

# Sustainable Drainage Systems - SuDS



## Relevant Case Studies



NI Water - Carrowreagh Storm Sewer  
Sustainable Drainage Project

DARD Rivers Agency - Flood Maps

This information sheet is part of the Climate Northern Ireland infrastructure hub.

The United Kingdom Climate Impacts Projections (UKCP09) suggest Northern Ireland will experience increased winter rainfall, with precipitation falling in shorter, more intense extreme events. Flooding has been identified as potentially one of the most significant and urgent risks to Northern Ireland<sup>1</sup>. Coastal, river and surface water flooding already account for significant losses in infrastructure services so it is essential to build resilience and implement appropriate inspection and monitoring programmes. An estimated 46,000 properties in Northern Ireland are already at risk from river or tidal flooding<sup>2</sup>. An rise in extreme events will increase flood risk and potential damages, which are currently estimated to be

£16million every year from river flooding alone<sup>3</sup>. Surface water flooding is considered to amount for half of all flood events in Northern Ireland. Most of Northern Ireland's sewer networks are combined, where a single set of sewers drain sewage and surface water from rainfall through the same system. During a rain storm event the rate of flow continually increases and rises above the capacity of sewers causing flooding. An increase in the frequency and severity of extreme events will increase the frequency and volume of discharges from storm overflows and risk of sewer and surface water flooding.



## What are SuDS?

SuDS are practical responses to some of the issues associated with climate change. A range of SuDS techniques are available which aim to deal with the issues of water quantity, water quality and social amenity. Sustainable drainage systems are drainage solutions that provide an alternative to the direct channelling of surface water through networks of pipes to watercourses. SuDS can imitate natural drainage systems to reduce surface water flooding, improve water quality and enhance the amenity and biodiversity value of the environment<sup>4</sup>.

## Policy and legislation

The improvements demanded by both the Water Framework Directive and the Floods Directive have highlighted the limitations of traditional methods of collecting and conveying runoff away from developed land. The automatic right to connect surface water run-off to a surface or combined public sewer granted under section 163 of the Water and Sewerage Services (Northern Ireland) Order 2006, is one of the reasons why there has been such a slow uptake of SuDS<sup>4</sup>. The relevant policies and legislation for SuDS are as follows:

**1. EU Water Framework Directive 2000/60/EC** aims to promote 'good status' in all water bodies by 2015. SuDS will contribute to achieving compliance with the WFD.

**2. Strategic Planning Policy Statement for Northern Ireland (2015)** suggests the planning system should help to mitigate and adapt to climate change by working with natural environmental processes, for example through promoting the development of green infrastructure and the use of SuDS to reduce flood risk and improve water quality.

**3. Planning Policy Statement 15 (PPS 15) – Planning and Flood Risk** sets out the planning policy to minimise flood risk to people, property and the environment. The policy states that 'appropriately scaled and supported SuDS can, in the right circumstances, offer developers the opportunity to proceed with developments which would otherwise be refused because of the increased flood risk they would pose.'

**4. The Water Environment (Water Framework Directive) Regulations (Northern Ireland) 2003** provides a legal imperative to consider the introduction of measures such as SuDS and water level control to mitigate against floods.

**5. Water & Sewerage Services (Amendment) Act 2016** only permits stormwater discharges to combined sewers in exceptional circumstances, and then the use of storm attenuation to prevent pollution and out of sewer flooding. NI Water can adopt hard components of SuDS and can also require the consideration of SuDS as part of the application to connect.

**6. Addendum to Planning Policy Statement 7 (PPS 7) – Safeguarding the Character of Established Residential Areas.** Policy LC 3 encourages the use of permeable paving as a SuDS technique as it can contribute to a reduction in the volume and speed of run-off from new residential developments, in turn reducing flood risk.

## Tools and guidance

The following list provides a range of tools and guidance for practitioners who intend to implement SuDS. *Links available on back page.*

### A. SuDS Manual C753 – CIRIA

Best practice guidance on planning, design, construction, operation and maintenance for the successful implementation of SuDS. It is intended for developers, local authorities and organisations involved in the operation of surface water drainage for new and existing developments.

### B. BeST: Benefits of SuDS Tool

CIRIA has developed BeST, a free tool and guidance for use on PCs. BeST provides a structured approach to evaluating a wide range of benefits, based upon the overall drainage system performance.

