

Audit of Sea Level Rise, Coastal Erosion and Inundation Legislation and Policy

**Report prepared by the Environmental Defender's Office of NSW
for the Sydney Coastal Councils Group**

December 2010

(updated May 2011)



First Published in June 2011 by the
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Executive Summary

The Sydney Coastal Councils Group Inc (SCCG) has instructed the Environmental Defender's Office NSW (EDO) to conduct a comparative assessment of Australian State and Territory planning and coastal legislation and policies that address sea level rise, coastal erosion, coastal inundation and storm surge. In addition, the SCCG has requested an assessment of some identified regional and international jurisdictions.

As a result of our analysis of different jurisdictions, the EDO has prepared this report for the SCCG.

Part One of this report outlines the findings of our research as to how Australia's jurisdictions are responding to coastal impacts through legislation and policy.

Part Two includes an analysis of how certain international jurisdictions are dealing with similar issues.

Part Three of the report identifies areas that appear outside of the project parameters, but will require further attention and analysis to develop solutions to some of the problems identified in this paper.

Having covered domestic and international responses, **Part Four** of the report makes recommendations for law reform with regard to the NSW response to sea level rise, coastal erosion, coastal inundation and storm surge. These recommendations relate to 10 key themes identified from the project research and analysis:

- Addressing the ad-hoc framework for coastal management
- Including detail in primary legislation as opposed to subordinate instruments
- Improving enforcement and compliance
- Dealing with existing inappropriate development
- Providing certainty to those managing the uncertain
- Lines in the sand – No go areas for development
- Development of a federal framework
- The need for a paradigm shift in NSW
- Hierarchy of adaptation approaches, and
- Improving communication.

In conclusion, **Part Five** recommends the development of a robust and prescriptive statutory framework for considering planning issues and coastal hazards like coastal erosion, inundation, storm surge and flooding in NSW. The role for a Federal system in filling local gaps in resourcing is canvassed; along with the need for amendments to assist local councils in developing site specific strategies. To avoid development in areas at risk, all plan and decision making be made in accordance with the principles of ecologically sustainable development. In addition, better communication strategies should encourage participatory decision making and monitoring of those decisions. Finally, existing inappropriate development deserves much greater attention from both State and Federal governments.

Introduction

In 2009, the Sydney Coastal Councils Group (SCCG) were awarded funding under the Natural Disaster Mitigation Program to undertake the *Mapping and Responding to Coastal Inundation Project*. This project aimed to provide Councils and the community with the science, management and planning provisions and community awareness-raising materials necessary to effectively incorporate sea level rise and extreme storm surge events into Local Government planning and management systems. The project involves the following stages:

- Stage 1: Map the effect of climate change on sea level rise and extreme sea levels.
- Stage 2: Develop model planning provisions to integrate sea level rise and extreme sea level events into relevant planning strategies of the SCCG.
- Stage 3: Develop and distribute community risk disclosure information and corresponding community and stakeholder education program.

To assist with Stage 2 of the *Mapping and Responding to Coastal Inundation Project* the SCCG engaged the Environmental Defender's Office NSW (EDO) to conduct a comparative assessment of:

1. Australian State and Territory planning and coastal legislation and policies that address sea level rise, coastal erosion, coastal inundation and storm surge.
2. Identified regional and international jurisdictions.

The results of this analysis are presented in this report.

Note on currency: In general the research in this report is current to December 2010. A draft report was provided to SCCG in early 2011, and some updates were made prior to finalisation of the project in May 2011.

Part One: Domestic Analysis

This Part involves an in-depth analysis of the domestic planning and coastal legislation, regulations, planning instruments, and policies to identify references to the following terms:

- “sea level rise”;
- “coastal erosion”;
- “coastal inundation”; and
- “storm surge”.

It is important to understand from the outset that the above terms only appeared in the legislation or regulations in extremely limited circumstances. In order to ensure that this report encapsulates those instruments that could contain information relevant to the coastal issues above, our analysis extended the search terms to include “erosion”, “inundation” and “coast” for completeness. These subsequent three terms may be referred to as the additional search terms throughout the remainder of this Report.

In order to present the information as clearly as possible, this project will begin the analysis of each Australian State and Territory with a table showing whether the specific initial terms – “sea level rise”, “coastal erosion”, “coastal inundation” and “storm surge” – appeared in any primary legislation. The tables also include references to the additional search term “coast”, due to its frequent appearance.

1.1 Western Australia

Western Australia	“sea level rise”	“coastal erosion”	“coastal inundation”	“storm surge”	“coast”
Legislation	No results.	No results.	No results.	No results.	17 results.
Regulations	No results.	No results.	No results.	No results.	44 results.

As the table shows, none of the primary search terms appeared in any of the Western Australia (WA) primary legislation. However, references were found to the additional search terms: ‘erosion’, ‘inundation’ and ‘coast’. The next section examines where these terms appeared in Acts and regulations.

a) Additional Search Terms: Erosion, Inundation and Coast

i) *Environmental Protection Act 1986*

Erosion is mentioned under the *Environmental Protection Act 1986* in regard to Vegetation Conservation Notices (VCN). If the CEO of the Department suspects on reasonable grounds that unlawful clearing is taking place or has taken place, then a VCN may be issued requiring any person to take specified measures “to prevent the erosion, drift or movement of sand, soil, dust or water.”¹

ii) *Soil and Land Conservation Act 1945*

This Act also refers to erosion in relation to Soil Conservation Notices (SCN). The Act provides that the Commissioner of Soil and Land Conservation is able to issue an SCN when they are of the opinion that land degradation is occurring as a result of “failure on the part of any person to take adequate precautions to prevent or control soil erosion, salinity or flooding.”² Although this appears to be a broad statement, the legislation does not have a coastal focus, and the issuing of SCNs could not be relied upon to ensure long-term shoreline stability in coastal environments.

¹ Sec. 70(4)(b)(iii), *Environmental Protection Act 1986* (WA).

² Sec 32(1)(c), *Soil and Land Conservation Act 1945* (WA).

iii) *Town Planning Regulations 1967 – Notes.*

A reference to erosion and inundation is made under the “Matters to be considered by local government”³ when considering a development proposal. The Notes state that:

“local government in considering an application for planning approval is to have due regard to such of the following matters as are in the opinion of the local government relevant to the use or development of the subject of the application ...

“...whether the proposal is likely to cause soil erosion or land degradation.”⁴

“...whether the land to which the application relates is unsuitable for the proposal by reason of it being, or being likely to be, subject to flooding, tidal inundation, subsidence, landslip, bush fire or any other risk.”⁵

This reference to the additional search terms is weak, with local government only required to “consider” such factors as erosion, flooding and tidal inundation.

iv) *Town Planning (Buildings) Uniform General By-Laws 1989*

Under the heading of “Land liable to flooding” this instrument stipulates that a “building shall not be constructed on land defined by the council as being liable to flooding or inundation.”⁶ This is not prescriptive and relies upon the discretion of the council in deciding what land is “liable to flooding or inundation.”

v) *Town Planning and Development By Laws – By-Law 3*

The By-laws for securing proper sanitary and hygienic conditions in connection with buildings erected on lands liable to inundation provide that:

“From and after the commencement of this By-law, no building intended for use as a dwelling-house, or for occupation by persons for any purpose whatsoever, shall be constructed upon any land which adjoins or is adjacent to any river, lake, or watercourse, unless such building is so constructed that the level of the lowest floor in such building is at least four feet above the highest recorded flood level of the waters of such river, lake, or watercourse at or near the locality of such building, so far as the same can be ascertained from the records of the Meteorological Bureau at Perth or from any other official records.”⁷

The object of this statement is to provide sufficient clearance for proper sanitary and hygienic conditions. It is a fixed figure and not something that would constitute best practice in terms of dealing with coastal impacts. This is the same for the *Uniform General By-Laws – (Section 30, Subsection 1)*. There the reference to inundation is that any plans that accompany applications must show “Flood levels, land liable to inundation, swamps, streams, and any land not naturally drained or having a natural outlet on the surface of the land.”⁸

iv) *Additional Search Term – “Coast”*

Although there were a number of instances where the term ‘coast’ appeared both in the legislation (17 occasions) and regulations (44 occasions) none of these were relevant to the parameters of this project. Instead the search term ‘coast’ was primarily found in instruments such as the *Fish Resources Management Regulations 1995* and the *Marine Archaeology Act 1973*.

³ Part 10.2, *Town Planning Regulations 1967 - Notes*.

⁴ Part 10.2 (c), *Town Planning Regulations 1967 - Notes*.

⁵ Part 10.2 (c), *Town Planning Regulations 1967 - Notes*.

⁶ Reg 23, *Town Planning (Buildings) Uniform General By-Laws 1989(WA)*.

⁷ *Town Planning and Development By Laws – By-Law 3 (WA)*.

⁸ Sec 2 (f), *Uniform General By-Laws – (Section 30, Subsection 1.) New Subdivisions and Re-Subdivisions*.

b) Relevant WA Policy

i) State Coastal Planning Policy 2003

The *State Coastal Planning Policy 2003 No. 2.6* (SCPP) is “the primary policy mechanism for the consideration of potential climate change impacts for new land developments” in WA.⁹ It was developed to “address land use planning and development issues specifically as they relate to the protection and management of the coast throughout WA.”¹⁰ This was implemented in 2003 and although it was amended in 2006 it is “generally considered to be out of date and still refers to the 2003 IPCC 3rd Assessment Report which has since been superseded.”¹¹ As a result of this, the Western Australian Planning Commission (WAPC) and Department of Planning are reviewing the SCPP “in light of scientific information regarding the impacts of climate change and planning policies nationally being amended to reflect the latest predictions.”¹² A draft for public consultation was expected by the end of 2010,¹³ and as such, the comments below primarily relate to the existing SCPP.

The objectives of the SCPP include a specific reference to “ensure that the location of coastal facilities and development takes into account coastal processes including erosion, accretion, storm surge, tides, wave conditions, sea level change and biophysical criteria.”¹⁴

Schedule 1 of the SCPP sets out the “Coastal Development Setback Guidelines for Physical Processes” based on the Horizontal Setback Datum (HSD).¹⁵ These Guidelines (based on a 100 year planning timeframe) should be applied to all coastal development and include how to identify setbacks (i.e. how far a development must be set back from the coast) using scientific calculations of data projecting the changes to coastal regions, allowing for sea level rise.

Part D of Schedule 1 is particularly relevant. It sets the factors that need to be considered for calculating the setback required to protect development from physical coastal processes. In relation to erosion, it sets out the both the distance for absorbing acute erosion (i.e. erosion from extreme storm sequences) as well as the distance to allow for historic trends (i.e. chronic erosion or accretion). For inundation, Parts C3 and C4 address how the HSD will be set for inundation in Low Energy Mangrove Shorelines and Cyclonic Storm Inundation Areas respectively. There is an indication that the upcoming review of the SCPP will review the guidance on how to calculate a physical processes setback to be based around the following four factors:

- Determining the baseline - horizontal setback datum (HSD) - 4 coastal types are identified (sandy, rocky, mangrove, and cyclonic);
- S1 - allowance for the impact of severe storms;
- S2 - allowance for the historic trend - erosion or accretion; and
- S3 - sea level rise (0.38m based upon IPCC AR3 scenario A1B).

⁹ Department for Planning and Infrastructure (Western Australia) submission to Parliament of Australia House of Representatives Standing Committee on Climate Change, Water, Environment and the Arts. *Inquiry into climate change and environmental impacts on coastal communities*, June 2008. Available at:

<http://www.aph.gov.au/House/committee/ccwea/coastalzone/subs/sub089.pdf>.

¹⁰ Planning Western Australia Website. Available at:

<http://www.planning.wa.gov.au/Plans+and+policies/Publications/139.aspx>

¹¹ Freehills fact sheet, *Climate change litigation to flood planning and development in coastal areas*. Available at www.freehills.com.au/Print/5786.aspx.

¹² Western Australian Planning Commission – Position Statement. Available at:

http://www.planning.wa.gov.au/Statement_SPP2_6_Final_WAPC_Modified.pdf?id=2371.

¹³ At May 2011, this document has not been released.

¹⁴ Sec 4, *State Coastal Planning Policy 2003*.

¹⁵ The HSD means the line, determined with regard to physical or biological features of the coast, from which a setback will be applied.

WA's SCPP currently provides that local and regional planning strategies, structure plans, schemes, subdivisions, strata subdivision and development applications, as well as other planning decisions and instruments relating to the coast should:

- Ensure that a coastal foreshore management plan is prepared and implemented;
- Ensure that use of the coast, including the marine environment, for recreation, conservation, tourism, commerce, industry, housing, ocean access and other appropriate activities, is sustainable and located in suitable areas; and
- Ensure that new buildings and foreshore infrastructure on the coast are positioned to avoid risk of damage from coastal processes.

It also notes that a coastal planning strategy and/or foreshore management plan should be prepared to support development proposals on the coast. We note this is a subordinate instrument with multiple references to precautions that “should” (as opposed to “must”) be adhered to. Nevertheless, it does provide some potentially transferable concepts for other jurisdictions and as such the information arising from the upcoming WA SCPP review (which had been planned for the end of 2010) may well prove useful, for example, in the review of NSW coastal policies.

ii) Coastal Planning and Management Manual (2003)

Although WA has a *Coastal Planning and Management Manual*,¹⁶ it does not directly address issues such as “coastal development setbacks (or)... urban drainage systems”¹⁷ to deal with storm surge or coastal inundation.

iii) Development Control Policies

Outside the Perth Metropolitan Region, coastal planning in Western Australia has been largely guided by the WAPC's *Development Control Policy 6.1 – Country Coastal Planning Policy* (DCP 6.1). This DCP operates in a subordinate capacity to the State Planning Policies and provides general development principles. The principles include requirements for the separation from the coast by a foreshore reserve, public access to the foreshore, and that development should not reduce the visual amenity of the foreshore (cl 3.1). DCP 6.1 sets out principles adopted by the WAPC for the allocation of coastal land, for example, “to give priority to coastal dependent developments over non-coastal dependent developments” (cl 3.2.1). It also provides guidelines for setbacks (generally 100m) and the preservation of the ecology, visual amenity, and soil and water quality of the coastline. Other WAPC Development Control Policies relevant to the coast are:

- 1.8 – Canal Estates and other Artificial Waterway Developments;
- 2.3 – Public Open Space in Residential Areas; and
- 4.2 – Planning for Hazards and Safety.

In addition, many coastal management plans and strategies for specific areas and regions have been prepared by the WAPC or local governments.

c) Reports

In January 2010 the Coastal Planning Program released the *Status of Coastal Planning in Western Australia* in conjunction with the Western Australian Department of Planning. This report identified 76 outstanding planning tasks that need to be completed. It was developed in “response to a patchwork of

¹⁶ Available at: <http://www.planning.wa.gov.au/Plans+and+policies/Publications/312.aspx>.

¹⁷ Available at: http://www.planning.wa.gov.au/Publications/1_Introduction.pdf?id=850.

local and regional planning instruments that have sprung up in the absence of an effective State policy framework.”¹⁸

In the *Western Australian Complementary Measures Review – Final Report* to COAG, the WA Office of Climate Change committed to developing a new Climate Change Adaptation and Mitigation Strategy (CCAMS) to be developed over 2009/10. The release date on this is unclear and as such “there is considerable uncertainty and a lack of guidance in Western Australian Government policy in relation to coastal planning and development.”¹⁹

The WAPC, in coordination with the Department of Planning and other key stakeholders, “are reviewing SPP 2.6 [the State Coastal Planning Policy] in light of scientific information regarding the impacts of climate change and planning policies nationally being amended to reflect the latest predictions.”²⁰ This project is currently underway and a “draft for public consultation is expected to be available by the end of 2010.”²¹

d) WA Overview and Lessons Learned

As is apparent from the analysis, there are a number of pieces of primary legislation in WA that refer to the additional search terms of erosion and inundation, however none of those focus on issues that primarily occur in the coastal zone. So whilst these instruments could be applicable in coastal areas, WA still has some way to go in developing a coastal management strategy that adequately addresses sea level rise, coastal erosion, coastal inundation and storm surge. It has been suggested that “the sheer volume of different local plans and strategies currently in operation around Western Australia highlights the need for an effective, over-arching State-wide policy.”²² It will be useful for other jurisdictions to keep abreast of the issues arising from the review of WA’s *State Coastal Planning Policy*, the draft of which was due to be released for public consultation by the end of 2010.²³

¹⁸ Clayton Utz, *Environment and Planning Insights: Riding the wave of climate change – Coastal strategy in Western Australia*. Available at: [http://www.claytonutz.com/publications/newsletters/environment and planning insights/20100813/riding the wave of climate change-coastal strategy in western australia.page](http://www.claytonutz.com/publications/newsletters/environment%20and%20planning%20insights/20100813/riding%20the%20wave%20of%20climate%20change-coastal%20strategy%20in%20western%20australia.page).

¹⁹ Freehills fact sheet, *Climate change litigation to flood planning and development in coastal areas*. Available at www.freehills.com.au/Print/5786.aspx.

²⁰ Position Statement – State Planning Policy No. 2.6. State Coastal Planning Policy Schedule 1 Sea Level Rise. Available at: [http://www.planning.wa.gov.au/Statement SPP2 6 Final WAPC Modified.pdf?id=2371](http://www.planning.wa.gov.au/Statement%20SPP2%206%20Final%20WAPC%20Modified.pdf?id=2371).

²¹ Position Statement – State Planning Policy No. 2.6. State Coastal Planning Policy Schedule 1 Sea Level Rise. Available at: [http://www.planning.wa.gov.au/Statement SPP2 6 Final WAPC Modified.pdf?id=2371](http://www.planning.wa.gov.au/Statement%20SPP2%206%20Final%20WAPC%20Modified.pdf?id=2371).

²² Clayton Utz, *Environment and Planning Insights: Riding the wave of climate change – Coastal strategy in Western Australia*. Available at: [http://www.claytonutz.com/publications/newsletters/environment and planning insights/20100813/riding the wave of climate change-coastal strategy in western australia.page](http://www.claytonutz.com/publications/newsletters/environment%20and%20planning%20insights/20100813/riding%20the%20wave%20of%20climate%20change-coastal%20strategy%20in%20western%20australia.page).

²³ However as noted above was not yet released at time of writing.

1.2 Tasmania

Tasmania	“sea level rise”	“coastal erosion”	“coastal inundation”	“storm surge”	“coast”
Legislation	No results.	No results.	No results.	No results.	21
Regulations	No results.	No results.	No results.	No results.	--- ²⁴

a) Additional Search Terms: Erosion, Inundation and Coast

i) *Local Government (Building and Miscellaneous Provisions) Act 1993*

The only relevant reference to inundation is in the *Local Government (Building and Miscellaneous Provisions) Act 1993* in relation to the minimum requirements that a lot must display. Under section 109(1)(c), an urban building area must still be able to have an area not less than 550 square metres and have a frontage of 6 metres upon a road, free from inundations.

‘Coast’ appears 21 times in Tasmanian legislation.

b) Relevant Tasmanian Policy

Prior to examining the relevant Tasmanian policies, it is worth noting that sections 13 and 14 of the *State Policies and Projects Act 1993* provide that planning schemes inconsistent with State policy are void to the extent of the inconsistency.

i) *Tasmanian State Coastal Policy*

A review of the *State Coastal Policy* in 2004 found that a lack of technical resources and operational guidance resulted in many Councils not adequately implementing the policy. To address this concern, the State government has produced a number of technical reports particularly to address the lack of operational guidance. To help identify natural values and areas at risk from coastal hazards, the following activities were undertaken:

- The Coastal and Marine Branch of the Department of Environment, Parks, Heritage and the Arts released GIS mapping tools for coastal vegetation, geomorphic values and fauna habitat. They have also released indicative mapping of coastal areas vulnerable to climate change and sea level rise.²⁵
- The three regional NRM bodies collaborated to produce a set of Estuarine, Coastal and Marine Indicators to assess natural resource conditions in the coastal zone.²⁶
- The Local Government Association of Tasmania has released a *Climate Change Toolkit* comprising case studies to help local governments to address climate change issues.

Prior to the review of the *State Coastal Policy*, the broad nature of the statements in the Policy made it difficult to enforce in practice, despite being subject to litigation on numerous occasions. In a recent decision, the Supreme Court held that local governments are bound to give effect to the policy and achieve its outcomes, but recognised that many of the statements in the policy are not prescriptive enough to be directly enforced.²⁷

This document is currently under review, however the *Draft State Coastal Policy 2008* (which has been released²⁸) includes some relevant objectives:

²⁴ Data not accessible at time of writing.

²⁵ Sharples, C., 2004. *Indicative mapping of Tasmanian coastal vulnerability to climate change and sea level rise: Explanatory Report*, Department of Primary Industries, Water and Environment.

