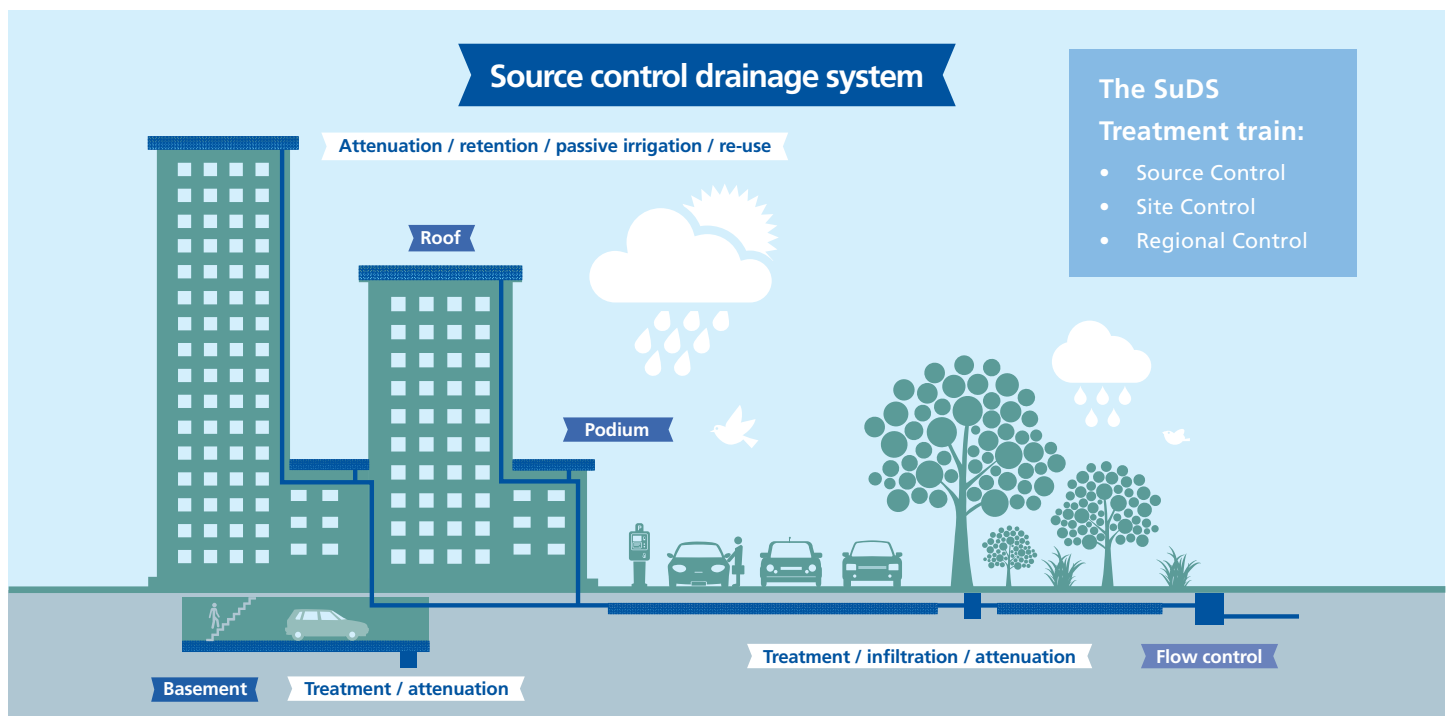


Permavoid System **Source Control**

The SuDS manual, CIRIA Report C753, provides best practice guidance on all aspects of the design, construction, operation and maintenance of SuDS. In particular, it places emphasis on the use of source control techniques.



The capture of rainwater at source and subsequent control of surface water run-off is integral to the SuDS philosophy. This minimises changes in the volume and rate of surface water run-off from pre-development (greenfield/brownfield sites) to post-development.

Incorporating SuDS reduces flood risk and environmental damage. SuDS source control schemes can also be used to:

- Use rainwater as a resource
- Treat surface water run-off to reduce pollution
- Enhance amenity and bio-diversity

Source control is a key element for interception – the capture and retention of the first 5mm of a rainfall event to prevent any surface water run-off occurring.

Interception

Key facts from the HR Wallingford SuDS Study

- The majority of rainfall events in the UK are less than 5mm in depth
- Rainfall run-off from paved surfaces contains a range of pollutants such as hydrocarbons and heavy metals, mainly associated with vehicle emissions
- Pollutant concentrations tend to be highest in the early stages of a rainfall event
- If the first 5mm of every event was prevented from leaving the site, the total volume of runoff discharged into the receiving streams and rivers through the year would be a relatively small proportion of the total run-off generated by the site



Strong Interlocking Raft



Beneath porous & non-porous surfaces



Source Control



Treatment



Retention



Attenuation



Infiltration



Permavoid is ideal as part of the surface water management train concept offering a modular, flexible, shallow source control solution.

- Stormwater is collected and treated close to where it falls.
- Run-off is conveyed slowly under very shallow gradient and retained in shallow, easy to maintain features.
- The forward flow is reduced, therefore pipe sizes and depths are smaller than in conventional attenuation/infiltration systems.
- Silt/debris and contaminants can be managed at the head of systems using multiple smaller components preventing migration into the rest of the system i.e. Permachannel or Permaceptor.
- Treatment at source means water is immediately available for re-use for both internal and external use.
- Only simple flow control devices, such as orifice plates, are required due to low flows and limited variability in the hydraulic head.
- Avoids the necessity for deep pumping stations – gravity systems can be incorporated into the site wide drainage strategy.
- Permavoid attenuation/infiltration systems can be linked more effectively into soft SuDS schemes such as swales or dry basins, as invert levels can start as shallow as 0.28m below surface level.

As a shallow source control system, Permavoid has a unique flexibility to help avoid problems on projects with challenging ground conditions.

High water table

- Permavoid can act as a structural conduit to collect and convey ground water away from works as part of an overall site dewatering strategy.
- Provide attenuation or infiltration solutions above water table and avoid ground water issues.
- Avoid the complexity of designing attenuation tanks considering flotation.

Contaminated soils

- Avoid or reduce the need to excavate into contaminated ground.
- Avoid or reduce the need for either on-site or off-site remediation and associated vehicle movements.
- Reduces deep excavation and associated temporary works and costs.
- Avoid all of the Health, Safety and Environmental issues relating to contaminated groundworks.

Rock/Hard ground

- Excavation of hard rock is time consuming, expensive and has health and safety implications. Permavoid can be incorporated into pavement/ highway/ landscape design, avoiding more complex construction methods.



Contact Us

to find out about our Technical Workshop

Look out for our Permavoid Technical Manual, available to download from our website