

OPERATOR

February 2016 Edition



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Gavin Allen in Antarctica.
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GVW wins best water in
Australia. Details on page 9.

New ocean outfall
for Anglesea. Read
about the project on
Page 17.



Newsletter of the WATER INDUSTRY OPERATORS ASSOCIATION OF AUSTRALIA

FROM THE MD'S DESK

After a very relaxing Xmas break, it's back to business as usual for the WIOA staff, Committee and Directors.

The move to the new office has been completed and we have settled into our new premises quite well. It took longer than anticipated, but our phones, fax and IT network are also now fully functional. There is an open invitation to all members to drop in for a coffee, chat and to check out the new digs at any time.

As our financial year concludes on 31 December annually, we have been busily preparing for our audit which has just been completed. We have also just completed and distributed our Annual Review for 2015. In the interests of controlling our environmental footprint, and due to significant increases in mail costs from 1 January, we decided not to mail a hard copy to every member as we have done in the past. For those that received the email version of the Review, printed copies are available if you would like one. Just contact the office and we'll send one out to you.

The 2015 Review highlights the continued growth of our Association and provides an excellent overview of the organisation and all the activities that WIOA and our members are engaged in. It also gives us the opportunity to celebrate the achievements of many of our members.

There have been a few industry developments since the last edition of Operator in November 2015. The main one is that the Australian Industry Skills Committee has endorsed the updated water training package, and training organisations will be able to deliver content from the National Water Package in 2016. It is important to note that there are some differences between units in the old and new package with not all units deemed equivalent, and there are new Packaging rules. There will be a grace period to allow trainees currently enrolled in the NWP07 version to complete this qualification. Your training organisation will be able to inform you of these details. If you are close to finishing a Certificate under NWP07, we suggest that you fast track your training and complete it ASAP, otherwise there may be some extra or different training required for you to complete a qualification under the new Package.

Planning for all the 2016 conferences is proceeding full steam ahead. We are really excited that EcoCatalysts and Calix have joined existing companies Automation Group, Ixom and Xylem as Prime conference sponsors in 2016. The support of these companies and all our other event and award sponsors is greatly appreciated and we encourage all our members to support them whenever possible. We also note the contribution of outgoing Prime sponsors – Krohne along with Acromet and Odour Control Systems (Australia) for their support over a number of years.

The technical program for the NSW conference in Newcastle in April is full of interesting platform and poster presentations from experienced operations staff and there is a wide range of Councils represented in the program. Delegate and visitor registrations are being accepted, with the program and registration forms available from the website. The Call for Papers for the Queensland conference in Rockhampton in June closes in late February and we still need more abstracts from operators.

In collaboration with the Water Services Association of Australia (WSAA), WIOA will be participating in an important project in the lead up to the August 2016 census. The Bureau of Statistics currently believe that there are less than 350 water treatment operators in the whole country because when we completed past census forms, we didn't use a generic descriptor for our role. WIOA knows that the role of "water treatment operator" has a multitude of different names, depending on the employer and situation but it is really important for future funding for our industry that we standardise how we define ourselves. We will provide more information on this project in the coming months.

Participation in WIOA's certification scheme is increasing in Victoria with 44 operators now meeting all the requirements to be certified and another 27 applications currently being processed. After working with the Queensland Water Directorate to complete the Pilot Project for certification of operators using the requirements of the National Certification Framework 2012 – Operators within Drinking Water Treatment Systems, we certified 6 Queensland Operators at the 2015 WIOA Qld Conference. WIOA will be holding a similar certification presentation ceremony as part of our 2016 NSW Conference in Newcastle. To date we have at least seven Operators employed in NSW who are eligible to be certified. We'd be pleased to hear from any other NSW employers who might like to participate in this process.

The Water Industry Skills Taskforce met recently with the main item on the agenda being the review and update of the national water treatment operator Certification Framework. Many of the changes proposed are designed to rectify issues or anomalies identified during the implementation of the pilot projects in Queensland and New South Wales.

Finally, those members yet to pay their 2016 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. Keep in mind that all financial Individual members will go into the bonus draw to win a \$1,000 travel voucher, generously donated by Royce Water Technology. The draw will be made at the NSW conference in Newcastle.

Until next time, **George Wall**, Managing Director

THE LIGHTER SIDE



PROFILE OF A MEMBER



Name: Orme Kewish

Position: Wastewater Manager

Employer & Location: Mt Hotham Resort Management Board, Mt Hotham

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

This is my 5th year running the Mt Hotham WWTP. I live and work in the area and it was an opportunity to expand my knowledge and skill set while working in an environment and area that I love.

What do you enjoy most about your job?

Checking pump stations on skis during the winter. Working outside in the beautiful alpine environment of Mt Hotham.

What are the major challenges in your current role?

The main challenge of the Mt Hotham activated sludge WWTP is temperature. We are always starting the ski season with temperatures in the bioreactors below 10 degrees so we are working right on the razor's edge of the biology's ability for effective wastewater treatment. As the ski season progresses the temperatures gradually improve, improving treatment efficiency, but it is quite a fine balancing act.

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

Since I started work at the Mt Hotham WWTP nearly 5 years ago

How do you relax?

In winter I ski and snowboard, in summer running, gardening making homebrew and wandering in the mountains with the family.

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

I live in a very small mudbrick cottage with my wife Maree and two daughters in the bush half an hour from Mt Hotham on the way to Omeo. It is close to work and skiing but in an area where we all have space to wander and enjoy the beauty of Mother Nature.

QUICK QUESTIONS

Age: 37

Nickname: Qi

Family Status: Married with 2 daughters

Pets: Flash the black Kelpie

Favourite food: Japanese

Least favourite food: I love food pretty much in general, not sure about eating insects....

Favourite TV show: Don't have a TV, but I do like watching AFL when I get a chance.

Worst TV show:

Favourite Movie: Star Wars

Favourite Musical artist/s: At the minute.....Birds of Tokyo, over time probably the Boss (Bruce Springsteen) Too many to choose though really.

Favourite book: Tao de Ching

Favourite team: Collingwood

Ambition in life: To set up our own ski building system in the shed. Continue more medical studies (I am a ski patroller in winter).

Hobbies: Skiing, snowboarding, gardening, camping, wandering, parenthood!

Best Trait: When inspired, endless energy.

Worst Trait: Easily distracted.

Four people to invite to dinner: Jackie Chan, Lao Tzu, The Boss (Bruce Springsteen) and Han Solo (For Maree)

WIOA OFFICE FACILITIES AVAILABLE

Moving into our much larger office building allows us to offer an additional member benefit. We have made one of our extra rooms into a "hot office" and it is available for the use of any members who need a work space whilst they are in, or travelling through, Shepparton.

Additionally, we have a very large Board Room which can double as a training room and will comfortably fit groups of up to 12 people. There is AV and whiteboard facilities already in place. Just contact us in the office if you would like to use either room.

There is also an open invitation to all members to drop in for a coffee, chat and to check out the new digs at any time.



Jim and George outside the new WIOA office
24 New Dookie Road

QUEENSLAND WASTE-WATER INTEREST DAY – MALENY

The WIOA Qld Advisory Committee initiated a Queensland Wastewater Interest Day on 26 November, 2015. Hosted by Unitywater and held at the Maleny Sewage Treatment plant, the day was attended by a range of water industry representatives.

The day was opened by Colin Haynes from Unitywater, the current Chair of the WIOA Qld Advisory Committee and Unit Leader Treatment Plants for Unitywater.

The first address was by Ray Aspey, Manager Strategy and Business Development, Unitywater. Ray gave an exceptional overview of the region and scope of Unitywater. He listed the challenges Unitywater face. The growth potential, the population age demographic, the water consumption and limited storage capacities of the region they have to cope with. All of which was leading to the importance of wastewater treatment and reuse to the local environment.

Ray also extolled the virtues of Unitywater, being a forward thinking utility and offered an insight into its innovative ideas, like their home maintenance and insurance scheme.

The main focus of Maleny STP is membrane filtration. The technology and equipment used in the plant was very well described in a detailed presentation by GE representatives Kevin Loughran and Ron Bean. Membrane filtration allows Maleny STP to operate on a very small footprint. Outside-in membranes filter the water from the waste and an automatic self-cleaning process ensures maximum plant through-put with minimal down time. Additionally no large holding, settling or sludge drying ponds are used.



Glenn Carroll leading the Maleny STP tour

Glenn Carroll and Matt Ball are the STP operators in charge of the site. They did a tag team presentation where they spoke of a dream operation with minimal maintenance requirements, suggesting that perhaps more water authorities should look at this form of wastewater treatment.

Maleny STP is idyllically located on the banks of the picturesque Obi Obi creek. The operators treated us to a BBQ lunch down near the creek where the platypus play. Unfortunately, they (the platypus) didn't want to see us. This was followed by a tour of the wastewater treatment plant, inspection of the membrane channels, the pumping equipment and the chemical dosing facilities used within.



Maleny STP

All in all a very informative day.

Trade displays were set up by GE and Grundfos offering information on equipment suitable for use in this type of treatment plant.

Contributed by **Peter West**, Grundfos Pumps.

WIOA HITS BATHURST

In conjunction with the CENTROC operators group, a water interest day was held in Bathurst on 10th November 2015 which was well attended by WIOA members. After holding the CENTROC operators meeting, delegates heard a presentation on manganese removal at Bathurst Water Treatment Plant by Dave Cashen.

Adrian Nisbet from the Automation Group delivered a session covering SCADA and telemetry integration and understanding radio networks which was also well received.

WIOA MD George Wall provided an update on the association including the National certification system which he was able to describe in some detail.

After a networking lunch, the delegates attended a tour of either the Water or Wastewater Treatment Plants in Bathurst.



