

# DECISION SUPPORT FOR ADAPTATION: THE HANDBOOK

## The Handbook

The primary output of the Decision Support for Adaptation project - 'The Handbook' provides a consistent and transparent decision making process to assist councils identify management options (including long term adaptation pathways) in vulnerable coastal areas. It applies to both existing coastal hazards and those projected to worsen due to climate change. Coastal areas are broadly defined as:

- beaches, dunes, cliffs, headlands and foreshore areas on the open coast.
- estuaries, wetlands and lagoons, coastal lakes, and tidal river systems.
- coastal catchments and the coastal hinterland.

The issues and decision-making processes for which the Handbook has been designed focus on potential economic, social and environmental impacts arising from:

- sea level rise;
- coastal recession associated with more frequent or severe storms, storm tides, and changes to coastal currents and other coastal processes;
- changes to extreme rainfall and associated flooding (rivers and flash flooding) in coastal areas; and
- a combination of these events.

The Handbook is a valuable tool for progressing coastal management and adaptation planning. Key applications include:

- informing locality or 'place based' adaptation planning
- informing the design and implementation of coastal and flood risk hazard assessments and management plans, and in particular, assisting with the assessment and selection of preferred management options
- informing the design of new assets or renewal / upgrade of existing assets to improve resilience to climate change
- providing a clear process for consistently and effectively engaging local communities and stakeholders in coastal decision making processes, including demonstrating the process through which adaptation options are determined.

## Project Partners

Project partners include the region's seven coastal councils (Greater Taree, Great Lakes, Port Stephens, Newcastle, Lake Macquarie, Wyong and Gosford) and NSW Office of Environment and Heritage (Department of Premier and Cabinet). Funding for the project was provided through the Commonwealth Government's Coastal Adaptation Pathways Initiative.



**Australian Government**  
Department of Climate Change  
and Energy Efficiency



# Using the Handbook

Five key principles underpin application of the Handbook:

- 1. **Consistency and transparency:** The Handbook will lead to consistent and transparent approaches to decision-making on coastal adaptation.
- 2. **Comprehensiveness:** The Handbook is applicable to a range of different issues.
- 3. **Scalability:** The Handbook can be applied at different scales and over different timeframes.
- 4. **Adaptiveness:** The Handbook enables risk and uncertainty to be addressed through adaptive decision-making processes.
- 5. **Community and stakeholder focussed:** The Handbook recognises the crucial role and input of local communities and stakeholders to the decision-making process.

Effective collaboration, engagement and communication is critical.

Three elements critical to the decision-making process are also emphasised:

- 1. integrated decision-making.
- 2. dealing with risk and uncertainty.
- 3. effective collaboration, engagement and communication processes.

The Handbook also provides guiding principles for coastal decision-making. These overarching principles aim to guide all decisions at different stages in the decision-making process. Adherence to these principles is intended to improve the credibility and consistency of coastal adaptation decisions, both within and across councils and also other coastal decision-makers. They include:

- 1. **Objective focused:** Decisions should be made with the purpose of meeting clear, measurable and prioritised objectives
- 2. **Efficient use of resources:** Decision-makers should seek to achieve objectives cost effectively.
- 3. **Risk averse:** As a minimum, pursue strategies that will avoid catastrophic outcomes.
- 4. **Avoid maladaptation:** Avoid adaptation strategies that adversely impact or increase the vulnerability of other systems, sectors or social groups.
- 5. **Adaptive management:** Encourage adaptation strategies that are flexible, reversible and can achieve multiple objectives and synergies.
- 6. **Relevant:** Use data, methods, criteria and assumptions appropriate to the nature of the decision and that meet the expectations and requirements of stakeholders.
- 7. **Completeness:** Consider all potential implications of decisions - direct and indirect costs, and winners and losers.
- 8. **Consistent:** Use data, methods, criteria and assumptions that allow for meaningful and valid comparisons with other decisions of a similar nature.
- 9. **Consultative:** Meaningful consultation and engagement should be undertaken to ensure that decisions reflect stakeholder and community values and preferences. The level of engagement should reflect the significance of the decision.
- 10. **Collaborative:** Decisions should be collaborative, involving close cooperation with other relevant decision-makers.
- 11. **Transparent:** Provide clear and sufficient information for reviewers to assess the credibility and reliability of the decision.
- 12. **Compliant:** Ensure decisions comply with relevant national and state legislation, policies and guidelines.

