June 2015
Queensland Branch Newsletter
As this column goes to ‘print’, AWA in Queensland is going through the ritual ‘changing of the guard’ with the re-election of half of our Branch Committee. A number of our existing committee members have drawn their current time on the committee to a close due to other commitments. A big thank you goes to Tom Jamieson, Jeff Ballard, Bill Todd and Justin Watts who have all worked hard over the last few years. To steal a quote from Winston Churchill: “We make a living by what we do, but we make a life by what we give” and these team members have certainly given of their time back to the industry.

The upside of the process though is to welcome returning and new Branch Committee members who have been successful in being elected. I am excited to see so many long time AWA supporters putting their hands up and welcome Steve Tansley, Barry Holcroft, Margit Connellan, Karen Campisano, Justin Simonis, Partha Susarla and Andrew Mills to the team.

I also sincerely thank the other people who nominated for the Committee but were unsuccessful this time around. Please think about trying again next year: your interest is appreciated!

One of the recent themes of our activities is to work closely with other water industry organisations to ensure that we coordinate our efforts, make best use of volunteer time and give collective members value with minimal overlap. It has been gratifying to see AWA members actively involved with the successful inaugural Queensland Water Aid Ball, participating at the WIOA Queensland Conference in Toowoomba and the delivery of a joint technical session with Engineers Australia Queensland Water Panel. This is combined with our continued dialogue with Qldwater and LGAQ on Strategy and Policy issues. Rest assured the Branch Committee will be working hard to ensure continued coordination and collaboration.

I was fortunate to attend the WIOA Queensland Conference in Toowoomba to present the Leon Henry Operator of the Year Award which AWA supports. A hearty congratulations goes to Grahame Dunstan, Wastewater Services Coordinator from Cairns Regional Council, as well as the recipients of other awards at the WIOA conference. Also big congratulations to the WIOA team for putting on another fantastic conference.

The nominations for the other categories in the AWA Queensland Water Awards program draw to a close on 31 July 2015. We also have open the Call for Papers of the QWater (SEQ Regional) Conference which will be held in Brisbane in November. Please have a think about abstracts yourself or your colleagues may be able to submit.

Finally, I look forward to seeing as many of you as possible at NQWater in Cairns in late July. The program is confirmed and it is shaping to be yet another event for the North Queensland industry to be proud of.

Please feel free to send an email on qldpresident@awa.asn.au with your ideas or comments or catch up with things on the web site at http://www.awa.asn.au/QLD.aspx .
QLD YWP

Professional Development Seminar

On 28 May 40 Young Water Professionals participated in the first Professional Development workshop of the year organised by the AWA QLD YWP Committee. It was a great success with registrations sold out two weeks prior the event.

The workshop focused on 'Managing Successful Projects' and was led by industry professional and Senior Project Management Specialist, Dr Helen Johnson who lectures in the International Water Centre (IWC) Master of Integrated Water Management.

Participants were given the opportunity to explore new perspectives on project management and given practical tools on how to manage projects for long-term success.

In the second part of the evening participants were split into groups and invited to discuss stakeholder engagement as part of the design and planning phases of their projects.

“The workshop cognitively challenged participants. Conversations at the end of the evening were very engaging”, said Alycia Moore, Professional Development Coordinator at the AWA YWP Qld.

“I believe some people will walk away from the event and dismiss the information they received. At the same time, I believe that very same information will fundamentally change the way some of them approach their projects; for these people, I hope it will lead them onto a path which helps the world become a better place and optimises value to their clients.”

The event was sponsored by IWC and CH2M Beca and we thank them kindly for their support.

Article by Robert Goedecke

Thank you from Julie Smith, Isaac Regional Council
Queensland Operator of the Year, 2014

I was very honoured and proud to receive the 2014 QLD Operator of the Year award. I would like to thank QLD AWA for sponsoring this award, which enabled me to participate in the WIOA tour of New Zealand. With a bit of a bumpy start for the 3 Queenslanders we finally landed in Christchurch, where WIOA Executive Officer was waiting patiently for us. The group consisted of thirteen of us including our bus driver and tour guide Graeme Thacker.

