

iah news

Newsletter of the Australian Chapter
International Association of Hydrogeologists

January 2016 to March 2016
Volume 32, No. 1



On the cover:

***Water quality sampling on the Liverpool Plains, NSW, by
University of NSW (funded through NCGRT).***

Photograph by Wendy Timms.

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International Association of Hydrogeologists Australian National Chapter

The International Association of Hydrogeologists is a professional association for those within disciplines related to groundwater, its occurrence, utilisation, testing and management. IAH is a scientific and educational organisation that is truly international, and was established to foster closer ties, cooperation and information exchange related to the study of groundwater. IAH is non-government and non-profit and has over 4000 members internationally from around 120 countries. The Association is affiliated with the International Union of Geological Sciences (IUGS), and was founded during the 20th International Geological Congress in 1956. By its statutes the IAH is an association of individuals and corporate members, and not a federation of national committees. National groups do, however, organise local meetings and other activities. A proportion of the national committee membership goes to the local organisation to support these activities, the remainder to the international body. The country of the international secretariat is changed every several years. The IAH publishes Hydrogeology Journal, various workshop and conference proceedings and an international newsletter.

The main objectives of the IAH are to promote international and national cooperation between involved scientists and engineers; sponsor international and national technical/management meetings and symposia on hydrogeology; publish hydrogeological reports, papers and maps; establish investigation commissions and working groups to report on special topics; encourage the international application of relevant approaches and techniques for the benefit of the hydrological and human environment.

Our national chapter was founded in 1983 and is one of the most active. Activities tend to be organised locally within each state and territory, but national activities also occur. Each state body has its own meetings, usually monthly. Conferences are held in Australia around every two to three years, and seminars on a more frequent basis.

Membership Requirements: IAH will accept as individual members anyone directly or indirectly engaged in study or research on, or management of water in its various forms related to hydrogeology, if sponsored by two members in good standing. Companies and research organisations can apply for corporate membership. The current membership categories and annual subscriptions for 2015 (see www.iah.org.au) are:

▪ Member	\$140
▪ Online member	\$120
▪ Student	\$55 (full time students)
▪ Online Student Member	\$35
▪ Corporate member	\$790
▪ Partial sponsor	\$155
▪ Full sponsor	\$190
▪ Retired	\$75

We are pleased to announce that the student membership fees have been reduced by \$20 in 2015 as an added incentive for full-time students to become IAH members. In addition, we have maintained the Member and Online Member fees at their current level, despite a rise in the IAH International fees for these membership categories for 2015.

Membership of this professional association is tax deductible in Australia, and individual members are entitled to use 'MIAH' (Member of the International Association of Hydrogeologists) after their name.

FROM THE PRESIDENT

Welcome to the IAH Newsletter!

I don't know how it feels for you, but 2016 seems to be flying past! 2016 is a very special year for the International Association of Hydrogeologists, as we reach the major milestone of the 60th anniversary of our founding in 1956. From small beginnings, IAH has grown into a truly worldwide scientific and professional association with just over 4,100 members in 125 countries and 40 national chapters, 14 scientific commissions and networks, a high quality journal, well-established book series and a programme of international scientific congresses, of which the Congress to be held in September this year at Montpellier is the 43rd (<http://www.60iah2016.org/en/>). I encourage each of our Australian chapters to celebrate our 60th birthday at one of your events in the latter half of the year, perhaps to coincide with the International Congress in France in September.

The IAH and National Centre for Groundwater Research and Training held the highly successful Australian Groundwater Conference in Canberra in November 2015. Although there was scepticism among many of us that the "12 minute" presentation format for the conference papers was achievable, it turned out to be a great success. Concise hydrogeological "speed dating" allowed a broad range of issues to be covered across the multiple streams. With so many great sessions on the go, decision making on which to attend was a challenge! There were plenty of discussion opportunities over the break-out times and the social functions. Following on from the success of this conference, planning has now commenced for the next joint conference to be held in Sydney in 2018.

At the annual general meeting held at the Australian Groundwater Conference I spoke on the need for IAH Australia to be an advocate for groundwater in Australia. It is a challenge, however. There are a diverse range of views on various issues across our membership. How can we represent all the membership but also provide a robust response to challenging issues?

Our mission, as an organisation, is to further the understanding, wise use and protection of groundwater resources throughout the world.

IAH aims to be a leading international society for the science and practice of hydrogeology and to be a globally recognised information source and facilitator for the transfer of groundwater knowledge. We endeavour to raise awareness of groundwater issues and work with national and international agencies to promote the use of groundwater to ensure ready access to safe drinking water. IAH also promotes the protection of aquifers against pollution, the improvement of aquifer storage and the management of groundwater resources to assure the sustainability of groundwater-dependent ecosystems.

In developing responses to the challenges to groundwater, we must remain true to our organisational goals and to our membership. The national chapter continues to encourage state branches to be involved in the issues in your area. It is important that our members be involved in this process. So when the opportunity arises, PARTICPATE! We need to be relevant and representative!

Happy 60th Birthday IAH!

Chris McAuley
President
IAH Australia

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We gratefully acknowledge the support of our national corporate sponsors.



