OPERATOR

February 2019 Edition

W-I-O-A Australia
EXCELLENCE IN OPERATIONS

Inside

Tasmanian Operators of the year.
Learn about them on page 4.

Inspecting the new Parkes WTP.
Read about it on page 6.

2018 SA Operator of the Year, Brad Alcorn.
More on page 5.

Newsletter of the WATER INDUSTRY OPERATORS ASSOCIATION OF AUSTRALIA

FROM THE MD'S DESK

Welcome to 2019. We hope all our members had a relaxing, enjoyable and safe Christmas break. I enjoyed a great break chilling out on the banks of the Murray River, fishing and enjoying a red wine or two. In hindsight, there wasn't much "chilling" going on and an air conditioner on most nights would have been very handy. Oh well, the joys of camping.

Our fickle climate has not been kind for a number of our members with heat waves plus fires impacting the South of the country, floods hitting the Far North, and drought plus blue-green algal blooms in lots of places in between. Rest assured we are thinking of all our Members during these difficult times. Keep in mind that we have access to over 4,000 members Australia wide with considerable operational expertise. We are only a phone call away if anyone needs help at any time.

After advertising and interviewing for our Project Officer vacancy in late 2018, our preferred candidate decided not to take up the position for personal reasons. We have recommenced the recruitment process with applications closing on 1 March 2019. An excellent field of candidates have applied for the position and interviews will be undertaken in Mid-March. We look forward to announcing who our newest staff member will be in due course. Coming up to the start of the conferences the new person will have plenty to do.

A big thank you is extended to all the Members who nominated for a position on one of WIOA's five Advisory Committees. The new look Advisory Committees held their inaugural meetings in late November 2018 and all of them are planning a range of activities and services for the benefit of all Members in 2019. We hope that all Members will take the opportunity to participate when something is staged in your area.

Planning for the 2019 WIOA conferences is proceeding full steam ahead. The technical program for the NSW conference in orange in April is full of interesting presentations from experienced operations staff and there is a wide range of Councils represented in the program. Delegate and visitor registrations are currently being accepted, with the program and registration forms available from the website. Along with the Best Tasting Tap Water in NSW/ACT competition, the first staging of the Mains Tapping competition in NSW will also be held at the Orange conference. We would like to encourage as many organisations as possible to enter a team.

Good luck is also extended to the team from Wannon Water in Victoria, winners of the 2018 Best Tasting Tap Water in Australia competition. They have a couple of staff heading off to Berkeley Springs in the USA, with a sample of the Hamilton WTP's finest drop in tow, to represent Australia in the International Water Taste Test in late February.

The Call for Papers for the Queensland conference in Bundaberg in June has closed and we are still seeking more abstracts from operators in the poster category.

With the updates to the Diploma in the national Water Training Package recently endorsed, the review of the Certificate II & III qualifications, along with each of the units of competence, is now under way. Being co-ordinated through Australian Industry Standards, a number of WIOA members are actively involved in the Technical Advisory Committee (TAC) that is reviewing all the material. If you would like to provide any input into the review of the qualification or any of the individual units, feel free to pass your information on to us and we'll make sure it is considered by the TAC.

Our staff have been busy producing the 2018 Annual Review which was recently distributed to Members. We think the Review provides an excellent snapshot of our organisation and the ever expanding suite of activities that WIOA and our members are engaged in. It also provides the opportunity to celebrate the achievements of many of our members. We hope you will enjoy reading it.

As we did in 2018, and in the interests of controlling our environmental footprint, we have not mailed a hard copy to every member. For those who received the email version of the Review, printed copies are available if you would like one. Just contact the office and we'll mail one out to you.

Finally, those members yet to pay their 2019 fees would have received a reminder in the mail recently. Anyone not paid by the end of February will be removed from the member database, so please make sure you pay promptly.

Until next time,

George Wall
WIOA Managing Director

OH THE SERENITY

Sunset on the Murray River

PROFILE OF A MEMBER

Name: Steve Muir

Position: Site Engineer

Employer & Location: Allwater JV (Broadspectrum), Glenelg WWTP

How long have you worked in the water industry and what attracted you to it?

10 years in a variety of roles covering Laboratory Analytics, Water Quality, Staff Communications and Wastewater & Reuse Operations.

How could you not be attracted to it?

Between all the operational avenues the water Industry offers: water treatment, distribution, networks, wastewater, recycled systems and the functional support to the side there is always plenty of room to grow and learn.

What do you enjoy most about your job?

I love the adrenaline of frontline operations, problem solving under pressure, working with a dedicated team of professionals to get the most out of our plant. Overall though, I'm an environmentalist at heart and nothing is more rewarding than knowing that the better the plant performs the better it is for the environment.

What are the major challenges in your current role?

Capital upgrades: Glenelg WWTP was originally constructed in 1904, it has seen so many upgrades over the years it is a bit of a Frankenstein mish mash of new and retrofitted plants and assets. Most individual steps in the process are either currently undergoing major upgrades or have them scheduled in the short-term future. Coordinating these works in a way to minimise process disruptions can be challenging and at times frustrating.

How long have you been a WIOA member? (and your involvement)

4-5 years, and I have just become a committee member of the WIOA South Australian Advisory Committee.

How do you relax?

At work: Every day I make time for a plant walkaround, aside from keeping my finger on the pulse of the plant I find this also helps to form clarity on my thoughts and projects.

At home: Chasing my kid around sometimes works, sometimes makes it worse. After a big day a couple of glasses of wine always works.

Where do you live and what's the best thing about it?

Adelaide has a lot of great features: wine-growing regions, beaches, Central Markets, it's also a great place to live to raise a young family. At a local scale, I live close to my work site. My last two jobs had some significant commuting times, so the thing I am enjoying a lot about it now is the fact that I can be at work or home in under 15 minutes.

Quick questions

Age: 38

Nickname: Stavros

Favourite TV show: Just finished watching "The Bodyguard" on Netflix, it was decent.

Favourite Movie: Conan the Barbarian or anything else with Arnold Schwarzenegger in it.

Favourite book: Wastewater Engineering Treatment & Resource Recovery – Fifth Edition. It has been sitting on my desk for months now, I plan to open it someday soon.

PASS

Problem Accepted - Solution Supplied

WIN A TRIP TO NEW ZEALAND

PASS (Problem Accepted Solution Supplied) Award

The PASS Award provides an opportunity for operational staff to share their in the field innovations and fixes to problems so that others in the water industry can benefit. It is a fantastic opportunity for members of WIOA to receive recognition for their innovation and efforts and lets us share the good ideas and innovations with other Members.

Applications will be accepted until 12 March 2019 with the winner announced at the NSW Conference in Orange. The prize for the winner is an all-expenses paid opportunity to join the WIOA contingent on the tour of NZ and to attend the WIOG operations conference to be held in Christchurch from 8 to 10 May 2019

All the entries, including the winner of the award, will be published in the PASS Award booklet that provides our members with useful tips on improving day to day work practices.

A site visit in Napier on the 2018 WIOA tour of New Zealand.

TASMANIAN OPERATORS RECOGNISED

OPERATOR OF THE YEAR

Rodney Inness received the WIOA Tasmanian Operator of the Year Award, sponsored by TasWater at the recent Interest Day held in Launceston. Rodney commenced his employment at Port Cygnet Council which then merged into the Huon Valley Council. During that time, he was responsible for 8 separate water treatment schemes.

Throughout this time Rodney had a number of challenges to ensure that treated water met quality requirements. He was able to continually get the best out of some outdated / aging infrastructure, meeting the relatively small budget allocated, and working in a Council that had no desire to replace or upgrade infrastructure.

Rodney was required to use his mechanical mind and initiative to keep the plants operating, often reconstructing infrastructure like dosing pumps using parts from old units laying about the place. It was a credit to Rodney that the plants continued to deliver safe drinking water to the customers.

Following the creation of Southern Water, funding was provided to enable improvements to be carried out throughout the Huon with the Huon Valley Regional Scheme being implemented. This saw Rodney take control of the second largest water supply system within Southern Tasmania. The new scheme saw the 8 plants reduce to 3 however, the associated new infrastructure and technology meant that Rodney needed to continue his professional development. He actively asked questions and requested training which enable him to make confident decisions in relation to the plants under his responsibility.

With his 35 years of experience, Rodney has been a huge asset to the business and using his wealth of knowledge has enabled him to intervene to prevent significant issues from occurring, Some examples include preventing water outside of CCP requirements entering the network, fault finding when there was the chance of the scheme running out of water and providing knowledge and scenarios which have enabled other parties within the business to identify and rectify problems.

Another feather in Rodney's cap has been the development of the younger operators. He has shown himself to be a good teacher and mentor and it is clearly evident he loves his role and the opportunity / responsibility of providing safe drinking water to not only TasWater customers, but also his family and friends.

Rodney inspecting the pumps at the WTP.

YOUNG OPERATOR OF THE YEAR

Bradley Housego was rewarded for his dedication when announced as the 2018 WIOA Tasmanian Young Operator of the Year.

Brad commenced his employment with TasWater as an apprentice plumber. He quickly showed great leadership potential and a willingness to learn. Brad's skills developed quickly and in his area of jurisdiction (Central Highlands) he was starved of opportunity to develop his plumbing skills due to the infrequent water system failures. Although this was a disadvantage to his plumbing apprenticeship, it was a great opportunity for him to develop in water treatment operations.

The Central Highlands group were responsible for some very old WTP's and out of date technology which required a lot of resource hours to ensure the quality of supplied water met parameters. Add to this the distance that the team were required to cover and there was a need for Brad to be able to operate and maintain a plant without supervision.

