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Further Advice to

The House of Representatives Standing Committee on Climate Change, Water, Environment and the Arts Committee

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Inquiry into climate change and environmental impacts on coastal communities

20 May 2009

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The House of Representatives Standing Committee Inquiry on Climate Change and Environmental Impacts on Coastal Communities

The Victorian Government provided a submission to the committee on 20 June 2008. Since this time a number of significant state policies and programs related to coastal management, planning and climate change have been progressed. This supplementary submission is an update outlining these changes.

Victorian Coastal Strategy

- 1. On 10 December 2008 the Victorian Government released the Victorian Coastal Strategy (the Strategy) (Attachment 1). The Strategy is the state's coastal policy and provides the framework for implementing Integrated Coastal Zone Management (ICZM) in Victoria. The three major themes of the Strategy are climate change, population and growth and marine ecological integrity.
- 2. The Strategy sets out a range of policies and actions. Those that address the impacts of climate change on the coast are found in Attachment 2.
- 3. Following the release of the Strategy, the State Policy Planning Framework section of the Victoria Planning Provisions (*Clause 15.08 Coastal Areas*), was amended on 18 December 2008, to reflect the new policies (Attachment 3). This requires that planning and responsible authorities take into consideration the impacts of climate change, including planning for a sea level rise of not less than 0.8 meters by 2100 as part of their decision making.
- 4. For planning scheme amendments along the coast a 'Minister's Direction' on 'Managing coastal hazards' was issued under the *Planning and Environment Act* 1987, on the 18 December 2008 (Attachment 4). This requires that a planning authority must review the impacts of projected coastal hazards associated with climate change in making decisions in relation to re-zoning non-urban land for urban use or development.

Guidance Information

- 5. To guide local councils, coastal planners and managers in implementing the Strategy's climate change polices, the Department of Planning and Community Development (DPCD) and the Department of Sustainability and Environment (DSE) have developed a package of information including:
 - General Practice Planning Note Managing coastal hazards and the coastal impacts of climate change (Attachment 5)
 - Fact Sheet Managing coastal hazards and the impacts of climate change (Attachment 6)
 - Advisory Note how to consider sea level rise along the Victorian coast (Attachment 7).

Future Coasts

6. The Future Coasts Program represents a \$13.5 million dollar investment by the Victorian Government to consider climate change adaptation on the coast. The

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program will provide detailed mapping of the Victorian coastline that will act as a basis for assessing the physical vulnerability of coastal areas to the impacts of sea level rise and storm events.

- 7. A key component of the Future Coasts Program is mapping and modelling using Digital Elevation Modelling (DEM). Since June 2008 a considerable amount of DEM capture has occurred. Attachments 8 and 9 detail the capture program, indicative release dates and examples of the DEM data.
- 8. This mapping and modelling information will be coupled with investigation and consultation into the best tools, approaches and adaptation measures to manage climate change impacts on the coast.
- 9. The development of appropriate tools will be progressively developed to provide guidance to local governments and land managers in day-to-day decision-making and undertaking strategic planning along the coast. These tools will build on the Future Coasts data and modelling, and the policy and planning work undertaken in conjunction with the coastal management community. There is scope to build on the approaches underdevelopment across other states and through Commonwealth programs.

Planning Advisory Committee

10. Building on the policy in the Victorian Coastal Strategy 'to investigate opportunities within the Victorian Planning Provisions to address climate change risks and impacts', the Minister for Planning has established Terms of Reference for an advisory committee pursuant to the Planning and Environment Act 1987. The Committee will investigate and recommend ways in which Victorian land use planning and development controls can best support the Victorian government's policy for managing coastal impacts of climate change (Attachment 10).

Coastal Spaces Initiative

11. The Victorian Government in 2006 released the Coastal Spaces Initiative which built on the Victorian Coastal Strategy objectives aimed at protecting spaces inbetween coastal settlements. This initiative supported the identification of boundaries for settlements to minimise linear coastal development and protect the character of smaller hamlets and villages. It also delivered the Coastal Spaces Landscape Assessment Study 2006 that has largely been implemented. The Coastal Spaces policy recommendations have been embedded into the latest Victorian Coastal Strategy, and State Planning Policy.

Climate Change Green Paper

12. The Victorian Government is currently developing a Climate Change Green Paper for public comment. In regards to coastal communities it emphasises the need to understand the risks of climate change impacts and possible approaches for adaptation response.

Land and Biodiversity White Paper

13. The Victorian Government is also developing a white paper focused on land and biodiversity. In relation to coastal issues the white paper will look at building

resilience into our coastal and marine systems, and enhancing our governance systems to strengthen the links between catchments, coasts and seas to address the impacts of climate change.

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Attachments

- 1. Victorian Coastal Strategy (refer to separate booklet)
- 2. Victorian Coastal Strategy policies relating to climate change and communities
- 3. State Policy Planning Framework (Clause 15.08) Ministerial Direction No 13 - Managing Coastal Hazards and the Coastal Impacts of Climate Change
- 4. Ministerial Direction No 13 Managing Coastal Hazards and the Coastal Impacts of Climate Change
- 5. General Practice Note Managing coastal hazards and the coastal impacts of climate change
- 6. Fact Sheet Managing Coastal Hazards and the Impacts of Climate Change
- 7. Advisory Note How to consider sea level rise along the Victorian Coast
- 8. Mapping and Modelling Indicative Timeline of Data Release
- 9. Example of D.E.M.
- 10. Terms of Reference Planning Advisory Committee on Coastal Climate Change

<u>Attachment 2 – Victorian Coastal Strategy policies relating to climate change and communities</u>

P38

- Plan for 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 impacts associated with climate change. As scientific data becomes available the policy of planning for sea level rise of not less than 0.8 metres by 2100 will be reviewed
- Apply the precautionary principle to planning and management decision-making when considering the risks associated with climate change.
- Prioritise the planning and management responses and adaptation strategies to vulnerable areas, such as protect, redesign, rebuild, elevate, relocate and retreat.
- Ensure that new development is located and designed so that it can be appropriately protected from climate change's risks and impacts and coastal hazards such as: , inundation by storm tides or combined storm tides and stormwater (both river and coastal inundation, geotechnical risk (landslide) and coastal erosion sand drift.
- Avoid development within primary sand dunes and in low-lying coastal areas.
- Encourage the revegetation of land abutting coastal Crown land using local provenance indigenous species to build the resilience of the coastal environment and to maintain biodiversity.
- New development that may be at risk from future sea level rise and storm surge events will not be protected by the expenditure of public funds.
- Ensure that climate change should not be a barrier to investment in minor coastal public infrastructure provided the design-life is within the timeframe of potential impact.
- Ensure planning and management frameworks are prepared for changes in local conditions as a result of climate change and can respond quickly to the best available current and emerging science.
- Ensure all plans prepared under the Coastal Management Act 1995 and strategies relating to the coast, including Coastal Action Plans and management plans consider the most recent scientific information on the impacts of climate change.