²⁶ *Trialing NRM Resource Condition Indicators in the Coastal Zone – Final Report*, May 2006

²⁷ *St Helens Landcare and Coastcare v Break O’Day Council* [2007] TASSC 15

²⁸ Available at: http://www.planning.tas.gov.au/_data/assets/pdf_file/0020/125507/Draft_SCP_2008.pdf.

- “3.1 To conserve, enhance and restore natural systems, values and processes of the coastal environment; ...
- 3.3 To support and maintain the sustainable development of coastal communities; and
- 3.4 To provide for safe and healthy lifestyles through provision of appropriate infrastructure.”

It is worth noting that although this policy is yet to be finalised, a number of Tasmanian councils have significantly criticised its current formulation. The Break O'Day Council submitted that there “is no clear vision of the important coastal zone issues for Tasmania or targeted solutions to be pursued at state level.” Furthermore it was reported that Environment Tasmania called the document “grossly inadequate” and indicated that Tasmania had “missed an opportunity to protect coastal values with a clear policy that could guide developers, government and the community.”²⁹ Finally the Local Government Association of Tasmania commented that “[the policy] appears to only be given effect, by having requirements that planning authorities review their Statutory Planning Instruments. It does not appear to guide or shape in any other way, management of the coastal area, other than through development control measures on future development. There is little by way of direction in relation to addressing existing coastal management issues.”

The *Revised Draft State Coastal Policy 2008* was referred to the Resource and Development Commission (now the Tasmanian Planning Commission) in June 2009 and a final assessment was expected to be released in mid-2010. The release of this policy will be significant as all statutory instruments under the Resource Management and Planning System which manage or control use or development in the coastal area, including planning schemes, management plans and marine farming development plans, must give effect to the objectives and outcomes of this policy.

The *Revised Draft State Coastal Policy 2008* outlines a number of required outcomes, although notes that not all outcomes will be applicable in all circumstances. The following outcomes are relevant to this project:

- Use and development of the coast is undertaken in appropriate and designated locations and where there is a demonstrated capacity for it to be adequately and appropriately serviced; and
- Development in areas at risk from the adverse impacts of climate change, occurs only where the risks are satisfactorily managed.

Despite having contacted the Tasmanian Planning Commission,³⁰ there is still some uncertainty as to when the finalised version of this policy will be released. A three person panel has been formed with the task to filter through the submissions received on the *Revised Draft State Coastal Policy 2008* and forward its subsequent recommendations to the Minister.

c) Case Study: City of Clarence – Local Government and Coastal Climate Change

Some local Councils have taken action in response to community concerns about issues such as the erosion of beaches and flooding events in coastal areas. For example, the Clarence City Council conducted a pilot project to examine some approaches that could be adopted by small coastal communities in response to the impacts of climate change.

²⁹ The Mercury Newspaper, *Critics damn coastal policy*. Available at: http://www.themercury.com.au/article/2010/07/03/156505_tasmania-news.html.

³⁰ Contacted via telephone on 17/09/10.

Case Study: Clarence City Council

The city of Clarence is located on the eastern shore of the Derwent River. It conducted an assessment of the impact of sea level rise at both 0.5m and 0.9m rise by 2100, the focus of which was to encourage “performance based responses that maintain acceptable levels of risk over the life of the structure.” As a result, the City of Clarence has developed a series of overlays in their Council Planning Scheme.

The first is a Sea Level Rise and Storm Surge Overlay which aims to “control impacts on coastal infrastructure and development from sea level rise and storm surge in coastal areas as defined by a 2004 coastal vulnerability study.” All development applications that fall within this overlay must identify:

- How hazard risk can be mitigated through an identification of structural or siting methods to avoid damage to or loss of buildings and other works.
- That the development will not increase the level of risk of hazard for adjoining or nearby properties or public infrastructure.
- That the need for future remediation works is minimised.
- That important natural features are adequately protected.
- Hazard risk can be mitigated through identification of measures to be used to modify the hazard.
- The health and safety of individuals is not placed at risk.

The second overlay is the Coastal Management Overlay, which aims to implement the provisions of the *State Coastal Policy*. The third is the Subject to Inundation Overlay, which identifies areas subject to inundation and precludes development that will be affected by floodwater or flows. Development that falls within this overlay is discretionary, with the document setting a list of Specific Decision Requirements:

- (a) Mitigation measures should be sufficient to ensure habitable buildings will be protected from flooding;
- (b) Any mitigation measures should also protect any protected environmental values and use of the water body or catchment; and
- (c) Mitigation measures should also be sufficient to consider the additional cumulative impact of sea level rise, as determined by any State-published and adopted authority on the phenomenon.

The insertion of overlays of this nature may assist when developing a robust system to deal with the coastal hazards associated with climate change, sea level rise, erosion and inundation in other jurisdictions. In addition to the overlays integrated in the Council Planning Scheme, this pilot project identified a series of adaptive measures that could assist at the council level when attempting to address coastal erosion, inundation, sea level rise and storm surge. These measures include:

- “Practical management options including planning controls for new development, which deal with building setbacks, minimum floor levels, appropriate engineering assessments, and appropriate construction techniques (for example, piled buildings, flood resistant materials).
- “A development freeze in some locations where erosion threatens future development and protection is either impractical or undesirable.
- “Physical works such as seawalls, groynes, dune management or sand nourishment, offshore breakwaters and/or surfing reefs, temporary or permanent flood barriers, reconstruction of public infrastructure (for example, roads, other services) above flood levels.
- “Detailed emergency management and evacuation planning, with hazard reduction requirements for affected properties.
- “Providing community education and information to improve awareness and ability to cope ongoing monitoring, analysis and review of findings and additional data collection or studies.
- “A timeframe for review, currently five years for council planning schemes.”³¹

³¹ Norman, B. 2009, *Planning for coastal climate change – An insight into international and national approaches*. Available at: [http://www.climatechange.vic.gov.au/CA256F310024B628/0/8A5ACCF88D5F6257CA257626001574ED/\\$File/Planning+for+coastal+climate+change+v1.pdf](http://www.climatechange.vic.gov.au/CA256F310024B628/0/8A5ACCF88D5F6257CA257626001574ED/$File/Planning+for+coastal+climate+change+v1.pdf).

d) Tasmanian Overview and Lessons Learned

The specific initial search terms were not found in current legislation. Rather, Tasmania, like many other jurisdictions, is focusing on policy development. With the State Coastal Policy currently under review, Tasmania is awaiting some guidance that will hopefully accompany the finalised document. It is hoped that the updated document will take heed of the submissions received from stakeholder input on the Revised *Draft State Coastal Policy 2008*. An Implementation Guide will also be released to assist relevant parties to implement the policy. In addition, the *Tasmanian Framework for Action on Climate Change* (2008) is also currently under review, with a final expected to be out early in 2011.³² The State is also developing a project entitled Climate Futures for Tasmania, which will “use sophisticated climate modeling techniques and ... current knowledge to describe the most likely future climate scenarios.”³³

³² No final copy was available at time of writing.

³³ Australian Climate & Ecosystems CRC. Available at: http://www.acecrc.org.au/drawpage.cgi?pid=climate_futures.

1.3 Northern Territory

Northern Territory	“sea level rise”	“coastal erosion”	“coastal inundation”	“storm surge”	“coast”
Legislation	No results.	No results.	No results.	No results.	9
Regulations	No results.	No results.	No results.	No results.	13

a) Additional Search Terms: Erosion, Inundation and Coast

There are only two pieces of Northern Territory (NT) legislation where the term “inundation” appears, however neither of them are directly relevant to the coastal zone.³⁴ The term “coast” appears in nine instances throughout the legislation and 13 instances in the regulations, again none of which are relevant to the project. The following instruments contain relevant references to “erosion”.

i) Soil Conservation and Land Utilisation Act

Erosion is mentioned a number of times throughout the *Soil Conservation and Land Utilisation Act* (SCLUA). The preamble states that it is “An Act to make provision for the prevention of soil erosion and for the conservation and reclamation of soil.” This Act does not focus on the coastal issues dealt with in this project. However, the Act does include some relevant provisions that may be applied to erosion in the coastal environment.

Section 7 of the SCLUA provides for the formation of a Soil Conservation Advisory Council (SCAC). Its functions are:

- “(a) to advise the Minister on matters relating to this Act and the regulations, and in particular as to:
- (i) the state of erosion on land;
 - (ii) the progress being made with erosion control;
 - (iii) the measures which it recommends for further control of erosion or the reclamation of land; and
 - (iv) matters relating to the future utilisation of land;
- (b) to provide a forum for the discussion and consideration of matters concerning soil conservation;
- (c) to receive and consider reports and recommendations from the Commissioner on action taken by him under this Act and, where necessary, approve of or ratify that action; and
- (d) to hear and consider submissions put before it by members of the public and, in particular, persons affected by the operation of this Act.”

The functions of the SCAC clearly have the potential to deal with coastal erosion as they have the mandate to address “the state of erosion of land”; including erosion issues occurring in the coastal zone. Furthermore, as the SCAC is to deal with the “reclamation of land” and “future utilisation of land” it could well play a part in advising the Minister on the erosion issues associated with new coastal developments.

The SCLUA provides for the appointment of a “Commissioner for Soil Conservation.”³⁵ The Commissioner has the power to not only “carry out treatment for the public purpose of preventing

³⁴ *Criminal Code Act* – Sec 251 concerning Criminal damage in general and the *Valuation of Land Act* – Sec 12 concerning Value of certain improvements.

³⁵ Sec 4, *Soil Conservation and Land Utilisation Act*.

soil erosion or conserving or reclaiming soil”,³⁶ but also make a “Soil Conservation Order”³⁷ if “in the opinion of the Commissioner a danger of soil erosion” may be created.³⁸

Ultimately these sections appear to focus strongly on preventing erosion from livestock and clearing of vegetation. While there is potential for the SCLUA to be implemented to address erosion in the coastal zone, there appears to be no best practice elements that could be integrated into other jurisdictions.

b) Relevant Northern Territory Policy

i) Environmental Guidelines for Reclamation in Coastal Areas

These Guidelines have been developed to “provide practical environmental advice to developers who are planning to undertake reclamation work in coastal regions of the Northern Territory.”³⁹ Whilst they do not directly apply to erosion or inundation, they do “apply to activities such as foreshore filling in coastal areas and along rivers, canal estate, marina and port developments, coastal aquaculture developments and development occurring on coastal floodplains.”⁴⁰ The Guidelines very briefly discuss sediment and erosion control (but not inundation, storm surge or SLR in a relevant context). It is also important to remember that these are only advisory guidelines and as such remain unenforceable.

ii) Northern Territory Coastal Management Policy

This Policy provides the overarching policy direction for the Territory, giving guidance for management, planning and conservation in the NT coastal zone. Initially developed in 1985, this Policy is currently under review.

iii) Northern Territory Planning Scheme (NTPS)

The NTPS applies to the whole Territory other than areas that are subject to a specific planning scheme in accordance with section 8 of the *Planning Act*. Part 2 of the NTPS sets a series of “planning principles” which are “broad expressions of the Northern Territory Government’s commitment to outcomes of land use planning and development control.”⁴¹ One of the principles is that the administration of the planning scheme is to “consider flood and storm surge levels associated with floods and cyclones to minimise risk to life and property.”⁴² The NTPS also provides information pertaining to land subject to flooding and storm surge, “the purpose of which is to reduce risk to people, damage to property and costs to the general community caused by flooding and storm surge.”⁴³ It goes on to provide requirements such as the minimum floor level for habitable rooms in a “Defined Flood Area”, as well as identifying ‘Primary’ and “Secondary Storm Surge Areas” (those coastal areas within a 1% and 0.1% Annual Exceedence Probability⁴⁴ of inundation by storm surge).

c) Northern Territory Overview and Lessons Learned

The Northern Territory has very limited information within the scope of this project. There was however some useful guidance in the NTPS, especially regarding the classification of Primary and Secondary Storm Surge Areas. This may be useful in providing more accurate guidance to councils in low lying coastal areas in other jurisdictions.

³⁶ Sec 12(1), *Soil Conservation and Land Utilisation Act*.

³⁷ Sec 14, *Soil Conservation and Land Utilisation Act*.

³⁸ Sec 14(1), *Soil Conservation and Land Utilisation Act*.

³⁹ Sec 1, *Environmental Guidelines for Reclamation in Coastal Areas*. Available at:

<http://www.nt.gov.au/lands/planning/scheme/documents/enviroguidelines.pdf#search=%22coast%22>.

⁴⁰ Sec 1, *Environmental Guidelines for Reclamation in Coastal Areas*. Available at:

<http://www.nt.gov.au/lands/planning/scheme/documents/enviroguidelines.pdf#search=%22coast%22>.

⁴¹ *Northern Territory Planning Scheme User Guide*, Pg. i. Available at:

http://www.nt.gov.au/lands/planning/scheme/documents/NTPS_as_at_3sept2010.pdf.

⁴² Part 2, 4.1(i), *Northern Territory Planning Scheme*.

⁴³ Part 4, 6.14(1), *Northern Territory Planning Scheme*.

⁴⁴ The Annual Exceedence Probability, or AEP, is defined as the likelihood, in percentage terms, of a flood of a given size occurring in a specified area in any one year.

1.4 South Australia

South Australia	“sea level rise”	“coastal erosion”	“coastal inundation”	“storm surge”	“coast”
Legislation	No results.	No results.	No results.	No results.	79
Regulations	No results.	<i>Development Regulations 2008</i> : Schedule 2, 3 & 8 (not relevant).	No results.	No results.	97

a) Additional Search Terms: Erosion, Inundation and Coast

Inundation appears in three South Australian Acts,⁴⁵ but none of them are relevant to this project. Unsurprisingly, the word “coast” appears extensively under the *Coast Protection Act 1972* (discussed below), but there are also nearly 100 references in regulations.⁴⁶ Schedule 5 of the *Development Regulations 2008* sets out the “Requirement as to plans and specifications”, and part 2 of Schedule 5 provides information particularly on “Requirements for development near the coast.” Part 2 provides that:

“If a development is to be undertaken on a site any part of which is adjacent to the coast, the following particulars must be shown on the plan:

- (a) the distance from high water mark to the nearest point or points where buildings suitable for human occupation are likely to be constructed; and
- (b) the surface profile of the natural surface between high water mark and the points where buildings suitable for human occupation are likely to be constructed, at intervals of 30 metres, together with a written description of the nature of the exposed surface along that profile.”

Such a requirement highlights the increasing importance being placed on recording information for aspects such as distance of dwelling from the coast, as well as the type of land situated between the coast and the development.

The term “erosion” appears in five South Australian Acts,⁴⁷ but only some of them are relevant here. The most relevant is the *Coast Protection Act 1972*, which established the “Coast Protection Board”⁴⁸ (CPB) that “continues to be a primary authority for managing coast protection issues and providing advice on coastal development in South Australia.”⁴⁹ The CPB is however “subject to the control and direction of the Minister for Environment and Conservation and is under the Department for Environment and Heritage.”⁵⁰ The functions of the CPB include:

- “(a) to protect the coast from erosion, damage, deterioration, pollution and misuse; and
- “(b) to restore any part of the coast that has been subjected to erosion, damage, deterioration, pollution or misuse; and

⁴⁵ *Golden Grove (Indenture Ratification) Act 1984*, *Natural Resources Management Act 2004*, *West Lakes Development Act 1969*.

⁴⁶ Of particular note is the reference to coast in schedule 2 of the *Development Regulations 2008* which details what are the “Additional acts and activities constituting development.” This includes “the placing of any structure or works for coastal protection, including the placement of rocks, stones or other substance designed to control coastal erosion, within 100 metres landward of the coast measured from mean high water mark.”

⁴⁷ *Native Vegetation Act 1991*, *Coast Protection Act 1972*, *Natural Resources Management Act 2004*, *Roxby Downs (Indenture Ratification) Act 1982*, *Golden Grove (Indenture Ratification) Act 1984*.

⁴⁸ Sec 6(1), *Coast Protection Act 1972*.

⁴⁹ South Australian Government 2008, *Submission to the Inquiry into Climate Change and Environmental Impacts on Coastal Communities*.

⁵⁰ South Australian Government 2008, *Submission to the Inquiry into Climate Change and Environmental Impacts on Coastal Communities*.

“(c) to develop any part of the coast for the purpose of aesthetic improvement, or for the purpose of rendering that part of the coast more appropriate for the use or enjoyment of those who may resort thereto; and

“(ca) to manage, maintain and, where appropriate, develop and improve coast facilities that are vested in, or are under the care, control and management of, the Board; and ...

“(e) to carry out research, to cause research to be carried out, or to contribute towards research, into matters relating to the protection, restoration or development of the coast.”⁵¹

The CPB develops planning policy for the coast and also “acts as a referral authority on key development proposals on the coast.”⁵² In 1992, the CPB made South Australia the first Australian State to adopt planning policies and standards to minimise the risk to coastal development by climate change-induced sea level rise. The planning policies that were introduced include the *Policy on Coast Protection and New Coastal Development* (discussed below).

Erosion is also referred to in the *Native Vegetation Act 1991*. However, it is in the context of “the harvesting of native vegetation”.⁵³ Such an activity should not be carried out if it “is likely to contribute to soil erosion or salinity in area.”⁵⁴

The *Natural Resources Management Act 2004* merely states that a permit is not required to “authorise a person to erect, construct or enlarge contour banks to divert surface water solely for the purpose of preventing or reducing soil erosion...”⁵⁵

The *Development Act 1993* does contain information relevant to this project (although it does not mention any of the initial or additional search terms). Coastal developments are assessed through the three tiers of the planning system: the *Planning Strategy for South Australia*, Development Plans and the development assessment process. The *Development Act 1993* guides all development through development plans.

b) Relevant South Australian Policy

i) Coastline: Coastal erosion, flooding and sea level rise standards and protection policy

This 1992 Policy has been included in the council-wide provisions of development plans. It states that:

- Development should not be approved where building sites are lower than a height determined by adding 0.3m (for 50 years of sea level rise) to the 1-in-100 year storm surge level and making an adjustment (where appropriate) for land level changes to 2050;
- For commercial or habitable buildings, floor levels should be no less than 0.25m above this minimum site level; and
- Development should not be approved unless it is capable, by reasonably practical means, of being protected or raised to withstand a further 0.7m of sea level rise. (This condition allows for a further sea level rise of 0.7m from 2050 to 2100 for a total sea level rise of 1m to 2100).

It is important to note that this is only a policy and again uses the discretionary term “should” as opposed to “must” or “is required”. This policy has since been incorporated into development plans (see overview in box below) and planning strategies by state and local government.

⁵¹ Sec 14, *Coast Protection Act 1972*.

⁵² *Coastal Climate Change Advisory Committee Issues and Options Paper*, February 2010.

⁵³ Sec 27(3), *Native Vegetation Act 1991*.

⁵⁴ Schedule 1, *Native Vegetation Act 1991*.

⁵⁵ Sec 128(1)(b), *Natural Resources Management Act 2004*.

c) Development Plans South Australia – An Overview

The Development Plans in SA all contain a series of standard planning policies that address sea level rise, through strategies such as erosion buffers and hazard risk minimisation. These policies have been summarised to include the following:

- “To protect and maintain coastal processes and plan for a 1.0m rise in sea levels by 2100.
- “Development should only occur on land that is not subject to or can be protected from coastal hazards.
- “Development can accommodate changes in sea level during the first 100 years of its life.
- “Development will not require public funds for protection in the future.
- “Development should be designed and sited so that it does not prevent natural coastal processes including landward migration of mangroves, coastal saltmarsh and dune systems.
- “Development should ensure the provision of a 50 metre coastal reserve to maintain public access to the coast.
- “With respect to coastal hazards the key principles of development control include:
 - Minimise coastal hazards by ensuring site development levels are at least 0.3 metres above sea flood levels; that floor levels are 0.55 metres above sea flood levels and protect development from an additional rise in sea levels of 0.7 metres and including that from land subsidence by 2100; and
 - Small scale development should be setback from coastal erosion a sufficient distance to provide for 100 years of coastal retreat and 200 metres for large scale development and township areas unless appropriate private protection is provided or council protection of the public reserve is to be provided.
- “Where a coastal reserve exists or is to be provided it should be increased in width by the amount of any required erosion buffer. The width of an erosion buffer should be based on the following:
 - The susceptibility of the coast to erosion.
 - Local coastal processes.
 - The effect of severe storm events.
 - The effect of a 0.3 metres sea level rise over the next 50 years on coastal processes and storms.
 - The availability of practical measures to protect the development from erosion caused by a further sea level rise of 0.7 metres per 50 years thereafter.
- “Development should not occur where essential services cannot be provided and maintained having regard to flood risk and sea level rise, or where emergency vehicle access would be prevented by a 1 in 100 year average return interval flood event, adjusted for 100 years of sea level rise.”⁵⁶

ii) *The Coastal Planning Information Package*

This package was initiated by the Coastal Protection Branch of the SA Department of Environment and Heritage and relates specifically to coastal development. Its objective is to raise awareness about the role of the Coastal Protection Board (the statutory authority responsible for managing the state’s coastline, as discussed above). This package contains checklists for both applicants and development assessment planners, with an “aim to ensure that the appropriate level of information is provided with development applications.”⁵⁷ It also aims to assist policy planners to ensure that the right issues are considered in the preparation and review of planning policy relating to coastal and marine issues.

iii) *Living Coast Strategy for South Australia*

More recently, this 2004 Strategy was devised to formally set out the State Government’s environmental policy directions for the sustainable management of coastal environments. It acknowledges the value of retaining natural coastal areas, such as estuaries, for transition zones to provide storm and erosion protection to shorelines and in land areas. This Strategy was developed in recognition that Australia’s coastal, estuarine and marine environments are under significant pressure, following the *Review of the*

⁵⁶ *Coastal Climate Change Advisory Committee Issues and Options Paper*, February 2010.

