

## **EXECUTIVE SUMMARY**

### **Background**

The current political climate in South Africa requires that the provision of services to millions of people still residing in dense settlements must be accelerated considerably. The lack of housing and other services was cited as one of the major causes of xenophobic attacks in South Africa during 2008.

It is government policy to upgrade and integrate the informal settlements of South Africa into its urban fabric as soon as possible. For this reason, it is necessary to determine the demand for all services – and particularly for the different levels of services such as for various sanitation options – as a matter of urgency among the residents of dense settlements in South Africa.

### **Main objectives**

The main objective of this research study was to determine the effective sanitation demand of residents in dense settlements by making use of the adjusted Sigodi Marah Martin (SMM) computer housing program. This computer model determines the effective demand for services according to the integrated affordability of all the services to the residents of dense settlements by making use of a cognitive process called contingent valuation. It is, as far as could be ascertained, a world first in terms of the integration of the affordability of all the services to determine the sustainable demand for these services.

The most important objective of this study was to determine how well this computer model establishes the effective demand for sanitation among the residents in dense settlements, but also to test whether it yields better results than the conventional methods by taking integrated affordability of all services (housing and all other infrastructure services) into consideration.

### **Methodology**

The research study methodology of this study consisted of the following steps:

1. A literature study to establish whether there were any examples in international literature of other studies which followed an integrated affordability approach to determine sanitation demand among the residents of dense settlements.
2. The computerized SMM housing model was then adjusted to cater for alternative sanitation options. Thus adjusted, the model was renamed the Sanitation and Housing Applied Priorities Enquiry (SHAPE) Model.

3. Subsequently, surveys were done among 263 households in three selected dense settlement areas of South Africa.
4. Thereafter two case studies were carried out to confirm or invalidate the findings of the surveys.
5. Subsequently, the results of both the surveys and the two case studies covering altogether 275 households were analyzed and findings were made.
6. Finally, a number of important conclusions were drawn and recommendations made. These recommendations included the identification of some areas for further research.

### **Literature study**

Since no real examples of determining sanitation demand by means of an integrated affordability process could be found in literature, attention was directed to cases where the contingent valuation method had been applied in a non-integrated affordability fashion to determine sanitation demand. Attention was also focused on approaches to determine sanitation demand in general, and experiences gained with these methods.

The study of local literature sources also included a survey of officially accepted sanitation options in South Africa and their characteristics. These included their use, popularity, cost and the general experience gained with their performance in the past.

### **The surveys among residents**

Altogether 263 households were surveyed in three selected dense settlement areas of South Africa, namely 81 at Schmidtsdrif in the Siyancuma Local Municipality area, 50 at eThekweni (Durban) and 132 at Ekurhuleni (East Rand area near Springs). These areas could be regarded as a good representative selection of urban and rural dense settlement areas in South Africa.

The surveys were done by means of questionnaires which were completed by the residents while being briefed in detail on all the sanitation and other services options. Colourful posters were used to demonstrate the different sanitation and other service options and how they operated.

### **The case studies**

After having completed the surveys, two case studies were carried out to confirm or contradict the findings of the surveys. The case studies were done at Soshanguve and at Temba/Hammanskraal in the jurisdiction of the City of Tshwane Metropolitan Municipality.

During the case studies the same questions were posed to participants as during the surveys, but the answers were entered directly into the SHAPE Model on a laptop computer.

Taking the 12 households participating in the case studies into consideration, a total of 275 households therefore participated in this research study.

### Key findings

The key findings of this research study can be summarized as follows:-

1. The most important finding of this study is that the integrated affordability approach followed when the SHAPE Model is applied, yields considerably more accurate demand figures for all services than the conventional non-integrated methods. This is illustrated by the fact that virtually all respondents surveyed in this study eagerly preferred waterborne sewerage systems, but when integrated affordability considerations started to play a part, about 30% of the participants accepted on-site sanitation options.
2. The overall sanitation demand patterns yielded by both the surveys and the case studies were for all practical purposes the same, namely:-
  - a. Just over a quarter of the participants chose ventilated improved pit latrines (VIPs).
  - b. Very few participants (only about 3%) showed any interest in the composting toilet.
  - c. Roughly 70% of the participants were very adamant about waterborne toilets. About 60% chose the shallow waterborne system and roughly 10% opted for the conventional full-bore waterborne system.
3. The fact that the overall sanitation demand patterns of the case studies corresponded with those of the surveys, clearly showed that the case studies confirmed the results of the surveys.
4. An important by-product when applying the SHAPE model is the fact that the demands for housing and all other infrastructure services are established simultaneously "in one go". This is an enormous advantage to government and other authorities responsible for delivering services to the residents of dense settlements.
5. Many of the residents of the dense settlements surveyed, were willing to accept smaller houses in exchange for higher levels of water and sanitation services in their homes, since they could expand their homes in future, but could not upgrade their services in future on their own.

6. The respondents regarded an electricity supply of paramount importance – even more important than water supply or waterborne toilets in their homes.
7. Local authorities often take policy decisions which exclude on-site sanitation systems for new housing schemes. If these decisions are not dictated by physical conditions like high water tables or specific soil conditions, they negate central government policy and the Batho Pele (“People First”) principles.
8. The poor coordination and contact between local authority officials, councillors, ward committee members and the residents of the dense settlements led to considerable delays and placed a question mark in relation to community involvement in South Africa today.
9. The respondents unknowingly applied the linear programming technique cognitively when they made integrated affordability decisions according to the contingent valuation method. A clear cascade of values among the participants consequently emerged, namely preference for an electricity service, followed by preferences for water supply and sanitation and then a demand for elementary housing and lastly roads and street lighting.
10. The Application of the SHAPE Model during the research sessions led to far greater community involvement and realism among the inhabitants of dense settlements as far as services are concerned. Far more appropriate and realistic choices were made by the households which they actually could afford – not only as far as sanitation was concerned, but also with regard to housing and all the other infrastructure services.

### **Key Recommendation**

Taking the key findings of this study into consideration, it is recommended that the integrated affordability approach as demonstrated by the SHAPE Model must be followed to establish sanitation and all other service demands of residents in dense settlement areas of South Africa henceforth. This will prevent erroneous demand patterns being established like in the past by non-integrated methods which do not take the integrated affordability of all services into consideration.

### **Recommendations for further research**

A number of topics for further research have been identified through this study, namely:

- A survey should be done in future to determine how often and in which way the integrated affordability of services is taken into account when services such as housing and all other infrastructure services are offered to the residents of dense settlements in South Africa. Should

these residents not be able to afford these services, non-payment, boycotts, demonstrations and even violence may erupt.

- It is recommended that more research should be done to familiarize prospective users with the different sanitation options available. Sanitation technology demonstration centres should be considered for residents of dense settlements – especially in urban environments.
- Investigations should be done to determine whether authorities still adhere to the Batho Pele (“People First”) principles when water and sanitation services are supplied to the residents of dense settlements in South Africa.

Hopefully this research study will have a positive influence on the establishment of affordable and sustainable sanitation and other service demands among the residents of dense settlements in South Africa – especially now that the supply of housing and infrastructure services to these residents is of utmost importance in South Africa.