# The Decision Making Process

The Handbook establishes 10 key stages in the decision-making process:

### Stage 1. Define the issue

Assists practitioners clearly define the issue or problem to inform the level of priority that should be assigned to the issue, the overall decision-making approach and subsequent stages in the process.

### Stage 2. Clarify roles and responsibilities

Assists practitioners determine roles and responsibilities including:

- outlining the legislative and policy framework;
- defining roles and responsibilities, including how councils should deal with shared responsibilities and multi-layered decision-making; and
- addressing barriers and uncertainties relating to councils' responsibilities.

### Stage 3. Establish objective

Assists councils to establish a primary objective against which to identify and assess adaptation options, including guidance on:

- identifying objectives for the region or area being examined;
- prioritising between competing objectives; and
- establishing a primary objective and constraints on that objective.

### Stage 4. Assess hazards and risks

All decisions on coastal adaptation need to be underpinned by a sound understanding of potential climate changes and the local and regional scale consequences of those changes. This stage provides guidance on:

- the difference between a hazard assessment and a risk assessment;
- why hazard and risk assessments are important to the decision-making process;
- hazards and risks that should be addressed in the assessment; and
- the hazard and risk assessment process.

A clear primary objective is paramount to effective decision making.

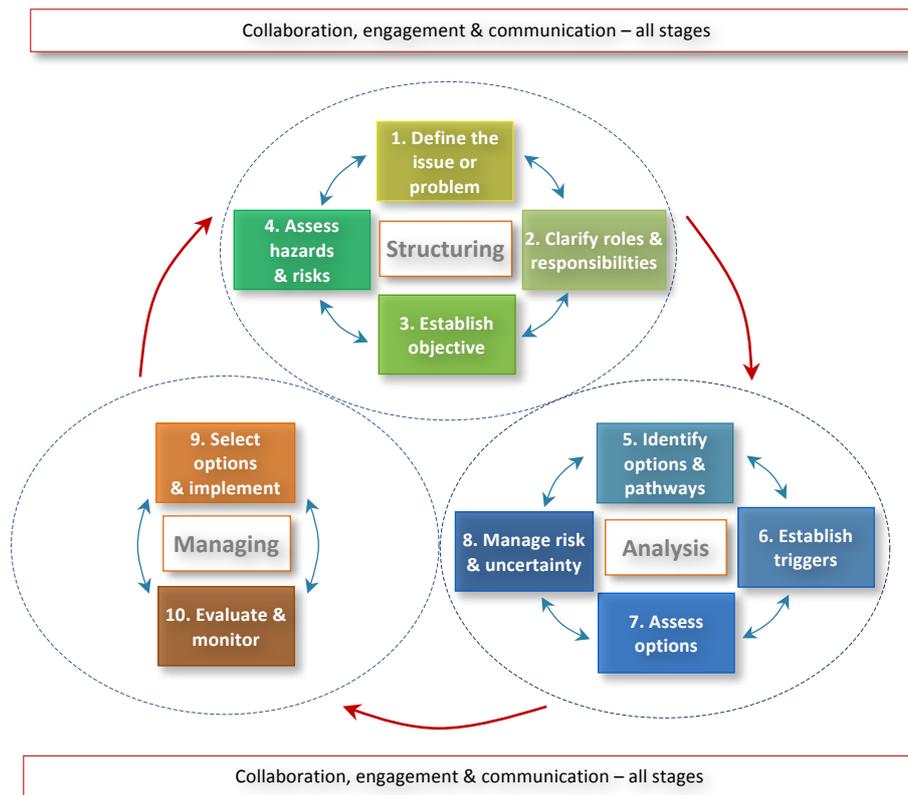


Figure 1: Stages in the decision making process.

**Stage 5. Identify options and pathways**

Assists councils identify a range of potential adaptation options and consider how those options will be sequenced over time (i.e. adaptation pathways). This stage provides:

- examples of different adaptation strategies and categories of options;
- guiding principles for good adaptation practice;
- a process and criteria for filtering (or screening) options to derive a short list for more detailed assessment later in the process;
- a process for bundling (or grouping) of options that have synergies; and
- a process for mapping adaptation pathways over time, distinguishing between flexible and inflexible options and discussing implications of different pathways for the options assessment.

