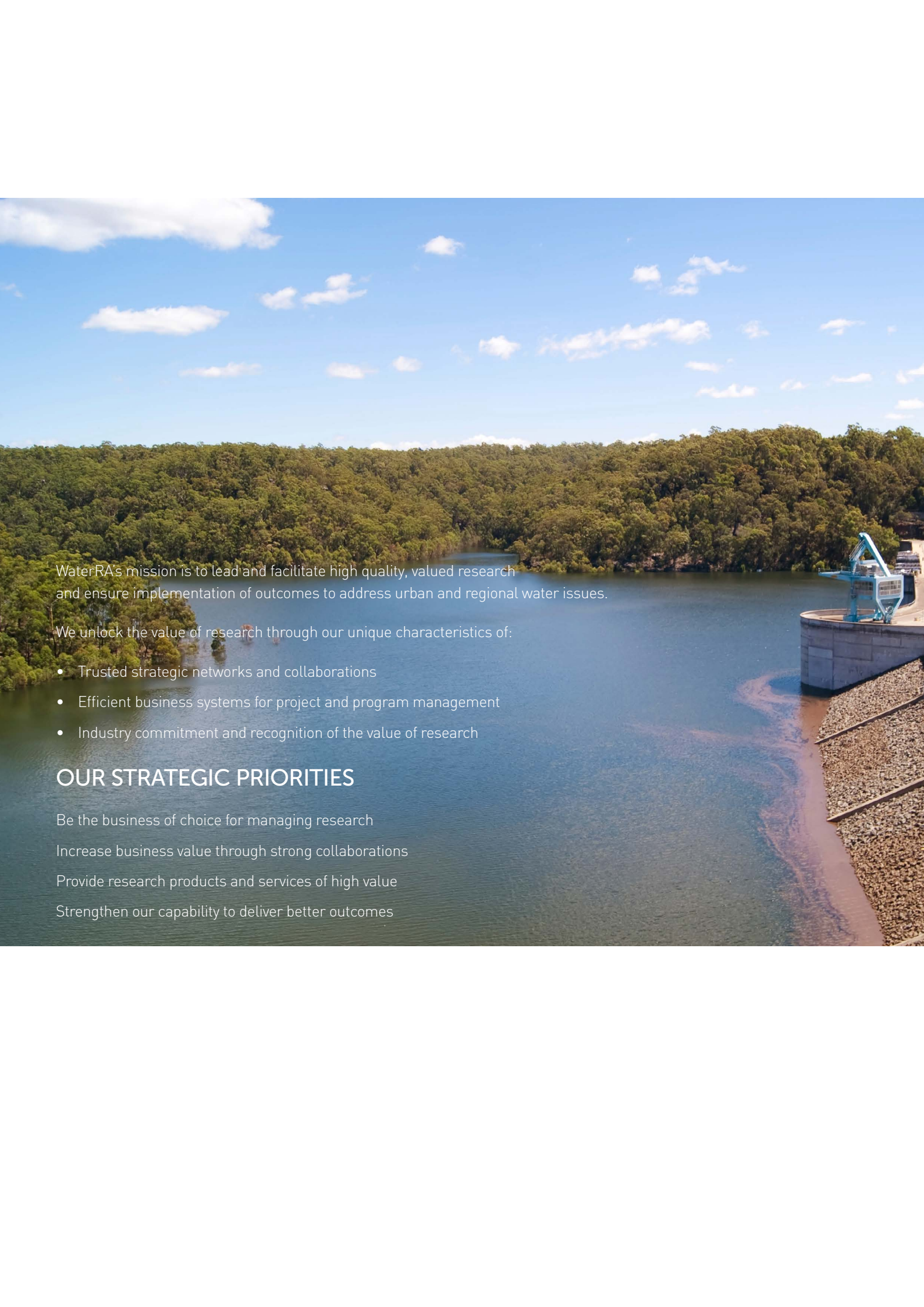


WATER RESEARCH AUSTRALIA LIMITED
ANNUAL REPORT



2015/2016



WaterRA's mission is to lead and facilitate high quality, valued research and ensure implementation of outcomes to address urban and regional water issues.

We unlock the value of research through our unique characteristics of:

- Trusted strategic networks and collaborations
- Efficient business systems for project and program management
- Industry commitment and recognition of the value of research

OUR STRATEGIC PRIORITIES

Be the business of choice for managing research

Increase business value through strong collaborations

Provide research products and services of high value

Strengthen our capability to deliver better outcomes



ANNUAL REPORT 2015–16

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Cover photo: Angus Fanning, 2015 WaterRA Honours student
Hunter Water and University of Newcastle
Sampling on reef at Burwood Beach



FUTURE PROFESSIONALS ARE CRITICAL FOR THE SUSTAINABILITY OF AUSTRALIA'S WATER INDUSTRY.

The National Skills Audit 2008 predicts that by 2018, there will be a projected gap of 26,600 jobs - or 47 per cent of national requirements.

WaterRA, with other water industry based research agencies, is maintaining a focus on capacity building for our industry, and for the country.

Over the past eight years, Australian companies have contributed nearly \$1,000,000 through WaterRA to support postgraduate students.

WaterRA has set up a scholarship fund to support students interested in a career in the water industry to become tomorrow's young professionals - skilled and employable researchers and practitioners.

WaterRA's not-for-profit status means that you, or your company, can sponsor post graduate student scholarships in the water industry. The WaterRA Scholarship Fund is an option for organisations looking at ethical or philanthropic support for Australian industry, via a student project.

A focus on building future capacity and succession planning benefits the water industry, and most importantly, the community. Australia's water

industry needs high calibre research to inform operational practice and water industry guidelines, respond to emerging issues and ensure the continued supply of safe water for our communities.

Postgraduate (PhD, Masters and Honours) student projects remain an effective means of undertaking research projects and provide excellent research training for future water professionals.

The benefits of WaterRA sponsorship are not just financial!

WaterRA provides orientation, networking opportunities, professional development, exposure to the water industry and a mentor. PhD candidates are supported to attend an international conference, and give at least one presentation at a domestic water industry meeting.

If you are interested in making a donation, or learning more about the WaterRA Scholarship Fund, contact us:

info@waterra.com.au

PROJECT BENEFITS 2015-16

RESEARCH FOCUS AREA

1

THE INDUSTRY NEED

2

ACTIVITY

3

INDUSTRY BENEFITS

CLIMATE CHANGE

Decision-appropriate data and techniques for informed decision making in the face of climate uncertainty

WORKSHOP

Climate Change

PROJECT NAME & INVESTMENT

Climate Change - data driven decisions
Cash \$350k over 3 years

RISK MANAGEMENT

Climate change adaptation becomes business as usual

PRODUCTIVITY GAINS

Best practice planning for climate change, compatible with the WSAA climate change adaption guidelines

MANAGING CONTAMINATION IN WATER

E. Coli is a useful indicator organism for faecal contamination, but strains have been discovered which can exist outside of a host, giving suspected false positive detections

WORKSHOP

Environmental *E. Coli*

PROJECT NAME & INVESTMENT

Management of Environmental *E. Coli* (#1101)
Cash \$250k over 2.5 years

SERVICE DELIVERY BENEFIT

Evidence/science based protocols between regulators and utilities

IMPROVED RISK MANAGEMENT

Better understanding of the risk of environmental *E. coli*

MANAGING SOURCE WATER

Knowledge transfer about the risks of *Cryptosporidium* and other pathogens in drinking water sources.

WORKSHOP

Cryptosporidium risk in Catchments – co-hosted with NSW Department of Health

RISK MANAGEMENT

Better awareness of drinking water catchment pathogen risks

OUTPUT

WaterRA Factsheet
'Removal and Inactivation of *Cryptosporidium* in the environment'

MANAGING SOURCE WATER

Centralised treatment can be costly exercise for utilities servicing smaller communities (< 40 households)

PROJECT NAME & INVESTMENT

Decentralised Treatment Solutions for Regional and Remote Water Supplies (#1077)
WaterRA \$100k over 1.5 years

PLANNED

Point of entry device trial and testing protocol in development

SERVICE DELIVERY

Improved understanding of the risk of different servicing options for small communities

PRODUCTIVITY GAINS

Cost effective per capita, servicing faster to roll out and better whole of region outcomes.

NATIONAL RESEARCH STRATEGY & POLICY / DIRECTION SETTING AND REVIEW

WaterRA aims to achieve a balanced portfolio of short and long term high impact research. Our research engagement is national and covers urban, regional and remote water. We also participate in international research to maintain linkages for the benefit of our members.

The scope of our research includes all aspects of drinking water, recycled water and wastewater, and is guided by the national urban water research strategy produced by the Water Services Association of Australia (WSAA) in 2016.

WaterRA has identified ten key focus areas that support the delivery of the national strategy and WaterRA's mission. (figure 1).

The Strategic Research Program structures WaterRA's research portfolio to:

- Align with the WSAA Urban Water Research Strategy
- Apply the focus areas for regional and remote communities
- Be consistent with priorities and perspectives gleaned from industry feedback
- Provide a structured approach to managing and delivering current and future directions of research programs
- Form a basis for better engaging with members and industry
- Integrate across the education program and all other organisational activities
- Be informed by our Strategic Advisory Committee

COMMITTEES

Membership of National Committees

- AWA Water Quality Monitoring and Analysis Specialist Network Committee
- Advisory committees for Victoria University and Curtin University
- National Water Research Access Portal Committee
- Nominee to the Australia Standards Committee FT20 Water Microbiology Committee (Dr Julie Gladys-Croué, Curtin University)

International Committees and representation

- CEO is Board member of Global Water Research Coalition
- Chartered Institute of Water and Environmental Management Hong Kong International Forum on Lead/Heavy Metals in Drinking Water - Dr Andrew Bath (Water Corporation) nominated by WaterRA to attend
- GWRC Antibiotic Resistance and Microplastics Workshop – Prof Jean Philippe Croué attended on behalf of WaterRA

ADVOCACY AND ANALYSIS

Communication via website

- 107 news items published on the WaterRA website
- Water Matters newsletter published monthly for Members and other stakeholders

Communication via presentations

- Key Note address at the IWA Young Water Professionals conference, Sydney February 2016 (CEO)
- Presentation to the Victorian Water Business Managing Directors meeting, Bendigo, September 2015 (CEO)

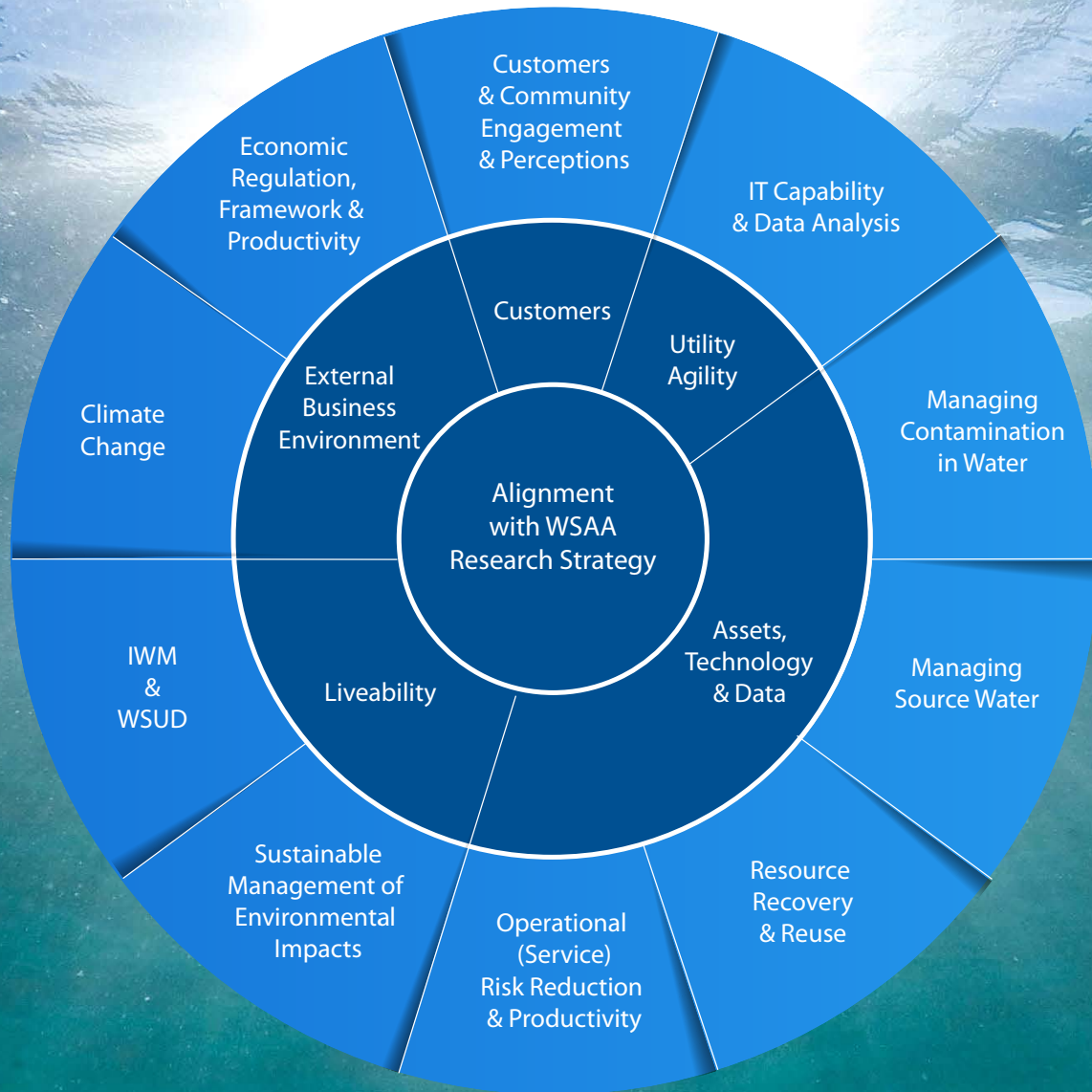


Figure 1. WaterRA research focus areas

The outer circle lists the ten focus areas WaterRA uses to underpin the WSAA Urban Water Research Strategy



PROBLEM DEFINITION

2015-16 was the first year into a new business model, where research projects are now generated via the Community of Interest workshop process. Each workshop has its own unique challenges and requires an adaptive approach to the problem presented and the group involved. The process has been a resounding success, in that the industry has been participating and funding projects, and a number of non-traditional stakeholders are becoming involved.

