

# Treating contaminated runoff from a slum settlement in the Western Cape, South Africa, with large and small biofiltration cells and its reuse for urban food production.



Research Centre  
Agroecology, Water  
and Resilience

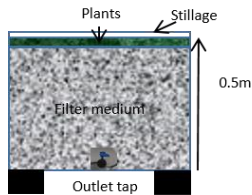


## UK: small scale

Site: Ryton Organic Gardens,  
Coventry, West Midlands, UK.



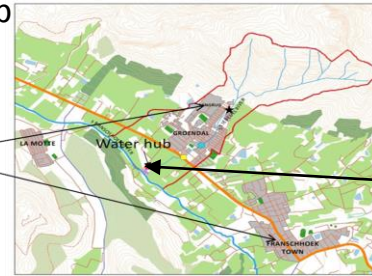
Half 1000L  
containers



Planted with lavender, mesembryanthemum,  
Aloe. Watered with synthetic greywater.

## South Africa: the Water Hub

Franschoek, Western Cape, SA



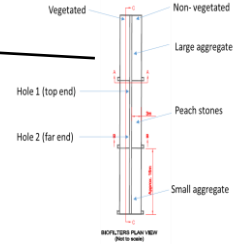
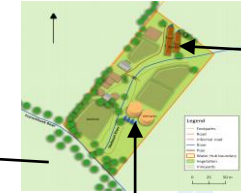
Introduction: The Stiebeuel River runs through Langrug, an informal settlement to the west of Franschoek. It is contaminated with a variety of pollutants. At the Water Hub it is directed through 3 pairs of large biofiltration cells containing 2 particle size of aggregate (20mm and 2-3mm) and a third cell containing waste peach stones. One pair of the cells were planted with *Typhia*, *Phragmites* and *Papyrus*, the other pair sets were unvegetated.

Results: Plants in the aggregate cells flourished, whilst those in the peach stones died.

Water quality	E. Coli cfu /100ml	
Inflow	77010	Cp x WHO Treated wastewater for RTE: 1000 cfu/100ml Raw sewage = 10 <sup>7</sup> cfu/100ml
Large aggregate vegetated	2	
Large aggregate unvegetated	1	Biofilters with aggregate performed well
Small aggregate vegetated	1	
Small aggregate unvegetated	<1	
Peach stones vegetated	>2420	Biofilters with peach stones did not perform well
Peach stones unvegetated	124	

Future work: monitor at Water Hub for New and Emerging Pollutants, particularly medication, as well as metals and nutrients. Investigate peach stone biofilters. Set up small UK containers, monitor plant efficiency to improve water quality and harvesting for other uses.

## The Water Hub



3 pairs of biofiltration cells

Small scale urban gardening using effluent from the biofiltration cells



Small stone aggregate with living plants

Peach stones/pips with dead plants

Authors: Sue Charlesworth, Steve Coupe, Liz Trenchard, Peter Hollings, Coventry University  
Kevin Winter, University of Cape Town, SA