

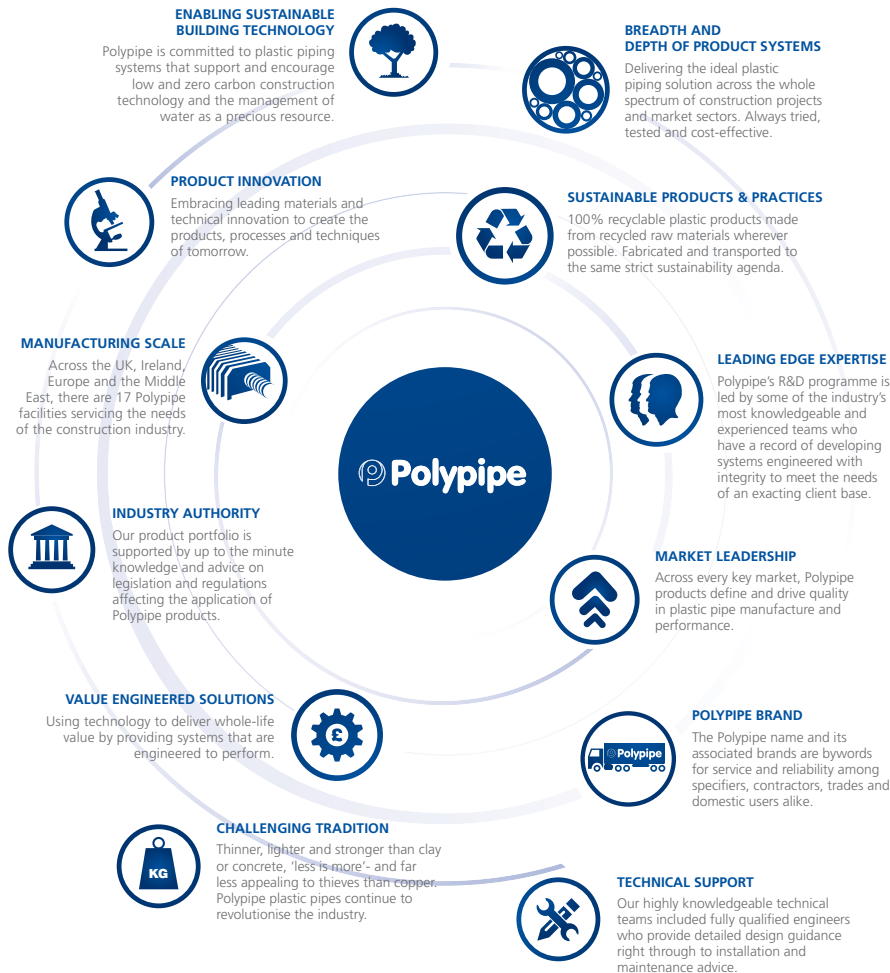
# Water Management Solutions



From Roof to River

# Polypipe

We design, develop and manufacture the widest range of plastic piping products, with over 20,000 product lines available. Our primary focus is on developing and supporting pragmatic product systems through specific knowledge and understanding of the residential, commercial, civils and infrastructure market sectors. We ensure that customers can trust our unrivalled expertise to provide value engineered, fit for purpose piping solutions for the growing diversity and complexity of construction and building technology challenges they face.



# Managing water from Roof to River

Polypipe's water management solutions embrace a comprehensive range of Sustainable Drainage Systems (SUDS) and services that together address the surface water management requirements of every commercial and domestic project, no matter how large or small.

With a choice of market leading products, plus up to the minute technical support, you can depend on Polypipe to help you deliver the most effective and compliant surface water management plan.

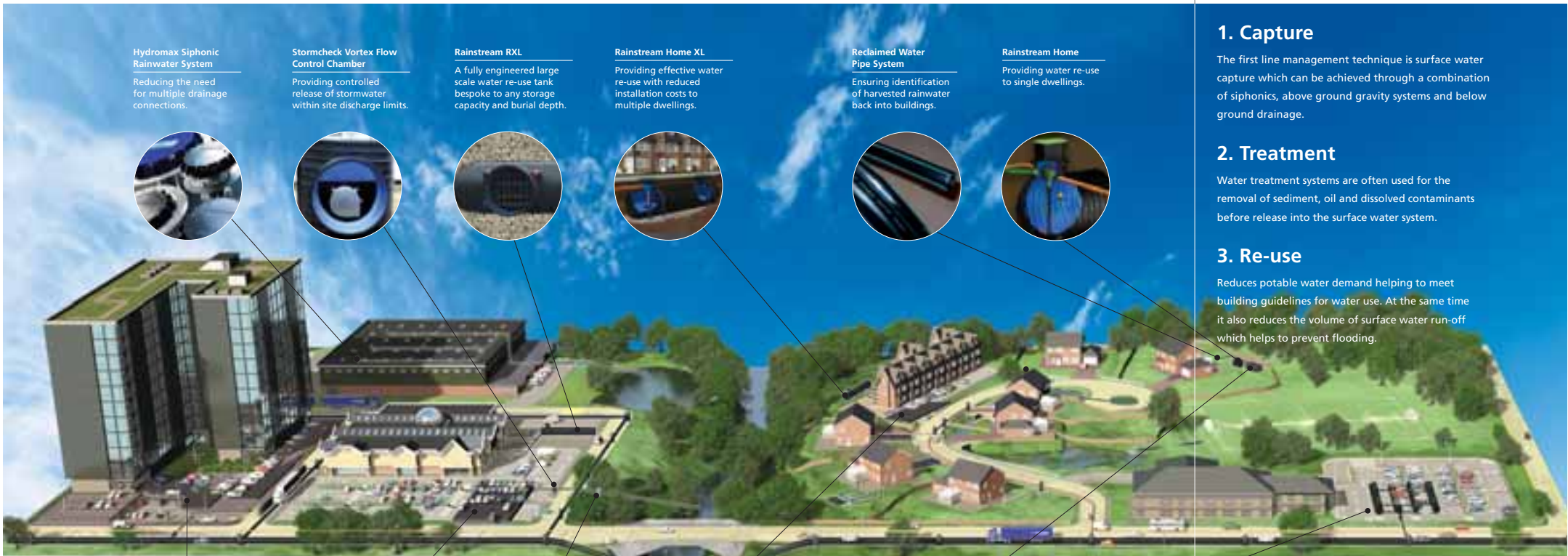


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# Holistic Water Management Solutions from Roof to River

Taken as a whole, modern building regulations can be broken down into a number of steps to achieve best practice in water management, as shown below.



