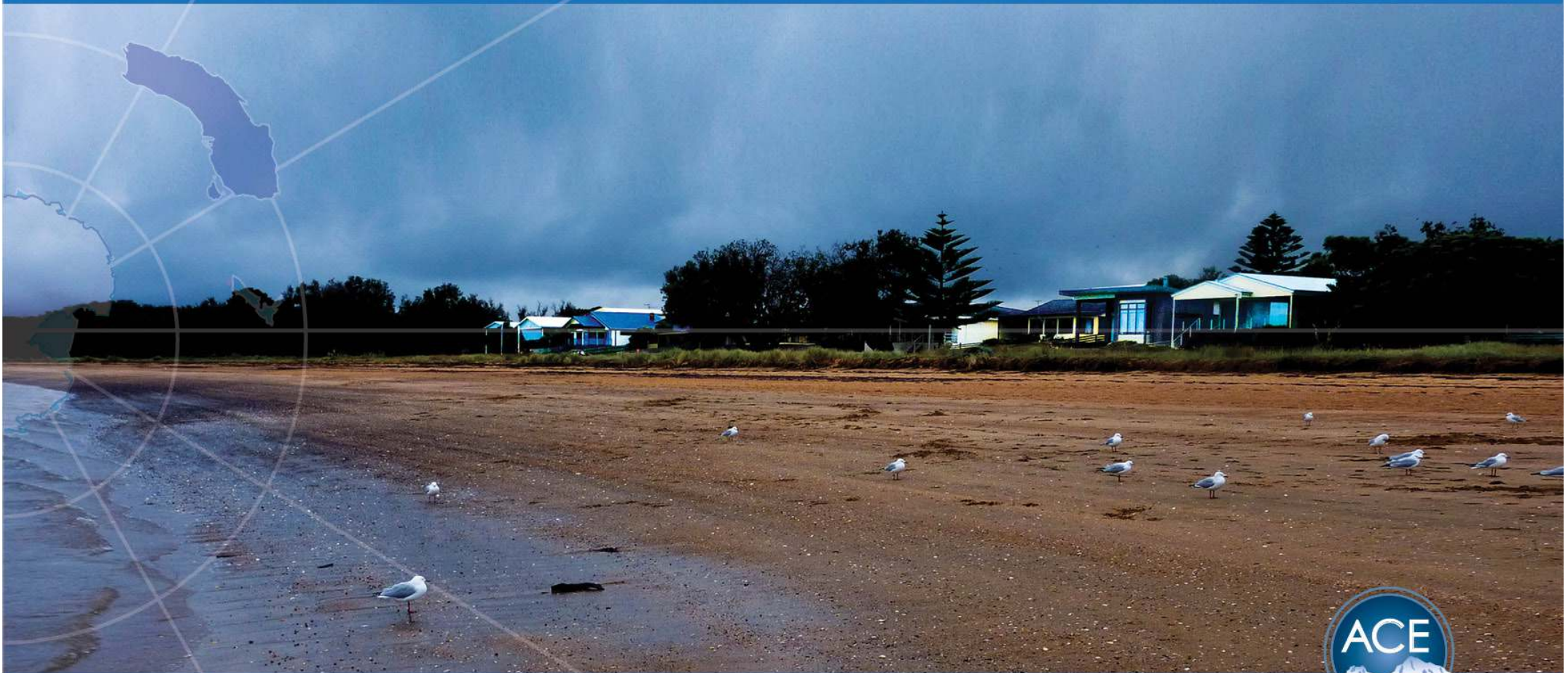


TECHNICAL REPORT

Government coastal planning responses to rising sea levels, Australia and overseas



Prepared by Meg Good
Antarctic Climate and Ecosystems Cooperative Research Centre 2011

ANTARCTIC CLIMATE
& ECOSYSTEMS CRC

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Government Coastal Planning Responses to Rising Sea Levels, Australia and Overseas

ACE CRC (July 2011)
Report prepared by Meg Good*

This report briefly summarises the coastal planning responses of selected Australian and overseas jurisdictions to the challenges posed by sea level rise. The report was prepared for John Hunter and Tessa Jakszewicz of the Antarctic Climate & Ecosystems Cooperative Research Centre, University of Tasmania.

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Executive Summary

Report Aim:

The aim of this report is to provide a general overview of the state of government coastal planning responses to the challenges posed by rising sea levels. Whilst a few international jurisdictions have been included to provide a point of contrast, the report predominantly focuses upon Australian governments. The legislative and policy responses of the Australian Commonwealth Government, relevant state/territory governments and selected local governments are addressed. The report aims to provide a comprehensive and succinct overview of the responsibilities of the respective levels of government in relation to coastal planning, and specific responses to the issue of sea level rise. For each jurisdiction the planning benchmarks set by governments in relation to planning for sea level rise have been outlined. The report is not intended to provide an exhaustive summary of the coastal planning and climate change legislative/policy frameworks for each jurisdiction. Moreover, although the report does outline some 'areas for improvement' for each jurisdiction, the report is not designed to provide a critical analysis of government action. It is hoped that the report will assist in the navigation of this complex issue and provide members of the public with an idea of the scope and nature of current government approaches.

Report in Brief:

Due to Australia's federal system of government, the federal government and the state/territory governments share jurisdiction over coastal management. However, coastal planning is primarily the role of state/local governments. At present the Commonwealth Government is facilitating numerous initiatives which provide guidance relating to climate change adaptation and coastal management to state/territory governments and local governments. At the National Climate Change Forum, numerous issues were raised including the possible need for a 'coordinated national approach, with clear allocation of responsibilities' (DCCEE 2010b: 1) and the confusion caused by the 'current diversity of sea-level rise benchmarks across jurisdictions' (DCCEE 2010b: 2). Currently, each of the state/territory governments has set different sea-level rise planning benchmarks (as demonstrated in Table 1 overleaf). In most cases, local governments are required to incorporate these benchmarks into their planning policies. Failure to consider sea level rise in coastal planning may constitute grounds for a legal challenge, as demonstrated by recent case law.[†]

In Australia, most coastal planning and management decisions are made by local governments within the jurisdiction of a state/territory. Accordingly, local governments require clear policy direction from state/territory governments, financial assistance to implement coastal adaptation initiatives and access to accurate locally specific scientific information about the coastal impacts of climate change. It is apparent from the evaluation of the selected local governments in this report that the nature and scope of government responses to rising sea levels is varied at the local government level in Australia. Some local governments have been pro-active in their approach to the issue. For example, Clarence City Council in Tasmania has released a report which details climate change impacts on a number of coastal locations in the Clarence City Council area and evaluates possible adaptation management options to address the identified impacts.

[†] See, Peter Briggs, John Taberner and Michael Voros (2010), 'Climate change litigation to flood planning and development in coastal areas', <http://www.freehills.com/5789.aspx>; Nicole Gurrán, Elisabeth Hamin and Barbara Norman (2008), 'Planning for climate change: Leading Practice Principles and Models for Sea Change Communities in Coastal Australia: Prepared for the National Sea Change Taskforce', <http://www.seachangetaskforce.org.au/Publications/PlanningforClimateChange.pdf>

Four international jurisdictions are covered in the report – California (USA), New York (USA), Holland and the United Kingdom. All the jurisdictions explored have undertaken initiatives to address the challenges posed by rising sea levels. Some of the most significant initiatives include:

- **California** – California has introduced numerous relevant policy initiatives, including the California Climate Adaptation Strategy and the Resolution of the California Ocean Protection Council on Sea-Level Rise. The Adaptation Strategy lists as one of its strategies the establishment of sea-level rise and climate adaptation plans by state agencies. An evaluation of sea level rise in California, Oregon and Washington is currently being undertaken (National Academy of Sciences 2011).
- **New York** - a State Sea Level Rise Task Force has been established which has released a comprehensive report outlining the threats posed to New York State by sea level rise and evaluates and recommends legislative/policy reform to improve management of the problem.
- **Holland** - the recently introduced Water Act (2009) and the corresponding National Water Plan 2009-2015 make it clear that protection against flooding is a key priority of the Dutch government. The Plan calls for the ‘development of a long-term strategy for coastal protection’ (Dutch Central Government 2009: 134). The Delta Programme has been established to help further the aims of the Plan and to assess the most suitable adaptation options for Holland to pursue.
- **UK** – has introduced the Flood and Water Management Act 2010 (not yet in effect) which provides for the management of flood risk and the establishment of ‘Lead Local Flood Authorities’ which are tasked with the regulation of ‘Local Flood Risk Management Strategies’. Under the Act, the Environment Agency is also required to develop a ‘National Flood and Coastal Erosion Risk Management Strategy for England’ (Environment Agency 2011b).

Table 1: Sea-Level Rise Planning Benchmarks Summary - Australia

Government	Benchmarks	Source	Status
Commonwealth	There are no national sea-level rise planning benchmarks.	NA	NA
New South Wales	Sea level rise increase of: <ul style="list-style-type: none"> ▪ 0.4m by 2050 (above 1990 mean sea levels); ▪ 0.9m by 2100. 	Sea Level Rise Policy Statement (NSW) (2009).	Currently in force.
Northern Territory	There are currently no sea-level rise planning benchmarks in place.	NA	NA
Queensland	<ul style="list-style-type: none"> ▪ For development not subject to a development commitment: a sea level rise of 0.8m by 2100 must be taken into account by planning authorities. ▪ For development already subject to a development commitment: the level of sea level rise which must be taken into account depends upon the year in which the planning period ends. Annex 3 of the <i>Queensland Coastal Plan</i> (2011) sets out the policy: 2050 – 0.3m; 2060 – 0.4m; 2070 – 0.5m; 2080 – 0.6m; 2090 – 0.7m; 2100 – 0.8m. 	State Coastal Management Plan (2001) (currently in force); Queensland Coastal Plan (2011) (will take effect mid 2011).	The Queensland Coastal Plan (2011) is expected to replace the State Coastal Management Plan (2001) in mid 2011. However, both Plans contain the same benchmarks.
South Australia	New developments should take into consideration: <ul style="list-style-type: none"> ▪ A 0.3m sea-level rise by 2050; ▪ A further 0.7m sea-level rise between 2050 and 2100. 	Policy on Coast Protection and New Coastal Development (1991); Appendix I of Coast Protection Board Policy Document (Endorsed 2002).	The 1991 Policy is currently under review.
Tasmania	There are currently no sea-level rise planning benchmarks in place.	NA	NA
Victoria	Planning authorities must plan for a sea level rise increase of ‘not less than’ 0.8m by 2100.	Victorian Coastal Strategy (2008).	Currently in force. However, the Victorian planning system is currently under review.
Western Australia	A vertical sea-level rise of 0.9m must be taken into account when planning authorities consider the ‘setback and elevation’ for new developments to allow for the impact of coastal processes over a 100 year planning timeframe (i.e. 2010 – 2110).	Position Statement: State Planning Policy No. 2.6 State Coastal Planning Policy Schedule 1 Sea Level Rise (2010).	The benchmarks contained in the Position Statement apply. However, the State Coastal Planning Policy is currently under review.

Government	Commonwealth Government
Jurisdiction over Coastal Planning	<p>Shared Management Responsibility As explained in the Commonwealth Coastal Policy (1995) ('CCP'), all three levels of government in Australia (federal/state/local) 'share responsibility for management of the coastal zone, its resources and the offshore waters'. The Commonwealth Government has adopted a co-operative approach to management of the coastal zone (in keeping with the principles of the Intergovernmental Agreement on the Environment), in recognition of the fact that 'no single sphere can manage the coastal zone on its own' (CCP 1995). For this reason, the Commonwealth has not created a national agency for coastal management. According to the CCP, such an agency would be 'unrealistic and unnecessary'.</p> <p>Legislative Power over Coastal Planning The Commonwealth Government does not have any explicit power under the Constitution to make laws with respect to the coastal zone. However, as noted in the CCP, the Commonwealth may have the ability to enact legislation relating to the coastal zone under other powers granted to the Commonwealth under the Constitution (including 'interstate and overseas trade and commerce, fisheries in Australian waters beyond territorial limits, taxation, defence, lighthouses, quarantine, corporations, petroleum and minerals beyond 3 nautical miles, Aboriginal and Torres Strait Islander affairs, territories, and external affairs').</p> <p>As recognised in the CCP, the States and Local Government are primarily responsible for coastal planning and management.</p> <p>Commonwealth Influence over Coastal Planning Although the Commonwealth does not have direct legislative power over coastal planning, there are numerous ways in which the Commonwealth can have an influence:</p> <ul style="list-style-type: none"> ▪ Through the provision of grants to the States under s. 96 of the Constitution (CCP 1995); ▪ Through the provision of information about coastal zone management; ▪ Through the establishment of national plans and policies to guide State/Local Government plans/policies/actions.
Coastal Policy Authorities	<ul style="list-style-type: none"> ▪ Department of Climate Change and Energy Efficiency (DCCEE) ▪ Department of Sustainability, Environment, Water, Population and Communities (DSEWPC)
Legislative/Policy Framework	<p>Legislative Framework</p> <p>There are no federal laws directly addressing the impacts of climate change on the Australian coast.</p> <p>Policy Framework</p> <p>The Commonwealth Coastal Policy (1995) ('CCP') The CCP establishes the coastal policy of the Commonwealth Government and its 'vision for a co-operative, integrated approach to coastal management' (CCP 1995). The Policy 'provides both the means for the Commonwealth to manage its own coastal activities, and a range of initiatives whereby all Australian governments can work together to ensure best management of the coast' (CCP 1995). Annexe A of the CCP lists Commonwealth</p>

	<p>programs relevant to the coastal zone, including programs relating to the impact of ‘greenhouse issues’ on the coastal zone. Some of the initiatives included aim to assess the ‘vulnerability of coastal areas’ to sea level rise (CCP 1995).</p> <p>Developing a National Adaptation Agenda</p> <p>The ‘Adapting to Climate Change in Australia’ Position Paper was released by the Federal Government in 2010. The Paper outlines the Australian Government’s proposal ‘to work through the Council of Australian Governments (COAG) to develop a national adaptation agenda’ (DCCEE 2010a: 1). The Paper explains that the proposed agenda ‘will clarify roles and responsibilities for adapting to the impacts of climate change and identify priorities for collaborative action between governments to position Australia to manage the unavoidable impacts of climate change’ (DCCEE 2010a: 1).</p> <p>The Paper identifies ‘coastal management’ as one of the six initial national priorities for adaptation action (DCCEE 2010a: 11). Granting ‘national priority status’ to coastal management is justified in the Paper on the grounds of ‘the magnitude of national wealth and critical infrastructure invested in the coastal zone’ (DCCEE 2010a: 12). It is recognised however that ‘Local Governments and States and Territories have the leading role in managing the coastal zone’ (DCCEE 2010a: 12).</p> <p>In pursuance of this goal, a National Climate Change Forum was held in 2010 which involved over 200 relevant experts/planning officials. As a consequence of the forum a report was released by the Government - <i>Developing a national coastal adaptation agenda: A report on the National Climate Change Forum</i> (2010). Some key issues raised in the Report include:</p> <ul style="list-style-type: none"> ▪ The need for a ‘coordinated national approach, with clear allocation of responsibilities’ (DCCEE 2010b: 1); ▪ The confusion caused by the ‘current diversity of sea-level rise benchmarks across jurisdictions’ (DCCEE 2010b: 2); ▪ The need for more climate change information to ‘support decision-making’ (DCCEE 2010b: 2). <ul style="list-style-type: none"> ○ Specifically, information regarding ‘the comparative costs and benefits of adaptation options’ (DCCEE 2010b: 2).
Benchmarks/Targets	The Commonwealth has not yet put in place any national sea level rise planning benchmarks. However, there have been recommendations that a national approach should be adopted (see above).
Other Relevant Initiatives	<ul style="list-style-type: none"> ▪ Intergovernmental Coastal Advisory Group ▪ National Sea Change Task Force Inc. ▪ Coastal Adaptation Decision Pathways projects http://www.climatechange.gov.au/government/initiatives/australias-coasts-and-climate-change/adapting/coastal-adaptation-decision-pathways.aspx ▪ Mapping sea level rise http://www.climatechange.gov.au/government/initiatives/australias-coasts-and-climate-change/adapting/mapping-sea-level-rise.aspx ▪ National Coastal Risk Assessment http://www.climatechange.gov.au/government/initiatives/australias-coasts-and-climate-change/adapting/national-coastal-risk-assessment.aspx ▪ National Climate Change Forum http://www.climatechange.gov.au/government/initiatives/australias-coasts-and-climate-change/adapting/national-climate-change-forum.aspx ▪ National landform mapping

	<p>http://www.climatechange.gov.au/government/initiatives/australias-coasts-and-climate-change/adapting/national-landform-mapping.aspx</p> <ul style="list-style-type: none"> ▪ Coasts and Climate Change Council http://www.climatechange.gov.au/government/initiatives/australias-coasts-and-climate-change/adapting/coasts-and-climate-change-council.aspx ▪ Climate Change Risks to Australia's Coast: A First Pass National Assessment (link below) ▪ Climate Change Risks to Coastal Buildings and Infrastructure: A Supplement to the First Pass National Assessment http://www.climatechange.gov.au/~media/publications/coastline/riskscoastalbuildings.pdf ▪ Kakadu: Vulnerability to climate change impacts http://www.climatechange.gov.au/~media/publications/adaptation/kakadu-coast-full.pdf
Areas for Improvement	<p>Numerous recommendations for reform were made by planning officials/decision-makers at the National Climate Change Forum, including:</p> <ul style="list-style-type: none"> ▪ The possible creation of a 'new COAG intergovernmental agreement on the coastal zone' (DCCEE 2010b: 14); ▪ The creation of nationally consistent sea-level rise benchmarks (DCCEE 2010b: 14); ▪ Enhancing 'consistency in policy and regulatory settings across jurisdictions' (DCCEE 2010b: 9). <p>Another theme throughout the Forum was the need for greater guidance to be given to local councils about how to plan for the impacts of climate change, such as sea-level rise (DCCEE 2010b: 15).</p> <p>The recommendations made by the House of Representatives Standing Committee on Climate Change, Water, Environment and the Arts (2009) and the Government's consequent response (2010) also noted a number of areas for improvement.</p> <p>A number of 'barriers to planning for climate change' in Australia are identified in Barbara Norman (2010), <i>A Low Carbon and Resilient Urban Future: A Discussion Paper on an Integrated Approach to Planning for Climate Change</i>, Paper prepared for the Department of Climate Change and Energy Efficiency, http://www.climatechange.gov.au/~media/publications/local-govt/low-carbon-resilient-urban-future.pdf</p>
Relevant Links	<ul style="list-style-type: none"> ▪ Australian Government (2010), <i>Australian Government response: House of Representatives Committee Report - Managing our coastal zone in a changing climate: The time to act is now</i>, http://www.climatechange.gov.au/government/~media/publications/adaptation/HoR-managing-coastal-zone.ashx ▪ Coasts and Climate Change Council (2010), <i>Report to Minister Combet</i>, http://www.climatechange.gov.au/government/initiatives/australias-coasts-and-climate-change/adapting/coasts-and-climate-change-council/~media/publications/coastline/cccc-report.pdf ▪ Department of Climate Change and Energy Efficiency (2010a), <i>Adapting to Climate Change in Australia - A Position Paper</i>, http://www.climatechange.gov.au/en/government/adapt/~media/publications/adaptation/190210-dcc-positionpaper.pdf ▪ Department of Climate Change and Energy Efficiency (2010b), <i>Developing a national coastal adaptation agenda: A report on the National Climate Change Forum</i>, http://www.climatechange.gov.au/~media/publications/adaptation/developing-national-coastal-adaptation-agenda.pdf ▪ Department of Climate Change and Energy Efficiency (2009), <i>Climate Change Risks to Australia's Coast: A First Pass National Assessment</i>, http://www.climatechange.gov.au/~media/publications/coastline/cc-risks-full-report.pdf ▪ Department of the Environment, Water, Heritage and the Arts (1995) <i>The Commonwealth Coastal Policy</i>, http://www.environment.gov.au/coasts/publications/coastal-policy/index.html ▪ House of Representatives Standing Committee on Climate Change, Water, Environment and the Arts (2009), <i>Managing our coastal zone in a changing climate: The time to act is now</i>, House of Representatives Committee Report, http://www.aph.gov.au/house/committee/ccwea/coastalzone/report/Final%20Report.pdf
Useful Contact/s	The Department of Climate Change and Energy Efficiency - enquiries@climatechange.gov.au

Government	New South Wales
Jurisdiction over Coastal Planning	Although the NSW State Government has jurisdiction over coastal planning, as recognised in the <i>NSW Coastal Policy</i> (1997), '[l]ocal councils have primary responsibility for planning and development in the coastal zone' (DoPI 1997: 24).
Coastal Planning Authority/Authorities	<ul style="list-style-type: none"> ▪ NSW Department of Planning & Infrastructure (DoPI) – DoPI is responsible for land use planning in NSW. ▪ Department of Environment, Climate Change and Water (DECCW) – most of DECCW's functions have been transferred to the Office of Environment & Heritage. ▪ Minister for Climate Change and the Environment ▪ Office of Environment & Heritage ▪ NSW Coastal Panel – established under Part 2A of the <i>Coastal Protection Act 1979</i> (NSW). The role of the Panel is to provide the Minister administering the Act and local councils with 'expert advice', in addition to reviewing draft coastal zone management plans referred by the Minister to the Panel (Office of Environment & Heritage 2011c). ▪ Local Councils – as noted in the <i>NSW Sea Level Rise Policy Statement</i> (DECCW 2009: 4), 'local councils are responsible for many of the land use planning and development assessment decisions made in coastal areas'. Local councils may constitute a 'Coastal Authority' for the purposes of the <i>Coastal Protection Act 1979</i> (NSW), s. 6.
Legislative/Policy Framework	<p>Legislative Framework</p> <p>Environmental Planning and Assessment Act 1979 (NSW) – sets out the requirements for coastal development applications. The <i>NSW Coastal Planning Guideline: Adapting to Sea Level Rise</i> (2010) provides guidance for the assessment process of development applications in coastal areas (DoPI 2010: 14 – see Figures 3/4/5).</p> <p>Environmental Planning and Assessment Regulation 2000 (NSW) – sets out the regulations relevant to the planning processes contained in the <i>Environmental Planning and Assessment Act 1979</i> (NSW).</p> <p>Coastal Protection Act 1979 (NSW) – coastal zone management plans may be prepared under this Act which 'can address risks from coastal hazards, such as coastal erosion' and 'need to address the projected impacts on climate change, including projected sea level rise, on coastal erosion risks and estuary health' (Office of Environment & Heritage 2011a).</p> <p>Local Government Act 1993 (NSW) ('LGA') The <i>NSW Coastal Policy</i> recommends that 'local councils address their implementation of the Coastal Policy through the management plans which they are required to prepare' under s. 402 of the LGA.</p> <p>Policy Framework</p> <p>NSW Coastal Policy 1997 The <i>NSW Coastal Policy</i> acts as the cornerstone of NSW's coastal policy framework. All NSW State Government agencies and local councils are required</p>

to 'take account' of the Policy in 'their own policies and programs' (DoPI 1997: 24). The Policy applies to the whole NSW coastline (as defined in the Policy), 'urban and non urban areas' and to 'all new development and publicly owned lands' (DoPI 1997: 23).

As explained in the *NSW Sea Level Rise Policy Statement* (DECCW 2009: 2), the Policy is given 'statutory effect through State Environmental Planning Policy 71 – Coastal Protection and through a Ministerial Direction to local councils under section 117 of the *Environmental Planning and Assessment Act 1979* (NSW)'. It is also explained in the 'Implementation' section of the Policy that the Policy constitutes a 'prescribed matter' under s. 90 (1) (s) of the *Environmental Planning and Assessment Act 1979* (NSW) which means that 'councils need to have regard to relevant provisions in the policy when assessing development applications'.

In relation to sea level rise, the Policy adopts the position that 'the precautionary principle should be used in the assessment of natural hazard issues, including climate change and sea level rise' (DoPI 1997: 75) and that 'sea level rise scenarios will be incorporated into management plans and other mechanisms, where appropriate' (DoPI 1997: 21).

State Environmental Planning Policy No 71 – Coastal Protection

The State Environmental Planning Policy 71 – Coastal Protection (SEPP 71) (established under the *Environmental Planning and Assessment Act 1979* (NSW)) aims to implement the *NSW Coastal Policy* (1997). SEPP71 'requires that both land use planning and development assessment within the NSW Coastal Zone consider the likely impact of coastal processes and coastal hazards on development and any likely impacts of the development on coastal processes and coastal hazards' (DECCW 2009: 2).

Sea Level Rise Policy Statement (2009)

In 2009, the DECCW released the *NSW Sea Level Rise Policy Statement* which 'outlines the Government's objectives and commitments in regards to sea level rise adaptation' and the 'support that the Government will provide to coastal communities and local councils to prepare and adapt to rising sea levels' (DECCW 2009: 1). The Government intends to deliver this support through the following mechanisms:

- 'Promoting an adaptive risk-based approach to managing the impacts of sea level rise'
- 'Providing guidance to local councils to support their sea level rise adaptation planning'
- 'Encouraging appropriate development on land projected to be at risk from sea level rise'
- 'Continuing to provide emergency management support to coastal communities during times of floods and storms'
- 'Continuing to provide up-to-date information to the public about sea level rise and its impacts' (DECCW 2009: 3).

