

## Rainstream Home Systems



Rainwater harvesting solutions

# Rainstream Home Systems

Rainstream Home Systems have been created by Polypipe after intensive research and development to design robust and cost-effective rainwater harvesting systems for the UK domestic market.

Polypipe has more than 10 years experience in rainwater re-use and it's through our proven track record that we have been able to develop new systems specifically for the domestic market. The re-use of rainwater in the home can save owners up to 50% of their annual potable water usage.

## Why harvest rainwater?

- Population growth and rising consumption is increasing the demand for water
- Climate change is creating pressure to conserve water
- Legislation is enforcing the need to conserve water
- Higher water charges and water metering are predicted

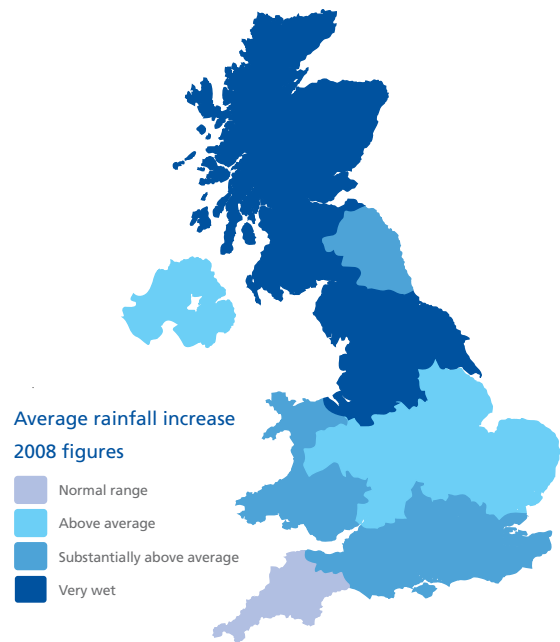


# Climate Change and the environment

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 the management of rainfall and surface water. Changing rainfall patterns are likely to lead to wetter winters and drier summers, sea levels are expected to rise and extreme weather events look set to become far more commonplace.

The average person in England and Wales now uses 150 litres of water every day - almost 50% more than 25 years ago. Washing and toilet flushing account for much of this figure, with drinking, cooking, car washing and garden watering also playing large parts. Yet while continental countries such as Italy and Spain enjoy water supply capacities of on average 2,785 m<sup>3</sup> per person, per year, England and Wales has a surprisingly low capacity of just 1,334 m<sup>3</sup> per person. The high population densities in areas such as South East England mean that there is even less water available to each person in these regions.

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. This not only reduces the demand for mains water for toilet flushing, laundry, vehicle washing and irrigation purposes, but also eases the potential for flooding which can be created when rainwater deposited by extreme storms is simply left to run to ground.



## Water management drivers

- Changing rainfall patterns; Fewer but more intense events
- Climate Change Act (2008); requirement to cut green house gas emissions by 80% below 1990 levels by 2050. 28% of UK Carbon Emissions are from housing.
- Construction Industry targets: Code for Sustainable Home & BREEAM (see page 14 for details)
- Building Regulations; Approved Document H
- Flood & Water Management Act (2010)



# Water Consumption



Toilet Flushing

Typical non-potable water consumption such as toilet flushing, clothes washing and garden watering make best use of rainwater re-use in turn providing significant savings for each household.



