



Surface Water Management Direction, Policy & Practice

27 June 2012

SOAS, University of London



Delegate Notes

Thinking from across the world is helping to set out how surface water management fits into the broader context of water in the urban environment. The developing ideas envisage multiple benefits accruing from a wide variety of schemes and projects. This conference will also be rooted in demonstrating the practical delivery of projects from a wide variety of perspectives in these current challenging times and will also set out a clear direction of travel.

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CIWEM'S International JOURNAL OF FLOOD RISK MANAGEMENT

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The Journal of Flood Risk Management provides an international platform for knowledge sharing in all areas related to flood risk. The Journal promotes ideas across a range of disciplines where flood related research is being carried out, and provides content ranging from leading edge academic papers to applied content with the practitioner in mind.

Readers and authors come from a variety of backgrounds, including hydrologists, meteorologists, geographers, conservationists, civil engineers, social scientists, policy makers, insurers and

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The Journal is accessible only by subscription.

Welcome to the conference

This information gives the answers to some of the most frequently raised questions that arise at the conferences we organise.

Conference Outputs The Power Point presentations and delegate notes will be available shortly after the event on the CMS www.coastms.co.uk and CIWEM www.ciwem.org websites. We will notify you by email when these have been uploaded.

Questions – Bookings – Receipts – In house information If you have any questions during the event about bookings, finances, or logistics please see **Christina Beech** at the registration desk; she will be pleased to help.

Timing We will try to ensure that the conference runs on time to allow the allocated time for speakers and as importantly for discussion. A bell will be rung 5 minutes before the start of sessions.

Refreshment Breaks In running events in London over the last 16 years we have used two main refreshment breaks during the day that enable us to split the sessions and breaks more evenly. A sandwich buffet is available in the first break and sweet course during the second.

Food There is always ample food at the events and you can come back for more. Once you have collected your food **could you move away** from the serving table. Catering staff are on hand if you need anything, including extra drinks.

Delegate list A list of the delegates to 18 June is at the end of the delegate notes.

Evaluation form There is a questionnaire and evaluation form in your delegate pack; your views will help us improve future events. Please leave these at the registration desk along with your badge when you leave.

NB Valuables **If you have anything you value keep it with you i.e. do not leave laptops unattended.**

Before you leave Check you haven't left anything in the conference hall.

Please also take any leaflets or reports.

Aim

Thinking from across the world is helping to set out how surface water management fits into the broader context of water in the urban environment. The developing ideas envisage multiple benefits accruing from a wide variety of schemes and projects. This conference will also be rooted in demonstrating the practical delivery of projects from a wide variety of perspectives in these current challenging times and will also set out a clear direction of travel.

Objectives

- To provide an overview of this fast developing idea from the emerging policy context to the realities of practical delivery
- To demonstrate the multiple benefit and developments in scheme evaluation
- To describe the emerging picture of risks posed by surface water flooding and the responses this is provoking
- To understand the direction of Government policy and programmes
- To consider urban diffuse pollution and how SuDS can play a part in mitigation
- To understand the developing picture of Ofwat and water company responses, working with Local authorities and partnership
- To look at community level response in terms of the developing practice
- To provide an update on the SuDS Advisory Board idea and how this might work in practice
- To test and be inspired by overseas examples providing an integrated view of water in the urban environment and the role of surface water management

Format

- Roughly 60 – 40 presentation and discussion format

Programme

9.40 **Welcome and Overview of the day** - **Elliot Gill** Halcrow

Four 15 minute presentations and a 30 minute discussion with a speaker panel

9.50 – 10.05 **Multiple benefits of effective surface water management** **Paul Shaffer** CIRIA

- *Sustainable* drainage embodies environment, economic and societal benefits underpinned by achieving favourable outcomes for flood, water resource and water quality issues
- Work on ecosystem (sustainability) goods and services valuation methodology is leading us to ways of assessing the wider benefits of SuDS more effectively

10.05 – 10.20 **Climate change and surface water: risk, communication and adaptation**