The tour took off from Christchurch on the 2nd May and our first stop was the Rolleston WWTP. Very impressive, the solar drying system was very interesting. Thanks Guys the scones were yummy too. Arthurs Pass intake was awesome the climb was worth it. We had tea at the Blackball Hilton Hotel, very interesting. We found ourselves in the middle of a great debate. Had a look at Pancake Rocks, amazing what Mother Nature can do. We stopped at Peeky’s plant had lunch and some lessons in shooting. Other great plants were at Nelson, Belle Island, Picton and Wellington. In Picton we had some free time, so we all went fishing, even the girls. I would like to thank all of the hosts from the different councils and water authorities for giving up their time and weekends to show us around their plants. It is easy to see that all operators have the same pride and passion in what they do.

We gathered in Blenheim for the WIOG conference. I met some interesting people who shared their knowledge and ideas. I think I went and listened to all of the papers, some excellent ones. Ian Johnson’s talk was as inspiring and mind blowing as the first time I heard him speak.

After the conference it was back to Picton to catch the ferry to Wellington. After a tour of the Moa Point WWTP it was time to go to the airport, where I had to say goodbye to the new friends I had spent the last week with. Thank you guys, I haven’t laughed so much in ages. Thanks George and Anthony, Thanks Graeme for getting us to our destinations in one piece. This trip was definitely an experience I won’t forget.
Paul Heaton has a very interesting career path having studied and worked in a number of areas in Australia as well as overseas. He completed his civil engineering degree at the University of Queensland in 1985 and took up a position with the now defunct Camp Scott and Furphy (CSF) working with John Stapleton and Terry Wamsley. His first major project was the Coombabah WWTP Stage 2. He then left CSF and travelled to Israel and studied irrigation and soil management at the Agricultural Research Organisation in Tel Aviv and the Ben Gurion University of the Negev. Whilst in Israel he worked in a kibbutz for about six months.

Returning to Australia he joined the Rural Water Commission (RWC) in Victoria and worked on a number of dam projects as well as the Wimmera-Mallee water supply scheme. At that time John Langford was the CEO and Paul recalls meeting him on his first day and then 18 months later when John walked up to him and impressively greeted him by his first name. Whilst working for the RWC he gained a Post Graduate Diploma in Natural Resource Management at the University of New England. It was here that he met his wife, Julie.

Paul then headed to Western Australia where he took up a research position with the Centre for Water Research at the University of Western Australia. Here he completed a Masters Degree in Catchment Management.

Continuing his thirst for new experiences, he joined Power and Water in Alice Springs, then SKM in Townsville, prior to re-joining Power and Water in 2001 as the Manager Water Facilities in Darwin. He was appointed the General Manager Water Services five years later, and during that time was lucky enough to be awarded a Churchill Fellowship to study soil aquifer treatment systems in the USA. In 2010 he was offered the role of Chief Operating Officer with the newly formed Alconnex Water and was appointed as the Director of Gold Coast Water when Alconnex Water was disbanded in 2012.

Paul notes that some of the challenges at Gold Coast Water have been getting their systems re-integrated with the Council’s systems. He notes that whilst development has been ‘slow’ for the last four years there is now movement in this area and with the forthcoming Commonwealth Games the pace has picked up considerably. He says that whilst in the past Gold Coast development was mostly ‘greenfield’ in the future it will be ‘brownfield’. The challenge ahead is getting the team focussed on delivering infrastructure to support this development.

What gives him a buzz about his job is working with people at all levels and providing high quality services to the people of the Gold Coast.

He and his wife Julie have four children and this keeps them both pretty well occupied at weekends. He still has time however for their morning ritual of a walk along beautiful Tallebudgera beach.
Ken Hartley, one of AWAs longest standing members has recently retired after 48 years of service to the water industry. Ken is acknowledged as one of Australia’s leading wastewater treatment process engineers. There are many wastewater plants in Australia that bear his signature as process designer. These include various stages of wastewater plants at Merrimac (Gold Coast), Pulgul Creek (Hervey Bay), Werribee (Melbourne), Bundaberg, North Rockhampton, West Byron, Brunswick Valley, South West Rocks, Maroochydore, Coolum, Thorneside and Cleveland Bay (Townsville). Ken’s oxidation ditches were said to be bullet proof.

Ken started his career with the South Australian Engineering and Water Supply Department (EWS) having graduated from the South Australian Institute of Technology in 1966. He worked with EWS for fourteen years on various water and wastewater projects. The highlight of this period of his career was running a pilot plant program and the concept process design of the 720 ML/d Happy Valley Water Treatment Plant.

