Other Coastal Hazard Planning Related Projects & References[1]

Scale	Project	Project Manager/ Reference Details	Study Area	Project Summary	Project Type*
Global	IPCC Third Assessment (2001)	Intergovernmental Panel on Climate Change	Global	The IPCC Third Assessment Report, *Climate Change 2001*, is an assessment of available scientific and socio-economic information on climate change by an intergovernmental panel (IPCC) established by the United Nations Environment Programme (UNEP) and the UN's World Meteorological Organization (WMO).	1. 2. & 3.
	IPCC Fourth Assessment (2007)	Intergovernmental Panel on Climate Change	Global	Fourth report in a series intended to assess the scientific, technical and socio-economic information concerning climate change, its potential effects, and options for adaptation and mitigation. The report is released in four distinct sections - the Working Group reports (I, II & III) and the Synthesis Report (Summary for Policy Makers).	1. 2. & 3.
	IPCC Fifth Assessment (2014)	Intergovernmental Panel on Climate Change	Global	The Fifth Assessment Report provides an update of knowledge related to climate change including information on: • Socio-economic aspects of climate change and its implications for sustainable development; • More detailed regional information; • More precise considerations of risk, economics and ethics; and • Stabilisation of greenhouse gas concentrations.	1. 2. & 3.
	IPCC Sixth Assessment (underway)	Intergovernmental Panel on Climate Change	Global	The IPCC is currently in its Sixth Assessment cycle. During this cycle, the Panel will produce three Special Reports, a Methodology Report on national greenhouse gas inventories and the Sixth Assessment Report (AR6). The AR6 will comprise three Working Group contributions and a Synthesis Report. The AR6 Synthesis Report will integrate and synthesize the contributions from the three Working Groups that will be rolled out in 2021 into a concise document suitable for policymakers and other stakeholders. It will be finalised in the first half of 2022 in time for the first global stocktake under the Paris Agreement.	1. 2. & 3.
United Kingdom	Shoreline Management Plans: Guidance Volume 1 and 2 (2006)	Department for Environment, Food and Rural Affairs	England and Wales	A shoreline management plan (SMP) is a large-scale assessment of the risks associated with coastal processes and helps to reduce these risks to people and the developed, historic and natural environment. Volumes 1 and 2 provide guidance on producing SMPs. They are aimed at people responsible for defining and managing the production of SMPs and those carrying out work to produce these plans. The guidance is split into two volumes: • Volume 1: defines an SMP and what it should include; • Volume 2: provides guidance on how to produce an SMP in line with the requirements in volume 1.	5.
United States of America	Coastal Construction Manual: Principles and Practises of Planning, Siting, Designing, Constructing, and Maintaining Residential Buildings in Coastal Areas (2011)	Federal Emergency Management Agency	United States of America	This Manual provides guidance for designing and constructing residential buildings in coastal areas that will be more resistant to the damaging effects of natural hazards. The focus is on new residential construction and substantial improvement or repairs of substantial damage to existing residential buildings. This Manual is intended to be used by contractors, designers, architects, and engineers who are familiar with the design and construction of one- to three-story residential buildings in coastal areas of the United States and its territories.	5.
New Zealand	Climate Change Effects and Impacts Assessment: A Guidance manual for Local Government in New Zealand (2008)	New Zealand Government	New Zealand	This manual provides projections of the expected physical impacts of climate change, both at the national level and for regions around New Zealand. It is designed to help local government identify and quantify opportunities and risks that climate change poses for their functions, responsibilities and infrastructure. It also demonstrates how to incorporate climate risk assessment into local government regulatory, assessment and planning processes to reduce vulnerability to the impacts of climate change.	5.
National	HB 203:2012 Managing Environment-Related Risk (2012)	Standards Australia / Standards New Zealand	Australia and New Zealand	This Handbook is intended to help individuals and organizations to: • Develop a clear understanding of environment-related risks; • Manage environment-related risk effectively and in a manner that is integrated with other risks across the organization; • Make well informed decisions associated with environment-related risks; and • Provide a consistent terminology when discussing the environment, environment related risk and risk management.	5.
	AS 5334-2013 Coastal Change Adaptation for Settlements and Infrastructure – A Risk Based Approach (2013)	Standards Australia	National	This Standard provides principles and generic guidelines on the management of the risks that settlements and infrastructure face from the impacts of climate change.	5.

	AS ISO 31000:2018 Risk Management – Guidelines (2018)	Standards Australia	National	This document provides a common approach to managing any type of risk and is not industry or sector specific. It can be used throughout the life of the organisation and can be applied to any activity, including decision-making at all levels.	5.
	Climate Change Adaptation Guidelines in Coastal Management and Planning (2012)	Engineers Australia	National	This guideline is directed at local government engineers and managers whose area of responsibility includes a section of the Australian coastline. It is designed to assist in making appropriate decisions in managing coastal development problems subject to climate variability and change including when to call for additional expert advice.	5.
	Climate Change Impacts and Risk Management: A Guide for Business and Government (2006)	Australian Government	National	This document is a guide to integrating climate change impacts into risk management and other strategic planning activities in Australian public and private sector organisations. The purpose of this Guide is to assist Australian businesses and organisations to adapt to climate change.	5.
	Smartline (2010)	University of Tasmania	National	The Smartline Coastal Geographic Map of Australia is a detailed map of the coastal landform types (geomorphology) of continental Australia and most adjacent islands. Creation of this map is useful is assessing the vulnerability of Australia's coast to sea-level rise.	1.
