

# Sustainable Drainage News



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

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This is the second bi-annual newsletter about sustainable urban drainage systems (SUDS). The aim of these bulletins is to communicate the latest innovations in SUDS practices and encourage their widespread use in developments.

The SUDS Bulletin has been renamed **Sustainable Drainage News** to cover the use of sustainable drainage systems in the full range of possible situations. Sustainable drainage systems may be referred to as either SUDS or SuDS.

This bulletin discusses the work that is being undertaken by various stakeholder groups to promote the use of SUDS techniques. It provides a practical example of multi-stakeholder participation and the positive contribution this can have to sustainability.



Dundee Stenton surface water treatment pond, Fife. *Courtesy of SISTech*

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Typical native wetland plant.  
Courtesy of Warwickshire Wildlife Trust

## The sustainable drainage systems working group

Planning Policy Guidance Note 25 (PPG 25) *Development and flood risk*, published by DTLR in July 2001, recognised the need to manage surface water disposal more proactively. It identified the role that SuDS could play in that process and encouraged their use. However, the perceived legal, technical and maintenance issues associated with the adoption of SuDS were not addressed by PPG25.

A SuDS working group has therefore been established by the Environment Agency to address the perceived issues. It includes representatives from:

- ◆ Department for Transport, Local Government and the Regions
- ◆ Department for Environment, Food and Rural Affairs
- ◆ National Assembly for Wales
- ◆ Office of Water Services
- ◆ The Water Industry
- ◆ Local Government Association
- ◆ Highway Authorities
- ◆ The Environment Agency
- ◆ The House Builders Federation.

The group aims to formulate proposals for a core set of standards, considering the possibility of agreements between those

public organisations with statutory or regulatory responsibilities relating to the disposal of surface water. This should lead to an agreed protocol or code of practice. Specific matters to be covered will include design standards, a decision framework to match SuDS to local topographical and geological conditions, legal issues, consents, maintenance responsibilities and ownership. The group has met three times, and a sub-group has been formed to assist with the drafting of design standards. The consultation draft should be available by the end 2002, when wide consultation with relevant key organisations is expected.

*Prosper Paul*  
Environment Agency, Thames Region

## Water UK Think Tank – Creating an agenda for action on SUDS

Water UK's Information and Learning Think Tank, gathered 54 water industry and stakeholder representatives to consider the difficulties surrounding SUDS. There is little disagreement on some schemes, like industrial sites and motorway service stations, where responsibilities are clear and robust. However, when it comes to housing schemes there are many problems, particularly around maintenance and adoption, as well as the appropriate use and design of SUDS to reduce flood risks.

During the workshop the Think Tank looked at the Environment Agency's aims and objectives, the achievements of the Scottish Executive and DEFRA's Climate Change Programme, and considered the practical implications

of incorporating SUDS in development. Bob Bray provided colourful examples of the contribution SUDS can make to sustainability and highlighted the possible cost savings.

SUDS are a growing area of interest, with many stakeholders debating the issues. The water industry is currently working with the Environment Agency, Ofwat, DEFRA/DTLR and other stakeholders to come up with a "SUDS for adoption" scheme. The industry is also running a research project through UKWIR to determine the real costs and performance of SUDS structures, considering both hydraulics and water quality.

The experience in Scotland has been very instructive. Scotland has approached the issue from a water quality perspective. With a publicly owned industry, a framework agreement was facilitated between local authorities, SEPA and the Scottish Executive, resulting from currently some 1300 approved schemes. The Scottish Executive's version of PPG25, called PAN 61 dealing with SUDS, is more prescriptive about duties, and aims to bring parties to the decision making table. However, more design work is needed and there are problems, which it is hoped to address with the introduction of new law. This could mean that the Scottish Executive will define duties for all parties. It seems that England and Wales still have much to learn from the Scottish experience.

*Mike Waddington*  
Water UK



Typical native wetland plant. Courtesy of Warwickshire Wildlife Trust

# Sustainable drainage and the Building Regulations

The Building Regulations 2000 have been amended. Requirement H3, Rainwater Drainage, now explicitly refers to the preferred types of outfall in priority order, and Approved Document H (2002 version) now includes guidance intended to encourage the incorporation of sustainable urban drainage systems (SUDS) in the decision making process for designing drainage systems.

The Building Regulations contain requirements that aim to ensure the health and safety of people in and around buildings, design for energy conservation and provide access and facilities for disabled people. The supporting approved documents give practical and technical guidance on meeting the requirements.

Foul and surface water drainage are dealt with under separate requirements, with Requirement H3 referring to rainwater drainage.

In mandatory Requirement H3, the preferred option is to drain the rainwater to an adequate soakaway or another infiltration system. If a site cannot drain to an infiltration system then the next favoured option is to dispose of the rainwater to a watercourse. Where this is not feasible, the last option is to drain the rainwater to a sewer.

Previously, a developer would only have considered soakaways and other infiltration devices when their scheme could not drain to a sewer or watercourse. The new requirement means that infiltration devices must be considered from the outset. Although all methods of disposal of rainwater from a development are acceptable, this new hierarchy will ensure that SUDS are considered first and foremost.



