

Demonstrating Climate Change Adaptation of Interconnected Water Infrastructure.



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Synthesis Report



Demonstrating Climate Change Adaptation of Interconnected Water Infrastructure

Prepared for

Sydney Coastal Councils Group

Prepared by

ARUP

Level 10 201 Kent Street PO Box 76 Millers Point Sydney 2000 Australia

www.arup.com

28 November 2012

Printed on Australian recycled paper.

ISBN: 978-0-980208-3-8

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The Sydney Coastal Councils Group (SCCG) is a voluntary Regional Organisation of Councils representing fifteen coastal and estuarine Councils in the Sydney region. The Group promotes cooperation and coordination between Members to achieve the sustainable management of the urban coastal environment.

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

Funding has been provided by the Australian Government represented by the Department of Climate Change and Energy Efficiency. Coastal Adaptation Decisions Pathways Projects (CAP) - an Australian Government initiative.

COVER PHOTOGRAPH:

The Tank Stream, Sydney
Photo supplied courtesy of Sydney Water

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Demonstrating Climate Change Adaptation of Interconnected Water Infrastructure

The Sydney Coastal Councils Group (SCCG) project “Demonstrating Climate Change Adaptation of Interconnected Water Infrastructure” provides simple, practical guidance to ensure that water infrastructure managers are able to implement appropriate asset management approaches to plan for and address the potential challenges of a changing climate. Sydney Coastal Councils Group (SCCG) collaborated with Sydney Water (SWC), and the NSW Office of Environment and Heritage (OEH) in developing this project.

1. EXECUTIVE SUMMARY

Interconnected water infrastructure is infrastructure where management is shared between agencies or different tiers of government. This can be in the form of physical interconnectedness or shared financial responsibility or asset management or overlapping governance and/or planning accountability.

This project took a case study approach to explore the climate change issues facing Sydney’s interconnected water infrastructure, the adaptation imperative and the range of challenges and barriers to adaptation facing infrastructure managers.

The project developed and applied a step-wise framework for adaptation decision making using principles of risk management, evaluation of options and economic analysis. Flexible adaptation pathways were the main feature of managing climate change uncertainty.

Guidance on adapting interconnected water infrastructure to climate change will be relevant to all Councils and water infrastructure managers. The project deliberately adopts a case study approach to test this guidance, and any assumptions ‘on the ground’ in real-world scenarios.

The case studies selected to offer a range of climate problems, governance structures and political / social context, and interconnectedness. The case studies were also in different stages in terms of the progress already made in establishing adaptation pathways.

The five case studies assessed included:

- City of Sydney CBD: Understanding the implications of sea level rise and tidal locking in an existing area of high value assets
- Green Square: Redevelopment accommodating the impact of sea level rise on the drainage network
- Cooks River: Improving governance arrangements between multiple authorities and asset owners to address existing and future flooding impacts
- Wollongong: A systems approach for interconnected coastal asset owners to adapt to coastal recession
- Berry Creek: Valuing community and ecological assets in the adaptation of interconnected water networks under multiple ownership

2. INTRODUCTION AND AIMS

Climate change may pose significant challenges to the practices and strategies of organisations who manage water infrastructure. Projected changes, including altered rainfall patterns, sea level rise,

and the potential for increased storm intensity will require managers to re-assess standards, maintenance, construction and expenditure over infrastructure life cycles.

A number of national, state and local inquiries and research papers have identified the need to develop information and guidance to assist water infrastructure managers understand how climate change will affect them, what may be required and how to implement these responses. Also identified is the need to build the capacity of Councils to address issues such as planning and design of infrastructure and understanding the vulnerability of existing infrastructure to the impacts of climate change.

The Case Studies of Adaptive Capacity report produced through the SCCG/ CSIRO “Systems Approach to Regional Climate Change Adaptation Strategies in Metropolises” project found that:

“the lack of clear policy guidance with respect to infrastructure management in a changing climate creates significant challenges for Local Government with respect to decisions regarding infrastructure design and investment. This is exacerbated by the complex web of ownership and responsibility that surrounds many infrastructure systems”.

Given this need, the project aimed to:

- Demonstrate effective adaptation strategies to address direct and indirect impacts of climate change in situations where there are challenges due to interconnected infrastructure.
- Produce guidance and frameworks that assist asset managers mitigate the impacts of climate change on water infrastructure.