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SUDS Bulletin

The bi-annual bulletin of news and development in Sustainable Urban Drainage Systems

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In this issue

Welcome to the first issue of the CIRIA SUDS Bulletin

Sustainable Urban Drainage Systems (SUDS), are management practices and physical structures designed to drain surface water in a more sustainable way than conventional systems.

The SUDS bulletin has been produced to communicate the latest developments and innovations in SUDS technology to all those involved in the field.

It is hoped that by the bulletin presenting case studies and sharing information the incorporation of SUDS will be more widespread and the perceived barrier of a lack of information will be overcome.

The SUDS bulletin will be published twice a year, updating readers on developments.

If you wish to provide an article for subsequent issues or have a SUDS site that could be featured please email:

suds@ciria.org.uk

The SUDS Bulletin has been sponsored by the following parties:

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If you would like to know more about CIRIA's SUDS work please contact Paul Shaffer at CIRIA

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SUDS and planning control – the new PPG 25

Development of land requires planning permission from the local planning authority. Any significant development project is likely to give rise to drainage considerations. Building, civil engineering and mining operations disturb the land, interfere with natural drainage and may reduce permeability. The replacement of vegetated areas by roofs, roads, car parks etc generally leads to a permanent reduction in permeability and consequent increase in run-off.

The adequacy of drainage from a development site has long been recognised as a "material consideration" in determining a planning application as well as in development plans.

Adequacy

PPG 23 Planning and pollution control (1994), advises that permission may be refused if a local planning authority is not satisfied with the adequacy of sewerage infrastructure, or conditions may be imposed to ensure suitable arrangements are put in place. DOE Circular 11/95 – *The use of conditions in planning permissions* includes model conditions requiring drainage works to be carried out in accordance with details agreed by the local planning authority. PPG 12 Development plans (1999) identifies the need to have regard to environmental, social and economic considerations, including land drainage issues, and to link in with sustainable development.

Identified

Guidance on development in flood-risk areas (DOE Circulars 17/82 Development in flood risk areas – Liaison between planning authorities and water authorities, and 30/92 Development and flood risk) both identified the problem of run-off from new development leading to increased flood risks downstream and the need for mitigation. Also, the judgement in W E Black Ltd v Secretary of State for the Environment and London Borough of Harrow (1997) confirmed that a planning authority can require developers to

implement drainage systems to prevent increased flood risk.

However, guidance on how to determine an application that incorporates a sustainable urban drainage system, or when a planning condition should be imposed upon a developer to require such a system, was limited. While it may not yet provide all the answers, the new PPG 25 Development and flood risk (2001) takes a more positive approach to sustainable drainage and its significance for new development.

Potential

PPG 25 seeks to ensure that flood risk is considered on the wider scale of the whole catchment. It recognises the importance of both local flooding due to sheet flow or run-off exceeding the existing drainage capacity and the contribution of run-off from developed areas to flooding downstream. It directly identifies the potential for sustainable drainage systems to reduce these problems and promotes the development of teamwork to encourage these systems.
In particular it indicates that local authorities should work closely with the Environment Agency, sewerage undertakers, navigation authorities and prospective developers to enable surface water run-off to be controlled as near to the source as possible through sustainable drainage systems.

Guidance

PPG 25 provides specific guidance on the need to manage surface water drainage and proposes a risk-based approach to development and flood risk. It also advises that new development should not increase runoff from the undeveloped situation and that redevelopment should reduce run-off.

Developers are advised to assess the implications of run-off from their proposed development and to control it using sustainable drainage systems where possible. The PPG also advises that local plans should include policies promoting SUDS.

When implemented in development plans and the determination of individual planning applications, PPG 25 should encourage the wider use of SUDS and provide the associated environmental benefits. It will complement the forthcoming amendments to Part H of the Building Regulations (2000), which also give greater priority to the use of SUDS.

Planning Policy Guidance Note 25 – *Development and flood risk* is published by The Stationery Office at £11.00 (ISBN 0 11 753611 3) and is available on the Internet at www.planning.dtlr.gov.uk/ppg25.

Article provided by David Brook, DTLR

Current CIRIA projects involving SUDS

Source control using pervious surfaces

Despite the recognition of the benefits of SUDS techniques, there is still some reluctance to adopt these systems. One perceived barrier to their uptake, identified during the recent CIRIA project on SUDS (RP555), is a lack of specific technical guidance for the use and design of pervious surfaces. While the conventional approach to keeping water out of pavement construction is well known to engineers, there is a lack of information to design a pervious surface for an appropriate loading.

