

WaPUG Spring Conference 2004

SuDS Working Party for Wales

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1 Summary

This paper is concerned with Sustainable Drainage Systems or SuDS and describes the background to setting up the SuDS Working Party for Wales and its subsequent development. It describes the activities of the working party, particularly in the development of an educational programme. The final section provides a glimpse of the future for the Working Party.

2 Background

In October 2001 Hyder Consulting Ltd in collaboration with Bradford University, organised a SuDS Awareness meeting in Crickhowell in the Brecon Beacons on behalf of Dŵr Cymru Welsh Water (DCWW). This was attended by approximately 100 people including representatives of DCWW and a number of local authorities. Some Consulting Engineers were also represented. Several papers were presented including papers on SuDS work in Scotland, which dealt with the use of SuDS and in particular their implementation.

During the day, DCWW asked for volunteers to join a SuDS Working Party for Wales which was to be set up to promote the use of SuDS in Wales. DCWW asked Hyder Consulting Ltd to organise the working party and to invite representatives of all stakeholder organisations. The Hyder Consulting proposal suggested the following membership of the Working Party:

- 2 Representatives of DCWW
- 2 Representatives of the Environment Agency
- 2 Representatives of Local Authority Planning Departments
- 2 Representatives of the Highway Authorities
- 1 Representative of Developers
- 1 Representative of the Welsh Assembly
- 2 persons from Hyder Consulting to facilitate and initially chair the meetings
- 12 persons in total

In setting up the Working Party, DCWW recognised that the following matters should be taken into consideration when the use of SuDS is proposed in any development:

Planning

All parties potentially involved with the design of the SuDS should meet at an early stage of the proceedings. This will promote an integrated and holistic approach to their development. Invited parties should include engineers, landscape architects, planners, ecologists and representatives

of the public. Early consultation with the regulatory authorities is also recommended.

Adoption can be a major deterrent to the implementation of SuDS in England and Wales. The provision of a framework for deciding on adoption and maintenance is an essential part of protocol, but there is currently no formal agreement in place.

Implementation

Effective implementation based on available guidance, is a key factor in the short and long-term success of SuDS.

Appropriate design is essential to ensure the long and short-term effectiveness of the structure.

Social Acceptance

SuDS is a relatively new concept in the UK (although a best management practice approach has been used in the past) and it is essential that adequate education is provided to gain social acceptance (especially to address concerns regarding safety).

Economic

SuDS should provide a cost-effective solution to the control of stormwater (including both construction costs and maintenance costs). In particular, the cost of maintenance of these systems will require careful consideration of who pays.

3 Setting Up

In their proposal to Dŵr Cymru Welsh Water for setting up the Working Party, Hyder Consulting set out a programme of meetings to cover the first 2 years of operation and suggested a list of organisations that could be approached with a view to taking up membership of the Group. Considered key among these organisations was the Environment Agency Wales. The first meeting was held on 24th January 2002 and was attended by representatives from the various organisations listed in Section 2 above.

The meeting was chaired initially by Hyder Consulting and it was envisaged that the “permanent” chairman would be elected by the meeting. In the event, this did not happen until several meetings had passed, when it was agreed that the Chair should pass to the Environment Agency representative. Hyder Consulting then assumed a purely secretarial and advisory role. For the first two years of operation, the secretarial duties were undertaken by Gaye McKissock who had been involved in the activities of the Scottish SuDS Working Party during its formative years. Late in 2003, Ms McKissock passed the secretarial duties over to Jeremy Jones, former Chairman of the South Wales Branch of CIWEM.

The secretary together with the Chair of the Group, puts forward a programme and agenda for each meeting and members are encouraged to suggest items for inclusion. Meetings are held in different locations depending on availability, but locations have included the Offices of the Welsh Assembly Government, the Environment Agency, Dwr Cymru Welsh Water and Hyder Consulting Limited.

When national or regional matters relating to SuDS require a response from the Group, a sub-committee is set up to deal with it. Such sub-committees have been used, for example, to comment on “Planning: Delivering for Wales, Consultation Paper”, TAN15 (the Welsh equivalent to PPG25), and the consultation document “Framework for Sustainable Drainage Systems (SuDS) in England and Wales” issued by the National SuDS Working Party.

4 Membership

The Working Party is chaired by Bob Vaughan who represents the Environment Agency in Wales. It was felt by the Group that the Chair should be from the Environment agency because it is from that quarter that the impetus for the implementation of SuDS comes.