For those who know Ken, it will be no surprise to learn that a major organisational restructure of EWS in 1981 induced him to move on. John Ryan, formerly from GHD and now retired, offered Ken a job in GHD’s Brisbane Office. Whilst Ken had a good mix of process design skills in both water and wastewater most of his work at GHD ended up being on wastewater treatment (municipal and industrial). Ken decided to move on from GHD in 1997 and joined the University of Queensland’s Advanced Wastewater Management Centre where he provided assistance to various research projects.

While at AWMC he also acted as the independent investigator for a major odour event in Adelaide caused by problems at the Bolivar STP. He stayed with the Centre for approximately 18 months before deciding to set up his own business in 1998. He maintained this business until his retirement late 2014.

During his career he worked on a number of overseas assignments; this included project experience in China, Fiji, Indonesia, Malaysia, New Zealand, Oman, PNG, Philippines and Singapore, with technical visits to Europe, UK and USA – a healthy mix of overseas experience.

Ken has had an ongoing interest in developing his process design knowledge through analysis of performance data from operating facilities. As part of this interest he has authored over sixty technical publications including three books. The first Operating the Activated Sludge Process, was published in 1985, the second, Chemistry of Chlorinated Swimming Pools, in 1989 and the third, Tuning Biological Nutrient Removal Plants, in 2013. Being the disciplined person he was, he tried to devote the first hour of each day to writing, before getting onto fee-paying work.

In his retirement, Ken and his wife Kathy have moved to a new house at Brookwater. He currently has no special plan to fill the void left after an illustrious career as a process designer other than spending time with his extended family that includes two dogs, two daughters, one son and five grandchildren.
The Whitsunday Regional Council called for Expressions of Interest (EoI) for Design, construction, operation and maintenance for three sewage treatment plants in November 2010. Eight EoI’s were received and after an evaluation of the EoIs two companies were selected for the tendering process, these being Tenix and UGL. Following this the WRC undertook an Early Contractor Involvement phase, which involved the contractors participating in a number of workshops. A Request for Tender was issued on 17 June 2011 and this closed on 12 August 2011. Submitted tenders were then evaluated by WRC and final award of the tender to Tenix made in January 2011 for the total tender price of $50m (capital cost).

The tender award was for two plants only, these being the Cannonvale STP and the Proserpine STP. WRC decided not to proceed with the Bowen STP upgrade at that time. The Cannonvale STP was to be a new plant with capacity of 20,000 EP and producing an effluent of quality TN 5 mg/L and TP 1 mg/L. The Proserpine STP was also to be a new plant with capacity of 4,000 EP and producing a similar quality effluent. Both plants were to replace existing older technology plants.

Tenix proposed an MBR type plant for the Cannonvale STP with a 30 day design sludge retention time to provide for robust operation. For Proserpine, Tenix proposed an Intermittently Decanted Extended Aeration process with the use of ‘sugar syrup’ to achieve the required nitrate trimming.

Whilst award of Contract to Tenix was made in January 2011, work did not begin on site until June 2012. This delay in the construction start was because of the intervening Christmas period, to avoid the wet season and to enable the design work to get sufficiently advanced prior to construction commencing.

Construction was completed by February 2014 and this included the plant proving period. WRC reports that there were only a few issues during construction and commissioning was achieved with few issues also.

The contract has a 5 year O & M period with a potential 5 year extension. The plants have now been operating for a period of 1 year under the management of Tenix. WRC provided the option for operators to transition to the new operator or to continue working with Council. WRC reports the transition from a Council operated plant to one operated by a private company has been relatively seamless.

Tenix provide monthly reports to Council on the plant performance and also report on a number of KPIs. The plants have fully achieved licence since commencement of operation. WRC note that operating costs have increased substantially reflecting the high quality effluent produced and the stringent licencing and reporting requirements.

The Cannonvale plant had 3 licences to comply with being GBRMPA, DEHP and EPBC.
In January this year Unitywater awarded a contract to TRILITY Pty Ltd to rehabilitate the Redcliffe Sewage Treatment Plant (STP) under a Design, Build Operate and Maintain (DBOM) agreement. The contract requires TRILITY to carry out a number of improvements to the plant and to operate the plant until 2022. Unitywater will invest $28.6 M in delivering the associated capital works.

The Redcliffe STP was previously operated by a private company until taken over by Unitywater in June 2012. At that time the plant was performing poorly and was generally in poor condition.

Unitywater made a number of initial amendments at the plant to improve the operator safety and also made a number of process and operational changes to improve performance. Nevertheless the plant still had a number of deficiencies that needed to be addressed and hence the engagement of TRILITY under this DBOM agreement.