Brad was enrolled into and has completed his Certificate 3 in Water Treatment. He was fully engaged with each of the study modules and this has enabled him to put the theory behind the on the job practical tasks that he has been undertaking. In no time at all, Brad was deemed to be competent to run the WTP's without supervision, was placed on the on-call roster and was used on a daily basis to perform operations.

Brad's development and responsibilities increased after the retirement of the two older operators within the team. This then led to Brad having the most operations knowledge in the Central Highlands area. He quickly took ownership of the plants and again through his work ethic and the utilisation of the skills and knowledge that he acquired through his Certificate 3, he has continued to initiate change within the plants. This has allowed them to meet CCP's and water quality requirements under challenging circumstances due to their age and varying raw water quality.

His line manager noted that the improvement in skills and knowledge each time he returns to work after attending a training session is obvious. It is also pleasing that he is willing to challenge the status quo and some of the decisions that are being made from other areas within the business.

For winning their respective awards, TasWater has sponsored both Rodney and Brad to join the WIOA contingent on the tour to New Zealand in May 2019.

Bradley being presented the award by Sonia Green.

SOUTH AUSTRALIAN OPERATOR OF THE YEAR

Brad Alcorn from SA Water was announced as the winner of the 2018 South Australian Operator of the Year Award at the Mount Barker Interest Day in November.

Since SA Water took over Leigh Creek water and wastewater infrastructure in September 2016, Brad has been an amazing source of knowledge and information. Brad is responsible for the maintenance and operation of the water infrastructure and wastewater network and treatment plant within Leigh Creek and the surrounding towns Copley and Lyndhurst.

Prior to working with SA Water, whilst working with Flinders Power, Brad was not involved with the operation and maintenance of the wastewater treatment plant. However, he has taken on the new responsibility with a ferocious determination. As he was not familiar with the plant and a handover from the previous operator was not possible, Brad has learnt and continues to learn about the plant processes through constant observation, monitoring and recording. Brad reports his findings and learnings to other internal groups and helps us to understand the tricks and individual characteristics of the Leigh Creek WWTP.

Since taking on operational duties for the Leigh Creek WWTP, Brad has become interested in learning more about wastewater treatment processes and is keen to get as much exposure to other treatment plants as possible. He is always asking and willing to attend training and networking days to further his knowledge and contact base.

Brad Alcorn (L) with Lena Marchesan from TAFE SA.

Brad's enthusiasm and determination to get the job done makes him a huge asset to SA Water's operations team. He is always happy and willing to go above and beyond for SA Water and their customers.

For winning the award, Brad receives funding courtesy of sponsor TAFE SA to attend the 2019 WIOA operators tour to New Zealand.

TSIRC SYMPOSIUM

Torres Strait Island Regional Councils (TSIRC) Divisional Engineering Officers, Water Officers and representatives from neighbouring councils, attended a two-day Water Symposium hosted at Hammond Island in November 2018.

It was the first event of its kind, where water industry experts delivered information regarding the delivery of Safe, Healthy Drinking water to our communities. Mayor Fred Gela, CEO Bruce Ranga and COO Jan Pool also attended and provided information on the challenges faced and opportunities currently available.

The symposium delegates.

The event was kindly sponsored by Tropical Public Health Services Cairns. It is hoped that this event will become an annual event to continue to provide valuable information and networking opportunities for the TSIRC team and other neighbouring Councils.

The symposium delegates listening intently to the presentations.

Contributed by **Chris Blake**, Environmental Health Services - Tropical Public Health Services Cairns

INTEREST DAY IN PARKES

Parkes Shire Council was the host of a joint event organised through WIOA and the Centroc Operators Group. Held on 30th October 2018 at Parkes, home of the Dish and the Elvis Festival, the day was a great opportunity for operators to get together and share information as well as to inspect the newly completed Parkes Water Treatment Plant.

The day had more than 60 attendees and incorporated both a WIOA Interest Day as well as a special ceremony where the Certified Water Treatment Operator credentials were presented to 18 operators from the Centroc region.

It was a great day and was just reward for all the people who worked tirelessly behind the scenes to perform what some might say was a miracle, bringing the operators from 14 NSW Councils together.

The interest Day included a number of very interesting presentations including Graeme Bayliss from Parkes SC who spoke about the Parkes WTP & STP upgrade projects. Chris Evans from Detection Services spoke about a whole range of innovative technologies used in the water main condition assessment and management fields, as well as the No-Des technology which will be in high demand if the drought continues. The video of the "liquid" leak plug was amazing to see.

Chris Evans presenting to the delegates.

Jeff Parsonage, President of the Backflow Association of Victoria gave an overview of the design, installation and hydraulics of backflow prevention devices and showed some warts and all photos of dodgy installations and issues. Final presenter was George Wall who gave an update on WIOA activities and presented the framed documents to all the Certified operators.

Following a BBQ lunch we then went off for site tours of either the new WTP or the new STP which were built simultaneously by the Parkes Shire Council. They took a different approach than the norm and included their operators from the planning right through to the commissioning stages.

The WTP has a DAF system with a maximum flow of 16 ML/day and the STP is an IDEA system (EP 15,000) with maximum inflow of 300 L/s and a reuse drought proof system for irrigation purposes. The combined budget was around $72 M.

We would like to thank all the organisers, WIOA, North Coast TAFE, Water Mangers, HR staff, Supervisors and of course the Operators who participated a special thanks to Murray Thompson who supplied solid advice and all the training.

I could not finish without a big thanks to the ladies from CWUA Meredith, Carolyn and Kate who made all this possible and have already started work on the Wastewater certification process.

All the Certified Operators.

Contributed by **Paul Gregg**, Chair Centroc Operators Group.

WOW (WOMEN OF WATER) BREAKFASTS

WIOA with the support of Hanna Instruments will be conducting networking breakfasts for women attendees at WIOA conferences on the Wednesday of conference week in 2019.

The breakfasts are an opportunity for women from different organisations to meet up prior to the event and have the chance to meet conference companions. This will assist everyone in feeling valued, respected and comfortable to contribute at the event. We believe it is a great opportunity to connect and be inspired by like-minded women in the water industry and to broaden working networks, while having a bit of fun along the way.

The first WOW breakfast will be held on Wednesday 3 April from 7.00am to 8.20am at the Nile Street Café, 49 Nile Street, Orange.

In parallel to this event there is also a similar opportunity for the men attending the NSW conference with Cadia hosting a Big Blokes Breakfast at the same time at the Cadia Depo, 2-4 Elwin Drive, Orange.

The breakfasts are optional and importantly, are free to attend with prior registration.

LAUNCESTON INTEREST DAY

The WIOA Tasmanian Advisory Committee held a Wastewater Interest Day on 14 November, 2018 at the Ti Tree Bend Sewage Treatment Plant in Launceston. The day was attended by over 30 people from across the state including operators, engineers, scientists and managers. It included the presentation of the WIOA Tasmanian Operator of the Year and Young Operator of the Year awards, sponsored by ***TasWater***.

The focus of the day centred on wastewater activities with a number of excellent presentations. First up was TasWater's Jason Barnett & Bardia Solati who spoke about how the sewerage optimisation team, working closely with the operators, have produced practical and effective results with the improvement of effluent compliance utilising Operational and Critical Control Points (OCP and CCP's). Rennie Brown (TasWater) spoke about the Ti Tree bend Biosolids upgrade project and how effective stakeholder management and utilising the local knowledge of the Service Delivery operators can make for a smooth project with operator ownership and lasting results.

Michael Romer from Calix, the Corporate sponsors of the day, showcased some case studies where efficient chemical dosing using their Acti-Mag product (Magnesium Hydroxide) have achieved multiple benefits. These included odour, corrosion and network FOG buildup control, Phosphorus removal and the resultant reductions in STP alum doses along with multiple other benefits.

Michael Romer and Glenn Alford from Calix.

Butch Towns (Coordinator of the Plant) gave a talk on his version of how stakeholder management was delivered from the above projects and surprisingly he was positive about the experience and the relationship with the project leaders. It's amazing what working together in a practical way can achieve! After a hearty lunch, Butch took us all on a tour of the plant. All up a great day was enjoyed by all!

Butch Towns describing the inlet screens.

HOW DO WE VALUE WORK?

The Workplace Gender Equality Agency (WGEA) is an Australian Government agency charged with promoting and improving gender equality in Australian workplaces. The Agency's vision is for women and men to be equally represented, valued and rewarded in the workplace.

Over four million employees across Australia are covered, which accounts for more than 40% of employees in Australia. Findings from the full dataset were released in November 2018. The report indicted:

- Strong growth in employer action on gender equality over five years
- Gender pay gap has declined but men earn 21.3% more than women, on average
- Steady increase in women in management and leadership roles.

Water and Waste Services are included in the data with the Electricity and Gas industries. The report showed that while women make up 24.8% of the workforce for these industries only 22.9% are employed in management positions.

Across all of Australia, men still take home $25,717 a year more than women on average. For our industry the difference in average total remuneration is $22,633 with a difference in average base salary of $12,661 or 11.4%

2013-14	2014-15	2015-16	2016-17	2017-18
19.3%	21.5%	20.0%	18.7%	16.1%

Gender pay gap in favour of men, for the Electricity, Gas, Water and Waste Services

Base salary GPG (%)	11.4%
Difference in average base salary	$22,633
Total remuneration GPG (%)	$12,661
Difference in average total remuneration	16.1%

Pay gaps by industry by the difference in average total remuneration ($)

Pay is an important part of all work, but in many instances there are a number of other support programs that allow individuals to find a work life balance that can make for a rewarding career.

