

ENGINEERS AUSTRALIA
my organisation

ENGINEERS AUSTRALIA UPDATE THE NCCOE GUIDELINES FOR COASTAL IMPLICATIONS OF CLIMATE CHANGE

PRESENTERS:

DOUG LORD – COASTAL ENVIRONMENT PTY LTD

ALESSIO MARIANI – UNSW WATER RESEARCH LABORATORY

NSW COPEP 21st May 2012



ENGINEERS
AUSTRALIA

NCCOE Documents

- NCCOE approached DCCEE in June 2010 with a proposal for assistance to upgrade existing documents relevant to climate change.
- Agreement was reached to update 2 existing guidelines and to prepare a third (new) document over a period of approximately two years with funding support from DCCEE.
- Updated documents to be published electronically and in hard copy and to be made freely available.



Overview

- **Volume 1** - *Guidelines for Responding to the Effects of Climate Change in Coastal and Ocean Engineering*, originally published 1991 and updated, 2004.
- **Volume 2** - *Coastal Engineering Guidelines for working with the Australian Coast in an ecologically sustainable way*, originally published 2004.
- **Volume 3** - *Climate Change Adaptation in Coastal Management and Planning*, new document



Climate Change Guidelines (1)

- Volume 1 - *Guidelines for Responding to the Effects of Climate Change in Coastal and Ocean Engineering*, originally published 1991 and updated, 2004.
- Based on updated information included in AR4, 2007 with some more recent information.
- Retain the assessment procedure developed in the original 1991 version.
- Total 70 pages.



Climate Change Guidelines (2)

- Summarise the causes of atmospheric warming due to the enhanced greenhouse effect and identifies the primary climate-sensitive factors for various types of coastal engineering activities.
- Guidelines are provided to assist an experienced coastal and ocean engineer to assess the significance of climate change for a particular situation or project using a risk-based approach.



Climate Change Guidelines (3)

- Primarily for use by appropriately experienced professional engineers, with expertise in and responsibility for works and facilities within the coastal and ocean field.
- It is essential that the professional coastal and ocean engineer continues to exercise good judgement in response to the possible impacts of climate change. The engineering profession must continue to work with the broader climate science community to improve and integrate our understanding of future climate variability.



Sustainability Guidelines (1)

- Volume 2 - *Coastal Engineering Guidelines for working with the Australian Coast in an ecologically sustainable way*, originally published 2004.
- Update of the original 2004 document with specific reference to the climate change assessment.
- Reflects current Engineers Australia position on sustainability.
- Incorporates additional detailed appendices.
- Total 130 pages



Sustainability Guidelines (2)

- Directed primarily at professional engineers practising in the coastal area. The Guidelines are also of value to allied professionals such as planners and managers with decision-making roles in the coastal zone.
- The scope of application is designed to cover Commonwealth, State and Local Governments, industry, consulting and development.



Sustainability Guidelines (3)

- In exercising its responsibilities to the community and its members, Engineers, Australia has a Code of Ethics, the first sentence of which reads *“As engineering practitioners, we use our knowledge and skills for the benefit of the community ahead of other personal and sectional interest.”*
- The Code has four tenets, the fourth of which is to *“Promote Sustainability”*.



Sustainability Guidelines (4)

- The NCCOE believes that ecological sustainability in the coastal zone will be achieved through the application of good engineering practice and with the support of allied professions.



Sustainability Guidelines (5)

- 1. Introduction
- 2. Ethics, Responsibilities & Duty of Care.
- 3. Coastal Zone Policy
- 4. Coastal Environment
- 5. Coastal Development
- 6. Coastal Engineering Methodology.
- 7. Standards, Codes and Quality Assurance
- 8. References & Bibliography



Sustainability Guidelines (6)

APPENDICES

- 1 - The Institution of Engineers Australia – Code of Ethics and Sustainability Charter
- 2 - Policy, Programs and Associated Publications
- 3 - Glossary of Coastal Engineering Terms



Sustainability Guidelines (7)

SUPPLEMENTS

- A - Beach Replenishment
- B - Marinas
- C - Outfalls
- D - Construction Materials for the Marine Environment
- E – Desalination Marine Structures
- F - Integrated Coastal Zone Management



Sustainability Guidelines (8)

Chapter 3 on ethics, responsibility and duty of care states:

“Ethical professional practice is particularly important because poorly planned or insensitive projects in the coastal zone have the potential to cause long-lasting, extensive and expensive ecological and environmental damage. They can also adversely affect social, cultural, aesthetic, indigenous and natural heritage values. Coastal climates are highly variable and extremely demanding; information and data about coastal processes at specific sites are often inadequate; coastal ecosystems are complex and often not well understood.”