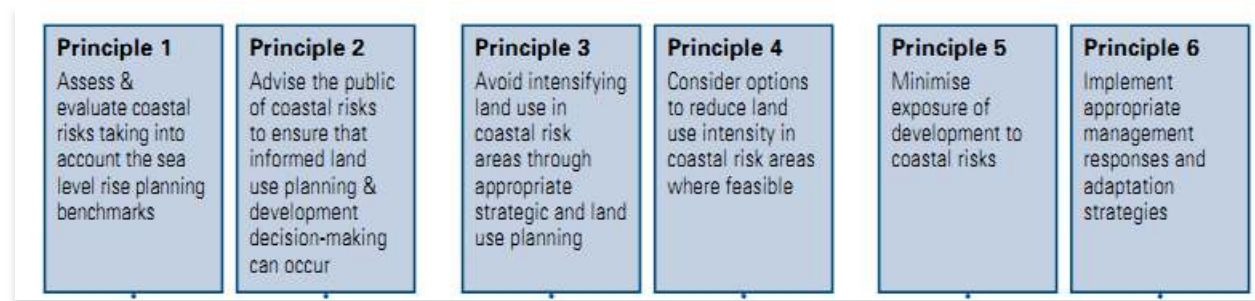
The Policy Statement also includes planning benchmarks for sea level rise (discussed below).

Sea Level Rise Guidelines

Three complementary sea level rise planning guidelines were released by the NSW State Government in 2010 to assist planning authorities in the implementation of the 2009 *Sea Level Rise Policy Statement*.

- ***Flood Risk Management Guide: Incorporating sea level rise benchmarks in flood risk assessments (2010)*** – this Guide updates 'the sea level rise information in the NSW Floodplain Development Manual (NSW Government 2005)' and 'the sea level rise section of the Floodplain Risk Management Guideline: Practical Consideration of Climate Change (DECC 2007)' (DECCW 2010b: 1).
- ***Coastal Risk Management Guide: Incorporating sea level rise benchmarks in coastal risk assessments (2010)*** – this Guide updates 'the sea level rise information in the NSW Coastline Management Manual (NSW Government 1990)' (DECCW 2010a: 1).

- **NSW Coastal Planning Guideline: Adapting to Sea Level Rise (2010)** – the Guideline adopts ‘six coastal planning principles for sea level rise adaptation’ which ‘should be applied in decision-making processes for land use planning and development assessment in coastal areas’ (DoPI 2010: 2):



Source: DoPI 2010: 3.

Coastal Regional Strategies

At present, there are 8 regional strategies in place in NSW, which all ‘include actions requiring councils to carefully plan for climate change’ (DoPI 2009: 42).

Local Environment Plans

Local Environment Plans (LEPs) created under the authority of the *Environmental Planning and Assessment Act 1979* (NSW) ‘guide planning decisions for local government areas’ (DoPI 2011). Under the ‘Standard Instrument’ for LEPs created in 2006, Clause 5.5 requires planning authorities ‘assessing development within the NSW Coastal Zone’ to consider ‘the effect of coastal processes and coastal hazards and potential impacts, including sea level rise, on the proposed development, and arising from the proposed development’ (DoPI 2010: 11).

Planned/Proposed Legal/Policy Reform

- The NSW coastal management framework underwent significant reform in 2010/2011 (For a summary, see: Sydney Coastal Councils Group Inc. 2010).
- A new government took office in March this year, which may result in more reforms.
- The *Sea Level Rise Policy Statement* will probably be reviewed when the IPCC releases its next report (DECCW 2009: 4).

Benchmarks/Targets

Benchmark: planning must take into account ‘an increase above 1990 mean sea levels of 40 cm by 2050 and 90 cm by 2100’ (outlined in the *Sea Level Rise Policy Statement*).

The Benchmarks will be reviewed by the Government in light of climate change science developments.

The Policy Statement (2009: 4) explains that the benchmarks may be relevant to the following areas:

- ‘Strategic planning and development assessment’ under the *Environmental Planning and Assessment Act 1979* (NSW);
- ‘Infrastructure planning and renewal’;
- ‘Coastal and flood hazard assessments’;
- ‘Preparation of local environmental plans’;
- ‘Designing and upgrading of public and private assets in low-lying coastal areas’;

	<ul style="list-style-type: none"> ▪ 'Assessing the influence of sea level rise on new development'; ▪ 'Considering the impact of sea level rise on coastal and estuarine habitats (such as salt marshes) and identifying valuable habitats at most risk from sea level rise'.
Other Relevant Initiatives	<p>Sydney Coastal Councils Group The Sydney Coastal Councils Group (SCCG) is established under the <i>Local Government Act 1993</i> (NSW) and promotes 'co-ordination between Member Councils on environmental issues relating to the sustainable management of the urban coastal environment' (Sydney Coastal Councils Group 2010).</p> <p>Regional Mapping The NSW Government has provided \$500 000 funding for a regional mapping project 'which maps low lying areas in the Gosford, Wyong, Lake Macquarie, Newcastle and Port Stephens council areas' (DoPI 2009: 47).</p> <p>Coastal and Estuary Grants Program The NSW Government's Coastal Management Program offers grants to local councils to help them 'manage the risks from coastal hazards' and 'understand the potential risks from climate change' (Office of Environment & Heritage 2011b). Recently the grants program has been revised to place a 'greater emphasis' on funding for 'updating coastal hazard studies to incorporate sea-level rise benchmarks' and 'updating estuary plans to consider climate change impacts, including sea level rise' (Office of Environment & Heritage 2011b).</p> <p>Coastal Impacts Research The Office of Environment & Heritage is currently engaging in significant research regarding the coastal impacts of climate change in the NSW coastal zone. The Office has already released two reports providing more information about these impacts for policy-makers/decision-makers and members of the public. The reports are available at: http://www.environment.nsw.gov.au/climatechange/coast.htm. Also relevant in this regard is the 'NSW Climate Impact Profile' conducted by the DECCW (2010c).</p> <p>Climate Change Action Pack website The Local Government and Shires Associations of NSW (2011) have established the Climate Change Action Pack website to assist local governments with their 'understanding of the impact of climate change on Local Government's areas of responsibility' and to 'assist Local Government to mitigate and adapt to climate change'.</p>
Areas for Improvement	<p>Lack of Legislative Direction Ghanem, Ruddock and Walker (2008) have highlighted a number of shortcomings in New South Wales' legislative response to the coastal challenges posed by climate change:</p> <ul style="list-style-type: none"> ▪ In NSW, there are 'no laws that specifically deal with protecting coastal communities from climate change impacts' (904); ▪ The <i>Coastal Protection Act 1979</i> (NSW) does not impose any 'prescriptive requirements on decision-makers to conduct adaptation activities or to refuse developments subject to increased risks due to climate change'. Ghanem, Ruddock and Walker argue that this constitutes 'a severe impediment to early adaptation action in the vulnerable coastal zone' (902); ▪ The <i>Environmental Planning and Assessment Act 1979</i> (NSW) 'does not contain any terms that refer to 'climate change', 'greenhouse', or 'sea level rise' even though appropriate development processes are crucial to achieving a robust adaptation framework for NSW' (902).

	<p>For these reasons, Ghanem, Ruddock and Walker (2008) propose that:</p> <ul style="list-style-type: none"> ▪ The legislature (federal and NSW) should enact ‘appropriate laws that facilitate adaptation’ (904); ▪ Amendments should be made to the <i>Coastal Protection Act 1979</i> (NSW) to acknowledge the challenges/risks posed by climate change (904). <p>They argue that these legislative reforms would create ‘more clearly defined responsibilities’ which would ‘greatly assist decision-makers who are currently unsure how to proceed in tackling climate change’ (905).</p> <p>It must be noted that in 2009 the <i>Sea Level Rise Policy Statement</i> was introduced and in 2010 complementary guidelines were created (discussed above). Although these are not legislative reforms, they do provide decision-makers with more direction regarding planning for climate change in the coastal zone.</p> <p>For commentary on the adequacy of NSW’s coastal planning system, see: Zada Lipman and Robert Stokes (2011), ‘That sinking feeling: A legal assessment of the coastal planning system in New South Wales’, <i>Environmental and Planning Law Journal</i>, 28 (3): 182-200.</p> <p>Need to Amend the NSW Coastal Planning Guideline: Adapting to Sea Level Rise</p> <p>The National Sea Change Taskforce (2011) has proposed amendments to the <i>NSW Coastal Planning Guideline: Adapting to Sea Level Rise</i> in order to ‘provide a consistent and transparent approach to land use planning in areas vulnerable to coastal erosion, inundation and flooding’. Proposed amendments include:</p> <ul style="list-style-type: none"> - The Guideline ‘should address existing developments that may not be sustainable as a result of climate change impacts’; - The Guideline should ‘incorporate a decision support framework for prioritising coastal areas, coastal protection works and other coastal management options, ranging from protection through to retreat’; - The Guideline should ‘incorporate guidance on floor height, building design features and standards (including scale, density and provision for demountability) to be incorporated in developments which provide for projected sea level rise and rainfall increase to the year 2100’. <p>The Taskforce also made a number of recommendations for initiatives to support the Guideline, including the provision of ‘access to consistent and improved spatial data required for modelling predicted climate change impacts in coastal areas’.</p>
<p>Relevant Links</p>	<ul style="list-style-type: none"> ▪ Department of Environment, Climate Change & Water NSW (2010a), <i>Coastal Risk Management Guide: Incorporating sea level rise benchmarks in coastal risk assessments</i>, http://www.environment.nsw.gov.au/resources/water/coasts/10760CoastRiskManGde.pdf ▪ Department of Environment, Climate Change & Water NSW (2010b), <i>Flood Risk Management Guide: Incorporating sea level rise benchmarks in flood risk assessments</i>, http://www.environment.nsw.gov.au/resources/water/coasts/10759FloodRiskManGde.pdf ▪ Department of Environment, Climate Change & Water (2010c), <i>NSW Climate Impact Profile: The impacts of climate change on the biophysical environment of New South Wales</i>, http://www.environment.nsw.gov.au/resources/climatechange/10171climateimpactprof.pdf ▪ Department of Environment, Climate Change and Water NSW (2009), <i>NSW Sea Level Rise Policy Statement</i>, http://www.planning.nsw.gov.au/LinkClick.aspx?fileticket=ukmXcVJesYA%3D&tabid=177 ▪ Department of Planning & Infrastructure (2011), ‘Local Planning – Standard Instrument’, http://www.planning.nsw.gov.au/LocalEnvironmentalPlans/StandardInstrument/tabid/247/Default.aspx ▪ Department of Planning & Infrastructure (2010), <i>NSW Coastal Planning Guideline: Adapting to Sea Level Rise</i>,

	<p>http://www.planning.nsw.gov.au/LinkClick.aspx?fileticket=VYjmQirQIAk%3d&tabid=177&language=en-US</p> <ul style="list-style-type: none"> ▪ Department of Planning & Infrastructure (2009), <i>Regional Strategy Update Report</i>, http://www.planning.nsw.gov.au/corporate_publications/pdf/regional_strategy_update_2009.pdf ▪ Department of Planning & Infrastructure (2007), <i>NSW Coastal Policy</i>, http://www.planning.nsw.gov.au/PlansforAction/Coastalprotection/NSWCoastalPolicy/tabid/173/language/en-US/Default.aspx ▪ Local Government and Shires Associations of NSW (2011), 'Climate Change Action Pack', http://www.lgsa-plus.net.au/www/html/1903-climate-change-action-pack.asp ▪ National Sea Change Taskforce (2011), 'NSW Coastal Policy Paper', http://www.seachangetaskforce.org.au/Publications/NSWCoastalPolicyPaper@24February2011.pdf ▪ Office of Environment & Heritage (2011a), 'NSW coastal zone management', http://www.environment.nsw.gov.au/coasts/index.htm ▪ Office of Environment & Heritage (2011b), 'Coastal, estuary and floodplain management grants', http://www.environment.nsw.gov.au/coasts/InfoCoastEstFloodGrants.htm ▪ Office of Environment & Heritage (2011c), 'NSW Coastal Panel', http://www.environment.nsw.gov.au/coasts/coastalpanel.htm ▪ Robert Ghanem, Kirsty Ruddock and Josie Walker (2008), 'Are Our Laws Responding to the Challenges Posed to our Coasts by Climate Change?', <i>University of New South Wales Law Journal</i> 31 (3): 895-905, http://www.austlii.edu.au/cgi-bin/sinodisp/au/journals/UNSWLawJl/2008/48.html?stem=0&synonyms=0&query=(((((title(climate)%20AND%20title(change))%20AND%20title(coast))%20AND%20title(new))%20AND%20title(south))%20AND%20title(wales ▪ Sydney Coastal Councils Group Inc. (2010), 'Activities in relation to the NSW Coastal Management Reforms 2010', http://www.sydneycoastalcouncils.com.au/sites/default/files/sccg-package2010.pdf
Useful Contact/s	<p>Jane Gibbs, Manager – Coast and Flood Policy NSW Department of Environment, Climate Change and Water Email: Jane.gibbs@environment.nsw.gov.au Phone: (02) 4904 2587.</p>

Government	Northern Territory
Jurisdiction over Coastal Planning	The Northern Territory Government and local governments share jurisdiction over coastal management.
Coastal Planning Authority/Authorities	<ul style="list-style-type: none"> ▪ Local Councils ▪ Department of Natural Resources, Environment, the Arts and Sport ▪ Department of Lands and Planning - The Department of Lands and Planning ‘manages the planning and development framework incorporating the <i>Planning Act</i>, the NT Planning Scheme and provides professional and technical support to the Development Consent Authority’ (Northern Territory Government 2010). ▪ Development Consent Authority
Legislative/Policy Framework	<p><u>Legislative Framework:</u></p> <p>Planning Act (NT) – provides for the establishment of the Northern Territory Planning Scheme. The Scheme currently has no provisions for sea level rise.</p> <p>Planning Regulations</p> <p>Local Government Act (NT)</p> <p><u>Policy Framework:</u></p> <p>The Northern Territory Planning Scheme One of the ‘General Performance Criteria’ for the Scheme concerns ‘Land Subject to Flooding and Storm Surge’. The Clause is intended to ensure that planning reduces ‘risk to people, damage to property and costs to the general community caused by flooding and storm surge’ (Northern Territory Government 2011 [6.14]). However, the Scheme does not directly address planning for sea level rise or coastal impacts of climate change.</p> <p>Northern Territory Climate Change Policy The NT Climate Change Policy was introduced in 2009 by the Northern Territory Government to serve as a broad action plan for climate change mitigation and adaptation in the Territory.</p> <p>One of the five ‘headline actions’ outlined in the Policy relates to the protection of the Territory’s coastal wetlands from the impacts of climate change: ‘The Territory will be at the forefront of efforts to save the best of our priceless coastal wetlands, at risk from rising sea levels- through specific interventions aimed to reduce salt water intrusion, protect fishing and save biodiversity’ (Northern Territory Government 2009: 7).</p> <p>The Policy also sets a ‘target’ (Target 40) for action relating to the impacts of sea-level rise: ‘By 2013, develop, test and select new methods to rehabilitate damaged wetlands and protect the Mary River freshwater wetlands and their carbon stores from the risks of rising sea levels’ (Northern Territory Government 2009: 13).</p>
Planned/Proposed Legal/Policy Reform	The Northern Territory <i>Climate Change Policy</i> commits the Department of Natural Resources, Environment, the Arts and Sport to produce a ‘Territory Climate Change Adaptation Action Plan’ (Northern Territory Government 2009: 13).

Benchmarks/Targets	There are currently no sea-level rise benchmarks in place in the Northern Territory.
Other Relevant Initiatives	<p>Local Government Association of the Northern Territory (LGANT) The Local Government Association of the Northern Territory has developed a co-operative project designed to better enable local councils in the NT to adapt to the impacts of climate change. LGANT is 'currently working with a number of councils to develop climate change risk assessment and adaptation plans' which seek to 'address the vulnerability of communities in the remote inland and coastal areas of the Northern Territory top end' (LGANT 2011). LGANT plan to extend the project across the Territory. The project has three aims – to 'undertake a risk assessment at the community level', 'initiate a community awareness program' and 'develop an action plan for climate change adaptation' (LGANT 2011).</p> <p>Mary River Wetlands Study A report prepared by the Australian Greenhouse Office in 2004 evaluated a 'study undertaken to evaluate the cost and benefits of options to prevent the intrusion of salt water upon the Mary River Wetlands in the Northern Territory, Australia' (AGO 2004: 2). Although the inundation of the Wetlands was not a result of climate change, the report examined the usefulness of the study for undertaking 'research in circumstances similar to those projected to occur due to global warming' (AGO 2004: 2). The report concluded that the 'study demonstrated an economic methodology which could be used to assess options to adapt to greenhouse induced sea-level rise'.</p>
Areas for Improvement	<p>There are a number of possible areas for improvement:</p> <ul style="list-style-type: none"> ▪ The need to develop sea-level rise benchmarks and a sea-level rise planning policy; ▪ The need to require benchmarks/SLR policy to be incorporated into all development planning concerning the coastal zone (perhaps through legislation); ▪ The need to adopt a specific coastal adaptation policy; ▪ The need to engage in further research into the impacts of climate change on coastal areas of the Territory.
Relevant Links	<ul style="list-style-type: none"> ▪ Australian Greenhouse Office (2004), 'Cost-Benefit Analysis of Mary River Wetlands Salinity Mitigation', http://www.nt.gov.au/nreta/environment/greenhouse/pdf/maryriveroverview.pdf ▪ Local Government Association of the Northern Territory (2011), 'Climate Change Risk Assessment and Adaptation', http://www.lgant.asn.au/sustainability-environment/climate-change-risk-assessment-and-adaptation ▪ Northern Territory Government (2011), 'Northern Territory Planning Scheme', http://www.nt.gov.au/lands/planning/scheme/documents/NTPS_as_at_31Mar2011.pdf ▪ Northern Territory Government (2010), 'The Northern Territory Planning System', http://www.nt.gov.au/lands/planning/system/index.shtml ▪ Northern Territory Government (2009), <i>Northern Territory Climate Change Policy</i>, http://www.greeningnt.nt.gov.au/climate/docs/Climate_Change_Policy.pdf
Useful Contact/s	<p>Department of Natural Resources, Environment, the Arts and Sport Phone (General Enquiries): (08) 8999 5511.</p>

Government	Queensland
Jurisdiction over Coastal Planning	As explained by the Queensland Climate Change Centre of Excellence (2011: 37), ‘the assessment of most coastal development applications has been devolved under legislation to local councils. In these cases, the local council acts as assessment manager and the Queensland Government acts as a concurrence agency providing advice on the applicability of Queensland coastal policies to the proposal’.
Coastal Planning Authority/Authorities	<ul style="list-style-type: none"> ▪ Department of Environment and Resource Management ▪ Department of Local Government and Planning ▪ Local Councils
Legislative/Policy Framework	<p><u>Legislative Framework:</u></p> <p><i>Coastal Protection and Management Act 1995 (Qld)</i> – the CPMA is Queensland’s primary coastal management legislation. The Act performs a number of functions, including:</p> <ul style="list-style-type: none"> - Establishing the Coastal Protection Advisory Council. The Council’s functions involve providing advice to the relevant Minister regarding coastal management issues, including in regards to ‘appropriate preventive and remedial measures for coastal management’– s. 21 (1) (c). - Providing for the creation of the <i>State Coastal Management Plan</i> (soon to be amended). - Providing for the establishment and review of regional coastal management plans. - Providing for the declaration, amendment, amalgamation and abolition of coastal management districts. <p><i>Sustainable Planning Act 2009 (Qld)</i> – regional plans (including coastal regional plans) may be made by the Minister under this Act. Section 24 of the Act explains that regional plans are statutory instruments for the purposes of the <i>Statutory Instruments Act 1992</i> (Qld). Regional plans prevail over local planning instruments to the extent of any inconsistency between them (<i>Sustainable Planning Act 2009</i> (Qld), s. 53). The purpose of the Act is to achieve ‘ecological sustainability’ by ‘managing the process by which development takes place’ in Queensland to deliver sustainable outcomes (s. 3).</p> <p><u>Policy Framework:</u></p> <p><i>Queensland Coastal Plan (2011)</i> The recently introduced <i>Queensland Coastal Plan</i> (2011) is comprised of a 'State Policy for Coastal Management' and a 'State Planning Policy for Coastal Protection' ('Planning Policy'). The Plan represents the culmination of a comprehensive statutory review process which will result in the replacement of the current <i>State Coastal Management Plan</i> (2001) partly due to its failure to adequately address the coastal impacts of climate change. Until the requisite legislative amendments are made to the governing legislation (<i>Coastal Protection and Management Act 1995</i> (Qld)), the <i>State Coastal Management Plan</i> (2001) and other relevant regional coastal management plans will remain in force.</p> <p>Under the new <i>Queensland Coastal Plan</i> (expected to take effect mid 2011), the Planning Policy provides policy guidance for local/state planning authorities relating to numerous coastal protection issues, including ‘coastal hazards’. The Policy (2011: 42) outlines a mechanism for the identification of ‘coastal hazards’ (defined as ‘areas at risk from coastal erosion, permanent inundation due to projected sea level rise, or storm tide inundation’). Accordingly, ‘coastal hazard areas are determined using a projected sea-level rise factor of 0.8 metres by 2100, based on the upper range of the projections published by the IPCC’ (<i>Queensland Coastal Plan</i> 2011: 42).</p>

	<p>The Policy also provides for a policy review mechanism which is to be activated within 6 months of either one of two possible events:</p> <ol style="list-style-type: none"> 1) The release of a new IPCC Report, which refers to 'global emissions, temperature or sea-level rise trends', or; 2) The 'making of an Australian intergovernmental agreement or policy adopting sea-level rise and storm intensity factors for land-use planning and development assessment purposes' (<i>Queensland Coastal Plan</i> 2011: 42). <p>The <i>Queensland Coastal Plan</i> introduces a number of improvements relating to sea-level rise planning:</p> <ul style="list-style-type: none"> ▪ The Plan 'uses risk-based vulnerability zoning for land-use planning by mapping areas at high risk from coastal hazards' (Queensland Climate Change Centre of Excellence 2011: 38). ▪ The Plan acknowledges that as there is 'no single adaptation strategy that will work for the entire Queensland coast' a range of planning responses will have to be developed (Queensland Climate Change Centre of Excellence 2011: 38). ▪ The Plan recognises that '[r]egional assessments are useful for identifying socially vulnerable communities, the limits to their adaptive capacity and areas of future risk where development should not occur' (Queensland Climate Change Centre of Excellence 2011: 38). <p>Guidelines for the implementation of the Queensland Coastal Plan</p> <p>Once the <i>Queensland Coastal Plan</i> takes effect, planning authorities implementing the Plan's policies will be expected to utilise guidelines provided by the State Government ('State Planning Policy for Coastal Protection Guideline' and the 'Queensland Coastal Hazards Guideline').</p>														
Planned/Proposed Legal/Policy Reform	As mentioned above, the <i>Queensland Coastal Plan</i> (2011) is expected to replace the current <i>State Coastal Management Plan</i> (2001) in mid 2011. This policy reform is dependent upon legislative reform to the <i>Coastal Protection and Management Act 1995</i> (Qld).														
Benchmarks/Targets	<p>Queensland coastal policy sets numerous benchmarks for planning authorities in relation to projected sea-level rise. The benchmarks/targets contained in the <i>State Coastal Management Plan</i> (2001) are reproduced in the <i>Queensland Coastal Plan</i> (2011).</p> <p>For development not subject to a development commitment: a sea level rise of 0.8 metres by 2100 must be taken into account by planning authorities.</p> <p>For development already subject to a development commitment: the level of sea level rise which must be taken into account depends upon the year in which the planning period ends. The following table taken from Annex 3 of the <i>Queensland Coastal Plan</i> (2011) sets out the policy:</p> <table border="1"> <thead> <tr> <th>Year of end of planning period</th><th>Projected sea level rise</th></tr> </thead> <tbody> <tr> <td>Year 2050</td><td>0.3m</td></tr> <tr> <td>Year 2060</td><td>0.4m</td></tr> <tr> <td>Year 2070</td><td>0.5m</td></tr> <tr> <td>Year 2080</td><td>0.6m</td></tr> <tr> <td>Year 2090</td><td>0.7m</td></tr> <tr> <td>Year 2100</td><td>0.8m</td></tr> </tbody> </table> <p style="text-align: right;">Source: <i>Queensland Coastal Plan</i> (2011): 94.</p>	Year of end of planning period	Projected sea level rise	Year 2050	0.3m	Year 2060	0.4m	Year 2070	0.5m	Year 2080	0.6m	Year 2090	0.7m	Year 2100	0.8m
Year of end of planning period	Projected sea level rise														
Year 2050	0.3m														
Year 2060	0.4m														
Year 2070	0.5m														
Year 2080	0.6m														
Year 2090	0.7m														
Year 2100	0.8m														
Other Relevant Initiatives	<p>Joint Initiative - 'Future Coastlines' Project</p> <p>Under the leadership of Griffith University, the Gold Coast City Council, the Bureau of Meteorology, the Queensland Environmental Protection Agency,</p>														

