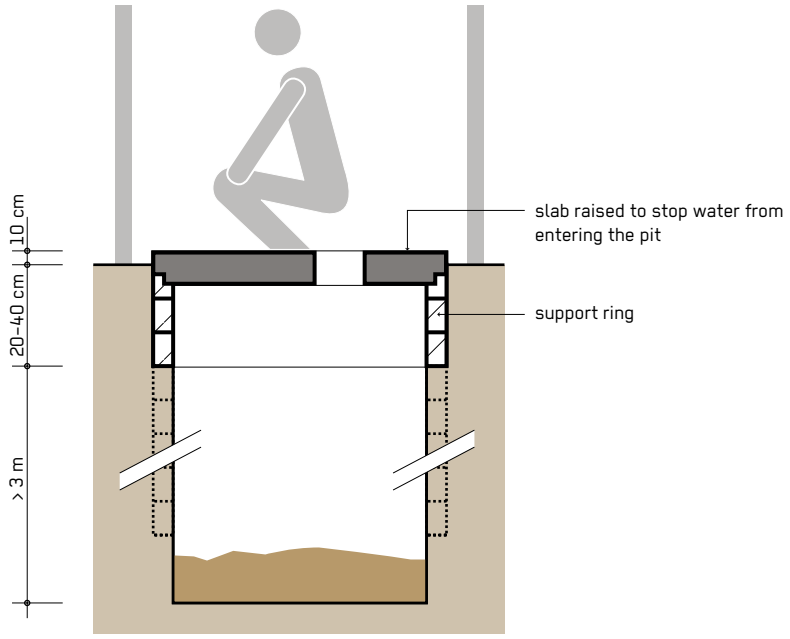
Single Pit Latrine

Phase of Emergency	Application Level / Scale	Management Level	Objectives / Key Features
** Acute Response ** Stabilisation ** Recovery	** Household * Neighbourhood City	** Household ** Shared Public	Excreta containment, Sludge volume reduction
Space Required	**Technical Complexity**	**Inputs**	**Outputs**
* Little	* Low	● Faeces, ● Excreta, ● Blackwater, (+ ● Dry Cleansing Materials), (+ ● Anal Cleansing Water)	● Sludge



The Single Pit Latrine is one of the most widely used sanitation technologies. Excreta, along with anal cleansing materials (water or solids) are deposited into the pit. Lining the pit prevents it from collapsing and provides support to the superstructure.

As the Single Pit Latrine fills, three processes limit the rate of accumulation: leaching, consolidation and degradation. Urine and water percolate into the soil through the bottom and walls of the pit, while microbial action partially degrades the organic fraction. A smooth, and regularly cleaned platform can promote hygienic conditions by minimising possible human contact with faeces.

Design Considerations: Single Pit Latrines vary in size and are typically at least 3 m deep and 1 m in diameter. The top of the pit should be lined to prevent it from collapsing while the bottom of the pit should remain unlined to allow for infiltration. The latrine slab should be at least 10 cm above the surrounding ground to prevent flooding with rainwater runoff. The pit lining should extend at least 40 cm to support the cover, prevent wall collapse and prevent rodents from burrowing into the pit. On average, solids accumulate at a rate of 40–60 L/person/year and up to 90 L/person/year if dry cleansing materials such as leaves or paper are used. The volume of the pit should be designed to contain at least 1,000 L. If 50 people are using one pit of 3 m depth and 1 m diameter and using dry cleansing materials, it will fill after approximately 6 months. The latrine design should include arrangements for emptying. When it is not possible to dig a deep pit or the groundwater level is too high, a Raised Latrine **(S.7)** can be a suitable alternative. It is worth considering upgrading the pit latrine to a more sophisticated technology like a Single Ventilated Improved Pit **(S.4)**, a twin pit system **(S.5, S.6)** or a Double Vault Urine Diversion Dehydration Toilet **(S.9)** at a later stage. This should be considered in the initial design.

Materials: The latrine superstructure can be made from local materials, such as bamboo, grass matting, wood, plastic or metal sheeting (though this often heats up the interior). Pit lining materials can include brick, rot-resistant timber, bamboo, concrete, stones, or mortar plastered onto the soil. Some agencies have rapid response kits for slabs and superstructure which can be flown in for immediate use or that can be stockpiled in advance. The slab on top can be fabricated on-site with a mould and cement. In the acute emergency phase, pre-fabricated plastic slabs may be used. However, if produced cheaply, they should be replaced frequently after they become brittle. Other slab materials such as wood or bamboo are also possible, where no other materials are available. Once the pit is full, equipment for emptying or materials for covering the pit are required.

Applicability: Single Pit Latrines can be constructed quickly with local materials during the acute phase of an emergency. Single pits are appropriate for rural and peri-urban areas. In densely populated areas, pit emptying can be difficult and there is often insufficient space for infiltration. Single pits are especially appropriate when water is scarce and where there is a low groundwater table. They are not suited for rocky or compacted soils, or for areas that flood frequently. For long-term solutions, they should be upgraded to Ventilated Improved Pits **(S.4)**, to lower the presence of flies and odours.

Operation and Maintenance: Daily maintenance associated with a single pit includes regular cleaning, routine operational tasks such as checking availability of water, hygiene items, soap and dry cleansing materials, providing advice on proper use, conducting minor repairs and monitoring of the pit fill level. As pits are often misused for solid waste disposal, which can complicate pit emptying, awareness raising measures **(X.12)** should be a part of installation programmes. When the pit is full it needs either desludging (including subsequent transport, treatment and safe disposal/reuse options) or if enough space is available the superstructure and squatting plate can be moved to a new pit with the previous pit safely covered and decommissioned **(X.6)**.

Health and Safety: If used and managed well, Single Pit Latrines can be considered a safe excreta containment technology. They need to be equipped with Handwashing Facilities **(U.7)** and proper handwashing with soap after toilet use needs to be addressed as part of hygiene promotion activities **(X.12)**. As with all pit-based systems, groundwater contamination can be an issue and 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. Emptying of the pit **(C.1, C.2)** should be carried out in such a way as to minimise the risk of disease transmission including personal protective equipment and hygiene promotion activities **(X.12)**. If the latrine is for communal use additional illumination at night, security guards for protection and accessibility for all users is required.

Costs: A pit latrine with slab is a low-cost technology, as minimal materials and minimal skills for constructions are needed. Costs will depend on local material prices. The costs of emptying and transporting pit latrine sludge or covering the pit and constructing a new pit also need to be considered. When constructing a new pit, the slab of the previous pit can be reused, if still in usable condition.

Social Considerations: The design of Single Pit Latrines should be discussed with the community beforehand. It should reflect local user preferences (sitter vs. squatter, anal cleansing practices, direction, positioning, screens etc.) and should account for the accessibility and safety of all users, including men, women, children, elderly and disabled people **(X.10)**. The potential handing over to beneficiaries and the roles and responsibilities for O & M need to be agreed upon early on and closely linked to respective hygiene promotion activities **(X.12)** to ensure appropriate use and O & M of the facilities.

Strengths and Weaknesses:

- ⊕ Can be built and repaired with locally available materials
- ⊕ Low (but variable) capital costs depending on materials and pit depth
- ⊕ Small land area required

- ⊖ Flies and odours are normally noticeable
- ⊖ Low pathogen reduction with possible contamination of groundwater
- ⊖ Costs to empty may be significant compared to capital costs
- ⊖ Sludge requires secondary treatment and/or appropriate discharge

→ **References and further reading material for this technology can be found on page 190**