Not including the Pipe bursts workshop, 12 universities and 17 water industry organisations participated in the workshops. A number of non-member organisations that attended provided us with valuable input we would otherwise have missed.

Pipe burst workshop at Research Symposium, Adelaide

Inland desalination at GWV, Shepparton

Climate change at SA Water, Adelaide

Cryptosporidium risk in catchments in Sydney

Smart monitoring for microbial risk at NMI, Sydney

Environmental *E. coli* at ANU, Canberra

Shallow urban lakes at WSAA, Melbourne

In vitro bioassays at Griffith University, Brisbane

Figure 2 below shows the current process by which projects can be initiated, right through to completion and knowledge transfer.

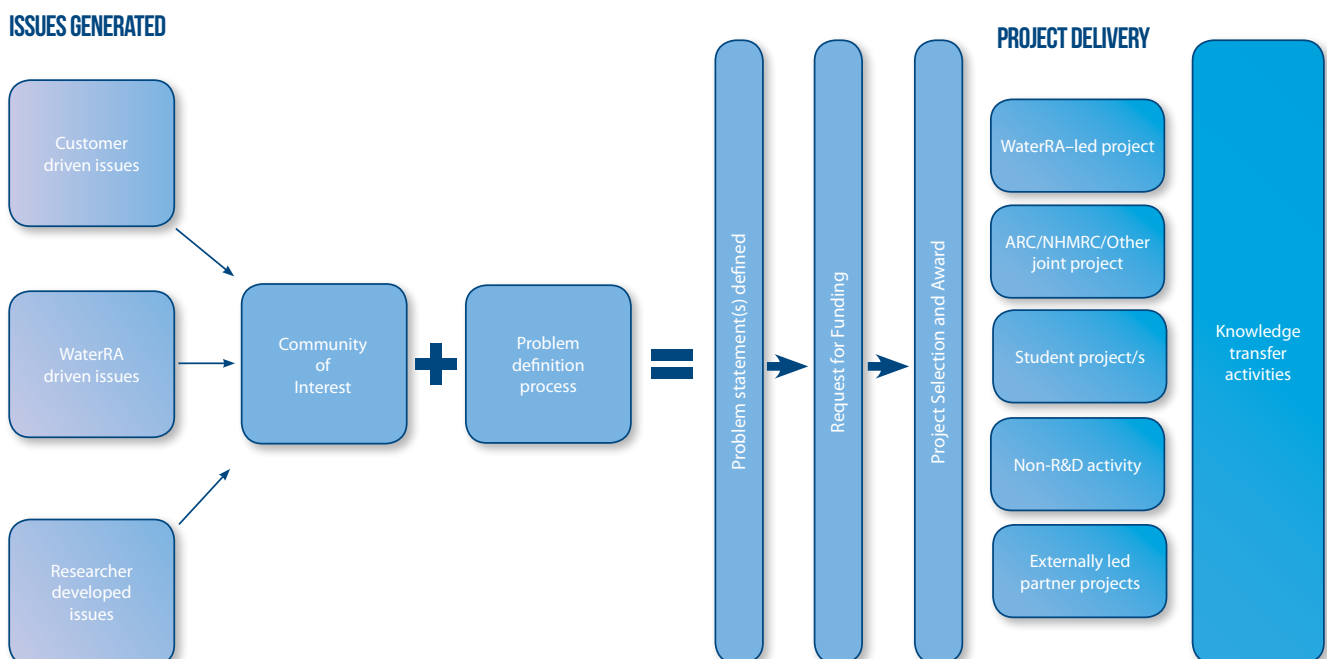


Figure 2. Project development and delivery process

RESEARCH DELIVERY

PROJECTS COMMENCED OR COMMITTED TO IN 2015-16

RESEARCH PROGRAM

Management of potential contamination risks from pipeline repair or renewal (1091-16)

Better data driven decision making under future climate uncertainty (1100-16)

Management of Environmental *E.coli* (1101-16)

Trial of WSA-108 - Point of entry (PoE) units for the production of potable water (1102-16)

Smart monitoring for microbial risk (1103-16)

Guidelines for construction and management of shallow lakes (1105-16)

Fate, behaviour and ecological impact of wastewater treatment plant derived fluorinated surfactants (2046-16)

Stormwater device validation protocol development

Release of intracellular cyanotoxins during oxidation (1104-16)

EDUCATION PROGRAM

Detection of radionuclides from radiation medical treatments within South Australia's wastewater (Samantha Pandelus, Honours 4103-16)

Investigating bioaccumulation of chemical pollutants adsorbed to microplastics in the terrestrial environment (Damien Moodie, Honours 4109-15)

Degradation of contaminants and antibiotic resistant genes in wastewater (Maolida Nihemaiti, PhD 4512-15)

Evaluating the use of microbial source-tracking markers in QMRA (Sonya Kozak, PhD 4517-15)

Understanding swimming pool water quality to minimise chemical health risks (Rhys Carter, PhD 4518-15)

Epidemiology and detection of enteric viruses in clinical and environmental matrices (Jennifer Lun, PhD 4519-15)

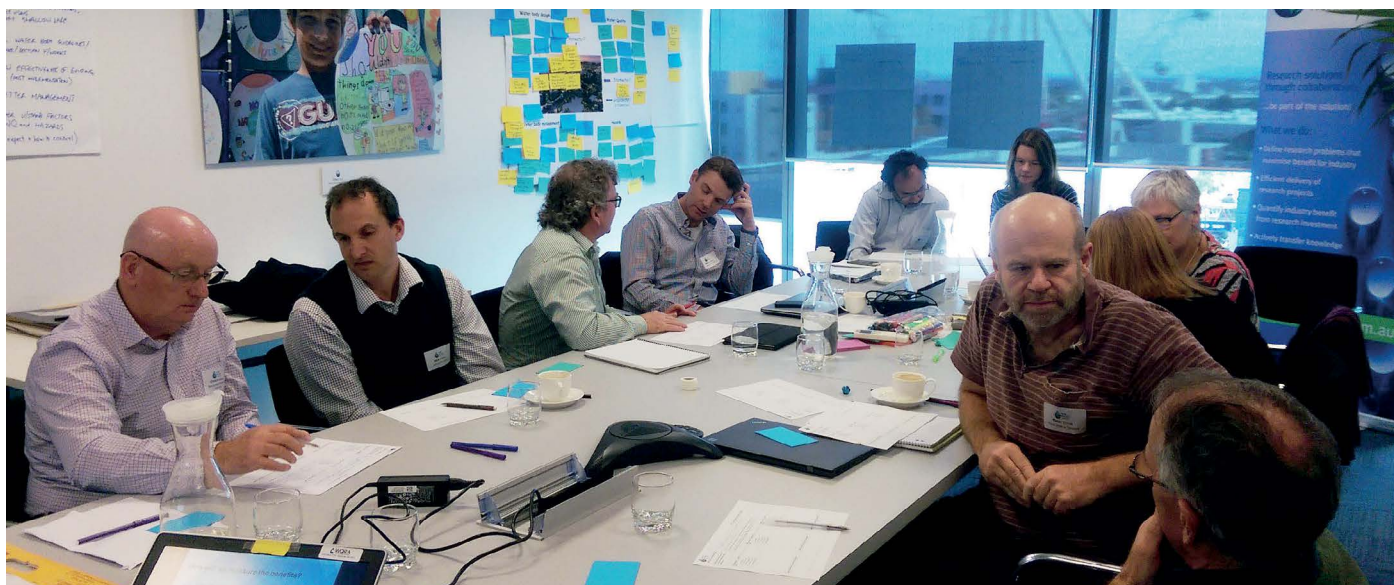
Development and evaluation of molecular techniques for monitoring aquatic macroinvertebrates in freshwater systems (Edward Tsyrlin, PhD 4521-16)

Optimisation of granular sludge for energy efficient wastewater treatment and reuse (Ben Thwaites, PhD 4522-16)

Optimisation of coagulant and powdered activated carbon doses during cyanobacteria blooms using fluorescence probes (Florence Choo, PhD 4523-16)

Combining engineering experience and formal optimisation for designing and operating water systems under climate uncertainty (Cameron McPhail, PhD 4524-16)

Assessing the impact of wastewater derived perfluorinated chemicals on aquatic ecosystems (Timothy Coggan, PhD 4525-16)



SYNTHESIS

PROJECTS COMPLETED

DRINKING WATER

Research impact study on disinfection by-products (Cynthia Joll, Curtin University 1093-15)

Tool box development for microbial source tracking water sources and catchments (Helen Stratton, Smart Water Research Centre, Griffith University, Seqwater 1056-11)

Develop evidence-based approaches to monitor and manage chlorine and chloramine residuals (Chris Chow, Australian Water Quality Centre, SA Water 1064-12)

Identify and assess the water quality risks from extreme weather events (Stuart Khan, UNSW Australia, Water Futures, Griffith University, AWQC, CAT, Department of Health SA 1063-12)

Bayesian Risk Assessment tool for extreme weather events (Anne Roiko, Griffith University 1071-12)

Decentralised treatment solutions for regional and remote water supplies (Peter Sanciola, Victoria University 1077-13)

WASTEWATER

Destruction of toxicity and reduction of organic content of municipal waste water reverse osmosis concentrate (Felicity Roddick, RMIT University 2023-11)

An assessment methodology for screening wastewater streams causing reduction of ultraviolet transmissivity (Felicity Roddick, RMIT University 2033-13)

Management of treatment sludge impacted by cyanobacteria (Gayle Newcombe, Australian Water Quality Centre 1073-13)

PUBLICATIONS– GENERAL

- Around 1200 documents available for download from WaterRA website
- 45 peer reviewed journal publications in 2015-16

3 GUIDANCE BOOKLETS

- Pathways to One water - A guide for institutional innovation (with WERF and Water Research Foundation)
- Protecting drinking water quality from extreme weather events
- Good practice guide to the operation of drinking water systems for the management of microbial risk

RECYCLED WATER

Water quality characteristics of stormwater (Andrew Humpage, Australian Water Quality Centre 3015-11)

Human health risks of micropollutants in stormwater (Alex Keegan, Australian Water Quality Centre 3023-12)

EDUCATION PROGRAM

The contribution of Western Australian native plant species to water repellency (Luke Kitchens, Honours, Murdoch University)

Tracing the presence of anthropogenic derived nutrients in intertidal ecosystems using stable isotopes of carbon (12C:13C) and nitrogen (14N:15N) in the Hunter Region, New South Wales (Angus Fanning, Honours, University of Newcastle)

Investigating bioaccumulation of chemical pollutants adsorbed to microplastics in the terrestrial environment. (Damien Moodie, Honours, RMIT University)

Investigation of a novel toxin produced by a *Limnothrix* cyanobacteria (Paul Whan, PhD, University of Adelaide)

Development of a surface acoustic wave micromixer for enhanced chemiluminescence microanalysis: application to pesticides (Ana Martins, PhD, RMIT University)

Mechanisms of spontaneous combustion of stockpiles of biosolids - risk reduction and process optimisation (Rachael Aganetti, PhD, Victoria University)

SCIENCE REVIEW AND ANALYSIS

- WaterRA disinfection by-products impact study
- Semi quantitative assessment of microbial source risk Occasional Paper, Richard Walker et al
- Four "Health Stream" issues delivered to subscribers

SHARING & TRANSFER

4 FACT SHEETS

WaterRA (2015) Ultrasound for the control of cyanobacteria

WaterRA & WWSA (2015) *Naegleria fowleri*

WaterRA (2015) Shining light on pesticide monitoring

WaterRA (2015) Removal and inactivation of *Cryptosporidium* in the environment

RESEARCH SYMPOSIUM

The second WaterRA research symposium was held in July 2015, in Adelaide. Around 90 people attended over two days to hear presentations on catchments, treatment, emerging technologies, stormwater and alternative water supplies. There was an opportunity to participate in a novel interactive session showing a method to determine people's perception of water. The symposium ended with our first problem definition workshop to examine pipe burst issues.

As usual, there was ample opportunity for networking and time to catch up with water industry colleagues.