Encouragingly, Electricity, Gas, Water and Waste Services organisations are highly performing and taking action on a number of fronts with high proportion of organisations with a formal policy and/or strategy on :

- Flexible working arrangements (87.0%)
- Parental leave and support for caring (71.7%)
- Support employees experiencing domestic violence (63.0%)

For more information on the Workplace Gender Equality Agency visit their website: https://www.wgea.gov.au

JUNIOR POO CREW

It's hard to believe, but I've now accumulated more than two decades working in the water industry and I'm still loving it! Time flies when you're having fun, especially when your day-to-day tasks are more rich and diverse than you could have ever imagined.

My team looks after 15 sewage treatment plants spread from Noosa in the north to Redcliffe in the south and a 5300 square kilometre western arc between those points. There's an additional two STPs in our fleet that are contract operated.

Sewage treatment has certainly evolved over the decades; from operating Imhoff tanks preceding biological trickle filters with maybe a humus tank, to highly sophisticated, fully-automated membrane bioreactors.

My role has also evolved – strikingly so! I've gone from working behind the scenes in a technical and operational sense to taking part in some very public activities like appearing in Totally Wild TV segments, speaking at children's environmental conferences and filming Junior Poo Crew videos with 5 & 6 year-olds.

James and the Junior Poo Crew.

Customers are our community. They are at the heart of everything we do. At Unitywater, we're always striving to serve and connect with our community in ways that they value and enjoy.

Standing in front of a video camera is not a typical day for me, but it is great fun! I'm humbled to be involved in activities that educate, entertain and raise awareness of sustainable sewage treatment.

To me, it deepens the pride I have in what the treatment team does every minute of the day. Plus, I just love interacting with children. They are so funny, and they often teach me a thing or two.

James and some World Toilet Day heroes.

I've always advocated that the Treatment Plant team is involved in quite a noble profession that we should all collectively be proud of, protecting community health and the environment.

I encourage us all to maintain good networks and continue to collaborate wherever possible so collectively as an industry we're able to share great ideas and help each other out.

James educating school children about sewage treatment.

Contributed by **James Castle**, from Unitywater

QUEENSLAND AWA REGIONAL SERVICE AWARD

WIOA congratulates the Queensland Water Regional Alliances (QWRAP) Program Manager, Rob Fearon who received well deserved recognition for his many years of service to the water sector in Queensland, taking out the AWA Regional Service Award.

Starting with ***qldwater*** in 2006 as CEO and now Director, Innovation Partnerships, Rob's enthusiasm for promoting and developing the industry are well known and demonstrated by his support for programs and projects which ultimately improve the capacity of ***qldwater*** members. His strategic foresight, technical understanding, and policy and government experience are core to the success of the Queensland Water Directorate. Rob was keen to share the success with the team, and key stakeholders including WIOA, technical reference groups, ***qldwater*** members and the LGAG.

Rob Fearon with the award.

MOUNT BARKER INTEREST DAY

The WIOA SA Advisory Committee held it's final event for 2018 in November; a Wastewater Interest Day at SA Water's Mt Barker workshop facility.

The assembled guests heard a number of presentations to gain insight into recent activities in wastewater operations. Shane Wigley from KBR provided an overview of the process which was used to develop the solution for the new Murray Bridge WWTP and pumping system which is currently under construction.

Dan Squire gave an overview of the Hahndorf WWTP inlet works upgrade and provided an operator's perspective on what worked well and what didn't on this installation. Thomas Coetzer from Mt Barker Council provided a run through of the proposed upgraded WWTP for the town of Mt Barker and the complexities which need to be taken into account for such a rapidly expanding city with limited treated wastewater disposal options.

Ron Bergmeier from Bergmeier Environmental sponsored the day and gave an incredible warts-and-all view of lagoon dewatering which helped delegates understand the best way to go about scoping and actually carrying out lagoon dewatering on their sites.

Dan Squires presents at the day in Mount Barker.

Following the presentations delegates made their way to the Mt Barker WWTP for a site tour which was hosted by Mark Millington from Mount Barker Council and included the existing aerated lagoons, actiflo and microfiltration units, and an understanding of how the system is required to operate together to manage peak flows.

Mount Barker tour.

The event also presented the opportunity to award the SA Operator of the Year award which is sponsored by TafeSA. The award this year went to Brad Alcorn from SA Water who operates in Leigh Creek in the state's far remote north.

Contributed by **Robran Cock**, WIOA SA Advisory Committee Chair.

WERRIBEE INTEREST DAY

In November 2018, the Victorian Advisory Committee in conjunction with Melbourne Water held a special Interest day at the Western Treatment Plant to focus on water re-use and biosolids.

Rob French carried out an induction/introduction to the plant followed by Dee Orgill who ran through the history of the plant. In 1897 the plant, then known as the farm, was established utilising land filtration as the method of treatment in three week cycles.

In the early 1930's grass filtration was adopted with a pre-treatment system to remove a lot of the solids before application. The filtered run off was carried by drains to the bay.

Today all of the sewage is treated in lagoons following a $160 million upgrade undertaken in 2004 to remove nitrogen, producing a high quality recycled water that is used on and off site. The plant and surrounding areas have also been declared a sanctuary and is RAMSAR listed.

Dee teamed up with Ravindran Appathurai for some very informative presentations on the plant's sludge processing and biosolids production, drying and usage, along with irrigation and management of the re-use water produced on site.

Rod Curtis discussed the biosolid production and drying undertaken at Western Water plus the obligations of the drying contractor along with the benefits for both parties by producing a dryer sludge from their plant.

Dee Orgill from Melbourne Water presenting.

Looking over the UV system.

Stuart Harris from Goulburn Valley Water presented on reuse management of their effluent. Stuart discussed the types of irrigation and customers that use the resource, along with the planning required to get the water on to the land.

Following lunch, it was on to a bus to take a tour of the plant. I knew it was big but I wasn't prepared for just how big it really is. It's massive, with its own road system, paddocks, cattle and continual works to optimise and improve the treatment. We stopped off along the tour to see the UV & chlorine dosing systems used to treat the reuse water before driving around the lagoons and biosolid storage areas.

A big thank you to Melbourne Water for coordinating the day and all our presenters.

Contributed by **Anthony Evans**, WIOA Victorian Advisory Committee Chair.

TASTE TESTS KEEP ON GIVING

WIOA's – Ixom Best Tasting Tap Water competitions are conducted around the country and have become a wonderful celebration for the industry, the water provider businesses, treatment teams and most importantly the operators themselves.

Yes, we do celebrate the victors and give kudos to them, but the competitions have been embedded into WIOA events as a celebration and recognition for all the operational employees working diligently providing safe, quality drinking water for their communities.

Last year it was the Wannon Water team who after winning the Victorian title for the sample from the Hamilton WTP, took on the other state champions to become the provider of the Best Tasting Tap Water in Australia.

It is great to see their PR team is using the title to promote the district to potential businesses and celebrate the achievement through signage on vehicles and offices.

We hear on the grapevine that a couple of their staff (who just happen to be WIOA members) are even making the trip to the USA to support and enter the Australian representative in the International water tasting competition.

WIOA will again be conducting Taste Tests around the country and encourage all providers to get involved by submitting a sample for one of the competitions.

You never know who may take out the titles in 2019 and have similar bragging rights across the water industry, or where the competition may take you.

VALE MARK CLOSTER

Western Water in Victoria is mourning the loss of Mark Closter, who passed away in January 2019 following a motor cycle accident.

Mark was the Team Leader at the Merrimu Water Filtration Plant. He was also Western Water's longest-serving employee, commencing during the former Water Board days almost 37 years ago.

Mark Closter.

Mark was a good supporter of WIOA having been a member for more than 10 years. He was awarded the Victorian Operator of the Year in 1990, an achievement both he and his family was very proud of.

Our thoughts are with Mark's son, Ryan Closter, who is a plant operator at the Melton Recycled Water Plant, along with Mark's other family members and friends at this sad time.

He will be greatly missed by his colleagues, Western Water, WIOA and the industry he helped shape and drive.

WIOA FOOTY TIPPING WILL BE BACK IN 2019

tipping.nrl.com
CODE = YFCXE65L

tipping.afl.com
CODE = ZJETC4HV

AFL and NRL competitions return in 2019

NABIAC INLAND DUNE AQUIFER WATER SUPPLY SYSTEM

The $34 million Nabiac Inland Dune Aquifer Water Supply System project is a long term goal of MidCoast Council Water Services and aims to provide the community with water security into the future. It will provide an alternative to the Manning Water Supply Scheme, currently providing water to approximately 70,000 people in the Manning and Great Lakes areas.

The Nabiac Inland Dune Aquifer is located within a generally flat to low lying inland dune containing wetlands in the east and elevated dunes in the west. The aquifer is positioned 6km south east of Nabiac and approximately 4km northwest of Tuncurry and has a total catchment surface area extending over 44km^2.

The Nabiac scheme will help to reduce the volume of water extracted from the Manning River, which will be subject to stricter environmental flow rules in the near future.

The Nabiac System is centered on the extraction of groundwater from the Nabiac Inland Dune Aquifer. The scheme includes the following major components:

- The Nabiac groundwater extraction borefield including 14 groundwater bores
- The Nabiac Water Treatment Plant with capacity to treat up to 10 million litres of water per day
- The Darawank Reservoir and Pump Station. Over 16km of pipelines, electrical and telecommunication services will link these components to the existing Manning District Water Supply Scheme.

Nabiac Plant.

Raw Water Aquifer

Recharge of the aquifer occurs by direct rainfall infiltration and storm water runoff from Bundacree Creek in the west of the catchment. Based on a surface area of 44.7 km2, the shallow aquifer contains about 22,000 ML, the indurated sand layer contains about 20,000 ML and the deep aquifer contains about 154,000 ML.

The preservation of groundwater-dependent ecosystems associated with the Nabiac aquifer will be achieved through the adoption of extraction limits determined by rainfall conditions in the previous 6 months.

