



**The bigger the roof, the bigger the catchment, the bigger the benefits. This is why rainwater harvesting is so ideally suited to commercial applications:**

- Schools and public buildings
- Commercial Offices
- Warehouses and factories
- Housing Associations
- Industrial developments
- Farms and agriculture
- Plant nurseries and garden centres

**Benefits**

Commercial premises generally have a greater demand for non-potable water for cleaning and toilet facilities.

Conversely, by having a large roof area these buildings possess a natural facility to recoup large amounts of water and, in turn, deliver substantial savings.



No two buildings are alike and this is taken into account when assessing the system's components. Each system installation is bespoke, with carefully selected tanks, filters and control systems. The monitoring and telemetry can also be linked into building management systems.

**Designed for Your Convenience**

Whether it is from a cost-saving, environmental or storm water management standpoint, our technical staff will evaluate the site conditions and design a cost effective, easy to use system that is tailored for your specific building application.

Each system is capable of being upgraded and can be linked into future development expansion or potential change of use.

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# Siphonic Roof Drainage & Rainwater Harvesting Specialists



- Increase building design flexibility
- Maximise floor space potential
- Reduce installation time
- Provide flexible drain location
- Reduce ground works
- Save overall costs

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# Siphonic Roof Drainage Specialists

**Siphonic roof drainage is an innovative technique allowing the efficient removal of large volumes of rain water using the minimum of pipework. Conventional roof drainage relies exclusively on gravity; siphonic roof drainage also exploits the latent energy derived from the building height.**

## High Performance

Siphonic outlets are performance tested and calibrated for flow capacity and water depths. The discharge from each siphonic downpipe is a specific water volume at a pre-determined location within the project footprint. Systems can therefore be integrated with roof, gutter and underground drainage design to produce optimum solutions to known parameters.

## Cost Effective

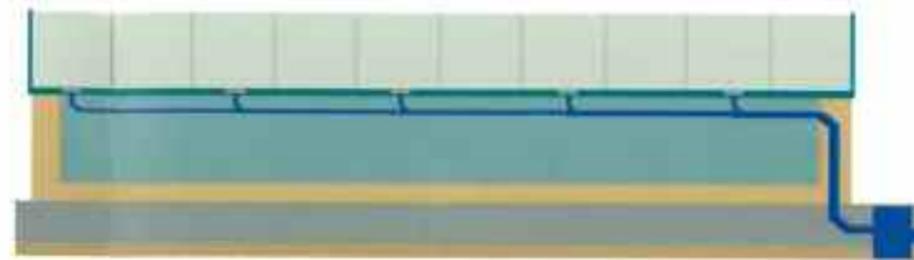
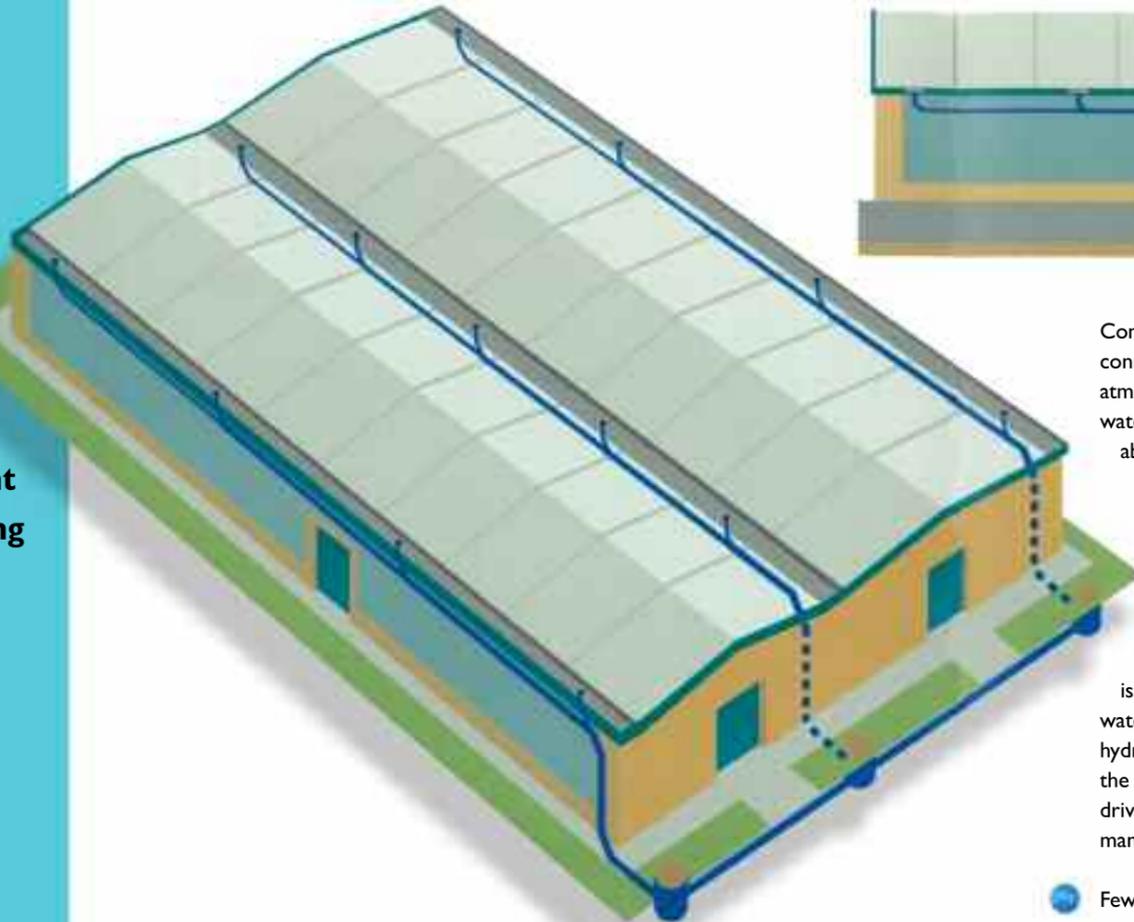
Installation costs are less due to smaller pipe dimensions and fewer downpipes or discharge points. On-site times may be reduced.