**Hydromax Siphonic Rainwater System**  
Reducing the need for multiple drainage connections.

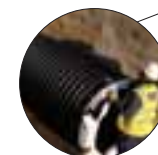
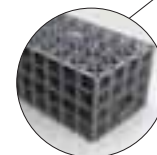
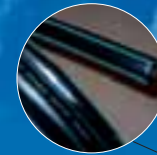
**Stormcheck Vortex Flow Control Chamber**  
Providing controlled release of stormwater within site discharge limits.

**Rainstream RXL**  
A fully engineered large scale water re-use tank bespoke to any storage capacity and burial depth.

**Rainstream Home XL**  
Providing effective water re-use with reduced installation costs to multiple dwellings.

**Reclaimed Water Pipe System**  
Ensuring identification of harvested rainwater back into buildings.

**Rainstream Home**  
Providing water re-use to single dwellings.



**Permavoid Podium Deck**  
Modular cell system for the storage, control and treatment of water at roof level in green roofs and podium deck applications.

**Polystorm for Attenuation**  
For the collection and attenuation of stormwater including medium, heavy and light loading variants allowing hybrid solutions.

**Storm-X4**  
Advanced 4 stage water treatment system removing sediments, oil and dissolved contaminants.

**Permavoid Modular Cell System**  
Unique sub-base replacement system tested for managing surface water at shallow depths, ideal for high water table environments.

**Polystorm for Soakaway**  
Modular cell system providing standalone soakaway solutions with a 95% void ratio.

**Ridgistorm-XL**  
Engineered pipe solution for large scale attenuation schemes providing bespoke profile strength and stiffness.

## 1. Capture

The first line management technique is surface water capture which can be achieved through a combination of siphonics, above ground gravity systems and below ground drainage.

## 2. Treatment

Water treatment systems are often used for the removal of sediment, oil and dissolved contaminants before release into the surface water system.

## 3. Re-use

Reduces potable water demand helping to meet building guidelines for water use. At the same time it also reduces the volume of surface water run-off which helps to prevent flooding.

## 4. Soakaway/Infiltration

Where possible water that cannot be re-used can be replaced back into the ground, further reducing the volume of run-off and recharging depleted ground water sources.

## 5. Attenuation

Where ground conditions are not suitable for infiltration, attenuation of peak surface water flow should be considered to reduce flood risk.

## 6. Drainage to sewers

Only when all of the above methods are impractical should water be drained directly to existing surface water sewer networks.

# Making space for water

## Residential developments

In residential projects, the need to balance the provision of land for housing, land for public amenities and land to encourage bio-diversity provides a real challenge.

By using Polypipe's engineered water management solutions in conjunction with 'soft' SUDS techniques, developers can maximise the amount of land available to avoid compromising on any of these three critical considerations. The result is a responsible and sustainable development that makes space for water meeting the functional and ecological needs of the site and its residents, today and many years into the future.

1. Carefully combined engineered and soft SUDS allow a holistic approach to land use and water management that enhances amenity space and the natural environment encouraging bio-diversity.



- A Storm-X4 intercepts and treats water before it goes into the pond helping water quality and improving bio-diversity
- B Ponds capture and retain water allowing some to evaporate reducing run-off volume and providing first stage attenuation
- C Sub-surface Polystorm attenuation tanks reduce the area required for open water providing additional space for amenities such as recreation or landscaping without encroaching on buildable land
- D Stormcheck flow control units prevent water run-off from creating downstream flooding and drives attenuation back into the pond via the Polystorm system

2. Rainstream rainwater harvesting systems capture water at source and can either store it for re-use or discharge to a soakaway. Using the system increases credits awarded under The Code for Sustainable Homes and reduces the need for swales or ponds to be developed close to family homes.



- A High volume storage of filtered rainwater captured at source
- B Re-using captured water in the home reduces the water run-off from the development
- C Combining the rainwater harvesting system with a soakaway or below ground attenuation solution dramatically reduces the amount of land required to store water above ground
- D Reduces the need for swales or ponds near to homes while also helping to cut homeowners' water bills.

3. Polypipe's systems help developers create hard standing areas for parking amenities while still utilising the full potential of the land in front of each home for SUDS.

- A Permeable paving solutions prevent rainwater running straight off driveways providing treatment and source control via attenuation or soakaway
- B Enables Developers to provide front of house parking whilst still treating and managing water run-off
- C Permavoid attenuation tanks under driveways allows for slow release to drains, ponds or swales
- D Grassed and planted areas arrest any additional run-off and encourage infiltration and treatment by silt removal



# Making space for water

## Commercial developments

Mixing engineered and soft SUDS in commercial projects provides developers with the means to increase the amount of land available for vital amenities such as car parking, while broadening the scope for the landscaping and green areas to encourage bio-diversity.

1. Sub-surface water capture and storage structures provide an efficient way of managing run-off from roof drainage systems to make large areas of land available for car parking or development for other use.



- A Rain gardens provide attenuation whilst allowing water collection, treatment and landscaping
- B Perforated Ridgidrain pipes wrapped in Permafilter treatment textile are laid within the rain garden which will collect water, remove oil and silt enabling sub-surface filtration
- C Run-off can be piped into an attenuation system, such as Polystorm, which can be designed and engineered for any storage capacity to suit your particular application

2. Ponds, swales and other soft SUDS features mimic the natural flows of undeveloped land while providing a pleasant working environment and encouraging bio-diversity.

- A You will improve water quality when you install a Storm-X4 into your scheme as it removes impurities which in turn encourages bio-diversity and plant activity
- B The system dramatically improves the quality of surface water run-off entering the water course aiding compliance with the Water Framework Directive



3. Podium decks used in green roof applications help absorb and contain rainwater at source reducing run-off. They create additional useable areas that can be developed for leisure or commercial applications such as café or restaurant terracing.

- A The system collects water at source and reduces the need to dig below ground by storing and controlling water in the deck
- B Permavoid podium deck water capture system provide non-potable water which can be used for irrigation, vehicle washing or toilet flushing and as it is gravity fed there is no need for pumps
- C The Permavoid system can support landscaping to create a natural environment and encourage bio-diversity



4. Green roofs use an otherwise unused surface to create plant and animal bio-diversity, improve air quality in the immediate area and slow run-off by trapping water in soil and allowing it to be absorbed through root systems.

- A Vegetation traps airborne particles and pollution to improve local air quality
- B Plants and flowers encourage bio-diversity by attracting insects and birds
- C Natural insulation properties prevent heat loss and solar gain, saving on energy used by building heating and cooling systems

Permavoid modular cells can be used at roof level to support a green roof system providing water management at source, the captured water can also be recycled.

