

# JOURNAL

FOR IRRIGATION PROFESSIONALS

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Professional  
development

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Electrofusion welding  
polyethylene pipelines  
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Meter Installer and  
Validator

**Urban**  
Irrigation upgrade  
at Coonamble  
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ledema Award  
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**IN THIS ISSUE:**

CERTIFICATION BOARD UPDATE  
ALMOND IRRIGATION BPM PROJECT: INDICATORS FOR GOOD PERFORMANCE  
CHALLENGES AND OPPORTUNITIES IN BROOME

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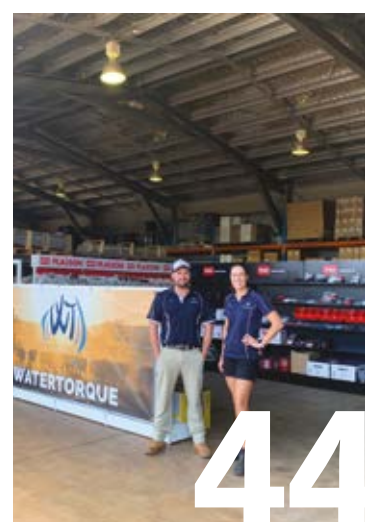
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**ON THE FRONT COVER:** Ryan Sabolta (left) and Chris Browning, students at the Certificate III in Irrigation Technology training course, measuring the performance of irrigation drippers at a vineyard at Pokolbin NSW. The measurement of volume over time checks how much water is being applied as per the design of each dripper. This is an irrigation maintenance assessment requirement.

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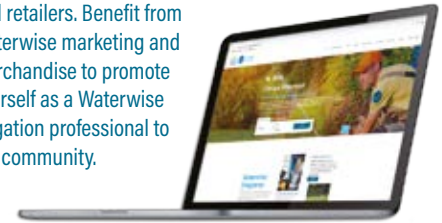
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### 5. Conference & Tradeshow Discounts

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### 7. Access to eKnowledge

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### 8. Discounts on Publications and Merchandise

Irrigation Australia offers a wide range of books, eBooks and other merchandise through its online store. Members receive significant discounts on materials.

### 9. Invitations to Regional Meetings & Events

Irrigation Australia hosts a number of regional meetings, events and site visits across Australia. This is a great opportunity for members and industry colleagues to come together to discuss new challenges, technologies and network.



### 10. Monthly Electronic IrriNews Newsletter

Receive our monthly Irrigation Newsletter with the latest information on upcoming training, events as well as new products, information and industry news.



## Additional Membership Benefits

(EXCLUDES PRIMARY PRODUCERS, INDIVIDUALS & RETIRED MEMBERSHIP CATEGORY)

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List your business or organisation for free in the digital National Irrigation Directory reaching the wider irrigation industry.



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## CHAIRMAN'S MESSAGE

A challenge for any industry association is to ensure that it continues to be relevant to and provides meaningful benefits for its members. To help Irrigation Australia maintain its focus on providing maximum value for its members, each year your board members participate in a strategic planning process with senior management.

With restrictions on travel during December 2020, our meeting to develop a strategic plan for 2021 was held virtually. Despite some initial reservations about how effective this would be without face-to-face interaction, all directors reported that they found the meeting interesting and productive.

Irrigation Australia is a diverse organisation made up of members representing all facets of the irrigation industry, so it is understandable that there will be diverse views on what represents 'good value' from their association. Members need to be confident that the time, effort and financial investment they make in their association is justified. It is therefore important that we collectively remind ourselves about what the core values of an industry association are. Some of the more important values, confirmed in the strategic planning meeting, must include:

- **The promotion and adoption of best industry practice.** Irrigation Australia members have access to case studies and technology describing best practice in our publications and on our website as well as through events and social media activities. This valuable information from peers and like-

minded people with vast industry experience can help define and achieve industry best practice whatever the task at hand.

- **Professional development.** Irrigation Australia is the only organisation delivering many irrigation competencies and training courses that are aligned not only with the national training framework but also with what our members tell us they want. Without our participation and effort in developing training activities, there would be much less opportunity for professional development for Irrigation Australia members and their staff.
- **Networking.** There is an adage that there is more to life than work, and Irrigation Australia conferences, exhibitions, and nowadays even social media groups provide an excellent opportunity for members to meet, exchange ideas, learn and reacquaint themselves with old friends in a business and social environment.
- **Industry representation.** As an individual it is easy to think that nobody is listening and there is no possibility of influencing things such as government agency decisions on policy and regulation. As the peak industry body, Irrigation Australia is often the first stop for local, state and federal government agencies asking us to provide input into policy and other decisions on behalf of our members. You can be assured that Irrigation Australia is working hard on your behalf behind the scenes on a vast range of activities.  
Regardless of whether you are an individual, a small business owner or a large corporation in the irrigation

industry, it is important for all that we have effective representation by a professional body working on behalf of our industry.

While we have all been strongly challenged in the past year, I am pleased to report that Irrigation Australia has withstood these challenges, and with your ongoing support the board and management team look forward to continuing the good work in the year ahead.

**Andrew Ogden**  
Chairman



# WELCOME



## FROM THE CEO

Irrigation Australia life member Sid Dyer was kind enough to recently 'donate' to me a plastic tub filled with early records of the Irrigation Association of Australia (IAA), the predecessor organisation of Irrigation Australia Ltd (IAL).

One document caught my interest, and this was a record of a meeting held in October 1988 to establish an Irrigation Industry Working Party to develop a trade-based qualification for the irrigation industry. Present at this meeting were representatives from IAA, NSW Plumbers and Gasfitters Union of Australia, Apprenticeship Training Committee, Hawkesbury Agricultural College, Building Services Corporation and Independent Chairman, Graeme Dodds.

The minutes noted that a full, trade-based irrigation qualification was to be the first and top priority for the group and that every effort should be made to start the program in 1989 to attract that year's school leavers. Provision was made to allow people already employed in the industry to be included in the program.

It was obvious from the extensive notes, all prepared on a typewriter, that much work had gone into this project and the participants enthusiastically recognised the importance of a trade-based qualification for the irrigation industry.

It may have taken much longer than these proponents could have imagined but it is nice to record that their inspiration, and the efforts of the many people who followed them, have resulted in the Trade Level Qualification of an Irrigation Technician.

In fact, students in the first intake of the Certificate III in Irrigation Technology AHC32419 qualification are now working their way through the last block of learning on their way to be fully qualified. Soon the objectives of the group that met in 1988 will be achieved, and all of us in today's organisation will be able to celebrate our first irrigation trade-level-qualified personnel, to be known as 'Irrigation Technicians'.

The journey may have been long and the hurdles higher than were first imagined but the result is an achievement of significant value for our essential industry. There is no better time for irrigation industry employers to make that important investment in upskilling your staff to become trade level qualified and recognise the significant effort that went into making this possible.

While on the subject of the IAA, we note with sadness the passing of Mrs Joy Brinks, the former Secretary of the SEQ Regional Committee of the IAA. An obituary for Joy is in this edition of the Journal.

Looking to the future, our ICID National Committee (IACID) have been working on the formation of an Australian Young Irrigation Professionals sub-committee and, after a recruitment campaign on social media, we are delighted to confirm that many suitably qualified and enthusiastic young irrigation professionals from all corners of Australia have volunteered. We expect future leaders of our industry will emerge from this group and we look forward to being inspired by their ideas and enthusiasm.

**Bryan Ward**  
CEO

Check out Irrigation Australia's social media feeds.



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## NEW PUMP CONTROLLERS COMPLETE UPGRADE FOR QUEENSLAND NURSERY

### SNAPSHOT

- Logans Nursery, a Queensland-based wholesale nursery, has just recently replaced its 12-year-old pump controllers with new models of the same brand
- Having a reliable system that delivers water every day at the correct pressure is crucial to the business, especially during hot summer weather
- The new controllers have eliminated pressure fluctuations and incorporate duty standby for every pump ensuring that a pump failure does not result in water not being delivered to plant stock when required

Logans Nursery is a Queensland-based wholesale nursery business supplying plant stock ranging in size from revegetation tubestock to plants in 2000 L containers. The business has two locations, a 2 ha site at Capalaba and a 110 ha site at Donnybrook, north of Brisbane. Having a reliable and efficient irrigation system that can be operated at the flick of a switch is crucial to ensuring that plants are kept in top condition, especially during the heat of summer.

With the Lowara end-suction pumps at the nurseries having been replaced by multi-stage pumps three years ago, the control systems were the last pieces in the puzzle to be upgraded to ensure the irrigation systems apply water and use energy efficiently.

The decision to upgrade the pump controllers was made easy last year after one failed. This was no small task as the Donnybrook nursery had five units and the Capalaba nursery, two units.

### Even application the key

The irrigation systems at the two sites, which apply water using both sprinklers and drip, are supplied from onsite storages, two at Donnybrook and one at Capalaba. The Donnybrook site has three pumps controlled by three Hydrovar variable-speed pump controllers at one dam and two pumps and Hydrovars at the other. Water use averages about 600,000 L a day. The Capalaba storage, which supplies an average of 160,000 L/day, has two pumps and two Hydrovars.

Darren Dodson from Total Water Services in Brisbane, a Brown Brothers Engineers' dealer, has worked with Logans Nursery for more than 20 years designing, installing and upgrading the irrigation systems so is familiar with almost every piece of equipment at the two sites. He explained that a failure of one of the controllers last year prompted owner Graeme Logan to replace all seven as an efficiency measure.



Three controllers are installed in the pump shed to control three multi-stage pumps which supply irrigation water from a water storage to the Donnybrook nursery site.

“The controllers, which were about twelve years old and had each clocked up around 9000 hours a year, had certainly performed well but were definitely due for replacement,” said Darren.

A key requirement of any nursery irrigation system is to apply water so that all the plants in each zone receive the same amount at each irrigation, as a way of ensuring uniform plant growth.

Water pressure is a crucial factor in doing this. On the one hand, water applied at pressures that are too low to drive sprinklers at their designed application rates will lead to dry spots and underwatering. On the other hand, higher pressures can cause overwatering near the sprinkler head and create small droplets susceptible to wind drift and evaporation.



Water is supplied to plant stock in the nursery using solid-set overhead sprinklers as well as drip.



Pressure controllers such as the Hydrovar eliminate these pressure fluctuations and help maintain sprinkler pattern integrity and performance. It is an intelligent controller that matches pump performance to demand and controls the speed of a standard IEC motor by converting the fixed voltage and frequency from the power supply line.

### **Solution provides backup protection**

Darren said that the new controllers had upgraded software and newer drives so were a good solution for the nursery.

“An important feature was that the system also has a backup on a backup, so there is duty standby for every pump.

“With the amount of stock in the nursery, not being able to supply irrigation water when required as the result of a pump failure would be a disaster,” said Darren.

This feature of duty standby, which originated in high rise buildings where reliable water supply is crucial, is becoming more common in nurseries, especially larger ones, as a risk management measure.

According to Darren, the installation of the new pump controllers was “very straightforward”, in part because the old equipment was being replaced by new, upgraded models of the same brand.

Wall-mounted custom booster controllers were configured to offer a wide range of flows providing flexibility based on pumping requirements at each location. They change motor speed, manage constant pressure or constant flow and vary pressure and flow to compensate for any system losses.

### **Extension in the pipeline**

The upgrade has come at the right time for the Donnybrook site. Darren is now working on a 16 ha extension as water will be supplied to this extension using the current pump and controller system.

**Acknowledgment.** Thanks to Brown Brothers Engineering Australia, who provided information for this article.

*Anne Currey, Irrigation Australia*



## BACKING A WINNER AT COONAMBLE JOCKEY CLUB

### SNAPSHOT

- A project to upgrade the irrigation system at Coonamble Jockey Club has paid dividends with the rejuvenated track attracting better trainers and more horses, leading to record attendance rates and boosting club sponsorship
- With funding tight, designer Scott Johnstone opted for a single-row rotor system that could be upgraded to two-row configuration in the future
- The new central control system was tailored to the specific requirements of the site and the people who operate it

Jointly funded by Racing NSW and the Coonamble Jockey Club, an innovative irrigation upgrade has paid dividends for this country racetrack. Improved track conditions have gained the attention of some of Australia's leading racehorse trainers and jockeys, boosting attendance rates to record levels.

Less than 18 months ago, Coonamble's racecourse was in dire straits. The track was in poor condition, with an ancient hand-watering system that was labour intensive, inefficient and ineffective. When the Western Country Championship Qualifier was awarded to Coonamble for 2020, the club and Racing NSW joined forces to fund an irrigation upgrade with the hope of restoring the track to its former glory.

The club engaged Scott Johnstone from HydroPlan to design the upgrade and project manage installation and commissioning. With a lean budget, Scott opted for a single-row rotor system along the inside track, using high performance DN40 rotors at 18 m spacings. Rotors with a 25 m radius ensure sufficient overthrow (5 m) past the outside rail.

In developing the new system, Scott factored in the complex requirements for a modern racetrack. The window for irrigation applications at night is often limited given horses are exercised on the track early in the morning. This requires the hydraulic and control capacity to deliver a full irrigation cycle to the entire track in a short space of time. In addition, precise rotor placement is critical to avoid water being displaced by the course rails, and to avoid contact between a rotor and a horse.



Placing the rotors to avoid horses hitting them and water being displaced by rails is an important consideration in design.



Left: HydroPlan Principal Scott Johnstone oversaw the design, installation and commissioning of Coonamble Jockey Club's new irrigation system.

### Futureproofing irrigation

The system was also designed to be converted into a full two-row configuration, if ever required, by adding rotors to the outside rail and reducing the size of the existing nozzles. Current hydraulic and control capabilities

are enough to power a two-row system while providing traditional full grid coverage and maximising uniformity. Importantly, this will also reduce the scheduling coefficient from 1.3 to 1.1, further optimising the use of water and inputs.

### Tailored central control

Coonamble Jockey Club's new central control system was tailored to the specific requirements of the site and the people who operate it. In addition to standard features, the control system was programmed to automate irrigation rates by combining evapotranspiration and application data in line with the optimum requirements for plant growth and water budgets.

The flow management component of the control system is used to manage hydraulic limits and monitor actual flows, to track water use and to stop watering during an alarm event. Flow and pressure rates are also compared with historical data to diagnose issues such as underflows (blockage) and overflows (leaks).

The control system is accessible via a smartphone app, providing easy, remote access to monitor and manage the irrigation system and receive alerts about potential system issues. Remote access was an important part of the brief as the Coonamble Jockey Club relies on a dedicated team of volunteers to manage the grounds. Adam Firth, a local electrician, plays a key role in managing the system, with technical support from fellow volunteer Graham Proctor, a local agronomist.

At commissioning, Scott Johnstone provided the club's volunteers with training on system use in addition to the implementation of an integrated water management plan (IWMP). The IWMP set out a strategy to meet fluctuating seasonal irrigation demands accurately and efficiently, reducing the use of inputs including water, fertiliser, chemicals, power and labour, further reducing costs and streamlining the process of operating and maintaining the system.



Coonamble Racetrack received its first application of water directly after the system was completed in December 2019.



The straight at Coonamble Jockey Club, just two months after the new irrigation system was installed.

### Tight timing

The project had a tight timeline, given there were just three months between completion of construction and the 2020 Western Country Championship Qualifier. Timing was crucial to ensure that the irrigation system could be installed and the track watered sufficiently before the big race.

The transformation from a brown track to emerald green grass was visually impressive, with the new going also exciting some of racing's most influential people during the Championship Qualifier. Since then, race meets have continued to attract better trainers and more horses leading to record attendance rates and boosting club sponsorship by more than 500 per cent.

In addition to gaining high praise from Australia's leading jockeys, Coonamble's racetrack is now considered one of the best in the country west of the range.

### Information

For more information, visit the HydroPlan [website](#).