	Coastal Digital Elevation Model	Australian Government - Department of Climate Change	National	The creation of a national Digital Elevation Model (DEM) was the highest priority task identified for the national risk assessment. DEMs provide a three dimensional model of the ground surface topography and are critical to assessing risk from inundation in low-lying areas. The mid resolution DEM covers the entire coast derived from SPOT High Resolution Stereoscopic Reference3D (SPOT) satellite imagery.	1.
	Climate Change Risks to Australia's Coast: A First Pass National Assessment (2009)	Australian Government - Department of Climate Change and Energy Efficiency	National	This report presents the findings of the first national assessment of the risks of climate change for the whole of Australia's coastal zone. The objectives of the first pass national coastal risk assessment are to: • Initial assessment of the Climate Change (CC) implications for Australia's coastal regions. • Identify high risk areas to CC impacts. • Identify impediments to developing effective coastal adaptation responses. • Help identify national priorities for adaptation to reduce CC risk in the coastal zone.	2. & 3.
	Climate Change Risks to Coastal Buildings and Infrastructure: A Supplement to the First Pass National Assessment (2011)	Australian Government - Department of Climate Change and Energy Efficiency	National	This document supplements the analysis presented in the *Climate Change Risks to Australia's Coast (2009)* – See above for report details. The document provides additional data on the exposure of commercial buildings, light industrial buildings, and transport systems (road, rail, tramways) in Australia's coastal areas. Existing data on residential properties is also reported in the document, as well as subsequent modelling of projected population change and implications for the exposure levels of residential properties.	2. & 3.
	Australian Climate Change Science – A National Framework (2009)	Australian Government – Department of Climate Change	National	The Framework identifies national climate change science priorities for the coming decade and sets out ways to harness our full science capacity to address them.	1. & 2.
	Australian Climate Change Adaptation Research Network for Settlements and Infrastructure (2010)	National Climate Change Adaptation Research Facility (NCCARF)	National	Sets out the priority research agenda for the next 5-7 years to inform a better understanding of climate change risks and impacts on settlements and infrastructure and how these risks can be managed and impacts reduced through planned adaptation interventions.	1. 2. & 3.
	House of Representatives Inquiry into Climate Change and Environmental Impacts on Coastal Communities (2009)	Parliament of Australia	National	Inquiry into climate change and environmental pressures experienced by Australian coastal areas, with particular regard to: • Existing policies and programs related to coastal zone management, taking in the catchment-coast-ocean continuum • Environmental impacts of coastal population growth and mechanisms to promote sustainable use of coastal resources • The impact of climate change on coastal areas and strategies to deal with climate change adaptation, particularly in response to projected sea level rise • Mechanisms to promote sustainable coastal communities • Governance and institutional arrangements for the coastal zone.	1. 2. & 3.

	Estimating Sea Level Extremes	Antarctic Climate & Ecosystems Cooperative Research Centre	National	Web tool specifically designed for designers, planners and policymakers to assist in understanding how to: • Assess the risk to existing assets from sea level rise and plan appropriate adaptation • Set appropriate design codes and planning strategies for future developments.	1. 2. 3.& 4
	Climate Change in Australia: Projections for Australia's NRM Regions (Technical Report) (2015)	CSIRO and the Bureau of Meteorology	National	A comprehensive report that outlines the key climate change projection messages for Australia across a range of variables. It contains an extensive set of figures and descriptions on recent Australian climate trends, global climate change science, climate model evaluation processes, modelling methodologies and downscaling approaches. The report includes a chapter describing how to use climate change data in impact assessment and adaptation planning.	1.
	Government Coastal Planning Responses to Rising Sea Levels, Australia and Overseas (2011)	Antarctic Climate & Ecosystems Cooperative Research Centre	National	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.	3.
	The Critical Decade 2013: Climate Change Science, Risks and Responses	Professor Will Steffen & Professor Lesley Hughes - Climate Council (Independently reformed from the previous Federal Government's Climate Commission)	National	In its previous report titled *The Critical Decade: Climate science, risks and responses*, the Climate Commission stated that this decade, 2011-2020, is the decade to decisively begin the journey to decarbonise our economy, thereby reducing the risks posed by climate change. One quarter of the way through the critical decade they present an update of their current knowledge of risks to our communities and the responses.	3.
	Coastal Risk Management Plan: Template and Guidelines (2009)	Government of Tasmania	Tasmania	This document provides a simple template of headings for a Coastal Risk Management Plan, and Guidelines for how to develop a plan based on the Template. It is designed for managing the risks to specific assets, or discrete local areas where a few particular assets at risk occur together, and then to identify realistic and effective options for how to respond to those risks.	5.
	Communication Guidelines Coastal Hazard Adaptation (2014)	Local Government Association of Queensland	Queensland	These Guidelines were prepared to provide a practical resource to assist both elected members and council officers develop fit-for-purpose communication strategies about coastal hazards and council's decision-making processes to respond and adapt to such hazards.	5.
	Developing a Coastal Hazard Adaptation Strategy: Minimum Standards and Guideline for Queensland Local Governments (2016)	Local Government Association of Queensland and Queensland Government	Queensland	The purpose of this document is to assist coastal local governments impacted by existing and future coastal hazards to develop a Coastal Hazard Adaptation Strategy that will identify coastal hazards, associated vulnerabilities and risks, and inform the selection of suitable adaptation options.	5.
