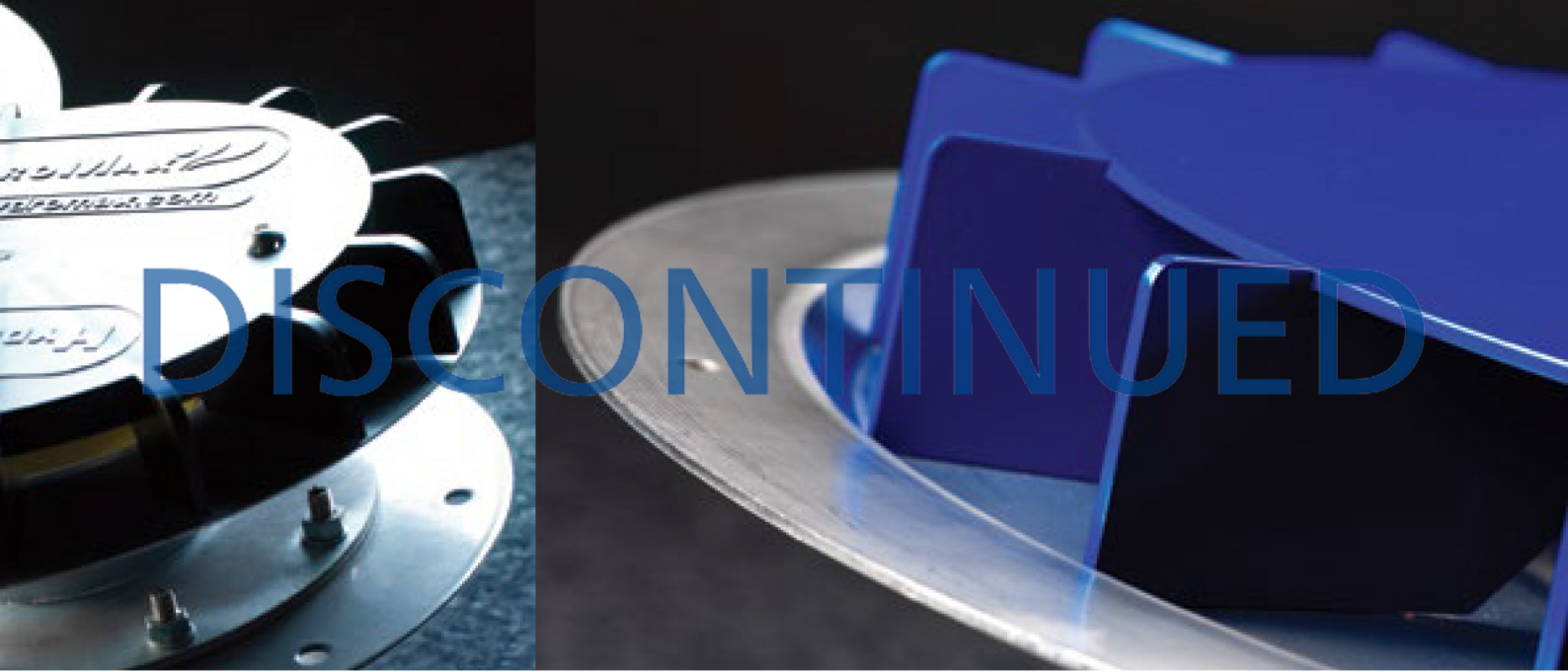


TERRAIN



Siphonic Roof Drainage



Polypipe

Building Services

Terrain Siphonic Roof Drainage



Polypipe

With ten times the flow capacity of a conventional gravity system and significantly faster water removal rates, the Terrain Siphonic Roof Drainage System 'sucks' water from a roof to cope with downpours that would overwhelm a gravity system and is ideal for complex roof shapes.

Offering valuable total project cost savings of typically 20-45% over a conventional system, our Siphonic Roof Drainage System can be factory prefabricated and gives important structural and space savings, with a reduced build programme.

The Terrain system has a comprehensive range of roof drains for every flat and pitched roof membrane, from asphalt to bitumen to modern single ply membranes.

