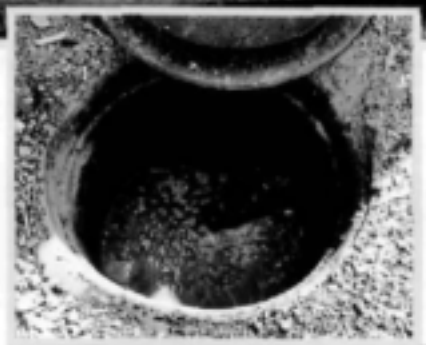
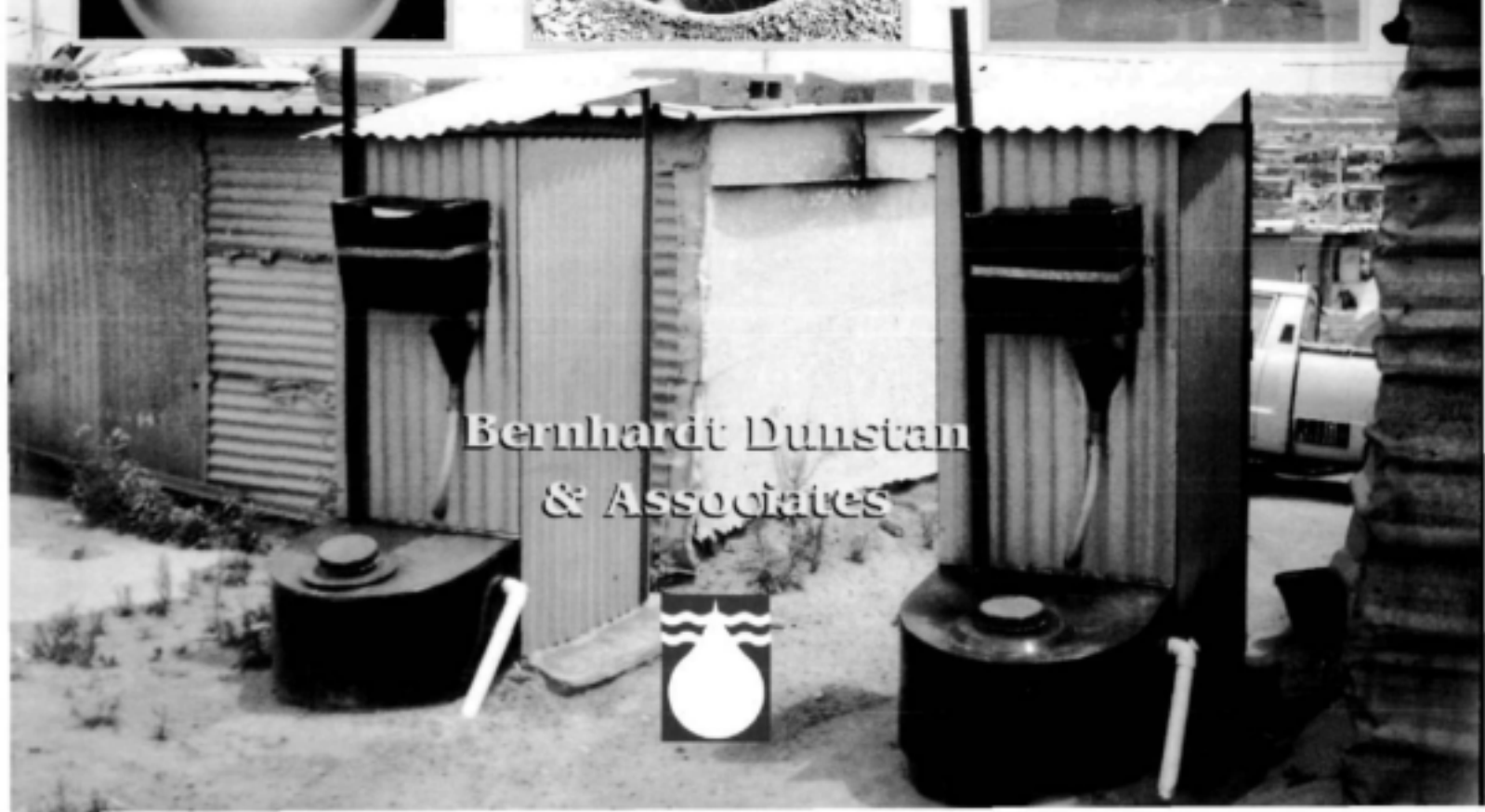
Handbook to Guide Communities in the Choice of Sanitation Systems