Raw Water Quantity

The maximum instantaneous supply available if all the stage 1 bores operate together at their design flow rate is 164 L/sec. In the future, and following confirmation of the sustainable yield from the aquifer, the intention is to increase the capacity of the system through equipping additional bores which will take the maximum instantaneous supply up to ~300 L/sec.

Process Flow

Raw water is supplied to the WTP from a network of bores. When the water enters the WTP site the water will be dosed with hydrated lime. The lime dosed raw water then travels to the top of a forced draft packed tower designed to remove greater than 90% of the free CO2.

The water from the packed tower will fall into the first compartment of a pre-treatment tank which allows time for oxidation of soluble metals, coagulation and flocculation as well as buffering the raw water flows.

The Pre-treatment tank will allow for the addition of chlorine to aid in the oxidation of soluble metals and remaining H2S prior to membrane filtration.

The raw water in the pre-treatment tank will be drawn out by membrane feed pumps and pushed through self-backwashing auto strainers prior to membrane filtration. The filtered water will be chlorinated and fluoridated with chlorine contact time being achieved through maintaining minimum volume of 1.14ML in the treated water storage tank and a chlorine level of at least 1mg/L.

Treated Water Storage and Distribution

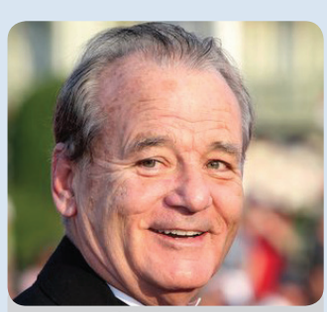
Water is stored in a single 7 ML (operating Volume) reservoir (TWST) with the intention that the WTP aims to keep the reservoir full so that transfers can be made as required at rates above that which the WTP operates to take advantage of off-peak power tariffs. The water from Nabiac WTP is either pumped (Duty/Duty/Standby pump set), or flows by gravity (low rates only) to the Darawank Reservoir which has a nominal storage of 2 ML.

Contributed by **Craig Stone**, **Josh McLenaghan** and **Lindsay Walsh** from MidCoast Council

WIOA LOOK-ALIKES

As if this edition hasn't got enough pictures of Wannon Water in it, we thought we'd share the resemblance between John Harris (minus the glasses of course) and US actor Bill Murray.

John Harris
Wannon Water & WIOA Life Member



Billy Murray
Actor

If you know of a WIOA member who has a look-alike send us a photo.

wannonWATER

BIRDS EYE VIEW - Facilities Members Operate

Hamilton Water Treatment Plant

Hartwichs Reservoir, north of Hamilton, with the source of the water, the Grampians National Park in the background.

1 Raw water basins
2 Raw water pump station
3 DAFF
4 Alum tanks
5 Lime silo
6 Fluoride
7 Backwash water
8 Drying beds
9 Clear water storage
10 Solar system 100 kW
11 Hartwichs Reservoir

WIOA
2018
Hamilton
VICTORIA
AUSTRALIA'S BEST TASTING TAP WATER

HEPATITIS A OUTBREAK

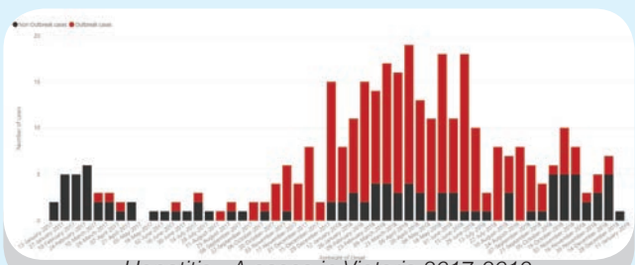
"Hepatitis A – Are You Vaccinated and is your Vaccination Still Protecting You?

A recent newspaper headline titled "Victoria in worst Hep A outbreak since modern sewerage" highlighted that a preventable infection which turns sufferers yellow is making an "unusual" resurgence in Victoria, with health authorities reporting the state's worst outbreak of hepatitis A, since the introduction of modern sewerage systems.

In recent times the cases of the highly contagious liver infection have typically been rare with only 30 to 80 infections reported across the State of Victoria each year.

However, since March 2017 there has been an ongoing outbreak of hepatitis A in Victoria resulting in the largest number of notified cases (273) in a 12 month period for almost a decade.

The table below from Victorian Health Department's website provides a graphical representation of this most recent outbreak.



Hepatitis - A cases in Victoria 2017-2019

Two (2) people have died in the local outbreak, which is linked to an outbreak in Europe that in recent years has affected hundreds of people.

Victoria Health authorities are confident that local infections are now slowing, but have again reinforced the importance of **vaccinations for people at risk of contracting this disease which includes all sewage workers** (NHMRC, The Australian Immunisation Handbook 2008 9th Edition).

It is therefore very important that all sewage workers are vaccinated, the vaccination is tested for effectiveness and the use of correct PPE together with good hygiene practices are implemented at all times when working with raw sewage.

Hepatitis A is a contagious disease which usually spreads through the ingestion of the virus (faecal-oral route) from food, drink or objects contaminated by small amounts of faeces from an infected person. It affects the liver, with symptoms including abdominal pain and dark urine. Hepatitis A can affect people of all ages, but can be prevented with vaccination.

There are currently five (5) hepatitis A vaccines and two combined hepatitis A/hepatitis B vaccines registered for use in Australia. The vaccines are made from inactive hepatitis A virus. The body reacts with the inactive virus to produce antibodies that protect against infection. Clinical trials have shown that the hepatitis A vaccine is effective in preventing infection in about 95% of people.

Protection begins within 14-21 days after the first dose of the vaccine. A second dose of vaccine is required for long-term protection. **The duration of immunity following vaccination is not certain, however, it appears to be at least 10 years, probably longer.** (NHMRC,The Australian Immunisation Handbook 2008 9th Edition).

Hepatitis A, B and C are all different diseases, so they have different symptoms and different treatments. The hepatitis A vaccine does not protect you from hepatitis B or hepatitis C.

Summary

- **Hepatitis A & B are both viral infections of the liver,**
- **They are spread through the faecal-oral route or when infected faecal matter enters the mouth.**
- **Sewage workers should be vaccinated for both hepatitis A & B.**
- **A blood test should be completed very ten (10) years to confirm the presence of antibodies or need for re-vaccination.**
- **Vaccination against hepatitis A & B is available, and**
- **PPE and good hygiene practices are also important controls to help minimise the risk of infection by sewage workers.**

This story has been prompted by both the recent outbreak of Hepatitis A in Victoria and also high pressure water jetting training completed for sewage workers, which has highlighted that many workers were not aware that vaccinations should be confirmed with a simple blood test.

Contributed by **Murray Thompson**, MTWS.

FNQ CHARITY DONATION

Using a rotating system around the various Far North Queensland Councils, it was Cassowary Coast Regional Council's turn to nominate the charity to receive the proceeds from the TRILITY sponsored 2018 FNQ Charity Bowls Day.

They chose the Cassowary Coast Community Christmas Appeal as the recipient of the $1,300 donation. The appeal raises much needed funding for community organisations and all funds raised go to support those in need.

Presenting the FNQ-Christmas Appeal Cheque to the Mayor.

NEW PLANT MEETS CANUNGRA'S FUTURE THIRST

Canungra's new Water Treatment Plant (WTP) is fully operational, producing almost four times more drinking water for the local community. The $4 million plant will cater for future increased water demand for the growing Canungra community and has been built in line with Seqwater's 30-year water plan for South East Queensland.

The project complements Seqwater's plans to connect Beaudesert and Wyaralong Dam to the SEQ Water Grid for the first time to ensure the future water supply security for the Scenic Rim. After weeks of commissioning and performance testing, the new WTP was connected to the reticulation network in September 2018.

Scenic Rim Regional Council Mayor Greg Christensen (L) joined Seqwater CEO Neil Brennan to officially open the new treatment plant.

The original Canungra WTP was commissioned in 1975 with some upgrades and additional works carried out in 1982 along with addition of a Fluoride dosing system in 2009. At the time of decommissioning, the WTP was capable of treating approx. 0.5 ML per day depending on the raw water quality.

The Raw Water is a run of river supply with an estimated storage of 1 ML. Raw water Turbidity averages at 7 NTU peaking well in excess of 100 NTU in rain events. At this level, the old treatment plant would be turned off and we would have to wait for the creek to settle.

The new Canungra WTP is capable of treating raw water with turbidity up to 1000 NTU, at a reduced flow rate, and under "normal" raw water conditions can treat 21.3 L/S which equates to 1.53 ML/D with onsite storage of 310kL.

The on-site storage provides an extra 250 kL of treated water capacity, available for transfer to Appel St reservoir when required. Previously, with limited storage and in times of dirty water from rain events or maintenance issues, at times it could take days to fill up the Appel St reservoir again if the demand was up.

A brief overview of the treatment process, screening and pumping is undertaken at the raw water inlet structure, with 2 submersible pumps that are presently run in a duty/standby arrangement. From there Aluminum Chlorohydrate (ACH) is dosed. This is a change from the previous coagulant and is recommend with the use of the membrane filtration. The use of ACH also provides a broader dose range which is a great benefit when treating ever changing creek water.

The dosed water is pumped into the inlet structure and proceeds through the flocculation and clarification process where a large percentage of the solids, heavy metals and organics are removed prior to filtration with the addition of pre-chlorination after clarification.

From this point the fun starts with ultra-membrane filtration. There are 2 membrane filtration trains, again operated in a duty stand/by arrangement which filter the clarified water. Ancillary systems include backwashing, chemical cleaning and neutralisation and membrane testing to verify the integrity of the membranes.

Membranes at the Canungra WTP.