Roadside Swales at West Grange Development, Dundee. *Courtesy of SISTech*

The following information, recommendations and guidance are all included in the new Approved Document H and all are positive steps towards the use of SUDS.

- ◆ Paths, driveways and other narrow areas of paving should be free draining to a pervious area such as grassland, provided there is no likelihood of damage.
- ◆ Where surrounding ground is not suitable for the flow, filter drains may be provided.
- ◆ Information about pervious paving is provided.
- ◆ Rainwater recovery systems are referenced as an option.
- ◆ Details are provided of siting and of the design of infiltration systems.
- ◆ Reference is made to CIRIA report C522 Sustainable urban drainage systems – design manual for England and Wales and CIRIA report R156 Infiltration drainage – manual of good practice.
- ◆ Details are supplied on these types of infiltration systems:
  - ◆ swales
  - ◆ infiltration basins
  - ◆ filter drains
  - ◆ detention ponds.

*Morven Scott  
Telford and Wrekin Council*

The Building Regulations 2000 approved document H Drainage and waste disposal is published by The Stationery Office at £12.00 (ISBN 0 11 753607 5) and is available on the Internet at [www.safety.dtlr.gov.uk/bregs/brads](http://www.safety.dtlr.gov.uk/bregs/brads)

## Sustainable drainage systems and biodiversity

SuDS have been advanced as part of an increasingly environmentally friendly approach to development. One element of this is the maximisation of opportunities to promote biodiversity, which can be defined as "the variety and abundance of life on Earth".

The 1992 Rio Earth Summit saw the term biodiversity come to the fore, and in the UK this has resulted in the production of a series of national and local Biodiversity Action Plans (BAPs). Inevitably, these concentrate on our rare habitats and species, which must be a priority, but by definition the conservation of biodiversity necessarily includes those that might be considered common.

### SuDS – their biodiversity potential

Conventional drainage systems transfer surface water runoff to watercourses, often in a very short time period, with no attempt to remove any contaminants. SuDS can offer an alternative that provides benefits to biodiversity and the wider wetland environment as follows:

- 1) Reducing flood risk - by attenuating run-off.
- 2) Reducing pollution - by using natural processes such as sedimentation and biological degradation to remove the main contaminants (of which many wetland species are intolerant).



Creation of deep and shallow water.  
*Courtesy of Warwickshire Wildlife Trust*

- 3) Creating habitats - retaining water (even temporarily) in an above ground structure (e.g. swale or pond) that supports some common wetland plants and associated invertebrates, constitutes habitat creation and a gain for biodiversity.

### SuDS – designing for biodiversity

While SuDS will always be an engineered solution to a drainage issue, minor alterations in design can bring considerable biodiversity gains. The following points should be considered.

#### Location

- ◆ Ensure schemes do not destroy, damage or compromise areas of existing conservation value.
- ◆ Endeavour to associate SuDS with existing wetland (or other

semi-natural) habitat, thus promoting habitat connectivity.

#### Profiling and water depth

- ◆ Most biodiversity is associated with shallow water - permanent water of 500 mm or less will support the greatest array of emergent/marginal plants and associated species.
- ◆ Deep open water (ie greater than 1 metre) is a relatively specialised habitat, which should be limited to 25 per cent of the scheme area where practical.
- ◆ Habitat mosaics can be promoted by varying the water depth both spatially (creating a complex of open pools of differing depth, separated by areas of swamp/marsh vegetation) and temporally (creating areas of permanent, semi-permanent and temporary water).
- ◆ Good design of SuDS can leave a hummocky finish to create micro-habitat niches.

#### Botanical establishment

- ◆ Natural colonisation should be the preferred method of vegetation establishment.
- ◆ Where active planting is necessary, SuDS can be improved by including native species that are suited to site conditions in terms of water depth and quality.

The ever-increasing adoption of SuDS is clearly beneficial to our wetland environment. But the incorporation of some simple design refinements can maximise the gain for biodiversity, without compromising SuDS primary functions.

*Matt Jones*  
*Warwickshire Wildlife Trust*



Dunfermline Eastern Expansion. *Courtesy of SISTech*

### 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 on the website and in the Bulletin. If you have suitable case studies we would be interested in hearing from you.

### In the know about H<sub>2</sub>O

CIRIA will run the following event in Autumn 2002: **In the know about H<sub>2</sub>O? Implementing sustainable water management in the built environment.** The programme will include presentations on the barriers to implementing sustainable water management and include examples of good practice where these difficulties have been overcome. If you are interested in speaking or attending please contact CIRIA.

## Useful links and contacts

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

[www.ciria.org.uk/suds](http://www.ciria.org.uk/suds)  
[www.environment-agency.gov.uk](http://www.environment-agency.gov.uk)  
[www.boc.com/foundation](http://www.boc.com/foundation)  
[www.epg-ltd.co.uk](http://www.epg-ltd.co.uk)  
[www.sepa.org.uk](http://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.