Bernhardt Dunstan
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HANDBOOK TO GUIDE COMMUNITIES IN THE CHOICE OF SANITATION SYSTEMS

Prepared by

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for the

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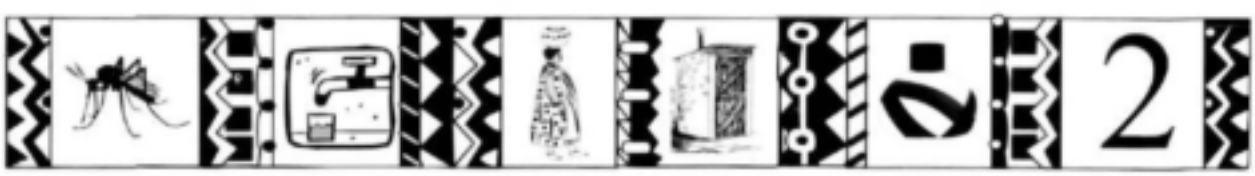

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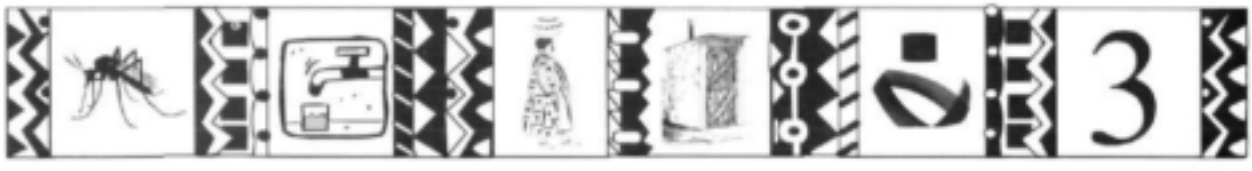
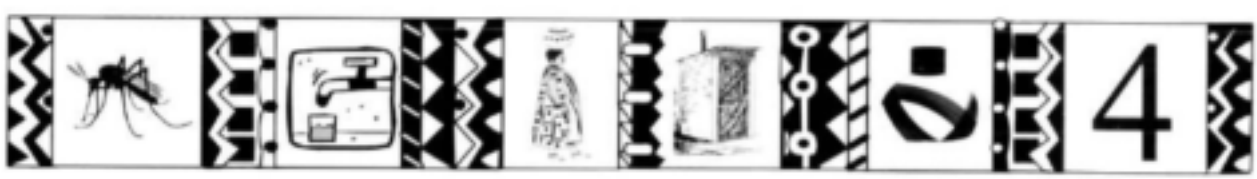
This handbook is based on the report: " Evaluation of On-site Sanitation Systems for Applicability in Low-cost Housing from a Socio-Economic Perspective", financed by the Water Research Commission (WRC) and is approved for publication. Approval does not signify that the contents necessarily reflect the views and policies of the WRC or the members of the project steering committee, nor does the mention of trade names or commercial products constitute endorsement or recommendation for use.

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PART ONE: INTRODUCTION

Aim of this handbook

The purpose of this handbook is to transfer information from a research project with the purpose of making the key findings of the research easily accessible to communities who are beneficiaries of sanitation projects or who desire to become so.

The intention is that these findings should assist communities in decision-making by giving background information. This information should stimulate questions and help avoid pitfalls experienced by others.

The hoped-for outcome is affordable, sustainable sanitation which will upgrade the recipients by providing a better quality of life and improved health for all members of the community.

Background to the research

Research was undertaken over a 12- month period in the following 3 areas:

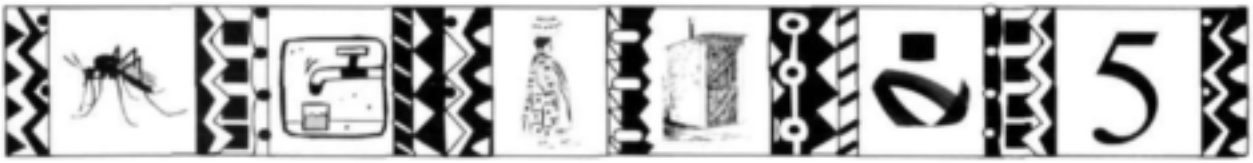
- Soshanguve TT, an Independent Development Trust development of an informal settlement with the same on-site, low flush system installed on every stand.
- Ga-Mmotla, a peri-urban settlement about 20 km north of Soshanguve in the Eastern District of the North-West Province. Ga-Mmotla, at the time of the research, had unimproved pit latrines but funding had been approved for future upgrade.
- Ivory Park, an expanding, formalising settlement in Midrand with a variety of on-site systems, both wet and dry.