FACILITATING UPTAKE OF OUTCOMES

- Ozwater'16 Workshop "Delivering outcomes through collaborative research – Common lessons learned from the water industry" 12 May 16, Melbourne 2016
- Co-hosted *Cryptosporidium* risk in Catchments workshop

CONSULTATION WITH MEMBERS

AGM (October 2015) and Member meeting (Feb 2016), 157 attendees

74 Member visits by staff covering all States and Territories

NODE MEETINGS

Victoria - Dec 2015 (WSAA, Melbourne and Aquasure, Wonthaggi),

Queensland - 4 Dec (Griffith Smart Water Research Centre, Southport)

Western Australia - June 2016 (Curtin University, Perth)



CONFERENCES AND WORKSHOPS

WSAA Research Strategy Development Workshop,
13 Jul, Adelaide

RMIT Biosolids Workshop 2015, 1 Sep, RMIT, Melbourne

Towards a Digital Utility Conference, 8-9 Sep, Melbourne

Integrated Water Networks Research Planning Meeting,
10 Sep, Melbourne

AWA National Water Policy Summit, 7 Oct, Melbourne

South Australian Water Innovation Launchpad, 20 Oct,
Adelaide

Algal Technologies Workshop, 27 Oct, RMIT Melbourne

Research and Development Stakeholder Forum, 3 Nov,
Melbourne Water, Melbourne

WSAA International Water Reuse and Desalination
Symposium, 4-5 Nov, Brisbane,

Queensland Water Directorate Innovation Forum –
4-5 Nov Maroochydore, Qld

WSAA Water Reuse and Desalination Research Workshop,
6 Nov, Brisbane,

Philanthropy workshop, 10 Nov, Adelaide

Australian Water Recycling Centre of Excellence Roadshow,
30 Nov, Melbourne,

Algae Research Symposium 2015, 1 Dec, UNSW Australia,
Sydney

Water Services Sector Group Contamination in Water
Conference, 10-11 Mar, Canberra

Philanthropy workshop, 03 Feb, Adelaide

IWA Young Water Professionals Conference,
18-19 Feb, Sydney

2016 Funding Institute Australia Conference,
2-4 Mar, Melbourne

QMRA workshop, 21-24 Mar, Brisbane

Philanthropy workshop, 11 April, Adelaide

South Australian Water Policy Dialogue, 28 Apr, Adelaide

OzWater '16, 10-12 May, Melbourne

SA Young Water Professionals Forum, 8 Jun, Adelaide

Melbourne Water Research and Development Stakeholder
Forum, 17 Jun, Melbourne

International

GWRC Board meeting, 14-15 April, Amsterdam

Research Collaborations

- Total number of Member organisations in 2015-16 = 51
- Total number of non-Member collaborating agencies (since 2008) = 196
- Average number of collaborators per project = 5.6
- Eight new projects initiated/awarded in 2015-16.



BENEFITS REALISATIONS AND MEASUREMENTS

STUDENTS CURRENTLY SUPPORTED

29 PhD
2 Honours
1 industry member part-time Masters
4 Associate Student Members

Total supported (since 2008) = 56

STUDENT AWARDS

Florence Choo (UNSW Australia) – 2016 Nancy Millis Memorial PhD Award

Damien Moodie (RMIT) – 2016 Michael R Moore Memorial Honours Award

Luke Kitchens (Murdoch University) 2015 Nelly Stothers Bayliss Prize in Chemistry for best academic performance in Honours in Chemistry by a graduating student, supported by Sir Noel Bayliss CBE

STUDENT SPONSORS

WaterRA gratefully acknowledges the support of the following organisations for student research projects:

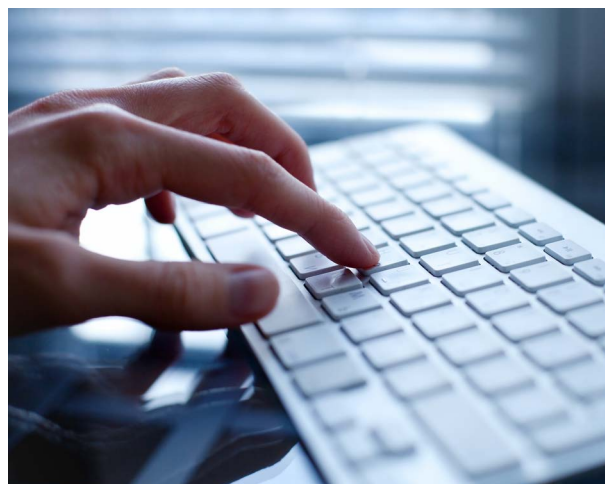
- ChemCentre
- CSIRO
- Healthy Waterways
- Melbourne Water
- SA Water Corporation
- Seqwater
- Water Corporation of WA

WEBSITE USAGE

- 839 individual subscribers to our Member login area
- 78,154 page views were recorded
- Of the 1120+ documents on our website, 860 were downloaded 143,088 times in this year

WHAT VISITORS DOWNLOADED MOST IN 2015-16

- Drinking water treatment fact sheet (13,201)
- A guide to blue-green algae fact sheet (9,871)
- Log Removals in wastewater treatment fact sheet (3,095)
- Management strategies for cyanobacteria (blue-green algae) and their toxins: A guide for water utilities - RR 74 (2,968)
- *Naegleria fowleri* fact sheet Nov 2015 (2,137)
- Natural organic matter: understanding and controlling the impact on water quality and water treatment processes (2,022)
- WaterRA Annual Report 2014-15 (1,633)
- WaterRA Company Profile (1,476)
- Good practice guide to the operation of drinking water systems for the management of microbial risk (1,219)
- Zeta potential: a tool for the successful control of coagulation and removal of *Microcystis aeruginosa* in waste treatment plants (800)



WHAT OUR MEMBERS DOWNLOADED MOST

“Health Stream”

Naegleria fowleri fact sheet

Good practice guide

Fact sheet - Log removals in wastewater

Quantifying water quality characteristics of stormwater

ADOPTION OF RESEARCH - KNOWLEDGE UPTAKE

CASE STUDIES

WaterRA utility members' radar is often well-tuned to the research that is likely to be of benefit to their businesses. We asked some members to provide examples of how projects of the last year or so have contributed to the effectiveness and efficiency of their business.

APPLYING WATERRA RESEARCH FINDINGS AT MELBOURNE WATER TO IMPROVE MANAGEMENT OF RISKS FROM CYANOBACTERIAL BLOOMS

Water RA projects, including "Biological filtration for the treatment of cyanobacterial metabolites", "Optimising treatment for the removal of Cyanobacteria" and "Management of treatment sludge impacted by cyanobacteria & their toxins", have contributed significantly to Melbourne Water's understanding of the risks associated with blue green algae.

This work has also influenced the development of operational responses to manage the impacts of nuisance microalgal and/or cyanobacterial blooms in waterways, drinking water reservoirs, wastewater lagoons and water treatment plants and have significantly improved understanding of the extent to which cyanobacteria impact water quality. It has also highlighted the importance of process monitoring to confirm that treatment processes are functioning as effective barriers for cyanobacterial cells and metabolites.

In-situ fluorescence projects "Organic matter monitoring in DW using fluorescence for early warning", "Monitoring organic matter in drinking water systems using fluorescence spectroscopy" and "Fluorescence characterisation of cyanobacteria" have led Melbourne Water to use fluorescence as a useful tool as an early warning system for

potential CCP limit breaches, and also for determining the effectiveness of treatment interventions. Examples of this include optimising polymer dosages and testing of oxidants to reduce cyanobacterial cells. This has greatly improved Melbourne Water's ability to respond to and manage blue green algal risks, and has improved Melbourne Water's reliability of water supply.



APPLYING WATERRA RESEARCH FINDINGS AT COLIBAN WATER TO IMPROVE OPERATIONAL AND AUDIT PERFORMANCE

During the summer of 2015-16, several of Coliban Water's drinking water supply systems were threatened by a significant cyanobacterial bloom on the Murray River. Similarly to Melbourne Water, Coliban Water was able to draw on the vast array of cyanobacterial knowledge and practical management advice that is contained in various WaterRA publications, especially the Management Strategies for Cyanobacteria (Blue-Green Algae): A Guide for Water Utilities, to respond to the bloom. Luckily,

the cyanobacterial bloom did not greatly impact on raw water quality, but, if it had, there was an available store of knowledge that Coliban Water could draw upon.

Also during 2015-16, Coliban Water undertook a regulatory audit of its drinking water quality risk management plan. To prepare for the audit, Coliban Water used the WaterRA publication Good Practice Guide to the Operation of Drinking Water Supply Systems for the Management of Microbial Risk as a checklist of sorts to ensure the business was following what is considered to be good practice. Coliban Water found that the Good Practice Guide was easy to use, and it allowed Coliban Water to be in a strong position for the audit. Coliban Water is now looking at ways to incorporate the information in the Good Practice Guide into everyday practice.

Finally, Coliban Water is using the Guidance Manual for the Maintenance of Chlorine and Chloramine Residuals to assess its current disinfection practices, and look at ways to maintain chlorine and chloramine residuals across distribution systems.

APPLYING WATERRA RESEARCH FINDINGS AT SA WATER TO OPTIMISE WATER TREATMENT

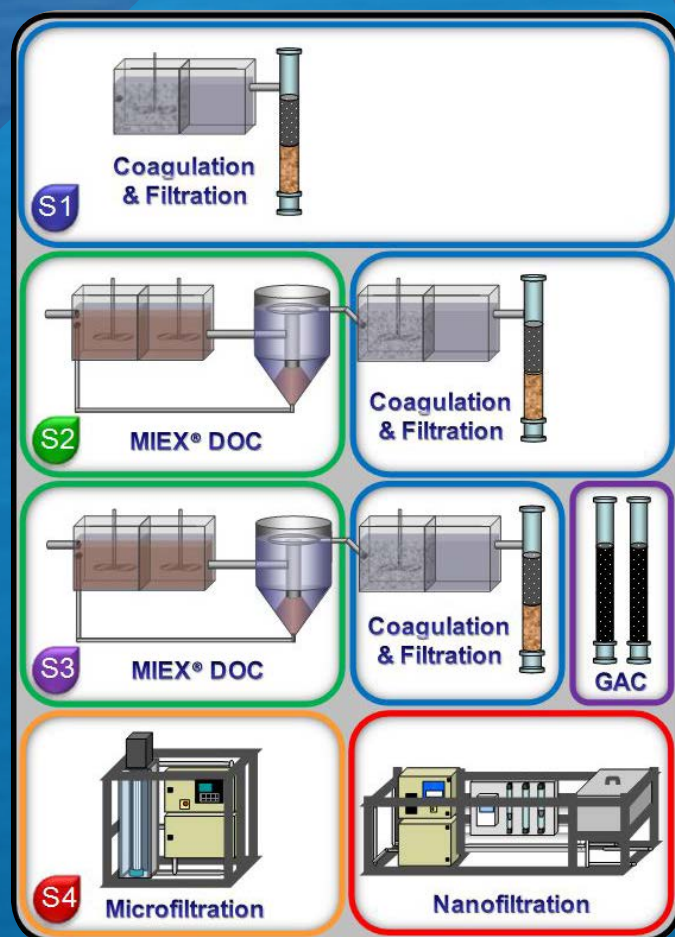
SA Water has partnered with WaterRA and a host of other water providers over the years to investigate ways of improving systems and processes. Two recent projects conducted by SA Water contribute useful information on water treatment optimisation.

The aim of "Characterisation of DBP formation for water quality management – Stage 2" was to evaluate the extent to which the formation of brominated disinfection by-products (DBPs) could be reduced by optimising conventional treatment (coagulation, flocculation, sedimentation and filtration), and disinfection processes. The findings from the study have clarified the understanding of factors affecting DBP formation and how much this can be managed in the treatment process. Most importantly from the utility's perspective:

- enhanced coagulation will maximise removal of DBP precursors

- the goal is to remove as much bromide as possible
- SA Water has a better handle on DBPs other than just needing to comply with THM guidelines
- Opportunities to use two-stage chlorination have been considered and are being implemented where feasible

"Optimal Water Quality to Minimise Distribution System Problems" compared final water quality following four separate parallel pilot distribution systems, treating the same source water using four treatment processes (of increasing complexity). Outcomes for SA Water have included greater focus on organic character and implementing UV254 measurement for optimising treatment performance and using tools which also assess floc characteristics to improve evaluation of alternative coagulants. SA Water is also considering the use of flow cytometry to determine bacterial log removal and assess treatment plant compliance with proposed health based targets. New tools are also being applied to understand the source of water quality deterioration and assist with improved management of distribution systems.



CEO & CHAIR REPORT



CEO REPORT

This has been a busy and exciting year for WaterRA, operating under an innovative new model for initiating and funding research projects. Following a major overhaul of our business model based on member and stakeholder feedback, as of 1 July 2015 new project ideas have been developed through a Community of Interest and problem definition process. This has involved sharpening the focus on project proposals to demonstrate clear value to industry by identifying drivers and needs, and then backing this up by working with industry partners to secure specific funding commitments for projects to be delivered. It was a bold change, made in the context of understanding that the water industry has undergone significant change since WaterRA and its predecessors began operating, with access to research funding becoming more difficult as more and more priorities compete for investment.

Over the past twelve months, WaterRA has also continued working with research organisations and industry partners to support and secure new funding for Honours and Postgraduate student projects, and looking to build links with philanthropic organisations to develop potential additional funding support for the education program. The education program maintains its importance, along with the broader research program, as a key WaterRA service. It provides an efficient way of delivering cost-effective research outcomes, supports development of our young talent and builds professional capability for the industry into the future.