The views of the Welsh Assembly Government are represented by a member from the Highways Directorate and a member from the Planning Directorate. Highway Engineers frequently take a different view from other engineers because, amongst other things, of their obligation to adhere to Departmental guidelines. For the Group to understand all points of view, it was therefore considered essential to include a highways engineer in the membership and his contributions have been most useful.

Dŵr Cymru Welsh Water is represented on the Group and makes a valuable and forthright representation of its views. Tied to a large extent by the requirements of OFWAT, DCWW is keen to encourage the implementation of SuDS in Wales which would have an impact on the combined sewerage system and result in reduced discharges from storm overflows and more effective treatment. (DCWW sustainable drainage policy is included as Appendix 3)

The Housebuilders Federation is represented and takes a keen and active interest in the Group. Housebuilders find themselves between two camps – on the one hand, the Environment Agency promoting SuDS through the planning process and on the other hand the Water Company is unable to adopt the majority of SuDS techniques due to the lack of appropriate legislation.

The Working Party was of the view that the way to get SuDS implemented as widely as possible was through the Planning process. Welsh Planners are therefore represented by Wynn Mitchell, Chief Planning Officer of the City of Newport. Members of the Working Party gave a presentation on SuDS to the annual meeting of Chief Planning officers of Wales.

The Welsh Development Agency is represented on the Group. This Agency has a very strong environmental policy and sees the Working Party as one way of promoting it.

Local Authorities in Wales are represented by the Welsh Local Government Association. Together with the representative of Welsh Planning Authorities, they are able to put forward a robust view of SuDS and their implementation and limitations.

The Group is supported and administered by Hyder Consulting which provides secretarial and other support services and is financed by Dŵr Cymru Welsh Water. DCWW support has recently been extended for a further year.

The current membership of the Working Party differs somewhat from the original proposed membership described in Section 2 above. There are also several organisations and individuals that have asked to be kept informed of the activities of the Working Party and they receive copies of the minutes. These organisations include Water Voice.

5 Objectives

At its initial meeting the Working Party defined its objectives as follows:

- Work in partnership to promote the use of SuDS
- Protect the environment
- Agree responsibilities for design, implementation, ownership and approval
- Promote the use of the management train concept
- Encourage re-use of water
- Influence legislation (especially planning procedures)
- To monitor the performance of SuDS
- Provide a source of expertise
- Provide a focus in Wales compatible with other national foci
- Educate stakeholders and the public

6 Education

At an early stage the Working Party recognised that those who could potentially apply SuDS principles or encourage their use probably knew little or nothing about them. The Working Party therefore took the view that education should be one the members' primary objectives. The question was how should this should be achieved?

It was decided to approach this problem in three ways:

Firstly, through publicity materials.

Secondly through presentations.

Thirdly through the development of a SuDS database for Wales.

6.1 Publicity materials

The Working Party decided to develop a leaflet which would explain in very general terms what SuDS are all about and which could be distributed through the Local Authorities via the planning process. (A copy of the leaflet in its current state is given in Appendix 1)

The leaflet was intended to give a brief introduction to SuDS but more importantly, provide a source of information which could then be used by the reader to investigate SuDS in more detail. It therefore contains references to design guides, relevant web sites and contacts at the working party. The leaflet uses the same terminology as the CIRIA design guide.

The leaflet has been designed to be printed on A3 size paper which can be folded to provide a Welsh language version or an English language version. Translation and printing will be undertaken by one of the member organisations.

6.2 Presentations

At the end of 2003, the Chair of the Working Party wrote to the Chief Executive and Chief Planning Officer of every Local Authority in Wales offering a presentation on SuDS at the Local Authorities' own offices. Over 20 such letters were sent out but very few responses have been received to date, although there is still a possibility of responses.

The presentations that have been given, which are given in PowerPoint, are tailored to the expected audience following consultation with the Local Authority concerned. Responses to these presentations have been positive on the whole and have revealed the level of awareness within the Authorities to the design and use of SuDS. They have also revealed some unfortunate misconceptions, the principle one being that "using SuDS means there will be no runoff"!

To date presentations have been given to Herefordshire Council, the Vale of Glamorgan Council and the Brecon Beacons National Park Authority. Further presentations are planned for Anglesey Council, Torfaen Council and a North Wales Local Authority Forum.