**Acknowledgment.** Thanks to Hydroplan for this article.



## INNOVATIVE PLASTIC MULCH ALTERNATIVE SET TO INCREASE CROP WATER PRODUCTIVITY BY A THIRD

### SNAPSHOT

- Researchers at CSIRO have developed TranspiratiONal, a durable spray-on polymer membrane that acts like plastic mulch
- Unlike plastic, TranspiratiONal is biodegradable and does not leave toxic residue in the soil, nor does it need to be retrieved and disposed of at the end of the season
- Irrigated field trials have confirmed a more than 30 per cent increase in water productivity compared with bare soil
- It is simpler to apply and is expected to be more economical than plastic

A spray-on polymer membrane can help farmers increase crop yields and save water with fewer inputs and less environmental impact than plastic mulch.

Scientists at CSIRO have developed TranspiratiONal, a sprayable biodegradable polymer membrane (SBPM) technology that delivers the benefits of plastic mulch films, but without the environmental cost.

“The world desperately needs a durable, cost-effective sprayable biodegradable polymer membrane technology to replace the petroleum-based plastic mulch films that are damaging our soils, water systems and cropping systems,” said CSIRO Senior Principal Research Scientist Dr Keith Bristow.

Farmers have used mulch films in crop production since the 1960s. Applying a thin plastic film to rows of crops has proven short-term benefits, boosting yields by moderating soil temperature, maintaining soil moisture and reducing weed competition.

### Advantages over plastic

The downsides to plastic mulch use are significant. Application is specialised, costly and typically one-size-fits-all. And at the end of the season the mulch must be disposed of, usually into landfill or by burning, to avoid serious soil and water contamination and toxicity issues.

“The SBPM technology is a water-based polyurethane dispersion that forms a membrane when sprayed onto the soil, which will disintegrate and biodegrade, leaving no toxic residue in the soil,” explained CSIRO Senior Scientist, Stuart Gordon.

“There is also the potential to be able to formulate the dispersion so the integrity of the membrane can be extended as required.”

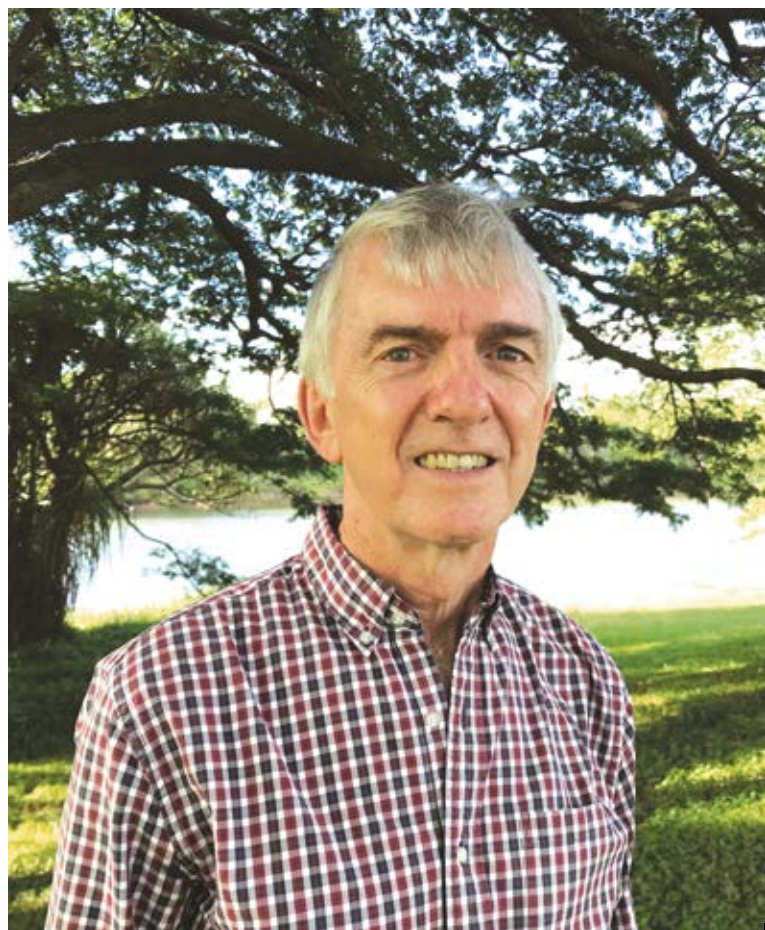
### Water-saving potential

Irrigated field trials on cotton, sorghum, tomatoes and melons have confirmed a more than 30 per cent increase in water productivity compared with bare soil – as well as weed suppression.

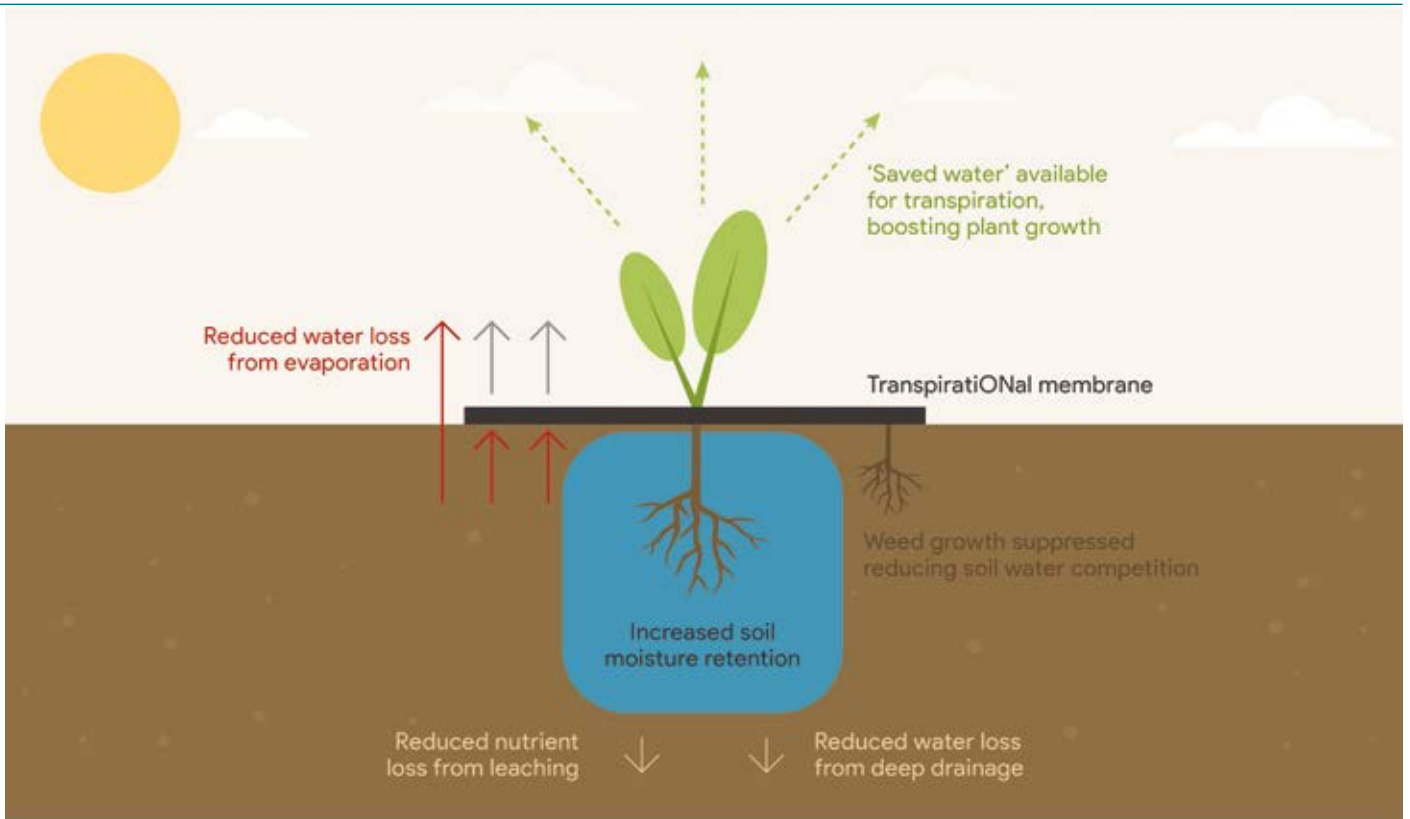
Achieving CSIRO’s initial target of using 10 per cent less water with no yield loss in Australian irrigated agriculture would free up more than 1,000 GL of water. Even this conservative 10 per cent improvement would deliver nearly one-third of the total volume of water to be recovered under the Murray-Darling Basin Plan.

### Other benefits for farmers

While water-saving benefits are seen when using plastic mulch films, TranspiratiONal has other advantages too. CSIRO is aiming to reach price-parity with plastic, but with retrieval and disposal costs removed, TranspiratiONal should come out on top.



CSIRO scientist, Dr Keith Bristow.



**TranspiratiONal:** the sprayable, biodegradable alternative to plastic mulch

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**TABLE. DIFFERENCES BETWEEN CONVENTIONAL PLASTIC MULCH FILM AND TRANSPIRATIONAL.**

Conventional plastic mulch	TranspiratiONal biodegradable polymer mulch
Not biodegradable	Biodegradable in normal field conditions
Degrades into fragments that leach toxic additives and heavy metals, impact soil structure, impede water and nutrient transport and crop growth and harm soil organisms	Breaks down into natural by-products such as gases, water, biomass, and inorganic salts
Only suited to manually harvested row crops	Can be applied to manually or mechanically harvested row crops and broadacre crops
In place for an entire growing season. Long-term use can <a href="#">promote soil degradation</a> by harming microbiota and organisms, depleting organic matter and increasing water repellence	No negative impacts on soil or water systems, microbiota or soil organisms
Costly application process using specialised machinery with limited flexibility	Simple and flexible application process, with farmers able to determine width and depth of film – using a small handheld device or conventional spray rig
Costly retrieval process	Doesn't need to be retrieved as it breaks down in the field leaving natural by-products
Costly and dirty disposal process, with most used films, burned or sent to landfill	No disposal as it breaks down in the field leaving natural by-products



Applying TranspiratiONal with handheld sprayers

Farmers can use hand-held or mechanised sprayers and adjust the spray to cover the soil surface required for different cropping systems.

“Field trials have even shown potential to adjust the application by spraying onto the soil and up onto the stems of seedlings to create a complete soil coverage that eliminates weed growth, with no adverse impact on the seedlings,” said Keith.

Alternatives to conventional plastic mulch films are available but haven't yet been widely adopted. The team believes this is largely because they don't match the CSIRO product for sprayability, biodegradability, and ease of use.

### Ready for market

CSIRO is at the stage of having conducted commercial trials, secured IP through three patents, lined up formulation and manufacturing partners and established a commercialisation team. Substantial interest has been expressed by local and international customers, including broadacre farmers, who are traditionally excluded from the plastic mulch market.

The next step is to fine-tune the formula and application rates to balance biodegradability with durability – maximising the benefit for the range of cropping systems it can assist.

With demand growing for the product, demonstrated clear benefits for cropping production systems and trials having proven the concept, CSIRO is ready to go to market with a partner.

### Information

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P: 07 4753 8596.

**Source.** The full version of this article was first published on the evokeAG [website](#).



# BIL WPD Water Meter

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NMI 14/3/54**

A highly accurate Woltman Parallel Turbine Water Meter pattern approved and tested in Australia for use in non-urban applications.

## Key Characteristics

- Wide measuring range, small pressure loss
- Low starting flow and high overload security
- Pulse output with integrated reed switch
- Long - term accuracy and stability
- Swirl - reducing inlet design
- Replaceable measuring internals
- Water - proof (IP68), hermetically sealed, glass/copper register
- Solid cast iron construction with durable epoxy coating for exposure to field applications



Dial for DN150 - DN300 size meters

## Applications

- For measuring of high flow rates
- For horizontal or vertical installation
- For cold water up to 50° C
- For applications where NMI-M10 Pattern Approved water meters are required

## Available Sizes

- 50mm - 300mm (2" - 12")
- Table E flanged inlet/outlet



To access the NMI Certificate of Approval go to:

[https://www.industry.gov.au/sites/default/files/nmi/certificates-approval/14-3-54\\_r1\\_0.pdf](https://www.industry.gov.au/sites/default/files/nmi/certificates-approval/14-3-54_r1_0.pdf)

For more information please contact your local HR Products sales office

[www.hrproducts.com.au](http://www.hrproducts.com.au)





## NEW DIRECTION FOR WATER POLICY?

### SNAPSHOT

- The release of the Productivity Commission’s draft report on the national water reform and the publication of a book about policy and management of the Murray–Darling Basin could have ramifications for water management, according to Jeremy Fisher
- The Productivity Commission has recommended that the National Water Initiative be renewed and adopted by the Commonwealth and states as framework for water management in the future
- A recent book by Richard Beasley SC about the Murray–Darling Basin explains why the *Water Act (2007)* needs to be rebooted and describes how multi-jurisdictional management of the Basin Plan has failed

### Is law politics by other means?

Ralf Michael (Arthur Larson Professor of Law, Duke Law School).



Two significant publications, each likely to have wide ramifications for water management in Australia, became available to the public in February 2021.

One of these is the federal Productivity Commission’s *National Water Reform 2020 Draft Report*. The draft reveals

the Productivity Commission’s thinking and its intended final recommendations about the future of the National Water Initiative (NWI), now 17 years old and the legal grandparent of the Murray Darling Basin Plan.

The Productivity Commission has concluded that the NWI is worthwhile and has tangibly improved outcomes for and the management of water resources across Australia. Even though Western Australia, Tasmania and the Northern Territory have not complied wholly with the initiative, the NWI is still of direct value and those jurisdictions should continue towards compliance.

### NWI renewal recommended

It recommends that the NWI be renewed to reflect issues that have emerged in the past decade and a half. This is to be achieved by adding three new elements to existing NWI principles - climate change, First Nations’ water rights and urban water supply.

Also recommended is the addition, across the spectrum of issues, of water service provision. This is seen as an essential component of the NWI, critical to making it executable by stakeholders. The draft report stresses that absence of a focus on water service provision in the original NWI has inhibited implementation of the principles.

Importantly, the commission considers that the elements of a renewed NWI must be statutorily based, pointing to “recent experiences [that] highlight the need for a much stronger focus on compliance and enforcement”. In particular,

*Governance arrangements established for the... NWI in 2004, whilst key to progress in the early years of the agreement, have been significantly eroded over recent years.*

A new, strengthened architecture for the NWI agreement is required to ensure that ‘leadership on national water policy is evident and effective, and that water sector participants and the broader community can have confidence in activity’ under the principles.

The commission considers responsibility for the NWI lies with water ministers, working in a body with enough status and credibility with water sector participants and the broader community to carry the initiative to successful implementation, and that:

*Water ministers should come together periodically to oversee development of a renewed NWI, and to receive, consider and act upon advice that comes out of any periodic review of the new agreement.*

Multi-jurisdictional governance is central to the recommended model for NWI renewal and its success will rely on ‘interjurisdictional co-operation’. If water ministers and influential others follow the recommendations, the result will be “a nationally consistent planning, market and regulatory based system of managing surface and groundwater resources for rural, urban and remote use [with]”:

*statutory water provisions for the environment which are integrated with complementary natural resource management to achieve agreed environmental outcomes and where this does not compromise environmental outcomes, manage to also achieve cultural and social benefits... (Draft NWI Renewal Advice 3.3: Modernised Objectives)*

### Agreement on water management

Perhaps surprisingly for some, this recommendation, coming as it does from the Productivity Commission, is consistent with the findings and recommendations of the South





The recently released Productivity Commission draft report on national water reform has concluded that the National Water Initiative resulted in tangible outcomes for water management in Australia and should be renewed.

Australian Royal Commission in the Murray Darling Basin. The Royal Commission found that the *Water Act 2007* had not been complied with by the states or the Commonwealth in a fundamental and critical way.

Specifically, the Water Act has been systemically interpreted and misconstrued, virtually since its enactment and despite overwhelming legal advice to the contrary, as allowing non-environmental objectives (economic and social values) to trump the needs of the environment as determined by science.

In the context of the South Australian Royal Commission, this has been called the 'Big Legal Error'.

Two years on from the Royal Commission, the Productivity Commission appears to agree, effectively recommending legislative correction of the Big Legal Error, including statutory relegation of non-environmental objectives to a position behind those of the environment.

