

### Permavoid in the Urban Environment: **Rainwater Attenuation**

**Managing rainwater run-off is integral to the philosophy of Sustainable Urban Drainage Systems (SUDS).**

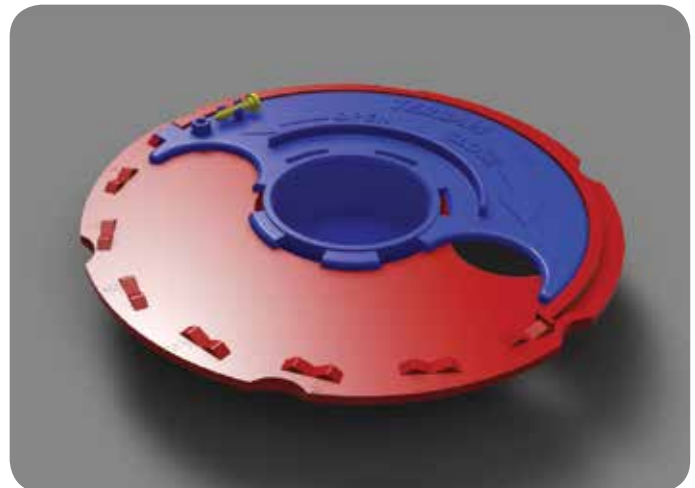
**By intercepting rainwater at source, it can reduce or remove the necessity for conventional below ground attenuation storage tanks. This is particularly beneficial in urban environments where space for rainwater storage tanks can be impractical or impossible to install.**

Attenuating water at roof or podium level, creates smaller sub-catchment areas that require unique solutions, particularly for flow control. The Polypipe Terrain team have developed a patented rainwater flow control solution that can simply be fitted into the range of Terrain PVCu large rainwater outlets.

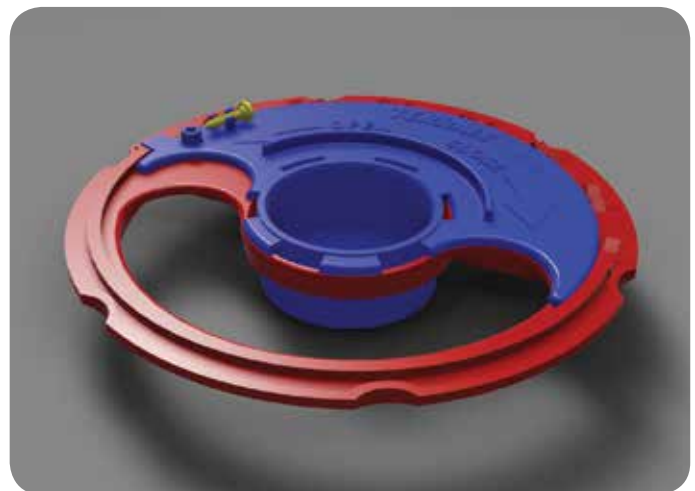
The range includes flat, domed, vented and inverted roof outlets. When fitted into any one of these roof outlets a controlled flow outlet is formed.

The flow control plate incorporates a 50mm moulded socket in which a 50mm section of pipe can be fitted, this acts as a vent for the downpipes and also as an overflow. Connection can be made by relieving the socket and solvent welding the correct length of pipe to suit the required over flow height.

The flow control outlets are designed for use with the Terrain Permavoid rainwater systems for roofs and podiums and Terrain PVCu or Terrain FUZE HDPE above ground drainage pipework systems.



Polypipe Terrain flow control device shown above at minimum and below at maximum opening areas.



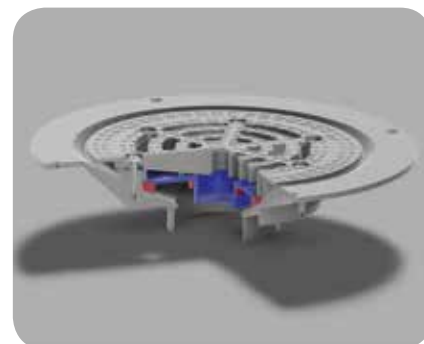
The range includes flat, domed, vented and inverted roof outlets. When fitted in to any one of these roof outlets a controlled flow outlet is formed.

- The orifice plate can be rotated within itself into one of 8 different positions, providing a different orifice cross sectional area.
- This gives flexibility both during the design and to accommodate post installation amendments and retro-fitting into existing outlets.
- The orifice plate can be fixed once rotated into position although there are integral moulded ramps preventing free rotation.

Flow tests have been carried out in accordance with BS EN1253 to establish flow rates for a static head

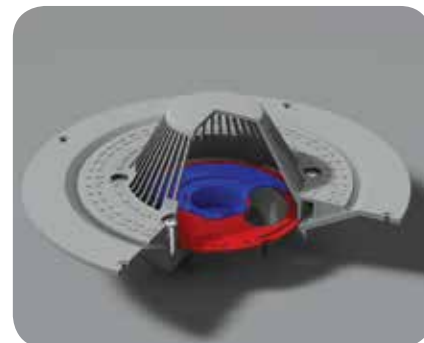
### Flat roof outlet

Configuration	25mm Depth	35mm Depth	50mm Depth	100mm Depth	135mm Depth
Position 1	2.39	2.67	3.1	4.8	6.91
Position 2	2.38	2.65	2.98	4.59	6.01
Position 3	2.36	2.59	2.89	4.33	5.3
Position 4	2.3	2.48	2.69	3.85	4.65
Position 5	2.08	2.3	2.45	3.21	3.63
Position 6	1.72	1.79	1.96	2.51	2.74
Position 7	1.09	1.14	1.23	1.56	1.71
Position 8	0.45	0.48	0.54	0.65	0.71