Personal Washing  
Baths and Basins



Showers



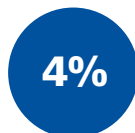
Washing  
dishes



Garden use and  
vehicle washing



Clothes Washing

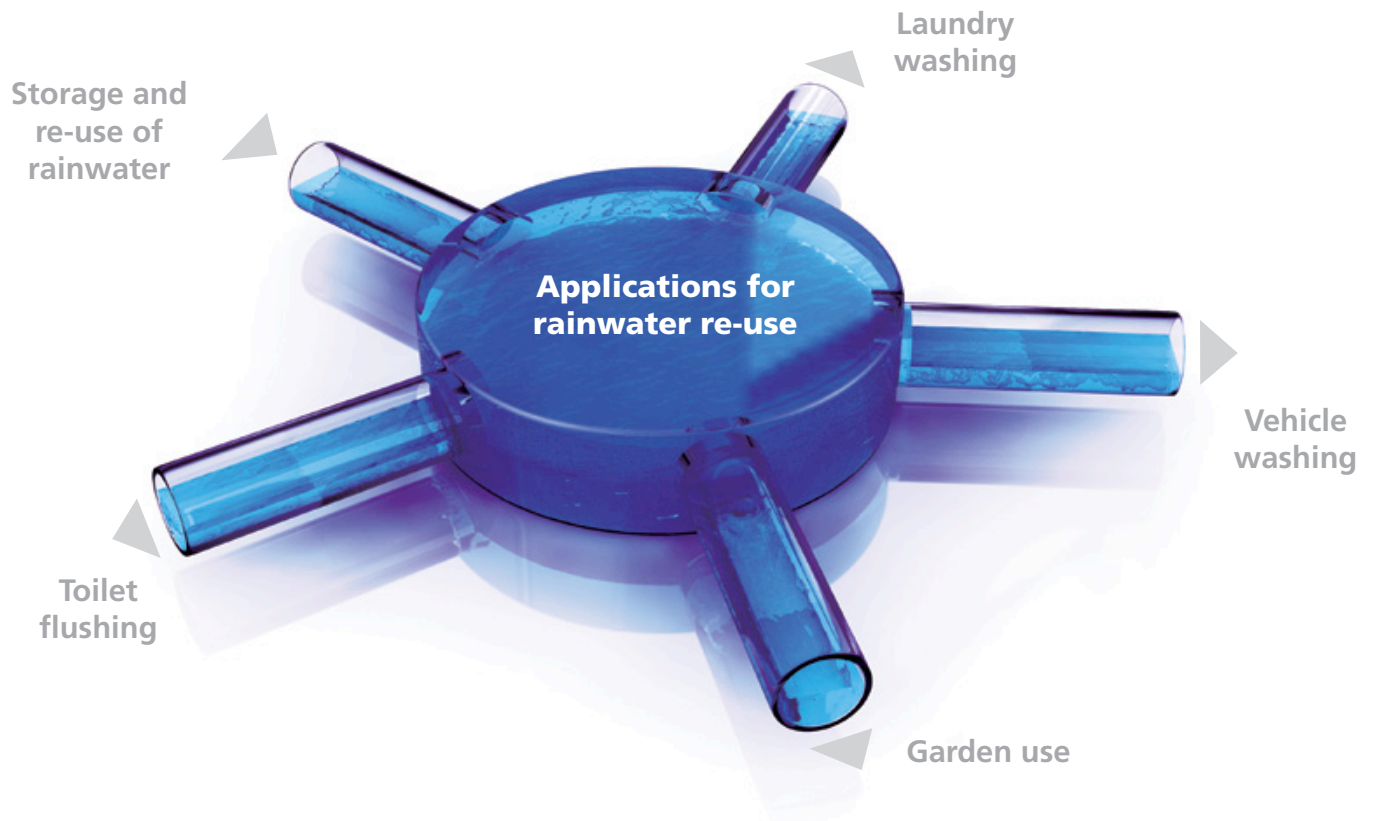


Drinking  
Water



Other

# Reducing Demand



## Toilet flushing

Rainwater is perfect for toilet flushing - the highest consumer of water in domestic buildings. Using rainwater for this purpose can cut mains water consumption by up to 30%. Polypipe Rainstream Home systems incorporate a mains water backup to maintain operation if sufficient rainwater is not available.

## Laundry washing

Although great efforts are made by equipment and detergent manufacturers to reduce the environmental impact of laundry washing, the actual water consumption is often overlooked. In addition rainwater is naturally 'soft' so washing machines are less susceptible to scaling and less detergent is needed.

## Car washing

Recycled rainwater can be used for washing cars. Again 'soft' rainwater requires less detergent and leaves a streak free finish.

## Garden use

Recycled rainwater is ideal for watering the garden with no dehydrating chlorine or salt content, rainwater will keep grass and plants watered and healthy.

## Water quality

Rainstream Home filters the stored rainwater to a level suitable for these non-potable applications in the home. Polypipe advises that the available water quality and intended use are carefully considered and a risk assessment completed where necessary. The company's technical team is always available to advise on such issues.