In each case, the researchers were tasked to evaluate the existing on-site systems from a socio-economic point of view and to focus on the processes that needed to be followed to ensure the introduction of affordable, sustainable sanitation systems to communities.

A socio-economic approach

Before this research project was undertaken evaluations of sanitation projects were largely confined to technical assessments. This research had a different focus of which the main aspects were:

- Is the system socially and culturally acceptable to the community?
- Is the system affordable both as regards the initial installation cost and then the ongoing cost of operation and maintenance?
- How does the system affect minority groupings whose opinion is often ignored in such matters, for example, the elderly, blind, disabled, very young, and women?
- Is the operation and maintenance of the system easily understood by all who use it?
- Is the system upgradable?



Methodology

A variety of methods were used by the researchers including random house-to-house interviews using structured questionnaires, focus groups reflecting the different interest groups, one-on-one interviews and discussions with local authorities, technical people and in some cases, the manufacturers of the systems.

Research findings

Soshanguve TT highlights

- In block TT improved sanitation was found to be the first priority issue in the community: it was rated more important than housing.
- The low-flush on-site system was disliked mainly because of the extra work load it imposed, particularly on the women. The community alleged the system did not function correctly with the result that people believed they must drain the toilets themselves. Women's groups felt there was no improvement in their quality of life as a result of the on-site system. Because their expectations were unfulfilled, the women perceived no extra benefit in comparison with their former pit latrines.
- All the toilets faced the street as a result of uniform town planning. The women's focus group denounced this as unsafe and socially embarrassing.
- Community comments, confirmed by Council officials, reported a high water table in the area. This suggests that soak-away systems are not compatible with the soil conditions.
- Women felt they had been excluded from development decisions including the choice of sanitation systems.
- Health problems were perceived both by the community and health workers to result from the poor sanitation system.
- The local authority had no equipment to drain toilets. The service was privatised and was unaffordable to the community who were not consulted beforehand.
- Less than a quarter of the residents were paying the flat rate for services in the area; hundreds of illegal water connections had been made. Despite the low flat-rate, people did not seem to accept the payment principle as a necessary responsibility.
- An upgrade to a small bore system was underway which will include a water connection on each stand. The cost implications both for the Council and the end-users had not been discussed between the parties at the time of the research.

Ga-Mmotla highlights

- This peri-urban area had over 2 500 stands almost all with rudimentary or unimproved pit latrines. Water was a scarce commodity with only occasional standpipes on main routes.
- The main problem was that toilets were mostly built by unskilled family members resulting in structures that appeared unsafe causing fears, particularly for the elderly, the disabled and children, of falling into the pit below.
- New shacks on the edges of the settlement often had no latrines; occupants used the veld until they could afford a toilet.
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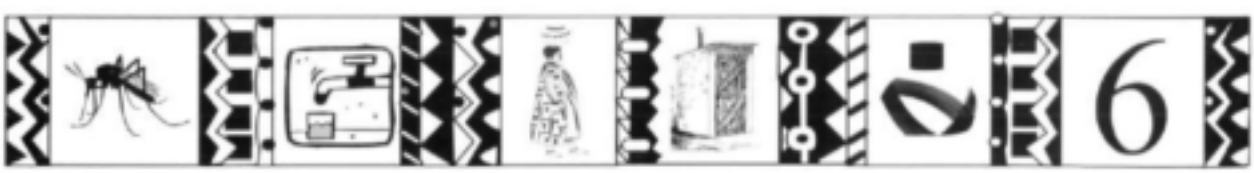


- The toilets were characterised by bad smells and flies.
- Personal hygiene was poor with many cases of skin sores being treated at the local clinic. Particularly noticeable were children's faeces on the ground around the toilets. Children were discouraged to use the toilets presumably out of fear they might fall into the pits. Children's faeces were not considered to be harmful as is so in many areas of SA.
- An upgrade to VIP toilets was planned and money for this had been allocated. However the people prioritised electricity as a greater need than improved toilets.