Stephen Merrett Environment Agency

- The outcomes of the Climate change risk assessment re flooding and surface water flooding
- How surface water flooding from convective rain events is influencing thinking [frequency, impact, communication, forecasting] - changes in thinking
- EA role - Steps being taken to make adaptation

10.20 – 10.35 **Government Policy Update**

Linda Aucott Defra

10.35 -10.50 **Urban Diffuse Pollution**

Richard Martin Defra

- Urban diffuse pollution is very easily overlooked
- SuDS can play a very significant part in pollution management
- This presentation will review the Government's recent discussion paper on this subject

10.50-11.20 **Discussion**

11.20-12.00 Break Refreshments & Sandwiches

Chair: Chris Digman MWH

12.00 **Making surface water management 'Business as Usual' from the water company perspective – policy in to practice**

3 x 15 minute presentations and 25 minutes for discussion with a speaker panel

12.00 – 12.15 **Peter Jordan** Ofwat Regulator perspective – insights into pilots - partnership working with Local authorities

12.15 – 12.30 **Jeremy Jones** Welsh water Implementation of the their SWM strategy

12.30 – 12.45 **Briony Tuthill** Anglian Water Services Ltd

12.45 -13.15 **Discussion**

12.55 **Community practice and engagement: from plans to delivery**

3 x 15 minute presentations and 25mins discussion with a speaker panel

13.15 – 13.30 **Surface Water Early Action: Defra Programme - Outcomes and ways forward**

Jonathan Hunter Environment Agency

13.30 – 13.45 **SuDS - Urban retrofitting – a highway perspective**

Owen Davies Lambeth Council

13.45 – 14.00 **Community engagement in practice: from plans to delivery**

Paul Cobbing National Flood Forum

14.00 - 14.25 Discussion

- Including Water Company - Local Authority collaboration - how are these organisation working together to manage surface water?
- What legislative – regulatory issues that influence delivery need to be looked at (remove barriers, incentivise)
- Practical measures and how these are working
- Practical work on urban retrofitting from a Highways Authority perspective
- Lessons from 'bottom up' working – local flood groups
- Planning - Local Flood Risk Management Strategies
- Delivery and working in partnership

14.25-15.00 Break - Cake and refreshments

Chair: Paul Shaffer CIRIA

15.00 – 15.25 **SuDS Advisory Boards – Developing thinking** **Simon Bunn** Cambridge City Council

15 mins presentation and 10 mins discussion

Issues including:

- Staffing, skills,
- Understanding whole life costs of SuDS, future management
- Reducing risks
- Evaluation
- Provide clarity on the roles and requirements of the SAB (and how this could function)

15.25 – 16.25 **International best practice - what can this tell us about the practicalities of the direction of travel?**

The thinking around integrated urban drainage, the widespread use of SuDS in their many forms and the recognition of the importance of surface water flooding and management in the UK in the last 5 years has been described as a paradigm change. It requires that we respond very differently using a wider array of measures to deal with the challenges we face.

This session will look at the key elements of this paradigm change to compare it with best practice from overseas. What more can we learn

4 x 10 minute overviews – and a 20 minute discussion with a speaker panel

15.25 **Testing change: What are the key elements of the new paradigm?** **Chris Digman** MWH

15.35 **USA study tour** **David Schofield** Hydro-International

15.45 **Water Sensitive Urban design** **Peter Robinson** AECOM

15.55 **Australian thinking** **James Berryman** Micro-drainage

16.05 – 16.25 Discussion

16.25 End and refreshments

Better surface water management – ‘cos it’s worth it

Paul Shaffer

Associate, CIRIA, Classic House, 174-180 Old Street, London, EC1V 9BP
T: 020 7549 3300 E: paul.shaffer@ciria.org

Improvements in flood risk management, water quality and the provision of amenity and biodiversity are some of the better known benefits associated with Sustainable Drainage Systems (SuDS). However, as interest in green infrastructure delivery, ecosystems services and urban water management grow and the focus on getting ‘more from less’ the potential for additional benefits is gradually becoming appreciated and desired. These additional benefits associated with multi-functional land use range from water supply, thermal comfort, reductions in energy use, opportunities for recreation and those related more to quality of life and less tangible impacts around aesthetics and community cohesion.

