

Sustainable Drainage News



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

Issue 8 – August 2005

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

Greening the urban environment

Current demands on the construction industry are tougher than ever before. Not only are calls for housing increasing, but buildings also need to provide a better quality of life and positively contribute to sustainability, preserving and enhancing the local biodiversity.

However, as these pressures increase, planners, designers and builders are becoming more innovative in their response and in some cases embracing sustainable buildings. Many approaches are taking design back to grass roots, observing natural processes and working to imitate these within the built environment, a method sufficiently researched by sustainable drainage experts.

Green roofs aim to go a little further and incorporate biodiversity into buildings themselves. A green roof is a roof with vegetation on its surface, examples include the roof of Cannon Street Station in London or those within the Canary Wharf Estate. The concept of green roofs is not new they have been in existence since ancient times, through the Italian Renaissance, the garden city movement of the late 19th century and the modernist movement of the 20th century.

Once again, urban designers are planning to cover our rooftops with vegetation, and the potential is huge. Most of the unused space in towns and cities is on the rooftops, for example, buildings (and therefore roofs) cover 24 000 hectares or 16 per cent of Greater London, which is equivalent to an area 28 times the size of Richmond Park.

Many parts of Europe are far ahead of the UK for greening roofs, not only is there more funding available to support specification of green

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roof technology, but in certain countries installation to flat-roof areas is a legal requirement on new-build development.

In Germany, the country that leads the world in roof greening, 1 million m² of green roofs were installed during 1989. In 1997 the figure had climbed to 11 million m² and in 2001, 13.5 million m² of green roofs were installed, costing the Euro equivalent of an estimated £153 million.



Poppies growing on the green roof at Kanton Hospital. (photo courtesy of S. Brenneisen)

The UK is far behind its European neighbours and green roof technology is limited to showcase buildings and 'green' centers. Yet the need for green roofs is greater than ever since the move to develop more brownfield sites which will see the loss of essential urban green space.

Green roofs can, if designed with consideration of local and regional conditions, provide a plethora of benefits including:

- increased biodiversity and wildlife in urban areas
- energy conservation and fuel savings through thermal insulation
- reduction in the urban heat island effect which will further reduce smog and climate differences in cities
- attenuation of storm water by delaying run-off to drainage systems
- increased urban green space with associated aesthetic and health benefits.

Arguably the most important benefit of green roofs is to the people living and working around them. There is growing evidence that visual and physical contact with greenery of the natural environment provides substantial mental health benefits including stress reduction, lower heart rates and blood pressure, and an overall feeling of well being.

CIRIA's project RP714 *Biodiversity in buildings* explores the possibilities and practicalities of delivering imaginative built environment solutions (ie green roofs, façade greening etc) that can deliver increased biodiversity, sustainable drainage and thermal efficiency benefits within the built fabric.

The outputs of the project will encourage people and organisations to think holistically, providing information on improving the contribution to local sustainability through maximising biodiversity, amenity and rainfall attenuation in buildings. To find out more contact email mark.bentley@ciria.org



Example: The green roof at Komodo Dragon House, London Zoo (photo courtesy of D. Gedge)

Making space for SUDS

Recent flooding incidents have highlighted the need for Government to develop a comprehensive, integrated and forward-thinking strategy for managing future flood and coastal erosion risks in England.

As a response Defra and other Government departments published the Making Space for Water consultation document in July 2004 and in March 2005 published the First Government Response which sets the future agenda for how Government will start to implement a new strategy for the next 20 years and beyond.

Defra recognises the benefits to water quality, flood management, biodiversity and amenity space SUDS can provide. As such Defra support the appropriate use of SUDS and are committed to ensuring that their take-up is facilitated. They are aware that at present, barriers to the adoption and maintenance of SUDS exist and that there are legislative issues which constrain and disincentivise the design and implementation of SUDS. Defra recognise that action is needed and are working to resolve these issues.

The new strategy for flood and coastal erosion risk management, Making Space for Water (www.defra.gov.uk/environ/fcd/policy/strategy.htm) highlighted ways of efficiently coordinating the various responsibilities for urban drainage, including SUDS. A technical annex to this consultation (<http://www.defra.gov.uk/environ/fcd/policy/strategy/suds.htm>) explores the specific options and proposals that have been made to Government to encourage and facilitate the implementation of SUDS systems in the future.

The consultation exercise produced mixed responses about which organisation/s may be ideal to take ownership and responsibility for SUDS. The Government therefore proposes to consider the options further in the context of the integrated urban drainage management proposals, as described in the main First Government Response. These will provide a vehicle for considering the role of SUDS in the broader urban drainage management concept. The Government aims to resolve SUDS issues by leading with integrated urban drainage management as a whole.

The responses suggest that it may be more appropriate to focus on addressing specific barriers to the take-up of SUDS rather than

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attempt to apply a “one size fits all” approach to ownership and maintenance. Various necessary legislative changes were also suggested by respondents. Defra will explore and build on these, working with other Government departments, local authorities and other operating authorities and delivery bodies. Defra propose to continue work with the National SUDS Working Group to identify and promote any beneficial changes.

