



# Faecal Sludge Treatment Plant

## MALAPANAGUDI, BALLARI, KARNATAKA

### PROJECT BRIEF

The first phase of Swachh Bharat Mission – Grameen (SBM-G) (2014-19) focused on making all villages in India open defecation free (ODF) - through the provision of individual household or community toilets.

The second phase, which started in February 2020, focuses on sustaining these ODF efforts through continued usage of toilets and through solid-liquid waste management (SLWM).

As part of second phase efforts, The Rural Drinking Water and Sanitation Department, Government of Karnataka issued a State Policy and Strategy for Sanitation and Waste Management in Rural Areas as well as Model Bye-Laws. This is being followed by the implementation of liquid waste treatment initiatives in 16 *Gram Panchayats*, which will serve as pilots for the rest of the state. One of these *Gram Panchayats* is Malapanagudi in Ballari District.

### PROJECT OUTCOMES

Assessing gaps across the sanitation value chain in the Gram Panchayat; and implementing sustainable, cost-effective and appropriate systems to manage faecal sludge generated within the Gram Panchayat up to a radius of 15 km from the Faecal Sludge Treatment Plant (FSTP) site

### REUSE OPTIONS

1. Treated wastewater for landscaping
2. Bio-solids in agriculture

### O&M Activities

#### Operation tasks

1. Daily monitoring of the plant
2. Removal of collected solid waste from the screening chamber

#### Maintenance tasks

1. Removal of Bio solids Planted drying after its drying period
2. Desludging of the Integrated Settler and Filter Chambers
3. Cleaning of the filter media in the Planted Drying Bed
4. Cleaning of the filter media in the Planted Gravel Filter
5. Trimming of plants in Planted Gravel Filter

### SALIENT FEATURES

- Source of faecal sludge:** Single pits
- Design capacity:** 12 kilo litres per week (klw)
- Population covered:** 63,829 (Cluster of 8 GPs)
- TS inlet quality:** 30,000 mg/L
- Influent Quality:** BOD: 6,000 mg/L  
COD: 30,000 mg/L

### PROJECT SPECIFICATIONS

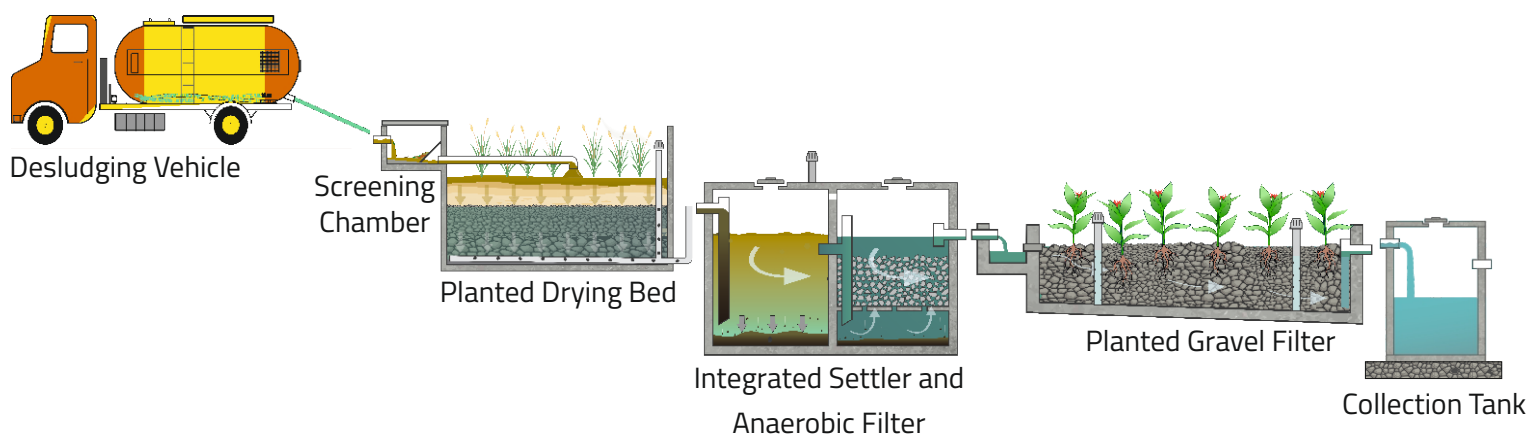
- Implementing agency:** Rural Drinking Water and Sanitation Department, Government of Karnataka
- Technical partner:** CDD Society
- Constructed By:** AVR Enterprises
- Implementation cost:** Rs. 38 Lakhs
- Operation and maintenance cost:** Rs. 1.72 Lakhs per annum
- Construction period:** 6 Months
- Commissioning date:** 6<sup>th</sup> May 2022

### MODULES ADOPTED

Components	Area of Construction
Screening chamber	3.20 m <sup>2</sup>
Planted Drying Beds	4 beds*33.68 m <sup>2</sup> = 134.72 m <sup>2</sup>
Integrated Settler and Anaerobic Filter	8.8 m <sup>2</sup>
Planted Gravel Filter	13.6 m <sup>2</sup>
Collection tank	4 m <sup>2</sup>
Other Civil Structure	240 m <sup>2</sup>
<b>Total Area</b>	<b>404.32 m<sup>2</sup></b>



## TREATMENT PROCESS



## SYSTEM IN BRIEF

The Faecal Sludge Treatment Plant consists of modules for sludge drying and liquid treatment, as follows:

Sl.No	Module	Treatment Objective
1	Screening chamber	Is the first module of the FSTP and helps in trapping all the solid waste and inorganic solids like plastics, cloth, sand, silt etc. present in the faecal sludge
2	Planted Drying Beds	This is the main module of treatment which consists of a filter bed with graded filter media and plantation of emergent macrophytes which helps in not only dewatering and drying of sludge but also allow some amount of stabilization through nutrient absorption. The first set of 2 beds receive faecal sludge which is allowed to dry for a week after every loading. Once these 2 beds gets filled, it is allowed to dry completely until 6 months. After the end of this drying period, Bio solids are obtained from these beds and can be used for agriculture. During this resting period of 6 months, next set of 2 beds are used and loaded with faecal sludge. The percolate is collected in a drain with a perforated top slab and sent to the liquid treatment module.
3	Integrated Settler and Anaerobic Filter	Primary and secondary treatment of the percolate is done first through a single chambered anaerobic settler to remove the settleable solids. This is followed by a single chambered anaerobic filter to trap and remove further organic matter by the filter media
4	Planted Gravel Filter	A horizontal planted gravel filter provides tertiary treatment of percolate to remove the nutrients and any residual colour and odour present in the outflow from the previous module
5	Collection tank	The final module includes a collection tank to be used for landscaping in the FSTP site



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