Green infrastructure has been broadly defined (by Natural England) as a strategically planned and delivered network of high quality green spaces and other environmental features. Designed and managed as a multifunctional resource it should be able to deliver those ecological services and quality of life benefits required by the communities it serves and need to underpin sustainability.

Many local authorities are developing green Infrastructure strategies that also include ‘blue infrastructure’ as well, this combined with the Millennium Ecosystem Assessment (2005) has created an awareness and momentum on harnessing the services, goods and benefits from the environment that we benefit from, and the need to recognise and value these goods and services within policy development and implementation.

The use of green infrastructure to manage surface water in the United States is becoming increasingly common, as they recognise that surface water is a valuable resource, rather than a nuisance. With Philadelphia, New York and Portland being recognised as amongst 14 “emerald cities” and cities like Melbourne retrofitting 10,000 rain gardens, there is growing evidence of the benefits and practical examples of what can be achieved given the right philosophy, attitude, governance and skills. In most cases this approach results in overall cost savings at the same time as creating greater financial benefits

The presentation will summarise the state of play in the UK and US with regards to assessing the benefits associated with surface water management and will plot a possible direction of travel for the UK.

Government Update

Linda Aucott

Head of Engineering, FCRM, Defra

This presentation will provide an overview of the current policy areas including:

- SUDS – what the current position is regarding the outcome of the consultation
- PR14 – update on Defra guidance to Ofwat – consultation advance notice
- FWMA and Flood Risk Regs update, commencement position and implementation – designation, flood risk management maps and plans
- Red Tape Challenge – update on position with relation to Floods Legislation
- LLFA Capacity Building – update on progress.
- New Floods Portal

Urban Diffuse Pollution

Richard Martin

Defra

E: richard.martin@defra.gsi.gov.uk

Richard's presentation will cover the following:

- Head of Non Agricultural Diffuse Pollution Strategy
- Seconded in Defra part time for over a year
- Working in the Water Quality Division
- 20 year in the Environment Agency
- Long track record in urban pollution
- Have been involve in pollution prevention for over 10 years
- Ran the Oil Care Campaign
- Helped set up and run the Misconnections ConnectRight campaign
- Responsible for consulting on Defra's Non Ag strategy

Making surface water management ‘Business as Usual’

Peter Jordan

Principal Analyst/Engineer, Ofwat, Centre City Tower, 7 Hill Street,
Birmingham, B5 4UA
T: 0121 644 7512 E: peter.jordan@ofwat.gsi.gov.uk

Regulation of the water industry is at a point of significant change. The next price review will focus companies on long term sustainable outcomes to provide the service that their customers want and need. This is in contrast to the current focus on localised asset improvement within a five year period. We expect that companies' future work will involve closer partnership working with local authorities and other stakeholders.

Ofwat will also ensure that companies have the right incentives to innovate and deliver a service that has lowest whole life cost. One intention is to use total expenditure approaches in regulation that seek to consider expenditure on assets and on delivering daily activities holistically.

This presentation will explain how these changes affect the management of surface water and highlight how partnership working is essential to ensure that surface water management becomes business as usual.

It will also give an update on pilot schemes that companies are delivering to improve the public sewerage service other than increasing the size of underground assets.

Next steps

- Continue to support water companies as they work with stakeholders to deliver pilot projects.
- Work with the Environment Agency and other stakeholders to produce a Strategic Sewerage Management Framework by the end of the year that will help companies identify long term approaches that will be either resilient to future uncertainty or adaptive to it.
- Work with stakeholders to understand the likely costs and benefits of different approaches over the long term.
- Ofwat will consult on its detailed methodology for the next price review in the autumn.