Ivory Park highlights

- Here the study involved three on-site systems: one dry and two that used water in their flush systems. All three were disliked to varying degrees and were malfunctioning as was evident both to the users and the researchers.
- The Council did evacuate the tank contents though not always as regularly as the community would have liked. Several sources reported the emptying of the suction tanks into the river which ran through Ivory Park.
- The toilets were mostly poorly kept and foul smelling.
- The residents expected their toilets to be upgraded to waterborne sewerage in the near future. The upgrade had begun in certain areas of the township but this was progressing slowly.
- The level of payment for services was reportedly only 4% despite community leaders reporting on the success of the Masakhane campaign in the area. As in Soshanguve TT the prevailing culture of non-payment made it impossible to hold realistic discussions on what people would or should be prepared to pay.

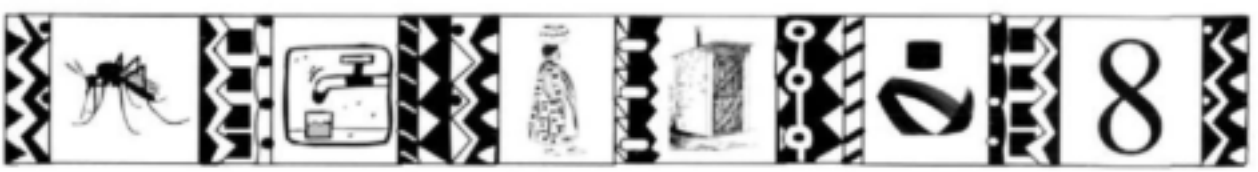
Overview of findings

- All three areas researched reported inadequate sanitation systems.
- In all the areas the women said they were severely inconvenienced by the systems and spent hours of work trying to clean their toilets, often unsuccessfully.
- In all 3 areas people felt the local authorities were not doing sufficient to maintain or upgrade the systems.

- There was inadequate knowledge of the link between sanitation and health and the need to improve this. There is a need to convince people to encourage children to use the toilets.
- There was not enough knowledge among householders on how to operate and maintain their toilets.
- The payment principle had been ignored or neglected with the result that non-payment mostly prevailed.
- The communities reported poor or non-existent consultation processes at the time of installation of their systems. Women felt particularly excluded.
- There was a strong sense of frustration with malfunctioning on-site systems and a feeling that only a full water-borne flush system would meet the community needs.

Conclusion

The findings of this research led the sponsors of the project, the Water Research Commission, and the project steering committee to commission the researchers to re-work their findings in this handbook. It is hoped that this handbook will assist communities and those involved in sanitation policy and practice to achieve affordable, sustainable sanitation systems and benefit from the research findings.



PART TWO: LESSONS TO BE LEARNT

The community experience of on-site sanitation systems

It is important that communities articulate their sanitation experiences clearly and include the different perspectives of the leadership, women, disabled, professional people, youth etc. Much valuable information is lost when a small number of people speak on behalf of a community with the result that wrong decisions may be made.

Communities must try to ensure that all voices are heard and sufficient time is spent on gathering information. The methods that can be used are discussed further in Part 3.

The Soshanguve sanitation experience

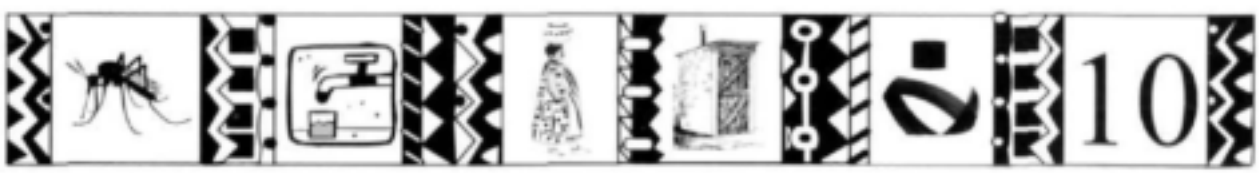
The Soshanguve experience is stated here in detail so readers can appreciate the detail that is needed for decision-making as well as the trust level that needs to be established before participants can share intimate confidences.

Women: the women felt that their particular low-flush system caused an intrusion into the most personal and private part of their lives. The result was a stressful situation. The procedure of going to the toilet was described as follows:

- First the women needs to go to the communal tap down the street to fill the bucket with water.
- Then she goes to her toilet with the bucket.
- After the use of the toilet she pours the water into the bowl and flushes the toilet.
- If she has young children or visitors then she goes back to the standpipe to refill the bucket for the next user.
- If she has visitors this means a trip to the standpipe to fill the bucket after every use; one cannot expect visitors to ask for a bucket before using the toilet.
- For pregnant women, children and those with stomach ailments, the alternative is to keep a potty, otherwise the process of fetching water from the standpipe becomes exhausting and also dangerous after dark.