Ideal for commercial, industrial, sports, leisure, education and healthcare buildings, the roof drains are extremely compact and the range includes an inlet for the top deck of multi-storey car parks.

10 times the flow capacity of a conventional gravity system

Faster water removal rates

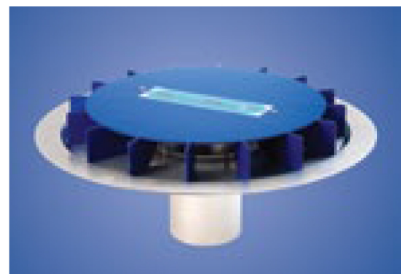
20-45% cost savings over a conventional gravity system

Reduces underground drainage

Ideal for complex roof shapes

Structural and space saving

Accurate design software



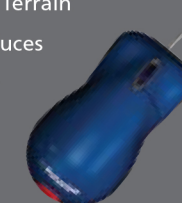
Designed to rapidly remove the high volumes of water deposited in extreme rainfall events from the roof areas of today's increasingly larger buildings, the Terrain siphonic roof drainage system offers a complete and proven solution.

Building Services

Outstandingly accurate design software

Terrain Siphonic Roof Drainage System design software enables the designer working to BS 8490:2007 to achieve exceptionally accurate calculations which underpin the success of any engineered hydraulic siphonic drainage system. Independently tested by the world's

leading Hydraulic Research Centre at Wallingford, compliance with the performance requirements of BSEN 12056-3:2000, Terrain HydroTechnic™ produces calculations, factory ready drawings and bills of quantities.

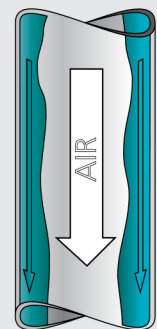


Terrain Siphonic Roof Drainage System

How it works

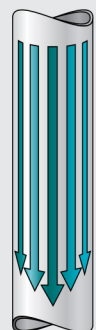
The Terrain Siphonic Roof Drainage system 'sucks' water from the roof, using a powerful hydraulic force created by water accelerating down the full height of the building to deliver far greater capacity and flow rates than a gravity system. In a gravity drainage system, pipework carries both air and water. The flow in gravity pipes is extremely inefficient because of the large core of air which enables the water to flow resulting in the need for larger pipes and more of them as well as extensive underground systems.

In the Terrain Siphonic Roof Drainage system as rain falls, the roof drain prevents the ingress of air, rapidly purging it until the system is fully primed and running full bore. Water is transported in smaller diameter pipes to fewer, more convenient locations. The system responds quickly to rainfall changes, is self-cleaning, drains rapidly when rainfall ceases, and is designed to prevent blockage by leaves, twigs and other debris.



Gravity Traditional System

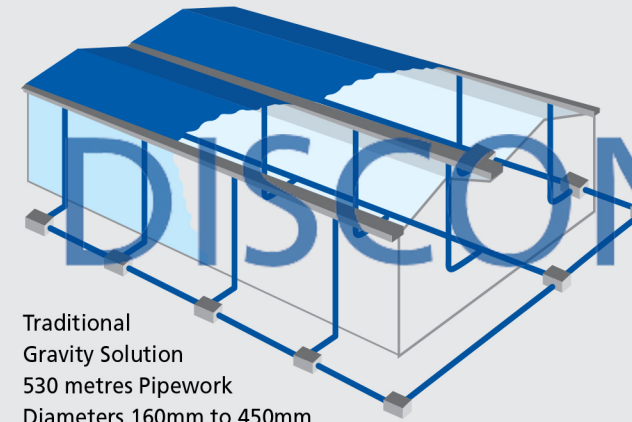
A gravity drainage system limits capacity to one-third water that adheres to the inner pipe wall with a large two-thirds air core.