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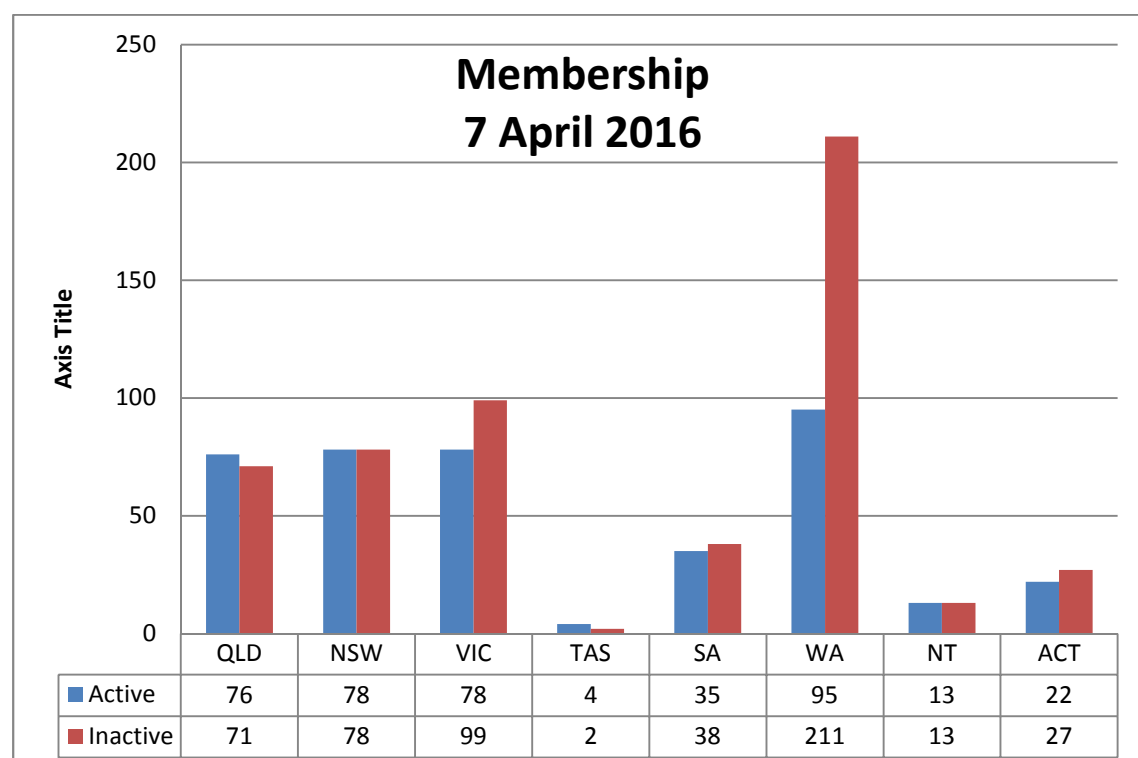
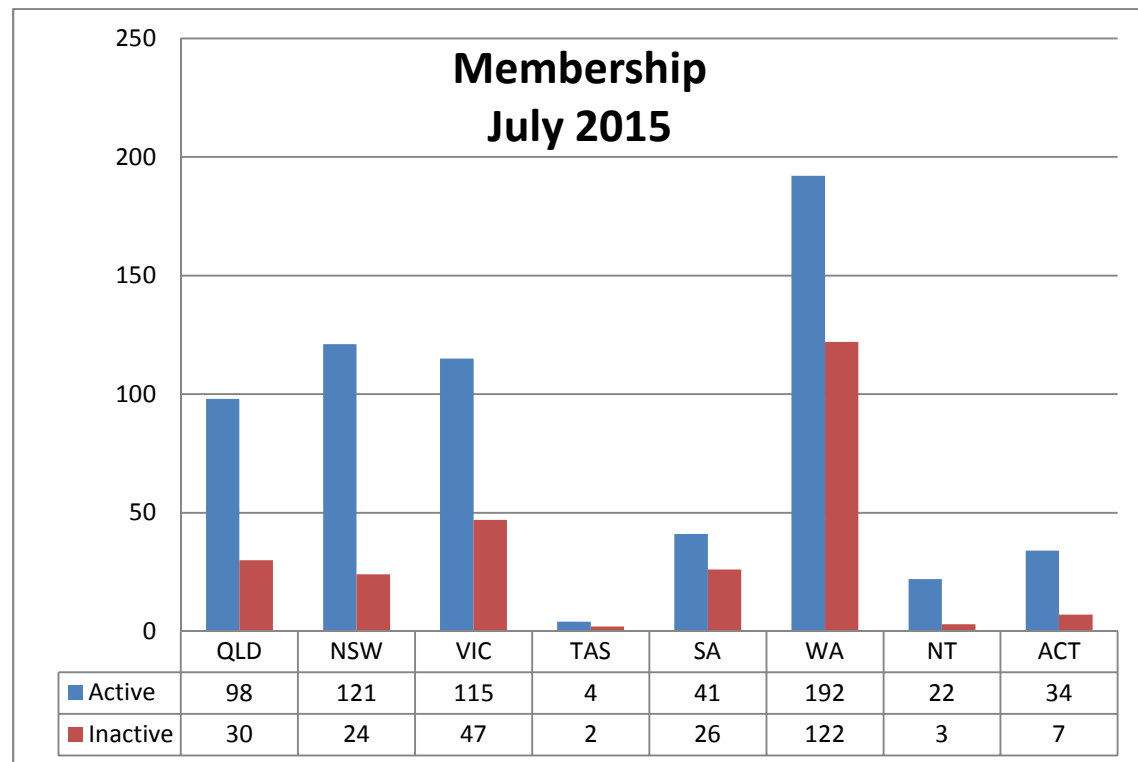
www.jbsg.com.au



www.rockwater.com.au

MEMBERSHIP

The increasing trend in the number of active (paid up) members since the low point of May 2014 appears to have slowed. There were 637 active members and 261 inactive (non-financial) members at the end of July 2015 compared to the totals of 426 active members and 546 inactive members at 7 April 2016. The tables of active and inactive members and the membership graphs show the distribution of the numbers by State and Territory at both times.



The State committees can – and do – play a vital part in contacting their inactive members and encouraging them to become active again. Fixing the problems with on-line renewal via the website has removed a major deterrent and source of irritation, although glitches are still being reported. Also, the active and continuing checks and updates of the national database through feedback from the States has reduced the number of duplications or omissions as members transfer between states or move overseas.

The other perceived factor in renewals is the fluctuation in employment opportunities over the past few years. Promotion of the benefits of IAH membership in this respect can help to persuade members to stay active.

As a repeat from a previous issue of the newsletter, here's how an inactive member can become active again:

Current/Lapsed Membership Renewal Process

Membership renewal emails were sent to all members in January, with instructions for membership renewal using the new system. For anyone who may have missed the email, the renewal instructions from the email are provided on the following page.