⁵⁷ Available at: http://www.urps.com.au/projects/natural_resource_management/coastal_planning.

Management of Adelaide Metropolitan Beaches (Government of South Australia, 1997), and the *Framework for a National Cooperative Approach to Integrated Coastal Zone Management* (National Resource Management Ministerial Council, 2003). The SA Strategy builds on the State Government's previous 1997 strategy outlined below.

iv) Our Seas and Coasts: A Marine and Estuarine Strategy for South Australia 1997

The 1997 strategy encompassed a wide range of environmental initiatives and programs, and set out the State Government's policy directions for the following five years to help protect and manage SA coastal areas, estuaries and marine ecosystems. In addition, it proposed the development of a clear government policy to manage sea level change, in conjunction with local and the Commonwealth governments.

v) Adelaide's Living Beaches: A Strategy for 2005–2025

Due to concerns about sand erosion, tidal drift, seawalls and the need for beach nourishment, in 2000 the Department for Environment and Heritage (on behalf of the Coast Protection Board) initiated a review of the management of Adelaide's metropolitan beaches. The recommendations of this review formed the basis for an innovative strategy for managing Adelaide's beaches called *Adelaide's Living Beaches: A Strategy for 2005–2025*. The SA Government endorsed the strategy in November 2005. Policy makers recognise that climate change is likely to gradually alter the forces that act on the coastline, and so they must allow for additional supplies of sand to maintain beach width and provide for strengthened dune buffers. It is anticipated that the main effects of climate change along the coast of South Australia will be sea level rise and changes to weather and hence wave conditions. The vast majority of the explanation and policy on the effects of climate change on the South Australian coast in this document simply re-iterates the Coastal Protection Board's 1992 policy, *Coastline: Coastal erosion, flooding and sea level rise standards and protection policy*.

vi) Marine Planning Framework for South Australia (2006)

This 2006 framework incorporates elements of *South Australia's Strategic Plan* (SA Government, 2004) regarding sustainable development, and the *Living Coast Strategy for South Australia* (above). The framework requires a statutory basis from which to operate.

While many of the other policies in this area are purely directional and often aspirational, the *Marine Planning Framework* represents a practical embodiment of these and other policy directions that have been incorporated into development legislation. The overarching goals, objectives and strategies from the marine planning zones will, as appropriate, be incorporated into the *Planning Strategy for South Australia* under the *Development Act 1993*.

vii) South Australia's Strategic Plan (2004)

More broadly, *South Australia's Strategic Plan* (2004), as reviewed and updated in January 2007, represented a dynamic framework for the forward development of the State. It acts as an umbrella policy, informing and instructing the creation and development of policy in all areas of governance. The key targets broadly instruct the evolution of South Australian policy on coastal development, climate change and the environment are: Lose no Species; Marine Biodiversity; Ecological Footprint; River Murray – flows; and River Murray – salinity. The Strategic Plan is currently being reviewed again. The closing date for formal submissions was 15 October 2010.

(d) South Australia Overview and Lessons Learned

The general trend is continued in South Australia, whereby the majority of the guidance for addressing sea level rise, climate change, coastal erosion and coastal inundation is contained in subordinate instruments, as opposed to primary legislation. In South Australia in particular, the number of strategic and policy documents is significant, leading to confusion and a lack of coordination. Although guidance is provided by the Coast Protection Board, it "has limited powers and the South Australian Parliament's Environment Resources and development Committee's Inquiry in to Coastal Development noted that

around 20% of the CPB's advice was not followed by planning authorities.”⁵⁸ One aspect that may usefully be integrated into other jurisdictions is the use of checklists, under the *Coastal Planning Information Package*, for both applicants and development assessment planners which “aim to ensure that the appropriate level of information is provided with development applications.”⁵⁹

⁵⁸ South Australian Government 2008, *Submission to the Inquiry into Climate Change and Environmental Impacts on Coastal Communities*.

⁵⁹ Available at: http://www.urps.com.au/projects/natural_resource_management/coastal_planning.

1.5 Victoria

Victoria	“sea level rise”	“coastal erosion”	“coastal inundation”	“storm surge”	“coast”
Legislation	No results.	No results.	No results.	No results.	27
Regulations	No results.	No results.	No results.	No results.	13

a) Additional Search Terms: Erosion, Inundation and Coast

i) *Coastal Management Act 1995*

Although Victoria does have the *Coastal Management Act 1995*, none of this project’s initial search terms are included. Two of the additional search terms (erosion and inundation) also do not appear. This is despite the objectives of the Act including:

- “(b) to protect and maintain areas of environmental significance on the coast including its ecological, geomorphological, geological, cultural and landscape features; ...
- (d) to maintain and improve coastal water quality;”⁶⁰

The term “coast” does appear in the *Coastal Management Act 1995*.⁶¹ The Act provides guidance for the management of coastal Crown land⁶² in Victoria, stating that a “person must not use or develop coastal Crown land unless the written consent of the Minister has first been obtained.”⁶³ In deciding whether on not to consent to the application to develop this land, the legislation provides that the Minister:

- “must have regard to –
- (a) the Victorian Coastal Strategy; and
- (b) any Coastal Action Plan applying to the land; and
- (c) any relevant coastal recommendation.”⁶⁴

The *Victorian Coastal Strategy* and *Coastal Action Plans* are discussed under “Policy” below.

In a recent Commonwealth report on climate change and the coastal zone,⁶⁵ the Standing Committee on Climate Change, Water, Environment and the Arts was “impressed by the coastal governance structures in Victoria.” This governance structure, set out under the *Coastal Management Act 1995*, provides for the Victorian Coastal Council to be the peak body for the strategic planning and management of the coast, and to advise the Minister for Environment and Climate Change. The Victorian Coastal Council also has three regional boards (the Western Coastal Board, the Central Coast Board and the Gippsland Board) that coordinate to provide an integrated strategic approach to ensuring the sustainability of Victoria’s coastal zone.

⁶⁰ Sec 4, *Coastal Management Act 1995*.

⁶¹ The term coast does also appear in the regulations on 13 occasions, however none are relevant to this project.

⁶² Sec 3(1) of the *Coastal Management Act 1995*, defines Crown land as:

- (a) any land reserved under the Crown Land (Reserves) Act 1978 for the protection of the coastline; and
- (b) any Crown land within 200 metres of high water mark of-
 - (i) the coastal waters of Victoria; or
 - (ii) any sea within the limits of Victoria; and
- (c) the sea-bed of the coastal waters of Victoria; and
- (d) the sea-bed of any sea within the limits of Victoria; and
- (e) any Crown land which is declared by the Governor in Council under subsection (2) to be coastal Crown land- but does not include any land which the Governor in Council declares under subsection (2) not to be coastal Crown land for the purposes of this Act;

⁶³ Sec 37, *Coastal Management Act 1995*.

⁶⁴ Sec 40(2), *Coastal Management Act 1995*.

⁶⁵ House of Representatives Standing Committee on Climate Change, Water, Environment and the Arts 2009, *Managing our coastal zone in a changing climate, The time to act is now*.

ii) *Planning and Environment Act 1987*

This Act does not directly mention erosion or inundation.

iii) *Climate Change Act 2010*

The Victorian Parliament passed the *Climate Change Act 2010* (CC Act) on 3 September 2010. The CC Act requires government decision makers to have regard to the impacts of climate change in a few select government decisions under specific sections of specific Acts. Of particular relevance is the requirement to consider climate change in the development of coastal strategies and coastal action plans under the *Coastal Management Act 1995*. Whilst this requirement is positive, EDO Victoria found that the CC Act specifically excludes those “(D)ecisions that have the largest contribution to climate change and are affected the most by climate.”⁶⁶ Furthermore, it is important to note that decision makers are only required “to ‘have regard to’ (and then possibly discount) climate change when making decision”⁶⁷ as opposed to actively requiring decision makers to “increase adaptation measures that are relevant to the decision.”⁶⁸

When searching the Victorian regulations for “erosion”, the results are extremely limited. The term appears only in schedule 2 and 3 of the *Sustainable Forests (Timber Harvesting) Regulations 2006*, neither of which are relevant to this project.

When searching for the term ‘inundation’, only the *Aboriginal Heritage Regulations 2007* makes reference to it, and again it is in a manner not relevant to this project.

b) Relevant Victorian Policy

i) *The Victorian Coastal Strategy 2008*

Victoria has a tiered system of policies that exist to control activities around the coast. The *Victorian Coastal Strategy 2008* (VCS) acts as the primary planning document. The VCS acknowledges the very real threats for the State, having been “updated in December 2008 to specifically acknowledge the risk to Victoria’s coastal areas posed by climate change.”⁶⁹ The VCS deals with the three main issues of climate change, population growth and marine ecological integrity. It aims to set “a long term vision for the coast and (provide) policies and actions to guide decisions about its management over the next five years.”⁷⁰ The purpose of the strategy is to outline:

- “1. a vision for the planning, management and use of coastal, estuarine and marine environments;
2. the government’s policy commitment for coastal, estuarine and marine environments;
3. a framework for the development and implementation of other specific strategies and plans such as Coastal Action Plans, management plans and planning schemes; and
4. a guide for exercising discretion by decision-makers, where appropriate.”⁷¹

The section of the VCS relating to climate change touches on most of this project’s terms of reference. It acknowledges that “Over the medium to long term, *climate change* poses real and serious threats to our

⁶⁶ EDO Victoria Briefing Paper: Climate Change 2010 (Victoria) – summary and analysis. Available at: http://www.edo.org.au/edovic/policy/edo_vic_climate_change_act_paper.pdf.

⁶⁷ EDO Victoria Briefing Paper: Climate Change 2010 (Victoria) – summary and analysis. Available at: http://www.edo.org.au/edovic/policy/edo_vic_climate_change_act_paper.pdf.

⁶⁸ EDO Victoria Briefing Paper: Climate Change 2010 (Victoria) – summary and analysis. Available at: http://www.edo.org.au/edovic/policy/edo_vic_climate_change_act_paper.pdf.

⁶⁹ Clayton Utz Environment and Planning Insights, *Victorian coastal policy: a work in progress*. Available at: http://www.claytonutz.com/publications/newsletters/environment_and_planning_insights/20100813/victorian_coastal_policy_a_work_in_progress.page.

⁷⁰ *Victorian Coastal Strategy 2008*, pg. 1.

⁷¹ *Victorian Coastal Strategy 2008*, pg. 5.

coast. During this century, it is likely the Victorian coastline will be impacted by sea level rise and increased frequency and severity of *storm events* leading to *inundation* and *erosion*.⁷²

Part 2.2 of the VCS provides eight specific policies for planning, and managing the use and development of land. One of these policies highlights the need to “Identify and avoid development in areas susceptible to flooding (both river and coastal inundation), landslip, erosion, coastal acid sulphate soils, bush fire or geotechnical risk.”⁷³ Furthermore, the VCS introduces the requirement for decision makers to apply a precautionary approach when assessing climate change risks, and 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.”

This sea level planning benchmark for the Victorian coastline of 0.8 metre figure is not fixed, but instead will be reviewed as more “scientific data becomes available.” In doing so, Victoria is providing parameters which councils in the short term can act upon, whilst still flagging the possibility that such a figure is susceptible to change in response to the most up to date information.

In the recent Commonwealth report addressing coastal zone management in light of climate change, it was noted that “several stakeholders pointed to the model of coastal governance under the Victorian Coastal Strategy 2008.”⁷⁴ This strategy was given particular support in regard to the restriction of further development to within existing settlement boundaries around the coastal zone. This is an attempt to discourage inappropriate development from expanding further into areas which may be at risk from coastal inundation, erosion and storm surge.

Whilst the VCS does “give direction for planning and managing the impacts of activities on and in the marine environment, foreshores (coastal Crown land 200 metres from the high water mark), the coastal hinterland and catchments draining to the coast and estuaries”⁷⁵ it has also been criticised. This is due to “its imprecise scope and for focusing on future development with properties that have been identified as vulnerable but are already zoned to allow or have permits for development.”⁷⁶ In December 2010, the Coastal Climate Change Advisory Committee was scheduled to report to the Victorian Minister for Planning where some of these criticisms may be addressed.⁷⁷ The Coastal Climate Change Advisory Committee released an Issues and Options paper in February 2010 which included a number of preliminary ideas (including the concept of introducing overlays and controlling land use) which may appear within the final recommendations in the report to the Minister.

ii) Coastal Action Plans and Coastal Management Plans

In addition to the *Victorian Coastal Strategy 2008*, there are also a series of Coastal Action Plans (CAPs) as well as Coastal Management Plans (CMPs) for the West Coast, Central Coast and Gippsland Coast respectively.

The CAPs provide a “key mechanism for the implementation of the Victorian Coastal Strategy”⁷⁸ and aim to enable the “broad principles and priorities identified in the Strategy to be further developed and applied at a sub-regional or issue based level.”⁷⁹

⁷² *Victorian Coastal Strategy 2008*, pg. 13.

⁷³ *Victorian Coastal Strategy 2008*, pg. 40.

⁷⁴ House of Representatives Standing Committee on Climate Change, Water, Environment and the Arts 2009, *Managing our coastal zone in a changing climate, The time to act is now*, at Pg. 256.

⁷⁵ *Coastal Climate Change Advisory Committee Issues and Options Paper*, February 2010.

⁷⁶ Clayton Utz Environment and Planning Insights, *Victorian coastal policy: a work in progress*. Available at: http://www.claytonutz.com/publications/newsletters/environment_and_planning_insights/20100813/victorian_coastal_policy_a_work_in_progress.page.

⁷⁷ At the time of writing no such report was available.

⁷⁸ Available at, <http://www.coastlinks.vic.gov.au/coastalplans.htm#cap>.

Whilst the CAPs aim to take a long term strategic view and clarify directions for future use, the CMPs “provide direction for day to day management of an area of coast by appointed managers.” Addressing both the immediate and long-term timeframes is an important measure that should be replicated to ensure an effective response to the problems associated with climate change in the coastal zone.

iii) State Planning Policy Framework

This framework “seeks to ensure that the State’s planning objectives are “fostered through appropriate land use and development planning policies and practices which integrate relevant environmental, social and economic factors in the interests of community benefit and sustainable development.”⁸⁰ The *State Planning Policy Framework* addresses the topic of “Managing coastal hazards and the coastal impacts of climate change”⁸¹ and outlines five⁸² major concepts that it says should be incorporated. These include planning for sea level rise of not less than 0.8 metre by 2100, applying the precautionary principle, ensuring new developments take into account the impacts of climate change such as coastal erosion and storm tides, and avoiding development in areas susceptible to inundation.

Case law in Victoria provides some guidance on how legislation is interpreted, as discussed below.

Case Study: *Taip v East Gippsland Shire Council*⁸³

This case concerned an application for an eight-dwelling development in Lakes Entrance. The East Gippsland Shire Council (the Council) granted a permit to build, however an objector (which was joined by East Gippsland Catchment Management Authority (the CMA)) lodged an appeal with the Victorian Civil and Administrative Tribunal. This case concerned “the site’s vulnerability to climate change impacts against the strategies and policies contained within the East Gippsland Planning Scheme.”⁸⁴

Although the concerns of the original objector were resolved, the CMA continued its objection on the grounds relating to the existing level of flood risk and the potential risk from climate change-related sea level rise (this reference to climate change was later deleted). The grounds therefore related to the existing level of flood risk and hazard in the area.

VCAT overturned the Council decision finding that a “decision to grant a permit would not lead to an orderly planning outcome, as it would fail to satisfy the purposes of planning in Victoria for intergenerational equity, sustainable, fair and socially responsible development.”⁸⁵ The judgement provided that while “the current flood levels do not present and unacceptable level of risk, it is clear... that increasing depths of flooding will”⁸⁶ and so there would be a “corresponding increase in the hazard to residents and emergency personnel.”⁸⁷ This is a significant decision, with some suggesting that the “decision has put the acid on all coastal councils and water authorities to take climate change flood risks

⁷⁹ Available at, <http://www.coastlinks.vic.gov.au/coastalplans.htm#cap>

⁸⁰ Available at, <http://www.coastlinks.vic.gov.au/coastalplans.htm#sppf/>

⁸¹ Available at, http://www.dse.vic.gov.au/planningschemes/aavpp/15_sppf.pdf, pg 6.

⁸² 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.

⁸³ [2010] VCAT 1222.

⁸⁴ *Taip v East Gippsland SC (includes Summary)* (Red Dot) [2010] VCAT 1222 (28 July 2010).

⁸⁵ [2010] VCAT 1222 at 13.

⁸⁶ [2010] VCAT 1222 at 63.

⁸⁷ [2010] VCAT 1222 at 64.

seriously and pro-actively consider the risks in their decisions despite the uncertainty of State policy and in the absence of any tailored climate change zones or overlays.”⁸⁸

(c) Victorian Overview and Lessons Learned

Like many of the other jurisdictions, Victoria’s coastal management regime is in a state of flux with changes likely to be seen after the Coastal Climate Change Advisory Committee has reported back to the Minister for Planning on how better to utilise land-use planning and development controls regarding the coastal impacts of climate change. Furthermore, whilst Victoria is taking measures to better protect the coastal zone through a strong governance structure, some concerns exist that there is too much focus on preventing new inappropriate development, at the expense of developing strategies to address existing development that may be at risk from coastal hazards. There are also some concerns that in the absence of clear statutory processes in Victoria, “coastal vulnerability will continue to be dealt with primarily on a site-by-site basis.”⁸⁹ One aspect of the new *Climate Change Act 2010* that would undoubtedly be of value for other jurisdictions is the requirement that the Minister develop an adaptation plan, to be updated regularly. As the reporting on the implementation and effectiveness of the plan falls under a statutory framework, there is an obligation for Government to perform this important process, which is otherwise often ignored.

⁸⁸ Allens Arthur Robinson, Focus: *Planning for Vulnerable Victorian Coastal Communities*. Available at: <http://www.aar.com.au/pubs/env/foenvsep10.htm>.

⁸⁹ Available at: http://www.claytonutz.com/publications/newsletters/environment_and_planning_insights/20100813/victorian_coastal_policy_a_work_in_progress.page.

1.6 Queensland

Queensland	“sea level rise”	“coastal erosion”	“coastal inundation”	“storm surge”	“coast”
Legislation	No results.	No results.	No results.	2 ⁹⁰	266
Regulations	No results.	No results.	No results.	No results.	13

a) Additional Search Terms: Erosion, Inundation and Coast

i) *Coastal Protection and Management Act 1995*

A search of the Queensland legislation found 44 references to “inundation”. Many of these are in the *Coastal Protection Management Act 1995* – the primary legislation aimed at protecting and managing the coastal zone. It is administered by the Environmental Protection Agency (EPA). The main objects of this Act are to:

- (a) provide for the protection, conservation, rehabilitation and management of the coast, including its resources and biological diversity; and
- (b) have regard to the goal, core objectives and guiding principles of the National Strategy for Ecologically Sustainable Development in the use of the coastal zone; and
- (c) provide, in conjunction with other legislation, a coordinated and integrated management and administrative framework for the ecologically sustainable development of the coastal zone; and
- (d) encourage the enhancement of knowledge of coastal resources and the effect of human activities on the coastal zone.⁹¹

Chapter 2 of the Act is particularly relevant. It establishes the Coastal Protection Advisory Council (CPAC) “to advise the Minister about coastal management”, including:

- “areas of the coastal zone needing special coastal management;
- “appropriate preventive and remedial measures for coastal management;”⁹² including
 - “preventing a thing having an unacceptable effect on the coastal zone; and
 - “mitigating damage to property from erosion or tidal inundation.”⁹³

Before declaring an area a coastal management district, the area’s vulnerability to erosion must be considered.⁹⁴ As with inundation, in determining development applications, the decision maker must consider erosion.⁹⁵ For the purposes of this project, the provisions in this Act relating to soil erosion⁹⁶ as a result of mining activities are not considered relevant.

