Australasian Groundwater & Environmental Consultants

New South Wales

Groundwater and environmental consulting for your next project

Our New South Wales Team

AGE's Newcastle-based team delivers groundwater and environmental advisory services across New South Wales, supporting projects in mining, infrastructure, government and industry. While locally embedded, the NSW team operates as an integrated part of AGE's national business, drawing on shared systems, specialist expertise, and technical leadership across Australia.

We combine first-hand knowledge of NSW geology, regulatory frameworks, and stakeholder expectations with AGE's broader field capability, modelling, hydrogeochemistry, and expert advisory capability. This integrated approach allows us to deliver practical, defensible solutions that stand up to regulatory, operational, and legal scrutiny, while remaining proportionate to project risk and scale.

Through powerful insights and clear advice, we empower informed water decisions to help advance your projects.

Local Expertise, National Capability

Our Newcastle office services projects across New South Wales. Team members have played key roles in supporting major mining operations, infrastructure projects and water-intensive developments, with experience spanning early feasibility, approvals, active operations, and long-term compliance.

By combining on-the-ground NSW experience with AGE's national network of specialists, we help clients:

- Identify and manage groundwater risks early.
- Navigate complex NSW and Federal project approval pathways.
- Optimise water management during operations.
- Deliver technically robust outcomes that are regulator-ready.

We work closely with clients to ensure groundwater considerations are clearly understood and effectively managed throughout the project lifecycle.

We take care of every stage of your groundwater and environmental investigations, from data collection in the field and modelling, through to stakeholder engagement and ongoing monitoring.

ageconsultants.com.au e: newcastle@ageconsultants.com t: (02) 4962 2091 AGE Consultants

End-to-end groundwater services

We provide integrated groundwater services across the full project lifecycle, from early feasibility investigations through approvals, operations, compliance and closure.

Field-ready groundwater investigations

Our Newcastle team maintains a field-ready approach, enabling rapid mobilisation and efficient, safe delivery of high-quality groundwater data.

Our hydrogeologists operate company-owned packer, pumping, and slug-testing systems, giving us direct control over aquifer testing and data quality. We also operate two dedicated field vehicles equipped for routine groundwater sampling, supporting both targeted investigations and large-scale monitoring programs. Our monitoring methods meet legislative standards, and we routinely undertake bore censuses and baseline data collection to support approvals and impact assessments.

We install hydrogeological and geotechnical instrumentation, including vibrating wire piezometers (VWPs) and time domain reflectometry (TDR) devices, providing real-time data for groundwater monitoring, hazard mapping, and daily onsite safety checks. Our expertise also includes telemetry systems, using back-to-base or cloud-based platforms to reduce monitoring costs and improve data accessibility.

Our team designs and constructs monitoring and water management bores aligned with project objectives and regulatory requirements. Our consultants are skilled in geological core logging and wireline interpretation, and regularly work independently onsite to supervise drilling, collect data, and resolve issues.

With mine-spec vehicles and close proximity to the Hunter Valley and Sydney region, our team provides rapid site access, reduced mobilisation and accommodation costs, and a fast response to onsite challenges, supporting both approvals and active operations.

Hydrogeochemistry and contaminant assessment

We deliver integrated hydrogeochemical and contaminant assessments to support environmental approvals, operational decision-making, and long-term risk management. Our services include groundwater quality monitoring and analysis (major ions, trace elements, and contaminants), supported by hydrogeochemical interpretation, chemical speciation modelling and contaminant fate and transport analysis to understand processes, assess risks, and inform mitigation.

We design and implement field sampling programs for contaminated sites and statutory investigations, assess contaminant sources, pathways and receptors, and provide waste and leachate characterisation, remediation advice and closure planning. All assessments are defensible, regulator-ready and integrated with broader groundwater impact assessments and approvals documentation.



Our Newcastle Team services the local Government, New South Wales industry and infrastructure, and the Minerals Province.

Our technical expertise is applied globally and nationally.



Groundwater modelling and assessment

Our analytical and numerical groundwater models support assessment of groundwater impacts, inflow estimation, dewatering requirements, mine planning and infrastructure design. Modelling incorporates uncertainty analysis and scenario testing to support approvals, operational optimisation and long-term planning.