If this approach of the Productivity Commission's is included in its final advice, it will be very significant for water management in the immediate, coming years. Compliance in this direction will likely place markedly increased strain on multi-jurisdiction water governance, which already exhibits signs of stress.

As it happens, release of the Productivity Commission's draft report coincides with publication of another work about multi-jurisdictional water governance.

Richard Beasley SC has written a book about the Murray–Darling Basin (*Dead in the Water*, Allen & Unwin 2021). According to the *Sydney Morning Herald*, the book is one of the most anticipated of 2021.

*Dead in the Water* sets out, in very clear language, why implementation of the Water Act needs to be rebooted,

largely as the result of failure of multi-jurisdictional management of the Basin Plan.

The author was Counsel Assisting in the South Australian Royal Commission, but the book is not about the Royal Commissioner's 2019 Report. *Dead in the Water* relates the history of water law at the level of high policy, referring to matters dealt with in the commission with the benefit of two years' further events in water governance since the report and an unfettered focus on what should now be done about the Basin.

In the Australian context of separate English colonial and state systems, overlaid with federal interventions, competition for control of waterways created water governance arrangements as divergent as they are co-operative, despite the moment of common purpose achieved with the NWI and Water Act.

Apparently in acknowledgment of this, there is a federal parliamentary organ created to provide governance about the multi-jurisdictionality of Basin governance, i.e. the Select Committee on the Multi-Jurisdictional Management and Execution of the Murray–Darling Basin Plan.

Although not a standing committee, this select committee's terms of reference seem to have expanded beyond its original inquiry. Currently it is set to provide two reports in mid-2021.

On the way to delivering those reports, it remains a forum where senators can discuss Basin governance. This February, the discussion has been around how much influence *Dead in the Water* will wield.

### Information

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## Almond irrigation BPM project identifies key indicators for good performance

### SNAPSHOT

- A recent almond drip irrigation project conducted a system performance audit of 50 orchards in south-east Australia and ranked them according to their performance against a set of standard indicators.
- The evaluation of the performance of each system contributed to identifying best management for drip irrigation of almonds.
- The two most important management factors for good drip system performance identified are the age of the dripline and the frequency of flushing
- An app was developed that can be used by growers to assess their drip system performance against the 50 sites evaluated in the almond industry irrigation performance audit

Last year the result of an irrigation best practice management project for almonds was released. A key component of the project was a drip irrigation [system performance audit](#) of the Australian industry to assess the performance of drip irrigation systems across the major almond producing regions of south-east Australia (Adelaide Plains, Riverland, Sunraysia and Riverina). Fifty irrigation valve units were tested across these regions and were ranked according to their performance against a set of standard indicators.

Performance of valve units against these indicators was also compared with other data collected at each site, including age of the system, water source, filtration type and maintenance frequency. These critical factor comparisons assisted in identifying [best practice management](#) leading to good drip irrigation performance.

### KEY FINDINGS

The key findings from the project were as follows:

- variation in dripper outlet flow rate across individual valve units was greater than recommended in over 80 per cent of sites evaluated
- age of dripline was a key contributor to drip system performance
- frequency of dripline flushing correlated well with drip system performance and indicated that flushing is generally not carried out often enough.

### PERFORMANCE INDICATORS

The following set of standard indicators of irrigation performance were used for this project and as part of the audit:

#### *Pressure variation (important for non-pressure compensating emitters)*

- Compares the highest and lowest pressures measured across the valve unit and expresses the difference as percentage above and below the midpoint (average of the highest and lowest pressures).
- The target is less than  $\pm 10\%$  variation from the midpoint between the highest and lowest pressures (e.g. for a midpoint of 100 kPa, the highest pressure should be  $<110$  kPa, and the lowest  $>90$  kPa).

#### *Flow variation*

- Compares the highest and lowest emitter flow rates measured across the valve unit and expresses the difference as percentage above and below the midpoint (average of the highest and lowest flows).
- The target is less than  $\pm 5\%$  variation from the midpoint between the highest and lowest flows (e.g. for a midpoint of 2 L/h, the highest flow should be  $<2.1$  L/h, and the lowest  $>1.9$  L/h).

#### *Flow variation from quoted flow rate (important for pressure compensating emitters)*

- Compares the average emitter flow rate to the manufacturer's quoted flow rate for the dripline being used. For pressure compensating emitters the flow rate should be constant across the valve unit despite variations in pressure and should be close to the quoted flow rate.
- The target is less than  $\pm 5\%$  variation from the quoted flow rate (for example if the quoted flow rate is 2 L/h, the average should be between 1.9 and 2.1 L/h).

#### *Coefficient of uniformity (CU)*

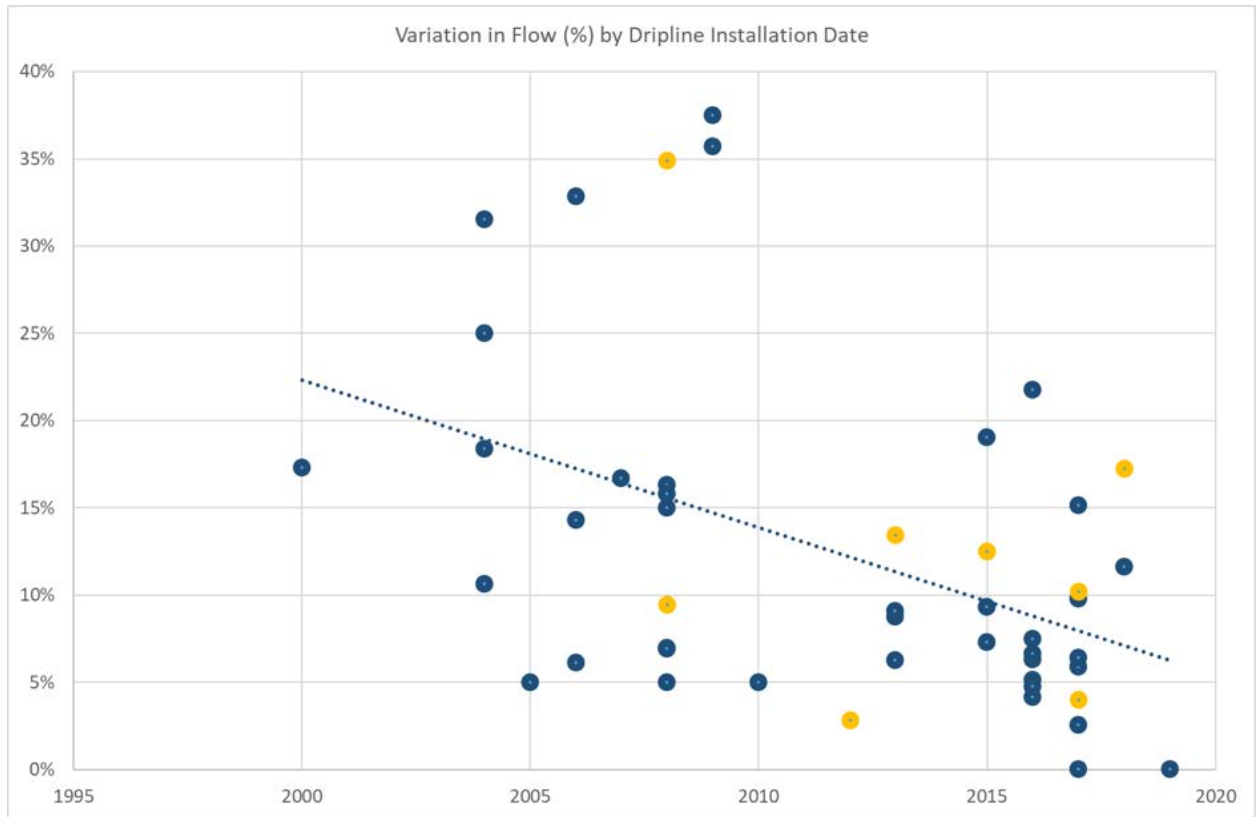
- Compares the variation across all flow rate measurements taken from a valve unit and expresses the result as the average closeness of measurements to the average measurement (100% indicates all measurements are the same).
- The target is greater than 90% CU.

#### *Test lateral flow rate*

- Compares the flow rate of a complete lateral with the flow rate expected from the number of drip emitters along the length of the lateral. This will potentially identify the presence of partially or fully blocked drippers or worn drippers which may not be selected for the specific pressure and flow rate measurements above.

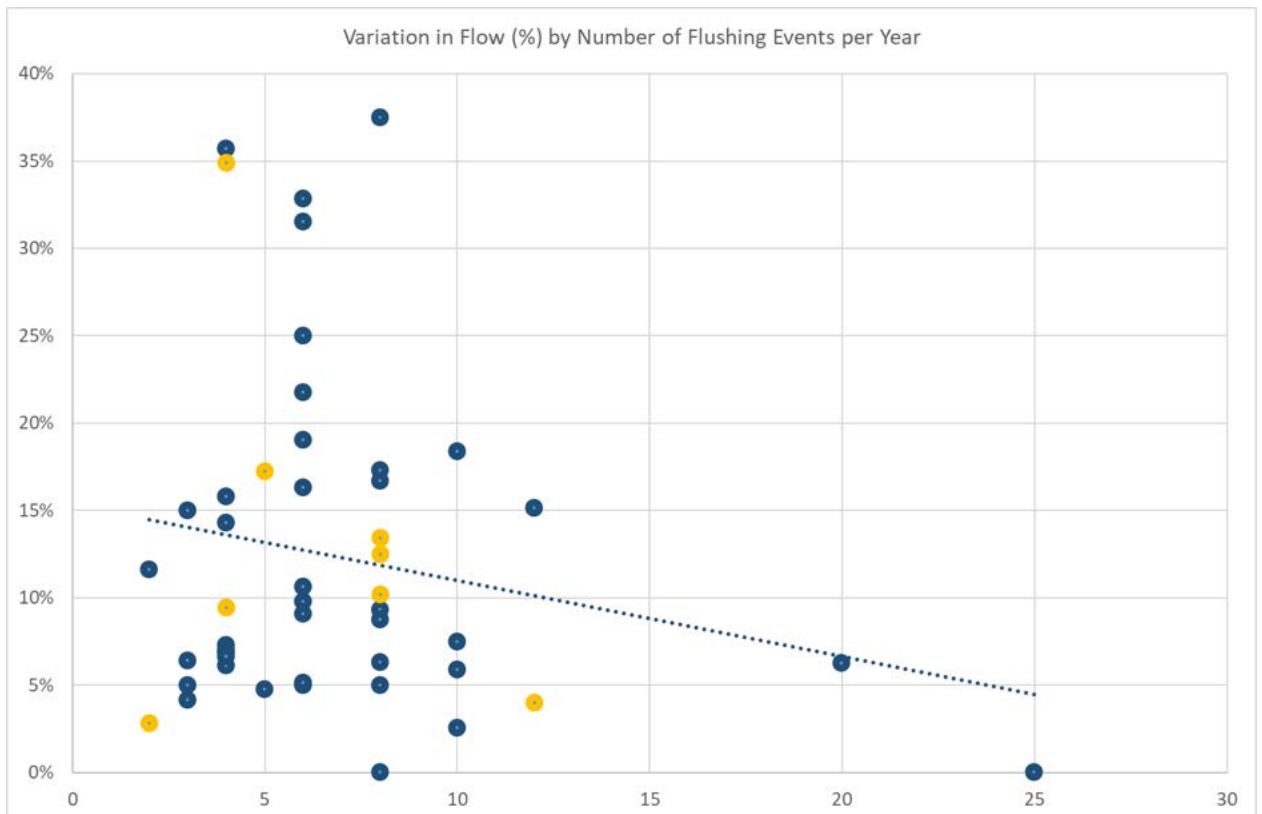
**FIGURE 1. RELATIONSHIP BETWEEN VARIATION IN FLOW AND INSTALLATION DATE OF THE DRIPLINE.**

Note: Pressure compensating systems are shown in blue, and non-pressure compensating systems as orange.



**FIGURE 2. RELATIONSHIP BETWEEN VARIATION IN FLOW AND NUMBER OF FLUSHING EVENTS PER YEAR.**

Note: Pressure compensating systems are shown in blue, and non-pressure compensating systems as orange.



# IRRIGATION DESIGN AND PRACTICE

- The target is less than  $\pm 5\%$  variation from the quoted flow rate (e.g. if the quoted dripper flow rate is 2 L/h, dripper spacing is 0.5 m, length is 100 m, the expected flow rate is thus 400 L/h, measured flow rate should be between 380 and 420 L/h).

## WHAT WERE THE CONCLUSIONS?

There were a range of conclusions and recommendations about best practice for almond irrigation.

The researchers identified that the data collected and the comparisons made in the audit indicate that the two most important management factors for good drip system performance are the **age of the dripline** and the **frequency of flushing**.

In both cases there was a wide range in performance at a given dripline age (see Figure 1) or flushing frequency (see Figure 2), but there was also a clear trend towards better performance by systems with younger dripline, and by systems which are flushed more often. The relationship between variation in flow and the colour of flush water further supports the importance of flushing, where water that was clear or slightly discoloured at the time of evaluation showed generally lower values for variation in flow than sites where water was dirty.

The data did not support a blanket recommendation on when systems should be replaced, or the ideal frequency for flushing systems. Rather, these will depend on the dripline product used, the makeup of the water being applied, and the maintenance carried out during the life of the system.

A **recommendation** was that system performance assessments be carried out regularly and the results used to monitor for declining performance of valve units which may point to the need for replacement of the dripline.

Another **recommendation** was that drip irrigation systems should be flushed often as insurance against gradual build-up of debris in the system. In time this material will lead to blockages, requiring dripline to be replaced earlier than would perhaps have been necessary if the system were kept cleaner through more frequent flushing. There is evidence that many sites evaluated in this audit were not flushed often enough.

Researchers also noted that further investigation into the impact of flushing manifolds on the effectiveness of flushing was recommended. There is evidence in the data collected to suggest that flushing effectiveness of systems without manifolds is superior, as they perform at a similar level to manifold systems, but with far less frequent flushing.

## GROWER ASSESSMENT TOOL

A handy output from the project is a [drip irrigation assessment tool](#) that growers can download and use to compare the performance of their own drip irrigation systems against the 50 sites evaluated in the almond industry irrigation performance audit.



**Source:** The information for this article was accessed from [Australian Almonds irrigation website](#) 18 February 2021.

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## Best practice for designers starts with the letter of offer

### SNAPSHOT

- Clive Croxford, an irrigation designer based in Perth, discusses some of the key issues designers and other professionals in the industry can run into when dealing with clients
- The letter of offer is often the cause of disputes between designers and clients, so it is important to be clear, to describe the offer clearly and to explain contract boundaries
- Having your own guidelines for best practice irrigation design will help with communication with clients and clearly describe the project and design parameters



Clive Croxford has run a successful irrigation design business in Perth for many years and is a member of Irrigation Australia's Certification Board. With this background, he is well placed to talk about some of the key pitfalls for designers and others in the irrigation industry when dealing with clients. In this article he identifies the importance of starting any job on the right foot by paying attention to letters of offer and describes some of the things to look out for to ensure best practice in irrigation design.

While an irrigation designer can be perceived by a customer as any person offering advice or information about pipe or pump sizing, crop water demand or any irrigation related matter, the reality is more complex and underpinned by defined competencies and skills.

As a result of much effort over many years, irrigation design is now recognised as a profession and is backed by a certification process developed and managed by Irrigation Australia.

While some in the industry might undervalue the skills of a certified designer, the fact is that the situations other irrigation professionals find themselves in are very varied and cover so many fields and disciplines that it is not possible to know it all.

This is why it is worthwhile looking at when the skills of an irrigation designer will add value (and potentially save a lot of time and problems). Of course, the need for input by a certified designer is always going to depend on the advisor's own ability, knowledge, experience, integrity and acceptance of their limits.

Whatever level you fit in at, there is one common factor; if you are offering advice you must always exercise best practice. To do that you must consider the client's expectations for the full term of the development and ensure that what you are advising now is right for the current situation and for the future, or at least inform them of the limitations of what you are offering.