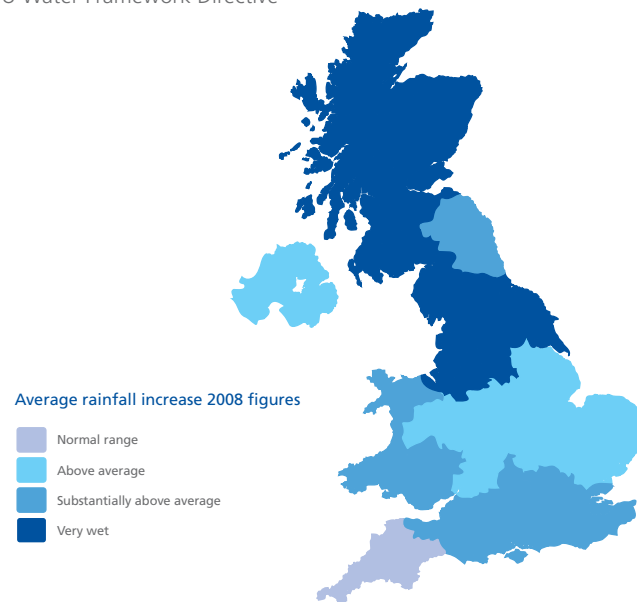


# Surface water treatment & legislation

In recent years, climate change and flooding have driven a major overhaul of planning policy with much greater emphasis being placed on controlling surface water run-off, requiring planners, developers and contractors to give greater consideration to the management of water.

The main regulations affecting planning law are:

- Flood and Water Management Act 2010
- Planning Policy Statement 25: Development and Flood Risk
- Building Regulations Approved Document H
- EU Water Framework Directive



## Flood & Water Management Act 2010

The Flood and Water Management Act 2010 sets out a more joined-up approach to flood risk prevention and management and has been developed to implement the majority of the recommendations set out in the Pitt Review following the floods of 2007. It gives DEFRA a responsibility for establishing national standards for sustainable drainage and local authorities the lead role in managing local flood risk, as well as the responsibility for adopting and maintaining sustainable drainage schemes. This will then enable the Environment Agency to adopt a strategic overview role for all forms of flood risk, including groundwater and surface water.

## Planning Policy Statement 25: Development and Flood Risk

This sets out Government policy on flood risks associated with development. It aims to make flooding a central consideration of the planning process, so that only appropriate development is undertaken in areas at risk, with that risk limited as far as possible.

(PPS:25 covers England, the equivalent guidance is provided in Technical Advice Note 15: Development and Flood Risk for Wales and Planning Advice Note 61: Planning and Sustainable Urban Drainage Systems for Scotland).

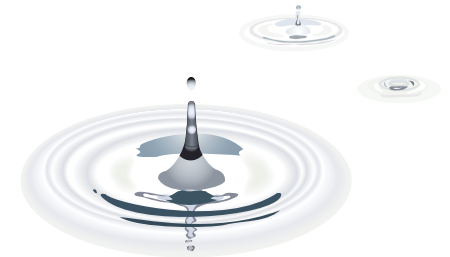
For full detailed explanations please visit:  
[www.polypipe.com/wms/legislative-guidance](http://www.polypipe.com/wms/legislative-guidance)

## Building Regulations

The Building Regulations Approved Document H3, Rainwater Drainage, establishes a hierarchy of drainage requirements detailing the preferred method of rainwater disposal.

## EU Water Framework Directive

The far-reaching EU Water Framework Directive was introduced in 2000 and gives member states until 2015 to achieve a good chemical and ecological status for inland and coastal waters. Its aim is to reduce groundwater pollution, in particular by removing sediment, fuel, oil and other 'priority hazardous' substances in order to protect wetlands and other aquatic ecosystems.



# Water Management & The Code for Sustainable Homes

The Code for Sustainable Homes is a set of standards and guidelines that have been established to help homebuilders improve the sustainability of the houses they build in key categories. It rates homes for their performance in each category, from Level 1 (entry level) to Level 6 (the highest).

The Code covers 9 areas	
1.	Energy and CO <sup>2</sup> Emissions
2.	<b>Water</b>
3.	Materials
4.	<b>Surface Water Run-off</b>
5.	Waste
6.	Pollution
7.	Health and Wellbeing
8.	Management
9.	Ecology

A Code Level is achieved by first reaching a set of mandatory minimum standards then gaining credits in the areas stated above and finally converting the credits to points and an overall Code score.



Two of the mandatory categories within the Code are Water and Surface Water Run-off.

## Surface water run-off (SUR 1)

As more and more land is given over to residential development, the total area of paved surfaces in the UK is increasing, while its capacity to absorb rainfall and surface water is reduced.

For this reason, The Code requires developers to reduce and delay discharge of surface water into public sewers through infiltration and a range of other SUDS techniques. Two of its key criteria are that any additional volume of run-off should be prevented from leaving its source or where this requirement can not be satisfied must be reduced to a limited discharge to prevent flooding.

As SUR 1 is mandatory, failure to comply means a zero rated Code certificate. Credits against SUR 1 are gained by ensuring there is no discharge to watercourses of the first 5mm of rainfall and for providing an appropriate level of treatment of surface water.

To achieve this, Polypipe offers a range of solutions including permeable paving, attenuation/soakaway systems and water re-use products.

## Water usage

In the Water sub-category, **Wat 1: Indoor Water Use**, the aim is to reduce the internal potable water used. Credits are awarded according to the predicted average household water consumption.

Water has the highest credit value in The Code, with 1.5 points for each credit gained. It also has three mandatory threshold levels which have to be achieved in order to satisfy The Code requirements. There are up to 5 credits available (see table below).

WATER CONSUMPTION (LITRES PER PERSON/DAY)	CREDITS	MANDATORY LEVELS
≤ 105 l/p/day	3	Levels 3 & 4
≤ 90 l/p/day	4	
≤ 80 l/p/day	5	Levels 5 & 6

**Wat 2: External Water Use** aims to use rainwater for irrigation and other external uses such as washing cars and bikes. 1 credit is available for providing a water collection system to supply external uses with rainwater. Polypipe Rainstream Rainwater Harvesting Systems aid compliance with WAT 1 and WAT 2 of the Code.



## Water capture

Water capture and storage is a critical element in any water management solution. This first line management technique can be achieved through a combination of siphonic roof drainage, above ground gravity systems and below ground drainage.

Polypipe have a number of systems and solutions allowing for the effective capture of surface water prior to control and treatment.



