# Ecosan: An unsuccessful sanitation scheme at a rural school: Lessons learned from the project failure

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**Abstract**

Emzamweni High School is a rural educational institution in South Africa that serves a number of low-income communities. Sanitation was a badly neglected aspect, with the facilities consisting of old, unimproved pit latrines, which were in a filthy and unhygienic condition due to a lack of proper care and maintenance. The Municipality decided to construct a new toilet block, using the opportunity to demonstrate ecological sanitation technology. The challenge was to introduce ecosan at an institutional facility, rather than in a home. The concept was therefore thoroughly workshopped with the principal and teachers, who would be ultimately responsible for transferring the required knowledge of operation and maintenance procedures to the pupils, in order to ensure proper use of the toilets. Information booklets and posters were also prepared and given to the school for use as teaching aids. Despite the careful preparation and intensive training, however, the teachers were not committed to ensuring that the pupils used the facilities properly, and the project was therefore a failure. Nevertheless, some valuable lessons were learned for future implementation of urine diversion sanitation projects at South African schools.

## Introduction

Emzamweni High School is a rural educational institution situated within the municipal boundary of Msunduzi, in KwaZulu-Natal province, South Africa. It is located in a scenic area and serves a number of low-income communities in the surrounding district. In the majority of schools populated by Blacks, sanitation had been badly neglected by the previous authorities, and while the present government has committed itself to improving school sanitation, it is struggling to catch up with the backlog of inadequate amenities. Emzamweni's "toilets" consisted of dilapidated, smelly and unhygienic ordinary pit latrines, with no handwashing facilities. They were also in a filthy condition, due partly to vandalism, but mostly because of a lack of proper care and maintenance (Figure 1). The latter problem was largely the result of the teachers' poor attitude – they had the use of flushing toilets connected to a septic tank, as well as proper washbasins with running water, and were either completely unaware of the pupils' plight or did not care. The school janitor obviously also avoided cleaning the pupils' toilets, because the floor was never even swept. The result of this neglect was that female pupils did not make use of the facilities, preferring to wait until they returned home, while male pupils simply relieved themselves behind the nearest convenient tree or against the wall. Interestingly, the teachers' toilets were also neither clean nor properly maintained.

**Figure 1:** The existing school latrines

Although the school property belonged to the provincial education department, the Municipality decided, as a community project, to sponsor the construction of improved sanitation facilities. It was, however, stipulated that the municipality would only sponsor half the actual number of toilets required for all the pupils, and that the school would be expected to raise its own funds to build the remainder. CSIR was requested to assist with the technical and social input, and it was agreed to use the opportunity to demonstrate ecological sanitation technology, which was completely unknown in this area. It was also an interesting challenge to introduce urine diversion at a school, rather than in a home – it is always easier to implement a sanitation project in a domestic situation, because the family owns the toilet and the mother usually assumes control of it, keeps it clean and teaches the children how to use it properly. An institutional toilet is not subject to this personal control, and ownership can thus be a problem. Social aspects therefore took priority during project implementation.

**Project implementation**

A meeting was arranged between the CSIR project team and the school staff (principal and teachers), where urine diversion technology was explained (Figure 2). The intention was to gain acceptance in principle of the proposed technology before detail project planning commenced. Much interest was shown – and also some scepticism – with many questions being asked concerning the operation and maintenance of the toilets.

**Figure 2:** Initial meeting with teachers where urine diversion technology was explained

The next step was to facilitate a workshop for the teachers (Figure 3). The intention of this workshop was to transfer to them the knowledge required for teaching the pupils how to use and maintain the new toilets. This included discussing the various aspects of sanitation in some detail, starting with basic hygiene awareness and disease transmission routes associated with poor sanitary practices. Operation and maintenance of urine diversion toilets, including excreta re-use in agriculture, were then discussed at length, using posters specially prepared for this purpose (Figure 4). There was wide debate on the latter aspect, as re-use of human excreta is a foreign concept in South Africa.

**Figure 3:** Workshop for teachers

**Figure 4:** Examples of ecosan posters

Booklets containing all the information covered in the workshop, as well as copies of the posters, were given to the school for use as teaching aids. It was made clear to the teachers that only they, and nobody else, were in a position to transfer this knowledge to the pupils, and that it would be their responsibility to do so once the new toilets were built. It would also be their responsibility to ensure that the pupils kept the toilets clean and properly maintained. Some maintenance methods were suggested, such as developing a roster for the various classes to be involved in cleaning activities, ensuring proper supervision, limiting use of the facilities to only half the pupils, etc.


