on processes and outcomes Periodic independent evaluation

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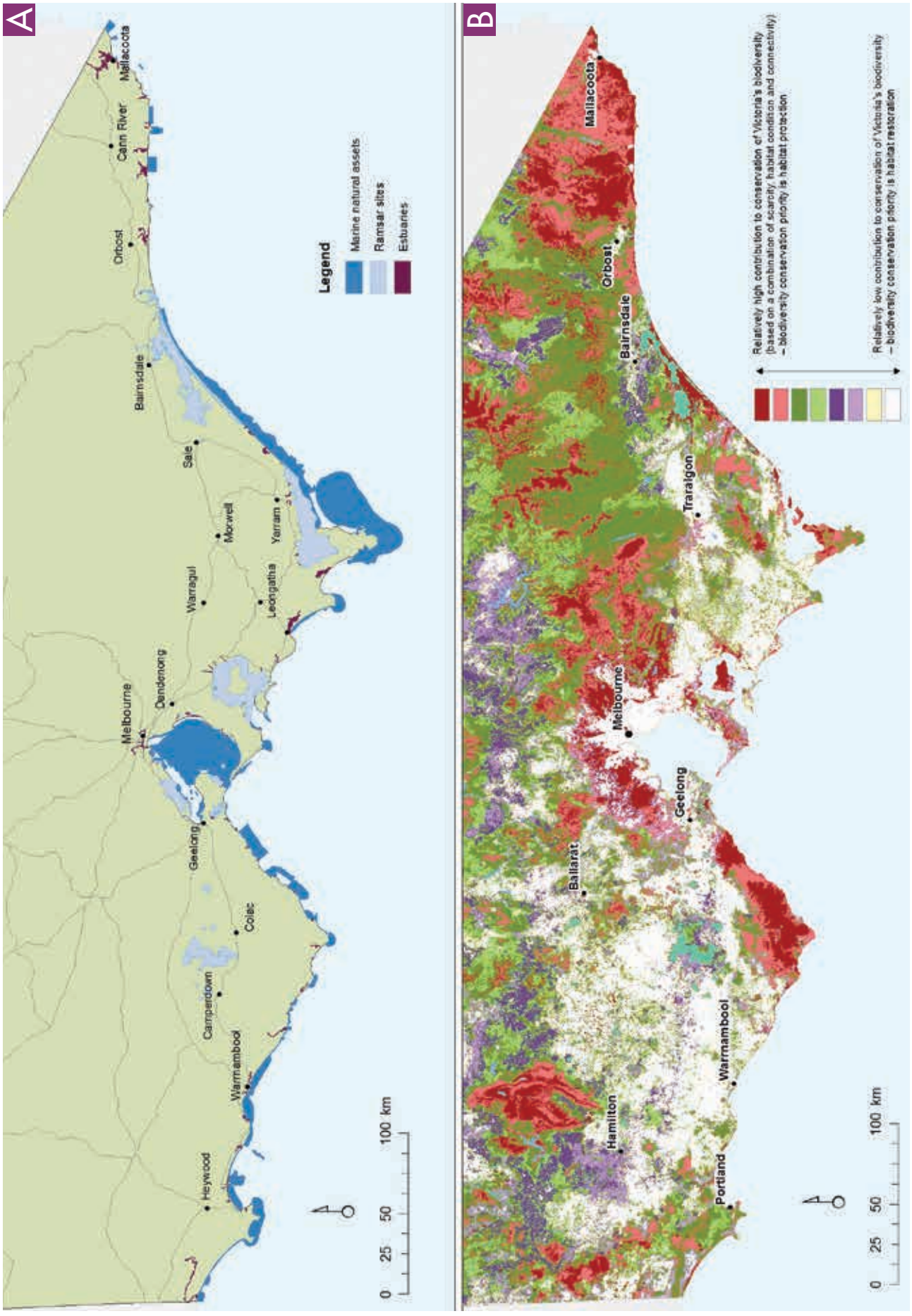
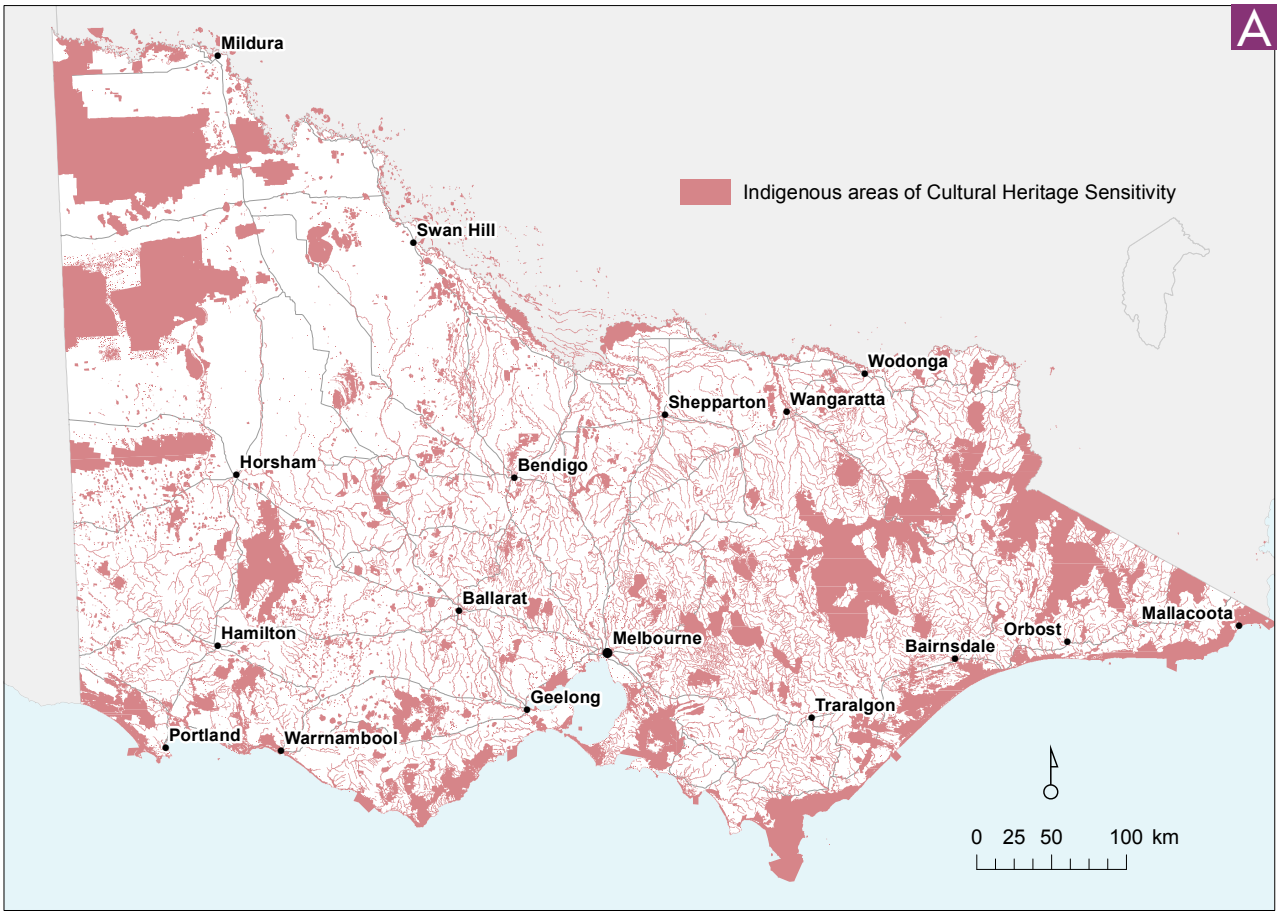