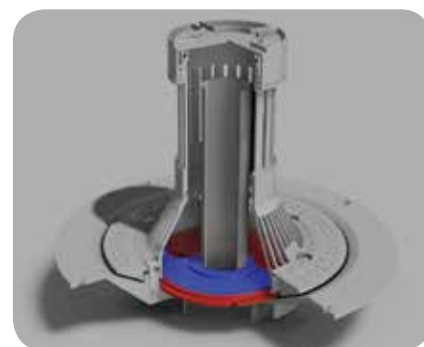
### Domed roof outlet

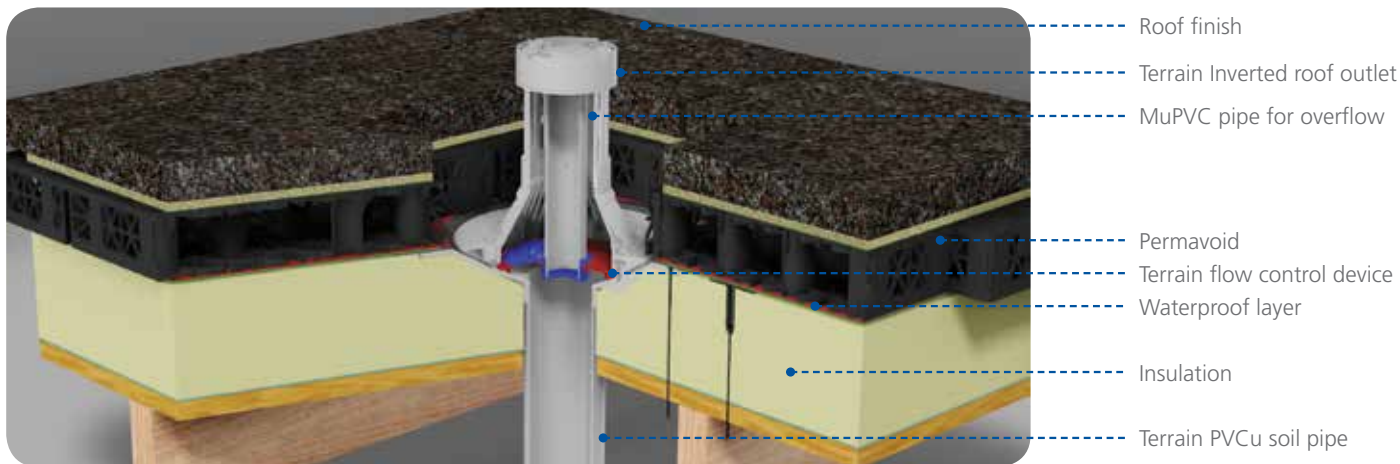
Configuration	25mm Depth	35mm Depth	50mm Depth	100mm Depth	135mm Depth
Position 1	2.39	2.67	3.1	4.8	6.91
Position 2	2.38	2.65	2.98	4.59	6.01
Position 3	2.36	2.59	2.89	4.33	5.3
Position 4	2.3	2.48	2.69	3.85	4.65
Position 5	2.08	2.3	2.45	3.21	3.63
Position 6	1.72	1.79	1.96	2.51	2.74
Position 7	1.09	1.14	1.23	1.56	1.71
Position 8	0.45	0.48	0.54	0.65	0.71



### Inverted roof outlet with overflow



Configuration	25mm Depth	35mm Depth	50mm Depth	100mm Depth	135mm Depth
Position 1	2.39	2.74	3.06	4.33	5.55
Position 2	2.37	2.63	3.03	4.15	4.95
Position 3	2.34	2.58	2.85	3.83	4.4
Position 4	2.29	2.45	2.66	3.56	3.99
Position 5	2.11	2.29	2.39	2.95	3.3
Position 6	1.64	1.75	1.82	2.36	2.6
Position 7	1.12	1.22	1.28	1.58	1.78
Position 8	0.48	0.52	0.6	0.65	0.69





Polypipe Terrain flow control device installed within an inverted roof outlet.

	Size (mm)	Col	Code
<b>Flat roof outlet - large</b>			
	To drain surface water from flat roofs Suitable for most roof finishes		
	82	G	2170.3
	110	G	2170.4
<b>Doomed roof outlet - large</b>			
	To drain surface water from flat roofs Suitable for most roof finishes		
	82	G	2171.3
	110	G	2171.4

	Size (mm)	Col	Code
<b>Vent pipe outlet socket</b>			
	Special vented type for combined systems Suitable for most roof finishes		
	110	G	2171.44
<b>Inverted roof outlet</b>			
	To allow for drainage from two levels as required with inverted roof construction		
	110	G	2171.4A

Range of Polypipe Terrain roof outlets the flow control device can be installed within

Further information will be available within our upcoming technical manual and will also appear on our website shortly. For further information please contact us about our Technical Workshops on how Permavoid can help you with your rainwater management needs for roof, podium or sub base applications.



### Contact Us

to find out about our Technical Workshop

Look out for the new series of Technical Bulletins on Tall buildings in 2016.