

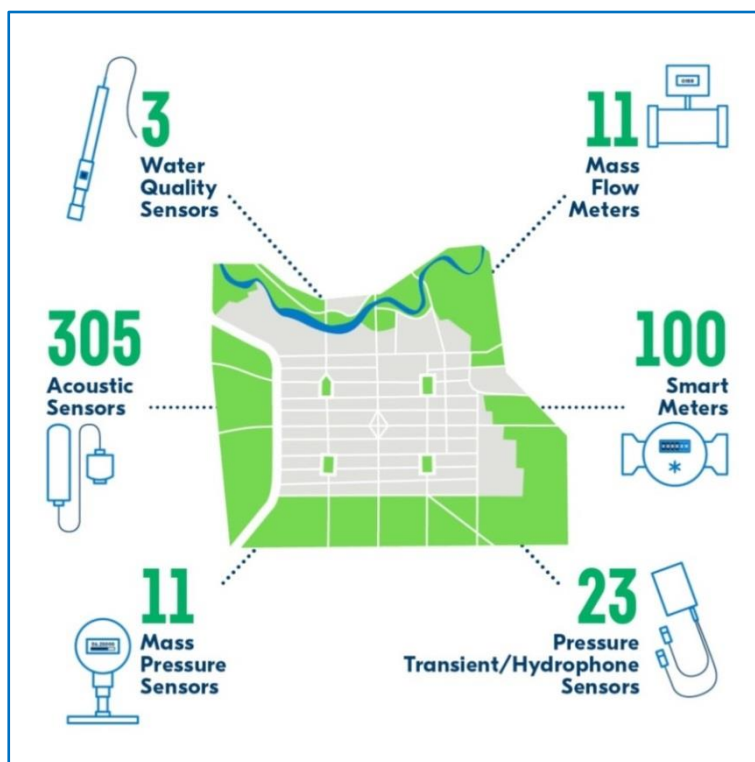
## Issue 28 – March 2018

### CBD smart water network leading the way

Our smart water network in Adelaide's CBD is already having an impact, nine months after it launched.

The network comprises acoustic sensors, pressure and flow data, high speed transient pressure sensors, smart meters and water quality sensors to improve water services and reduce disruptions for our customers. Since the network started operating in July 2017, we have identified four cracked pipes and repaired them, avoiding four main breaks.

In seven other instances we have obtained data confirming that main breaks have occurred over a time of five minutes or less. In these cases, neither the alerting system nor any operational preventative action was possible because of the speed of the main breaks. Several customers have also benefitted from having smart meters installed as part of the smart water network, with as many as 10 instances already noted by SA Water staff where alarms have flagged high water use as result of equipment malfunctions on customer sites. In these cases customers have been able to act quickly and repair the leaks saving as much as an estimated \$15,000 for one customer per month in the worst case.



We are now developing faster alert transmission systems so we can achieve the quickest response possible from leak measurement to action on the ground. The data indicates that a significant number of pipe breaks will be able to be prevented this way. From a scientific point of view, the intercept of four cracked pipes in nine months has exceeded the project team's expectations.

Interpreting smart water network data is as new as the sensor technology itself and we're leading the way. To help evaluate the data we receive, we are working closely with

experts from the University of Adelaide and Allwater to measure and interpret noises, pressure waves and flow.

We are setting a benchmark for the water industry by integrating smart technology on a broad scale to benefit customers by reducing community impacts like traffic delays and water service interruptions.

This technology has also enabled data-driven decisions about our network maintenance and upgrades that benefit customers and the community, now and into the future.

## Glenelg to Adelaide Recycled Water Scheme (GARWS)

### Technical Forum 2018

The Glenelg to Adelaide Recycled Water Scheme (GARWS), also referred to as 'GAP' in the early days is approaching 10 years of age.