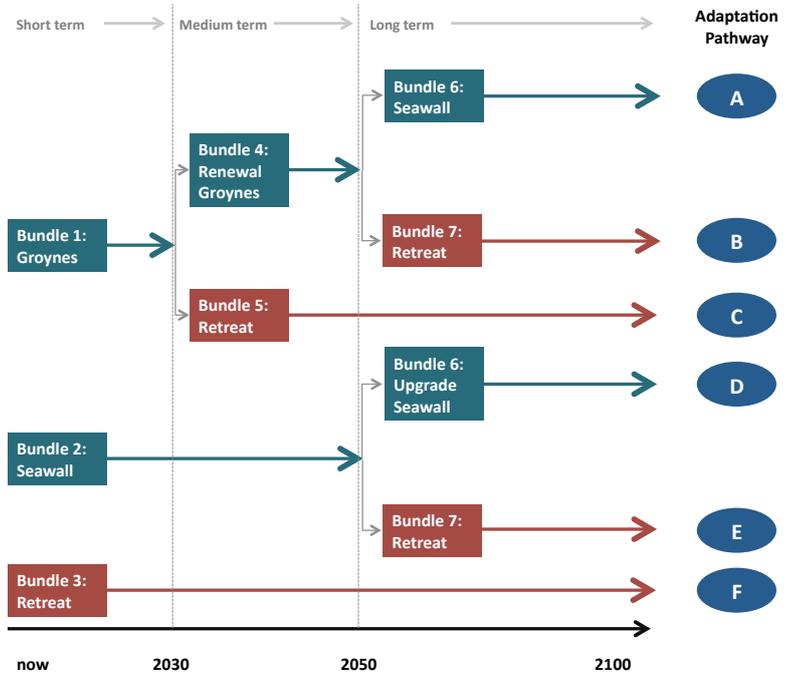


Figure 2: Stage 5 assists practitioners map adaptation pathways over time.

**Stage 6. Establish thresholds and triggers**

Provides guidance on the methodology and process for identifying the timing of adaptation responses, particularly:

- the concepts of 'thresholds' and 'triggers' and the difference between them;
- the benefits of using thresholds and triggers and where it is appropriate to do so;
- types of thresholds and the process for establishing them;
- the process of selecting appropriate triggers based on thresholds; and
- principles, processes and mechanisms for monitoring progress toward identified triggers.

**Stage 7. Assess options**

Focuses on methods that can be employed to assess options and discusses the factors influencing the selection of a suitable method including:

- identification of benefits and costs of adaptation;
- main characteristics of a range of options assessment methods and how they are applied;
- factors influencing selection of the options assessment method;
- nature of information and expertise required for application of alternative methods; and
- key principles of options assessment.

**Stage 8. Manage risk & uncertainty in the options assessment**

Making decisions on coastal adaptation will inevitably involve dealing with risks and uncertainties. Effectively managing this is crucial to decision making. This stage provides guidance on a variety of techniques for managing uncertainty.

**Stage 9. Select and implement options**

Once options have been identified and assessed, decision-makers need to select the preferred options, bundles or pathways, develop an implementation schedule and ensure that possible impediments to the implementation and operation of the option are identified and mitigated. This stage examines these issues and looks at 'distributional issues' a key factor to be addressed prior to implementing preferred options and pathways. 'Distributional issues' covers two important questions:

- who benefits from the adaptation strategy? and
- who should pay?

**Stage 10. Monitor and evaluate**

Discusses monitoring and evaluation of adaptation actions, considering suitable approaches and how best to act on the results of the monitoring and evaluation so as to achieve a truly iterative approach to adaptation.

## Why do we need the Handbook?

Significant population growth, urban and industrial infrastructure, and nationally and internationally important natural assets located in the coastal zone make the Hunter, Central and Lower North Coast region particularly vulnerable to existing coastal processes, and those projected to worsen due to climate change.

The Commonwealth Government's First Pass National Assessment: Climate Change Risk to Australia's Coast identifies that three of the region's councils are among those most affected by sea level rise in Australia. Along with Wollongong, Shoalhaven and Rockdale (outside the region), the Lake Macquarie, Wyong and Gosford council areas represent over 50% of the residential buildings in NSW at risk from sea level rise.

