

Halsted Rain Ltd

Urban Rainwater Harvesting Systems

Frequently Asked Questions & Answers

Halsted Rain is a leading supplier of Urban Rainwater Harvesting systems used for toilet flushing, laundry and garden irrigation. We have specialist knowledge and experience of UK market requirements for aboveground and shallow below ground rainwater harvesting systems and strong collaborative relationships with other leading manufacturers of rainwater products worldwide.

Below are the most frequently asked questions regarding rainwater harvesting and Halsted Rain has provided the following guidance to assist specifiers evaluate our systems.

[What is Urban Rainwater Harvesting?](#)

Urban rainwater harvesting is the installation of purpose designed aboveground slim line tank systems against a property to collect and use rainwater in domestic and light commercial buildings for toilet flushing, clothes washing and garden irrigation. This approach is widely used throughout the developed world as a means of reducing the use of mains water. Typically a third of mains water used in a domestic house is for toilet flushing and this rises to 85% in many commercial premises. The simplicity and affordability of this approach has been extended to include the use of platen style tanks that can be installed in a shallow excavation in open ground or under decking.

[What are the main components of an Urban System?](#)

Rain is collected from a down pipe by an efficient filter diverter and stored in a slim line or platen tank system before being pumped on demand to the connected services. In the event that there is insufficient rainwater to meet demand, a mains top up unit adds a small amount of mains water to the system to maintain services.

[What are the benefits of a Urban Rainwater Harvesting System?](#)

Urban rainwater harvesting systems offer the durability, utility and permanence of a traditional cylindrical below ground system plus easy installation and maintenance that help make it a low cost affordable option. It is an ideal retrofit solution that avoids the civil work and disruption required when installing traditional below ground systems. Urban modular tank systems make it simple to add units to provide the required capacity and modules can always be added at a later stage if water needs change.

[What size of system do I require?](#)

This depends on the size of the roof catchment, annual rainfall, space available for water storage and the expected usage. A system should be matched to the property and usage. The temptation to oversize a system should be resisted to ensure water quality is maintained and to avoid unnecessary expense.

[Is the quality of rainwater collected from a roof and stored in an aboveground tank suitable for use in a home or business premises for toilet flushing?](#)

Modern systems have been designed with exactly this application in mind. Extensive scientific research by universities, relief aid agencies and industry has shown that a properly installed aboveground system to supply rainwater for toilet flushing presents no increased risk to public health.

In the UK collected rainwater is not approved for human consumption. Halsted Rain advises the following when installing an urban harvesting system to maintain a healthy rainwater storage system.

1. Ensure the gutter line is in good repair to avoid the collection of debris and the pooling of rainwater between storms.
2. Use a quality filter and diverter to remove leaf litter and debris that descends from the roof and fit a feature to prevent back flow of foul water from the drain.
3. Install a quality opaque aboveground tank on a north or west facing wall or shade or screen the tank from the mid-day sun. Install in a location with good ventilation.
4. Size the system so that the water is being regularly used and the tank overflows regularly throughout the year to the main drain removing any fine particles of floating organic matter.

The water in a well designed and maintained rainwater harvesting system is generally clean for purpose before it enters storage and the system should be used regularly to prevent the water quality deteriorating.

[Is freezing of aboveground systems during periods of cold weather going to interrupt the supply of rainwater to the toilet cistern?](#)

Experience shows that in a temperate climate such as the UK it is unlikely that a purpose designed aboveground rainwater harvesting system will freeze. During periods of cold weather micro climatic effects moderate the temperature close to buildings by several degrees and the storage tanks are insulated by a thick HDPE wall relative to the size of tank. In winter, the tanks are usually full of naturally circulating water and a prolonged period of severe cold would be required to freeze this mass of water. Halsted Rain advises the following to mitigate the risk of any interruption to supply due to freezing weather.

1. Locate storage tanks against a sheltered wall to gain maximum benefit from the 'urban heat sink' effect.
2. Install the pump package and mains top up valve inside the building, a protective enclosure or submerged inside larger tanks to prevent any frost damage.
3. Insulate the tank outlet fitting and exposed pipe to the pump and services with external quality mineral wool mat, insulating tape or moulded insulation foam.

In less temperate climates such as Canada, for example, or very exposed sites, additional measures can be taken to winterise aboveground tanks such as the use of thermostatically controlled trace heat products and thermal blankets.

[Is planning consent required for the installation of an Urban Rainwater Harvesting System?](#)

Councils give expeditious and sympathetic handling of planning permission to applications for new build and extensions which include rainwater harvesting. The retrofitting of most systems do not need planning consent, but exceptions apply for Listed Buildings, buildings in Conservation Areas and World Heritage sites. If you are in any doubt about planning requirements contact the local planning office.

Is Urban Rainwater Harvesting covered by Building Regulations?

There are currently no direct building regulations for rainwater harvesting. However, Hygiene and Drainage are covered by the Building Regulations and can influence rainwater harvesting system design.

Several other associated regulations apply; In England and Wales the Water Supply Regulations 1999 (Water by-laws 2000 in Scotland and Water Supply (Water Quality) Regulations (Northern Ireland) 2002 must be adhered to. These regulations are enforced by the water supplier.

The essential requirements of the regulations specific to rainwater harvesting are;

- (1) No cross bonding of rainwater piping with potable supply pipes
- (2) Prevention of backflow to potable water supplies according to CEN EN1717 with air gaps
- (3) The clear marking of rainwater pipes according to WRAS # 9-02-05
- (4) Material specifications, where contact with wholesome water is permissible meet the prevailing approved list.

For further guidance on the design of rainwater harvesting systems contact Halsted Rain.

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