## Polypipe products for water capture solutions

### Hydromax siphonic drainage system

An advanced siphonic drainage system that provides rapid and highly efficient removal of water from roof surfaces. Using a naturally induced siphonic process, HydroMax literally 'sucks' water away, creating a flow capacity up to ten times greater than an equivalent gravity-fed system. Unlike conventional downpipes, HydroMax pipes require no air core at their centre, allowing much larger volumes of water to be dispersed through a smaller pipe diameter.

### Gravity rainwater

A fully integrated system of gutter and downpipe assemblies, including all the fittings and accessories needed for easy installation, Polypipe Rainwater offers a choice of gutter profiles in robust PVCu to help you achieve your performance and design objectives, no matter what the project. It features captive seals for performance and security, plus a combination clipping system and dry jointed downpipe spigot sockets for ease of installation.

### EN 1401 below ground drainage

Polypipe provides a full range of EN 1401 plastic drainage pipes, fittings and chambers for residential and commercial developments. Their major advantage is the simplicity they bring to the whole process; by stipulating BS EN1401, you are automatically choosing a product that is tried and tested in all conditions and is guaranteed to be compatible with all other manufacturers' equivalent BS EN1401 pipe.

### Polysewer/Ridgisewer

Polypipe offer the largest range of structured wall pipes and fittings for use in adoptable sewers with sizes ranging from 150mm to 600mm diameter.

### Ridgidrain

Ridgidrain is the industry's most respected, non-adoptable surface water drainage brand, which utilises up to 100% recycled polyethylene - the perfect blend of technology and sustainability. Sizes from 100mm to 600mm.



# Water treatment

Planning regulations already make clear requirements for the provision of attenuation and source control solutions to help prevent flooding on newly developed land.

Now, under the requirements of legislation such as the EU Water Framework Directive and the proposed national build standards for SUDS, developers are facing new challenges to integrate systems that intercept pollution, often as close to source as possible, which helps raise the overall quality of surface water discharged into the environment.

## Silt Traps

Located between attenuation systems and soakaways or watercourses, silt traps isolate heavier particles such as silt, grit and organic material by filtration and settlement.

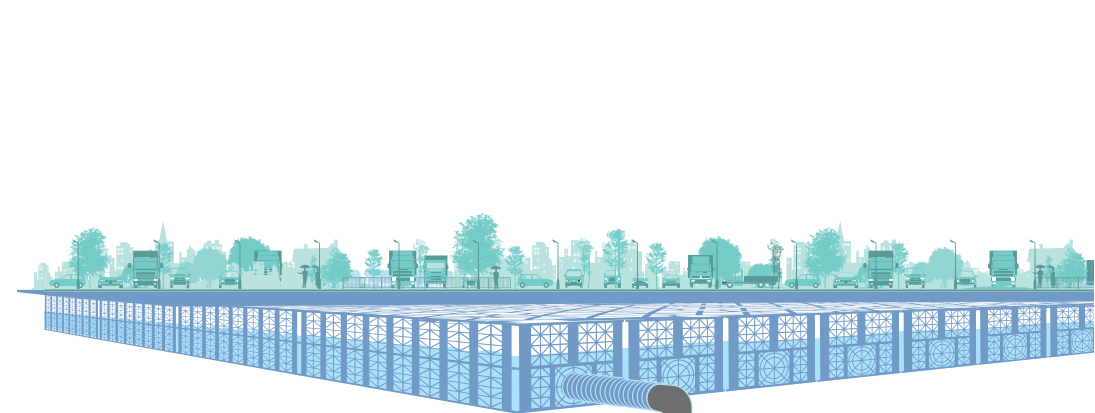
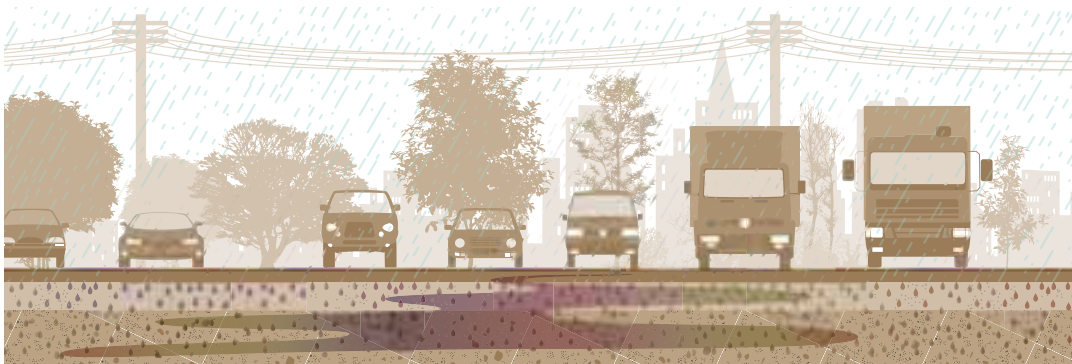
## Ridgitreat

Ridgitreat has a semi-permeable continuous membrane wrapped around perforated pipework. Trapping and digesting oil deposits providing a retention performance of up to 600ml of oil per square metre.

## Permafilter

Permafilter is a self-cleaning geotextile membrane that traps pollutants while allowing clean water to pass through its needle-punched surface. It can be used to wrap Polystorm tank structures in soakaway applications, creating a habitat for the micro-organisms that feed on trapped oil and remove pollutants through natural digestion.

*Note: Permafilter forms part of the Permavoid System which also includes Permachannel and Biomat treatment solutions. Please see page 28.*

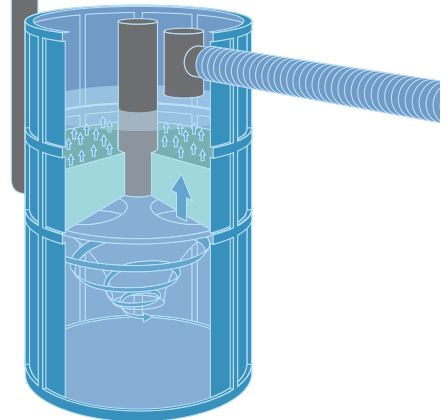


## Storm-X4

The use of the Storm-X4 advanced four stage filtration system can dramatically improve the quality of the surface water entering the receiving water course, improving biodiversity and aiding with compliance of the Water Framework Directive.

Storm-X4 utilises a four-stage upward filtration process to separate and remove silt, oil, phosphorus and heavy metal pollutants such as copper and zinc from surface water run-off. It allows water to be treated and cleaned even before it has left the local area in an efficient and compliant source control solution.

