# FRESH WATER STORAGE - EVAPORATION RESEARCH

## *Evaporation Study*

## *Executive Summary*

During this research, three possible concepts for reducing evaporation were investigated using plastic rings floating on water filled pools. The concepts were: 1) pool covered with rings only; 2) pool covered with rings and a water borne fern *(Azolla)* and 3) pool covered with rings supporting a cap to provide a modular pool cover. To check the validity of the concepts, the results were then compared with the results of a 'reference pool'.

An analysis of the results indicates that the concept of rings only decreases surface actions but the net effect on evaporation reduction is minimal at 0.4% compared to the reference pool. The concept of rings plus Azolla worked well in stabilizing the location of the Azolla, however the option does not appear viable with only a 5.5% reduction of evaporation compared to the reference pool.

The rings plus caps concept shows great potential and demand for further research with a 65.4% reduction of evaporation compared to the reference pool.

This report emphasises the need for additional research on the rings plus caps concept (referred in this report as an *Aquacap*), particularly in the areas of production of a prototype and field testing the prototype in an area under the conditions for which it is required.

The study identifies that in order to get some reliable information, any future study should focus on Aquacaps being tested on a minimum size water surface area of 1000m2. Two water storages adjacent to each other and of the same dimensions would be necessary for comparison.

In addition, the study points out the need for instrumentation to provide meteorological data on a daily basis. Also, the duration of any future study would need to be sufficient to obtain data for at least two seasons of evaporation.

This study has shown that a significant reduction of water loss due to evaporation from a water storage is possible using Aquacaps with an estimated pay back period of about 3.3 years.