AGE has the largest consulting groundwater modelling team in the country, allowing us to tailor modelling approaches to suit project objectives, complexity and budget. We deliver both highly bespoke models for complex sites and streamlined, fit-for-purpose models where appropriate, ensuring outputs are practical, defensible and targeted to the specific groundwater environment.



Ecohydrogeology services

We provide ecohydrogeological assessments to support sustainable water resource management and environmental approvals. Our services include assessing groundwater–surface water interactions and groundwater-dependent ecosystems (GDEs) using tracer studies, isotope analysis and hydrogeochemical modelling to understand recharge processes and ecological connectivity.

We develop water balance and flow models to predict ecological impacts and guide management strategies, delivering defensible assessments of groundwater impacts on wetlands, springs and riparian habitats to support regulatory approval and compliance.

Approvals, compliance, and advisory

We prepare groundwater impact assessments for environmental impact statements and modification applications, support water licensing and Aquifer Interference Policy requirements, and engage directly with regulators to support our clients through approval processes.

We also provide ongoing compliance monitoring, reporting, and adaptive management advice to support approved operations and evolving regulatory requirements.

Expert advisory

We assist clients with joint expert reports, act as expert witnesses in court and tribunals, participate in technical review panels, and undertake peer reviews and gap analyses of conceptual and numerical groundwater models and technical reports.

Our projects

Over more than two decades, we have delivered specialist groundwater services for a multitude of projects that are too many to list. Here's an example of some key New South Wales projects we've assisted with over the years:

Cadia Valley Operations

Orange, New South Wales

The NSW Aquifer Interference Policy (AIP) requires a water licence for aquifer interference activities, including incidental take associated with dewatering. We developed numerical groundwater models to estimate whole-of-site groundwater take and assess compliance with Water Sharing Plan licensing limits. The assessment included prediction of potential groundwater demand under a range of mining and climatic scenarios to support licensing and operational planning.

Mt Arthur Coal

Muswellbrook, New South Wales

Drilling programs were undertaken to support mine design and expansion, with installation of groundwater monitoring bores and vibrating wire piezometers to track mining-related impacts. Time domain reflectometry devices were installed to assess highwall and endwall stability. Telemetry systems enabled remote data access to support ongoing monitoring and operational decision-making.

Northparkes Gold Project

Parkes, New South Wales

A groundwater impact assessment was undertaken as part of an environmental impact statement to support development of a new satellite opencut copper-gold mine. The assessment included an environmental constraints and gap analysis, field investigation program, and numerical groundwater modelling. Monitoring bores were installed around proposed expansion areas to establish baseline conditions and support long-term groundwater monitoring.

Dargues Gold Mine

Jembaicumbene, New South Wales

A three-dimensional numerical groundwater model was developed to assess whether historical underground mine workings could be used for water storage. The assessment involved simulating water transfers into underground voids at defined rates to predict regional groundwater responses. A transport model using MODFLOW-USG was developed to map flow paths and track the fate of transferred water, enabling assessment of potential impacts on sensitive receptors.

Hunter Valley Operation

Muswellbrook, New South Wales

A groundwater impact assessment was completed to evaluate the consequences of mine expansion within a large and hydraulically interconnected mining area. A detailed conceptual groundwater model informed development of a numerical model that replicated key system features. The assessment evaluated mine planning options and contributed to a Federal Government environmental impact statement. A gap analysis identified data deficiencies, which were addressed through a targeted drilling program and installation of hydrogeological instrumentation.

Sydney Cross City Tunnel

Sydney, New South Wales

A comprehensive review of groundwater conditions was undertaken, including assessment of existing infrastructure such as deep basements and tunnels. A conceptual groundwater model formed the basis for two numerical groundwater models covering the Cross City Tunnel alignment at Woolloomooloo Bay and Cockle Bay. The models were used to assess long-term groundwater inflows, drawdown rates, and water level changes in both bedrock and unconsolidated sediments, supporting settlement assessments and evaluation of potential impacts to surrounding infrastructure.

