

## Recycled Water and Subsurface Textile Irrigation

### Lessons from Recent Installations

Irrigation & Water Technologies have recently been involved in a number of large recycled water irrigation projects in Australia and the Middle East.

These projects have provided significant insight into the advantages of KISSS subsurface textile irrigation over conventional sprinkler and subsurface drip systems.

### Low Mains Pressure

In general mains pressure from Sewage Treatment Plant (STP) lines are too low to operate a sprinkler system (<450kPa) but is adequate for KISSS. STPs are keen to keep the mains pressure low because it reduces their pumping costs (carbon emissions) and reduces the risk of leaks in the line.

Councils wishing to use a sprinkler system will have to purchase a tank of sufficient volume (enough for fields in summer) and a suitable pump to obtain the correct pressure. This adds to the infrastructure costs (at least \$20 000) and to ongoing running costs including energy and maintenance.

### Recycled Water Supply is Not Continuous.

At many sites, the water supply cannot be guaranteed throughout the day. This reduces the hours available for irrigation especially when sprinklers are used. To reduce the opportunity for human contact, recycled water is generally applied from sprinklers at night. Subsurface Textile Irrigation can be conducted safely at any time of the day even when the field is being used, with no risk of human contact.

### No Water Quality Guarantee

Water Authorities will not /cannot guarantee water quality. Consequently, councils wishing to use *sprinklers* with recycled water need to:

- Sterilize the water to ensure the levels of human pathogens are acceptable. The cost of a suitable system, such as UV, is around \$20 000. Water testing and maintenance costs will be significant and ongoing.
- Comply with some rather impractical restrictions designed to protect the public and council staff where treated recycled water is used for irrigation. In Sydney, councils are technically required to test water before each use which is both costly and almost certainly not possible.

- Fully accept the public risk that comes with managing the water treatment facility. Using water from an STP, even without treatment, leaves the responsibility with the supplier if the water is applied subsurface.

### **High levels of Salt**

Recycled water contains significant sodium and chloride (141mg/L Na and 186mg/L Cl). The concentrations of these salts are high enough to burn sensitive plants when applied to the foliage.

Supplying the same quality water to plants through a subsurface textile irrigation system carries a substantially lower risk of injury because plants can control the uptake of sodium and chloride through the roots much better than through the leaves.

When sprinklers are used, sodium can also damage surface soil structure reducing infiltration rates and promoting compaction.

### **High Cost of Recycled Water**

Recycled water costs are already high (\$1.50-\$1.72 per kL approx 80% of potable) and will increase as demand grows for the resource. The high price of this water and its limited availability will mean that it must be used efficiently. Subsurface Textile Irrigation uses up to 60% less water than conventional irrigation systems.

### **Reduce risk of Contaminant Spread**

Precise application of recycled water, using Subsurface Textile Irrigation, helps to reduce the risk of contaminants entering surface and subsurface water bodies.

Further water conserving and recycled water safety benefits are explained in the FACT SHEET “Minimising the Risk from Using Recycled Water” These are in addition to the safety and water conserving benefits explained in earlier notes

([http://www.kiss.net.au/files/fact\\_sheet\\_kiss\\_minimises\\_the\\_risk\\_from\\_using\\_recycled\\_water.pdf](http://www.kiss.net.au/files/fact_sheet_kiss_minimises_the_risk_from_using_recycled_water.pdf)).