The Development of Urban Planning and Landscaping for Sustainable Drainage Systems

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The largest UK civil emergency since WWII

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“The largest UK civil emergency since WWII’
Thousands of properties flooded, on floodplains and in settlements of all sizes in Gloucestershire and surrounding counties, Humberside, Yorkshire.

Inundation, contamination and disruption to services for over 400,000 people, subsidence, health and other contingent losses.
£3 Billion (estimated) damage, and some permanent economic losses to business and industry.

Single critical points of failure, such as water treatment plants, electricity stations and motorways.
400,000 people lacked piped water supply for up to 21 days
Urban runoff effects in Gloucester
How can this happen in a developed UK economy with 50 years of strong planning guidance?
Exceptional events and climate change are part of the answer.
What are Sustainable Drainage Systems (SuDs)?

Drainage design, officially promoted by UK Government for 20 years to:

• Replace conventional drainage to sewers
• Reduce flood runoff into and from developed areas, by dealing with rainfall where it falls
• Promote groundwater recharge to enhance water resources
• Reduce pollution by using soils and vegetation to ‘clean’ water
Temporary and permanent water storage to attenuate flood peaks
The SuDS Management Chain

Source Control

Site Control

Regional Control

Evapotranspiration

Conveyance

Infiltration or recharge
Source control through water butts, porous paving, filter strips and detention basins
Conveyance through swales and site control through infiltration basins
Regional control through ponds and lakes
• Protect people and property from flooding
• Protect water courses from accidental pollution from spillages and misconnections
• Protect and enhance water quality and biodiversity in local streams
• Maintain or restore natural stream flow
• Allow new development in areas where sewerage systems are at full capacity
• Allow groundwater recharge
The Urban Drainage Triangle (DTI, CIRIA 2001)

- Quantity
- Quality
- Amenity
- SuDS
Why are SuDss not being used?
Two key challenges......

• SuDS ‘marketing’ has ignored some of the basic drivers in securing institutional changes, and has not achieved societal transformation.

• SuDS philosophy has not, in many experts’ minds, moved from being an ‘environmental’ to a ‘sustainability’ issue, including the social, cultural and equity (fairness) aspects.
Inspire!
Kotter’s Eight Stages of Change

1. Establishing a sense of urgency
2. Creating a guiding coalition
3. Developing a vision and strategy
4. Communicating the change vision
5. Empowering broad-based action
6. Generating short term wins
7. Consolidating gains and producing more change
8. Anchoring new approaches in the culture

Kotter, 1995
A guiding coalition...

- Government agencies
- Engineers and scientists

BUT ALSO

- Leading architects
- Leading house builders
- Community leaders
- Artists
Kotter’s Eight Stages of Change

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Kotter, 1995
Developing and communicating the vision and strategy

• Develop the technology and the design
• Provide training courses and manuals

BUT ALSO

• Bring people into networks
• Inspire landscapers
• Make the public aware and remove their fear of new technology
Empowerment and short term wins

• Legislation

  BUT ALSO

• Celebrate the beauty of well-designed SuDS schemes

• Promote amenity, public access and ecological benefits

• Promote the long term reduced costs

• Understand the full meaning of the term ‘sustainable’
The Urban Drainage Triangle

SuDS

Quantity

Quality

Amenity
The Knowledge Transfer Network
Environmental and Water Activity

• Accelerating the transition to a low carbon, resource and energy efficient economy by connecting businesses, universities, other research organisations and Government agencies

• Catalysing innovation across emerging environmental technologies
Thank you!