Fact sheet

Government of South Australia

SA Water

Irrigation System Performance
The Importance of an Irrigation Audit

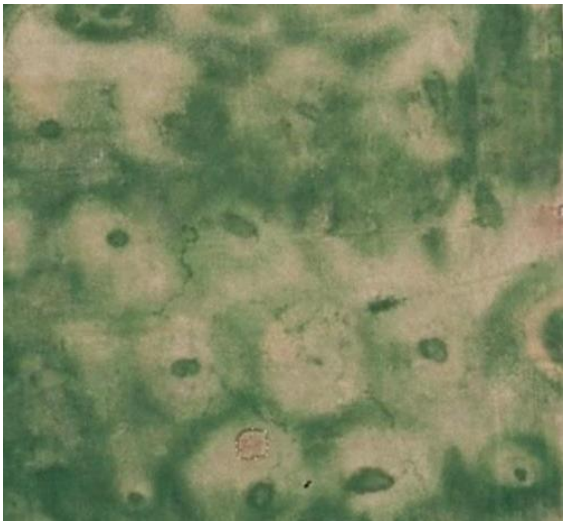
Even though irrigation systems may have been well designed and built, without ongoing maintenance the performance of all irrigation systems will degrade over time unless continually audited and maintained. Sprinkler nozzle openings gradually wear away and flow increases significantly, supply pressures can change, new sprinklers heads and nozzle replacements often don't match the specified flow and pressure and plumbing repairs may alter flow rates within the system. These are just a few factors contributing to the efficiency of your system.

An irrigation audit will determine how efficient your system is. A typical audit will provide the distribution uniformity of the system (see next section), measurements of flow and precipitation rates and provide recommendations to improve the efficiency of the system. The Irrigation Association (IAL) can provide assistance to source irrigation auditors that can undertake irrigation audits in your area. The IAL can be contacted on (02) 8335 4000.

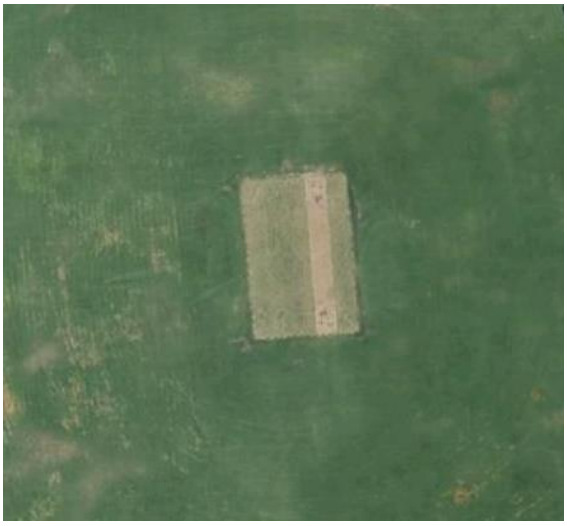
Irrigation Efficiency – Distribution Uniformity (DU)

DU is the unit of measure used to determine the performance of irrigation systems. The DU is a measurement of the 'evenness' of water applied and is expressed as a percentage. It is defined as 'the average water applied in the 25% of the area receiving the least amount of water, regardless of location within the pattern, divided by the average water applied over the total area'. (Refer to IAL – Certified Irrigation Audit Manual, 2004.) A DU of 75% or greater is considered best practice in the industry.

Poor DU



Good DU



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Why does SA Water recommend Irrigation Audits?

Irrigation audit recommendations, when followed through, improve the overall efficiency of an irrigation system. Improving efficiency helps sustain water for our environment and can help save you money. The table below is a case study for an oval where the value of DU is demonstrated. The savings in **Table 1** are in the order of thousands of litres.

Case Study: IPOS Irrigation Baseline Requirements

Oval Size: 1.5 hectares (15000m2)
Oval Location: Kent Town
Functional Purpose: Local Sport Standard Turf (TQVS 3)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	Total	Indicitive Cost/Saving
Avg. Irrigation Requirement (kL) **DU = 55% (poor performing irrigation system)**	801	1349	1575	1914	1488	991	387	**8505**	**$28,236**
Avg. Irrigation Requirement (kL) **DU = 80% (well performing irrigation system)**	551	927	1083	1316	1023	682	266	**5848**	**$19,415**
Difference/Saving (kL)	250	422	492	598	465	309	121	**2657**	**$8,821**

Table 1: *Comparison between water consumption when DU is increased, cost/saving calculated at 2014/15 SA Water Non-residential drinking water price - $3.32 per kL*

Table 1 also demonstrates the potential cost saving generated by maximising the efficiency of a typical irrigation system – this saving will go a long way in paying for any system improvements and upgrades and may justify upgrade expenditure!

The Department for Education and Child Development (DECD) undertook successful irrigation assessments for some of their school ovals as part of their 2007 - 2010 Water Management Strategy. The results were pleasing with aesthetical improvements to facilities as well as improved efficiencies.

Other Considerations

Efficient systems must be combined with effective scheduling to achieve best practice standards. Scheduling of irrigation systems should occur only when required in optimal climate conditions. The best times to irrigate are at night when evaporation is zero, when winds aren't strong and preferably after turf or trees are mowed/pruned to relieve the stress the plant has undergone. Implementing sound horticultural practices such as fertilising should also be implemented.

Useful Links

- Irrigation Australia www.irrigation.org.au
- SA Water www.sawater.com.au