

Landscape, water and flooding

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Water and flooding whether in terms of drought or flood is a frequent news item. Over the past two years flood and drought have exposed the UK's lack of resilience. Climate science tells us that this type 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 around £1.1bn annuallyⁱ. And, according to the Environment Agency, an estimated 5.2 million, or 1 in 6 properties in England lie in areas that are at risk of floodingⁱⁱ.

Although we have the means to protect ourselves against flooding, government is failing to act.

- The Coalition has not implemented Schedule 3 of the Flood and Water Management Act 2010 which requires developers to implement a sustainable drainage (SuDS) scheme as part of any new construction, and remove the automatic right of connection to a sewer. It has recently closed another round of consultations which will delay implementation further.
- The introduction of wetlands, reed beds, drainage channels and porous driveways known as SuDS schemes are all accepted ways of helping to prevent run-off flooding. However, the UK's developers and house builders recently won a reprieve on having to incorporate them into new developments. Lobbying from house builders has also resulted in a reduction in the requirement so that they no longer have to take into account concerns about water quality or amenity.
- The Government had said that it will start work on 93 flood defences in England but this is only one aspect of protecting us from flood risk, and mainly deals with coastal and river flooding.

New approaches to the water problem

- The UK's water supply chain needs to become more sustainable. We need to look beyond the idea that a pipe in the ground is the best option for the removal of rain water – this is very much a 19th-century solution to a growing 21st-century problem
- We need to start prioritising all elements of the water cycle when designing and developing new places using the principles of Water Sensitive Urban Design (WSUD) of which SuDS is an important part.
- We need to better recognise 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) – provide better resilience against flooding

- SuDS are an increasingly important part of our green infrastructureⁱⁱⁱ providing not only green networks but also much broader species diversity.
- 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 better manage the flows of water and avoid creating one large flooding problem in one place at one point in time.
- SuDS are a cost-effective way to reduce surface water flood risk and damage by tackling the problem through many small features, close to where the water falls.

International examples of SuDS^{iv}

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 their long-established (over 20 years) downspout disconnection programme has disconnected more than 56,000 downpipes and is estimated to remove more than 1.3 billion gallons of storm water per year from their combined sewer system every year^v
- In Philadelphia the City is part-way through a 25 year strategy to implement SuDS throughout the city, to avoid the unaffordable cost of building a new \$8-9bn sewage treatment plant. This would otherwise be required to deal with their problems of flooding and illegal discharge of sewage into the river system.

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 from the start of the planning and design process for 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. Black water can also be considered for site recycling.
- WSUD and SuDS reduce pressure in existing infrastructure, directs flood waters away from homes and businesses and reduces the amount of water entering the sewers.
- Reducing the pressure on the sewage infrastructure enables development where the existing capacity of the system is overloaded, makes sewage treatment plants more efficient, and reduces the need for investment in sewage infrastructure (or allows that investment to be directed elsewhere).

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.^{vi}
- Removal of the 'un-economic cost' get-out in the Draft National Standards^{vii} unless exceptional circumstances exist (with 'exceptional' being defined).
- Removal of the automatic right to connect surface water to a sewer, as proposed in the Pitt Review.
- Consider soft options first, to obtain the multi-functional benefits of green infrastructure.
- Adoption of WSUD and SuDS policies in every Local Plan.
- Embark on a comprehensive programme of retrofitting SuDS alongside larger water catchment management programmes and flood defence programmes.

Landscape Institute resources on water and flooding

See the LI's website for a range of briefings, case studies and videos: www.landscapeinstitute.org/water

ⁱ House of Commons Library Standard note:

Flood defence spending in England, Standard Note: SN/SC/5755

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Author: Oliver Bennett, Policy Analyst

Section Science and Environment

'Some 5.2 million properties are at risk of flooding in England. Annual flood damage costs are in the region of £1.1 billion. These costs could rise to as much as £27 billion by 2080. It has been estimated that maintaining existing levels of flood defence would require flood defence spending to increase to over £1 billion per year by 2035.'

ⁱⁱ 'Investing in the Future' Flood and Coastal Risk management in England, Environment Agency, 2009

'Around 5.2 million properties in England, or one in six properties, are at risk of flooding. More than five million people live and work in the 2.4 million properties that are at risk of flooding from rivers or the sea, one million of which are also at risk of surface water flooding. A further 2.8 million properties are susceptible to surface water flooding alone.'

ⁱⁱⁱ Green Infrastructure: An integrated approach to land use www.landscapeinstitute.org/policy/GreenInfrastructure.php

^{iv} Retrofit SUDS: international perspective www.retrofit-suds.group.shef.ac.uk/int.html

^v www.portlandoregon.gov/bes/54651

^{vi} www.defra.gov.uk/environment/quality/water/sewage/sustainable-drainage

^{vii} National Standards for Sustainable Drainage Systems www.defra.gov.uk/consult/files/suds-consult-annexa-national-standards-111221.pdf