Tonbridge & Malling Borough Council

Water Guides

Sustainable Drainage Systems (SUDS)

What are SUDS?

SUDS provide an alternative to traditional drainage techniques such as underground pipes that replicate natural drainage systems.

SUDS can control rainwater and surface water run-off, as well as potential pollution.

What are the benefits of SUDS?

SUDS techniques can achieve many benefits. They can:

- Reduce flooding
- Protect water quality
- Recharge groundwater reserves
- Create wildlife habitats and enriching the biodiversity value of an area; and
- Provide an amenity area for people to enjoy.

Why do we need SUDS locally?

The borough will continue to experience high levels of development, particularly in the central area of Tonbridge, in the foreseeable future.

This development can, if it is designed with significant areas of hard impermeable surfaces, result in increased water run-off and reduced infiltration of water into the ground.

Not only can this increase the risk of flooding but the contaminants picked up by the run-off (eg car oil and litter) can pollute local rivers and groundwater harming their biodiversity value and also the ability for the abstraction of safe clean water.

The major flooding event in Tonbridge back in the year 2000 and the likelihood of more intense rainfall as an expected effect of climate change mean that now, more than ever, SUDS need to be considered and integrated where practicable into the design of new developments. The Flood and Water Management Act requires developers to put SUDS in place in new developments wherever practicable

What forms of SUDS are there?

There are several SUDS techniques that potentially can be designed into new developments:

- **Preventative Measures** – These focus on techniques aimed at preventing run-off at source, including **rainwater harvesting, green roofs** and **permeable surfaces.**
- **Rainwater harvesting** can be as simple as installing a water butt to the down drainpipe of your property or it can involve the installation of an underground storage tank. Such measures also have the added benefit of potentially reducing your water bill (if you have a water meter installed) because the collected water can be used to water garden plants and, after filtering, used for the flushing of toilets. For further information please see the Council's 'Saving water in the home' guide (please see the Council's website: www.tmbc.gov.uk or contact the Planning Policy Section, tel: 01732 876266 for details).
- **Green roofs** can vary from low growing mosses to a wildflower mix and even shrubs. There are several layers that make-up a green roof: the roof structure itself, waterproofing, drainage, filter fabric, growing medium and then finally the vegetation layer. Green roofs can perform a number of beneficial roles as well as controlling the run-off of surface water at its source. Established green roofs can help moderate temperatures of buildings, thus preventing the need for mechanical heating and/or cooling systems and saving you money on your energy bills. They can also act as carbon sinks and release oxygen into the air thereby improving local air quality. Finally they can perform a vital biodiversity role of providing a habitat for small flora and fauna to flourish.

Green roof, image courtesy of Energy Saving Trust

- **Permeable surfaces** (eg pavements, driveways, footpaths, car parking areas and access roads) can, depending on the local ground and soil conditions, allow rainwater to drain away into the ground. Porous surfaces that can be used include permeable concrete blocks, crushed stone or porous asphalt.

- **Swales and Basins** – Swales are grassed shallow depressions that provide temporary storage of run-off surface water before it naturally filters back into the ground. Basins are designed to hold more significant storm run-off for a few hours before allowing it to infiltrate into the ground. Outside storm periods basins are often dry.
- **Infiltration Techniques** – These techniques allow water to drain directly into the ground, depending on the local ground and soil conditions, and include **infiltration trenches** and **filter drains.**
- **Infiltration trenches** effectively create an underground reservoir by allowing stormwater to enter a shallow excavated trench filled with stone before infiltrating into the ground. The lifespan of the trenches can be extended by pre-treating the stormwater using a filter strip.
- **Filter drains** are similar structures through which a perforated pipe runs. This pipe allows for the storage and filtration of stormwater. Pollutants are removed by absorption, filtering and microbial decomposition in the surrounding soil.
- **Ponds and Wetlands** – Ponds and wetlands are intended to hold more water in storm conditions than basins, thereby enhancing flood storage capacity. They can potentially provide a haven for wildlife and also act as a visual amenity for local residents.

Drainage Pond, image Courtesy of the Construction Industry Research and Information Association

What issues do you need to consider?

Local ground water and **soil conditions** need to be investigated because these will determine what SUDS techniques are appropriate. For example, if soil permeability is low, there is little point introducing filtration systems. Instead, consideration should be given to preventative measures such as rainwater harvesting and green roofs.

The **existing public sewerage system** also needs to be taken into account. It is important that there is capacity in the existing system to cope with the excess surface water infiltration, otherwise surcharging and wastewater flooding of properties could occur.

The **long-term management and maintenance** of SUDS also needs to be established and agreed early in the process of designing a new development. The Flood and Water Management Act requires new SUDS to be adopted and maintained by county and unitary local authorities, which for Tonbridge and Malling is Kent County Council.

At the design stage of your development, please contact the Council's Development Control Section **(planning.applications@tmbc.gov.uk, tel: 01732 876230)** and consult with the Council's Building Control Section **(building.control@tmbc.gov.uk, tel: 01732 876305)** for further advice.

Who can help?

Environment Agency – a body responsible for protecting and improving the environment (www.environment-agency.gov.uk, tel: 08708 506 506)

Construction Industry Research Information Association (CIRIA) – an association which provides guidance, advice support and training on SUDS (www.ciria.org, tel: 0207 549 3300)

Livingroofs.org – Independent UK resource for green roof information (www.livingroofs.org)

South East Water – a water company serving the community of Tonbridge and Malling (www.southeastwater.co.uk, tel: 0845 850 6060)

Southern Water - a water company serving the community of Tonbridge and Malling (www.southernwater.co.uk, tel: 0800 027 6152)

Thames Water - a water company serving the community of Tonbridge and Malling (www.thameswater.co.uk, tel: 0800 714 614)

Kent County Council: Kent Design Guide
This guide promotes good, sustainable design in Kent and includes a section on Sustainable Drainage Systems (www.kent.gov.uk, tel: 01622 221866)

If you have difficulty reading this leaflet and would like the information in another format, please call 01732 876266 or email ldf@tmbc.gov.uk.

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