	<p>Emergency Management Queensland, Danish Hydraulics Institute and the CSIRO are working together to ‘to address key vulnerabilities to climate variability and climate change for communities in coastal Queensland’ (Griffith Centre for Coastal Management 2011). The aim of the project (which is being funded by the ‘Queensland Smart State’ program), is to model coastal processes and provide advice to the Government in relation to mitigation of risk stemming from sea-level rise and other coastal changes.</p> <p>Improved Mapping for Climate Change Responses As part of the broader ‘ClimateQ: toward a greener Queensland’ initiative, the Queensland State Government has pledged significant funding to a mapping project designed to capture high resolution images of the Queensland coast in order to better inform policy making relating to rising sea-levels and other coastal management issues.</p>
Areas for Improvement	<p>The Queensland Climate Change Centre of Excellence (2011: 39) has identified that a ‘common barrier to adaptation is that some local governments may lack the capacity to assess and reduce climate risk’. This is a problem facing all jurisdictions in Australia. However, it is evident that Queensland is attempting to remedy this problem through the development of regional plans, state-wide coastal management policies and other state/local government initiatives.</p>
Relevant Links	<ul style="list-style-type: none"> ▪ Griffith Centre for Coastal Management (2011), ‘Future Coastlines’, http://www.griffith.edu.au/environment-planning-architecture/griffith-centre-coastal-management/research/future-coastlines2 ▪ Department of Environment and Resource Management (2011b), <i>Queensland Coastal Plan</i>, http://www.derm.qld.gov.au/coastalplan/pdf/qcp-web.pdf ▪ Office of Climate Change (Qld) (2010), ‘Improved Mapping for Climate Change Responses’, http://www.climatechange.qld.gov.au/pdf/factsheets/3planbuild-n4.pdf ▪ Queensland Climate Change Centre of Excellence (2011), Department of Environment and Resource Management, <i>Queensland Coastal Processes and Climate Change</i>, http://www.climatechange.qld.gov.au/pdf/qld-coastal-processes-and-climate-change.pdf
Useful Contact/s	<p>Department of Environment and Resource Management Queensland State Government Email: coastal.support@derm.qld.gov.au.</p> <p>Office of Climate Change Queensland State Government Contact: http://www.climatechange.qld.gov.au/contactus.php</p>

Government	South Australia
Jurisdiction over Coastal Planning	The State Government of South Australia and local councils share jurisdiction over coastal planning and management in South Australia. Whilst the majority of coastal planning decisions are made by local councils acting as planning authorities, the State Government and the Coast Protection Board provide local councils with policy and planning guidance/direction.
Coastal Planning Authority/Authorities	<ul style="list-style-type: none"> ▪ Coast Protection Board – the Board is the South Australian statutory authority responsible for the management, maintenance and development of the South Australian coast. The Board was established under the <i>Coast Protection Act 1972 (SA)</i> which also sets out the functions of the Board. Under the <i>Development Act 1993 (SA)</i>, the Board is a referral body for development applications (DAs) on the coast (Townsend pers. comm., 2011). The Board ‘provides advice and in some circumstances direction to planning authorities on these development applications’ (Townsend pers. comm., 2011). ▪ Department of Environment and Natural Resources (DENR) – the DENR is a State Government department which ‘provides administrative and technical support to the Coast Protection Board’ (Townsend pers. comm., 2011). ▪ Department of Planning and Local Government – administers the relevant legislation governing planning in South Australia. ▪ Local Councils – may constitute a ‘relevant authority’ for the purposes of the <i>Development Act 1993 (SA)</i>, s. 34.
Legislative/Policy Framework	<p><u>Legislative Framework:</u></p> <p><i>Development Act 1993 (SA)</i> – governs the creation and regulation of ‘Development Plans’, including coastal Development Plans. <i>Development Regulations 2008 (SA)</i></p> <p><u>Policy Framework:</u></p> <p>Policy on Coast Protection and New Coastal Development (Endorsed 21 May 1991) The 1991 Policy aims to ‘provide a clear understanding of Coast Protection Board policy for development in areas which may be at risk due to coastal flooding or erosion’ (Coast Protection Board 1991). Accordingly, the Policy determines which policies apply in relation to specific planning areas, such as planning for sea-level rise for major coastal developments.</p> <p>Coast Protection Board Policy Document (Endorsed 30th August 2002) The <i>Coast Protection Board Policy Document</i> outlines the Board’s rights, responsibilities, policies, aims and standards in relation to the protection of the South Australian coastline. The Policy includes the policy standards set out in the 1991 Policy in Appendix I and further elaborates upon the Board’s duties and objectives in relation to coastal planning for sea-level rise. In particular, the Policy Document recognises that as ‘the level of risk in many instances will change over time’ a continually evolving policy response is required.</p> <p>Coast Protection Board Strategic Plan 2009-2014 The <i>Coast Protection Board Strategic Plan 2009-2014</i> outlines the Board’s three 'strategic priorities' to achieve its vision of sustainable use of the South Australian Coast:</p> <ul style="list-style-type: none"> - Adaptation of existing development to coastal hazards and the impacts of climate change; - Ensure new development is not at risk from current and future hazards, and; - Plan for resilience in coastal ecosystems to adapt to the impacts of climate change (Coast Protection Board 2009).

	<p>In relation to the first priority of adaptation, the Board aims to:</p> <ul style="list-style-type: none"> ‘1.1 Support the implementation of the <i>National Climate Change Adaptation Framework 2007</i>, in particular, the acquisition of the national coastal DEM and coastal vulnerability assessment. 1.2 Assist Governments prepare coastal vulnerability assessments and adaptation plans. 1.3 Assist Local Government devise, prioritise and implement protection strategies for coastal settlements. 1.4 Provide advice to the Minister, Government, local government and the community on adaptation of coastal development’ (Coast Protection Board 2009).
Planned/Proposed Legal/Policy Reform	<p>Currently under review – 1991 Policy</p> <p>At present, the 1991 Policy is under review by the Board. The review will consider evidence revealed by audits that show ‘that between 10% and 18% of decisions are not in accord with the Board’s advice, with more than half of these involving advice on coastal hazards’ (Townsend pers. comm., 2011). According to Tony Huppatz and Brian Caton (2010: 8), it is becoming apparent that there is an ‘upward trend...in applications being approved at odds with Board advice’.</p> <p>Proposed reform – Coast Protection Board’s Powers</p> <p>The South Australian Government is considering the necessity of increasing the Coast Protection Board’s powers of direction over applications for development subject to unaddressed coastal hazards (Government of South Australia 2010: 35). According to Townsend (pers. comm., 2011), the Board is ‘seeking increased powers of direction over development applications for which the proposal is likely to be subject to coastal hazards to reduce the number of approvals at odds with the Board’s policies’.</p>
Benchmarks/Targets	<p>According to the 1991 Policy contained in Appendix I of the 2002 Policy Document, new developments should take into consideration:</p> <ul style="list-style-type: none"> ▪ A 30cm sea-level rise by 2050 ▪ A further 70 cm sea-level rise between 2050 and 2100. <p>The standards contained within the 1991 Policy were incorporated into Development Plans governed by the <i>Development Act 1993</i> (SA) across South Australia in 1994 by the Minister’s Regional Coastal Areas Policies Amendment. If a development is located on ‘Coastal Land’ (as defined under the Act) then the provisions in the Policy apply.</p> <p>In the 1992 <i>Coastal erosion, flooding and sea level rise standards and protection policy</i>, the Coastal Protection Board explained that these requirements mean that ‘development which could not reasonably be protected against sea level rise beyond 0.3m needs to be on higher land or set far enough back from the coast to be safe for a 1 m rise by 2100. This 1.0 m includes a small margin for greater than expected increase and for weather changes that could result in more storm surge and higher tides’.</p> <p>The requirements are based upon scientific estimates of future sea-level rise. Currently, the provisions are under review in order to ensure that they reflect the most recent climate change science put forward by the Inter-governmental Panel on Climate Change (IPCC) and other recent scientific research (Government of South Australia 2010: 34).</p> <p>Recent case law from the South Australian Supreme Court demonstrates that development applications may be rejected on the grounds of insufficient planning for projected sea-level rise: See, <i>Northcape Properties v. District Council of Yorke Peninsula</i> [2008] SASC 57.</p>

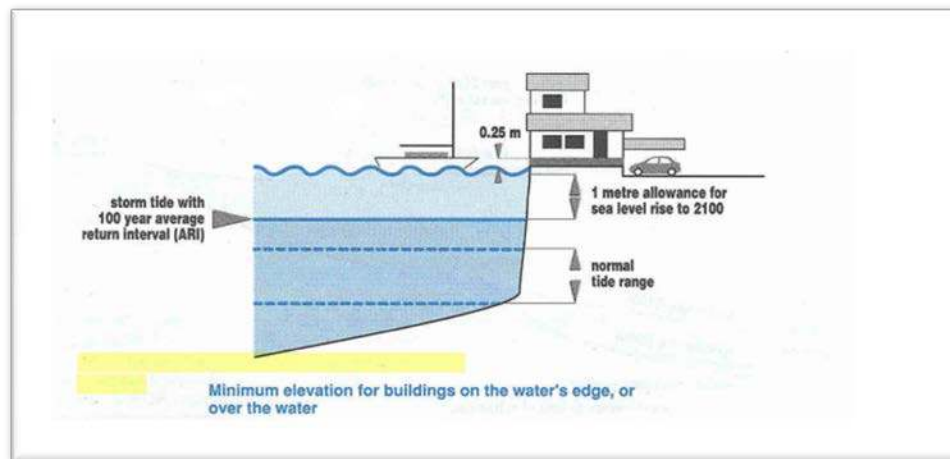


Diagram Source: Coast Protection Board of South Australia (1992), *Coastal erosion, flooding and sea level rise standards and protection policy*: <http://www.environment.sa.gov.au/files/a2ba9951-05ca-4905-8d54-9e3900ec48e1/no26.pdf>.

Other Relevant Initiatives

Joint Initiatives – Federal/State/Local Government

The South Australian division of the Planning Institute of Australia (2010: 7) reports that the 'Cities of Charles Sturt, Port Adelaide, Enfield and West Torrens are joining forces to prepare for the impacts of climate change in Adelaide's western suburbs, in collaboration with the State and Federal Governments'.

Relevant Links

- Coast Protection Board South Australia (1991), *Policy on Coast Protection and New Coastal Development*: www.environment.sa.gov.au/files/fb3b339d-50ac.../cpb_policy_1991.pdf
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- Government of South Australia (2010), *Prospering in a Changing Climate: A Draft Climate Change Adaptation Framework for South Australia*: <http://www.climatechange.sa.gov.au/uploads/Adaptation/Draft%20CC%20Adaptation%20Framework.pdf>
- Planning Institute of Australia (SA Division) (2010), 'Hot in the City: Climate Change Edition', *SA Planner*: <http://www.planning.org.au/documents/item/1855>
- Tony Huppatz and Brian Caton (2010), 'Taking Sea Level Rise into Account: a history of coast protection policy in South Australia and its translation to planning controls': http://conference2010.coast2coast.org.au/sites/default/files/documents/C2C_Paper_-_CP_policy_in_SA_-_Caton_%26_Huppatz.pdf

Useful Contact/s

Coast Protection Board (SA): coastprotectionboard@sa.gov.au
Department of Environment and Natural Resources – Dr. Murray Townsend (Manager Public Land and Coastal Conservation): murray.townsend@sa.gov.au or (08) 8124 4879.

Government	Tasmania
Jurisdiction over Coastal Planning	The State Government of Tasmania and local councils share jurisdiction over coastal planning and management in Tasmania and its offshore islands.
Coastal Planning Authority/Authorities	<ul style="list-style-type: none"> ▪ The Tasmanian Planning Commission is Tasmania's peak planning body. The Commission's roles and responsibilities are set out under the <i>Planning Commission Act 1997</i> (Tas). Under the <i>Land Use Planning and Approvals Act 1993</i> (Tas) (LUPAA), the Commission has responsibility over the certification and approval of planning schemes governed by the Act (s. 8). Planning schemes include coastal planning schemes (s. 7). ▪ Local Councils have authority over local coastal planning decisions. A local council constitutes a 'planning authority' for the purposes of LUPAA (s. 3).
Legislative/Policy Framework	<p>Resource Planning and Management System (RMPS) Tasmania's coastal planning management falls under the broader Resource Planning and Management System (RMPS). The RMPS is an integrated management system which creates a common management framework for a range of Tasmanian legislation (including LUPAA) governing resource planning and management. Legislation which is part of the RMPS shares a common set of objectives (contained in Schedules to the Acts) outlined by the Tasmanian government, including the promotion of sustainable development.</p> <p>Tasmanian State Coastal Policy (1996) The <i>Tasmanian State Coastal Policy</i> (1996) (currently in operation), is a 'State Policy' established under the authority of the <i>State Policies and Projects Act 1993</i> (Tas) (SPPA). Due to the fact that the SPPA falls under the RMPS, State Policies created pursuant to the Act must prioritise sustainable development as their 'central objective' (<i>Tasmanian State Coastal Policy</i> 1996: ii). State Policies are statutory documents with a unique legal status. As explained in the <i>Tasmanian State Coastal Policy</i> (1996: ii), State Policies are 'intermediate between the provisions of an Act and the lesser policies and provisions of planning schemes and other mechanisms identified in the relevant legislation comprising the [RMPS]'. The <i>Tasmanian State Coastal Policy</i> (1996) applies across the state of Tasmania and planning authorities are explicitly required to give effect to the Policy (<i>Tasmanian State Coastal Policy</i> 1996: 1). The Policy provides a framework to guide the actions of planning authorities in Tasmania in relation to the use, management and conservation of the Tasmanian coastal zone. In doing so, the Policy aims to prioritise the objective of sustainable development outlined in the RMPS contained in Schedule 1 of the SPPA. The definition of sustainable development within the Schedule cited in the Policy includes 'sustaining the potential of natural and physical resources to meet the reasonably foreseeable needs of future generations'. This reference to the principle of intergenerational equity is particularly relevant in the context of coastal planning for sea-level rise. One of the three main principles guiding the Policy is the principle that 'natural and cultural values of the coast shall be protected' (<i>Tasmanian State Coastal Policy</i> 1996: 5). It is explained that this principle recognises <i>inter alia</i> 'the susceptibility of the coast to the effects of natural events, including sea-level rise' (<i>Tasmanian State Coastal Policy</i> 1996: 5; 1.4.1).</p>
Planned/Proposed Legal/Policy Reform	<p><u>Proposed Policy Reform:</u> Draft State Coastal Policy (2008)</p> <p>In 2008, the Tasmanian State Government proposed reform to the 1996 <i>Tasmanian State Coastal Policy</i>. The <i>Draft State Coastal Policy</i> (2008) included in its list of intended outcomes that development in areas at risk from the adverse impacts of climate change should only occur 'where the risks are satisfactorily managed' (<i>Draft State Coastal Policy</i> 2008: 4.11).</p>

	<p>In its review of the Draft Policy this year (2011), the Tasmanian Planning Commission found that the Draft Policy did not meet the requirements of a State Policy under the SPPA (<i>Report on the Draft State Coastal Policy</i> 2008: Recommendation 1). One of the eight major issues which led the Commission to the conclusion that the Draft Policy was not sufficient to act as a State Policy was the fact that there was ‘no evidence that the Policy was developed with consideration of climate change, sea-level rise and other scientific advances’. For this reason, the Commission recommended that ‘projected sea-level rise limits be considered, and agreed upon, by the Tasmanian Government and included as part of a coastal policy package’ (<i>Report on the Draft State Coastal Policy</i> 2008: Recommendation 6).</p>
Benchmarks/Targets	At present, Tasmania does not have in place any set benchmarks or targets for sea-level rise adaptation planning.
Other Relevant Initiatives	<p>Adaptation Unit – Tasmanian Climate Change Office The Adaptation Unit within the Tasmanian Climate Change Office aims to co-ordinate different government responses to the impacts of climate change. Planning and management in coastal areas is said to be an upcoming priority of the unit.</p> <p>Tasmanian Planning Commission Initiatives The Tasmanian Planning Commission is co-ordinating the development of regional land-use strategies for the three regions of the State to better co-ordinate regional infrastructure, economic development and environmental and social planning. These will include a focus on adaptation and land-use planning, specifically on coastal inundation, coastal erosion and bushfire-prone areas.</p> <p>Joint Initiatives – Local Government Reform Fund The Tasmanian State Government, the Southern Tasmanian Councils Authority and the Local Government Association of Tasmania have received funding from the national Local Government Reform Fund to:</p> <ul style="list-style-type: none"> ▪ ‘assess the vulnerability and adaptability of municipal areas to climate change impacts based on climate change science and modelling’; ▪ ‘implement adaptation management tools, resources and strategies at a regional level’, and; ▪ ‘integrate climate change adaptation planning with other key local government processes’ (Department of Regional Australia, Regional Development and Local Government 2011).
Areas for Improvement	The Tasmanian Planning Commission in its Report on the Draft Policy (2011b: v) stated that the ‘development of a Tasmanian state coastal policy would benefit from a broader approach, possibly with specific statutory backing’, as seen in other states of Australia. Such an approach would need to incorporate explicit reference to the coastal planning challenges posed by sea-level rise, possibly with the introduction of benchmarks/targets for sea-level rise adaptation planning.
Relevant Links	<ul style="list-style-type: none"> ▪ Climate Change Adaptation Unit, Tasmanian State Government: http://www.climatechange.tas.gov.au/government_action/government_action_content2/climate_change_adaptation_unit ▪ Department of Primary Industries, Water & Environment (1996), <i>The Tasmanian State Coastal Policy</i> (1996): http://www.environment.tas.gov.au/index.aspx?base=406 ▪ Department of Regional Australia, Regional Development and Local Government (2011), <i>National Partnership Agreement - Implementation Plan for Future-proofing Tasmania’s councils: A regional and land use based approach to climate change adaptation</i>, http://www.federalfinancialrelations.gov.au/content/national_partnership_agreements/Other/local_government/Future_proofing_Tas/LGRF_IP_future_proofing_Tas.pdf ▪ Tasmanian Planning Commission (2011a), ‘State Planning’: http://www.planning.tas.gov.au/the_planning_system/state_planning

	<ul style="list-style-type: none"> ▪ Tasmanian Planning Commission (2011b), <i>Report on the Draft State Coastal Policy (2008)</i>: http://www.planning.tas.gov.au/_data/assets/pdf_file/0019/170263/State_Coastal_Policy_2008_Report_on_the_Draft.pdf ▪ Tasmanian State Government (2008), <i>Draft State Coastal Policy (2008)</i>: http://www.planning.tas.gov.au/_data/assets/pdf_file/0008/152369/Draft_SCP_2008.pdf
Useful Contact/s	<p>Tasmanian Climate Change Office Website: www.climatechange.tas.gov.au Email: climatechange@dpac.tas.gov.au Phone: (03) 6270 5485.</p> <p>Shona Prior - Manager Adaptation Unit, Climate Change Adaptation Unit, Tasmanian Climate Change Office, Department of Premier and Cabinet. Email: Shona.prior@dpac.tas.gov.au Phone: (03) 6270 5491.</p> <p>Tasmanian Planning Commission Website: http://www.planning.tas.gov.au/ Email: enquiry@planning.tas.gov.au Phone: (03) 6233 2795.</p>

Government	Victoria
Jurisdiction over Coastal Planning	The Victorian State Government has jurisdiction over the creation of state-wide policies concerning planning, including coastal planning. These policies guide and inform the planning schemes which govern Victoria's various municipalities. Local Councils are granted jurisdiction over planning through these schemes (provided for under the <i>Planning and Environment Act 1987</i> (Vic)).
Coastal Planning Authority/Authorities	<ul style="list-style-type: none"> ▪ Department of Planning and Community Development – the DPCD is a State Government department responsible for 'land use-planning and environment assessment in Victoria'. ▪ Department of Sustainability and Environment – the DSE is responsible for the administration of Victoria's principle coastal planning and management legislation – the <i>Coastal Management Act 1995</i> (Vic). ▪ Minister for Planning – is a 'planning authority' under the <i>Planning and Environment Act 1987</i> (Vic), s. 8. ▪ Minister for Environment and Climate Change – the DSE is responsible to the Minister for Environment and Climate Change for the management of coastal matters. ▪ Victorian Coastal Council – established by the <i>Coastal Management Act 1995</i> (Vic). The VCC performs numerous functions including strategic coastal planning, providing advice to the Minister for Planning and monitoring Coastal Action Plans. ▪ Local Councils – constitute 'planning authorities' (s. 8A) and 'responsible authorities' for the administration/enforcement of planning schemes (s. 13) under the <i>Planning and Environment Act 1987</i> (Vic). ▪ Regional Coastal Boards – implement regional Coastal Action Plans.
Legislative/Policy Framework	<p><u>Legislative Framework:</u></p> <p>Planning and Environment Act 1987 (Vic) ('PEA') The PEA is Victoria's primary planning legislation. The Act sets out the regulatory framework for the establishment and implementation of 'planning schemes'.</p> <p>Coastal Management Act 1995 (Vic) ('CMA') The CMA is Victoria's primary coastal management legislation. The main functions of the Act are explained in the <i>Victorian Coastal Strategy 2008</i> - they include:</p> <ul style="list-style-type: none"> • The development of a Victorian Coastal Strategy; • Strategic Planning for the management of the Victorian coast; • Establishment of the Victorian Coastal Council; • Establishment of three Regional Coastal Boards (Western, Central and Gippsland); • Provides for the 'preparation and implementation of Coastal Action Plans and management plans for coastal Crown land'; • Provides a 'coordinated approach to approvals for the use and development of coastal Crown land'. <p>Catchment and Land Protection Act 1994 (Vic) ('CLPA') The CLPA establishes Catchment Management Authorities which have the power to create Regional Catchment Strategies (see 'East Gippsland' section for an example).</p>

Climate Change Act 2010 (Vic) ('CCA')

Under the recently introduced *Climate Change Act 2010* (Vic), decision-makers making a decision or taking an action that is authorised under an Act specified in Schedule 1 to the CCA must 'have regard to' the 'potential impacts of climate change relevant to the decision or action' (s. 14). Acts relevant to coastal planning contained in the Schedule include the CLPA and the CMA.

Policy Framework:

Victorian Coastal Strategy 2008 ('VCS')

The *Victorian Coastal Strategy 2008* is established under the *Coastal Management Act 1995* (Vic). The Strategy represents the Victorian Government's coastal management policy – which acts as a guide for planning authorities and a broad 'framework for the development and implementation of other specific strategies and plans such as Coastal Action Plans, management plans and planning schemes' (*Victorian Coastal Strategy 2008*). The Strategy establishes policies, with associated 'actions' to be taken.

For example, the Strategy adopts a policy that 'all plans prepared under the Coastal Management Act 1995 and strategies relating to the coast, including Coastal Action Plans and management plans consider the most recent scientific information on the impacts of climate change'. The Strategy then dictates numerous 'actions' which must be taken by specified government departments in order to pursue the policies outlined in relation to coastal planning for the impacts of climate change (such as sea-level rise).

These 'actions' include:

- Establishing an 'appropriate mechanism and/or instrument to support policy and decision-making in relation to the risks and impacts of climate change';
- Working through 'national and state processes to develop consistent national benchmarks for coastal vulnerability assessments';
- Developing 'comprehensive vulnerability assessments for the whole Victorian coast (through the Future Coasts program) to provide guidance to all planners and managers as to how to apply the information for decision-making';
- Developing a 'methodology to provide guidance to all planners and managers as to how to apply the policy of planning 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 for decision-making' (*Victorian Coastal Strategy 2008*).

The Strategy makes reference to the 'Future Coasts' program (see below), and dictates that once 'vulnerability assessments' have been completed under the program, the following actions should be taken by the relevant departments:

- Investigating 'opportunities within the Victoria Planning Provisions to address climate change risks and impacts and, if necessary investigate the development of new provisions to manage coastal climate change risks and impacts' (Relevant Departments: DPCD, LG, & DSE);
- Developing 'appropriate adaptation strategies to support local and regional level decision-making in relation to the risks and impacts of climate change to the coastline' (Relevant Departments: DSE, DPCD & RCB).

Numerous actions have already been undertaken, including:

- The DPCD has amended the State Planning Policy Framework (Amendment VC 52) to incorporate the sea-level rise benchmarks set by the Strategy (see benchmarks below);

- A Ministerial Direction (2008) has been released which requires planning authorities to take into consideration the impacts of climate change (especially, sea level rise) when they are considering rezoning coastal land from 'non-urban land' to urban use (DPCD 2008b). All planning authorities must take this into consideration, due to the requirement in s. 12 (2) (a) of the *Planning and Environment Act 1987* (Vic) which requires planning authorities (making an amendment or planning scheme) to have regard to the Minister's directions;
- A General Practice Note has been released to further guide planning authorities in the implementation of the requirements outlined in the Ministerial Direction (DPCD 2008a);
- The DPCD is working with the DSE on the Future Coasts Program to enhance understanding of the impact of climate change on the coastal environment with a view to providing decision-makers with better guidance and information;
- A Coastal Climate Change Advisory Committee has been established to 'advise the Minister for Planning how Victoria's land-use planning and development controls can best support the Victorian Government's policy for managing the coastal impacts of climate change' (DPCD 2011a).

State Planning Policy Framework

According to the Victorian Planning and Environmental Law Association (2010), the general purpose of the SPPF 'is to inform planning authorities and responsible authorities of those aspects of State planning policy that are to be taken into account and given effect to in planning decisions and in the administration of their respective planning schemes'. The *Victorian Coastal Strategy 2008* is 'given effect in Planning Schemes through clause 15.08 'Coastal Areas' of the State Planning Policy Framework' (Central Coast Board 2009).

Coastal Action Plans

The *Coastal Management Act 1995* (Vic) provides for the establishment of Coastal Action Plans (CAPs), prepared by Regional Coastal Boards either at their own discretion or at the direction of the Minister or the Victorian Coastal Council (s.22). CAPs provide 'a key mechanism for the implementation' of the *Victorian Coastal Strategy 2008* (Coastlinks Victoria 2011). A list of current CAPs can be found at:

<http://www.coastlinks.vic.gov.au/coastalplans.htm#cap>.