Further information:

'[Future price limits – a statement of principles](http://www.ofwat.gov.uk/future/monopolies/fpl/prs_web201105fplstatement)' that sets out the high-level principles that Ofwat intends to use to guide it in how it sets price limits in the future.

http://www.ofwat.gov.uk/future/monopolies/fpl/prs_web201105fplstatement

Further work by Ofwat relating to surface water management

<http://www.ofwat.gov.uk/future/sustainable/drainage>

Implementation of the Welsh Water SWM Strategy

Jeremy Jones

Welsh Water

E: jeremy.jones@jrjconsulting.co.uk

Jeremy is the Surface Water Management & SUDS Technical Advisor to Dwr Cymru Welsh Water (DCWW). For the past six years he has been instrumental in forming and delivering DCWW's Surface Water Management Strategy. Jeremy's short paper will:

- Explain the SWEAR Strategy
- Explain the targets that have been set for this Regulatory Period
- Illustrate the progress towards these targets
- Identify the changes that have been necessary in the Business
- Describe the latest work being continued
- Emphasise the difficulties in Implementation
- Explore what is needed for the Future

The future of Surface Water Management and Water Companies

Briony Tuthill

Flood Risk Manager, Anglian Water, Thorpe Wood House, Peterborough, PE3 6WT

Tel No: 01733 414631 Email: btuthill@anglianwater.co.uk

www.anglianwater.co.uk

The water industry has invested over £4bn in the public sewerage system to reduce the risk of sewer flooding to more than 15,000 properties since 2000. But climate change, 'urban creep', and development are expected to increase the amount of water in sewers, leading to more flooding problems in the future.

The industry recognises the need to change the way in which it manages surface water to address this issue. It is clear that we will have to work with our partners, think outside the box (and above the ground!) and engage our customers if we are to be successful in delivering sustainable solutions.

As part of Ofwat's sustainable drainage programme Anglian Water are undertaking a number of pilots which seek to address existing flooding problems through a combination of sustainable approaches. I will provide some examples of this work, reflecting on the successes, and challenges it presents and how this learning will be utilised as we prepare for our next five year business plan.

Surface Water Management scheme delivery – examples from Early Action Funding

Jonathan Hunter

Senior Advisor Flood Risk Management Advisor, Environment Agency, Guildbourne House,
Chatsworth Road, Worthing, West Sussex, BN11 1LD

Email: jonathan.hunte@environment-agency.gov.uk

In March 2010, the Minister announced £5m funding to 47 local authorities for 61 schemes and 15 Surface Water Management Plans. The majority of these schemes have now completed. Local authorities have recently completed reports on the outcome of their work and the lessons learnt.

The funding has benefited locations that were badly affected in 2007 and other areas that have suffered repeated flooding in the past. A range of approaches have been used including; landscaping to store water in green space; attenuation of surface runoff before it enters a watercourse or drain; new pipes and drains to increase the capacity of the drainage systems; re-profiling kerbs / streets to divert flows away from properties; and retrofitting of Sustainable Drainage Systems (SUDS).

Overall the programme has been a real success, reducing the risk of flooding to communities. The work has been completed by local authorities during a period of change as they took on new responsibilities to manage local flood risk. The successes and lessons learnt are very relevant to other local authorities as they plan work to manage flooding. The key themes include technical issues, working with partners and the public. Improving skills and capacity within local authorities was seen as important for both engineering work and engagement with communities.

The presentation will use evidence from local authorities to share practical advice on the delivery of schemes and engagement with partners and the public.

Next steps:

1. To share the learning from the Early Action funding on delivery of surface water management schemes with local authorities and partners to assist with future delivery of work and build skills within organisations.
2. To work with government, local authorities and partners on maximising multiple benefits to communities and the environment in the delivery of flood risk management schemes.

Surface Water Management – SuDS – Urban Retrofitting – a highway perspective

Owen Davies

Sustainability Engineer, Environmental Services & Highways - Lambeth

E: odavies@lambeth.gov.uk

How does a dense urban authority with an expected population increase of 30,000 by 2025 and a housing increase of 19% over the same period adapt, influence and ultimately manage these competing demands against aging infrastructure which has exceeded its design limits? One solution of many is by understanding our assets and land use it is clear that 15% of Lambeth is public highway how can we adapt the highway to assist in the management of surface water without compromising the primary use of the highway. The public highway, in a lot of authorities, will be the largest public open space with often very little opportunity elsewhere within the authority to maximise and influence land they control.

