



SPECIALISTS IN UNCONVENTIONAL GAS IMPACT ASSESSMENT

We are developing novel methods to assess the impact of unconventional coal and shale gas production on groundwater quality and quantity, and greenhouse gas emissions. This is achieved by analysing air and groundwater chemistry prior to and during gas production.

RESEARCH RESOURCES

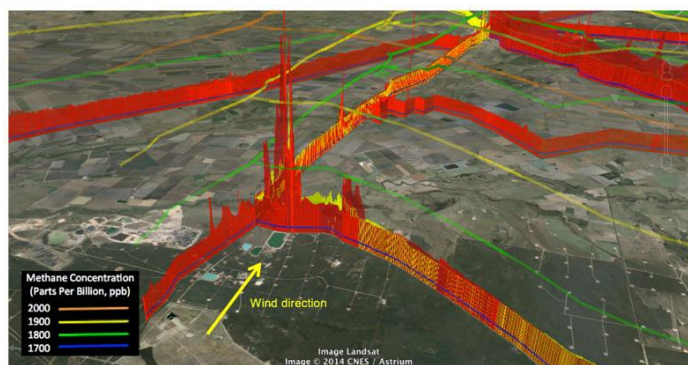
Our laboratory can:

- Undertake high precision (parts per billion) GPS located continuous ground-level atmospheric greenhouse gas surveying.
- Measure concentration and isotopic composition of methane (CH₄), carbon dioxide (CO₂), and Nitrous Oxide (N₂O)
- Extract and analyse dissolved gases from monitoring wells.

WHAT WE DO

Our team can:

- Undertake baseline air and groundwater quality surveys.
- Build conceptual 3D geological models of basin stratigraphy and fault networks.
- Analyse groundwater flow paths.
- Assess aquifer connectivity using major ion and isotope hydrogeochemical methods.
- Create novel interactive visualisations for management and community engagement.



Methane emissions from coal seam gas production co-produced water-holding ponds

COLLABORATIONS

Our team works closely with:

- ANSTO, who provide extensive support with sampling, chemical analyses and hydrogeochemical interpretation.
- Royal Holloway, University of London, who are specialists in gas analyses.

We also collaborate with the NSW Office of Water, NCGRT affiliate institutions, CSIRO, Namoi Water, NSW and Qld Government Departments.

RECENT AND CURRENT PROJECTS

Surat Basin / Condamine Catchment baseline groundwater investigation assessing the impact of CSG and irrigation developments for the Cotton Research Development Corporation.

Gunnedah Basin / Lower Namoi Catchment baseline groundwater investigation assessing the impact of CSG and irrigation developments for the Cotton Research Development Corporation.

Reviews for the Office of the NSW Chief Scientist and Engineer.

OUR EXPERTS



Associate Professor Bryce Kelly

has over 25 years of Earth and Environmental Sciences research and industry experience. He has undertaken groundwater, oil and gas projects with: US Geological Survey, US EPA, SAIC/USDOE, AERA energy (California), Shell (Scotland), Elf Exploration (Scotland), Total (Bolivia), Texaco (Texas), BP, IT Corporation (USA), Federal Airport Corporation, Caltex, Orica, NSW

EPA, Cotton Catchment Communities CRC, National Water Commission, Namoi CMA, Sydney Water, and the Office of the NSW Chief Scientist and Engineer.



Charlotte Iverach is a PhD candidate at UNSW specialising in assessing the impact of coal seam gas production and mapping aquifer connectivity using hydrogeochemical methods. Her research is already having international impact. Interest in her recent paper Iverach et al. (2015) "Assessing Connectivity Between an Overlying Aquifer and a Coal Seam Gas Resource Using Methane Isotopes, Dissolved Organic Carbon and Tritium" is in the top 2%

of all of the 198,647 tracked articles of a similar age in all journals. <http://www.nature.com/articles/srep15996>.