6.3 SuDS Database

The Working Party agreed that it would be useful to have a database of SuDS sites in Wales to which anyone interested could have access via the world wide web. This would include photographs where possible together with locations and other information about the site. A questionnaire was

produced which is used to gather data for the database. (A copy of the questionnaire is give in Appendix 2)

After much deliberation it was agreed that the database should be accessible via the Environment Agency web site and should point to other relevant web sites such as the excellent CIRIA SuDS web site. At the time of writing, tenders for writing the SuDS database had been received and were being assessed by the Environment Agency.

The Working Party is aware of work being undertaken elsewhere to develop a National SuDS database, but took the view that Wales should have its own facility dedicated solely to SuDS in Wales. It was felt that the information required by the National Database would tend to discourage all but the most dedicated from submitting data. The Welsh database will be simpler with fewer questions.

7 Discussions and Views

The diverse membership and multiplicity of organisations represented on the Working Party leads to frank exchanges of views and some lively debate. The members represent a wide range of opinions on the use of SuDS which makes the group a useful forum for exchanging views and experiences.

The biggest obstacle to the wholesale implementation of SuDS solutions in Wales and England is the matter of maintenance – who will maintain the SuDS once constructed and who will pay for that maintenance? This question has occupied many hours of discussion at the Working Party as it has at the National SuDS Working Group. There is no easy answer and until this is addressed nationally, it will continue to be problematic.

The Working Party appears to be moving towards the view that SuDS above ground should be maintained by the Local Authorities while those underground should be maintained by DCWW. However there is reluctance on the part of both parties because of the cost involved and to a certain extent, fear of the unknown. This model has been rejected in Scotland, after extensive trials, in favour of adoption of all SuDS by Scottish Water.

In an attempt to crystallise the arguments the Working Party has drawn up a “SuDS Matrix” that lists the various types of SuDS and suggests who should be responsible for their maintenance.

Diagrams to explain what is currently acceptable for adoption by DCWW and what is not are also being prepared.

The Working Party believes that rainwater harvesting should be encouraged and should be regarded as a legitimate SuDS technique.

The views held by the individual members of the Working Party are many and varied. While all members support the general principles of SuDS it would be fair to say that this support ranges from enthusiasm to resigned acceptance. This range of opinion has also highlighted some of the drawbacks of SuDS such as their use in areas containing contaminated

land; difficulties encountered where the subsoil is impermeable; the space required to implement SuDS (of particular concern to developers); the perceived dangers of constructing bodies of open water and the risk of children drowning. There is also a conflict between Government planning guidance, which favours higher density developments, and the promotion of SuDS which tend to occupy more land than conventional piped systems. The Working Party recognises that SuDS do not provide a universal panacea for dealing with all surface water drainage but do provide a useful tool which, while dealing with surface water runoff, may also bring water quality and amenity benefits simultaneously.

8 A vision of the future

When the SuDS Working Party for Wales was first set up, it was realised that the organisation could provide a valuable advice centre for those wishing to implement SuDS in Wales.

The Working Party could provide a source of technical and generic information for use in SuDS design and development and could even provide design, or design checking services for organisations such as Local Authorities or private clients. While the technical design of SuDS is not complex, lack of knowledge and experience do provide a challenge for many organisations, especially Local Authorities.

It has been recognised by the Working Party that monitoring of SuDS sites that have been constructed will be of benefit both in promoting SuDS in the future and improving the principles of design. Sponsoring post-graduate students to undertake an ongoing programme of site monitoring is a possibility and would be a useful exercise. This has been undertaken with some success in Scotland.

While these suggestions may be some way off, they are not unattainable. The main stumbling block is finance. How can the Working Party offer these services without costs to the support members.

9 Conclusions

Sustainable Drainage Systems potentially provide a solution to many of the problems associated with rapid runoff of surface water from paved areas, reducing the impact on receiving waters.

SuDS can also provide a level of treatment that can deal with the problems of the “first flush”, familiar to many engineers and environmentalists.

SuDS can provide amenity value and environmental enhancement.

Promotion of SuDS by the Environment Agency is driving the need to solve the adoption and maintenance problems associated with SuDS.

The SuDS Working Party for Wales is working towards a better understanding and acceptance of SuDS principles in Wales and a framework for their acceptance for adoption by appropriate bodies.

While there is still a long way to go, the Working Party is successfully moving towards achieving the objectives it set for itself as listed in Section 5 above.