The highway is a valuable asset which undertakes many functions from getting people and goods from A-B through to providing communications and waste disposal, though is this the extent of the highway can we enhance the highway as we do public realm spaces and introduce SuDS and Green Infrastructure in dense urban environments to aid surface water management? With such a large public open space at Lambeth we see the public highway as an opportunity to manage surface water, however we also see opportunity to merge and blend traditional boundaries between “open space” and “highways” and deliver wider public spaces, but also in key locations look to protect the highway from surface water.

This presentation will look at how Lambeth are looking to adapt existing infrastructure without increasing costs or creating new work. By amending existing design principles and using simple widely available materials we can deliver through standard maintenance work both SuDS and Green infrastructure which overall contribute to the management of surface water. We will also show that Lambeth are committed to delivering larger scale SuDS solutions on the public highway as well as looking off the highway for larger strategic wholesale solutions for surface water management which offers mitigation and protection.

Surface Water Management - community engagement and a number of specific schemes

Paul Cobbing

National Flood Forum

E: paul.cobbing@floodforum.org.uk

The Pitt Review following the 2007 floods sought a more coordinated and focussed approach to flood risk management with clarity about roles, responsibilities and leadership. Its first principle was to “First, and most importantly, we start with the needs of those individuals and communities who have suffered flooding or are at risk.”

Since then, most of the Pitt Review recommendations have been transposed in to the Flood and Water Management Act 2010. Environment Agency has reorganised its structures to enable a more community and locally focussed approach. Local government and water companies have taken on new responsibilities and Local Flood Management Strategies are being developed. These and many more actions are being undertaken.

However, communities still flood and people suffer the consequences. This session will provide a reminder of the impact of flooding on communities, outline a community perspective to managing flood risk and the need for a holistic approach and the importance of the right engagement process.

Formation of the SuDS approval/adoption body (SAB)

Simon Bunn

Sustainable Drainage Engineer, Cambridge City Council, PO Box 700,
Cambridge, CB1 0JH
T: 01223 457193 E: simon.bunn@cambridge.gov.uk

Under the Flood and Water Management Act 2010 national standards for the implementation of sustainable drainage will be published. These standards 'may permit or require' approving bodies and the standards may require the approving bodies to have regard to guidance that is also to be published.

The function of the SuDS approval body under the Flood and Water Management Act 2010 is therefore solely in relation to the national standards.

The draft national standards are in two parts, part 1 the principles and part 2 the criteria on which drainage systems should be judged.

This leads to the question of the makeup of the SAB? As part 2 is your standard criteria for the engineering design of drainage systems, runoff destination, peak flow and volume, water quality and the function of the systems should engineers be the only ones that make up the SAB? Part 1 is more of a difficult subject to tackle; especially as an engineer sitting within the SAB may have little influence on these aspects. Should the membership be extended to include those disciplines that usually have greater influence on these? Or is it already too late by the time it hits the desk of the SAB officer? Is a total re-design of a proposed development to ensure surface runoff is managed on the surface reasonable? Is it even practicable?

Throughout this process it should also be remembered that a planning application is also being considered and the crossover between the SAB and the local planning authority is considerable when the subject of land use is raised. Should the two processes be separate at all?

There probably will be many approaches especially as there is also potentially a local flavour to SuDS by the provision for the setting of local standards. Will we also see an approach that is target driven, processing as many applications as possible in a given timeframe?

There are many other questions that will have to be answered and this is even before the question of the adoption process is considered. What about reducing risk, costs and maintenance? At Cambridge we have an approach for the SuDS we are adopting now, how that will change in the future will depend on the results of the consultation and the actual national standards and associated guidance.

Testing change: what are the key elements of new Paradigm?