Bathurst Water Interest Day



Members enjoyed a tour of the Bathurst WTP

AN ANTARCTIC ADVENTURE IN WATER TREATMENT

In late 2015 I had the opportunity to spend a few weeks working on a water treatment plant at Casey Station, Antarctica. I was part of a team of tradespeople, scientists and engineers under the direction of University of Melbourne Project Team Leader, Kathryn Mumford, and Australian Antarctic Division (AAD) Project Manager Tim Spedding. We were commissioning and operating a plant to treat water as part of the clean-up of contaminated sites impacted by diesel spills in Antarctica. Veolia is assisting the University of Melbourne on this project through onsite operational support.

I left for Antarctica on the 18th November 2015. The trip involved a 4 ½ hour flight to Wilkins Aerodrome in Antarctica and a 4 hour bus ride to Casey station on the Antarctic Coast.

First day on station we woke up to a blizzard. The temperature outside was -13C and wind gusting to 70 knots. When the weather cleared we got started on the commissioning of the water treatment plant. We were treating contaminated water that was a combination of snow melt and surface water as part of soil remediation activities in response to historical and contemporary fuel spills. Living and working in an extreme environment makes it very hard to prevent equipment failing and spills occurring.



Blizzard conditions at Casey Station

For operation of the water treatment plant, the day started around 7.30am. There was a project team toolbox and then we had to inspect equipment and unfreeze lines ready for start-up. We usually got the plant up and running about 8.30am and then had ongoing monitoring, sampling and general operational activities throughout the day. The plant operated through to about 10pm, so we had a shift system to monitor the plant.



Casey on a good day

It wasn't all work though. We had survival training where we used map and compass to navigate across the sea-ice to Shirley Island. We had to test the sea-ice was safe to walk on, 20mm is enough! We had the opportunity to see the penguins and seals on the island and spend the night outdoors sleeping in a bivvy bag.



Testing the sea-ice on survival training



Casey WTP commissioning



Adelie penguin

I also had the chance to spend the weekend at the old Wilkes Station. This station was built by the Americans in the 1950s and was abandoned in the 1960's. A team of us went over to Wilkes to retrieve an old radio communications box that was requested to be salvaged as a historical artifact. As I walked around the remains of the old station, I thought it was unbelievable how much of the original base has been left behind. Once the job was done we stayed overnight in the "Wilkes Hilton", an old station communications building that has been converted into a field hut. It was a great opportunity to get out and see a bit more of the area around Casey Station. Overall it was a great experience. I hope to get the chance to go back someday.

Contributed by **Gavin Allen** from Veolia-ANZ.

HOW CLEAN IS THE “KITCHEN”



One of the things that we in the Water industry often forget, is that we are basically in the business of providing a food to our customers. A liquid food, and a fairly

unique foodstuff, in that we pipe it into people's homes and serve it up for their consumption 24/7.

So if we accept that we are in the food business, then our Water Treatment Plants are our kitchens and our Distribution Systems are the crockery.

Anyone who has watched Ramsay's Kitchen Nightmares knows there are some rather ordinary restaurant kitchens out there, with rat faeces, cockroaches, rotten or expired food in the fridge, and a whole lot of other unsavoury practices. Luckily, most of these kitchens appear to be in the UK, but what if Ramsay came to visit our “water kitchens”; would he be impressed? On the whole, I think he probably would be, as most Water Treatment Plants look like places where the ‘food’ being produced is safe to consume.

But there are still some “water kitchens” out there in Australia where you would be far less confident in the quality of the food being produced. Old chemical containers left lying about, spilt chemicals on the floor, slime on the walls of clarifiers and filters, and general untidiness, which all leave the impression that the food being served may not be of the best quality.

Would You Eat at a Restaurant if you knew the Kitchen looked like this?



Stretching the kitchen analogy further, our treated water storages could be seen as the crockery on which we serve our food. Again, many of them are fine and are suitable to eat off, but others have cracks and holes in the roofs, have animals roosting in them and leaving their faeces behind. This all increases the risk that our food will be contaminated prior to reaching the table.



It is appreciated that having a clean kitchen and clean crockery has a cost attached to it, but that is one of the overheads of running a clean and safe restaurant, and restaurants that make their customers sick don't last long in the hospitality industry. We wouldn't take our families to restaurants that we knew had dirty kitchens and unclean crockery, so what impression would our customers have if they saw some of our “water kitchens and crockery”?

Contributed by **David Sheehan**, Coliban Water

OPINION - AN AMALGAMATION THAT IS LONG OVERDUE?

One of the major aspects of having worked in the Water Industry over the last few decades is my experience with the benefits of creating “economies of scale”. In Victoria during the Kennett era in the 1990's, I recall many forced amalgamations which created larger Regional Water Corporations and larger Municipal Councils, all at the one time.

My first experience with a major merger was when seven water entities merged into one which became Ovens Water. This created not only economies of scale, but instigated efficiency savings of around 30%. Three years later, Ovens Water was forced to amalgamate with Kiewa Murray Water (which had undergone a similar amalgamation of about the same number of entities). The new entity created was, and still is, North East Water. The creation of a larger Water Corporation instigated even more savings of approximately 20%. These savings enabled North East Water and all the new Corporations to achieve improvements in many small towns and cities where it would not have been financially possible under the previous arrangements. The improvements continue to be enjoyed by customers throughout the State.

Tasmania is also an example where in 2009, some 29 Councils transferred their water and sewerage functions across to three Water Corporations and three years later, came together as one entity. A common theme with amalgamations is one of larger, better-resourced organisations taking over from smaller, less well funded enterprises that are often struggling to carry out their day-to-day operations and fulfil their compliance obligations.

Amalgamated entities that I have been involved with operated separately from the Council functions. The institutional arrangements provided many benefits, not only to smaller communities through capital upgrades, but also to the employees who benefited from improved working conditions. Best practice conditions come out of applying competition by comparison and benchmarking opportunities. I have seen many dollars spent over the years to increase and improve water quality with substantial capital works. This has generally been carried out efficiently and effectively and many and varied Water Treatment Plants have been constructed. Boards have taken on Governance that is of Best Practice standards, and as a result, water quality around Australia has improved remarkably.

In all of the mergers I have been involved with, raising WHS standards has been a prioritised objective, and rightfully so. However, maybe it is now time to consider an additional amalgamation.

There are opinions within the water industry that while there are amalgamations occurring “between” organisations, we should also be considering the opportunities for proactive amalgamations “within” organisations. For example, WHS merging with the Water Quality section has merit. WHS has always received an adequate proportion of budgets, in some cases at the expense of water quality.

WHS issues are enacted by law and enforced accordingly by WorkCover agencies, Unions and local worker representatives. Water quality on the other hand, is often only protected by recommendations and guidelines. Therefore, the consequences of not following through with accepted water quality obligations may not be as severe as compared to say the responsibility assigned from the death of a worker. However, we all know that throughout the world there have been many people die from contaminated water supplies.

The WHS team has been very effective in building a safety conscious workforce, well aware of every day hazards. Think of steel-capped boots, Hi-vis clothing, JSA's, SOP's, other documented work systems and associated training. Why not consider the amalgamation of WHS departments with Water Quality sections and offer the new team a whole raft of “different issues” to solve.

Instead of Water Quality being looked after by “recommendations and guidelines” some muscle could be injected into the cause with a joint focus and fresh view of diligence. In the past we experienced improved standards through the initiation of benchmarking, and we are already seeing more emphasis on Water Quality through programs like the certification of operators. So to keep up the improvement curve, a “within” amalgamation could well be worth full consideration.

Contributed by **Jim Martin**, retired CEO North East Water and current WIOA Chairman

HOW TO FIX A SINKHOLE

We had identified a broken / blocked sewer main underneath the rear yard of a property in Auckland, New Zealand. This break was causing sewage to leach into the ground, which was producing a sewer smell and eventually ground subsidence, resulting in a “tomo” (sinkhole) appearing in the yard. The tomo was full of foul water which made the smell at the property worse.



Tomo - sinkhole

With CCTV we identified the obstruction as a piece of drain coil pipe. We suspected that some years earlier, possibly during the construction of the retaining wall, the pipe had been damaged, then a rough repair done with drain coil, which had subsequently collapsed.

We tried to repair the main from the downstream manhole, about 2 meters away in a neighbor's yard. We tried a number of methods:

- Trying to hook it and pull it out with drain cleaning rods
- Making a manual cutter and trying to cut it out
- Trying to mill it out
- Trying to thrust a smaller line through the obstruction

None of these were successful.

We held a planning session on site to discuss different options, including excavation and bypassing / abandoning the line. The decision was made to excavate and hydro excavation was chosen as there was no room to get an excavator into the back yard and we had to remove all the spoil as it was contaminated.

A planning session was held to discuss safety and methodology. Our biggest safety concern was that the excavation would be approximately 5 metres deep in wet, contaminated ground. We had to think about access, safety while working and rescue in the event of an accident in the hole.

We planned to build a 1.5M x 1.5M trench shield on the surface, then hydro excavate the center out of it, adding sections as the shield was lowered into the excavation.

Two 1.5T gantries would be installed above the trench shield to control it during lowering, to raise it during backfilling and to provide an anchor point for the fall arrestor and recovery gear.



The excavation starting



The ground was wet with sewage



As the excavation got deeper we extended the shield



The work was muddy and slow.

During the excavation we had to remove two storm water lines. A fan was used to supply fresh air to the worker. Though it was smelly, the gas detector never went off.



We made it to the broken sewer line at almost 5M deep.

It was good to see “fresh” sewage running through once we had removed the drain coil and vacuumed out the stale sewage that had backed up in the line. The pipe was repaired and we started to backfill.



