

# Program



NATIONAL CENTRE FOR  
**GROUNDWATER**  
RESEARCH AND TRAINING

Australian Groundwater School – Perth  
Adina Apartments  
Monday 4 December 2017

TIME		THEME/TOPIC	PRESENTERS
8.30am		<b>Registrations and Coffee</b>	
8.45am		<b>Welcome and Introduction</b>	
9.00am	1	<b>The Importance of Groundwater In Australia</b> <ul style="list-style-type: none"> <li>• What is groundwater</li> <li>• Where is groundwater found?</li> <li>• The hydrologic cycle</li> <li>• What is hydrogeology and its history?</li> <li>• Australian groundwater facts and figures</li> <li>• Australian aquifer map. sedimentary basin/fractured province, inset on map</li> </ul>	<b>Sarah Bourke</b> <i>University of Western Australia</i>
10.00am	2.1	<b>Introduction to Hydrogeology</b> <ul style="list-style-type: none"> <li>• Water table and capillary zone</li> <li>• Aquifers &amp; aquitards</li> </ul>	<b>Sarah Bourke</b> <i>University of Western Australia</i>
11.30am		<b>Morning Tea</b>	
11.45am	2.2	<b>Introduction to Groundwater Hydraulics</b> <ul style="list-style-type: none"> <li>• Groundwater flow systems</li> <li>• Storage in aquifers</li> <li>• Hydraulic Head</li> <li>• Physical &amp; hydraulic parameters</li> </ul>	<b>Sarah Bourke</b> <i>University of Western Australia</i>
12.45pm		<b>Lunch</b>	
1.45pm	3	<b>Groundwater Hydraulics</b> <ul style="list-style-type: none"> <li>• Groundwater flow equations</li> <li>• Borehole pumping test</li> <li>• Single borehole test</li> <li>• Lab measurements of hydraulic conductivity</li> </ul>	<b>Dr. Michael Teubner</b> <i>Consultant, MD Teubner Consulting</i>
3.00pm		<b>Afternoon Tea</b>	
3.15pm	4	<b>Drilling Methods and Bore Design</b> <ul style="list-style-type: none"> <li>• Types and purposes of various bores</li> <li>• Drilling methods</li> <li>• Databases in Australia</li> <li>• Methods, variability &amp; limitations of data collection</li> </ul>	<b>John McAvan</b> <i>Water Corporation WA</i>
5.15pm		<b>End Day 1</b>	
4.40pm		<b>Networking Drinks</b>	

Australian Groundwater School – Perth  
 Tuesday 5 December 2017

TIME		THEME/TOPIC	PRESENTERS
9.00am	5	<b>Groundwater Modelling</b> <ul style="list-style-type: none"> <li>• What is a model and what is its purpose?</li> <li>• Modelling groundwater flow</li> <li>• Modelling process</li> <li>• Groundwater modeling codes</li> </ul> <b>Groundwater Modelling Application</b> <ul style="list-style-type: none"> <li>• Modelling guidelines</li> <li>• Limitations and pitfalls in modelling</li> <li>• Modelling case study</li> <li>• Management, regulatory issues</li> </ul>	<b>Dr. Michael Teubner,</b> <i>Consultant, MD</i> <i>Teubner Consulting</i>
11.00am		<b>Morning Tea</b>	
11.15am	6.1	<b>Tutorial, Part 1</b> <ul style="list-style-type: none"> <li>• Interpreting hydrographs</li> <li>• Developing groundwater contours</li> <li>• Borehole test for hydraulic conductivity</li> <li>• Contaminant transport</li> </ul>	<b>Dr. Michael Teubner,</b> <i>Consultant, MD</i> <i>Teubner Consulting</i>
1pm		<b>Lunch</b>	
1.45pm	6.2	<b>Tutorial, Part 2</b> <ul style="list-style-type: none"> <li>• Water budgeting</li> <li>• Estimating groundwater flow</li> <li>• Hydrostratigraphic conceptualisation</li> </ul>	<b>Dr. Michael Teubner,</b> <i>Consultant, MD</i> <i>Teubner Consulting</i>
3.15pm		<b>Afternoon Tea</b>	
3:30pm	7	<b>Geophysics</b> <ul style="list-style-type: none"> <li>• Surface, airborne, borehole</li> <li>• Methods and data processing and interpretation</li> <li>• Hydrologic properties derived from geophysics</li> </ul>	<b>Dr. Michael Teubner,</b> <i>Consultant, MD</i> <i>Teubner Consulting</i>
4.30pm		<b>End Day 2</b>	

