Case study of sustainable sanitation projects

Urban decentralised wastewater management Badlapur, Maharashtra, India - draft

Fig. 1: Project location

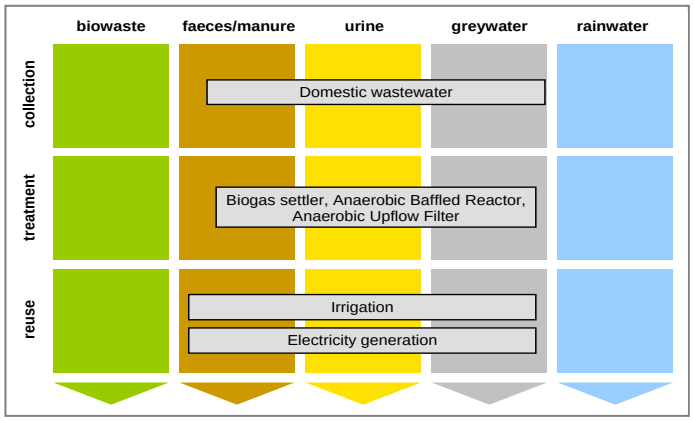

Fig. 2: Applied sanitation components in this project

1 General data

Type of project:

Decentralised wastewater management and reuse concept

Project period:

Start of Planning: 2008

Start of construction: was planned for 2009 but not yet started (awaiting approval process)

Start of operation:

Project scale:

Decentralised wastewater treatment scheme for 300 + 240 households (stage I & II, respectively)

Address of project location:

Madha Housing Society, Badlapur, Dist. Thane, Maharashtra, India

Planning institution:

Ecosan Services Foundation (ESF)

Paradigm Environmental Strategies Ltd.

seecon gmbh

Executing institution:

Kulgaon Badlapur Municipal Council

Supporting agency:
Kulgaon Badlapur Municipal Council

Note: this project has not been built yet and therefore just contains a concept design.

2 Objective and motivation of the project

Inspired by the ongoing ecosan pilot project at "Adarsh Vidyaprasarak Sanstha's College of Arts & Commerce, Kulgaon" in Badlapur town, the Badlapur Municipal Council has decided to promote decentralised sanitation concepts in Badlapur town on the large-scale. It was decided that 5 existing large-scale septic tanks at Madha Housing Colony shall be replaced by decentralised wastewater treatment plants allowing for the reuse of the treated water.

3 Location and conditions

Madha Housing Colony is located in Badlapur town, in Maharashtra's Thane district, about 68 km from Mumbai, 34 km from Thane and 10 km from Ulhasnagar. The wastewater from about 300 households (i.e. Cluster A) drains to a septic tank for treatment (see Fig. 3). But due to the desolate condition of the existing sewer system, a large amount of the wastewater does not even reach the treatment system. The septic tank itself is in bad condition as well; partially filled with solid waste dumped at the site.

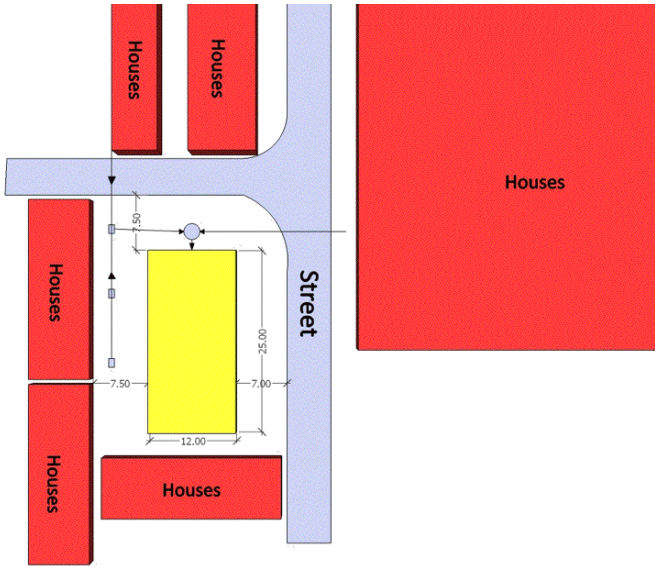

Fig 3: Layout map of „Cluster A" of Madha Housing Society depicting location of houses and existing septic tank (yellow rectangle) (source: N. Zimmermann)

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Therefore the existing sewer lines and septic tanks at Cluster A and B (about 240 households) shall be augmented or replaced by decentralised treatment systems comprising of a settler, an anaerobic baffled reactor and an anaerobic upflow filter respectively. Stage-I of the project foresees replacement of the septic tank at Cluster A with a decentralised treatment system; Stage-II Cluster B shall follow after successful completion of the treatment and re-use system in Cluster A.

4 Project history

The project is in the construction approval stage; structural drawings, layout and bill of quantities (BoQ) are prepared and submitted for sanctioning.

5 Technologies applied

Treatment of domestic wastewater will happen in a decentralised treatment systems comprising a (biogas) settler, an anaerobic baffled reactor and an anaerobic upflow filter (see Fig 4).

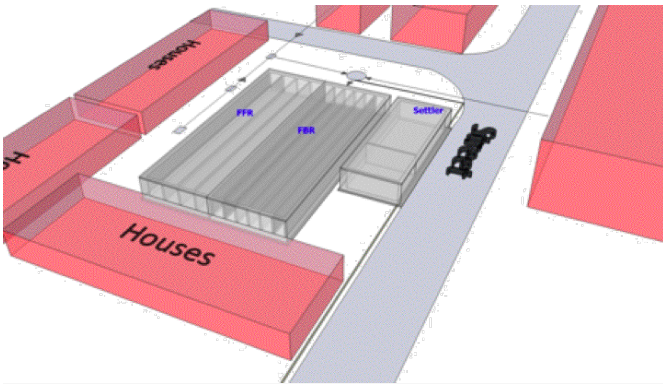

Fig 4: Proposed decentralised wastewater treatment scheme (source: N. Zimmermann)

6 Design information

Daily wastewater production is estimated to be about 200 m³. The surface area for construction of all treatment steps is approx. 500 m^2.

7 Type and level of reuse

The treated water shall be reused for irrigation purpose at the site. Biogas produced in the process of anaerobic wastewater treatment will be collected and shall be converted into electricity via a (bio) gas generator; the electricity can be stored in an accumulator (battery) and be used on-site to bridge power cuts.

8 Further project components

(This section will be updated later)

9 Costs and economics

A cost estimate suggests total project implementation costs of about INR 40 lakhs (i.e. approx. EUR 65,000).

10 Operation and maintenance

Operation and maintenance of the treatment facilities will be done by the Kulgaon Badlapur Municipal Council.

11 Practical experience and lessons learnt

As the project is in the planning and building permission phase and implementation is expected to happen only after planning approval is obtained, 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 treatment of the total domestic wastewater and the safe reuse of the treated water for irrigation purposes. As the project has not been implemented yet, this cannot yet be assessed.

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).

	collection and transport			treatment			transport and reuse		
Sustainability criteria:	+	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	

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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).

Case study of SuSanA projects

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This document is available from:
www.susana.org

13 Available documents and references

No documents are available at this stage.

14 Institutions, organisations and contact persons

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