Fitting hydraulic jacks under the shield

Once the sewer line was repaired, we fitted hydraulic jacks under the shield to assist the chain blocks while removing it.

Conveyors used to bring in the backfill

To save the manual handling and to reduce damage to the lawn we set up conveyors to bring in the backfill.



Backfill poured into place.

We used 3% cement stabilized scoria as a backfill material to reduce settling and to eliminate the need for compaction. The top 2 metres of excavation is against a retaining wall that is under engineered and already bowing. We didn't want to put pressure on the retaining wall by compacting backfill.



All's well that ends well!!

You'd never realise that only a couple of days ago there was a 5 metre deep excavation here!!

Contributed by **Noel Biltris** from Noel Biltris Plumbing & Pipework

LOWER MURRAY WATER IMPROVES PUMP STATIONS

For many years Lower Murray Water (LMW) has been operating soft starts at the majority of their 45 sewer pump stations in the Mildura district. Between December 2013 and August 2014 they have installed Flygt SmartRun pump controllers at five pump station sites, with one further site upgraded in February 2015. These six sites were considered to be the most troublesome and problematic for Operation and Maintenance staff. The main reason for the Flygt SmartRun controller installation was to reduce call-outs related to pump chokes. Since the installation in December 2013, pump blockages to these stations have reduced by 80%.



*Lower Murray Water
standard pump station
switchboard layout*

The cost savings through the reduced chokes and call-outs has equated to approximately \$13,700 per year. The system improvement also allows O&M staff to focus and continue working on the daily scheduled works and not having to react to unplanned pump call outs. If these call outs occur out of hours, this can put two staff on a break, resulting in later starts for them, and meaning further cost and disruption to planned works.

The Flygt SmartRun pump controller also has a number of 'built-in' features, including pipe scouring function, varying the pump start levels to reduce fat rings, and a sump cleaning function that allows the pump to intermittently pump down to a 'snoring' level to remove debris. LMW staff have observed cleaner pump stations because of this. Additionally, there has been a saving of approximately \$6,500 per year by not requiring the use of a sucker truck to maintain and clean the pump stations. The well washers have also been removed from all these sites, further reducing maintenance on the units, and more importantly, saving water.



*Flygt SmartRun SRC
pump controllers in LMW
switchboard*

Over one year LMW has had estimated savings of more than \$20,000, which in turn has also covered most of the capital cost of converting these sites to the Flygt SmartRun Controllers. LMW focused on the most troublesome sites for these installations, in particular sites with reoccurring pump chokes, and where regular cleaning and maintenance was required. The addition of the Flygt SmartRun has certainly improved these site and LMW pumping operations. There has also been a noticeable improvement in power usage at these stations which is still being monitored at this time. But, mostly importantly the O&M teams do not need to attend site in 40+ degree heat to clear pump chokes. This is a massive bonus.

Contributed by **Daryl Murray**, Coordinator Mechanical Maintenance and **Mark Blows**, Coordinator Electrical Maintenance, Lower Murray Water

GUNNEDAH WATER INTEREST DAY

On Thursday 29th October the Northern Inland Water Managers Group were joined by members of the WIOA Advisory Committee at a water interest day at Gunnedah in North West NSW.



*Whats on in Gunnedah -
WIOA water tasting!*

The day also included judging of the **Ixom Australia's Best Tap Water** competition. Interest day delegates along with Gunnedah residents were invited to taste the water supplied by each of finalists in order to determine which would become Australia's national champion. The winner was Marysville in Victoria.

The day was a great opportunity for operators from throughout the North West and other areas to catch up and discuss issues which are common to most water utilities. Attendants were greeted by staff from Gunnedah Shire in a great venue at the Gunnedah Civic Centre. The event was sponsored by Prominent, Suez and Aqualift who also provided very interesting presentations.



*Over 70 people attended the
interest day in Gunnedah*

Operators were particularly interested in the ice piggling presentation by Paul Banfield from Suez and the presentation by Josh Tickell from NSW Health on drinking water management system improvements. An earlier presentation by Greg Cashman from Prominent provided delegates with an interest in dosing systems a good insight into how the units operate.

The presentation by Jill Busch from Aqualift was also very interesting and opened the eyes of many operators in the audience to the hazards of poor reservoir maintenance and how easily water can become contaminated.

The site visit in the afternoon to the new Gunnedah bore construction along with the reservoir inspection demonstration provided by David Barry which was also well received by operators.



*The team from Gunnedah SC
hosted a fantastic water
interest day*

Thank you to NIWMG and WIOA for bringing the event to Gunnedah and we hope to see more similar events in the area at various stages in the future. Operators are always keen to see how everyone else is doing things and come up with new ideas to improve their own systems. Thank you to everyone who assisted in organising the event and particularly the girls at the Gunnedah Civic and Helen and Vicki for organising morning tea and lunch.

Contributed by **Brock Stone** from Gunnedah Shire Council

BEST TASTING TAP WATER IN AUSTRALIA

Goulburn Valley Water has won the Best Tasting Tap Water in Australia for the sample from Marysville that represented Victoria in the Ixom 2015 Australia's Best Tasting Tap Water competition. This is the first year WIOA has held the national competition where samples are judged on their appearance, aroma and taste.

Judging was conducted at a WIOA water interest day held in Gunnedah, NSW on Thursday 29 October 2015. The community of Gunnedah were provided the opportunity to help select the Australian Champion with members of Gunnedah Shire Council and WIOA setting up a water tasting pop-up shop in front of the Smithurst Theatre in Conadilly Street.

Competition for the title was provided by the various winners of the taste test competitions across Australia and included samples from Orange in NSW, Richmond in Queensland and Adelaide in South Australia in the battle for bragging rights and national honours.

A new \$5 million Marysville Water Treatment Plant based on micro-filtration has been producing award winning water since June. The plant services the towns of Marysville and Buxton. Raw water for the Marysville Water Treatment Plant is drawn from the Steavenson River into the off-stream Aub Cuzens Reservoir. The plant has the capacity to produce up to 2 ML of drinking water per day and water is only drawn from the Steavenson River when good quality water is available.

The WIOA water taste tests are a celebration of the fact that some of the best tasting and safest water in the world is produced right here in Australia by people who have a great passion for their jobs, who continually produce high quality, safe, drinking water for their communities.

WIOA will work with the Goulburn Valley Water team to send the winning sample from Marysville for judging in the Berkeley Springs International Water tasting competition to be held in February 2016, where it will compete for the right to be recognised as the best in the world.



Not quite a media frenzy on the streets of Gunnedah

2016 WEEKEND SEMINAR & AGM

This year's Weekend Seminar & WIOA AGM will be held on the weekend of Saturday 27th and Sunday 28th February at the Parkside Motel in Geelong.

The Seminar provides a great opportunity to meet other members and learn about some of the latest technologies in a relaxed and friendly atmosphere. The cost for the weekend is absolutely zero, as long as you can get yourself there and home again. From lunch Saturday to lunch Sunday the weekend is on WIOA – just another benefit of being a WIOA member.

Corporate Member presentations will be delivered by FluidQuip, Aeramix, Royce Water Technologies and the day will be interspersed with some fun activities and a discussion forum. The dinner on Saturday night is often full of surprises.

David Greaves will provide an encore of the paper he presented at the 2015 Victorian Conference that was awarded the Best Paper Overall titled: Sariri Village rebuilding – Papua New Guinea (PNG).

A site tour on Sunday morning of the Northern Water Reclamation Plant and Class A facility located at Viva energy in North Geelong conducted by the Barwon Water team will finish off this very informative weekend

Places are limited to the first 50 members who register. To secure your place register online at www.wioa.org.au/seminars/WeekendSeminar.htm



The Liverpool Plains guys knock back the water samples on the streets of Gunnedah



WIOA takes water tasting to the streets

GVW's Manager Operations Mr Steve Nash said the real highlight of the competition however is to reward the passion that GVW operators put into continually producing high quality, safe, drinking water.

2015 Weekend Seminar attendees



gldwater URBAN WATER INDUSTRY INNOVATION FORUM

The **gldwater** Urban Water Industry Innovation Event was held on 4 & 5 November on the Sunshine Coast. The 2 day event kicked off with an Innovation tour, which was hosted by Unitywater. Around 40 members jumped on a Bus and took in Unitywaters' current innovations at various sites including:

- New Mechanical and Electrical training room – Northern Service Centre
- SCADA and network control room.
- Solar panel system on the Northern Service Centre.
- Sludge treatment and handling (solar drying) – Maroochy STP
- Preston Road Pressure Reduction Generator and
- Energy reduction initiatives at Sewage pumping stations.

The second day involved a host of presentations which started with Unitywater CEO, George Theo giving us an insight to Unitywaters future innovations, co-generation possibilities, Leak Technology for Water reticulation and Smart ball technology for pipeline condition assessment to name a few.



Delegates attending the innovation tour

Other speakers presented a wide range of topics including Benchmarking data, Cultivation of freshwater Macro-algae in Wastewater, THM removal in drinking water reservoirs through aeration, Floating wetland technology, Liquid chemical vacuum feeders, and Workforce transformations to list a few.

Best papers at the event went to Kim Moore from Unitywater and Nicholas Paul from James Cook University.

The winner of the 2015 Ixom Best of the Best Queensland Water Taste Test was also announced at the event with the honours going to Barcaldine Regional Council with the ancient water from the Great Artesian Basin selected as the best by conference delegates. The results were very close again this year and a mention should be given to Livingstone Shire Council who came a close second with their Woodbury Water Treatment Plant drop.

The event came to a close after the delegate dinner held on the Thursday night.

