TECHNICAL GUIDANCE

SUDS
GUIDANCE FOR PROPRIETARY SUSTAINABLE DRAINAGE SYSTEMS & COMPONENTS

www.britishwater.co.uk/publications/sustainabledrainage

In partnership with

Environment Agency

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SUDS Technical Guidance

Foreword

This 2nd edition of Technical Guidance for SUDS proprietary systems has been prepared by the British Water Sustainable Drainage Focus Group (see logos on last page). It has benefited from consultation and input from designers, manufacturers, practitioners and regulators of contemporary sustainable drainage solutions.

The original technical guidance supplemented the limited amount of information available to stakeholders on proprietary sustainable drainage technologies. This second edition is intended primarily to be a live web based publication so that a greater range of up-to-date information can be provided within the flexibility of an electronic system. It provides hyperlinks from "Technology lists" to more detailed descriptions of proprietary technologies and then to descriptions of equipment which are available from British Water members that provide proprietary sustainable drainage systems. The introductory pages can be printed to form an informative leaflet.

The information should be used to help select the most appropriate proprietary systems to be incorporated into a particular sustainable drainage solution. This publication complements the existing sustainable drainage industry guidance.

Please note that British Water, any company or other organisation associated with this publication does not endorse or recommend any particular product to which this Technical Guidance provides direct links. The links enable the reader to be aware of proprietary

Flow Control

- Disconnection
- Vortex Flow Controls
- Orifice Plates
- Penstocks
- Pumps
- Throttle Pipes
- Weirs
- Float Operated Controls
- Real Time Controls

Summary of Regulations

technologies which may be used in the management of surface water. The reader should assess and determine the appropriateness of each product for any particular application.

Introduction

The world climate has always been variable, the current trend includes greater variability in rainfall patterns. The extended duration and greater intensity of rainfall events has prompted significant innovation and development in drainage systems to manage surface water to prevent or minimise flooding.

Contemporary sustainable drainage systems usually comprise a balance of natural and proprietary systems. Natural systems require space and provide amenity value. While proprietary systems can provide amenity they are often installed underground so leaving the surface free for other uses. They are also appropriate for retrofit situations.

Scope

This guidance publication briefly reviews sustainable drainage and outlines many of the issues which impact on surface water drainage. It directs the reader to information about proprietary solutions in four principle areas Flow Control, Infiltration, Storage & Attenuation and Treatment.

What is Sustainable Drainage?

The widespread implementation of sustainable drainage systems (also known as "SUDS") best management practices (BMP) should be integral to any development's surface water management strategy. This will provide the platform to replicate the response of the existing

Infiltration

- Perforated & Porous Pipes
- Permeable & Porous Surfaces
- Soakaway Chambers
- Geocellular Systems
- Preformed Detention Tanks (with permeable invert)

catchment and its surfaces, ideally with some betterment, negating any increased on or off-site flood risk.

A contemporary sustainable drainage methodology for managing surface water runoff should use the techniques to focus on three key areas, each where applicable; controlling surface water quantity (reducing off-site flow rates), improving surface water quality and providing added development amenity value, although not always in equal measures.

Contemporary sustainable drainage should be a design and implementation combination of natural and proprietary techniques, complemented by traditional drainage techniques where required.

It can be used to address the following water industry challenges:

Flood Risk Management

Artificial drainage systems designed to manage surface water runoff can pose a flood risk if the system is overwhelmed.

Current planning policy guidance considers surface water management a key flood risk issue and sustainable drainage techniques should be employed to manage residual flood risk wherever feasible.

Climate Change

Increasing global temperatures and changing weather patterns confirm that climate change is a reality. Therefore, allowances for the impact of climate change are a critical part of any assessment of flood risk and should be included in the design and implementation of sustainable drainage. This would typically be an increase in peak rainfall intensity.

Storage and Attenuation

- Geocellular Systems
- Sewer Pipe Detention Tank
- Box Culvert Detention Tank
- Preformed Detention Tanks
- Green and Brown Roof Technology
- Permeable and Porous Surfaces

Glossary

The Water Framework Directive

The EU Water Framework Directive (WFD) is a major opportunity to improve the entire water environment and promote the sustainable management of water for the benefit of people and wildlife alike. The WFD aims to deliver long-term protection of the water environment and improve the quality of all waters to "good status."

Many of the issues associated with implementation of the WFD are fundamental to contemporary sustainable drainage and proprietary techniques will have a very important role to play. This is particularly significant for many emerging advanced technologies for sustainable drainage, which are aimed at managing, controlling and improving surface water quality.

Whole Life Issues

Experience has underscored the importance of considering the construction of sustainable drainage components and ensuring whole life maintenance, thus delivering authentic sustainable drainage implementation and longevity.

Designing For Exceedance

As a result of extreme rainfall and/or inflows, it is inevitable that any drainage system or component will have its capacity exceeded at certain times. This is known as the exceedance event and the resultant flood volume will likely begin to move across the ground as overland flow. Further analysis should be undertaken to ensure that exceedance flows can be managed in a sustainable way and that they will not pose a residual flood risk.

Treatment

- Green Roofs
- Rainwater Recovery
- Filter Systems
- Hydrocarbon Separators
- Packaged Reed Beds
- Solids / Liquids Separators
- Bioretention Systems
- Advanced Material Technologies
- Packaged Treatment Train

Useful web addresses

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Notes

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