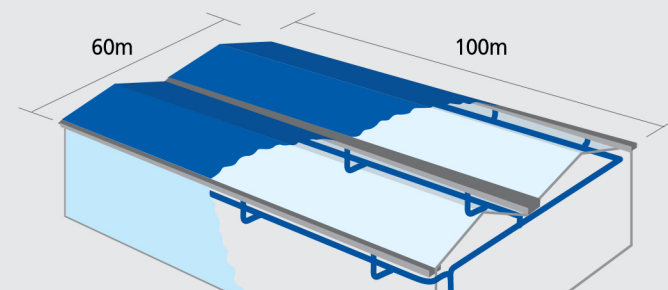
Terrain Siphonic Roof Drainage

In Terrain Siphonic Roof Drainage air is purged from the pipe so that it runs 100% full of water, normally achieving 10 to 15 times higher flow rates.

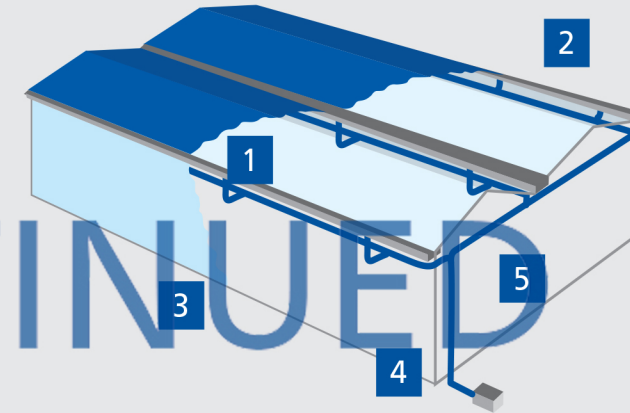
Saving time and money



Traditional Gravity Solution
530 metres Pipework
Diameters 160mm to 450mm



Terrain Siphonic Scheme
360 metres HDPE Pipework
Diameters 56mm to 200mm

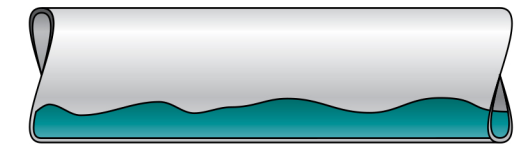


- 1 Small diameter collector pipes installed level without slope
- 2 High performance Terrain roof drain
- 3 Significant reduction in underground drainage, trenching, soil removal, treatment or backfill
- 4 Design team or clients' chosen downpipe locations
- 5 No drainage under building floor slab

