



focus on **NRM** research

Evaluating the extent of hydraulic connectivity between the Great Artesian Basin and the lower Namoi Alluvium.

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What are you researching?

CRDC in partnership with UNSW and ANSTO are funding an extensive study of groundwater conditions throughout the lower Namoi. This project aims to assess the impact of the groundwater sharing plans, provide insights into groundwater recharge pathways and the age of the groundwater being used by irrigators, map connectivity between the Great Artesian Basin (GAB) and lower Namoi alluvium and highlight any risks associated with the expansion of the coal seam gas projects in the Pilliga region.

We are sampling the groundwater at 30 points in the Narrabri, Wee Waa and Pilliga regions. These samples are from shallow and deep alluvial aquifers, the GAB, and NSW Government coal bores. At each of these locations we are measuring the major ion chemistry, trace elements, isotopes to age date the water, and dissolved gases. We are also conducting extensive microbiological analyses (refer to the separate project description).

We are conducting mobile methane surveys to detect leaky wells, which sometimes leak gas. There are many abandoned coal and GAB exploration wells throughout the lower Namoi. If the abandoned wells are poorly sealed they provide a pathway for the upward movement of water and gas from the GAB to the fresh water alluvial aquifers used to supply irrigation water.

Decades of CSG production will result in the depressurisation of the coal measures. If an abandoned leaky well connects the alluvium to the GAB, then once the coal measures are depressurised groundwater will move downwards out of the alluvial aquifer used for irrigation towards the CSG production formation.

Why is it important?

To have sustainable access to groundwater we need to know where and how much groundwater is recharging the lower Namoi Aquifers. By mapping groundwater recharge pathways in the lower Namoi we will gain insights into where, when, and how much groundwater can be used to support agriculture.

Groundwater is also critical for ecosystem health, and there are now many regions throughout the Namoi catchment where many trees are in poor health. The groundwater data being collected in this study will assist with groundwater-dependent ecosystems investigations currently being undertaken by Dr Rhiannon Smith at UNE.

Both the groundwater chemistry and ground level greenhouse gas surveys will help with assessing the impacts associated the expansion of coal seam gas throughout the region.

Where do I go for more information?

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