Women identified the following specific problems:

- The location of the toilet with the door facing the street is unsafe, especially with the present increase in violence and rape. A night visit to the toilet is dreaded by women.
- A major problem is the disposal of sanitary pads as they are not allowed to be put down the toilets and the women are targeted by the garbage men who shout and embarrass women who put pads in the garbage. The perception is that no self- respecting women would expect a male garbage collector to dispose of her blood. Most women wash or burn the pads to avoid the problem, however they find the process disgusting and messy. Some women have resorted to using baby diapers which they can wash and hang out without embarrassment.
- The problem is worse for daughters-in-law, who are new in the family or visitors who have to carry pads from the toilet to the house in order to wash them. The situation of the toilets makes this visible to everyone from the road.
- Some women are forced to use toilet paper as menstrual pads since they can dispose of these in the toilet. The nurses stated that this causes vaginal infections, and they see quite a number of such cases.
- Mothers are concerned that little girls growing up in the area may grow up being ashamed of their womenhood, and menstruation in particular due to all the problems associated with the disposal of sanitary pads.
- Women and children often come into the clinic with serious rashes, when they have been using full toilets. The problem is greater for women because biologically men do not have to sit on the toilet seat every time they use the facility, whereas women sit on the seat irrespective of the intended use. They are, therefore, far more exposed to various infections.



- Some women do not allow children to use the toilets, they encourage them to use the open spaces instead to avoid infections which they believe are caused by the toilets.
- Tension is common within families, regarding the responsibilities of draining the toilet. The less powerful within the family structure have the responsibility of draining the toilet. Cleaning is generally regarded as a woman's job, so most families see the draining of the toilet as a natural extension of this job. Most women in the workshop claimed it would be child abuse to expect a young child to withstand the smell, let alone to withstand the stigma that is associated with the activity. In fact most men refuse to do this work and some will use physical violence to force their wives to do the job.
- Some women believe that their daughters would never get married if they drained the toilets; they would have a stigma for life. Therefore older women volunteer for the job in order to protect unmarried daughters.
- The toilets are too small: big people and pregnant women find it hard to close the toilet door. This causes great embarrassment as they are then visible from the street.
- Some women reported that they have stopped using the toilets due to the problems and have dug their own pit latrines.

Concerns of the disabled and elderly

- The design and functioning of the system assumes a person can walk to the communal tap, fetch water and be able to put it into the cistern. The disabled people are unable to carry a full bucket of water from the tap, they cannot get close enough to the tap with a wheel chair, and cannot reach the tap anyway because it is too high.
- Even if they get someone to bring the water for them they cannot reach the cistern so they need to ask someone else to fill it before they can flush.
- It is almost impossible to open and close the toilet from a wheelchair, without hand rails to hold on to.
- All the problems around draining affect this group more than others, since they are dependent on neighbours for help with digging and draining.
- One man remains with an undrained toilet until his brother comes home for an occasional weekend. The liquid has seeped into the house on several occasions and there are some damp smelly patches inside the house.

- At night the disabled cannot go out to the toilet, since there is no electricity and it is impossible to drive a wheel chair and carry a bucket of water in the dark. Without having a free hand to carry a torch it is impossible to get out of the wheel chair; open the toilet and bring the bucket in.
- Even during daytime they cannot go to the toilet unless there is someone to help, they feel helpless and dehumanised, having to inform someone every time they need to go to the toilet.
- Some of the men claimed that wives have left them because they could not deal with all these problems.

Findings from the blind

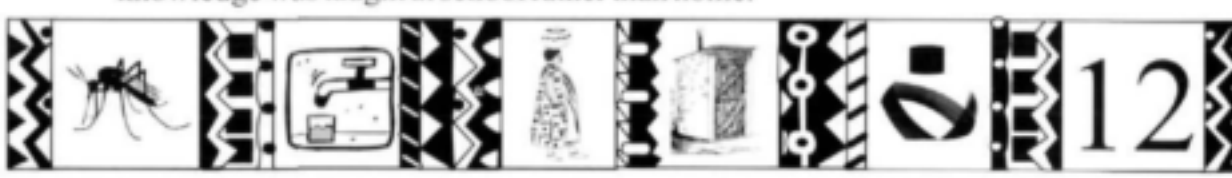
- Most comments from the blind are similar to the disabled, but one major problem is that they cannot see, so they assume the toilet is clean until they actually sit in the dirt left by the last user. Since the community knows they cannot see, passersby feel free to use their toilets without fetching water to flush .
- The other problem relates to the taps. Some people steal the handle of the taps and when the blind arrive at the tap they cannot operate the tap. For people who see it is easier to identify the nearest tap with a handle, for the blind it means they must walk from tap to tap until they find one that is working.
- They cannot drain their own toilets and depend on employed labour.