After filtration, sodium hydroxide is dosed for pH adjustment, and sodium hypochlorite for disinfection and sodium fluoride are added.

From there, the water is pumped from the onsite storage to the Appel Street reservoir on a demand basis as determined by the reservoir level. The Canungra water supply network is a stand-alone water supply system providing water to the township of Canungra and residential surrounds, via the Queensland Urban Utilities owned reservoirs at Appel Street and Maurita Crescent.

For more information about Seqwater's 30-year water plan – the SEQ Water Security Program, please visit www.seqwater.com.au

Contributed by **Ian Cuthbertson** and **Elle Price** from Seqwater.

NSW Main Tapping Competition

Following successful Queensland, FNQ and Victorian Live Main Tapping competitions held in 2018, we are thrilled to announce the WIOA NSW Main Tapping Competition will be held at this year's NSW conference in Orange.

The winning team will have the opportunity to nominate a charity to receive a $1,000 donation, courtesy of the event sponsor Reece Civil.

Register your team by email before Thursday 21 March to:
Craig Mathisen at WIOA **craig@wioa.org.au**

More information can be found at:
wioaconferences.org.au/nsw-2019/nsw-main-tapping-competition

DEALING WITH THE 2019 HEAT WAVE

What a start to 2019, with Victoria, NSW and South Australia hit with some of the hottest temperatures ever recorded. The extreme heatwave across Northern Victoria and Southern NSW produced record high temperatures: 45.3°C in Albury-Wodonga the hottest day ever recorded on a record spanning over 30 years. With these record temperatures came problems with water supply, electrical equipment overheating, and staff heat stress working in these conditions to keep the water and sewer flowing. Here is our story on the actions and events that Albury City Council staff and our assets endured through these record high temperatures.

15th January 2019 – 44.5 °C

After a few days of temperatures in the 40's and no sign of relief we started to get some failures in sewer pump station switchboards. The VSD's were the first to fail, members of our electrical team took thermal guns around the sites and recorded temperatures in excess of 60°C ambient cabinet temperatures and electronic components 70°C. They immediately looked into ways to cool down the internals of the switchboards to get critical pumps running before any sewer spills or water supply issues occurred. Sites with minimal venting on cabinets had large meshed vents cut in, cooling fans were purchased and installed, spare VSD's were purchased for redundancy, gazebos were erected to stop the direct heat on switchboards, some switchboards were opened and continuously manned with a fan blowing on them, one of our critical water pump station switchboards was even given a hose down to drop the internal temperature. All this and we still haven't made it to the hottest day.

Gazebo over sewer pump station switchboard.

16th January 2019 – 45.3 °C (record temperature)

Extreme heat working conditions were a high risk to outdoor staff. To assist with heat stress, our staff bought and froze some Zooper Doopers for internal cooling and Sqwincher Sachets (electrolyte mix) to mix with water to combat dehydration. These remedies helped staff who reported times of cramping and exhaustion from the extreme heat. Outdoor staff changed their work start time to 6 am for the days in the 40's and prioritised the outdoor tasks to be completed before lunch. Work that could be done in the air-conditioned workshop was scheduled in the afternoon to eliminate the need for staff to be out in these extreme temperatures. All these small changes made a huge difference in combating heat stress. We are in the process of purchasing a deep freezer so outdoor staff can have continual access to ice to put into their drink bottles and eskys.

A second round with the thermal gun came with some good news, the remedial actions helped. The results were better. The hottest internal switchboard temperature now was down to 52°C inside. Council has generally rated their VSDs to 50°C, even though slightly over it was the worst one and the temperature had dropped a lot since the previous day even with the hotter ambient temperature.

Now we were facing other problems, the hotter the weather got, the more water our customers used. The residents of Albury nearly doubled their water use and were 42% above the average January total use. With this came strain on our water pump stations and reservoirs. Some customers were experiencing low water pressure and others with elevated blocks ran out of water during peak periods as the reservoir levels dropped below normal operating levels and water demands soared. This was a growing concern as the weather forecast wasn't predicting any cool changes and the maximum level in the water reservoir 28 was on a steady decline every day the heat wave continued, putting more households at risk of low or no water pressure. Our teams acted quickly and came up with a solution to put in a generator to run an additional pump so the water reservoir levels had a chance to replenish overnight, this plan worked and our water supply issues eased.

Generator installed to run another pump to keep up with the high demand for water.

Albury City Council are about to upgrade the Water Pump Station supplying water reservoir 28 and with new pipework already installed, this will allow larger pumps to maintain the reservoir's level in peak times in the future.

17th January 2019 – 42°C

The heating issues at our sewer pump station switch boards were now under control but they have moved on to our main Wastewater Treatment Plant. One of the clarifier drives decided it was too hot to run and tripped out at 71°C. Luckily, we had spare parts and this was quickly rectified by our Mech/ Elec staff.

Gazebo and fan to cool down switchboard for new booster pump set at the WWTP

23 January 2019 – 40.6°C

With only little reprieve from the heat it is back into the 40's yet again. Our heating issues continue. The air conditioner has now failed at our main sewer pump station in the middle of Albury CBD, and the electrical switch room was warming up fast. Luckily we had local suppliers that sensed our urgency and dropped everything to assist.

To rectify heating issues at our raw water pump station switchboard, our electrical staff hired an air conditioner, and a 2500 L tank as we had no potable water available on site. Our fitters plumbed up a pump so we can run filtered water to the air conditioner for operation, and the tank was refilled with filtered water twice a week.

We then looked into options to purchase portable air conditioners as funnily enough, we were having trouble finding available air conditioners for hire. We did manage to hire one which we had to run a temporary water line to, to service the evaporative cooler.

New aircon in Raw water pump station switchboard room.

Post Event

Following these events, we have engaged a switchboard consultant to do an audit of our sites and to provide options to permanently fix the issues we experienced. We are in the process of upgrading the water pump station to ensure our reservoir levels can be sustained to alleviate water supply and pressure issues. We have checked all the VSDs in vulnerable sites and changed the fans in the majority of these drives that are of age. We are in the process of ensuring all our critical sites have adequate cooling for any future extreme temperature events.

Contributed by **Heidi Josipovic** and **Christopher Cornell** from Albury City Council

Waterview WWTP – Fan to cool down Inlet band screen switchboard.

NEW DEVELOPMENT IN THE FIGHT AGAINST FATBERGS

Water UK recently released a new official standard identifying which wet wipes can be flushed down toilets safely. Manufacturers of wipes will be able to feature an official water industry 'Fine to Flush' symbol on their packaging if they pass strict scientific tests.

This symbol will let consumers know that the products don't contain plastic and will break down in the sewer system instead of clogging up sewers and contributing to fatbergs which cause blockages and sewage overflows.

Fatbergs – mainly caused by a build-up of wet wipes, fats, oils and grease into a solid mass – have been increasing in frequency in recent years. These include a 250-metre long fatberg in Whitechapel in London in 2017 which weighed as much as nineteen elephants. There are also numerous Australian examples of enormous fatbergs.

In 2017 the biggest ever in-depth investigation of sewer blockages in the UK proved that wipes being flushed down toilets caused serious problems in the sewerage system. The project found that non-flushable wet wipes could make up around 93% of the material causing some sewer blockages. These wipes – which included a high proportion of baby wipes – are not designed to be flushed.

Commenting on the new 'Fine to Flush' standard Water UK Chief Executive Michael Roberts said: "This is an important step in the battle against blockages. We've all seen the impact of fatbergs recently, and we want to see fewer of them. Improving the environment is at the core of what the water industry does, and the new 'Fine to Flush' standard that we've created will make it easier for consumers to buy an environmentally-friendly product instead of one which clogs up drains and sewers."

Manufacturers can have their wipes tested by WRc, the Swindon-based independent technical experts who developed the specifications for flush-ability standards in conjunction with Water UK. If they pass the tests, the wipes manufacturers will receive the 'Fine to Flush' symbol from WRc.

Although there has been an increase in products being labeled 'Do Not Flush', there are many wipes on the market labeled 'Flushable' which do not break down quickly when they enter the sewer system, and which would not pass the stringent tests which meet the standard to receive the 'Fine to Flush' symbol. The labeling of these products can cause confusion amongst consumers, increasing the problem of sewer blockages.

The technical name for 'Fine to Flush' is Water Industry Specification 4-02-06, and the details of the specification can be found on the Water UK website https://www.water.org.uk/

The Standards Australia WS-041 Committee has a working group looking at this same issue and WIOA is represented on this Committee by Darren Sharman from Goulburn Valley Water. We will provide an update from the Australian perspective in due course.

KONONGWOOTONG RESERVOIR PROJECT

Wannon Water, in conjunction with the Victorian Fisheries Authority and the Casterton Angling Club, held an open day for community members to view the recent development of the Konongwootong Reservoir and its new boating and fishing facilities.

The open day was held in October 2018 with plenty of interest from locals throughout the day.

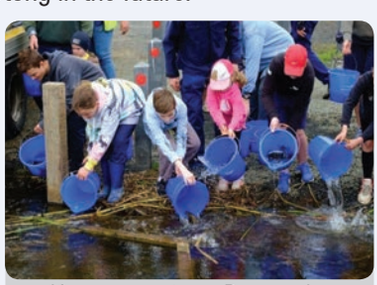
Casterton Angling Club held a fishing competition starting at 10am and closing at 1:30pm with prizes in four categories. They also held a fishing clinic to help introduce any non-anglers into the sport of fishing.

Konongwootong Reservoir.

Coleraine Lions Club supplied visitors with bacon, sausages and eggs for lunch as well as some nice healthy options of fruit.

The Victorian Fisheries Authority had a stand providing information to anglers on bag and size limits, and the prohibited use of specific fishing equipment. They also distributed plenty of giveaways on the day.