In addition to the CPAC, the *Coastal Protection Management Act 1995* allows the development of a “regional consultative group”⁹⁷ to assist in the preparation of a regional plan. The regional consultative group is to make recommendation on “issues, management strategies and areas requiring special coastal management to achieve ecological sustainable development of the coastal zone.”⁹⁸

This demonstrates the potential for the CPAC and the regional consultative group to develop anticipatory adaptation recommendations, however this is only advice to the Minister, which can be adopted or ignored.

⁹⁰ *Integrated Resort Development Act 1987* and the *Mixed Use Development Act 1993*.

⁹¹ Sec 3, *Coastal Protection and Management Act 1995*.

⁹² Sec 21(1)(a & c), *Coastal Protection and Management Act 1995*.

⁹³ Sec 21(2)(a & b), *Coastal Protection and Management Act 1995*.

⁹⁴ Sec 56(a), *Coastal Protection and Management Act 1995*.

⁹⁵ Sec 104, *Coastal Protection and Management Act 1995*.

⁹⁶ For instance Sec 344 of the *Mineral Resources Act 1989*.

⁹⁷ Sec 25, *Coastal Protection and Management Act 1995*.

⁹⁸ Sec 25(1)(b) *Coastal Protection and Management Act 1995*.

Under the Act, the chief executive must take measures to gather information about storm tide levels relating to erosion, and provide it to the CPAC to perform its functions.⁹⁹ In regard to erosion, the *Coastal Protection and Management Act 1995* provides for the chief executive to declare erosion prone areas (by sea or wind).¹⁰⁰ If such a declaration is made, the chief executive must “ensure the erosion prone area is shown on a document describing the area”¹⁰¹ and “keep the document available for inspection by members of the public at the department’s head office.”¹⁰² The consequences of declaring these erosion prone areas are fairly limited. To give an example, the *Building Act 1975* (section 72) provides that if any building works occur on erosion prone land, any material that is excavated for the building work must be placed on the land seaward of the building or structure, or at another location within the erosion prone area, in an effort to retain the material within the impacted area. Furthermore, if erecting stormwater drains or roof drainage systems in an erosion prone area, these structures must not cause erosion. This can again easily be over-ridden if the “approval states that the person carrying out the building assessment work for the application is satisfied the condition are not necessary for coastal management, including, in particular, the prevention of erosion or tidal inundation.”¹⁰³

The *Coastal Protection and Management Act 1995* does stipulate that where a development application involves reconfiguring a lot for the construction of a canal, an assessment manager must refuse the application if the canal is to intersect, or be connected to, inundated land.¹⁰⁴ There are other references within the Act to inundation that relate to such matters as tidal boundaries for the purpose of mapping¹⁰⁵ or the assessment of rates and land tax for inundated or potentially inundated areas.¹⁰⁶

ii) *Integrated Resort Development Act 1987*

Interestingly, the *Integrated Resort Development Act 1987* and *Mixed Use Development Act 1993* each contain direct references to “storm surge”. Schedule 1 of the *Integrated Resort Development Act* requires that applications for approval of development schemes and future development areas identify “storm surge lines.”¹⁰⁷ Likewise, applications for approvals of a scheme made to local government must identify any storm surge lines in the proposed plan of development¹⁰⁸ and for future development areas.¹⁰⁹ Amendments to development plans adding land to the site must also identify storm surge levels.¹¹⁰ This is only an indication that decision makers ought to consider potential storm surges in determining development applications. It does not place prescriptive restrictions on developments in any vulnerable areas. As noted above, it is however one of the only places where a reference to “storm surge” is made in a piece of primary legislation as opposed to a subordinate instrument.¹¹¹

The term “coast” appears 266 times in Queensland’s primary legislation, as well as 653 times in the regulations. This figure may be misleading in terms of the relevance to this project. It is more useful to analyse how many instruments contain the term. The term appears in 71 different regulations and 49 Acts. Even then, the reason for so many references is largely due to several titles of Acts and regulations containing the term “coast”. The instances in which it is relevant have been covered in the legislation analysed above.

⁹⁹ Sec 29(1), *Coastal Protection and Management Act 1995*.

¹⁰⁰ Sec 70, *Coastal Protection and Management Act 1995*.

¹⁰¹ Sec 70(2)(a), *Coastal Protection and Management Act 1995*.

¹⁰² Sec 70(2)(b), *Coastal Protection and Management Act 1995*.

¹⁰³ Sec 72, *Building Act 1975*.

¹⁰⁴ Sec 118, *Coastal Protection and Management Act 1995*.

¹⁰⁵ Sec 72, *Survey and Mapping Infrastructure Act 2003*.

¹⁰⁶ Sec 148, *Mixed Use Development Act 1993*.

¹⁰⁷ Schedule 1 ss 18(g) and 19(g), *Integrated Resort Development Act 1987*.

¹⁰⁸ Sec 28(5)(l), *Mixed Use Development Act 1993* Sec 28(5)(l).

¹⁰⁹ Sec 35(7)(e), *Mixed Use Development Act 1993*.

¹¹⁰ Sec 42(3)(j), *Mixed Use Development Act 1993*.

¹¹¹ Only one reference to storm surge is made in the regulations (*Rural and Regional Adjustment Regulation 2000* Schedule Approved Assistance Schemes s 116(f)) and this is only to clarify that storm surge is “an eligible natural disaster” for certain persons to receive assistance.

b) Relevant Queensland Policy

i) *State Coastal Management Plan*

Queensland's major coastal policy is the *State Coastal Management Plan* which commenced in February 2002. Under the *Coastal Protection and Management Act 1995*, the Plan is required to outline directions for effective protection and management of the coastal zone. Its overarching principle is "to ensure development and activities are carried out in an ecologically sustainable manner."¹¹² The Plan consists of 48 policies across 10 topic areas:

- coastal use and development;
- physical coastal processes (the effects of waves, tides, currents and coastal storms);
- public access to the coast;
- water quality;
- Indigenous traditional owner cultural resources;
- cultural heritage;
- coastal landscapes;
- conserving nature;
- coordinated management; and
- research and information.¹¹³

Under the *Integrated Planning Act 1999*, the *State Coastal Management Plan* has the effect of a state planning policy. This means that relevant parties must consider the Plan when:

- making or amending planning schemes and other government policy or legislation;
- assessing development applications; and
- designating land for community infrastructure.¹¹⁴

This policy has recently been reviewed by the Minister for Climate Change and Sustainability, in accordance with an ongoing 7-year review requirement. The review, which included a public consultation process, highlighted some of the weaknesses in the current framework. Results indicated that the policy and legislative framework are inconsistent with evolving planning, policy and legislative instruments, because:¹¹⁵

- the current Plan was ambiguous and difficult to use;
- implementation had been impeded due to lack of alignment with "the guiding framework set by the *Integrated Planning Act 1997* (IPA), poor communication between policy makers, development assessment officers, planners and managers which resulted in confusion about roles and responsibilities, and lack of sufficient resources [for local councils]";
- there was "significant duplication and overlap in policy topics covered by other legislation and policy"; and
- there was a need for improved planning policies for sensitive coastal land.

Furthermore, the EDO Queensland made the following comments on the *State Coastal Management Plan*:

¹¹² Queensland Government Department of Environment and Resource Management, Report on the Review of the State Coastal Management Plan, p 5, <http://www.derm.qld.gov.au/register/p02796aa.pdf>.

¹¹³ Queensland Government Department of Environment and Resource Management, Report on the Review of the State Coastal Management Plan, p 5, <http://www.derm.qld.gov.au/register/p02796aa.pdf>.

¹¹⁴ Ibid.

¹¹⁵ Queensland Government, Department of Environment and Resource Management, State Coastal Management Plan Review website:

http://www.derm.qld.gov.au/environmental_management/coast_and_oceans/coastal_management/state_coastal_management_plan/state_coastal_management_plan_review/ (Accessed 18 October 2010).

“The Plan lacks prescriptive language and therefore fails to impose obligations on persons or agencies carrying out activities in the coastal zone. Moreover, there is no difference in weighting provided, so where conflicts occur between the topics (say, coastal use and development and conserving nature) there is nothing to say that pro-environment objects must prevail – and in EDO’s experience, development interests generally win out.”¹¹⁶

In response to the need for improvements in coastal planning and management frameworks, a new *Draft Queensland Coastal Plan* was prepared by the Department of Environment and Resource Management in 2009.¹¹⁷ This is yet to be finalised, however is discussed below.

iii) Draft Queensland Coastal Plan

Released in 2009, this draft document contained two major policy components:

- Draft State Policy – Coastal Management;
- Draft State Planning Policy – Coastal Protection.

As these are only drafts, they will only be addressed briefly.

Draft State Policy – Coastal Management

This six-page document is intended for use by coastal land managers managing private land, and State and local governments who are responsible for managing land owned by the State.¹¹⁸ It aims to “provide policy direction and guidance on managing coastal land in Queensland in line with the objectives of the Coastal Act.”¹¹⁹ It does refer to concepts such as climate change and erosion, but these references are weakly worded. For example at 5.2, the document provides that the “potential for increased sea levels and associated increases in the risk of coastal erosion and storm tide inundation should be taken into account when undertaking management activities.” This aspirational statement is indicative of the language used throughout. Similarly, one of the Policy outcomes is for coastal resources to be protected and maintained by “reflecting climate change impacts in decision making about the use and management of coastal resources.” This statement provides no guidance regarding how, and at what point of the decision making process, this is to occur. This is also the case with erosion, sea level rise and inundation, as they are specified as factors that are only to be taken into account in decision-making.¹²⁰

Draft State Planning Policy – Coastal Protection (SPP)

This policy aims to protect “coastal resources of the coastal zone by setting out criteria for land-use planning and development assessment – enabling Queensland to manage development with the coastal zone including land below tidal waters.”¹²¹ The draft SPP would be taken into account when considering applications for the use of State land within the coastal zone under the *Land Act 1994*, and applications for an allocation of quarry material from below high water mark under the *Coastal Act*. It would have effect “when local planning instruments are made or amended, when development applications are assessed, and when land is designated for community infrastructure.”¹²² In this process, all local

¹¹⁶ Environmental Defender’s Office Queensland, *Coastal Protection and Management*, 2008, p 2. Available at: <http://www.edo.org.au/edoqld/edoqld/new/Coastal%20Protection%20&%20Mgmt%200508.pdf>.

¹¹⁷ Queensland Government, Department of Environment and Resource Management, State Coastal Management Plan website. Available at: http://www.derm.qld.gov.au/environmental_management/coast_and_oceans/coastal_management/state_coastal_management_plan/ (Accessed 18 October 2010).

¹¹⁸ Queensland Government Department of Environment and Resource Management (DERM), Draft State Policy – Coastal Management 2009 p 2. Available at: http://www.derm.qld.gov.au/coastalplan/pdf/coastal_mngt_policy.pdf.

¹¹⁹ Draft Queensland Coastal Plan, Draft State Policy – Coastal Management, Sec 2. Available at: http://www.derm.qld.gov.au/coastalplan/pdf/coastal_mngt_policy.pdf.

¹²⁰ DERM, Draft State Policy Coastal Management 2009 p 3. Available at: http://www.derm.qld.gov.au/coastalplan/pdf/coastal_mngt_policy.pdf.

¹²¹ Ibid.

¹²² DERM, Draft State Planning Policy – Coastal Protection 2009, p 5. Available at: http://www.derm.qld.gov.au/coastalplan/pdf/policy_coastal_protection.pdf.

governments entirely within (or with boundaries intersecting) the coastal zone must integrate and appropriately reflect the draft SPP to the planning Minister's satisfaction – a highly subjective standard.¹²³ Further, the draft SPP would not automatically override other policies and requirements in other State planning instruments.¹²⁴

The draft SPP is divided into sections on how to achieve policy outcomes through making or amending a planning instrument,¹²⁵ and development assessments and designating land for community infrastructure.¹²⁶ Acceptable circumstances for not achieving a policy outcome are where there is an overriding public interest need (taking into account certain factors annexed to the document) or there is a development commitment.

In addition to the two policies above, the following three guidelines were also prepared to help implement the *Draft Queensland Coastal Plan*:

- *Draft State Policy Guideline – Coastal Management*;
- *Draft State Planning Policy Guideline – Coastal Protection*; and
- *Draft Guideline – Coastal Hazards*.¹²⁷

Draft State Policy Guideline – Coastal Management

This draft management guideline provides information and advice on interpreting and implementing the *Draft State Policy Coastal Management* (six-page document above).¹²⁸ Each of the Policy outcomes is covered, with information on the rationale behind it and possible strategies to achieve it.

Draft State Planning Policy Guideline – Coastal Protection

This draft protection guideline details how the draft SPP applies. It covers the SPP's relationship with other planning instruments; making or amending a planning instrument; achieving the policy outcomes through a local planning instrument and development assessment; and other important definitions and mapping criteria.¹²⁹

Draft Guideline – Coastal Hazards

The purpose of this guideline is to “provide background information about coastal hazards (storm tide inundation, coastal erosion and sea level rise inundation), and guidance on determining those areas that are at risk from coastal hazards.”¹³⁰

c) Queensland Overview and Lessons Learned

An early analysis conducted of submissions on the *Draft Queensland Coastal Plan's* two components indicates that the new policy has not addressed all the shortcomings of the old policy. Confusion about its application persists and clarification of the application of the policies was requested, as well as support for coastal policies to address coastal hazards. Other issues raised included concerns about adequacy of biodiversity protection, debate about geographical scope of planning policies and requests

¹²³ DERM, Draft State Planning Policy Guideline 2009 p 12. Available at: http://www.derm.qld.gov.au/coastalplan/pdf/coastal_plan_guide_coastal_protection.pdf.

¹²⁴ Ibid, p 8.

¹²⁵ DERM, Draft State Planning Policy – Coastal Protection 2009 p 7. Available at: http://www.derm.qld.gov.au/coastalplan/pdf/policy_coastal_protection.pdf.

¹²⁶ Ibid, p 8.

¹²⁷ Ibid.

¹²⁸ Queensland Government Department of Environment and Resource Management, Draft State Policy Guideline Coastal Management 2009, p 2. Available at: http://www.derm.qld.gov.au/coastalplan/pdf/coastal_plan_guide_coastal_mgmt.pdf.

¹²⁹ Queensland Government Department of Environment and Resource Management, Draft State Planning Policy Guideline Coastal Protection 2009 Available at: http://www.derm.qld.gov.au/coastalplan/pdf/coastal_plan_guide_coastal_protection.pdf.

¹³⁰ Queensland Government Department of Environment and Resource Management, Draft Guideline Coastal Hazards 2009 p 2. Available at: http://www.derm.qld.gov.au/coastalplan/pdf/coastal_plan_guide_coastal_hazards.pdf.

for performance targets.¹³¹ Having contacted the Queensland Department of Environment and Resource Management (DERM), it is anticipated that the final version of the Plan will be released in December 2010, accompanied by an implementation program by March next year.¹³² There was an indication that the four current *Regional Coastal Management Plans* will be abolished, with a lot of the detail from them being absorbed into a set of guidelines that will be released in coordination with the final *State Coastal Management Plan*. Furthermore, DERM indicated that the final State Coastal Management Plan will look significantly different to the Draft version that was previously released, and will be fairly strongly worded “must implement” as opposed to “have regard to” policy. Aside from primary legislation and subordinate instruments, Queensland has some controversial coastal land management ideas such as Injurious Affection, which will be discussed at 3.2 below.

¹³¹ Queensland Government Department of Environment and Resource Management, Consultation results website, Available at: http://www.derm.qld.gov.au/coastalplan/consultation_results.html.

¹³² Queensland Government Department of Environment and Resource Management, Consultation results website, Available at: http://www.derm.qld.gov.au/coastalplan/consultation_results.html.

1.7 New South Wales

NSW	“sea level rise”	“coastal erosion”	“coastal inundation”	“storm surge”	“coast”
Legislation	2 results. ¹³³	No results.	No results.	No results.	138 results.
Regulations & Planning Instruments	<ul style="list-style-type: none"> - Eurobodalla Urban LEP 1999 - Shellharbour LEP 2000 - Tweed LEP 2000 - Ulmarra LEP 1993 - Wollongong LEP 1990 - Hastings LEP 1987 - Bellingen LEP 2003 - Maclean LEP 2001 - Bega Valley LEP 2002 - SEPP (Major Development) 2005 - Gosford City Centre LEP 2007 - Newcastle City Centre LEP 2008 - Port Macquarie-Hastings LEP 2008 - Standard Instrument (LEP) Order 2006 - Standard Instrument – Principal LEP – Reg 5.5 - Warringah LEP 2000 	<ul style="list-style-type: none"> - Tweed LEP 2000 - Ballina LEP 1987 - Warringah LEP 2000 - Richmond River LEP 1992 - Nambucca LEP 1995 - North Coast REP - SEPP (Infrastructure) 2007 - Shoalhaven LEP 1985 - Kiama LEP 1996 - Bellingen LEP 2003 - Richmond River LEP 1992 - SEPP (Exempt and Complying Development Codes) 2008 - Wyong LEP 1991 - Byron LEP 1988 	<ul style="list-style-type: none"> - Newcastle LEP 2003 - SEPP (Infrastructure) 2003 	No results.	489 results.

As the table above shows, there are a number of planning instruments in NSW that mention the key search terms for this project.

The additional search term “coast” appears 138 times (in 25 separate Acts) and 489 times in the regulations (many of them in LEPs). Of the 25 separate Acts, the one that is relevant to this project is the *Coastal Protection Act 1979* and recent amendments, which are discussed below.

a) Activity Since Last SCCG Report

In 2008, the EDO conducted an assessment for the SCCG of Australian and NSW legislation and policy relating to climate change, as relevant to regional and metropolitan coastal councils. Since then, a number of laws and policies have been developed and amended, that attempt to go further in addressing sea level rise, coastal erosion and inundation. These include:

- i) The *Coastal Protection Act and Other Legislation Amendment Act 2010* (CPAOLA);
- ii) The *Coastal Protection Act 1979*;
- iii) The *Coastal Protection Regulation 2011*;
- iv) NSW *Sea Level Rise Policy Statement* (SLRPS);

¹³³ *Coastal Protection Act 1979* and the *Local Government Act 1993*.

- v) *Coastal Planning Guideline*.
- vi) *Coastal Risk Management Guide* and *Flood Risk Management Guide*

These are addressed in turn below.

i) *Coastal Protection and Other Legislation Act 2010* (CPAOLA)

The CPAOLA covered the following main topics:

- emergency coastal protection works;
- permanent coastal protection works;
- creation of a new NSW Coastal Panel;
- coastal protection service charge; and
- strengthens good faith defence for liability of councils.

Furthermore, the CPAOLA defined temporary coastal protection works to mean “work comprising the placement of ... material on a beach, or a sand dune adjacent to a beach, to mitigate the effects of wave erosion on land.”¹³⁴ There were qualifications regarding the materials that could be used for these erosion protection works, permitting “sand, or fabric bags filled with sand (other than sand taken from a beach in a marine park or in an aquatic reserve).” It did however prevent the use of rocks, concrete, construction waste or other debris. The Act also prescribed the timing of placement of such materials, that is, only “as an emergency action during a period of beach erosion (where the beach erosion occurs through storm activity or an extreme or irregular event) or when such beach erosion is imminent.”¹³⁵ In order to ensure that these actions were only temporary, the maximum period allowed for the works was 12 months.¹³⁶

During the writing of this report, the NSW Government released the *Coastal Protection and Other Legislation Amendment Bill 2010 (No 2)* which introduced a number of changes to the original CPAOLA. These changes relate primarily to the actions permitted around certain emergency protection works, and enabling local councils to make an annual charge for the provision of coastal protection projects. This recent amendment demonstrates the current state of flux in NSW regarding the updating and amendment of its coastal adaptation strategies.

ii) *Coastal Protection Act 1979*

The *Coastal Protection Act 1979* is the principal law that applies to the NSW coastal zone. It aims to protect the coastal environment of the State “for the benefit of both present and future generations.” Importantly, the Act’s Objects clause refers specifically to sea level rise.¹³⁷ This Act contains provisions for the use and supervision of the coastal zone, the carrying out of development within the coastal zone and the preparation of the Coastal Zone Management Plans.

As noted above, this Act underwent review during the writing of this report:

“In 2010 the Act was amended by the *Coastal Protection and Other Legislation Amendment Act 2010*. This included new provisions allowing landowners to temporarily place sand or sandbags as emergency coastal protection works under certain conditions. The amendments also improved the arrangements for preparing coastal zone management plans and the ability of public authorities to require the removal of unlawful material dumped on beaches. They also increased penalties for a breach of the principal Act.”¹³⁸

¹³⁴ The then proposed section 55O, *Coastal Protection Act and Other Legislation Act 2010*.

¹³⁵ The then proposed section 55O(a), *Coastal Protection Act and Other Legislation Act 2010*.

¹³⁶ Some of these provisions have now been implemented in the *Coastal Protection Regulation 2011* (discussed below).

