

Sustainable Drainage News



The bi-annual bulletin of news and development in sustainable drainage systems

Issue 5 – February 2004

This is the fifth bi-annual newsletter about sustainable drainage systems (SUDS). The newsletters aim to communicate the latest innovations in SUDS practices and encourage their widespread incorporation in developments.

This newsletter discusses how SUDS are making a difference in America and the how master planning in Scotland can help SUDS implementation, as well as looking at future work on incorporating water sustainability in the built environment.

SUDS – the American experience

Bob Bray and Steve Wilson of Sustainable Drainage Associates recently undertook a SUDS fact-finding visit to the US as part of CIRIA Project 663 (SUDS - hydraulic, structural and water quality advice).

The visit took in a diverse range of sites in Maryland, Washington DC, Portland and California. The use of SUDS (known in the US as stormwater best management practices, or BMPs) varies widely and while some states, such as Maryland, have been installing these systems for over 10 years, in other states experience may be limited. The main focus is on pollutant removal to improve water quality in watercourses.

In Maryland, where space is not a constraint, the use of surface techniques predominates. On one site a series of swales, wetlands and ponds has been operating successfully for over 10 years and continues to do so with little or no maintenance.

The visit showed that effective drainage systems can also provide significant aesthetic and wildlife benefits, and there seems to be a far greater emphasis on these aspects from designers. It was difficult to tell that the scheme at Howards Branch was a SUDS system. (Photo - opposite).

Bioretention areas and rain gardens are used widely in car parks (Photo - opposite), with vegetation playing a key role in reducing the

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SUDS at Howards Branch, Maryland USA. Courtesy of SDA



Bioretention areas. Courtesy of SDA

volume of runoff. Green roofs are also becoming an increasingly important and useful technique for managing stormwater in urban areas, and in Portland there are incentives for developers to use them.

In Washington DC many sites use mainly hard surfacing, with little space available for surface techniques such as swales or ponds. However the SUDS concept is still applied to these dense urban developments using more engineered techniques such as underground filtration systems. A dedicated team of inspectors from the regulators in Washington DC ensures that maintenance is being carried out.

Sediment loads from construction sites are seen as a major source of stormwater pollution and in Maryland there is robust legislation to prevent this. Where sites over a threshold size are to be stripped, the contractor must take measures to prevent silt entering water courses or the storm drain system. It is a common site to see silt fences installed around site boundaries and gullies blocked so flows can be diverted to prevent silt entry.

Another common sight around Maryland is the use of swales and wetlands along major roads to manage stormwater runoff. These visible SUDS features contribute to local amenity and are treated as normal landscape features.

The visit was kindly arranged by Tom Schueler and Jennifer Zielinski from the Centre for Watershed Protection, Ellicott City, Maryland, US (www.cwp.org). CIRIA guide C609, based on research project 663 (SUDS Techniques) should be available this spring, providing further technical detail on SUDS based on UK and overseas experiences.

Steve Wilson, Sustainable Drainage Associates

ODDS & SUDS

CIRIA is undertaking a comprehensive review and update of their best practice guidance on SUDS. For further information visit www.ciria.org/suds

Working in partnership in Midlothian and Edinburgh

A unique project partnership - the South East Wedge Project Group - has been established to promote the sustainable management of

surface water in a major development in the east of Scotland. The development area covers 1370 ha. Eventually almost 6000 new homes will be built, creating three new or expanded local communities. The development area straddles two planning authority areas - Edinburgh and Midlothian - with the majority being undertaken in Midlothian.

The area is drained by three relatively small burns that are impacted by urban runoff, combined sewer overflows and other discharges including pumped mine water. These burns have already been culverted and channelised and have little habitat or amenity value. In some cases culverting has increased the flood risk. Integrating SUDS into the development could not only minimise the impact of the development on the burns in terms of water quality and flooding, but also provide significant ecological, landscape and amenity value. Returning the watercourses to a more natural state provides an opportunity to reintroduce burns as a community focus and could alleviate flood risk.

The South East Wedge Project Group comprises representatives from Midlothian Council, City of Edinburgh Council, Scottish Environment Protection Agency (SEPA), Scottish Natural Heritage (SNH) and Scottish Water, with project management provided by the Scottish Institute of Sustainable Technology (SISTech). The cornerstone of the group's work is the production of the Environmental Enhancement Action Plan, which lays out a detailed vision of the integration of SUDS and enhanced watercourses into the development. This report includes details of possible linkages between features, for example through the use of green corridors, and how the drainage system could make full use of a range of SUDS features through the stormwater management train.

Tim Darlow, SISTech



SUDS at Blythe Valley

WaND – Casting a spell over sustainable water management

An EPSRC and industry/regulator funded £2.5M project is under way as part of the Sustainable Urban Environment initiative. The aim of WaND (Water Cycle Management for New Developments) is to support the delivery of integrated, sustainable water management for new developments by providing tools and guidelines for project design, implementation and management.