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• Protect assets from coastal erosion and storm activity by managing coastal processes along the Port Phillip Bay coast where there is significant demonstrable public value, whilst having regard to the risks and impacts of climate change.

P64

• Ensure that development or maintenance work of local port facilities considers the impact of storm tides or combined storm tides and storm water, coastal erosion or sand drift, including an allowance for changes in sea level due to subsidence and anticipated climate change.



Attachment 3 - State Policy Planning Framework (Clause 15.08)

15.08 Coastal Areas

18/12/2008 VC52

Objective

15.08-1 18/12/2008 VC52

To protect and enhance the natural ecosystems and landscapes of the coastal estuarine and marine environment.

To ensure sustainable use of natural coastal resources.

To achieve development that provides an environmental, social and economic balance.

To recognise and enhance the community's value of the coast.

To plan for and manage the potential coastal impacts of climate change.

Strategies

15.08-2 18/12/2008 VC52

Integrated planning for the future

Land use and development planning should be coordinated with the requirements of the Coastal Management Act 1995 to:

- Provide clear direction for the future sustainable use of the coast, including the marine environment, for recreation, conservation, tourism, commerce and similar uses in appropriate areas.
- Protect and maintain areas of environmental significance.
- Identify suitable areas and opportunities for improved facilities.

Decision-making by planning authorities and responsible authorities should apply the hierarchy of principles for coastal planning and management as set out in the Victorian Coastal Strategy 2008, which are:

- 1. Provide for the 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:

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

Managing coastal hazards and the coastal impacts of climate change

Planning to manage coastal hazards and the coastal impacts of climate change should:

- Plan for 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.
- Apply the precautionary principle to planning and management decision-making when considering the risks associated with climate change.
- Ensure that new development is located and designed to take account of the impacts of climate change on coastal hazards such as the combined effects of storm tides, river flooding, coastal erosion and sand drift.

- Ensure that land subject to coastal hazards are identified and appropriately managed to ensure that future development is not at risk.
- Avoid development in identified coastal hazard areas susceptible to inundation (both river and coastal), erosion, landslip/landslide, acid sulfate soils, wildfire and geotechnical risk.

Population growth and development

Planning for population growth and development should:

- Identify a clear settlement boundary 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.
- Direct residential and other urban development and infrastructure within defined settlement boundaries of existing settlements that are capable of accommodating growth.
- Support a network of diverse coastal settlements which provides for a broad range of housing types, economic opportunities and services.
- Ensure a sustainable water supply, stormwater and sewerage treatment for all development.
- Encourage urban renewal and redevelopment opportunities within existing settlements to reduce the demand for urban sprawl.
- Avoid linear urban sprawl along the coastal edge and ribbon development within rural landscapes and protect areas between settlements for non-urban use.
- Encourage opportunities to restructure old and inappropriate subdivisions to reduce development impacts on the environment.
- Ensure development is sensitively sited and designed and respects the character of coastal settlements.
- Minimise the quantity and enhance the quality of storm water discharge from new development into the ocean, bays and estuaries.
- Promote ecological sustainable design techniques such as energy efficiency and water sensitive urban design.
- Avoid development on ridgelines, primary coastal dune systems and low lying coastal areas.

Sustainable use, protection and management of environmental and cultural values

Planning for sustainable use, protection and management of significant environmental and cultural values should:

- Ensure development conserves, protects and seeks to enhance coastal biodiversity and ecological values by:
 - Encouraging revegetation of cleared land abutting coastal reserves.
 - Maintaining the natural drainage patterns, water quality and biodiversity within and adjacent to coastal estuaries, wetlands and waterways.
 - Avoiding disturbance of coastal acid sulfate soils.
- Protect cultural heritage places, including Aboriginal places, archaeological sites and historic shipwrecks.

- Ensure that use and development on or adjacent to coastal foreshore Crown land:
 - Maintains safe, equitable public access and improves public benefit whilst protecting local environmental and social values.
 - Demonstrates need and coastal dependency.
 - Is located within a defined activity or recreation node.
- Encourage suitably located and designed coastal and marine tourism opportunities which:
 - Ensure that a diverse range of accommodation options and coastal experience are maintained and provided for and that sites and facilities are accessible to all.
 - Demonstrate a tourist accommodation need and support a nature based approach within non-urban areas.
 - Are of an appropriate scale, use and intensity relative to its location and minimises impacts on the surrounding natural visual, environmental and coastal character.

Planning for the Great Ocean Road Region

In addition to the land use and development strategies above, planning for the Great Ocean Road Region should:

- Protect the landscape and environment by:
 - Protecting public land and parks and identified significant landscapes.
 - Ensuring development responds to the identified landscape character of the area.
 - · Managing the impact of development on catchments and coastal areas.
 - Managing the impact of development on the environmental and cultural values of the area.
- Manage the growth of towns by:
 - Respecting the character of coastal towns and promoting best practice design for new development.
 - Directing urban growth to strategically identified areas.
 - Encouraging environmentally sustainable development.
- Improve the management of access and transport by:
 - Managing the Great Ocean Road for tourism and regional access.
 - Enhancing the safety and travelling experience of the Great Ocean Road.
 - Improving the safety and operational performance of the inland routes from the Princes Highway to the Great Ocean Road.
 - Providing travel choices to and within the region.
- Encourage sustainable tourism and resource use by:
 - · Developing a network of tourism opportunities throughout the region.
 - Supporting tourism activities that provide environmental, economic and social benefits.
 - Supporting the land use and transport needs of key regional industries including tourism.
 - Using natural resources with care.