State and Regional	**WA Coastal Zone Strategy (2017)**	Western Australia State Government	WA coastal zone	The Strategy is the Western Australian Government's strategic response to key issues facing coastal planning and management. The Strategy establishes the State Government's vision, goals and objectives for coastal zone management. It also provides a high-level framework for collective action by stakeholders to ensure a sustainable future for the State's coast.	4.
	State Planning Policy No. 2.6 State Coastal Planning Policy (2013)	Department of Planning, Lands and Heritage	WA coastal zone	State Planning Policy No. 2.6 State Coastal Planning Policy (SPP2.6) was fully reviewed and gazetted in July 2013. The purpose of SPP2.6 is to provide guidance for decision-making within the coastal zone including managing development and land use change; establishment of foreshore reserves; and to protect, conserve and enhance coastal values. Schedule one of SPP 2.6 provides guidance for calculating the component of the coastal foreshore reserve required to allow for coastal processes. The allowance for sea level rise should be based on a vertical sea level rise of 0.9 metres over a 100-year planning timeframe to 2110.	5.

	State Coastal Planning Policy Guidelines (2013)	Department of Planning, Lands and Heritage	WA coastal zone	The key objective of these guidelines is to provide detailed guidance for the application of the policy measures in SPP2.6. A review of the guidelines will be completed in 2020.	5.
	Coastal Hazard Risk Management and Adaptation Planning Guidelines (2019)	Department of Planning, Lands and Heritage	WA coastal zone	These guidelines have been produced to support the implementation of SPP2.6 by assisting decision-makers in developing and implementing effective coastal hazard risk management and adaptation planning (CHRMAP). They provide an overview and explanation of: • The process for undertaking CHRMAP; • Determining appropriate content for CHRMAP; and • Assessing options for appropriate management and adaptation to risk. A review of the guidelines was completed in mid-2019.	5.
	Risk Management Guidelines (2011)	Insurance Commission of Western Australia	Statewide	These guidelines were developed to assist the Government of Western Australia's agencies in developing and implementing effective risk management processes. They should be read in conjunction with the WA Government Business Continuity Guidelines, as the management of critical incidents and emergencies is just one aspect of an agency's overall approach to managing risk.	5.
	Risk Management Resources (2013)	Department of Local Government	Statewide	This document provides the process and framework for undertaking risk management and its inclusion in all local government functions and services.	5.
	LiDAR Survey and Bathymetric Mapping (2009)	Department of Transport, Coastal Infrastructure	Two Rocks to Cape Naturaliste	These high-resolution baseline data sets have been acquired for use in the study of coastal processes and assessments of coastal vulnerability and the potential impacts of sea level rise. The project outputs include complete and seamless data files of water depths and broad seabed imagery from pseudo-reflectance, and high resolution coastal 3D models of the land and seabed.	1.
	LiDAR Survey and Bathymetric Mapping (2016)	Department of Transport, Coastal Infrastructure	Hillarys to Horrocks, Abrolhos Islands, southwest inland waterways		
	Terrestrial LiDAR (2008)	Department of Water and Environmental Regulation	Swan Coastal Plain	In 2008 the Department of Water commissioned Fugro Spatial Solutions to undertake a land based LiDAR survey of 7000km² of the Swan Coastal Plain. The survey was conducted in February 2008 at 1m x 1m resolution. The digital terrain model which resulted is being used to determine the patterns of flooding, groundwater/surface water interaction and ecological systems.	1.
	Coastal Compartments & Sediment Cells	Department of Planning, Lands and Heritage	Statewide – Strategic, regional and local scales	The aims include identifying the principal landforms and processes of the coast and nearshore waters as well as for comparative purposes to establish areas of relative susceptibility to environmental change. To identify a hierarchy of planning units based on natural coastal systems similar to the approach used to identify river catchments. The marine and coastal planning units should approximately accord with mapping scales commonly used for the preparation of statutory plans.	1. & 2.
	WA Coast Project – Coastal Compartments and Sediment Cells (2011-2012)	Geological Survey of Western Australia	Pilbara, Gascoyne, Lancelin to Kalbarri, Rottnest Island and Cape Naturaliste to Lancelin.	The Geological Survey of Western Australia recognises the importance of geology and geomorphology as the framework underpinning decisions in the coastal zone. The surveys characterise the geomorphology and geology of the nearshore, foreshore and backshore at a high level of detail using the 'Smartline' mapping concept. Additional datasets include a detailed assessment of the 198 beaches in the study area, a large-scale geomorphological map of the coastal zone, and an atlas of aerial-oblique photographs of the coast. The results of the study are aimed at coastal engineers, planners, managers and organisations that are involved in developing and implementing coastal management plans. The data provides a sound scientific basis for decision making and should be applied to underpin strategic coastal planning and management decisions.	1. & 2.
	Climate Change Scenarios for Initial Assessment of Risk in Accordance with Risk Management Guidance (2006)	Prepared by CSIRO for the Australian Greenhouse Office, Department of the Environment and Heritage	North-Western and South-Western Australia	This report provides climate change scenarios for ten regions across Australia (including South Western and North-Western Australia) for use in the initial assessment of risks as recommended by the Australian Government. These scenarios have been prepared by CSIRO for the Australian Greenhouse Office. Specifically, scenarios were needed for 2030 for changes in: • average annual temperature, rainfall, potential evaporation and sea-level; • average daily extremes of temperature, rainfall, cyclone intensity and fire danger. • average annual solar radiation and humidity, and extreme daily wind-speed (each of which were found to be small, and are therefore not reported in detail).	1.