Coastal Management Plans

Coastal Management Plans are also provided for under the CMA (s. 30), to enable more localised management of a particular coastal area. However, all management plans must be consistent with any relevant CAP and the broader VCS (s. 31).

Coastal Spaces Project

The Coastal Spaces project is a State Government initiative which aims to '[i]mprove and clarify strategic planning for sustainable development in coastal Victoria', '[i]mprove the application of planning and environment tools in coastal areas' and 'build the capacity of local governments and other stakeholders to apply Victorian Government policy' (DSE 2005: i).

Victorian Coastal Climate Change Hazard Guidelines

The Future Coasts Program is currently working to develop 'Victorian Coastal Climate Change Hazard Guidelines', which are expected to be released this year. The Guidelines are intended to 'provide guidance for improved and consistent consideration of coastal hazards and risk assessment in decision-making processes in relation to coastal land use, development and management, and the influence that climate change will have based on current information' (Future Coasts 2010: 2).

Planned/Proposed Legal/Policy Reform	<p>Victorian Planning System Ministerial Advisory Committee ‘The Minister for Planning has established an Advisory Committee to review the planning system in Victoria’ (DPCD 2011b).</p> <p>Policy reform – Future Coasts Program The Future Coasts Program (led by the DSE and the DPCD) is currently ‘working with other government departments to prepare recommendations for a policy framework to guide planning for and managing the impacts of climate change on Victoria’s coast’ (State Government of Victoria 2011). This proposed policy framework would operate in addition to the existing broader policy framework in place for coastal planning (discussed above).</p> <p>Climate Change Adaptation Plan Under the recently introduced Victorian <i>Climate Change Act 2010</i>, the Minister for Environment and Climate Change must prepare a Climate Change Adaptation Plan by 31 December 2012 (and a new plan every four years after that date) which sets out ‘an outline and risk assessment of the potential impacts of climate change on various regions of Victoria specified in the plan’ and ‘a statement of the Government of Victoria’s state-wide priorities and strategic responses for adaptation to potential impacts of climate change’ (s. 16).</p>
Benchmarks/Targets	<p>The <i>Victorian Coastal Strategy 2008</i> has set a sea-level rise planning benchmark for Victoria based upon the IPCC’s sea level rise projections. A sea level rise of ‘not less than 0.8 metres by 2100’ must be planned for by relevant planning authorities. This benchmark will be reviewed ‘as scientific data becomes available’ and may be ‘superseded by national benchmarks’ (<i>Victorian Coastal Strategy 2008</i>).</p>
Other Relevant Initiatives	<p>Future Coasts Program The Future Coasts Program (discussed above) is a State Government program, comprised of numerous initiatives designed to enhance Victoria’s ability to respond to the coastal challenges posed by climate change. The program involves:</p> <ul style="list-style-type: none"> - ‘Undertaking a state-wide assessment of the physical impacts of sea level rise and storms on Victoria’s coast’; - Undertaking ‘a number of local coastal climate change assessment case studies in partnership with local government and other coastal agencies’; - Developing guidelines for ‘decision makers who are responsible for planning and managing Victoria’s coasts’; - Creating a ‘database of the state’s coastal assets...to improve access to coastal asset information for state, regional and local coastal practitioners’ (State Government of Victoria 2011). <p>Coastal Climate Change Advisory Committee (CCAC) A Coastal Climate Change Advisory Committee has been established (pursuant to the <i>Planning and Environment Act 1987</i> (Vic)) to ‘advise the Minister for Planning on how Victoria’s land-use planning and development controls can best support the [Victorian Coastal Strategy 2008] for managing the coastal impacts of sea level rise’ (Department of Planning and Community Development 2011a).</p>
Areas for Improvement	<p>Need to address both pre-existing and future development on the coast The Victorian Planning and Environmental Law Association (2010) (VPELA) has highlighted numerous areas for improvement of Victoria’s coastal planning legal/policy framework’s response to the challenges posed by climate change. In relation to the <i>Victorian Coastal Strategy 2008</i>, VPELA (2010: 39) has noted that the Strategy is only ‘directed to decisions concerning <i>future</i> development’ (emphasis added). VPELA argues that this approach is problematic given the fact that ‘[t]here are many areas of the coast that are already developed that are at risk from the effects of climate change – most notably sea level rise’ (VPELA 2010: 39).</p> <p>Other areas for improvement of the policy/legal framework surrounding the Government’s response are highlighted by VPELA in their Briefing Report prepared for the Coastal Climate Change Advisory Committee (link below) and Elisa de Wit and Rachael Webb (2010), ‘Planning for coastal climate</p>

	<p>change in Victoria', <i>Environmental and Planning Law Journal</i>, 27 (3): 23-35.</p> <p>Need for a Coastal Growth Boundary</p> <p>In their joint submission (with the Victorian National Parks Association Inc) to the Coastal Climate Change Advisory Committee's Issues and Options Paper 2010, the Environment Defenders Office (Vic) outlined a number of areas for improvement, including the proposed establishment of 'a Coastal Growth Boundary around existing settlements as soon as possible (which takes account of the need for settlements to move as a result of sea level rise) to define the limit of coastal settlements and thereby balance biodiversity protection and development priorities' (EDO 2010: 3).</p> <p>Lack of a sense of urgency at the local government level</p> <p>Natasha Vasey-Ellis (2009: 167) argues that 'no sense of urgency has filtered down to the statutory level of planning in recent years, and only guidance by the state will ensure that this happens in a consistent manner in the future'. She also argues that local councils need to be provided with more support from the State Government to handle their 'climate change vulnerabilities' through the provision of 'additional resources and more focused [Integrated Coastal Management]' (Vasey-Ellis 2009: 167). However, it must be noted that Vasey-Ellis' argument is based upon survey responses from Victorian planning officials collected in 2007.</p>
Relevant Links	<ul style="list-style-type: none"> Central Coast Board, http://www.ccb.vic.gov.au/index.htm Coastlinks Victoria (2011), http://www.coastlinks.vic.gov.au/index.htm (this site acts as a coastal and marine portal for Victoria) Department of Planning and Community Development (2011a), 'Coastal Climate Change Advisory Committee', http://www.dpcd.vic.gov.au/planning/panelsandcommittees/current-planning-panels-and-committees/coastal-climate-change-advisory-committee Department of Planning and Community Development (2011b), 'Victorian Planning System and Ministerial Advisory Committee', http://www.dpcd.vic.gov.au/planning/panelsandcommittees/current-planning-panels-and-committees/victorianplanningsystemadvisorycommittee Department of Planning and Community Development (2008a), 'General Practice Note: Managing coastal hazards and the coastal impacts of climate change', http://www.dpcd.vic.gov.au/_data/assets/pdf_file/0003/41727/Coastal_hazards_and_climate_change.pdf Department of Planning and Community Development (2008b), <i>Direction No. 13 - Managing Coastal Hazards and the Coastal Impacts of Climate Change</i>, http://www.dpcd.vic.gov.au/_data/assets/pdf_file/0011/43040/dir13.pdf Department of Sustainability and the Environment (2005), <i>Coastal Spaces Inception Report</i> (2005), http://www.dse.vic.gov.au/_data/assets/pdf_file/0008/109484/CoastalSpacesInceptionReport.pdf Environment Defenders Office (Vic) Ltd (2010), <i>Submission by Environment Defenders Office (Vic) Ltd and Victorian National Parks Association Inc - Coastal Climate Change Advisory Committee Issues and Options Paper February 2010</i>, http://www.edo.org.au/edovic/policy/edo_vnpa_cccac_submission.pdf Future Coasts (2010), 'Victorian Coastal Climate Change Hazard Guidelines' http://www.climatechange.vic.gov.au/_data/assets/pdf_file/0008/77948/VictorianCoastalClimateChangeHazardGuidelinesProjectSummaryDocument2010.pdf Natasha Vasey-Ellis (2009), 'Planning for Climate Change in Coastal Victoria', <i>Urban Policy and Research</i> 27 (2): 157-169, http://pdfserve.informaworld.com/422788_731193560_911852986.pdf State Government of Victoria (2011), 'Future Coasts Program', http://www.climatechange.vic.gov.au/adapting-to-climate-change/future-coasts State Government of Victoria (2008), <i>Victorian Coastal Strategy 2008</i>, http://www.vcc.vic.gov.au/2008vcs/home.htm Victorian Coastal Council, http://www.vcc.vic.gov.au/about.htm Victorian Planning and Environmental Law Association (2010), 'Reference Group Briefing Report: Prepared for Coastal Climate Change Advisory Committee', http://www.dpcd.vic.gov.au/_data/assets/pdf_file/0004/34375/VPELA_Briefing_Paper.pdf
Useful Contact/s	<p>Simon Haber, Senior Policy Officer, Department of Planning and Community Development (Vic): simon.haber@dpcd.vic.gov.au / (03) 9637 9217.</p>

Government	Western Australia
Jurisdiction over Coastal Planning	The Western Australian State Government and local governments share jurisdiction over coastal management. However, local governments are the primary decision-makers in relation to planning issues.
Coastal Planning Authority/Authorities	<ul style="list-style-type: none"> ▪ Department of Planning (DoP) ▪ Western Australian Planning Commission (WAPC) – WAPC is the ‘statutory authority with statewide responsibilities for urban, rural and regional land use planning and land development matters’ (DoP 2011). ▪ Minister for Planning, Culture and the Arts ▪ Department of Environment and Conservation (DEC)
Legislative/Policy Framework	<p><u>Legislative Framework:</u></p> <p>Planning and Development Act 2005 (WA):</p> <ul style="list-style-type: none"> - Establishes the WAPC; - Provides for the creation of State planning policies; - Provides for the creation of Region planning schemes and Local planning schemes. <p><u>Policy Framework:</u></p> <p>Environment and Natural Resources Policy (SPP2)</p> <p>The ‘broad environment and resource management policies for sustainability’ in WA are set out under the Environment and Natural Resources Policy (SPP2). These include requirements to ‘ensure use and development on or adjacent to the coast is compatible with its future sustainable use’ and to ‘take into account the potential for impacts from changes in climate and weather on human activities and cultural heritage including coastal and urban communities...’ (WAPC 2003: 2051).</p> <p>State Coastal Planning Policy (SPP2.6)</p> <p>The State Coastal Planning Policy (SPP2.6) applies across the state of WA and is intended to act as guidance for the WAPC and other relevant planning authorities, including local governments (WAPC 2006: 2067). One of the aims of the Policy is 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’ (WAPC 2006: 2064).</p> <p>Schedule One of the Policy contains ‘Coastal Development Setback Guidelines for Physical Processes’ which ‘provide a setback that protects development from coastal processes’ by <i>inter alia</i> ‘allowing for global sea level rise’ (WAPC 2006: 2068). One of the three factors to be considered in calculating a coastal processes setback is the ‘distance to allow for sea level change’:</p> <p>‘(S3) Distance to Allow for Sea Level Change</p> <p>The setback to allow for sea level rise is based on the mean of the median model of the latest Assessment Report of the IPCC Working Group (currently, the <i>Third Assessment Report of the Intergovernmental Panel on Climate Change Working Group</i>, January 2001). The vertical change predicted by the current model between the years of 2000 and 2100 is 0.38 metres. A multiplier of 100, based on the Bruun Rule shall be used and gives a value for S3 = 38 metres for sandy shores. For other shore types, S3 shall be assessed in regard to local geography’ (WAPC 2006: 2070).</p>

	<p>As noted by Charlie Bicknell in the 'Sea Level Change in Western Australia: Application to Coastal Planning Report' (DoT 2010: 1), the sea-level rise projections cited in the Policy have since been revised by the IPCC and the CSIRO. For this reason, Bicknell argued that the 0.38 m sea level rise factor included within the Policy was no longer consistent with the guidance provided by the IPCC and CSIRO and should therefore be revised in consistency with the IPCC's most recent report (DoT 2010: 17).</p> <p>Bicknell also recommended that 'a vertical sea level rise of 0.9 m be adopted when considering the setback distance and elevation to allow for the impact of coastal processes over a 100 year planning timeframe (2010 to 2110)' and that 'for planning timeframes beyond 100 years that a vertical sea level rise of 0.01 m/year be added to 0.9 m for every year beyond 2110' (DoT 2010: 18).</p> <p>The recommended revisions to the Policy were made in the 'Position Statement: State Planning Policy No. 2.6 State Coastal Planning Policy Schedule 1 Sea Level Rise' released by the WAPC, which makes the following change to Schedule One:</p> <ul style="list-style-type: none"> ▪ 'SLR increase to 0.9m to 2110, based upon IPCC AR4 (scenario A1FI) and CSIRO 2008' (DoP 2010). <p>The sea level rise benchmark outlined in the Position Statement applies, until the review of SPP2.6 is completed (DoP 2010).</p>
Planned/Proposed Legal/Policy Reform	The State Coastal Planning Policy (SPP2.6) is currently under review by the WAPC and the Department of Planning.
Benchmarks/Targets	<ul style="list-style-type: none"> ▪ <u>Current benchmark</u> (pending review of SPP2.6): A vertical sea level rise of 0.9 m must be taken into account when planning authorities consider the 'setback distance and elevation' for new developments to allow for the impact of coastal processes over a 100 year planning timeframe (i.e. 2010-2110). ▪ Benchmarks may be reviewed in light of new sea level rise projections/developments in climate change science.
Areas for Improvement	<p>Bicknell (pers. comm., 2011) argues that:</p> <p>'Currently the most difficult planning decisions are those which relate to the redevelopment of existing developed areas close to the coast which are very likely to be impacted by sea level rise. There is certainly room to improve the clarity and strength of our existing planning policies for these developments, and this has been acknowledged by the DoP and is being incorporated into their current review of SPP2.6.'</p>
Relevant Links	<ul style="list-style-type: none"> ▪ Department of Planning (2011), 'About the WAPC', http://www.planning.wa.gov.au/The+planning+system/About+Planning+WA/default.aspx ▪ Department of Planning (2010), 'Position Statement - State Planning Policy No. 2.6 State Coastal Planning Policy Schedule 1 Sea Level Rise', Western Australian Planning Commission - Position Statement, http://www.planning.wa.gov.au/Position_Statement_SPP2_6_Final_WAPC.pdf?id=2380 ▪ Department of Transport (2010), <i>Sea Level Change in Western Australia: Application to Coastal Planning</i>, http://www.planning.wa.gov.au/Sea_Level_Change_in_WA_Rev0_FINAL.pdf?id=2370 ▪ Western Australian Planning Commission (2006), <i>State Coastal Planning Policy</i>, Statement of Planning Policy No. 2.6, http://www.planning.wa.gov.au/Plans+and+policies/Publications/Downloads_GetFile.aspx?id=139 ▪ Western Australian Planning Commission (2003), <i>Environment and Natural Resources Policy</i>, Statement of Planning Policy No. 2, http://www.planning.wa.gov.au/Plans+and+policies/Publications/Downloads_GetFile.aspx?id=134
Useful Contact/s	Charlie Bicknell , Senior Coastal Engineer, WA Department of Transport – charlie.bicknell@transport.wa.gov.au Ph: 0429 683 975 / (08) 9216 8923

Government	Clarence City Council (Tas)
Jurisdiction over Coastal Planning	Clarence City Council (CCC) has jurisdiction over planning in the Council area. Accordingly, the CCC has established the Clarence Planning Scheme.
Legislative/Policy Framework	<p>Clarence Planning Scheme 2007</p> <p>The Clarence Planning Scheme governs planning in the Council area. The Scheme came into operation in 2008, and the assessment of applications under the Scheme is regulated by the <i>Land Use Planning and Approvals Act 1993</i> (Tas) (CCC 2011). One of the objectives of the Scheme is to ‘ensure that the use and development of coastal areas does not increase risk from natural processes’ (CCC 2007: 22). In furtherance of this objective, the Scheme contains a number of ‘overlays’ which ‘provide additional controls that respond to specific issues that may affect the land, such as heritage or coastal management’ (CCC 2007: iii). Three overlays are relevant to planning for sea level rise:</p> <ul style="list-style-type: none"> ▪ <u>‘Subject to Inundation Overlay’</u> – includes the requirement that ‘mitigation measures [for inundation] 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’ (CCC 2007: 168 [7.2.5 (c)]). The <i>Climate Change Impacts on Clarence Coastal Areas Report</i> (discussed below) explains that ‘the boundary of the overlay has been based on records of historic flood events and does not indicate potential flood extent from higher sea levels’ (CCC 2009a: 20). ▪ <u>‘Coastal Management Overlay’</u> – includes the requirement that development in coastal areas should ‘have regard to any coastal hazard...’ (CCC 2007: 170 [7.3.4 (a)]). However, the <i>Climate Change Impacts on Clarence Coastal Areas Report</i> notes that the Overlay ‘does not at this time recognise the way in which these landforms and ecosystems will respond to sea level rise and climate change by progressively moving inland, where possible’ (CCC 2009a: 21). ▪ <u>‘Sea Level Rise and Storm Surge Overlay’</u> – the SLR and SS Overlay applies to ‘coastal areas’ identified in a report produced in 2004 by Chris Sharples titled ‘Indicative Mapping of Tasmanian Coastal Vulnerability to Climate Change and Sea Level Rise: Explanatory Report’ (the Report was subsequently updated/expanded in 2006, link below). One of the stated purposes of the Overlay is to ‘control impacts on coastal infrastructure and development from sea level rise and storm surge’ (CCC 2007: 171 [7.4.1 (b)]). A permit is required for all use and development in the areas to which the Overlay applies (CCC 2007: 171 [7.4.3]). A number of specific direction requirements are provided in the Overlay, including the requirements that ‘suitable mitigation measures are to be used dependent upon the nature and assessable risk of the hazard’ and that the CCC and ‘other relevant bodies should be indemnified against future actions arising from the effects of sea level rise and storm surge activity where necessary’ (CCC 2007: 172 [7.4.6 (a)/(b)]). As noted in the <i>Climate Change Impacts on Clarence Coastal Areas Report</i>, the ‘requirements do not specify a specific solution but take a performance based approach to assessment and approval. In the absence of specified solutions, the onus is on the applicant to assess risks and devise acceptable solutions’ (CCC 2009a: 19). <p>NB: Other relevant legislation/policy exists.</p>
Planned/Proposed Legal/Policy Reform	The draft amendments to the Planning Scheme proposed in Appendix E of the <i>Climate Change Impacts on Clarence Coastal Areas Report</i> were scheduled to be considered by the Tasmanian Planning Commission at a hearing on 20 th July 2011 (Ford pers. comm., 2011). The Commission will decide whether to approve the amendments in their current form, approve a modified version of the amendments or refuse the amendments altogether (Ford pers. comm., 2011). The Commission has not yet made its decision (as of 22 July 2011).

	<p>The amendments proposed in the Climate Change Impacts Report include:</p> <ul style="list-style-type: none"> ▪ An amendment to the types of ‘overlay’ included in the Scheme. The Report proposes that four coastal hazard overlays should be included (Inundation hazard, Erosion hazard, Storm surge hazard and Septic tank high water table hazard) (CCC 2009a: Appendix E). ▪ Amendments to the various overlays already included in the Scheme, to incorporate considerations such as sea level rise benchmarks (i.e. a sea level rise of 0.3m above 1990 levels by 2050 and a 0.9m rise above 1990 levels by 2100).
Benchmarks/Targets	<p>There are no official benchmarks/targets for sea-level rise planning in the Clarence area. However, the <i>Climate Change Impacts on Clarence Coastal Areas Report</i> (discussed below) does provide a comprehensive overview of the risks to coastal areas in the Clarence area and explores a range of possible adaptation management options. Moreover, as mentioned above, the Planning Scheme requires that sea level rise must be taken into consideration for development occurring in areas identified in the 2004 version of the Sharples report.</p>
Other Relevant Initiatives	<p>Climate Change Impacts on Clarence Coastal Areas Report</p> <p>Funded by the Tasmanian State Emergency Service, the CCC, the Australian Government and the federal Department of Climate Change, the Climate Change Impacts on Clarence Coastal Areas Report (‘Climate Change Impacts Report’) is a comprehensive study into the climate change impacts ‘both at present and for climate change scenarios to 2050 and 2100 for 18 coastal locations in Clarence’ (CCC 2009a: 113). The report considers numerous coastal adaptation management options for the coastal locations considered.</p> <p>The report explains that the report’s conclusions can be ‘used to amend the Planning Scheme for controls on development in areas identified as being subject to coastal hazards’ (CCC 2009a: 113).</p> <p>The report makes a number of statements regarding governmental responsibility for risk associated with sea level rise:</p> <ul style="list-style-type: none"> ▪ ‘As it stands, Council has no clear statutory obligation to protect established private property that becomes at risk from changed conditions, provided the original approval for development was consistent with the then prevailing Planning Scheme and that the Scheme was prepared with due regard to the known circumstances at that time’ (CCC 2009a: 18); ▪ ‘Council has clear obligations to consider risks that may apply to new development and reflect this in the Planning Scheme’ (CCC 2009a: 19). ▪ ‘It is likely to be well beyond the means of Clarence City Council to meet the costs of risk management and reduction measures on its own, and equally inequitable for coastal councils to bear the costs of changes brought on by global changes’ (CCC 2009a: 34). <p>The report also makes a number of recommendations, including:</p> <ul style="list-style-type: none"> ▪ A recommendation not to change land use zoning ‘specifically in response to climate change risk’ (CCC 2009a: 32); ▪ A recommendation that existing land owners who ‘were not aware of the developing risk and are not in control of the causes of this developing risk’ should have a period of 25 years where ‘the cost of risk reduction and management measures [are] borne by the wider community’ (CCC 2009a: 35). However, after this time, ‘the cost of further risk management measures would be the responsibility of those that benefit from coastal use or occupation’ (CCC 2009a: 35); ▪ A recommendation that for ‘existing property subject to increasing risk...triggers be identified that would require an adaptation response to keep risks at acceptable levels. Triggers would be invoked where risks exceed agreed levels (CCC 2009a: 35). <p>The approach advocated by the Report is an approach based upon responding to ‘actual changes in risk as the sea level rises or erosion progresses’, rather than an approach based on ‘events forecast for the distant future’ (CCC 2009a: 36).</p>

	<p>Local Government Association of Tasmania Climate Change Toolkit The Local Government Association of Tasmania has developed an online climate change governance resource for local governments in Tasmania called the 'Climate Change Toolkit': http://www.lgat.tas.gov.au/site/page.cfm?u=542</p> <p>Sea Level Rise Monitoring Sea level rise on Tasmanian beaches has been monitored by the TASMARC program since 2004 (CCC 2009b: 3).</p>
Relevant Links	<ul style="list-style-type: none"> Chris Sharples (2006), <i>Indicative Mapping of Tasmanian Coastal Vulnerability to Climate Change and Sea-Level Rise: Explanatory Report</i>, 2nd ed, Consultant Report to Department of Primary Industries & Water, Tasmania, http://www.dpiw.tas.gov.au/inter.nsf/Attachments/PMAS-6RG5HZ/\$FILE/TasCoastVulnMapRept_2ndEd_broadband_1-body.pdf Clarence City Council (2011), 'Clarence Planning Scheme 2007', http://www.ccc.tas.gov.au/site/page.cfm?u=1074 Clarence City Council (2009a), Climate change impacts on Clarence coastal areas - Final Report, http://www.ccc.tas.gov.au/webdata/resources/files/CCICCA-Final-Report-A415375.pdf Clarence City Council (2009b), 'Climate Change Impacts on Clarence Coastal Areas: Sea Level Rise', Special Edition Newsletter, http://www.ccc.tas.gov.au/webdata/resources/files/CCC_News_Special_Edition-FINAL.pdf Clarence City Council (2007), <i>Clarence Planning Scheme</i>, http://www.ccc.tas.gov.au/webdata/resources/files/clarence_planning_scheme_2007_02_04_08.pdf Clarence City Council (2011), 'What is climate change adaptation?', http://www.ccc.tas.gov.au/site/page.cfm?u=1547 J T Carley, M J Blacka, W A Timms, M S Andersen, A Mariani, D S Rayner, J McArthur and R J Cox (2008), 'Coastal Processes, Coastal Hazards, Climate Change and Adaptive Responses for Preparation of a Coastal Management Strategy for Clarence City, Tasmania', Water Research Laboratory Technical Report 2008/04, http://www.ccc.tas.gov.au/site/page.cfm?u=1547
Useful Contact/s	<p>Climate Change Officer - Clarence City Council Phone: (03)6245 8775 Email: fpribac@ccc.tas.gov.au</p> <p>Dan Ford (Strategic Planner) Clarence City Council Phone: (03) 6245 8622 Email: dford@ccc.tas.gov.au</p>