15.08-3 Geographic strategies

18/12/2008 VC52

Decision making by planning and responsible authorities should be consistent with:

- The Victorian Coastal Strategy 2008.
- The Great Ocean Road Region A Land Use and Transport Strategy (Department of Sustainability and Environment, 2004)
- The purpose for which land is reserved under the Crown Land (Reserves) Act 1978.
- Any relevant State environment protection policy.
- Any relevant coastal action plan or management plan approved under the Coastal Management Act 1995 or National Parks Act 1975.
- Any approved recommendations from the Land Conservation Council or the Victorian Environment Assessment Council.

and have regard to (as relevant):

- The Coastal Spaces Landscape Assessment Study (Department of Sustainability and Environment, 2006).
- The Great Ocean Road Landscape Assessment Study (Department of Sustainability and Environment, 2004).
- The Siting and Design Guidelines for Structures on the Victorian Coast (Victorian Coastal Council, 1998).

Attachment 4

<u>Ministerial Direction No 13 - Managing Coastal Hazards and</u> the Coastal Impacts of Climate Change

Planning and Environment Act 1987 Section 12 (2) (a)

DIRECTION NO. 13

MANAGING COASTAL HAZARDS AND THE COASTAL IMPACTS OF CLIMATE CHANGE

Purpose

The purpose of this Direction is to set out the general requirements for consideration of the impacts of climate change within coastal Victoria as part of an amendment which would have the effect of allowing non-urban land to be used for an urban use and development.

Application

This Direction applies to any planning scheme amendment that provides for the rezoning of non-urban land for urban use and development of all land:

- Abutting the coastline or a coastal reserve.
- Less than 5 metres Australian Height Datum within one kilometre of the coastline including the Gippsland Lakes.

Definition

In this Direction:

Coastline means the line of the low water mark off the sea coast which includes any bay, inlet, estuary and any waters within the ebb and flow of the tide.

Coastal hazard means an occurrence of an event within coastal Victoria which includes the individual or combined effects of inundation by the sea, the effects of storm tides, river flooding, coastal erosion, landslip/landslide and sand drift which adversely affects or may adversely affect human life, property or aspects of the environment.

Requirements to be met

In preparing an amendment which would have the effect of rezoning non-urban land for urban use or development, a planning authority must include in the explanatory report how the proposed amendment:

- Is consistent with the policies, objectives and strategies for coastal Victoria as outlined in Clause 15.08 of the State Planning Policy Framework.
- Addresses the current and future risks and impacts associated with projected sea level rise and the individual and/or combined effects of storm surges, tides, river flooding and coastal erosion.
- Is based on an evaluation of the potential risks and presents an outcome that seeks to avoid or minimise exposing future development to projected coastal hazards.

- Ensures that new development will be located, designed and protected from potential coastal hazards to the extent practicable and how future management arrangements will ensure ongoing risk minimisation.
- Considers the views of the relevant floodplain manager and the Department of Sustainability and Environment.

Exemption by Minister

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The Minister may grant an exemption from the need to comply with this Direction in relation to a particular amendment. An exemption may be granted subject to conditions.

JUSTIN MADDEN MLC Minister for Planning

18 December 2008

Attachment 5

<u>General Practice Note - Managing coastal hazards and the</u> coastal impacts of climate change





Managing coastal hazards and the coastal impacts of climate change

This General Practice Note provides guidance on:

- managing coastal hazards in the context of climate change
- coastal vulnerability assessments
- the decision making process for assessing coastal hazard risk
- planning for development in vulnerable coastal areas.

Background

Significant development has already occurred in coastal areas. Population growth and the demand for coastal living are ongoing pressures. The potential impacts of climate change on existing coastal hazards are also likely to increase.

The Victorian Coastal Strategy 2008 identifies that during this century our coastline is likely to be impacted by climate change. Impacts such as sea level rise and an increase in frequency and severity of storm events are projected which are likely to lead to greater coastal inundation and erosion that may cause damage and loss to property, infrastructure and the environment.

Managing risk exposure relative to such coastal hazards and understanding how climate change will impact on these coastal hazards is an important component of informed decision making.

What are coastal hazards?

There are many coastal hazards that need to be considered as part of any planning process, for example, wildfire, various forms of flooding, acid sulfate soils, landslip and landslide. For the purposes of this practice note, coastal hazards mean inundation (both coastal and river) and erosion.

Coastal inundation

Coastal inundation is the flooding of land by ocean waters or river catchments. The frequency, extent and magnitude of coastal and river inundation is likely to be altered by climate change over time and through the combined interactions with sea level rise, tide ranges, storm surges and other coastal processes.

Coastal erosion

Erosion is a naturally occurring process which is impacted on by a number of climatic factors. Erosion can be classified as either long term or short term.

Long term erosion refers to a trend of erosion extending over several years and can be caused by a reduction in the annual offshore deposition of sand or in the rate of longshore deposition of sand.

Short term erosion refers to erosion that can occur over a short period of time as a result of extreme weather events. Short term erosion caused by sudden and extreme weather can result in significant eroding of the beach profile. During a short term erosion event the sand is transported offshore. After the storm passes the normal coastal process brings the sand back onshore and restores the beach naturally over many months or years.



Department of Planning and Community Development



How will climate change affect coastal hazards?

With the exception of long term sea level rise, climate change is not likely to introduce new types of coastal hazards. However, climate change is likely to increase the frequency, intensity and extent of existing coastal hazards.

This means that for some parts of the Victorian coast, climate change impacts are likely to exacerbate coastal erosion processes and inundation, potentially further increasing the impacts of these coastal hazards on existing and future coastal communities and development.

While some climate change impacts such as sea level rise are gradual and occur over a long timeframe, extreme weather events can occur at any time and can significantly reshape the coastline.

Land use planning decisions have long-term implications due to the relatively long life span and permanency of use and development proposals such as residential growth areas, buildings, roads and utilities.

What is sea level rise and what is the benchmark for planning purposes?

Sea level rise means an increase in the mean level of the ocean. Even if atmospheric concentrations of greenhouse gases were stabilised at today's levels, ongoing sea-level rise would continue from past greenhouse gas emissions and consequent warming.