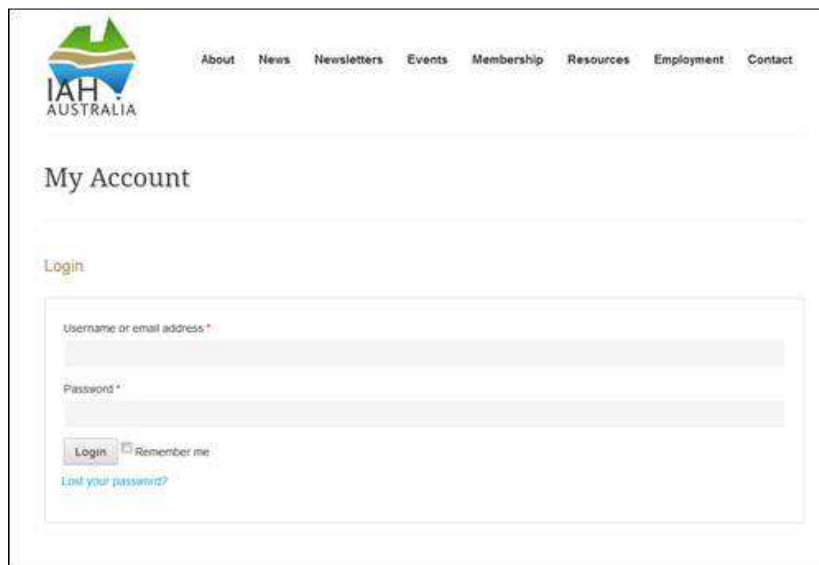
Note that if you were a member in 2015, and **did not receive** a membership renewal email in January 2016, some common issues are listed below:

- The email was intercepted by your **spam filter**. Check your spam folder or quarantine archive for IAH emails received on or about 15 January 2016, and consider adding the IAH sender details to your safe list.
- Your **email details changed** in the past year (for example, change of employment) and you have not yet updated your email address with IAH. You can update your details at any time through the [iah.org.au](https://www.iah.org.au) website, by selecting “My Account” under “Membership”, and editing account details.
- **Corporate “firewalls”** at some companies block all suspected incoming spam emails (IAH emails may be classified as “marketing” emails by some systems). Speak with your IT administrator about adding IAH to your corporate safe list, or switch to a personal email account.
- Your membership has **lapsed for more than a year** without renewal, and your details have been removed from our database. You can still use the new membership system to renew your lapsed membership.

Contact membership@iah.org.au with any questions.

Log into [your account page](https://www.iah.org.au/membership/my-account/) on the IAH website (<https://www.iah.org.au/membership/my-account/>).

Your username is the email address the email was sent to (which should be the email address you have registered with IAH). If you have forgotten your password, you can reset it using the “**Lost Your Password**” link at the bottom of the page **using the email address the email was sent to.**



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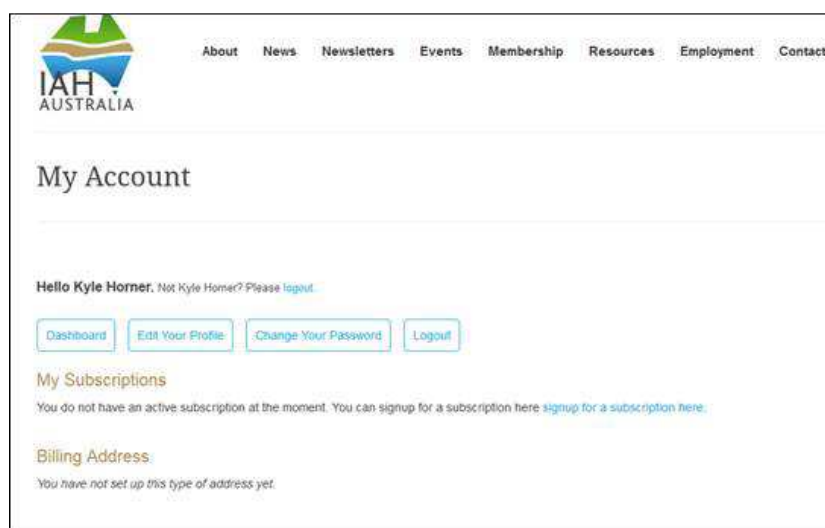
Password *

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Once logged in, you will see your account Dashboard.

Under the **My Memberships** section, click on the link to sign up for a new subscription. This will direct you to a new page where you can select your desired membership category from the options. Details of each membership type can be found at the bottom of the registration page. Once you have chosen your desired category, follow the prompts to finish your membership renewal.



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If you have any questions, please do not hesitate to contact the membership team at membership@iah.org.au.

IAH AUSTRALIA EXECUTIVE

President	Chris McAuley	drhydronicus@gmail.com
Vice-President	Dr Lange Jorstad	ljorstad@geosyntec.com
Treasurer	Ron Colman	Ron.Colman@royhill.com.au
Secretary	Dr Kyle Horner	Kyle.Horner@epa.nsw.gov.au
Past President	Dr Rick Evans	Richard.Evans2@jacobs.com
Membership Secretary and Web Administration	Fiona Adamson	secretariat@iah.org.au
Newsletter Champion	Dr Ben Rotter	Ben.Rotter@coffey.com

Introducing Committee Members

In this issue we introduce Chris McAuley, IAH Australia National President.



Chris McAuley graduated in 1990 with a combined geology and geophysics major from the University of Melbourne. His “apprenticeship” as a hydrogeologist was with the Rural Water Corporation in Victoria under the leadership of Dr Rick Evans. The 1990’s were dominated by salinity management. Chris had a lead role in the development of groundwater knowledge in the Wimmera and Mallee, contributing to the regional salinity management plans and the Mildura and Horsham 1:250,000 hydrogeological map sheets.

After a year travelling, Chris returned to Australia and joined SKM. As his career developed, groundwater resource development and management became a feature. This included contributing to a range of groundwater resource assessments and management plans across Australia. He was heavily involved in National Water Resource Audit, developing groundwater audit methodologies for Victoria and Tasmania, along with contributing as part of the national project leadership team. He also developed expertise in the drilling, construction and refurbishment of deep groundwater bores to 1,500 metres.

The early 2000’s included two years working with SKM in Europe as part of a small environmental practice. The team focused on a range of contaminated site investigations both in the United Kingdom and internationally through Europe and the Middle East. This provided exposure to the developing groundwater framework directive for the European Union. A small but significant project was the first study in the UK into proposed underground structures causing “groundwater flooding” of basements in adjacent properties.

On return to Australia, Chris worked in the sustainability area, although he maintained a lead role in the groundwater issues associated with the development of mineral sands mines in northern and western Victoria. In 2005 Chris joined the Environment Protection Authority in Victoria. His initial role was as project manager for EPA regulatory and approval functions for the Port Phillip Bay channel deepening project and the EastLink road project. In 2006 he became the manager - environmental audit at the EPA, contributing to the administration and development of the audit system in Victoria. In this

role, Chris contributed to the development of the revised National Environmental Protection (Assessment of Site contamination) Measure as well as the lead EPA assessor of clean-up to the extent practicable (CUTEP) and groundwater quality restricted use zones (GQRUZ) determinations.

