

# Redland Green School, Bristol

## SuDS used

- Permeable surfaces
- Swales
- Retention ponds
- Filter drains
- Green roof



## Benefits

- Effective runoff management.
- Provision of an outdoor classroom within the landscape.
- Biodiversity and amenity improvement.

## 1. Location

Redland Green School, Redland Court Road, Redland, Bristol BS7.

## 2. Main SuDS components used



Figure 1 Green roof

The site uses multiple SuDS components including a green roof predominantly planted with sedum.

### 3. How it works

SuDS were selected to attenuate runoff as there is insufficient capacity in the local drainage system to take increased flows. There is an extensive green roof, predominantly planted with sedum.

### 4. Specific project details

A variety of methods were used: permeable surfaces; swales with weirs to control the rate of runoff; retention ponds with a storm-water overflow to a watercourse for additional flow. Infiltration techniques are used to minimise off-site runoff.



Figure 2

### 5. Reason for choosing SuDS

The design uses the natural slope of the site. The green roof covers the main school building and is accessible from ground level. The sedum mats provided by Erisco-Bauder. These were laid over a layer of fleece in which the plants then take root. The Bauder mats were planted with a wide variety of Sedum plants, some of them suited to wet conditions and others suited to better drained soils. As each context is different there is a degree of natural selection operating over time. Runoff from the roof enters the SuDS system onsite. The biodiversity value of the site has also been increased by the planting of 160 trees and hundreds of shrubs and border plants, all native species. The roof also acts as teaching and learning space.

## 6. Design & construction

The extensive green roof system has a low maintenance sedum planting that provides cover and increased protection. The multi-use sports pitches are made of a permeable material. Drainage swales include treated timber baffle weirs to attenuate flows. Runoff from the car park is treated with a petrol interceptor before discharging into the swales. There are two dry retention ponds which are planted with a selection of species which thrive in saturated conditions, such as bistort. Stone filter drains further aid infiltration. The system has an overflow to a nearby watercourse for extreme events.

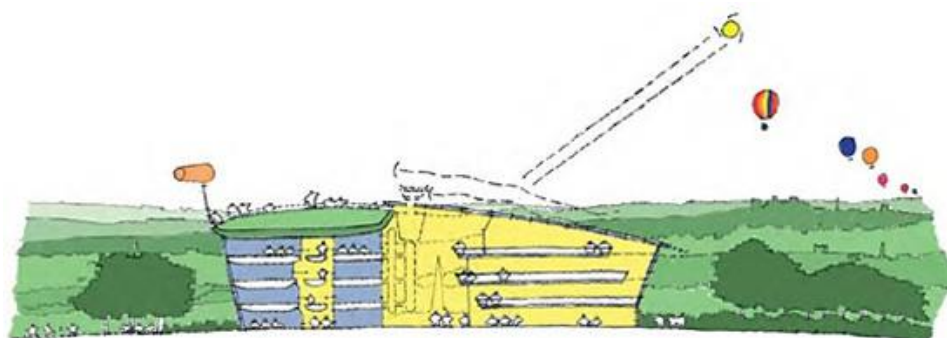


Figure 3

## 7. Benefits & achievements

In addition to managing runoff, benefits include provision of an outdoor classroom within the landscaping and an increase in biodiversity within the area. The roof also enhances the biodiversity of the area – previously a playing field with little other than amenity grass as cover.

## 8. Challenges

The planning process was difficult as there was opposition to the siting of this new school. SuDS were required in this development as the local drainage network was unable to allow for additional flow from the site. The green roof is incorporated into the wider SuDS allowing for surface water to be retained on site.

## 9. Lesson learnt

It has been observed that flows have still discharged from the roof days after intense storms, demonstrating its attenuation role.



Figure 4

## 10. Maintenance

Part of routine grounds maintenance, grass cutting and checking the weirs for silt build-up. Low maintenance required since the roof has been installed includes routine weeding need throughout the year.

## 11. Project details

**Construction completed:** September 2007

## 12. Project team

**Design and construction:** Building Design Partnership (BDP) London, Cowling Construction