Churches, shebeens, spazas and other businesses

- For places that are visited by a number of people who need to use the toilet, this system is reported to be a nightmare. Toilets block often, need draining often, and need the business owner to spend a lot of his time fetching water to fill after each customer.
- The owners cannot prohibit people from using the toilet without losing business so they end up cleaning up all the mess.
- On days when they drain the toilet they need to close their businesses. The smell is so strong that no one wants to come and buy food from the shop.
- For churches the problem occurs every Sunday or when there is a wake because the toilets cannot deal with large numbers of people.
- Some of the churches have decided to dig pit latrines because of the problems they encounter.
- The draining company refuses to come to pump every time they are asked by a business or a church, they stick to their 20 households requirement.
- The businesses want the toilets to be upgraded to flush toilets as soon as possible. They are prepared to pay for the service, as right now they believe they lose too much money due to this sanitation system.

Youth findings

- The group all knew they supposed to wash their hands after going to the toilet. This knowledge was taught at school rather than home.



- In practice the water is too cold in winter and too far away. The children are always in a hurry and they confess to being lazy.
- This group said they were expected to fill the flushing bucket, especially when visitors came.
- Most of the group knew the toilets had to be drained. This is done by inserting an empty two litre beverage container attached to a piece of wire. The smells during drainage are very bad and cause arguments between families.
- Both toilet paper and newspaper are used. The flushing bucket is also used in the house for cleaning and washing.
- Boys said they all urinated behind the toilets and only used the toilet structure for anal excretion. This was encouraged by the adults.
- This group said the installer of the toilets did not include any young people in an education programme.

Professionals, including community workers and health workers

- The toilets are thought to be unhealthy, the draining process and the ensuing smells cause health and social problems.
- Most community members are not careful about digging a deep hole for the drained effluent, so the sludge overflows, resulting in ugly quarrels between neighbours.
- Some people drain at night and dispose of the liquid in the street. It is very difficult to be proud of the area or to instil a sense of pride within the children or the community, because the toilets are a sense of shame.
- It is difficult to plan a party or social event when you invite people from outside, because they will not be able to eat if any of the neighbours are draining. The smell is unbearable and some people vomit as a result.
- The Soshanguve area is waterlogged so the soak away system has been a bad choice. During times of flooding half of the households have problems.

- Most people in this group are prepared to pay for a truck to come out and pump the toilets, but the company is not prepared to come unless there are twenty households who can do it on the same day to make it economically viable. The problem is that not all households can afford the R 80 charged per trip, and toilets do not fill at the same time. This point was raised by all groups.
- The school teachers mentioned that the school uses pit latrines and they are convinced that they are better for them than the on-site low-flush system. It would be impossible to expect every child to refill the toilet cistern after use.
- The manufacturer told residents that the system would need to be drained every two years, but all of them have had to drain at least once every six months.
- Nurses reported cases of skin rashes that they have seen on the patients after cleaning toilets.
- Some of the health problems are associated with the fact that some families use the same bucket for kitchen use and the toilet.
- Some people are not very careful about cleaning their hands before going to the tap, so the taps are often handled by people who have not washed hands. It is therefore inadvisable to drink directly from the tap, but children frequently do so.

Guidelines for the selection of on-site sanitation systems

These community findings have been reported in detail so other communities can think carefully about the following questions in relation to their own situation:

- If the system requires water how easy is the access to water? Who will carry the water and how often? What will happen to the people who cannot carry water?

- Where should the toilets be placed? Which way should the door face? How big should the toilet structure be in order to accommodate pregnant women, over-weight people and people who need assistance?

- Who will clean the toilets? Will the Council empty the toilets? Does the Council have the necessary equipment? If the service has to be privatised, what will it cost?

- Can people afford a toilet bucket that is not used for anything else, for cleaning and hand-washing? Can they afford cleaning materials including soap for hand-washing?

