Makana Municipality

Local Environmental Action Plan

SANITATION PROJECT PROPOSAL

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Overview of the challenges facing sanitation improvement in South Africa
Providing adequate sanitation facilities for the poor is one of South Africa's major challenges. Municipalities need to have a coherent, integrated sanitation strategy for all areas under their jurisdiction, both urban and rural. There has been a disturbing increase in the number of poorly designed and poorly operated water-borne sewerage systems, especially in urban areas.

Poor sanitation is often seen as a technical problem that requires a technical solution. But sanitation problems are often caused by people's beliefs, preferences or habits, and any sanitation programme that does not take these into account will have no lasting impact.

The most important decision-makers are the residents themselves, the people who will have to live with the system and pay for it. Sanitation decisions need to consider the range of other technical options available, waste treatment works capacity, whether the sewer system can cope and whether the new occupants will be able to afford their monthly service charges. Residents need to be closely involved in planning new settlements and upgrades to services in existing settlements.

Key issues relating to sanitation provision

[The sections below summarise key points contained in the DWAF 'questions and answers on the White Paper on Basic Household Sanitation.']

Alternative sanitation
Sanitation technologies are often reduced to just two choices: full flush toilets, or VIPs. In fact, there are a range of alternatives in use in South Africa - double pit VIPs, desiccating (drying) toilets, urine diversion systems, low flow systems, shallow sewers, solids free systems and so on. There is no one 'best option' - each situation has its own

needs and every technical option has its place and functions best in the environment it was designed for.

The full bore waterborne sewerage options require fully functioning wastewater treatment facilities. The health consequences of failure of the system are devastating in comparison to on-site, dry sanitation.

Water access
Local authorities need to think carefully about the kind of water supplies they provide in a settlement because this has a big impact on the kind of sanitation systems that will be viable. The level of water supplies provided needs to match the sanitation technology. If residents cannot afford the monthly running costs of conventional flush toilets, the local authority should think carefully before installing high-pressure house connections.

Operational costs
Keeping a sanitation system functioning well is as important as installing it in the first place - whether it is a stand-alone VIP or a town's entire sewerage network. Once the system is in place and in use, it needs to be kept running; if funds are not set aside and used for regular maintenance, the system will slowly deteriorate until it breaks down.

Education
Residents are responsible for maintaining toilets, pits, pipelines and sewers within the boundaries of their property. Yet many users believe that if they pay the municipality a monthly fee for water and sanitation, the municipality should fix their toilet when there is a problem with it. Misunderstandings can lead rapidly to resentment and malfunction. Any toilet system needs basic maintenance. Keeping it clean, understanding what repairs and replacements will be needed, and understanding its weak points, are all essential. Providing this information needs to be an integral part of any sanitation improvement programme. Education programmes aimed at schools are an effective ways of reaching all residents, as scholars take the message home with them.

Groundwater pollution
On-site sanitation systems are a viable, lower-cost alternative to water-borne sewerage. There is a risk that they will pollute groundwater, particularly where they are situated very close to boreholes or in areas with a very high water table. For this reason, many insist that flush toilets should be installed instead to protect groundwater quality. However, flush toilets might not be affordable to the local authority or to users, and a poorly managed sewer system is a much greater pollution hazard than a poorly managed on-site system. Each situation must be assessed on its own merits.

Overview of sanitation provision in Makana Municipality

Makana Municipality sees access to adequate sanitation as a major priority. R30 million has been earmarked to eliminate the bucket system from Makana by 2006. VIP toilets are not seen as practical in Grahamstown, due to clay soils and water borne sanitation is seen as the solution. Tenders are now out to provide water borne sanitation in parts of Grahamstown, Alicedale and Riebeck East. In rural areas VIP and other basic systems have to be relied upon

by farmworkers and other citizens. There remain many challenges to ensure basic sanitation is provided to all rural citizens in Makana.

Issues identified by the LEAP Process

Following a public participation process, many issues relating to sanitation were raised by the public and informed citizens of Makana. These issues are provided in summary in the Environmental Issues Audit of the LEAP process, and include:

Access to water

- Need to consider rainwater harvesting. Tension between cost and access
- Health hazard vs. water purification
- Needs extension
- Over use leads to a lack of basic access

Water conservation

- Recycling of grey water
- Restrictions on water tanks in urban areas need lifting
- Awareness needs raising
- Need to determine existing capacity
- Makes access issue easier

Access to sanitation

- Lack of sewage system
- Need (managed) public toilets
- Poor sanitation systems in townships
- Unsafe tap water
- Is it purified/safe?
- Sewage treatment poor

Drainage

- Poor system, especially in townships

Long-term Objectives in Makana

Baring in mind the issues raised by the LEAP process, including consultations with municipal officials, the following are recommended as long-term objectives for sanitation in Makana:

- The elimination of disease relating to poor sanitation

- To establish and maintain decision-making structures which will enable effective decision making on sanitation issues

- To provide and maintain a sustainable and equitable sanitation system for all inhabitants of Makana, characterised by affordable, low water usage, nutrient recycling and minimal pollution discharge.