¹³⁷ At section 3(h) it provides that one of the objectives is “to encourage and promote plans and strategies for adaptation in response to coastal climate change impacts, including projected sea level rise”.

¹³⁸ Available at: <http://www.environment.nsw.gov.au/coasts/CoastProtReg2011.htm>.

The EDO made a submission to one component of this review concerning the draft Minister's Requirements under the *Coastal Protection Act 1979*. It comments on issues such as imminent erosion, protection of native vegetation, emergency sub-plans and enforcement and monitoring.¹³⁹

iii) Coastal Protection Regulation 2011

On 3 March 2011 the *Coastal Protection Regulation 2011* commenced. This new regulation replaced the previous 2004 regulation. It introduced a number of fundamental changes to try and address some of the problems associated with development and erosion in the Coastal Zone. Some of the pertinent provisions include:

- “requirements relating to emergency coastal protection works by landowners, specified in a Code of Practice^{140]} under the Regulation and also explained in a guide^{141]} to these requirements;
- “requirements relating to Ministerial concurrences which must be obtained before carrying out certain off-shore development activities, similar to the requirements in the Coastal Protection Regulation 2004;
- “defining the arrangements for categorising land according to its vulnerability to coastal hazards, based on information in council coastal zone management plans.”¹⁴²

As noted in the dot points above, the new regulation stipulates the use of a code of practice published in March 2011 by the NSW Department of Environment, Climate Change and Water (now the Office of Environment and Heritage). The new regulation also prescribes certain penalty notices and amounts.

iv) NSW Sea Level Rise Policy Statement (SLRPS)

The SLRPS, released by the former NSW Government in October 2009, “sets out the Government’s approach to sea level rise, the risks to property owners from coastal processes and the assistance that Government provides to councils to reduce the risks of coastal hazards.”¹⁴³ Its objectives include:

1. “promoting an adaptive risk-based approach to managing the impacts of sea level rise;
2. providing guidance to local councils to support their sea level rise adaptation planning;
3. encouraging appropriate development on land projected to be at risk from sea level rise;
4. continuing to provide emergency management support to coastal communities during times of floods and storms;
5. continuing to provide up-to-date information to the public about sea level rise and its impacts.”¹⁴⁴

In NSW there has been significant pressure on the State Government to provide information on measures for councils to take, to respond and prepare for the impacts associated with climate change. The SLRPS goes some way to giving guidance through the introduction of two planning benchmarks – which provide for an increase above 1990 average sea levels of 40cm by 2050 and 90cm by 2100.¹⁴⁵ These benchmarks¹⁴⁶ are to be used in assessing the influence of sea level rise on new development.

¹³⁹ The complete submission can be found at the EDO website. Available at: http://www.edo.org.au/edonsw/site/pdf/subs10/100913coastal_protection_act.pdf.

¹⁴⁰ Code of Practice available at: <http://www.environment.nsw.gov.au/resources/water/coasts/110223CodeofPracCoastProtAct1979.pdf>.

¹⁴¹ Guide available at: <http://www.environment.nsw.gov.au/resources/water/coasts/101017guidestatreqs.pdf>.

¹⁴² Available at: <http://www.environment.nsw.gov.au/coasts/CoastProtReg2011.htm>.

¹⁴³ NSW Office of Environment and Heritage website. Available at: <http://www.environment.nsw.gov.au/climatechange/sealevel.htm>.

¹⁴⁴ Pg.5, *Sea Level Rise Policy Statement*.

¹⁴⁵ Benchmarks established through the use of national and international SLR projections, e.g. Intergovernmental Panel on Climate Change Assessment Reports.

¹⁴⁶ The policy stipulates that the benchmarks are not fixed figures, but instead are malleable and will be reviewed and updated to remain in line with best available science. Due to the uncertainty that exists in relation to the impacts of climate change, it

The benchmarks are intended to “support an adaptive risk-based approach by the proponent to future development and upgrading of existing development in vulnerable coastal areas, and to give the decision-maker... a framework on which to base its decisions.”¹⁴⁷

The SLRPS has been criticised for its failure to prohibit certain developments, or propose rezonings in areas clearly vulnerable to inundation. The EDO has noted that whilst this policy does provide benchmarks, it “provides scant leadership and guidance for affected stakeholders.”¹⁴⁸ The EDO has also observed that the SLRPS is merely another layer of policy that “sits within the plethora of other NSW coastal legislation and policy documents.”¹⁴⁹ This view was put in response to the recent approach to coastal management in NSW, with far too many documents dealing with similar subject matter being developed without integration.

v) Coastal Planning Guideline

This Guideline has been developed to provide greater guidance for decision makers on strategic plan-making and development assessment in coastal risk areas. The Guideline also assists development proponents by setting out the following eight criteria that the proponent should consider when selecting coastal development sites:

1. Development avoids or minimises exposure to immediate coastal risks (within the immediate hazard area or floodway).
2. Development provides for the safety of residents, workers or other occupants on-site from risks associated with coastal processes.
3. Development does not adversely affect the safety of the public off-site from a change in coastal risks as a result of the development.
4. Development does not increase coastal risks to properties adjoining or within the locality of the site.
5. Infrastructure, services and utilities on-site maintain their function and achieve their intended design performance.
6. Development accommodates natural coastal processes including those associated with projected sea level rise.
7. Coastal ecosystems are protected from development impacts.
8. Existing public beach, foreshore or waterfront access and amenity is maintained.

At first glance, the eight points appear to be a relatively solid set of criteria, however the requirement is not that these factors must be adhered to, but only considered. In its submission to the NSW Department of Planning on the *Draft NSW Coastal Planning Guideline*, the EDO noted the need for “a more prescriptive approach to be taken to addressing coastal hazards...” and for “government guidance to assist decision-makers undertaking strategic planning and assessing proposed development, especially in light of the significant sea level rise projections for the NSW Coast.”¹⁵⁰

The EDO submission made clear that the *Draft Coastal Planning Guideline* failed to provide this guidance or prescriptive approach. Unfortunately, limited changes were made prior to the release of the finalised *NSW Coastal Planning Guideline*. What is therefore required is a set of similar criteria to the eight provided, except with legally binding obligations instead of merely being factors for consideration.

is essential that any instrument that addresses these impacts contain an element of flexibility to ensure it can respond to fluctuations.

¹⁴⁷ Clayton Utz Environment and Planning Insights, Planning ahead for sea level rises in NSW. Available at: http://www.claytonutz.com/publications/newsletters/environment_and_planning_insights/20100813/planning_ahead_for_sea_level_rises_in_nsw.page.

¹⁴⁸ EDO Submission to the NSW Department of Environment and Climate Change on the Draft Sea Level Rise Policy Statement. Available at: http://www.edo.org.au/edonsw/site/pdf/subs09/090409decc_sealevelrise.pdf.

¹⁴⁹ Ibid.

¹⁵⁰ The complete submission can be found at the EDO website. Available at: http://www.edo.org.au/edonsw/site/pdf/subs09/091130coastal_planning_guideline.pdf.

It is important to note that two sets of complimentary guides have been released to assist in the functioning of the *NSW Coastal Planning Guideline*. These are discussed below.¹⁵¹

vi) Coastal Risk Management Guide and Flood Risk Management Guide

These guides have been released as part of the recent suite of measures introduced into the NSW coastal planning regime. Their full titles and purposes are:

- the *Coastal Risk Management Guide: Incorporating sea level rise benchmarks in coastal hazard assessments* (DECCW 2010) – to “assist local councils, the development industry and consultants incorporate the sea level rise benchmarks in coastal hazard assessments;”¹⁵² and
- the *Flood Risk Management Guide: Incorporating sea level rise benchmarks in flood risk assessments* (DECCW 2010)¹⁵³ – to “assist local councils, the development industry and consultants incorporate the sea level rise benchmarks in floodplain risk management planning and flood risk assessments for new development.”

It is encouraging that guidelines have been developed, and the introduction of such documents are, to a limited extent, useful in assisting Councils who may wish to integrate the sea level rise benchmarks. On the other hand, this is again only a guide and contains no legally binding obligations for how Councils are to address the coastal hazards relevant to this project. Both documents contain fairly non-committal guidance that is open to broad interpretation:

“In circumstances where it is necessary to consider physical coastal processes and/or the influence of tidal waters, it is recommended that the additional impact of projected sea level rise up to the planning benchmarks be considered.”¹⁵⁴

The ambiguity of this statement is representative of the guidance provided throughout the coastal Guide. Having stated this, it is worth noting that the documents do include some useful tools, such as how to apply the methodology of the ‘Bruun Rule’. This can be used as a “coarse first-order approximation for determining sea level rise induced recession for planning purposes along the open coast.”¹⁵⁵

b) Other NSW Legislation

i) Environmental Planning and Assessment Act 1979 (EP&A Act)

The EP&A Act has the potential to greatly influence the interaction between infrastructure and the environment when considering development in the coastal zone.¹⁵⁶ Section 117 of the EP&A Act provides that a Local Environmental Plan (LEP) be developed. An LEP is one environmental planning instrument (EPI) used to control the use of land adjoining the beach.¹⁵⁷ The development of such LEPs should include provisions that give effect to and are consistent with the *NSW Coastal Policy 1997*. The policy provides the principles which should be addressed in new and existing LEPs (and Development Control Plans (DCPs)) to ensure:

- Only developments which do not compromise the natural and cultural values of the area will be permitted on beaches and frontal dunes; and

¹⁵¹ These are the Coastal Risk Management Guide and Flood Risk Management Guide.

¹⁵² Pg.1, *Coastal Risk Management Guide: Incorporating sea level rise benchmarks in coastal risk assessments*.

¹⁵³ This covers such topics as the impacts of sea level rise on flooding and tidal inundation; where sea level rise likely to impact on flood levels, and the projected changes to flood planning areas.

¹⁵⁴ Pg.4, *Coastal Risk Management Guide: Incorporating sea level rise benchmarks in coastal risk assessments*.

¹⁵⁵ Pg.5, *Coastal Risk Management Guide: Incorporating sea level rise benchmarks in coastal risk assessments*.

¹⁵⁶ The coastal zone is defined in the *NSW Coastal Policy 1997* as 3 nautical miles seaward of the mainland and offshore islands; 1 km landward of the open coast high water mark; a distance of 1 km around all bays, estuaries, coastal lakes, lagoons and coastal rivers to the limit of mangroves or the tidal limit whichever is closer to the sea.

¹⁵⁷ Thom, B. 2003, ‘Beach Protection in NSW, New Measures to secure the environment and amenity of NSW beaches’, *Environmental and Planning Law Journal*, vol. 20, no.5, pp 325-358.

- In allowing works to protect, restore and rehabilitate beaches and frontal dunes, to preferably favour “soft” engineering¹⁵⁸ approaches as developed through a Coastline Management Plan.¹⁵⁹

The EP&A Act appears to demonstrate that some efforts have been made to better manage the coastal zone. However, in practice, many inappropriate developments are still approved in sensitive coastal zones. A consequence of the listing of developments in the coastal zone as Part 3A¹⁶⁰ projects (under the EP&A Act) is that developments that are likely to have the greatest impact on the coastal environment in NSW will be decided by the Planning Minister, who determines the scope of any environmental assessment. This would be appropriate, however Part 3A is based on Ministerial discretion. It does not guarantee a clear process to ensure that environmental impacts (including cumulative impacts¹⁶¹) are adequately considered, that the public is involved in the process, and that concurrence is obtained from the Minister for the Environment. (Part 3A is discussed further under c) ii below).

c) Other Planning Instruments

i) *State Environmental Planning Policy No. 71 – Coastal Protection*

The *State Environmental Planning Policy No. 71 – Coastal Protection* (SEPP 71) aims to regulate development in coastal areas. Whilst the objectives of this policy are broad ranging, there is no specific mention in the entire document of any of the initial search terms for the project, nor does it mention the additional terms, “erosion” or “inundation”. It does refer to the term “coast” a number of times, particularly in the aims of the policy, which include ensuring the “visual amenity of the coast is protected” as well as to “protect and manage the natural, cultural, recreational and economic attributes of the NSW coast.”¹⁶² SEPP 71 also requires councils to take into account “the likely impact of coastal processes and coastal hazards on development and any likely impacts of development on coastal processes and coastal hazards”¹⁶³ when preparing Local Environmental Plans and assessing development in the NSW coastal zone. While the regulation does not define “coastal processes and coastal hazards”, it could be interpreted to include erosion, inundation and storm surge. It is important to recognise that these are only matters to be considered, and require no level of satisfaction by the decision maker that these matters have been redressed.

ii) *State Environmental Planning Policy (Major Development) 2005*

All major projects, which include a sub-category of critical infrastructure projects, are now assessed and approved under Part 3A, rather than under Part 4 or Part 5 of the EP&A Act. Part 3A projects are identified in the Major Development SEPP; or declared by the Planning Minister where the Minister is of the opinion that the project is of “state or regional significance”, or “essential to the State for economic, environmental or social reasons”. The Planning Minister is the consent authority for all major projects and critical infrastructure, except in limited circumstances where the Planning Assessment Commission is the consent authority. These include where the proposed project is in the Minister’s electorate or where political donations have been made.

The main effect of the introduction of Part 3A into the EP&A Act has been to remove many major projects from assessment and approval under the Part 4 development consent process and Part 5

¹⁵⁸ Soft engineering approaches are discussed further below.

¹⁵⁹ Thom, B. 2003, ‘Beach Protection in NSW, New Measures to secure the environment and amenity of NSW beaches’, *Environmental and Planning Law Journal*, vol. 20, no.5, pp 325-358.

¹⁶⁰ NB: At the time of writing, the NSW Government was preparing to repeal and/or amend Part 3A of the EP&A Act.

¹⁶¹ Whilst a particular applicant may be able to demonstrate that their project will not of itself adversely impact on coastal processes, the cumulative effect of many applications will have a negative social, environmental and economic impact on the coast. Thus, we recommend that the mandatory clause require councils to consider the cumulative impacts when assessing individual developments.

¹⁶² Clause 2(1)(a) & (e), *State Environmental Planning Policy No. 71 – Coastal Protection* (SEPP 71)

¹⁶³ Clause 8(j), *State Environmental Planning Policy No. 71 – Coastal Protection*.

activity assessment process. Control of these projects is given to the Planning Minister and the Department of Planning, which is responsible for assessing the project. Under Part 3A, section 75U 1(a) provides that certain authorisations are not required for an approved project, and furthermore the provisions of any Act that prohibit an activity without such an authority do not apply. This includes “the concurrence under Part 3 of the *Coastal Protection Act 1979*” which prohibits the carrying out of development in the coastal zone if the Minister for the Environment is of the opinion that the development:

- “is inconsistent with the principles of ecologically sustainable development;
- adversely affects the behaviour of the sea or an arm of the sea or any bay, inlet, lagoon, lake, body of water, river stream or watercourse, or
- adversely affects any beach or dune the bed, bank, shoreline, foreshore or flood plain of the sea or an arm of the sea or any bay, inlet, lagoon, margin, lake, body of water, river, stream, or watercourse.”¹⁶⁴

Part 3A removes the requirement for concurrence of the Minister for the Environment for Part 3A projects carried out in the coastal zone, which would otherwise apply. This effectively prevents the Minister charged with administering the *Coastal Protection Act 1979* from having any input into the assessment of development proposals which are likely to have the most significant impacts on the coastal zone and be most at risk from coastal hazards.

d) Other relevant NSW Policy

i) NSW Coastal Policy 1997

The principal policy guiding councils in the coastal zone is the *NSW Coastal Policy 1997*. The role of the 1997 Policy is to provide a framework for the “balanced and co-ordinated management of the coast’s unique physical, ecological, cultural and economic attributes.”¹⁶⁵ Furthermore it is intended to set the “overall strategic direction for coastal management in NSW ... based on the principles of ecologically sustainable development.”¹⁶⁶ Whilst this appears to be an aspirational statement only, there is a recognition that the coastal zone is subject to intense pressures from human activity and that there are a large range of competing interests for its resources. Furthermore, this Policy does outline some key strategic actions relating to the development of Coastal and Estuary Management Plans.

The 1997 Policy does also refer to sea level rise, firstly in relation to the need for the precautionary principle to be taken into account when considering the impact that sea level rise will have, and secondly regarding the need for sea level rise scenarios to be “incorporated into management plans and other mechanisms.”¹⁶⁷ Erosion is the only other relevant search term specifically referred to in this Policy, and that reference is only fleeting.¹⁶⁸

The 1997 Policy aims to facilitate the development of the coastal zone in a way which protects and conserves the zone’s values. This includes recognising and accommodating natural processes and protecting beach amenity and public access. In particular the Policy recognises (at page 14) that:

“The coastal zone represents the interface between marine and terrestrial environments and as such contains an inherent vulnerability. This is reflected in processes such as shoreline recession and erosion of beaches and dunal systems.”

¹⁶⁴ Sec 31(1)(b-d), *Coastal Protection Act 1979*.

¹⁶⁵ Pg. 7, *NSW Coastal Policy 1997*.

¹⁶⁶ Pg.4, *NSW Sea Level Rise Policy Statement*.

¹⁶⁷ Pg 20, *NSW Coastal Policy 1997*.

¹⁶⁸ “This is reflected in processes such as shoreline recession and erosion of beaches and dunal systems.” Page 14, *NSW Coastal Policy 1997*.

As such, the Policy sets out various goals, actions and objectives. The key strategic action outlined in the policy is the development and implementation of Coastal and Estuary Management Plans in accordance with the existing Coastline and draft Estuary Management Manuals. The Policy also requires that appropriate planning mechanisms that incorporate sea level change scenarios set by the Inter-governmental Panel on Climate Change (IPCC) be implemented. However, local councils face practical difficulties in complying with this requirement. First, councils are given no guidance as to which specific IPCC sea level scenarios they need to incorporate, nor the time frame for implementation. Second, many existing environmental planning instruments are not flexible enough to allow for an adaptive response to changing sea level rise. So although this policy may appear to assist in addressing some of the issues associated with coastal erosion, coastal inundation and storm surge, in reality this document may be little more than a set of aspirational statements. The Policy is now 14 years old and is in considerable need of review. The intent and implications of the range of amendments to the *Coastal Protection Act* over this time (including those that came into force on 1 January 2011) are not reflected in the current policy.

ii) *NSW Coastal Design Guidelines* (2003)

The *NSW Coastal Design Guidelines* have been developed to assist parties such as government decision makers, development applicants, planners, designers and local communities. The Guidelines are divided into three parts:

1. Part 1: Determining a local hierarchy of settlements;
2. Part 2: Design principles for coastal settlements; and
3. Part 3: Conclusion and next steps.

Part 2 of the Guidelines includes a section entitled “Protecting the Natural Edges” which addresses such issues as “Setbacks”. One of the points under “Setbacks” deals specifically with many of the subjects pertinent to this project. It states that coastal habitats and the coastal edge should be managed to reduce land use impacts through setbacks that also support the protection of properties from erosion, and also provide for public access along the foreshores and to natural areas. Furthermore the document provides that “setbacks for redevelopment should consider a 100 year planning timeframe to address shoreline retreat and sea-level rise.” Such statements exemplify the document’s tone, with no mandatory requirements but instead only suggestions of matters for consideration.

iii) *NSW Coastline Management Manual* 1990 (superseded)

Important note: As of 1 January 2011 the *Coastline Management Manual* was replaced by the Guidelines for Preparing Coastal Zone Management Plans.¹⁶⁹ These Guidelines set the minimum requirements for the preparation of coastal zone management plans for the Minister to certify the plans. The Guidelines will be supported by technical notes (placed on the NSW Office of Environment and Heritage website) that will provide guidance on the technical issues associated with preparing coastal zone management plans.

The *Coastline Management Manual* 1990 was prepared as part of implementing the *Coastline Hazard Policy* (also superseded¹⁷⁰). The Manual was created to assist understanding of coastal processes and hazards in NSW (specifically including Beach Erosion Hazards and Coastal Inundation Hazards) and their underlying causes.¹⁷¹

Under the *Coastal Protection Act* 1979 (discussed above) councils located in the coastal zone may produce Coastal Zone Management Plans, and must do so if directed by the Minister. That Act required that these plans be made in accordance with the *Coastline Management Manual*.

¹⁶⁹ Available at <http://www.environment.nsw.gov.au/coasts/coastalmgtdocs.htm>.

¹⁷⁰ The Coastline Hazard Policy has been superseded by the NSW Sea Level Rise Policy Statement (SLRPS) at a) iv) above.