A highly effective oil retention unit makes Storm-X4 the ideal 'front line' defence for run-off from roads, car parks and forecourts, where hydrocarbon pollutants are at their most concentrated. Storm-X4 is a Code for Sustainable Homes compliant device for improving the quality of water discharged and its use helps to gain credits under Sur 1.



Polypipe water treatment products can be combined to form progressively more efficient solutions for intercepting pollutants in attenuation and soakaway systems, depending on the levels of pollution expected:

<b>Level 1 Treatment</b>	Silt removal, collection and separation using silt traps.
<b>Level 2 Treatment</b>	Silt and oil interception using advanced treatment textiles such as Ridgitreat and Permafilter.
<b>Level 3 Treatment</b>	All the above, plus removal of dissolved pollutants with Storm-X4.

# Water re-use

With average UK annual temperatures predicted to rise by up to 3.5°C over the next 70 years, climate change is already driving the need for innovative solutions to manage rainfall and surface water.

Changing rainfall patterns are likely to result in wetter winters and drier summers, in addition the average person in England and Wales now uses 150 litres of water every day - almost 50% more than 25 years ago.



The high population densities in areas such as South East England mean that there is even less water available for each person. Rainwater re-use solutions offer a way to address this increasingly important issue by collecting and recycling rainwater, rather than simply allowing it to drain away. Rainwater re-use also helps to reduce the volume of surface water run-off which helps to prevent flooding.

## Rainstream RXL System

Polypipe's Rainstream RXL system provides an effective and versatile way to harness rainfall for use in a whole range of non-potable applications. Consisting of a below ground, structured wall tank into which run-off from the roof area is stored, the system can dramatically reduce mains water consumption by up to 80% in commercial buildings. Rainstream RXL provides water for use in toilet/urinal flushing, vehicle washdown areas, commercial laundries and irrigation of landscaped areas.






Rainstream RXL is a bespoke, fully engineered product, based on the same proven technology as our Ridgiform-XL large diameter pipe range. The result is a tank of exceptional stiffness and integrity that can be transported quickly and efficiently in modular units, assembled on-site and installed more easily than conventional GRP tanks. The unique nature of the tank construction means that it can be installed without the need for a concrete surround, or the need to fill the tank with mains water to weigh it down during installation.



## Rainstream RXL Biomaster® Anti-microbial Technology

Rainstream RXL incorporates an anti-bacterial lining that resists the development of bacterial colonies on the tank wall. This helps reduce the risk of contamination from micro-organisms and helps to maintain water quality.

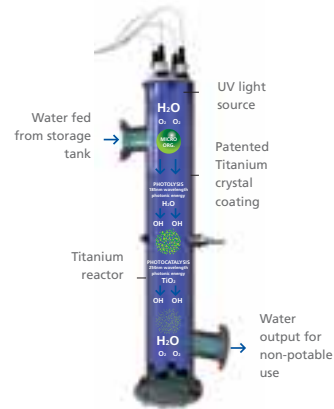
-  Biomaster binds to the cell wall; preventing growth.
-  The Biomaster ions interrupt enzyme production; stopping the cells from producing energy.
-  Biomaster interrupts the cells DNA; preventing replication.



# Water re-use

## Rainstream Advanced Control Unit (ACU)

The Rainstream ACU offers a simple and effective solution for the control of rainwater distribution. A sophisticated control unit monitors water levels within the tank and pipework and automatically matches supply to demand. Featuring an integral break tank with mains water top up and intelligent pump control, in a single unit, the Rainstream ACU saves space in the plant room by eliminating the need for separate break tanks and booster sets. It also minimises the volume of mains water required in dry periods.



The disinfection process

## Rainstream Titanium Disinfection

Polypipe's Rainstream Titanium Disinfection system improves the quality of water in rainwater harvesting and re-use systems through a combination of ultra violet light and titanium dioxide technology. It provides a sustainable, non-chemical alternative to chlorine dioxide.

## Filters within chambers

Sediment and leaf filters can be provided within pre-fabricated chambers and delivered to site ready to install. Filtering to a level of 50m improves water quality and reduces the build up of silt within the system.

## Low invert drop leaf filters

In situations where the existing drain run dictates the invert level, low invert drop filters may need to be considered. We are unique in our ability to offer bespoke low invert drop filters within a pre-fabricated chamber. Designed to exact customer specifications the low invert drop filters and chambers allow a minimum head loss of only 66mm, enabling connection to an existing drain run.



Filter within a chamber



Low invert drop leaf filters

Reducing domestic water consumption by as much as 50%, rainwater harvesting satisfies The Code for Sustainable Homes requirements for levels 5-6 in the WAT category and contributes a full 9% of the total credits available in a 'whole house' rating.

In addition, it helps satisfy Code criteria for reduced surface water run-off volume by collecting and storing rainwater where it falls rather than allowing it to enter watercourses.



## Rainstream Home

Rainstream Home offers a rainwater re-use solution for the home and garden. Comprising of a robust one piece rotomoulded tank with single turret, housing leaf filter, overflow and calmed inlet; with storage capacities ranging from 2,000lts to 10,000lts and a wall mounted 'pump-pack' to complete the system.

## Rainstream Home XL

Rainstream Home XL offers multiple dwellings a rainwater re-use solution for home and garden use. Where deeper burial depths are required (often a characteristic of communal storage systems) this structured wall tank is capable of withstanding water pressure up to 6m burial depths or 0.6 bar.

# Soakaway

Soakaway systems use the natural infiltration properties of subsoil to reintroduce water into the environment at a rate and volume that won't saturate or flood surrounding land.



Where ground conditions permit, they represent an effective and reliable water management technique, retaining surface water on-site, recharging ground water sources and providing treatment as water percolates through the natural soil.

## Polypipe products for soakaway solutions

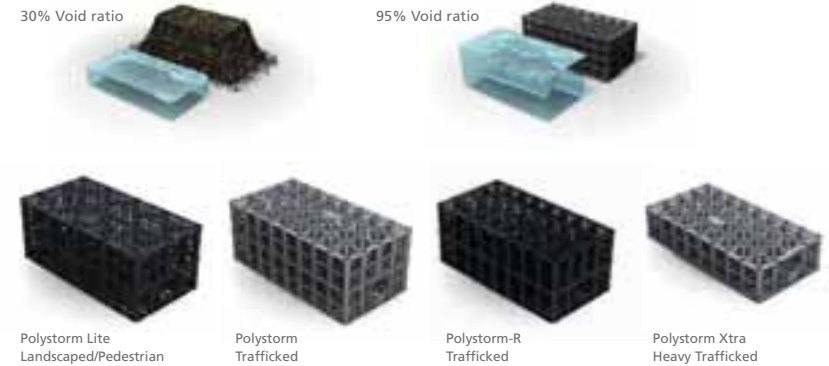
### Pipe Soakaway

Perforated drainage pipes improve on the infiltration performance of traditional, stone-filled soakaway trenches or pits by increasing water volumes and providing more consistent water release rates. They can be laid horizontally along verges and in fields, or vertically in boreholes if the required sub-surface area is unavailable. All Polypipe soakaway pipe products can be laid quickly and easily and are suitable for use under all load conditions.