Adaptation Guidelines

- Volume 3 - *Climate Change Adaptation in Coastal Management and Planning*, first published 2012.
- This is a live document that will be regularly updated.



Adaptation Guidelines (1)

- 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 appropriate decision making in managing coastal development problems subject to climate variability and change including when to call for additional expert advice.



Adaptation Guidelines (2)

- This document does not to replace expert and professional advice but rather assists the coastal decision maker in awareness of the types of intervention options that are commonly used and in which situations those options may be most appropriate or inappropriate.
- The intent is to raise awareness of the likely and possible impacts, beneficial and adverse, that may result from such a management decision.



Adaptation Guidelines (3)

- This document is primarily concerned with protecting the shoreline i.e. the area bounded by the extent of onshore offshore sediment transport under storms conditions and the landward extent of coastal processes (wave erosion, overtopping and coastal inundation) for the foreseeable future. The report deals with the understanding and range of intervention strategies that can be considered for development or land use within that narrow zone.



Adaptation Guidelines (4)

- The intended audience is the coastal manager/decision maker in local government, elected representatives and interested community stakeholders. The audience may be trained in areas including coastal management, coastal engineering, planning and environmental sciences, or may have no formal training and limited experience in any of these areas.



Adaptation Guidelines (5)

- A. What is Climate Change Adaptation
- B. Coastal Processes
- C. Modelling and Data Collection
- D. Planning Approaches
- E. Protection/Amelioration Overview
- F. Shoreline Protection/Amelioration Options
- G. Offshore protection/Amelioration Options



Adaptation Guidelines (6)

- H. Estuary and Entrance Management Options
- I. Emerging Technology
- J. Construction Materials Overview

- References
- Appendices



Adaptation Guidelines (7)

- The focus of this guideline is on specific physical intervention options (so called engineering options). Each of these will have particular environmental, social and heritage impacts that are also fundamental to decision making.
- This guideline recognises the importance of planning and specific planning options in climate change adaptation. It does not present a detailed guideline on coastal planning.



Adaptation Guidelines (8)

- The best overall strategy may require a mixture of planning measures, development controls and physical intervention works.
- Importantly, this mix may change with time as climate changes and/or shorelines evolve.



Adaptation Guidelines (9)

- It is important to identify whether and when the site will become unsuitable for the current land use or proposed development at some future stage as a result of natural shoreline evolution or as a result of climate change.
- This does not necessarily mean the site should not be used for the purpose now proposed but rather that the triggers that will result in a need to change the usage or terminate the development approval need to be recognised now.



Adaptation Guidelines (10)

- As appropriate, “sunset provisions” must be incorporated into the overall management strategy and may impact the selection and design of any intervention option/s to be implemented.



Conclusions (1)

- Aim is to provide a coherent suite of guidelines to assist coastal engineers, allied professional and coastal managers and planners across all spheres of government to better understand the linkages between climate change, sustainability and the likely long term effects of specific coastal management measures.
- Their objective is to increase knowledge, highlight sensitivities and facilitate the inclusion of appropriate professional advice in decision making.



Conclusions (2)

- The documents are intended as guidelines not manuals. They do not provide an alternative to seeking professional expert advice.
- Volumes 1 & 2 have been finalised and approved by DCCEE for publishing. They are currently with EA Publications for final proof edit and printing.
- Volume 3 is in a final draft form.



Conclusions (3)

- The NCCOE urges practitioners and those involved in coastal management to peruse and use the existing documents.
- Project scheduled for completion in June 2012 with release of the three guidelines at the 2012 Coast to Coast Conference in Brisbane.
- <http://www.engineersaustralia.org.au/coastal-ocean-engineering>





www.engineersaustralia.org.au