	University of WA - Coastal Oceanography Research THE UNIVERSITY OF WESTERN AUSTRALIA	C.Pattiaratchi, T.Stul, I.Haigh, M.Eliot	Statewide	A research group at UWA has undertaken work that encompasses coastal physical processes and their influence on biological, geological and climate processes on the continental shelf region, the nearshore (beach) zone and estuaries. The group uses field measurements, remote sensing and computer modelling as the tools of research. Through sustained work carried out over the past 28 years, the research group has made significant contributions towards the understanding of coastal and shelf processes in Western Australia and the Indian Ocean region, discovering features and processes unique to Western Australia.	1. & 2.
	How to Photo Monitor Beaches (2012) GOVERNMENT OF WESTERN AUSTRALIA	Department of Transport	Applicable to the WA coast between Kalbarri and Eucla	This step by step photo monitoring guide can assist coastal managers to identify trends in beach change, identify beach management issues and assist in developing strategic directions for coastal planning.	1.
	Coastline Movements Vegetation Lines GOVERNMENT OF WESTERN AUSTRALIA	Department of Transport	Statewide	The primary purpose of this online coastal movement tool is to provide a spatial representation of coastal vegetation lines, sand drift extents and a generalised water line for Western Australia. This dataset has been captured using available imagery and photogrammetric techniques. This dataset is used in the production of coastline movements drawings by the Department of Transport. A range of coastline movements lines are available for the years 1875–2011.	1.
	Coastal Sediment Cells for the Mid-West Coast between Moore River and Glenfield Beach (2014) GOVERNMENT OF WESTERN AUSTRALIA	Report prepared by Seashore Engineering Pty Ltd and Geological Survey of WA for the Department of Transport	Coast between Moore River (Guilderton) to Glenfield Beach (north of Geraldton)	This report presents a hierarchy of sediment cells along the Mid-West Coast for application in engineering, science, planning, management and governance of the region. Sediment cell boundaries were mapped and identified at three spatio-temporal scales, along approximately 350km of the Western Australian coast between the Moore River and Glenfield Beach. The area includes the inner continental shelf and coastal lands of the Mid-West Region in the northern Swan Coastal Plain. The three scales range from small, local landforms and the day-to-day processes affecting them to large coastal systems changing over millennia in response to global processes. At each scale the cells identify boundaries within which to consider the potential implications of proposed coastal engineering works as well as for assessment of coastal planning and management practices.	1.
	Coastal Sediment Cells for the Vlamingh Region between Cape Naturaliste and Moore River (2015) GOVERNMENT OF WESTERN AUSTRALIA	Report prepared by Seashore Engineering Pty Ltd and Geological Survey of WA for the Department of Transport	Between Cape Naturaliste and the Moore River	This report presents a hierarchy of sediment cells along the Vlamingh Coast for application in engineering, science, planning, management and governance of the region. Sediment cell boundaries were mapped and identified at three spatio-temporal scales, along approximately 350km of the Western Australian coast between Cape Naturaliste and the Moore River. The area includes the inner continental shelf and coastal lands of the Vlamingh Region in the southern Swan Coastal Plain, including Garden Island and Rottnest Island. The three scales range from small, local landforms and the day-to-day processes affecting them to large coastal systems changing over millennia in response to global processes. At each scale the cells identify boundaries within which to consider the potential implications of proposed coastal engineering works as well as for assessment of coastal planning and management practices.	1.
Perth Metropolitan Area	**Natural Hazard Risk in Perth, Western Australia (2005)** Australian Government	Trevor Jones, Miriam Middelmann & Neil Corby, Geoscience Australia	Covers Perth Metropolitan Area	Hazard risk assessment by Geoscience Australia and collaborating agencies (notably Bureau of Meteorology and local governments). This study is aimed at estimating the impact on the Perth community of several sudden-onset natural hazards. The natural hazards considered are both meteorological and terrestrial in origin. The hazards investigated most comprehensively are riverine floods in the Swan and Canning Rivers, severe winds in metropolitan Perth, and earthquakes in the Perth region.	1. & 2.
	Climate Change Risk Assessment and Adaptation Analysis (2012) CITY OF VINCENT · CITY of PERTH · MRA Metropolitan Redevelopment Authority	City of Perth, City of Vincent, Metropolitan Redevelopment Authority	Central Perth Area (administrative boundaries of the City of Perth, MRA and the City of Vincent)	A partnership between the City of Perth, City of Vincent and MRA Central commissioned an investigation into the key impacts of projected climate change. The project aims to better understand the impacts of climate change in the project area, and to identify and assess the risks posed by climate change to buildings (existing and future) and their users. Identifying and understanding a potential adaptation process was a key part of phase 2.	2. & 3.
	Climate Change Risk Assessment Project (2010) SWAN RIVER TRUST · GOVERNMENT OF WESTERN AUSTRALIA	Swan River Trust	Windan Bridge (Swan) to Riverton Bridge (Canning)	The study provides a methodology to assist local governments to identify which foreshore assets in the Swan Canning Riverpark are most at risk from sea level rise. This information will help prioritise and target local government adaptation strategies.	2.

