

# A shift in thinking

**Phil Krasnostein, technical director Nubian Water Systems discusses how urbanisation is changing water distribution and a new way to combat the problem of dissipating water resources.**

It is predicted major urban centres in Australia will have an additional demand of over 600 billion litres of water annually and by 2056 of over 1,000 billion litres<sup>1</sup>. The unstoppable trend of urbanisation means for the first time in history more than half of the world's population are living in towns and cities.

Our urbanised lifestyle is putting a significant strain on our water resources. The 2009 United Nations' World Water Development Report predicted nearly two-thirds of the world will face water shortages by 2025 displacing anywhere from 24 to 700 million people<sup>2</sup>.

The combined effects of increasing urban populations, lack of investment in water infrastructure and shifting rainfall patterns are causing increasing stress on drinking water supplies across the globe, including capital and regional centres in Australia. Seventy per cent of the earth's surface is made up of water, yet only 2.5% of the world's water is fresh<sup>3</sup>.

With increasing numbers of people wanting to implement sustainability strategies, there are opportunities to reduce the cost of supplying 'new' water, while providing plentiful supplies of high quality water for irrigation, home, business and landscape use.

These opportunities present alternative water supplies from non-traditional sources such as bores, rivers, rainwater, stormwater, seawater, greywater and black water. To make use of these alternatives requires a shift from the traditional model of large centralised water treatment plants built and operated by water authorities or

municipalities. This shift is gathering pace and has led to a proliferation of what has become known as 'distributed systems'.

A distributed system can either be dedicated to delivering water to a single community (e.g. a home, apartment building or university campus), or can be part of a linked group of such systems operating together to create a network.

## Distributed systems vs. traditional systems

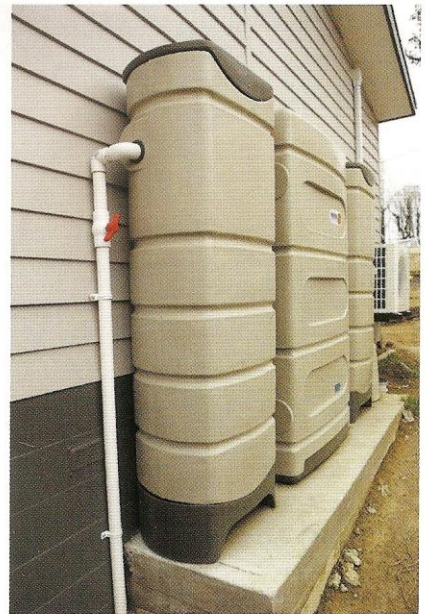
Distributed systems have a number of benefits over the traditional centralised model. They can:

- Reduce costs – systems can be smaller, simpler and custom built
- Be designed to meet local requirements – they can be optimised to take advantage of specific circumstances such as the use of waste energy to operate the plants, or available local uses for waste sludge
- Improve service security and risk management – a network of linked distributed systems provides supply options in the event of failure of an individual treatment plant
- Maintain gardens and landscapes in times of water restrictions – having local recycling systems can drought proof communities.

## Not all water we use has to be potable

One of the best ways to improve the sustainable use of water is to recognise that not all of the traditional uses of drinking water actually require drinking water. Good examples are irrigation, toilet flushing, laundries and vehicle washing.

However, any use of water requires it to be of a quality appropriate to a particular use, known as 'fit for purpose'. Understanding the performance and approvals required by the various States and local councils around Australia is critical as there is an increasing



**A network of linked distributed systems provides supply options in the event of failure of an individual treatment plant.**

level of scrutiny by regulators and a consequential tightening of the rules governing the use of water from alternate sources. Regulators are, therefore, increasingly placing higher demands on the systems used to treat water and on the operators of the systems.

Although regulations vary from State to State there are some underlying concerns that need to be addressed:

- Systems have to produce high quality water
- Systems have to be reliable
- Owners and regulators need to be able to ensure they are delivering the required quality
- Systems have to be easy to manage and maintain.

To respond to these requirements, new and innovative approaches to traditional water treatment problems need to be developed. For example, in addition to developing its own patented biofiltration system for greywater recycling and a

remote monitoring and management system, Nubian has brought 'best of breed' international technology to the Australian market:

- UV Pure from Canada – a range of UV disinfection products that can meet the demanding NSF/ANSI 55 Class A standard
- Seccua from Germany – a range of ultrafiltration products that has been proven in extensive tests to remove 99.99% of all pathogens
- Blue-I – a range of on-line water quality analysers and controllers that has been proven to provide high-precision measurements not only in general water treatment applications, but also in challenging environments such as power plants, oil refineries and cooling towers.

These products have all contributed to enabling the development and

implementation of successful distributed systems in regulated environments.

#### Factors for a distributed water system

Based on our experience, there are four key characteristics that help to ensure the success of distributed systems.

##### 1. Must be designed for the job

Systems need to be able to prove they're 'fit for purpose' and can deliver water to the standard required by the application. This is not a simple task as each installation has unique characteristics both in terms of the water input to the system and the quality of water it outputs.

