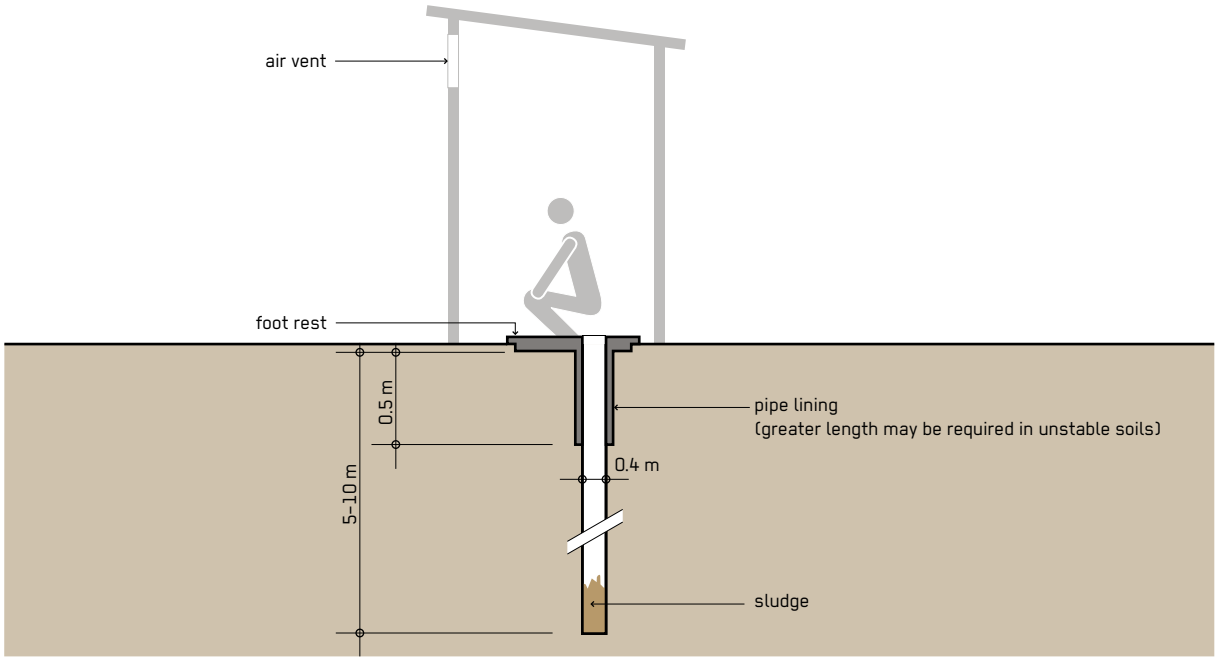
Borehole Latrine

Phase of Emergency	Application Level / Scale	Management Level	Objectives / Key Features
** Acute Response * Stabilisation Recovery	** Household ** Neighbourhood City	** Household ** Shared * Public	Safe containment, Minimising immediate public health risk, Fast implementation
Space Required	**Technical Complexity**	**Inputs**	**Outputs**
* Little	* Low	● Urine, ● Faeces, (● Anal Cleansing Water), (● Dry Cleansing Materials)	(● Sludge)



Borehole Latrines are mainly provided in the acute response phase, when a large number of latrines are required quickly and the site conditions do not allow for the excavation of bigger pits. A borehole driller is the main requirement for implementation.

Borehole Latrines are usually temporary solutions but depending on diameter, depths and number of users they can also be considered a longer-term solution with a potential life span of several years. The hole is bored using either a mechanical or manual auger or a drilling machine.

Design Considerations: Depending on the soil type and drilling equipment the borehole should be between 5 to 10 m deep with a diameter of usually between 0.3 to 0.5 m. A pipe lining is required at the top 0.5 m and may be greater in length in more unstable soil formations. The superstructure can either be simple screens around the hole (as a temporary solution) or more solid cubicles. As it is not possible to easily ventilate the borehole, the superstructure should allow for air circulation to reduce potential odour problems. The hole should be covered with a slab or pedestal. The lifespan (the time required to fill the borehole to within half a metre of the top) is a function of the borehole volume, divided by the number of users and estimated excreta volume generated per person. On average, solids accumulate at a rate of 3–5 L/person/month and up to 5–7.5 L/person/month if dry cleansing materials are used. Special attention should be paid to the expected groundwater level and the associated risks of groundwater pollution as well as the topography, ground conditions and soil permeability. Poorly permeable soil will increase the rate at which the borehole fills.

Materials: To construct a Borehole Latrine a manual or mechanical auger or a drilling machine is the main requirement. The user interface can be made out of wood, bamboo, concrete or prefabricated plastic. For the su-

perstructure, materials should be used that are readily available and that can be applied rapidly (e.g. bamboo, grass matting, cloth, wood, plastic or metal sheeting). For the borehole lining, a pipe should be used, with a minimum length of 0.5 m and corresponding to the borehole diameter. Some relief agencies have rapid response kits for slabs and superstructure which can be used where there are few resources locally.

Applicability: A Borehole Latrine can be implemented quickly and therefore is considered an appropriate solution in the acute response phase provided the technology is acceptable to the users, the ground conditions allow for the drilling of deep holes and there are sufficient tools, materials and human resources available. The soil needs to be stable and free of rock, gravel and boulders.

Operation and Maintenance: General operation and maintenance (O & M) measures include routine tasks such as checking the availability of water to ensure personal hygiene, of soap and dry cleansing material and monitoring the condition and fill level of the hole. Particular attention should be paid to the cleanliness of the top of the borehole. This is easily soiled and will quickly begin to smell and harbour flies if not regularly cleaned. As desludging is usually not an option the latrine should be decommissioned **(X.6)** when filled up to the top 0.5 m of the hole.

Health and Safety: If used and managed well, Borehole 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 identify the minimum distance to the next water source and limit exposure to microbial contamination. The Sphere minimum standards on excreta management should be consulted for further guidance.

Costs: Building Borehole Latrines is relatively inexpensive. Costs vary depending on the availability and costs of an auger or drilling machine and local materials. Cost calculations need to include ongoing O & M requirements.

Social Considerations: The design of the Borehole Latrine should ideally 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 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:

⊕ Inexpensive
⊕ Quick to construct
⊕ No water needed for operation
⊕ Little space required

⊖ Unsuitable for areas with high water-table, unstable soil and rocky ground
⊖ Often odour and fly problems
⊖ Groundwater contamination might be an issue
⊖ Drilling machine is needed
⊖ Relatively short lifetime

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