The WaterRA team has worked extremely hard over the last year to deliver successful outcomes under the new arrangements. Our target, in terms of generating projects for 2015/16, was four new projects with total industry funding support of \$400K, which was roughly equivalent to the previous annual commitments to projects. The outcome from the first year is seven new projects to be delivered over the next three years with a total industry cash funding commitment, over multiple contributors, in excess of \$1M. For the Education Program, the target was eight new student scholarships – the outcome is nine new PhD and two new Honours scholarship sponsorships confirmed.



CHAIR REPORT

WaterRA's vision is "Research solutions through collaboration". At the beginning of the year, in this still-dwindling research funding environment, we invited Members and the broader industry to embrace that concept as we embarked on a new business model. Such significant changes are not made without careful deliberation - and optimistic confidence that we are reading the sector correctly. The WaterRA Board and I are delighted with the enthusiasm with which our industry has responded, and look forward to seeing this grow as the process is refined further.

I wish to thank Dr Paul Pretto for his massive contribution this year. His input has been particularly useful as he brought a fresh perspective on the company, and immediately shaped and honed the business. Paul has spearheaded the company's efforts and led the staff with great competence resulting in a seamless transition. I also thank the Board and staff for their ongoing commitment to and confidence in WaterRA.

WaterRA exists because a large core of water industry companies and individuals see value in a collaborative approach to improving the way we do business and deliver knowledge, services and products for national and even international benefit.

Shaun Cox, WaterRA Board Chair

These outcomes far exceed the expectations of a year ago and can be attributed to the dedication and effort of the WaterRA staff as well as the wonderful support provided by WaterRA industry, research, general and associate members together with other industry stakeholders. They affirm the additional value that the change in approach to generating projects and associated funding has provided through improved industry engagement and refining of project proposals to better meet industry needs in a measurable way.

Securing Education Program funding through philanthropic organisations has proved to be much more challenging. However, with the experience gained in the last year we now have a better understanding of these challenges and have the opportunity to review and refine our activities in this space.

For the coming year, WaterRA is looking to consolidate and further improve on the successes of the last 12 months. In particular, continuing to broaden both the scope of our research program and the level of engagement with members and across different parts of the industry and research community. In particular, we will increase our efforts on emphasising that, although the model for generating new projects is focused on meeting industry needs as a key means of securing funding, WaterRA is also looking to our research members to initiate project ideas. This is a critical part of ensuring we develop initiatives that deliver value to industry from emerging areas of knowledge and technology development that researchers are aware of, but that industry may not be. The challenge for researchers is to articulate research opportunities and strategies that will convince industry of their potential to "change the game". It will also be important for ensuring the scope of WaterRA's research program includes an appropriate mix of short, medium and long horizon initiatives.

Paul Pretto, WaterRA CEO



WATERRA BOARD

The WaterRA Board is responsible for the strategic direction and oversight of WaterRA on behalf of its members. It comprises three Directors nominated by research members, four Directors nominated by industry members, an Independent Chairperson and the CEO.

During 2015-16 the following Board changes occurred:

- CEO David Halliwell left WaterRA at the end of July 2015
- Dr Paul Pretto commenced as CEO of WaterRA on 15 July 2015
- Professor Simon Beecham stepped down as a Board Director, Research at the AGM in October 2015
- Professor Richard Stuetz was elected to the Board as a Director, Research at the AGM in October 2015



CURRENT BOARD

AT 30 JUNE 2016

MR SHAUN COX, INDEPENDENT CHAIR

Shaun Cox was appointed as a Non-Executive Director in October 2014. He has led Australian water utilities for more than 18 years, most recently Melbourne Water and previously South East Water and Gold Coast Water.

DR STEVE CAPEWELL, NON-EXECUTIVE DIRECTOR (INDUSTRY)

Steve Capewell joined the WaterRA Board in October 2013 and is a water quality and treatment specialist with extensive knowledge of the planning, design, operation and optimisation of water treatment plants and process technologies. He currently heads the Drinking Water Quality Branch at the Water Corporation in Western Australia.

DR DHARMA DHARMABALAN, NON-EXECUTIVE DIRECTOR (INDUSTRY)

Dharma Dharmabalan has worked in the water industry in Australia for more than 25 years. He is currently the General Manager for Capital Works Delivery with TasWater in Tasmania and holds degrees in the fields of Civil Engineering, Environmental Hydrology, Computing and Water Systems Risk Management Philosophies from Universities around the world.

PROF STEPHEN GRAY, NON-EXECUTIVE DIRECTOR (RESEARCH)

Stephen Gray was appointed as a Non-Executive Director in October 2011. Prof Gray is the Director of the Institute for Sustainability and Innovation at Victoria University, where he is responsible for Victoria University's water research program.

DR PAUL PRETTO, EXECUTIVE DIRECTOR

Appointed as WaterRA CEO and Executive Director on 15th July 2015. Paul has an outstanding breadth of experience in the water industry, spanning 22 years in engineering and executive management, including key roles in research, resource assessment, regulation and large infrastructure planning and management. Paul held executive roles in Melbourne Water between 2007 and 2015, and prior to that worked at SKM, and the Office of the Regulator-General, Victoria.

DR JOHN HOWARD, NON-EXECUTIVE DIRECTOR (RESEARCH)

John Howard was appointed to the Board in November 2009, and was a member of the original Implementation Committee for WaterRA. He has more than 30 years experience in water quality and water resources management and is currently the General Manager of Strategy & Planning at SA Water.

MR DAVID SHEEHAN, NON-EXECUTIVE DIRECTOR (INDUSTRY)

David Sheehan was appointed as a Non-Executive Director for WaterRA in October 2014. David took up the role of General Manager Water Quality Performance and Regulation at Coliban Water in February 2014. Prior to that he worked in a regulatory role with the Victorian Department of Health. He is also currently a member of the National Health and Medical Research Council's Water Quality Advisory Committee.

DR MELITA STEVENS, NON-EXECUTIVE DIRECTOR (INDUSTRY)

Melita Stevens was appointed as a Non-Executive Director in October 2010. She was also a member of the implementation committee that supervised the start-up of WaterRA. Dr Stevens has a background in public health microbiology and has been involved in water quality and research for 20 years. Melita is Principal Scientist at Melbourne Water.

PROF RICHARD STUETZ, NON-EXECUTIVE DIRECTOR (RESEARCH)

Richard Stuetz has 20 years' research experience in Australia and the UK and is currently Director of the UNSW Australia Water Research Centre. He is a member of IWA and was instrumental in the establishment of the IWA YWP programme and its international conference series. Richard's research interests are the fate of contaminants in water, and wastewater and waste management processes.

MR PETER BRASS, COMPANY SECRETARY

Peter Brass was appointed as the Company Secretary on the WaterRA Board in August 2012. Peter has over 20 years' experience in governance, risk management and internal audit in both private and public organisations and is a Graduate of the Australian Institute of Company Directors and facilitates training courses for the Governance Institute of Australia.



WATERRA BOARD COMMITTEES

In 2016 the decision was made to merge the Scientific and the Regulatory Advisory Committees and form one Strategic Advisory Committee. The SAC members have outstanding experience and skills from across the water industry, and we will seek their guidance in direction setting and review, problem definition, research outcome delivery, synthesis, knowledge transfer and benefit realisation and measurement.

Strategic Advisory Committee Members: 2015-16

Mr David Sheehan (Chair)	Coliban Water, Victoria
Mr Tad Bagdon	Department of Water WA
Dr David Cunliffe	Department of Health (SA)
Dr Darryl Day	Department of Land Resource Management, NT
Dr Annette Davison	Risk Edge
Mr Graham Hawke	Bureau of Meteorology
Prof Cynthia Mitchell	University of Technology, Sydney
Dr Kaye Power	Independent Pricing and Regulatory Tribunal (NSW)
Dr Stephanie Rinck-Pfeiffer	Global Water Research Coalition
Dr Greg Ryan	Water Services Association of Australia
Mr David Snadden	Yarra Valley Water
Ms Cathy Wilkinson	EPA Victoria
Mr Peter Brass	WaterRA - Company Secretary

Risk and Audit Sub-committee Members: 2015-16

Prof Stephen Gray (Chair)	Victoria University
Dr Melita Stevens	Melbourne Water
Dr Dharma Dharmabalan	TasWater
Mr David Sheehan	Coliban Water
Mr Gary Penn	SA Water Corporation (independent member)

Human Resources Sub-committee Members: 2015-16

Dr Steve Capewell (Chair)	Water Corporation WA
Prof Richard Stuetz	UNSW Australia
Dr John Howard	Australian Water Quality Centre

MANAGEMENT COMMITTEES

The WaterRA CEO is supported by two operational committees: The Project Review Team and the Education Committee. These committees provide the CEO and staff with advice to ensure the provision of high quality and relevant research. The members of the operational committees are representatives from member organisations who bring a high level of knowledge and skills to WaterRA and its members.

Education Program Committee Members: 2015-16

Prof Felicity Roddick (Chair)	RMIT University
Ms Carolyn Bellamy	WaterRA
Dr Paul Monis	SA Water Corporation
Dr Rita Henderson	UNSW Australia
Mr Asoka Jayaratne	Yarra Valley Water
Dr Kathryn Linge	Curtin University
Dr Louise McKenzie	Hunter Water Corporation
Prof Dennis Mulcahy	University of South Australia
Mr Gareth Roeszler	WaterRA
Mr Glen Rowlands	TasWater

Project Review Team

With the change in WaterRA's business model, the role of the Project Review Team (PRT) has also changed. In 2015-16 the PRT was convened once in July 2015. The PRT's role will be to provide support in the review of all WaterRA project proposals, including those for submission to external agencies such as the ARC, Water Environment Research Foundation and the WaterReuse Research Foundation. The PRT comprises a cross-section of industry and research representatives and core WaterRA staff.

Project Review Team Members: 2015-16

Dr Rino Trolio (Chair)	Water Corporation WA
Dr Paul Pretto	WaterRA
Mr Asoka Jayaratne	Yarra Valley Water
A/Prof Stuart Khan	UNSW Australia
A/Prof Fred Leusch	Griffith University
Ms Claire McInnes	WaterRA
Dr Con Pelekani	SA Water Corporation
Ms Nadine Riethmuller	Power & Water Corporation NT
Mr Gareth Roeszler	WaterRA
Dr Martha Sinclair	Monash University

WATERRA TEAM

Dr Paul Preto, CEO and Executive Director

Appointed as WaterRA CEO and Executive Director on 15th July 2015. Paul has an outstanding breadth of experience in the water industry, spanning 22 years in engineering and executive management, including key roles in research, resource assessment, regulation and large infrastructure planning and management. Paul has a Bachelor of Engineering (Civil) Hons, Bachelor of Commerce, PhD (Environmental Engineering) and is a member of the FIEAust.

Mr Peter Brass, General Manager, Operations and Company Secretary

Peter commenced with WaterRA in July 2012. He has previously held senior management positions and has over 20 years' experience in governance, risk management and internal audit in both private and public organisations. Peter has a Bachelor of Economics, is a Certified Practising Risk Manager, a Fellow of CPA Australia and a Graduate of the AICD.

Ms Susan Spragg, Corporate Coordinator

Susan is the Corporate Coordinator and is responsible for a diverse range of administrative and key functions within WaterRA. She is a Certified Member of the Governance Institute of Australia. Susan previously worked at the CRCWQT and has an employment history in public relations and marketing in not-for-profit, local government and other various sectors.

Mr Gareth Roeszler, Program Manager, Research

Gareth commenced working with WaterRA in March 2010 and has had several roles in the Research Team. Gareth has a BEng (Chemical), a BLaws (Honours) and a Grad Dip in Legal Practice. Before joining WaterRA Gareth worked for BHP Billiton at Olympic Dam in SA.

Ms Angela Gackle, Manager, Marketing & Communications

Angela returned to this position in May 2013 (having been in the role from 2007 - 2010). She has a BSc in zoology/pharmacology. Angela was Manager, MarComms in the final years of the CRC WQT, overseeing the completion of around 70 final reports. She held a range of Communication roles in CSIRO from 1990 - 2003 and has worked in local government and a number of other sectors.

Ms Carolyn Bellamy, Program Manager, Education

Carolyn has been in this role since March 2009. She manages the Education Program, which supports the development of young water professionals for the future. Before joining WaterRA, Carolyn coordinated the CRC WQT Education and Training Program. Carolyn has a Diploma in Counselling.

