EXECUTIVE SUMMARY

BACKGROUND

In South Africa there are still many households without access to basic infrastructure such as water and sanitation and in many areas, especially rural areas, onsite dry sanitation systems in the form of VIPs or Urine diversion toilets will continue to be an appropriate technology choice. Thus in meeting the backlogs, many toilets will have to be constructed. However, the current shortage of standard building materials of good quality combined with the critical skills shortages in these remote areas hamper efforts to provide this basic infrastructure. Many South African households will be provided with a VIP or its derivatives. Many of these systems will require rehabilitation or replacement when the pit reaches it capacity or design life. However, current standard construction techniques and materials make the superstructure very heavy to move to a new site or even to allow access for desludging. Superstructures are also difficult to dismantle and reuse the material to build a new structure. In many cases it is not possible for the average household to relocate the superstructure resulting in overflow of raw sewerage. Current standard construction techniques and materials make the superstructure very heavy to move to a new site or even to allow access for desludging. Superstructures are also difficult to dismantle limiting the reuse of the material to build a new structure. In many cases it is not possible for the average household to relocate the superstructure resulting in overflow of raw sewerage. Modern technology and materials can be used to develop a building system that can be used by communities to build their own infrastructure.

OBJECTIVES AND AIMS

The aim of this project was to develop an affordable moveable superstructure for a VIP toilet that can be used in rural communities

RESULTS

A literature review was conducted to set up a list of the superstructures currently used with the current cost attached to each system. The perceived advantages and disadvantages of each system were taken into account in setting up requirements for a new VIP superstructure. Alternatives were manufactured, tested and priced to determine the most suitable moveable lightweight VIP superstructure.

In South Africa there are various systems available for the construction of the superstructure of toilets. These systems can be divided into two main groups namely the lightweight systems that can be moved (as a whole or dismantled) when the pit of a VIP is full and systems that cannot be moved as such but the material may be re-useable in the construction of a new superstructure.

Agrément tests are conducted on a full scale structure to ensure that the structure can withstand the forces that it will be subjected to during a typical lifespan without undue distortion or distress. These forces include wind loads, impact loads from people or sharpedged objects colliding with walls, door slamming or localized loads caused by various fittings.

In South Africa structures should normally comply with the requirements set in the National Building Regulations. Some of the National codes of Practice are based on deemed to be fit rules and these rules are often based on experience. The National Homebuilders Registration Council has their own set of deemed to be fit rules and regulations and these or often not as onerous as that of the National Standards. If an alternative building material or system is used that does not fall within the areas covered by the National Building Standards, the material or system can be tested and certified as fit for purpose by the Agrément Board of South Africa.

During this project, a moveable lightweight superstructure system made from high strength fibre reinforced concrete was developed. This system consists of a base slab, wall panels, a roof and a door and the system can be provided to communities in package form or it can be

manufactured by the communities themselves in controlled environments. A system that consists of bricks or blocks that cannot compete with a pre-cast system as far as cost or quality is concerned. The various systems available do not differ much in cost and other factors will determine which of the systems would be most suitable in a given community. A choice will have to be made to optimize community involvement while providing every household with an acceptable sanitation solution as soon as possible.

RECOMMENDATIONS FOR FUTURE RESEARCH

The major problem with the provision of VIP superstructures is that there is no standard requirement and each supplier determines what the quality of the product is that they wish to deliver. It is recommended that a National Standard should be developed with minimum requirements that all VIP superstructures should adhere to. These requirements can include aspects such as minimum dimensions, load capacities, requirements for doors and fittings.