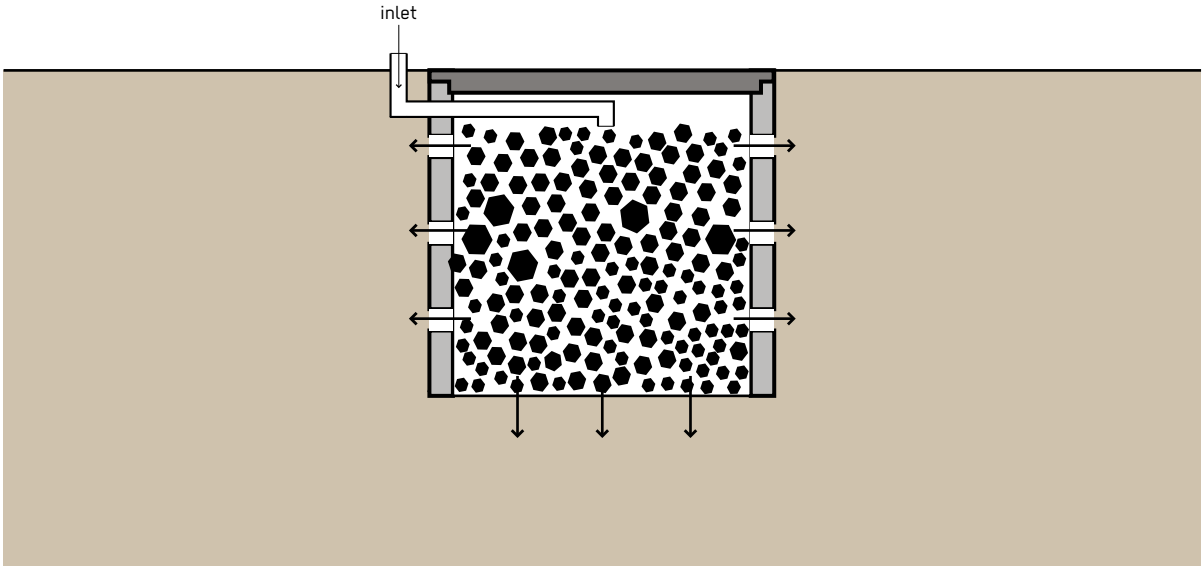
Soak Pit

Phase of Emergency	Application Level / Scale	Management Level	Objectives / Key Features
* Acute Response * Stabilisation ** Recovery	** Household * Neighbourhood City	** Household ** Shared Public	Use of treatment capacity of the soil, Safe disposal of effluent
Space Required	**Technical Complexity**	**Inputs**	**Outputs**
* Little	* Low	● Effluent, ● Greywater, ● Urine, ● Anal Cleansing Water	



A Soak Pit, also known as a soakaway or leach pit, is a covered, porous-walled chamber set in the ground that allows water to slowly percolate. Pre-settled effluent from a water-based collection and storage/treatment or a (semi-) centralised treatment technology is discharged to the underground chamber from which it infiltrates into the surrounding soil.

As wastewater (greywater or blackwater after primary treatment) percolates through the soil from the soak pit, small particles are filtered out by the soil matrix and organics are digested by microorganisms. Thus, Soak Pits are best suited for soil with good absorptive properties; clay, hard packed or rocky soil is not appropriate.

Design Considerations: The Soak Pit should be between 1.5 and 4 m deep, and as a rule of thumb, never less than 2 m above the highest groundwater table. It should be located at a safe distance from a drinking water source (ideally more than 30 m). The Soak Pit should be kept away from high-traffic areas so that the soil above and around it is not compacted. It can be left empty and lined with a porous material to provide support and prevent collapse, or left unlined and filled with coarse rocks and gravel. The rocks and gravel will prevent the walls from collapsing, but will still provide adequate space for the wastewater. In both cases, a layer of sand and fine gravel should be spread across the bottom to help disperse the flow. To allow for future access, a removable (preferably concrete) lid should be used to seal the pit until it needs to be maintained. As the bottom may clog, the design should only consider the sidewall area. Preferably a percolation test is done to assess the leaching capacity of the soil.

Materials: Bricks and cement or wood are needed for lining and rocks and gravel for filling a soak pit. This filling can also replace the lining, by supporting the walls from inside.

Applicability: A Soak Pit exposed to raw wastewater will quickly clog. Soak Pits are designed to discharge pre-settled blackwater or greywater. The technology is appropriate for rural and peri-urban settlements. They depend on soil with a sufficient absorptive capacity (e.g. sandy soils) and are not appropriate for areas prone to flooding or with high groundwater tables. As Soak Pits are very low cost, cheap and easy to implement technologies for water-based systems, they can be the first solution for wastewater discharge in an emergency. Once it is possible to provide better treatment to the wastewater, Soak Pits can potentially be upgraded or replaced.

Operation and Maintenance: A well-sized Soak Pit should last between 3 and 5 years without maintenance. To extend the life of a Soak Pit, the effluent must be clarified and/or filtered to prevent the excessive build-up of solids. Particles and biomass will eventually clog the pit so that it will need to be cleaned or moved. When the performance of the Soak Pit deteriorates, the material inside can be excavated and refilled.

Health and Safety: As long as the Soak Pit is not used for raw sewage, and as long as the previous collection and storage/treatment technology is functioning well, health concerns are minimal. The technology is located underground and, thus, humans and animals should have no contact with the effluent. Groundwater contamination can be an issue and the Soak Pit must be kept far away from any potential potable water source. Soil properties such as the permeability of the soil and groundwater level should be properly assessed **(X.3)** to limit exposure of water sources to microbial contamination. The Sphere minimum standards on excreta management should be consulted for further guidance.

Costs: Soak Pits are very low in cost for construction, operation and maintenance.

Social Considerations: A Soak Pit is a very low-cost and low-tech solution for discharging wastewater. Since the Soak Pit is odourless, installed underground and wastewater kept away from human contact, even the most sensitive communities may have little acceptance issues.

Strengths and Weaknesses:

- ⊕ Can be built and repaired with locally available materials
- ⊕ Technique simple to apply for all users
- ⊕ Small land area required
- ⊕ Low capital and operating costs

- ⊖ Primary treatment is required to prevent clogging
- ⊖ May negatively affect soil and groundwater properties

→ **References and further reading material for this technology can be found on page 196**