Sea level rise

Key contributions to sea level rise include the melting of ice stored in glaciers and the polar ice sheets, increasing the amount of water in the ocean. Warming contributes to thermal expansion of oceans contributing to the raising of sea levels.

The Fourth Assessment Report by the Intergovernmental Panel on Climate Change (IPCC) November 2007 concludes that:

- global average sea level has increased at an average rate of 1.8 millimetres per year between 1961 and 2003 but between 1993 and 2003 at 3.1 millimetres per year; and
- annual average ice extent has shrunk by 2.7 per cent per decade since 1978.

The Victorian Coastal Strategy 2008, identifies sea level rise as a significant coastal issue that requires specific attention. Based on current scientific projections by the IPCC, the Strategy identifies the need to:

Plan for 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 impacts associated with climate change.

The upper limit of sea level rise of 0.8 metres by 2100 is derived from the Fourth Assessment Report of the IPCC (November 2007). This includes a provision of 0.2 metres to take into account the projected extent of ice sheet melt to that time.

For further information about Victorian Government policy on planning for sea level rise please refer to the Coastal Advisory Note: How to consider sea level rise along the Victorian Coast (Department of Sustainability and Environment, 2008).

What are coastal hazard vulnerability assessments?

Our understanding of the coastal impacts of climate change is evolving and as time progresses our knowledge and understanding will continue to improve. Understanding coastal hazard vulnerability will help avoid increased risk exposure as part of future coastal development.

Planning and responsible authorities should determine if a coastal hazard vulnerability assessment is required to assist in making infordecisions about use and development proposals or to inform long term settlement and strategic planning activities.

If coastal hazard vulnerability assessments are required, consideration should include factors such as sea level rise, storm tide and surge, coastal processes, river inundation and local topography and geology.

Coastal hazard vulnerability assessments can be undertaken at a scale appropriate to inform a particular proposal or development need. In some areas this work may have already been undertaken.



The Future Coasts Program

Future Coasts is a major program of the Victorian Government to assess the physical vulnerability of Victoria's coast to climate change, and develop strategies to help communities and industry respond and adapt. The Future Coasts program is being led by the Department of Sustainability and Environment. Further information on this important project can be obtained at: www.climatechange.vic.gov.au/futurecoasts

Coastal vulnerability assessments can be undertaken by a suitably qualified coastal engineer or coastal processes specialist to assist with understanding erosion rates and developing appropriate setbacks or protection works.

In some instances, where local geology may be unknown or unstable, or where inundation from rivers and streams may also be an issue, advice can also be sought from a qualified hydrological or geotechnical expert.

What is the process for assessing coastal hazard risks?

The Victorian Coastal Strategy 2008 sets out the policy and strategic direction for responding to coastal hazard risks in the context of climate change. This is reflected in the State Planning Policy Framework through Clause 15.08 'Coastal areas'.

The general steps in the process for assessing and responding to proposals in coastal areas are outlined in Figure 1.

Planning decision making for the impacts of climate change on coastal hazards should be guided by a process of investigation and number of general principles. These include:

Risk Avoidance: New use and development should be sited and designed in a way that does not unnecessarily expose future communities and assets to coastal hazard risks over its intended lifespan.

For coastal erosion, avoidance means ensuring that new use and development is not affected by the retreat of a coastline over the intended design lifespan. For inundation, avoidance means ensuring that new use and development is not placed in harms way and is located beyond, or above an area prone to temporary inundation.

Integrated coastal planning: Requires the assessment of the future impacts of coastal hazard risk exposure on the economic, environmental and social wellbeing of people and communities in coastal areas.

Precautionary approach: The precautionary approach is an accepted principle in coastal decision making. It requires decision makers to act having regard to the best available science, knowledge and understanding of the consequences of decisions and in the context of increasing uncertainty, to make decisions that minimise adverse impacts on current and future generations and the environment.

Figure 1: Decision making process

ESTABLISH CONTEXT

e.g: coastal location, existing hazards exposure, information availability, decision timeframe etc

ASSESS VULNERABILITY

e.g: probability, magnitude, frequency, consequences

EVALUATE RISKS

e.g: precautionary approach focused on impacts on people, property, communities, infrastructure, environment

RESPONSE STRATEGY

e.g: avoid, retreat, accommodate, protect, apply precautionary approach

DECISION



Planning for the impacts of climate change on coastal hazards need to be considered for:

- Amendments to planning schemes which seek to rezone land which would have the effect of allowing non-urban land to be used for a new urban use and development. Refer to Ministerial Direction No. 13 Managing coastal hazards and the coastal impacts of climate change.
- Considerations regarding development of individual parcels of land within existing zoning and overlay provisions within planning schemes.

In both the above cases, coastal hazard assessments may be required to understand the risks and identification of strategies to respond to and manage risk.

Rezoning of land for urban purposes

Given the current body of knowledge and information an important principle is the need to avoid the further intensification of development in areas that are likely to be impacted by projected coastal hazards under climate change.

Proposals to rezone land should be accompanied by an informed coastal vulnerability assessment for that part of the coastline. This should be informed using the best available information to understand the impacts of climate change.

Considerations as part of this process may include:

- The intended use and design lifespan and value of a proposal assessed against the relative risk exposure during that time.
- The local geographic characteristics of the coastline such as ocean exposure (for example open coast or sheltered exposure) and land type (such as sandy, rocky, engineered).
- The role of natural coastal processes and the need to provide for allowances for such processes to continue as a cost effective form of coastal defence against climate change.
- The critical need for coastal protection infrastructure and the type, location and cost of providing and maintaining such infrastructure throughout its intended lifespan.

- The need to establish and provide for appropriate setbacks to avoid a projected permanent hazard event and/or withstand a temporary event.
- The ability for a proposal to provide safe, allweather access during times of emergency.
- Consideration of appropriate built form responses such as the need for land fill, materials, sub-floor and floor level heights.
- The cumulative impacts or any flow-on effects of proposed development and any associated protection works to adjacent properties and the coastline.
- Other identified coastal hazards such as coas acid sulfate soils, land subsidence, wildfire and other general geotechnical risks.
- Any other issues relative to the orderly and proper management of use and development within coastal areas such as development within identified settlement boundary, significant landscapes, native vegetation and cultural heritage.
- Any other issues relative to the orderly and proper management of use and development within coastal areas such as development within an identified settlement boundary, significant landscapes, native vegetation and cultural heritage.

