

Practical urban self reliance – water harvesting.

People in traditional cultures place a value on being able to provide the necessities of life themselves whilst here in ‘developed’ countries most of us work to earn money and pay others provide our food and shelter.

When native peoples (including our ancestors) faced problems of survival their first step was to map their territory for resources. They took a pride in honing their senses to spot game, edible plants and water signs. Here we may have lost that pride when we look for things to sustain us in an urban environment. There is no shame in asking before raiding a skip for the timber to feed your fire or build your house. Rather we can feel proud to be doing our bit to reduce landfill, CO2 and save the planet. That neglected apple tree on wasteland can be a source of food saving the carbon footprint of the apples in the supermarket. Once you allow your antenna to scan your environment you will, like the Aborigine, feel closer to the area you live in and spot opportunities you were blind to before. I hope over the course of a few articles to draw attention to the resources that are all around us even in an urban situation.

Water is the first necessity of life; we can only live a few days without a drink but more than a month without food. Since we moved to Clacton (the driest place in England with about 500mm of average yearly rainfall) our attention has been focussed on the need for water to help our plants grow. Our small holding is an integral part of the way we live. If you don’t have a garden you will end up with a different system but the principles remain the same.

The first step on the road to abundant water is to harvest the water that falls on your property. Even with our low rainfall, we could store more than 125 cubic meters of rain water from our house and outbuildings, which is 125000 litres or 27496 gallons – more than we would ever need to use in the house – our current yearly use for four people is about 88 cubic meters. To save water we:

- Don’t use mains water in the garden

- Save our pee to use on the compost heap so we don't need to flush (probably our single most important water saving habit).
- We share bath water and use the water to wash the floor etc
- Only wash full loads in the washing machine and save our washing up to do once or twice a day.
- We don't leave the tap running when washing or cleaning our teeth.

Water storage costs money and the cheapest storage method depends on your situation. We decided on recycled 1000 litre IBC tanks (**picture 1- Water harvesting – Caption: Water storage tank.**) these are available cheaply from eBay or industrial estates. They need to be protected from the sun's ultraviolet light (we are boxing ours in with recycled timber). If you have the space a hole in the ground is also a good storage option (otherwise known as a pond!) The snags are that as you use the water the water level will go down leaving you with the problem of getting the water to where you need it and unless you have fish in your pond (which is another story) you will breed mosquitoes and become rather unpopular with your neighbours! The rainwater feeds the polytunnel by a 'leaky pipe' watering system. (**Possible picture-poly tunnel July 08? Caption: Our polytunnel; watered with recycled water)**

The next source is the water we pay for and use ourselves in our home – more expensive than rain but available regularly (even I have been known to have a bath occasionally!). We decided to recycle our bath, sink and washing machine water – not our sewage.

If you store your grey water and don't use it immediately on the garden it will start to smell and if you aren't careful about the kind of soap and detergent you buy, watering can build up too many salts in the soil over a period. To avoid these problems we decided to build a small reed bed to purify the water before using it on the garden. Common reeds have the ability to provide oxygen to their roots and will use up the nitrate in the waste water as they grow. They will also maintain a colony of aerobic bacteria round their roots to help with the cleanup process.

(**picture 2 –Reeds or Reeds and Zero. choice of 2 with or without our dog! Caption; Common reeds (Phragmites australis))** We decided on a 4 square meter reed bed, 35cms

deep raised above ground level to give the height to keep the water flowing. A reed bed is basically a pond filled with gravel with reeds growing in it and a collecting pipe buried at one end to take the water out after filtering. We made ours out of recycled lumps of concrete mortared together with mud and a triangular wall cross section. **(picture 3 - Reed bed wall plastered or Reed bed wall caption: Building the reed bed wall from rock and mud)**

This construction was lined with old carpet and pond liner. **(picture 4 reed bed drain pipe caption: The reed bed lined with carpet and pond liner with the water collection pipe in place)** A piece of perforated drainage pipe led the water to an old cold water header tank from which we could lead it to the pond or down to a tank outside our polytunnel. **(picture 5 reed bed Gravel caption: Filling the reed bed with the second layer of smaller gravel)** The reed bed is filled with gravel starting with a layer of about 10mm of pebbles then filling to the top with pea gravel. The reeds will take a year to establish themselves and their aerobic bacteria friends. In the meantime the water is cleaned by the gravel but is a little smelly due to the anaerobic bacteria in the gravel bed. I hope the reed bed water will eventually pass thorough the pond but at the moment it contains too little dissolved oxygen to be good for the fish (we don't want to rely on an electric aerator). **(possible picture 6 – Reed bed gravel completed Caption: Reed bed filled with gravel showing the outlet collecting tank)**

To complete the system we installed a surge tank made from a (recycled) water tank to take the water from the house. This has a crude filter made from a pan scourer (which needs to be cleaned monthly). The water passes from the tank into a hose pipe which leads to the reed bed.

I think the reed bed and pond are an attractive addition the garden which will look even better next year as the reeds grow. **(picture 7 Pond in July 08, caption: The pond and reed bed after one year – the reeds are still not fully grown.)**

The water systems have served us well this year which has proved to be another very dry summer here in Clacton. **(possible picture 8: Garden July possible or Garden July 08 , caption: The**

garden deep beds in full production) For more details of our eco additions to the bungalow, see our website www.ecodiy.org