CIRIA has recognised this gap in SUDS guidance with Research Project 637 *Source control using constructed pervious surfaces – hydraulic and structural performance*. This project will produce a Technical Note addressing the hydraulic and structural issues of using pervious surfaces and propose a design methodology to ensure the correct construction of these systems. The project will also address the water quality issues surrounding the use of pervious surfaces, and the benefits they can provide.

Sustainable water management – planning for new homes

The main objective of this study is to provide good practice guidance on the incorporation of water resource and wastewater treatment issues as part of the planning process for new developments. Particular regard will be given to the appropriate use of sustainable approaches to water management, for example in the aspects of surface and waste water disposal, the design of water-efficient housing and effective use of sources of non-potable water.

The final project output will be a good practice guide for the incorporation of water resource and wastewater issues and sustainable water use within the planning process. The guide will be designed to meet the needs of planners and developers, with guidance summaries being produced to inform regulators, water utilities and sewerage undertakers in their decision-making. The report will identify any further developments required in resolving the potentially conflicting needs of new housing and the water environment.

The project will assess the need for and, if required, identify a framework for a computer-based decision support system to assist in the consideration of sustainable water management in the planning process.

New SUDS website www.ciria.org.uk/suds

In association with the production of this bulletin, CIRIA has recently produced a website which introduces the principles of SUDS.

The website contains useful information on SUDS, including:

- an introduction to the use of SUDS
- SUDS techniques available
- technical considerations
- legal issues
- planning considerations
- selection of SUDS techniques
- training material
- case studies.

Sustainable drainage design at the Oxford and Hopwood motorway service areas

The motorway service areas (MSA) at Oxford (M40 J8A) and Hopwood Park (M42 J2) are now considered SUDS "demonstration sites" by the Environment Agency.

The guiding design principle at Oxford considers the development as a single catchment, controlled by SUDS techniques, flowing to a local ditch network and then to the River Thame. The ornamental ponds around the amenity building collect and store roof-water as well as providing amenity for visitors.

All other run-off is treated through SUDS features before discharge to the ditch outfall.

The SUDS site at Hopwood Park service area near Bromsgrove, is split into two sub-catchments by a road drain running through the site. Each sub-catchment uses a suite of SUDS that collect, clean and store run-off before discharging to the Hopwood Stream.
Experience at Oxford showed how vulnerable a single stage drainage system can be to pollution, so the Hopwood Park area uses a series of SUDS techniques in sequence to manage flow and control pollution which is called a "management train" or "treatment train". Further information on management trains can be found on the SUDS website, www.ciria.org.uk/suds

A questionnaire to site managers and monitoring by the Environment Agency at the Hopwood Park site identified the following benefits:

- ease of maintenance
- 30–50 per cent cost savings in maintenance
- attractive landscape features
- reduction in heavy metals, silt and BOD
- filter strips and treatment trenches protect wetlands
- the "management train" enhances water quality.

The Oxford and Hopwood motorway service areas demonstrate the benefits of SUDS to the environment, the community and all the stakeholders involved in development.

Case study courtesy of Robert Bray Associates Tel 01453 764885
Email: rjbassoc@aol.com
Web: www.sustainabledrainage.co.uk

Useful links and contacts

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

www.ciria.org.uk/suds
www.environment-agency.gov.uk
www.sepa.org.uk

CIRIA has recently published the following on SUDS:

C523
Sustainable urban drainage systems – best practice manual

C522
Sustainable urban drainage systems – design manual for England and Wales

C521
Sustainable urban drainage systems – design manual for Scotland and Northern Ireland

For further information please contact CIRIA's customer services on 020 7222 8891.

Have your say

We would welcome your feedback on both the SUDS website and the SUDS *Bulletin*, so if you have any suggestions or comments please contact Paul Shaffer at CIRIA on 020 7828 4441
Email: suds@ciria.org.uk

A case in point...

As we would like to demonstrate the benefits of SUDS we intend to feature case studies of good practice relating to the incorporation of SUDS in both the website and SUDS *Bulletin*. If you have suitable case studies we would be interested in hearing from you.