Sustainable Stormwater Management

The need for standards
What is stormwater?

Any rain water

Water from unusually heavy rain
“Stormwater” definitions

"storm-water n. (a) an abnormal amount of surface water resulting from a heavy fall of rain or snow; ...“
Oxford English Dictionary

“stormwater” water arising from events which can include rainfall, storms, snowmelt, fluvial flooding, storm surges, tsunami, dam breaks, pipe breaks or blockages
ISO/AWI 20325
TC 165 Definitions

Rainwater

Surface water

Infiltration

Surface receiving water body
Objectives of stormwater management

- Water quality
- Water quantity
- Protection of infrastructure and property
- Water conservation
- Ecosystem health
- Public health
- Social values
- Sustainable development

Courtesy South West Water

Courtesy Brian Smith
What Impacts can be managed?

Flooding at varying levels from:
- nuisance (large puddles)
- damage to property
- fatalities

Environmental damage from:
- Pollutants carried in surface water discharges
- Pollutants carried in discharges from combined sewer overflows

Courtesy Brian Smith

Courtesy South West Water
How these impacts can be managed

• Inputs / Source control
  - volume
  - flow rates
  - Pollutants

• Outputs
  - attenuation
  - storage
  - treatment

• Exceedance flow routes
What is the role of standards?

- Directives: aimed at politicians/legislators

- Standards: aimed at practitioners

- New approach Directives: aim to permit each to do what they are best at
Role of European standards?

- Support the European single market legislation

- Support implementation of other European Directives

- Ensure works funded by European Institutions are to well built standards

Courtesy Sheffield City Council
Example

Annex 1 to the UWWT Directive:

“Collecting systems shall take into account waste water treatment requirements.

The design, construction and maintenance of collecting systems shall be undertaken in accordance with the best technical knowledge not entailing excessive costs, notably regarding:

- volume and characteristics of urban waste water,
- prevention of leaks,
- limitation of pollution of receiving waters due to storm water overflows.”

A standard could, by inference, define ”best technical knowledge”
What standards can’t/can do in stormwater management?

• **Cannot** change legislation
• **Can** provide a common terminology
• **Can** support higher level policies and legislation, for example by codifying
  - Good practice in monitoring
  - Best available techniques for solutions
  - Checklists to ensure all options are considered
• **Can** provide framework for cross boundary agreement
• **Can** provide a consistency of approach
Barriers to standardization

• Different cultures of practice

• Different institutional arrangements

• Existing national/local regulations

• Need to accommodate variations in local circumstances

• Fear of lawyers
How can these barriers be overcome?

Incremental approach:

- First agree terminology and high level principles
- Add more detail as harmonisation evolves
- Identify what can be measured without setting limits
- Include alternatives where acceptable practices vary
EN 752 Drain and sewer systems outside buildings – sewer system management
WG22 Detailed Standards

• EN 13508 *Investigation and assessment of drain and sewer systems outside buildings*

• EN 14654 Management and control of operational activities in drains and sewers

• EN 16932 *Drain and sewer systems outside buildings – Pumping Systems*

• EN 16933 *Drain and sewer systems outside buildings – Design*
Principles of storm water management

• Already incorporated into EN 752

• EN 16933
  – Part 1 Layout (*currently at feasibility stage*)
  – Part 2 Hydraulic design (*due for publication in 2017*)

• Developing ISO/TC 224/WG 11 - Guidelines for Stormwater Management in Urban Areas
Where do we go from here?

• Evolve from principles into agreed detail

• Provide framework for regulators to determine acceptable performance in a manner that does not impose unnecessary burdens

• Share good practice as it is identified

• Interpret latest scientific knowledge for practitioners
Thank you