



SkyJuice™ Foundation Inc. No: 9883786
ABN: 57 240 520 309



Level 15, 3 Spring Street
Sydney NSW 2000 Australia

Tel: +61 2 9252 4420
Fax: +61 2 9252 4430

Email: jann.hughes@skyjuice.com.au
Website: www.skyjuice.com.au

Sustainable Water Solutions for Humanitarian and Disaster Relief

**REPORT ON THE PROVISION OF LOW COST WATER PURIFICATION UNITS
BY THE SKYJUICE™ FOUNDATION INC for KIRIBATI MINISTRY OF PUBLIC
WORKS and UTILITIES AND THE PACIFIC ISLANDS APPLIED GEOSCIENCE
COMMISSION (SOPAC)**



REPORT ON THE PROVISION OF LOW COST WATER PURIFICATION UNITS BY THE SKYJUICE™ FOUNDATION Inc

1. Background

This report has been prepared by David Hughes, Deputy Chairman of the SkyJuice Foundation, Sydney, Australia for Pacific Islands Applied Geoscience Commission (SOPAC) based in Suva, Fiji

The **Ministry of Public Works and Utilities** together with SOPAC has identified a water shortage issue for the 300 approx inhabitants of Banaba Island. The Ministry of Public Works and Utilities and SOPAC has selected the SkyJuice water purification unit, the SkyHydrant™, for immediate provision of potable water from the existing rainwater water tanks on Banaba Island.

SOPAC has contracted the SkyJuice Foundation to provide 3 SkyHydrants and necessary training to nominated personnel from the **Ministry of Public Works and Utilities** in South Tarawa, to enable the unit to be installed, operated and maintained at a suitable date on Banaba Island. A report was to be produced by SkyJuice noting the results of the treatment trial. The Deliverables were noted in the SOPAC WEU SkyJuice agreement dated 19 November 2008.

2. Scope of the project

The project scope evolved over time but based on the report by Dr Ian White and communication with SOPAC. Ancillary equipment required was noted in these communications.

The recommendation by Dr White and the proposal by SOPAC was to use low cost, simple water treatment technology to purify the stored contaminated water on Banaba Island. Dr. White's recommendation was based on the Technical Specification Sheet. The report by Dr Ian White nominated SkyJuice technology as the most appropriate solution. Based on the information stated in the report, SkyJuice advised that the SkyHydrant was suitable for the proposed application in that it had the following characteristics:

- The SkyHydrant water purification unit produces affordable drinking water
- The unit operates with as little as one metre head and up to maximum of a 4 metre head
- The SkyHydrant can be a single stand alone unit or can be manifolded together for increased capacity

- Clean potable water can be produced from the majority of non-saline surface or ground water sources. The unit will not extract any dissolved minerals or chemicals but will remove pathogens, coliforms, bacteria and turbidity.
- The micro pore membrane is robust, cleanable and long-lasting
- All operating functions are manual and simple to undertake
- The cleaning operation uses no consumables and the purification process has no moving parts
- The SkyHydrant is compact, light (18kg), easy to transport, comes complete with essential components for installation and is simple to deploy in the field.

Funding from SOPAC was obtained by the **Ministry of Public Works and Utilities** and a commitment to purchase the units was made to SkyJuice Foundation on the 19th November 2008.

3. Project Description

Two SkyHydrants were shipped to South Tarawa on the week of the 9th December 2008 and the third SkyHydrant was hand carried to ensure it's safe arrival. An experienced representative from the SkyJuice Foundation, David Hughes flew to Bonriki then travelled on to Betio, South Tarawa for training of representatives from the **Ministry of Public Works and Utilities** from the 9-11th December 2008.

The SkyHydrant system was set up prior to Mr Hughes' arrival, ready for training.



David Hughes met with the Ministries' senior water engineer Mr Mourongo Katstia who organised other representatives of the Water Engineering section to participate in installation, maintenance and operational training. The training was successfully carried out at the Department's offices in Betio on the 9th and 10th of December.

Training involved:

- **Installation:** A simple schematic of a typical set up was distributed. Set up is site specific however; ancillary equipment such as header and filtrate tanks, 1 metre head, tap stand or distribution points were discussed. It is always prudent to

analyse the feedwater supply and make an 'informed' decision of the raw water analysis.

- **Operations:** A simple Operations and Maintenance guide in English was used as the training tool; multiple copies were left for the operators. The instructions are provided to ensure that the SkyHydrant is correctly and safely operated. The guide sets out step by step instructions and includes a daily log sheet to record production (litres), backwash frequency, san clean frequency and the amount of chlorine used. The instructions also stress the need for post purification chlorination, as all stored water is subject to recontamination. The dose level will be determined by site specific conditions.

The trainees were given the opportunity to operate the SkyHydrant.

- **Maintenance:** It was stressed that the frequency of cleaning will be dependent upon the source water on Banaba Island. The Do's and Don'ts of operating the SkyHydrant were discussed which are also included in the maintenance guide. Instructions and precautions regarding the use of chlorine were also discussed.

Question and answer session followed and all participants were given the opportunity to operate and clean the unit individually.

SkyJuice training certificates were awarded to all trainees who attended and completed the training.

Following successful commissioning of the test unit in Betio using ground water sources in the compound, water samples were collected by the Department of Health and were taken to a laboratory for testing. David Hughes requested that samples be taken of the source water supply and the post filtering filtrate tank for comparison.



Water sample for laboratory analysis pre and post filtration.