Ms Claire McInnes, Program Coordinator

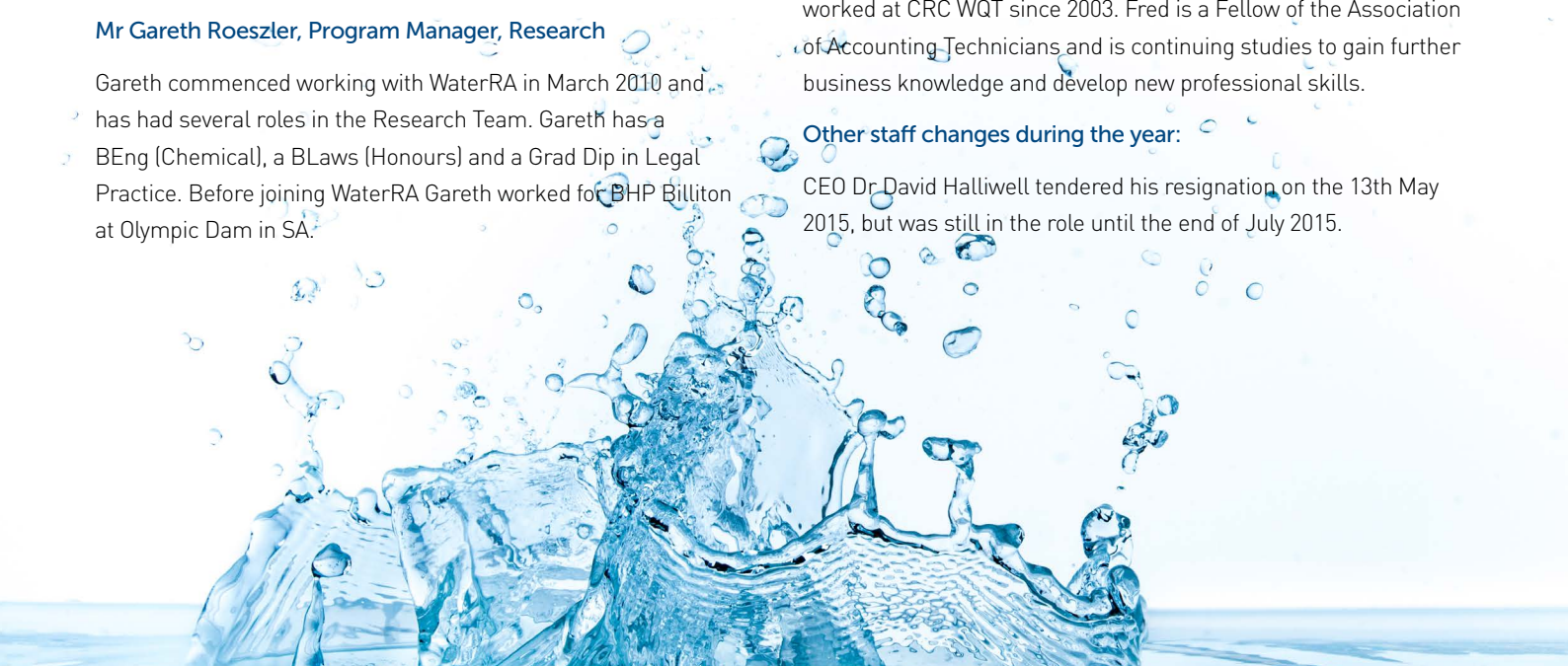
Claire commenced in this role in October 2012. She has extensive experience in Project and Engineering Management, gained working in the defence, and oil and gas industries prior to joining WaterRA. Claire has a BEng(Aero), MA(Int Rel) and Grad Cert in Project Management.

Mr Fred Fleuren, Senior Finance Officer

Fred is the Senior Finance Officer, and manages the financial and management accounts. He joined WaterRA in October 2008, having worked at CRC WQT since 2003. Fred is a Fellow of the Association of Accounting Technicians and is continuing studies to gain further business knowledge and develop new professional skills.

Other staff changes during the year:

CEO Dr David Halliwell tendered his resignation on the 13th May 2015, but was still in the role until the end of July 2015.



DIRECTORS REPORT AND FINANCIAL SUMMARY

FOR THE YEAR ENDED 30 JUNE 2016

- Corporate Information
- Directors' Report
- Auditor's Independence Declaration
- Statement of Profit or Loss
and Other Comprehensive Income
- Statement of Financial Position
- Directors' Declaration
- Independent Auditor's Report

CORPORATE INFORMATION

The Board of Directors of Water Research Australia Limited (WaterRA) has pleasure in presenting this report for the financial year ended 30 June 2016 to the members of WaterRA.

The Board

WaterRA has a representative Board comprising nine Directors:

- An Independent non-executive Chair
- Four non-executive Directors nominated by industry members and elected by members
- Three non-executive Directors nominated by research members and elected by members
- The CEO

The Chair is a paid position elected for a term of three years, while other non-executive Directors serve terms of two years in a voluntary capacity.

The Chair, Mr Shaun Cox, was appointed 22nd October 2014 following a resolution of the members at the 2014 Annual General Meeting.

WaterRA Committees

The Board disbanded the Scientific Advisory Board Committee and a Regulatory Advisory Board Committee in September 2015 and established a Strategic Advisory Committee in February 2016. The new advisory committee has no formal decision-making powers but provides expert, balanced and timely advice to the Board and management on a wide range of urban, regional and remote water issues that have strategic implications for Water Research Australia research programs and activities.

The Board also has two Sub-committees – the Risk & Audit Committee and Human Resources Committee – which provide an important assurance that key areas (Finance, Human Resources and Risk Management) of the Board's duties will be rigorously discharged. The Risk & Audit Committee incumbent Independent Member was reappointed by the Board for another two year term ending May 2018.

In addition to the one advisory Board committee and sub-committees of the Board, two management committees – the Project Review Team and the Education Committee – provide advice and support to the CEO and staff and make recommendations to the Board on specific research program issues.

Directors

The names and details of the company's Directors in office during the financial year are as outlined on the following page. All Directors were in office for the entire year unless otherwise stated.

Short biographies for Directors can be found on page 19.

During the 2015-16 financial year the Board met on five occasions for Board meetings or Non-Executive Director meetings – either face-to-face or via teleconference. In addition Directors also met on four occasions for the Board sub-committees, either face-to-face or via teleconference.

Name	Date of Appointment	Term End or Retirement Date	Board Meetings			Non-Executive			Board Sub-committee	
			A	B	C	D	E	F	RAAC	HR
Prof Simon Beecham	27 Nov 2009	23 October 2015	2	2	0	2	2	0	n/a	2
Dr Stephen Capewell	25 Oct 2013	2017 AGM	5	5	0	5	5	0	2	3
Mr Shaun Cox	22 Oct 2014	2017 AGM	5	5	0	5	4	1	n/a	n/a
Dr Dharma Dharmabalan	15 Nov 2013	2016 AGM	5	4	1	5	4	1	2	n/a
Prof Stephen Gray	28 Oct 2011	2015 AGM	5	5	0	5	5	0	3	n/a
Dr John Howard	12 Oct 2007	2017 AGM	5	4	1	5	4	1	n/a	3
Dr Paul Pretto	15 July 2015	22 August 2016	5	5	0	n/a	n/a	n/a	n/a	n/a
Mr David Sheehan	22 Oct 2014	2016 AGM	5	5	0	5	5	0	2	n/a
Dr Melita Stevens	26 Oct 2010	2016 AGM	5	5	0	5	5	0	4	n/a
Prof Richard Stuetz	23 Oct 2015	2017 AGM	3	3	0	3	3	0	n/a	2

A Number of meetings held during the time the Director held office during the year

B Number of meetings attended

C Number of apologies registered

D Non-executive meetings held

E Non-executive meetings attended

F Number of apologies registered

DIRECTORS REPORT

Details of Directors' qualifications, experience and special responsibilities

Name	Qualifications Professional Memberships	Position & Organisation	Special Responsibilities
Prof Simon Beecham	PhD (Civi Eng), BSc(Hons) (Civil Eng), GCHE FAICD, FIE (Aust), CPEng, SIA, AWA	Pro Vice Chancellor, Information Technology, Engineering and the Environment, University of South Australia	HR Committee (Board sub-committee) until Oct 2015
Dr Stephen Capewell	BSc(Hons), M Eng & Tech Man, PhD (Chem Eng), GAICD, AWA, IDA, IWA	General Manager, Operations Services, Water Corporation	Chair: HR Committee (Board sub-committee) from Jun 2015
Mr Shaun Cox	BEng (Civil), Adj Prof (Uof Q), FAICD, FIE (Aust), CPEng, FAIM	Director, Inxure Strategy Group	Independent Chair: WaterRA Board
Dr Dharma Dharmabalan	D Tech, DipH Delft, GradDip (Comp), BScEng (Hons) (Civil), MEng (Env), Adjunct Prof (VU), Adjunct A/Prof (Deakin) FIE (Aust), CPEng, FICE, FASCE, MAWA, MAICD	General Manager, Works Delivery, Tasmanian Water & Sewerage Corporation	Risk & Audit Committee (Board sub-committee)
Prof Stephen Gray	BE (Chem Eng) PhD (Chem Eng) AWA, IWA, ACS	Director, Institute of Sustainability, and Innovation, Victoria University	Chair: Risk & Audit Committee (Board sub-committee) from 25 Oct 2013
Dr John Howard	BSc (Hons), PhD (Freshwater Chemistry) FAICD	General Manager, Strategy & Planning, SA Water Corporation	Deputy Chair: WaterRA Board Chair: Scientific Advisory Committee until Sept 2015 Member of HR Committee (Board sub-committee)
Dr Paul Pretto	BDSce, BEng (Civil -Hons), PhD (Env Eng), FIEAust, MAICD	CEO Water Research Australia (from 15 Jul 2015)	
Mr David Sheehan	MSc, DipMgmt, GAICD, NHMRC, AWA	General Manager, Water Quality Performance & Regulation, Coliban Region Water Corporation	Risk & Audit Committee (Board sub-committee) until Feb 2016 Chair: Strategic Advisory Committee from Feb 2016
Dr Melita Stevens	PhD, BAppSc, DipMicro, Adjunct Prof (RMIT), Senior Fellow (Melbourne) AWA, GAICD	Principal Scientist, Melbourne Water Corporation	Risk & Audit Committee (Board sub-committee)
Prof Richard Stuetz	BSc, MAppSc, PhD (Environmental Biotechnology)	Professor, School of Civil and Environmental Engineering, UNSW Australia	HR Committee (Board sub-committee) from Oct 2015

Company Secretary

Mr Peter Brass has been the Company Secretary during the 2015-16 financial year.

Principal Activities

WaterRA's principal activities during 2015-16 were:

- Coordinating and managing high quality research on priority issues in water quality on behalf of the members of WaterRA and the Australian water community
- Facilitating knowledge transfer and uptake of outcomes of R&D into industry through workshops and members' meetings
- Providing scientific evidence to underpin regulation and guidelines relating to safe drinking water and recycled water
- Building national water industry capability through the Education Program
- Promoting the importance on the national agenda of safe water to the Australian community by engaging with key decisions-makers within government and industry

Operating Results for the Period

The company's trading result for the year ended 30th June 2016 was a deficit of (\$322,029) [2015 deficit of (\$63,064)].

The surplus/(deficit) for WaterRA as a whole can be considered as having two components:

- PART A - A deficit of (\$486,865) for the 2015-16 year from revenue and expenditure acquitting commitments to research projects [2015 deficit of (\$619,070)] from cash reserves.
- PART B - A surplus of \$164,836 for the 2015-16 year from the remainder of the Income Statement not related to acquitting commitments to research project expenditure [2015 surplus of \$556,007].

The overall deficit is a reflection of research projects utilising the cash committed to them.

The company is a not-for-profit entity, registered as a charity and is exempt from income tax. A detailed review of operations can be found in the company's 2016 Annual Report.

Cash & Project Commitments

At 30th June 2016 the company had cash and cash equivalents plus financial assets of \$2,645,137 [2015 \$3,041,120].

At the same date WaterRA commitments to research projects plus external project funding held or received by WaterRA was \$684,527 [2015 \$1,294,971].

The cash commitments will be acquitted over the term of the research projects, with each project averaging a span of two to three years.

The WaterRA Board closely monitors its commitments to research projects relative to cash and working capital to assure that cash commitments to projects can be covered in full from the point of Board approval.

Members Liability on Winding Up

Each Member of the company undertakes to contribute to the company's property an amount as may be required not exceeding one hundred dollars if the company is wound up while it is a Member or within one (1) year after ceasing to be a Member, for payment of the company's debts and liabilities contracted before it ceased to be a Member and of the costs, charges and expenses of winding up and for an adjustment of the rights of contributories amongst themselves.

DIRECTORS REPORT

Dividends

The company is limited by guarantee and its constitution precludes the payment of dividends. No dividends were paid during the reporting period.

Share Options

The company has not granted options to any persons to have shares issued to them. The company is limited by guarantee and its constitution precludes the issue of options.

Significant Changes in State of Affairs

In the opinion of the Directors, there were no significant changes in the state of affairs of the company that occurred during the financial year under review not otherwise disclosed in this report.

Post Reporting Period Events

There has not arisen, in the interval between the end of the financial year and the date of this financial report, any item, transaction or event of a material and unusual nature that, in the opinion of the Directors, is likely to substantially affect the operations of the company, the results of those operations, or the company's state of affairs in future financial years. The CEO resigned in July 2016 and will complete his employment with the company in August 2016. This will not affect the finances of the company and is noted for the interests of members.

Environmental Regulations

The company is not particularly exposed of any environmental regulation. The Directors have not received notification of, nor are they aware of, any breaches of environmental laws by the company.

Future Developments and Results

There are no significant changes in the state of affairs that are expected in the future which will affect the results and therefore require disclosure.

Indemnification and Insurance of Directors and Officers

Since the end of the previous financial year, the company has paid an insurance premium of \$8,095 in respect of a directors and officers liability insurance contract for current and former directors and officers, against all liabilities and expenses arising as a result of work performed in their respective capacities, to the extent permitted by law.

Auditors Independence

The auditors' independence declaration, which forms part of the Directors reports for the financial year ended 30th June 2016, has been received and can be found following this report.