It is important that best practice is followed for every job by considering client expectations, informing them of any limitations and issues, and ensuring that your advice is right for the current situation and for the future.





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The bottom line is that it is not all about the immediate sale, rather it is about the whole process to deliver the best option at the best price for both parties. Both parties need to profit.

#### LETTERS OF OFFER – STARTING ON THE RIGHT FOOT

I deal with or advise on many disputes where a client is dissatisfied with the job they end up with. In many circumstances the advice or design has just been bad, or the salesperson has been excellent at their job – they got the sale done and then disappeared into the sunset. In most cases of dispute, the client has been genuine about their requirement and the supplier has been of good intent, but somewhere in the middle something has gone wrong and the blame game starts.

In nearly all those cases the single factor that has either caused or could have prevented the dispute is the letter written to state the original offer. Most people are not expert at letter writing. In the case of a letter of offer describing an irrigation project and the result, often we do not present our reasoning adequately or describe the offer clearly and what our contract boundaries are. Importantly, we are not clear about our responsibilities and those of the client.

Through experience, I have developed a clear process for writing letters of offer. They must have an orderly structure and must show how you arrived at the elements such as the flow rates you are proposing, as well as the parameters



# IRRIGATION DESIGN AND PRACTICE

used to estimate crop requirements, flow rates, etc. Other elements to consider include how you arrived at a duty point you calculated, why you selected the pump you did, the limitations of the pumping system or the mainline or any other components of primary importance.

It is important to document all these elements both as a checklist to ensure you have considered all important issues and solutions and in case of a dispute. Any dispute starts when a system is delivered, installed and turned on but does not do what the client was expecting. It is no good at this stage referring to a communication such as an email that states a particular piece of equipment would be supplied, e.g. a 30 kW pump unit. It is unlikely that the client will understand this and even if they do, they are relying on your expertise as a professional to specify equipment that will do the job efficiently and effectively. Don't expect a client to know that what you have proposed will not work.

## BEST PRACTICE GUIDELINES

Over the years I have developed my own best practice guidelines for designing a system as follows:

- As a minimum, the starting point must always be to confirm the crop or plants being irrigated, soils, region, topography, features, water and power availability, conditions and special needs of the client. I confirm my understanding of them in the letter of offer.
- I complete the design or calculations needed to arrive at the conclusion.
- I write the letter of offer and attach drawings or relevant documents, ensuring that I comply with the relevant trade practices laws and all relevant regulations.
- For anything outside normally accepted practice, such as spaced sprinklers more than 50 per cent overlap, I state the reason and the consequences in the letter of offer. If this isn't done and the client notices the poor distribution after the system is operated, then the fight starts. Provide as many details as you can. Do not assume that the client knows what or why you have done something.
- If it is a project of significant value or size, I have it peer reviewed by a colleague, trusted friend, consultant or someone I know who is likely to pick up any shortfall in any of the multiple factors required for a good presentation and outcome.

Being an irrigation designer is not all about being able to size a pipe or pump or use AutoCAD. It is about understanding a whole range of factors, such plant-soil-water relationships, power consumption and costs, and climate extremes.

Being an expert with AutoCAD and working in the industry does not make you a designer, rather it gives you the ability to draft a nice presentation. Knowing how to select a pump using pump curves or electronic selector does not make you a designer or pump expert. If you cannot accurately calculate

the duty point, for which you also need to know how to calculate crop water demand and a range of other factors, then you should be careful when selecting pumps. When a client asks for a replacement pump, do not just replace like for like as you can almost rest assured that the previous selection was flawed, and the client has been operating with a poorly selected pump for years.

Irrigation design is a profession that is backed by a certification process that recognises skills and knowledge. As a professional, it is important that you apply best practice in your field as this is your best advertisement and one of the most effective ways of maintaining satisfied customers and avoiding disputes.

## CERTIFIED IRRIGATION DESIGNER PROGRAM

Irrigation Australia certified irrigation designers have the technical expertise and an up-to-date understanding of the latest water management practices to design, install, manage and maintain a wide variety of irrigation systems. Customers, companies and government agencies trust Irrigation Australia certified irrigation designers to:

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- Bring a tested and vetted professional to your irrigation project
- Manage commercial and residential spaces that will flourish
- Ensure all federal, state and local regulatory standards are being met
- Work with a dedicated professional, committed to advancing their knowledge



Clive Croxford, Croxford Irrigation Design, Perth



# Maintaining your design standards

We've all heard of standards and codes of practice, and even best practice. The advantages of standards and codes are many, e.g. they provide a consistent guide that people can follow when they are undertaking a particular task or set of tasks, something that is especially important if you employ a number of staff, and they allow you to show your clients that you are working to industry standards.

When you are quoting on a job, designing an irrigation system or installing one, do you have a procedure backed by standards and codes that you and your staff follow?

In 2015 IAL published *Rural Irrigation System Design – Standards and Codes of Practice*. If you are looking for a guide that will help you establish best practice for designing piped irrigation systems, this handy publication is well worth a look. While this publication has been written for rural systems, the principles apply equally to urban situations.

It is divided into two sections – one detailing irrigation design parameters and the other, irrigation performance parameters. To give you an idea of the information included in *Rural Irrigation System Design – Standards and Codes of Practice*, Table 1 shows the parameters that should be considered to complete an irrigation design. Each of these parameters are then described in detail.

The same information is supplied for performance standards (Table 2).

Interested in following up? Download a copy of *Rural Irrigation System Design – Standards and Codes of Practice* from the Irrigation Australia [website](#).

Anne Currey, Irrigation Australia

TABLE 1. IRRIGATION SYSTEM DESIGN PARAMETERS.

	Base Design Parameter	Unit(s)	Associated Information
1.1	Area considered for irrigation	Hectares (Ha)	<ul style="list-style-type: none"> <li>Area layout - size and shape</li> <li>Greenhouse growing structures (Nurseries)</li> <li>Size and quantity of containers (Nurseries)</li> <li>Physical obstacles (fences / trees / buildings, etc.)</li> <li>Land restrictions (protected areas, etc.)</li> <li>Topography</li> </ul>
1.2	Water Supply	L/s	<ul style="list-style-type: none"> <li>Quantity / Allocation</li> <li>Source (i.e. dam, bore, etc?)</li> <li>Quality</li> <li>Re-use (Nurseries)</li> <li>Energy source for pump</li> </ul>
1.3	Crop / Plant		<ul style="list-style-type: none"> <li>Type/s</li> <li>Growth stages and timing</li> <li>Cultivation practices</li> <li>Root depth</li> <li>Crop coefficients</li> </ul>
1.4	Soil – Readily Available Water (RAW)	mm/m	<ul style="list-style-type: none"> <li>Soil or Growing Medium information</li> <li>Soil structure</li> <li>Field Capacity &amp; Permanent Wilting Point</li> <li>Refill Point</li> <li>Infiltration Rate/s</li> </ul>
1.5	Climate		<ul style="list-style-type: none"> <li>Evapotranspiration</li> <li>Rainfall</li> <li>Wind</li> <li>Managed (greenhouses)</li> </ul>
1.6	Management requirements		<ul style="list-style-type: none"> <li>System integration</li> <li>System type (sprinkler, drip, pivot, etc?)</li> <li>System compatibility</li> <li>Labour skill &amp; availability</li> <li>Process control</li> <li>Risk appetite</li> <li>Price budget</li> </ul>
1.7	Irrigation System Capacity – Designed & Managed	mm/day	<ul style="list-style-type: none"> <li>Irrigated area</li> <li>Peak Crop Water Use</li> <li>Gross application rate (depth of water applied in mm over time)</li> <li>Application efficiency (%)</li> <li>Operating hours:                             <ul style="list-style-type: none"> <li>Irrigation cycle (duration and frequency)</li> <li>Pump Utilisation Ratio (PUR)</li> </ul> </li> <li>Flow rate of irrigation system</li> </ul>

TABLE 2. IRRIGATION SYSTEM PERFORMANCE STANDARDS.

Indicator	Associated Information	Standards
System capacity (based on 24 hour delivery)	<ul style="list-style-type: none"> <li>Flow rate of irrigation system (L/s)</li> <li>Irrigated area</li> <li>Actual hours of pumping / day</li> </ul>	Meets the peak irrigation requirements of the crop
Ratio of system capacity to peak season crop irrigation demand	<ul style="list-style-type: none"> <li>Design system capacity</li> <li>Managed system capacity</li> </ul>	80–120%
System application depth	<ul style="list-style-type: none"> <li>Refill Point</li> <li>Gross depth of water applied (mm)</li> </ul>	≤ 50% of RAW
Irrigation Cycle	<ul style="list-style-type: none"> <li>Return interval able to be achieved with each system type</li> </ul>	Meets the peak irrigation requirements of the crop
Application uniformity	<ul style="list-style-type: none"> <li>DU</li> <li>CU</li> </ul>	DU > 80% CU > 85%
Average application intensity	<ul style="list-style-type: none"> <li>Gross depth of water applied</li> <li>Time (hours) taken to physically apply water</li> </ul>	< Infiltration rate of the soil
Potential application efficiency	<ul style="list-style-type: none"> <li>Estimated from field distribution and depends on system type</li> </ul>	75 – 95%
Water Velocity	<ul style="list-style-type: none"> <li>To limit potential water hammer in irrigation system pipe lines</li> <li>Vary for flushing and filtration</li> </ul>	Max = 1.5 m/s
Hydraulic efficiency	<ul style="list-style-type: none"> <li>Pressure loss through fittings</li> </ul>	> 90% i.e. losses through fittings not to exceed 10% of total losses
Pump system efficiency	<ul style="list-style-type: none"> <li>Pump system efficiency % (pump/motor efficiency)</li> </ul>	Best possible depending on duty and pump type
Pump Operating Cost	<ul style="list-style-type: none"> <li>Cost per volume of water pumped</li> <li>KWh of energy used per volume of water pumped related to pressure</li> </ul>	\$/ML < 5.0 kWh/ML/m

## Regulating pressure in irrigation systems

### SNAPSHOT

- Regulating the pressure within an irrigation system is important to protect the system and keep it running efficiently
- Various hydraulic devices are available to help maintain uniformity and distribution of flow
- The main functions of the available products include pressure regulation, pressure sustainment, pressure relief and pressure compensation

In this article, first published in *Irrigation Today* journal, author and irrigation designer Michael Meyer from Coast Water explains why pressure regulation in an irrigation system is important to ensure efficient and uniform irrigation across the entire field or block.

The principles described by Michael are common throughout the irrigation world, wherever systems are being designed and installed. Controlling the pressure in an irrigation system is important to protect the system and to keep it working efficiently and uniformly. In areas with unavoidable pressure drops and spikes, devices such as control valves, regulators and compensators can help.

Knowing what device is needed, where to use it, and what size and rating of product to use, takes knowledge and experience. To understand when and how to use these products, it's first necessary to understand what they do and the terminology around them. This article discusses the four main functions of hydraulic controls: pressure regulation, pressure sustainment, pressure relief and pressure compensation.

### PRESSURE REGULATION AND SUSTAINMENT

Pressure regulation is a function of a device that reduces higher and sometimes varying upstream pressures to lower, constant pressures downstream. Regardless of the incoming pressure and flow rate within a certain range, the regulator must be able to maintain the set pressure downstream. It must also be able to respond quickly to changing upstream conditions with minimal variations in performance.

The two most common regulators are pressure regulating control valves and inline hose regulators. They are usually installed at the head of a hose, head of a manifold or head of a submain. Hose regulators are typically nonadjustable whereas most regulating valves are adjustable.

Sizing pressure regulators is very important because they all work within a given flow range. To function properly, the valves need a certain velocity and pressure loss across them. If the flow rate is too high or too low, the valve will likely fail and cause problems or breaks down the line.

Opposite to pressure regulating valves, pressure sustaining valves control and maintain a desired upstream pressure, regardless of fluctuating flow or downstream pressure variations. The valve will gradually open or close to maintain the minimum pre-set upstream pressure. If the pressure upstream of the valve is less than the setpoint on the valve, it will remain closed. As the pressure increases it will start to open the valve, and once the line pressure exceeds the setpoint on the valve, the valve will fully open.



This pressure reducing and sustaining valve has a three-way manual selector and can sustain upstream pressure and reduce downstream pressure.



**Above:** This pump and filter station has two sustaining valves that help keep backpressure on the filters while irrigating strawberry fields below. **Below:** This electric throttling valve manifold allows the grower to control flow to four separate blocks and irrigate them individually or simultaneously.

Pressure sustaining valves are usually used downstream of a self-cleaning filter. Self-cleaning filters have a minimum operating pressure requirement that can most easily be met using a properly sized pressure sustaining valve. Other common uses for sustaining valves include controlling pipeline fill-up and preventing pipeline emptying, pump overload and pump cavitation.

In low-pressure drip systems, a combination pressure reducing and sustaining control valve is often used. This is a hydraulically operated, diaphragm-actuated control valve that sustains a minimum backpressure for a filter while reducing and never exceeding downstream pressure requirements. Just like pressure regulating valves, these valves must be sized correctly to function properly.

### **PRESSURE RELIEF**

One of the most important safety features in an irrigation system is a pressure relief valve. These valves exhaust water out of the system when pressure exceeds a pre-set value. They are typically hydraulically operated and spring- or pilot-actuated control valves. If sized correctly, they respond to a system pressure spike quickly, accurately and repeatedly. When placed in the correct locations, relief valves will protect an irrigation system from accidental pressure bursts and provide a visual indication of high pressures or system failures.



# IRRIGATION DESIGN AND PRACTICE



The most common causes of pressure spikes include sudden closing of valves, excessive water velocity and clogging filters. Pressure relief valves are usually positioned at low points, pump stations and anywhere in the system where certain products need protection from over-pressurisation.

On pump stations without variable frequency drives, a pressure relief valve can act as a reservoir or tank return valve when the system demand is much lower than the pump capacity. In high-pressure situations, it is often advisable to use both a spring pressure relief and a pilot-controlled hydraulic relief valve in the same location.

Adding a relief valve to an irrigation system is a low-cost preventative measure that should be considered by all growers.

## PRESSURE COMPENSATION

While a properly designed system characterised by low pressures and relatively flat terrain can be efficient using conventional non-pressure compensating emitters, there is another option. Arguably one of the most important improvements for irrigation system efficiency and uniformity is the pressure compensating emitter. The opposite of a pressure regulator, a pressure compensator will allow

a dripper or micro-sprinkler to run at the same or very similar flow rate over a wide range of pressures. They allow extremely uniform distribution and can help farmers save up to 40 per cent of their water.

The emitter has a rubber diaphragm that opens or closes the emitter orifice, depending on incoming pressure, while maintaining a constant output flow rate. This means designers can stretch hose runs and add more emitters on one line, and systems can operate uniformly on undulating terrain.

## CHOOSE THE RIGHT DEVICE FOR THE SITUATION

Hydraulic control products can protect irrigation systems and improve efficiency and uniformity. When choosing a control valve or pressure compensating emitter, consider factors including operating pressure ranges, flow requirements and installation locations. Consult a certified irrigation designer to ensure proper sizing and setting of all types of control valves.

**Acknowledgment.** This article is reprinted from [Irrigation Today](#) Vol 5, Issue 3 Winter 2021.

**Photos:** Coast Water Solutions.

*Michael Meyer, Coast Water Solutions, California*



## IMPROVING WATER USE EFFICIENCY FOR WESTERN AUSTRALIAN VEGETABLE GROWERS

Vegetable producers in North Wanneroo, Western Australia, are facing the joint challenges of a growing population, a drying climate and a 10 per cent cut in water allocations by 2028. VegNET regional development officers have identified water use efficiency as a central industry objective and are developing a water use efficiency project as part of VegNET's Regional Strategic Plan for the area.

VegNET is a partnership between Hort Innovation and the vegetable industry to effectively communicate vitally important research-based information to Australian vegetable growers.

