

Stormwater
Management
Manual for
Western Australia

3 Best Planning Practice for Stormwater Management



Department of Water
Government of Western Australia

Cover photograph: New urban subdivision, Hammond Park. (Source: Department of Water.)

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Consultation and guidance from the Stormwater Working Team



Department of **Water**
Government of **Western Australia**

June 2007

Acknowledgments

This chapter was prepared by Peter Howard and Emma Monk, Department of Water. Sincere thanks to everyone that provided comments, particularly the following people who provided information or feedback: Julio Navarrete and Ken Dawson - Department for Planning and Infrastructure; Carissa Lloyd - Swan River Trust; Shelley Shepherd - Essential Environmental Services; Bill Till, Verity Klemm and Julie Tilleke - Department of Water.

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The recommended reference for this publication is:

Department of Water 2007, *Best Planning Practice for Stormwater Management, Stormwater Management Manual for Western Australia*, Department of Water, Perth, Western Australia.

ISBN 1-92084-954-8 [Print - Manual]

June 2007

An electronic version of this chapter is available at <<http://stormwater.water.wa.gov.au>>.

Preface

A growing public awareness of environmental issues in recent times has elevated water issues to the forefront of public debate in Australia.

Stormwater is water flowing over ground surfaces and in natural streams and drains as a direct result of rainfall over a catchment (ARMCANZ and ANZECC, 2000).

Stormwater consists of rainfall runoff and any material (soluble or insoluble) mobilised in its path of flow. Stormwater management examines how these pollutants can best be managed from source to the receiving water bodies using the range of management practices available.

In Western Australia, where there is a superficial aquifer, drainage channels can commonly include both stormwater from surface runoff and groundwater that has been deliberately intercepted by drains installed to manage seasonal peak groundwater levels. Stormwater management is unique in Western Australia as both stormwater and groundwater may need to be managed concurrently.

Rainwater has the potential to recharge the superficial aquifer, either prior to runoff commencing or throughout the runoff's journey in the catchment. Urban stormwater on the Swan Coastal Plain is an important source of recharge to shallow groundwater, which supports consumptive use and groundwater dependent ecosystems.

With urban, commercial or industrial development, the area of impervious surfaces within a catchment can increase dramatically. Densely developed inner urban areas are almost completely impervious, which means less infiltration, the potential for more local runoff and a greater risk of pollution. Loss of vegetation also reduces the amount of rainfall leaving the system through the evapo-transpiration process. Traditional drainage systems have been designed to minimise local flooding by providing quick conveyance for runoff to waterways or basins. However, this almost invariably has negative environmental effects.

This manual presents a new comprehensive approach to management of stormwater in WA, based on the principle that stormwater is a RESOURCE – with social, environmental and economic opportunities. The community's current environmental awareness and recent water restrictions are influencing a change from stormwater being seen as a waste product with a cost, to a resource with a value. Stormwater Management aims to build on the traditional objective of local flood protection by having multiple outcomes, including improved water quality management, protecting ecosystems and providing livable and attractive communities.

This manual provides coordinated guidance to developers, environmental consultants, environmental/community groups, Industry, Local Government, water resource suppliers and State Government departments and agencies on current best management principles for stormwater management.

Production of this manual is part of the Western Australian Government's response to the State Water Strategy (2003).

It is intended that the manual will undergo continuous development and review. As part of this process, any feedback on the series is welcomed and may be directed to the Drainage and Waterways Branch of the Department of Water.

Western Australian Stormwater Management Objectives

Water Quality

To maintain or improve the surface and groundwater quality within the development areas relative to pre development conditions.

Water Quantity

To maintain the total water cycle balance within development areas relative to the pre development conditions.

Water Conservation

To maximise the reuse of stormwater.

Ecosystem Health

To retain natural drainage systems and protect ecosystem health .

Economic Viability

To implement stormwater management systems that are economically viable in the long term.

Public Health

To minimise the public risk, including risk of injury or loss of life, to the community.

Protection of Property

To protect the built environment from flooding and waterlogging.