In 2008, Chris moved to the then Department of Sustainability and Environment as the Victorian government's principal hydrogeologist. He has had an ongoing role in the development of groundwater resource knowledge and policy in Victoria. Key projects included the secure allocation, future entitlement project that developed a revised management framework for Victoria and associated resource assessment guidance. Key information products developed included the statewide 3D mapping of the state's aquifers. This has become a framework for mapping of salinity information by aquifer for the state and contributing into the national aquifer framework. He has held various positions, including the Director Groundwater Licensing and Investigation. Chris is currently the Director of Water Entitlements and Markets for Victoria at the Department of Environment, Land, Water and Planning.

Chris has maintained a strong focus on groundwater education. He regularly contributes to groundwater training courses, and in 2012 completed development of the National Water Authority funded "WetRocks" (www.wetrocks.com.au) on-line groundwater education portal linked to the Australian National Curriculum. This forms part of the Teacher Earth Science Education Programme (TESEP) resources.

Chris has been actively involved in the International Association of Hydrogeologists since first joining the Victorian committee in the 1990's. He has been an ordinary member, vice-chairperson and chairperson of the Victorian branch, and vice-president of the national committee. He is currently the Australian President, having been first elected in 2015.

FINANCE UPDATE

This report of the IAH National Committee finances covers the period *19/11/2014 to 3/11/2015*

Term Deposit as of <i>19/11/14</i>	\$44,798.83
Cheque Account as of <i>19/11/14</i>	\$111,342.93
Total Cash Balance as of <i>19/11/14</i>	\$156,141.76

Term Deposits as of <i>3/11/2015</i>	\$96,322.93
Cheque Account as of <i>3/11/2015</i>	\$50,083.60
Total Cash Balance as of <i>3/11/2015</i>	\$146,406.53

Income

2015 Membership fees	\$80,295.39
Cash Account Interest	\$213.73
<hr/>	
Total Income	\$80,509.12

Outgoings

States 2015 Capitation	\$6,240.00
Association Insurance	\$3,399.53
Website work and hosting	\$1,876.00
Darcy Lecture support	\$787.05
Aust Post Mailbox	\$275.00
Campaign Monitor (website monitoring)	\$503.74
Bank Fees	\$90.40
AGC Subs	\$2,083.84
IAH Secretariat (NCGRT)	\$5,500.00
UK IAH Head Office 2015 subscription	\$71,012.89
<hr/>	
Total Outgoings	\$91,768.45

Signature:



Date: 3/11/2015

Ron Colman, IAH Australia National Treasurer

Term Deposits as of 07/04/16	\$96,956.86
Cash Account as of 07/04/16	\$109,500.00
Total Cash Balance as of 07/04/16	\$206,456.86

Payment of \$12,885.00 made to ACT Branch for AGC disbursement

Signature:



Ron Colman, IAH National Treasurer

Date: 07/04/16

FEATURE NEWS

IAH Submission to Senate Committee

The IAH Australia submission to the Senate Select Committee on Unconventional Gas Mining is now available online:

<https://www.iah.org.au/correspondence/>

John Cherry awarded 2016 Lee Kuan Yew Water Prize Laureate

John Cherry was recently awarded the Lee Kuan Yew Water Prize Laureate 2016 for his work in improving effective management in groundwater pollution. The full story can be found at:

<http://www.channelnewsasia.com/news/singapore/hydrogeologist-john/2623112.html>

New research measures effects of human activities on groundwater systems



The geotechnical centrifuge is also known as the 'environmental time machine'

Researchers at the UNSW Connected Waters Initiative (CWI) have developed new methods for measuring how the properties of groundwater systems can be affected by activities such as extraction and mining.

Groundwater in confined aquifers is contained by layers of substrate such as clay that have low permeability. Called aquitards, these layers limit the rate at which the aquifer can be recharged by water moving through them, and can act as a barrier to external contaminants entering the aquifer.

"Low permeability barriers can be naturally occurring clay or rock, or constructed of clay and engineered materials," said Dr Timms of the UNSW School of Mining Engineering, who led the research team.

However, human activities can change the way aquitards limit the flow of water through them. Extraction of groundwater can stress aquitard materials by causing subsidence and compaction.

"Where mining occurs near water bodies, wetlands or farming land, these barriers to groundwater flow can be very important," Dr Timms said. "There is increasing need to improve the engineering design of flow barriers, and computer modelling predictions of natural barriers to flow."

The CWI team developed a technique to simulate these changes experimentally and measure how the hydraulic properties of the aquitard materials can change in response to these stresses.

Compacted, or 'tight', clay collected from an aquitard near Gunnedah in the Namoi catchment in NSW, was analysed at the [CWI Centrifuge Permeameter Facility](#) and the mining geo-mechanics laboratories at UNSW.

Using the geotechnical centrifuge, Dr Steve Bouzalakos found that the hydraulic permeability of the tight clay could change depending on stress conditions. The variations in stress in the experiment simulated the stressing of aquitard materials affected by activities such as extraction of large volumes of groundwater or by mining and coal seam gas developments.

The geotechnical centrifuge is also known as the 'environmental time machine'. Accelerated gravity is used to gradually speed up processes that usually occur over time periods measured in years or decades to help evaluate the long-term effects of changes in the subsurface environment.

In related research, Dr Richard Crane and Dr Wendy Timms pioneered a new technique to analyse tight clays at the CWI Centrifuge Permeameter Facility. In a world first, an interrupted-flow centrifuge method was developed to show how small flow channels could allow leakage through the normally relatively impermeable materials that comprise aquitards. These preferential flow paths could be activated through aquitards if there are differences between groundwater pressures above and below the aquitard materials.

These findings have implications at scales ranging from individual sites to basins and catchments in which activities occur that affect the subsurface environment by extraction of groundwater or modification to aquitards.

"The research is of benefit to mining and agricultural communities, by improving predictions of barriers to groundwater flow," said Dr Timms.

Funded by the Australian Research Council, through the National Centre for Groundwater Research and Training, the research outcomes are reported in a number of publications.