**30%** Flushing the toilet



**13%** Washing your clothes

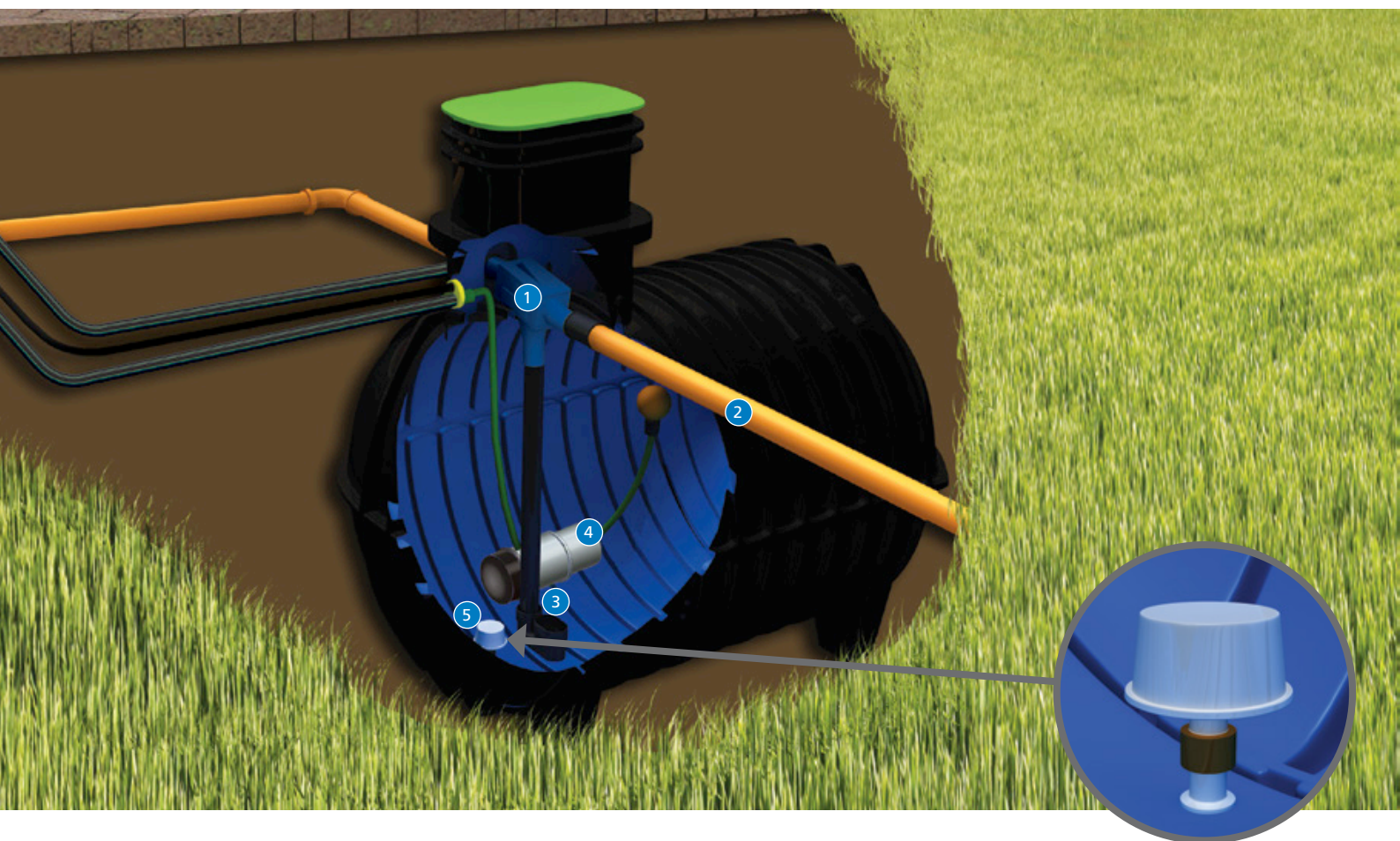


**7%** Garden use & washing the car

# Polypipe Rainwater Harvesting

Rainstream offers a rainwater harvesting solution for the home and garden. Comprising of a robust one piece rotomoulded tank made from PE plastic which makes it extremely durable and dimensionally stable. The tanks comprise of a single turret, housing leaf filter, overflow and calmed inlet with storage capacities ranging from 1,000lts to 10,000lts.

With the inclusion of ground water inlet valves the tank does not require a concrete surround or base in high water table areas, saving time and money during installation.