The Redcliffe STP has been identified under Unitywater’s Treatment Services Plan as one of its major regional treatment sites and is planned for expansion in 2026. This current DBOM contract will not provide additional capacity above the nominal 70,000 EP capacity and will maintain the effluent quality licence requirement of TN 5 mg/L and TP 1 mg/L. However, the current contract will provide for improved operability, safety and process robustness.

The tendering process for the Redcliffe plant commenced with an industry briefing session in December 2013. Following evaluation of the pre-qualification submissions, four companies were shortlisted for tendering.

The advantage of the DBOM delivery method is that the interfacing between design, construction and operation activities is fully integrated and under the control of one entity.

The successful tenderer, TRILITY, offered a package of general improvements to the plant including amongst other things new inlet works, improvements to the sludge handling system with additional sludge digesters, improvements to the aeration system and a new odour control system. TRILITY has now taken over operation and maintenance of the plant from Unitywater with their construction work due to commence in the coming months.

The TRILITY team includes MWH as design consultants, Aquatec Maxcon as mechanical equipment supplier / installer and Alliance Automation as the electrical equipment supplier / installer.
A healthy AWA dinner meeting audience of around 50 people gathered at the Ship Inn on 6 May 2015 to hear Professor Mara argued that while the 2006 WHO guidelines on wastewater use in agriculture adopts a default value for the tolerable additional burden of disease of ≤10−6 DALY loss pppy, this is too conservative an approach. It unreasonably dissuades the wider use of wastewater for the irrigation of food crops.

The disability-adjusted life year (DALY) is a measure of overall disease burden, expressed as the number of years lost due to ill-health, disability or early death. It was developed in the 1990s as a way of comparing the overall health and life expectancy of different countries. The use of the DALY is becoming increasingly common in the field of public health and health impact assessment (HIA).

The WHO 10−6 DALY loss pppy was apparently chosen as equal to the USEPA’s 10−5 waterborne cancer risk in per person per 70-year life – i.e. 1.4 ×10−7 pppy. BUT actual all-cancer incidence in USA was 1.8 ×10−3 pppy in 2006. So, is a factor of safety of FOUR orders of magnitude justifiable or cost-effective? Professor Mara believes not.

The USEPA accepts a waterborne-disease infection risk of 10−4 pppy. Using EPA’s disease/infection ratio of 0.1, this equals a waterborne disease risk of 10−5 pppy.

This is FIVE orders of magnitude lower than current actual incidence of diarrhoeal disease in USA (ca. 1 pppy) (global incidence of DD is 0.1–1) and THREE orders-of-magnitude lower than current estimate of incidence of waterborne disease in USA (1.6 ×10−2–4.3 ×10−2 pppy).

The implications of this for wastewater treatment if a 10−4 pppy figure is adopted would be:

Restricted irrigation: 1–2 log unit pathogen reduction – to be achieved by wastewater treatment. Wastewater treatment to achieve only 1–2 log unit pathogen reduction is both simple and affordable

If it is a municipal wastewater treatment plant, then design for 2 log unit reduction (e.g., a 1-day anaerobic pond + a 4-day facultative pond)

If urban agriculture, then a three-tank/pond system: on any one day, one tank is filled, one tank allowed to settle, and contents of third tank used for irrigation [+ hygiene education for urban farmers].

Professor Mara started his presentation with some apparently ‘frightening’ figures about food standards. Did you know that according to European Union (Directive 92/46/EEC) the permitted total coliforms in dairy products in Europe per 100 g or ml are: Butter1000; Milk100; Ice cream10,000. Public Health England considers it acceptable to have up to 10,000FC per 100 g in ready-to-eat foods. Wow!!!.

In summary: Professor Mara’s proposition about effluent use sounds entirely reasonable – but what can we do about this?

Our thanks to Helen Stratton and the team from Smart Water and Griffith University for their help in organising this.
Upcoming Events

23-24 July 2015  North Queensland Regional Conference, Cairns
Wed, 5 August 2015  Paul Heaton Gold Coast Water, Brisbane Qld (to be confirmed)
Fri, 21 August 2015  Women of Water Networking Event, Brisbane
Wed, 26 August 2015  Breakfast, Seqwater Water Security Program, Brisbane
Fri, 18 Sept 2015  Qld Gala Dinner and Awards Night, Brisbane
Sat, 10 October 2015  YWP Amazing Race, Brisbane
Wed, 14 October 2015  Unified Water Operating Platform, Brisbane

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