Government	Darwin (NT)
Jurisdiction over Coastal Planning	'The Northern Territory Government Department of Lands and Planning is responsible for administering the Northern Territory Planning Scheme which covers Darwin Municipality' (DCC 2011b). Darwin City Council (DCC) has responsibility for numerous aspects of coastal management, including responsibility for the development of a coastal management plan for the council area.
Legislative/Policy Framework	Northern Territory Planning Scheme – governs planning in Darwin City (see 'Northern Territory' section above). Local Government Act (NT)
Planned/Proposed Legal/Policy Reform	<p>Planned: Climate Change Policy The Darwin City Council released a policy paper in 2008, outlining 'Strategic Directions' for the City (DCC 2008). One of the identified policy 'outcomes' was for the DCC to 'develop and implement a climate change policy...' (DCC 2008: 16). DCC has not yet (mid 2011) developed a climate change policy.</p> <p>Planned: Coastal Management Plan/Foreshore Management Plan Another policy outcome identified under the 2008 policy paper is the aim of developing and implementing a 'coastal erosion management plan' (DCC 2008: 16 [4.1.2]). DCC has not yet developed a coastal erosion management plan. Action Plan 8 of the DCC's <i>Environmental Management Plan</i> highlights the need to 'develop and implement a Foreshore Management Plan' designed to address the problems associated with coastal erosion (DCC 2005). DCC has not yet developed a Foreshore Management Plan.</p> <p>Consultation: 'Greater Darwin Region Land Use Plan – Towards 2030 Consultation Paper' The Northern Territory Government has released a consultation paper for the development of the 'Greater Darwin Region Land Use Plan – Towards 2030' which will 'guide development of the region to 2025' (Northern Territory Government 2011: 2). The Paper includes a section on climate change, which states that the 'Towards 2030 Land Use Plan supports the Northern Territory Climate Change Policy 2009' (Northern Territory Government 2011: 59) (see discussion of the policy in the 'Northern Territory' section above). The Paper also states that 'vulnerability mapping' is to be used 'to identify areas at high or severe risk of climate change impact such as rising sea level...and severe storm events in developing future areas' (Northern Territory Government 2011: 59).</p>
Benchmarks/Targets	There are currently no sea-level rise benchmarks in place in the Darwin region.
Other Relevant Initiatives	<p>Climate Change and Environment Section Established In 2009, DCC established a 'Climate Change and Environment Section' which has been placed in charge of the creation of the DCC's planned climate change policy (discussed above) (DCC 2011c).</p> <p>Member of the Cities for Climate Change Protection Program DCC is a member of the Cities for Climate Change Protection Program (DCC 2011c).</p> <p>Investigation of Coastal Erosion In 2008, DCC 'commissioned an Investigation of Coastal Erosion' at specific coastal sites by 'staff from the Centre for Regional Climate Change Studies and the Centre for Geoinformatics Research and Environmental Assessment Technology at Southern Cross University' (DCC 2011a). As a consequence of this investigation, DCC has recognised the 'need for a Strategic Coastal Erosion Plan' (DCC 2011a). DCC (2011a) has sought funding from the Federal Government to develop a 'long term Strategic Coastal Erosion Management Plan' for the specific coastal sites investigated. It has also identified the need to evaluate the 'possible impacts of climate change on key areas of the coastline', including the effects of 'sea level rise on coastal erosion' (DCC</p>

	2011a).
Relevant Links	<ul style="list-style-type: none"> ▪ Darwin City Council (2011a), 'Investigation into Coastal Erosion', http://www.darwin.nt.gov.au/climate-change/land/coastal-erosion/investigation ▪ Darwin City Council (2011b), 'Planning and Development', http://www.darwin.nt.gov.au/work/planning-and-development ▪ Darwin City Council (2011c), 'Climate Change', http://www.darwin.nt.gov.au/climate-change/climate-change ▪ Darwin City Council (2008), 'Evolving Darwin: A dynamic, different and diverse city - Strategic Directions: Towards 2020 and beyond', http://www.darwin.nt.gov.au/sites/default/files/EvolvingDarwinTowards2020StrategicPlan.pdf ▪ Darwin City Council (2005), Environmental Management Plan, http://www.darwin.nt.gov.au/sites/default/files/EMP.pdf ▪ Northern Territory Government (2011), 'Greater Darwin Region Land Use Plan Towards 2030: Consultation Paper', http://www.nt.gov.au/lands/growth/gdr_2030/consultation_paper/documents/GreaterDarwinRegionLandUsePlan.pdf
Useful Contact/s	Darwin City Council - environment@darwin.nt.gov.au

Government	East Gippsland (VIC)
Jurisdiction over Coastal Planning	<p>The East Gippsland Shire Council (EGSC) has jurisdiction over coastal planning in the East Gippsland region.</p> <p>Relevant authorities include:</p> <ul style="list-style-type: none"> ▪ East Gippsland Shire Council – constitutes a planning authority for the purposes of local planning. ▪ East Gippsland Catchment Management Authority – ‘The Authority is one of ten Catchment Management Authorities (CMAs) throughout Victoria established under the Catchment and Land Protection Act 1994 and the Water Act 1988. The CMAs report to the Minister for Environment and Minister for Water’ (East Gippsland Catchment Management Authority 2011a). ▪ Gippsland Coastal Board – ‘The Gippsland Coastal Board (GCB) is one of three regional coastal boards formed under the Coastal Management Act 1995 reporting to the Minister for Environment and Climate Change...The Gippsland Coastal Board's principal role is to implement the Victorian Coastal Strategy, provide advice to the minister and the Victorian Coastal Council, and prepare and implement coastal action plans. Another key activity is facilitating improved coastal management through liaison with industry, government and the community’ (GCB 2011).
Legislative/Policy Framework	<p>For an understanding of the broader Victorian legislative/policy framework in which the East Gippsland planning framework operates, please refer to the ‘Victoria’ section above.</p> <p>East Gippsland Planning Scheme</p> <p>It is explained in the East Gippsland Planning Scheme (11.05-5; 12.02-1; 12.02-2) that planning in coastal areas must ‘consider as relevant’ the Victorian Coastal Strategy 2008 (DPCD 2011).</p> <p>As explained above (in the ‘Victoria’ section), the Victorian Coastal Strategy 2008 sets a sea-level rise planning benchmark for Victoria which requires relevant planning authorities to take into account a sea-level rise of ‘not less than 0.8 metres by 2100’.</p> <p>The Planning Scheme contains a section dedicated to ‘Climate change impacts’ (13.01) and in particular, ‘Coastal inundation and erosion’ (13.01-1). A number of ‘strategies’ are listed to aid in the achievement of the objective of planning for and managing the ‘potential coastal impacts of climate change’:</p> <ul style="list-style-type: none"> ▪ ‘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’. <p>It is further explained that coastal planning for climate change must ‘consider as relevant’ a number of policy guidelines including the Victorian Coastal Strategy and the coastal climate change vulnerability mapping currently being undertaken through the Future Coasts Program (discussed above in the ‘Victoria’ section).</p>

The Scheme also contains a 'Land Subject to Inundation Overlay' (44.04) which provides planning authorities with guidance in relation to the assessment of development in areas subject to flooding/flooding risks.

Lakes Entrance Business District Interim Control

The Victorian Department of Planning and Community Development (in partnership with the EGSC, the East Gippsland Catchment Management Authority and the Department of Sustainability and the Environment) has introduced an 'Interim Control' planning measure which applies to 'flood-prone areas of the Lakes Entrance Business District' (EGSC 2011a). The aim of the Interim Control is to 'ensure that all development within the district allows for a sea-level rise in line with the *Victorian Coastal Strategy 2008*, which sets out the State Government's policy requiring that we must plan for at least 0.8 metres of Sea Level Rise by the year 2100' (EGSC 2011a). Accordingly, the Interim Control requires that all 'proposals for land development within the Lakes Entrance Business District as identified in the Interim Control must be approved by the East Gippsland Shire Council in consultation with the East Gippsland Catchment Management Authority' (EGSC 2011a).

The Interim Control was developed on the basis of the 'latest local-level flood modelling provided by the East Gippsland Catchment Management Authority' which identified the District as being 'particularly vulnerable' to the 'risks associated with rising sea levels' (EGSC 2011a).

The Interim Control is provided for by clause 52.03 of the East Gippsland Planning Scheme (through an 'incorporated document'). However, the Control is expected to expire on 31 December 2011, or until such time as the Gippsland Lakes Inundation Management Project (a long-term planning response to the issue) comes into operation (EGSC 2011a).

East Gippsland Regional Catchment Management Strategy 2005-2010

The East Gippsland Planning Scheme contains a section (13.02-1) on 'Floodplain Management' which explains that floodplain management planning must 'consider as relevant' a number of guidelines including 'Regional catchment strategies'. The East Gippsland Regional Catchment Management Strategy applies in the East Gippsland region, developed by the East Gippsland Catchment Management Authority. The Strategy is completed every 5 years and acts as the 'principle strategic document setting regional priorities for the maintenance of [East Gippsland's] natural resources' (EGCMA 2011b).

The Strategy addresses the impacts of climate change on the East Gippsland region and the associated management responsibilities:

- 'The long-term impact of rises of sea level on estuaries is unknown. Currently the Gippsland Lakes are cut off from the sea by a sandy barrier except at the artificial entrance at Lakes Entrance. With rising sea levels it is possible that the barrier separating the Gippsland Lakes would be breached and the result could be more seawater entering the Lakes and further changes to the ecosystem. A similar scenario is possible for the other estuaries';
- 'At this stage there is limited understanding of, or capacity to influence, climate change. The major actions planned are to assess its probable consequences and then to develop appropriate risk management strategies. Because the amelioration of climate change is a national and international level issue, the regional response is to develop appropriate risk management strategies to manage possible sea level rises are proposed and will be incorporated into Zones and Permissible Uses in Shire Planning Schemes' (East Gippsland Catchment Management Authority 2005: 121).

	<p>Coastal Action Plans</p> <p>Victoria's Coastal Management Act 1995 (Vic) provides for the preparation of Coastal Action Plans by Regional Coastal Boards which land managers must take into account when carrying out their land management functions (s. 29).</p> <p>Relevant Coastal Action Plans and their associated relevant responses/aims in relation to climate change impacts include:</p> <ul style="list-style-type: none"> ▪ Gippsland Lakes Coastal Action Plan (1999) <ul style="list-style-type: none"> ○ '2.6.1 Update and periodically assess information on the effects of climate change on the Gippsland Lakes and catchment'; ○ '5.2.1 Take an adaptive and conservative approach when considering development which may be affected by future climate change or land subsidence' (GCB 1999). ▪ Integrated Coastal Planning for Gippsland – Coastal Action Plan (2002) <ul style="list-style-type: none"> ○ Highlights the threats posed by climate change to the Gippsland coast. ▪ Gippsland Estuaries Coastal Action Plan (2006) <ul style="list-style-type: none"> ○ 'Undertake further research and investigation into climate change impacts across Gippsland' (GCB 2006: 35); ○ Results about the 'potential for subsidence of coastal areas' should be 'integrated with results from predicted impacts of climate change' (GCB 2006: 32). <p>Coastal Towns Design Framework Project</p> <p>The 'Coastal Towns Design Framework Project' is a Project led by the East Gippsland and Wellington Shire Councils (in association with the Department of Sustainability and Environment and the Gippsland Coastal Board) which involves the creation of Urban Design Frameworks for coastal towns in the region (EGSC 2007). Urban Design Frameworks 'provide strategic guidance for the future development of urban areas' and the establishment of 'an integrated design vision that involves the generation of ideas and the preparation of realistic design concepts based on community consultation, research and Analysis' (EGSC 2007). Frameworks are implemented through 'planning scheme changes, capital works projects and guidelines for private development' (EGSC 2007). They are designed to assist in the 'implementation of the Victorian Coastal Strategy and the Integrated Coastal Planning for Gippsland Coastal Action Plan' and provide 'detailed design guidance and planning provisions for the settlements and development pressure areas' (EGSC 2007).</p>
<p>Relevant Case Law</p>	<p><i>L Taip v East Gippsland Shire Council</i> [2010] VCAT 1222</p> <p>The recent Victorian Civil and Administrative Tribunal (VCAT) decision of <i>L Taip v East Gippsland Shire Council</i> [2010] VCAT 1222 is highly significant for coastal planning for climate change in the East Gippsland region and for the broader Victorian planning system.</p> <p><u>Case summary:</u></p> <p>Facts: 'The case concerns a decision by the East Gippsland Shire Council to grant a permit for residential development of eight dwellings in Lakes Entrance, which is a coastal regional town in Eastern Victoria that is subject to flooding. The land the subject of the permit application is in a Business 1 Zone and is affected by a Land Subject to Inundation Overlay (LSIO)' (Maddocks Lawyers 2010).</p> <p>Issue: 'A local resident sought review of Council's decision before VCAT. The core issue under consideration by VCAT was the impact of climate change risks on the site in question and its surrounds' (Maddocks Lawyers 2010).</p> <p>Findings:</p> <ul style="list-style-type: none"> ▪ 'In reviewing Council's decision, the Tribunal distinguished between two categories of risk, namely: flood risk [and] climate change risk.

	<p>With respect to the flood risk and associated issues that are required to be considered under the LSIO, VCAT considered that the proposed elevation of the dwellings in the permit application was a generally acceptable response to the flood risk' (Maddocks Lawyers 2010);</p> <ul style="list-style-type: none"> ▪ 'In contrast, the Tribunal considered that the design response in the permit application did not adequately address the wider climate change risks. Based on material tabled by the East Gippsland [Catchment] Management Authority (who objected to the grant of the permit) and a CSIRO assessment of climate change vulnerability, VCAT considered that, over time the depth of flooding would increase, flood events would become more frequent and there would be a corresponding increase in hazards to residents and emergency personnel. In the Tribunal's view, the elevation of the dwellings above projected water levels would not be sufficient to protect against the totality of climate change risks' (Maddocks Lawyers 2010); ▪ 'VCAT considered that there were acknowledged and accepted risks to the development in question from coastal climate change impacts', that 'not all of these risks had been properly considered and sought to be minimised' and that 'Council had effectively deferred the difficult decisions as to how the risks of climate change impacts in Lakes Entrance could be addressed and minimised' (Maddocks Lawyers 2010). <p>VCAT held that:</p> <p>'the proposal for this more intensive development of Lakes Entrance is one that is pre-emptive to the development of appropriate strategies to address climate change risks. This leads to the conclusion that to grant a permit fails to satisfy the purposes of planning in Victoria for intergenerational equity, sustainable, fair and socially responsible development and would not lead to an orderly planning outcome' (Victorian Civil and Administrative Tribunal 2010).</p> <p>It has been suggested that the main implication of the case for coastal planning is that 'if climate change risks – including sea level rise, storm surges and other associated coastal hazards – are likely to affect a proposed development in the future, approval of such development should be avoided until 'responses are put in place to address and minimise risks'' (Maddocks Lawyers 2010).</p>
Planned/Proposed Legal/Policy Reform	<p>Gippsland Lakes Inundation Management Project</p> <p>At present, the EGSC is developing the Gippsland Lakes Inundation Management Project which is intended to provide a more comprehensive understanding of the 'risks and likely impact of flooding as a result of climate change' in the region (EGSC 2011a). The Project will be led by a steering committee which 'brings together key agencies to work together to provide strategic and coordinated advice and planning for dealing with the impact of coastal climate change in East Gippsland' (EGSC 2010). The Project will involve the preparation of a strategy/strategies to address climate change impacts and the development of associated 'planning controls based on agreed strategy' (EGSC 2011a). The Project's strategies and planning controls will replace the Interim Control (discussed above).</p> <p>Adaptation Planning</p> <p>At the Development Industry Forum in 2010, it was explained that 'planning for 2100' in East Gippsland will involve the development of an 'adaptation plan' for the region and may include 'changes to the Planning Scheme' (EGSC 2010).</p>
Benchmarks/Targets	Coastal planning must plan 'for sea level rise of not less than 0.8 metres by 2100' (Victorian Coastal Strategy 2008; East Gippsland Planning Scheme).

**Other Relevant
Initiatives**

Gippsland Climate Change Study

The Gippsland Coastal Board is undertaking research into the effects of climate change for the future of Gippsland’s coast. In 2008, the GCB released a report titled ‘Climate Change, Sea Level Rise and Coastal Subsidence along the Gippsland Coast’ which outlines the ‘potential threats to assets and infrastructure in Gippsland and addresses issues [such as] erosion and sand transport’ (GCB 2008). The report also advocates for an ‘adaptive management’ approach which involves both pro-active and reactive policy measures (GCB 2008).

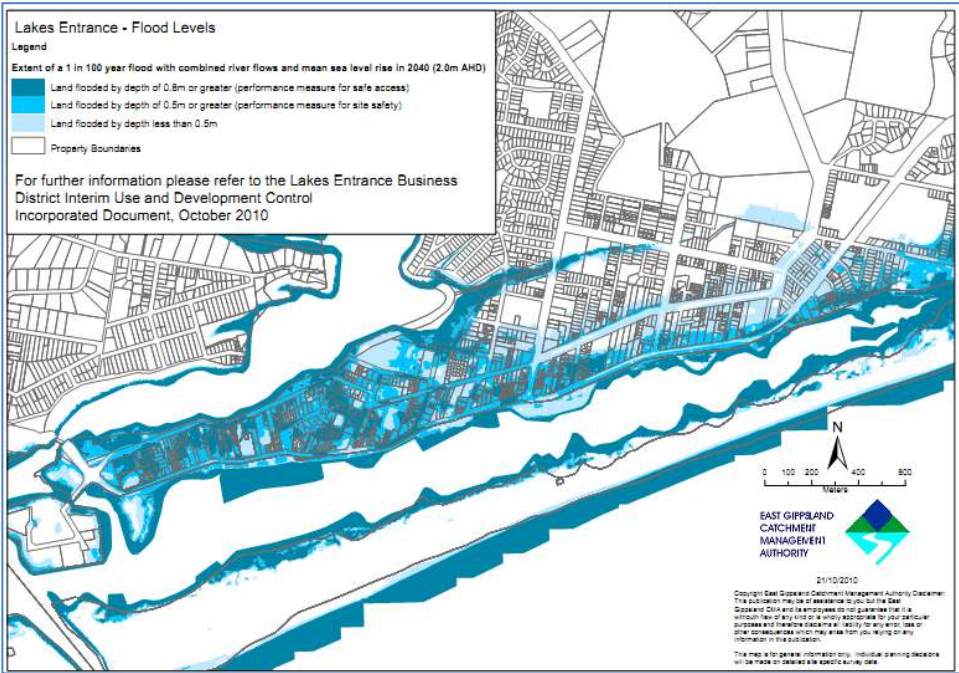
A report outlining ‘Climate Change in Eastern Victoria’ has also been prepared by the Commonwealth Scientific and Industrial Research Organisation (CSIRO) which determines ‘the impact of climate change on sea level heights and inundation around Corner Inlet and the Gippsland Lakes’ (CSIRO 2006).

International Council for Local Environmental Initiatives (ICLEI) Oceania Adaptive and Resilient Communities (ARC) Program

The EGSC is a participant in the International Council for Local Environmental Initiatives (ICLEI) Oceania Adaptive and Resilient Communities (ARC) program.

Flood level mapping (East Gippsland Catchment Management Authority)

Flood level mapping for the East Gippsland region is available from the East Gippsland Catchment Management Authority (example below).



Source: East Gippsland Catchment Management Authority (2010).

Relevant Links	<ul style="list-style-type: none"> ▪ Commonwealth Scientific and Industrial Research Organisation (2006), 'Climate Change in Eastern Victoria', http://www.gcb.vic.gov.au/documents/gipps_report_phase3_final.pdf ▪ Department of Planning and Community Development (2011), 'East Gippsland Planning Scheme', http://planningschemes.dpcd.vic.gov.au/eastgippsland/home.html ▪ East Gippsland Catchment Management Authority (2011a), http://www.egcma.com.au/ ▪ East Gippsland Catchment Management Authority (2011b), 'East Gippsland Regional Catchment Strategy (RCS)', http://www.egcma.com.au/inform.php?a=6&b=220&c=227 ▪ East Gippsland Catchment Management Authority (2010), 'Lakes Entrance – Flood Levels', http://www.egcma.com.au/file/Map%20of%20Lakes%20Entrance%20combined%20river%20and%20sea%20level%20rise%20100%20year%20flood%20extent%202040%20(2)_1.pdf ▪ East Gippsland Catchment Management Authority (2005), <i>The East Gippsland Regional Catchment Strategy 2005-2010</i>, http://www.egcma.com.au/file/EGRCS[1].pdf ▪ East Gippsland Shire Council (2011a), 'Lakes Entrance Interim Planning Control Information', http://www.egipps.vic.gov.au/page/page.asp?page_id=1858 ▪ East Gippsland Shire Council (2011b), 'Coastal Towns Design Framework Project', http://www.egipps.vic.gov.au/page/page.asp?page_id=519 ▪ East Gippsland Shire Council (2010), 'Coastal Climate Change and Planning in East Gippsland', Development Industry Forum Presentation, 8 September 2010, http://www.egipps.vic.gov.au/Files/Presentation_Developers_Forum.pdf ▪ East Gippsland Shire Council (2007), 'Lakes Entrance Urban Design Framework', http://www.egipps.vic.gov.au/files/udf/LakesEntranceUDFReport-noplans.pdf ▪ Gippsland Coastal Board (2011), http://www.gcb.vic.gov.au/about.htm ▪ Gippsland Coastal Board (2008), <i>Climate Change, Sea Level Rise and Coastal Subsidence along the Gippsland Coast</i>, http://www.gcb.vic.gov.au/sealevelrise/sealevelriseSubsidence.pdf ▪ Gippsland Coastal Board (2006), 'Gippsland Estuaries Coastal Action Plan', http://www.gcb.vic.gov.au/estuariescap/gippslandestuariescap.pdf ▪ Gippsland Coastal Board (2002), 'Integrated Coastal Planning for Gippsland - Coastal Action Plan', http://www.gcb.vic.gov.au/integratedcap/IntegratedCAP.pdf ▪ Gippsland Coastal Board (1999), 'Gippsland Lakes Coastal Action Plan', http://www.gcb.vic.gov.au/gippslandlakescap/gippslandlakescap.pdf ▪ Maddocks Lawyers (2010), 'VCAT's Decision on the Impact of Climate Change in <i>L Taip v East Gippsland Shire Council</i>: A Warning for Coastal Councils', Maddocks Sustainability and Climate Change Update, http://www.egipps.vic.gov.au/Files/Attachment5awarningforcoastcouncilsupdateaugust2010.pdf ▪ Victorian Civil and Administrative Tribunal (2010), '<i>Taip v East Gippsland SC</i> (includes Summary) (Red Dot) [2010] VCAT 1222', http://www.surfcoast.vic.gov.au/Council/Documents/Agendas/2010/Appendices%2025%20Aug%202010/1.1_Planning_Permits_Application_8_3_GOR_Aireys_Inlet_appendix3.pdf
Useful Contact/s	<p>East Gippsland Catchment Management Authority: (03) 5152 0600</p> <p>East Gippsland Shire Council: (03) 5153 9500.</p> <p>Gippsland Coastal Board: (03) 5152 0451</p>

Government	Gold Coast City Council (QLD)
Jurisdiction over Coastal Planning	The Gold Coast City Council (GCCC) has jurisdiction over land use planning in the GCCC Council area. Accordingly, the GCCC has established the Gold Coast Planning Scheme which governs development and planning in the area.
Legislative/Policy Framework	<p data-bbox="383 185 2184 217"><u>Legislative Framework:</u></p> <p data-bbox="383 256 2184 288"><i>Sustainable Planning Act 2009 (Qld)</i></p> <p data-bbox="383 293 2184 357">Provides for the establishment of regional plans which have statutory effect and prevail over local planning instruments to the extent of any inconsistency between them (<i>Sustainable Planning Act 2009 (Qld)</i>, s. 53).</p> <p data-bbox="383 400 2184 432">South East Queensland Regional Plan</p> <p data-bbox="383 437 2184 501">The South East Queensland Regional Plan is the primary planning instrument for the SEQ region, established under the <i>Sustainable Planning Act 2009 (Qld)</i> (DoLP 2010). The Plan contains policies related to climate change (discussed below).</p> <p data-bbox="383 544 2184 576"><u>NB:</u> Other relevant legislation exists.</p> <p data-bbox="383 616 2184 647"><u>Policy Framework:</u></p> <p data-bbox="383 687 2184 719">Queensland Coastal Plan 2011</p> <p data-bbox="383 724 2184 788">The Queensland Coastal Plan (discussed above in the ‘Queensland’ section) provides direction to QLD local councils regarding coastal management, and coastal climate change adaptation planning.</p> <p data-bbox="383 831 2184 863">Climate Change Strategy</p> <p data-bbox="383 868 2184 995">The GCCC endorsed the ‘Climate Change Strategy’ for the Gold Coast City area in 2009. One of the ‘Strategic Outcomes’ of the Climate Change Strategy is for Council to have a ‘planned climate change response that meets its statutory responsibilities’ (GCCC 2009: 8). One of the key areas for research highlighted in the Strategy is research dedicated to analysing the ‘potential risks to the city posed by a range of future climate change scenarios including sea level rise parameters occurring at a more rapid rate than anticipated’ (GCCC 2009: 12).</p> <p data-bbox="383 1038 2184 1070">Draft South East Queensland Climate Change Management Plan</p> <p data-bbox="383 1075 2184 1251">The Draft South East Queensland Climate Change Management Plan was released in 2009 by the Queensland Government for public consultation. The Draft Plan outlines ‘draft actions to implement the climate change policies of the South East Queensland Regional Plan 2009-2031’ (DoIP 2009a). The GCCC falls within the jurisdiction of the South East Queensland Regional Plan. The Draft Plan cites numerous climate change adaptation initiatives, including the South East Queensland Climate Adaptation Research Initiative (SEQCARI) which ‘is a three-year research initiative examining SEQ’s vulnerability to climate change’ (DoIP 2009a: 2).</p> <p data-bbox="383 1294 2184 1358">The Draft Plan aims to provide direction in relation to two policies from the South East Queensland Regional Plan (2009b) which are relevant to sea level rise planning in the region:</p> <ul data-bbox="427 1362 2184 1394" style="list-style-type: none"> ▪ ‘Reduce the risk from natural hazards, including the projected effects of climate change, by avoiding areas with high exposure and establishing

