

February 2013

## Briefing: Landscape and water

Water, whether drought or flood, dominated the headlines in 2012. The widespread floods - following long-term droughts - exposed the UK's lack of resilience. Climate science tells us that this kind of extreme weather is set to continue with increasingly severe and frequent rainstorms. Our existing sewer infrastructure can't cope, and, as yet, we have failed to implement a comprehensive water management programme in the UK.

Government estimates the cost of flooding in England as more than £2bn annually. And, according to Defra, an estimated 2.7 million properties in England and Wales lie in areas that are at risk of flooding. The 2012 floods caused the biggest insurance industry losses since 2007, with customers filing for £3bn in water damage claims.

We have the means to better protect ourselves against flooding, but...

- The Government still hasn't implemented Schedule 3 of the Flood and Water Management Act 2010 which requires developers to construct sustainable drainage as part of any new construction
- The introduction of wetlands, reed beds, drainage channels and porous driveways (known as sustainable drainage systems or SuDS) are all accepted ways of helping to prevent run-off flooding. However, the UK's developers and housebuilders won an 18 month (to April 2014) reprieve on having to incorporate them into new developments
- The Government has said that it is to start work on 93 flood defences in England this year, but this is only one aspect of protecting us from flood risk, and mainly deals with coastal and river flooding
- Insurance cover for those in high-risk areas is under threat. The Association of British Insurers agreement to insure properties on flood plains expires in July 2013.

### **New approaches to the water problem**

- The UK's water supply chain needs to become more sustainable
- It's time to look beyond the idea that a pipe in the ground is the best option for getting rid of rain water – this is an obsolete 19<sup>th</sup>-century solution to a growing 21<sup>st</sup>-century problem
- We need to start prioritising all elements of the water cycle when designing and developing new places
- We need to better understand the economics that allow soft planted (bioengineered) drainage schemes to cost less whilst increasing property values
- When planning outdoor space, we must consider 'whole life costs' and recognise the multiple benefits which arise from sustainable design: attractive liveable spaces, increased biodiversity, better air and water quality, improved public health and enhanced land values.

### **Sustainable Drainage Systems (SuDS) – better resilience against flooding**

- SuDS are an increasingly important part of our green infrastructure<sup>i</sup>

- Through the creation of ponds, wetlands, swales and basins, which mimic natural drainage by absorbing or attenuating water into permeable surfaces and vegetated surfaces, we can slow down water and help to prevent surface flooding
- SuDS are a cost-effective way to reduce flood risk and damage.

### **International examples of SuDS<sup>ii</sup>**

SuDS are being embraced elsewhere in the world. Investment is accepted as an economical and sustainable way of protecting against the costs of flooding.

- Since 2001 in Augustenborg, a highly populated inner-city suburb of Malmö, Sweden stormwater has been dealt with via a complex arrangement of green roofs, channels, ponds and small wetlands. Green roofs are effective at lowering total runoff, and the ponds successfully attenuate storm peak flows for even 10-year rainfall
- In Portland, Oregon a long-established (10 years) downspout disconnection programme protects more than 42,000 homeowners and has removed more than 1.3 billion gallons of stormwater per year from the combined sewer system<sup>iii</sup>
- In 1980 Tokyo installed an 'Experimental Sewer System' (ESS) in about 249 ha of the city, which included permeable pavements, porous concrete blocks, infiltration trenches on housing sites, streets, school grounds and public gardens and water storage tanks to provide water for toilets, sprinkling, car wash and a recreational pond. So successful was the control of stormwater runoff that the Tokyo Metropolitan Government has since built the ESS over an area of more than 1,423 ha with 33,294 infiltration pits, 285 km of infiltration trenches and 484,000 m<sup>2</sup> of permeable pavement.

### **Water Sensitive Urban Design (WSUD) – an integrated solution to flooding, droughts and water quality**

- WSUD means thinking about water supply, waste water, surface water and flooding when planning and designing new places – rather than as an after-thought
- WSUD improves the quality of water entering the waterways, allows for storm water and grey water harvesting and reuse, and delivers significant reductions in potable water needs
- WSUD reduces pressure in existing infrastructure, directs flood waters away from homes and businesses and reduces the amount of water entering the sewers

### **Landscape Institute recommendations**

- Full implementation of the Flood and Water Management Act, which would ensure the use of SuDS on all new developments in the UK<sup>iv</sup>
- Removal of the 'un-economic cost' get-out in the Draft National Standards<sup>v</sup> unless exceptional circumstances exist (with 'exceptional' being defined)
- Consider soft options first, to obtain multi-functional benefits of green infrastructure
- Adoption of water sensitive urban design policies in every Local Plan
- Embark on a comprehensive programme of retrofitting SuDS alongside larger water catchment management programmes and flood defence programmes.

Sue Illman, President of the Landscape Institute, says: “Government is seemingly short-sighted in its approach, considering first line economic growth in isolation of the longer term benefits to flood alleviation, urban pollution, and all other improvements to public amenity and biodiversity that SuDS can bring. The Natural Environment White Paper promotes the Green Economy; developing and implementing SuDS could make an important contribution to stimulating growth, and we know it can be extremely cost effective.”

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<sup>i</sup> Green Infrastructure: An integrated approach to land use [www.landscapeinstitute.org/policy/GreenInfrastructure.php](http://www.landscapeinstitute.org/policy/GreenInfrastructure.php)

<sup>ii</sup> Retrofit SUDS: international perspective [www.retrofit-suds.group.shef.ac.uk/int.html](http://www.retrofit-suds.group.shef.ac.uk/int.html)

<sup>iii</sup> [www.portlandoregon.gov/bes/54651](http://www.portlandoregon.gov/bes/54651)

<sup>iv</sup> [www.defra.gov.uk/environment/quality/water/sewage/sustainable-drainage](http://www.defra.gov.uk/environment/quality/water/sewage/sustainable-drainage)

<sup>v</sup> National Standards for Sustainable Drainage Systems [www.defra.gov.uk/consult/files/suds-consult-annexa-national-standards-111221.pdf](http://www.defra.gov.uk/consult/files/suds-consult-annexa-national-standards-111221.pdf)