### C. NetRegs

Provide guidance on SuDS for businesses in Northern Ireland and Scotland, this includes information for good practice on a variety of possible SuDS components such as green roofs, filter strips, permeable paving, swales, and detention basins.

**D. UK Sustainable Drainage Guidance & Tools** HR Wallingford developed estimation tools for the design and evaluation of surface water management systems and SuDS. A suite of tools provides users with the facility to understand what SuDS components might be suitable, outline design characteristics for SuDS components and indicative costs of SuDS components.

### E. Planning Northern Ireland

DOE Planning and Environment provide advice for planning applications seeking planning permission on the use of sustainable drainage systems in new developments. Information is provided on selection of SuDS, SuDS on contaminated land or brownfield sites, and whether discharge consent is required.

**F. Managing stormwater - a strategy for promoting the use of sustainable drainage systems (SuDS) within Northern Ireland** provides information on the benefits and constraints of SuDS, policy and legal drivers behind the promotion of SuDS, and cost implications.

<sup>1</sup> DOE (2014) [http://www.nienviromentlink.org/cmsfiles/policy-hub/files/documentation/Climate/ni\\_climate\\_change\\_adaptation\\_programme\\_\\_niap\\_\\_\\_.pdf\\_for\\_web\\_page\\_-\\_jan\\_2014.pdf](http://www.nienviromentlink.org/cmsfiles/policy-hub/files/documentation/Climate/ni_climate_change_adaptation_programme__niap___.pdf_for_web_page_-_jan_2014.pdf)

<sup>2</sup> UKCIP (2011) [http://www.climatenorthernireland.org.uk/cmsfiles/resources/files/UKCP09-NI-Headline-Message-Water-V8\\_2011.pdf](http://www.climatenorthernireland.org.uk/cmsfiles/resources/files/UKCP09-NI-Headline-Message-Water-V8_2011.pdf)

<sup>3</sup> Defra (2012) [http://www.climatenorthernireland.org.uk/cmsfiles/resources/files/climate\\_change\\_risk\\_assessment\\_NI\\_2012\\_FULL-REPORT.pdf](http://www.climatenorthernireland.org.uk/cmsfiles/resources/files/climate_change_risk_assessment_NI_2012_FULL-REPORT.pdf)

<sup>4</sup> NIEA (2011) [http://www.nienviromentlink.org/cmsfiles/policy-hub/files/documentation/Sust/managing\\_stormwater\\_a\\_strategy\\_for\\_promoting\\_the\\_use\\_of\\_sustainable\\_drainage\\_systems\\_within\\_ni\\_september\\_2011.pdf](http://www.nienviromentlink.org/cmsfiles/policy-hub/files/documentation/Sust/managing_stormwater_a_strategy_for_promoting_the_use_of_sustainable_drainage_systems_within_ni_september_2011.pdf)



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## Links to tools and guidance:

- A. [www.ciria.org/Memberships/The\\_SuDs\\_Manual\\_C753\\_Chapters.aspx](http://www.ciria.org/Memberships/The_SuDs_Manual_C753_Chapters.aspx)
- B. [www.susdrain.org/resources/best.html](http://www.susdrain.org/resources/best.html)
- C. [www.netregs.org.uk/library\\_of\\_topics/water/sustainable\\_urban\\_drain\\_system.aspx](http://www.netregs.org.uk/library_of_topics/water/sustainable_urban_drain_system.aspx)
- D. [www.uksuds.com/tools.htm](http://www.uksuds.com/tools.htm)
- E. [www.planningni.gov.uk/index/advice/northern\\_ireland\\_environment\\_agency\\_guidance/standing\\_advice\\_5\\_sustainable\\_drainage\\_systems.pdf](http://www.planningni.gov.uk/index/advice/northern_ireland_environment_agency_guidance/standing_advice_5_sustainable_drainage_systems.pdf)
- F. [http://www.nienvironmentlink.org/cmsfiles/policy-hub/files/documentation/Sust/managing\\_stormwater\\_a\\_strategy\\_for\\_promoting\\_the\\_use\\_of\\_sustainable\\_drainage\\_systems\\_within\\_ni\\_september\\_2011.pdf](http://www.nienvironmentlink.org/cmsfiles/policy-hub/files/documentation/Sust/managing_stormwater_a_strategy_for_promoting_the_use_of_sustainable_drainage_systems_within_ni_september_2011.pdf)



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