A big thanks for the opportunity to attend and represent WIOA at the Innovation Forum.

Contributed by **Colin Haynes** from Unitywater, Chairperson of the WIOA Qld Advisory Committee

MOVEMBER

A number of WIOA members showed their support to changing the face of men's health by taking part in the 2015 Movember challenge with varying results as you can see.

Adam Simpson and Bernd Vetter from Evoqua Water Technologies raised over \$400 for the cause that aims to combat prostate cancer, testicular cancer and mental health problems. When it came time to take the "mo" off Bernd opted for the Chaplin look, but thankfully it did not last long after a number of people suggested it is probably not the best look given Bernd's heavy German accent still clearly recognisable.

Congratulations to everyone who raised funds for this much needed cause, well done to you all!



Bernd Vetter and Adam Simson show off their mo's during Movember



Not the best look - hail Bernd!

WIOA CHARITY WORK PASSES \$80K

Since making our first ever donation in 1999, WIOA has been able to contribute over \$80,000 to worthwhile charities by conducting charity events and through fundraising at conferences. In 2015 WIOA was pleased to have donated \$11,600 to charity and we congratulate everyone who has assisted WIOA in raising these valuable funds.



Jason Mullins from North East Water presents the WIOA charity cheque to a representative of Headspace

At the 2015 Victorian conference Aaron Sewell from North East Water received a warm reception and a round of applause after he shared a poem with delegates. After much convincing, he finally got around to putting his words down on paper and agreed for WIOA to be able to share this with all our members.



WATER WATER

Water water everywhere not a drop to drink
As I sit and ponder and have a little think.

Beside a mountain stream or the mighty Murray river
These are the living veins that we use to deliver.

The blood of our country that makes our wide crops yield.
And in town and home and on cricket field.

We used to take it all for granted there is plenty to go around
Just dam the rains and catch them and pump it on the ground.

And send it out to lands where nothing used to grow
Take what you want today there is plenty for tomorrow.

Now the river ambles on, winding across the land
Through red banks of clay, past bars of fine white sand.

Down the river flows until it finds another weir
And then we pump it out and then it's gone for another year.

Now massive crops of rice and cotton suck our rivers blood
And the people on the land all ask "where is the winter flood."

That flushes all the rubbish and cleans the river out
And gives the huge trees a drink to get them through the drought.

Now as the water makes the river mouth the people say there's
none for me
So we pump out the last and she never makes the sea.

But the salt and silt that's left behind makes every ones heart sink
You see down here there's water everywhere but not a drop to drink.

Now the clouds are in the hills again and the rains are all around
The streams pick up the rivers burst and spread out across the ground.

Down through the gully the life bloods on the move
Onward ever flowing following an ancient groove.

Into our impoundments and filling our store
Until its huge walls crest can hold no more.

Then on into the valley the life blood bubbles and spills
Flowing towards town and home and testing peoples wills.

A flood will break the drought says an old timer from his porch
As he watches his paddock get relief from a ten year scorch.

Now stock are moved to high ground and sand bags take their place
To prepare the town and people for the challenge they must face.

Now soon will be the time of plenty with good crops from these lands
down south
As the flood waters slowly recede for their final push to the river mouth.

Now it's the Coorong's turn to bounce back from near defeat
As the new fresh flows and salty brine they finally meet.

Then when the last sand bar can hold no more
The mighty river Murray flows to meet the sea shore.

Now it's true how they say these rains have bought life back from the
brink
But still there's water everywhere but not a drop to drink.

© Aaron Sewell, North East Water

NSW OPERATOR OF THE YEAR



Nominations for the **2016 NSW Operator of the Year** sponsored by the Water Directorate, closed on 19th February 2015 with the winner to be announced at the WIOA NSW conference in Newcastle.



2015 Glen Clifford
Dubbo City Council



2014 Todd Pattison
Wyong Shire Council



2013 Neville Woodward
Coffs Harbour City Council



2012 Erwin Balsar
Shoalhaven City Council



2011 Allen Paul
Clarence Valley Council



2010 Les Potter
Coffs Harbour City Council



2009 Ross Waugh
Coffs Harbour City Council



2008 Peter Hale
Shoalhaven Water



2007 Pat Welsh
Mid Coast Water

BIRDS EYE VIEW Facilities Members Operate Marysville Water Treatment Plant, Victoria



The \$5 million Marysville Water Treatment Plant is a microfiltration plant and was commissioned in June 2015. Built after the Black Saturday bush fires, this building is made of pre cast concrete panels, has fire rated external doors and has no windows, so it is essentially a fire bunker. It has 2 X 600KL (1.2 ML) concrete storage tanks that supply the towns of Marysville and Buxton. It can produce up to 2 ML of potable water per day.



Raw water for the Marysville Water Treatment Plant is drawn from the Stevenson River and into the off stream 100ML Aubrey Cuzens Reservoir. The raw water pH ranges from 6.8 – 8.2 depending on the seasons.

The turbidity ranges from 0.5 – 1.5 NTU, and a true colour ranging from 5-20 and an EC of around 84 micro Siemens.





Goulburn Valley Water's Marysville WTP was the 2015 winner of the Ixom Victorian Water Taste Test and the Ixom Australia's Best Tasting Tap Water in 2105!! The taste tests are a celebration of the fact that some of the best tasting and safest water in the world is produced in Australia by people who have a great passion for their jobs, who continually produce high quality, safe, drinking water for their communities.

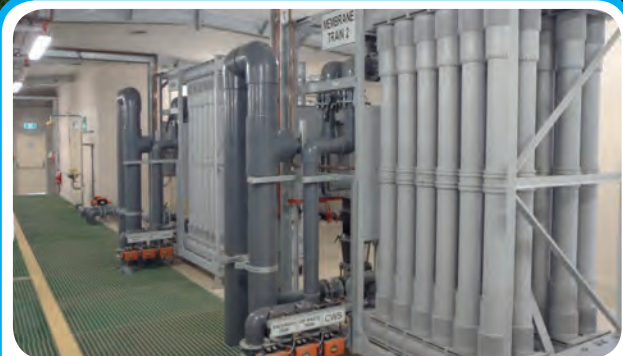
Pictured: Tony Nolan, SE District Manager, Steven Nash Operations Manager and Heath Vince, Plant Operator.



Wet rack board, continuous monitoring of inlet Cl_2 dosing and pH, 2 x filter NTU analysers, continuous monitoring of the raw water characteristics and dosed water pH. All the instrumentation is located centrally in the laboratory room.



This is the services room consisting of 2 x raw water automated strainers. These strainers filter objects 200 microns or larger before entering the flocculation tank. When a pre-determined value, time or pressure is reached, they automatically self clean. There are also 2 x air compressors to supply the aeration washes and all pneumatic valves and transfer pumps and a large holding vessel. Also in the room are air dryers and 2 water service pumps.



Two ultra-membrane filtration trains have a capacity of 14.3L/s. The aim of the Membrane is to remove all suspended particles and coagulated colour molecules from the pre filtered raw water.

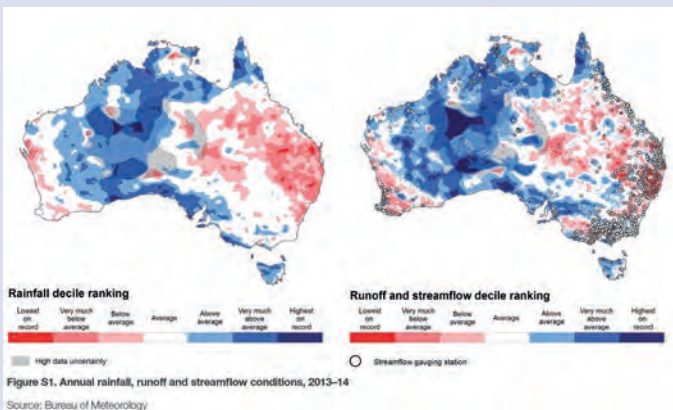
The UF filters continually accumulate solids in the membrane bundles during filtration. These solids require frequent removal via backwashing and are consequently backwashed every 20-40 mins.



WATER IN AUSTRALIA

The Bureau of Meteorology recently released **Water In Australia** (www.bom.gov.au/water/waterinaustralia/), the first assessment by the Bureau to provide information on water availability and use across the whole country. It takes over the role of the biennial Australian Water Resources Assessment (2010 and 2012) and the annual National Water Account summary (2012 and 2013) to provide a comprehensive annual overview of Australia's water situation.

Water in Australia 2013–14 shows that conditions were wetter in the north and much of Western Australia but drier in the east and far west. This is consistent with the long-term rainfall trend. Since 1950 rainfall has increased in the north and northwest but declined along the west coast and most of eastern Australia. Many of the wetter areas in 2013–14 experienced exceptional events or series of events, rather than rainfall spread over the season. The drier conditions were particularly significant for southern Queensland and northern New South Wales where drought has persisted since 2012.



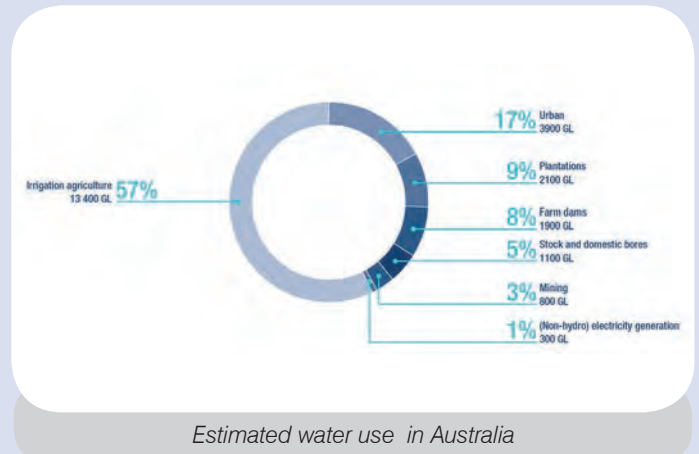
Surface water is the main source in eastern Australia. The volume available for use in any one year is dependent on rainfall, streamflow and storage levels. Seasonal water allocations are variable and determined according to annual conditions. At 30 June 2014 storages were at about 63% of capacity. Drier conditions led to the decline from almost full at the end of 2012. In the northern Murray–Darling Basin, which has been in drought, storages were at 29% at 30 June 2014. However the southern storages held 69%, where rainfall conditions were closer to average.