Strategic investigations should take into consideration the above and other future management issue that may be relevant to ensure risk minimisation and effective long term management of new use and development.





Assessing applications for planning permits

A more complex planning issue is dealing with existing developed areas in particular within or adjacent to low lying areas susceptible to coastal hazards.

The following provides an overview of potential situations and possible considerations:

Minior buildings and works

P PRIMA PLANACING	5 (M.) (19/13)
Situation	Permits for minor building and works, for example non-habitable buildings, dwelling extensions or ancillary farm buildings.
Consideration	Typically no change from current practice. Assessment of impacts may be advisable for high value assets. Siting and design considerations may also need to be factored in. and non-urban areas
Situation	Permits for buildings and works such as replacement of an existing dwelling or construction on a vacant allotment.
Consideration	Assessment of impacts may be advisable for sites immediately adjacent to the coast or near an existing floodplain. Location specific information may be required to inform a localised coastal vulnerability assessment and the development of appropriate land suitability, set back or design responses.
	The relevant flood plain manager or a suitably qualified coastal engineer or hydrology expert can provide relevant advice as required.
kareje sesilenie	velopment/subdivision proposals
Situation	Permits for buildings and works that seek to introduce significant change to built form and intensity within and adjacent to the coast or near existing floodplains.
Consideration	A coastal hazard vulnerability assessment may be required to determine potential exposure and development suitability of the land to evaluate risks. This may include coastal engineering, design or setback responses necessary to demonstrate assessed risks can be effectively and sustainably managed.
	The relevant flood plain manager or a suitably qualified coastal engineer or hydrology expert can provide relevant advice as required.

Obtaining further information

For guidance on whether a coastal process or coastal hazard vulnerability assessment is required for developments along the Victorian coast, and the key elements of a hazard assessment, advice should be sought from the appropriate flood plain management authority and the Department of Sustainability and Environment.

For more information regarding the *Victorian Coastal Strategy 2008* and the Victorian Government climate change program please visit the following websites: www.vcc.vic.gov.au www.climatechange.vic.gov.au

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www.dpcd.vic.gov.au/planning

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Attachment 6

Fact Sheet - Managing Coastal Hazards and the Impacts of Climate Change









2008

COASTAL PLANNING FACT SHEET MANAGING COASTAL HAZARDS AND THE COASTAL IMPACTS OF CLIMATE CHANGE

Over the next 100 years, our climate is likely to change as a result of global warming. Climate change will impact the Victorian coastline in many ways. However some climate changes are already occurring.

While greenhouse gas emission reductions both globally and locally can help slow the rate. climate change cannot be prevented entirely. Changes such as temperature, rainfall and sea levels will occur to differing extents in different parts of Victoria throughout the 21st century and probably beyond. Victoria needs to adapt to these changes. Adapting to long-term climate change will also contribute to our resilience to extreme events as well as to natural fluctuations in climate.

Within coastal areas increased flood risk, and greater frequency and intensity of storms are likely to occur into the future. Informed and proactive planning now can help minimise exposure to impacts and maximise benefits and minimise the direct and indirect costs of climate change.

Victorian Coastal Strategy, 2008

The Victorian Coastal Strategy (VCS) 2008 is the State Government's policy commitment for coastal, estuarine and marine environments in Victoria. It provides a longterm vision for the planning, management and sustainable use of our coast. It contains the policies and actions Victorians will need to implement over the next five years to help achieve that vision. The VCS directly responds to the challenges of climate change, coastal population growth and marine ecological integrity.

Sea Level Rise

Sea level rise is the result of a combination of factors caused by global warming of the atmosphere. Warming contributes to the thermal expansion of the ocean and melting of the polar ice caps.

The Intergovernmental Panel on Climate Change (IPCC) has recently indicated that:

- Global average sea level has risen since 1961 at an average rate of 1.8 millimetres per year and since 1993 at 3.1 millimetres per year.
- Annual average ice extent has shrunk by 2.7 per cent per decade since 1978.

Based on current scientific projections by the IPCC, the Victorian Coastal Strategy 2008 identifies the need to:

Plan for 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 impacts associated with climate change.

Coastal hazards and the coastal impacts of climate change

With the exception of long term sea level rise, climate change is not likely to introduce new types of coastal hazards. However, climate change is likely to increase the frequency, intensity and extent of existing coastal hazards.

This means that for some parts of the Victorian coast, climate change impacts are likely to exacerbate coastal erosion and inundation, further increasing the impacts on existing and future coastal communities and development.



Department of Planning and Community Development

Victorian Government's Future Coasts Program

Floure Gaasts, we by the Department of Sustainability and Environment is seek ap to provide a comprehensive valuerae invidesestment of the risk of climate change to the Victor an coastline by the end of 2010. The program will mae areas that are physically vulnerable to climate change impacts along the coast and develop accision-making support tools. The program is pair' of the Victor on Climate Change Adaptation Program.

Land Use Planning decisions and the coastal impacts of climate change

Land-use planning decisions often have long-term implications because of the long life span and permanency of use and development such as residential growth areas, buildings, roads or utilities.

Planning approvals should be informed by appropriate information. Each situation will be different and will require information to suit the locational variabilities and type of proposal. Taking a precautionary approach to planning new development, infrastructure and services to avoid coastal hazards over their intended lifespan is a responsible long term approach.

Development should seek to respond appropriately through, siting and design and other measures to avoid and be resilient to future impacts.

Frequently Asked Questions

Does this mean no more development along the coast?

No – coastal growth and development will continue. Normal planning approvals are required, but development proposals must be demonstrate that the future risks posed by coastal climate change impacts have been addressed. Assessment of proposals will need take into account potential impacts as part of the normal decision making process. Proposals should seek to respond appropriately through siting, design and other measures to avoid and be resilient to future impacts.

How will the Victorian Coastal Strategy be given effect to in Planning Schemes?

The Strategy is given effect to in Planning Schemes through clause 15.08 'Coastal Areas' of the State Planning Policy Framework.

How should sea level rise be considered as part of planning schemes?

Sea level rise should be considered as part of strategic long term planning for the coast. Coastat climate change impacts should be considered when reviewing Municipal Strategic Statements and in the development of land use planning strategies.

