



Infrastructure Services
Shetland Islands Council

Disposal of Surface Water within your site

Advice Note 3

Aim

This advice note is produced to highlight that the disposal of surface water requires early consideration in the development process. It also highlights various ways which it can be achieved.

**Shetland Islands Council
Infrastructure Services
Planning
Grantfield
Lerwick**

V1 30/03/04

Sustainable Drainage Systems (SuDS)

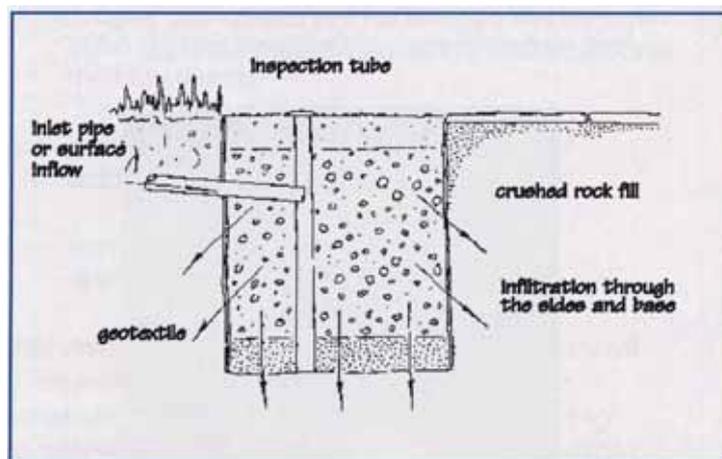
Your Planning Application forms will ask you to provide details of your methods of surface water disposal.

SuDS is a collective term for different types of drainage structures which replicate the capacity of undeveloped ground to infiltrate, store or attenuate (slow down) the flow of surface water within the site. The aim is to minimise the speed and quantity of surface water draining off into a watercourse, this should minimise the need for large deep ditches within development areas. Some methods, which can be used, are:

Soakaways

Soakaways drain water directly into the ground, they can be used at source or, as is more commonly used in domestic developments the water is conveyed to the soakaway by means of a pipe. Soakaways are completely below ground level and can be easily integrated into landscaped areas, such as gardens.

Infiltration devices (soakaways, filter drains) should not be built within 5m of a building, under a road or on a soil which might dissolve or be washed away. The use of suitable membranes can extend the life of the device as they act as a filter screening out the debris.



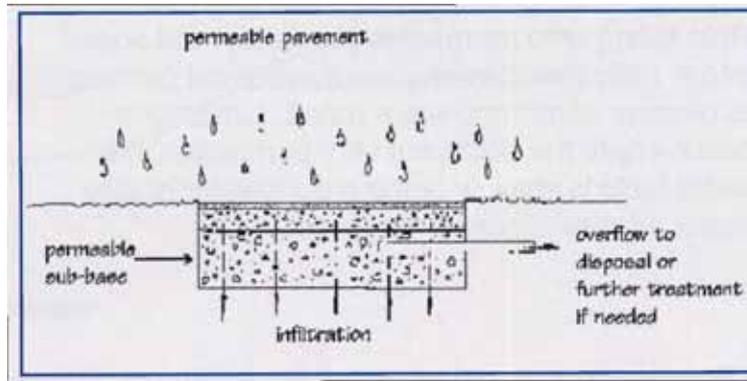
Cross-section through a traditional soakaway

Permeable Surface on hard surfaced areas e.g. car parks, paths, patios etc.

Permeable surfaces slow the flow of water by infiltration, water simply filters through the surface layer into a permeable sub-base which both slows the flow of water and filters out some of the pollutants.

Linking to a Filter Drain (see below) is a further measure to slow down the flow of water. Materials used can include:

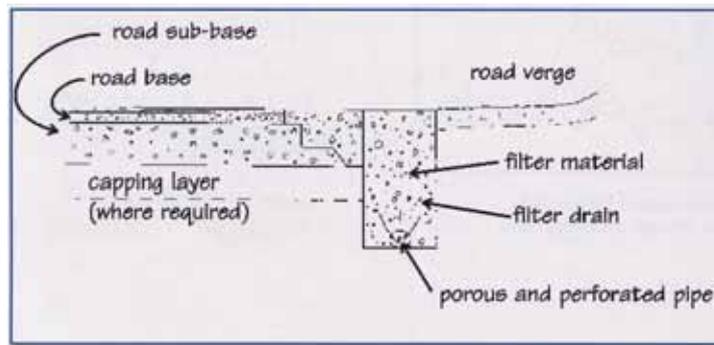
- Reinforced Grass
- Gravelled areas
- Solid paving block with gaps between the individual units (loc block paving)