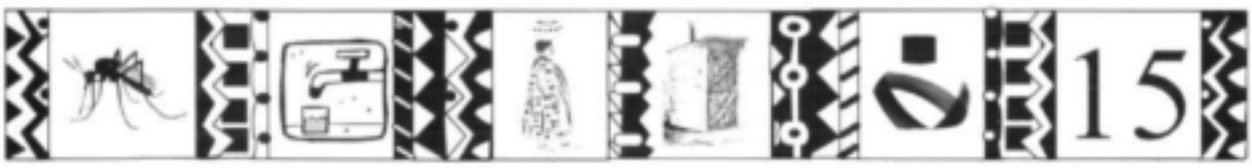
- Can the community afford an incinerator for the hygienic disposal of sanitary pads and other refuse which needs to be burnt?

- Can small enterprises resulting from a new sanitation system be run by community members rather than be outsourced and costly?

- How can new standards of health and hygiene be introduced to a community so that old practices can be changed and replaced by healthy new behaviour? Who is responsible for this education? Council employees, nurses, hygiene officers, teachers, parents or the children themselves? Or is it a combination of all community members?

- If certain substances like household bleach will destroy the working of a particular sanitation system, how will the households be advised of this? Is it sufficient to rely on a manufacturer to provide education or a contractor at the time of installation?

- If VIPs (Ventilated Improved Pit Latrines) are to be installed how can construction be monitored so there is no danger of pits subsiding or of children falling into the pit because of faulty construction?



- How can a community get reliable information about all the different sanitation options and the cost of each?

- Who should decide what the community will have to pay and who is responsible if a manufactured system breaks and / or stops working? How strong are the working parts in a system? Will they withstand years of tough usage? Are there spare parts easily available? Are the parts affordable?

- What of the Government subsidy for sanitation? How does a community apply?

- Can the system be upgraded to a water-borne system in the long term?

While the findings reproduced in this handbook are from one area only, they are sufficiently representative to form a starting point for communities to assess their own sanitation needs. These then are the sort of questions that should form the basis of a community investigation. They need to be discussed throughly in workshop situations so that as wide a spectrum of people as possible can feel they were part of the decision-making process and the resulting sanitation is affordable and sustainable. Policy makers and practitioners will also benefit from working through these questions.

Other players including local authorities, manufacturers of sanitation systems, consulting engineers and other professionals

Local authorities: the research revealed the need for local authorities to check geo-technical conditions carefully, to ensure manufacturers carry out education programmes as promised and to ensure there is proper provision for maintenance. If the maintenance is contracted out, then the local authority should ensure its quality and affordability by the local community.

The research did highlight some concerns: firstly the local authority preference for water-borne sanitation. This preference was based solely on the ease of future maintenance from the Council's perspective. It was insufficiently linked to a community's affordability and the Council's need to recover costs for the services it provides. The second concern was this principle of cost recovery. Council Treasuries seem paralysed by the prevailing culture of non-payment. They talk despairingly of illegal connections and particularly of councillors who seem to encourage their constituencies not to pay, and who don't pay themselves.

Community members should be aware of the sorts of questions that will be asked by both their councillors and the council officials.

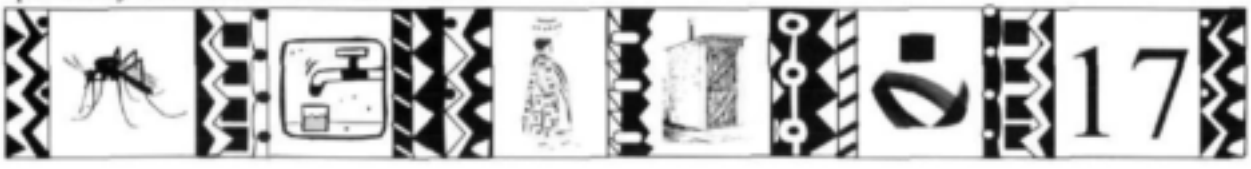
Official's questions

- Is the system affordable for the municipality? What are the total capital costs?
- How easy is it to maintain? What are the estimated running costs to the Council?
- How durable is the system in the long term?
- What skills and resources are needed to maintain the system?
- What training and education are required and at what cost?
- What support is available from the manufacturer and are spares available?
- What is the health and environmental impact?
- How easy is upgrade?
- How many new jobs will be created in the process of installation?