**Figure 5:** Examples of illustrations in teaching aid booklet

The booklets contained a written and pictorial description of urine diversion sanitation, as well as information on basic health and hygiene, water- and excreta-related diseases, operation and maintenance of the toilets, and re-use of urine and dehydrated faeces. Figure 5 shows some of the illustrations contained in the booklets.

Meanwhile, construction of the toilet block had begun. The pupil numbers dictated that, for the first phase construction decided upon, 6 toilet pedestals for girls and 4 for boys were required. The boys would also be supplied with a urinal. The faeces vaults were designed to be easily accessible, while the urinal was flushed by wastewater from the handwashing trough. All urine was collected in a single pipe and led to a storage tank, where it would be available for agricultural use if desired. Figure 6 illustrates these aspects, while Figure 7 shows the relevant design details.

**Figure 6:** Construction details: left, handwashing trough and part of urinal; right, urine tank; below, nearly completed structure showing vaults

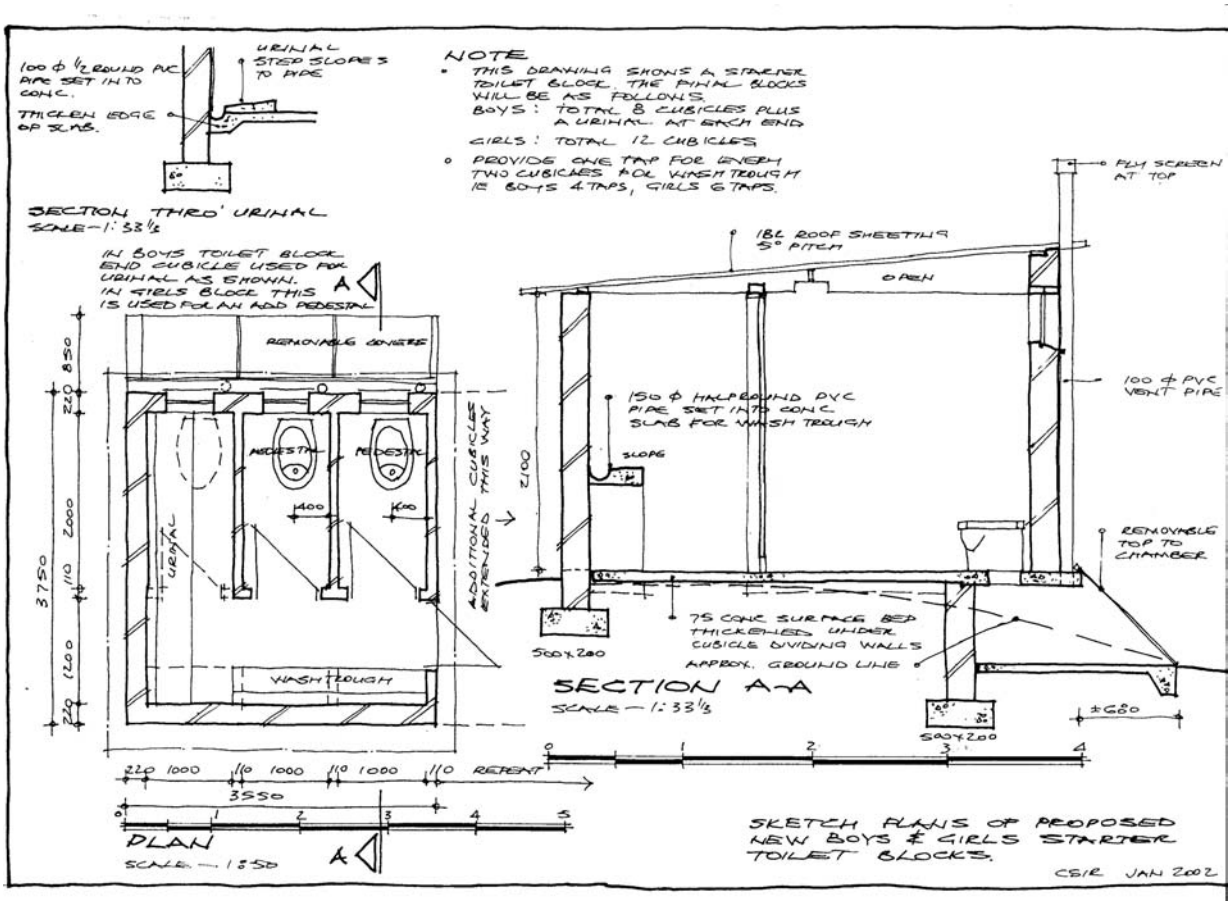


**Figure 7:** Design details of the toilet block

## Results

The toilet block was completed in July 2002. Due to the fact that a few months had elapsed since the teachers' workshop, a refresher session was offered on the important aspects of urine diversion toilets. This took place just before the facility was opened for use. The teachers were reminded that the toilets would not work properly unless they committed themselves to ensuring that the pupils adhered to correct operation and maintenance procedures. This would be especially important at the beginning of each year, when a new crop of pupils would arrive at the school. Posters were put up on the walls inside the toilet block and a large pile of ash, as well as plastic buckets, were provided. The principal appointed one of the male teachers as manager of the toilet block, with the responsibility for ensuring proper operation and maintenance.

An opening ceremony was held and various dignitaries, including the mayor and officials from the education department, attended. There was much pomp, with speeches by the dignitaries and singing by the pupils. The event ended with a ribbon cutting as the new facility was officially opened. Although there appeared to be much enthusiasm about the new facility, the principal, in his speech, made use of the opportunity to lobby for more classrooms and better teaching equipment, and the intended focus on sanitation therefore diminished. It was nevertheless hoped that there would be successful and beneficial use of the toilets, as originally intended. This was not to be, however.

While the teachers made an initial attempt to explain the technology to the pupils, it very soon became obvious that they were not committed to the task. During a visit made a few weeks after the toilets were put into use, it was found that pupils had been defecating in the urine bowls of the pedestals and throwing anal cleansing material into the vault instead of into the plastic containers provided. Some of the urine outlet pipes were blocked as a result of the misuse, and the toilets were malodorous. It was also discovered that the principal was not aware of the problems. On being informed, however, he castigated the toilet manager who subsequently arranged for the facilities to be cleaned up.