Dr Chris Digman

Senior Principal Engineer, MWH,
 1 Red Hall Avenue, Paragon Business Village, Wakefield, WF1 2UL
 Tel No: 07766 732 314
 Email: christopher.j.digman@mwhglobal.com

In the UK, our current approach in urban areas is to remove the water from the surface as soon as possible and pass it underground to sewers and culverts. While we are experiencing increasing problems with flooding and pollution from the combined systems in particular there has been no appetite to retrospectively separate them. To resolve existing problems, the typical approach has been to increase the size of the sewers to convey or store greater and greater amounts of surface water, whether to manage urban flooding or limit water quality impacts on watercourses and rivers. Retrofitting sustainable drainage systems is only slowly emerging as an alternative approach, yet many blockers appear to remain in them becoming a 'business as usual approach'. Therefore, what approach should we take when retrofitting to existing drainage systems or when building new for development?

The lack of adaptive capacity in these systems means that when failure occurs, the impact can be significant in terms of potential pollution from piped discharges (surface water systems and combined sewer overflows) and flooding to property and infrastructure. The future threat of the impacts of climate change and uncertainty behind predictions leaves a particular challenge. The option to build progressively larger solutions is becoming increasingly untenable.

Two years ago a new simple paradigm for how we will manage surface water proactively and sustainably in the future was presented. This has been adapted further and is presented below:

Where we have come from	Where are we moving to
1. Move water below ground as quick as possible	1. Surface water will often be on the surface
2. Move water away from its source as quick as possible	2. Hold back surface water at source
3. Treat surface water at the end of pipe	3. Decentralised 'natural' surface water treatment
4. Water is often feared and not valued	4. Maximise multiple benefits (including water as a resource)
5. Flooding is expected not to happen	5. Make buildings and infrastructure flood resilient
6. Flooding and where it goes is uncontrolled	6. Safely convey extreme events as well as more frequent events
7. We inform communities once we have decided what to do	7. Engage communities before work is decided
8. We operate in professional silos	8. Mix the professions
9. We build many things out of sight	9. Urban design at the heart of surface water management

Whilst we are unlikely to see further changes in legislation for some time, there are other key ways in which we can adapt to help achieve the paradigm. Examples from international experience (contained in the next three presentations), and those slowly emerging from the UK, will help to achieve this paradigm. So what are the things we can do now, and in small steps have started in the UK? The points below set out some of the requirements to help achieve this paradigm.

Our change of approach needs to start with new development and regeneration, particularly following the Flood and Water Management Act (2010). Here we have a substantial opportunity to require SuDS to be used, to generate the wider multiple benefits that they create. This opportunity should not be missed. However there are also significant needs to be addressed and opportunities in existing areas in the short to medium term where retrofitting a wide range of measures in a mix and match approach would be appropriate.

Our whole approach needs to change to one from defence to resilience. This means that water needs to be managed on the surface and be visible. Surface water needs to be held back at the source. We must maximise the benefits of water being held back to improve water quality, amenity and bio-diversity. This means that urban design must be placed at the heart of what we do to enable water to become an every day feature that enriches the environment and helps to overcome the health and safety fears associated with water.

Different solutions to our traditional approach need to become common place, and not purely confined to new or re-development – which does afford a great opportunity, but is limited in terms of the ratio of development to existing land. The solutions need to encompass a whole range of measures including sustainable drainage, hard engineered above ground channels, and where appropriate below ground solutions. Similar approaches in other countries e.g. low impact development in the United States or water sensitive urban design in Australia, have shown how water can be proactively managed in a positive manner whilst addressing the water quality.

We are likely to see a range of measures either at the source, pathway or receptor level being implemented. However, these solutions will need to manage not only the water, but reduce the surface pollution that is naturally washed off whilst improving the amenity value. Hence, controlling these at source at the site, street or regional level is vital and should be our first target.

By keeping water on the surface, the management of extreme events may become easier, if we choose to accept the implications that this brings. Good design is critical and requires engineers to embrace this challenge to provide safe 'flood' routes. A critical element to this will be addressing the concerns of highway engineers and ensuring that extreme events in the carriageway can be accommodated and managed, rather than produce ad-hoc flooding.