The advanced Glenelg Recycled Water Treatment Plant was constructed and commissioned in 2009 and first water was pumped to the Adelaide CBD in early 2010. The scheme was also one of the first constructed in South Australia since the establishment of the Australian Guidelines for Water Recycling (2006) and the product meets the requirements for dual reticulation and municipal irrigation. Since 2009, about 13 gigalitres of water has been produced and the number of customers has grown to 39 in Glenelg and in Adelaide.

SA Water is planning to hold a technical forum on all things GARWS, including a plant tour in August 2018. Topics to be covered include: overview of treatment processes, recycled water, water quality, customer experiences, sustainable irrigation practices and customer feedback from our stakeholder engagement survey and priorities going forward.

Enquires can be made to Rudi Regel, E: [rudi.regel@sawater.com.au](mailto:rudi.regel@sawater.com.au), or T: 7424 1145.

## Cool Airports

### Innovation for a warming world

As his flight came in to land, Greg Ingleton was struck by how simple it could be to turn the dry, flat areas of Adelaide Airport into green space. What he then designed turned into something much more powerful, creating new business models in irrigation, agriculture, food service, carbon trading and, best of all, a way to cool airports in the driest parts of our warming world.

Greg Ingleton is an environmental scientist who challenges the way we think about and use water, especially in Australia, one of the driest places on our planet. Part of Greg's work for a large water utility is to identify and develop opportunities to use 'wastewater' in ways that provide social, environmental and economic benefits. This talk was given at a TEDx event using the TED conference format but independently organized by a local community. Check out the video [here](#).

## Virginia Pipeline Scheme

### VPS Customer Management

From 1 January 2018 SA Water has taken over customer management off the Virginia Pipeline Scheme (VPS), with operations and maintenance provided by Trility. As part of this, the Business Relations Team has recently expanded to include management of the VPS customers with a dedicated account manager.

The VPS supplies recycled water from the Bolivar wastewater treatment plant (WWTP) to approximately 350 irrigators in the Northern Adelaide Plains. The Scheme commenced in 1999, previous to which growers heavily relied on depleting groundwater for irrigation of open crops and glasshouses. Bolivar WWTP recycles approximately 30% of the treated wastewater volume through the VPS scheme. The recycled water is treated to be fit for the purpose of unrestricted irrigation and is approved for this irrigation use by the Department of Health and Ageing.

The horticultural production from the Northern Adelaide Plains contributes around a third of the total value of South Australia's horticultural production. By utilising recycled water in this manner, the scheme eases the pressure on underground water supplies by offering an alternative water source to producers and irrigators; reduces the discharge of nutrients into the marine environment by reducing ocean outfall from the Bolivar WWTP; helps to secure the long-term economic viability of the region; and continues to demonstrate the effectiveness of reusing treated water on a large scale for commercial horticultural production.

For any enquiries regarding VPS accounts, please contact Verity Manning on [Verity.Manning@sawater.com.au](mailto:Verity.Manning@sawater.com.au) or ph. 0436 673 997. Alternatively, you can visit the VPS office in Virginia at Shop 4 Brady Street.

## Smart Irrigation System Trial

### Technology that helps agricultural and urban irrigators

SA Water is working with other Australian water utilities trialling technology that helps agricultural and urban irrigators irrigate more effectively with different water sources. A smart irrigation package has been sourced and is being trialled at various sites across Greater Adelaide. The software automatically collects data logged by soil moisture sensors, smart