Use of SuDS requires a change in attitude, principally by Engineers, to move away from the traditional hard engineered solutions towards a softer, more natural approach to management of surface water runoff. The Working Party is working to facilitate this process in Wales.

Appendix 1

SuDS Information Leaflet

SuDS Design

The principles used for the design of SuDS are straightforward and do not involve complex calculations. Design relies on basic well tried principles. Design guides are available.

Design Guides

“Sustainable Urban Drainage Systems – design manual for England and Wales” is published by CIRIA, reference C522.
“Sustainable Urban Drainage Systems – best practice guide” is published by CIRIA, reference C523.



SuDS Costs

In general terms, SuDS are no more expensive to install than conventional systems and can deliver significant savings in many circumstances.

Dual Uses

Some SuDS features, such as infiltration basins, are normally dry and can be used for other purposes when not required for drainage. In these cases, notices should be provided to warn people that the basin may flood in the event of a storm. SuDS can often be accommodated in Public Open Space.

The SuDS Working Party for Wales includes representatives of the following organisations:

Environment Agency Wales
Dŵr Cymru Welsh Water
Welsh Assembly Government
Welsh Development Agency
Welsh Local Government Association
House Builders Federation
CIWEM
Hyder Consulting Ltd

Contacts **Bob Vaughan** EA (Wales)
Chair of the Working Party
Tel. 029 2077 0088
Jeremy Jones, CIWEM,
Secretary to the Working Party
Tel. 029 2056 3398
Roger Noden, Hyder Consulting
Technical Advisor
Tel. 0870 000 3004

Member organisation web sites:
www.environment-agency.gov.uk
www.dwrcymru.com
www.wales.gov.uk
www.wda.gov.uk
www.wlga.gov.uk
www.hbf.co.uk
www.ciwem.org.uk
www.hyderconsulting.com
Other useful sites:
www.ciria.org.uk

Sustainable Drainage Systems

SuDS

SuDS Working Party for Wales



Sustainable Drainage Systems

The Working Party

The SuDS Working Party for Wales includes representatives of organisations that encompass all aspects of stormwater management and drainage design. The Working Party promotes the use of SuDS with a view to providing water quality improvement, water quantity control, amenity provision and enhancement as well as maximising habitat potential. The Working Party can also provide strategic advice on planning and implementation of stormwater control facilities and development of policies.



Why SuDS?

Using SuDS for the disposal of surface runoff from impermeable areas has a number of advantages, including:-

- Reduced impact on watercourses;
- Reduced diffuse pollution;
- Reduced flows in combined sewers;
- Improved amenity;
- Reduced construction costs.

SuDS are designed to mimic natural drainage systems by using soft landscaped techniques instead of hard engineering.

SuDS Principles

The term SuDS covers a range of sustainable urban drainage facilities from end of pipe facilities such as wetlands or retention ponds, to source control systems such as soakaways, infiltration trenches, swales and permeable pavements. The Working Party believes that there is a need for an integrated approach to SuDS design, whereby issues of water quality and water quantity are considered together with amenity and habitat.

SuDS Terms

The following terms relate to SuDS.

Attenuation – Slowing down the rate of flow to prevent flooding and erosion, with a consequent increase in duration of flow.

Balancing ponds – ponds that hold surface water for a time and allow it to flow to a water course at a reduced rate, hence attenuating the flow.

Detention basin – a basin that is normally dry, constructed to store water temporarily to attenuate flows. As these features are normally dry, they may be used for other purposes when not required for drainage.

Filter drains – trenches constructed alongside highways which are filled with free draining material such as shingle, and which may have a perforated pipe running in the bottom of the trench. (Sometimes known as ‘French Drains’)

Infiltration basin – shallow depression in the ground which is usually dry but which is used to

hold surface water for a time while allowing it to soak into the ground.

Lagoon – A pond designed for the settlement of suspended solids.

Permeable paving – hard surfaces, usually block paving, that allow rainwater to pass through the surface and into the underlying ground.

Soakaways – A subsurface structure into which surface water is conveyed, designed to promote infiltration.

Swales – shallow, usually grass lined channels, often running alongside roads, designed to drain water from a site as well as controlling the flow and quality of surface water.

Wetland – a pond, with emergent vegetation, that is created in order to provide a treatment area for water running off impermeable surfaces and which may contain pollutants such as oil or silt. Long retention periods allow biological action.