To achieve this we will fundamentally need to work differently to implement more holistic ways to manage surface water:

- Firstly our attention must move away from generally focusing on quantity and address water quality as well as improving the amenity and bio-diversity.
- Secondly, different professions will not achieve this new approach in isolation, but through joint working. This includes planners, urban designers, landscape architects and engineers using their combined skills to develop and implement a lasting solution.
- Thirdly, we will need to work far more in partnership with other stakeholders and particularly the general public if we are to retrofit a range of measures. Aligning stakeholder objectives and the opportunities that arise (e.g. due to a flooding or water quality problem or when improving the urban realm) will unlock potential funding and make best use of the resources available (time and money).
- Fourthly, the measures we can use need to not only be in public open space – which provides their own challenges, but also on private property. Overcoming the challenge of retrofitting more sustainable measures in the public and private realm will require 'real' engagement. Incentivisation for the individual is likely to play a key role in achieving this. Understanding the needs of communities before working together to design and implement solutions.

Engaging with wider stakeholders and the public will require funding and an understanding of a change in timescales. This will require a strategic approach across a catchment to understand what is required where. This will be vital to help prioritise where money is spent and when, so joining up funding across different stakeholders, when it becomes available. Recognising and planning for engagement will also change our delivery timescales to resolve problems, particularly if the public are to play a part in designing the measures to use (and even consider undertaking simple maintenance?)

We certainly face a significant challenge and uncertain future. Overcoming the issues that may be preventing a paradigm change will be critical. If we are to manage flood risk proactively, reduce pollution, respond to climate change, improve our urban areas and enhance biodiversity, the change needs to happen now.

International Best Practice – The American Way

David Schofield

Associate Director, Hydro Consultancy

T: 01275 337967 E: dschofield@hydro-consultancy.com

How authentically sustainable are SuDS? That was the question I wanted to try and answer when afforded the opportunity to go back to the USA in 2011 and visit successful sustainable drainage implementation programmes in Portland, Oregon and Seattle, Washington.

In November 2011 key individuals from three of the major UK water companies supported by two leading consultancies visited Portland and Seattle to evaluate and learn from these successful sustainable drainage implementation programmes. Representing Arup as part of that delegation, I personally wanted to evaluate what has evolved for sustainable drainage in these two cities since my last SuDS related visit in 2006. The original visit was part of a British Water led Department of Trade and Industry technical mission that also included two water companies and the Environment Agency.

Set against the backdrop of planned widespread UK implementation, are there applicable lessons we can learn from these exemplary American SuDS case studies? The importance of an extensive programme of “outreach” (public engagement; a crucial component of the success) is a fundamental lesson to be learnt. In addition, very robust design and specification for the SuDS structures themselves should be underpinned with an essential but proportionate operation and maintenance programme, with available funding that is well managed.

Portland must surely rank as one of the most commendable SuDS case studies and as images from their Green Streets SuDS implementation programme are used in presentations around the World, this one will focus on their key achievements. However, it doesn't have to be complicated to be ingenious as one of their outreach initiatives will highlight. Full sized tarpaulin printed outreach “roll-outs” that can easily be transported to a potential Green Street, for the local residents to evaluate first-hand how the final SuDS structures might look. This brilliantly simple but effective example of outreach collateral typifies the exceptional SuDS case study that is Portland, Oregon.

Water Sensitive Urban Design – Bringing it to the UK?

Peter Robinson & Celeste Morgan

Director - AECOM

E: celeste.morgan@aecom.com

In recent years, there have been great leaps forwards in the championing, incentivising and regulation of sustainable (urban) water management in the UK. However, in practice the components of the urban water cycle (i.e. drainage, supply, wastewater) are still considered separately and are viewed as largely an engineering problem for consideration in detailed design stages. The potential for 'water sensitive-thinking', in the UK that simultaneously achieves water quality, flood management, quality of life and ecological aims has therefore been largely overlooked. Fundamentally, water has not yet become a coordinated and high profile opportunity in the strategic planning and design of urban places where the most crucial and integrated impacts can be made.