The 4 steps of water flow through a siphonic system

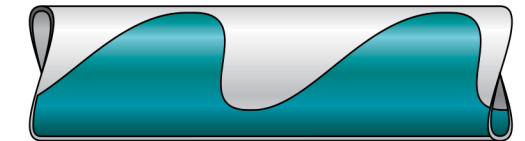
1. Gravity flow

Air carried above water



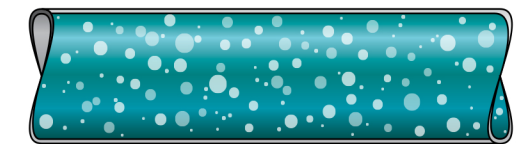
2. Plug flow

Air pockets driven down pipe with water 'plugs' to ensure self-cleaning



3. Bubble flow

Water fills pipe and carries bubbles in suspension



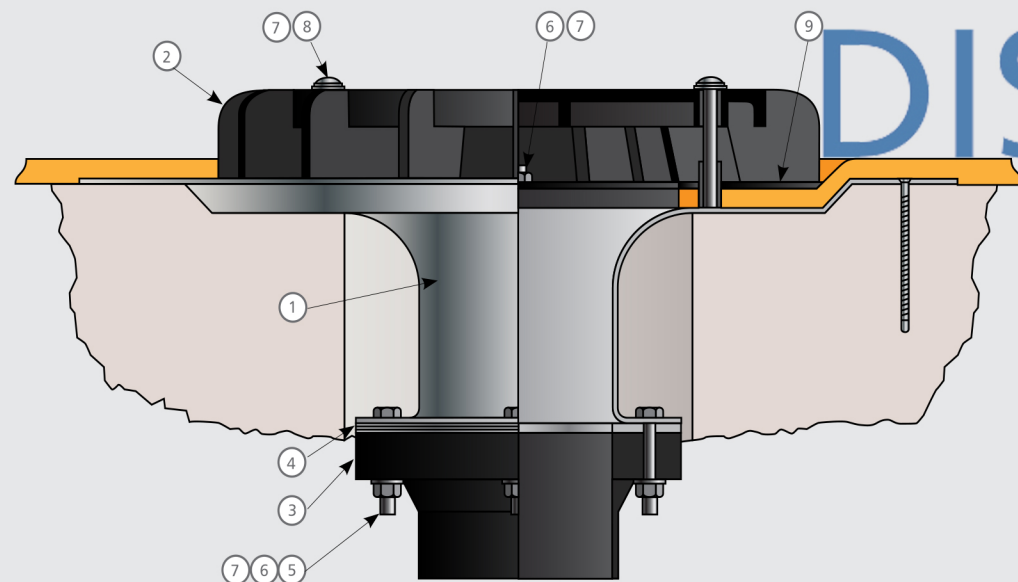
4. Full bore flow

Water fills pipe with all air purged and excluded, delivering far greater capacity and flow rates