	Coastal Vulnerability and Flexible Adaptation Pathways Project	Cockburn Sound Coastal Alliance (Partnership between Cities of Cockburn, Rockingham, Fremantle and Kwinana and Perth Region NRM)	The Cockburn Sound and Owen Anchorage coastal strip between Fremantle Fishing Boat Harbour and Point Peron, Rockingham, including the east coast of Garden Island	This project is a staged delivery undertaken by the Cockburn Sound Coastal Alliance, led by the City of Cockburn and incorporating: Stage 1 – Coastal Vulnerability Assessment (completed in 2013): Investigated metocean behaviour and sediments movements within Cockburn Sound plus coastal landform to project and map potential erosion and inundation of the coast from Fremantle to Rockingham under various sea level rise and storm event scenarios out to year 2110; Stage 2 – Coastal Values and Risk Assessment Study (completed in 2014): In consultation with key agencies and stakeholders, identified the built and natural 'assets' along the coast likely to be affected by coastal processes, what are the economic, social and ecosystem services 'values at risk', and presented 'first pass' adaptation options to address those identified risk areas; Stage 3 – Coastal Adaptation Plans (completed in 2016): Engaged with community and stakeholders, determined options to address the coastal vulnerabilities and the 'values at risk' determined in Stage 1 and 2, and recommended in detailed Adaptation Plans for each local government area, site specific adaptation actions covering planning and physical treatments over ensuing timeframes; and Stage 4 – Adaptation Plan Implementation and Monitoring (commencing in 2017): Implementing the first scheduled adaptation actions identified in Stage 3.	1. 2. & 3.
	Vulnerability of the Cottesloe Foreshore to the Potential Impacts of Climate Change (2008)	Town of Cottesloe	Cottesloe foreshore	The main aim of the Cottesloe Climate Change Vulnerability Assessment Project was to establish potential risk to existing key coastal infrastructure under a range of future climate scenarios. The overriding objectives to achieve this aim were: • Analysis of contemporary coastal conditions (environmental conditions and resultant coastal change) • Determination of scenarios for future climate change • Prediction of impacts on the physical coastal environment • Implications of physical change for existing infrastructure. In addition, the possible strategic alternatives for adaptation were also considered.	2. 3. & 4.
	Northern & Southern Perth Metropolitan Coast Coastal Setback Study (2005)	Department for Planning and Infrastructure (now Department of Planning, Lands and Heritage) and M P Rogers & Associates	Cook Lump to Fremantle & Fremantle to Singleton	In 2005, the Department for Planning and Infrastructure (DPI) commissioned two studies of coastal process along the Perth metropolitan coastline. The aim of the studies were to provide a preliminary assessment of the physical processes setback line, using schedule 1 in State Planning Policy No. 2.6 State Coastal Planning Policy (SPP 2.6) as gazetted 2003. The studies were used to help determine where future management focus may be required and to identify where any proposed development may need more detailed coastal engineering studies. **Please note:** The State Planning Policy No. 2.6 State Coastal Planning Policy was fully reviewed and gazetted in July 2013. For further information see the SPP 2.6 row under 'State and Regional' (above).	1. & 2.
	Coastal Flooding of the Swan River and the Effects of Climate Change Induced Mean Sea Level Rise (2012)	The University of Western Australia (Ian R. McMullen)	Swan River	The aim of this study is to assess the vulnerability of the Swan River region to coastal flooding resulting from extreme sea level events in relation to predicted rises in mean sea level. A range of intensities of extreme sea level events will be looked at under present and possible future sea level conditions. To achieve this, the specific objectives of this study were defined as: • To produce an accurate two dimensional, high-resolution model of the Swan River; • To determine inundation levels caused by extreme sea level events relative to mean higher high water; and • To evaluate possible implications faced by the surrounding communities.	1. & 2.
	Town of Cambridge Coastal Vulnerability Study	Town of Cambridge	Town of Cambridge coast	A coastal vulnerability investigation for physical coastal processes for the Town's coastline (approx. 5km) to inform future coastal planning and management. A draft has been completed by MP Rogers and Associates.	1. & 2.
	Climate Change Response Strategy (2012)	City of Rockingham	Rockingham	The purpose of this strategy is to: • Provide an overview of what climate change is and how it could potentially impact the organisation and its activities; • Address those strategic community plan aspirations that would be affected by the variables associated with climate change and to link this to the City's operations; • Provide a "vehicle" through which the identified community and organisational strategic objectives can be driven through targeted mitigation and adaptation actions that have been developed through a risk analysis process.	3. & 4.

	Adapting to Climate Change in the City of Melville 2012-2017 (2012)	City of Melville	Melville	A risk analysis for impacts of climate change in the future, with priority actions to be carried out in order for the City of Melville to adapt.	3.
	Climate Change Adaptation Plan: Preparing for and Responding to Climate Risks in the City of Stirling (2013)	City of Stirling	Stirling	The City acknowledges that climate change planning is an important and long-term task and the development of this Adaptation Plan represents the first stage of many in helping the City build resilience. The main climatic changes likely to be of significance to the City are sea-level rise, increasing temperatures, reduced rainfall and infiltration, and increased frequency and intensity of storms.	3.
	City of Joondalup Coastal Infrastructure Adaptation Plan 2018-2026	City of Joondalup	Joondalup	The plan has been developed to ensure the City is adequately prepared to adapt to current and future coastal hazards and risk to City infrastructure and assets is minimised. The objectives of the Plan are to: • Improve understanding of the potential impacts of current and future coastal hazards. • Identify risk to the City's infrastructure and assets as a result of current and future coastal hazards. • Identify and implement projects to minimise risk to the City's infrastructure and assets from current and future coastal hazards. • Identify a long term approach that will guide the City's future adaptation responses in the coastal zone.	1. 2. & 3.