Australian Groundwater School – Perth  
 Wednesday 6 December 2017

TIME		THEME/TOPIC	PRESENTERS
9.00am	8	<b>Surface Water – Groundwater Interactions</b> <ul style="list-style-type: none"> <li>• Introduction to surface water hydrology</li> <li>• Locations and modes of interaction between surface water and groundwater</li> <li>• Water balance</li> <li>• Human impacts</li> <li>• Recharge/discharge definitions and estimation</li> </ul>	<b>Sarah Bourke</b> <i>University of Western Australia</i>
10.00am	9	<b>Groundwater Replenishment for Public Water Supply</b> <ul style="list-style-type: none"> <li>• Groundwater replenishment trial</li> <li>• Perth Groundwater replenishment stage 1</li> <li>• Future groundwater replenishment options</li> </ul>	<b>Palenque Blair</b> <i>Water Corporation WA</i>
11.00am		<b>Morning Tea</b>	
11.15am	10	<b>Groundwater Chemistry</b> <ul style="list-style-type: none"> <li>• Why study groundwater chemistry?</li> <li>• Physical and chemical composition of groundwater</li> <li>• Origin of solutes, evolution in groundwater</li> <li>• Field parameters</li> </ul>	<b>Shawan Dogramaci</b> <i>Rio Tinto</i>
12.15pm	11	<b>Environmental Isotopes in Groundwater</b> <ul style="list-style-type: none"> <li>• What are isotopes and their use?</li> <li>• Types of isotopes, Australian examples</li> </ul>	<b>Shawan Dogramaci</b> <i>Rio Tinto</i>
1.15pm		<b>Lunch</b>	
2.00pm	12	<b>Groundwater Microbiology</b> <ul style="list-style-type: none"> <li>• Introduction to microbiology</li> <li>• Pathogens in groundwater</li> <li>• Microbial metabolism in groundwater</li> <li>• Bioremediation</li> </ul>	<b>Geoffrey Puzon</b> <i>CSIRO</i>
3.00pm		<b>Afternoon Tea</b>	
3.15pm	13	<b>Groundwater Contamination</b> <ul style="list-style-type: none"> <li>• Introduction and definitions</li> <li>• Sources of contamination</li> <li>• Fate of contaminants in the sub surface</li> <li>• Groundwater remediation</li> </ul>	<b>John Rayner</b> <i>CSIRO</i>
4.15pm	14	<b>Salinity and Water Logging</b> <ul style="list-style-type: none"> <li>• What is salinity and why is it a groundwater issue</li> <li>• Primary and secondary salinity &amp; its sources</li> <li>• Dryland and Irrigation salinity, water logging</li> <li>• Impacts and management of salinity</li> </ul>	<b>Paul Raper</b> <i>Department of Agriculture and Food</i>
5.00pm		<b>End Day 3</b>	

Australian Groundwater School – Perth  
 Thursday 7 December 2017

TIME		THEME/TOPIC	PRESENTERS
9.00am	15	<b>Fractured Rock Aquifers</b> <ul style="list-style-type: none"> <li>• Fractured rock provinces in Australia</li> <li>• Classification</li> <li>• Basic Characteristics</li> <li>• Groundwater flow</li> <li>• Locating and mapping fractures</li> </ul>	<b>Alan Puhlovich / John Waterhouse</b> <i>Golder Associates</i>
10.00am	16	<b>Mining Hydrogeology</b> <ul style="list-style-type: none"> <li>• Mine Dewatering</li> <li>• Dewatering Methods</li> <li>• Impacts of dewatering</li> <li>• Design of dewatering system</li> </ul>	<b>Alan Puhlovich</b> <i>Golder Associates</i>
11.00am		<b>Morning Tea</b>	
11.15am	17	<b>Groundwater Dependent Ecosystems</b> <ul style="list-style-type: none"> <li>• Introduction and definition</li> <li>• Types of GDEs</li> <li>• Hydrogeological framework</li> <li>• Methods and indicators used in the determination of GDEs</li> <li>• Level of dependency</li> </ul>	<b>Anya Lam</b> <i>Department for Water</i>
12.15pm	18	<b>Groundwater Management</b> <ul style="list-style-type: none"> <li>• What, why, when and how we manage GW?</li> <li>• Principles</li> <li>• Tools for groundwater management</li> <li>• Management issues</li> <li>• Climate change</li> </ul>	<b>Michael Hammond &amp; Rebecca Palandri</b> <i>Department for Water</i>
1.15pm		<b>Lunch</b>	
2.00pm	19	<b>Groundwater Governance – Water Law</b> <ul style="list-style-type: none"> <li>• Development of water resources law in Australia</li> <li>• Essential aspects of the current legal framework</li> <li>• Groundwater and water trading</li> </ul>	<b>Natalie Brown &amp; Alex Gardner</b> <i>University of Western Australia</i>
3.00pm		<b>Afternoon Tea</b>	
3.15pm	20	<b>Groundwater Governance – Case Studies</b>	<b>Natalie Brown &amp; Alex Gardner</b> <i>University of Western Australia</i>
4.30pm		<b>End of course wrap up and evaluation</b>	
5.00pm		<b>End Day 4</b>	