Groundwater is less responsive to annual conditions but longer-term trends are affecting availability in some areas. Rainfall decline since the 1970s is evident along the west coast of Western Australia where groundwater is under stress and surface water resources are limited.

Water levels in the majority of groundwater bores analysed across the country were close to average during 2013–14. The exceptions were South Australia and Queensland, where levels were above average at more than one-third of bores. For Queensland, this reflects the above-average rainfall during 2010–12. The impacts of the last two years of drought and reduced recharge were not yet reflected in the water levels.

While it varies from year to year, irrigation is the dominant water use in Australia, comprising 57% of total use in 2013–14. Surface water use fell by 24% in the Murray–Darling Basin in response to the drier conditions and groundwater use increased by 18%.

Less than 20% of all water was used by urban populations. This level has remained relatively stable since the Millennium Drought. Desalinated water is increasingly important in many parts of the country and contributed 39% of urban water supply in Perth in 2013–14. It is also an important source of urban water in Adelaide.



Water in Australia is complemented by Regional Water Information and the Monthly Water Update.

Spatial information down to river region level on the status of water resources and use during the assessment year can be accessed at www.bom.gov.au/water/rwi

A snapshot of rainfall and streamflow for the previous month relative to average conditions can be obtained at www.bom.gov.au/water/monthly-water-update/

USELESS FACTS

Why is there's a tiny pocket in your jeans

Ever wonder why there's a teeny-tiny pocket above the regular ones in the front of your jeans? Well, wonder no longer.

It's a watch pocket, originally for men who wore pocket watches and needed a protective place to store them. Though, as Levi's points out, the pocket has also served many other purposes over time, from condom storage to coin hoarding.

The Levi Strauss blog confirms their conclusion: "The first blue jeans had four pockets—only one in back and, in the front, two plus the small, watch pocket. This extra pouch has served many functions... condom pocket, coin pocket, match pocket and ticket pocket, to name a few."

Not only is the pocket extremely useful for holding tiny trinkets, it is also loved by denim heads for the faded and worn nature it takes on over time. The pocket appears on the oldest pair of jeans in the Levi's archives, which date to about 1879.



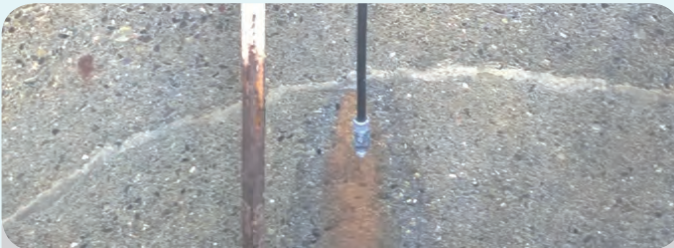
KEMPSEY PUMP STATION REFURBISHMENT

Dealing with the effects of Concrete corrosion caused by hydrogen sulfide in sewer networks can be a major problem. Kempsey Shire Council has utilised a range of strategies under its asset maintenance program to refurbish sewer assets throughout Kempsey's sewage network. Council's "Water Projects Group" has been dealing with this problem and recently refurbished a sewage pump well in Gladstone, an outlying village within the Kempsey Shire. The walls of the concrete Pump well were extensively corroded by hydrogen sulfide.



The G1 pump station

To isolate the well so repairs could be carried out, the pump well was bypassed by installing a pump in the receiving access shaft and connecting the pump line into the rising main in the valve pit. All level controls were duplicated in the access shaft so controls and alarms would be transmitted as normal.



Corrosion on the wall prior to coating



The bypass pumping system

This arrangement was trialled for couple of days to ensure the bypass system would cope.

The pump well was then drained and pressure washed a number of times to remove loose concrete and fat build up from the internal walls. During this process the waste was removed with a vacuum truck.

After cleaning it was revealed the original slurry layer had been completely eaten away, leaving exposed stones and voids in the surface of the walls.

Contractor Mattioli Bros were awarded the job and decided to protect and smooth the surface by applying a coat of Intercrete 4840 supplied by International. Large voids and cracks were filled prior to spraying an initial coat at 1000 microns. The second coat was also applied at 1000 microns, but in areas of high erosion the product was applied excessively and brushed smooth to fill voids. The final coat was left for eighteen hours to cure.



Wet well wall - Before Coating



Wet well wall - After Coating

The cleaning and coating process took two and a half days to complete.

Contributed by **Chris Seam**, Kempsey Shire Council

DRUNK WATER OPERATOR LEAVES TOWN WITHOUT WATER

A water plant operator is facing disciplinary action after leaving residents without water during an entire weekend in October because he was too drunk to open the plant.

The South African operator will face an internal disciplinary process, Times Live reported, citing local municipality spokesman Joseph Ngala.

"Yes, I can confirm that the official who was tasked with opening water for the public failed to do so for the whole weekend [between October 2 and 4]. We learned during a council meeting that the municipal manager has since intervened and placed another water plant operator into the area. However, the official is now facing disciplinary action following the dry taps that were a result of his behavior," the spokesman said.

Infrastructure problems, including a faulty pump, require an operator at the plant to ensure water is available to local residences.

"We had a schedule to share the opening of the water with the other villages and towns. However, the water plant operator's actions led to total water shortage. As the municipality, we would like to apologise for the ordeal," the spokesman said, per the report.

The problem occurred in the South African province of Mpumalanga in the town of Mbombela. The town has a positive track record on water issues. It is one of the top performers on a regional Blue Drop audit, a leak reduction program in South Africa. The "Blue Drop Scorecard" rates how well municipal tap water authorities are functioning.

"Assessments are conducted by a panel consisting of a qualified drinking water quality professional as Lead Inspector, 2-4 Inspectors and a Learner Assessor who also coordinates the logistical arrangements of the assessments," the 2012 Blue Drop Report said.

Source: www.wateronline.com - News feature 25 November 2015

TAKE THE WATER CHALLENGE



WaterAid has launched its first ever Water Challenge for 2016. Challenge yourself to make 'just water' your only beverage for 14 or 30 days this March, or take the original 'Walk for Water' challenge and walk or run your way to good health between 14 and 20 March.

Coinciding with World Water Day on 22 March, the Water Challenge is WaterAid's annual fundraising event. Choose your Water Challenge, improve your health, and raise money to help provide lifesaving safe water to the world's poorest communities.

"The Water Challenge is a terrific opportunity for people to get healthy while supporting WaterAid to transform the lives of the poorest and most marginalised people in the world by improving access to safe water, sanitation and hygiene," said WaterAid Australia Chief Executive Paul Nichols.

The Water Challenge is free to enter and there are several ways you can get involved:

Drink Just Water: Water is essential for life and good health. Challenge yourself to make 'just water' your only beverage for 14 or 30 days in March, to improve your health and raise money to help provide lifesaving safe water to others.

Walk for Water: Get active this March and take the original Walk for Water Challenge. Set your personal distance goal and walk or run your way to good health between 14 and 20 March. 10,000 steps is the average distance walked by the world's poorest women and children to collect water each day. 10,000 steps is approximately 7 kilometres, or 90 minutes of walking.

WaterAid is also proud to partner with Netball Victoria and the Melbourne Vixens. As part of our annual Water Challenge, netball teams can participate in Goals for Water, between 11 and 17 April.

What: The Water Challenge

When: March 2016 – Drink Just Water and Walk for Water, April 2016 – Goals for Water

Who: Help transform the lives of the poorest and most marginalised people by improving access to safe water, sanitation and hygiene.

Why: Over 650 million, or one in ten, do not have access to safe water and 900 children die every day from diarrhoea caused by unsafe water and poor sanitation.

How: Register now at www.waterchallenge.org.au

WASTEWATER – AN UNTAPPED RESOURCE

Population growth, increasing demand for natural resources, rising costs and community expectations are impacting management of Australian water resources.

These pressures require the water industry to develop innovative and more efficient processes to optimise resource recovery from wastewater, according to a new report by the Academy of Technology and Engineering (ATSE) launched in December 2015.

The report *Wastewater – An Untapped Resource?* was launched by Professor John Thwaites, Chair of Melbourne Water and former Deputy Premier of Victoria.

The report notes that Australian wastewater contains nutrients, carbon, energy and other inorganic and organic resources worthy of recovery and examines the potential industry opportunities for resource recovery in Australia.

It reviews international case studies, considers the Australian regulatory framework and evaluates the key technologies and products, as well as analysing several investment options. The report shows that there are several significant value-creating opportunities to pursue for investors in Australia in the medium term.

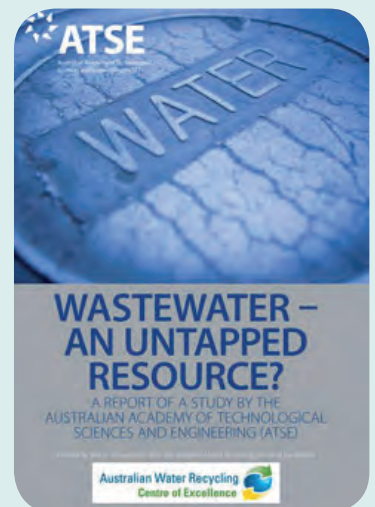
Wastewater – An Untapped Resource? was prepared by ATSE with funding from the Australian Water Recycling Centre of Excellence.