### Polystorm Modular Soakaway

Polystorm is a family of high strength but light in weight modular cell units that can be combined to form a water containment space. Their 95% void ratio combined with their highly permeable surface area make for an incredibly efficient soakaway solution. Polystorm storage units are able to typically store 3 times the amount of water than the equivalent volume of gravel.

*Note: For shallow depth source control and soakaway please see our Permavoid System on page 28.*

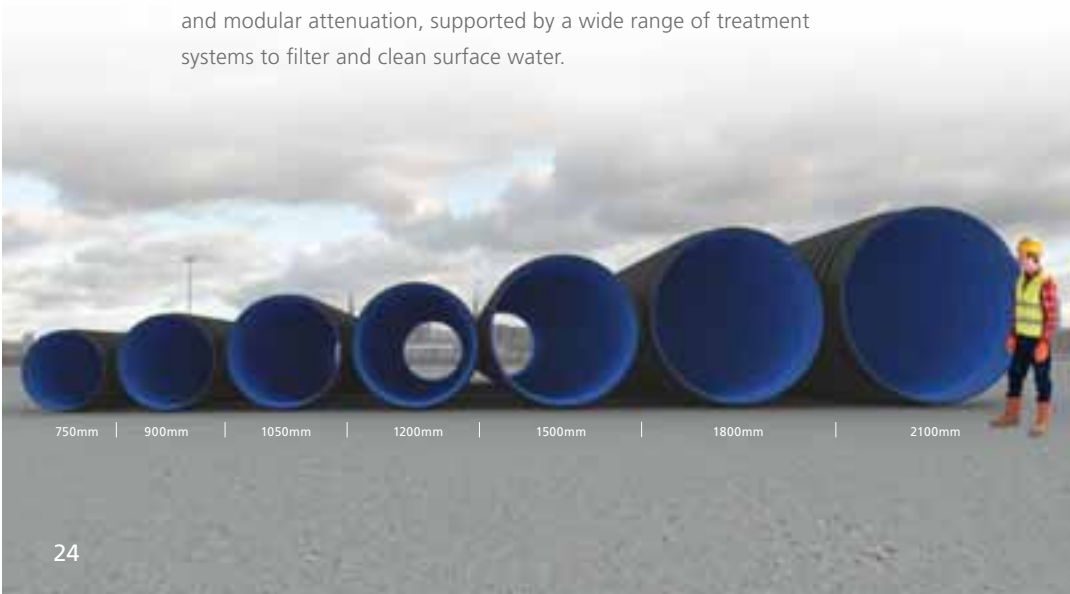


# Pipe attenuation

Attenuation is the process of capturing surface water then storing and releasing it at a controlled rate into drains, sewers and watercourses thereby reducing the risk of flooding from major storm events.



Techniques for attenuation fall into two categories: pipe and modular systems. Polypipe offer market-leading solutions comprising of both pipe and modular attenuation, supported by a wide range of treatment systems to filter and clean surface water.



Ridgistorm-XL - A selection of pipe profiles



**PR profile:** Pipes produced with a PR profile achieve high stiffness with relatively low weight. This is a common pipe profile for use in sewer and surface water attenuation applications.

**Olympia profile:** In addition to the PR profile, the Olympia profile option can achieve greater pipeline stiffness with a comparatively low weight. Olympia is used on the larger pipe diameters.

**SQ profile:** This profile option has a smooth inner and outer surface. High stiffness is achieved through the SQ profile, making it ideal for extremely high loads.

## Ridgistorm-XL

Polypipe's largest diameter plastic pipe can be used to form a robust underground storage tank which can be engineered and tailored with the appropriate strength and stiffness to exact project specifications. It combines exceptional performance with a flexibility that allows it to adapt under settlement and traffic loads without loss of structural integrity. By analysing the site conditions and installation parameters, our design engineers can create a solution with the appropriate profile strength and a stiffness that is neither over nor under engineered. When dealing with small flows Ridgistorm-XL can be provided with a built-in integral low flow channel.



## Unique patented electro-fusion jointing

Ridgistorm-XL is the only large diameter plastic pipe solution with integrated electro-fusion jointing, effectively welding the pipes together to provide a leak-tight joint. Where electro-fusion jointing is not appropriate other jointing methods are available.



# Modular attenuation

Every site is unique, different ground conditions, planning requirements and design considerations will have an influence on the sustainable drainage system selected.



The Polystorm family of modular cell solutions are flexible enough for any situation. Whether trafficked or non-trafficked, deep or shallow excavation there is a solution to suit every site constraint.

With land space at a premium as a result of the pressures on housebuilders to increase the number of units per hectare, Polystorm has the flexibility to squeeze into the tightest spots.



## Polystorm

The Polystorm range of modular cell systems are designed with a 95% void ratio to retain large volumes of water run-off. The modular cells can be built up to form a structure of any shape or size making them ideal for narrow strips or restricted areas. The modular cells have unique rounded corners which enables ease of handling and reduces the likelihood of punctures to membranes. The range spans from 20 tonnes/m<sup>2</sup> up to 80 tonnes/m<sup>2</sup> load bearing capacity and can be designed for both trafficked and non-trafficked areas. At the end of their useful life the modular cells are fully recyclable.

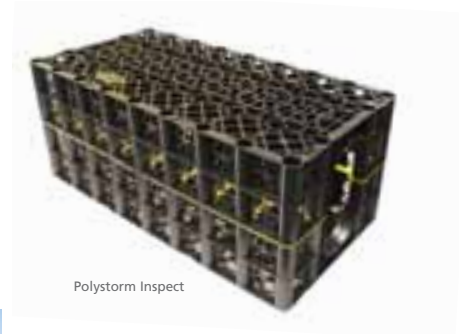
## Polystorm-R

Polystorm-R is manufactured from up to 100% recycled polypropylene, and provides the same levels of performance as Polystorm. The perfect blend of technology and sustainability.

## NEW Polystorm Access and Inspect

Polystorm Access and Inspect can be designed into all Polystorm Modular Cell schemes and allows for visual inspection and facilitates maintenance.