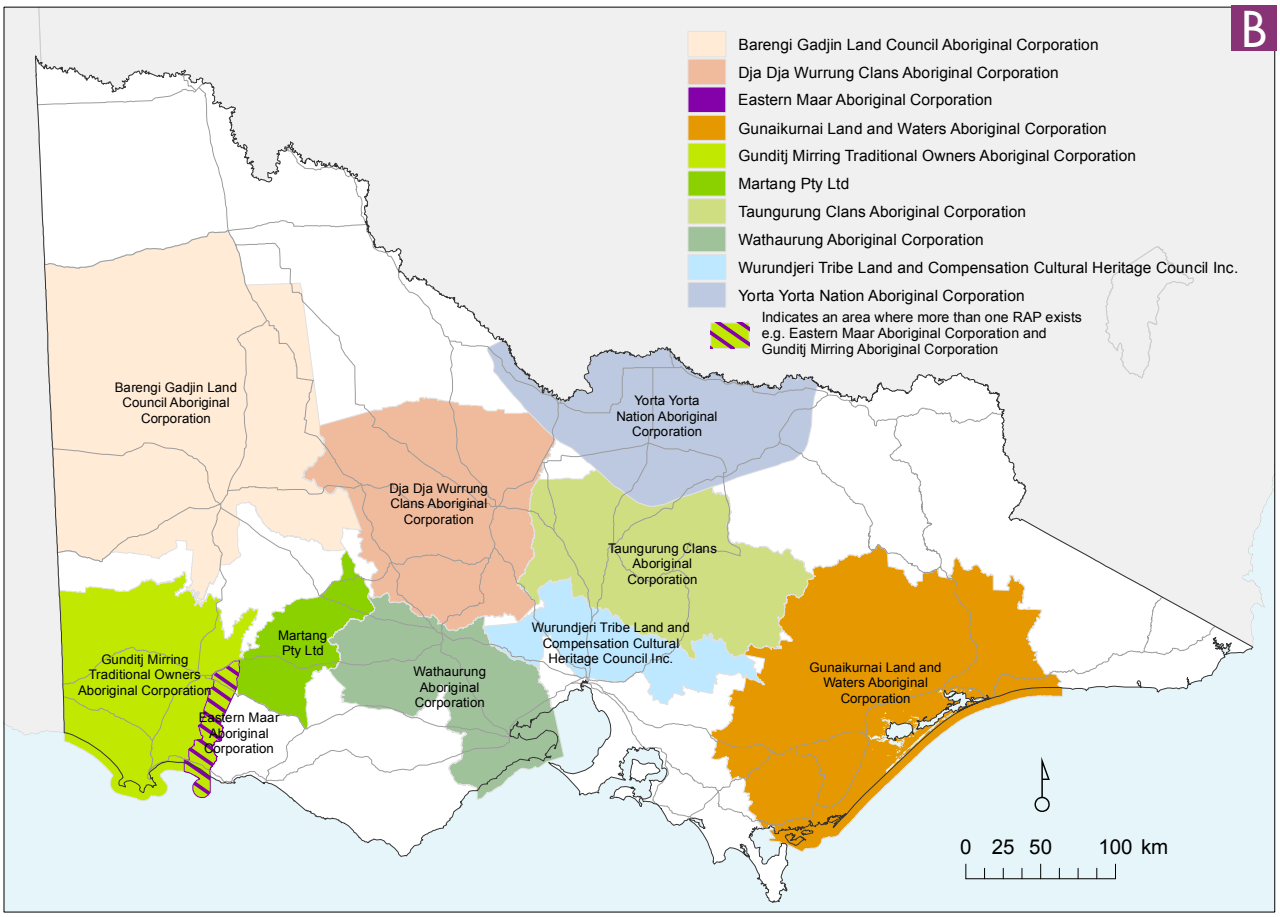
MAP 2A & B NATUREPRINT, MARINE NATURAL ASSETS, RAMSAR SITES & ESTUARIES

