Permavoid installed for rain gardens to provide lasting green infrastructure at Melina Road in London

Permavoid and Permafoam cells were installed on a busy London street as part of four new rain gardens, adding amenity and biodiversity to the streetscape.

Retrofit rain gardens

Urbanisation, coupled with climate change, has led to a disturbed water cycle and an increase in flood events in the UK. This has placed immense stress on London's combined sewer systems, which were developed over old river culverts.

In order to compensate for the loss of permeable green space that would have alleviated the risks of excess stormwater, Polypipe was able to supply a unique SuDS geocellular solution at Melina Road, a busy residential street in Hammersmith, which includes a local school and a public open space.

2,345 Permavoid cells have been installed to create four separate storage tanks to sit beneath new rain gardens. The tanks will provide 88m³ of rainwater storage.

Each of the Permavoid tanks feature a top layer of Permafoam cells to upwardly irrigate the rain garden above. Permafoam cells contain a phenolic foam that is highly absorbent and water retentive, providing 31 litres of water storage for on-demand irrigation.

Martin Bennett, Project Director of the Counters Creek Sewer Flooding Alleviation Scheme said,

"The implementation of the SuDS solutions marks an important milestone in the delivery of the wider project which will help alleviate the misery of sewer flooding for local residents. Together with the proposed storm relief tunnel which will run under both local authority areas, upgrading the existing local sewer network and the SuDS schemes, the ability of the sewer network to cope with heavy rainfall will be greatly improved and we are delighted that in this instance we have been able to work collaboratively to provide such an innovative solution."

CASE STUDY

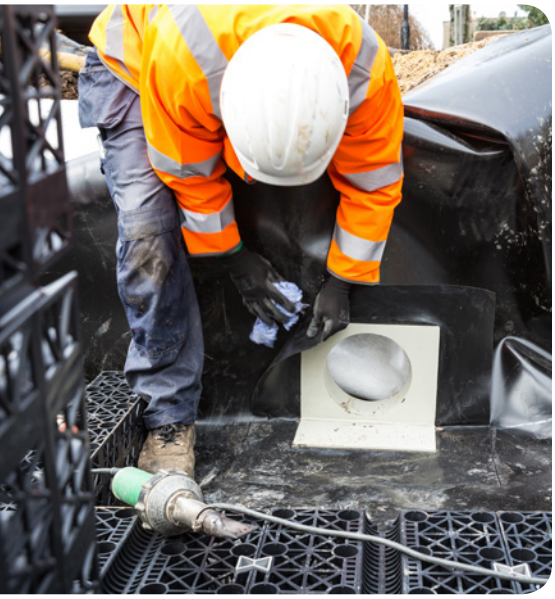
Project
Counters Creek Flood Alleviation Scheme, London

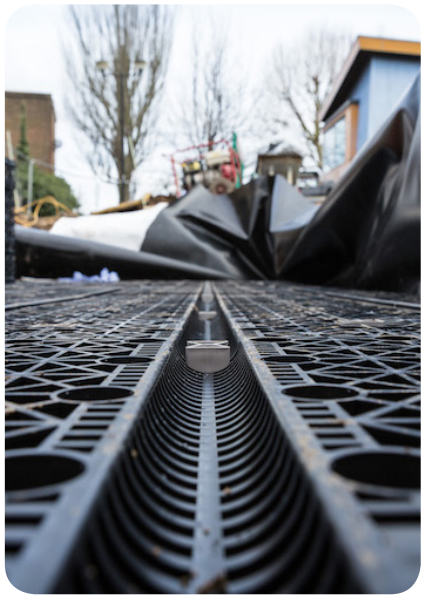
Client
Thames Water

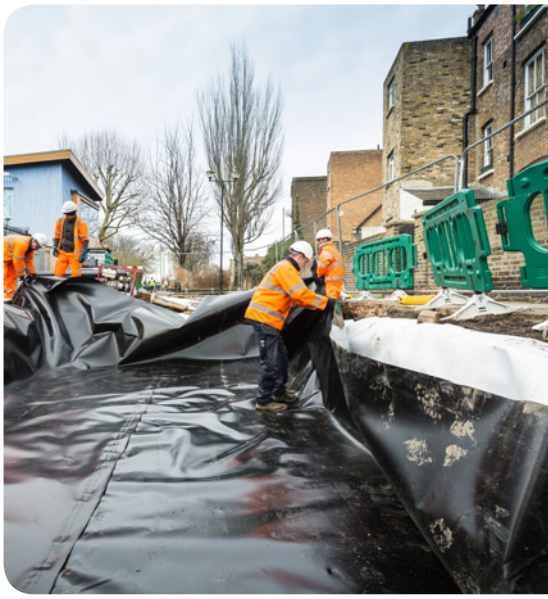
Application
Source control, attenuation and irrigation for rain gardens

Product
Permavoid, Permafoam and Permatex 300 Geotextile

Polypipe







2,345 Permavoid cells have been installed to create four separate storage tanks to sit beneath new rain gardens.

Each tank is wrapped in a geomembrane at the sides and bottom, along with Permatex 300 geotextile at the top of each tank to allow for infiltration into the tank to feed plants and to allow for water capture.

Each rain garden is also connected to the local sewer network to allow excess water to discharge back into the network at a lower flow rate, managing water at source. Installation had to be carefully planned and considered due to existing services on the street, while shallow tanks were used to reduce excavation time and to fit within the footprint of the street.

This method helps to reduce water volumes into the local sewer network, whilst improving the visual environment of the street. The effective water management at source provides multifunctional benefits to the design and meets recommendations of the CIRIA SuDS manual, dealing with the quantity and quality of water, adding amenity and biodiversity.

Melina Road is part of a three-street scheme designed to alleviate flood risk in streets built over the Counter's Creek river system. Monitoring performance on the street will provide evidence to show how joint engineered and soft SuDS systems will provide a viable solution that can be applied across a wider area.

A total of 430 Permafoam cells were installed to cover a combined area of 108m² and will provide water supply for vegetation above. This technique mitigates flood risk during storm events, while sustaining plant growth and providing additional green space in the local urban environment.

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