

Embleton Road SuDS, Bristol



SuDS used

- *Retrofit rain gardens – planted build outs retrofitted along Embleton Road, doubling-up as a traffic calming measure, outside of Little Meads Primary Academy.*
- *Swale as part of an existing green area, adjacent to the local playground*

Benefits

- *Reduced flood risk – 15,500% increase in rain water attenuation*
- *100% of people surveyed thought the street environment had been improved*
- *88% of children through the road felt safer*
- *60% of residents thought the new street design would encourage more people to meet*

1. Location

Little Mead Primary Academy, Gosforth Road, Southmead, Bristol, BS10 6DS;

51°30'16.9"N 2°36'21.6"W

2. Description

Sustrans worked in partnership with Bristol City Council's Flood Risk Management Team and ARUP to deliver this project outside of Little Meads Primary Academy in Embleton Road, in Southmead, Bristol. The objectives of project were to make the road greener and more attractive, improving drainage and calming traffic outside the school. The local authority identified Southmead as an area in need of improved surface water drainage to reduce the risk of flooding, whilst also improving the water quality in the River Trym.

The engagement process was very successful, including a street trial with school children and the local community, giving the residents a full perception of the changes that will take place on the street.

3. Main SuDS components used

- Rain gardens – planted build outs, often along roads. Designed to collect large quantities of surface water, as well as filtering pollutants collected from the road. They can be incorporated in the initial street design or retrofitted afterwards.
- Detention basin – small depression in existing green space to collect water and allow infiltration to soil with overflow to surface water sewer.

4. How it works

This pilot project aimed to develop and test an approach that engaged the local community to retrofit SuDS, with a view to potentially roll out across key points in the city. Little Meads Primary Academy on Embleton Road was ideally placed – it provided us with a central location to engage with a wide section of the local community, including pupils, parents and local residents, enabling us to raise awareness of issues including water management and road safety.

The SuDS installed allowed to create a road with nearly no gullies, and reduce the flood risk by 15,500%.

The highly-involved engagement process and the artwork created by the children gave a great sense of ownership of the scheme to the local residents, who felt empowered and listened to.

5. Specific project details

The objectives of the project were to:

- Reduce flood risk
- Calm traffic
- Increase levels of walking and cycling
- Increase community involvement and control
- Increase social ties and connections

We ran a series of workshops to engage with pupils and the local community, which are outlined below:

1. **SuDS** - exploring how SuDS could reduce flooding and improve local water quality. The children built a SuDS system using a large planter – learning about infiltration, attenuation and filtration.
2. **Street design and road safety** – considering how physical interventions in the road could change driver behaviour, slow traffic speeds and make the streets safer.
3. **Urban design** – the children completed a site analysis, considering constraints and opportunities along the road. Using plans of the street and plenty of clay, the children created a vision for the road that would create a nicer street environment for everyone.
4. **On-street community design** – the road was closed for a morning to host an open community design workshop. A scale model was laid out on and the community explored designs. Temporary rain gardens were constructed using rolls of turf and plants, residents explored the impact they had on the street environment.
5. **Street art and road safety** – pupils explored design elements and their impacts on road safety, they experimented with designs to improve the look, feel and road safety of the street.
6. **Finalising the road design** – an updated design was produced incorporating feedback from Bristol City Council and fed back to the pupils. Each child was given a copy and asked what they liked/ didn't like about it – these comments were used to amend the final designs.
7. **Community feedback** – the community was informed of the final design – many were spoken to in person, others were given a leaflet and asked to respond with their comments or reached via social media. Feedback was incredibly enthusiastic about the project.

ARUP drafted the final design based on those developed with the community and Bristol City Council implemented the rain gardens.

6. Maintenance & operation

Installation was completed in two phases – the SuDS were completed in spring 2017, followed by decorative thermoplastics on the road in autumn 2017.

Ongoing maintenance is the responsibility of Bristol City Council's Highways team.

7. Monitoring and evaluation

The impacts of flooding were calculated using Bristol City Council's surface water management plan and the benefits of the SuDS estimated using a volumetric assessment. Residents, parents and pupils completed surveys about the 'street appeal' once the interventions were put in place.

Weekly site visits are taking place to monitor the build-up of silt and debris, which will inform the future maintenance regime.

8. Benefits and achievements

This project delivered enormous benefits – bringing the local community together to develop a project and positively impact on their local area. Results from our surveys showed:

- *Reduced flood risk*
- *Improved water quality in the River Trym*
- *Everyone surveyed thought the street environment was improved*
- *88% of children and 40% of parents through the road felt safer*
- *60% of residents thought the new street design would encourage more people to meet*
- *60% of residents felt like they'd contributed to the street improvements*
- *46% increase in walking and cycling levels*

9. Lessons learnt

Build up of leaf mulch has proven to be a particular problem which will inform the future design of inlets and siting of features near trees. Maintenance costs continue to be prohibitive to the delivery of future schemes and alternative approaches such as community involvement are needed.

10. Interaction with local authority

This project was completed in partnership with Bristol City Council – both their Flood Risk Management and Highways teams. The Flood Risk Management team identified potential sites for the project. The highways teams were provided with designs produced by the community, which they adapted before presenting back to the community for further feedback.

11. Project details

Construction completed: *May 2016*

Cost: *£63,400*

Extent: 5 raingardens of approx. 10 sqm each, detention basin

12. Project team

Funders	<ul style="list-style-type: none"> • Bristol Green Capital • Bristol City Council
Clients	<ul style="list-style-type: none"> • Bristol City Council Flood Management Team
Designers	<ul style="list-style-type: none"> • Bristol City Council • Sustrans • ARUP
Contractors	<ul style="list-style-type: none"> • ETM Contractors • Bristol City Council Landscape

13. Site images and illustrations



Fig 1: Embleton Road before any intervention



Fig 2: Children building SuDS



Fig 3: Street design and road safety workshop



Fig 4: Test planting rain gardens using turf



Fig 5: Community design workshop



Fig 6: New rain gardens on Embleton Road