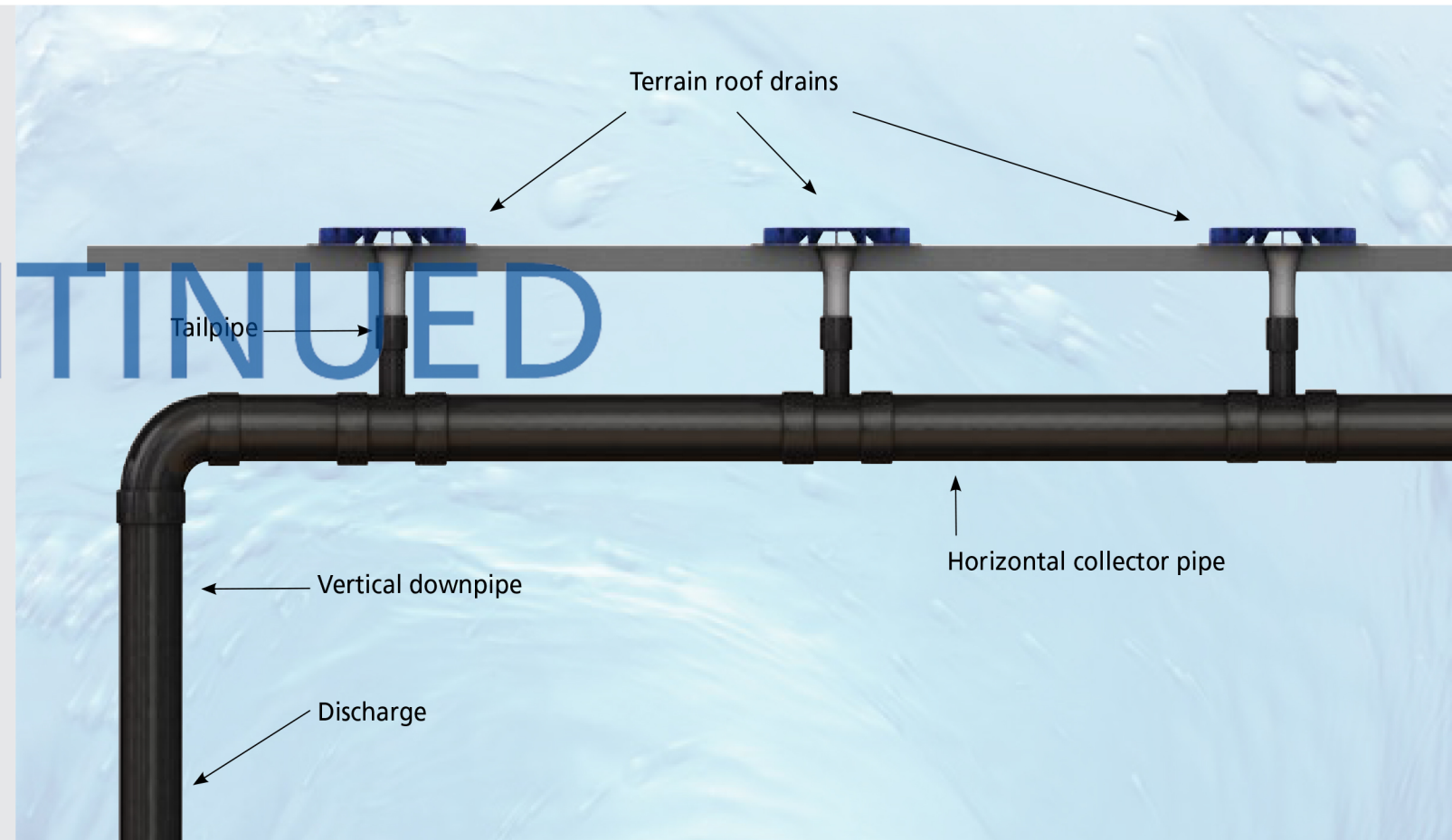
The roof drain and piping system

The Terrain roof drain incorporates a one-piece inducer or air baffle plate, which becomes submerged in shallow water to exclude air. The height of the inducer above the body ensures the system primes rapidly with a minimum depth of water.

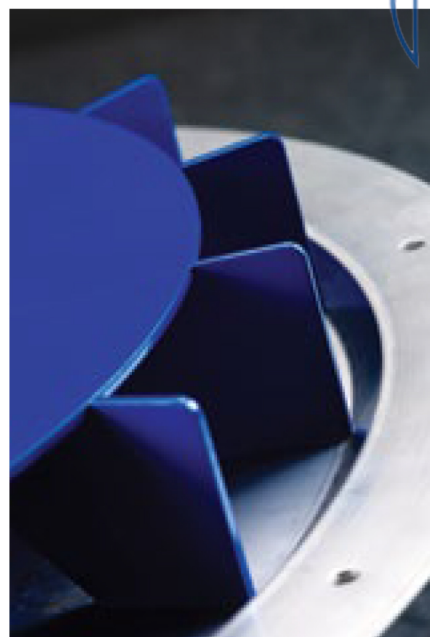


- KEY**
1. Terrain roof drain body
 2. Terrain inducer
 3. HDPE stub flange connector
 4. Neoprene gasket
 5. Hex headed set screw
 6. Full nut
 7. Washer
 8. Button headed cap screw
 9. Flashing ring

DISCONTINUED



The inducer fins extend beyond the cover plate to restrict the formation of vortices by swirling water, which could entrain air. The fins also prevent blockage by debris and although the entire system is low maintenance, good housekeeping practice is recommended.



The roof drain is of a compact design and the system has over thirty different models available to cope with a range of roof types. The tailpipe below the roof drain is of relatively small diameter and in use, a series of tailpipes is connected to a horizontal collector or leader pipe below the roof.

Flow capacity
A 75mm roof drain can remove up to 25 litres of rainwater per second, whilst the 125mm drain can remove up to 100 litres of rainwater per second with certain piping configurations.

The piping system
The collector pipe is normally installed horizontally without slope at high level and runs to a convenient point where it drops ground level with a transition break connection into the below-ground gravity drainage system or manhole chamber.