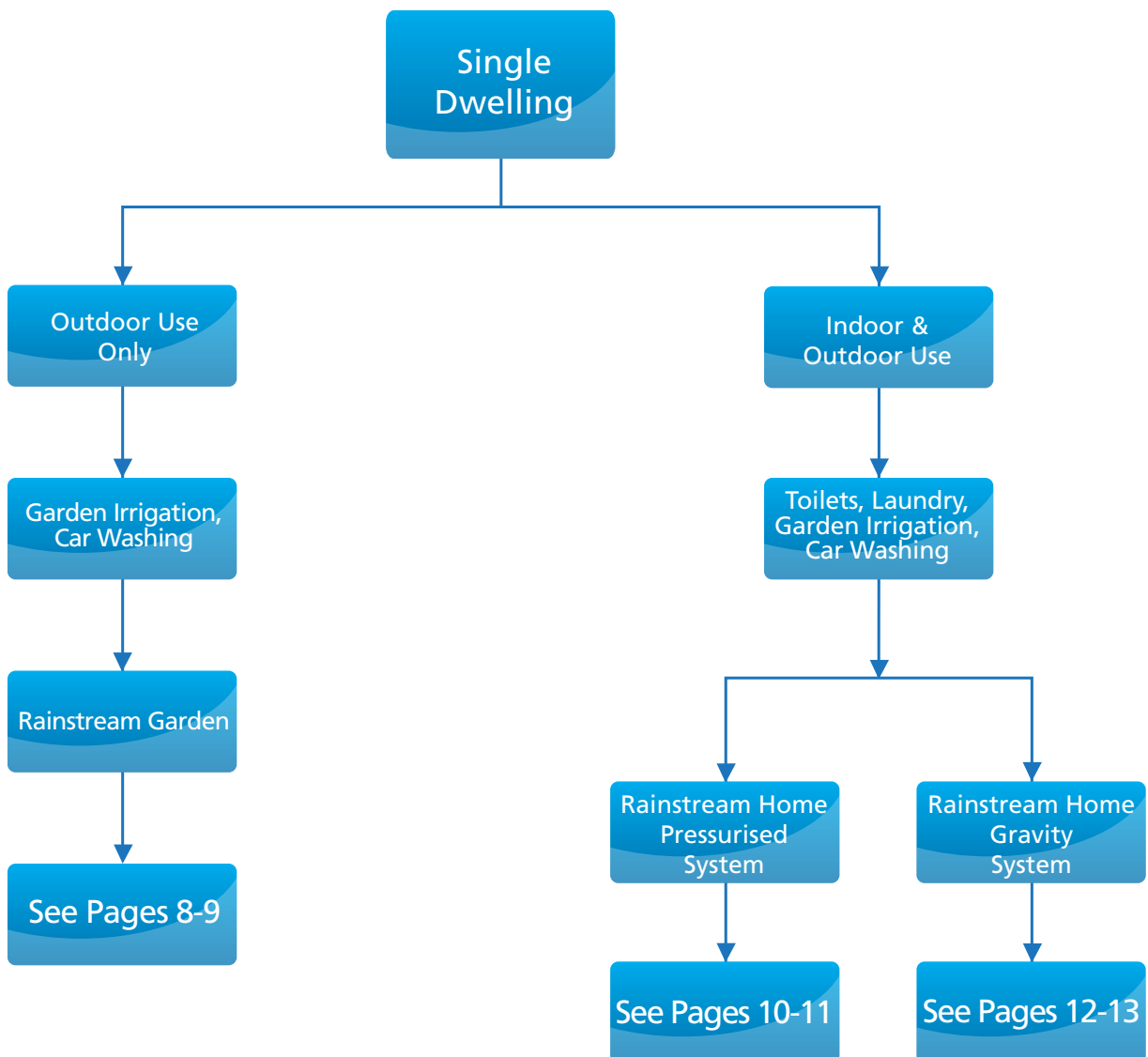


1. Internal self-cleaning leaf filter
2. Overflow to drain, soakaway or attenuation system
3. Calmed inlet
4. Steel submersible pump with floating intake and filter
5. Ground water inlet valve for high water table areas (optional extra)

In areas with a high ground water table, ground water inlet valves can be fitted meaning that there is no requirement for a concrete bed or surround. These valves allow (filtered) ground water from a rising water table to enter the tank. By equalising the hydrostatic pressures on internal and external surfaces, tank collapse or flotation is prevented.

