

## Flood Risk Management Activity: Design a SUDS

In this activity you will be challenged to design a Sustainable Urban Drainage System (SUDS) for your school or community.

You will need:

- A plan of your school or community - photos of buildings/structures etc. would also be helpful
- A sheet of tracing paper
- Paper clips
- A pencil
- Some coloured pencils
- A guide to/list of SUDS (attached)
- Access to the website

Now you need to:

- Watch the [Ever wondered where the rain goes?](#) animation (used courtesy of [www.susdrain.org](http://www.susdrain.org)).
- Look at the guide to SUDS and discuss their benefits and which would work best in your locality.
- Use your plan to identify which areas within your school grounds/local community could be used for a SUDS.
- Place your tracing paper over your plan and attach it with paper clips.
- Draw in the outlines of the buildings etc. Then use your coloured pencils to label areas of the plan as suitable for different SUDS. Make a key.

### CHALLENGE:

Now take your plan to your Head teacher or local councillor and ask them if they can look into installing SUDS in your school grounds/local area.

## A simple guide to Sustainable Urban Drainage Systems

As we have built and paved over more of our villages, towns and cities the rain that might have once soaked into the soil now quickly disappears down gullies and drains. We have changed the natural stages of its journey that previously would have allowed the rain to soak into the ground and find its way into streams and rivers. Passing slowly through vegetation and filtering through the soil makes it cleaner and helps remove any pollution. SUDS are designed to copy the way it would have been before we changed the natural environment.

We expect our modern underground drainage systems to handle any rainstorm, however with climate change and more houses and roads being built the pipes are becoming overloaded and unable to take the greater volumes of water.

Using SUDS allows water that falls on roofs, drives and roads to be managed more effectively to reduce the risk of flooding. That's not the only benefit of SUDS; they can also improve the quality of water flowing into our rivers and create friendly green spaces for both wildlife and the community.

There are a wide range of SUDS to choose from and sometimes a combination of different techniques can produce the most effective solution.

**Rain gardens:** Rain gardens use water butts to store water from roofs and once these are full any additional water is allowed to flow to a planted area. Gravel is placed under the plants to allow water to soak away more easily into the ground below.

**Rainwater harvesting:** Rainwater from roofs and drives can be stored in tanks and water butts and then re-used for flushing toilets and watering the garden.

**Living walls:** Also called green walls, living walls describe the self sufficient vegetation that is deliberately grown on the otherwise unused vertical exterior walls of buildings.

- Green roofs:** Any rain falling onto a roof usually runs straight off into the guttering, down a drainpipe and into the local sewer system. With gently sloping or flat roofs, carefully chosen plants can be used above a waterproof layer to catch the rainfall and reduce the amount flowing into sewers.
- Brown roofs:** Also referred to as eco roofs, these are constructed by covering the flat roofs of new developments with a thin layer of crushed rubble and gravel.
- Permeable paving:** A normal road, pavement or car park allows rainwater to flow across the surface and then down the gulleys and into the sewers. When permeable paving is used, rainwater can flow through the gaps between each small block and down into the ground.
- Swales:** Swales are wide, shallow ditches which can provide temporary storage for rainwater while it soaks away into the ground. Swales may contain small check dams to hold water back in a series of shallow pools.
- Filter strips:** Usually constructed on vegetated areas of broad, flat and gently sloping land, filter strips intercept rainfall run-off.
- Bioretention areas:** These are landscaped areas, which are shallow/depressed to capture and run-off from roads and car parks. Bioretention areas have a drainage layer with engineered sand. They can be designed to include shrubs/plants.
- Ponds and wetlands:** These permanent areas of water help to reduce the effects of heavy rainfall by being able to store potential flood-water.