Peel	**City of Mandurah Coastal Zone Climate Change Risk Assessment and Adaptation Plan (2009)**	City of Mandurah	Mandurah	To identify and prioritise risks arising from climate change, develop strategies to manage them, and to develop a climate change adaptation plan.	2. 3. & 4.
	Climate Change Impact Modelling, and Quantifying Coastal Development	Hamish Anderson – Climate Change Project Leader - Geoscience Australia Department of Climate Change and Energy Efficiency	Rockingham to Bunbury	The overarching objective of this project is to provide additional spatial information products to inform the National Coastal Vulnerability Assessment (NCVA), which complement existing NCVA projects and support a more comprehensive and credible assessment of climate change risks in the coastal zone. This study will undertake detailed modelling of coastal impacts under current climate and future climate change scenarios for the area south of Perth, from Rockingham to Bunbury.	1. & 2.
	The Yalgorup Coast: Binningup to Cape Bouvard, WA (2009)	Damara WA Pty Ltd for the Department of Planning and Department of Environment and Conservation	Binningup to Cape Bouvard	The objective of this project was to describe the geomorphology of the Yalgorup Coast and identify areas of relative instability between Binningup and Cape Bouvard, including sections of the beach and barrier dune potentially subject to risk in response to projected environmental change.	1. & 2.
	Regional Climate Change Impact Modelling for Mandurah, Western Australia (2012)	M. Hazelwood and D. Moore (Geoscience Australia)	Mandurah	This project has three aims: • To assess the feasibility of integrating coastal recession and hydrodynamic storm-tide inundation modelling outputs in order to assess the vulnerability of Mandurah LGA to a change in environmental conditions under a range of future climate scenarios; • To build on the National Coastal Risk Assessment and perform a more detailed coastal vulnerability, impact and exposure analysis at Mandurah; • To complete spatial analysis to identify the exposure of buildings, roads, bridges and rail infrastructure to the modelled hazards and to estimate exposure costs where available.	1. & 2.
South West	**Bunbury Storm Surge Modelling (2012)**	Department of Planning, Lands and Heritage & Geoscience Australia	Bunbury	The WAPC, together with the Department of Planning, Lands and Heritage, engaged the services of Geoscience Australia to undertake an assessment of Bunbury's coastal vulnerability. This study uses the latest modelling techniques to improve our understanding of the consequences for Bunbury of a storm surge event, both under present conditions and in future scenarios where climate change has caused sea levels to rise.	1. & 2.
	Busselton Storm Surge Modelling (2014)	Department of Planning, Lands and Heritage & Geoscience Australia	Busselton	The WAPC, together with the Department of Planning, Lands and Heritage have engaged the services of Geoscience Australia to undertake an assessment of Busselton's coastal vulnerability by modelling storm surge and flooding scenarios.	1. & 2
	Developing Flexible Adaptation Pathways for the Peron Naturaliste Coastal Region of WA 2011-2012	Peron Naturaliste Partnership (Local Governments between Cape Peron and Cape Naturaliste)	Cape Peron to Cape Naturaliste	The key reason for this project is to ensure the Peron Naturaliste Coastal Region is adequately prepared to respond to the impacts of climate change. The project will develop adaptation planning options for the region, which will help to deliver the following two specific project outcomes: • An economic-based regional test of adaptation options to treat identified impacts of coastal climate change; and • A detailed demonstration of several coastal adaptation pathways and options at a local scale.	3.

Great Southern	**Climate Change: Whole of Landscape Analysis of the Impacts and Options for the South Coast Region (2009)**	South Coast Natural Resource Management	South Coast Region	The aim of the project is to identify the potential risks and impacts of climate change and seasonal variability on the natural resource assets, land and seascapes, industries and communities of the South Coast region of Western Australia, to allow the South Coast community to develop actions and set priorities to minimise the impacts of climate change on the environment and the community.	2. & 3.
Wheatbelt	**The Coast of the Shires of Gingin and Dandaragan, Western Australia: Geology, Geomorphology and Vulnerability (2012)**	Damara WA Pty Ltd and Geological Survey of Western Australia for the Department of Planning and Department of Transport	Shires of Gingin and Dandaragan	Provide a strategic planning guidance, management strategies and direction on appropriate land uses for future subdivision and development of coastal land in the Shire of Gingin and Shire of Dandaragan by the identification of sediment cells that define coastal stability and susceptibility to change the coastal zone.	1. & 4.
Mid West	**Dongara to Cape Burney Coastal Study (2011)**	Department of Planning, Lands and Heritage	Dongara to Cape Burney	The Study includes information that may be of assistance in progressing strategic planning for this part of the coast and comprises of: • The Dongara to Cape Burney Visual Landscape Assessment aims to assess landscape features in order to develop landscape management objectives and design guidelines within the Dongara to Cape Burney area. • The Dongara to Cape Burney Western Australia: Geomorphology report describes the geomorphology of the coast between the northern limit of the Dongara Townsite and the mouth of the Greenough River at Cape Burney South. This will assist to identify areas of relative instability including sections of the beach and dune system that are potentially subject to environmental change. • This assessment has been on-going and this report is proposed to be superseded by an all-encompassing Mid West assessment. This assessment is expected to be completed by the end of 2011. The Dongara to Cape Burney Flora and Vegetation Survey was undertaken in 2008, and re-surveyed in 2011. It aims to provide a regional context of native vegetation in the Greater Geraldton region to allow informed planning decisions to be made.	2. 3. & 4.