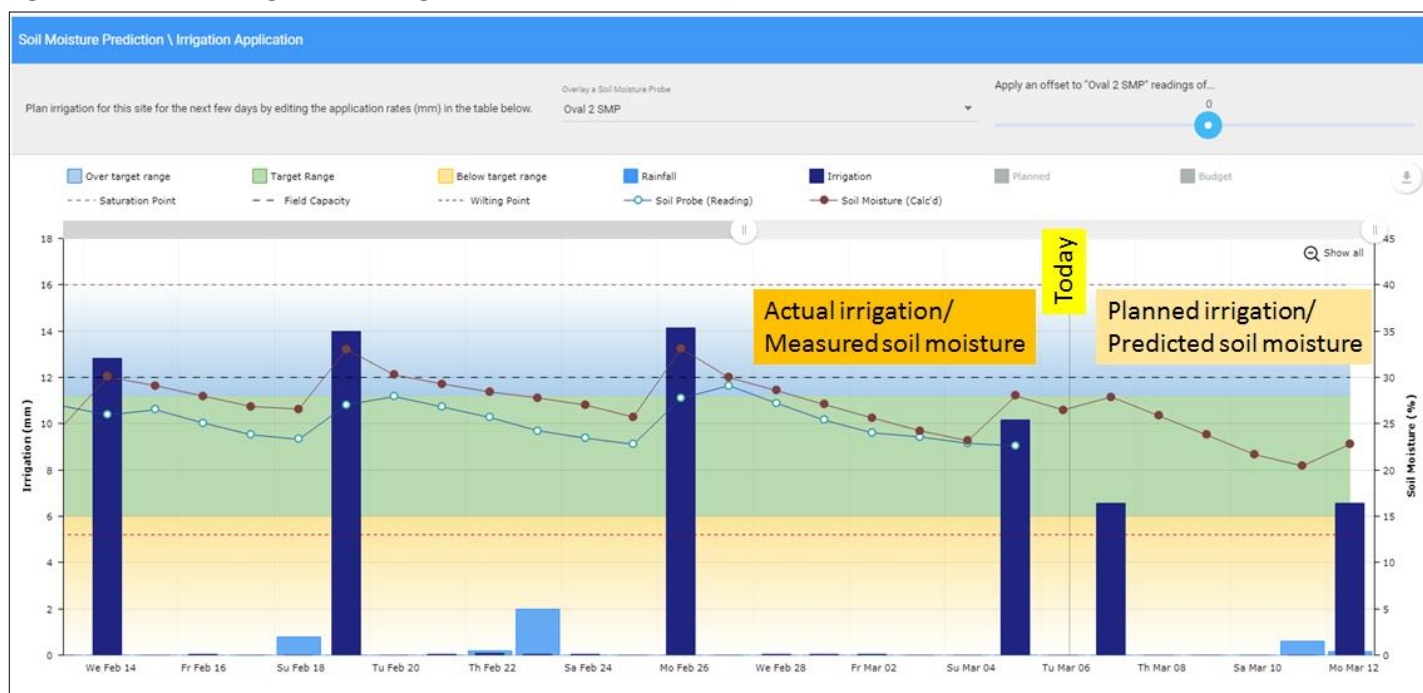
water meters, Bureau of Meteorology climate observations and will soon include normalised difference vegetation index (NDVI) data to present information and analytics for irrigation use and nutrient loading.

## Irrigation Scheduling

Figures 1 and 2 display some functionality of the software. Actual irrigation applied (planned and budgeted), and rainfall events are displayed by the irrigation manager. It also shows the actual recorded soil moisture (blue line) as well as the calculated soil moisture (red line). The calculated soil moisture line also shows predicted future soil moisture based on weather forecasts and planned irrigation. To optimise water consumption, the irrigation manager allows irrigation to be planned up to seven days in advance to ensure the soil moisture remains in the 'green zone'.

In Figure 1, the irrigation manager uses historical data and forecast data to predict future soil moisture levels. The graphical interface provides quick visual information regarding the need for future irrigation events.

