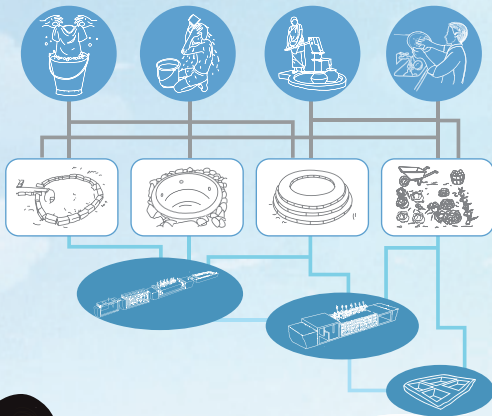




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जल शक्ति मंत्रालय  
भारत सरकार  
DEPARTMENT OF DRINKING WATER AND SANITATION  
MINISTRY OF JAL SHAKTI  
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# GREYWATER MANAGEMENT



## What is greywater?

Greywater is used or wastewater that is free of any faecal or urine contamination.



No poo



No urine

GWM is necessary to maintain and build upon the gains made in SBM (G) Phase 1. It is an essential component of SBM (G) Phase 2 and the Jal Jeevan Mission.

It still contains some chemical and biological particles such as:



Ash



Soap



Detergent



Particles



Grease

It is generated from various domestic activities



Kitchen activities



Bathing, washing, cleaning



Maintenance of livestock



Run off at community water points

Greywater is also generated at institutions such as schools, shops, offices, etc.

## What is GWM?

GWM is the use of simple technologies to properly collect and treat greywater



Greywater management includes:



Collection of greywater



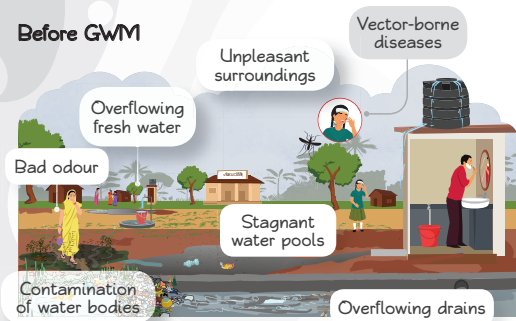
Treatment to remove chemical & biological contaminants



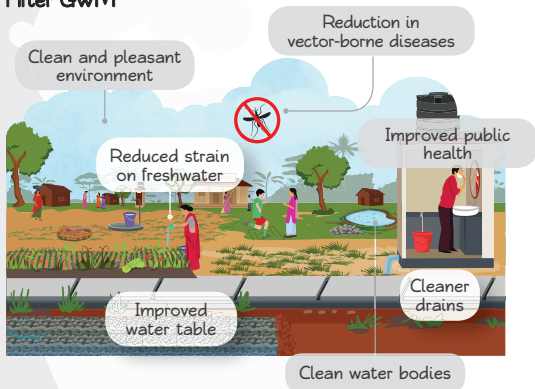
Usage of treated water

## Benefits of GWM

### Before GWM



### After GWM



Treated greywater can be used for activities such as:



Flushing of toilets



Cleaning (floors, vehicles, community spaces)



Irrigation/watering of kitchen gardens



Recharge of groundwater



Pisciculture (fish-farming)



**Greywater must not be consumed. It must not be used for cooking or drinking.**

## Principles of GWM



### Reduce

Use less freshwater. Generate less greywater



### Reuse

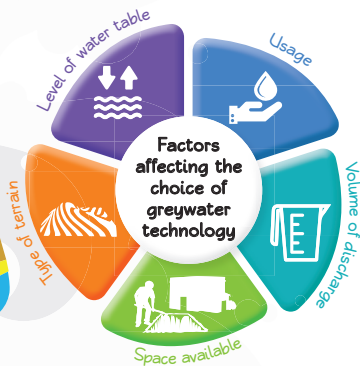
Use treated water for various permitted purposes



### Recharge

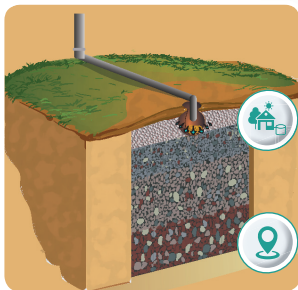
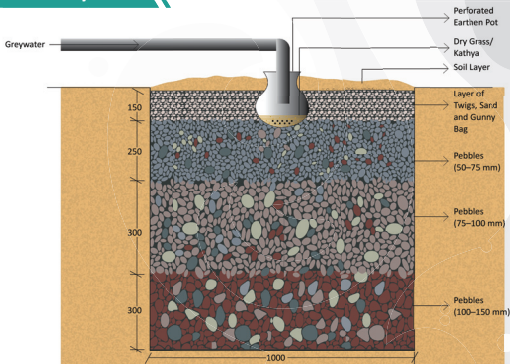
Allow greywater to percolate into the ground and replenish the groundwater