Signed in accordance with a resolution of the Directors.



Shaun Cox
(Chair)



Stephen Gray
(Director)

22nd August 2016

AUDITORS INDEPENDENCE DECLARATION



Tel: +61 8 7324 6000
Fax: +61 8 7324 6111
www.bdo.com.au

Level 7, BDO Centre
420 King William St
Adelaide SA 5000
GPO Box 2018, Adelaide SA 5001
AUSTRALIA

DECLARATION OF INDEPENDENCE UNDER SECTION 60-40 OF THE AUSTRALIAN CHARITIES AND NOT-FOR-PROFITS COMMISSION ACT 2012

BY PAUL GOSNOLD

TO THE DIRECTORS OF WATER RESEARCH AUSTRALIA LIMITED

As lead auditor for the audit of Water Research Australia Limited for the year ended 30 June 2016, I declare that, to the best of my knowledge and belief, there have been:

1. No contraventions of the auditor independence requirements of the *Australian Charities and Not-for-profits Commission Act 2012* in relation to the audit; and
2. No contraventions of any applicable code of professional conduct in relation to the audit.

A handwritten signature in blue ink that reads 'Paul Gosnold'. The signature is written in a cursive style with a large initial 'P'.

Paul Gosnold
Director

BDO Audit (SA) Pty Ltd

Adelaide, 22 August 2016

STATEMENT OF PROFIT OR LOSS AND OTHER COMPREHENSIVE INCOME

FOR THE PERIOD ENDED 30 JUNE 2016	2016	2015
	\$	\$
REVENUE		
Revenue from continuing operations	3,374,383	3,604,463
Other income	8,092	43,394
EXPENDITURE		
Research program project expenses	(1,928,279)	(2,087,643)
Education program expenses	(298,925)	(170,340)
Marketing and communications	(108,679)	(119,102)
Operating expenses	(318,700)	(349,503)
Depreciation and amortisation expense	(13,842)	(13,843)
Employee benefits	(1,002,079)	(936,600)
Chairman remuneration	(34,000)	(33,890)
Surplus/(Deficit for the year)	<u>(322,029)</u>	<u>(63,064)</u>

Copies of the full set of financial statements are available on request.

STATEMENT OF FINANCIAL POSITION

AS AT 30 JUNE 2016	2016 \$	2015 \$
ASSETS		
Current assets		
Cash and cash equivalents	1,498,355	1,452,031
Trade and other receivables	784,865	148,672
Financial assets	1,146,782	1,589,289
Prepayments	78,234	45,009
Total current assets	<u>3,508,237</u>	<u>3,235,001</u>
Non-current assets		
Intangible asset - software	17,242	27,685
Total non-current assets	<u>17,242</u>	<u>27,685</u>
Total assets	<u>3,525,479</u>	<u>3,262,686</u>
LIABILITIES		
Current liabilities		
Trade and other payables	413,777	634,537
Revenue received in advance	1,753,779	928,245
Total current liabilities	<u>2,167,556</u>	<u>1,562,782</u>
Non-current liabilities		
LSL Provision Long Term	10,561	30,512
Total non-current liabilities	<u>10,561</u>	<u>30,512</u>
Total liabilities	<u>2,178,116</u>	<u>1,593,294</u>
Net assets	<u>1,347,363</u>	<u>1,669,392</u>
EQUITY		
Retained earnings	<u>1,347,363</u>	<u>1,669,392</u>
Total equity	<u>1,347,363</u>	<u>1,669,392</u>

Copies of the full set of financial statements are available on request.

DIRECTORS DECLARATION

WATER RESEARCH AUSTRALIA LIMITED
A.B.N. 32 127 974 261
DIRECTORS' DECLARATION
(SHORT DISCLOSURE)

The directors of the company declare that:

In the opinion of the directors of Water Research Australia Limited:

1. the Statement of Profit or Loss and Other Comprehensive Income and Statement of Financial Position as extracted from the full Financial Report of the company are drawn up so as to present fairly the results of the operations of the company for the financial year ended 30 June 2016 and the state of affairs of the company as at 30 June 2016.
2. there are reasonable grounds to believe that the company will be able to pay its debts as and when they become due and payable.

This declaration is made in accordance with a resolution of the Board of Directors.

On behalf of the Board of Water Research Australia Limited.



Shaun Cox
(Chair)



Stephen Gray
(Director)

Dated this 22nd day of August 2016

INDEPENDENT AUDITOR'S REPORT



Tel: +61 8 7324 6000
Fax: +61 8 7324 6111
www.bdo.com.au

Level 7, BDO Centre
420 King William St
Adelaide SA 5000
GPO Box 2018, Adelaide SA 5001
AUSTRALIA

INDEPENDENT AUDITOR'S REPORT TO THE MEMBERS OF WATER RESEARCH AUSTRALIA LIMITED

Report on the Financial Report

The accompanying financial summary of Water Research Australia Limited comprises the statement of financial position as at 30 June 2016 and the statement of profit or loss and other comprehensive income for the year then ended, derived from the audited financial report of Water Research Australia Limited for the year ended 30 June 2016. The financial summary does not contain all the disclosures required by the Australian Accounting Standards and accordingly, reading the financial summary is not a substitute for reading the audited financial report.

Directors' Responsibility for the Financial Report

The directors of the company are responsible for the preparation and fair presentation of the financial summary in accordance with Australian Accounting Standards, and for such internal control as the directors determines is necessary to enable the preparation and fair presentation of the financial summary that is free from material misstatement, whether due to fraud or error.

Auditor's Responsibility

Our responsibility is to express an opinion on the financial summary based on our audit procedures which were conducted in accordance with Auditing Standard ASA 810 Engagements to Report on Summary Financial Statements. We conducted an independent audit of the full financial report of Water Research Australia Limited for the year ended 30 June 2016. Our audit report on the full financial report was signed on 26 August 2016, and was not subject to any modification. The Auditing Standards require that we comply with relevant ethical requirements relating to audit engagements and plan and perform the audit to obtain reasonable assurance whether the financial report is free from material misstatement.

An audit involves performing procedures to obtain evidence about the amounts and disclosures in the financial summary. The procedures selected depend on the auditor's judgement, including the assessment of the risks of material misstatement of the financial summary, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the entity's preparation of the financial summary in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity's internal control. Our procedures in respect of the financial summary included testing that the information in the financial summary is consistent with the full financial report, and examination on a test basis, of evidence supporting the amounts, discussion and analysis, and other disclosure which was not directly derived from the full financial report. These procedures have been undertaken to form an opinion whether, in all material respects, the financial summary is presented fairly.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

Opinion

In our opinion, the financial summary derived from the audited financial report of Water Research Australia Limited as of 30 June 2016 is consistent, in all material respects with the audited financial report in accordance with Australian Accounting Standards.

BDO Audit (SA) Pty Ltd

Paul Gosnold
Director

Adelaide, 26 August 2016

WATERRA PUBLICATIONS

2015–16

Journal Papers – Refereed

Aganetti R, Lamorlette A, Guilbert E, Morvan D & Thorpe GR (2016) Advection and the self-heating of organic porous media, *International Journal of Heat and Mass Transfer* 93, 1150-8.

Alexova R, Dang TC, Fujii M, Raftery MJ, Waite TD, Ferrari BC and Neilan BA (2016) Specific global responses to N and Fe nutrition in toxic and non-toxic *Microcystis aeruginosa*. *Environmental Microbiology* 18(2), 401-413.

Allard S, Tan J, Joll CA and Von Gunten U (2015) Mechanistic study on the formation of Cl-/Br-/I-trihalomethanes during chlorination/chloramination combined with a theoretical cytotoxicity evaluation. *Environmental Science & Technology* 49(18), 11105-11114.

Bertone E, Sahin O, Richards R and Roiko A (2016) Extreme events, water quality and health: A participatory Bayesian risk assessment tool for managers of reservoirs. *Journal of Cleaner Production* 135, 657-677.

Branch A, Trinh T, Carvajal G, Leslie G, Coleman H, Stuetz R, Drewes J, Khan S & Le-Clech P (2016) Hazardous events in membrane bioreactors – Part 3: Impacts on microorganism log removal efficiencies, *Journal of Membrane Science* 497, 514-523.

Busetti F, Ruff M and Linge KL (2015) Target screening of chemicals of concern in recycled water. *Environmental Science: Water Research & Technology* 1(5), 659-667.

Criquet J, Rodriguez EM, Allard S, Wellauer S, Salhi E, Joll CA and Von Gunten U (2015) Reaction of bromine and chlorine with phenolic compounds and natural organic matter extracts – Electrophilic aromatic substitution and oxidation. *Water Research* 85, 476-486.

D'Agostino PM, Woodhouse JN, Makower AK, Yeung ACY, Ongley SE, Micallef ML, Moffitt ML and Neilan BA (2015) Advances in genomics, transcriptomics and proteomics of toxin-producing cyanobacteria. *Environmental Microbiology Reports* 8(1), 3-13.

Dow N, Gray S, Zhang J, Ostarcevic E, Liubinas A, Atherton P, Roeszler G, Gibbs A and Duke M (2016) Pilot trial of membrane distillation driven by low grade waste heat: Membrane fouling and energy assessment. *Desalination* 391, 30-42.

Dow N, Roehr J, Murphy D, Solomon L, Mieog J, Blackbeard J, Gray S, Milne N, Zhu B and Gooding A (2015) Fouling mechanisms and reduced chemical potential of ceramic membranes combined with ozone. *Water Practice and Technology* 10(4), 806-813.

Drikas M, Fabris R, Braun K, Mussared A and Ho L (2016) Tools for monitoring distribution system water quality: a study using four parallel pilot systems. *Journal of Water Supply: Research and Technology-Aqua* 65(4), 295-306.

Fabris R, Braun K, Ho L, Verberk J and Drikas M (2016) Bacteriological water quality changes in parallel pilot distribution systems. *Water Science and Technology: Water Supply*, DOI: 10.2166/ws2016095.

Fabris R, Braun K, Morran JY, Ho L and Drikas M (2015a) The evolution of organic character in a drought- and flood-impacted water source and the relationship with drinking water treatment. *Journal of Water and Climate Change* 6(3), 401-413.

Fabris R, Denman J, Braun K, Ho L and Drikas M (2015b) Surface analysis of pilot distribution system pipe autopsies: The relationship of organic and inorganic deposits to input water quality. *Water Research* 87, 202-210.

Fujii M, Dang TC, Bligh M and Waite DT (2016) Cellular characteristics and growth behaviour of iron-limited *Microcystis aeruginosa* in eutrophic and oligotrophic chemostat systems. *Limnology & Oceanography* (in press, accepted June 2016).

Fujii M, Yeung AC and Waite TD (2015) Competitive Effects of Calcium and Magnesium Ions on the Photochemical Transformation and Associated Cellular Uptake of Iron by the Freshwater Cyanobacterial Phytoplankton *Microcystis aeruginosa*. *Environmental Science & Technology* 49(15), 9133-9142.

Furlong C, Gan K & De Silva S (In Press) Governance of Integrated Urban Water Management in Melbourne, Australia. *Utilities Policy*, doi:10.1016/j.jup.2016.04.008.

Furlong C, De Silva S & Guthrie L (2016) Understanding Integrated Urban Water Management as an ideology, method and objective. *Water e-Journal*, 1(2), 1-8.

Furlong C, De Silva S, Guthrie L & Considine R (2016) Developing a water infrastructure planning framework for the complex modern planning environment. *Utilities Policy*, 38, 1-10.

Furlong C, De Silva S & Guthrie L (2016) Planning scales and approval processes for IUWM infrastructure. *Water Policy*, 18(3), 783-802.

