

Groundwater data in the Gunnedah Basin

More than 700 groundwater monitoring sites and 1,300 Government monitoring bores are gathering vital data in the Gunnedah Basin in northern NSW. Baseline groundwater data is robust and dates back to 1903 in the Great Artesian Basin, and the late 1960s for the main alluvial systems.

Most of the monitoring bores are in the Upper and Lower Namoi and the Lower Gwydir valleys, where high yield, good quality water and the large volume of water rights are allocated across the systems. The NSW Government is installing further groundwater monitoring sites in the sedimentary basin where coal seam gas exploration is underway.

The project maps the geology of the Gunnedah Basin and its groundwater sources. It examines existing groundwater entitlements and uses. It shows the groundwater monitoring networks and highlights water level behaviour over time in key groundwater sources.

Water and coal seam gas in the Gunnedah Basin

The coal within the porous rocks of the sedimentary (mineral or organic matter deposited by water, air or ice) Gunnedah Basin was deposited 250–300 million years ago.

Santos holds petroleum exploration licences in the Gunnedah Basin. There are also a number of coal mining exploration leases in the area and several operating coal mines.

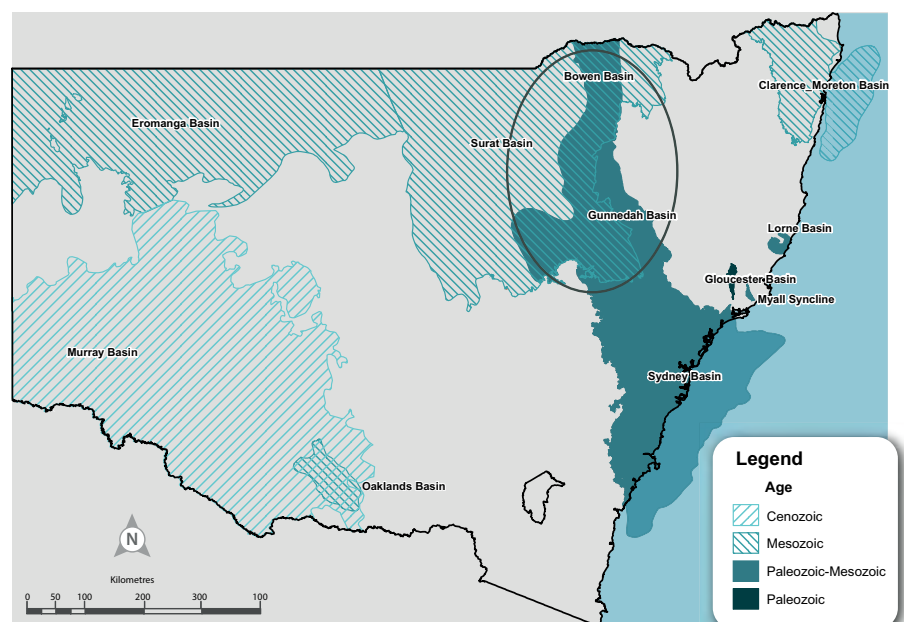
NSW Office of Water undertakes regular monitoring of water sources to assess the impact of agriculture, industry, mining and coal seam gas in the area. To safeguard the environment and community, there is limited and controlled use of groundwater in NSW under the *NSW Water Act 1912* and *Water Management Act 2000*.

Irrigation is the predominant purpose for groundwater use. Most of the current entitlements to take water are in alluvial water sources – predominantly the Upper and Lower Namoi and Gwydir.

The Santos project in Narrabri is estimated to use two gigalitres (GL)/yr (800 Olympic swimming pools) of groundwater from the Gunnedah Oxley Basin porous rock water source. This represents 1.8 per cent of the sustainable extraction limit of the porous rock water source.

Santos is exploring for coal seams in the deep porous rocks between 700 and 1000 metres below the ground, and not the alluvial (shallow high yield fresh water) systems that are important for stock, irrigation, domestic and town use.

Hydraulic fracturing of the coal seams is not being proposed by Santos in the Gunnedah Basin.