	Coastal Processes Study – Greys Beach to Sunset Beach (2010)	City of Greater Geraldton, Geraldton Port Authority & Department of Transport	Sunset Beach to Greys Beach (City of Greater Geraldton)	The aim of the study is to understand coastal processes in the region, and use that knowledge to inform the coastal management priorities and practices between Grey's Beach in the south to Sunset Beach in the north.	2. & 3.
	Climate Change Adaptation Action Plan (2010)	AECOM Australia prepared for the Batavia Regional Organisation of Councils	City of Geraldton-Greenough, Shire of Northampton, Shire of Irwin, Shire of Chapman Valley	The Batavia Regional Organisation of Councils (BROC) is comprised of the City of Greater Geraldton and the Shires of Irwin, Northampton and Chapman Valley. The Climate Change Adaptation Action Plan project focussed on identifying risks and opportunities and developing adaptation actions for the councils in response to the higher temperatures, reduced rainfall and sea level rise projected for the region in the future.	2. & 3.
	Mid West Regional Council Climate Change Risk Assessment and Adaptation Action Plan (2010)	Mid West Regional Council	Shires of Coorow, Carnamah, Mingenew, Morawa, Mullewa, Perenjori and Three Springs	Key objectives of the plan are: • Identification, analysis and evaluation of climate change risks to future financial, infrastructure and environmental assets and associated services of member Councils. • Formulation of a series of strategies by member Councils and the MWRC to manage identified climate change risks. • Creating 'local ownership' and instilling the capacity within member Councils to address the impacts of climate change by encouraging personal involvement in developing and implementing adaptation. • Capacity building within member Councils to enhance the understanding of, and to build resilience to climate change. • Identification to climate change risks that require further investigation beyond the scope of the study. Integration of results from the climate change risk assessment and adaptation responses into Climate Change Adaptation Action Plans for the member Councils and the MWRC.	2. 3. & 4.
	The Coast of the Shires of Coorow to Northampton, Mid West, WA: Geology, Geomorphology and Vulnerability (2012)	Damara WA Pty Ltd and Geological Survey of Western Australia for the Department of Planning and Department of Transport	Shires along the Mid West coast	The objectives of the project are to: • Describe the geomorphology of the coast of the Shires of Coorow to Northampton in Western Australia; • Determine land systems or structures that are susceptible to change over a long period; • Identify landforms that are currently unstable; and • Assess the vulnerability of different parts of the coast to projected change in metocean forcing.	1. 2. & 4.

	Coastal Sediment Cells for the Northampton Region between Glenfield Beach and the Murchison River (2014)	Report prepared by Seashore Engineering Pty Ltd and Geological Survey of WA for the Department of Transport	Coast between Glenfield Beach (north of Geraldton) and Nunginjay Spring Coast (north of Kalbarri)	This report presents a hierarchy of sediment cells along the Northampton Coast for application in engineering, science, planning, management and governance of the region. Sediment cell boundaries were mapped and identified at three spatio-temporal scales, along approximately 145km of the Western Australian coast between Glenfield Beach (north of Geraldton) and north of the Murchison River. The area includes a length of coast in the lee of the Houtman Abrolhos (approximately 45km offshore) and coastal lands of the Chapman Region and southern Victoria Plateau. The three scales range from small, local landforms and the day-to-day processes affecting them to large coastal systems changing over millennia in response to global processes. At each scale the cells identify boundaries within which to consider the potential implications of proposed coastal engineering works as well as for assessment of coastal planning and management practices.	1.
Gascoyne	**Cyclonic Inundation and Coastal Processes Modelling (2009)**	Department for Planning and Infrastructure (now Department of Planning, Lands and Heritage)	Carnarvon	Global Environment Modelling Services were commissioned to carry out a study that would examine the impact of storm surge inundation and coastal processes at Carnarvon. The aims of the study were to determine: • Areas affected by cyclonic inundation; • Stability of Babbage Island spit during significant cyclonic events; • Appropriate coastal development setbacks; • Finished floor levels for development; and • Any required protection works and management strategies in order to minimise the risk of damage to future development.	1. & 2.
	Cyclonic Inundation Modelling for Coral Bay (2005)	Shire of Carnarvon and Ningaloo Sustainable Development Office (no longer operational); Department of Planning, Lands and Heritage	Coral Bay	Global Environment Modelling Services were commissioned by the Ningaloo Sustainable Development Office to undertake a study to identify storm surge inundation levels at Coral Bay. The study included storm surge inundation and associated wave run-up and overtopping impact levels for several designated cyclone events. The design storms were based on Category 4 and 5 cyclones impacting Coral Bay on a 'worst' track basis and coinciding with mean spring tide.	1. & 2.
	The Coast of the Shires of Shark Bay to Exmouth, Gascoyne, WA: Geology, Geomorphology and Vulnerability (2012)	Damara WA Pty Ltd and Geological Survey of Western Australia for the Department of Planning and Department of Transport	Shires along the Gascoyne coast	The objectives of the project are to: • Describe the geomorphology of the coast of the Shires of Shark Bay, Carnarvon and Exmouth at a broad, strategic planning scale; • Describe the land systems and landforms comprising the coast to indicate potential coastal responses to projected change in metocean forcing; and • To identify the nature and degree of investigation required to support management proposals for the land system or landform under consideration.	1. 2. & 4.