Up to 1,000 rainbow trout were released into the reservoir with the enthusiastic help of the many children present. This proved exciting for the onlookers as well as those who intend to fish at Konongwootong in the future.



Konongwootong Reservoir - releasing fish.

A total of $432,000 has been invested in the refurbishment of the reservoir, with the majority spent on the boat ramp facility and floating jetty/pontoon that allows easier access for anglers. Significant work has also been completed around tree clearing and walking track access.

Funding has come from the Victorian Government Recreational Fishing Grants ($232,000) and Wannon Water ($200,000).

Wannon Water has also committed to maintain the area into the future.

A quick rundown on the history of this reservoir:

The 1,920 ML reservoir was constructed in 1926 to supply water to the townships of Casterton and Coleraine. This continued until recent years when the towns were connected to the Tullich aquifer which has better quality and more reliable water. The reservoir is still available as a back-up to the Tullich borefields and also supplies more than 60 rural customers with a non-potable supply.

Konongwootong has significant Aboriginal cultural heritage values and is currently registered on the Victorian Aboriginal Heritage Register. The reservoir has been built at the site of the Fighting Water Holes Massacre which occurred in 1840.

In recognition of this, Wannon Water has established a Quiet Place at the reservoir that is designed to encourage informed and respectful contemplation by visitors.

Konongwootong Reservoir - commemorative plaque.

Konongwootong Reservoir is located 11 kilometres north of Coleraine in south-west Victoria.

Contributed by **Andrew Povey**, Wannon Water.

TASTING TRANSPARENCY

Swinburne University student Jordan Medic was awarded the Best Cinematographer Award at the Cineaesthesia Awards conducted by the Swinburne University Advanced Diploma of Screen and Media program.

Jordan was the Cinematographer for the documentary Tasting Transparency that was created in 2018 around the WIOA Victorian and National Best Tasting Tap Water competitions, following the Wannon Water sample from the Hamilton WTP to ultimate victory.

Jordan is a cinematographer who loves working across a range of genres from short films to documentaries and music videos. With aspirations of working on feature films Jordan aims to collaborate with inspiring storytellers, translating the story into compelling moving imagery.

Tasting Transparency was directed by Jack Morrow, produced by Lucy Demuth, cinematography by Jordan Medic and was edited by Chloe White. Other students who worked on the project include Jayden De Oliveria, Alex Cann and Hamish Viney.

WIOA intends to hold a public screening of the documentary in 2019 after an embargo is lifted as Tasting Transparency goes through judging for several other film and television awards.

John Harris (Wannon Water), Craig Mathisen (WIOA), Jordan Medic, Lucy Demuth and Jack Morrow (Swiburn University) and Ian Bail (Wannon Water) celebrate the Best Cinematographer Award.

BOM AND CSIRO STATE OF THE CLIMATE

The Bureau of Meteorology and CSIRO have produced their fifth, biennial State of the Climate report that draws on the latest monitoring, science and projection information to describe variability and changes in Australia's climate. Observations and climate modeling paint a consistent picture of ongoing, long term climate change interacting with underlying natural variability.

These changes affect many Australians, particularly the changes associated with increases in the frequency or intensity of heat events, fire weather and drought. Australia will need to plan for and adapt to some level of climate change. The science underpinning this report will help inform a range of economic, environmental and social decision-making and local vulnerability assessments, by government, industry and communities.

Key points for Australia

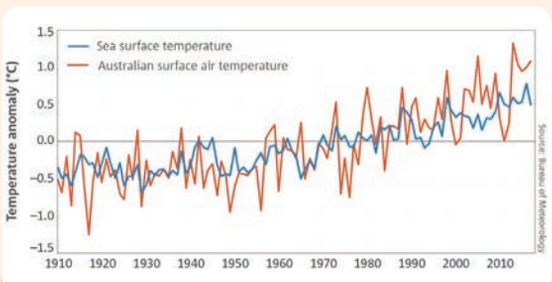
- Australia's climate has warmed just over 1 °C since 1910 leading to an increase in the frequency of extreme heat events.
- Oceans around Australia have warmed by around 1 °C since 1910, contributing to longer and more frequent marine heatwave.
- Sea levels are rising around Australia, increasing the risk of inundation.
- The oceans around Australia are acidifying (the pH is decreasing).
- April to October rainfall has decreased in the southwest of Australia. Across the same region May–July rainfall has seen the largest decrease, by around 20 per cent since 1970.
- There has been a decline of around 11 per cent in April–October rainfall in the southeast of Australia since the late 1990s.
- Rainfall has increased across parts of northern Australia since the 1970s.
- Streamflow has decreased across southern Australia. Streamflow has increased in northern Australia where rainfall has increased.
- There has been a long-term increase in extreme fire weather, and in the length of the fire season, across large parts of Australia.

The future

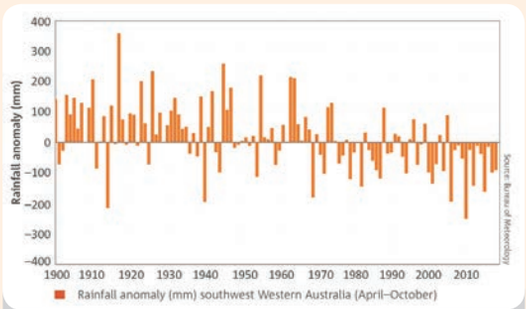
Australia is projected to experience:

- Further increases in sea and air temperatures, with more hot days and marine heatwave, and fewer cool extremes.
- Further sea level rise and ocean acidification.
- Decreases in rainfall across southern Australia with more time in drought, but an increase in intense heavy rainfall throughout Australia.

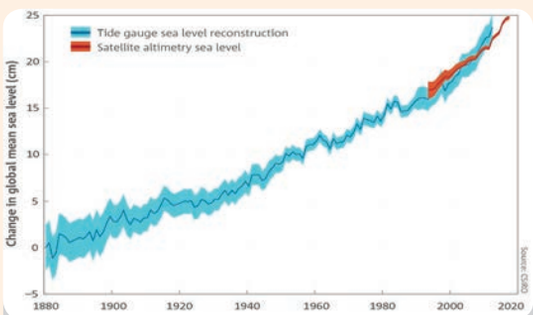
http://www.bom.gov.au/state-of-the-climate/



Sea surface temperature.



Rainfall anomaly.



Tide gauge sea level.

WIOA TALKS RETURN IN 2019

WIOA TALKS

The WIOA webinar series titled WIOA talks will return in 2019 featuring key industry issues and the latest trends and technologies, as well as general interest webinars on topics and issues that impact people and culture within water businesses.

The WIOA talks will be scheduled to run for a maximum of 1 hour and will include presentations and an opportunity for a Q&A session for participants via an online chat function. Kathy Northcott is assisting to get the 2019 program started.

The topic for the first WIOA Talk is a technical session titled: Nano, Micro, Macro! Understanding the risks and challenges of new and emerging contaminants. It is scheduled for 22 March 2019, the time, program, registration and further details will be available on the WIOA website.

The WIOA Talks will allow members from all over the country to hear the latest updates and share knowledge and experiences – and all from the comfort of their own desk! Using the Adobe Connect web conferencing software, WIOA Talks aim to provide members another way to access information and increased opportunities for collaboration.

For suggestions of future WIOA Talks topics and presentations, or to volunteer to give a presentation at an upcoming webinar, please contact **George** or **Craig** at WIOA.

FORSAYTH WTP UPGRADE

Aquatec Maxcon has successfully designed, constructed and commissioned the upgrade of the Forsayth Water Treatment Plant in Far North Queensland, delivering safe drinking water to the community.

The existing treatment plant was outdated, rundown and had numerous maintenance issues which required significant operator interventions and callouts. Regular breakdowns and poor process performance resulted in water quality concerns and frequently required trucking of potable water to the town during downtimes. In some instances, the small township was required to boil their drinking water due to health concerns.

Jar Testing at the site.

The $700k project included installation of a new potassium permanganate dosing system and a new lamella clarifier which was incorporated into the existing process. An existing flocculator tank was repurposed to be used as a PAC contact tank, some additional instrumentation was included and upgraded the control system of the existing plant with new sophisticated controls over the water quality and chemical dosing. The client was particularly impressed with changes made to the functionality of the existing DAF air saturator which was previously very inconsistent and prone to failures. MPA successfully transitioned the plant to an all new switchboard and PLC, while keeping shutdown durations within 6 hours so as to keep up the required water production.

This has been a great achievement and thanks to the teams involved in delivering this project for all of their hard work. Special thanks to Ben Johanson, James Alback, Mohsen Mobarghei, Jessica Buchanan as well as the Electrical, Mechanical, Install & Civil teams.

The refurbished Forsayth WTP.

Contributed by **Justine Parker**, Aquatec Maxcon

HELPING COUNCILS TO IMPROVE DRINKING WATER MANAGEMENT IN REGIONAL NSW

Providing safe drinking water to residents in regional NSW in a cost effective and sustainable way provides challenges for small local Councils. With limited specialist resources, how do they ensure that they are implementing the requirements of their Drinking Water Quality Management Plans (DWMPs)?

All local Councils in NSW are required to have a quality assurance program in place (usually referred to as a DWMP) as required by the NSW Public Health Act and Regulations. These plans must meet the 12 Elements of the Framework for Management of Drinking Water Quality (as set out in the Australian Drinking Water Guidelines - ADWG).

NSW Water Quality

A number of Councils in the central and north west of NSW (previously known as the Lower Macquarie Water Utilities Alliance) pooled together their resources and sought support from water treatment design and operations specialists, Hunter H2O, to facilitate regular drinking water quality meetings.