Article by Rick Arena, first published by UNSW Connected Waters Initiative, <http://www.connectedwaters.unsw.edu.au/news/2016/04/new-research-measures-effects-human-activities-groundwater-systems>

FROM THE BRANCHES

NEW SOUTH WALES

IAH NEW SOUTH WALES BRANCH

2016 Committee:

Chair	Katarina David	(UNSW)
Presentations Secretary and External Communications	Graham Hawkes	(AECOM)
Treasurer	Tingting Liu	(Hydrosimulations)
Secretary	Sean Cassidy	(EMM)
Student and Young Professional Coordinator	Dr Anna Greve	(Eco Logical Australia)
Meeting Facilitator and Internal Communications	Sean Daykin	(WSP Parsons Brinkerhoff)
Newsletter Champion	Dr Ben Rotter	(Coffey)
NSW Sponsorship Champion	Jason Carr	(Jacobs)
Web Champion	Doug Anderson	(Water Research Laboratory, UNSW)
International Sponsorship Champion	Dr Jay Punthakey	(Ecoseal)
University Liaison	Dr Bill Milne-Home	(UTS)
Members Champion	Ellen Kwantes	(WSP Parsons Brinkerhoff)
National Vice President	Dr Lange Jorstad	(Geosyntec)
International Vice President - Australasia	Dr Wendy Timms	(UNSW)
Committee Support	Mark Peterson	(ANSTO)

Local News

Our regular branch meetings continue to be held at the office of WSP Parsons Brinckerhoff (WSP) located in the Sydney CBD. Thank you to WSP for supplying the convenient central venue, first class facilities, and food and drinks.

IAH NSW branch provides events that span all stages of a career in hydrogeology. Our Student Night event provides a platform for students, and our Young Professional Award recognises young professionals. For mid to late career hydrogeologists, a forum is provided for technical presentations. Highly experienced professionals join our panel during Elders Night, with esteemed NSW hydrogeologists recognised by the receiving of the Woolley Award at or near retirement.

NSW Sponsors

IAH NSW gratefully acknowledges the contributions of its 2015/16 sponsors. Details of sponsors can be found on the website at <http://www.iah.org.au/about/new-south-wales/nsw/-branch-sponsors>.

Our Gold Sponsors include AECOM, ALS Laboratory Group, Coffey, Douglas and Partners, Earth Science Information Systems, Eco Logical Australia, Environmental Strategies, EMGA Mitchell McLennan, Geosyntec, Hydrosimulations, NSW Department of Primary Industries Water, NSW Environment Protection Authority, Parsons Brinckerhoff, RPS, WSP, University of NSW Water Research Laboratory.

Our Silver Sponsors include Frans Kalf and Associates, EcoSeal and C. M. Jewell & Associates.

Recent Events

9 March 2016 – The Broken Hill Managed Aquifer Recharge (BHMAR) project – Approaches taken and lessons learnt – Dr Ross Brodie

Dr Ross Brodie is a Principal Hydrogeologist in the Groundwater Branch at Geoscience Australia in Canberra. As part of a broader water savings strategy for the Murray-Darling Basin, Geoscience Australia was tasked, through the Broken Hill Managed Aquifer Recharge (BHMAR) project, to identify and assess aquifer storage and groundwater extraction options in the Darling River floodplain of western New South Wales.

Due to the lack of pre-existing information, the project involved significant data acquisition. This included approaches not routinely used in Australian hydrogeological investigations, such as airborne electromagnetics (AEM), sonic coring, pore fluid analysis, downhole nuclear magnetic resonance (NMR) logging and river bathymetry/sediment surveys. It was the interpretation, integration and re-evaluation of these cross-disciplinary datasets during project phases that drove fundamental shifts in the conceptual understanding of groundwater processes in the study area.

This talk provided an overview of the approaches taken, and the challenges and opportunities in integrating these datasets.

16 February 2016 – Lithium salt lakes - powering the future – Murray Brooker

Murray Brooker is a Principal at Hydrominex. He presented on the fascinating geological and hydrogeological environments that are salt lakes.

Salt lakes are located in some of the world's most extreme climates, from outback Australia to the Andean high Plateau. Despite the inhospitable environments these lakes host a treasure trove of mineral wealth that is of increasing importance for humanity. As the importance of lithium ion batteries grows, powering everything from phones to laptops and cars, the demand for batteries is expanding rapidly. Lithium from salt lakes is the cheapest production source and is expected to provide much of the needed supply. Often as a secondary product potassium (potash) is another important product from salt lakes, supplying the global fertiliser market for speciality SOP or MOP fertilisers.

The talk presented the geology and hydrogeology related to the evaluation and development of a number of salt lakes in Argentina and Australia. It outlined the geological and hydrogeological characteristics of these remarkable environments, where hypersaline brines form under conditions of extreme solar radiation, in closed drainage

basins. Examples included lithium-potash projects in Northern Argentina in the “Lithium Triangle” and in Central Australia, two very distinct environments, with different brine characteristics. The presentation discussed the features required to form a brine deposit, the different types of salt lake, porosity and permeability testing, brine sampling, chemical evolution of the brine and requirements for groundwater modelling for management of the brine resources.

This presentation can be found on the NSW page of the Australian IAH website.

8 December 2015 – AlgoMesh: A tool for building unstructured-grid groundwater models - Damian Merrick

Damian Merrick, Principal Software Developer at HydroAlgorithmics, presented on the use of unstructured grids in groundwater flow modelling.

Unstructured grids have seen growing popularity recently in the groundwater modelling community, predominantly due to the release of MODFLOW-USG. The use of unstructured grids provides several benefits over traditional rectangular-grid finite-difference approaches: the ability to focus resolution in particular model areas, cut out inactive cells, accurately represent the geometry of important features, and align cell boundaries to model directions of preferential flow. However, building an appropriate unstructured grid to realise these benefits is more difficult than setting up a structured rectangular grid.

This talk introduced AlgoMesh, a mesh generator and model building software tool developed for this purpose. AlgoMesh provides a novel combination of mesh generation algorithms to facilitate the creation of high-quality unstructured triangular and Voronoi grids. It also includes a comprehensive and modern graphical user interface for importing and manipulating model geometry, fine-tuning mesh generation inputs, mapping material properties and boundary conditions, and creating MODFLOW-USG model files. The talk detailed what AlgoMesh is, how it works, and how it has been used to date in the development of a number of complex groundwater models.

