

Water answers for South-East Queensland

There is a certain irony in the fact that some suburbs of Brisbane experienced flooding earlier this year from stormwater, and now they have level 5 water restrictions.

Building more dams just exposes the south-east to the same drought conditions in rural catchments. If there was a dam on the Mary River it would also be low due to drought.

Brisbane needs to diversify its water supply into options which are more reliable. Desalination is one answer, but the other solution which has largely been ignored, is the runoff within the city boundary.

This water supply is more reliable than dams because there is a large area of concrete, bitumen and building rooves, which has runoff with small rainfall events. Brisbane has enough of this water runoff to meet a large portion of its own needs and could move quickly to supply around one third of its water supply from this source.

There is more than 30,000 hectares of concrete, bitumen and buildings in the greater Brisbane area. The annual runoff from this area, with 1000mm of rainfall, is 300,000 megalitres. This is in excess of the annual use of water in the Brisbane area of 280,000 megalitres. In addition, some 100mm of runoff from the remaining part of the lower Brisbane catchment, would contribute another 100,000 megalitres to stormwater runoff each year.

Not all of this could possibly be stored, but if there are millions of dollars available to build dams and pipelines, a significant amount of storage and use of this water could be achieved. If one quarter of stormwater runoff could be captured, it would supply in the vicinity of one third of the total water demand. If another third of the water used is recycled, then two thirds of the total water needs can be supplied from Brisbane's own water, without input from dams.

The existence of large supplies of untapped water suggests calls to curb population growth in south-east Queensland are nonsense. New developments can make even greater use of rainfall by designing ways to capture and use it as new buildings and suburbs are being built.

Brisbane should use its own water supplies before moving further out into the countryside to take away water supplies from rural residents and farmers who have traditionally used water for irrigation.

The first way to capture rain is via rainwater tanks, which can provide around 100 kilolitres of water and reduce external water consumption by 50% in the average suburban household.

However, this requires a good size tank of more than 10,000 litres and use of the water in the laundry, toilet and garden. Most people are installing much smaller tanks and do not add the pressure pump system needed to effectively use the water.

The first, partial solution to better water supplies is for an extension of government incentives for the installation of water tanks to encourage the installation of larger tanks and pressure pump systems.

The second solution is to build decentralised urban lakes and water storages to harvest water as ways of boosting supplies for parks, gardens and golf courses. If there is surplus water it can be treated by reverse osmosis to remove any quality or health concerns and used to augment household water. Demonstrations of stormwater capture have been successfully completed in Newcastle, Canberra and Adelaide at a cost which is cheaper than constructing large dams.

Let's have a bit of imagination here. Suppose a low lying area of 4 hectares was selected for the development of a storage. It could be excavated to 20 metres and provide a gravity-fill reservoir of 800 megalitres. If this was filled twice a year, the yield would be 1600 megalitres – enough to provide water for 10,000 homes in the surrounding area. Expensive, maybe, but what if the land was developed as a shopping centre or industrial buildings above the tank? The sale of the land (now above flood level) would probably pay for the underground storage.

A third method of harvesting stormwater is to pump it underground. The classic example of underground water storage is on the Gold Coast, where thousands of spear pumps reclaim rainwater, which has percolated through the sandy soil.

In Brisbane, the soils are generally less suited to percolation, but stormwater from buildings and roads never gets a chance of being stored underground, because it is channelled away in concrete drains and pipes very quickly.

There is likely to be suitable land in parts of Brisbane where underground storage could be possible with the construction of tunnels or porous pipelines. What is needed is some determined investigation and commitment of money by all levels of government to tap into the most important resource of all, the rain which falls on Brisbane.