*Note: For shallow depth source control and attenuation please see our Permavoid System on page 28.*



Polystorm Inspect



## Stormcheck Vortex Flow Control

One of the key aims of SUDS regulations is to ensure run-off rates from developed areas match those of the original, undeveloped site. The Stormcheck vortex flow control system offers a way to regulate run-off rates by controlling how quickly water is released into rivers and streams.

## Permavoid shallow depth solutions

Permavoid is a geocellular system designed to provide shallow water storage for attenuation or infiltration, within a pavement structure. Permavoid is designed and tested to be used in place of a traditional sub-base, improving reliability and shallow storage volumes.



Its unique jointing mechanism means it has exceptional strength, providing an interlocking 'raft' that will support structural loads across the most heavily trafficked areas. Permavoid can be used directly below porous Infiltra block paving and drain asphalt surfaces as a source control technique, or below impermeable top surfaces in conjunction with a water treatment system such as Permachannel.

### Permavoid Biomat for additional oil retention

Permavoid Biomat provides floating pollution control consisting of a low density, high strength buoyant plastic grid that traps and retains any residual or emulsified oils. It also provides a habitat for microbes that digest and breakdown oil deposits.



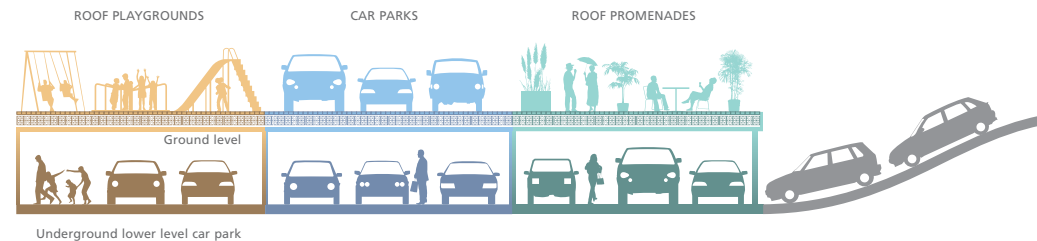
### Permachannel

A proven source control collection system that also acts as a silt and oil interceptor and treatment solution. Designed to be laid with little or no gradient to still run-off and encourage silt deposition within the channel. A weir and baffle outlet prevents silt deposits entering the rest of the SUDS system.



## Permavoid podium deck

The Permavoid Podium Deck solution is a light in weight, modular water management system providing drainage, attenuation, water treatment and water harvesting within a slender, watertight deck construction.



### A more sustainable option

The Permavoid Podium Deck water management system provides an ideal first stage source control sustainable drainage component that can be easily integrated into the overall SUDS design. This can significantly enhance the sustainability of a project by allowing harvested rainwater to be used for the irrigation of green areas or toilet flushing without the need for pumping.

The system reduces the dependence on air conditioning by taking advantage of the cooling properties of attenuated water and reduces run-off and flood risk. An added benefit is that the system will effectively treat pollutants from contaminated water run-off through the use of filtration, including Permafilter Geotextile and Permavoid Biomat.

The water storage capacity afforded by the system means that there is no need for drainage outlets to be taken through the deck, water can be taken to the edge of the slab where rainwater down pipe connections are easy to make.



## Pipe away



Sustainable drainage systems are an alternative to the traditional approach, however when direct drainage of surface water to existing sewer systems and watercourses is the only solution, Polypipe offer a complete range of methods for managing surface water from source to outfall.

### Ridgidrain

Ridgidrain is the industry's most respected, non-adoptable surface water drainage brand, which utilises up to 100% recycled polyethylene - the perfect blend of technology and sustainability in sizes from 100mm to 600mm.

### Ridgistorm-XL

Our largest diameter plastic pipe for surface water management can be value engineered to a precise profile strength and pipe stiffness, and combines exceptional performance with a flexibility that allows it to adapt under settlement and surface traffic loads without loss of structural integrity.

### Polysewer/Ridgisewer

Polypipe offer the largest range of structured wall pipes and fittings for use in adoptable surface water sewers with sizes ranging from 150mm to 600mm diameter.

### EN 1401 below ground drainage

Polypipe provides a full range of EN 1401 plastic drainage pipes, fittings and chambers for residential and commercial development.

## Manholes, Catchpits & Fabrication Services

### Manholes and Catchpits

The Polypipe range of manholes and catchpits offers one of the widest choices of structured wall products available to the specifier and developer. Manufactured in high strength polyethylene with stiffness well in excess of other plastic products, it includes couplings, seals, bends, junctions and specialist fabrications that allow it to connect to Ridgidrain, Ridgisewer and Polysewer structures for a completely integrated solution.

### Bespoke fabrication facility/ off-site construction

Polypipe is the only UK manufacturer to operate an end-to-end, in-house fabrication service to its customers, offering you all the benefits of a made to measure solution which arrives on-site ready to install. It means your water management system will be a truly bespoke one, designed and pre-fabricated according to the precise requirements and conditions of your site and its desired performance. In addition, it allows our designers and engineers to plan for any unorthodox or problematic site conditions. So you won't have to compromise with inappropriate or over engineered solutions.



# A specialist team of water management experts

Polypipe is the only manufacturer to offer holistic solutions covering the entire process of water management for commercial and domestic developments.

Crucial to the success of those solutions is the unrivalled experience, expertise and technical knowledge our specialist water management solutions team brings to every project across a full range of design and installation services.

## Value engineered

By designing and manufacturing a SUDS system to the specific requirements of each individual project, we are able to provide solutions that represent the very best performance and value for money. Precise value engineering means less waste, optimum efficiency and improved sustainability at every stage of the process.

## Planning

Changing legislation and ever more demanding planning processes all add to the workload for specifiers, designers and developers seeking approval for their commercial and residential projects. Our teams have the technical and regulatory knowledge to help you meet the broad range of demands needed for project approval, and will advise you at every stage on satisfying their requirements.

## Design

Polypipe provides an end-to-end water management solutions design advice service, drawing on our full range of in-house facilities and the in-depth knowledge of our expert designers, specialists and engineers.

All as part of an integrated process that feeds into our fabrication, installation and on-site support services to provide a truly holistic end result.

## UKAS accredited laboratories

The in-house Polypipe Research and Development facility is one of the best of its kind and includes the independent UKAS accredited Berry & Hayward laboratory. That gives us the body of knowledge and expertise needed to produce the most advanced range of water management solutions available to the construction industry.

## Technical and installation support

Right from your initial design consultation, your project couldn't be in safer or more experienced hands. Our full Project Co-ordination service will help you manage and prioritise your resources, and your dedicated Project Co-ordinator will oversee the delivery of components and services in line with your project timescales. At any stage of the project, you can call our technical helpline for a rapid response to all your enquiries on **01509 615100**.

