Customer Satisfaction

Households have willingly paid the R600 contribution to obtain an on site source of water and, since they no longer have to carry the water, have surplus for productive uses.

Some owners of older wells equipped with bucket pumps have been upgrading them to rope and washer pumps at their own expense.

One woman said that she had approached a member of the well construction team to repair her rope that had snapped. The construction team member wanted to charge her R50 to do the repair so she repaired it herself!

Municipal Satisfaction

The uMkhanyakude District Municipality sub-wards of Mvelabusha, Chitamuzi, and Mnthunzini were chosen as suitable sites for the installation of the family tube wells with rope and washer pumps.

In these areas with widely scattered households it is difficult to provide services. The rope and washer pump provides a higher level of service than a communal tap or hand pump and, because the household owns it, the household takes responsibility for maintenance.

For more information or to set up site visits contact:

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MAPUTALAND

TECHNICAL REFERENCE SITE

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NORAD
DIREKTORATET FOR UTVIKLINGSSAMARBEID
NORWEGIAN AGENCY FOR DEVELOPMENT COOPERATION

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The NORAD-Assisted Programme for the Sustainable Development of Groundwater Sources under the Community Water and Sanitation Programme in South Africa

Background

In the north eastern corner of KwaZulu-Natal, surrounded by the Tembe, Ndumu, Mkuze and St Lucia Game and Marine Reserves, with the Lebombo and Ubombo mountains to the west and the Indian Ocean to the east, lies the broad, sandy Maputaland plain. The area is characterised by very scattered settlements. Houses are often over 500m apart, with people engaged in subsistence farming or small scale timber growing.

The area has good year round rainfall but almost a complete lack of surface water except for major rivers and shallow lakes, where the water is open to contamination. However, underlying the entire area, at shallow depth, is a major aquifer. Drillers typically use the mud-rotary technique in such soft sandy material, but this technique is too expensive for anything but high production boreholes.

The traditional method of accessing the water has been to excavate a very large depression with a shallow well at the bottom. This had many problems, including the effort to reach the water table, susceptibility to pollution, and the collapse of the excavation in heavy rains.

In order to overcome this 11 rope and washer pumps were constructed and tested during a six-month development phase in 2003. A suitable prototype was developed, and installation of the family tube wells and pumps began.

A further 102 rope and washer pumps were installed with funding from the Norwegian Government (NORAD) and, since then, a further 46 pumps have been installed under a Christian Broadcasting Network funded programme.

To ensure that wells and pumps are only installed where they are wanted, households have to apply for a well, and make a R600 contribution to the cost. There has been no shortage of applicants.

Choice of Technologies

In this context technologies were sought that:

1. Could be provided and maintained at house hold level;
2. Could be cheaply sunk into the sand and not silt up or block; and
3. Would encourage and allow for increased water consumption.

The most appropriate solution was found to be a combination of hand augured tube wells and rope and washer pumps.

Hand augured tube wells

A 165 mm hole is manually augured as far as the water table using a Vonder Rig. Water table depths of up to 20 metres in unconsolidated formations can be reached very economically. Thereafter a 125 mm uPVC well screen and casing is sunk up to five metres into the water table using a manual baling technique. The slotted well screen is wrapped in a geotextile sleeve before it is lowered down the borehole. This prevents the fine sand of the area from entering and silting up the well.

Rope and washer pumps

This has proved the most effective method of extracting sufficient water in excess of that required for basic household consumption so that food can be grown and other productive tasks undertaken. In essence a rope with washers fastened along its length is wound down into the water and then up a pipe (slightly larger in diameter than the washers). As it rises the rope draws water up the pipe in a continuous stream. The pump is made from readily available local materials.