The project aims to help growers better understand soil characteristics; the regional soil map; how water filters through the soil profile; the nutritional demands of different crop types and growth stages; and irrigation techniques. The goal is for wider adoption of on-farm best practice. A 10 per cent reduction in net fertiliser costs and a 10 to 25 per cent reduction in irrigation volumes would be considered a key indicator of success.

Reductions of this magnitude are possible. In 2019, vegetablesWA helped the Department of Primary Industries and Regional Development (DPIRD) to assess irrigation efficiency in the region. They found that appropriate water management strategies can lead to acceptable levels of efficiency.

In addition to preparing for the future, greater efficiency has obvious benefits for growers. Based on figures from a financial and production benchmark report produced by

vegetablesWA and PlanFarm, a 10 per cent reduction in fertiliser and irrigation costs would result in a benefit of \$570/ha annually. This is a large increase in profits, since the average annual profit before tax of the WA vegetables industry is \$6,200/ha. Although the outlay to upgrade an irrigation system can be considerable, growers can significantly improve their profits by taking this step.

**Information.** For information on the water use efficiency project, contact Regional Development Officer Truyen Vo on [truyen.vo@vegetableswa.com.au](mailto:truyen.vo@vegetableswa.com.au).

**Source.** AUSVEG website



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## OUR NATIONAL WATER POLICY IS OUTDATED, UNFAIR AND NOT FIT FOR CLIMATE CHALLENGES: NEW REPORT

### SNAPSHOT

- The recently released Productivity Commission draft report into national water policy identified that there are some big issues to be dealt in the future. In this article, Quentin Grafton discusses some of the report’s findings
- While acknowledging progress has been made, the report says there is still much to be done, including recognising how climate change threatens water sharing agreements between states and between water users, delivering adequate drinking water to all Australians and making water infrastructure projects a critical part of the National Water initiative
- The report points to the dismantling of the National Water Commission in 2015 as a policy failure which means that there is no informed agency to ensure water reforms were being implemented as agreed

In February 2021, the Productivity Commission released a draft report on Australia’s water policy, identifying that there are some big issues to be dealt with. In this article, Quentin Grafton from the ANU’s Centre for Water Economics, Environment and Policy, Crawford School of Public Policy, discusses the report’s key findings.

Most Australians know all too well how precious water is. Sydney just experienced a severe drought, while towns across New South Wales and Queensland ran out of drinking water. Under climate change, the situation will become more dire, and more common.

It wasn’t meant to be this way. In 2004, federal, state and territory governments signed up to the National Water Initiative. It was meant to secure Australia’s water supplies through better governance and plans for sustainable use across industry, environment and the community.

But a draft report by the Productivity Commission released in February says the policy must be updated. It found the National Water Initiative is not fit for the challenges of climate change, a growing population and our changing perceptions of how we value water.

The report’s findings matter to all Australians, whether you live in a city or a drought-ravaged town. If governments don’t manage water better, on our behalf, then entire communities

may disappear. Agriculture will suffer and nature will continue to degrade. It’s time for a change.

### A big job ahead

The report acknowledges progress in national water reform and says Australia’s allocation of water resources has improved. But the commission makes clear there is still much to be done, including:

- making water infrastructure projects a critical part of the National Water Initiative
- explicitly recognising how climate change threatens water-sharing agreements between states, users, towns, agriculture and the environment
- more meaningful recognition of Indigenous rights to water
- delivering adequate drinking water quality to all Australians, including those in regional and remote communities, especially during drought
- all states committing to drought management plans.



### Busting water illusions

The commission’s proposal to make water infrastructure developments a much larger part of the National Water Initiative is a critical way to keep governments honest. For years, state and federal governments have used taxpayers’ dollars to pay for farming water infrastructure that largely benefits the big end of town – large, corporate irrigators.

For example, the federal government last year announced an additional A\$2 billion for its ‘Building 21st Century Water Infrastructure’ project. This type of funding represents a return to schemes like the discredited Bradfield scheme, a plan to redirect floodwater from Queensland’s north to the south, including to South Australia.

Such megaprojects, even when relabelled or reconceived, perpetuate simplistic myths of the early 20th Century that Australia – the driest inhabited continent on Earth – can be ‘droughtproofed’.

As the report highlights, when governments in 2004 signed up to the National Water Initiative, they agreed to ensure investments in water infrastructure would be both economically viable and ecologically sustainable. But many proposed water infrastructure projects appear to be neither.

This includes the construction of Dungowan Dam in NSW. For this dam, the commission notes, “any infrastructure that improves reliability for one user will affect water availability for others” and the “prospect of ‘new’ water is illusory”.

The commission warned projects that are not economically viable or ecologically sustainable can “burden taxpayers with ongoing costs, discourage efficient water use and result in long-lived impacts on communities and the environment”.

Equally disturbing is that billions of dollars for water infrastructure are currently targeted primarily for primary industry (such as agriculture and mining) while communities in desperate need of drinking water that meets water quality guidelines miss out. Thousands of Australians in more remote communities still lack access to drinking water most Australians take for granted.

### Water scarcity under climate change

Water availability under climate change features prominently in the report. The commission says droughts will likely become more intense and frequent and, in many places, water will become scarce.

The report says planning provisions were inadequate to deal with both the Millennium Drought and the recent drought in Eastern Australia.

The commission also said more work is needed to rebalance water use in response to climate change. One need only look to the 2012 Murray–Darling Basin Plan – one of the key outcomes of the National Water Initiative – which didn’t account for climate change when determining how much water to take from streams and rivers.

### Overcoming past failures

As the commission report notes, one key policy failure since the 2004 National Water Initiative was signed was the federal government’s dismantling of the National Water Commission in 2015. It meant Australia no longer had a resourced, well-informed agency to ‘mark the homework’ and make sure the reforms were being implemented as agreed.

The report offers ways to overcome a range of past policy water failures, including strengthening governance architecture for the National Water Initiative. Importantly, it also called for better recognition of the rights Aboriginal and Torres Strait Islander people hold over water.

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“The report offers ways to overcome a range of past policy water failures, including strengthening governance architecture for the National Water Initiative. Importantly, it also called for better recognition of the rights Aboriginal and Torres Strait Islander people hold over water.”

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Aboriginal communities and corporations own just 0.1 per cent of the more than A\$26 billion of water entitlements in the Murray–Darling Basin. Clearly, such gross inequities must be overcome.

What happens in the Murray–Darling Basin is key to national water reform. There is overwhelming evidence the basin plan needs fixing.

To start, subsidies for irrigation-related water infrastructure should be halted until a comprehensive audit is conducted to determine who gets water, when and how. And an independent, properly funded expert agency should be established to monitor, advise and implement the law for managing the Basin’s water resources.

The 800-page report of the 2019 South Australia Murray–Darling Royal Commission proposes many ways forward. Yet unfortunately, that substantial body of work is not mentioned in the Productivity Commission’s report.

### We’re still waiting for change

In 2007, the worst year of the Millennium Drought, Prime Minister John Howard said the current trajectory of water use and management in Australia was not sustainable. He said: “In a protracted drought, and with the prospect of long-term climate change, we need radical and permanent change”.

We are still waiting for that change. If Australia is to be prosperous and liveable into the future, governments must urgently implement water reform, including adopting recommendations from the Productivity Commission’s draft report.

If it fails to act, our landscapes will degrade, agriculture will become unsustainable, communities will disintegrate, and First Peoples will continue to suffer water injustice.

**Acknowledgment.** This article is from [The Conversation](#) website accessed 13 February 2021.

*Quentin Grafton, Director of the Centre for Water Economics, Environment and Policy, Crawford School of Public Policy, Australian National University*

# PROFESSIONAL DEVELOPMENT

## SNAPSHOT

- As interest in professional development opportunities continues to grow, Geoff Harvey brings us up to date on new courses and certifications being offered by Irrigation Australia
- Check out our latest courses - Electrical Wiring and Troubleshooting, Certificate III in Irrigation Technology AHC32419 Upgrade, and Poly Welding Electrofusion and Butt Welding
- Chair of the Certification Board Gennaro Vellotti has an update on board activities during 2020
- We meet newest Certification Board member Kosi Kalogerinis and talk to him about his background and perspectives on certification
- Peter Smith provides the latest on meter policy and certification

## INTEREST IN TRAINING AND CERTIFICATION ON THE UP



This year has started with a bang with a steady stream of enquiries about certification and training courses.

One of the things prompting people in the industry to consider their career options and personal development opportunities seems to have been the break over Christmas allowing time to think about the future.

The Irrigation Australia training course calendar is starting to fill up and many training courses are already scheduled. Extra courses have been added because of demand from our members, particularly for Certificate III in Irrigation Technology AHC32419, Certified Meter Installer/Validator (CMI) and some tailored training courses for centre pivot lateral move (CPLM) and electrofusion poly welding.

While most of our courses are still being delivered virtually using Zoom, at the beginning of this year we started face-to-face training to cover some of the practical requirements for the Certificate III in Irrigation Technology AHC32419.



Certificate III in Irrigation Technology students conducting field assessments at Tocal Agricultural College NSW



Our first face-to-face training blocks were delivered in Western Australia at Cockburn Council and in New South Wales at Tocal Agricultural College. Unfortunately, a similar training session scheduled for Melbourne had to be postponed because of the COVID-19 lockdown, emphasising the need to be flexible during these pandemic times and fit in the practical training around any government restrictions.

## New courses

The team at Irrigation Australia is always on the lookout for training opportunities and has recently introduced three new courses as a result of industry demand.



**Basics in electrical wiring and troubleshooting.** One of Irrigation Australia's newest courses is basics in wiring and electrical troubleshooting. The course, which is run over two half-days, covers the basic skills and knowledge for wiring and electrical troubleshooting in automatic irrigation systems.

Students who successfully complete the course can assess, test and repair extra low voltage systems used in irrigation automation.

The course is sponsored and delivered by Hunter Industries, who provide each participant a wiring kit including an X-Controller, solenoid and multi meter, which is returned on completion of the course.

For information about the course go to the Irrigation Australia [website](#).

### **Certificate III in Irrigation Technology AHC32419**

**Upgrade Course.** Irrigation Australia is now offering this new training course to those students who have already obtained the old Certificate III in Irrigation AHC32416 or equivalent qualification.

Our training covers the additional units of competency (minimum of eight extra units of competency required) that make up the necessary 22 units in the nationally recognised Certificate III in Irrigation Technology AHC32419 (Trade Level Qualification – Irrigation Technician).

Interest has been high, with the first course already full. Additional courses will be scheduled as required.

For information about the course go to Irrigation Australia [website](#).

### **Certified Poly Welding – Butt Welding and Electrofusion.**

The new Certificate III in Irrigation Technology AHC32419 qualification includes two poly welding competencies, which are:

- PMBWELD301 - Butt weld polyethylene plastic pipelines
- PMBWELD302 - Electrofusion weld polyethylene pipelines

At present there is limited competency-based training for these two subjects, so our plan is to lift the professionalism of this job function by offering competency-based training.

Both competencies will be offered as part of the training delivery of the Certificate III in Irrigation Technology AHC32419 qualification, however, we will also be offering these training courses to all Irrigation Australia members and other interested markets.

All successful participants will become a certified poly welder in either butt welding or electrofusion or both and will be issued with a certification card valid for two years. They will also be issued with a statement of attainment for each competency successfully completed.

For information about these courses send an email to [Irrigation Australia](#).



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# PROFESSIONAL DEVELOPMENT

## IRRIGATION TRAINING INFORMATION AT YOUR FINGERTIPS

Check out Irrigation Australia's [new training course booklet](#). This comprehensive publication provides essential details on training courses offered by Irrigation Australia.

- Certificate III in Irrigation Technology
- Certificate IV in Irrigation Management
- Centre Pivot and Lateral Move
- Meter Installation and Validation
- Introduction to Irrigation | Agriculture
- Introduction to Irrigation | Urban
- Irrigation Pumps and Systems
- Irrigation Efficiency
- Urban Irrigation Design
- Commercial Irrigation Design
- IRRICAD Design
- Irrigation Installer
- Storage Meter Installation and Validation



## CERTIFICATION BOARD UPDATE

It would be no surprise to readers if I said that last year was a challenging one – for the Certification Board, for irrigation professionals and industry in general. Many events and field were cancelled, including Irrigation Australia Conference and Exhibition, because of COVID restrictions.

As well as being important to the industry, these events, in particular Irrigation Australia Conference and Exhibition, are where industry professionals gain continuing professional (CPD) points, through completing training, learning about new products and viewing presentations. This international event also provides a unique opportunity for certified professionals to network and allows Irrigation Australia and the Certification Board the opportunity to acknowledge certified professional in our industry with a lunch and awards to individuals. Last year, this went out the window and we had to focus on other ways, mainly online, for certified professionals to achieve the CPD points.

Despite the curved ball that was COVID-19, the Certification Board was able to work remotely and progress several important tasks.

**Metrification of POI.** After much effort, the board finally completed the metrication of the *Principals of Irrigation* (POI) textbook, which is now with the US Irrigation Association to finalise and publish. When it is published, the POI will benefit all certified professionals in Australia

providing a more up-to-date reference for irrigation, design and agronomy. It will also be a great resource for certified irrigation designers when they are doing their exams. It will also be useful for updating the exam program (future work) to reduce the number of exams, make them available online and make them easier to understand and complete.

**Certified storage validator.** A new certification for certified storage validator (CSV) was developed for the industry and the first training course delivered in late 2020.

**Board review.** During the year we reviewed the Certification Board makeup and introduced a Young Professional member category. The aim is to have input from a younger industry professional and identify their issues and views. Daniel Rose from Hydroplan is our first Young Professional member and he is making a great contribution.

**CPD in a year of COVID.** One impact of restrictions on travel and attending events last year was that there were few opportunities to earn CPD points. The board and Irrigation Australia decided that we needed to be more lenient than in previous years on the CPD requirements. The board also developed online tests/tutorials for certified professionals to achieve CPD points.

For more information about certification, go to the Irrigation Australia [website](#).

Gennaro Vellotti, Chairman

## MEET THE CERTIFICATION BOARD'S NEWEST MEMBER



Kosi Kalogerinis, a recent appointment to the Certification Board, is a certified irrigation designer, holds a Diploma in Irrigation Management and a Certificate III in Irrigation. *Irrigation Australia* caught up with Kosi to find out a bit about him and why he nominated for the board.

### IA. Can you tell us how long you have been involved in the irrigation industry and what areas you work in.

**Kosi.** After seeking a new adventure and career switch in 2008, I initially applied for a trainee design role at Netafim. I worked there for six years earning my CID and continuing to improve on my skills. I then embarked on a sales and design role in open-field and protected horticulture with a dealer before spending three years with a global engineering consultancy. In late 2019, I returned to Netafim.

### IA. What do you enjoy about working in the industry?

**Kosi.** Working in a design consulting role continues to present exciting challenges designing for a wide range of crops across various climates. It is also rewarding to know that we play a significant role in an essential industry.

### IA. How do you think the industry has changed in terms of irrigation design in the last few years?

**Kosi.** Many people now realise that planning and designing

a system early plays a substantial role in the success of their project. Design is more than just sizing components against acceptable velocities and pressures. It is working to an understanding of crop, water and soil relationships while taking a holistic approach to each system and factoring in energy, water efficiency, labour, OHS, planting layouts and other operational requirements.

### IA. Why did you nominate for the Certification Board and what do you want to focus on?

**Kosi.** Certification is essential within our industry, and I can bring a high standard of professionalism to the team taking certification forward.

I would like to see a practical approach to complement the CID course with testing of the fundamentals in the traditional closed-book fashion but followed by an open-book exam with real-world scenarios. For example, an open-book exam would likely require candidates to search for and use technical data, etc. closely resembling what we do on a day-to-day basis.

### IA. What do you see as the biggest challenge/s for the industry in the next few years and what role can having certified professionals play in meeting them?

**Kosi.** I think water efficiency and labour and energy costs will continue to be the main challenges.

Certified irrigation designers will further take the holistic but practical approach to design always striving to achieve more for less. We already see newer technologies emerging tackling these challenges such as automatic flushing of collection manifolds, automatic filters, low pressure and low flow systems, and this trend will continue. There are also many existing systems operating inefficiently, and as designers, we can identify and address those inefficiencies.