The project will be co-ordinated by Professor David Butler and his group at Imperial College London, and will include substantial input from the universities of Bradford, Cranfield, Leeds, Sheffield and Wales (Aberystwyth) plus CEH, HR Wallingford and WRc.

Work packages will focus on technical aspects of the water cycle (water supply, wastewater collection, storm drainage and SUDS). HR Wallingford, CEH Wallingford and the Pennine Water group will lead the SUDS work. There will also be work packages dealing with social, planning, economic and health issues.

The project will concentrate on water cycle management as delivered at local level in new developments, including work focusing on sustainable drainage, designed to build on and complement other on-going projects. A number of case study sites, at various states of completion, will be examined. Offers of suitable sites will be gratefully received. For more details, please contact Professor David Butler (d.butler@imperial.ac.uk).

David Butler, Imperial College

ODDS & SUDS

In the Spring CIRIA will be producing guidance and running a seminar to help stakeholders overcome the technical and management barriers to wider implementation of SUDS. For further information visit www.ciria.org/suds

Odds & SUDS and a technical guide

CIRIA has been involved in providing guidance on drainage for more than a decade. Since the late 1990s this has involved taking a closer look at how sustainable drainage can contribute to the improved management of storm water runoff.

During 2003, CIRIA has been working on two collaborative projects to help overcome these potential barriers. SUDS - hydraulic, structural and water quality advice is a detailed technical report with more than 250 references to provide further information on hydraulic, structural and water quality issues surrounding SUDS.

CIRIA has also been working with industry and the National SUDS Working Group to develop model agreements for SUDS. Model Agreements for sustainable water management systems will develop model operation and maintenance agreements for SUDS and rainwater/greywater use systems. The report will provide a robust framework for the allocation of responsibilities and simple guidance on the use of model agreements and sustainable water management systems within the built environment.

These project outputs will be available Spring 2004 and will be complemented by a CIEF seminar on the practical implementation of SUDS.

CIRIA also recently started SUDS - updated guidance on technical design and construction, which aims to review, update and augment the existing suite of guidance on SUDS to produce a definitive one-stop-shop reference on design and construction. This will ensure that available best practice guidance is up to date and reflects improved understanding and experience of sustainable drainage. Information on how to benefit from the training and get involved in other SUDS projects can be found on CIRIA's SUDS website.

Paul Shaffer, CIRIA

ODDS & SUDS

Check out the 25th Standing Conference on Stormwater Source Control, Shrewsbury, 20 February 2004. For further information visit www.ciria.org/suds

Supporting dissemination of SUDS work

This newsletter and CIRIA's SUDS website (www.ciria.org/suds) are the outputs of a project to promote good practice relating to SUDS. If you would like to sponsor the newsletter and website and participate in the project please contact CIRIA at enquiries@ciria.org

Forthcoming SUDS events

SUDS CIEF event, 24 February 2004

Recently there have been several interesting developments relating to sustainable drainage systems (SUDS) in the built environment. In response to these, the CIEF will be holding a technical briefing on the implementation of SUDS at the Institution of Civil Engineers in February. This will provide a useful and timely update on the regulatory scene and current research. There will also be a case study demonstrating the benefits of adopting a multi disciplinary approach to SUDS in the built environment. The briefing will also include "A postcard from America" - learning how our colleagues across the Atlantic design and manage SUDS components. For further information visit www.ciria.org

SUDS training

CIRIA is strengthening its dissemination and implementation activities on SUDS by developing a strategic training programme to encourage and promote the incorporation of SUDS in the built environment. Depending on interest, the training events will happen in Spring or Summer 2004. For further information on this and other projects please visit: www.ciria.org/suds

**CIRIA, Classic House, 174-180 Old Street,
London EC1V 9BP**
Tel: +44(0)20 7549 3300
Fax: +44(0)20 7253 0523
<http://www.ciria.org/suds>
email: suds@ciria.org

Sustainable Drainage News has been sponsored by the following organisations:



Useful links and contacts

Listed below are websites, featuring SUDS work, which you may find useful:

www.ciria.org/suds
www.environment-agency.gov.uk
www.boc.com/foundation
www.epg-ltd.co.uk
www.sepa.org.uk

CIRIA has published the following on SUDS:

- C521 Sustainable urban drainage systems – design manual for Scotland and Northern Ireland
- C522 Sustainable urban drainage systems – design manual for England and Wales
- C523 Sustainable urban drainage systems – best practice manual
- C582 Source control using constructed pervious surfaces

Forthcoming:

- C609 Sustainable drainage systems – hydraulic structural and water quality advice.