

A Water Cycle Management Strategy for Local Government
Masters of Science (MSc by Thesis)

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2008

Thesis submitted for the degree of Masters of Science at the
University of Technology, Sydney.

Certificate of Authorship

I certify that this thesis has not already been submitted for any degree and is not being submitted as part of candidature for any other degree.

I also certify that this thesis has been written by me and that any assistance in the preparation of this thesis has been acknowledged in this thesis.

This thesis is subject to the University procedures and requirements. Harvard UTS referencing style has been used in the preparation of this thesis.

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Acknowledgments

When I commenced this project I did not know what to expect or what approach to take, and admittedly I was apprehensive and not really prepared for the task ahead.

It soon became apparent that researching science can be enjoyable, and also very frustrating. But I was very fortunate that I had very supportive, knowledgeable and experienced supervisors guiding me.

Firstly, my thanks go to my principal supervisor Associate Professor Kenneth Brown for his wisdom and unique approach of turning negative issues into positive outcomes for this I'm truly grateful and wish him a happy and fulfilled retirement. Secondly, my gratitude and thanks go to my co-supervisor Dr Ross McPherson for his ongoing support, continual feedback, enthusiasm, encouragement and friendship. I would also like to thank Mrs Katie Clarke for her assistance and untiring patience and my employer Hornsby Shire Council for assistance and support.

Finally, I would like to dedicate this thesis to my mother, Elli, for her life long support in my endeavours. My thanks also go to my family, Effy, Chris, Dino, Shireen, Floria and my nieces Rachael and Breanna for their encouragement and support.

***“I hear ... and I forget
I see ...and I remember
I do ... and I understand”.***

.....Anonymous

Abstract

Management of the water cycle on a strategic level has been very limited in local government. Local governments are major stakeholders in frontline environmental management and collectively they have a major influence on how natural resources are managed nationally. Their management role of regulating development and town planning has a major effect on the water cycle.

The ecological characteristics of the hydrological cycle involve a broad and complex hydrological regime that influences the natural environment through its integration of climate, geology, geomorphology, groundwater, evaporation, transpiration and precipitation.

The aim of this research is not to propose or uncover new scientific knowledge on the workings of the hydrological cycle, but to acknowledge current research, and apply principles into a management process. The research further recognises the principal ecological components that regulate the water cycle in a local government context through development regulation and the management of natural resources. As a result, this research proposes a Water Cycle Management Strategy template that can be applied by local government to manage the water cycle.

The increasing demands on water resources will exceed our ability to supply this valuable resource in the near future. The rectification of this situation will require improved decision-making using holistic strategies in water resource planning. An integrated/ multidisciplinary management approach from the catchment headwaters to the household incorporating temporal and spatial factors needs to be considered to manage the water cycle. Managing urban development impacts and maintaining an ecological water balance through the principles of sustainability and equity of water resources is a priority.

This research project encapsulates a water cycle strategic framework that focuses on achieving sustainable outcomes for water cycle management within local government. The Strategy encompasses low, medium and high priority objectives that integrates science with strategic management. The strategic framework includes; an assessment of the water cycle, management of human induced impacts and the conservation of water resources which incorporates environmental, social, and economic considerations.

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