Permeable pavement used for infiltration

Filter Drains

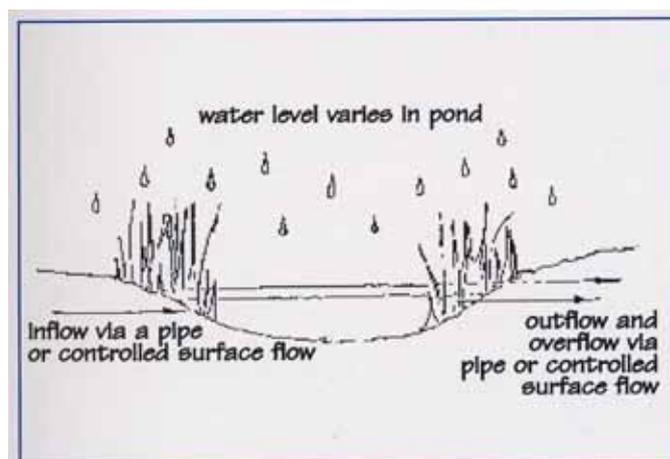
These are constructed to have a large area of permeable material below ground level which temporarily stores the water. Surface-water flows to this storage area via a permeable surface. The permeable surface base traps sediment and can provide some treatment for pollutants such as oil.



Cross-section through a filter drain

Ponds

Ponds which act as a holding device, or reservoir for surface water, slowing down the flow before it continues offsite to an existing watercourse.



Ponds may form an integral part of the drainage system and the landscape

Wetland Areas

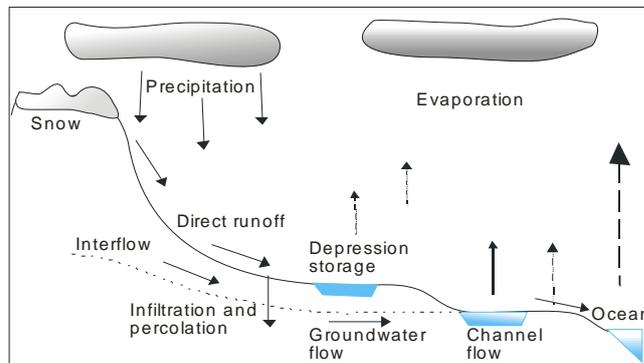
This is an area comprising shallow ponds and marshland where water constantly flows through, aquatic vegetation in this area retains the water and so slows down the rate of flow into the existing watercourse. Consider giving a small section of your garden to create a wetland area.

Minimising water run-off

You can minimise the amount of water run-off re-entering the hydrological cycle by recycling. Water Butts/barrels are storage devices which store a quantity of water collected through your roof drains and enable the water to be re-used for activities such as car-washing, watering plants and vegetables, washing windows, drinking water for pets or indeed livestock etc. Water Butts generally have an overflow, when its is full water will flow into other surface water drainage systems put in place on site.

Why Sustainable Drainage?

The diagram below indicates the changes in the hydrological cycle when an area is subject to development.



Movement of water on the Earth's surface

The surface water flow is much greater and much faster on a developed site with the result that the water flows into the watercourse at a much greater rate with minimal water flowing through the soil. This can have a negative impact on the surrounding environment for the following reasons:

- The drainage problem is transferred downstream leading to a water surge effect and the potential for overloaded burns/ditches
- The scouring effect of overload or flash flooding erodes burnbanks and beds, reducing the flow capacity of burns. This also has a negative impact on wildlife living and growing in these burns/ditches
- Many burns/ditches are culverted (flow through pipes underground). When subject to periods of heavy rainfall some culverts may become overloaded and increase the likelihood of flooding
- Water supplies will be contaminated with pollution carried by the run-off from roofs, roads and car parks. The pollutants may include a variety of sediments, hydrocarbons, metals, salts and pathogens harmful to people and wildlife.

Conclusion

Employing one of the above methods will reduce the rate and volume of the flow. Employing a combination will have an even greater effect. We cannot say which is the best as every site is different. What you need to do is decide which is achievable on your site. Is it the water butt and the permeable surface? Or the soakaway, wetland area and pond to create a particular feature in the garden? The choice is entirely yours but you should give consideration to how you are proposing to dispose of surface water when you are first thinking of developing.

Further Information

N.B This document is guidance only and if you wish to discuss any development or require further information please contact the Planning Control Department and speak to the Duty Planning Officer on (01595) 744800.

Websites

www.sepa.org.uk/guidance/urbandrainage/index.htm

www.ciria.org/suds/