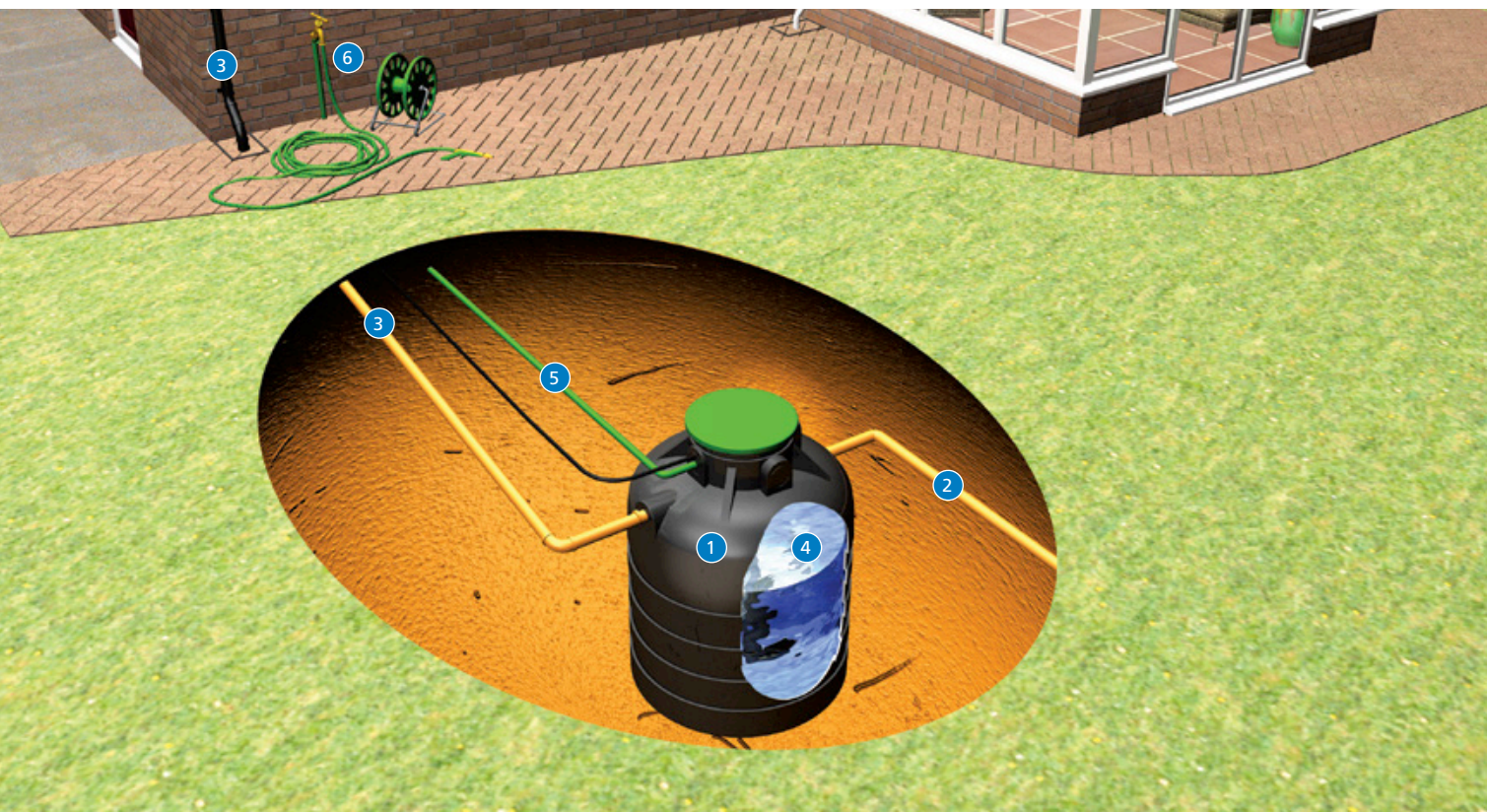
# Selecting the right system

To ensure you select the correct solution for your requirements, please refer to the Product Selector below:



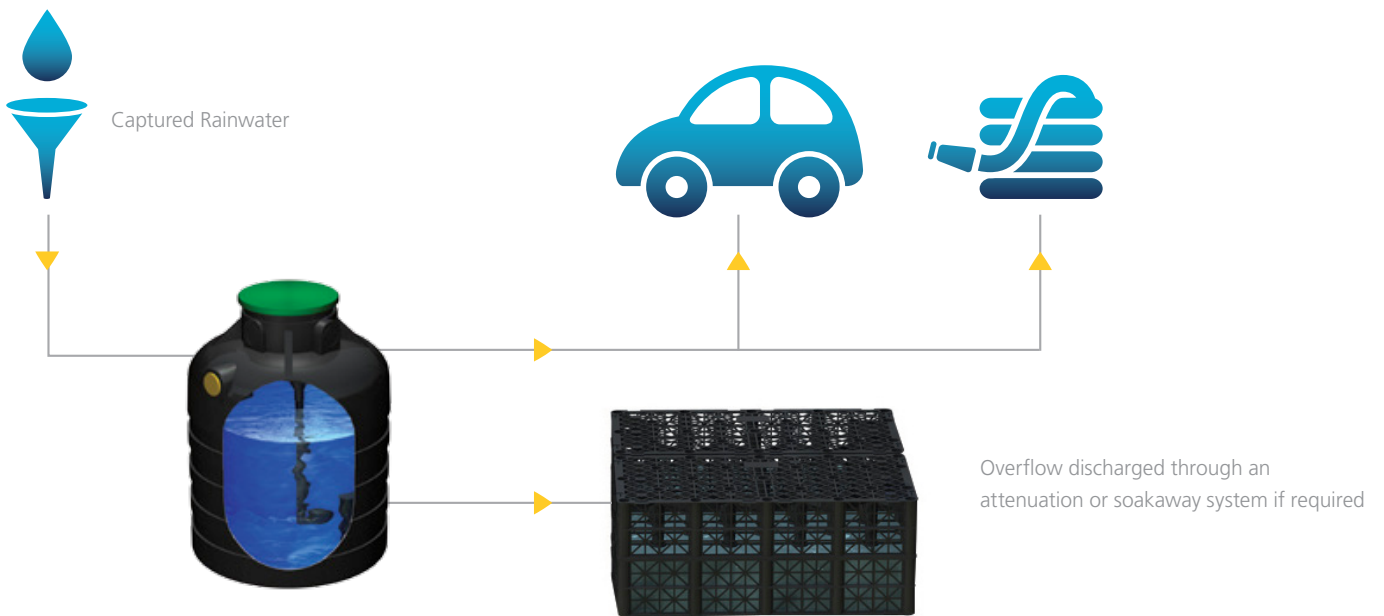
# Rainstream Garden

Rainstream Garden system is an ideal product for light rainwater harvesting irrigation requirements. Typical uses include the supply of recycled rainwater to a garden tap or irrigation system.



1. Tank including leaf filter, calmed inlet and submersible pump
2. Overflow to drain, soakaway or attenuation system
3. Captured rainwater
4. Submersible pump
5. Recycled rainwater
6. Garden hose for irrigation





## The garden system

A 1,000 litre capacity rainwater harvesting and irrigation system, comprising of: Robust rotomoulded PE tank, leaf filter, calmed inlet, skimmed overflow and submersible pump.

The harvested water enters the tank via the rainwater inlet. It is then filtered through a leaf filter with the waste being expelled through the overflow outlet and then the filtered water passes through the calmed inlet to avoid turbulence.

The pump has a built in pressure drop sensor so only 'pumps' when the tap (or other suitable outlet) is opened.