**Figure 1: Effective irrigation management.**

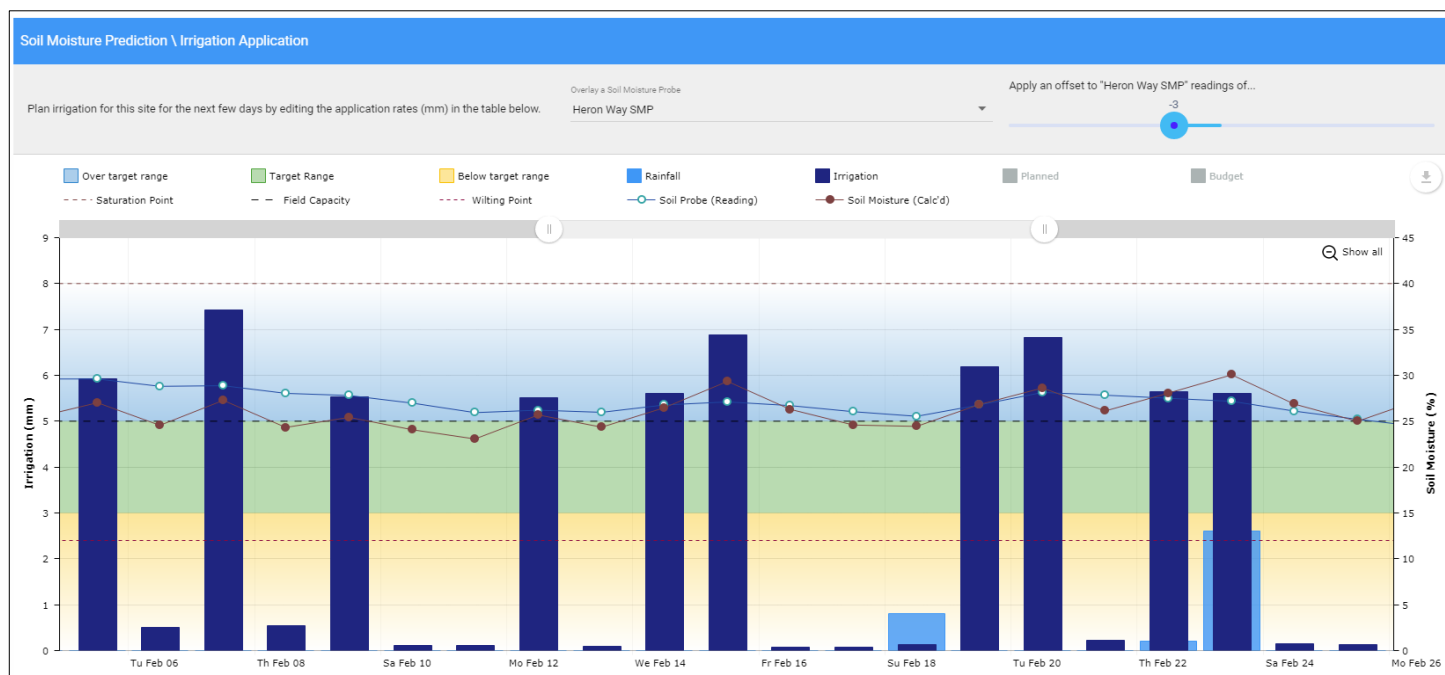


The example in Figure 2 shows that historical irrigation has perhaps been a little excessive: The soil moisture is constantly higher than the target green zone, and irrigation was applied even when soil moisture was high. Some irrigation applications could have been avoided, saving water. The volume of excess irrigation is calculated and available within the software.

The irrigation manager can also calculate the volume of water wasted due to deep drainage (leaching). The soil moisture probe records soil moisture at different levels throughout the soil profile. If after irrigation the soil profile continues to get wetter at depths

below the root zone, then this water is likely to be wasted to deep drainage. Any nutrients in the soil will also leach out to deep drainage, potentially entering the surrounding ecosystem.

**Figure 2: Excessive irrigation**



The software provides information that makes it easier for the irrigation manager to determine when to water as well as how much water to apply.

Historically, irrigation managers may have been guilty of 'set and forget' irrigation scheduling that can lead to inefficient water use and unnecessary costs. The advancement of these types of technologies provides irrigation managers with the tools to be more effective in managing their water.

If you are interested and want to know more about this type of technology please feel free to contact us!

Disclaimer:

*SA Water's Business Relations Group provides recommendations and suggestions only. It is advised that further investigations are detailed studies are completed before any projects are implemented. All applicable standards & guidelines (Australian, EU, AQUIS, HACCP, Australian Drinking Water Quality Guidelines etc.) should be adhered to, and care should be taken to ensure water and wastewater minimisation programs do not negatively impact health or processing operations.*