Product Summary	WATER CAPTURE	TREATMENT	RE-USE	SOAKAWAY	ATTENUATE	PIPE AWAY	
HYDROMAX SIPHONIC RAINWATER SYSTEM	✓		✓				Roof level collection of high water volumes in commercial applications
STORM-X4 ADVANCED FILTRATION		✓	✓	✓	✓		4 stage surface water treatment for improving surface water quality before discharge
PERMAFILTER		✓		✓	✓		Self cleaning treatment geotextile membrane for use with cellular attenuation and soakaways
RIDGITREAT	✓	✓				✓	Perforated structured wall pipe wrapped in Permafilter ensuring water is treated during capture
RAINSTREAM PRE-TANK FILTERS		✓	✓				Pre-storage filtration of captured rainwater
RAINSTREAM TITANIUM DISINFECTION SYSTEM		✓	✓				Advanced oxidation treatment of rainwater before re-use
SILT TRAPS	✓	✓	✓	✓	✓	✓	Prevention of silt ingress into water management systems
PERMAVOID BIOMAT		✓		✓	✓		Retention of emulsified oils in Permavoid cellular applications used as part of a SUDS treatment train
RIDGISTORM-XL LARGE DIAMETER PIPING SYSTEM				✓	✓	✓	Large diameter piping system for drains and sewers which can incorporate a low flow channel
RIDGISTORM-XL MANHOLES	✓				✓	✓	Off-site constructed manhole improves site efficiency and safety
RIDGISTORM-XL CATCHPITS	✓			✓	✓	✓	Off-site construction improves site efficiency and safety and captures litter and debris. Some silt removal
RIDGIDRAIN	✓			✓		✓	Ridgidrain Structured wall drainage system for surface water made from recycled material to improve sustainability
RIDGISTORM-XL LARGE DIAMETER ATTENUATION SYSTEM					✓		Modular large diameter attenuation system for the management of surface water
POLYSTORM LITE MODULAR CELLS			✓	✓	✓		Modular geocellular storage solution for attenuation or soakaway of surface water in non trafficked applications
POLYSTORM MODULAR CELLS			✓	✓	✓		Modular geocellular storage solution for attenuation or soakaway applications
POLYSTORM-R			✓	✓	✓		Modular geocellular storage solution for attenuation or soakaway applications utilising recycled materials
POLYSTORM XTRA MODULAR CELLS			✓	✓	✓		Modular geocellular storage solution for attenuation or soakaway of surface water in heavy trafficked applications
POLYSTORM ACCESS AND INSPECT			✓	✓	✓		New inspection systems for use with Polystorm which allows visual inspection and facilitates maintenance
PERMAVOID GEOCELLULAR SYSTEM	✓	✓		✓	✓		Geocellular storage solution ideal for shallow management of surface water via porous surfaces as part of a pavement structure
PERMAVOID PODIUM DECK	✓	✓		✓	✓		Holistic modular geocellular solution for the management and treatment of surface water from deck structures
RAINSTREAM HOME			✓				Rainwater re-use system for the home and garden
RAINSTREAM HOME MULTI DWELLING SYSTEM			✓				Rainwater re-use system for multiple home and garden applications
RAINSTREAM RXL TANKS			✓				Commercial rainwater harvesting tank system requiring no concrete surround
EN1401 PVCu DRAINAGE PIPE	✓					✓	EN1401 PVCu drainage pipe for around the house drainage
RECLAIMED WATER PIPE			✓				Distribution of reclaimed water into buildings utilising colour coded and marked pipe
STORMCHECK CHAMBER					✓		Vortex control of site surface water discharge rates
RAINSTREAM ADVANCED CONTROL UNIT			✓				Control of commercial rainwater harvesting systems
RAINSTREAM CONTROL SYSTEMS			✓				Direct and Indirect control of rainwater harvesting systems for residential and commercial applications

KEY : ✓ PRIMARY APPLICATION    ✓ ADDITIONAL APPLICATIONS



# Literature

## Product Literature



Water Management Solutions Product & System Selector | Permavoid Modular Cell Systems | Permavoid Podium deck | WMS Residential Solutions | Stormwater Treatment Brochure | Code Compliance | Rainstream Rainwater Re-use | Above & Below Ground Drainage

## Solutions Literature



Carbon Efficient Solutions

## Technical Literature



Terrain Rainwater Technical Manual | Ridgstorm-XL Technical Guide | Polystorm & Polystorm Lite Technical Guide

All literature available at: [www.toolbox.polypipe.com](http://www.toolbox.polypipe.com)

# Polypipe enabling sustainable building technology

Polypipe provides plastic piping systems that enable the effective installation and performance of sustainable building technology, meeting the twin global challenges of carbon reduction and water management.

## CARBON EFFICIENT SOLUTIONS

### 'SUSTAINABLE INDOOR ENVIRONMENTS'

Ever stricter building regulations and ever more environmentally conscious customers are driving the demand for greener building products and technologies. Polypipe fulfils that demand with a full range of systems that enable collection, transmission, emission and control in heating, ventilation and cooling systems.

## WATER MANAGEMENT SOLUTIONS

### 'ROOF TO RIVER'

Offering a comprehensive range of standalone and modular SUDS products, rainwater harvesting and surface water treatment solutions plus legislative and technical support services, Polypipe's water management solutions team address the requirements of every construction and civil engineering project.



## Market Sector Literature

Additional market sector literature is available please visit [www.polypipe.com](http://www.polypipe.com) or contact the telephone numbers appearing under each brochure.



Residential  
01709 770000



Civils and Infrastructure  
01509 615100



Commercial  
01622 795200

All literature available at:  
[www.toolbox.polypipe.com](http://www.toolbox.polypipe.com)

# Sector Focus

Our product systems respond directly to sector-specific requirements thanks to focused technical and development teams with hands on expertise in the following areas:

## RESIDENTIAL

Polypipe offers the broadest range of residential product and service solutions for both new build and RMI applications, as well as innovative solutions in response to legislative and industry targets for more sustainable housing.

## CIVILS AND INFRASTRUCTURE

Delivering performance and sustainability, Polypipe's surface water drainage and cable management systems, supported by our in-house fabrications team, offer civils and infrastructure project planners a complete suite of solutions.

## COMMERCIAL

Major commercial projects from car parks and high rise office blocks to hospitals, educational premises and shopping centres have all benefited from Polypipe's range of value engineered products and comprehensive service support.

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## Water Management Solutions



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