The report was developed by a working group led by Dr John Burgess FTSE, a chemical engineer who has more than 20 years' experience as a senior executive and research leader. It included Professor Damien Batstone, Deputy Director of the Advanced Water Management Centre at the University of Queensland, Dr Tim Muster, a Senior Research Scientist from CSIRO Land and Water, and Mr Francis Pamminger, Manager of Research and Innovation at Yarra Valley Water.

The launch, at Melbourne Water's Docklands office, was chaired by Dr Paul Greenfield AO FTSE, a Director of ATSE and Chair of the International Water Centre in Brisbane.

Wastewater – An Untapped Resource? is available online at www.atse.org.au/atse/subjects/natural-resources/content/subject/natural-resources.aspx

ATSE is an independent body of 800 eminent Australian scientists and engineers enhancing Australia's prosperity through technology and innovation



NEW ANGLESEA OUTFALL

Barwon Water successfully replaced its recycled water outfall pipeline at Anglesea in November 2015 in a major land and ocean operation spanning 16 hours.

The existing outfall – a 30-metre deep drop structure to transfer Class B recycled water from the plant to the base of the cliffs and a 185-metre outfall pipe to discharge flows out to the ocean – was constructed in 1995.

Since then, cliff erosion has exposed the section of the outfall that runs through the base of the cliff leaving it susceptible to damage.

In July 2015, a section of cliff collapsed, cracking the pipe and resulting in Class B recycled water spilling onto the beach. The instability of the cliff and risk of further collapse meant it was too dangerous to carry out repairs.

Barwon Water had been monitoring the pipeline and plans for its replacement had been approved by the Board. Preliminary work was underway when the collapse occurred. The project was then fast-tracked to ensure the critical infrastructure was completed before the busy summer period.

A dedicated project team comprising Barwon Water engineering, construction, safety, quality and environment and communications and stakeholder engagement staff was established and Dunstons Construction Group engaged.

After months of planning, a drill rig was set up in early October to bore the new outfall.

While the drill bored from the water reclamation plant, under the base of the cliff and ocean floor to emerge 500 metres off the coast, a separate operation was underway in Melba Parade, Anglesea.

Twelve-metre lengths of 350-millimetre diameter polyethylene pipe were laid out and welded together to form the new 700-metre outfall pipeline.



The 700-metre pipeline laid out in Melba Parade, Anglesea.

On 8 November 2015, the pipeline was moved on rollers along Melba Parade and across the beach at Point Roadknight where it was attached to a boat and towed across the ocean.

Once at the outfall end point, the pipe was connected to the drill head and lowered 10 metres below the surface before being pulled back through the bore to the water reclamation plant.

Barwon Water General Manager Infrastructure Services Paul Northey said the challenging project had gone smoothly.



The pipe being towed out to sea before being pulled back through the bore to the water reclamation plant.



The project team observes the pipe being towed from Point Roadknight beach.

“The project required a significant amount of onshore and offshore work as well as monitoring of tides, ocean conditions and a partial beach closure to allow the pipe to be safely moved onto the water,” Mr Northey said.

“As far as projects go, it was not your run-of-the-mill pipeline job. It was the first time in Barwon Water’s history that an outfall had to be replaced and was quite spectacular to see,” he said.

He said the new pipeline alignment would eliminate the problem of erosion exposing the outfall in future.

Connections to existing infrastructure at the water reclamation plant and underwater work on the outfall diffuser will be completed prior to Christmas.

TRADE WASTE DAY IN SPREYTON

A wastewater interest day was held at the Fonterra milk processing facility in Spreyton on 11 November 2015. This was the first event run by the Tasmanian Advisory Committee at a facility external to TasWater. The main topic was trade waste and Greg O’Rourke from Fonterra described the plant processes and all in attendance learnt more about the wide range of products made from milk. The day included an interesting factory tour which included a DAFF plant that is part of the site.

Greg Rook from the trade waste section of TasWater discussed the relationship between TasWater and Fonterra and described how they are working collaboratively to effectively manage the trade waste. This was followed by Bill Woods from TasWater who provided a presentation on biosolids and how they are managed across TasWater sites. Bill’s presentation included some of the ideas and opportunities that may be implemented at other sites in the future.



OPERATORS CORNER A TWO WAY STREET

When the Editor asked me to write about how I had been able to provide assistance to operations staff with wastewater treatment problems, my initial reaction was to think of how much operations staff have taught me solutions to “engineering” problems.

So, for the first of this series, I would like to pay small homage to the many operations staff that have taught me since I came out of Uni with a bit of paper that said that I had a degree and now go and learn!!

A number of years back (14 to be precise), yours truly was involved in a project with the editor to tackle a problem that has plagued most activated sludge treatment plants across the world; the dreaded algae growth on secondary clarifier launders. The “green weed” contaminates final effluent samples, is unsightly and can severely interfere with final effluent disinfection amongst other nuisances.



Launders with Algae

The project required a literature survey and a global survey of engineers, including their contract operations teams, to identify the most effective means of controlling or preventing algae growth on clarifier launders. Numerous responses were received however, the same old themes came up; brushes (if you don't mind replacing them weekly), covers (the civil engineering approach of, if it is unsightly-bury it) and launder sprays that leave nice race tracks in the algae at best. None of these were real alternatives to the hazardous and labour intensive solutions of operators regularly climbing into wet and slippery launders with watering cans of hypochlorite and a broom, spending hours scrubbing the launders clean whilst potentially inhaling some not particularly nice gases.

Fast forward a couple of years (circa 2003) and I am at a treatment plant with immaculately clean launders!!! How so, I ask? And then, the brilliantly simple answer was provided by the operators!!! The plant was one of my designs and, being the caring and sensitive sole that I am, I had specified a launder spray system to at least try and diminish the toils of my operator mates in keeping launders clean. As usual, it was an abject failure and I walked away with another bunch of operators left with a useless monument to engineering design.

However, operators don't like to let things go to waste. With the aid of an electric power point timer from K-Mart (you know, the ones that turn the lights on and off when you are on holidays), the spray was rigged to run only in the early hours of the morning during minimal or no flow periods when the sprays would impact on the algae and not the water flowing in the launder.

Now, the spray system also included a Y strainer on the suction pipe with an end cap to permit removal and cleaning of the strainer. All you do (and this is the really clever bit) is drop a couple of swimming pool chlorine tablets in the strainer and, hey presto, you have a

launder chlorine spray that sprays when there is no flow to deflect or dilute the chlorine from the algae and no one around to get a mist of chlorinated water. Full accolades to the operations team at Kawana on the Sunshine Coast. How to make an engineer's folly look good.



Unusual STP visitor

Since then, I have become aware of a similar system developed at Mid Coast Water in NSW (Australians are an inventive mob). Very smart refinements have also been made for plants that still have low flows, even in the “wee” hours of the morning, by the team at Wetalla in Toowoomba.

The smarts just keep coming! We looked all over the world for a solution and only had to look in our own backyard. Maybe the problem was that we asked the engineers and not operators-after all, learning is usually a two way street!!!

Acknowledgement – article first published in AWA Qld Branch Newsletter, September 2015

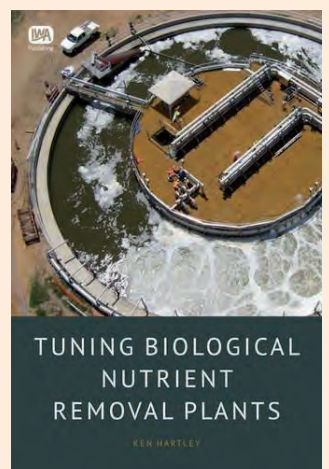
Contributed by **Peter Griffiths**

TUNING BIOLOGICAL NUTRIENT REMOVAL PLANTS

Members would be aware of the Practical Guide to Operating and Optimising Activated Sludge STP produced by WIOA in 2014.

Ken Hartley has also produced a book titled *Tuning Biological Nutrient Removal Plants* which is aimed at (a) operations personnel with responsibility for plant performance and operating costs, and (b) plant managers who also have an eye on plant capacity and the need for augmentation, preferably through a series of integral expansions achieved by identifying and overcoming bottlenecks.

The book's main focus is on identifying and taking advantage of unrecognised capabilities in your plant. The book can be purchased from AWA or IWA Publishing and its ISBN number is 9781780404820.



TECHNICAL TIP - INSPECTION SKILLS 101

"If it cannot be measured, it cannot be managed"

Inspecting a simple structure or a more detailed asset, requires some core skills to ensure accurate outcomes. These core skills include:

1. Understanding of the item being inspected – its materials, its operational aspects and its maintenance requirements
2. Good photography to capture the inspection progress
3. Recognising 'the evidence' present, that is relevant to the inspection scope
4. Consistency in outcomes, when inspecting multiple assets
5. Having the writing skills to present clear, concise and technical level documentation of the outcomes

Understanding: While it is imperative to have a thorough understanding of the item being inspected, it is also important to have 'upstream and downstream' knowledge of its operational aspects, as these can also impact on the asset and affect its performance. Protective coatings, concrete and steel structural limitations and construction techniques all play an important part in most water related infrastructure assets. These skills are acquired through technical training, 'on the job' experiences and sharing knowledge with others.



Good photography: Everyone with a smart phone considers themselves to be 'good at photography' (selfies being the evidence), however photography has to be learned and practised to be effective.