- He D, Wong CE, Tang W, Kovalsky P and Waite TD (2016) Faradaic Reactions in Water Desalination by Batch-Mode Capacitive Deionization. *Environmental Science & Technology Letters* 3(5), 222-226.
- How ZT, Linge KL, Busetti F and Joll CA (2016b) Organic chloramines in drinking water: An assessment of formation, stability, reactivity and risk. *Water Research* 93, 65-73.
- How ZT, Linge KL, Busetti F & Joll CA (2016) Organic chloramines in drinking water: An assessment of formation, stability, reactivity and risk. *Water Research*, 93, 65-73
- Huang H, Chow CW and Jin B (2016) Characterisation of dissolved organic matter in stormwater using high-performance size exclusion chromatography. *Journal of Environmental Sciences* 42, 236-245.
- Khan SJ, Deere D, Leusch FD, Humpage A, Jenkins M and Cunliffe D (2015) Extreme weather events: Should drinking water quality management systems adapt to changing risk profiles? *Water Research* 85, 124-136.
- Liu X, Wang Y, Waite TD and Leslie G (2015) Numerical simulation of bubble induced shear in membrane bioreactors: Effects of mixed liquor rheology and membrane configuration. *Water Research* 75, 131-145.
- Liu X, Wang Y, Waite TD and Leslie G (2016) Numerical simulations of impact of membrane module design variables on aeration patterns in membrane bioreactors. *Journal of Membrane Science*, 520, 201-213.
- Masters N, Christie M, Katouli M and Stratton H (2015a) A combination of PhP typing and -d-glucuronidase gene sequence variation analysis for differentiation of *Escherichia coli* from humans and animals. *Canadian Journal of Microbiology* 61(6), 409-416.
- Masters N, Christie M, Stratton H and Katouli M (2015b) Viability and stability of *Escherichia coli* and enterococci populations in fecal samples upon freezing. *Canadian Journal of Microbiology* 61(7), 495-501.
- O'Malley E (2015) Fate and toxicity of engineered nanomaterials in treated wastewater. *Australian Water Association Water Journal* 42(7), 66-70.
- Reeve P, Monis P, Lau M, Reid K, van den Akker B, Humpage A, King B, Leusch F and Keegan A (2015) Quantifying Water Quality Characteristics Of Stormwater. *AWA Water*, 73-78.
- Ryan U, Zahedi A and Paparini A (2016) *Cryptosporidium* in Humans and Animals - a One Health approach to prophylaxis. *Parasite Immunology* (in press) doi: 10.1111/pim.12350.
- Sawade E, Fabris R, Humpage A and Drikas M (2016) Effect of increasing bromide concentration on toxicity in treated drinking water. *Journal of Water and Health* 14(2), 183-191.
- Shutova Y, Baker A, Bridgeman J and Henderson R (2016) On-line monitoring of organic matter concentrations and character in drinking water treatment systems using fluorescence spectroscopy. *Environmental Science: Water Research & Technology*. 2, 749-760.
- Sinclair M, Roddick F, Grist S, Nguyen T, O'Toole J and Leder K (2016) Variability in 24 hour excretion of cyanuric acid: implications for water exposure assessment. *Journal of Water and Health* 14(2), 192-198.
- Tan J, Allard S, Gruchlik Y, McDonald S, Joll C and Heitz A (2016) Impact of bromide on halogen incorporation into organic moieties in chlorinated drinking water treatment and distribution systems. *Science of the Total Environment* 541, 1572-1580.
- Tang W, Kovalsky P, Cao B, He D and Waite DT (2016a) Fluoride removal from brackish groundwaters by constant current capacitive deionization (CDI) submitted April 2016. *Environmental Science & Technology*. doi: 10.1021/acs.est.6b03307
- Tang W, Kovalsky P, Cao B and Waite TD (2016b) Investigation of fluoride removal from low-salinity groundwater by single-pass constant-voltage capacitive deionization. *Water Research* 99, 112-121.
- Tang W, Kovalsky P, He D and Waite TD (2015) Fluoride and nitrate removal from brackish groundwaters by batch-mode capacitive deionization. *Water Research* 84, 342-349.
- Tomlinson A, Drikas M, & Brookes J (2016) The role of phytoplankton as pre-cursors for disinfection by-product formation upon chlorination. *Water Research* 10.1016/j.watres.2016.06.024
- Trinh T, van den Akker B, Coleman H, Stuetz R, Le-Clech P, Drewes J & Khan S (2016) Seasonal variations in fate and removal of trace organic chemical contaminants while operating a full-scale membrane bioreactor, *Science of the Total Environment* 550, 176-183.

- Trinh T, Le-Clech P, Coleman H, Stuetz R, Drewes J & Khan S (2016) Hazardous events in membrane bioreactors – Part 2: Impacts on removals of trace organic chemical contaminants, *Journal of Membrane Science* 497, 504-513.
- Umar M, Roddick F and Fan L (2016a) Impact of coagulation as a pre-treatment for UVC/H₂O₂-biological activated carbon treatment of a municipal wastewater reverse osmosis concentrate. *Water Research* 88, 12-19.
- Umar M, Roddick F and Fan L (2016b) Comparison of coagulation efficiency of aluminium and ferric-based coagulants as pre-treatment for UVC/H₂O₂ treatment of wastewater RO concentrate. *Chemical Engineering Journal* 284, 841-849.
- Wu H, Ikeda-Ohno A, Wang Y and Waite TD (2015) Iron and phosphorus speciation in Fe-conditioned membrane bioreactor activated sludge. *Water Research* 76, 213-226.
- Xin Y, Bligh MW, Kinsela AS and Waite TD (2016) Effect of iron on membrane fouling by alginate in the absence and presence of calcium. *Journal of Membrane Science* 497, 289-299.
- Xin Y, Bligh MW, Kinsela AS, Wang Y and Waite TD (2015) Calcium-mediated polysaccharide gel formation and breakage: Impact on membrane foulant hydraulic properties. *Journal of Membrane Science* 475, 395-405.
- Yeung A, D'Agostino P, Poljak A, McDonald J, Bligh M, Waite DT and Neilan BA (2016) Physiological and proteomic responses of continuous cultures of *Microcystis aeruginosa* PCC 7806 to changes in iron bioavailability and growth rate. *Applied and Environmental Microbiology*, AEM.01207-16; Accepted manuscript posted online 29 July 2016.
- Zahedi A, Papparini A, Jian F, Robertson I and Ryan U (2016a) Public health significance of zoonotic *Cryptosporidium* species in wildlife: critical insights into better drinking water management. *International Journal for Parasitology: Parasites and Wildlife* 5(1), 88-109.
- Zahedi A, Phasesy J, Boland T and Ryan U (2016b) First report of *Cryptosporidium* species in farmed and wild buffalo from the Northern Territory, Australia. *Parasitology Research* 115(3), 1349-1353.
- Zamyadi A, Choo F, Newcombe G, Stuetz R and Henderson RK (2016a) A review of monitoring technologies for real-time management of cyanobacteria: recent advances and future direction. *TrAC Trends in Analytical Chemistry* (In Press).
- Zamyadi A, Henderson R, Stuetz R, Hofmann R, Ho L and Newcombe G (2015a) Fate of geosmin and 2-methylisoborneol in full-scale water treatment plants. *Water Research* 83, 171-183.
- Zamyadi A, Henderson RK, Stuetz R, Newcombe G, Newton K and Gladman B (2016b) Cyanobacterial management in full-scale water treatment and recycling processes: reactive dosing following intensive monitoring. *Environmental Science: Water Research & Technology*, 2 362-375.
- Zamyadi A, Sawade E, Ho L, Newcombe G and Hofmann R (2015b) Impact of UV-H₂O₂ Advanced Oxidation and Aging Processes on GAC Capacity for the Removal of Cyanobacterial Taste and Odor Compounds. *Environmental Health Insights* 9 (Suppl 3), 1.
- Zhang Z, Bligh MW and Waite TD (2015a) Ascorbic acid-mediated reductive cleaning of iron-fouled membranes from submerged membrane bioreactors. *Journal of Membrane Science* 477, 194-202.
- Zhang Z, Bligh MW, Wang Y, Leslie GL, Bustamante H and Waite TD (2015b) Cleaning strategies for iron-fouled membranes from submerged membrane bioreactor treatment of wastewaters. *Journal of Membrane Science* 475, 9-21.
- Zhang Z, Wang Y, Leslie GL and Waite TD (2015c) Effect of ferric and ferrous iron addition on phosphorus removal and fouling in submerged membrane bioreactors. *Water Research* 69, 210-222.

Book Chapters

How ZT, Linge KL, Busetti F and Joll CA (2016a) Detection methods to monitor the degradation of organic chloramines. *Disinfection By-products in Drinking Water*, Royal Society of Chemistry, Cambridge, UK Chapter 31, 267-276.

Li X, Joll C, Linge K, Khan S, Henderson R and Wales S (2016) Characterisation of Organic Nitrogen in Algal Organic Matter and Formation of N-DBPs after Chlorination. *Disinfection By-products in Drinking Water* Chapter 3(352), 29.

Linge K, Liew D, Marti E, Dickenson E, Heitz A and Joll C (2016) N-nitrosodimethylamine Precursors in Wastewater: Removal via Activated Sludge Treatment. *Disinfection By-products in Drinking Water* Chapter 2(352), 14-28.

Newcombe G (2015) Optimizing conventional treatment for the removal of cyanobacteria and toxins, *Water Research Foundation*.

Reports

Linge KL, Joll C, Charrois JWA, Henderson R, Liew D, Kristiana I, How Z and Li X (2015) Advanced water treatment technologies to minimize nitrogenous disinfection by-products in drinking water: understanding the role of organic nitrogen. Final report for ARC Linkage project 110100548, CWQRC2015-11. 51 pages with a separate appendix of 292 pages.

Roddick FA, Fan L, Puspita P and Nguyen T (2016) Destruction of Toxicity and Reduction of the Organic Content of Municipal Wastewater Reverse Osmosis Concentrate. Final Report Project 80S-8010.

Conference Presentations

Aganetti R, (2015) 17thèmes Journées Internationales de Thermique in Marseille, France, 28-30 October 2015.

Bertone E, Sahin O, Richards R and Roiko A (2015) Bayesian Network and System Thinking modelling to manage water-related health risks from extreme events. IEE International Conference on Industrial Engineering and Engineering Management (IIEEM), Singapore, 6-9 December 2015.

Bertone E, Sahin O, Richards R and Roiko A (2015) Bayesian Network and Systems Dynamics modelling to manage drinking water related health risks from extreme events MODSIM, 21st International Congress on Modelling and Simulation. Gold Coast, Queensland, Australia, 2-4 December 2015.

Duke M (2015) Performance and cost of ceramic membranes enhanced by ozone for water recycling. (invited talk), National Water Recycling and Reuse Technology 2015 Conference, Melbourne, Australia, 30 September to 1 October 2015.

Duke M (2015) Cost assessment and chemical consumption of the ozone/ceramic membrane process for water recycling. (invited talk), International Conference on Sustainable Water Management, Murdoch University, Perth, Australia, 29 November to 3 December 2015.

Duke M (2015) Inorganic membranes for sustainable water and foods processing. (invited plenary talk), 9th Conference of the Aseanian Membrane Society, Taipei, Taiwan, 19-21 July 2015.

Duke M (2015) Performance and cost of ceramic membranes enhanced by ozone for water recycling. (invited talk), WaterRA Research Symposium - Unlocking the Value of Research, Adelaide, South Australia, 15-16 July 2015.

Furlong C, Guthrie L, De Silva S, & Considine R (2015) Informing infrastructure planning processes for IUWM projects. Water Resources Management Conference, La Coruna, Spain, June 2015.

Furlong C, Gan K, & De Silva S (2015) Governance of Integrated Urban Water Management in Melbourne, Australia. Redrafting Water Governance Conference, Lisbon, Portugal, October 2015.

Furlong C, De Silva S, & Guthrie L (2016) Understanding Integrated Urban Water Management as an ideology, method and objective. AWA/IWA Young Water Professionals Conference, Sydney, Australia, February 2016.

Furlong C, De Silva S, & Guthrie L (2016) Understanding Integrated Urban Water Management as an ideology, method and objective. OzWater, Melbourne, Australia, May 2016.

Furlong C, Brotchie R, Considine R, Finlayson G, & Guthrie L (2016) An empirical assessment of nine Integrated Urban Water Management plans. Adapting to Climate Change conference, Lisbon, Portugal, June 2016.

Gaget V, Keulen A, Hobson P, Humpage A, Monis P, Vigneswaran B and Brookes J (2015) Bad tastes and odours in our drinking water reservoirs: are benthic cyanobacteria the culprits?, WaterRA Research Symposium, Unlocking the value of Research, Adelaide, South Australia, 15-16 July 2015.

Gruchlik Y, Linge KL, Liew D, Joll C, Papparini A, Buseti F, Ryan U, Cadee K and Lethorn A (2016) Chemical and microbial analysis of selected waste stabilisation pond systems in Western Australia, IWA Specialist Group Conference on Ponds Technology for Wastewater Treatment, University of Leeds, UK, 21-23 March 2016.

How ZT, Linge KL, Buseti F & Joll CA (2015) Occurrence of free amino acids and related disinfection by-products in drinking water treatment systems (oral), NOM6 – 6th IWA Specialist Conference on Natural Organic Matter Research, 7-10 September 2015, Malmö, Sweden.

How ZT, Linge KL, Buseti F & Joll CA (2015) Organic chloramines: Identification of degradation by-products (oral), Micropol & Ecohazard Conference 2015, 9th IWA Specialist Conference on Assessment and Control of Micropollutants and Hazardous Substances in Water, 22-25 November 2015, Singapore.

Humpage A (2016) Cyanobacterial Awareness, Water Contamination Conference, ICON Water, Canberra, 10-11 March 2016.

Ishii S, Stanford B, Hadjikakou M, Kobayashi Y, Wiedmann T, Rowley H and Khan S (2016) Comparing the economic, environmental and social impacts of potable reuse with other water supply options., 2016 AWWA Annual Conference and Exposition., Chicago, Illinois, USA, 19-22 June 2016.

Joll C (2015) Nitrosamines and other nitrogenous DBPs in Australian drinking waters, WaterRA Research Symposium: Unlocking the Value of Research, Adelaide, South Australia, 15-16 July 2015.

Khan I, Zamyadi A, Stuetz R and Henderson R (2016) Alternative alert system for cyanobacterial blooms using #D fluorescence excitation emission matrix. Poster presentation., AWA/IWA Young Water Professionals Conference, UNSW Australia, Sydney, Australia, 18 February 2016.

Khan S (2016) Water quality impacts of extreme weather events, WSAA Water Services Sector Group, Water Contamination Conference, Canberra, Australia, 10-11 March 2016.

Lampard J, Tang JYM, Gernjak W, Escher B, Sidhu J, Black J, & Agullo-Barcelo, M (2015) Chemical and microbial qualities of stormwater: informing risk management for harvesting and reuse, Stormwater Queensland 2015 Conference, Toowoomba, Australia, 15-17 July 2015.