Pilbara	**Port Hedland Coastal Vulnerability Study (2011)**	Landcorp, Department of Planning and Department of Water	Port Hedland, Wedgefield, South Hedland and Shellborough	To evaluate the combined effects of coastal inundation (flooding and storm surge) arising from cyclonic events for the Town of Port Hedland and the surrounding area, and to also assess shoreline stability over planning periods of up to 100 years (2110). This study is critical in identifying development opportunities and constraints for Port Hedland to meet the infrastructure requirements as population doubles over the next 15 years.	1. & 2.
	Onslow Townsite Planning Coastal Setbacks & Development Levels (Draft, 2011)	Landcorp, Department of Planning and Department of Water	4 Mile Creek to Beadon Creek	Landcorp commissioned M P Rogers & Associates Pty Ltd to assess the appropriate setback to account for the action of physical coastal processes in line with SPP2.6 as well as to investigate potential coastal inundation in order to determine the appropriate development levels. This report has been split into two parts, the first dealing with the coastal setback assessment while the second part investigates the extent of potential coastal inundation. This report presents the data, methods and findings of the Onslow Coastal Setback and Development Levels study.	1. & 2.
	Karratha Coastal Vulnerability Study (2012)	Landcorp, Department of Planning and Department of Water	Karratha and Dampier	The purpose of this study is to: • Evaluate the combined effects of storm surge, coastal inundation and shoreline movement on the future expansion of the townsite for Karratha (including Dampier townsite); and • Provide estimates of the storm surge components and total water levels for a range of design return periods along Karratha coastline. (A hydraulic model is required as a part of this study).	1. & 2.
	Geology, Geomorphology & Vulnerability of the Pilbara Coast, in the Shires of Ashburton, East Pilbara and Roebourne, and the Town of Port Hedland, Western Australia (2013)	Damara WA Pty Ltd and Geological Survey of Western Australia for the Department of Planning	Pilbara coast between Hope Point (Exmouth Gulf) and Tryon Point (north of Eighty Mile Beach)	The objectives of the project are to: • Describe the geomorphology of the coast of the Shires of Ashburton, East Pilbara and Roebourne and the Town of Port Hedland at a broad, strategic planning scale; • Describe the land systems and landforms comprising the coast to indicate potential coastal responses to projected change in metocean forcing; and • To identify the nature and degree of investigation required to support management proposals for the land system or landform under consideration.	1. 2. & 4.

	[Coastal Sediment Cells for the Pilbara Coast between Giralia and Beebingarra Creek, WA (2014)]	Report prepared by Seashore Engineering Pty Ltd and Geological Survey of WA for the Department of Transport	Pilbara coast between Giralia and Beebingarra	This report presents a hierarchy of sediment cells along the Pilbara Coast for application in planning, management, engineering, science and governance of the region. Sediment cell boundaries were mapped and identified at three spatio-temporal scales, along approximately 810km of the Western Australian coast between Giralia (Exmouth Gulf) and Beebingarra Creek (east of Port Hedland). The area includes the inner continental shelf together with the coastal lands of the Northern Carnarvon Basin and the Pilbara Craton. The three scales range from landforms and the day-to-day processes and extreme events affecting them to large coastal systems changing over millennia in response to global processes. At each scale the cells identify boundaries within which to consider the potential implications of proposed coastal engineering works as well as for assessment of coastal planning and management practices.	1.
Kimberley	[Broome Coastal Vulnerability Study (2015)]	Cardno prepared for the Shire of Broome	Broome Townsite	The Shire of Broome engaged Cardno to undertake a study of the combined effects of coastal inundation and catchment flooding on the Broome Township. This study will provide input into the necessary local government area strategic framework, within which the Shire can assess future development and management proposals.	1. & 2.
	[Derby Coastal Vulnerability Study (2015)]	Baird Australia and Emerge Associates for the Shire of Derby/West Kimberley	Derby Townsite and immediate surroundings	The study is intended to support future planning and flood risk management for the Town of Derby and surrounding areas. The project involved three technical reports: Storm surge and coastal inundation assessment; shoreline stability assessment; and Derby flood modelling report.	1. & 2.

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***Key for Project Types:**

1. Data Collection/Interpretation (i.e. the project involves investigation of Metocean Processes, Biological Drivers, Understanding Processes, Data Acquisition)
2. Vulnerability Assessment/Risk Assessment (identification and evaluation of the consequences for infrastructure, communities and natural assets)
3. Adaptation Plan (following risk / impact / vulnerability assessments, identification of actions or responses)
4. Strategy
5. Policy or Guideline

[1] It is important to note that neither the Department of Planning, Lands and Heritage (DPLH) or the Western Australian Planning Commission (WAPC) have made judgements as to the technical merit of the methodologies used in all of these studies and in no way endorses all of the projects or their findings. Some of these projects have received funding through the WAPC and DPLH has provided assistance and support though participation in project steering committees. Any representation, statement, opinion or advice expressed or implied in this table is made in good faith and on the basis that the Government, its employees and agents are not liable for any damage or loss whatsoever which may occur as a result of action taken or not taken, as the case may be, in respect of any representation, statement, opinion or advice referred to herein. Professional advice should be obtained before applying the information contained in this table to particular circumstances.