1. Camera settings are the first step. Set resolutions lower for most images – 500kb is effective for images being uploaded or inserted into documents. Use higher settings sparingly if technical detail is required for specialised defects, such as welds, cracks or things that need to be expanded for clarity.
2. Plan the shot to take in other aspects related to the individual image. When doing multiple asset inspections, take images from the same angle and perspective, so that comparisons can be made accurately. With renovations, take a 'pre' and 'after' shot from the same position to enable exact comparisons to be made.
3. Consider the background, shadows and other 'photo bombing' scenarios.
4. Frame the image so that it 'tells a story' to others, as that is the reason for conducting the inspection.

5. Take one, considered image of each item. If more detail is required, take a wider perspective shot, followed by a close up. This will establish where the defect is positioned in relation to other objects, and then follow with a close up image for better detail.

Recognising the evidence: Take a broadly focused view when inspecting an asset, as small pieces of seemingly unrelated evidence, can often build a larger picture of the important issues being inspected. A patch of greener grass some distance away may indicate leakage from the primary asset. A screw or nut laying on the ground or floor may have come from a structural fixing or mechanical object that has the potential to fail. Bird faeces or staining on an upper wall area will indicate localised activity and possible contamination issues.

Consistency: For outcomes to be relevant, the inspector must maintain consistency in interpreting the evidence. Ratings must be established and maintained. Items which can be assessed as 'either way', should be rounded up or rounded down, but in a consistent manner. Images must match what is recorded in the written report, as it is not uncommon for two 'stories' being told within the inspection process. The person with the most skills, both technical and interpretive should be the one who creates the reports and finalises the inspection process. If more than one inspector is used, then constant de-briefs should be carried out to ensure that everyone is working to the same ratings and interpretations of findings. Confidence comes from consistency – if multiple reports of similar assets are varied, then the results may not be completely accurate and cannot be trusted by the end users to further their objectives.



Writing skills: The main object of an inspection process is to impart knowledge to others who were not present at the time, but who require the information to carry out asset management and maintenance processes. Inspection findings need to be analysed for consistency, accuracy and technical detail. The results of the analysis then need to be drafted into a document that is easy to understand, is not contradictory and can be understood by a variety of personnel, who may only have a limited knowledge of some aspects of the report. Good grammar, structured sentences and concise use of technical terminology is important. Proof reading by a second party, who may only have a limited understanding of the subject is another good test of conciseness and technical structure – if they can understand the 'import' of the document, then it has passed the test for 'knowledge transfer' to multiple levels of end user.

Contributed by **David Barry** from Aqualift Project Delivery

TELEMETRY AS A DATA JOURNEY



Collecting data is key to the effective management of remote assets within the water industry. But there are many demands that can impact on the choice of the technology employed and how useful the data will be; a need for real time analysis and response, substantial data files, regulatory constraints and a requirement for reliable, remote technology when operating in hostile environments, to name just a few.

Failure to take into account all variables, including the specific requirements of different applications, may well result in an incomplete data journey; inadequate data collection, poor connectivity, limited reporting capabilities and a monitored network performing well below its potential.

So how best to ensure this data journey remains simple and cost-effective yet provides advanced reporting and maximises performance? How best to select the right technology for any particular application?

Consider the 4Cs checklist; questions for consideration when specifying the most appropriate telemetry equipment for your needs:

Collect - How is the data acquired?

- Location and environment:
 - o are IP68 and/or IECEx required?
 - o is there a need for a submersion sensor?
 - o is access likely to be remote? If so, will there be power, or is there a need for a battery with an extended life of 5+ years? If the latter, will the battery voltage need monitoring?
 - o is the ability to remotely configure and upgrade firmware a requirement? Would local contactless interaction be easier for site maintenance?
- The amount and nature of the data to be collected:
 - o Is there a need for rich telemetry functionality; dynamic trending, logging and intelligent alarm reporting?
 - o How important are memory and logging capabilities?

Connect - How do communications work?

- Will a requirement be for an internal and/or external antenna – does it need to be switchable?
- Telstra will phase out 2G by the end of December 2016, this will affect most M2M devices, therefore 3G connectivity becomes an important issue to factor in. Alternatively weigh up other options:
 - o GPRS, PSTN, Radio, Satellite
- Consider how the logger/RTU will connect securely to SCADA.

Communicate - How the data is presented?

- How should the data be presented to maximise its effectiveness? Consider the visualisation of data and its reporting.
- Ensure there will be sufficient reporting capability to support decision making.

Control:

The functionality, flexibility and configurability of intelligent RTUs play a major role in determining the degree to which assets can be effectively managed. This is true whether it be the monitoring of a single point or of hundreds of points over multiple sites.



Telemetry systems that integrate seamlessly with SCADA and provide detailed network data, can assist in a network's management and performance. Assessing the entire telemetry journey from collection to control allows an organisation to truly make data count; ensuring the most appropriate cost-effective system is employed.

Contributed by **Julia Gibson** from Metasphere Australia



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 29 February 2016 with the winner announced at the NSW Conference in Newcastle. The prize for the winner is an all-expenses paid trip to join the WIOA contingent on the tour of NZ and to attend the WIOG operations conference to be held in Auckland on 4-6 May 2016.

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.

LOW MAINTENANCE SCREENING



CST Wastewater Solutions has installed SCF (screen press for channel installation) screen extractor technology for the co-joined towns of Harden and Murrumburrah in NSW to improve the wastewater treatment system servicing approx 2,000 people.

The high efficiency SCF screens are engineered to deliver low maintenance performance with reduced OHS hazards for municipal and industrial waste water schemes. SCF allows for a much finer level of screening – 5mm compared to the old manually raked coarse bar screens with a 60mm aperture. This has led to a significant reduction in solids in the sedimentation tanks and trickling filters, more efficient treatment and less maintenance issues.



The screen extractor installed at Harden

They are also suitable for applications such as food and beverage, manufacturing and processing, mining, energy and resources camps to name a few. The technology – designed to lower investment, operational and maintenance costs in screening of municipal and industrial waste water with compacting of extracted solids - has also cut the amount of maintenance and waste that has to be handled by plant operators, reducing operational health hazards and improving OHS performance.

Not only are the tanks clearer and more efficient now, but the screen extractor also operates on level control and is fully automated, eliminating the previous labour intensive operator handling of screenings.



CST's SFC Screen Extractor

The SCF unit is constructed from AISI 304 or 316 stainless steel without the need for hanger, intermediate or bottom bearings. Featuring a space-efficient design suited to small sewage pump stations, the unit can handle up to 400m³ an hour. Easily retrofitted into existing pump stations with depths up to 8m, the screen allows removal of material before pumping.

Advantages include:

- High durability with low speed operation and robust shaftless spiral in high tensile carbon steel and stainless steel AISI 304 or 316.
- No jamming or blocking even with long or fibrous products. No mechanical components are in contact with handled products. The unit is fully enclosed for odour control.
- Extracted solid volume reduction up to 40 per cent, depending on the product.
- Capability to discharge solids in a plastic bag, single or continuous type. Capability also to wash solids.
- Intermittent operation in presence of solids.
- Different apertures from 0.25-10mm.
- Custom-designed machines possible.

The versatile SFC Screen Extractor can be installed in a channel or supplied with self-supporting tank, complete with inlet and outlet flange and optional bypass screen.

Contributed by **Mr Michael Bambridge**, Managing Director, CST Wastewater Solutions info@cstwastewater.com



LUCKY??? MEMBERS DRAW 2015

For the last 6 years Royce Water Technologies have generously supported WIOA in attracting new members by providing a fantastic prize annually for one lucky WIOA member. The 2015 winner of the Lucky Members Draw was Gavin Green from the Wyong Shire Council.

The Wyong Shire Council has a strict Gifts and Benefits Policy to ensure that all of its business dealings are transparent and open to public scrutiny, which unfortunately for Gavin, meant that he was unable to benefit from the prize as an individual.

As a valued Utility Corporate Member of WIOA, we worked with Wyong Shire Council and Gavin to ensure the prize was able to be used in their local community. Gavin chose to donate the prize to House with no steps, one of Australia's leading disability service providers that is working in the local community.

In the end one person's loss was a collective gain for the community and we were able to provide a real benefit for the community of Wyong, an additional outcome from their involvement as a Utility Corporate Member of WIOA.

Royce Water Technologies is proud to support the operational people in the water industry and have once again made a \$1000 travel voucher available for one lucky WIOA member. The prize is only available to WIOA financial individual members so ensure your membership fees are paid in full. A random draw will be conducted at the NSW Conference in Newcastle to determine the winner.

GRANT FOR DAF PROCESS



Aerofloat has been awarded a federal government Accelerating Commercialisation Grant for the development and commercialisation of the new Modular Aerofloat DAF.

To date the largest individual DAF manufactured by Aerofloat could treat 200L/min. Due to the unique design and cost effective DAF solution, Aerofloat was getting constant requests for a larger system.



Aerofloat 200 unit

In a number of projects, 2 or 3 Aerofloat 200 systems were being installed in parallel to increase the overall plant capacity. Due to the unique design of the hopper bottom and hopper top tank, the Aerofloat DAF could not simply be made larger and therefore Aerofloat engineers sat down to work on a new concept to increase the capacity, while still keeping the unique features admired by the many clients.

A Modular DAF concept was tabled and a prototype built and tested. The Modular DAF is a bank of Aerofloat tanks but only used one dissolver, one feed pump and one outlet valve. Michael Anderson, the chief designer said “this new design will minimise the moving auxiliary componentry, keeping costs low while still ensuring the core Aerofloat principles are incorporated to achieve superior effluent quality”.