	<p>adaptation strategies to minimise vulnerability to riverine flooding, storm tide or sea level rise inundation, coastal erosion, bushfires and landslides' (DoIP 2009a: 14 [1.4.1]).</p> <ul style="list-style-type: none"> ▪ 'Planning Schemes and development decisions shall be in accordance with the Queensland Coastal Plan including the range of potential sea level rises' (DoIP 2009a: 14 [1.4.3]). <p>The Draft Plan is yet to be finalised. When the Plan is finalised however it will only act as a guide - unlike the South East Queensland Regional Plan, it is not a statutory instrument.</p>
Planned/Proposed Legal/Policy Reform	<p>A new 'Planning Scheme' is currently being developed which is expected to be implemented in late 2012 (GCCC 2011a). Earlier this year the Council released a 'Statement of Proposal' which outlined some of the proposed new Planning Scheme directions, including:</p> <p>'Continue to partner with State Government agencies to identify areas with potential risk, over the course of this century, to climate change-induced sea-level rise and storm surge and consider the role of the planning scheme in regulating new development in these areas' (GCCC 2011b: 15).</p>
Benchmarks/Targets	<p>The Climate Change Strategy operates on the presumption of a 'range of 18-79 centimetres increase in sea level by 2100'.</p> <p>In terms of benchmarks for sea-level rise in planning, the GCCC must take into account the benchmarks set by the QLD State Government (explained in the 'Queensland' section). The GCCC has also stated that it 'will be requiring developers to make an allowance for a sea level rise of 27 centimetres over the next 50 years and is including that provision in its hydraulic modelling' (GCCC 2011c).</p>
Other Relevant Initiatives	<p>Coastal Councils Adaptation Taskforce</p> <p>In 2011, the Local Government Association of Queensland established the 'Coastal Councils Adaptation Taskforce' which provides 'expert guidance to help councils and their communities work through planning and land use issues associated with climate change' (LGA 2011). In particular, the Taskforce is intended to guide local councils in their implementation of the <i>Queensland Coastal Plan</i> (LGA 2011).</p>
Relevant Links	<ul style="list-style-type: none"> ▪ Department of Infrastructure and Planning (QLD) (2009a), <i>South East Queensland Climate Change Management Plan: Draft for Public Consultation</i>, http://www.dlqp.qld.gov.au/resources/plan/SEQ/draft-climate-change-management-plan.pdf ▪ Department of Infrastructure and Planning (QLD) (2009b), <i>South East Queensland Regional Plan 2009-2031</i>, http://www.dlqp.qld.gov.au/resources/plan/SEQ/regional-plan-2009/seq-regional-plan-2009.pdf ▪ Department of Local Government and Planning (2010), 'South East Queensland Regional Plan', http://www.dlqp.qld.gov.au/regional-planning/regional-plan.html ▪ Gold Coast City Council (2011a), 'Planning Scheme Review Program', http://www.goldcoast.qld.gov.au/t_standard2.aspx?pid=8332 ▪ Gold Coast City Council (2011b), <i>Developing our Gold Coast: Bold Future Planning Scheme - Statement of Proposal</i>, http://www.goldcoast.qld.gov.au/attachment/planningscheme/planning-scheme_statement-of-proposal.pdf ▪ Gold Coast City Council (2011c), 'Floods - Frequently Asked Questions', http://www.goldcoast.qld.gov.au/t_standard2.aspx?pid=334 ▪ Gold Coast City Council (2009), <i>Climate Change Strategy 2009-2014</i>, http://www.goldcoast.qld.gov.au/attachment/environment/climate_strategy.pdf ▪ Local Government Association of Queensland (2011), 'Taskforce to Help Councils Deal with Risk of Climate Change', http://www.lgaq.asn.au/web/guest/news/-/asset_publisher/pG32/content/taskforce-to-help-councils-deal-with-risk-of-climate-change?redirect=%2Fweb%2Fguest%2Fnews

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Government	Gosford City Council (NSW)
Jurisdiction over Coastal Planning	Gosford City Council has planning jurisdiction over the localities falling within the Council area. Accordingly, the GCC prepares planning instruments and management plans under the relevant NSW legislation (such as the <i>Environmental Planning and Assessment Act 1979</i> (NSW), <i>Coastal Protection Act 1979</i> (NSW) and the <i>Local Government Act 1993</i> (NSW)). This includes the preparation of Coastal Zone Management Plans.
Legislative/Policy Framework	<p><u>Legislative Framework:</u></p> <p>Gosford City Centre Local Environmental Plan 2007 Under the LEP 2007, ‘consent must not be granted to development on land that is wholly or partly within the coastal zone unless the consent authority has considered’ <i>inter alia</i> ‘the effect of coastal processes and coastal hazards and potential impacts, including sea level rise on the proposed development and arising from the proposed development’ (s. 32 (2) (f)).</p> <p>Draft Gosford Local Environment Plan 2009 The Gosford Local Environment Plan 2009 is currently in draft form as it has not yet been approved by the Minister for Planning (GCC 2011c). The Plan is ‘based on the state-wide "Standard Instrument LEP" which has been mandated by the Department of Planning (DoP)’ (GCC 2011c). The NSW State Government’s ‘Standard Instrument LEP Template’ contains a ‘standard clause in relation to development within the coastal zone’ (GCC 2010a: 1). According to the GCC (2010a: 1), ‘The aim of this clause is to protect the coastal environment of the state and to implement the principles of the NSW Coastal Policy. It requires a number of matters to be considered, including climate change and the affect of sea level rise. It does not however have any specific directions in relation to zones or development controls to respond to climate change. Council's strategic climate change investigations need to progress further before specific development controls will be able to be drafted and inserted into the DLEP and DDCP. The strategic direction chosen by Council in consultation with the community will influence the type of land use planning required in the DLEP and DDCP [Draft Gosford Development Control Plan 2009]. Hence DLEP 2009 does not contain specific provisions in relation to planning for sea level rise or climate change’.</p> <p><u>NB:</u> Other relevant legislation (discussed earlier) includes the <i>Environmental Planning and Assessment Act 1979</i> (NSW), <i>Coastal Protection Act 1979</i> (NSW) and the <i>Local Government Act 1993</i> (NSW).</p> <p><u>Policy Framework:</u></p> <p>NSW Coastal Policy – the state wide coastal Policy must be taken into consideration by local councils (as explained above in the ‘New South Wales’ section).</p> <p>Sea Level Rise Planning Level In December 2009, the GCC adopted the following resolutions:</p> <ol style="list-style-type: none"> ‘Council adopt 0.9m as its sea level rise planning level for the year 2100 with an assumed linear increase from 1990 levels as the basis for Council staff to proceed with risk assessment, policy development, and strategic planning decisions. The sea level rise planning level is used in all relevant strategic processes and Council commit to reviewing all relevant strategic documents to

	<p>incorporate the adopted sea level rise planning level to enable management options for development controls to be developed.</p> <ul style="list-style-type: none"> C. The sea level rise planning level is used in all relevant asset management and capital works project planning processes to enable proper consideration of potential sea level impacts in all relevant decisions. D. A notation be placed on planning certificates pursuant to s149(5) of the Environmental Planning & Assessment Act 1979 that the land is within the 0.9m sea level rise extent as identified on the most relevant map held by Council. E. The sea level rise planning level be reviewed upon the adoption of new information or policy by State Government and the process of this review involve engagement activities with the community. F. The measures already in place to address coastal risk and flood risk continue to be applied and are reviewed upon the adoption of new information or policy by State Government. G. Council write to the Director General of the Department of Planning requesting the formulation of a Severe Physical Hazard zone for inclusion in the standard template' (GCC 2011b). <p>Draft Gosford Development Control Plan 2009 (DDCP) Another relevant planning instrument is the Draft Gosford Development Control Plan which (once approved) will 'provide detailed guidance for additional controls for general development' and provide 'requirements for particular types of development or procedures Council must follow when considering applications for development' (GCC 2010b: 1).</p> <p>Climate Change Policy (GCC 2010) In 2010, the GCC adopted a 'Climate Change Policy'. The following objectives are relevant to sea-level rise adaptation:</p> <ul style="list-style-type: none"> ▪ 'Prepare, implement and review plans and strategies inclusive of consideration of risk from future sea level rise, and address the issue of, how to beneficially use coastal areas while recognising the long term need to protect, redesign, rebuild, elevate, relocate or retreat as sea levels rise'(GCC 2010d: 2); ▪ 'Progressively undertake a climate change risk assessment for the local government area to identify the most significant areas of risk and to establish priorities for the preparation of adaptation responses' (GCC 2010d: 2).
Planned/Proposed Legal/Policy Reform	<p>The GCC notes that it is unlikely that the sea-level rise planning benchmarks will be changed in the near future (GCC 2011d). However, the benchmarks will be reviewed regularly (GCC 2010c).</p> <p>The implementation of the Climate Change Policy (i.e. adaptation responses) may require amendments to be made to the Local Environment Plan in the future.</p>
Benchmarks/Targets	<p><u>Benchmarks:</u></p> <ul style="list-style-type: none"> ▪ Planning must take into consideration '0.9m as its sea level rise planning level for the year 2100 with an assumed linear increase from 1990 levels as the basis for Council staff to proceed with risk assessment, policy development, and strategic planning decisions' (GCC 2011b). ▪ Planning must take into consideration a sea-level rise of 0.4m for 2050 (GCC 2011d).
Other Relevant Initiatives	<p>Sea Level Rise Mapping The GCC has created maps which provide an 'indication of the areas that may be potentially impacted by increases in sea levels of up to 90cm' (GCC 2011a).</p>

	<p>International Council for Local Environmental Initiatives (ICLEI) Oceania Adaptive and Resilient Communities (ARC) Program</p> <p>The GCC is a participant in the International Council for Local Environmental Initiatives (ICLEI) Oceania Adaptive and Resilient Communities (ARC) program. The ARC Program aims ‘to support local governments in Australia in systematically addressing the impacts of climate change at the local level’ (GCC 2010a: 2).</p> <p>Flood studies</p> <p>The GCC is ‘currently re-assessing coastal hazards through the incorporation of sea level rise benchmarks and climate change impacts, and preparing a number of flood studies that will incorporate the sea level rise planning level. The outcomes will be addressed in the Brisbane Water Estuary Management Study, Gosford Lagoons Processes Study, the Open Coast and Broken Bay Beaches Coastal Processes and Hazard Reassessment and flood studies for the various catchments in the LGA, including Erina and Narara Creeks. Management Plans will form part of these studies which will then be implemented’ (GCC 2010a: 2).</p>
Relevant Links	<ul style="list-style-type: none"> ▪ Gosford City Council (2011a), 'Sea Level Rise Mapping for Property Encodings', http://www.gosford.nsw.gov.au/gis/slr ▪ Gosford City Council (2011b), 'Sea Level Rise Planning in Gosford', http://www.gosford.nsw.gov.au/environment/sea-level-rise-planning-in-gosford ▪ Gosford City Council (2011c), 'Frequently Asked Questions', http://lep.gosford.nsw.gov.au/faq ▪ Gosford City Council (2011d), 'Coastal Management Planning', http://www.gosford.nsw.gov.au/environment/coastal-management-planning-1/coastal-management-planning/?searchterm=draft development control plan ▪ Gosford City Council (2010a), 'Fact Sheet 8: Climate Change and Sea Level Rise', http://lep.gosford.nsw.gov.au/step-2/documents/fact-sheets/general-factsheets/glep-fact-sheet-8-climate.pdf ▪ Gosford City Council (2010b), 'Fact Sheet 3: The Draft DCP', http://lep.gosford.nsw.gov.au/step-2/documents/fact-sheets/general-factsheets/glep-fact-sheet-3-purpose.pdf ▪ Gosford City Council (2010c), 'Sea Level Rise Fact Sheet', http://www.gosford.nsw.gov.au/gis/slr/documents/sea_level_rise_facts.pdf ▪ Gosford City Council (2010d), <i>Climate Change Policy</i>, http://www.gosford.nsw.gov.au/council/policies/environment_planning/Climate%20Change%20Adaptation%20and%20Mitigation%20Policy%20FINAL.pdf ▪ International Council for Local Environmental Initiatives – Oceania (2011), http://www.iclei.org/index.php?id=1149
Useful Contact/s	<p>Gosford City Council</p> <p>Email: goscity@gosford.nsw.gov.au</p> <p>Phone: (02) 4325 8222.</p>

Government	Mandurah (WA)
Jurisdiction over Coastal Planning	The City of Mandurah has planning jurisdiction over the localities within the Council area.
Legislative/Policy Framework	<p>The legislative framework for the planning process in Mandurah ‘involves the assessment and approval of proposals, which is performed through the Planning and Development Act 2005, Peel Region Scheme, Local Government Act 1995 and Town Planning Scheme No 3’ (CoM 2010).</p> <p>Mandurah Coastal Zone Climate Change Risk Assessment and Adaptation Plan 2009</p> <p>In 2009, the City of Mandurah released the Mandurah Coastal Zone Climate Change Risk Assessment and Adaptation Plan 2009. The Plan ‘summarises key outcomes of a Coastal Climate Change Risk Assessment and Adaptation Project conducted by the City of Mandurah, supported by funding from the Federal Government of Australia, between November 2008 and July 2009’ (CoM 2009: 4). The Plan utilises the information garnered from the Project to develop adaptation responses to the identified risks (CoM 2009: 2).</p> <p>In addition to evaluating numerous different adaptation options, the Plan outlines areas where further work is required:</p> <ul style="list-style-type: none"> ▪ ‘Implementation of the Adaptation Planning outlined [in the Plan] requires mainstreaming of climate change adaptation across Council and integration of climate change issues in key documentation that the Council utilises to deliver its services to the community’ (CoM 2009: 2); ▪ An ‘elucidation of thresholds or trigger points of the implementation of predetermined actions’ is necessary (CoM 2009: 2); ▪ A ‘coordinated, systematic monitoring and management system is required throughout the City of Mandurah coastal zone’ (CoM 2009: 2). <p>The Plan also identifies ‘incorporating climate change scenarios into policy and decision-making processes’ as the ‘highest priority adaptation option’ (CoM 2009: 16). This will involve reviewing ‘relevant council strategies and plans to ensure that they incorporate the potential effects of climate change’ (CoM 2009: 16).</p>
Planned/Proposed Legal/Policy Reform	The City of Mandurah intends to develop a ‘Climate Change Strategy’ which will ‘provide the overarching strategic/policy position for Mandurah and will incorporate abatement and mitigation measures’ (CoM 2011). The development of the Strategy will involve the creation of a ‘Climate Change Response Plan’ which will ‘identify the broad environmental, economic and community risks to the City presented by climate change and...lay the framework in terms of what adaptation responses the City will need to develop to deal with the impacts of climate change’ (CoM 2011).
Benchmarks/Targets	At present, the City of Mandurah has not stipulated sea level rise planning benchmarks or targets. However, in exercising its jurisdiction as a planning authority in relation to coastal developments, the City must take into consideration the benchmarks and policy requirements outlined in the State Coastal Planning Policy (discussed above in the ‘Western Australia’ section).
Other Relevant Initiatives	<p>Coastal Climate Change Working Group</p> <p>The City has established a Coastal Climate Change Working Group, which has the responsibility of implementing the recommendations from the Adaptation Plan. This will include the development and/or incorporation of sea level rise into Councils’ policies and planning tools.</p>
Relevant Links	<ul style="list-style-type: none"> ▪ City of Mandurah (2011), ‘Climate Change Adaptation’, http://www.mandurah.wa.gov.au/ClimateChangeStrategy.htm ▪ City of Mandurah (2010), ‘Planning Services’, http://www.mandurah.wa.gov.au/planning.htm ▪ City of Mandurah (2009), <i>Mandurah Coastal Zone Climate Change Risk Assessment and Adaptation Plan 2009</i>, http://www.mandurah.wa.gov.au/HBItem_79614.PDF
Useful Contact/s	City of Mandurah – Climate Change: EcoServices@mandurah.wa.gov.au

Government	Yorke Peninsula (SA)
Jurisdiction over Coastal Planning	The District Council of Yorke Peninsula (DCYP) has jurisdiction over coastal planning in the Yorke Peninsula area.
Legislative/Policy Framework	<p>Development Plan</p> <p>The ‘objectives and principles of development control’ set out in the DCYP’s Development Plan ‘apply to the whole of the area of the District Council of Yorke Peninsula’ (DCYP 2011: 7). The Plan sets out a number of ‘principles of development control’ which are ‘applicable to all development which would impact on coastal areas, affect coastal processes or be subject to effect or hazard from coastal processes now or in the future...’ (DCYP 2011: 32). The Plan explains that ‘for the purposes of assessing coastal developments the standard sea-flood risk level for a development site is defined as the 100-year average return interval extreme sea level (tide, stormwater and associated wave effects combined), plus an allowance for land subsidence for 50 years at that site’ (DCYP 2011: 35).</p> <p>The Plan sets out ‘Hazard Risk Minimisation’ principles which provide direction regarding land division and commercial/industrial/residential development relating to hazard risk (such as sea level rise) (DCYP 2011: 35, see [27] and [28]).</p> <p>Two of the Plan’s objectives in relation to coastal development are of relevance to sea-level rise planning:</p> <p>Objective 2: To promote development which recognises and allows for hazards to coastal development such as inundation by storm tides or combined storm tides and stormwater, coastal erosion and sand drift; including an allowance for changes in sea level due to natural subsidence and predicted climate change during the first 100 years of the development. (DCYP 2011: 29)</p> <p>Objective 11: To encourage development that is located and designed to allow for changes in sea level due to natural subsidence and probable climate change during the first 100 years of the development. This change to be based on the historic and currently observed rate of sea level rise for South Australia with an allowance for the nationally agreed most-likely predicted additional rise due to global climate change. (DCYP 2011: 30).</p> <p>The Plan also explains that a ‘seafront development boundary has been established based on erosion and flooding estimates provided by the Coast Protection Board’ which ‘takes into account likely effects of a sea level rise due to climate change’ (DCYP 2011: 157).</p>
Planned/Proposed Legal/Policy Reform	At present, it appears that there are no planned/proposed policy/legal reforms by the DCYP relevant to sea level rise planning.
Benchmarks/Targets	The SA State Government sea-level rise planning benchmarks apply (as discussed above in the ‘South Australia’ section’). New developments should take into consideration a 30cm sea-level rise by 2050 and a further 70 cm sea-level rise between 2050 and 2100.
Other Relevant Initiatives	<p>Draft Coastal Assessment Report (2009)</p> <p>A draft Coastal Assessment Report was prepared in 2009 by Deb Allen for the DCYP (link below). The Report outlines the current coastal management</p>

	arrangements for coastal areas within the DCYP's jurisdiction. There are only a few brief references to sea-level rise and climate change impacts on coastal areas and coastal management. The Report does not make any planning reform recommendations to meet the challenges posed by these impacts.
Relevant Case Law	<p><i>Northcape Properties v District Council of Yorke Peninsula</i> [2008] SASC 57</p> <p>The relevance of this case for sea-level rise planning has been explained by Gavin Leydon in the <i>SA Planner</i> (2010: 12):</p> <p>In this case the Supreme Court upheld an earlier decision of the ERD Court which refused to grant consent to a proposed 80 lot land division on the northern outskirts of Marion Bay. The Court concluded that sea level rise was inevitable and that the principal issue was merely a question of the extent, rate and impact of such. It was found to be a relevant issue for the development of low lying coastal areas with both the ERD and Supreme Courts accepting evidence on future shoreline retreat due to sea level rise. The subject land was situated within a Holiday Settlement Zone adjacent to Coastal and Conservations Zones. The relevant Development Plan contained provisions relating to the development and protection of coastal reserves and development adjacent the coast. The policies within the Development Plan sought the preservation of native vegetation; allowance for coastal erosion and the provision of both an erosion buffer and coastal reserve. The erosion buffer width sought by the Plan was one to protect against sea level rise of 1 metre over 100 years. The evidence received by the ERD Court was that the extent of inland recession of the coast would be in the order of 35 to 40m over the next 100 years. As a result, the proposed 20 metre erosion buffer would move inland over the next 10 years meaning that the coastal reserve would become the erosion buffer in circumstances where the Development Plan called for both. Both appeals were dismissed with the Court in both instances finding that the design of the land division paid insufficient regard to the ecological sensitivity of the area and did not appropriately have regard to the inevitable effects of climate change.</p>
Relevant Links	<ul style="list-style-type: none"> ▪ District Council of Yorke Peninsula (2011), <i>Development Plan</i>, http://www.planning.sa.gov.au/edp/pdf/YOP ▪ Deb Allen (2009), <i>Coastal Assessment Report - Draft</i>, http://www.yorke.sa.gov.au/component/option,com_docman/task,doc_download/gid,1877/Itemid,999999999/ ▪ Gavin Leydon in Planning Institute of Australia (SA Division) (2010), 'Hot in the City: Climate Change Edition', <i>SA Planner</i>: http://www.planning.org.au/documents/item/1855
Useful Contact/s	<p>District Council of Yorke Peninsula</p> <p>Email: admin@yorke.sa.gov.au</p>

Government	California (USA)
Jurisdiction over Coastal Planning	<p>The California Coastal Commission – ‘The Coastal Commission, in partnership with coastal cities and counties, plans and regulates the use of land and water in the coastal zone. Development activities, which are broadly defined by the Coastal Act to include (among others) construction of buildings, divisions of land, and activities that change the intensity of use of land or public access to coastal waters, generally require a coastal permit from either the Coastal Commission or the local government’ (California Coastal Commission 2011a).</p> <p>The San Francisco Bay Conservation and Development Commission - It is important to note that the ‘coastal zone established by the Coastal Act does not include San Francisco Bay, where development is regulated by the Bay Conservation and Development Commission’ (California Coastal Commission 2011a).</p> <p>California Ocean Protection Council – The OPC was created ‘pursuant to the <i>California Ocean Protection Act</i>’ (OCP 2011a). The Council has numerous responsibilities which focus upon maintaining consistency and effectiveness in the management of California’s coastal zone. The OCP’s Five-Year Strategic Plan (released in 2006) includes the objective of understanding the impacts of climate change (Objective 3), with a corresponding ‘action’ to ‘work with the Climate Action Team to investigate the long-term impacts of sea level rise and develop statewide adaptive management policies that will help agencies deal with these impacts’ (OCP 2006: 28).</p> <p>Other relevant agencies:</p> <ul style="list-style-type: none"> ▪ Regional Water Quality Control Boards ▪ California State Parks ▪ California State Lands Commission ▪ The Coastal Conservancy ▪ California Resources Agency
Legislative/Policy Framework	<p><u>Legislative Framework:</u></p> <p>California Coastal Act It is noted in the <i>California Climate Adaptation Strategy</i> (2009: 74) that there are provisions in the Coastal Act which ‘require that new development in the coastal zone be designed to minimize risks from current and future hazards, which would include risks from expected sea-level rise. The Act restricts new development in hazardous areas, especially if it would require the construction of a protective device’.</p> <p>Local Coastal Programs Under the California Coastal Act, each ‘local government lying, in whole or in part, within the coastal zone’ is required to prepare a ‘local coastal program for that portion of the coastal zone within its jurisdiction’ [30500 (a)]. The California Coastal Commission explains that LCP’s are ‘basic planning tools used by local governments to guide development in the coastal zone, in partnership with the Coastal Commission’ (California Coastal Commission 2011b). NB: Other relevant legislation exists.</p>

Policy Framework:

California Climate Adaptation Strategy

The *California Climate Adaptation Strategy* (2009) is a comprehensive policy document which outlines numerous adaptation strategies and actions for Californian government bodies to take in regards to climate change adaptation. A section of the Strategy is devoted to coastal adaptation.

For each identified adaptation ‘strategy’, a range of ‘near-term’ and ‘long-term’ actions have been outlined. The following strategies (and selected actions) contained in the Strategy are of relevance to sea level rise planning in California:

- **Strategy 1 – ‘Establish State Policy to Avoid Future Hazards and Protect Critical Habitat’**
 - Near-Term Actions: Hazard Avoidance Policy (i.e. considering alternative locations for developments in vulnerable areas)
 - Long-Term Actions: Coordinate Policy Implementation
- **Strategy 2 – ‘Provide Statewide Guidance for Protecting Existing Critical Ecosystems, Existing Coastal Development, and Future Investments’**
 - Near-Term Actions: Establish Decision Guidance (i.e. the Ocean Protection Council and other agencies should ‘develop a statewide framework that can be used by state and local agencies as guidance in preparation of adaptation plans’).
 - Long-Term Actions: Pilot Studies
- **Strategy 3 – ‘State Agencies Should Prepare Sea-Level Rise and Climate Adaptation Plans’**
 - Near-Term Actions: Adaptation Planning (i.e. Relevant agencies are required to prepare ‘agency-specific adaptation plans, guidance and criteria as appropriate’).
 - Long-Term Actions: Adaptation Plan Updates
- **Strategy 4 – ‘Support Regional and Local Planning for Addressing Sea-Level Rise Impacts’**
 - Near-Term Actions: Amend Local Coastal Plans and General Plans to Address Climate Change Adaptation
- **Strategy 5 – ‘Complete a Statewide Sea-Level Rise Vulnerability Assessment Every Five Years’**
- **Strategy 6 – ‘Support Essential Data Collection and Information Sharing**

Resolution of the California Ocean Protection Council on Sea-Level Rise

In 2011, the California Ocean Protection Council adopted a Resolution on Sea-Level Rise. The Resolution is comprised of numerous resolutions, including:

- ‘state agencies, as well as non-state entities implementing projects or programs funded by the state or on state property, including on lands granted by the Legislature, should incorporate consideration of the risks posed by SLR into all decisions regarding areas or programs potentially affected by SLR’;
- ‘the OPC will support the development of regional sea-level rise adaptation plans, to the extent that funding and staff capacity allow’;
- ‘the OPC will encourage collaborations, including with the federal government, to enhance data collection and monitoring and development of decision support tools and guidance that will directly improve adaptation decision-making, including those predicting extreme events and supporting coastal and ocean climate change impact assessments’ (California Ocean Protection Council 2011b).