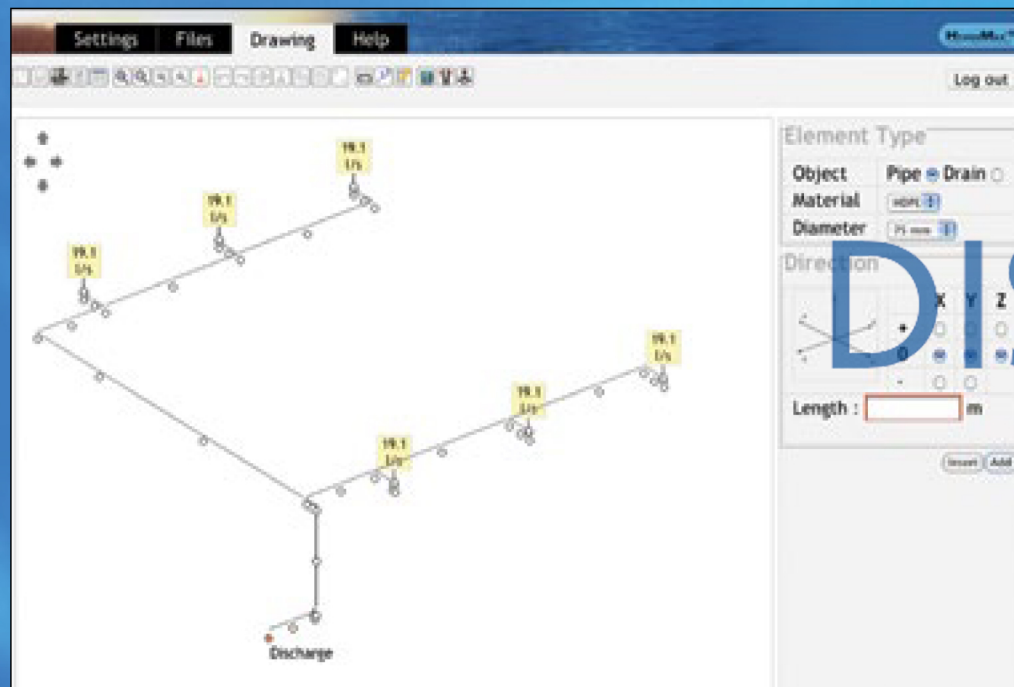


Terrain Fuze high density polyethylene pipes are manufactured in the UK to BS EN 1519-1:2000

Recommended pipes
Terrain Fuze pipes are manufactured in the UK to BS EN 1519-1:2000 and BBA certification. Fully welded to withstand high negative pressures, they offer excellent performance and durability with high weather and corrosion resistance.

With a wide range of diameters and fittings for maximum design flexibility, they are lightweight with electro-weld joints for rapid and simple installation. In addition, stainless steel and cast iron pipes can be used for aesthetics or as dictated by the site.

Correct installation
Essential to the success and performance of a siphonic system, correct installation is ensured by the system design software and prefabrication of specified pipework. In addition, installation is facilitated by the prefabricated Terrain Rail System, which supports pipes, enabling them to be hung from roof voids, and restrains pipe expansion. All rails, fixings, connections and brackets are included for rapid and speedy installation.



Pressure Calculation Results	
Out of Balance	Current 0.911 m
Pressure	6.671 m
Maximum Pressure	1.152 m
Minimum Pressure	1.839 m/s
Velocity	2.734 m/s
Vertical Velocity	7.485 m/s
Maximum Velocity	2.734 m/s
Discharge Velocity	52 seconds
Fill time	PASS
Pass/Fail?	
Tail Pressures	
1	-0.531 m
2	-0.586 m
3	-0.912 m
4	-0.008 m
5	-0.001 m
6	-0.018 m

This highly accurate and technically advanced software rapidly calculates rainfall and flow parameters for all kinds of pipework and buildings and provides pressure calculation results for compliance with BS 8490:2007.



Design assistance

The Polypipe Terrain technical support service can provide design assistance for any project on receipt of the following details:

- Design rainfall rate or geographical location
- AutoCAD drawings of roof and floor plans, **both** sections and elevations
- Gutter profiles
- Performance specification

Polypipe

Building Services

Technical support

Polypipe offers a complete technical advisory service for information, assistance and help with specification, scheduling and estimating – a full design and installation partnership that includes sourcing of approved designers and installers.

This is supported by CAD drawings of products and applications, design and manufacture of prefabricated pipework and rail systems, installation drawings and on-site advice and problem solving. A full range of training services is available.



Registered installer network

A nationwide network of registered installers operates throughout the UK and is comprehensively supported by Polypipe's technical department. Please contact us for details of your nearest installer.

Centre of Excellence

The Polypipe Centre of Excellence in Aylesford, Kent provides exhibition, demonstration and training facilities for consultants, clients, contractors, installers and distributors.



