

# INTRODUCTION TO SUDS.

Rain never seems too far away in the UK, but as our climate changes we can expect more extreme downpours - especially through warmer and wetter winter months.

While annual average rainfall may decrease slightly, the seasonal distribution of precipitation will change significantly, with winters seeing an increase in rainfall of up to 30%. An increase in extreme weather events, where winter storms will become more frequent, has also been forecast. And - as we've seen over the last few years - more intense rainfall means a higher risk of flooding.

Under natural conditions, most of the water that falls as rain soaks into the ground or gets carried away by rivers. But in urban areas, the built environment alters the natural drainage of water, with hard surfaces increasing both the rate and amount of rainwater that turns into run-off. And it has to go somewhere.

Traditional piped 'drains' have a limited capacity to cope with the high levels of surface water generated by extreme rainfall events. And, when the capacity of one or more parts of the drainage system is exceeded, the worst happens.

For example, in the floods of June 2007, extreme rainfall in the Midlands and the north of England led to large-scale urban flooding, with over 55,000 properties affected: two thirds of these were from surface water run-off overloading drainage systems.

In addition to flood risk, large amounts of surface water run-off can cause water quality problems. As water runs over hard urban surfaces, it picks up pollutants that are washed into water courses. For example, run-off from roads contains heavy metals and hydrocarbons which can seriously impact on water quality.

A well planned drainage infrastructure helps to manage water run-off by preventing domestic properties and other spaces such as paved public areas, car-parks, driveways and roads acting as conduits for run-off water. And it is more sustainable to manage storm water in a way that allows it to permeate naturally through the ground where it falls rather than being directed into already overloaded drains and public sewers.



**Large amounts  
of surface water  
run-off can cause  
water quality  
problems.**

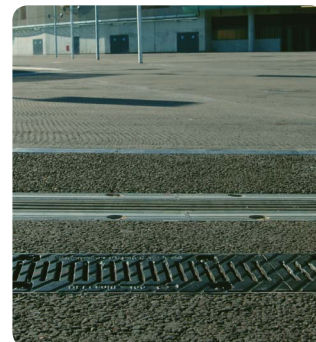




## Sustainable Drainage Systems (SUDS).

Sustainable drainage systems (SUDS) provide an alternative approach to piped systems. Whereas piped systems are characterised by a limited capacity, SUDS solutions such as permeable paving enable water to soak away from the surface where it falls, mimicking natural drainage processes. By reducing run-off volumes and encouraging recharge of the natural groundwater at source, they mitigate many of the adverse impacts of storm water run-off on the environment in terms of both volume and pollutants.

At the heart of the philosophy is the need to address three key concerns: water quantity, water quality and biodiversity. By considering these three factors known as the 'SUDS Triangle' when designing developments, it becomes possible to create drainage systems that provide natural water quality treatment, encourage infiltration, reduce the impact of peak flows and minimise impacts on the local habitats of both communities and wildlife.



Indeed, as a major legislative step towards improving both flood risk management and the way we manage our water resources, the Flood and Water Management Act 2010 seeks to define clearer roles, responsibilities and standards for the creation of sustainable drainage systems in line with proposed flood risk management strategies.

Whilst the act places responsibility for managing SUDS on Local Authorities' SUDS Advisory Boards, responsibility for the specification, design, implementation and maintenance of SUDS schemes remains shared between local government, drainage planners and hydraulic engineers, town planners and civil engineers, land-owners, developers and even homeowners.

With so many stakeholders involved, decisions about new developments and increasingly essential water management systems cannot be taken without a complete understanding of surface water risks - or the most effective solutions.

**SUDS solutions such as permeable paving enable water to soak away from the surface.**



Hence, everyone involved in creating our built environment bears some responsibility in implementing water management strategies to meet our changing climatic conditions. As such, each must play their part and work together. Wherever you sit in the water management process, Marshalls has the depth of expertise and wide choice of high performance drainage products needed to help you create more effective sustainable water management plans.

Marshalls fully supports DEFRA's vision for water policy and management where, by 2030 at the latest, we can sustainably manage risks from flooding. And if those of us responsible for the development of urban spaces are to maintain our quality of life while protecting the environment, we must take action now.

We are happy to share our experience in designing, specifying and advising on fully integrated water management systems to help drive innovation, share best practice, foster greater understanding and help you deliver more effective management of surface water now and in the future.



Marshalls has the depth of expertise and wide choice of high performance drainage products to help you.



[www.marshalls.co.uk/watermanagement](http://www.marshalls.co.uk/watermanagement)

**Ask Marshalls. Expert help on-tap for architects, developers, contractors and building engineers.**

For information or advice on designing, specifying or installing Marshalls water management products, email Marshalls expert team at [watermanagement@marshalls.co.uk](mailto:watermanagement@marshalls.co.uk)