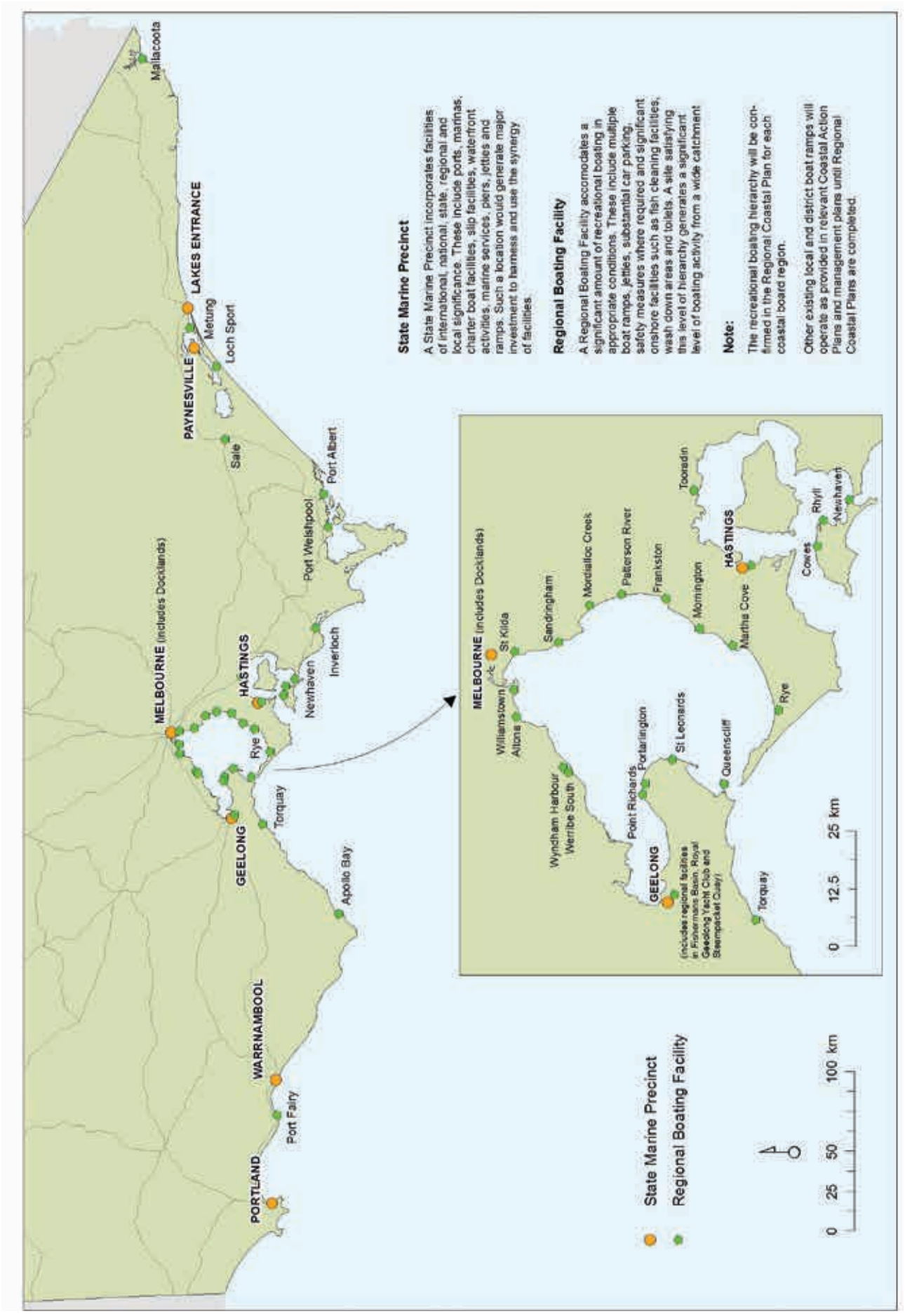


MAP 3A & B INDIGENOUS AREAS OF CULTURAL HERITAGE SENSITIVITY AND REGISTERED ABORIGINAL PARTIES IN VICTORIA





MAP 4 RECREATIONAL BOATING FACILITIES HIERARCHY 2030



The Victorian Coastal Strategy has been prepared by the Victorian Coastal Council and adopted by the Victorian State Government. The Council is the peak body for the strategic planning and management of Victoria's 2,000 kilometres of coastline and marine environment. Established under the *Coastal Management Act 1995*, it advises the Minister for Environment and Climate Change on coastal issues. The contributions of the following are acknowledged in shaping the Strategy:

- Council members (past and present)
- Council office staff (past and present)
- Submitters to the draft Victorian Coastal Strategy 2013
- Photographers
- Departments and agencies

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