

# Proposal

---

## Irrigation System

for

## Good Hope Community Organization

## Winterveldt

---

Dams for Africa  
27<sup>th</sup> August 2003

Nicholas Papenfus, PhD, MSAICE, MICT, Pr. Eng.

## **Purpose**

This proposal relates to the installation of an irrigation system for the Good Hope Community Organization in Winterveldt for the purpose of growing vegetables as food security to 127 children. In addition the children will learn new skills such as the cultivation and irrigation of vegetables, as well as marketing of excess produce into the local community.

A further purpose is to supply the children with drinking/domestic water. A degree of synergy exists between the various purposes in that the existing borehole and 10000 litre storage tank can be used for all these purposes.

## **Background**

On 23rd August 2003 Nicholas Papenfus of Dams for Africa was introduced by Pastor Reuben Mamatsinya to Mary Lwate of the Good Hope Community Organization, Winterveldt, where there are currently 127 children living in a small house.

Funding has been obtained from Eskom to relocate them to a nearby one hectare site. The current infrastructure at the new site consists of a high security fence around the perimeter, a borehole (see figure 2), a borehole pump, as well as a 10000 litre asbestos cement tank (see figure 3). Eskom are in the process of installing electricity. The Eskom Development Foundation has donated money to construct dormitories for the children, and the bricks and timber beams are already on site.

The steel casing in the borehole has a diameter of 150mm. The borehole has a yield of 7000 litres per hour. The overall depth is 90m and the first 20m is sleeved with steel pipes. The static water level is 9m below the surface. The submersible borehole pump is powered with a 2.1 kW electric motor, but has been removed for security reasons.

## **Proposed Irrigation Scheme**

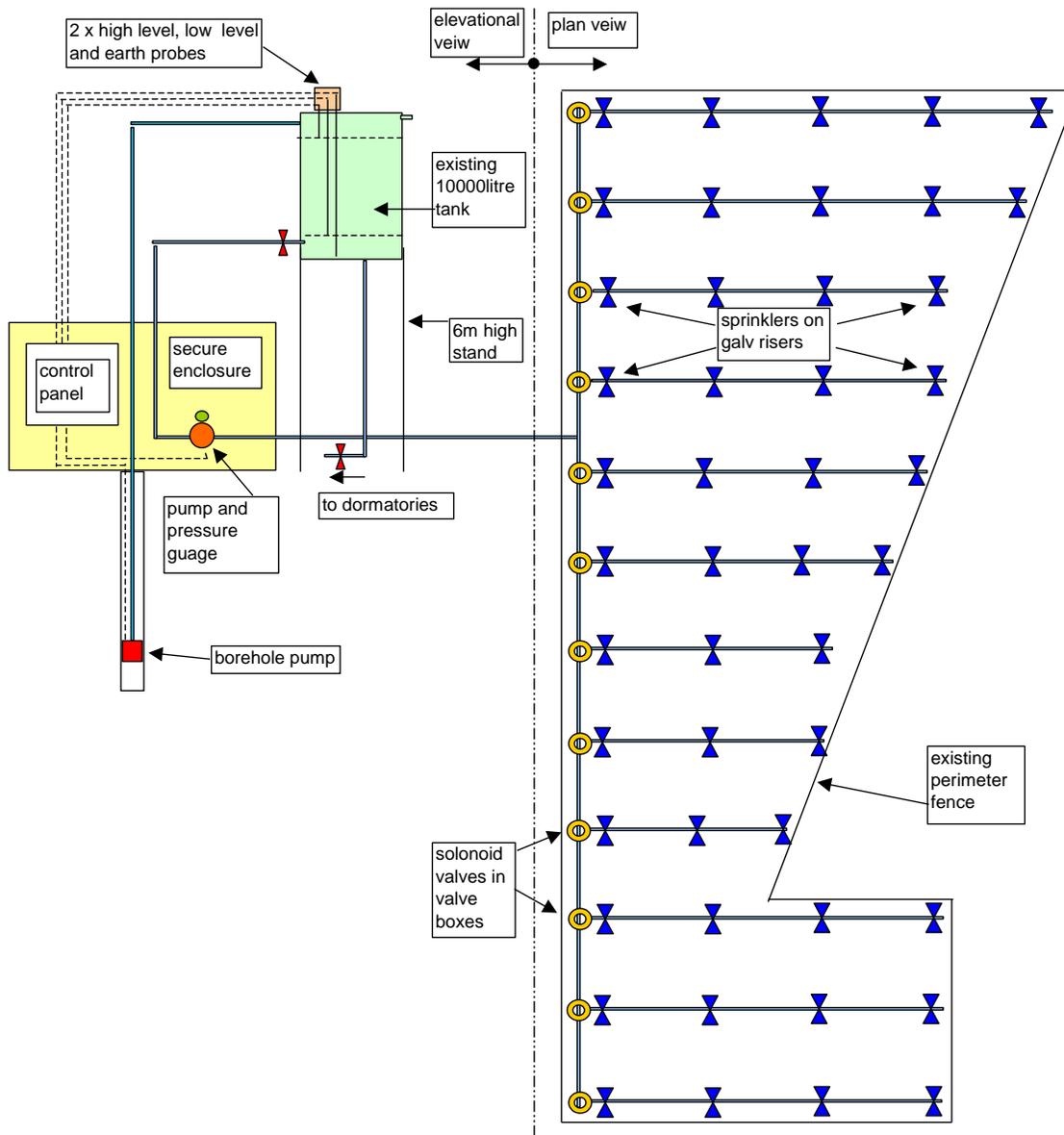
The layout of the proposed irrigation scheme is shown in figure 1, and a view of the land that has been allocated for irrigation which lies adjacent to the one hectare site, may be seen in figure 4.

