

The Sanitation Decision Support tool

Results of the Sanitation Decision Support Tool. The tool was created by WASTE (www.waste.nl) and the Akvo Foundation (www.akvo.org), in order to assist people in choosing sanitation technologies. We hope this tool proves useful, any comments can be send to m.t.westra@akvo.org.

Session information

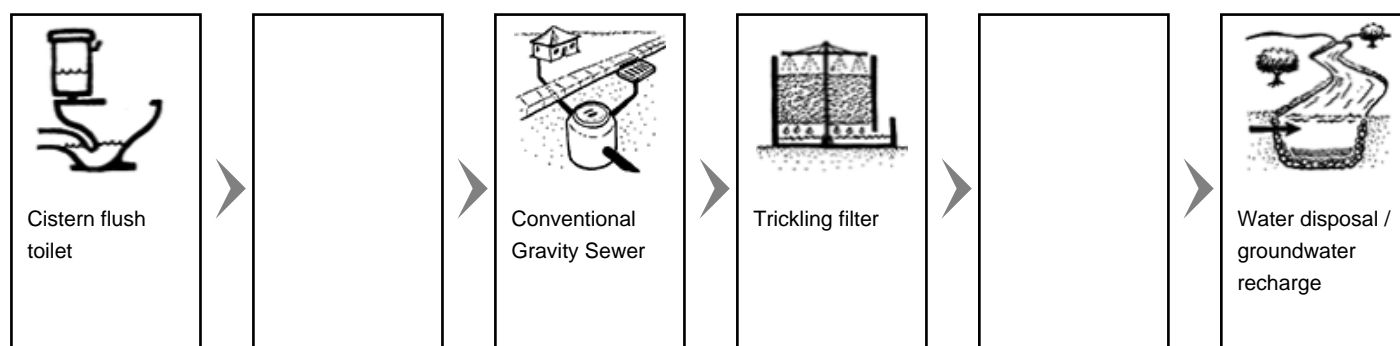
Date: Sun May 16, 2021

Time: 22:31:40

Options chosen

Water supply (one possible) <ul style="list-style-type: none">• none• fetched / hand-pump / standpipe / tanker• <u>connection</u>	Groundwater table (one possible) <ul style="list-style-type: none">• shallow• <u>medium</u>• deep	Soil type (one possible) <ul style="list-style-type: none">• clayey• silty• <u>sandy / gravelly</u>• rocky
Space availability (one possible) <ul style="list-style-type: none">• <u>large</u>• medium/large• medium• small/medium• small	Terrain / Topography / Slope (one possible) <ul style="list-style-type: none">• <u>flat</u>• slope	Anal cleansing method (more possible) <ul style="list-style-type: none">• water• <u>soft paper</u>• hard or bulky
Flood prone (one possible) <ul style="list-style-type: none">• not affected• frequent (low-lying area)	Vehicular accessibility (one possible) <ul style="list-style-type: none">• no access• limited / narrow access• <u>full access</u>	

Selected technologies



Links to Akvopedia articles

- Cistern flush toilet:
http://www.akvo.org/wiki/index.php/Cistern_Flush_Toilet
- Conventional Gravity Sewer:
http://www.akvo.org/wiki/index.php/Conventional_Gravity_Sewer
- Trickling filter:
http://www.akvo.org/wiki/index.php/Trickling_Filter
- Water disposal / groundwater recharge:
http://www.akvo.org/wiki/index.php/Water_Disposal_-_Groundwater_Recharge

Short descriptions

Cistern flush toilet



The Cistern Flush Toilet is usually porcelain and is a mass-produced, factory made User Interface. The Flush Toilet consists of a water tank that supplies the water for flushing the excreta and a bowl into which the excreta are deposited. The attractive feature of the Flush Toilet is that it incorporates a sophisticated water seal to prevent odours from coming back up through the plumbing. Depending on the age and design of the toilet, approximately 3 to 20L of water may be used per flush.

Relevant options

Conventional Gravity Sewer

Conventional Gravity Sewers are large networks of underground pipes that convey blackwater, greywater and stormwater from individual households to a centralized treatment facility using gravity (and pumps where necessary). The Conventional Gravity Sewer system is designed with many branches. Typically, the network is subdivided into primary (main sewer lines along main roads), secondary, and tertiary networks (network at the neighbourhood and household level). Conventional Gravity Sewers do not require onsite pretreatment or storage of the wastewater. Because the waste is not treated before it is discharged, the sewer must be designed to maintain self-cleansing velocity (i.e. a flow that will not allow particles to accumulate). A self-cleansing velocity is generally 0.6–0.75m/s. A constant downhill gradient must be guaranteed along the length of the sewer to maintain self-cleaning flows. When a downhill grade cannot be maintained, a pump station must be installed. Primary sewers are laid beneath roads, and must be laid at depths of 1.5 to 3m to avoid damages caused by traffic loads. Access manholes are placed at set intervals along the sewer, at pipe intersections and at changes in pipeline direction (vertically and horizontally). The primary network requires rigorous engineering design to ensure that a self-cleansing velocity is maintained, that manholes are placed as



required and that the sewer line can support the traffic weight. As well, extensive construction is required to remove and replace the road above.

Relevant options

At option **Terrain / Topography / Slope (one possible)** you have selected **flat**. This means that in your situation, Conventional Gravity Sewer might be a suitable technology. This depends on: **Requires a minimum slope of 0.5 %. If long distances are required, a pumping station might be needed.**

At option **Vehicular accessibility (one possible)** you have selected **full access**. This means that in your situation, Conventional Gravity Sewer might be a suitable technology. This depends on: **Primary sewers are laid below roads, at depths of 1.5 to 3 m to avoid damages caused by traffic loads.**

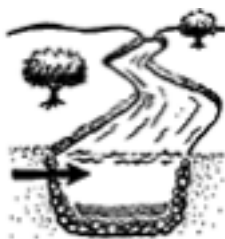
Trickling filter



A Trickling Filter is a fixed bed, biological filter that operates under (mostly) aerobic conditions. Pre-settled wastewater is 'trickled' or sprayed over the filter. As the water migrates through the pores of the filter, organics are degraded by the biomass covering the filter material. The Trickling Filter is filled with a high specific surface area material such as rocks, gravel, shredded PVC bottles, or special pre-formed filter material. A material with a specific surface area between 30 and 900 m²/m³ is desirable. Pre-treatment is essential to prevent clogging and to ensure efficient treatment. The pre-treated wastewater is 'trickled' over the surface of the filter.

Relevant options

Water disposal / groundwater recharge



Treated effluent and/or storm water can be discharged directly into receiving water bodies (such as rivers, lakes, etc.) or into the ground to recharge aquifers. It is necessary to ensure that the assimilation capacity of the receiving water body is not exceeded, i.e. that the receiving body can accept the quantity of nutrients without being over-loaded.

Parameters such as turbidity, temperature, suspended solids, BOD, nitrogen and phosphorus (among others) should be carefully controlled and monitored before releasing any water into a natural body. The use of the water body, whether it is used for industry, recreation, spawning habitat, etc., will influence the quality and quantity of treated waste water that can be introduced without deleterious effects.

Relevant options