## How to select greywater technology



## Household (HH) level

### Soak pit



**What:** A dug out pit filled with graded stones and gravel

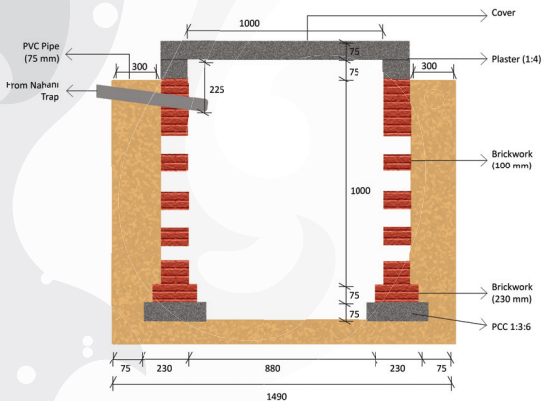
**Suitable for:**

- ▶ Permeable soil
- ▶ Low water table



**Cost:** Approximately ₹ 1279

# Leach pit



**For higher incoming flow**

**What:** A honeycomb-patterned brick-lined or RCC pit

**Suitable for:**

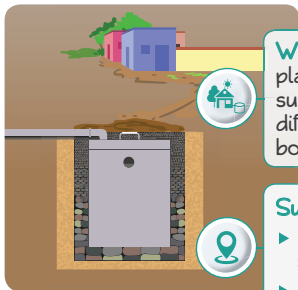
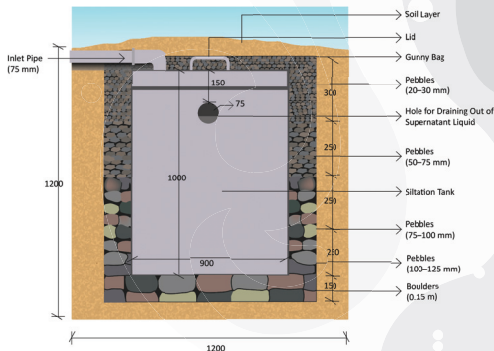
- ▶ Permeable and semi-permeable soil
- ▶ Low water table



**Cost:** Approximately ₹ 4126



## Magic pit



**What:** A cement/plastic tank surrounded by different grades of boulders and stones

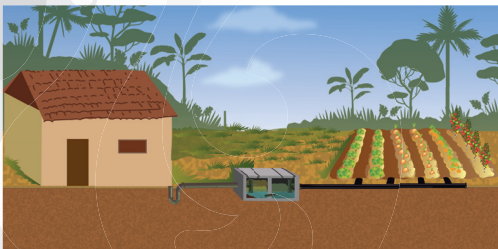
**Suitable for:**

- ▶ Permeable and semi-permeable soil
- ▶ Low water table



**Cost:** Approximately ₹ 2539

## Kitchen garden



**What:** Greywater can be used for watering a kitchen garden, reducing the demand for freshwater

### Suitable for:

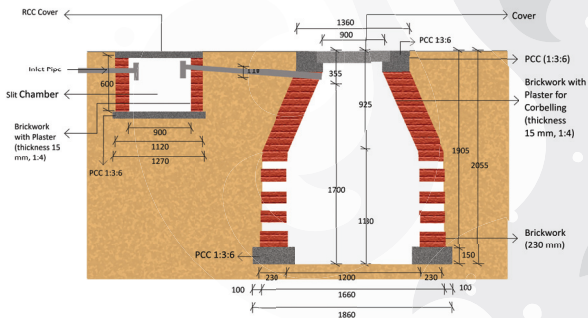
- ▶ All soil types
- ▶ High water table areas
- ▶ All terrains, requires alternate arrangement during rainy season



**Cost:** Approximately ₹ 600

## Community level

### Community leach pit



**What:** A honeycomb-patterned brick-lined or RCC pit

**Suitable for:**

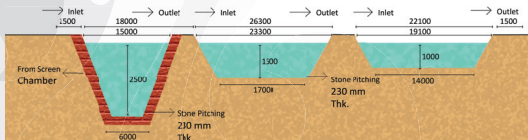
- ▶ Permeable and semi-permeable soil
- ▶ Low water table