13 November 2015 – Jointly organised IAH/Australian Geomechanics Society Symposium: Recent Developments and Experiences with Groundwater and Excavations

NSW IAH co-organised a one-day Symposium with the NSW branch of the Australian Geomechanics Society. The Symposium was held in Sydney and explored the theme of groundwater in the context of excavations.

Sixteen presentations were given on a range of topics, from analysis techniques to assess groundwater inflows and impacts associated with excavation, to ground amendments methods, government policy, and groundwater control.

The Symposium was well attended, with over 200 attendees (of which 60 were IAH members), from a range of disciplines, including consultancy, government, construction contracting and academia.

Upcoming Events

10 May 2016 – Elders Night and Woolley Award

The annual Elders Night will see three senior members from our local groundwater profession, Fabio Carosone, Ray Hatley and Dr Len Drury, offer their collective wisdom. The senior professionals will share memorable experiences from their careers with the

audience, provide insight into lessons learnt and challenges overcome, and discuss the changes they have seen in the industry, and the future of hydrogeology and groundwater engineering. There will be opportunity for the audience to ask questions.

An elder will be acknowledged for the Woolley Award. The Woolley award is a lifetime achievement Award for a prominent hydrogeologist who has spent the majority of their career working in NSW.

Other News

This year IAH NSW is seeking nominations for the **Young Professional Award 2016** which recognises the achievements of professional scientists or groundwater engineers working in the field of hydrogeology. We request that a candidate is nominated by their supervisor/senior colleague, accompanied by a two paragraph summary outlining the significant contribution that has been made, detailing project experience.

The winning candidate will receive fully paid registration to the Australian Groundwater Conference 2017 (AGC2017) to be held in Sydney and organised jointly by NCGRT and IAH in 2017. An abstract (maximum 500 words) should also be prepared for consideration for the conference.

Previous winners of the young professional award are Andrea Madden (2010), Ben Rotter (2011) and Ellen Kwantes (2013).

The criteria to be eligible for the NSW IAH Young Professional Award are:

- Groundwater specialist with up to 5 years post graduate experience
- Working in the groundwater/hydrogeology field
- To be nominated by colleague/supervisor/manager
- The nominee should prepare two paragraphs outlining the attributes and experience of the candidate and why the candidate has been nominated (no longer than 1 page) to include:
 - Technical achievements
 - Broader professional development
- An abstract for the conference is required for consideration for AGC2017.

The due date for submission is 30 June 2016, and the award will be presented at the IAH NSW Student night in October 2016.

Please submit your nomination and abstract to Graham Hawkes or Katarina David at the following email addresses:

graham.hawkes@aecom.com
katarinadavid@hotmail.com

AUSTRALIAN CAPITAL TERRITORY

IAH AUSTRALIAN CAPITAL TERRITORY BRANCH

2016 Committee:

Chair	Lucy Lytton	(Geoscience Australia)
Vice-Chair / Secretary	Scott Lawson	(Department of the Environment)
Treasurer	Anne Reisz	(Department of the Environment)
Events Committee	Tim Evans	
	Tim Ransley	(Geoscience Australia)
	Chris Harris-Pascal	
	Peter Hyde	
Communications	Stephen Hostetler	(Murray Darling Basin Authority)
Champion		(Geoscience Australia)
Membership Champion	Tim Evans	(Geoscience Australia)

Local News

3-5 November 2015 - Australian Groundwater Conference 2015

Hundreds of presenters, posters, exhibitors and participants flocked to beautiful Canberra for AGC 2015. We could not have fit more people in if we tried,

Many, many thanks to the sponsors, NCGRT, the Shine Dome and particularly the organising committee: Craig Simmons, Kay Brown, Fiona Adamson, Andrea McCaathy, Katarina David, Scott Lawson, Peter Hyde and Gabrielle Yates.

So much science, so much networking and so much fun could never be given justice in words alone. Enjoy some photos instead!



Waiting to get in



The crush at morning tea!



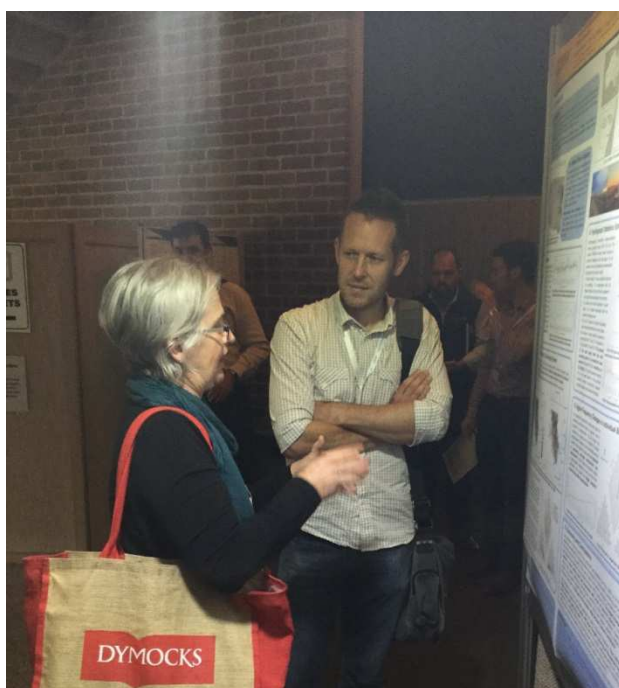
Opening ceremonies



Networking



Packed sessions



In depth poster discussions



Distinguished speakers



Our sponsors

Recent Meetings

IAH ACT AGM

ACT Branch held its AGM on 26 Nov 2015, with the success of the Australian Groundwater Conference providing a well-earned and positive point of interest.

Establishment of the 2015-2016 Committee was handled as professionally as ever by Steve Lewis, with the following appointments confirmed:

Chair - Lucy Lytton

Vice Chair and Secretary - Scott Lawson

Treasurer and Sponsorship Coordinator - Anne Riesz

Student Coordinator - Michael Short

Communications Champion - Stephen Hostetler

Events Coordinating Subcommittee - Tim Evans, Tim Ransley, Chris Harris-Pascal, Peter Hyde.'