Councillors' questions

- Is the system politically acceptable?
- Is it affordable to the people?
- Will it suit minority groups: women, children, disabled, elderly?
- How many jobs will be created?
- How bad will it be politically if it fails?
- What will be the environmental, health and financial risks if the system fails?

Manufacturers: the research did not put the manufacturers of on-site sanitation systems in a particularly good light as there were so many problems related to the community rejection of the systems and the obvious malfunctioning of the systems inspected. However it must be pointed out that the manufacturers are exercising a business function to market their product. Their role is to win tenders and install their systems as often and as quickly as possible. The assessment of the suitability of the system in the context of a particular community situation should lie with the community itself and the local authority. In all probability, the systems researched work perfectly well under ideal conditions.



The problems arise when people do not understand the technology, where ground conditions are unsuitable for the system and where there is no adequate maintenance in operation.

It is for these reasons that communities must take special care before choosing a system as there will be no legal come-back to a manufacturer if the problems experienced lie outside the manufacturer's control.

Consulting engineers and other professionals: the research showed that tensions do exist between consultants and Councils, and sometimes between consultants and communities.

There is a perception that the private sector consultants are the "fat cats" who stand to make money out of disadvantaged communities. This perception is re-enforced by the practice of remunerating consulting engineers on a percentage of total contract basis. This would not appear to encourage consultants to go an extra mile in seeking more affordable options. On the other hand, engineers are on the line if they make mistakes and their professional idemnity insurance is a costly item.

On the whole, the researchers of this report believe that projects are best led by recipient communities and their elected local authorities rather than the consultants. Consultants should rather provide the technical expertise to inform the process.

It is important for communities to understand that other stakeholders will have different agendas and that the final choice of a sanitation system must consist of a sharing of all the different concerns, answering the different questions and arriving at the best option for all the participants. For communities the criteria must be: is the system chosen affordable and will it continue to operate reliably into the future?

PART THREE: HOW TO BENEFIT FROM THE RESEARCH

This is a very brief section offering some guidelines on how to implement sanitation projects.

Involving the community

- Decide what the main groupings are; for example, leadership, religious, educational, professional, business, women, disabled, blind, elderly and youth. There may be more or less groups in any one community. The aim is not to leave any one sector out. Include everyone, even the difficult people, as it avoids future problems.
- Use of variety of methods: household interviews, focus groups, workshops, discussions, mass meetings.

There are many people, including sanitation project workers and environmental health officers who can assist with information and participative methods of involving the community. Use all the help you can get, especially from people who do **not** have a vested interest in selling a particular product.

Consulting your local authority

- Start with the councillor from your area and ask for introductions to the officials responsible for sanitation.
- Try to avoid a confrontational approach. Remember that development is the result of a successful partnership between local government and local communities.
- Services must be paid for: this is the basis of Masakhane. The task of a community is to ensure people get the best possible value for their money. The Council service must be monitored and the local councillor will assist with this.

Relationship with the manufacturers

- If a community is considering a manufactured on-site system, make sure you visit a community where the system is already installed and talk to the people who have been using it for some time.
- Use this handbook to make sure you ask the right questions and that you have discussed all the possible problems with the various sectors of the community.
- Ask your local government DWAF representative to get information for you from the National Sanitation Co-ordination Office about various sanitation options that are available together with their costs. Try never to choose a system or have it forced on you without knowing what the options are.

Relationship with the consulting engineers

- This is the community's project in partnership with the local authority, possibly assisted by the Government's sanitation subsidy. Consulting engineers are the technical experts who assess the ground conditions and give a specialist's opinion on the **technical** suitability of a particular system in a particular area. They should not be the drivers of a sanitation project.
- You should use all the technical expertise you can get but remember that the community itself is the best judge of the socio-economic suitability of the product. In other words, the people themselves, best know their needs and what is most acceptable to meet those needs and whether or not it is affordable.

USEFUL ADVICE AND INFORMATION

REMEMBER: advice is available from:
NATIONAL SANITATION CO-ORDINATION OFFICE
Department of Water Affairs and Forestry
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The following booklets are available from the above office. The first is particularly recommended for community use.

A WORKSHOP FOR SANITATION PRACTITIONERS
- TRAINING AND CAPACITY BUILDING -
Published by DWAF. April 1998.

GUIDELINES FOR TRAINING AND CAPACITY BUILDING
IN SANITATION PROJECTS.
Version 1. Published by DWAF. Dec. 1997.