

HOUSEPLANSDIRECT TECHNICAL GUIDES

RAINWATER HARVESTING EXPLAINED

A complete guide to collection, filtration, storage, pumps, controls, backflow protection and maintenance



A domestic rainwater system coordinated from roof catchment and filtration to storage, non-potable outlets, mains top-up and overflow.

NINE-PART PUBLICATION EDITION

Catchment · Yield · Demand · Filtration · Storage · Pumps · Backflow · Commissioning · Maintenance

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About this guide

This guide explains rainwater harvesting systems for low-rise housing in England. It is intended for clients, designers, plumbers, drainage engineers, installers and site teams who need to coordinate roof catchments, gutters, pre-filtration, storage tanks, pumps, controls, mains top-up, non-potable distribution, backflow protection, overflow, commissioning and maintenance. Project calculations, water-under taker requirements, current regulations, product data and competent-person decisions take precedence.

SCOPE Project water-balance calculations, drainage strategy, water-under taker requirements, product data, electrical design, commissioning evidence and Building Control decisions take precedence. Figures are explanatory and must not be scaled.

Part 1 – Introduction: What Is Rainwater Harvesting?

Collecting roof runoff for safe, controlled non-potable use on site

A rainwater harvesting system collects runoff from a suitable catchment, removes debris, stores water and supplies clearly identified non-potable outlets. Typical domestic uses are WC flushing, washing machines and garden irrigation. The roof, gutters, downpipes, filters, tank, inlet, overflow, pump, controls, mains top-up, pipework, outlets and maintenance regime form one system. Harvested rainwater is not wholesome drinking water unless separately treated and managed as a private supply.



Figure 1 — Principal collection, filtration, storage, pumping, top-up and non-potable distribution components.

1.1 Principal components

Component	Purpose
Catchment and conveyance	Collect suitable roof runoff through gutters and downpipes.
Pre-filter	Remove leaves and debris before water enters storage.
Storage tank	Hold non-potable water with secure access, vent, inlet, suction and overflow.
Pump and controls	Deliver design flow and pressure and manage dry-run, level and faults.
Top-up and distribution	Maintain service without contaminating wholesome supplies; feed identified outlets.

1.2 Benefits and limitations

- Can reduce wholesome mains-water demand for suitable non-potable uses.
- May reduce the volume and frequency of runoff discharged during smaller rainfall events.
- Performance depends on rainfall, catchment, demand, tank size, controls, energy and maintenance.
- Water-saving storage is not automatically stormwater attenuation; drainage performance needs a separate check.