

Polypipe bolsters flood defences at new £2.7m medical centre

Polypipe supplied its Polystorm and Permavoid geocellular water management systems to protect a new £2.7 million medical centre from flash floods.



Polypipe supplies water management systems to Gloucestershire surgery.



The 1,191sqm Churchdown Surgery in Churchdown, Gloucestershire can serve 20,000 patients, with consulting rooms, nurse treatment areas, training rooms and a large car park. Polypipe, consulting engineering firm EPG and civil engineer NGB Cheltenham had to deal with a water table that left only 130mm of cover in large hard landscaped areas, which meant a shallow attenuation system was required.

The village of Churchdown is prone to flooding. In 2007, Gloucestershire was hit by 78mm of rain in just 12 hours.

Building on the initial design by the contract engineer Rutter Johnson, a mixed product solution was supplied by Polypipe that included a Permavoid system for use beneath a large permeable paving car park and two Polystorm tanks utilising anti-floatation measures in soft landscape areas.

Due to the high water table, a 150mm deep system using 2,614 Permavoid cells delivered 138m³ of stormwater storage beneath the hard landscaping surface. Permavoid was also selected due to its high structural load capacity.



CASE STUDY

Project

Churchdown Surgery

Client

Rutter Johnson, EPG

Consulting Engineer

NGB Cheltenham

Application

Stormwater attenuation

Product

Permavoid, Polystorm, Permavoid Biomax and Permaceptor

Rosie Cheetham, marketing manager, Polypipe, said:

"This is a great example of a collaborative approach delivering a system that will serve a community for years to come. Our water management experts worked closely with all parties from the early stages of the design process to develop and deliver a modern, intelligently engineered SuDS solution that was easy to install."

Phil Williams, consultant engineer at EPG, said:

“This project provided objectives that we knew Polypipe could deliver upon. With only 130mm cover on the car park we chose to use Permavoid beneath the car parking bays because of its load bearing capability, and the ability of the system to negotiate the high water table on the site. By working with Polypipe’s technical experts, we were able to design a system that could be considered ‘good practice’ by the SuDS manual, local and national planning documents.”

In addition, 200 Polystorm PSM1a crates were used in soft landscaped areas, which provided a further 40m³ of water storage. Both Polystorm attenuation tanks installed beneath the landscaped areas surrounding the car park were wrapped in a fully welded impermeable geomembrane. Both systems are designed to cope with and manage sudden heavy rainfall, which has affected the region in the past decade.

To treat oil and capture silt, 35m of Permachannel, Permavoid Biomat and four Permaceptor separators were used to channel the collected stormwater away from the site and into local water networks.

Following consultation with EPG and NGB, Polypipe delivered a customised Permaceptor much larger than its standard model. Each modified Permaceptor can treat a larger catchment area over 150sqm and was installed to reduce the amount of Permachannel and Permavoid Biomat cells needed within two isolated permeable car park areas separated from the Permavoid tank. As well as this the main Permavoid tank beneath the car park area had a fully welded membrane to the base and sides.