A further visit was undertaken approximately seven months later, in February 2003. This occurred about six weeks into the new school year, and was unannounced. A foul odour, similar to that found in the school's old pit latrines, was detected from outside the toilet block already. An inspection revealed that the toilets had again been misused very badly, with nearly all the urine bowls being blocked with faeces and rubbish, the plastic containers intended for used cleaning material filled with urine, the handwashing troughs littered with cigarette butts, and the faeces vaults containing paper and rubbish but very little ash. The facility had also been vandalised, with the educational posters having been torn off the walls and some fittings broken. When the principal was approached concerning the matter, it was again evident that he was not aware of the problems. In fact, his only comment was that there were not enough toilets for the whole school, that any problems that may have arisen were due to congestion, and that the second phase facility should be built. The teacher who had been appointed manager of the facility also claimed that cleaning had been carried out on a regular basis, but this was obviously not the case. Figure 8 shows some results of the misuse.

**Figure 8:** Some graphic examples of toilet misuse

## Discussion

The project can certainly not claim to have been a success. On the contrary, it was an embarrassing experience for the project team, for whom project failure was an uncommon experience. However, some salutary lessons were learned in the process, and the following conclusions can be drawn regarding the installation of urine diversion toilets as institutional facilities (i.e. as opposed to domestic toilets) in the South African context:

- The teaching profession in South Africa, particularly at poor, under-funded government schools, has been under a great deal of pressure for a number of years to produce good academic results with very limited resources. Issues like sanitation facilities, therefore, while seemingly important for the authorities, are less significant for the teachers. This becomes even more evident when the teachers themselves, while having better facilities than the pupils, do not even look after their own toilets.

- There has generally been much success in the domestic sanitation scene with the implementation of urine diversion toilets, for reasons already mentioned (ownership, etc). It is probably advisable, therefore, to ensure implementation in the school's feeder community before attempting to install these toilets at the school itself. In this way, pupils will be fully conversant with the technology and will understand the operational issues without needing any training by the teachers, who are in any case unwilling to do it.

- Unless the education authorities make it compulsory for the teachers to ensure proper training for the pupils, it is unlikely that they will have any incentive to do so. The education and health departments should enforce proper care and maintenance, to be carried out by the schools themselves, by means of regular visits by inspectors and sanctioning for non-compliance. This could be linked to incentives such as more or better educational aids.

- Both teachers and pupils should have the same type of toilets, so that teachers and pupils can share the same experiences.

- The problem of ownership will always occur when something is given for nothing. Every school, no matter how poor, should contribute **something** towards new sanitation facilities in order to obtain some sort of commitment to proper care.