¹⁷¹ The Manual: assesses and identifies all available management options against environmental, social and economic criteria; provides detailed guidelines for councils to follow to address coastal erosion issues; and outlines steps to prepare and then implement Coastline Management Plans, as well as other adaptive actions councils can take to address coastal hazards.

e) NSW Overview and Lessons Learned

As with many of the other jurisdictions around Australia, the NSW Government is under increasing pressure from the community to provide a robust, equitable and environmentally strong framework to address the issues of increasing population densities in coastal areas and the ever-threatening coastal hazards exacerbated by a changing global climate and rising sea level. As the analysis above shows, NSW has a plethora of legislation, regulations, policies, strategies, frameworks and guidelines in an attempt to address these challenges. Despite the amount of documentation on this subject matter, the measures set out in the various instruments to address these coastal hazards can easily be overridden as a result of two main factors. The first is that the measures appear primarily in subordinate instruments as opposed to primary legislation that decision makers are legally required to comply with. Secondly, when these measures are raised in subordinate instruments such as policies and guidelines, decision makers are granted broad discretion, which leads to an inconsistent application of the policies when making decisions. The result has been the development of an ad-hoc, uncoordinated and inadequate response to a highly complex problem. The current NSW system, while being fragmented and lacking a clear process for implementation, does provide significant guidance in relation to sea level rise benchmarks and the technical aspects of their application in both strategic planning and development assessment activities. To assist the consistent implementation of this guidance, the development of a more robust and responsive planning framework is required that allows for impacts of sea level rise to be re-evaluated and adjusted over time.

Part Two: International Jurisdictions

Having conducted an investigation into the primary legislation and subordinate instruments in Australian jurisdictions concerning erosion, inundation, sea level rise and storm surge in Part One, this Part analyses a number of international jurisdictions that have been recognised as leading the way in responding to coastal hazards, as well as examining other comparative approaches. The parameters of this project have called for special attention on how enforcement and compliance mechanisms can function most effectively, and how communication channels can operate effectively to ensure compliance occurs. The first two international jurisdictions addressed are New Zealand and the UK, which have both adopted a risk based approach, followed by examples from South Africa and the United States of America.

2.1 New Zealand Response

The *Resource Management Act 1991* is the primary piece of legislation that attempts to address the impacts of climate change on the New Zealand coastline. It sets out a series of national, regional and local planning policy statements and statutory plans. It is however the *Coastal hazards and Climate Change Guidance Manual for Local Government* that demonstrates some novel approaches on how to address the risks posed by sea level rise. This manual is particularly relevant as it aims to address “coastal erosion caused by storms and long-term processes [and] coastal inundation caused by storms or gradual inundation from high tides due to sea-level rise.”¹⁷² The manual is intended to assist local authorities to manage coastal hazards by:

- “providing information on the effects of climate change on coastal hazards;
- presenting a decision-making framework to assess the associated risks; [and]
- providing guidance on appropriate response options.”¹⁷³

The decision-making framework referred to above aims to promote “long-term adaptive capacity for managing coastal hazard through adaptive management and no-regrets options” through a series of paradigm shifts that change the way in which coastal changes are viewed. The manual provides the following table¹⁷⁴ that is intended to demonstrate the paradigm changes that are required to enable successful and sustainable management of the impacts of coastal hazards.

¹⁷² New Zealand Ministry for Environment Website. Available at: <http://www.mfe.govt.nz/publications/climate/coastal-hazards-climate-change-guidance-manual/>.

¹⁷³ New Zealand Ministry for Environment Website. Available at: <http://www.mfe.govt.nz/publications/climate/coastal-hazards-climate-change-guidance-manual/>.

¹⁷⁴ New Zealand Ministry for Environment Website. Available at: <http://www.mfe.govt.nz/publications/climate/coastal-hazards-climate-change-guidance-manual/>.

Historical or prevailing paradigm

1) Hazards such as coastal erosion viewed as 'abnormal' coastal behaviour.

2) Predominantly re-active approach to managing coastal hazards after an event occurs.

3) Managing coastal processes.

4) Focus on a single management objective based on physical impacts, such as protection of front row property owners.

5) Uncertainty about the occurrence of climate change and a tendency to wait for more certain information.

6) Consideration and management of different coastal hazards separately (eg, erosion, storm inundation, tsunamis).

7) Decision-making based on short-term timeframes.

8) Little control over existing use rights with respect to hazard management.

Changing paradigm

Living with coastal erosion as a natural cyclic process that helps shape the natural characteristics of the coastal margin.

A proactive and strategic long-term approach to managing coastal hazards.

Influencing people.

Balanced consideration of a wide range of environmental and social objectives, including protection, but also issues such as natural character, public access, cultural values, kaitiakitanga, kaimoana and customary uses.

Certainty about the occurrence of climate change and the need to respond.

Integrated approach to managing multiple hazards, including dealing with residual risk, eg, emergency management.

Support for long-term planning appropriate to the intended timeframe of the decisions being made and ongoing climate change impacts.

Increased control over existing use rights with respect to hazard management.

This paradigm shift involves a communication strategy to inform councils and constituents that coastal hazards are no longer seen as abnormal coastal behaviour and an issue to be battled against. Instead, erosion and accretion events are merely components of cyclical processes that will continue to occur throughout the coastal zone. The table in the *Coastal hazards and Climate Change Guidance Manual for Local Government* has the potential to be an extremely effective communication strategy to adjust the traditional mindset of communities and local councils from working to overcome the dynamic nature of the coastline, to one that accepts and integrates these fluctuations into coastal planning and policy.

It has been noted that this novel way of thinking as to how a number of issues are dealt with in the coastal zone may provide some initial challenges in New Zealand. Such challenges may be in relation to changing perceptions of "existing use rights, the permanency of property and the roles and responsibilities of local government to provide protection against the impacts from coastal hazards."¹⁷⁵ Despite this, Australian jurisdictions could benefit greatly from the communication of some of these paradigm shifts to assist in the development of a strategy or program that better addresses coastal processes, particularly with the exacerbating impacts of climate change.

The New Zealand *Coastal hazards and Climate Change Guidance Manual for Local Government* uses a number of principles to assist in the decision making process to ensure good adaptation results. One of the more

¹⁷⁵ *Coastal Climate Change Advisory Committee Issues and Options Paper*, February 2010.

prominent principles the document draws attention to is the need to work in partnership with the community, which is, as the manual notes, “consistent with good participatory decision making.” This transfer of information between decision makers and community is fundamental to the development of a strategy that is not only likely to be more comprehensive, but will also have much more community “buy in” when introduced. This should in turn reduce the allocation of resources required for compliance and enforcement activities.

Another principle which should be integrated into the decision making process for addressing coastal hazards in NSW is the recognition of the value of no-regrets, low-regrets and win-win adaption:

- “no-regrets: policies and decisions that will pay off immediately under current climate conditions,
- “low-regrets: low-cost policies, decisions and measures that have potentially large benefits, and
- “win-wins: policies, decisions and measures that help manage several coastal hazard or climate related risks at once, or bring other environmental and social benefits, eg, preservation of natural character.”¹⁷⁶

Finally, the manual advocates the use of the precautionary principle, the importance of progressive risk reduction to ensure new development is not exposed to risk in the future, and acknowledges the importance of the coastal margin as a fundamental defence system against coastal hazards. The incorporation of these principles into the decision making process would greatly assist the development of a sustainable NSW coastline.

Another document that could assist in the development of coastal strategies in Australian jurisdictions is the *New Zealand Coastal Policy Statement 2008*. One of the objectives in this policy statement is to ensure that coastal hazard risks “are managed increasingly by locating or relocating development away from risk areas, protecting or restoring natural defences and discouraging recourse to hard protection structures.”¹⁷⁷ This policy statement is yet to be finalised, however the following specific policies proposed in the document provide strong examples of how to potentially address sea level rise and coastal erosion.

- “Reclamation - the expected effects of climate change and sea level rise, over no less than 100 years, needs to be considered and reclamation should avoid consequential erosion and accretion (Policy 27).
- “Hazard identification – both short term and long term (100 year time frame) high risk coastal environments should be identified, including those at risk from the effects of climate change including sea level rise, on hazard migration, fluctuating erosion and accretion, storm frequency and intensity and surges, coastal dynamics (Policy 51).
- “Development in hazardous areas – subdivision and redevelopment should be avoided in these areas and retreat, relocation removal or abandonment of existing structures shall be managed or existing development replaced, or modified without the use of hard protection structures (Policy 52).
- “Protection of structures – alternatives to hard protection structures should be considered including soft engineering solutions, relocation, removal and abandonment (Policy 54).”¹⁷⁸

It is noted that the New Zealand concepts and ideas appear in subordinate instruments as opposed to primary legislation, and do not offer much guidance regarding how enforcement and compliance mechanisms can work more effectively in Australia. However, the New Zealand approach does offer a useful model for communicating the necessary paradigm shift.

¹⁷⁶ New Zealand Ministry for Environment Website. Available at <http://www.mfe.govt.nz/publications/climate/coastal-hazards-climate-change-guidance-manual/page5.html>.

¹⁷⁷ Objective 8, *Proposed New Zealand Coastal Policy Statement 2008*. Available at: <http://www.doc.govt.nz/publications/getting-involved/consultations/closed/proposed-new-zealand-coastal-policy-statement-2008/>.

¹⁷⁸ *Coastal Climate Change Advisory Committee Issues and Options Paper*, February 2010.

2.2 United Kingdom Response

Legislation

The *Flood and Water Management Act 2010* (FWMA) was developed in response to the Pitt report¹⁷⁹ that followed the 2007 floods that occurred throughout Cumbria. This report aimed to set out what “needed to be done to better prepare for all types of flooding, whether from rivers, surface water or the sea.”¹⁸⁰ The preamble of the FWMA states that this is an “Act to make provision about water, including the provision about the management of risks in connection with flooding and coastal erosion.”¹⁸¹ The FWMA addresses a number of areas, particularly:

- “clarifying responsibilities and enabling local authorities to lead the management of local flood risk;
- facilitating the use of a wider and more sustainable range of approaches for managing risk; and
- risk based regulation of reservoirs.”¹⁸²

Part 1 of the FWMA deals with “Flood and Coastal Erosion Risk Management”, setting out some key strategies to minimise these risks. The FWMA requires the Environment Agency in England and the Welsh Ministers to develop a series of national strategies for floods, as well as strategies to address the risks associated with coastal erosion. What is of particular importance is the emphasis that this piece of legislation places on the importance of functioning communication channels when developing these strategies. Strategies such as the “Local flood risk management strategies” are to be developed through a consultation process between authorities and the public, after which a summary must be produced.

Once a Local flood risk management strategy has been developed, each local authority must then implement, produce guidance and act in accordance with them. However the communication channels by no means cease to function following the implementation of the strategy; the Environmental Agency and lead local flood authorities have the power to request information from a person in respect to their risk management functions. A person who fails to comply with such a request faces a fine. Communication and consultation also continue because the Environmental Agency must establish a series of Regional Flood and Coastal Committees, who are consulted on how those bodies propose to carry out the Environment Agency’s flood and coastal management risk functions in the region.

This emphasis on communication is continued throughout the legislation, with one of the three conditions for the Provision of Infrastructure (discussed further below) stipulating that the Environmental Agency must have consulted with:¹⁸³

- a) the lead local flood authority for the area in which the work is to be carried out;
- b) the district council (if any) for that area;
- c) the internal drainage board (if any) for that area; and
- d) persons who own or occupy land that, in the opinion of the Agency, is likely to be directly affected by the work.

¹⁷⁹ On 25 June 2008, Sir Michael Pitt published his final report into the 2007 summer floods. Available at: <http://webarchive.nationalarchives.gov.uk/20100807034701/http://archive.cabinetoffice.gov.uk/pittreview/thepittreview.html>.

¹⁸⁰ *The Government’s Response to Sir Michael Pitt’s Review of the summer 2007 Floods*. Available at: <http://www.defra.gov.uk/environment/flooding/documents/risk/pitt-progress091215.pdf>.

¹⁸¹ Preamble paragraph of the *Flood and Water Management Act 2010*.

¹⁸² *The Government’s Response to Sir Michael Pitt’s Review of the summer 2007 Floods*. Available at: <http://www.defra.gov.uk/environment/flooding/documents/risk/pitt-progress091215.pdf>.

¹⁸³ Sec 38(4), *The Flood and Water Management Act 2010*.

There is a clear emphasis on consultation and open, clear and ongoing communication channels when attempting to deal with very complex coastal issues. This need for consultation and cooperation was noted in the second reading speech, where it was stated that the Bill was “constructed to ensure that people come together and work co-operatively – (as) what goes on in one area can easily affect another.”¹⁸⁴ Through encouraging the flow of information and ongoing monitoring (which is again effectively the transfer of information) there is a much greater likelihood of the establishment of more sustainable and effective strategies being developed for addressing coastal processes.

The next aspect of the FWMA that is pertinent to this project is the way in which the legislation is prescriptive about what is required in the various strategies that are to be undertaken. For example with regard to the development of the “Local flood risk management strategies” the legislation prescribes that the strategies must contain:

- “the objectives for managing local flood risk;
- the measures proposed to achieve those objectives;
- how and when the measures are expected to be implemented; and
- how the strategy contributes to the achievement of wider environmental objectives.”¹⁸⁵

Furthermore, this legislation (at Part 2A) addresses the Regulation of Provision of Infrastructure, and the conditions that must be met before the following steps can be taken in the course of flood or coastal erosion risk management:¹⁸⁶

- (a) planning, erecting, maintaining, altering or removing buildings or other structures (including structures built or used for flood defence purposes),
- (b) maintaining or restoring natural processes,
- (c) reducing or increasing the level of water in a place (whether or not it results in a change to the water level in another place),
- (d) carrying out work in respect of a river or other watercourse (such as taking things out of it or supporting or diverting the banks),
- (e) moving things onto, off or around a beach, or carrying out other works in respect of the shoreline.

Before any of the above activities can be undertaken, the following three conditions must be met. The first is that the Environmental Agency must consider the work in the interests of nature conservation (including conservation of the landscape), preservation of cultural heritage, or people’s enjoyment of the environment of cultural heritage. Condition 2 states that it must be found that the “(A)gency considers the benefits of the work will outweigh the harmful consequences for”¹⁸⁷:

- human health;
- the social and economic welfare of individuals and communities;
- infrastructure; and
- the environment (including cultural heritage).

Finally, condition 3 stipulates that the Environmental Agency must have consulted¹⁸⁸:

- the lead local flood authority for the area in which the work is to be carried out;

¹⁸⁴ Extract from the second reading speech. Available at:

<http://www.publications.parliament.uk/pa/cm200910/cmhansrd/cm091215/debtext/91215-0009.htm#09121560000001>.

¹⁸⁵ Sec 9(4)(c, d, e & i), *The Flood and Water Management Act 2010*.

¹⁸⁶ Sec 3, *The Flood and Water Management Act 2010*.

¹⁸⁷ Sec 38 (3), *The Flood and Water Management Act 2010*.

¹⁸⁸ Sec 38(4), *The Flood and Water Management Act 2010*.

- the district council (if any) for that area;
- the internal drainage board (if any) for that area; and
- persons who own or occupy land that, in the opinion of the Agency, is likely to be directly affected by the work.

As can be seen from above, the legislation is highly prescriptive regarding the processes to be undertaken, who is to undertake those processes, and the content which the strategies are to cover. It is worth noting that in the second reading speech of the Bill, it was stated that “one of the purposes of the Bill is to make it absolutely clear for the first time who has lead responsibility for taking account of the matter”¹⁸⁹ and this has clearly been done.

The formal set of conditions, requirement of open communication channels, in addition to the clarification of the responsibilities of authorities, together provide a set of prescriptive legislative obligations that need to be complied with prior to the carrying out of flood or coastal erosion risk management. The introduction of this type of certainty and procedure for coastal management is distinctly absent from, but greatly needed to improve, the coastal hazard management regimes that currently exist in most Australian jurisdictions.

Policy

i) Planning Policy Statement 25: Development and Flood Risk

However it is not only legislation where the UK has shown significant developments in addressing coastal erosion, sea level rise and coastal flooding, as the release of the *Planning Policy Statement 25: Development and Flood Risk* (PPS) in March 2010 demonstrates.

In terms of applicability, the PPS states that the policies contained in it “should be taken into account by regional planning bodies in the preparation of Regional Spatial Strategies; by the Mayor of Greater London in relation to the Spatial Development Strategy in London; and, in general, by local planning authorities in the preparation of local development documents. They may also be material to decisions on individual planning applications.”¹⁹⁰

The PPS also addresses the topic of responsibilities, stating from the outset that “there is no general statutory duty on the Government to protect land or property against flooding,” and that “landowners have the primary responsibility for safeguarding their land and other property against natural hazards such as flooding.”¹⁹¹

The PPS aims to “ensure that flood risk is taken into account at all stages in the planning process to avoid inappropriate development in areas at risk of flooding, and to direct development away from areas at highest risk.”¹⁹² This is to be achieved through the preparation and implementation of planning strategies by Regional Planning Bodies (RPBs) and Local Planning Authorities (LPAs) in a manner to help deliver sustainable development. These strategies are developed through the three stages of risk appraisal, management and reduction. In the first stage (appraising risk) the RPBs and LPAs are to “identify land at risk and degree of risk of flooding from river, sea and other sources in the area.”¹⁹³ The second stage (managing risk) details that policies be developed for the “location of development which avoid flood risk to people and property, and manage any residual risk, taking account of the impacts of climate change.”¹⁹⁴ In the reducing risk stage, steps should be taken in “reducing flood risk to and from

¹⁸⁹ Extract from the second reading speech. Available at:

<http://www.publications.parliament.uk/pa/cm200910/cmhansrd/cm091215/debtext/91215-0009.htm#09121560000001>.

¹⁹⁰ *Planning Policy Statement 25: Development and Flood Risk*, Pg.iv.

¹⁹¹ *Planning Policy Statement 25: Development and Flood Risk*, Pg.8.

¹⁹² *Planning Policy Statement 25: Development and Flood Risk*, Pg.2.

¹⁹³ *Planning Policy Statement 25: Development and Flood Risk*, Pg.2.

¹⁹⁴ *Planning Policy Statement 25: Development and Flood Risk*, Pg.2.

new development through location, layout and design”¹⁹⁵ which may include the incorporation of sustainable drainage systems (SUDS).

Not only does the PPS include the subject matter that should be incorporated into planning strategies, but also the decision-making principles to get there; with the Sequential Risk-Based Approach being of particular relevance to this project. This test should be applied when identifying land for development in areas at risk of flooding. In these areas LPAs should demonstrate that there are no reasonably available sites in areas with a lower probability of flooding that would be appropriate to the type of development being proposed. Such a standard would be undoubtedly be of use in ensuring sustainable development in Australian jurisdictions throughout those coastal areas susceptible to SLR, storm surge, coastal erosion and inundation.

ii) Planning Policy Statement 25 Supplement: Development and Coastal Change

The *Planning Policy Statement 25 Supplement: Development and Coastal Change* (PPSDCC) addresses many of the issues that are the subject of this Report. It aims to set out a planning framework for the continuing economic and social viability of coastal communities. The policy aims to strike the right balance between economic prosperity and reducing the consequences of coastal change on communities.

Coastal change is defined in the PSSDCC as “physical change to the shoreline, i.e. erosion, coastal landslip, permanent inundation and coastal accretion.”¹⁹⁶ The objectives of this policy focus around ensuring that policies and decisions in coastal areas are based on “an understanding of coastal change over time.”¹⁹⁷ The policy aims to “prevent new development from being put at risk from coastal change” through “avoiding inappropriate development in areas that are vulnerable to coastal change” as well as “directing development away from areas vulnerable to coastal change.”¹⁹⁸

The PSSDCC outlines the development plan making policies that must be taken into account by regional planning bodies in the preparation of revisions to regional spatial strategies and by local planning authorities in the preparation of local development documents. Some of the major policies to arise from this policy that could be potentially transposed into Australian jurisdictions are as follows:

- Coastal planning authorities need to use appropriate evidence on the impacts of climate change when they are undertaking plan making;
- Encouragement of a Regional Planning approach where coastal change is a key regional priority;
- The need for Local Planning Authorities to appropriately identify at risk (Coastal Change Management Areas) areas and develop a strategic, consistent approach to what development is appropriate for that area; and
- The requirement for evidence based plan making including a vulnerability statement for planning applications for proposed developments within at risk areas.

In summary, the UK provides a number of best practice ideas that could be implemented to improve strategies for addressing the impacts of coastal erosion, coastal inundation, storm surge and sea level rise in Australian jurisdictions.

¹⁹⁵ *Planning Policy Statement 25: Development and Flood Risk*, Pg.2.

¹⁹⁶ *Planning Policy Statement 25 Supplement: Development and Coastal Change*, Pg.4.

¹⁹⁷ *Planning Policy Statement 25 Supplement: Development and Coastal Change*, Pg.4.

¹⁹⁸ *Planning Policy Statement 25 Supplement: Development and Coastal Change*, Pg.4.