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# PROFESSIONAL DEVELOPMENT

## PETER TALKS METERS



The roll-out of approved water meters across the Basin states is proceeding steadily, and in NSW the rollout of approved floodplain harvesting meters is imminent. Inquiries continue to be modest, indicating that CMI's generally understand the requirements.

Audits of submitted meter validation certificates in the Murray–Darling Basin jurisdictions have paused while MoUs with the jurisdictions are being finalised. The aim of these audits is to maintain a professional standard in the work submitted by CMI's. Where necessary, CMI's will receive feedback on any issues to ensure a high standard of practice.

### Professional development

CMI's are reminded of their obligation to maintain their certification with appropriate professional development activities totalling at least 10 CPD points every two years. Examples of activities include completed meter installations, attending an Irrigation Australia conference, regional meeting or member event, undertaking training from meter manufacturers, completing Irrigation Australia online training and gaining a new certification. For a complete list of relevant activities and their points values download this [document](#) from the Irrigation Australia website.

### Around the states

Most of the recent activity is from NSW.

**Floodplain harvesting measurement.** The NSW government has launched its Floodplain Harvesting Measurement Policy 2020 for the northern Murray–Darling Basin. This policy applies to landholders in the northern Murray–Darling Basin who will receive a floodplain harvesting water-access licence.

DPIE requires landholders to install minimum-standard, telemetry-enabled metering devices fitted with tamper-evident seals. Landholders need to contract a qualified person, such as a certified storage meter installer and validator (CSV), qualified surveyor or a telemetry technician, to install telemetry-enabled metering equipment.

There are two key rollout dates for the policy depending on storage size and frequency of use:

- 1 July 2021: 1,000 ML or greater and used more often than one year in seven, on average.
- 1 July 2022: Less than 1,000 ML or 1,000 ML or greater and used less often than one year in seven, on average.

Irrigation Australia was commissioned to deliver relevant training and to administer the certification program for CSVs. To date, there are 18 applicants who have completed the training and become certified. They are listed on the Irrigation Australia [website](#).

If you are interested in becoming a CSV, you can access details of the training and certification from the Irrigation Australia [website](#).

**DQP portal.** WaterNSW has continued to improve the [DQP portal](#) with most issues sorted out. If you encounter any difficulties, you can contact them by [email](#).

### Training courses

The CMI training course continues to be in high demand. While it is being delivered via virtual technology, easing COVID restrictions have allowed some courses to be delivered in person.

The CSV course has so far been delivered in person.

### News

The number of Pattern Approved meters continues to grow. The latest release from MDBA in December is available on the Irrigation Australia [website](#).

In NSW, the number of approved data logging and telemetry devices, or 'local intelligence devices' (LIDs), also continues to increase. The latest list can be downloaded from the NSW Department of Industry [website](#).

### Information

For any information about metering or if you have any metering issues or have questions, contact Peter Smith at [email](#), or phone 0455 973 780.

## NEW METERING FORUM

Have you checked out the new Metering Forum on the Irrigation Australia [website](#)? The forum contains a lot of information on metering, including for floodplain harvesting.

Access is open to all and subscription is free.

Subscribers can also ask a question and we will find you the answer. If you subscribe you will also be notified when a new post is made. This site is recommended for all CMI's and DQPs.

*Peter Smith, Metering Governance Officer, Irrigation Australia*

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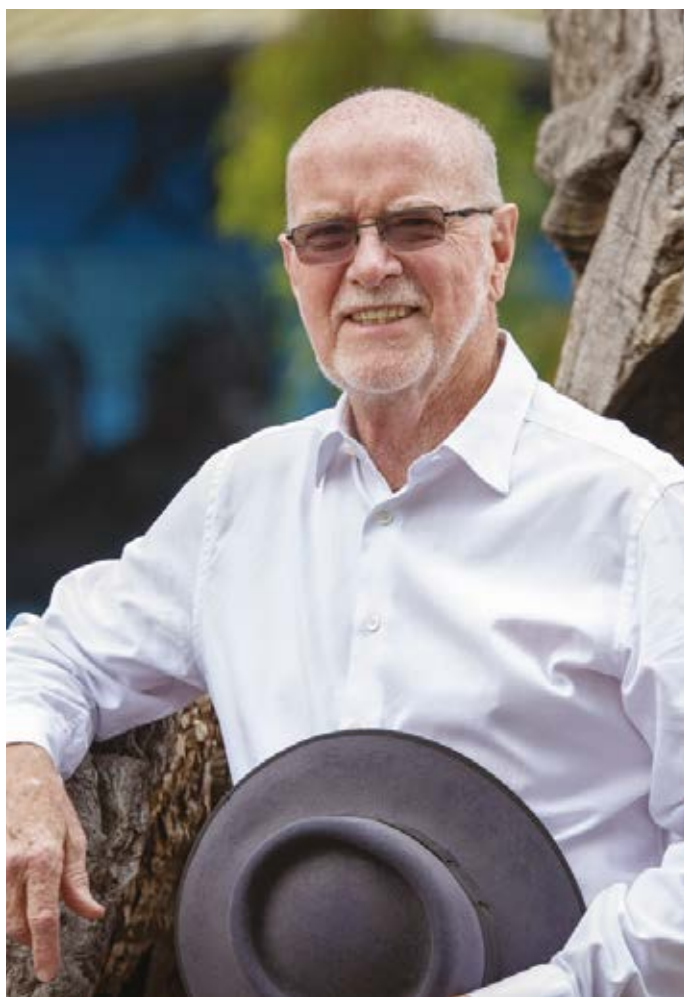
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## SNAPSHOT

- Recipient of the 2020 MacLean-Iledema Award, Peter Hayes, provides his perspectives on the irrigation industry and receiving this industry honour
- Tracy Martin brings readers up to date on what's going on in the regions
- Obituary: Joy Brink
- Your Irrigation Australia Board directors
- This year and next will see some big irrigation events in Australia

## LONG-TIME MEMBER RECEIVES INDUSTRY'S PRESTIGIOUS AWARD



Peter Hayes, long-time Irrigation Australia member, was recently announced as the 2020 recipient of the association's prestigious MacLean-Iledema Award for his outstanding contribution to the irrigation industry and the association.

Peter's long association with Irrigation Australia included a six-year term as a member of the national board from 2012 to 2018 as well as being a member of the South Australia regional committee. Reflecting his considerable expertise and interest in the international irrigation scene, he is currently a member of the Australian Committee for the International Commission on Irrigation and Drainage (IACID) and is helping with assessing extracts and submissions for the 24th ICID Congress and 73rd IEC Meeting to be held jointly in 2022 with Irrigation Australia's National Conference and Exhibition.

Peter's particular interest has been in education and training and R&D investment and management, especially in the wine industry. He has actively promoted and developed professional development activities, including short courses on topics such as vineyard development and irrigation, and he initiated the development of the CRC for Viticulture's most successful 'Research to Practice' series of professional development activities.

Many industry members would know Peter from his term as chair of the Cooperative Research Centre for Irrigation Futures (CRCIF) from 2002 to 2010. The CRCIF was the most important milestone in the history of irrigation research in Australia, providing research, education and training on critical issues across the irrigation industry.

Irrigation Australia spoke with Peter about receiving the award and his career in the industry.

**IA. You have been involved in the wine and irrigation industries for 45 years. On reflection, what have been the achievements you are most proud of as far as irrigation is concerned?**

**Peter.** I don't think anyone would argue with the fact that volunteers play a major role in developing and ensuring the future of most organisations, industries and communities in Australia. This is one of the reasons I find it difficult to make claims of individual contribution, as most of the recent progress in the irrigation and viticulture industries has been built on effort applied, knowledge created, and experiences garnered by many people in the last few decades.

Over the years, we have seen that technology alone does not generally represent the 'silver bullet' for solving most of our problems or meeting our challenges, rather it is the human touch that makes the difference. As a baby-boomer, I have been fortunate in being born at the 'right' time and have had many opportunities to provide this human touch by acting as a facilitator, broker and mentor within and between organisations and individuals.

From an irrigation sector viewpoint, the impact of the work of volunteers and committed individuals is well-evidenced by the collaborative efforts of those contributing to the formation and running of the CRC for Irrigation

Futures, and the lead taken by the likes of Wayne Meyer, Jeremy Cape and Mike Logan, among many others. The need for such initiatives remains and one hopes that current bid for the One Basin CRC will be successful.

I note that Irrigation Australia Limited is a partner in this CRC bid, and I also register great satisfaction in having been involved with the association as it recovered from a severe slump and is now firmly established as a vibrant, successful and influential player across, advocacy, industry training and professional development.

#### **IA. What does receiving the award mean to you?**

**Peter.** It recognises the value of collaboration in focussing on priority issues and in resolving problems, identifying issues and charting a pathway that depends on respectful interactions between all players and organisations. I recognise that competition is often of value in striving for excellence, but I also believe that, often, collaboration is needed to attain such in our complex society. So perhaps the award validates my perspective.

#### **IA. What have you enjoyed most about the irrigation industry?**

**Peter.** The people, the diversity and the satisfaction from seeing industry progress and professional development so evident across the irrigation sector.

#### **IA. What do you think the priorities for irrigation industry education and training will be in the next few years to meet challenges such as climate change, robotics and digitisation and information management?**

**Peter.** A response to this really interesting question probably has several elements.

Firstly, as I said earlier, the human touch is crucial to progress and advancement with many of our issues, so finding a way to accelerate the education, training and professional development is but part of the strategy.

Secondly, finding ways to co-design and commission these aspects and embed the necessary communications and social skills and attitudes will be another challenge. Fortunately, this lends itself to engagement by member communities and the efforts of Irrigation Australia and selected, appropriate partners.

And finally, creating well-grounded and adaptable members of the irrigation community able to work across diverse enterprises should also be an outcome of much value, especially in rural and regional communities.

## **MACLEAN-IEDEMA AWARD**

Scott MacLean and Don Iedema were strong supporters and contributors to the Irrigation Association of Australia (IAA) during its early years. Both men were involved in the organisation at a regional and national level and Scott was a former chairman.

Scott, Don and Roger Bell, an employee and talented irrigation designer, tragically lost their lives in a light aircraft accident in 1995.

The award was created by the then IAA to recognise their contribution to the irrigation industry and the association and to honour their memory. The MacLean-Iedema Award is specifically structured to recognise the outstanding contributions of individuals to the industry and includes a cash prize and commemorative plaque.

### **Award recipients**

2020 Peter Hayes, South Australia

2018 Jeremy Cape, New South Wales

2016 Robin Weaver, Western Australia

2014 Ted Gardner, Queensland

2012 Bill Yiasoumi, NSW

2010 Ken Sampson (awarded posthumously), Victoria

2008 Geoff Connellan, Victoria

2006 Ken Crawford, NSW

2004 John Mapson, Victoria

2002 John Blackwell, NSW

2000 Ken Wetherby, South Australia

1998 David Morwood, Queensland

1996 Christine Forster and Primary Industries South Australia



# IRRIGATION AUSTRALIA NEWS

## REGIONAL ROUNDUP

What's going on in the regions and with membership by Tracy Martin, Irrigation Australia's National Membership and Regions Manager.



**Queensland.** The South-East Queensland Waterwise Sub Committee are in the final stages of completing the review of the Waterwise Irrigation Design Shop program. Once this is done, they will move to the Waterwise Garden Irrigator program for the same process and develop an implementation strategy.

The regional committee hosted an industry Christmas function at the Nudgee Golf Club 3 December 2020 to celebrate restrictions easing in Brisbane and to wind up the year. Before enjoying a thirst-quenching beverage and some enjoyable finger food, local Rain Bird Australia rep Tim Robertson gave a presentation on the redeveloped irrigation system at the golf course.



Attendees at the regional committee's end-of-year function get the lowdown on the redeveloped irrigation system at Nudgee Golf Club.

**Western Australia.** In November last year Western Australia members attended a member event at the Hope Valley Nursery in Hopeland. Members learnt how water-saving initiatives integrated with full climate control and remote sensing technology are being used to grow indoor plants on a commercial scale at the nursery.



Water saving initiatives combined with climate control and remote sensing technology are being used by Hope Valley Nursery.

Future member events for 2021 are scheduled for Curtin University, Baldivis Sporting Complex and Cottesloe Golf Course.

The region is now focusing on the 2021 Waterwise Irrigation Expo, the premier Western Australian biennial event, to be held 25 August 2021 at Crown Perth Conference Centre and taking in the Burswood Park landscape precinct. To download the exhibitor prospectus and secure your exhibition space go to the Irrigation Australia [website](#).

The organising committee are currently working on topics to be presented as part of rotational educational seminars. Delegates will be able to attend these seminars throughout the day with a dedicated tour guide to hear industry expert presentations about on-site infrastructure and specific industry topics. Watch this space for the delegate prospectus, to be finalised soon!

**Victoria.** Due to COVID-19 restrictions, meetings every two months are continuing using the TEAMS platform. The February meeting discussed potential several activities for the Melbourne region later this year. One possibility is to host an event like the WA Waterwise Irrigation Expo. This will provide industry with an opportunity to target municipalities, school grounds staff, landscapers and irrigation contractors and present seminars in conjunction with a trade show exhibiting the latest technologies and products in water efficiency.

The Waterwise Garden Irrigator program is now being rolled out in Melbourne. The Waterwise Garden Irrigator and Waterwise Irrigation Design Shop programs are self-study endorsement programs, facilitated and administered by Irrigation Australia. They are designed to optimise water-use efficiency and reduce water use in garden irrigation systems. Underpinning the programs are best practice standards for irrigation system specifications, installation and design.

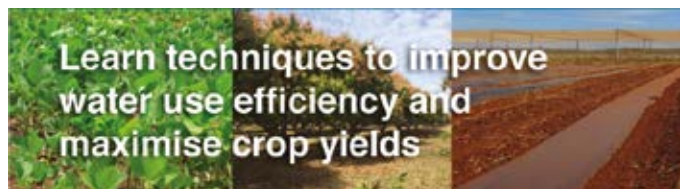
To learn how your business can become a Waterwise Professional, contact Irrigation Australia on (08) 6263 7774 or visit the Waterwise [website](#).



**New South Wales.** The Sydney regional committee is changing its focus from water restrictions to cover other areas of services to our members such as events, engagement with councils and training.

**Northern Territory.** In partnership with the Northern Territory government, NT Farmers Federation and Australian Mango Association, Irrigation Australia will deliver two field days in Darwin and Katherine in March 2021. The days will bring growers up to speed with the latest in irrigation technology and take participants through the basics of improving water use efficiency, maximising crop yields and quality, and local water regulations. Twenty-one manufacturers will be displaying their latest water saving technologies and products.

To learn more about the field days, to register or to view the list of exhibitors visit these links – [Darwin](#) and [Katherine](#).



**South Australia.** The South Australia regional committee will hold a planning meeting in March to determine what events can be delivered for not only the Irrigation Australia, but also the wider irrigation industry.

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## FIND AN IRRIGATION SPECIALIST

If you are looking for an irrigation specialist, then the Irrigation Australia website is your one-stop-shop. Just type in a postcode and irrigation professionals listed in the area will be shown, along with their contact details.



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## OBITUARY



Many people who have been members of IAA SEQ region during the last 25 years would be saddened to hear of the death of Florence "Joy" Brink on 23 January 2021.

Born in Zimbabwe, Joy immigrated to Australia and was first involved with irrigation industry

when she started working for Addis Irrigation, owned by Tony Addis, at the Brisbane office in 1991. Tony was the IAA South-East Queensland regional chair and Simon Cowland-Cooper, the regional vice chair.

At that time, the region was having difficulty attracting members to participate in meetings.

In 1991 Sid Dyer had recently moved to south-east Queensland after being active with the Sydney Region, which had just had the irrigation installers licence confirmed and approved by the NSW Building Services Corp. Joy was quickly involved in expanding this process for the Queensland irrigation industry.