##### 2. Quick and easy installation

As far as possible systems should be 'fast installs' having been designed, built and fully tested in the manufacturer's



Phil Krasnostein (pictured above) feels that distributed water systems need to be able to prove that they are fit for purpose and deliver water that meets the needs of particular standards.

facility. This approach limits the amount of expensive field work required and provides the best chance of the system coming into production with minimum difficulties. ➤

## CCTV CAMERA INSPECTION EQUIPMENT SYSTEM "KEEPING YOU IN THE PICTURE"

**JETWAVE**

#### Colour Inspection Camera

- ✓ Compact camera design able to inspect 50mm-300mm pipes
- ✓ 512Hz in-line sonde transmitter
- ✓ Shock/water resistant
- ✓ Self levelling camera head
- ✓ 16 high intensity LED lights with polycarbonate cover

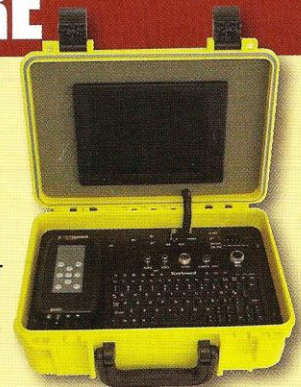
Other camera models and locator also available.

#### Monitor/Camera Control Unit

- ✓ 10.4" Flat LCD Hi-Res colour monitor
- ✓ SD Card Recorder
- ✓ MPEG-4-SP format
- ✓ On screen counter with time, date & keyboard/screenwriter
- ✓ 240 VAC/50 Hz
- ✓ 12 VDC inverter built in

#### Push Cable/Reel

- ✓ Combination 12mm D push rod video cable
- ✓ Water proof, dual jacket gel rod cable
- ✓ Standard 60 metre length included

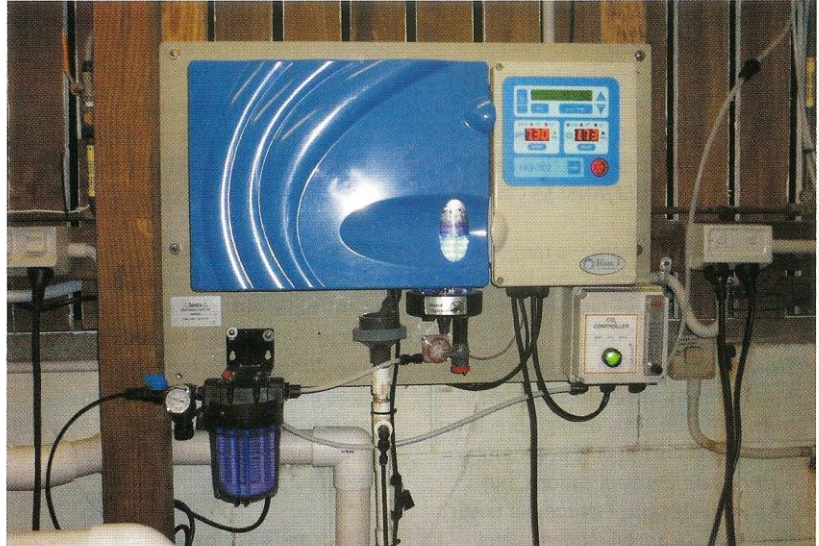


Call  
**1800 029 300**  
for details of your  
nearest dealer.

### Jetwave Industrial Equipment

72-74 Richmond Road, Keswick, SA 5035 • Tel: (08) 8371 3599 • Fax: (08) 8371 4497  
jetwave@cobweb.com.au • www.jetwave.com.au

## alternative water use



One of the best ways to improve the sustainable use of water is to recognise that not all of the traditional uses of drinking water actually require drinking water.

## HOW DO YOU RATE COPPER?

- a) Kills Bacteria
- b) 100% Recyclable
- c) Fewer Leaks
- d) Value

Copper Connects <sup>For</sup> Life.™

[www.copper.com.au](http://www.copper.com.au)  
Follow us on [www.twitter.com/copperlife](https://twitter.com/copperlife)

# COPPER

Copper Development Centre • Australia Ltd

Sponsored by:

 **KEMBLA**

 **Crane Copper Tube**

### 3. Remote monitoring to ensure accurate and quick responses

The system should be capable of being remotely monitored and managed. Better still, individual treatment components should be intelligent. They should be able to monitor their own condition with performance data being sent to, and updates received, from a remote service centre.

### 4. The technologies should be proven and reliable

Above all the system should be robust. It must be able to obtain regulatory approval and then consistently deliver water to that standard. To do that, both the technology and the company behind it must have a proven track record and support infrastructures enabled to service and maintain the system throughout its lifecycle.

### Set solutions

Over the last five years Nubian Water Systems has been developing a 'solution set' specifically targeted at meeting the needs of urban water sustainability. We have developed a range of solutions to help solve water quality issues for

distributed systems in urban water conservation applications.

Nubian's solutions include:

- Greywater recycling – we have more than 250 systems installed in houses, apartments, commercial office buildings, hotels, prisons and educational facilities
- Rainwater treatment – filtering and disinfecting rainwater in homes, educational facilities, office buildings, resorts and industrial sites
- Stormwater treatment – filtering and disinfecting stormwater used in irrigation projects, aquifer recharge and toilet flushing
- Cooling tower control – filtration and disinfection for legionella control
- Public and commercial swimming pools – monitoring and control of swimming pool water quality
- Wastewater recycling plant upgrades – filtration and disinfection of treated wastewater to broaden the range of re-use applications for the treated water ■

Article written by Phil Krasnostein,  
Technical Director Nubian Water Systems  
[www.nubian.com.au](http://www.nubian.com.au)