



Fig. 1: Project location

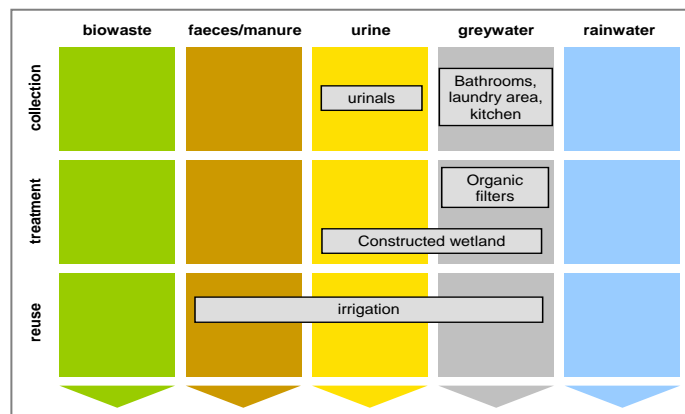


Fig. 2: Applied sanitation components in this project

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, Sarole Pathar, India

Supporting agency:

European union (under Asia ProEoll scheme) website??

2 Objective and motivation of the project

The objectives of this project are:

- Up-grading the existing sanitation scheme at Shree Baleshwar Anudanit Primary and Secondary Ashram School in Sarole Pathar.
- To treat a mixture of urine and greywater to such a degree that it is fit for reuse as irrigation water.
- Demonstration etc.

3 Location and conditions

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

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

Water supply (*Where is the source of this water?*) to the boarding school is provided from a nearby water tank in the village (*What is the name of the village; number of inhabitants?*). The school utilises about 20 m³ of freshwater (having drinking water quality) per day at annual costs of INR 2,000 (approx. 30€ (*Very cheap! €/m³=?*)). 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 (*Are there any photos of girls' 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 toilets (see Fig 3) (*Is this smaller font than the template? Not a good photo for the front page because it is dangerous for the children.*).



Fig 5: Horizontal Flow Constructed Wetland for...? (under construction) Where...? Month, year? (photo: N. Zimmermann)

The toilet (Which type of toilet? How many litres per flush?) 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 (Are there any photos? What about odour? What about clogging?).

(Why no rainwater harvesting? Why are urinals not waterless? Who runs the school and how long has it been there? What is the distance to some larger city? What is the age of the pupils? At end of section 3: Description of problems with existing sanitation systems or are there none?).

4 Project history

The implementation of the above-described treatment cum reuse facilities is still ongoing (Repeat and explain the dates given under section 1. Whose idea was it to do? What and



Fig 4: Organic filter for....(under construction) (Organic filter for what? Where is it? When has the photo been taken?) (photo: N. Zimmermann)

when?). Commissioning of the reuse oriented treatment system is expected in the first quarter of 2009 (Did it happen and how?).

5 Technologies applied

Greywater and/or greywater-urine mixture will be drained to the vertical flow filters (Fig 4) (Photos is fuzzy; get more and better photos) filled with organic matter (How is the organic matter removed? What about odour?).(rice husk, saw dust,



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

etc.) for rudimentary pre-treatment (i.e. removal of solids) before being discharged to a horizontal flow constructed wetland (Fig 5) (Photo is fuzzy; get more and better photos). The wetland effluent is collected in a storage pond from where the water will be pumped for irrigation purposes.

6 Design information

The wastewater production is estimated to be about 15.0 m³ (i.e. 15,000 litres/d). (Section 3 said 20m³/d is used? Which is correct? How much urine will be collected?)

The surface area and height of the organic filter media are 1 to 4m² (Is it 1 or 4m²?)(depending on anticipated wastewater production) and height is 0.9 m, respectively (Express wetland area as m² per person).

Length and width of the horizontal flow constructed wetland is 6 m by 20 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. 0.6 m.

The pond/tank has an effective volume of 14 m³ with a maximum depth of about 1.2 m. Type of liner?

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.

7 Type and level of reuse

The constructed wetland effluent shall be used for irrigation purposes at the school premises (What do they exactly irrigate? Urine will have a fertilizing effect?).

8 Further project components

There are currently no further project components

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. (Was there no cost estimate before construction started? Who pays for it?)

10 Operation and maintenance

Operation and maintenance of the treatment facilities will be done by staff members of the school. *(What do they have to do exactly and how many hours per week? Who can the staff turn to if they have problems?)*

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

Table 1 depicts a preliminary assessment of the five sustainability criteria for sanitation (according to the SuSanA Vision Document 1) of this 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 *(Is this replacing portable water and the demonstration character?)*

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	

Sustainability criteria for sanitation:

Health and hygiene include the risk of exposure to pathogens and hazardous substances and improvement of livelihood achieved by the application of a certain sanitation system.

Environment and natural resources involve the resources needed in the project as well as the degree of recycling and reuse practiced and the effects of these.

Technology and operation relate to the functionality and ease of constructing, operating and monitoring the entire system as well as its robustness and adaptability to existing systems.

Financial and economic issues include the capacity of households and communities to cover the costs for sanitation as well as the benefit, e.g. from fertilizer and the external impact on the economy.

Socio-cultural and institutional aspects refer to the socio-cultural acceptance and appropriateness of the system, perceptions, gender issues and compliance with legal and institutional frameworks

For details on these criteria, please see the SuSanA Vision document "Towards more sustainable solutions" (www.susana.org).

13 Available documents and references

No documents are available at the moment. *(Are there no design documents available from Martin?)*

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

Technical consultancy:

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Technical planning/implementation

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Case study of SuSanA projects

Urine and greywater treatment with reuse at Ashram School, Sarole Pathar, Maharashtra, India - draft
SuSanA 2009

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www.susana.org

(The toilets are not changed by this project only the urine and greywater treatment and reuse?)