Copi Mineral Sands

Wentworth, New South Wales

A comprehensive groundwater impact assessment was completed for the Copi Mineral Sands Project. The scope included hydrochemical data review, field investigations, groundwater sampling, injection trials, and advanced numerical modelling. The assessment supported design of a groundwater extraction and reinjection scheme and included a geochemical risk assessment to evaluate potential impacts on aquifers and infrastructure, ensuring regulatory compliance, and operational sustainability.

Broken Hill Cobalt Project GIA

Broken Hill, New South Wales

A groundwater impact assessment was undertaken to evaluate the effects of a proposed cobalt mine on the surrounding groundwater regime, in accordance with NSW and Federal legislation. The assessment projected groundwater levels during and after mining, estimated baseflow impacts to surface water, identified groundwater take and licensing requirements, assessed impacts on groundwater-dependent ecosystems and private users, and provided recommendations for mitigation, management, and monitoring.



Our New South Wales team

We have expert teams in multiple locations across Australia and offer the largest consulting modelling team in the country.
With around one third of our team at principal-level, we have highly skilled, industry- leading experts who specialise in particular fields across our services.

Bryce McKay

NSW Region Manager | Principal Hydrogeologist

Bryce has 17 years' experience leading groundwater investigations, modelling and impact assessments to support environmental approvals for coal and hard-rock mining projects, as well as sand and hard-rock quarries across the Hunter Valley, Newcastle and Port Stephens regions. He specialises in groundwater monitoring and modelling plans, water management plans, trigger assessments, field program design and delivery, conceptualisation, inflow estimation and data interpretation, including pumping, packer and slug testing.

Peter Kretschmer

Principal Hydrogeologist

Peter has 19 years' experience in hydrogeology, water policy and regulation across Australia and the Middle East. He specialises in groundwater exploration, age-dating, basin-scale resource assessments, monitoring network design, managed aquifer recharge, groundwater-dependent ecosystems and surface water–groundwater interaction. Peter also brings extensive experience in water policy development, governance and regulatory management, delivering practical, evidence-based solutions for complex and water-scarce environments.

Dr. Amir Jazayeri

Senior Hydrogeologist

Amir has experience in hydrogeological research and practice, specialising in variably saturated and variable density groundwater flow, solute transport, and groundwater–surface water interactions. His expertise includes numerical and physical modelling, contaminant transport, laboratory experiments, field investigations, and geophysical surveys. Amir holds a PhD and has developed advanced MODFLOW-USG, SEAWAT, and MODFLOW 6 models for mining, coastal aquifers, and wetland systems, delivering robust solutions for complex groundwater challenges.

Dr. Michael Thoma

Senior Hydrogeologist

Michael's experience in hydrogeology spans field investigations, monitoring network design, conceptual groundwater model development, analytical and numerical modelling, and water resources management. He has managed local NSW groundwater projects, overseeing data collection programs, field instrumentation, and ongoing monitoring. Michael is also skilled in numerical analysis and data processing using Python and MATLAB, as well as GIS and database management tools.

Samuel Kimber

Project Hydrogeologist

Sam has extensive experience in geological data capture and interpretation. His skills include core and chip logging, packer and slug testing, vibrating wire piezometer and time domain reflectometry installation, and delivery of geological logging programs across NSW mining projects.

Danijel Djukic

Project Hydrogeologist

Danijel has experience in the mining industry, with strong capability in drilling supervision, core and geotechnical logging, coal quality sampling, groundwater sampling and borehole planning. He has worked across multiple coal and energy projects and is experienced in managing field programs, mobile laboratory setup, and coordination of drilling activities.

Find out more about our other expert teams.



Local insight, global thinking

If you're looking for an expert partner to solve your groundwater or environmental challenge, get in touch with us.

Brisbane (Head office)
Level 2/15 Mallon Street
Bowen Hills QLD 4006
t: (07) 3257 2055

Adelaide
Office 13, 62 Queen Street
Glenunga SA 5064
t: (07) 3257 2055

Newcastle
Unit 1/46 Hudson Street
Hamilton NSW 2303
t: (02) 4962 2091

Perth
46B Angove Street
North Perth WA 6006
t: (08) 6383 9970

Townsville
Shop 1/60 Ingham Road
West End QLD 4810
t: (07) 4413 2020

ageconsultants.com.au

e: enquiries@ageconsultants.com.au