**Cost:** Approximately ₹ 22,776\*

\*for 5 HHs

## Waste stabilization pond (WSP)

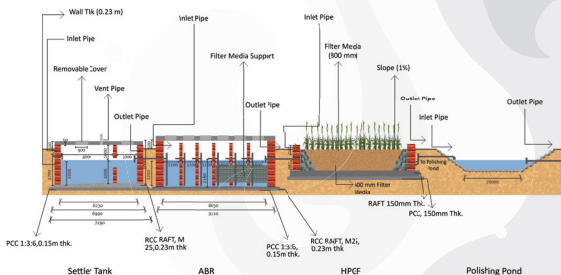


**What:** A series of shallow man-made basins

**Where:** At village-level drainage discharge points, where large quantity of greywater is generated

**Cost:** Approximately ₹ 16,58,076 for 211 kld

# Decentralized wastewater treatment system (DEWATS)



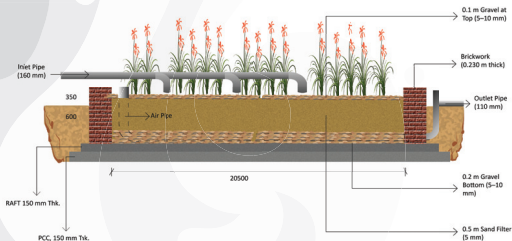
**What:** A gravity-based treatment technology

**Where:** Customizable



**Cost:** Approximately ₹ 50,27,999 for 211 kld

## Constructed wetlands (CWs)



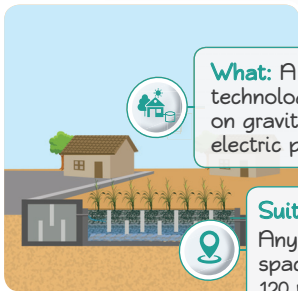
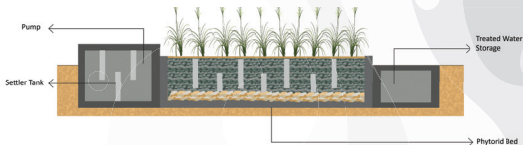
**What:** A large gravel and sand-filled channel planted with aquatic vegetation

**Suitable for:**

- ▶ All terrains
- ▶ All climatic conditions

**Cost:** Approximately ₹ 36,38,113 for 211 kld

## Phytorid



**What:** A scalable technology that works on gravity and has a low electric power requirement



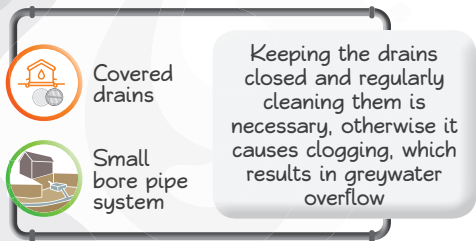
**Suitable for:** Any terrain. The space requirement is 120 m<sup>2</sup> for 100 kld



**Cost:** Approximately ₹ 51,961 for 211 kld

## Conveyance systems

A conveyance system is the drainage line that connects the source of greywater to the treatment unit. These can be:



### Operation and maintenance (O&M) at HH level

- Maintaining cleanliness and hygienic conditions on the premises
- Regular cleaning and removal of inorganic/unwanted matter from the drains
- Installation of oil/grease/sedimentation chamber before the treatment system
- Removal of grit, dirt, plastic, paper, etc. from the drains inside and outside the house





## Operation and maintenance (O&M) at community level

- Installation and periodic cleaning of screens, etc.
- Operation and maintenance of units as per the prescribed schedule
- Routine cleaning of the filter beds, aeration tanks, sludge holding tanks, etc.
- Periodic servicing and overhauling of all the electro-mechanical devices (pumps, motor, blowers, light fittings, control panel, etc.)





## Things to remember



- Use freshwater judiciously
- Generate minimum greywater at HH level
- Set up appropriate HH level treatment units
- Undertake regular O&M of HH level treatment units
- Discharge household greywater into conveyance systems where space for GW treatment system is not available at HH level
- Reuse treated greywater for various purposes
- Recharge groundwater wherever feasible
- Create awareness and uptake of positive practices for GWM





DO

- ✔ Use on-site treatment of greywater wherever possible
- ✔ Ensure separation of greywater and blackwater
- ✔ Use treated greywater only for recommended activities such as watering gardens, irrigation, toilet flushing, commercial vehicle washing, pisciculture, groundwater recharge, etc.
- ✔ Recharge groundwater wherever possible
- ✔ Ensure optimum usage of freshwater in order to generate minimum greywater
- ✔ Take care of greywater treatment units with proper O&M
- ✔ Use Nahani traps and oil/grease chamber at locations of greywater generation

DONT



- ✘ Keep greywater stagnant for longer durations because it can pollute the environment and spread diseases
- ✘ Deal with greywater with bare hands
- ✘ Let blackwater enter the greywater treatment units or the conveyance systems
- ✘ Use harmful acids or detergents for washing
- ✘ Discharge greywater in the open





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