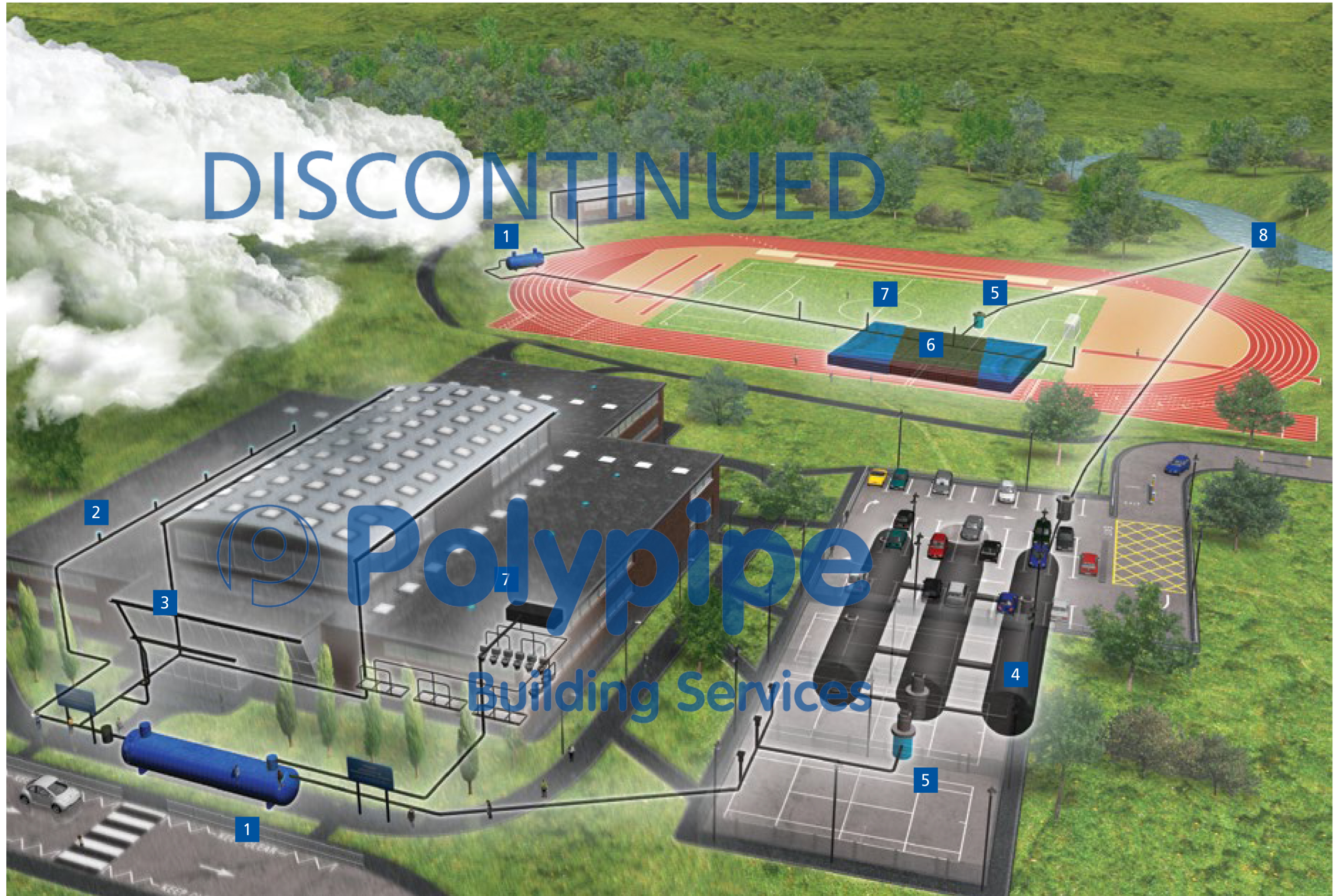
A Roof to River solution

Regulations and climate demand integrated, intelligently designed water management systems, to control rainwater as close to source as possible.

Polypipe provides a total solution 'from roof to river' enabling the specifier to choose a complete system from one manufacturer with one range of products, offering prefabricated systems using sustainable materials and processes.

It's a proven and integrated drainage solution for all requirements from roof collection to rainwater harvesting and storage, to recycling, soakaways and discharge, with a complementary range of pipework solutions.

- 1 Rainwater harvesting
- 2 Siphonic Roof Drainage system
- 3 Gravity rainwater system
- 4 Pipe flood alleviation system
- 5 Water treatment filter
- 6 Modular flood attenuation system
- 7 Re-use of stored water
- 8 Outflow



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Siphonic Roof Drainage System



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