	<p>Executive Order S-13-08</p> <p>'On November 14, 2008, Governor Schwarzenegger signed Executive Order S-13-08 to create statewide consistency in planning for sea level rise. The executive order calls for, among other things, the completion of a Sea Level Rise Assessment Report, the consideration of sea level rise scenarios for the years 2050 and 2100, and the development of a Climate Adaptation Strategy.' (California State Lands Commission 2009: 6).</p>
Planned/Proposed Legal/Policy Reform	<p>National Research Council (Upcoming Report on Sea Level Rise)</p> <p>A National Research Council committee is currently undertaking research which 'will provide an evaluation of sea level rise for California, Oregon, and Washington for the years 2030, 2050 and 2100. The evaluation will cover both global and local sea level rise' (National Academy of Sciences 2011). The research is in the final stages – a report will probably be released later this year.</p>
Areas for Improvement	<p>The California Climate Change Center has made numerous recommendations for policy reform in relation to sea-level rise planning in California – See, pages 88-90 in their report 'The Impacts of Sea-Level Rise on the California Coast' (link below).</p>
Other Relevant Initiatives	<p>California Climate Change Portal</p> <p>The California Climate Change Portal is an 'on-line website containing information on the impacts of climate change on California and the state's policies relating to global warming' (California State Lands Commission 2009: 7). The Portal can be accessed at: http://www.climatechange.ca.gov/</p> <p>Climate Action Team</p> <p>The Climate Action Team (CAT) 'was established pursuant to Executive Order S-3-05 signed by Governor Schwarzenegger on June 1, 2005' and is 'lead by the Secretary of the California Environmental Protection Agency (CalEPA)' (California State Lands Commission 2009: 7). The CAT has released a number of relevant reports accessible through the Climate Change Portal - http://www.climatechange.ca.gov/climate_action_team/reports/index.html</p>
Relevant Links	<ul style="list-style-type: none"> ▪ California Climate Change Center (2009), 'The Impacts of Sea-Level Rise on the California Coast', http://www.pacinst.org/reports/sea_level_rise/report.pdf ▪ California Coastal Commission (2011a), 'Program Overview', http://www.coastal.ca.gov/whoweare.html ▪ California Coastal Commission (2011b), 'Local Coastal Programs', http://www.coastal.ca.gov/lcps.html ▪ California Natural Resources Agency (2009), <i>California Climate Adaptation Strategy - A Report to the Governor of the State of California in Response to Executive Order S-13-2008</i>, http://www.energy.ca.gov/2009publications/CNRA-1000-2009-027/CNRA-1000-2009-027-F.PDF ▪ California Ocean Protection Council (2011a), 'About the Council', http://www.opc.ca.gov/about/ ▪ California Ocean Protection Council (2011b), <i>Resolution of the California Ocean Protection Council on Sea-Level Rise Adopted on March 22, 2011</i>, http://www.opc.ca.gov/webmaster/ftp/pdf/docs/OPC_SeaLevelRise_Resolution_Adopted031111.pdf ▪ California Ocean Protection Council (2006), <i>A Vision for Our Ocean and Coast: Five-Year Strategic Plan</i>, http://www.opc.ca.gov/webmaster/ftp/pdf/docs/OPC_Strategic_Plan_2006.pdf ▪ California State Lands Commission (2009), <i>A Report on Sea Level Rise Preparedness: Staff Report to the California State Lands Commission</i>, http://www.slc.ca.gov/reports/sea_level_report.pdf ▪ National Academy of Sciences (2011), 'Sea Level Rise in California, Oregon and Washington', http://dels.nas.edu/Study-In-Progress/Level-Rise-California-Oregon/DELS-BESR-09-04
Useful Contact/s	<p>California Ocean Protection Council - Ph: (510) 286-1015; Fax: (510) 286-0470.</p> <p>California Coastal Commission HQ – Ph: (415) 904-5200; Fax: (415) 904-5400.</p> <p>California Natural Resources Agency – Ph: (916) 653 5656; Fax: (916) 653 8102.</p> <p>California State Lands Commission (Sacramento Office) – Ph: (916) 574 1900; Fax: (916) 574 1810.</p>

Government	Holland
Jurisdiction over Coastal Planning	<p>According to the Ministry of Transport, Public Works and Water Management (2009), the Water Act ‘acknowledges only two water authorities: the State, as authority of the main waterways system, and the water management boards as the authorities of the regional waterways...Provinces and municipalities do not act as water managers, formally speaking, though they do have certain water management duties’.</p> <p>Relevant government departments/organisations include:</p> <ul style="list-style-type: none"> ▪ Dutch Ministry of Infrastructure and the Environment ▪ Ministry of Transport, Public Works and Water Management ▪ The Dutch Association of Regional Water Authorities ▪ Regional Water Boards (there are 26 in total).
Legislative/Policy Framework	<p><u>Legislative Framework:</u></p> <p>Dutch Water Act (2009) The recently introduced Water Act lists as one of its purposes, the prevention and (‘where necessary’) limitation of flooding (Section 2.1). The Act ‘provides the basis for the requirements to which water systems can be subjected’ and ‘the standards for primary flood defence structures’ (Ministry of Transport, Public Works and Water Management 2009).</p> <p>Spatial Planning Act (2008) The Spatial Planning Act ‘guarantees national planning goals and interests are taken into account in local land-use plans, zoning plans and structural visions prepared by the provinces, for instance that sufficient land area is set aside for flood control and water management’ (Ministry of Infrastructure and the Environment 2011c).</p> <p><u>Policy Framework:</u></p> <p>Water Management in the Netherlands (2011) The Ministry of Infrastructure and the Environment (2011a: 5) recently stated that ‘[c]limate change and sea level rise prompt a re-examination of our water management. The resilience of the main water system, the water infrastructure and the ground rules are up for reconsideration’.</p> <p>National Water Plan 2009-2015 Pursuant to the requirements laid down in the Water Act, in 2009 the Dutch Government adopted the ‘National Water Plan’. The Plan ‘focuses on protecting against flooding’ and ‘outlines the policy the State will implement in the period from 2009 to 2015 in order to achieve sustainable water management’ (Ministry of Infrastructure and the Environment 2011b). The Plan ‘replaces all previous water management policy memoranda’ and ‘has the status of a structural vision in terms of spatial planning aspects’ (Ministry of Infrastructure and the Environment 2011b).</p> <p>The Plan also ‘contains an initial elaboration of the Delta Programme that is being drawn up in response to the recommendations of the Delta Commission in 2008’. According to the Ministry of Infrastructure and the Environment (2011b), the ‘implementation of measures is already in full</p>

swing', such as the strengthening of 'coastal defences...through sand suppletion activities'.

The Plan calls for the 'development of a long-term strategy for coastal protection' (Dutch Central Government 2009: 134). The Plan outlines a number of available 'policy choices' in relation to coastal planning for sea level rise, including:

- 'Continuation of current policy';
- 'Sand Replenishments' (i.e. allowing the 'coastal foundation zone to increase with the rising sea level by adding sand');
- 'Integrated Area Development' (Dutch Central Government 2009: 136).

The Plan explains that the Government is looking into the possibility of 'expanding the coastline' at the recommendation of the Delta Committee (Dutch Central Government 2009: 136).

Delta Commission

The Delta Commission was established by the Dutch government to develop 'recommendations on how to protect the Dutch coast and the low-lying hinterland against the consequences of climate change' (Delta Commission 2008: 7). In 2008, the Commission released its report titled '*Working Together with Water*' which contains 12 recommendations, including:

- 'The present flood protection levels of all diked areas must be raised by a factor of 10. To that end, the new standards must be set as soon as possible (around 2013)';
- 'The decision of whether to build in low-lying flood-prone areas must be based on a cost-benefit analysis';
- The strengthening of the 'political and administrative organisation' of flood protection;
- The introduction of a 'Delta Act', a 'Delta Fund' and the creation of a 'Delta Programme' (Delta Commission 2008: 10-11).

The report also recommended that planning should take into consideration a regional sea level rise of 0.65 to 1.3m by 2100 and 2 to 4m by 2200 (Delta Commission 2008: 8).

Delta Act, Delta Programme, Delta Fund and Delta Programme Commissioner

In response to the Delta Commission's recommendations, a Delta Programme has been established and a Delta Programme Commissioner has been appointed (despite the fact that the Delta Act has not yet passed into law). According to the Delta Programme Commissioner (2011), the Delta Act: 'mandates that an annual Delta Programme must be drawn up in order to ensure that the Netherlands is well protected from flooding and to secure a proper fresh water supply. The Act also mandates that a Delta Commissioner must be appointed to supervise and direct the drawing up and implementation of the Delta Programme. In addition, the Delta Act provides for a Delta Fund to fund the Delta Programme. From 2020 onward, an annual sum of at least 1 billion euros will be deposited in this fund. The cabinet has submitted the Delta Act to the Dutch Lower House. The Lower House has not yet announced when it will address the bill.'

National Spatial Strategy

The Dutch Government's 'National Spatial Strategy' has a 'twofold objective' for its coastal areas:

- 1) 'public safety from flooding must be guaranteed';
- 2) 'the unusual character of the coastline must be preserved'.

Planned/Proposed Legal/Policy Reform	<p>As explained by the Delta Programme Commissioner (2011):</p> <p>Every six years, the safety of [Holland's] dikes and dams is assessed and tested against statutory standards and current technological and hydrological preconditions. Any sections that do not meet the requirements must be improved. The assessments are carried out by the water boards and the Directorate-General for Public Works and Water Management. All dikes, dams and coastal dunes must be reassessed by 2011. Individual water boards have recently published their test results. The results of all the tests conducted by water boards will be assessed by the provincial authorities, whereupon they will be evaluated by the Ministry of Infrastructure and the Environment, in order to be incorporated in the overall plan for 2011. This overall plan has not yet been drawn up; it will be finalised in 2011. Subsequently, the Minister of Infrastructure and the Environment will submit the overall picture, including a proposal for amendments wherever necessary and the financial means required, to the Dutch Lower House...In 2011, within the framework of the Delta Programme, a (basic) proposal will be drawn up regarding new safety standards that will have to take effect in the future.</p>
Relevant Links	<ul style="list-style-type: none"> ▪ Delta Commission (2008), <i>Working together with water: A living land builds for its future - Findings of the Deltacommissie 2008 Summary and Conclusions</i>, http://www.deltacommissie.com/doc/deltareport_summary.pdf ▪ Delta Programme Commissioner (2011), 'Questions and Answers', http://www.deltacommissaris.nl/english/topics/questions_and_answers/#aline1 ▪ Dutch Central Government (2009), <i>National Water Plan 2009-2015</i>, http://english.verkeerenwaterstaat.nl/english/Images/NWP%20english_tcm249-274704.pdf ▪ Government of the Netherlands (2008), 'Delta Commission Report is 'thorough and inspiring'', http://www.government.nl/News/Press_releases_and_news_items/2008/September/Delta_Commission_Report_is_thorough_and_inspiring ▪ Ministry of Infrastructure and the Environment (2011a), <i>Water Management in the Netherlands</i>, http://www.rijkswaterstaat.nl/en/images/Water%20Management%20in%20the%20Netherlands_tcm224-303503.pdf ▪ Ministry of Infrastructure and the Environment (2011b), 'The National Water Plan', http://english.verkeerenwaterstaat.nl/english/topics/water/water_and_the_future/national_water_plan/ ▪ Ministry of Infrastructure and the Environment (2011c), 'Roles and responsibilities of the ministry', http://english.verkeerenwaterstaat.nl/english/topics/spatial-planning/roles_and_responsibilities_of_the_ministry/ ▪ Ministry of Transport, Public Works and Water Management (2009), <i>The Water Act in Brief</i>, http://www.helpdeskwater.nl/algemene-onderdelen/serviceblok/english/legislation/@21831/the-dutch-water-act/
Useful Contact	<p>Ministry of Infrastructure and Environment Helpdesk Water www.helpdeskwater.nl Email: helpdeskwater@rws.nl Phone: +31(0)320-299999</p>

Government	New York State Government
Jurisdiction over Coastal Planning	<p>‘Land-use planning in New York State, including in coastal areas is within the authority of local governments. However, the Coastal Erosion Hazard Areas Act empowers NYSDEC to identify and map coastal erosion hazard areas and to adopt regulations to control certain activities and development in those areas. The backbone of these regulations is a permitting system aimed specifically at all proposed construction in erosion hazard areas. The construction or placement of a structure, or any action or use of land which materially alters the condition of land, including grading, excavating, dumping, mining, dredging, filling or any disturbance of soil is a regulated activity requiring a Coastal Erosion Management Permit- a written approval granted by NYSDEC, or the county or local government, whichever had the jurisdiction (See http://www.dec.ny.gov/lands/28923.html) (Lowery pers. comm., 2011).</p> <p>Relevant Government Departments:</p> <ul style="list-style-type: none"> ▪ New York State Department of Environmental Conservation ▪ New York State Department of State Division of Coastal Resources
Legislative/Policy Framework	<p><u>Legislative Framework:</u></p> <p>‘Any legislative requirements would flow from the New York State Legislature as legal requirements for the appropriate executive agencies. No such requirements specifically address sea level rise, nor are there non-binding guidelines from the Legislature’ (Lowery pers. comm., 2011).</p> <p>Coastal Erosion Hazard Areas Act</p> <p>The Coastal Erosion Hazard Areas Act (discussed above) empowers the Department of Environmental Conservation to ‘identify and map coastal erosion hazard areas and to adopt regulations to control certain activities and development in those areas. The backbone of these regulations is a permitting system aimed specifically at all proposed construction in erosion hazard areas’ (New York State Department of Environmental Conservation 2011b).</p> <p>State Environmental Quality Review Act (SEQR)</p> <p>‘Significant projects or activities proposed by a state agency or unit of local government, and all discretionary approvals (permits) from a NYS agency or unit of local government, require an environmental impact assessment as prescribed by the State Environmental Quality Review Act (SEQR). SEQR requires the sponsoring or approving governmental body to identify and mitigate the significant environmental impacts of the activity it is proposing or permitting including any impacts to coastal resources’ (Marcell pers.comm., 2011).</p> <p><u>Other relevant legislation, includes:</u></p> <ul style="list-style-type: none"> ▪ Tidal Wetlands Act ▪ Freshwater Wetlands Act

Policy Framework:

New York State Coastal Management Program

Under the New York State Coastal Management Program, the New York State Department of State ensures that any proposed activities ‘within or affecting the State’s designated Coastal Area and/or within an area with an approved Local Waterfront Revitalization Program (LWRP)’ are consistent with the State Coastal Policies (Marcell pers.comm., 2011). These policies are utilised for numerous purposes including to guide ‘local governments in the preparation of Local Waterfront Revitalization Programs’ (New York State Department of State Division of Coastal Resources 2011a).

State Coastal Policies on flooding and erosion include:

- Policy 11 – ‘Buildings and other structures will be sited in the coastal area so as to minimise damage to property and the endangering of human lives caused by flooding and erosion’;
- Policy 12 – ‘Activities or development in the coastal area will be undertaken so as to minimise damage to natural resources and property from flooding and erosion by protecting natural protection features including beaches, dunes, barrier islands and bluffs’;
- Policy 13 – ‘The construction or reconstruction of erosion protection structures shall be undertaken only if they have a reasonable probability of controlling erosion for at least thirty years as demonstrated in design and construction standards and/or assured maintenance or replacement programs’;
- Policy 14 – ‘Activities and development, including the construction or reconstruction of erosion protection structures, shall be undertaken so that there will be no measurable increase in erosion or flooding at the site of such activities or development, or at other locations’;
- Policy 15 – ‘Mining, excavation or dredging in coastal waters shall not significantly interfere with the natural coastal processes which supply beach materials to land adjacent to such waters and shall be undertaken in a manner which will not cause an increase in erosion of such land’;
- Policy 16 – ‘Public funds shall only be used for erosion protective structures where necessary to protect human life, and new development which requires a location within or adjacent to an erosion hazard area to be able to function, or existing development; and only where the public benefits outweigh the long term monetary and other costs including the potential for increasing erosion and adverse effects on natural protective features’;
- Policy 17 – ‘Non-structural measures to minimize damage to natural resources and property from flooding and erosion shall be used whenever possible’.

Policies can be accessed at: http://nyswaterfronts.com/downloads/Coastal_Policies/floodinganderson.html

Local Government Water Revitalization Programs

Local Waterfront Revitalization Program’s (LWRP’s) are ‘comprehensive land and water use programs with enforceable policies aimed at integrating local government’s vision for the coastal area with state and federal objectives’ (Pendergrass pers.comm., 2011). LWRP’s are implemented by local governments and operate as both a ‘plan and a program’ (New York State Department of State Division of Coastal Resources 2004). Accordingly, the term LWRP ‘refers to both a planning document prepared by a community, as well as the program established to implement the plan’ (New York State Department of State Division of Coastal Resources 2004). Policies relevant to flooding and erosion are contained within LWRP’s. These policies must be consistent with the State Coastal Policies outlined above.

- A list of current LWRP’s can be accessed at: http://nyswaterfronts.com/LWRP_Status.asp
- Example LWRP - New York City’s LWRP can be accessed at: <http://nyswaterfronts.com/lwrp/new%20york%20city/nyc%20sept%202002.pdf>

Coastal Resilience Planning Guidebook

The New York Department of State has ‘initiated assistance for local government planning to address coastal hazards and sea level rise’ by introducing the Coastal Resilience Planning Guidebook (Pendergrass pers.comm., 2011).

New York State Sea Level Rise Task Force

‘The New York State Legislature created a State Sea Level Rise Task Force in 2007 and charged it with developing recommendations for adapting to sea level rise. Those recommendations were delivered in 2010, but no action has been taken on them (See <http://www.dec.ny.gov/energy/45202.html>)’ (Lowery pers. comm., 2011).

List of Recommendations made by the Task Force (taken directly from the Task Force’s Report (2010: 8)):

1. Adopt official projections of sea level rise and ensure continued and coordinated adaptation efforts.
2. Require state agencies responsible for the management and regulation of resources, infrastructure, and populations at risk from sea level rise to factor the current and anticipated impacts into all relevant aspects of decision making.*
3. Classify areas where significant risk of coastal flooding due to storms has been identified and implement risk reduction measures in those areas.*
4. Identify and classify areas of future impacts from coastal flooding from projected sea level rise and storms to reduce risk in those areas.*
5. Reduce vulnerability in coastal areas at risk from sea level rise and storms. Support increased reliance on non-structural measures and natural protective features to reduce impacts from coastal hazards, where applicable.*
6. Develop maps and other tools required to assist local decision makers in preparing for and responding to sea level rise.
7. Amend New York State laws and change and adopt regulations and agency guidance documents to address sea level rise and prevent further loss of natural systems that reduce risk of coastal flooding.*
8. Provide financial support, guidance and tools for community-based vulnerability assessments and ensure a high level of community representation and participation in official vulnerability assessments and post-storm recovery, redevelopment and adaptation-planning processes.
9. Undertake a comprehensive assessment of the public health risks associated with sea level rise, coastal hazards and climate change including compromised indoor air quality, drinking water impacts, post-traumatic stress and other mental health problems, increases in disease vectors, impaired access to health care and loss of reliable access to food and medical supplies.
10. Raise public awareness of the adverse impacts of sea level rise and climate change and of the potential adaptive strategies.
11. Develop mechanisms to fund adaptation to sea level rise and climate change.
12. Fund research, monitoring and demonstration projects to improve understanding of key vulnerabilities of critical coastal ecosystems, infrastructure and communities from sea level rise.
13. Ensure continued and coordinated adaptation to sea level rise.
14. Seek federal funding, technical assistance and changes to federal programs to make them consistent with, or accommodating to, state policies, programs and adaptation measures related to sea level rise.

* Recommendation does not have the unanimous support of the Task Force.

The Taskforce also made numerous ‘findings’ including the fact that ‘current investment and land-use planning practices by both New York State and local governments are encouraging development in areas at high risk of coastal flooding and erosion’ (NYS Sea Level Rise Taskforce 2010: 7).

Hudson River Estuary Program

The Hudson River Estuary Program is an initiative operated by the New York State Department of Environmental Conservation which aims to ‘improve’ and ‘protect’ the Hudson River watershed (New York State Department of Environmental Conservation 2011a). The Program is guided by an ‘Action Agenda’ which is ‘a forward-looking plan, developed through significant community participation’ (New York State Department of Environmental Conservation 2011a).

The current Agenda (Hudson River Estuary Action Agenda 2010-2014) explains that the Program is ‘working closely’ with various government departments to ‘develop guidance on how local governments can reduce greenhouse gas emissions and begin to adapt to climate change’ (Hudson River Estuary Program 2010: 6). The Agenda lists a number of planned ‘actions’ including:

- The identification of ‘management techniques and measures that promote sustainable shorelines, and develop and disseminate guidance on shoreline erosion control options to respond to accelerated sea level rise’ (Hudson River Estuary Program 2010: 17);
- The identification of ‘low-lying areas where tidal wetlands may occur as sea level rises’ in order to ‘seek to conserve these properties’ (Hudson River Estuary Program 2010: 17).

The Agenda emphasises the importance of inter-agency co-operation (Hudson River Estuary Program 2010: 31). For example, the Agenda refers to working with the Climate Action Council, the Office of Climate Change, the Sea Level Rise Task Force and the Rising Waters Project run by the Nature Conservancy (for information about the Rising Waters Project, see: http://www.nature.org/media/newyork/rw_070509_exec.pdf).

New York State Climate Action Council and New York State Climate Action Plan

In 2010, the New York State Climate Action Council released the ‘Climate Action Plan Interim Report’ which makes numerous recommendations relating to climate change adaptation, particularly in relation to sea level rise:

Recommendation 1. New York State should endorse a coordinated set of projections for sea level rise and associated changes in flood-recurrence intervals in all coastal areas, including the Hudson River to the Federal Dam at Troy, for use by State and local agencies and authorities for planning and decision-making purposes.

Recommendation 2. Integrate sea level rise and flood-recurrence interval projections into all relevant agency programs and regulatory, permitting, planning, and funding decisions.

Recommendation 3. Identify and map areas of greatest current risk from coastal storms and greatest future risk from sea level rise and coastal storms in order to support risk reduction actions in those areas.

Recommendation 4. Reduce vulnerabilities in coastal areas at risk from sea level rise and storms (coastal risk management zone) and support increased reliance on non-structural measures and natural protective features to reduce impacts from coastal hazards.

Recommendation 5. Develop a long-term interagency mechanism to regularly evaluate climate change science; set research priorities to foster adaptation; coordinate programming, regulatory, and funding actions; and assess progress in adapting to climate change and sea level rise.

Recommendation 6. Assess and prepare for the significant public health risks associated with hazards related to sea level rise.

Recommendations taken from Chapter 11 ‘Adapting to Climate Change’ of the Interim Report, <http://www.nyclimatechange.us/ewebeditpro/items/O109F24023.pdf>

ClimAID

ClimAID is the 'Integrated Assessment for Effective Climate Change Adaptation Strategies in New York State' which is an initiative of the New York State Government designed 'to provide decision-makers with cutting-edge information on the state's vulnerability to climate change and to facilitate the development of adaptation strategies informed by both local experience and scientific knowledge' (New York State Energy Research and Development Authority 2010).

In 2010, the ClimAID Synthesis Report was released which lists a number of adaptation options which could be adopted by New York State, including in coastal zones affected by sea level rise (New York State Energy Research and Development Authority 2010: 21). The Report evaluates the relative benefits and downsides of various options, including sea walls, planned retreat and other engineering options (New York State Energy Research and Development Authority 2010: 23). Interestingly, it notes that 'the sustainability of a proposed barrier system to protect the entire New York harbor has not been established and requires careful cost/benefit assessments of long-term risks' (New York State Energy Research and Development Authority 2010: 39).

Environment Protection Fund Local Waterfront Revitalization Program

The New York State Department of State 'solicits grant applications from local governments for 50/50 matching grants from the New York State Environmental Protection Fund's Local Waterfront Revitalization Program' (New York State Department of State Division of Coastal Resources 2011b). Accordingly, local governments may be able to obtain funding for planning initiatives relevant to climate change through this program (Pendergrass pers.comm., 2011).

Climate Smart Communities

'New York State has a state-local partnership called Climate Smart Communities, with at least 94 New York communities already pledged to become "climate smart." Guidance on adaptation, including local responses to address sea level rise are under development' (Marcell pers.comm., 2011).

New York City Initiatives:**Climate Change Adaptation Task Force**

In 2008, New York City (NYC) created a Climate Change Adaptation Task Force which is tasked with the responsibility of developing 'adaptation strategies to secure the City's infrastructure from the effects of climate change' (City of New York 2008). The creation of the Task Force was proposed in NYC's 2007 'PlaNYC' policy (City of New York 2008). The Task Force is comprised of 'City and State agencies, authorities and private companies that operate, maintain, or control critical infrastructure in New York City' (City of New York 2008).

The Task Force intends to:

- 'create an inventory of existing infrastructure that may be at-risk from the effects of climate change';
- 'develop coordinated adaptation plans to secure these assets based on New York City-specific climate change projections';
- 'draft design guidelines for new infrastructure that take into account anticipated climate change impacts', and;
- 'identify adaptation strategies for further study that are beyond the scope of individual stakeholders' (City of New York 2008).