Social Values

To ensure that social, aesthetic and cultural values are recognised and maintained when managing stormwater.

Development

To ensure the delivery of best practice stormwater management through planning and development of high quality developed areas in accordance with sustainability and precautionary principles.

Western Australian Stormwater Management Principles

- Incorporate water resource issues as early as possible in the land use planning process.
- Address water resource issues at the catchment and sub-catchment level.
- Ensure stormwater management is part of total water cycle and natural resource management.
- Define stormwater quality management objectives in relation to the sustainability of the receiving environment.
- Determine stormwater management objectives through adequate and appropriate community consultation and involvement.
- Ensure stormwater management planning is precautionary, recognises inter-generational equity, conservation of biodiversity and ecological integrity.
- Recognise stormwater as a valuable resource and ensure its protection, conservation and reuse.
- Recognise the need for site specific solutions and implement appropriate non-structural and structural solutions.

1 Introduction

1.1 Aim of the best planning practice for stormwater management chapter

The aim of this chapter is to provide references to documents that contain further information about integrating land and water planning and implementing water sensitive urban design.

2 Policy and guidance documents

Land use planning proposals in Western Australia can be assessed under the *Environmental Protection Act 1986*. Proposals may be subject to formal review, if the Environmental Protection Authority (EPA) determines that the environmental risks are significant. To assist landowners and their consultants in planning proposed land use changes, the EPA has published a guidance document titled: *Environmental Guidance for Planning and Development*, Draft Guidance Statement No. 33 (2005).

Additionally, the Department for Planning and Infrastructure/Western Australian Planning Commission and the Department of Water are working together to integrate land and water planning and implement water sensitive urban design.

The currently available planning policy and guidance documents are:

Government of Western Australia 2003, State Planning Policy 2, *Environment and Natural Resources*.

Government of Western Australia 2006, State Planning Policy 2.9, *Water Resources*.

Western Australian Planning Commission 2004, *Liveable Neighbourhoods*, Element 5 - Urban Water Management.

Another key guidance document *Achieving Water Sensitive Urban Design: a framework to integrate land use planning with water resource management on the Swan Coastal Plain* is being developed. This provides guidance for how water resources should be considered at each stage of the land use planning process. As stated in the draft document:

“The framework is designed to facilitate better management and use of our urban water resources by ensuring an appropriate level of consideration is given to the total water cycle at each stage of the planning system. It intends to assist regional and land use planning, district, local, subdivision and development phases of the planning process and may be applied to both new greenfield and urban renewal projects. It should be applied to proposed residential, commercial, industrial and rural residential uses and development.”

The framework’s objective is to provide guidance on the implementation of State Planning Policy (SPP) 2.9 and may be adopted by the Western Australian Planning Commission as a schedule of the SPP or as a separate guidance document. The Department of Water will also adopt the document as an agency policy.

The Department of Water is also preparing a guideline that will assist developers incorporate urban water management at the subdivision scale. Contact the Drainage and Waterways Branch of the Department of Water for the latest information on this guideline.

In addition to the above planning documents, there might be other applicable planning documents for specific areas, such as other local and State planning policies.

The electronic version of this chapter will be updated with the latest information on applicable planning policy guidelines and can be accessed from <<http://stormwater.water.wa.gov.au>>.

3 Contacts

For more information on the progress of the framework document, you may contact:

Directorate of Environment and Sustainability, Department for Planning and Infrastructure.
Address: 469 Wellington Street, Perth WA 6000. Telephone: 9264 7575.

or

Land Use Planning Section, Drainage and Waterways Branch, Department of Water. Address: The Atrium, Level 4, 168 St Georges Terrace, Perth WA 6000. Mail: PO Box K822, Perth WA 6942. Telephone: 6364 7600.

4 References

Environmental Protection Authority 2005, *Environmental Guidance for Planning and Development*, Draft Guidance Statement No. 33, Environmental Protection Authority, Perth, Western Australia. Available via <<http://www.epa.wa.gov.au>>.

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