

Fig. 1: Project location

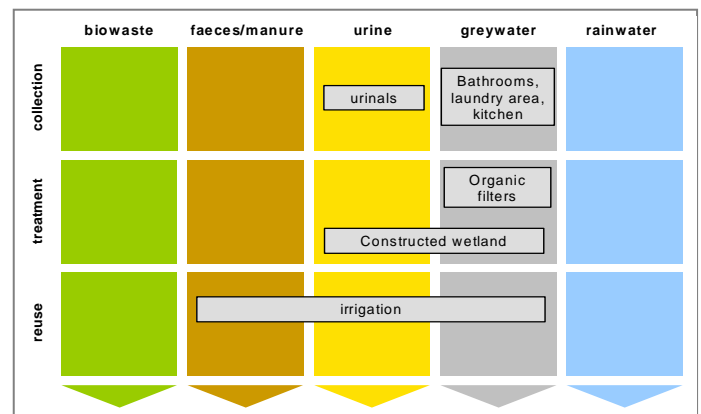


Fig. 2: Applied sanitation components in this project

1 General data

Type of project:

School Sanitation

Project period:

Start of Planning: 03/2008

End of construction: 05/2008

Start of operation: First quarter of 2009

Project scale:

Approx. 500 pupils and staff members living at Shree Baleshwar Anudanit Primary and Secondary Ashram School

Address of project location:

Shree Baleshwar Anudanit Primary and Secondary Ashram School

Sarole Pathar, Tal Sangamner, Dist. Ahmadnagar 422 620, Maharashtra State, India

Planning institution:

Ecosan Services Foundation (ESF)

secon gmbh

Executing institution:

Shree Baleshwar Anudanit Primary and Secondary Ashram School

Supporting agency:

EU-funded AsiaProEco II - project

2 Objective and motivation of the project

The project aims at up-grading the existing sanitation scheme at Shree Baleshwar Anudanit Primary and Secondary Ashram School in Sarole Pathar.

The main objective of this project is to treat a mixture of urine and greywater to such a degree that it is fit for re-use as irrigation water.

3 Location and conditions

Shree Baleshwar Anudanit Primary and Secondary Ashram School, which is situated off the Pune-Nashik road in India's Maharashtra State, accommodates 155 girl students, 162 boy students, 2 female and 9 male teachers as well as 5 female and 2 male non-teaching staff members at present.

Currently, extension of the school to a total capacity of 500 students (300 girls and 200 boys) is ongoing.

Water supply to the school is provided from a nearby water tank in the village. The school utilises about 20 m³ of freshwater (having drinking water quality) per day at annual costs of INR 2,000 (approx. 30€). The water taken from the tank is just sufficient to cover basic needs, but cannot provide for any other activities such as irrigation of land or gardening.

2 sanitation blocks, one for the girl students (comprising of 6 toilets, 7 urinals and 6 bathrooms) and one for the boy students (comprising 5 toilets, 7 urinals and 6 bathrooms) are provided within the school premises. Each sanitation block has a water tank of 2 m³ capacity for fetching water for washing clothes, taking a shower and flushing the toilet (see Fig 3).



Fig 3: Water tank for fetching water inside the sanitation facilities (photo: N. Zimmermann)

The toilet wastewater is discharged to septic tanks that drain to an open field.

The trench-type urinals are flushed with greywater from bathrooms and the laundry area. The urine-greywater-mixture is discharged to an open field outside the school premises.

4 Project history

The implementation of the above-described treatment cum re-use facilities is still ongoing. Commissioning of the re-use oriented treatment system is expected in the first quarter of 2009.

5 Technologies applied

Greywater and/or greywater-urine mixture will be drained to the vertical flow filters (Fig 4) filled with organics (rice husk, saw dust, etc.) for rudimentary pre-treatment (i.e. removal of solids) before being discharged to a horizontal flow constructed wetland (Fig 5).



Fig 4: Organic filter (under construction) (photo: N. Zimmermann)

The wetland effluent is collected in a storage pond from where the water will be pumped for irrigation purposes.



Fig 5: Horizontal Flow Constructed Wetland (under construction) (photo: N. Zimmermann)

6 Design information

Daily wastewater production is estimated to be about 15.0 m³ (i.e. 15,000 litres).

Surface area and height of the organic filter media are 1.00 to 4.00 m² (depending on anticipated wastewater production) and 0.90 m, respectively.

Length and width of the horizontal flow constructed wetland is 6.00 m by 20.00 m. The main filter media is fine gravel with a grain size of 4–8 mm. The height of filter media (at inlet) is approx. 0.80 m. while the saturated water depth is approx. 0.60 m.

The pond/tank has an effective volume of 14 m³ at a maximum depth of about 1.20 m.

7 Type and level of reuse

The constructed wetland shall be operated as a “productive wetland” growing (hybrid) Napier grass (also referred to as “Elephant grass” due to its tallness and vigorous vegetative growth, “Sudan grass” or “King grass”), which is an improved fodder grass that produces a lot of high-protein forage. The constructed wetland effluent shall be used for irrigation purposes at the school premises.

8 Further project components

(This section will be updated soon)

9 Costs and economics

As the construction is not yet finished, there is no detailed information on the costs of the different components of the wastewater management scheme.

10 Operation and maintenance

Operation and maintenance of the treatment facilities will be done by staff members of the school.

11 Practical experience and lessons learnt

As implementation of the treatment and reuse facilities is not yet finished, practical experiences, lessons learned and comments will be provided at a later stage.

12 Sustainability assessment and long-term impacts

With regards to long-term impacts of the project, the main expected impact of the project is improved sanitation at the Ashram School and the treatment of greywater for reuse as irrigation water.

Table 1 depicts a preliminary assessment of the five sustainability criteria for sanitation (according to the SuSanA Vision Document 1) of this project.

Table 1: Qualitative indication of the sustainability of the system. A cross in the respective column shows assessment of the relative sustainability of project (+ means: strong point of project; o means: average strength for this aspect and – means: no emphasis on this aspect for this project).

Sustainability criteria:	collection and transport			treatment			transport and reuse		
	+	o	-	+	o	-	+	o	-
• health and hygiene	X			X			X		
• environmental and natural resources		X		X			X		
• technology and operation	X			X			X		
• finance and economics		X			X			X	
• socio-cultural and institutional		X			X			X	

13 Available documents and references

No documents are available at the moment.

14 Institutions, organisations and contact persons

Project owner:

Shree Baleshwar Anudanit Primary and Secondary Ashram School, Sarole Pathar, Tal Sangamner, Dist. Ahmadnagar 422 620, Maharashtra State, India

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Case study of SuSanA projects

Shree Baleshwar Anudanit Primary and Secondary Ashram School

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