It was with her involvement with the regional committee that Joy's skills came to the fore. In a first for the IAA, she was engaged by the region as secretary. She suggested that members be charged for attending our regional meetings and organised guest speakers as well as a multi-course dinner at each event.

Joy participated in organising and controlling the irrigation licensing program and was always there to assist with workshops, conferences and other activities. Her enthusiasm not only held the group together from the mid-1990s, when she moved from Brisbane to Nerang, but also she ensured the region's finances were in the positive, even after paying her consultancy dues.

A good example of her organising ability relates to her generous and untiring help in organising and running the IAA stand at the first major Irrigation Australia Conference and Expo, which was held at the Brisbane Conference and Exhibition Centre in 1998.

*Simon Cowland-Cooper and Sid Dyer*

## 24TH ICID INTERNATIONAL CONGRESS, 73RD IEC MEETING AND IRRIGATION AUSTRALIA CONFERENCE & EXHIBITION



With the disruption and logistical issues of running an international event that have been caused by COVID-19, this major international event will now be held from 30 May to 6 June 2022 at the Adelaide Convention Centre.

For information go to the event [website](#).

## IN THE NEXT ISSUE

The **Winter 2021** issue of *Irrigation Australia Journal* will feature:

### EDITORIAL

- > Case studies: good irrigation practice
- > Rainwater harvesting
- > Rural irrigation: innovation, policy, and the environment

### ADVERTISING FEATURES

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# JOURNAL

FOR IRRIGATION PROFESSIONALS













# Learn techniques to improve water use efficiency and maximise crop yields

Presented by Dept of Industry, Tourism and Trade, NT Farmers Association, Australian Mangoes and Irrigation Australia, this field day will bring growers up to speed with the latest in irrigation technology and teach you how to improve water use efficiency, maximise crop yields and quality, resulting in saving money and water consumption.

## Topics covered:

-  Basic irrigation scheduling
-  Determining irrigation water requirements
-  Basic irrigation system trouble shooting
-  Developing system maintenance strategies
-  Checking pressure and flow rates
-  Conducting a water application distribution test
-  Collecting data to determine irrigation uniformity and efficiency
-  Assessing soil texture and root zone depths

## Dates:

### Darwin

**Tuesday 23rd March 2021**

8.30am – 4.30pm

Arnhem Mangoes - 30 Cain Rd,  
Lambells Lagoon

### Katherine

**Thursday 25th March 2021**

8.30am – 4.30pm

Godinymayin Yijard Rivers Arts & Culture Centre  
Lot 3238 Stuart Hwy, Katherine East NT 0850  
(Field demonstrations will be held  
at alternate site close by)

Attendees will gain a better understanding of relevant local water regulations and how this impacts their business, as well as field demonstrations and presentations on soil, plant, water relationships and irrigation scheduling.  
Manufacturers display of latest technologies

**\$25.00 per person + GST**

Morning Tea / Lunch / Afternoon Tea will be provided

Registrations are required for either event, please register for

**Darwin**

or

**Katherine**



EXHIBITION SPACE ON SALE NOW

DOWNLOAD PROSPECTUS

# WATERWISE IRRIGATION EXPO 2021

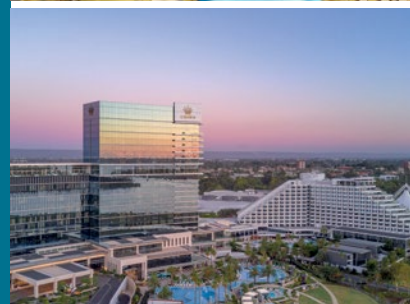
25<sup>TH</sup> AUGUST 2021

Between 7.30am and 4.00pm  
Crown Perth Conference Centre  
Gt Eastern Hwy, Burswood

## ABOUT THE EXPO

The Waterwise Irrigation Expo provides Exhibitors a face to face opportunity with the urban landscape industry of Western Australia. This biennial event attracts delegates from all sectors of the irrigation industry including Local Govt Parks & Gardens Teams, Landscapers, Irrigation Installers, Contractors and Retailers and Turf Managers. This event is promoted to these sectors through various marketing campaigns.

The Expo will consist of delegates being assigned to a group for the duration of the day and being escorted to various locations within the Burswood Park Precinct for hands-on field training.





## NEW DATES AND VENUE FOR IRRIGATION AUSTRALIA INTERNATIONAL CONFERENCE AND EXHIBITION

### Irrigation Australia International Conference and Exhibition, 24th ICID International Congress and 73rd IEC meeting

Dates: 30 May to 6 June 2022

Venue: Adelaide Convention Centre

Irrigation Australia recently announced new dates and a new venue for the ICID 24th International Congress and 73rd IEC meeting and Irrigation Australia Conference and Exhibition.

After considering the health and safety of delegates and possible issues with international travel next year as a result of COVID-19, the Irrigation Australia board decided that the most prudent option was to further postpone the event to 30 May to 6 June 2022.

The international event is being held at the Convention Centre in Adelaide, one of the world's most modern, flexible and technologically advanced meeting and event centres.

All exhibitors who had previously booked space for the postponed event will be offered incentives to transfer their arrangements to Adelaide in 2022.

Standby for further announcements on:

- abstract submissions
- student awards
- new website and logo
- exhibition floorplan
- technical tours
- social events.



## EVENT SCHEDULE

DATE	EVENT	LOCATION	CONTACT/ INFORMATION
22-29 September 2021	72nd IEC Meeting and 5th African Regional Conference (AFRC)	Marrakesh, Morocco	<a href="mailto:anafide.ma@gmail.com">anafide.ma@gmail.com</a> <a href="http://5arcid.ma/fr/">http://5arcid.ma/fr/</a>
30 May to 6 June 2022	73rd IEC Meeting and 24th ICID Congress	Adelaide, Australia	<a href="mailto:bryan.ward@irrigation.org.au">bryan.ward@irrigation.org.au</a> <a href="http://www.irrigationaustralia.com.au/">http://www.irrigationaustralia.com.au/</a>
September 2022	10th International Micro Irrigation Conference (10MIC)	Agadir, Morocco	<a href="mailto:anafide.ma@gmail.com">anafide.ma@gmail.com</a>
16-22 April 2023	74th IEC Meeting and 4th World Irrigation Forum (WIF4)	Beijing, China	<a href="mailto:gaoh@iwhr.com">gaoh@iwhr.com</a>

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Momir Vranes, Irrigation Australia Board Director and ICID Australia National Chair



## CHALLENGES AND OPPORTUNITIES IN BROOME

Watertorque, a Western Australia based irrigation business established 20 years ago, has shops at two locations: its head office at Muchea, north of Perth, and at Broome. The Broome office services the north-west of the state as well as the Pilbara, Kimberley and Gascoigne regions and specialises in irrigation and water projects for agriculture and industry.

Irrigation Australia spoke with Wes Harris, who manages the business, about the challenges of running an irrigation business in Broome, and the opportunities.

### IA. Can you tell us a bit about the business?

**Wes.** The Watertorque branch in Broome was opened in five years ago to allow the company to better service clients in the north-west. With the backing of distribution partnerships with Pioneer water tanks, Nastec solar pumps and Valley centre pivots, the business offers a range of water infrastructure solutions to the agricultural and commercial markets.

The team at Watertorque is made up of 18 full-time staff with a range of skills to ensure projects are completed by trained professionals. Roles vary from administration and sales to specialties such as design, installation, electrical and plumbing. Installation staff have been through the Irrigation Australia Cert 3 irrigation courses.

**IA. Watertorque works across a range of irrigation. What are the types of jobs that you deal with most in the industrial urban and rural sectors – is it upgrading or installing new systems – and are they mainly the same or a range of different types?**

**Wes.** The irrigation industry offers a diverse range of opportunities for designers and installers to experience. Although much of our business is in the agricultural sector, our teams also work for local government and mining. While most work involves new projects, there will always be service and upgrade work required to ensure our clients are catered for.

I think the industry is a great option for people looking for a diverse career, with varied workplaces and training. Our teams could be building new centre pivot irrigators, large capacity water storage solutions, energy efficient solar pumping systems or commercial irrigation. No one day is the same, with a variety of industries and clients to service.



Staff from Watertorque Broome butt-welding a pipeline from a bore field made up of three 37 kW bores. The pipeline supplies a 24 ML storage with a 120 L/sec pump station, which then supplies water to a cattle feedlot.



Wes Harris, Managing Director of Watertorque, with the Broome store manager, Helen Schneider

**IA. Could you describe a typical client as far as rural irrigation is concerned, and what is the potential for expansion of irrigation?**

**Wes.** No one client is the same. Rural irrigators are as diverse as the systems the industry can supply. As a rule, irrigation expansions often resemble initial stages with modifications for more efficient solutions that have become available.

There are numerous opportunities in the sector for new infrastructure as businesses are looking to diversify into the agricultural markets. These bring a combination of clients with business backgrounds and agricultural backgrounds.

**IA. How does having a distinct wet and a dry season affect managing the business and your work planning?**

**Wes.** Both branches are affected by the change in seasons. The Broome branch experiences a distinct change in business over the wet season. Having the two branches allows us to shift staff up to Broome in the busier times of year, then focus on work further south over the wet season when the branch is a little quieter.

These few months are a great chance to make improvements at the Broome branch and prepare for the dry season, which tends to last from April to December.

**IA. Have you noticed any changes or new trends as far as rural irrigation is concerned in the last year or two?**

**Wes.** The most predominant trend we have seen with is the transition from diesel-generated pumping solutions to clean energy – primarily solar. Solar systems now outweigh our traditional diesel and electric pump sets, something I could not have imagined 15 years ago. As solar energy solutions have

become more efficient, we are seeing client's payback periods reducing, making the initial investment a sensible choice.

The Watertorque team are building irrigation for a more diverse range of crops than ever, as more agricultural clients are looking to create new niche industries to keep ahead of a growing market. This has assisted in developing the irrigation team's knowledge in varied design and installation requirements to suit new crops in varied soils across the different climates in WA.

**IA. What are the main challenges with running the business in a remote location like Broome?**

**Wes.** Running any business will always throw up a few challenges along the way.

The Broome branch faces challenges with ensuring our staff are looked after well when working in the challenging climate here. Working out of town in a warm climate for most of the season can wear crews down over the year, so it is important to ensure the clients' requirements are met to a high standard while supporting the team and ensuring they are well rested and ready for each work rotation, which usually involves two weeks on and one week off.

Freight also poses a challenge. A part forgotten or missed on an order can take up to a week to arrive at Broome. Any goods required out on site can then be an additional day's drive from Broome. It's imperative that time is spent ensuring the teams are well organised before heading out to remote sites.

One advantage of being in Broome is that clients in remote areas such as the north-west are more open to ensuring they are using the best automation and monitoring systems available. Our clients in the Pilbara/Kimberley region are forward thinking and always looking to use new technology to advance their operations.

## WATERWISE IRRIGATION PROGRAMS ON FACEBOOK

Have you checked out Irrigation Australia's Waterwise irrigation programs on Facebook?

Waterwise-endorsed members are fully trained in water efficient practices and can design, install, repair and maintain domestic irrigation systems.

There are two categories:

- Waterwise Garden Irrigator - for professional installation and maintenance services
- Waterwise Irrigation Design Shop - for expert advice and quality parts



The Facebook page aims to provide the wider community with #waterwise tips and advice and promote members.

Use the QR code and jump on Facebook to find out more and keep up to date.



## SAND SLUG CHOKING SYSTEM

In February, the Murray-Darling Basin Authority (MDBA) announced that researchers had discovered a giant sand slug clogging up the Murray River and causing decreased capacity in the Barmah Choke.

Capacity through the choke is important for running the river efficiently to meet both consumptive and environmental needs downstream.

According to the authority, a huge volume of sand that was believed to be mobilised by goldmining and land clearing upstream in the 19th and early 20th centuries has been slowly moving downstream and is now building up in the Barmah Choke.

“We have been seeing the capacity of the Barmah Choke diminish for some time now. Back in the 1980s, it was about 11,300 ML per day—but now it’s about 20 per cent less than that, at just 9,200 ML per day,” says MDBA Executive Director River Management, Andrew Reynolds.

A survey of a 28 km stretch of river revealed that, for every kilometre of river length, 112,000 t of sediment was estimated to be on the bed. The sandy deposit on the riverbed averaged more than 1 m deep, with some areas over 4 m deep.

While some locals believe that the sediment is the result of erosion of banks, the MDBA identified that the coarse sandy material has a different profile and composition to the surrounding riverbanks, so it was clear that it’s not caused by local erosion.

Andrew explained that during Australia’s gold rush, river channels were used to process huge volumes of sediment, with the gold dropping out into cradles and sluice boxes. This would have introduced a large pulse of sediment, known as a ‘sediment slug’, to the river system.

The MDBA said that it would be consulting with key stakeholder groups on capacity issues and shortfall risks and that a webinar to canvass issues and solution will be held in March.

To read the reports on sediment in the Barmah Choke, visit [Barmah–Millewa forest sediment investigations](#).

**Source.** MDBA [website](#)

## NEW CEO FOR NIC

In December 2020, the National Irrigators’ Council (NIC) appointed Isaac Jeffrey as its new chief executive officer. Isaac took over the reins from outgoing CEO Steve Whan, who successfully headed the organisation for the last four years.

The aims of the NIC are “to develop projects and policies to ensure the efficiency, viability and sustainability of Australian irrigated agriculture and the security and reliability of water entitlements and to promote those projects and policies with a view to having them adopted or ratified by governments, statutory authorities and other groups and organisations”.

NIC Chair Jeremy Morton said that Isaac brought to the role extensive private and public sector leadership experience with skills in government relations and complex policy development, all of which were critical to navigating the challenging issues of water management and energy.

**Information.** For information about the NIC go to its [website](#)

## WA INVESTS IN WATERSMART FARMS

In February 2021, the Western Australian government announced that it had allocated \$1.5 million towards a new project supporting the state’s farmers to adopt self-sufficient water supply systems and build long-term drought resilience.

The Watersmart Farms project facilitates the rapid, widespread adoption of on-farm desalination plants in agricultural regions to process brackish groundwater into a suitable resource for livestock, crop agronomy and other agribusiness activities.

The project seeks to optimise desalination technology and its application in the Wheatbelt and Great Southern regions, including assessing the technology, economics and systems, identifying suitable groundwater resources and investigating options for the disposal of brine.

Researchers will examine how to improve farm dams and catchments to provide water in dry periods, including undertaking a targeted drilling exploration program to locate suitable groundwater for desalination trials.

There are already more than 30 small desalination plants across the agricultural region, reflecting a thirst by farmers to invest in self-sufficient, reliable, quality water supply systems.

The project aims to attract future co-investment to support the development and adoption of innovative and sustainable water supply options.

**Source.** WA Government [website](#)

## TWO NEW IRRIGATION SCHEMES FOR RURAL QUEENSLAND

Two irrigation schemes are proposed for the remote Queensland town of Hughenden. The \$300 million Hughenden Irrigation Project (HIPCo) and the smaller 15 Mile project aim to better use water in the region and drive economic growth.

The HIPCo is assessing demand and completing a detailed business use case to determine the financial viability of a dam, weir and irrigation channels at Saego Station.

Attendees at a recent public meeting heard that the scheme could be from 60,000 to 80,000 ML in size. Scope exists for using HIPCo water to increase cattle production, with lot-feeding options to drought-proof the region.

The smaller 15 Mile project will use underground water to establish a grape farm. This scheme, which could employ about 150 seasonal workers, will fill a seasonal gap in the





market, providing Australian-grown grapes to consumers in spring. The first harvest is expected to take place in 2022.

Flinders Shire invested \$4.5 million in the project, with assistance from the Queensland Government. Mildura-based company Marciano Table Grapes will invest \$10 million to develop an initial 60 ha farm and associated infrastructure. A total of 300 ha is potentially available for development.

For more information, visit the Hughenden Irrigation Project [website](#).

**Source.** ABC [website](#) 25 January 2021.

## LESS WATER FROM MENINDEE LAKES: NSW IRRIGATORS' COUNCIL

Before 2000, Menindee Lakes supplied nearly 40 per cent of South Australia's Murray-Darling Basin Plan entitlements. But with fewer floods, severe droughts, and reduced inflows over the last 20 years, this situation is changing.