The pump gathers stored rainwater through a secondary filter subsequently prolonging the pumps life and pumps to the plumbed outlet.

The calmed inlet ensures that any silt in the tank is not disturbed; the level ensures any silt that is not removed by the initial filtration, will relocate harmlessly to the bottom of the tank where it can be removed during periodic maintenance of the system.

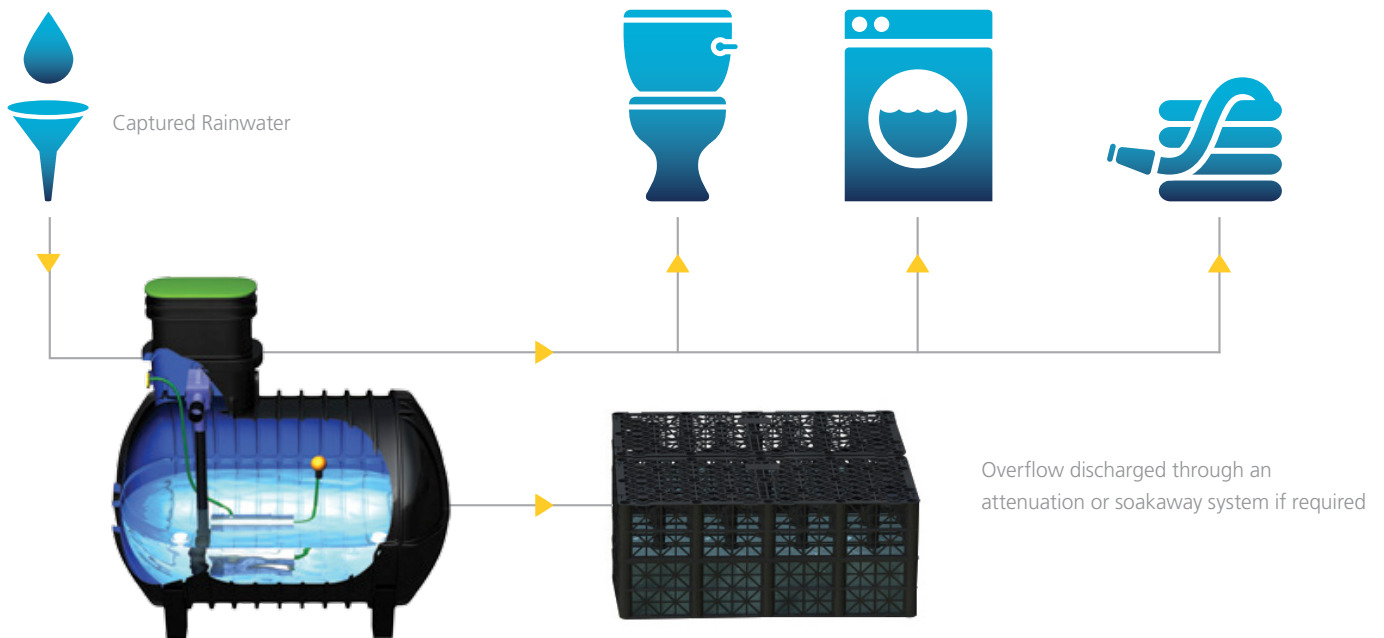
# Rainstream Home Pressurised

Rainstream Home Pressurised systems pump reclaimed rainwater directly to the appliances. During a period of low rainfall, a mains water back up facility feeds the underground tank ensuring there is no interruption to supply.



1. Tank including leaf filter, calmed inlet and submersible pump with floating intake
2. Overflow to drain, soakaway or attenuation system
3. Captured rainwater
4. Reclaimed rainwater appliance supply pipe
5. Mains water back up supply connection to calmed inlet
6. Electrical controls with mains water top up and AA air gap

In areas with a high ground water table, ground water inlet valves can be fitted meaning that there is no requirement for a concrete bed or surround. These valves allow (filtered) ground water from a rising water table to enter the tank. By equalising the hydrostatic pressures on internal and external surfaces, tank collapse or flotation is prevented.



## The Rainstream Home Pressurised system

The harvested water enters the tank via the rainwater inlet. It is then filtered through a leaf filter with the waste being expelled through the overflow outlet and then the filtered water passes through the calmed inlet to avoid turbulence.

These systems do not need a header tank. Instead an electronic control system monitors the demand for water and pumps it directly from the Rainstream Home tank to the appropriate outlet. The control system also measures the water level in the Rainstream Home tank and uses water from the mains, if required, to ensure there is no interruption to supply.