What does this mean for rezoning of land?

Planning Scheme Amendments that seek to rezone land from non-urban to urban will require appropriate investigations to be undertaken. These investigations should be used to identify potential risks and to inform the nature, design and siting of the proposed use or development proposed by an amendment. What does this mean for Planning Permits?

As is currently the case, planning permit decision making should be informed by relevant information where there is a need. Each situation will be different and will require information to suit locational variability. Such information can be obtained from a suitably qualified coastal processes engineer and/ or a hydrologist specialist, or suitable equivalent to assist with determining responses. Applicants are encouraged to seek appropriate information from a suitably qualified professional Responses may include appropriate setbacks, construction measures such as higher floor levels, site land forming and drainage works etc.

Further information

On issues relating to the need to undertake coastal climate change vulnerability assessments and general climate change information, advice should be sought from the Department of Sustainability and Environment. Call 136 186 or visit www.dse.vic.gov.au

The Victorian Coastal Strategy 2008 is available from the Victorian Coastal Council website www.vcc.vic.gov.au.

Further information on the Future Coasts Program can be obtained at www.climatechange.vic.gov.au/futurecoasts.

For more information about Victoria's planning schemes, visit www.dpcd.vic.gov.au/planning

Attachment 7

Advisory Note - How to consider sea level rise along the Victorian Coast

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Department of Sustainability and Environment

Advisory Note: How to consider a sea level rise along the Victorian Coast

Purpose

The Victorian Coastal Strategy (VCS) is a policy document that provides a comprehensive integrated management framework for the Victorian coast. The Coastal Management Act 1995 requires the VCS to be reviewed every five years. One element of the strategy is the consideration of sea level rise. This note aims to provide guidance for decision makers in using the sea level rise predictions in the VCS.

What is sea level rise and what does it mean for the coast?

The VCS identifies that during this century it is likely the Victorian coastline will be impacted by sea level rise and increased frequency and severity of storm events which are likely to lead to greater coastal inundation and erosion. This may cause damage and loss to property and assets.

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	- Lawreet Tobe

Figure 1: Contributions to coastal sea level from tides, storm surge and wave processes. Sourced from CSIRO website.

Further information on sea level rise can be found at the CSIRO website.

Who defines the sea level rise benchmark?

The Intergovernmental Panel on Climate Change (IPCC) is the most authoritative international scientific advisory body on human induced climate change science.

In its fourth Assessment Report, (November 2007), the IPCC projects the upper limit of sea level rise as being 0.8m by 2100. This includes a provision of 0.2 meters to take into account the projected extent of ice sheet melt to that time. On the basis of this IPCC information and until nationally consistent benchmarks for coastal vulnerability are established, the Victorian Coastal Council has recommended in the VCS 2008 that a minimum sea-level rise estimate of 0.8 metres by 2100 be applied for planning purposes.

It should be noted that as new information emerges from the IPCC on climate change, sea level rise projections will be refined and the interim benchmarks will be superseded by national benchmarks.

Why should it be considered in long term planning?

Sea level rise should be taken into consideration in long term planning as part of national, state and local responses to adapting to climate change.

Principles that underpin the importance of sea level rise information for long term coastal planning include:

1. The precautionary principle - where there is the potential for serious or irreversible threat to the environment, climate systems or ecological systems, the lack of absolute certainty about the precise quantum of sea level rise and other aspects of climate change science should not be used as a reason for postponing adaptation measures.

2. Informed decision making - in all decision making regarding coastal planning and in particular in making decisions concerning land use and development there is a need to consider all relevant information available at the time. The impacts and risks of climate change including sea level rise need to be taken into account to make informed decisions.

3. Reduction of uncertainty - there is a level of uncertainty in every decision making process. However, the consideration of all relevant information available to the decision maker at the time the decision is made allows for informed decision making.

How should a benchmark be used?

Relevant decision makers, (eg planning authorities, catchment management authorities and public land managers amongst others), may require erosion or vulnerability investigations to assist in making informed decisions about development, planning and management along the coast.

If coastal erosion or vulnerability assessments are required, data inputs should include factors such as sea level rise, storm surge information, coastal processes, flooding and inundation, local geology, etc. A prudent measure for sea level rise based on best available science at the time will inform high quality coastal vulnerability assessments.

Currently the data input for sea level rise as part of any erosion or vulnerability assessments is to use the IPCC upper projections of 0.8 metres by 2100 as a prudent measure. This figure will be refined as new scientific data becomes available. As the figure is refined the new figure should be be used by relevant decision makers.

Further Information on sea level rise consideration

A range of products are being developed to support relevant decision makers when they are considering climate change impacts for future planning.

The development of these products will be led by the Department of Sustainability and Environment. Key government departments such as the <u>Department of Planning and Community Development</u> will be closely consulted.

The proposed products include:

- A guideline for coastal erosion and inundation assessments and set backs
- Mapping of areas physically vulnerable to climate change impacts along the coasts (delivered as part of the Future Coastal Program)
- Decision making support tools (delivered as part of the Future Coastal Program)

For more information on products generated through the Future Coasts Program, visit <u>www.climatechange.vic.gov.au\futurecoasts</u>.



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Attachment 8 – Mapping and Modelling Indicative Timeline of Data Release

Output	Description	Timeframe
Terrestrial digital elevation modelling (DEM)	Land-based modelling will result in a DEM which is accurate to approximately 10cm vertically, and extends to 10m elevation. This will be available in four sections as detailed below.	See map below
• SA border to Anglesea		Now available
Port Phillip Bay & Western Port		Now available
Ninety Mile Beach, Wonthaggi & Snowy River		May 2009
• South & East Gippsland		May 2009
Storm surge modelling	CSIRO will conduct storm surge and inundation modelling along the entire Victorian coastline.	Early 2009
Coastal processes modelling	Modelling of coastal processes contributing to inundation from storm surge and sea level rise will be undertaken along the coast throughout 2009	End 2009
Preliminary Vulnerability Assessments	Integration of the DEM and the modelling work will provide preliminary vulnerability assessments of the coastline. The physical vulnerability assessments will be accessible to agencies and land managers to undertake further analysis of the impacts climate change may have on local environments and infrastructure.	Early 2010
Bathymetric (sea floor) digital elevation modelling (DEM)	The sea-based modelling will result in a DEM which is accurate to approximately 50cm vertically, and extends to 20m depth.	Early 2010





20 Km

Legend < 0 m elevation 6-7 m elevation 0 - 1 m elevation 7 - 8 m elevation 1-2 m elevation 8 - 9 m elevation 2-3 m elevation 9 - 10 m elevation 3 - 4 m elevation greater than 10 m in elevation Ν 4 - 5 m elevation no elevation data available 5 - 6 m elevation

operational railway lines road network watercourse network watercourse areas wetland swamps Map 1 of 1 This map represents elevations as colour bands from zero to ten metres at one metre increments from the coastline. This map is not intended for use for coastal vulnerability assessments eg. storm surge, sea level rise.