As such the need for local council action on climate change is well recognised in the region. In particular, there is a legal and liability imperative for councils to effectively consider and plan for the projected impacts of sea level rise. Significant information exists confirming that if councils make a genuine and serious attempt to alleviate potential risks, using the best information available, then their duty of care will be satisfied.

In partnership with HCCREMS, significant resources have been directed by councils toward a regional program to:

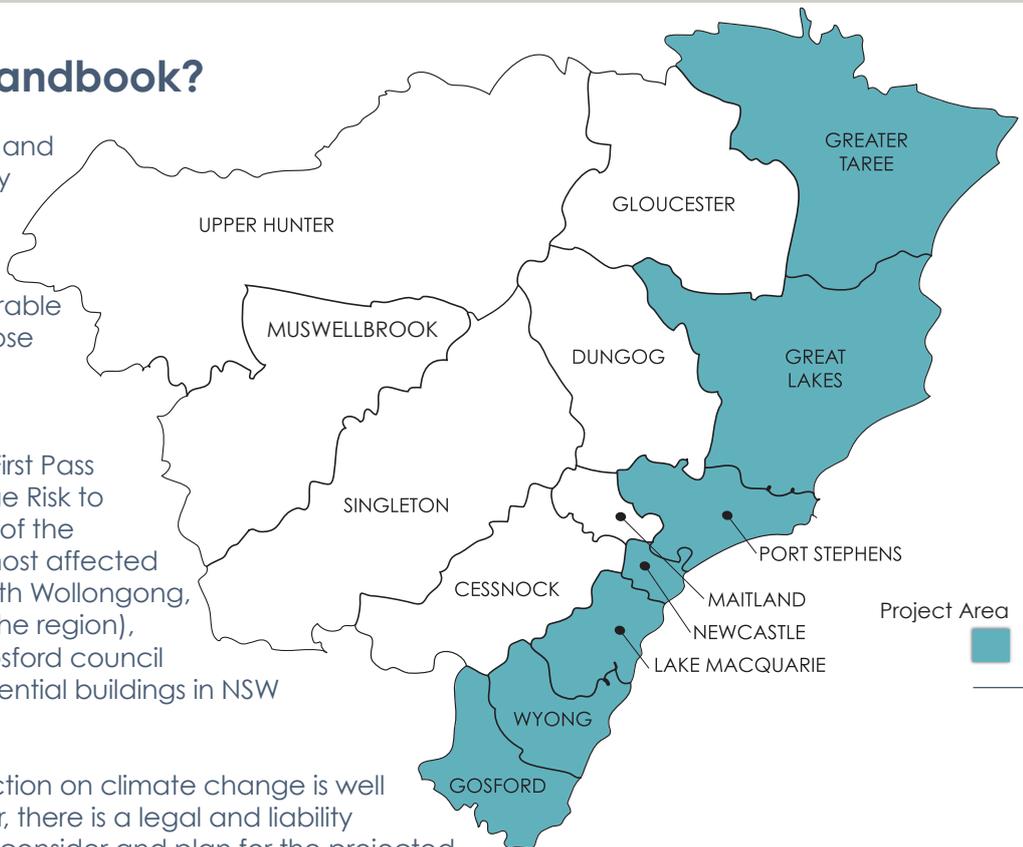
1. Improve understanding of climate change and its likely impacts;
2. Identify the key risks to councils and their communities arising from climate change;
3. Develop and implement adaptation strategies to manage priority risks.

Local and regional scale risk assessments have identified the following priority areas for action:

- Research & information
- Decision making frameworks
- Land use and infrastructure templates, guidelines, tools and resources
- Co-ordinated emergency management
- Professional capacity building & information sharing
- Community engagement and awareness

Development of 'The Handbook', represents a significant step in progressing these adaptation priorities. In particular it will:

- assist councils to more effectively consider and determine adaptation pathways for vulnerable coastal areas.
- promote a consistent, transparent and structured approach to adaptation planning in the context of land use planning and asset management both within and across councils, and in other organisations.
- significantly enhance organisational capacity to adaptively manage the complex interplay of environmental, social, economic and governance factors influencing planning and land use decisions with respect to climate change.
- translate the broad scale outcomes of local and regional risk assessment and adaptation planning into practical level decision making and outcomes.



There is a legal and liability imperative to plan for sea level rise.

### MORE INFORMATION:

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# Project Partners