NSW Irrigators' Council chief executive officer Claire Miller says that the Menindee Lakes can no longer be relied upon to underpin Murray allocations: "the warming, drying trend is consistent with the scientific forecasts for climate change... if those trends hold true that's a very serious challenge that we're facing."

She emphasises that this will place much more pressure on the Murray resource to meet demands, including South Australia's minimum entitlement.

Ms Miller says that licensing floodplain harvesting in the Northern Basin and reducing it back to the 1994 Cap levels will go some way to addressing the problem. New rules, such as the Resumption of Flow rule on the Barwon-Darling, will also help protect first flows after prolonged dry periods.

However, she acknowledges that these changes will not be enough. The impacts of policy decisions that have affected the allocation framework should have been reported on annually,

but have not been assessed for 16 years, according to Miller. The cumulative impact of these management decisions on general security allocation needs to be determined.

Southern Riverina Irrigators chair Chris Brooks, who represents the Murray Valley, argues that floodplain harvesting is a major contributor to the problem and needs to be tightened further. He says that licensing of floodplain harvesting does not go far enough to address the issue.

**Source.** The Land [website](#) 10 February 2021.

## WESTERN IRRIGATION NETWORK PROJECT

The federal and Victorian governments have signed off on the \$116 million Western Irrigation Network (WIN) project. The project is part of the federal government's \$3.5 billion investment through the National Water Infrastructure Development Fund to deliver the National Water Grid.

Large-scale infrastructure will connect three existing recycled water sources to provide a secure source of Class C recycled water for a new irrigation district – the Parwan Balliang Irrigation District (PBID), 15 km south of Bacchus Marsh.

It will involve about 59 km of pipeline, 2.1 GL combined water storages and three high-capacity pump stations. Combined with existing storages, the network will provide 3.3 GL capacity, with the potential for future expansion.

The project is expected to increase water security and support rural communities while protecting the environment from the increased volume of wastewater produced by the growing population.

The federal government has committed \$48 million to the project, which is co-funded by Western Water, with contributions from farmers. Construction will begin next year, and completion is expected by mid-2022.

**Source.** Pump Industry [website](#).

## WET AUTUMN FOR NORTHERN AUSTRALIA ON THE CARDS: BOM

A February climate outlook from the Bureau of Meteorology is forecasting a wetter-than-average autumn, mainly for northern Australia, with a greater than 70 per cent chance of exceeding median rainfall in the Northern Territory, South Australia and western parts of Queensland and New South Wales.

This trend is not predicted to extend to parts of the west coast of Western Australia, western Tasmania, south-east Queensland and north-east New South Wales, which show no significant shift towards a wetter or drier month.

Southern parts of Australia are in their drier season, so rainfall (even if above average) is not likely to be sufficient to relieve long-term rainfall deficits.

You can view the monthly climate and water outlook on the [BoM YouTube channel](#).

**Information.** For information about climate outlook, go to the BoM [website](#).





## CYBER SECURITY AND YOUR BUSINESS

### SNAPSHOT

- With scammers taking advantage of COVID-19 to exploit and play on the fears of businesses and consumers across Australia, it is important to keep on top of your cyber security
- The risks of falling victim to a scam can be high, with the possibility of losing your money, information, technology and/or reputation
- There are resources and information that you can access free of charge to check how effective your cyber security is and to identify the types of threats that exist online

As we increasingly use the internet to do business, it's important to make sure you have effective cyber security in place to protect your business from cyber-attacks. There is evidence that many Australian businesses, agencies and individuals do not pay enough attention to keeping themselves and their data secure online or implementing security measures such as regularly updating security software.

This article from Australian Government Business [website](#) outlines threats and the importance of protecting your business from cyber-attack.

**Be aware of coronavirus scams.** Unfortunately, scammers are taking advantage of COVID-19 to exploit and play on the fears of businesses and consumers across Australia. It is

difficult at times to know what communication is official.

Cybercriminals are using websites, emails and text messages that claim to provide official information about COVID-19, when they are, in fact, attempts to get your personal or business information.

Scammers are impersonating a range of official Australian and international organisations such as the Department of Health and the World Health Organisation, other government authorities and legitimate businesses including financial institutions, travel agents and telecommunications companies.

You can find out how to stay up-to-date and protect your business on the Australian Cyber Security Centre (ACSC) [website](#).

If you think you have been scammed, find out how to [report a scam](#) or call 1300 795 995.

**Cyber security.** Cyber security is about protecting your technology and information from accidental or illegal access, corruption, theft and damage.

You need to protect any digital information that your business creates and stores, plus any information you collect from your customers. Providing a secure system is critical to protect your business from [cybercrime](#) and build and maintain customer trust in your business.

To be effective, you need to make cyber security a part of your daily business processes.

**Who could be a cyber threat?** Cyber criminals may be an individual or a group of people. Threats to your technology or data might come from:

- criminals – out for money or information, to illegally access your hardware and data, or to disrupt your business





- clients you do business with – to compromise your information
- business competitors – looking to gain an advantage over your business
- current or former employees – who accidentally or intentionally compromise your information.

**Ways cyber-attacks can happen.** Cyber criminals look for access to information and data on your business, employees and customers. They might do this by:

- theft or unauthorised access of hardware, computers and mobile devices
- infecting computers with malware (such as viruses, ransomware, and spyware)
- attacking your technology or website
- attacking third party systems
- spamming you with emails containing malware
- gaining access to your information through your employees or customers.

**How a cyber-attack could affect your business.** A cyber-attack could cause you:

- financial loss – from theft of money, information, disruption to business
- business loss – damage to reputation, damage to other companies you rely on to do business
- costs – getting your affected systems up and running
- investment loss – time notifying the relevant authorities and institutions of the incident.

**What is at risk?** Your money, information, technology and reputation could be at risk. This could include the destruction, exposure or corruption of the following:

- customer records and personal information
- email records
- financial records
- business plans
- new business ideas
- marketing plans
- intellectual property
- product design
- patent applications
- employee records (which could include sensitive personal identifiable information such as their date of birth).

**Types of online threats.** Some common online threats to watch out for include:

- **Phishing** – fake messages to trick you into giving out your private personal, commercial or financial details. They can even pretend to be from an organisation you trust, such as a large business or government agency.
- **Malware** – malicious software most used by criminals to steal your confidential information, hold your system or device to ransom or install damaging programs onto your

device without your knowledge.

- **Ransomware** – a type of malicious software that makes your computer or files unusable unless you pay a fee to unlock them.

Read more about different types of cyber threats and how to protect yourself and your business at the Australian Cyber Security Centre [website](#).

**Online scams.** Online scams can pretend to be from organisations, businesses or even individuals you trust to trick you into giving the scammers your money or your personal details to steal your identity. A common online scam to watch out for as a business are tax time scams.

Tax time is a popular period for scammers to target businesses. Stay one step ahead by being aware of these scams. The Australian Taxation Office (ATO) will not email you and ask for your bank details or tax file number (TFN).

Watch out also for scams targeting small businesses. Read about [common scamming methods](#) on the ATO website.

If you get an email, call or SMS from the ATO that asks for personal information or offers a tax refund, [report it to the ATO](#) and [Scamwatch](#).

Read more about cyber safety at tax time at the [Australian Cyber Security Centre](#) website.

**Invoice email scam.** This involves scammers pretending to be legitimate suppliers advising you about changes to payment details. You may not realise until your business receives complaints from suppliers that your payments did not occur.

Be aware of potential scamming and have checks in place to ensure you pay the right suppliers. Before paying, ensure the supplier verifies all major invoices using contact details you already have on record.

Cyber security resources for small business. Need more help understanding the basics of cyber security for your business?

- [The Australian Cyber Security Centre](#) (ACSC) leads the Australian Government's efforts to improve cyber security. Their role is to help make Australia the safest place to connect online by providing advice and information about how to protect yourself and your business online. When there is a cyber security incident, the ACSC provides clear and timely advice to individuals, small to medium business, big business and critical infrastructure operators.
- See the [Small Business Cyber Security Guide](#) on the Australian Cyber Security Centre website.
- Find an [Australian Small Business Advisory Services](#) (ASBAS) URL provider for advice on a range of digital solutions including online security.

**Acknowledgment.** This article is from the Australian Government Business [website](#). Accessed 18 February 2021.



## OPPORTUNITIES FOR SPONSORS IN 2021



# WATER NIGHT

In 2021 SAWM is looking to partner with all local government authorities and utilities in every state for Water Night. We would love the support of irrigation businesses since Water Night is the perfect time to influence purchases of water-efficient products before summer starts.

Why not join us as we encourage 9 million Aussie households to take part in Water Night. Participants will make do with one bucket of water – no taps, no showers – no running water (aside from that required for hand washing and religious reasons).

Analysis from last year’s Water Night suggests the event prompted people to find out more about water efficiency

and water use and that their basic water literacy improved as a result of participating. Even our most ardent water efficiency advocates admitted that abstaining from using their taps was hard to do - they just didn’t realise how subconsciously they reach for their taps!

We are seeking more irrigation partners to promote and sponsor Water Night - October 2021 so we can improve water mindfulness across Australia.

### Find out more

If you would like to sponsor Water Night or would like to know more about this opportunity, contact [Zoe Palmer](#) today.

## AI BEATS FARMERS AT GROWING STRAWBERRIES

The trend towards automation and the application of AI in agriculture and irrigation is one that can't be ignored. Research in China has shown that AI can beat the human touch when growing strawberries.

The inaugural Smart Agriculture Competition pitted data scientists against traditional farmers in a strawberry-growing contest run over four months. Scientists grew strawberries using Internet of Things technology coupled with artificial intelligence and machine-learning-driven algorithms.

Although data scientists grew their crops remotely, their technology gave them the upper hand. Sensors provided precise control



over water and nutrient application. Temperature and humidity were controlled in the automated greenhouse environment.

Data scientists produced 196 per cent more strawberries by weight compared with traditional farmers, with their harvest, on average, representing a 75.5 per cent higher return on investment.

The event was about collaborating as well as competing. The competition, run by Pinduoduo, China’s largest agri-focused technology platform, and the China Agricultural University, gave farmers and data scientists an opportunity to understand each other’s work. This is important given the growing role of AI in promoting economic growth and productivity.

Source: The Print [website](#). 7 February 2021



## NATIONAL WATER REFORM 2020 DRAFT REPORT RELEASED

In February 2021, the Productivity Commission handed down for comment its draft report into national water reform.

Since the mid-1990s, governments have run a program of national water reform, with the most recent agreement – the National Water Initiative (NWI) – signed in 2004. The report outlines the findings of the second three-yearly inquiry conducted by the commission. The purpose of the inquiry was to assess governments' progress towards meeting the goals of the NWI and to provide practical advice on future national water reform directions.

The draft report outlines how this national water policy has served Australia well, but the NWI is now 17 years old. It has reached its use-by date and it will struggle in the face of the challenges ahead – increased population, increased community demands and the likely effects of climate change.

The report acknowledges that water is critical to the economy, the environment, and the wellbeing of Australian communities. But highly variable rainfall patterns, with frequent droughts and floods, make it a challenging resource to manage.

It is time for governments to lead the way once again on developing a new national water policy and agree on a pathway to meet these challenges. The report makes it clear that the NWI needs to be modernised and strengthened to create an agreement that will provide clear and sensible guidance to governments, communities, industries and environmental managers over the next 10 to 15 years.

### Key issues and recommendations

The inquiry found that jurisdictions have made good progress against the reform agenda. Reforms have been widely supported by the water sector, industry and stakeholders. And they have contributed to sizeable benefits – providing the foundations for sustainable resource management and the capacity for water to move to its highest value use and facilitating a more efficient and financially sustainable sector.

But reform needs to be adaptive. It needs to reflect lessons learnt from experience, evolving as the broader policy context changes, and proactively dealing with anticipated

challenges. The NWI has been implemented for seventeen years now, and during this time we have seen extreme and prolonged droughts. It has provided a wealth of experience and knowledge to build on.

The report also notes that reform must adapt to changing community and cultural expectations. Since the NWI was signed, for example, we have seen shifts in the way people value the role of water in promoting liveability and urban amenity. The importance of water to Aboriginal and Torres Strait Islander communities is also being recognised and needs to be at the fore of future reforms.

To ensure water security is maintained for communities and industries in the face of these challenges, governments and water utilities are gearing up to spend billions of dollars over the next decade on infrastructure. It is critical that this investment is spent wisely to maximise the benefits to water users and avoid sharp price increases or excessive costs for taxpayers.

The report says that Australians will need to become even more adept at dealing with drought, and communities, industries and the environment will have to adapt to lower water availability. For cities, this will mean considering all potential water sources. For the environment, it will mean using available water to best effect. For irrigators, markets will continue to provide a tool that supports adjustment to drier conditions.






The key challenges ahead provide a compelling case for continuing reform effort through a renewed NWI.

**Information.** For information and to download the report, go to the Productivity Commission [website](#).



Check out Irrigation  
Australia's social media feeds.



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-  [www.youtube.com/user/IrrigAust](https://www.youtube.com/user/IrrigAust)

## NAANDANJAIN

### ULTRAF PRO DIGITAL HYDROMETER



The Ultraf Pro, a revolutionary digital hydrometer available from NaanDanJain, combines a RAF diaphragm valve with a high-performance ultrasonic water meter into one compact unit.

A digital display shows both the total volume and current flow rate. The measurement units are user selectable using a Bluetooth connection to a smartphone with the Ultraf phone app.

The Ultraf Pro has an optional digital output with a selectable range from 1 to 10,000 L per pulse. Alternatively, a 4-20 mA analogue output signal is available. It is also possible to configure the Ultraf Pro to become a single valve, volume based, irrigation controller. Programming can be by either days of the week, with up to five starts per day, or cyclic, selectable between hours or days. All configuration and programming is done via the smartphone app.

Compact installation is possible due to a straight pipe requirement of only two pipe diameters up-stream and zero down-stream. The Ultraf Pro has an enclosure rating of IP68 for a depth of up to 3 m, making it suitable for installation in valve boxes or below ground pits.

The Ultraf Pro incorporates a RAF diaphragm valve, so can be configured as a pressure reducing, pressure sustaining, electric on/off or any other common control configuration.

The available size range is 40 and 50 mm with FBSP thread and 80 to 200 mm with flanged (Table D) connections. This gives a flow rate range from 0.5 to 500 m<sup>3</sup>/h.

Typical installations of the Ultraf Pro are as a master valve on turf and landscape systems for municipal authorities, pump control valve, centre pivot control and even general irrigation zone control valves where the flow rate and total volume needs to be monitored.

**Information.** Contact NaanDanJain, phone 03 9767 1222 or [email](#)

## RIVULIS

### FIND YOUR RECOMMENDED FILTER – AT THE TOUCH OF A BUTTON

Determining which filter is required for each farm is a complex decision.

A recent technical tool developed by Rivulis, [Find your recommended filter calculator](#), has just made the important and complex task of choosing the most suitable filtration method for a particular irrigation application much easier and quicker.

To access the *Find your recommended filter calculator* users go to the website and answer a series of questions. It then calculates a recommendation against three variables - irrigation application, filter working conditions, and water source and quality. The website dynamically updates the recommendation as the user answers each question.

The calculator takes 22 different user inputs to make its recommendation. However, users can input as few or as many answers as they wish. The user does not need to answer all 22 answers to receive a recommendation; however of course, the more answers provided, the more accurate the answer. Responses can also be shared with a Rivulis expert and users can receive a consultation regarding their filtration needs.

The interface is easy to use, but behind the scenes, the calculator is backed by a series of complex algorithms designed by the filter experts at Rivulis to provide the recommendation of filtration method.

As well as providing a recommendation for filtration method, the website provides an overview of the system including an overview of the filtration recommendations for your entire system including recommended Rivulis filter models from additional water treatment through to the backup filter in field.





**IRRIGATION  
AUSTRALIA**

**OUT SOON**

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**2021**

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