### Features and benefits:

- Wide choice of tank storage capacities from 1,000lts up to 10,000lts
- Mains water feeds into calmed inlet to ensure that no silt in the tank is disturbed during top up
- Four feet on base of tank for stable positioning
- Four grab handles at each corner of the tank for ease of handling
- Two lifting eyes on top of the tank for ease of off-loading
- Optional ground water inlet valves

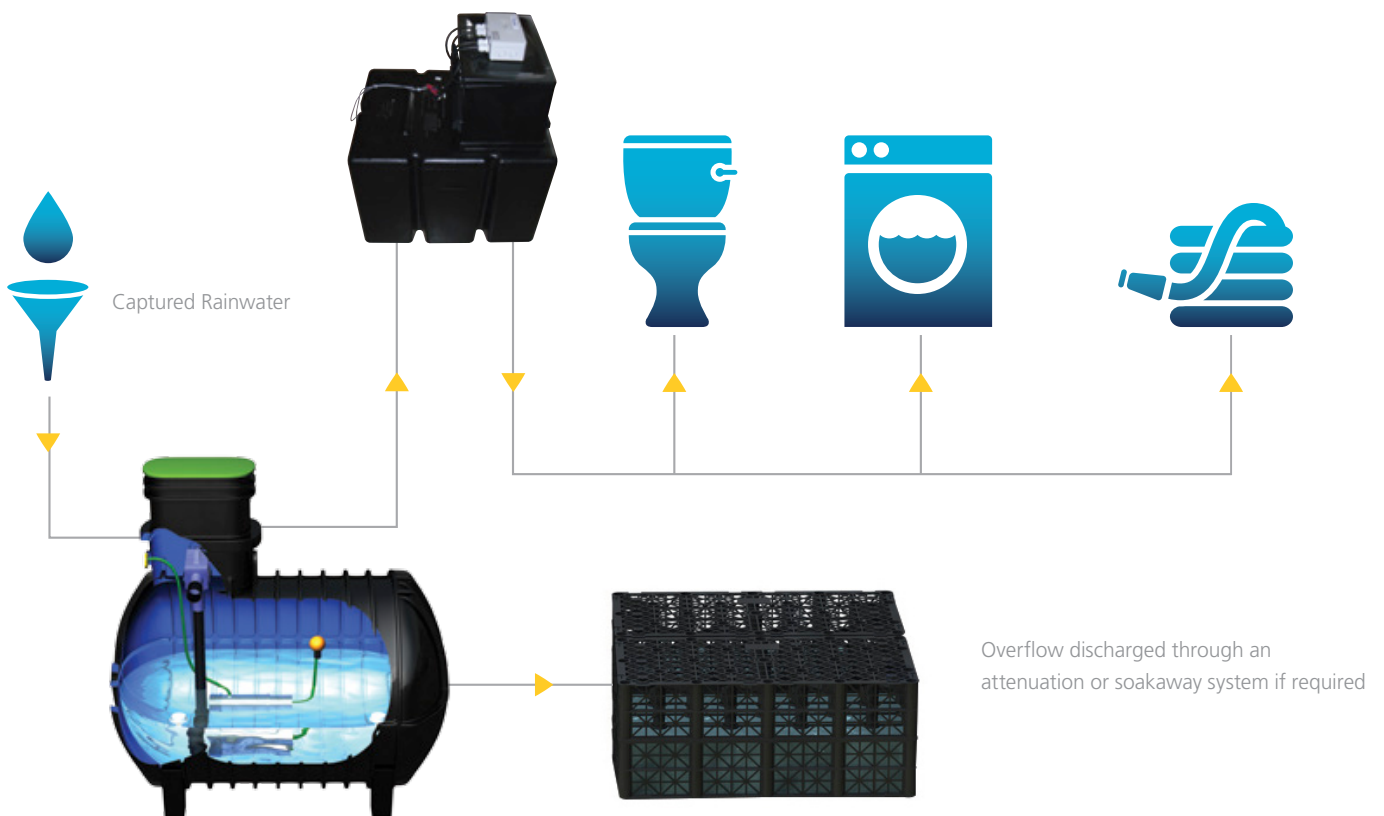
# Rainstream Home Gravity

Rainstream Home Gravity systems pump water to a header tank in the loft (supplied pre-built ready to use). Mains water backup is supplied to the header tank in the loft to prevent interruption to supply during low rainfall or mains power outage.



1. Tank including leaf filter, calmed inlet and submersible pump with floating intake
2. Overflow to drain, soakaway or attenuation system
3. Captured rainwater
4. Recycled rainwater feed to header tank
5. 82ltr Header tank in loft with AB air gap
6. Header tank mains water top up

In areas with a high ground water table, ground water inlet valves can be fitted meaning that there is no requirement for a concrete bed or surround. These valves allow (filtered) ground water from a rising water table to enter the tank. By equalising the hydrostatic pressures on internal and external surfaces, tank collapse or flotation is prevented.



## The Rainstream Home Gravity system

The harvested water enters the tank via the rainwater inlet. It is then filtered through a leaf filter with the waste being expelled through the overflow outlet and then the filtered water passes through the calmed inlet to avoid turbulence.

This system pumps recycled rainwater from the Rainstream Home tank in the garden. The water is then fed to each appliance by gravity. When the system has insufficient recycled rainwater, or suffers power failure, it uses a mains water feed to the header tank as an alternative supply.