It is proposed that the existing tank be elevated to a height of 6m to allow water to be gravity fed to the dormitories, and to supply a useful pressure to the booster pump which in turn pressurizes the 47 sprinklers in the garden via a network of irrigation pipes. The booster pump is to be located near to the borehole and both are to be housed in a high security pump house. A programmable controller housed in the pump house regulates the flow to the various sprinklers via 12 solenoid valves. The controller determines when each solenoid comes on, and for how long. Note that each sprinkler has a radial reach of 12m, which allows full overlap and hence uniform watering.

The water level in the 10000 litre tank will be automated by means of sensing probes inside the tank. Thus the booster pump will be automatically switched off when the tank is nearly empty and likewise the borehole pump will be switched off when the tank is almost full.

The cost for the complete project is R99500 excluding VAT. This allows for the supply, installation and commissioning of:

- a 6m high tower on concrete foundations to support the water tank
- level controls in existing 10000 water tank
- 47 sprinklers
- 12 solenoid valves and 16 station controller
- a network of 600m of piping
- irrigation pump and existing borehole pump
- control panel to house switchgear for borehole and irrigation pumps and controller
- a secure pump house



**Figure 1** – Diagram of proposed irrigation system.



**Figure 2** – View of existing borehole



**Figure 3** – View of existing 10000 litre tank



**Figure 4** – View of area to be cultivated, adjacent to the one hectare site where the children are to live.

## About Dams for Africa

**Dams for Africa** (Pty) Ltd design/construct/rehabilitate water related infrastructure to **empower communities** in remote rural areas. Typical projects include dam rehabilitation, canal, weir and reservoir construction, installation of pipelines and irrigation systems etc.

DFA recognises the need to be **flexible** and will tailor its involvement according to each need, from minor consultations to relatively large turnkey projects.

DFA's contribution to a **typical project** may take the form of an initial feasibility study, followed by design and/or construction.

Whenever practical **labour intensive** methods will be used in the construction process, sourced from local community.

DFA is also in a position to provide the necessary hydrological, topographical, geological, ecological and social impact **studies**, and attend to the technicalities and legalities associated with water related infrastructure.

Dams for Africa fully appreciates the need to

**network** and co-operate with partners such as:

1. **Community based organizations** that are in touch with the needs of the resident population.

DFA is aware of the importance of *community involvement* and is, if required, prepared to participate in all stages of this process. This would include a response-to-need request as the first step, assistance with visualization, participation in negotiations, recruitment and training of local residents for the construction stage, facilitation of training in subsequent agriculture and irrigation, and ongoing mentoring as may be required.

2. **Donors/funders** including government and financial institutions.

DFA is prepared to participate in *fundraising* for worthwhile projects, and in the production of 'bankable' documentation.

3. **Training organizations** who teach on farming methods, produce marketing, and who know the value of ongoing mentoring.

DFA would like to know that its engineering contribution is placed in the hands of a motivated community that has been *equipped* with the necessary skills to put the water infrastructure to good use for many years to come.

Tel 011 475 2764  
Fax 011 475 8381  
Damsforafrica@worldonline.co.za