During the meetings, the team reviewed the plant performance data and in a number of cases this focus resulted in more timely responses to water quality issues, better root cause analysis, and improved performance through, for example, chemical optimisation. Where improved performance has been sustained, Councils have been able to lower target, alert and critical control point (CCP) critical limits for important parameters such as turbidity to be more closely aligned to ADWG targets. In other cases, the regular review of water quality data has identified the need for process unit capacity investigations, upgrades to chemical dosing systems and potential future plant upgrade requirements.

These regular meetings, facilitated by Hunter H2O's Lisa Procter and Clara Laydon, proved to be a tangible way for Councils to practically integrate their DWMPs into the way they manage their catchment to tap water supply system on a daily basis. Collaboration between Council's operations team, technical experts and external stakeholders has resulted in knowledge transfer, operator upskilling, open communication and a more diligent approach to the management of drinking water quality.

Contributed by **Lisa Procter**, Hunter H2O

INCREASING EFFICIENCY WITHIN THE WASTEWATER INDUSTRY

Over time, wastewater companies have adopted different approaches to sludge treatment, but there is now a trend towards anaerobic digestion (AD) and away from incineration. This is largely attributed to efficiency improvements within the wastewater sector, renowned for its innovation, often setting the standard for efficiency within the AD industry.

Many of the original wastewater AD facilities are now looking to upgrade, switching from producing electricity to biomethane. However, small-scale improvements have been important in boosting the sector's energy output. Upgrading an existing plant is an ideal opportunity to maximise both energy production and overall greenhouse gas savings.

Heat exchangers improve efficiency

One of the easiest ways to improve efficiency is by recapturing heat. Heat exchangers have a lower heat requirement than tanks with heating jackets (up to half of that of some systems). In fact, a well designed heat exchanger system could recover and reuse 40% of the heat produced by a wastewater AD plant. But not all heat exchangers are created equal, and one size does not fit all. One range proving popular with wastewater operators is the DTI series from HRS, which is a corrugated double tube heat exchanger. The inner tube is corrugated to ensure improved heat transfer performance and resistance against tube wall fouling compared to smooth tube and dimple tube variants. This results in reduced maintenance periods. In addition, the tube in tube design permits the processing of fluids with particles or 'ragging' without any blockage, making it particularly suited to sewage AD plants where spiral type heat exchangers often cause huge headaches for operators.

The trend for sewage plants to add biomethane upgrading technology is increasing.

Having recovered this valuable heat, what are water companies doing with it? With a typical 1.5 MW wastewater AD plant producing as much as 40,000 tonnes of liquid digestate each year – bringing significant economic and logistical challenges associated with its storage and transportation – many operators are using their surplus heat to improve their digestate management systems. After all, if it is not concentrated, the volume and consistency of digestate can quickly become a costly bottleneck in plant efficiency.

Concentrated digestate is easier to manage

Using surplus heat to separate water from digestate by concentration can reduce the overall quantity of digestate by as much as 80%, greatly lowering the associated storage and transport costs. A well-designed system, such as HRS' Effluent Concentration System (ECS), will include measures to retain the valuable nutrients in the digestate, while the evaporated water can be condensed and returned to the front end of the process, reducing the amount of energy and water used by the plant. After concentration, the treated digestate dry solid content can be 20% or higher, making it much easier, and cheaper, to transport and handle.

By improving the efficiency of wastewater plants, many water companies are enjoying increased ROI, helping to make their service more affordable and sustainable; particularly important as the water industry uses around three per cent of all the electricity generated.

For more information please contact **Sulio Mustedanagic** on 03 9489 1866 or visit the HRS Heat Exchangers website www.hrs-heatexchangers.com

20 YEAR MEMBERS

WIOA recognises any individual or corporate members who have maintained their membership for 20 or more consecutive years, presenting them with a special Membership lapel pin.
This year there are another 14 Individual and 5 Corporate Members who have qualified for the 20 year recognition pin.

The Individual recipients of the pin in 2019 are:

- Murray Clayton
- Rod Curtis
- Chris Keith
- Cynthia Lim
- Konrad Mueller
- Rohan Poll
- Michael Rodgers
- Michelle Colwell
- Darren Dwight
- Jason Krzciuk
- Peter McCormack
- Trent Newton
- Len Rochford
- Allen Slocombe

The Corporate recipients are:

- Barwon Water
- DCM Process Control
- Goulburn Valley Water
- Merck
- Thermo Fisher Scientific

Congratulations to you all.

BLUELINE PIPE RELINING

Nuflow's Blueline is a structural relining product suited to various applications and environments including:

- Potable Water – safe for drinking water.
- High temperature and acid pipes.
- Drainage systems – sewerage and storm water.
- High pressure networks.
- Structural pipes.
- Trade waste.

Blueline is an environmentally friendly pipe relining solution. There is no excavation or destruction required therefore it causes minimal disturbance to the building, staff or occupants.

Blueline Technology restores structural integrity, prevents joint weakening, has a smooth transition to host pipe and prevents root intrusion and water infiltration. It can be installed on junctions, bends, horizontal or vertical pipes as well as on pipes with multiple bends, elbows, branches and diameter changes in one complete application.

Blueline allows installers to stop and start at any point within the pipe to give greater flexibility with sectional lining whilst increasing flow.

TECHNICAL SPECIFICATIONS

- Watermark Technical Specification WMTS-518:2016 approved.
- ISO 9001:2008 Quality Assurance approved.
- AS/NZ 4020:2005 approved – safe for drinking water.
- Relines pipes with diameters from 40mm to 1500mm. Although we can custom make solutions for larger diameters.
- Withstands pressure of up to 1800kpa.
- Can handle temperatures up to 140^{c}.
- Can handle many chemicals including caustic soda, sulphuric and nitric acids.

Contributed by **Nuflow** - https://nuflow.net

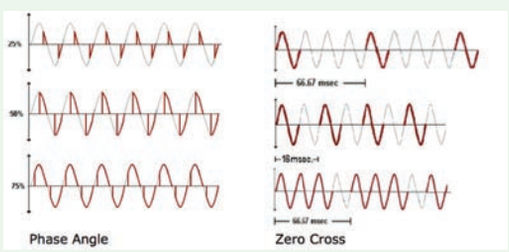
PREDICTIVE LOAD MANAGEMENT

There are many applications, where it is an absolute necessity to control the load. For example, controlling banks of resistive heaters, which are powered by generators. Metallic resistive heating elements draw a high current until the metallic element reaches operating temperature. This means the systems power supply needs to be able to handle the initial high inrush current until the heating elements stabilise.

One way to do this could be to use a generator that is large enough to cope with the current spikes. The major downside of this solution is the cost.

It is highly likely that there are already generators in place and replacing these is a major capital expenditure. The most cost-effective method is to use solid controlled rectifier (SCR), otherwise known as a thyristor. Contactors can also be used to control the switching of the elements in order to reduce the spike in current, but this option gives you very minimal control.

The Eurotherm EPower thyrsitor gives access to advanced features, such as predictive load management at a very affordable price.



Predictive Load Management involves two key strategies, load balancing and load shedding

Load Balancing

Load balancing distributes the power of different loads equally to obtain an overall power consumption as stable and balanced as possible. This eliminates peaks of power. Each heating zone controlled by an EPower, is defined by an output power, cycle time and a maximum power (max capacity), which can be pictured as a rectangle. Rather than letting these rectangles pile up randomly, the Predictive Load Management uniformly distributes them thereby ensuring that at any given moment the overall power is as stable and balanced as possible.

It is important to understand that the PLM function does not change the output power but rather balances and shifts the power evenly, eliminating any disturbance. The result is optimum load management through intelligent load balancing and load sharing, a strategy that will eliminate peaks and flicker and even out the overall power usage.

Load Shedding

The load shedding function allows limiting and shifting the overall energy consumption all together, or with fully adjustable user-defined priorities. Adjustments can be made through fieldbus communication (Profibus, DeviceNet and Ethernet) enabling dynamic adjustments in view of current ON peak period surcharges.

Predictive Load Management can also offer operational redundancy, something that is not achievable by using contactors.

Power Factor

Many systems use phase angle control as power limiting method. By switching from phase angle to burst firing, also called zero cross or full cycle firing you can improve the power factor; and reduce or eliminate harmonics. In Burst Firing mode a modulation period is defined and within this period the EPower is modulated with single or multiple full cycles according to the power demand.

Contributed by **AMD Instrument Engineering** - www.instrumentengineering.com.au

USING THE VFD AS STARTING DEVICE

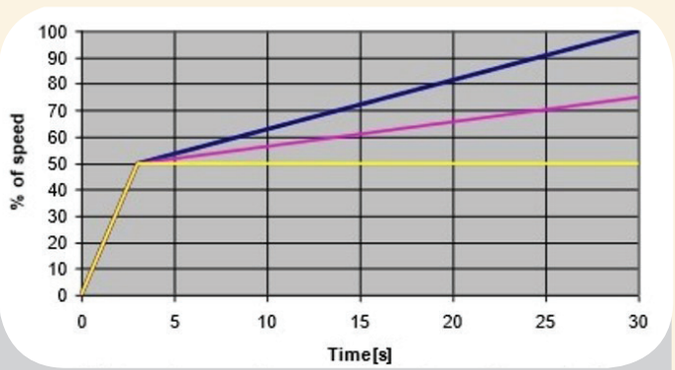
A Variable Frequency Drive (VFD) can reduce the starting current of the pump – motor unit. The pump is ramped up slowly. The starting current absorption from the mains may be not exceeding a range between the nominal current and a value of 120% of this.

Speeding up

VFDs allow control of the ramp times to control the acceleration and deceleration rates of pumps. It is important to ramp up rapidly (typically 3-5 seconds) to a minimum speed to ensures flushing of hydraulics and pipe work is carried out. For shredding pumps, the fast speeding up with maximum torque is essential to clear rags which may have been stuck in the cutter during the last pump stop.