An inter-disciplinary approach, particularly in the preliminary stages of design is required to create high quality urban environments in the UK. The success of a more holistic approach in Australia and the United States that emphasises multi-functionality in the design of landscapes and buildings has stimulated debate on how a better approach could be taken. CIRIA, AECOM and ARUP are currently scoping and driving the transition that needs occur in the UK to a WSUD approach. To frame a new approach, several non-water specific policy drivers are being emphasized, including a response to climate change, integration of green infrastructure, and sustainable design standards. Engagement and education of planners, urban designers, landscape architects and architects is central to the strategy for change. This presentation explores the journey so far and the steps to be taken to drive institutional and practice-based change in the UK.

Australian thinking – the value of rainwater

James Berryman

Product Manager – Micro Drainage Ltd

Email: james.berryman@microdrainage.co.uk

There is an undeniable and ongoing paradigm shift for surface water management. Historic barriers to green infrastructure, notably its adoption, are set to be resolved with the upcoming SuDS Approval Bodies (SAB) and the National Standards for SuDS.

However, now we can see the light (at the inlet of the pipe), there still remain more fundamental and holistic points to be addressed. These often lie outside of our comfort zone, or at least outside the normal remit of engineers. In fact engineers now share responsibility for surface water with many others stakeholders, such as architects, urban designers and, importantly, the communities themselves.

Australia is often referenced as a leader in surface water management where it is a recognised both at the local and at the national scale. The Water Sensitive Urban Design (WSUD) projects often go further than just effectively managing surface water; they go on to use surface water as a valuable resource in its own right.

Australians have a high dependency on water with the average household using nearly 5 times more than we do in the UK¹. Rainwater and stormwater harvesting is now common practise across Australia, and in many locations it is standard practise. The period of drought for several years up to 2010 meant stormwater harvesting rose up the political agenda.

In 2010 the Australian government made a commitment to expanding earlier stormwater harvesting and reuse programs. The link below lists the projects and the levels of investment set out:

<http://www.environment.gov.au/water/policy-programs/urban-water-desalination/projects-table.html>

It is worth noting this was after a period of drought. In the last two years they have experienced above average rainfall and the focus has switched to flood recovery and prevention. However the projects will provide resilience to the impacts of drought and climate change in the increasingly changeable weather patterns experienced around the world.

The projects are politically backed at and launched by a high level. One example of this is the Fitzroy Gardens and stormwater harvesting scheme in Melbourne:

<http://www.environment.gov.au/minister/farrell/2012/pubs/mr20120419.pdf>

The community were actively engaged in the project, interestingly “water security, climate change, the need to upgrade visitor facilities and the management of heritage-listed features are some of the issues on which the community was asked to comment”. In the UK water is often much further down the list of considerations in any community project.

<http://www.melbourne.vic.gov.au/AboutMelbourne/ProjectsandInitiatives/MajorProjects/Pages/FitzroyGardensPlanReview.aspx>

Stormwater harvesting in Melbourne is not just limited to large scale projects: there are numerous ongoing projects to actively improve the whole city by introducing green infrastructure in individual localities. “Darling Square, Powlett Reserve and tree-lined median strips in Grey, Simpson, Powlett

and Albert streets will be permanently green with the completion of the Darling Street stormwater project in East Melbourne”.

<http://www.melbourne.vic.gov.au/ParksandActivities/Parks/Pages/StormwaterHarvesting.aspx>

In a country that has seen more extreme droughts and more extreme floods than the UK, there has perhaps been more political pressure to deal with surface water in Australia. However, this year has so far seen the UK experiencing flooding during a hosepipe ban. If surface water could be harvested for watering community spaces and household usage the effects of these extremes could be better managed. We can get encouragement from Australian experience with legislating and implementing rainwater harvesting.

With National Standards likely to promote but not dictate harvesting, we need to open stormwater management to a wider group of stakeholders, especially as it will be these stakeholders that will see the real benefits.