Lampard J, Tang JYM, Gernjak W, Escher BI, Sidhu J, Black J, Agullo-Barcelo M (2015) Human health hazards in Australian urban stormwater runoff, 2nd Water Sensitive Cities Conference, Brisbane, Australia, 8-9 September 2015.

Lampard J, Tang JYM., Escher, BI, Sidhu, J, Black, J, Aryal R, Agullo-Barcelo M & Gernjak W (2015) Stormwater harvesting and reuse: an environmental health perspective, Environmental Health Australia 40th National Conference, Sydney, Australia, 20-23 October 2015

Linge KL (2015) Treating wastewater for potable reuse: removing chemicals of concern, WaterRA Research Symposium: Unlocking the Value of Research, Adelaide, South Australia, 15-16 July, 2015.

Martins A, (2015) Versatile, robust portable FIA systems to screen for pesticides in source water, WaterRA Symposium - Unlocking the Value of Research, Adelaide, 15-16 July 2015.

Masters N (2015) Evaluation of existing microbial source tracking methods used for detecting the source of faecal contamination in surface waters, 18th International Symposium on Health-Related Water Microbiology, Lisbon, Portugal, 13-19 September 2015.

Milne N, Sancio P, Atherton P, Dharmabalan D, Smith L, Sellwood J, Scott D, Sheehan D and Gray S (2015) Decentralised treatment solutions for regional and remote water supplies and wastewater, AWA OzWater 15, Adelaide, South Australia .

Newcombe G, Krasner S, Henderson R and Zamyadi A (2015) Optimizing conventional treatment for the removal of cyanobacteria and toxins, American Water Works Association (AWWA) Water Quality Technology Conference (WQTC), Salt Lake City, USA, November 2015.

Newton K, Jones P, Hale E and Newcombe G (2016) Changing customer perceptions, one sip at a time, OzWater Conference 2016, Melbourne, Australia, 10-12 May 2016.

Shutova Y, Baker A, Bridgeman J and Henderson R (2015) Challenges of NOM on-line fluorescence monitoring in drinking water treatment, 6th IWA Specialist Conference on Natural Organic Matter in Water, Malmo, Sweden, 7-10 September 2015.

Stanford B, Hadjidakou M, Wiedmann T, Johns G, Karnovitz A, Khan S and Kobayshi Y (2016) The Economics of DPR: A Framework for Triple Bottom Line Comparisons of Water Supply Options., AWWA International Symposium on Potable Reuse, Long Beach, California, USA, 25-27 January.

Wang Y, Roddick FA, Fan L, Blackbeard J and Crosbie N (2016) Sunlight photodegradation of micropollutants in wastewater effluent, AWA OzWater 2016, Melbourne, Victoria, 10-12 May.

Yeung A, D'Agostino P, Poljak A, Pearson L, Waite TD and Neilan B (2015) Proteomics in the water industry: How do toxic *Microcystis aeruginosa* respond to iron limitation? [Rapid-fire platform + Poster], Algae Research Symposium 2015, Sydney, New South Wales, December 2015.

Zamyadi A, Dorner S, Prevost M, Newcombe G and Henderson R (2015) Monitoring cyanotoxins and their producing cells in clarifiers and sludge treatment processes, 9th IWA Specialist Conference on Assessment and Control of Micropollutants and Hazardous Substances in Water: Micropol & Ecohazard Conference 2015, Singapore, 22-25 November 2015.

Zamyadi A, Dorner S, Prevost M, Newcombe G and Henderson R (2015) Fate of emerging cyanobacterial harmful metabolites in water supply systems, 2015 International Chemical Congress of Pacific Basin Societies (Pacifichem), Hawaii, USA, 15-20 December 2015.

Zamyadi A, Henderson R, Stuetz R, Newcombe G, Dorner S and Prevost M (2015) Cyanobacterial Cells - Water Treatment Challenges, American Water Works Association (AWWA) Water Quality Technology Conference (WQTC), Salt Lake City, USA, 15-19 November 2015.

Zamyadi A, Henderson R, Stuetz R, Newcombe G, Dorner S and Prevost M (2015) Real-Time Management of Cyanobacterial Blooms: Advantages and Limitations of in Vivo fluorescence Probes., American Water Works Association (AWWA) Water Quality Technology Conference (WQTC) 2015, Salt Lake City, USA, 15-19 November 2015.

Conference Posters

Carter R A A, Joll C A, Allard S, Heitz A, Croue J P & West N (2016) Simultaneous analysis of haloacetamides, haloacetamides and halonitromethanes by gas chromatography-mass spectrometry. (Poster) IWA & AWA Young Water Professionals Conference, Sydney, New South Wales, 18-19 February.

Chahal C, Monis P, Akker BVD & Young F (2016) Partitioning behaviour of FRNA phage and *E. coli* in wastewater. (Poster) PhD student day, School of medicine, Flinders University, SA, 9 October 2015.

Chahal C, Monis P, Akker BVD & Young F (2016) Partitioning behaviour of FRNA phage and *E. coli* in wastewater. (Poster) IWA and AWA YWP conference Sydney, NSW, 18-19 February 2016.

Choo F, Zamyadi A, Henderson R, Stuetz R and Newcombe G (2016) Algal management for water treatment: applied research following Australian utility's needs. Poster presentation., AWA/IWA Young Water Professionals Conference, UNSW Australia, Sydney, Australia, 18 February 2016.

Choo F, Zamyadi A, Stuetz R and Henderson R (2016) Implementation of best-practice cyanobacterial management: selection of online source to tap monitoring tool. Poster presentation., OzWater 2016, Melbourne, 10-12 May 2016.

Choo F, Zamyadi A, Newcombe G, Stuetz R, Bowling L & Henderson RK (2016) Implementation of best-practice cyanobacterial management: selection of online source to tap monitoring tool (Poster), AWA OzWater 2016, Melbourne, Victoria, Australia, 10-12 May.

Choo F, Zamyadi A, Stuetz R, Newcombe G & Henderson RK (2016) Algal management for water treatment: applied research following Australian utilities needs (Poster), AWA/IWA Young Water Professionals Conference 2016, Sydney, New South Wales, Australia, 18-19 Feb.

How ZT, Linge KL, Busetti F & Joll CA (2015) Speciation of organic chloramines and the rates and pathways of their degradation (poster), Drinking Water Disinfection By-Products - Gordon Research Conference, 9-14 August 2015, South Hadley, Massachusetts, USA.

How ZT, Linge KL, Busetti F & Joll CA (2015) Detection and confirmation of selected organic chloramines and their degradation by-products (poster), NOM6 - 6th IWA Specialist Conference on Natural Organic Matter Research, 7-10 September 2015, Malmö, Sweden.

Lampard J, Chapman H, Roiko A, Stratton H & McCarthy DT (2015) Pathogenic bacteria in stormwater runoff: factors influencing presence and potential human health risks, 2nd Water Sensitive Cities Conference, Brisbane, Australia, 8-9 September 2015.

Tomlinson A, Drikas M & Brookes J (2016) The role of phytoplankton as pre-cursors for disinfection by-product formation upon chlorination. [Poster] IWA and AWA YWP Conference Sydney, NSW, 18-19 February.

Student Theses

Kitchens L (2015) The contribution of Western Australian native plant species to water repellency, Honours, Murdoch University

Fanning A (2015) Tracing the presence of anthropogenic derived nutrients in intertidal ecosystems using stable isotopes of Carbon ($^{12}\text{C}:^{13}\text{C}$) and Nitrogen ($^{14}\text{N}:^{15}\text{N}$) in the Hunter Region, New South Wales, Honours, University of Newcastle

Moodie D (2016) Investigating bioaccumulation of chemical pollutants adsorbed to microplastics in the terrestrial environment. Honours, RMIT University

Whan P (2015) Investigation Of A Novel Toxin Produce By A *Limnothrix* Cyanobacteria, PhD, University of Adelaide

Martins A (2016) Development of a Surface Acoustic Wave Micromixer for Enhanced Chemiluminescence Microanalysis: Application to Pesticides, PhD, RMIT University

Aganetti R (2016) Mechanisms of spontaneous combustion of stockpiles of biosolids - risk reduction and process optimisation, PhD, Victoria University

WaterRA Fact Sheets

WaterRA (2015) Ultrasound for the control of cyanobacteria

WaterRA & WWSA (2015) *Naegleria fowleri*

WaterRA (2015) Shining light on pesticide monitoring

WaterRA (2015) Removal and inactivation of *Cryptosporidium* in the environment

Unpublished work

Chellappan S, Usher S and Stickland A (2015) Laboratory studies to test dry stacking of ETP sludge, Melbourne Water.

Usher S, Dassanayake K, Chellappan S, Skinner S and Stickland A (2014) Wastewater dry stacking outlet configuration trials, Milestone Report 4: Trials, Data Analysis and Modelling, Smart Water Fund.



WATERRA MEMBERS

RESEARCH MEMBERS

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Griffith University
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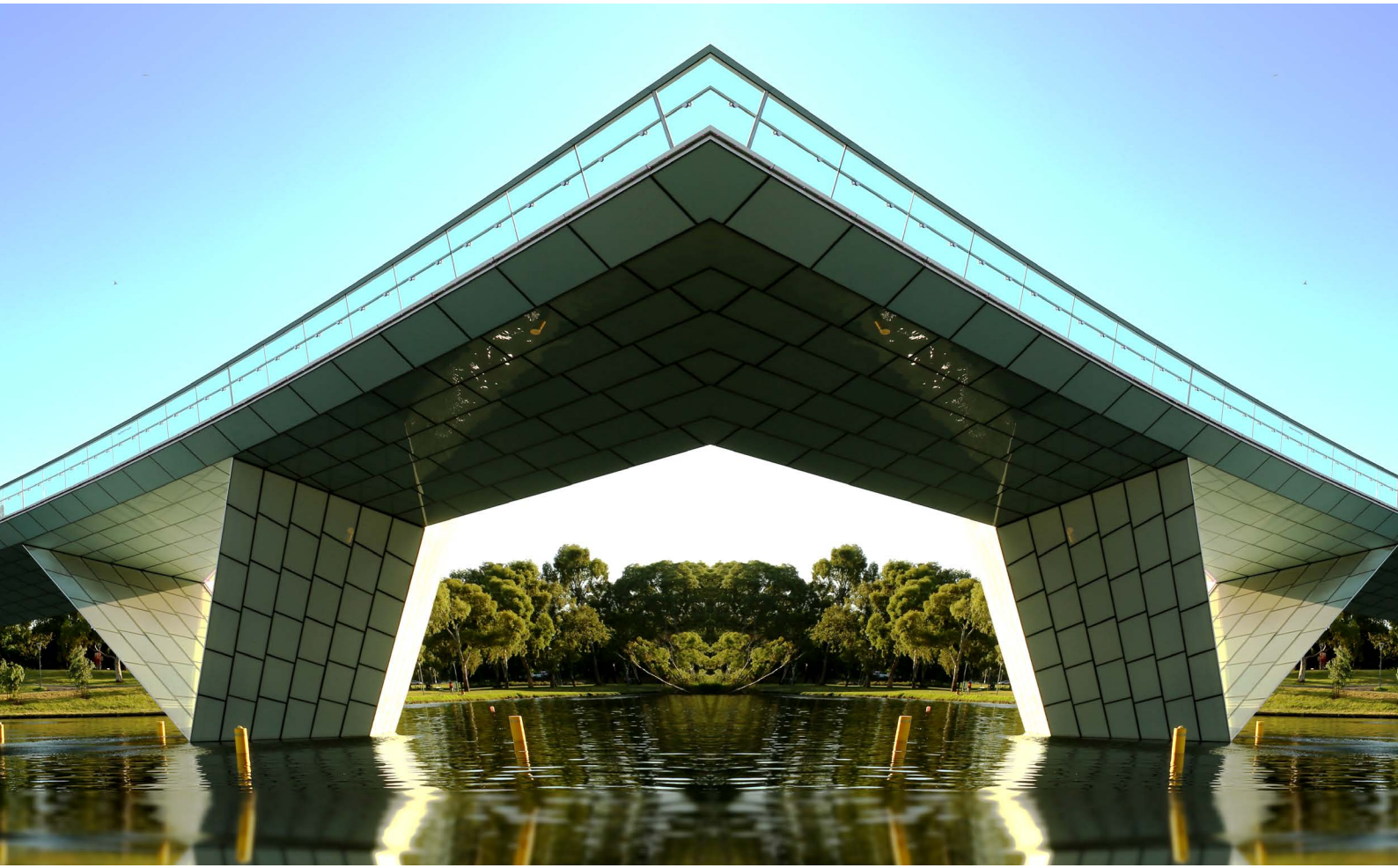
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Suez (trading as Degremont Australia)
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Wannon Region Water Corporation
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WaterNSW
Western Region Water Corporation
Yarra Valley Water Ltd

ASSOCIATE MEMBERS

Atom Consulting
Department of Health, Environmental Health (NT)
Department of Health and Human Services (Tas)
Risk Edge (TM) Pty Ltd
Water Futures



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Water Research Australia Limited
ACN 127 974 261
Head office: L3, 250 Victoria Square, Adelaide SA 5000
GPO Box 1751, Adelaide SA 5000
T +61 8 7424 2445
E info@waterra.com.au
W waterra.com.au