

Rapid riverbank vegetation curbs urban flooding

After devastation caused by heavy rainfall and flooding, Rotherham's award winning flood alleviation project used BSI PAS 100 compost to protect banks and stimulate plant growth

Background

In 2007, Sheffield and Rotherham were hit by heavy rain that broke the banks of the river Don and swept into the centre of Rotherham. With extreme rainfall patterns occurring more frequently, Rotherham Metropolitan Borough Council commissioned a flood alleviation project at Centenary Riverside, which has substantially improved conditions during heavy rainfall periods, as well as creating a thriving, biodiverse environment for the people of the local community to enjoy.

The key to success was stabilisation of the riverbank and the slopes that flank the wetland area through the rapid establishment of vegetation. The designers, Wildscapes, identified BSI PAS 100 compost as a cost effective bioengineering solution.

- *At the water's edge*, compost socks and coir matting were installed to create secure planting areas able to withstand the scouring action of the river. These vegetated soft armouring systems are designed to stabilise banks and prevent erosion caused by flood waters and precipitation runoff .
- *On the slopes*, compost was applied to prevent erosion from rainfall and seeded with wildflowers.



Installation of Compost socks

Senior Ecologist Belinda Wiggs explains: “The site is a post-industrial steel works which has a flood retention bank across the middle. It needed to be vegetated very quickly to help stabilise the soils. Topsoil would have taken longer to generate plant cover than compost, and the whole idea was that the two areas needed very rapid stabilisation in case the site was inundated after more heavy rains.”

Across the slopes, a blend of compost, topsoil and leaf mould was applied as a blanket and sown with a mix of urban common meadow species, while at the water's edge, the compost socks and coir matting were installed and seeded with purple loosestrife, sedges, soft rush and other grasses.

Both the meadow sowings and water's edge species developed quickly. On the wider bank, the compost planting initially supported relatively few of the sown species, but where they occurred they grew extremely rapidly and robustly. Wiggs says: “It was basically dominated by one species, but did provide high cover and a good stabilisation on the bank. In following years, however, additional species from the original seed mix were found, and also wind blown species. After three years, there was much higher diversity; it had become more naturalised and is attracting all sorts of wildlife from birds and invertebrates to amphibians.”

To really prove its worth, though, the site needed to show its effectiveness in dealing with excessive rainfall and in February 2011, Rotherham again faced heavy rain over a 24-hour period. Water levels at Centenary Riverside rose by one metre, but the retention bank successfully held the water, before slowly releasing it back to the river over a week later.

Wiggs says that for rapid vegetation, compost undoubtedly offers superior performance.

“Another benefit is that it's locally produced, locally sourced, and is reusing local materials. It retains the carbon in the soil, whereas if the material was taken to landfill, the carbon would be lost. If you are aiming for really rapid, robust plant material to stabilise a bank, for example, then compost is the most appropriate product.”

Senior Ecologist, Belinda Wiggs

This case study is one of a series of projects that examines how BSI PAS 100 compost can be used successfully in landscape and regeneration projects.

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