- To ensure the public are well educated on issues relating to sanitation and are able to quickly address problems that arise with the sanitation system.

- To have a monitoring structure that will highlight and address problems before health/pollution problems occur.

Short-term targets in Makana

Consultations with LEAP stakeholders, including municipal officials, have highlighted the following as short-term targets to be addressed by the LEAP implementation phase:

1.a. Carry out assessment of the sanitation situation in MM, including farms and rural communities

In 2003 MIIU drew up ToR to investigate water waste and sanitation service delivery as their contribution to the LEAP process. These ToR highlighted sanitation as being the most problematic area in terms of service delivery, before waste collection and water services. The ToR proposed an assessment of current wastewater collection (households serviced, condition of reticulation system, condition of treatment works and final effluent quality, including review of treatment facility DWAF permits and their compliance). An assessment was also proposed for the rural areas, without waterborne sanitation, summarising the forms of sanitation systems used. Hydro-geological conditions, with environmental/health impacts were to be summarised. Thus far only the study into waste services has been put out to tender (the study is currently being carried out). Ms Madlavu has indicated that the MIIU are still committed to funding studies around water and waste. A meeting with Alwyn Naidoo of MIIU to discuss this further needs to be scheduled immediately to clarify MIIUs position on funding studies around water and sanitation, including the proposals in the original ToR.

It is proposed that the above assessment be carried out and include an assessment of suitable alternative approaches sanitation to implement in Makana, with pilot projects to be recommended

COST: Approx. R200 000

1b. To carry out a pilot programme to install VIP or other non water-borne sanitation for other rural communities and review the use of water saving technologies in urban areas.

The agri-village and new urban developments in Makana could be developed as best practice models in this regard. They would provide an ideal opportunity to showcase such technology and demonstrate the socio-economic, as well as environmental benefits of more sustainable technology.

COST: This would depend on the level of support available for pilots recommended by the above assessment, the technology to be employed and buy-in to roll the system as

proven. For example a pilot of 50 rural and 50 urban households would cost in the region of R500 000.

Basic costing examples (from DWAF sanitation technology options)
The costs below give a useful comparison between different sanitation options. However, a full review would first need carrying out on the low-flush/non water-borne sanitation systems available and assessed relative to the conditions in Makana. The costs (both structural and educational) would be compared and recommendations made for the systems to be used for pilot projects. Pilot projects would need to consider the current dynamics around sanitation in Makana and consider appropriate interventions according to circumstances, such as households being taken off the bucket system, new low cost/higher cost developments, town, rural areas etc.

VIP (Ventilation Improved Pit). R600-R3000 to install + R60/pa

VIDP (Ventilation Improved Double Pit). One pit used at a time. R2500-R4500 + R17.50/R67.50/pa

Compost/urine diversion. Urine diverted to soakaway/for fertilizer and compost made for crop production/safe disposal. R3000-R4000 + R35-R500pa

Pour flush (pit toilet with basic flush). R2500-R3500 + R150-R300pa

Aqua-privy and soakaway (similar to a septic tank). R2000-R3500 +R150-R300pa

Conservancy tank (tank emptied periodically). R2000-R5000 +R550pa

Water borne sewage. R6000-R7000 + R400-R800pa

Septic tank and soakaway. R7000-R8500 +R200-R450
[The above costs are from DWAF 'Approved Sanitation Options.']

Biogas digester R1000-R2000-R0-200pa (the annual figure is potentially negative as the system provides 'free' natural gas to be used by householders or other users of the technology.)

2. Education campaign on stormwater drainage, best sanitation practice and appropriate use (to implemented through Environmental Education implementation plan)

3. To develop a community leak reporting (and fixing) programme (linked to leak monitoring system of water implementation plans)

Stakeholders

ECARP
Centre for Social Development

Institute of Social and Economic Research
Makana Municipality
SANDF
Farmers
National African Farmers Union (NAFU)
Umthathi
Masifunde
Developers

Monitoring framework

Water consumption patterns would be monitored, storm water quality, river water quality, incidence of sanitation related illness and adequacy of the new water-borne sanitation system.

FUNDING

Potential funding sources include DBSA, MIIU