2.3 South African Response

South Africa, like many Australian jurisdictions, has undergone some recent development in regard to coastal zone management to better address the various hazards associated with climate change and sea level rise. In February 2009 the *Integrated Coastal Management Act* was passed, which introduced a number of new concepts such as the introduction of a clearly defined coastal zone to, *inter alia*:

- a) “protect the ecological integrity, natural character and the economic, social and aesthetic value of coastal public property;
- b) avoid increasing the effect or severity of natural hazards in the coastal zone;
- c) protect people, property and economic activity from risks arising from dynamic coastal processes including the risk of sea level rise.”¹⁹⁹

Whilst the above strategies appear to be merely aspirational, South Africa did implement some practical changes into the *Integrated Coastal Management Act* such as the requirement for municipal coastal programmes to be implemented and for sea level rise planning to be included in any future land use planning. Whilst this is a positive start, the legislation provides no methodology of how this is to be done. This piece of South African legislation also makes it clear that should the high water mark move inland of the boundary line of a piece of land “as a result of erosion of the coast, sea level rise or other causes... the owner of that land unit –

- a) loses ownership of any portion of that land unit... and
- b) is not entitled to compensation from the State for that loss of ownership unless the movement of the high-water mark was caused by an intentional or negligent act or omission by an organ of state and was a reasonably foreseeable consequence of 5 that act or omission.”²⁰⁰

This clear stipulation of how compensation is addressed as a result of erosion in the coastal zone removes any confusion in terms of State responsibility and liability

South Africa does however, have ongoing issues in terms of enforcement and compliance with the legislation, primarily as a result of a lack of coordination amongst Government Departments, as well as a lack of enforcement capability in terms of funds, personnel and equipment. Similar to many Australian jurisdictions, addressing the issues of the coastal zone in South Africa would be greatly enhanced through initially beginning with developing procedures to ensure greater Government coordination.

¹⁹⁹ Sec 17(a)& (b), *Integrated Coastal Management Act*.

²⁰⁰ Sec 14 (a) & (b), *Integrated Coastal Management Act*.

2.4 United States Responses

a) California

The state of California has taken an increasingly proactive approach to addressing the impacts of sea level rise since the issuance of the Governor's Executive Order Directing State Agencies to Plan for Sea Level Rise on 14th November 2008.²⁰¹

The Executive Order contains four key actions:

- initiate California's first state wide climate change strategy assessing expected climate change impacts and identifying the states vulnerable areas and recommend adaptation policies;
- request the National Academy of Science to establish an expert panel on sea level rise;
- issue interim guidance to state agencies for how to plan for sea level rise for new projects; and
- initiate a report on existing and planned infrastructure projects vulnerable to sea level rise.²⁰²

In addressing these actions, California began by undertaking extensive amounts of research.

Research

California has recognised that a statewide, coordinated effort is essential for effectively adapting to the effects of climate change.²⁰³ As a result of the Executive Order was the development of the *Climate Change Adaptation Strategy* released in 2009 (following a 45 day public comment period). This document summarises the potential impacts and risks and provides a comprehensive set of recommendations in relation to the different sectors of Public Health; Biodiversity and Habitat; Ocean and Coastal Resources; Water Management; Agriculture; Forestry; and Transportation and Energy Infrastructure.

The report, produced by the California Natural Resources Agency in conjunction with state agencies, is said to be "the first step in an ongoing, evolving process to reduce California's vulnerability to climate change impacts."²⁰⁴ The Climate Action Team, overseen by the California Natural Resources Agency, will update the document every 2 years as new information becomes available on climate science.²⁰⁵ The development of a similar document would undoubtedly assist Australian state Governments in the development of a holistic adaptation strategy that takes into account not only environmental factors, but also go some way towards understanding the social and economic impacts of climate change.

There is also a significant regional focus to this strategy, which has been suggested as an appropriate way of addressing the context specific impacts of climate change. One example of the regional approach is the Bay of San Francisco and the planning being undertaken by the Bay Conservation and Development Commission to actively prepare for the consequences of sea level rise. It has identified the following adaptation strategies:

- (a) an identification of the most significant structural, environmental, aesthetic, social, cultural and historic resources that require protection;
- (b) areas inappropriate for protection; and
- (c) strategies and techniques that will make future conservation and development projects more resilient to climate change effects.

²⁰¹ Executive Order S-13-08 by the Governor of the State of California. Available at: <http://gov.ca.gov/index.php?/press-release/11035/>.

²⁰² Ibid.

²⁰³ California Natural Resources Agency, *2009 California Climate Change Adaptation Strategy*. Available at <http://www.climatechange.ca.gov/adaptation/index.html> at 5.

²⁰⁴ Id at 4.

²⁰⁵ Ibid.

It has been noted that:

“these three points should be considered for application on an Australian local council level. It is inevitable that certain coastal areas are inappropriate for protection, whether that be due to constant erosion or past inappropriate development. Further, it is vitally important that future development utilise strategies and techniques to ensure, as far as possible, resilience to climate change and its effects.”²⁰⁶

In keeping with the trend of consolidating California’s research efforts, a report was prepared by the California Climate Change Center on the Impacts of Sea Level Rise on the California Coast in May 2009.²⁰⁷ The final report is due in December 2010 and will advise on how California should prepare for future sea level rise. The final report will include sea level rise projections, a synthesis of existing information on projected sea level rise risks to infrastructure, natural areas and coastal and marine ecosystems and a discussion of future research needs. It is expected that these reports will be used by public land trustees to prepare local sea level action plans, in accordance with the proposed legislation discussed below. The December report may contain some useful content that could assist in the development of adaptation strategies in Australian jurisdictions.

Proposed legislation: Tidal and Submerged Lands

The Bill²⁰⁸ proposes to add s 6315 to the Public Resources Code²⁰⁹ relating to tidelands and submerged lands. This would have the effect of requiring the local trustees of over 80 public trust lands²¹⁰ to prepare a sea level action plan by July 1, 2012.²¹¹ Plans would include an assessment of the impact of sea level rise, in addition to an estimate of the financial cost of the impact and strategies to mitigate damage.²¹² The trustee would be required to consider the 2009 *California Climate Adaptation Strategy* (discussed above) and the Report on Sea Level Rise preparedness. Some exceptions to this requirement would operate, including that none of the local trustee’s public trust lands is subject to sea level rise by 2100²¹³ or that the cost to provide the plan substantially outweighs the benefit the plan would have.²¹⁴ A similar measure may be highly relevant in Australia for identified tidal and submerged lands where timely local action is imperative for effective adaptation measures.

Enforcement

The California Coastal Commission (CCC), in partnership with local governments, will be instrumental in the enforcement of the California state government initiatives. The CCC, a state agency established under the *California Coastal Act 1976*, is responsible for planning and regulating the use of land and water in the coastal zone and requires that coastal development permits are obtained for all development in the coastal zone. Typically, the CCC reviews and subsequently approves and certifies local coastal programs (LCPs) for governments in the coastal zone, transferring permit authority to the local government. However, the CCC retains permit jurisdiction over development proposed on tidelands, submerged lands and public trust lands.

²⁰⁶ Forbes, C. 2009, ‘The effects of climate change induced coastal inundation’, *National Environmental Law Review*, Vol.4, Pgs. 44 - 57.

²⁰⁷ California Climate Change Center, Impacts of Sea Level Rise on the California Coast, May 2009. Available at: http://www.pacinst.org/reports/sea_level_rise/report.pdf.

²⁰⁸ Bill number: AB 2598, as amended at 15 July 2010.

²⁰⁹ 2009 *California Public Resources Code*.

²¹⁰ The bill applies to public trust lands: see 2009 *California Public Resources Code* ss 6301 – 6314.

²¹¹ Bill number: AB 2598, as amended at 15 July 2010, s 6315(b).

²¹² Bill number: AB 2598, as amended at 15 July 2010, s 6315(c).

²¹³ Bill number: AB 2598, as amended at 15 July 2010, s 6315(f)(1).

²¹⁴ Bill number: AB 2598, as amended at 15 July 2010, s 6315 (f)(2).

Initial signs indicate that the CCC will take an increasingly proactive approach in recommending modifications to LCPs to address the threat of rising sea levels.²¹⁵ The emphasis on a partnership model between local and state governments may facilitate enhanced information flows and empower local governments in managing sustainable coastal development.

Communication

In order to improve communication, California has developed a user friendly online climate change portal as a central location for reports on the state's main climate change adaptation initiatives and strategies.²¹⁶ The establishment of such a central online portal would have the potential to better inform constituents about the issues and corresponding strategies associated with coastal processes in Australian jurisdictions.

b) Texas

One aspect of Texan law that is of particular relevance to this project is that of rolling easements. In 1985 an amendment was made to the *Open Beaches Act* which required all sales contracts for real property on a beach facing the Gulf of Mexico to include the following clause:

“Owners of structures erected seaward of the vegetation line (or other applicable easement boundary) or that become seaward of the vegetation line as a result of processes such as shoreline erosion are subject to a lawsuit by the state of Texas to remove the structures.”

Furthermore, this provision was incorporated into the Texas Constitution in 2009.

At the time of writing this Report, a decision was made in the Supreme Court of Texas that has the potential to impact the interpretation of this clause.

Severance v Patterson

This case provided some interpretation of state property law and the Texas *Open Beaches Act*. It concerned a plaintiff who was the owner of a beachfront property that had ended up forward of the vegetation line as a result of the damage caused by Hurricane Rita in 2005. As the property was forward of the vegetation line, the state informed the plaintiff that her house could be subject to a removal order. The Court held (6-2) that the *Open Beaches Act* does not establish a rolling easement, at least not to the extent that the State asserted. The Court stated that;

“Easements for public use of private dry beach property do change along with gradual and imperceptible changes to the coastal landscape. But, avulsive events such as storms and hurricanes that drastically alter pre-existing littoral boundaries do not have the effect of allowing a public use easement to migrate onto previously unencumbered property. This holding shall not be applied to use the avulsion doctrine to upset the long-standing boundary between public and private ownership at the mean high tide line. That result would be unworkable, leaving ownership boundaries to mere guesswork. The division between public and private ownership remains at the mean high tide line in the wake of naturally occurring changes, even when boundaries seem to change suddenly.”

A number of commentators expressed their disappointment at the decision, one in particular stating that:

“We are left with a very significant ruling interpreting the Open Beaches Act. Many will criticize the opinion, which could make it much more difficult, practically and/or financially, for the state to

²¹⁵ For instance, the recommendations to Crescent City LCP and amendments to the Redondo Beach LCP currently under consideration: State Lands Commission, *A Report on Sea Level Rise Preparedness*, December 2009 at 10.

²¹⁶ Available at: <http://www.climatechange.ca.gov/>.

establish public beach easements. The opinion also seems to leave undecided where to draw the line between merely "gradual" changes in the high tide line and more "dramatic" changes due to avulsion. It will be seen as a big win for the Pacific Legal Foundation, which represented the plaintiff, and by other libertarian and property rights advocates."²¹⁷

So whilst this concept of rolling easement does still exist in Texas, it appears to not apply to avulsive events. This may greatly weaken its application in situations such as storm surge events which are predicted to increase both in frequency and magnitude as a result of climate change. Notwithstanding, the clause included in all sales contracts for real property on a beach facing the Gulf of Mexico, may prove a useful tool in communicating to the public in Australia the potential threats associated with particular properties in the coastal zone in terms of coastal erosion, coastal inundation, sea level rise and storm surge.

c) South Carolina

South Carolina Coastal Council recognised the need to call together a committee for the development of a strategy to address coastal erosion and sea level rise back in 1984. As a result of the report drafted by the committee, the *South Carolina Beach Front Management Act 1988* was developed. This document required the establishment of a setback line for ocean-front properties of 40 times the annual erosion rate. When the setback line was determined, a number of properties fell within this zone rendering them undevelopable.

Lucas v South Carolina Coastal Council 1992

Lucas was a property owner impacted by the new legislation and took the Council to court seeking compensation for the fact that the ban on construction in the area had deprived him of all "economically viable use" of the property. The Court agreed that under the law, this amounted to a "taking" under both the fifth and fourteenth amendment and therefore required compensation.

This decision, as well as the ensuing Hurricane Hugo, prompted the legislation to be amended to allow for rolling easement on any lot seaward of the setback line to avoid the need for such compensation payouts. The amendments also specified that if lots "are submerged during high tide, rebuilding/repairing is no longer allowed."²¹⁸ Such concepts may prove useful in managing Australian shorelines.

²¹⁷ Available at: http://lawprofessors.typepad.com/land_use/2010/11/decision-on-open-beaches-act-rolling-easement-case-severance-v-patterson.html.

²¹⁸ Available at: http://coastalmanagement.noaa.gov/initiatives/shoreline_ppr_easements.html.

Part Three: Issues Requiring Further Analysis

The parameters of this consultancy indicated that this Report would not include a detailed assessment of issues such as compensation or finance structures that exist within the various jurisdictions, nor would the project be analysing any insurance mechanisms that exist in relation to sea level rise and erosion. However for the sake of completeness, it is considered necessary that the following issues be earmarked for future analysis and recommendations for reform. Without the alteration, introduction, amendment or reintroduction (as the case may be) of the following principles or concepts, any attempt at the development of a robust adaptation programme in Australia may be significantly hamstrung.

3.1 Role of the Public Trust Doctrine

The EDO developed a paper some time ago relating to ways in which to use private rights to protect the public commons, and throughout the document there were references to the potential incorporation of the Public Trust Doctrine (PTD). The PTD is a concept which relates to the ownership, protection and uses of natural and cultural resources. It recognises that those responsible for such resources owed a duty of care to protect the environment.

The PTD was embraced by the United States of America in the 19th century and is now a well established legal principle. In the US the traditional public trust doctrine prohibits alienation of trust property (generally water-related property) or abdication of sovereign control over the waters and lands underlying navigable waters except in instances to improve those resources for navigation, commerce and fishing or where disposition of trust property to a private interest will not substantially impair remaining trust resources.

The foundation case in American law on this issue, *National Audubon Society v Superior Court*²¹⁹ established that the public trust doctrine created an ongoing duty on state water licensing authorities to keep under review water property rights that had already been granted and a power to amend those rights in order to protect public trust values in the environmental qualities of the water resource without a duty to pay compensation to the holder of the water property rights.

The PTD has not been expressly approved by any Australian Court, however there are a number of Australian cases that offer implicit support for the doctrine.²²⁰ Drawing on the US experience, there may be considerable scope for the use of the PTD to protect natural resources including beaches and coastal foreshores and ensuring inappropriate development that impinges on public access to coastal foreshores does not occur in Australia. This issue is worth further consideration.

3.2 Intersection between concepts such as Compulsory Acquisition, Property Title Rights, Ambulatory Title and Injurious Affection

As noted above, the parameters of this project were constrained to particular aspects of coastal erosion, inundation and storm surge, however research needs to be done regarding the practical aspects of how Australian legislative systems can better operate to address the fundamental issues. These practical aspects include how legislative change can work in coordination with current property title and existing use rights. It has been noted that in NSW “private property rights are near sacrosanct”²²¹ however this

²¹⁹ Supreme Court of California (1983) 33 Cal 3d 419 [189 Cal Rptr 346].

²²⁰ For example *Packham v Minister for the Environment* (1993) 80 LGERA 205, *Woollabra Municipal Council v Minister for the Environment* (1991) 23 NSWLR 710, and *Willoughby City Council v Minister Administering the National Parks and Wildlife Act* (1992) 78: GERA 19.

²²¹ Thom, B. ‘The Australian Coast: images, problems and solutions.’ Available at: http://www.wentworthgroup.org/docs/Bruce_Thom_Coastal_Address.pdf.

may need to be rethought when issues such as public amenity and access to the coasts becomes restricted.²²² It has also been noted that:

“Other societies are recognising that the dynamics of landscape change necessitates an approach to land tenure, property law and common law rights which must be a lot more flexible than at present. For instance, freeholding of land on which shacks were located in two states has not helped, nor does the principle of injurious affection²²³ in another state. Our planning systems and perceived common law rights are not aligned to the scale of coastal change that science is projecting.”²²⁴

These “dynamics of landscape change” are going to require an analysis of how concepts such as ambulatory title²²⁵ can potentially operate to adjust land tenure rights in reflection of coastal processes. This is particularly relevant to the battles that continue on various beaches around NSW relating to the protection of private property rights of beach front properties through the construction of stabilisation structures to provide short term protection during periods of intense climactic activity (as noted in Part One). Consideration will need to be given to the processes to ensure public access to beaches can be retained. There is also going to need to be an increasing focus on understanding the nuances of concepts such as compulsory acquisition, as well the effectiveness of such programs as Government’s Coastal Lands Protection Scheme in areas such as Sheltering Palms.

There may need to be a dramatic expansion in the use of implementing restrictions on development, for example, such as those envisaged under the *NSW Coastal Planning Guideline: Adapting to Sea Level Rise*. These include increasing the occasions where restrictions such as site layout and design, building materials, as well as trigger and/or time limited consents are used.

It is clear that there is little point in tinkering with amendments to various pieces of policy and legislation within current Australian planning systems if the intersect of these fundamental concepts are not properly addressed. It is apparent that significant changes need to occur to both hazard assessment and the development approval process as part of a complete paradigm shift that needs to occur in Australia. Perceptions need to be changed, as is already being done in jurisdictions such as New Zealand, regarding perceptions of “existing use rights, the permanency of property and the roles and responsibilities of local government to provide protection against the impacts from coastal hazards.”²²⁶

²²² This incident involved the purchase of 17 houses in Sheltering Palms, just north of Brunswick Heads, which had been destroyed and abandoned in the face of storms in 1972-74 including cyclones Daisy, Kirsty and Pam. The Government also acquired 20 lots on Belongil Beach under the same scheme.

²²³ Injurious Affection is a concept that is currently in force in Queensland. It attributes a loss in value of the remaining area of property as a result of the use to which the acquired land is to be put (e.g. where part of a property is take for use as a sewerage treatment plant, the resultant value of the balance area is likely to be lessened).

²²⁴ Thom, B. ‘National Coastal Reform – 2010 and beyond.’ Available at: <http://www.wentworthgroup.org/uploads/Coastal%20address%20in%20C2C%202010.pdf>.

²²⁵ Ambulatory Title refers to land which has a boundary that may move from time to time in accordance with a specified event or events (‘movable title’, Butt *Land Law* at [235]). Title to land that borders the water can be ‘ambulatory’ if part of the boundary defined by the edge of the water. The boundary of coastal land is generally defined by the high water mark however this can be altered by statute.

²²⁶ *Coastal Climate Change Advisory Committee Issues and Options Paper*, February 2010.

Part Four: Recommendations for reform in NSW

In light of the assessment of the various approaches undertaken by Australian jurisdictions and some strategic international jurisdictions, this Part analyses which of the best practice examples identified in Part One and Part Two could be incorporated to help address some of the gaps and inherent weaknesses that exist in the current NSW response to addressing the issues of sea level rise, coastal erosion, coastal inundation and storm surge. We make 10 overarching recommendations for reform.

4.1 Review the ad-hoc Framework

Undoubtedly one of the reoccurring themes whilst analysing both domestic and international jurisdictions is the need for some form of State-wide overarching central policy. The current system in NSW, as noted above, is comprised of a patchwork of ad-hoc policy and legislation. There appears to be little consolidation in the NSW system, but instead an increase in the number of documents being released. Whilst the release in 2010 of two new policies and a Bill by the State Government have introduced some helpful concepts, they provide yet another layer to documents that have already been produced to address these uncertain coastal processes. The multiple layers of policy in particular, contribute to a sense of confusion regarding the management of the coastal zone, as it becomes extremely difficult to identify the status of some of the initiatives that are provided within the various instruments. Therefore one of the primary reforms needed in NSW is to review the current framework, and repeal any instruments that are considered obsolete. This is the necessary first step to developing an overarching state wide piece of legislation that addresses these highly complex issues and provides some comprehensive direction.

4.2 Detail to Appear in Primary Legislation as Opposed to Subordinate Instruments

In NSW, as is the case in most Australian jurisdictions, the majority of the detail addressing the issues of sea level rise, coastal erosion, coastal inundation and storm surge are delegated to subordinate instruments as opposed to appearing in primary legislation. The obvious consequence of where the concepts and strategies are set out is whether they are merely recommendations and guidance for decision makers, or whether a prescriptive legal obligation exists that requires decision makers to act in accordance with specific directions.

Again, two of the three recent documents released by the NSW Government purporting to assist in addressing these coastal issues are policy documents. Whilst they may provide guidance to decision makers and proponents, they are still just that - guidance. For example, the recent *Sea Level Rise Policy Statement* of NSW states:

5. Information availability

The Government has provided information to the community on sea level rise projections and the likely impacts of sea level rise on low-lying coastal areas. The Government will continue to provide up-to-date information on sea level rise and its impacts, and will continue to work with local councils to provide information on the impacts of sea level rise on local flooding and coastal hazards.

Continuing public access to current and credible information on sea level rise is important for various reasons, including:

- supporting community adaptation to sea level rise
- supporting the community and the private sector to make appropriate investment decisions in coastal areas
- assisting the insurance industry to price risks from sea level rise in their insurance policies.