The elevation information displayed on this map was derived from LiDAR captured data. The pixel resolution of the original LiDAR data was 1m, with a vertical accuracy of ++ 10 cm @ 1 sigma. For practical purposes the LiDAR data was resempted to 5m pixels and as a result; the vertical accuracy is approximately 20 cm. The LiDAR information is current as of 2007.

The vector information used to create the base for this map is sourced from VICMAP Digital.

This map uses the VICGRID 94 projection © The State of Victoria, Department of Sustainability and Environment, 2009

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Cartography by the Customised Mapping Unit, Spatial Information Infrastructure, DSE, G/7230-3. Php_futurecoastslertificew_hing_areastprograma/arcmapticew_hing_areas_1_10m_lider_torquay_to_southwest.mxd, created 14811/2009.

Coastal Digital Elevation Model (DEM)

Port Phillip and Western Port Section

Anglesea to San Remo



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RESPONDING TO COASTAL CLIMATE CHANGE IMPACTS THROUGH THE PLANNING SYSTEM

TERMS OF REFERENCE

ADVISORY COMMITTEE APPOINTED PURSUANT TO PART 7, SECTION 151 OF THE PLANNING AND ENVIRONMENT ACT 1987

1. PURPOSE

The purpose of the Coastal Climate Change Advisory Committee (CCCAC) is to investigate and recommend ways in which Victoria's land-use planning and development controls can best support the Victorian Government's policy for managing the coastal impacts of climate change as outlined within the Victorian Coastal Strategy 2008.

The CCCAC will need to consider strategic and statutory planning and development provisions to support implementation of the above in order to:

- Support emerging vulnerability information being assembled as part of the Victorian Government's *Future Coasts* program.
- Improve the operation and effectiveness of the Victorian planning system to deal with coastal hazards and the impacts of climate change into the future.
- Support the ability for strategic, long-term adaptation planning of coastal areas to ensure sustainable and appropriately located development and infrastructure.

Key areas for consideration by the CCCAC include:

- The operation and appropriateness of existing Victoria Planning Provisions (VPP) for example, policy, zones and overlays, in considering coastal climate change impacts.
- The form of new or amended VPP provisions to facilitate the use of emerging vulnerability information from the Government's *Future Coasts* program.
- Consideration of international and national approaches, frameworks etc and relevant case studies within Australia which are relevant to the Victorian context.
- The use and application of appropriate coastal hazard assessment methods and information within current or proposed planning and development control provisions of the VPP.
- Relevant regulatory and legislative arrangements which interact with Victoria's land-use planning system.
- Any other matters that the CCCAC considers relevant to planning and development decisions that facilitate climate change adaptation along the coast.

Further issues for consideration by the CCCAC can be found at Attachment 1.

2. BACKGROUND

Reasons for the CCCAC

Climate change represents an unparalleled challenge that will alter the coastline as we know it. Predicted sea level rise presents one of the greatest long term planning challenges facing Victoria. In the short to medium term, changing weather patterns combined with rising sea levels will create a more immediate challenge to coastal land-use planning and management.

Periodic flooding from rivers and the sea is a natural process that plays an important role in shaping the natural environment. Flooding threatens and causes substantial damage to property and communities. Approximately 60% of all coastal settlements in Victoria are located next to an estuary or on low-lying land associated with an estuary.

The climate change story for the coast is evolving. Modelling of the impacts of coastal vulnerability is being prepared for the entire coastline over time. A parallel investigation into planning and development approaches and responses is required in order to support the use of this information as well as evolve coastal land-use policy and planning.

Victorian Coastal Strategy 2008

On 10 December 2008, the Victorian Government released the *Victorian Coastal Strategy* 2008 (the Strategy). The Strategy is the third iteration since its inception in 1997. It was reviewed in accordance with the *Coastal Management Act 1995* and approved by the Minister for Environment and Climate Change.

The Strategy identifies a number of significant challenges for the future management of the coast. In particular, it identifies the impacts of climate change as a significant challenge facing all jurisdictions.

The Strategy identifies the need to plan for the long term impacts of sea level rise (up to 0.8m to 2100) and the combined impacts of coastal hazards such as storm surges, erosion and inundation.

As a first step to supporting the policy position of Government (through the Strategy) the Minister for Planning has adopted the following measures to provide initial guidance:

- Update of clause 15.08 of the State Planning Policy Framework of the VPP providing updated reference to new coastal planning policy (see Attachment 2);
- Release of Ministerial Direction No.13 requesting coastal rezoning proposals from non-urban to urban uses be accompanied by a suitable assessment of coastal hazard vulnerability (see Attachment 3); and
- Release of a General Practice Note providing an overview of coastal hazard vulnerability and what climate change means for these hazards.

Future Coasts Program

The Future Coasts program represents a multi-million dollar investment by the Victorian Government to consider climate change adaptation on the coast.

Future Coasts will produce detailed mapping of the coastline that will be used as a tool for assessing the physical vulnerability of coastal areas to climate change.

These physical vulnerability assessments, along with on-going consultation with coastal managers and stakeholders, will be used to inform coastal policy and develop planning measures that help coastal settlements adapt to the impacts of sea level rise and storm surge.

These assessments, along with on-going consultation with coastal managers and stakeholders, will be used to inform coastal policy and develop planning measures that help coastal settlements adapt to the impacts of sea level rise and storm surge.

Within this context, the role and function of Victoria's land-use planning and development system is considered as one of a number of significant tools available to government to assess, respond and manage the future challenges facing the coast.