UN World Water Day. Joint event with the Canberra Hydrological Society

El Nino Droughts, Rains, and Tropical Cyclones: Situation Normal in the Pacific - Joel Lisonbee (Bureau of Meteorology); Ian White (ANU); Tony Falkland (Island Hydrology Services)

22 March 2016, Fenner School of Environment and Society, ANU

Joel's presentation '**El Niños and Tropical Cyclones**', covered meteorological aspects of these phenomenon. Ian (just returned from Fiji where he had been held up by Tropical Cyclone Winston while assisting with the drought response) discussed their impacts in his talk '**El Nino Droughts and Cyclone impacts in the Southern Western Pacific**'. Tony discussed observations of fresh groundwater lenses at the coral atoll island of Kiritimati (Republic of Kiribati) in his presentation '**El Ninos & Rainfall in the Central Pacific**'.

VICTORIA

IAH VICTORIA BRANCH

2016 Committee:

Chair	Alan Wade	(Aquade)
Vice-Chair	Ben Hall	(Eartheon)
Secretary	Tara Smith	(Jacobs)
Treasurer	Anthony Brinkley	(Jacobs)
Events Committee	Katy Kijek	(Port of Melbourne Authority)
Communications Champion	Heath Pawley	(Golder Associates)
Membership Champion	Alexis Valenza	(Valenza Engineering)
	Matt Currell	RMIT
	Anne Northway	EPA
General Committee	Riki Gresswell	CDM Smith
	Ben Moore	CFA
	Lynton Bourne	Noel Arnold & Associates
	Mike Hoban	DELWP

Local News

Our regular branch meetings continue to be held alternatively at the Melbourne RMIT City Campus and at Jacobs Melbourne Branch. Thank you to RMIT and Jacobs for supplying the convenient central venues and first class facilities.

Talks

We had a relatively busy end of 2015 and start of 2016 with several talks covering a large range of topics as well as the AGC 2015 attended by several Victorian members and the Christmas party 2015. Great attendance, as always. A few highlights below.

20 October 2015, RMIT University, Melbourne. IAH Victoria Presentation Student Presentation Night

A great night with large attendance, drinks and nibbles (thanks to RMIT once again), and some exciting talks presented by university students covering interesting and diverse topics with groundwater being the focus.

Attila Gaal (La Trobe University):

“Assessment of hydraulic pumping and injection data to identify clogging in a Managed Aquifer Recharge scheme”.

Christin Down, Chris Skinner & Jeanne Drouet (RMIT University):

“Groundwater depletion & contamination in the North China Plain: Implications and solutions”

Bill Howcroft (Monash University):

“Young Water and Old Solutes in Rivers and in Groundwater”

AGC 2015

Several Victorian members attended the Australian Groundwater Conference in Canberra 3-5 November 2015, organised by the National Centre for Groundwater Research and Training and the Australian Chapter of the International Association of Hydrogeologists. A major event involving groundwater researchers, industry professionals and policy development specialists.

Program and speakers available [here](#).

Victorian IAH Branch December Presentation and Christmas Function. Interactive Presentation and Quiz – Groundwater Muddles by Matt Currell and Alan Wade

A great night at Jacobs, Melbourne office with an interesting event, a quiz on groundwater main misconceptions and misunderstandings. A terrific and funny event organized by Matt from RMIT and Alan from Aquade.



8 March 2016, Jacobs, Melbourne. Specific Storage – the poor cousin to hydraulic conductivity

The talk was presented by Dr. Richard Evans, and covers the various aspects of the determination and the use of storativity coefficients, Specific Yield and Storage.

Dr Richard Evans is Principal Hydrogeologist with Jacobs. Rick has 35 years' experience in all aspects of hydrogeology, groundwater resource management and groundwater engineering. He has worked on numerous water resource projects throughout Australia and Asia. He has specialised in groundwater management, surface water groundwater interaction, unconventional gas and assessing the impacts of groundwater developments.

Specific storage (Ss) is the poor cousin to hydraulic conductivity (K) for groundwater flow models, in the sense that it is frequently guessed because it is often difficult to determine. In some cases Ss is just as important as K in driving modelling results. It is very surprising that the literature has virtually no actual data on Ss in fractured rocks. This talk uses both conventional and a rarely known method to determine Ss.

19 April 2016, AECOM, Melbourne. Meeting Melbourne's Future Demand for Water Using Aquifer Storage and Recovery – developing an Integrated Water Cycle Management (IWCN) Strategy which includes development of ASR schemes to store recycled water and storm water

The talk was presented by Matt Hudson, Senior Hydrogeologist at City West Water. City West Water is one of three Victorian Government owned retail water businesses in metropolitan Melbourne, providing drinking water, sewerage, trade waste and recycled water services to customers in Melbourne's central business district, inner and western suburbs.

City West Water (CWW) is investigating the viability of alternative water storage through managed aquifer recharge (MAR) to assist in long term planning options supporting alternative water supply.



May 2016 Talk

Next month, Dr John A Webb, Associate Professor, Environmental Geoscience from RMIT University will give a talk related to the Influence of vegetation on groundwater.

It is the Tuesday 10 May, 5:30 for a 6pm start at RMIT City Campus (Room TBC)

INTERNATIONAL CHAPTER UPDATES

There are around 40 active chapters spread across the continents and 6 active commissions. IAH members are constantly travelling for work and sharing ideas and broad knowledge with other specialists.

We thought it would be a good idea to liaise with some of the other chapters and see if they have a different approach to similarly experienced problems.

For this issue, we have visited the French chapter, with an invite to the 2016 Montpellier 43rd Congress.

We encourage Australian members to visit the following links:

French Chapter - 43rd IAH Congress

The organising committee of the 43rd IAH Congress to be held in Montpellier, France, reminds us that abstract submission is open until 28th February and guidelines for online submission are available on the website. Registration is also open, with early bird discounts until 15th June. The first circular can be downloaded from the website. We look forward to seeing you in Montpellier to help us celebrate the Association's 60th anniversary.

Find out more

<http://www.60IAH2016.org>

WESTERN AUSTRALIA

IAH WESTERN AUSTRALIA BRANCH

2016 Committee:

Chair	Ian Brandes de Roos
Vice Chair	Mal McGivern
Secretary	Carsten Kraut
Treasurer	Peter de Broekert
Sponsorship Champion	Geoff Pettifer
State Liaison	Grant Bolton
	Pauline Amez-Droz
	Rachel Hamilton
Events team	Mariajose Romero-Segura
Communications team	John Enkelmann
	Alex Renz
ECHN Representative	Adriaan Haasbroek
Education Representative	Ryan Vogwill

Local News

Boart Longyear Gold Sponsor For 2016

IAH WA Branch is proud to partner with Boart Longyear in 2016. Boart Longyear will also be the major sponsor for our tech talk series in 2016.