While the policy statement clearly identifies a need for information and an intention to provide it, this does not legally constitute a statutory requirement to provide specific information.

It is clear that it is in the primary legislation where the vast majority of the NSW coastal framework should appear. Arguments can be made that it is better to address some issues in policies as they can be more easily amended or changed in light of new and emerging scientific information. However what needs to occur is a shift from the current situation where most of the detail relating to coastal issues is delegated to subordinate instruments. Only when there is a legal obligation to comply with a prescriptive statutory framework, along with the possibility of potential enforcement and compliance actions, will substantial changes to coastline management be realised.

4.3 Improved Enforcement and Compliance

As noted above, most of the detail is addressed in subordinate instruments. So whilst sound policies may exist, the implementation of them may be poor, partly as a result of the fact that that often can easily be discounted by other considerations (for example a decision maker may need only “have regard to” a policy rather than actually implement it). Furthermore many of these principles or policies that appear in the subordinate instruments are aspirational and as such are difficult to enforce. It is also apparent that there are issues surrounding a lack of resources and understanding throughout those authorities charged with enforcement duties that may need to be resolved.

4.4 Dealing with Existing Inappropriate Development

How to deal with existing inappropriate development is a gap in NSW law that is apparent and needs to be addressed as a priority. One council that has developed a policy to address this situation is Byron Council, which has set out in its *Coastal Zone Management Plan* (CZMP) a plan for the development of “Sustainable human settlement – management actions.”²²⁷ One of the management actions incorporated into the CZMP is a Voluntary Purchase Scheme. Through this mechanism, a list of criteria is to be developed to assess the eligibility of properties for voluntary purchase. Another mechanism that could be implemented is the gradual “down-zoning” of areas particularly at risk, so the intensity of land use is reduced. This is a complex process, however one that should be based on assessment of the magnitude of the potential risks, with issues such as land tenure and existing use rights being of secondary consideration. It is clear that the State Government needs to provide further guidance on how to manage those properties (particularly those previously given development consent) that are in areas that are likely to be subject to the impacts of erosion and sea level rise.

4.5 Providing Certainty to Those Managing the Uncertain

The uncertainty of coastal processes including the impacts of climate change and sea level rise, is one of the more complex challenges for decision makers and planning authorities. It is extremely difficult for decision makers and planning authorities to develop strategies that effectively address the impacts of climate change, when it is unclear as to the form and extent of what these impacts will be.

Under the Victorian *Climate Change Act 2010*,²²⁸ there is a requirement that the Environment Minister develop a *Climate Change Adaptation Plan*, and that it be updated every four years. The scheduled updating of this adaptation plan will go some way towards ensuring that government policy is aligned with the most recent scientific predictions of the uncertain consequences of climate change. Furthermore in Victoria *The Victorian Coastal Strategy 2008* requires updates as more “scientific data becomes available.” The NSW system may well benefit from the adoption of such strategies, underpinned by clear legislative

²²⁷ Table 5-6, *Draft Byron Shire Coastal Zone Management Plan Part A*. Available at: http://www.byron.nsw.gov.au/files/pages/czmp-public-exhibition/Draft_Byron_Shire_Coastal_Zone_Management_Plan.pdf.

²²⁸ This Bill was passed in 2010 but may not have commenced due to a change in Victorian Government.

requirements. However in contrast to the Victorian system, NSW should ensure that the Government implement the key actions identified in the adaptation plans and ensure that all decisions are consistent with the adaptation plans (as opposed to just taking note of them). This requirement for evidence based planning and decision making would greatly assist those attempting to manage the uncertain.

The uncertainty surrounding the exact impacts that climate change will have on coastal areas is not going to be resolved in the foreseeable future. In many of the jurisdictions analysed, there is a continual call for guidance and clarity for decision makers around what is and isn't considered appropriate coastal development in an at risk area. Unfortunately it appears that in the absence of clear direction in primary legislation, there is an ongoing emphasis placed on the discretion of the local decision maker. South Australia has gone some way to attempt to monitor this discretion to ensure it does not become unfettered through the introduction of a double checking system under the *Development Act 1993*. This legislation provides that inappropriate developments in high risk areas are classified as non-complying. Once a development has been classified as a non-complying development, consent must not only be granted by the relevant planning authority (such as the Development Assessment Commission) but also consent from at least one other planning authority (such as the relevant council or Minister). This requirement of concurrent approval has been developed in an attempt to reduce the likelihood of such inappropriate development occurring. A similar system could be transposed into the NSW system to assist in the decision making process for development in low-lying at risk areas in NSW.

4.6 Lines in the Sand – ‘No go’ Areas for Development

One of the more obvious mechanisms for providing certainty to those decision makers grappling with consent decisions for new development in potential risk areas, is to provide legislation that prohibits any new development in immediate coastal risk areas.

It has been suggested that planning legislation should be amended to stipulate that no development applications for proposed new developments located seaward of the identified ‘immediate hazard area’ will be accepted in the NSW Coastal Zone. This must be a legally enforceable clause, not simply a ‘guideline’ which councils are advised to follow. This requirement should apply regardless of whether the development is assessed under Part 4, 5 or 3A of the EP&A Act or whether the consent authority is a local council, a public authority, the Minister for Planning, Joint Regional Planning Panel or the Planning Assessment Commission.

Such a strategy is consistent with the precautionary principle, will protect high risk communities from future social, environmental and economic impacts from sea level rise and potentially addresses liability issues that may arise in relation to new developments approved in areas of imminent threat.

4.7 Development of a Federal Framework

The development of a Federal system may well be of use in providing a coordination role, perhaps through the formation of a Federal body or council. This could serve roles such as:

- providing guidance and coordination to develop a consistency of approach;
- providing baseline data and modelling;
- assisting in the development of overarching and specific vulnerability and risk assessments;
- outlining the process for how communities can identify community and environmental assets;
- assisting in the provision and distribution of coastal specific funding.

This Report is not suggesting a “one size fits all” approach to dealing with these coastal issues, as it is clear that climate change will impact upon different regions in different way. Instead what is needed is some sort of consistency and procedure through which coastal impacts are identified, understood and acted upon. This consistency may relate to such facets as the definition of the coastal environment,

assistance in the identification of landscapes and seascapes, and criteria for assessing the appropriate use and development of Australia's coastal areas.

This concept of the development of a Federal system to assist in the management of the coasts is not a new idea and there have been extensive amounts of literature published on the subject. Of particular note is the literature developed by the Wentworth Group of Concerned Scientists, and in particular, Professor Bruce Thom, who has continued to advocate for the development of a new Federal framework that includes the:

- Formulation of a National Coastal Policy;
- Establishment of a National Coastal Information System;
- Establishment of a National Coastal Commission;
- Formation of a Commonwealth Adaptation Fund;
- Adoption of a system of National Environmental Accounts to measure changes in condition of natural assets.²²⁹

It has been noted that many “national and state inquiries into coastal zone management have recognised inconsistent and uncoordinated approaches among state and local governments as a barrier to the integrated decision-making that is required.” Furthermore, it has been recognized that:

“the lack of an effective mechanism for national coordination of adaptation in the coastal zone, if not remedied, will impede effective risk management. Climate change impacts in the coastal zone will have cross-cutting social, economic and environmental consequences, and narrow sectoral collaboration mechanisms or programs are not adequate. Clarity about the roles and responsibilities of each of the levels of government is needed as a first step in coordinating a national reform agenda.”²³⁰

So whilst it is clear that there is currently a lack of coherence and integration within NSW, there is also an enormous disjunct that exists in terms of coastal management within Australia's States and Territories that needs to be addressed.

Finally, with regard to the development of a Federal system, it is important to provide a brief comment on a Federal body that has been recognised as being highly effective in the area of emergency response systems. With the consequences of climate change becoming more apparent, the United States has noted the increasing need to ensure there are systems and bodies in place to address these consequences when they occur. One such model to look to is the US Federal Emergency Management Agency which advises on such matters as:

- building codes and flood plain management;
- helping equip local and state emergency preparedness;
- training emergency; and
- making disaster assistance available to states and communities, businesses and individuals.²³¹

The introduction of such a national body in Australia may assist in the coordination of the response to increased coastal, inundation and storm surge events.

²²⁹ Thom, B. ‘Coasts: how best can we adapt to the challenges of climate change?’ 2010. Available at: <http://www.wentworthgroup.org/uploads/BruceThomSTCTalkApril2010.pdf>.

²³⁰ Climate Change Risks to Australia's Coasts, Chapter 6: Coastal Adaption – Towards a National Agenda. Available at: <http://www.climatechange.gov.au/publications/coastline/~media/publications/coastline/6-chapter.ashx>.

²³¹ Available at: <http://www.fema.gov/index.shtm>.

4.8 The need for a Paradigm Shift in NSW

As discussed in Part One and Part Two, a number of jurisdictions are beginning to implement a change in how sea level rise, coastal inundation, coastal erosion and storm surge is perceived. New Zealand is beginning to implement a system where these coastal processes are seen as just that - processes, as opposed to threats and hazards. By no means should the potential impacts of these processes be underestimated, as the consequences of extreme weather events are increasingly being witnessed on both a national and international level. What is instead being suggested is that these events be taken as a factor of living within the coastal zone. This change in thinking can be seen in the New Zealand *Coastal hazards and Climate Change Guidance Manual for Local Government*, whereby there is an attempt to alter the perception that coastal erosion is hazardous abnormal coastal behaviour, to one “living with coastal erosion as a natural cyclic process that helps shape the natural characteristics of the coastal margin.”²³² With this would come the extended use of trigger and/or time limited consents to allow development of those parcels of land that, although not currently being impacted by coastal erosion/inundation, will be in the future.

4.9 Hierarchy of Adaptation Approaches

The emphasis of this Report has been in relation to how to adapt in response to climate related threats to the coastline. Adaptation in this context can be understood as the adjustment in response to climate change threats, in order to manage the interaction between environmental processes and anthropogenic demands. It is defined by the IPCC as:

“Adjustment in natural or human systems in response to actual or expected stimuli or their effects, which moderates harm or exploits beneficial opportunities. Various types of adaptation can be distinguished, including anticipatory and reactive adaptation, and autonomous and planned adaptation.”²³³

The definition makes reference to both anticipatory adaptation (where measures are implemented before climate change impacts are observed) and reactive adaptation (measures being implemented in response to observed impacts).

Anticipatory Adaptation ²³⁴	Reactive Adaptation
<ul style="list-style-type: none">• Planning reforms• New building codes and design standards• Incentives for relocation• Shoreline management planning• Early-warning systems	<ul style="list-style-type: none">• Hard engineering solutions• Compensatory payments and subsidies• Disaster relief• Shoreline defence

Ideally, the NSW system needs to place more emphasis in implementing anticipatory adaptation measures with a focus on pre-emptive initiatives as opposed to reactive “end of pipe”, or reactive, solutions. This pre-emptive approach is in line with the following hierarchy of adaptation options that

²³² New Zealand Ministry for Environment Website. Available at: <http://www.mfe.govt.nz/publications/climate/coastal-hazards-climate-change-guidance-manual/>.

²³³ IPCC, 2007: Summary for Policymakers. In: *Climate Change 2007: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* [M.L. Parry, O.F. Canziani, J.P. Palutikof, P.J. van der Linden and C.E. Hanson (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA.

²³⁴ Adapted from Smit, B., Pilifosova, O., Burtin, I., Challenger, B., Huq, S., Klein, R.J.T., & YOHE, G., 2001, ‘Adaptation to climate change in the context of sustainable development and equity’. In McCarthy, J.J., Canziani, O.F., Leary, N.A., Dokken, D.J., & White, K.S. (eds.), *Climate Change 2001: Impacts, Adaptation and Vulnerability*. Cambridge, United Kingdom: Cambridge University Press, pp. 877–912.

has been advocated by the EDO throughout previous State and Federal submissions and discussion papers:

1. Planned or managed retreat
2. Development and planning controls
3. Resilience building measures
4. Early warning and emergency response
5. 'Hard' engineering solutions

Planned retreat, where feasible, should be the primary adaptation action, due to its alignment with the principles of ecologically sustainable development. However, in those areas where planned retreat is not a viable option, the focus should be placed on the robust implementation of mandated planning controls, resilience building measures, early warning systems and emergency response plans.

Hard engineering solutions, such as sea walls and groins are not recommended and should only be considered only as a last resort such as to protect cultural lifestyles and essential public infrastructure. Not only are these 'hard works' expensive, but they can be ecologically damaging and also impact upon the aesthetics of the area. Therefore there should be an emphasis on encouraging the development of soft options, which help build the resilience of natural systems. This hierarchy of responses should be clearly set out in legislation to assist decision makers in selecting the appropriate response to the impacts of climate change.

4.10 Communication

In order for changes to be brought about in NSW, it is important that both decision makers and proponents are informed of the issues surrounding sea level rise, coastal erosion, coastal inundation and storm surge, as well as the strategies that the Government has and is developing to address these complex issues. This information must be communicated clearly and comprehensively. Furthermore it is not simply information flow from authorities to the community that needs to be improved, what is just as important, especially in the development of further instruments, is the flow from communities to government agencies. Both these systems need to be improved and as noted, there are systems in place in other jurisdictions, particularly the UK and California, which could be replicated in NSW.

a) Development of a Communication Plan

One of the more interesting case studies discovered during the research, was that of the Clarence City Council in Tasmania (case study provided in the Tasmania section above). This local council has set out in its *Climate Change Impacts on Clarence Coastal Areas – Final Report*²³⁵ a communications plan with some very useful suggestions regarding information flow. The communications plan was based on a series of tiers, with the first tier setting out the following 6 objectives of communication:

1. To inform the Clarence community, government agencies and other stakeholders that Council considers it as its responsibility to keep itself informed on the issue and act accordingly and to inform and consult with the community now and in the future (in case of new findings, concerns or situations);
2. To provide the public and affected residents with the best available objective estimate of likely future impacts and options in an accessible way to enable them to make informed decisions about their future plans;
3. To increase awareness in the general community of the implications of climate change for coastal areas so that these become a factor in their future plans;
4. To consult with the community to stimulate practical, creative and constructive responses that recognise and respond to risks without loss of the amenity, use and enjoyment of coastal areas, both public and private while allowing appropriate adaptation to future conditions;

²³⁵ Available at: <http://www.ccc.tas.gov.au/webdata/resources/files/CCICCA-Final-Report-A415375.pdf>.

5. To create community awareness of the risks and community support for possible policy responses. Allowing the public to participate in the process of how to respond to the risks of sea level rise may improve acceptance and the community's ability to cope with the risks and its implications;
6. To address misinformation and speculation.²³⁶

The second tier details the principles of the communications plan such as to:

- keep information succinct and relevant in a format suitable to the audience; and
- provide good information (not speculation) early in the process.²³⁷

Ensuring that information is in a “format that is suitable the audience” is fundamental. As noted, California has developed an online climate change portal as a central location for reports on the state's main climate change adaptation initiatives and strategies.²³⁸ The establishment of such a central online portal in NSW has the potential to better inform constituents about the issues and corresponding strategies associated with coastal processes in NSW. Furthermore, the use of mail outs to specific areas that are particularly at risk in NSW may be highly effective in alerting particular residences about the ongoing risks in that area.

Finally, the third tier of the Clarence Council information transfer system outlines a series of specific target audiences to address. As a result on the importance placed on the transfer of information, the Clarence Council has developed an organised information distribution and gathering mechanism. Such a mechanism with objectives, principles and identified target audiences needs to be developed within NSW, so that such dissemination and gathering of information can be made possible on a State wide scale.

At the opposite end of the spectrum to the local government level, the UK has integrated into its national strategy, legislation that contains a series of mechanisms to ensure communication channels operate effectively at a national level. The *Flood and Water Management Act 2010* (FWMA) requires a series of ongoing input into the development of documents such as Local Flood Risk Management Strategies. Communication is required not only at the development stage, but also through the implementation process with authorities able to request information regarding issues such as specific risk management functions. This constant monitoring should hopefully improve the transfer of information throughout the process, and reduce the need for enforcement actions to take place if those activities that are being carried out in contravention to the FWMA are discovered at an early stage. The integration of a similar strategy into NSW of increased monitoring to facilitate information transfer could well in turn reduce the need for compliance actions to take place.

²³⁶ Available at: <http://www.ccc.tas.gov.au/webdata/resources/files/CCICCA-Final-Report-A415375.pdf>.

²³⁷ Full list of principles is as follows:

- To use the earlier community survey work to ensure message is appropriate and relevant;
- Keep information succinct and relevant in a format suitable to the audience;
- Act and communicate in a way that builds trust in the process for generating information and decision making;
- Provide good information (not speculation) early in the process;
- Provide information at several ‘depths’ according to the level of interest/need to know of the audience;
- Ensure wide canvassing of options, not narrow, early decisions;
- Ensure consistency in ‘branding’ and associate with strong brands where relevant/ appropriate – eg CSIRO;
- Never talk in public unless you know the facts of the matter;
- Speak only when you have something new to say;
- Don’t say anything you don’t want reported or that could be taken the wrong way.

²³⁸ Available at: <http://www.climatechange.ca.gov/>.

b) Improvements to the 149 Certificate

Certain existing communication tools could also be improved, for example s149 planning certificates under the EP&A Act. Other Australian jurisdictions provide limited examples of how this certificate could be improved. The current limitations of the certificate include that in terms of effectively communicating comprehensive coastal information to the community, s149 certificates:

- only provide information on request, usually when a person is considering purchasing property. It is therefore not generally available information; and
- are provided for a fee. For example, The City of Sydney issues Section 149(2) certificates, costing \$40.00 and Section 149 (2) and (5) certificates, costing \$60.00; and a s149 certificate can be processed within 24 hours upon payment of an additional fee of \$157.00. While it is appropriate that local councils be able to recoup their administration and processing costs for producing the certificates, it can be argued that charging fees may be a barrier to wider dissemination of information.

Some improvements to the certificate obviously include making the information much more readily available as well as reducing the fee associated with obtaining the certificate. Further suggestions include the inclusion of better information outlining specifically the potential risks and consequences to which a particular piece of land is exposed. The content of the 149 certificate is currently being reviewed and there have been some recent amendments.

c) Increase in Landholder Workshops by State Government

The introduction of State Government workshops have been suggested as another mechanism through which information channels can operate more effectively. These workshops would provide opportunities for information to be shared regarding the identification of risks that exist, what these risks may entail, and management options to address these risks. Some Councils have suggested that they do not have access to the technical expertise to fulfil these roles, and would benefit from some guidance on a state wide level.

d) Participatory Decision Making

It is widely acknowledged that the community has a key role to play in contributing to planning decisions and that community input will often result in better planning outcomes. Involving the community can also “promote environmental justice and help integrate ecological and social considerations in government decisions.”²³⁹ It is therefore important that the NSW coastal management system encourages community engagement across all levels – planning law, strategic plan making and the assessment of projects. This participation needs to go beyond a mere “tick a box” approach to ensure that good decisions are made that are informed by local knowledge and experience.

²³⁹ Richardson, R., Razzaque, J. 2006, ‘Public Participation in Environmental Decision-making’, in Richardson, R., and Wood, S. (eds) *Environmental Law for Sustainability*, Hart Publishing, p. 166.

Part 5: Conclusion

As can be seen from the image below, Australian jurisdictions are beginning to make note of the impacts of climate change:²⁴⁰



One of the major problems that exists in NSW is that the figures referred to are only to be “considered” or had “regard to” throughout a series of ad hoc subordinate instruments and weakly worded primary legislation that has resulted in a complex and unwieldy plethora of coastal related documentation. Instead, what is required in NSW is a state-wide robust and easily understood, prescriptive statutory framework which stipulates clear requirements such as no-go areas for development in the most sensitive coastal areas, comprehensive Environmental Impact Assessment mechanisms and community involvement in strategic regional planning and development approvals. It has been noted that local implementation may be hindered by limited resources, and lack of appropriate data; some suggest that a Federal system could assist in filling these gaps. In addition to Federal coordination, amendments must be made to assist Councils to develop site specific strategies at the local level.

All planning and approval strategies should be aimed at avoiding development in those areas at risk of being subjected to the cyclical (yet likely to be more frequent) occurrences of coastal erosion, inundation, storm surge and flooding and direct new development away from areas highest at risk. A mechanism that would assist this is the requirement that all plan and decision making is made in accordance with the principles of ecologically sustainable development. There must be a stronger emphasis on the development of a communication strategy to both encourage participatory decision making as well as the ongoing monitoring of decisions made, which should in turn reduce the need for enforcement and compliance actions to take place. Finally, the issue of existing inappropriate development is a subject that is given limited attention both at a State and Federal level and as such the complex issues that arise under this subject are yet to be dealt with in an adequate fashion.

²⁴⁰ Freehills fact sheet, *Climate change litigation to flood planning and development in coastal areas*. Available at www.freehills.com.au/Print/5786.aspx.