Other activity

Increasing momentum and activity is being generated along the coast to find solutions to this significant challenge. Activity that is currently underway on the issue of climate change with an element or focus on coastal planning include:

- Victorian Climate Change Green/White Paper.
- Council of Australian Governments Climate Change and Water Adaption Group.
- House of Representatives (Federal) Inquiry into climate change and environmental impacts on coastal communities.

3. METHOD

The CCCAC will be expected to liaise on an ongoing basis with the *Future Coasts* program to ensure consistency, progress priority issues, release of reports and exchange of relevant information as part of its program.

The CCCAC should undertake its review through the following phases:

- Phase 1: Investigation, Issues and Options Paper for consultation:
 - Consultation with key stakeholders identified in this Terms of Reference and others as determined by the CCCAC.
 - Any immediate and/or interim planning and development provision or consequential measure which may be required to further support implementation of the Government's policy position.
 - Gaps and opportunities within existing governance arrangements to achieve integrated management of climate change impacts within coastal areas.
 - Public exhibition of the Issues and Options Paper.
- Phase 2: Submissions on the Issues and Options Paper to include:
 - An appropriate program of hearings based across the coastal regional Victoria and Melbourne.
 - A variety of workshops, hearings and other individual meetings with stakeholders.

- Phase 3: Preparation of a Final Report containing recommendations that:
 - Form the basis for further adjustments, changes and considerations to the planning and development provisions in Victoria.
 - Assist in the development of further actions and activities as part of the Victorian Government's *Future Coasts* program.

4. CONSULTATION

Within this context, the CCCAC is encouraged to provide a focus for effective engagement relevant to the planning and environmental law sector in preparing its advice and any associated recommendations.

To inform the preparation of an Issues and Options Paper and the Final Report, the CCCAC should seek the views and opinions of (but not limited to) the following key stakeholders:

- All coastal local councils
- Building Commission (Victoria)
- Catchment Management Authorities
- Department of Planning and Community Development
- Department of Premier and Cabinet
- Department of Treasury and Finance
- Department of Sustainability and Environment
- Engineers Australia (Victoria)
- Municipal Association of Victoria
- Melbourne Water
- Planning Institute of Australia
- Property Council of Australia
- Urban Development Institute of Australia (Victoria)
- Victorian Coastal Council and Regional Coastal Boards.
- Victorian Civil and Administrative Tribunal
- Victorian Local Government Association
- Victorian Planning and Environmental Law Association
- Water Authorities

The CCCAC may inform itself in any way it sees fit including inviting submissions, arranging hearings and consulting with other stakeholders beyond those listed.

5. TIMING

The activities of the CCCAC should be completed within the following time frame:

- Phase 1 by October 2009
- Phase 2 by March 2010
- Phase 3 by December 2010

6. **FEES**

The member(s) of the Advisory Committee will receive fees and allowances as prescribed for a Panel appointed under Division 1, of Part 8 of the *Planning and Environment Act 1987.*

The CCCAC may operate as a quorum of one as required and/or as determined by the Chair.

7. FURTHER INFORMATION

Day to day liaison for the review will be through:

Simon Haber Senior Policy Officer Planning Policy Planning and Local Government Division Department of Planning and Community Development Ph: (03) 9637 9217

JUSTIN MADDEN MLC Minister for Planning

Date: L

ATTACHMENT 1: ISSUES FOR CONSIDERATION

Issues for consideration and advice sought from the Advisory Committee include for example, but are not limited to:

Statutory planning provisions

- The adequacy of existing zones, overlays and other relevant provisions to support the implementation of coastal vulnerability assessments.
- The fundamental and practical need for new zones, overlays and other provisions to respond to the impacts of climate change on the coast.
- Any consequential amendments or improvements to existing provisions that should be made immediately to allow improved efficiency of decision making.
- The general construct and operation of any proposed new provision to be applied through the VPP.
- The effect, use and application of the *Precautionary Principle* in land-use planning and decision making, and advice on improving guidance on its use and application.
- Appropriate planning and development provisions for e.g. building setbacks, minimum floor levels, appropriate engineering assessments, construction techniques, building materials and temporary/demountable dwellings etc.

Strategic planning

- The consideration of risk management approaches and frameworks and their applicability within Victoria and the Victorian land-use planning system.
- Consideration of strategic climate change adaptation responses and the role of the Victorian planning and development system within these.
- Advice on measures that might assist in the achievement of strategic adaption through the land-use planning system.

Planning and property law

- Potential use and application of common law doctrines relating to coastal land accretion and erosion.
- Common law liability and its relationship to coastal climate change impacts and land-use planning decision making.
- Potential role of property titles and relevant legislation in communicating and conveying risk.
- Use and appropriateness of Agreements under section 173 of the *Planning and Environment Act 1987*.

Emergency management and planning

• The nexus between emergency management planning and land-use planning decision making in a coastal context.

Operational context

- The extent and role of the Victorian planning and development system in responding to coastal climate change impacts.
- The interrelationships and operation of relevant legislation, such as the *Environment Effects Act* 1978, *Coastal Management Act* 1995, *Catchment and Land Protection Act* 1994 etc in achieving integrated coastal zone management.

Attachment 2

1. Planning system responses to climate change risks attached to the TOR included:

Amendments to State Planning Policy Framework (SPPF): SPPF Clause 15.08 and explanatory report

Minister's Direction No. 13 – Managing Coastal Hazards and the Coastal Impacts of Climate Change, issued concurrently with this amendment.

Note Planning authorities must comply with the Ministerial Direction on the Form and Content of Planning Schemes, issued under Section 7(5) of the <u>Planning and Environment Act 1987</u>. The direction applies to the form and content of all planning schemes and any amendments to those planning schemes and should be read in conjunction with the <u>Victoria Planning</u> <u>Provisions</u> (SPPF Clause 15.08).

General Practice Note to provide guidance to planning authorities and planning scheme users on application of the <u>Victoria Planning Provisions</u> set out under the State Planning Policy Framework

Advisory Committee on Coastal Climate Change appointed pursuant to Part 7, Section 151 of the *Planning and Environment Act* 1987 Announced by the Minister for Planning, Wednesday 20 May 2009 (tbc)