	<p>New York City Panel on Climate Change</p> <p>The Task Force is advised by the New York City Panel on Climate Change, which is a ‘panel of experts from academic institutions and the legal, engineering, and insurance industries’ which is ‘modelled on the Intergovernmental Panel on Climate Change’ (City of New York 2008). It is expected that the Panel will:</p> <ul style="list-style-type: none"> ▪ ‘develop a unified set of climate change projections for New York City’; ▪ ‘create a set of tools to help task force members identify at-risk infrastructure and develop adaptation strategies’; ▪ ‘write draft protection levels to guide the design of new infrastructure’, and; ▪ ‘issue a technical report on the localized effects of climate change on New York City-similar to the IPCC's landmark 2007 report on global climate change’ (City of New York 2008). <p>The Panel released a publication in 2009 outlining ‘Climate Risk Information’ for New York City (New York City Panel on Climate Change 2009).</p> <p>PlaNYC (2011 updated version)</p> <p>PlaNYC is an action agenda for the City of New York which sets aims and ‘milestones’ for how the City should ‘look and feel’ in 2030 (City of New York 2011: 3). The updated 2011 version of the Plan refers to the challenges posed by climate change, and in particular sea level rise. The Plan states that the City ‘will develop an updated digital elevation model using...new LiDAR data to promote more accurate sea level rise modelling’ (City of New York 2011: 156). It also promises to ‘launch an effort to develop publicly-available projected flood maps that incorporate sea level rise projections for planning purposes’ (City of New York 2011: 156). These aims are included in the Plan as ‘milestones’ to be completed by December 31, 2013 (City of New York 2011: 196).</p>
Planned/Proposed Legal/Policy Reform	<p>Implementation of the Sea Level Rise Task Force’s Recommendations</p> <p>‘An ad hoc interagency work group is currently examining opportunities to implement aspects of the Sea Level Rise Task Force’s recommendations as permitted under current agency authorities. (Implementation of many of the recommendations would require Legislative action that appears unlikely in the near future.) Opportunities for short-term actions include adoption of official projections of sea level rise for New York State, promulgation of coastal maps indicating likely areas of coastal flooding in consideration of sea level rise, and guidance to local and state permit review staff on review of projects within high-hazard areas’ (Lowery pers. comm., 2011).</p> <p>Department of State Initiatives</p> <p>The New York State Department of State (NYSDOS) is currently ‘working on a pilot regional program to address local government management issues including natural habitats, water quality and climate change impacts for the South Shore Estuary’ (Pendergrass pers.comm., 2011). If the planning approach is successful it ‘may be extended to other regions’ (Pendergrass pers.comm., 2011).</p> <p>NYS DOS is also currently working on incorporating sea level rise into guidance for communities undertaking Local Waterfront Revitalization Programs (Marcell; Pendergrass pers. comm., 2011).</p>
Areas for Improvement	<p>Need for improved planning coordination</p> <p>‘New York State is a “home-rule” state, which means that the state has almost no land-use planning authority. Currently, land-use planning falls under local authority and there is little coordination among municipalities. Effective coastal planning will likely require regional planning to which all involved municipalities, as well as the state, would be committed, with the goal of producing a shoreline management plan’ (Lowery pers. comm., 2011).</p>

	<p>Need for agreement and research regarding sea level rise and coastal storm impacts</p> <p>According to Barry Pendergrass from NYS DOS (pers.comm., 2011):</p> <p>‘Continuing lack of agreement on global and regional sea level rise projections hamper efforts to engage legislators and local governments in effective planning. We anticipate the 5th Assessment Report of the Intergovernmental Panel on Climate Change will provide improved global projections with sufficient scientific certainty to support action. However, IPCC AR5 is not due until 2013-14, creating a vacuum of information to support action. Regional downscaled SLR projections would also be beneficial.</p> <p>Additional certainty concerning the frequency and intensity of coastal storms as affected by climate change would be beneficial. There is a lack of specificity of the geographic distribution of coastal storm impacts, particularly with regard to extra-tropical storms (called “nor-easters” in this area), which undercuts planning efforts’.</p> <p>Need for a program to assist/compensate private landowners affected by sea level rise</p> <p>According to Barry Pendergrass from NYS DOS (pers.comm., 2011):</p> <p>‘In the event that existing developed areas are unsafe or uninhabitable as a result of SLR, there is no existing program to assist or compensate private landowners (no state-wide land trust, relocation program, etc.) As a consequence, private owners will be reluctant to relocate or abandon property due to the high personal loss they will absorb. This will have the dual effect of forcing private property owners to defend vulnerable locations with every means available, and increasing demand on county, state and federal resources for defensive measures and emergency assistance’.</p>
<p>Relevant Links</p>	<ul style="list-style-type: none"> ▪ City of New York (2011), ‘PlaNYC – Update April 2011: A Greener, Greater New York’, http://nytelecom.vo.llnwd.net/o15/agencies/planyc2030/pdf/planyc_2011_planyc_full_report.pdf ▪ City of New York (2008), ‘Mayor Bloomberg launches Task Force to adapt critical infrastructure to environmental effects of climate change’, http://www.nyc.gov/portal/site/nycgov/menuitem.c0935b9a57bb4ef3daf2f1c701c789a0/index.jsp?pageID=mayor_press_release&catID=1194&doc_name=http%3A%2F%2Fwww.nyc.gov%2Fhtml%2Fom%2Fhtml%2F2008b%2Fpr308-08.html&cc=unused1978&rc=1194&ndi=1 ▪ Hudson River Estuary Program (2010), ‘Hudson River Estuary Action Agenda 2010-2014’, http://www.dec.ny.gov/docs/remediation_hudson_pdf/hreaa2010.pdf ▪ New York City Panel on Climate Change (2009), <i>Climate Risk Information</i>, http://www.nyc.gov/html/om/pdf/2009/NPCC_CRI.pdf ▪ New York State Climate Action Council (2010), <i>Climate Action Plan Interim Report</i>, http://www.nyclimatechange.us/InterimReport.cfm ▪ New York State Department of Environmental Conservation (2011a), ‘Hudson River Estuary Program’, http://www.dec.ny.gov/docs/remediation_hudson_pdf/hrepfacts.pdf ▪ New York State Department of Environmental Conservation (2011b), ‘Coastal Management’, http://www.dec.ny.gov/lands/28923.html ▪ New York State Department of Environmental Conservation (2011c), ‘Climate Smart Communities’, http://www.dec.ny.gov/energy/50845.html#G ▪ New York State Department of State Division of Coastal Resources (2011a), ‘New York State Coastal Policies’, http://nyswaterfronts.com/consistency_coastalpolices.asp ▪ New York State Department of State Division of Coastal Resources (2011b), ‘Environmental Protection Fund Local Waterfront Revitalization Program’, http://nyswaterfronts.com/grantopps_epf.asp ▪ New York State Department of State Division of Coastal Resources (2004), ‘Local Waterfront Revitalization Program (LWRP)’, http://nyswaterfronts.com/aboutus_lwrp.asp

	<ul style="list-style-type: none"> ▪ New York State Energy Research and Development Authority (2010), <i>ClimAID Synthesis Report: Responding to Climate Change in New York State</i>, http://www.nyserda.org/programs/environment/emep/clim-aid-synthesis-draft.pdf ▪ New York State Sea Level Rise Task Force (2010), <i>New York State Sea Level Rise Task Force: Report to the Legislature</i>, http://www.dec.ny.gov/docs/administration_pdf/slrtffinalrep.pdf
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Government	United Kingdom
Jurisdiction over Coastal Planning	<p>In the UK, the national government and local governments share jurisdiction over coastal planning and management. In relation to planning, the national Government's Department for Communities and Local Government (2011a), 'supports plan-making and development management, principally through the provision of planning legislation, national planning policy and guidance'. However, as explained by the DCLG (2011a), the 'core elements of the planning system' (such as 'development plan-making and development management') are 'primarily undertaken at the local level'.</p> <p>Although '[m]anagement of the coast does not lie within the remit of a single authority or organisation', the Environment Agency has been 'given the strategic overview role for coastal and flooding issues in England' (POST 2009: 3).</p> <p>Relevant authorities include:</p> <ul style="list-style-type: none"> ▪ Department for Environment, Food and Rural Affairs – DEFRA 'has national policy responsibility for flood and coastal erosion risk management' (DEFRA 2011b). ▪ Department for Communities and Local Government – DCLG 'sets policy on supporting local government; communities and neighbourhoods; regeneration; housing; planning, building and the environment; and fire' (DCLG website - http://www.communities.gov.uk/corporate/about/). ▪ The Environment Agency - The Environment Agency 'has statutory responsibility for flood management and defence in England and will support the planning system by providing timely information and advice on flooding issues that is fit for purpose' (DCLG 2010a: 10). One of the agencies key priorities is addressing the impacts of climate change on coastal areas, especially sea level rise (Environment Agency 2010). ▪ Marine Management Organisation (England) – created under the Marine and Coastal Access Act 2009, the MMO is 'the new manager and regulator of England's marine environment' (Environment Agency 2011a).
Legislative/Policy Framework	<p><u>Legislative Framework:</u></p> <p>Climate Change Act 2008 As explained by the Department of Energy and Climate Change (2011), the Climate Change Act 2008 sets a 'requirement for the Government to report at least every five years on the risks to the UK of climate change, and to publish a programme setting out how these will be addressed. The Act also introduces powers for Government to require public bodies and statutory undertakers to carry out their own risk assessment and make plans to address those risks'.</p> <p>Coast Protection Act 1949 The Coast Protection Act establishes 'Coast Protection Authorities' which execute 'coast protection work'.</p> <p>Marine and Coastal Access Act 2009 The Marine and Coastal Access Act creates a 'new, comprehensive management system for [England's] coasts and seas' (Environment Agency 2011a).</p> <p>Flood and Water Management Act 2010 The Flood and Water Management Act (2010) (which has not yet come into effect) is designed to provide for 'better, more comprehensive management of flood risk for people, homes and businesses, helps safeguard community groups from unaffordable rises in surface water drainage</p>

charges and protects water supplies to the consumer’ (DEFRA 2011b). The Act gives local authorities an ‘important role in flood protection work’ by creating ‘Lead Local Flood Authorities’ who are required to ‘develop, maintain, apply and monitor Local Flood Risk Management Strategies’ (DEFRA 2011b).

NB: Other relevant legislation exists, such as the **Flood Risk Regulations 2009**, etc...

Policy Framework:

Making Space for Water Report (2005)

In 2005, the UK Government released the ‘Making Space for Water Report’ which outlines the Government’s ‘strategy for flood and coastal erosion risk management in England’. The report comprehensively outlines the mechanisms through which the strategy will be achieved, including:

- Ensuring that ‘adaptability to climate change becomes an integral part of all flood and coastal erosion management decisions’ (8);
- Promoting a ‘programme of research on the impacts of climate change’ (8);
- Adopting a ‘whole catchment and whole shoreline approach that is consistent with, and contributes to the implementation of, the Water Framework Directive’ (8);
- Facilitating a ‘holistic approach that is risk-driven’ (8);
- Giving the ‘Environment Agency an overarching strategic overview across all flooding and coastal erosion risks’ (8);
- Ensuring ‘local participation in decision-making, in particular through the preparation of Catchment Flood Management Plans and Shoreline Management Plans, within a context of national standards and nationwide information on flood risks and prioritisation’ (15);
- Encouraging the ‘inclusion of Flood Risk Assessments at all levels of the planning process’ (21).

As explained by the Parliamentary Office of Science and Technology (2009: 2), the Make Space for Water programme ‘represents a policy shift from hard defences and ‘holding the line’ policies to risk management’. This policy shift ‘recognises that risk can be reduced but not eliminated, and the advantages of natural protection through options such as managed realignment for some sites’ (POST 2009: 2).

Shoreline Management Plans

The policy shift represented in the Make Space for Water report has been incorporated into the development of Shoreline Management Plans (SMPs). SMPs ‘assess the risks associated with current and future coastal processes and coastal development’ (POST 2009: 2). SMPs are ‘delivered by ‘Regional Coastal Groups’ in partnership with a lead authority...on the basis of Defra guidance’ (POST 2009: 2). In keeping with the principles outlined in the Make Space for Water programme, the new SMPs focus on ‘policies that are technically feasible and work with natural processes, resulting in some coastlines no longer being defended’ (POST 2009: 2). The new SMPs have also ‘started to incorporate projections of sea level rise into long term plans for coastal defences’ (POST 2010: 3).

Planning Policy Statement 25 Development and Flood Risk (Policy, Supplement and Practice Guide)

Policy Statement

Planning Policy Statement 25 relating to development and flood risk management explains that the policies contained within the Statement ‘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' (DCLG 2010a).

The Statement explains that:

- **Policy Aims** - 'The aims of planning policy on development and flood risk are 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. Where new development is, exceptionally, necessary in such areas, policy aims to make it safe without increasing flood risk elsewhere and where possible, reducing flood risk overall' (DCLG 2010a: 2).
- **Responsibilities** – 'There is no general statutory duty on the Government to protect land or property against flooding' (DCLG 2010: 8).
- **Sea Level Rise Benchmarks** - In determining flood risk assessments for regional areas, the Statement recommends that the following 'contingency allowances for net sea level rise' are taken into consideration:

Administrative Region	Net Sea Level Rise (mm/yr) Relative to 1990			
	1990 to 2025	2025 to 2055	2055 to 2085	2085 to 2115
East of England, East Midlands, London, SE England (south of Flamborough Head)	4.0	8.5	12.0	15.0
South West	3.5	8.0	11.5	14.5
NW England, NE England (north of Flamborough Head)	2.5	7.0	10.0	13.0

Source: DCLG 2010a: 15.

Policy Statement Supplement

The Policy Supplement to the Policy Statement was released in 2010 to provide guidance to planning authorities/practitioners relating to the specific issue of planning for 'coastal change' (which includes permanent inundation and coastal erosion). One of the Government's central policy objectives outlined in the Supplement is to 'prevent new development from being put at risk from coastal change by':

- 'avoiding inappropriate development in areas that are vulnerable to coastal change or any development that adds to the impacts of physical changes to the coast', and;
- 'directing development away from areas vulnerable to coastal change' (DCLG 2010b: 4).

Policy Practice Guide

The Practice Guide incorporates numerous case studies which provide planning authorities with guidance on possible ways they can address coastal planning challenges, particularly in response to rising sea levels. For example, the Guide (2010c: 45) cites an example of a planning compromise from the Isle of Wight where a 'time-limited consent' was granted to a developer who planned to develop on land subject to future coastal risk from sea

level rise:

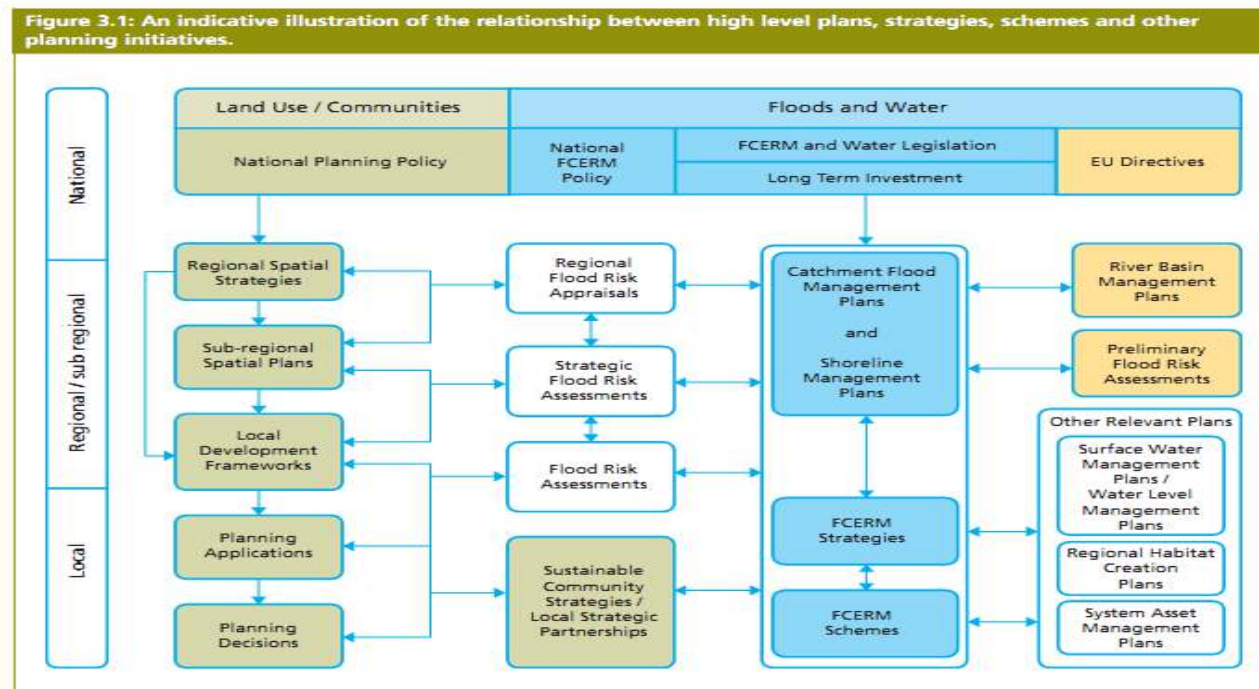
‘The developer and agent discussed and agreed having a time-limited consent of 50 years. The capital cost of the development would be written down over that period, including any interim refurbishments. In this respect, the process can be likened to a leasehold permission rather than freehold in perpetuity of usual planning permissions. At the end of the consented period, a reappraisal could be undertaken as to whether current sea level rise predictions have occurred. If sea level rise had not been as severe as predicted, then additional time could be consented. The agreement also included that any sea defence plans of further protection or retreat would be formulated and based on a zero value for the consented premises.’

Planning Policy Statement 1 (Delivering Sustainable Development) and Supplement to Planning Policy Statement 1 (Planning and Climate Change)

In 2007, the UK Government introduced a supplement to the UK’s planning policy (PPS1) relating to the delivery of sustainable development. The Supplement states that ‘tackling climate change is a key Government priority for the planning system’ and for this reason requires that regional and local planning bodies take climate change impacts into account in the development of planning strategies and in the determination of planning applications (DCLG 2007).

Appraisal of Flood and Coastal Erosion Risk Management (DEFRA 2009)

In a Policy Statement released in 2009, the Department for Environment, Food and Rural Affairs set out ‘the principles that should guide decision making on the sustainable management of flood and coastal erosion risk in England’ (DEFRA 2009: 4). The Statement contains a useful illustration of how the management framework in relation to flood and coastal erosion risk operates:



Source: DEFRA 2009: 18.

Planned/Proposed Legal/Policy Reform	<p>Planned: National Planning Policy Framework The Department for Communities and Local Government (2011) has announced that a ‘review of planning policy’ in the UK will be undertaken which is ‘designed to consolidate policy statements, circulars and guidance documents into a single concise National Planning Policy Framework’ (DCLG 2011b).</p> <p>Proposed: National Flood and Coastal Erosion Risk Management Strategy Under the Flood and Water Management Act 2010, the Environment Agency is required to ‘develop a National Flood and Coastal Erosion Risk Management Strategy for England’ (Environment Agency 2011b). The Strategy (which will have statutory effect) must describe ‘what needs to be done by all authorities involved in flood and coastal erosion risk management’. The Strategy ‘is designed to support local decision-making and engagement’ which will involve the ‘development of local flood risk management strategies by lead local flood authorities’ (Environment Agency 2011b).</p> <p>In the Government’s recent response to the Environment, Food and Rural Affairs Committee’s First Report, the Government stated that the Government has ‘made commitments to deliver planning reform and prevent unnecessary building in areas of high flood risk’ (DEFRA 2011c). The Government further stated that ‘Defra and [the Department for Communities and Local Government] are working together to deliver a planning system which allows for greater local decision making whilst also ensuring development is safe and sustainable from a flood risk perspective’ (DEFRA 2011c).</p>
Other Relevant Initiatives	<p>Coastal Change Pathfinders The UK Government has introduced the ‘Coastal Change Pathfinders’ program which provides funding (from the coastal change fund established in 2009) to local authorities to enable them to explore ‘new ways of adapting to coastal change’ (DEFRA 2011a). The aim of the program is to improve ‘understanding of how coastal communities can adapt to coastal change and what the costs and benefits of different approaches are’ (DEFRA 2011a). For example, local authorities might trial ‘buy and lease back schemes for properties at risk’ (POST 2009: 2).</p> <p>Thames Estuary 2100 The Thames Estuary 2100 project is ‘an Environment Agency-led flood risk management project set up to protect London and the tidal reaches of the Thames’ (POST 2010: 4). The project involves:</p> <ul style="list-style-type: none"> ▪ The creation of ‘an adaptive plan able to protect against a 1.9 metre rise in sea level’ (POST 2010: 4); ▪ The development of ‘different flood management options for different reaches of the Thames’ including ‘adaption to different future climate scenarios on short (2010-2035), medium (2035-2070) and long (2070-2100) timescales’ (POST 2010: 4). <p>Coastal Erosion Assistance Grant DEFRA has ‘committed to a £6,000 coastal erosion assistance grant for homeowners who are at risk of losing their property to coastal erosion’ which ‘contributes to costs of demolishing the property and some basic moving costs’ (POST 2010: 4).</p> <p>Review of International Coastal Adaptation Policies (2008) In 2008, the Environment Agency ‘commissioned a review of best international approaches on coastal adaptation’ with a view to informing the UK’s coastal adaptation strategies (POST 2010: 4).</p> <p>Other relevant initiatives:</p> <ul style="list-style-type: none"> ▪ UK Climate Impacts Programme: http://www.ukcip.org.uk/; Climate UK: http://www.climateuk.net/

Relevant Links	<ul style="list-style-type: none"> ▪ Department for Communities and Local Government (2011a), 'The Planning System', http://www.communities.gov.uk/planningandbuilding/planningsystem/ ▪ Department for Communities and Local Government (2011b), 'National Planning Policy Framework', http://www.communities.gov.uk/planningandbuilding/planningsystem/planningpolicy/planningpolicyframework/ ▪ Department for Communities and Local Government (2010a), 'Planning Policy Statement 25: Development and Flood Risk', http://www.communities.gov.uk/documents/planningandbuilding/pdf/planningpolycstatement25.pdf ▪ Department for Communities and Local Government (2010b), 'Planning Policy Statement 25 Supplement: Development and Coastal Change', http://www.communities.gov.uk/documents/planningandbuilding/pdf/1498576.pdf ▪ Department for Communities and Local Government (2010c), 'Planning Policy Statement 25 Supplement: Development and Coastal Change Practice Guide', http://www.communities.gov.uk/documents/planningandbuilding/pdf/1499049.pdf ▪ Department for Communities and Local Government (2010d), 'New planning policy on development and coastal change - consultation: Summary of responses', http://www.communities.gov.uk/documents/planningandbuilding/pdf/1499086.pdf ▪ Department for Communities and Local Government (2010e), 'Planning for Development and Coastal Change: Impact Assessment', http://www.communities.gov.uk/documents/planningandbuilding/pdf/1499208.pdf ▪ Department for Communities and Local Government (2007), 'Planning Policy Statement: Planning and Climate Change - Supplement to Planning Policy Statement 1', http://www.communities.gov.uk/documents/planningandbuilding/pdf/ppsclimatechange.pdf ▪ Department for Environment Food and Rural Affairs (2011a), 'Coastal Change Pathfinders', http://www.defra.gov.uk/environment/flooding/coastal-change-pathfinders/ ▪ Department for Environment, Food and Rural Affairs (2011b), 'Flooding and Coastal Change', http://www.defra.gov.uk/environment/flooding/ ▪ Department for Environment Food and Rural Affairs (2011c), <i>Future Flood and water management legislation: Government response to the Committee's First Report of Session 2010-11 - Environment, Food and Rural Affairs Committee</i>, http://www.publications.parliament.uk/pa/cm201011/cmselect/cmenvfru/922/92204.htm ▪ Department for Environment, Food and Rural Affairs (2009), <i>Appraisal of flood and coastal erosion risk management: A Defra policy statement</i>, http://www.defra.gov.uk/publications/files/pb13278-erosion-manage-090619.pdf ▪ Department for Environment, Food and Rural Affairs (2005), <i>Making space for water: Taking forward a new Government strategy for flood and coastal erosion risk management in England</i>, http://archive.defra.gov.uk/environment/flooding/documents/policy/strategy/strategy-response1.pdf ▪ Department of Energy and Climate Change (2011), 'Climate Change Act 2008', http://www.decc.gov.uk/en/content/cms/legislation/cc_act_08/cc_act_08.aspx ▪ Parliamentary Office of Science and Technology (2010), <i>Sea Level Rise</i>, http://www.parliament.uk/documents/post/postpn363-sea-level-rise.pdf ▪ Environment Agency (2011a), 'Marine and Coastal Access Act', http://www.environment-agency.gov.uk/research/planning/40191.aspx ▪ Environment Agency (2011b), 'National Flood and Coastal Erosion Risk Management Strategy', http://www.environment-agency.gov.uk/research/policy/130073.aspx ▪ Environment Agency (2010), 'TE2100 Flood Risk Management Plan', http://www.environment-agency.gov.uk/homeandleisure/floods/104695.aspx ▪ Environment Agency (2010), <i>Managing the environment in a changing climate</i>, http://publications.environment-agency.gov.uk/PDF/GEHO0111BTJW-E-E.pdf ▪ Parliamentary Office of Science and Technology (2009), <i>Coastal Management</i>, http://www.parliament.uk/documents/post/postpn342.pdf
Useful Contact	<p>Department for Communities and Local Government - contactus@communities.gov.uk</p> <p>Department for Environment, Food and Rural Affairs - defra.helpline@defra.gsi.gov.uk</p>

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