Water Sensitive Urban Design - WSUD

Principles and Inspiration for Sustainable Stormwater Management in the City of the Future

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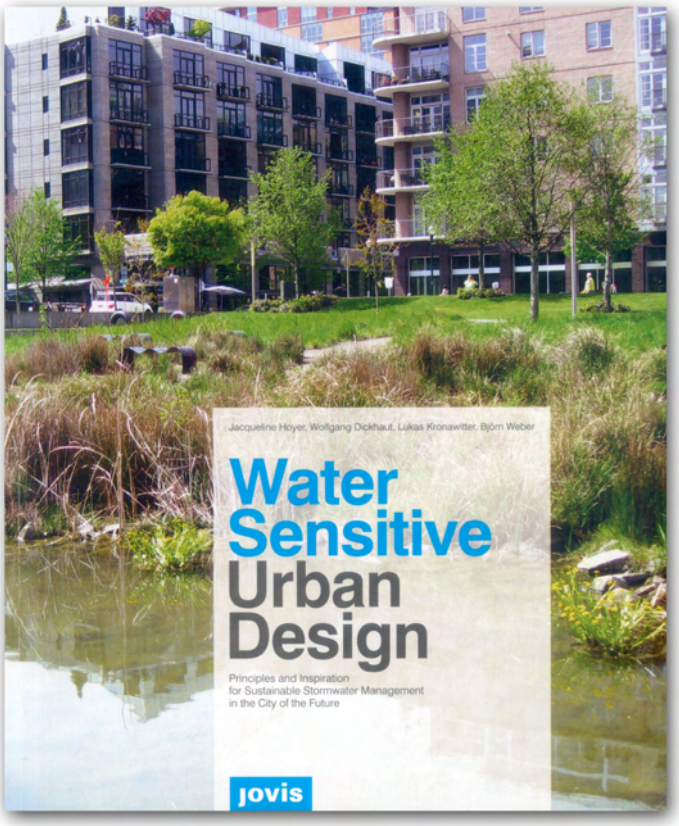
ISBN 978-3-86859-106-4



In recent years, considerable advances have been made in techniques and legislation for decentralized stormwater management worldwide. However, decentralized stormwater management systems are still underutilized and acceptance among citizens and professionals is still lacking. Indeed, decentralized stormwater management will be essential for the sustainable development of cities in the future. The main question that needs to be answered is: How can sustainable stormwater management be integrated with urban planning in order to create liveable, sustainable, and attractive cities? The approach of Water Sensitive Urban Design (WSUD) proposes a solution.

This manual, developed by the Hafen City University of Hamburg, in the ambit of the European research project SWITCH (Managing water for the city of the future, under the sixth research framework programme of the European Union). The book was published by Jovis Verlag GmbH in March 2011. It is organised into four chapters plus an introduction and the conclusions.

- *The first chapter* provides an overview of the WSUD approach, underlining the differences between conventional stormwater management in cities, the problems with conventional stormwater management and the variations in stormwater in different climate zones around the world.
- *The second chapter*, the ideas of WSUD and sustainable stormwater management, is organised in three parts: definitions, technical elements, solutions and drivers. The first defines the WSUD as an interdisciplinary cooperation of water management, urban design and landscape planning and clarifies that the primary objective is to combine the demands of sustainable stormwater management with the demands of urban planning. The second lists the technical elements and solutions grouped according to their primary function: water use, treatment, detention and infiltration, conveyance and evapotranspiration. The third gives an overview of international and national regulations, engineering standards and guidelines primarily focused on Europe, Australia and USA.
- *The third chapter* identifies principles for a successful WSUD, focusing on six issues: water sensitivity, aesthetics, functionality, usability, public perception and acceptance, as well as integrative planning.
- *The fourth chapter* presents an international selection of case studies ranging from small scale (site level) up to large scale (city level), demonstrating WSUD principles in the context of temperate climates. All the projects come complete with a fact sheet, several images and construction details, and were assessed against the following principles of WSUD: water sensitivity, aesthetic benefit, integration in the surrounding area, appropriate design, appropriate maintenance, adaptability, appropriate usability, public involvement, acceptable costs, integration of demand, interdisciplinary planning, impact on public perception.

WSUD strives to harmonise the urban built environment and the urban water cycle, combining the functionality of water management with principles of urban design and planning. The approach embraces interdisciplinary cooperation of water management, urban design, architecture and landscape planning in order to achieve WSUD goals as well

as integrating water management concerns into overall concepts and development plans.
The application perspectives of the WSUD method, supported by the implementation of new quantitative techniques, pave the way for interesting types of interventions in the urban environment that could be included in the implementation tools of the plans and could turn policies in the Environmental Strategic Assessment of plans and the Environmental Impact Assessment of designs into technical choices.

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