Aerofloats Katie Anderson, Ray Anderson and Michael Anderson with Federal Treasurer Scott Morrison (second from right)

To assist in the commercialisation of the new design, Aerofloat applied for the Accelerating Commercialisation Grant – an extremely competitive process managed by AusIndustry for the Department of Innovation, Industry, Science and Research. After extensive due diligence, Aerofloat was awarded the grant which will run over an 18 month project.

THE RINO MIST CANNON

The Rino mist cannon is a compact fog maker that's perfect for a diverse range of applications. With its new, specially designed bracket, it can be fitted to walls, so it can get to work without using up valuable floor space.

Available through Tecpro Australia, the Idrotech Rino Fog Maker is popular for use where dust suppression, odour control, evaporative cooling, humidification or disinfection is needed.

“With the development of a purpose-designed, compact bracket, the Rino can be easily installed above ground height,” said Patrick Cooper, a technical consultant with Tecpro Australia. “This has the advantage of putting it in a position where the mist can disperse more easily, and it also means it's not taking up floor space. Plus in situations where there is heavy equipment being moved about – for example bulldozers in a waste transfer station – the Rino is safely out of harm's way.”

Fog makers work by propelling a powerful mist of micro droplets. In the case of the Rino, the fog generated can travel up to 30 metres. Its pivoting head allows it to rotate 180 degrees and its elevation can be adjusted from -20 degrees to +30 degrees.

“An optional tank and dosing pump is available with the Rino,” said Mr Cooper. “This means chemicals such as odour neutralisers or disinfecting agents can be added, and automatically dispersed where needed. It's a useful feature for a variety of settings, including waste treatment plants where odours or contaminants need to be neutralised.”



Tecpro - Rino mist cannon

The Rino is fitted with a ring of special nozzles positioned on the outlet, and an industrial fan projects the mist. Designed and manufactured in Italy, three different models are available with flow rates of 11, 15 and 21 litres per minute.

Tecpro Australia has specialist expertise in advising on nozzles for all types of industrial applications. Contact the technical team to learn more at www.dustsuppressionsystems.com.au.

HALVING ELECTRICITY RELATED WWTP EMISSIONS



When thinking about climate change, there is a tendency to think that some future technology will save us. New research from Xylem, however, shows that the global wastewater industry can cut its electricity-related greenhouse gas emissions by 50% using technology that is available today. About 95% of these reductions will either cost nothing or will actually save money.

Xylem's big idea actually comes from a small place – a research pilot plant at the Hammarby Sjöstadswerk R&D facility in Stockholm, Sweden. Xylem began a pilot study there three years ago, working with IVL, the Swedish Environmental Research Institute, to investigate new technologies and concepts in wastewater treatment.

“One of our goals was to understand the environmental impact of wastewater treatment technology over its entire lifecycle,” says Aleksandra Lazic, Senior Process Engineer, R&D Treatment at Xylem. “We also wanted to get a complete lifecycle cost analysis for an entire treatment plant, including capital investment and operating expenses. So after working with IVL to confirm effluent quality and optimize performance, we actually performed lifecycle cost analyses at three full-scale plants.”

The research found that the biggest factor in a wastewater treatment plant's operating expenses and carbon footprint was energy consumption. By using currently available energy-efficient technology these plants could lower costs and reduce emissions.

Testing it on a global scale

Then Xylem's researchers had another idea: What if every wastewater treatment plant in the world made these changes?

“After we collected all of this information, along with our understanding of the environmental and economic aspects of each treatment process, we wanted to take a step back and look at it from a higher level,” Lazic says. “How can we use this information to influence decision makers? Would these changes really work everywhere?”

Xylem selected three regions, the US, Europe and China, to test whether the results of their study would hold up on a larger scale. Over the course of a year, researchers studied the wastewater sectors in these regions to assess 18 distinct abatement opportunities – from pumps used to transport the water to the blowers used to aerate it.

The result: \$40 billion in savings

The research found that nearly half of the electricity-related emissions in wastewater management could be abated at a negative or neutral cost. This means that wastewater plants

could annually cut 44 million metric tons of CO2 emissions by making smart investments in technologies that will ultimately pay for themselves or actually drive additional savings.

The greatest investment return and emissions abatement opportunities were found in China, where 100 percent of the emissions abatement opportunities analysed could be realised at zero or negative cost. In this region, where the government is actively investing in water infrastructure, more than \$25 billion in net savings can be generated across the life of the equipment with the adoption of high-efficiency wastewater technologies. With the addition of the United States and Europe, the savings top \$40 billion, which could in turn be the capital used to make the much needed upgrades to our existing water infrastructure.

“At the global climate policy level, this is an example of how an industry can lead the way in significantly reducing emissions with smart investments that ultimately pay for themselves,” says Randolph Webb, Senior Analyst, Strategy and Business Development at Xylem. Webb helped prepare Xylem's report on the research findings: *Powering the Wastewater Renaissance*.

“Our next step is to use this study to encourage new partnerships with a variety of organizations to further explore key areas of the global study, such as the opportunity in China and the financial barriers to adopting these technologies,” Webb says.

To accelerate the adoption of highly efficient wastewater technologies, the report recommends new financing models that incentivize investments in low-carbon technologies, and recommends increasing the energy efficiency standards of wastewater equipment.

The full report or an executive summary can be downloaded from <http://poweringwastewater.xylem.com>

Source: *Impellor Online Magazine from Xylem*, November 3, 2015.



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:

Michael Besnard, Alby Shaw, Wayne Batchler, Ray McSweeney, Peter Jarman, Shaun Reynolds, Russell Wall, Kristen Grant, Anthony Woodhouse, Anthony Trindall, Kirsty Douglas, Martin Coromandel, Mark McNeil, Chris Hogan, Allan Tsang, Chris Wong, Abhas Nigam, Elizabeth Turner, Karey Wills, Sam Bracken, Shane Dyson, Eric Nielsen, Robert McKenzie, Terry Rankin, Terry Tottenham, Garry Charker, Richard Jones, Craig George, Robert Allen, John Southwell, Andrew Sharp, Mark Patmore, Alice Liao, Laura Fuhrman, Kyliegh Victory, Greg Clark, Adam Medlock, Kate Johnson, Janice Wilson, Matthew Sant, Michael McAuley, Brendan Rolfe, Dustin Brown, Mark Vairy, Russell Lenz, Kevin Kippenberger, Paul Davis, Robert Strickland, Ross Turner, Chris Reed, Peter Becker, Liam Tuohy, Colin Grandison, Ashley Reidy, Richard Borg, Grant Powell, Geoff Lukin, Mark Closter, Paul Wilkie, Phill Dack, Scott Eade, Nura Redzepagic, Nathan Pearson, Shane Underwood, Ben Pennell, Stacey Hamilton, Tony Anderson, Carlo Basile, Paul Clark, Matt Conn, Nicole Griffin, Wayne Hewitt, Shane Hutchinson, Tarlee Jones, Kate Larrad, Svetla Petkova, Marcus Pilgram, Jason Potts, Ryan Snell, Tony Staley, Michael Tulloch, Rod Wells, Alison Wilson, Philip Behrens, John Tusler, Jon-Paul Marrow, Adrian Minshull, Scott Hurley, Alan Kleinschmidt, Noel Biltris, Simin Sabah, Michael Armstrong, Paul Trevitt, Martin Faulkner, Peter Morris, Chris Perry, & Keith Craine.

New **Utility Corporate Members** include:

Mackay Regional Council & Western Water.

New **Corporate Members** include:

Compliance Monitoring, Aerofloat, Suez, Bioaction, Pioneer Pump, Polymaster, Icepro, Oxyzone, Rothenberger Australia, MDC Water, Pentair, Elster Metering, ACE Water Services, Victaulic Australia, Concrete Protection & Repair Services, Absafe, Bermad Water Technologies, Kwik-ZIP Spacers, Ecolab Pty Ltd T/as Nalco Australia, ITT Blakers, Draeger, JHC Infrastructure, Aquatec, GHD, CHT Australia, Water Engineers United, Watertest Systems, CAC Gas, Microfloc, Vac Group Operations, Furphy Engineering, Billabong Water, DeKort Pumps, Rex Barrett Industries, Air-Met Scientific, Corrosion Control Engineering, Convergent Water Controls, DEKS Industries, Arris, Innaco & Sterling Pumps.

THE LIGHTER SIDE – SOME COMPLETELY USELESS FACTS

- Stewardesses is the longest word typed with only the left hand.
- The sentence "the quick brown fox jumps over the lazy dog" uses every letter in the alphabet.
- It is impossible to sneeze with your eyes open.
- In England, the Speaker of the House is not allowed to speak.
- No word in the English language rhymes with month, orange, silver or purple.
- "Dreamt" is the only English word that ends in the letters "mt".
- China has more English speakers than the United States.
- Did you know you share your birthday with at least 9 million other people in the world?
- The name of all the continents end with the same letter that they start with.
- The microwave was invented after a researcher walked by a radar tube and a chocolate bar melted in his pocket.

COMING EVENTS

2016

- 28 February** PASS Award applications close
- 27 & 28 February** WIOA Weekend Seminar & AGM, Parkside Motel, Geelong
- 29 February** PASS Award applications close
- 18 March** Queensland Charity Bowls Day, Yandina
- 6 July** Operations Interest Day & Ixom South Australian Water Taste Test, Adelaide

2016 CONFERENCE AND EXHIBITION SCHEDULE

- 6 & 7 April** 10th WIOA NSW Water Industry Operations Conference & Exhibition, Newcastle
- 1 & 2 June** 41st WIOA Queensland Water Industry Operations Conference & Exhibition, Rockhampton
- 31 August & 1 September** 79th WIOA Victorian Water Industry Operations Conference & Exhibition, Bendigo

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NEXT EDITION

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