### Features and benefits:

- Wide choice of tank storage capacities from 1,000lts up to 10,000lts
- 82 litre header tank supplied with all components fitted including AB air gap
- Four feet on base of tank for stable positioning
- Four grab handles at each corner of the tank for ease of handling
- Two lifting eyes on top of the tank for ease of off-loading
- Optional ground water inlet valves

# Legislation and standards

Growing public awareness of water issues has helped create a large body of legislation and standards. Polypipe is committed to helping customers understand these issues and comply with all the necessary requirements.

As an essential component of effective SUDS solutions, rainwater re-use plays a central part in this process and can help meet the requirements of the Flood and Water Management Act 2010, Building Regulations Part H, the Code for Sustainable Homes and many other recognised standards.

Rainwater re-use can also help achieve the aims of the Wildlife and Countryside Link's Blueprint for Water document, which offers a timetable for achieving a sustainable standard of water by 2015.

It complements the EU's Water Framework Directive by aiming to reduce consumption by 20% - something which rainwater re-use can often achieve.

## Water White Paper – Water for Life

Water for Life describes the Government's vision for future water management in which the water sector is resilient, water companies are more efficient and customer focused and water is valued as the precious and finite resource it is. It also explains that we all have a part to play in the realisation of this vision.

Amongst other reforms the document reaffirms the Government's commitment to:

- Deal with water quality and wider environmental issues
- Introduce national standards and a new planning approval system for sustainable drainage (SuDS)

For more information visit [www.defra.gov.uk/environment/quality/water/legislation/whitepaper/](http://www.defra.gov.uk/environment/quality/water/legislation/whitepaper/)

## Planning Policy Statement 25

The Flood and Water Management Act provides for better, more comprehensive management of flood risk for people, homes and businesses, helps safeguard community groups from unaffordable rises in surface water drainage charges and protects water supplies to the consumer.

The Act implements Sir Michael Pitt's recommendations requiring urgent legislation, following his review of the 2007 floods.

For more information visit [www.defra.gov.uk/environment/flooding/legislation/](http://www.defra.gov.uk/environment/flooding/legislation/)

## Approved Document G (2010)

The Approved Document Part G and the Building (Amendment No,2) Regulations 2010 came into force on 6th April 2010.

The introduction of a water efficiency target for new homes supports sustainability targets through saving water and associated carbon emissions without impacting on customer behaviour. It opens the way to use alternative technologies such as harvested rain water and grey water recycling for toilet flushing.

The introduction of a requirement for the supply of wholesome water to a building also clarifies where it is acceptable for other sources of water, such as grey water and rainwater to be used.

## The Code for Sustainable Homes

The Code is used to rate the environmental performance of new homes in England, Wales and Northern Ireland and certain compliance criteria is mandatory for participants. To achieve target ratings set for 2016, developers must adopt measures such as rainwater re-use that will significantly cut water consumption.

For more information visit [www.communities.gov.uk/thecode](http://www.communities.gov.uk/thecode)

## BS: 8515

This BSI rainwater harvesting code of practice gives guidance on design, installation, testing and maintenance of systems for non-potable applications

For more information visit [www.bsi-global.com](http://www.bsi-global.com)

## BREEAM

The Building Research Establishment Environmental Assessment Method (BREEAM) is now recognised as the standard measure of sustainable building design. It addresses environmental and sustainability issues and enables developers to prove the environmental credentials of their buildings to planners and clients

For more information visit [www.breeam.org](http://www.breeam.org)

# Associated Products

## Drainage and piping systems

Polypipe's unique range of drainage and piping products allow roof to re-use systems to be created for any type of project.

## Reclaimed rainwater supply pipe

To protect supplies of drinking water and to comply with UK water regulations the identification of pipework carrying non-wholesome water is essential to prevent future misconnections and cross contamination of water supplies.

Polypipe reclaimed rainwater supply pipe complies with UK water industry regulations and meets the requirements of BS8515 British Code of Practice for rainwater harvesting.



## Rainwater gutter systems

The products are offered in various colours and include Half Round, Square section, deep, extra and high capacity systems and the cast iron effect system Elegance Ogee Notched and Elegance Half Round.

All rainwater systems are BBA approved Cert no: 91/2673 (except the 75mm Half Round) and are complimented by a range of brackets, downpipes, outlets and adaptors.

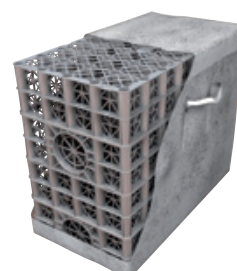


## Attenuation and soakaway

Polypipe provides a variety of pipeline or modular cell based solutions for attenuation or soakaway applications, depending on the requirements of the project.

Ridgistorm-XL provides a large diameter pipe and storage solutions for any scale of rainwater re-use project. Designed as a bespoke solution for each project, Ridgistorm-XL is the most advanced large diameter plastic pipe system available in the UK.

The Polystorm range of modular cells offer a sustainable and adaptable solution for any attenuation or soakaway project. Polystorm cells can be constructed to accommodate all types of ground conditions, planning requirements and design considerations.



## Rainstream Home and Garden



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