Safety Concerns

Any body of open water is potentially dangerous especially for children. SuDS design principles recognise this and the designs are intended to minimise this risk. This is achieved by constructing the water retaining areas of ponds and basins with very gently sloping floors, without sudden changes in depth.

Where appropriate, open water may be fenced or guarded with barrier planting to prevent access. Individual developers and local authorities need to decide on their approach to this issue.

Appendix 2

SuDS Site Questionnaire

Environment Agency – Dŵr Cymru Welsh Water

Sustainable Drainage Database

A working party has been established with the purpose of promoting the use of sustainable drainage systems (SuDS) in Wales. The Working party includes representatives of the key stakeholders in Surface Water Drainage systems.

A database detailing the location of SuDS in Wales is being established to provide a central source of information on SuDS sites established and proposed in the Principality. The purpose of the database is to provide information on the number and types of systems actually constructed or planned and to gain knowledge on the performance of those which are in use.

The database includes details of:

- The types of systems used at a particular location
- Grid References of where these devices are located
- The consultants involved with the development of SuDS and their clients
- The council areas in which the systems are in operation
- Other comments about the facilities, including performance

The database is capable of storing digital images/photos of the facilities and copies of these would be welcome.

If you know of any Sustainable Drainage Systems operated or proposed by organisations in your area, please fill in the attached form and fax it or send it to the following address:

**Roger Noden,
Hyder Consulting Limited,
Brooklands,
680 Budshead Road,
Plymouth, PL6 5XR
Tel. 0870 000 3004, Fax. 0870 000 3904
e-mail roger.noden@hyderconsulting.com**

Location Address _____

National Grid Reference _____

Client's Name _____

Client's Address _____

Consultant's Name _____

Consultant's Address _____

Type of BMP/SuDS: (Please tick appropriate response)

- Wetland Detention Pond Retention Pond Infiltration Basin Infiltration Trench
 Filter Drain Swale Porous Paving Permeable Surfacing
 Other (Please specify) _____

Development Type: (Please tick appropriate response)

- Housing Development Retail Development Leisure Park
 Road Industrial Development
 Other (Please specify) _____

Is the facility constructed or under construction Yes/No

If the facility has been built, please give approximate date of completion

Digital photographs available Yes/No

Local Council Area _____

County Council Area if different _____

I consent to the inclusion of this information on a database which may be placed in the public domain

Signed: _____

Appendix 3

DCWW Policy Statement for Best Practice Drainage

DŴR CYMRU

POLICY STATEMENT FOR BEST PRACTICE DRAINAGE

Dŵr Cymru will:

- Work with governmental organizations to encourage and promote a more sustainable approach to surface water drainage.
- Encourage and promote the use of best practice drainage systems (also known as Sustainable Drainage Systems or SuDS) wherever practicable.
- Work in partnership with regional and national groups on SuDS implementation.
- Promote general awareness and understanding of best practice drainage systems.
- Distribute this policy and disseminate available information to all relevant staff.
- Liaise with Highway Authorities and encourage the use of best practice drainage systems in road drainage, wherever practicable.
- Liaise with developers and encourage the use of best practice drainage systems, wherever practicable, in both green and brownfield development sites.
- Involve all best practice drainage stakeholders at an early stage of the planning and design.
- Ensure effective communication between all of the parties involved in any decision making process.
- Ensure all of their best practice drainage facilities are designed to operate in accordance with current planning and regulatory guidance/legislation.
- Ensure cost effective whole life solutions are implemented, whenever possible (construction and maintenance costs).
- Promote and utilise the 'treatment train' concept, in the design of best practice systems, which will involve considering the use of source control, site control and end of pipe facilities
- Agree with all relevant parties maintenance responsibilities at an early consultation stage.
- Encourage the provision of a framework for deciding on adoption and maintenance.
- Ensure the design of the best practice drainage systems are optimised to satisfy all relevant design criteria.
- Encourage the use of drainage Masterplans for larger sites, to ensure that maximum benefit may be gained from the integration of discrete schemes.
- Promote the potential habitat enhancement and amenity value of best practice drainage systems.
- Not consider implementation of any infiltration devices in areas potentially susceptible to groundwater contamination. In high-risk areas, all best practice drainage systems will be designed to prevent pollutants migrating into the groundwater.
- Encourage water re-use wherever possible, in particular the use of water butts.
- Encourage retrofitting SuDS to existing developments.

