



Location

Stroud Co-Housing, Springhill Road, Stroud

SuDS Used

A variety of SuDS were used to create a water management train in 2004. These included permeable paving, under-drained swales, normal swales, rills, pond and a detention basin.

How it works

Water running off the impermeable roadway filters down through the permeable paving in the car park. This is made from Permavoid crating filled with voided stone which provides both structure and filtration; there is space under the roadway acting as the first control point enabling water storage after heavy rain. Excess water and runoff from the buildings at the top of the site is conveyed to an underdrained swale. Any overflow from the top of the site flows down into a bio-swale. Water from the bio-swale and roof runoff then flows along rills at the side of the pedestrian street into a pool. The bio-swale and pool are both control points and can fill up

in heavy rain; also under the pedestrian street is more overflow space. The final SuDS element is a detention basin at the bottom of the site. Any overflow is conveyed into here and will drain away freely. It is not designed to contain water except during heavy storms. A final measure is an additional rill which drains into a stone-filled swale and under a culvert in the road to a local river.

Specific details

The site is 0.5 ha of steeply sloping ground on the edge of Stroud on which 28 housing units and a large communal building have been built. It can be divided into two sub-catchments with free draining limestone soil at the top of the site and impermeable clay at the bottom of the site. Stroud co-housing is a co-operative where all residents are jointly responsible for the management of the SuDS. This includes any modifications, maintenance or repair.

Design and Construction

The SuDS was designed by Robert Bray associates. The system has 3 main elements to its design:



- It has capacity to deal with large volumes of water
- The water is filtered and goes through 2 to 3 treatments stages before it enters the local watercourse.
- The system is aesthetically pleasing and provides a habitat for wildlife promoting biodiversity on the site.

Benefits and Achievements

This site implements a SuDS management train with a series of filtration, conveyance and control steps. Due to the Environmental Agency water management requirements for the site, SuDS enabled the development to go ahead. SuDS also enhanced the physical environment for the local residents. The SuDS reduces excessive rain water runoff from entering sewers, creates a habitat

for local wildlife and due to the nature of the system makes the area more resilient in times of drought.

Springhill Co-housing in Stroud is the first co-housing community in the UK and is a model for future sustainable communities. It was recognised by The Deputy Prime Minister's Award for making an "outstanding contribution" to sustainable communities.

Challenges

A number of modifications have been needed to the SuDS over the last decade. The gabions at the bottom of the site were removed to create a greener space for the residents as they did not receive enough water for them to be deemed necessary. Shared maintenance on the

permeable paving within the co-housing has been neglected and weeds have begun to grow where the filtrations should be. All residents are in charge of looking after the maintenance and have been guided by the SuDS designer. The rills in front of each house need regular maintenance and it has been agreed that this is now the responsibility of each home owner. Some residents have filled the rills with pebbles to decrease maintenance in consultation with the designer with no effect on performance reported.

Lesson learnt

The SuDS management train has been used as learning process for future developments. There have been aspects of the management train that in retrospect would not have been used as effectively as expected – for example the gabions. Inevitably with a system of this size there have been maintenance, modification and repair issues but the system has been very effective and aesthetically pleasing.

Team and Details

Designer – Robert Bray Associates

Completion 2004

Supplier – Formpave