African Rainwater Revolution Bladder – Prototype 2.1

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This prototype is designed so that the bladder is an integral part of a DIY pond liner. The bladder is in the shape of a semi-cylinder and is made from 0.75mm flexible polypropylene. The prototype has been manufactured in Adelaide at a cost of AUS$348 by Fabtech (www.fabtech.com.au).

bladder inflated with air.

The diameter of the semi-cylinder is 1.1m and the length is 4m. The storage capacity is 8000 litres.

The bladder is packaged by Fabtech so that it will not be damaged during shipment to Africa.

packaged bladder

bladder partially filled with water

When the pond liner is fabricated, the bottom of the bladder and surrounding skirt is joined to the rest of the pond liner.

The pond should have access to clean rainwater, for example, runoff from the rooves of nearby structures. The water entering the bladder should be potable.

The bladder has two 50mm diameter inlet/outlet boots, one on each side of the bladder.

boot connected to rainwater inlet

boot connected to float valve

Float valve

A float valve protects the bladder by ensuring that the water level in the bladder is never more than a predetermined value higher than the water level in the pond. The height of the float valve determines the maximum depth of water in the bladder when the pond is empty. The length of the overflow pipe in the centre of the float can be adjusted according to the structural strength of the bladder.

float valve connected to one of the boots

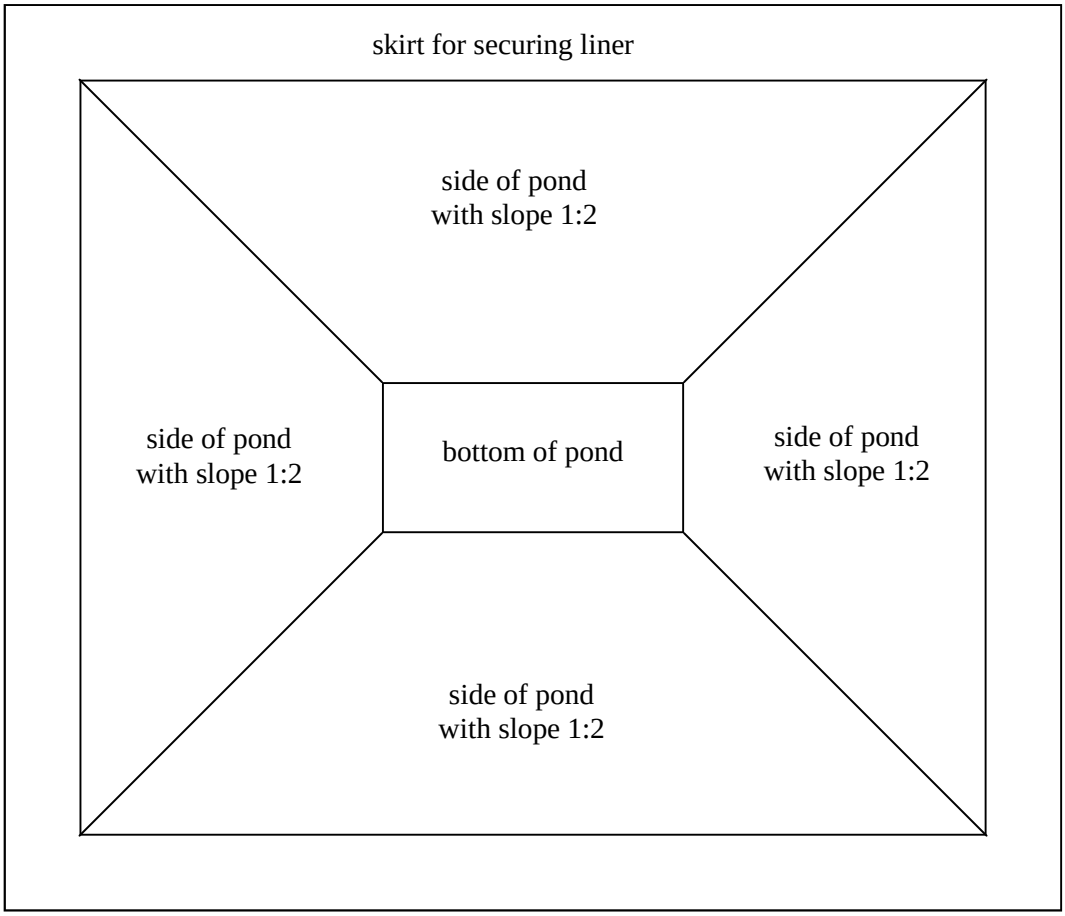
the float valve rises and falls according to the water level in the pond

Treadle pump

A treadle pump may be used to access the potable water in the bladder. The inlet tube for the treadle pump may be inserted inside the inlet pipe for the bladder. Alternatively, a 20 watt solar panel connected to a 14 watt pump may be used to access the water in the bladder.

Pond liner

The pond liner should be made in Africa using 0.75mm flexible polypropylene, the same material as the bladder.



The bottom of the pond should be at least 4m x 5m in order to accommodate the bladder.

Each of the 4 sides of the liner should have a slope of 1:2. The slope should to be set to a specific value so that the cost of mass production is minimized.

The DIY installation should follow the procedure used in the following link:
http://www.geoffmiller.com.au/images/dam_liner_brochure.pdf