New Tech Talk Location For 2016

The IAH WA branch has a fantastic new home for tech talks in 2016, Spacecubed, located in the heart of the city at 45 St Georges Terrace Perth. Tech talks will be held on the 4th Wednesday of every month.



Ron Colman, Roy Hill Iron Ore

Recent Meetings

24 February 2016, Roy Hill Iron Ore Project, Ron Colman, Water Manager, Roy Hill Iron Ore

This talk included all aspects of water resources management planning for project construction, start up water supply and large scale mine dewatering including test production bore drilling, management of hydrogeological and hydrological consulting services, water infrastructure design, development of the mine water management plan and operating strategy.

23 March 2016, Kalimantan Coal Mine Indonesia, John Waterhouse, Principal Groundwater Services, Golder Associates

This fascinating talk outlined the complex challenges faced depressurising 15km of a coal mine low wall in Kalimantan Indonesia, and how hydrogeologists work hand in hand with Geotechs and Mining Engineers to mine the coal seam both efficiently and safely.



John Waterhouse, Golder Associates

**2016 Tech Talk Series - Jay Matta, Asia Pacific WASH Coordinator,
International Federation of Red Cross - 27 April 2016, Developing
Groundwater Resources in Asia Pacific**

Jay addressed some of the issues and challenges faced when developing groundwater resources with personal experiences in countries such as Somalia, Bangladesh, Philippines, Myanmar and the Pacific, with his work with the Red Cross.

Upcoming Events

25 May 2016, Saudi Arabia Case Study, Dr Jan Vermaak

What do you do when things go pear shaped at a large petrochemical facility?

SOUTH AUSTRALIA

IAH SOUTH AUSTRALIA BRANCH

2016 Committee:

President	Steve Barnett
Vice President	Neil Power
Membership champion	Tavis Kleinig
Committee member	Russel Martin
Web master/mistress	Fiona Adamson
Modelling Forum	Juliet Wood

Recent Events

Nuclear Fuel Cycle Royal Commission

The Commission was established by the South Australian Government in March 2015 to undertake an independent and comprehensive investigation into the potential for increasing South Australia's participation in the nuclear fuel cycle, specifically in four areas of activity:

- Expanded exploration, extraction and milling of minerals containing radioactive materials
- The further processing of minerals and the processing and manufacture of materials containing radioactive and nuclear substances
- The use of nuclear fuels for electricity generation
- The establishment of facilities for the storage and disposal of radioactive and nuclear waste.

On 7th December Chad Jacobi (Counsel assisting), spoke to a small gathering of IAH members on the terms of reference for the inquiry and the importance of groundwater as an issue for consideration by the commission, and the type of public submissions received by the Commission.

The Tentative Findings of the Commission were released on 15th February and are an interim step in the process before the completion of its final report in May 2016. They reflect the Commission's current thinking on the issues it considers to be important and the most cogent evidence relevant to them. They do not contain recommendations, but find:

- South Australia can safely increase its participation in nuclear activities and, by doing so, significantly improve the economic welfare of the South Australian community.
- In an already oversupplied and uncertain market, there would be no opportunity for the commercial development of further uranium processing capabilities in South Australia in the next decade. However, fuel leasing, which links uranium processing with its eventual return for disposal, is more

likely to be commercially attractive, creating additional employment and technology-transfer opportunities.

- Taking account of future demand and anticipated costs of nuclear power under the existing electricity market structure, it would not be commercially viable to generate electricity from a nuclear power plant in South Australia in the foreseeable future.
- The storage of low to medium level waste and the disposal of used nuclear fuel in South Australia is likely to deliver substantial economic benefits to the South Australian community. An integrated storage and disposal facility would be commercially viable and the storage facility could be operational in the late 2020s.

Neil Power has been coordinating the presentation of hydrogeological data to the Commission and the DEWNR response to the Tentative Findings.

For further information, go to <https://www.iah.org.au/events/south-australia/>.

NORTHERN TERRITORY

IAH NORTHERN TERRITORY BRANCH

2016 Committee:

Chair	Melissa Woltmann
Vice-Chair	Joanna Ellis
Secretary	Steve Tickell
Treasurer	Quinton Bruwer

Local News

Quiet final quarter for the NT branch

Jo Ellis was overseas for Christmas, and recently visited the 2015 Darcy Lecturer Rainer Helmig at the University of Stuttgart and delivered a presentation on NT Water Resource Development.

Recent Events

The AGM was held in November and attended by 7. New committee arrangements as above. Gabby Yates presented members with a talk on CSG groundwater impact monitoring, related to work undertaken in her previous role at GA.

A joint Christmas Breakfast was held with Australian Water Association and Engineers Australia in December. Thoughts and ideas for collaboration in 2016 were discussed.

Upcoming Events

NT branch is again sponsoring the \$500 prize for the Geography award at the NT Board of studies ceremony being held in Darwin. The chair will be presenting the award in February.

Following the AGM, we are focussing on developing training opportunities for this year and potentially more community engagement.

TASMANIA

No update available in this edition.

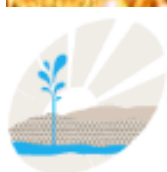
QUEENSLAND

IAH QUEENSLAND BRANCH

2016 Committee:

President	Lucy Reading
Vice President	Paul Smith
Treasurer	Dawit Berhane
Sectary, Website and Newsletter role	Adam King
Technical Representative	Jim Underschultz
Other committee members	Melanie Cross Shaun Davidge Lindsay Furness

No update available in this edition.



National Centre for
Groundwater
Research and Training

For upcoming courses, see <http://www.groundwater.com.au/events/training>

IAH PUBLICATIONS

Discounted IAH publications in the 'International Contributions to Hydrogeology' and the 'Selected Papers' series can be ordered by Australian IAH members directly from Macmillan Publishers Australia in Victoria.

customer.service@macmillan.com.au or orders@macmillan.com.au

Remember to quote your IAH Membership Number, which entitles you to a substantial discount. If you don't know your IAH membership number contact the Secretariat at: joel-p@groundwater.com.au