

An Introduction to Aboveground Urban Rainwater Harvesting

Rainwater Utilisation

A rainwater harvesting system comprises of a filter, storage tank, pump and mains valve that is connected to services and appliances to use rainwater for toilet flushing, laundry and garden irrigation. Rain falling on the roof of a building is channelled via the existing gutters and down pipe to a filter which removes leaf litter and other debris before diverting the water into a storage tank. When an appliance demands water a pump is automatically activated and draws water from the tank. If there is insufficient rainfall to meet demand a mains water valve is automatically opened to partly refill the tank. At Halsted Rain we believe that rainwater harvesting should be a practical, affordable and reliable conservation measure for all buildings. Some conventional rainwater harvesting systems can be complex and expensive to install and maintain. Modern and visually discreet above ground systems enable owners of smaller property, those with limited space or requiring a retrofit solution to economically reduce their use of mains water.



Rainwater harvesting systems can replace up to 50% of household mains water consumption

Urban Systems

Above ground rainwater utilisation systems for the urban 'built up' environment are a new innovation in the UK but are widely used in other countries. These state-of-the-art modular systems are an attractive, practical and contemporary solution to managing water resources and can be made to blend seamlessly with modern and traditional building designs. Urban systems that offer a modular tank design enable flexible sizing of the water storage capacity. At Halsted Rain we make no excuse that these systems can sometimes be a compromise between space, utility and cost. As much as 80% of the potential saving of mains water usage can be gained from a modular aboveground urban system at a fraction of the installed cost of a conventional below ground system.

Lack of Water

Water is becoming an increasingly precious natural resource. Whilst we appear to have an abundant water supply, 97% of the 1.4 billion cubic kilometres of water on Earth is sea-water, 2.7% of the remaining 3% is permanently bound up in ice at the poles. This leaves only 0.3% of the Earth's water resources as usable fresh water. It is now recognised that the south east of England in particular, is short of water (London has less water available per capita than Madrid or Istanbul). As the result of limited supply and increasing demand, Water Companies have been given new powers to increase the price of water and meter all households to encourage the more efficient use of water. In Germany, the use of rainwater utilisation is over 100 times that of the UK.

Use of Mains Water

Each person in the UK uses approximately 150 litres of water a day, 70% more than 30 years ago. A typical family uses 70,000 litres of water each year for toilet flushing, clothes washing and outside use. One third of all water used in the home gets flushed down the toilet. Rainwater harvesting systems can replace up to 50% of household mains water consumption, and up to 85% of light commercial consumption.



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Water and CO2 Emissions

For a typical family it takes 120 kilowatt hours (kWh) to supply water and 100 kWh to treat the dirty water put in to the sewers every year. The water industry is one of the largest producers of carbon emissions accounting for about 1% of the UK carbon footprint. When you include the heating of water, 20-25% of a family's total average energy consumption is used on water, enough to boil a kettle continuously for more than two months or the carbon equivalent of a return flight from London to New York. Therefore, saving water can also help avert manmade climate change.

Stormwater Management

Experience is showing that changing patterns in land use and the greater frequency and intensity of rain storm events is increasing the probability of flooding in many areas. The need to better manage exceedance events is growing in importance and one of the technologies that can be deployed is rainwater harvesting. Systems hold back stormwater runoff to be released into the drainage infrastructure at a later time or held for reuse at the point of collection.

Better Management is a Priority

In response to increasing water stress and management challenges new UK Government Policy and Regulation is requiring and promoting the wider use of water conservation measures. Relevant publications have included the EU Water Directive, Future Water and updating of water regulations. Capital Allowances are available to encourage the installation of rainwater harvesting technology. Planning Consent in some areas is now conditional on meeting higher water conservation standards. Following pressure from Government, Water Companies are increasing their promotion of conservation measures and where necessary insisting on the wider use of water meters.

Planning Your System

The simple rule is, the larger the roof area connected to the tank, the more water can be collected. To calculate the available rainfall [litres] multiply the local rainfall amount (mm) each year by the roof area (m²) connected to the tank. The average rainfall for England is 850mm (640mm in dryer areas). The expected usage each year can be calculated by multiplying the usage per person per day (150 litres) by the number of persons using the building by 50% and 365 days. For small urban systems, scale the storage capacity by calculating 2% of the lower of available rainfall or usage. The corresponding factor for larger systems is 5%. More complex calculations are available but one of the benefits of a modular urban rainwater system is that additional tanks can be easily added at a later date if more capacity is needed.



Ultra Slim Wall Tank System 470 litres can replace 20% of your potable water used for toilet flushing