## Easy Coordination

Straightforward installation and integration with other building services.



West Siphonics HydroStorm 75 Siphonic roof drain.

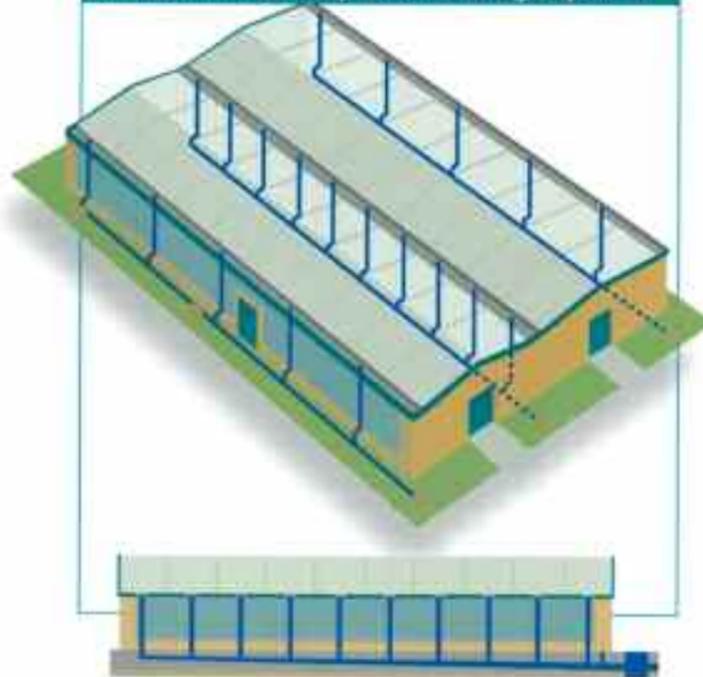


Conventional roof drainage systems generally comprise open outlets connected to vertical downpipes that are designed to operate at atmospheric pressure with a greater volume of air in the system than water. The size of the outlets and the allowable depth of the water above them usually determines the discharge capacity of such a system. In the case of a gutter the allowable depth may be up to 100mm but in the case of a flat roof may only be 30mm.

A siphonic roof drainage system typically consists of a series of specially designed outlets connected to a discharge point at or below ground level by pipe work that is assembled to specific dimensions such that under specified conditions all air is removed from the system resulting in more efficient removal of water. Under such conditions (known as 'full bore flow'), the driving (or hydraulic) head is equal to the vertical height between the roof level and the point of discharge. In many of today's commercial buildings this driving head may be in excess of 10m and can be used to advantage in many ways:

- 1. Fewer siphonic outlets are required than conventional outlets thus the number of roof penetrations is reduced.
- 2. The need for rows of vertical rainwater pipes inside a building can be virtually eliminated together with the extensive under floor drainage to serve them. For example, in a valley gutter, ten or more siphonic outlets may be connected to a single collecting pipe. The combined rainwater flow is then discharged via a single vertical down pipe at the boundary of the building. Since the pipe work acts siphonically when filled (primed), the collecting pipe can be installed horizontally just below the roof structure.
- 3. The fall or gradient that would be required by a conventional pipe designed to flow part full is not necessary to 'drive' a siphonic system. This characteristic alone allows significant savings to be made in the construction of large buildings.
- 4. Great flexibility in the use of the space within open-plan buildings is enabled by providing large areas uncluttered by downpipes.
- 5. The location of siphonic outlets on the roof or in a gutter is not restricted to column or support positions as with conventional rainwater downpipes. Outlets can be installed at planned low points or even, in extreme cases, to compensate for unplanned roof/gutter deflections.

Conventional Gravity Roof Drainage System



Since its introduction in Scandinavia during the late 1960's, significant development and improvements in the design of siphonic systems have taken place with particular reference to construction methods in UK and Ireland. Implementing a siphonic drainage system requires the consideration of a number of factors in order to gain maximum benefit and ensure the roof drainage system will cope with the load from the heaviest of rainstorms.



The dynamics of water flow under various conditions are complex and need to be fully understood - the height of the building, the interaction between the rainwater flows in the pipework, the effects of bends and joints, not to mention the extent of the rainfall - all need to be considered and integrated into the final design.

West Siphonics systems are designed using the technically advanced HydroStorm analytical design software based upon recognised hydraulic formulae and methodology and verified by rigorous testing.



West Siphonics roof rainwater drainage systems are designed in strict accordance with the theoretical principles and proven engineered solutions developed since the 1960's and comply with BS EN 12056 - 3:2000 and BS 8490.