As part of the interim response to Making Space for Water Defra will be initiating a programme of Integrated Urban Drainage Partnership pilots. Work shall soon be starting on a scoping study for the programme. While these will not specifically investigate detailed SUDS solutions for particular locations, they will provide a framework within which such approaches can be considered in the future.

SUDS training – going with the flow of good ideas

SUDS practitioners need to have access to the best possible information and have the confidence to implement guidance and use SUDS within developments. Recent consultation exercises undertaken by CIRIA, SEPA and the England and Wales National SUDS Working Group and others have suggested that further training and expertise is required for decision makers and practitioners to improve the implementation and maintenance of SUDS.

Two prominent SUDS training schemes currently available are the online SUDS training courses at Abertay University and the CIRIA SUDS modular training courses, which utilise different training methods.

The Abertay online course is both for experienced staff wishing to learn about SUDS, and for young professionals who require a basic knowledge of modern approaches to drainage systems. The course aims to provide students with a general knowledge of the component parts, principles and strategies of SUDS and skills in the planning and implementation of SUDS programmes.

CIRIA in partnership with Sustainable Drainage Associates, developed four SUDS training modules to build on current SUDS guidance and assist with the implementation of good practice. The training programme enabled practitioners to efficiently plan, design, construct and manage SUDS schemes in accordance with best practice guidance and the relevant legal and regulatory framework. Delegates were able to liaise with nationally recognised practitioners with design build expertise and learn about the entire life cycle of SUDS.

The training modules are designed for all levels of knowledge, from less experienced professionals fairly new to SUDS through to professionals who have extensive knowledge and experience of sustainable drainage concepts. CIRIA SUDS training modules include:

- SUDS fundamentals
- SUDS design
- Planning and evaluating SUDS schemes
- Maintenance and adoption of SUDS.

The module courses have so far received excellent feedback from delegates, who enjoyed the informal approach, interactive exercises, and the breadth of subjects covered. CIRIA and SDA are also working with Interpave to provide training on the implementation of pervious pavements and in late 2005/early 2006 will be organising further SUDS training modules.

Micro Drainage also offers complete programmes of training on their software packages WinDes and WinDap. Training ranges in scope from simple drainage design through to complex SUDS and hydrological studies. For more information see the Micro Drainage website: www.microdrainage.co.uk

Further details on the Abertay courses can be obtained by emailing uwtc@abertay.ac.uk or on the website: www.uwtc.tay.ac.uk

For more information on the CIRIA training courses please contact Paul Shaffer at CIRIA paul.shaffer@ciria.org or follow the links on the CIRIA SUDS website: www.ciria.org/suds

SUDSnet visit to Bourne Stream

Issue 4 of Sustainable Drainage News featured an article on the SUDS site at Bourne Stream, an important green corridor for local people and wildlife in a highly developed area on the south coast of England.

On 15 April, SUDSnet members visited the site at Bourne Stream hosted by the Bourne Stream Partnership to view the schemes progression.

After a presentation from Sarah Austin (project officer) and Stuart Terry (Borough of Poole), which provided the group with an overview of the catchment, the type of retrofit SUDS that were implemented as part of the overall improvement to the Bourne Stream and water quality monitoring results, we visited three of the SUDS.

First on the agenda was the wetland and lagoon at Alderney, which

primarily treat highway runoff. These structures have mature aquatic vegetation and are abundant with wildlife. The wetland, being the first component in the treatment train, had been subject to heavy sediment loading, which the council are currently removing.

Next we visited the stream modification works at South Park Road, where the stream is diverted via a sump into a new deep, meandering channel that is connected to an existing reed bed. Here, runoff from a nearby housing development is treated and the structure also functions as a flood alleviation scheme during extreme events, by



SUDSnet members following the Bourne Stream nature trail.

utilising the original stream channel. The works have been left to naturalise with indigenous vegetation, which provides an extended natural habitat for local wildlife

Our final visit was to Coy Pond Gardens where we enjoyed a stroll along a local beauty spot, which has recently been modified to perform as a natural 'water meadow', acting as a flood basin as well as a treatment facility. Local residents played a large part in choosing the adopted scheme, which also included improvements for local access, use of the area for amenity purposes and enhanced wildlife habitat. We particularly appreciated the personal touch of the local action group who organised the strategic planting of aquatic vegetation, shrubs and trees.

Alison Duffy – SUDSnet



SUDSnet members enjoy a stroll along the 'water meadow' (flood basin) at Coy Pond Gardens

Sustainable Drainage News has been sponsored by the following organisations:



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If you have suggestions for interesting and brief articles to be included in this newsletter please contact suds@ciria.org

CIRIA, Classic House, 174-180 Old Street,
London EC1V 9BP

Tel: +44(0)20 7549 3300

Fax: +44(0)20 7253 0523

www.ciria.org/suds

email: suds@ciria.org