Two things to be watched and optimised when the pumps are put into operation are:

- The ramp up should be as fast as possible according to the maximum permissible short time current load on the VFD. If only the nominal current of the motor can be set at the VFD output, a parameter to overrun this nominal current may be used. In this case the maximum input current to the inverter, which is in most cases 120% of nominal input current, may be used as limiter. There must also be a limitation of the overcurrent set at the inverter.
- The pump must not cavitate during ramping up. This is depending on the static head, in case a vertical pipe has to be filled or the pump has to start on system pressure. The mass of water in the pipe must always accelerate.

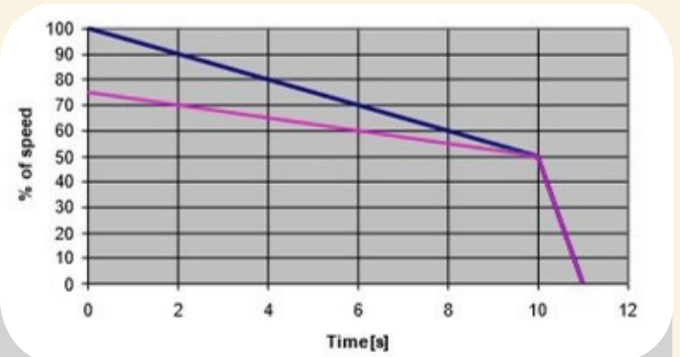


Ramping up of a pump on a VFD.

Slowing down / de-celaration

In cases when no non-return valve (NRV) is installed, the column of fluid will pass back through the pump hydraulics and turn the motor into a generator. This can cause nuisance tripping of a VFD and careful consideration of the stopping mode is required. For very large pumps it may be recommendable to integrate a non return device into the motor. Some VFDs allow for a pulsed DC current fed to the motor during the de-celeration. This DC current will more or less stall the motor shaft.

In case the slamming of a NRV has to be avoided, the ramping down time has to be evaluated during the during the first operations of the pumps by observation when the NRV is fully closed. The final ramping down should be as fast as possible (switch off if possible) as this is avoiding the pump experiencing cavitation.



Ramping down of a pump on a VFD

Energy Saving Evaluations

Running sewage pumps on frequency converters may save energy, but this possibility has to be evaluated very carefully on a case by case basis. The only alternative is to run a sewage pump the use of start-stop mode or on a frequency converter. This means that both these scenarios have to be calculated and compared to find the most energy efficient method.

Contributed by **Ramandeep Singh**, Sulzer Australia. - www.sulzer.com/en

WATER INDUSTRY PODCASTS

Xylem has provided a link to some of the best water podcasts on the water industry and water technology to keep you informed and entertained.

http://makingwaves.xylem.com/9-water-podcasts-water-industry/

The topics covered in the podcasts include:

1. Words on Water, from the Water Environment Federation
2. Water Values, exploring different aspects of the water industry
3. Water In Real Life, communicating with customers to make an impact
4. What's up With Water, weekly news from Circle of Blue reporting on the global freshwater crisis
5. BlueTech Research, with interviews experts, innovators and technology specialists
6. Talking Under Water: One Water, discussing current water industry news items
7. Stuff You Should Know, explaining every day things in an entertaining way
8. WQA Radio, the Water Quality Association focuses on residential, commercial and industrial water treatment.
9. Water You Talking About, produced by doctoral students researching urban water technologies.

Contributed by **Xylem.**

NEW MEMBERS

Welcome to the following people and companies who have recently joined our Association as a Member or Corporate Supporter.

New **Individual Members** include:

Joshua Writer, Michael Smith, Louie Salvestrin, Durgananda Chaudhary, Andrew Potts, Kirk Buckley, Nathan Balshaw, Brett Elsaesser, Danny Vea Vea, Michael Crane, Angelo Saridis, Reece Storie, Matt Conn, Hannah Gajic, Garry Parsons, Sam Marino, Mark Harris, Craig Dunstan, Brian Rowlings, Stephen Parsons, Chris McKinnon, Scott Zealley, Trevor Read, Matthew Giles, Luke Boyle, Luke Cruickshank, Peter Van Der Linden, Rod Cogo, Gary Lee, Kerry Day, Chris Davey, Catherine Kanara, Michelle Whillhelme, Nat Hickcox, Julian Kinder, Kate Babic, Trent Radburn, Dylan Thomas, Richard Aitken, Robert McKenzie, Tony Carlton, Stephen Matthew, Maria Tsagaris, Shane Boswell, Neil Gunning, Mark Pitches, Aaron Benbow, Mark Mizzi, Trent Barras, Garry Perry, Sara McCulloch, Phil Wetherell, Natasha Georgius, Craig Fox-Andrews, Kambez Akrami, Monique Gastaldin, Mohammed Hayat, Brent Tewes, Terry Carter, Andrea Pretorius, Billy Hajek, Mark Mancini, Kevin Pridmore, Gerard Mckay, Trent Bartholomew, Brett Ludwigsen, Peter Degens, Stanley McKercher, Martin Coromandel, David Castell, Ifan Martin, Nicole Kennewell, Dawson, Damon Emerson, Samantha Rinortner, Leah Maxwell, Ben Parcell, Clara Laydon, Ashley Coombe, Peter Veron, Mark Millington, Arthur Woolcock, Stuart Campbell, Ben Tattersall, Peter McLean, Eamonn Mott, Jason Haby, Shah Sandhu, Hendrik Gouws, Rebecca Eade, Jason Egresits, Kyle Robinson, Ryan Trinne, Neil Frieberg, Sugeesha Suresh, Andrew Haas, Jamie Brown, Heath Mayne, Carsten Birch, Tom McLaughlin, Narelle D'Amico, Ken Goodall, Chris Williams, Ian Laing, Shane Smoothy, Trevor Schulte, Brad Knauth, Charndeep Chahal, Tom Nash, Coedie Sloan, Richard Suckling, Brock Phillips, Eduardo Santos, Adrian Blinman, Gary Dinse, Matt Gullick, Allan Hughes, Daniel Robertson, Tim Sells, Gary Brumby, Angeli Carsaig, Thomas Chong, Mark Collins, Scott Graham, William Iro, Michael Jackson, Paul Kearns, Ricky Kiss, Ashley McGraw, Gareth McKenzie, Donna McLoughlin, Robert Muller, Ben O'Donnell, Dale Orr, Jonathon Palcak, Robert Palcak, Darren Phineasa, Jason Quincey, Dale Robinson, Jarrod South, Jon Turnbull, Ben Wilson, Lisa Wyman, Justin Bell, Tom Bennett, Simon Canning, Madalyne, Chatzis, Dylan Drewitt, Aaron Ewings, Peter Gendle, David Gligurovski, Michael Hammond, Jeff Ireland, Geoff Kingston, Damien Lamb, Jim Lawes, Brodie Melford, Adam Niciejweski, Kirsty Padberg, Shelley Parker, Gavin Peiris, Keith Phillips, Jayden Sanders, Brady Slater, Greg Slattery, Brett Stevens, Michael Stuart, Bob Tomasev, Jack Bond, Stephen Mason, Ashley Boland, Paul Harberts, Tony Schultz, Jonathan Hook, Graeme Mellor, Chris Gedes, Neil Crowe, Graham Middleton, Abdel Abujubbeh, Harry Sahota, Adam Blake, Grant Kaufman, Gopalakrishnan Palayam, Dale Ingram, Kane Wyburn, Reece Lloyd, David Allan, Harley Middleton, Vaughan Twite, Cam Sibraa, Alayna Gleeson, Matt McPheat, Michael Woodward, Aaron Munks, Brandan Baxter, Stephen Ellwood, Matthew McNamara, David Supierz, David Salisbury, Michelle Yeaman, Duncan Shillito, Anthony Maslen, Shawn Crowell, Sy Townsley, & Alan Freestun.

New **Utility Corporate Members** include:

Programmed & Wingecarribee Shire Council.

New **Corporate Members** include:

Hydromet, P.T Automation Solutions, AMS Water Metering, Codesafe Solutions, Techtop Australia, Trimble, Pressdress, Allflo Pumps & Equipment, ECT2, Aussie Fluid Power & Hidrostal Australia.

COMING EVENTS

7 March	***qldwater* Skills Forum and Certification Presentation**, Brisbane
8 March	**Queensland Charity Bowls Day**, Yandina
12 March	**PASS Award** applications close
14 March	**WIOA Inc AGM**, Online
22 March	**WIOA Talks - Nano, Micro, Macro!** Online
3 & 4 April	**13th WIOA NSW Water Industry Operations Conference & Exhibition**, Orange
11 April	**Queensland Advisory Committee Interest Day**, Brisbane
11 April	**South Australian Advisory Committee Interest Day**, Tonsley
16 April	**Victorian Advisory Committee Interest Day**, Traralgon
2-10 May	**WIOA Tour to New Zealand and WIOG conference**, Christchurch
23 May	**Tasmanian Advisory Committee Interest Day**, Hobart
5 & 6 June	**44th WIOA QLD Water Industry Operations Conference & Exhibition**, Bundaberg
7 & 8 Aug	**2nd WIOA South Australian Water Industry Operations Conference & Expo**, Murray Bridge
4 & 5 Sept	**82nd WIOA VIC Water Industry Operations Conference & Exhibition**, Bendigo

NEXT EDITION

Article Contribution Deadline for the next edition is 7 April 2019

All correspondence should be addressed to: The Editor
PO Box 6012, SHEPPARTON, VIC. 3632
or email: Craig@wioa.org.au Website: www.wioa.org.au