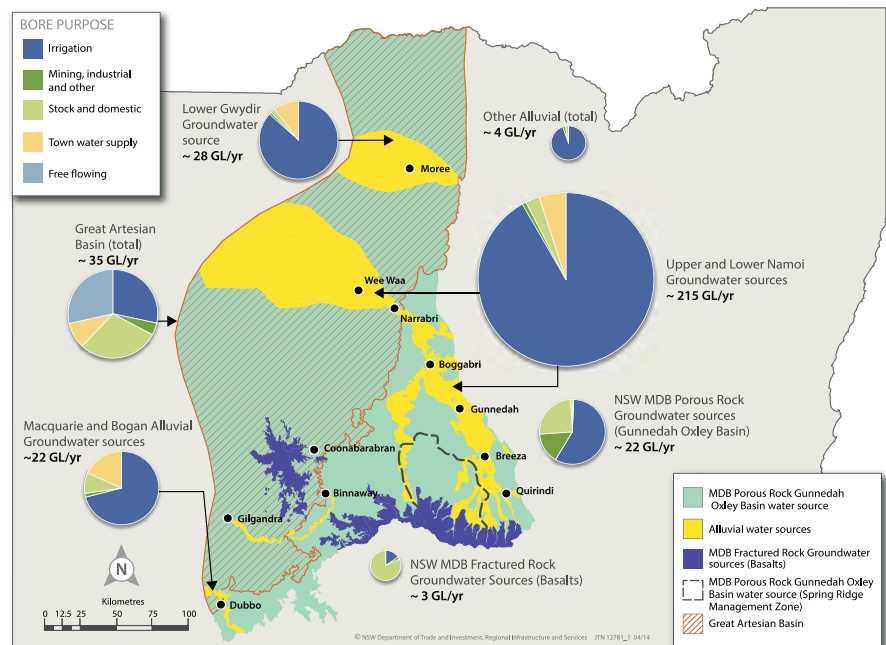
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NSW Aquifer Interference Policy

The NSW Aquifer Interference Policy protects our aquifers and groundwater while balancing the needs of the community, farmers, industry and the environment.

Three key elements of the policy include:

- All water taken must be properly accounted for.
- The activity must address minimal impact considerations on water table, water pressure and water quality.
- Planning for measures in the event that the actual impacts are greater than predicted, including making sure that there is sufficient monitoring in place.

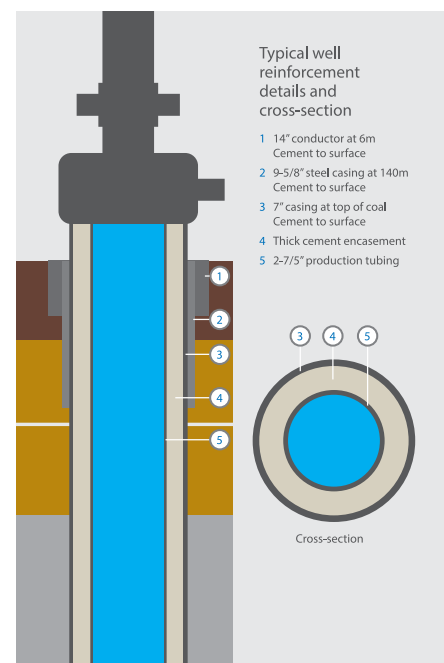


Gunnedah Basin: Distribution and purpose of groundwater rights

Well integrity in the Gunnedah Basin

The NSW Government protects the quality of the community's water in a range of ways, including:

- The *Code of Practice for Coal Seam Gas Well Integrity* – guidelines that ensure the strength of wells and the protection of underground water from contamination. The Code also specifies technical requirements for the design, construction, production, maintenance, closure and rehabilitation of coal seam gas wells in NSW. The requirements include that a well is triple-cased in cement and steel.
- The Office of Coal Seam Gas well inspectors undertake announced and unannounced inspections throughout the drilling and construction process. Once constructed, wells are subject to ongoing testing and integrity reporting as well as incident reporting.
- More stringent requirements for drilling and construction of gas bores than for water bores.
- Further information on the hydraulic fracturing process is available on the CSIRO website – www.csiro.au



More information about water and coal seam gas

More information about water in the Gunnedah Basin and coal seam gas can be found at www.water.nsw.gov.au