

**Submission  
No 38**

## **INQUIRY INTO WATER AUGMENTATION**

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My submission is about the part 1b – potential for aquifer recharge. I wish to raise more than just concerns with proposal of potential re-injection of produced and/or treated waters from the gas industry, whether from coal seams, tight formations or shale. The reinjection of treated or untreated water from gas production or extraction has the high potential to negatively impact the beneficial use of surface and groundwater systems, rivers and wetlands in NSW groundwater systems. Such water is radioactive and toxic to stock and native wildlife. Even treated water remains considerably ‘salted’. The trick here is to understand the gas industry use the term salty water, but those salts are in reality high unsafe concentration levels of heavy metals such as arsenic, lead, mercury, radon, uranium etc. Previous re-injection attempts by Eastern Star gas involved ‘treated’ produced water into a surface waterway, Bohena Creek, which proved when it was proved by the public that the actual water being discharged into the surface waterway was at times well outside of the permissible limits and was at times the raw untreated produced water. This industry has a history of cowboy behaviour, resulting in 100s of water incidents in the Pilliga area, including permanently contaminated aquifers in the Narrabri shire. In relation to current proposals by Santos in the Pilliga, I note that treated water from Leewood reverse osmosis plant will result in accumulation of 2.2 tons/ha/annum due to the application of the treated produced water on an irrigation area by both surface and underground drip irrigation, which is a form of re-injection using pressurised water. This water quality has the potential to contaminate the aquifers in the area which are part of the southern discharge zone of the Great Artesian Basin, on which many landholders rely. It is also unknown over the longer term where such water will migrate, with potential to impact surface waters, human health and wildlife. With regard to overseas experiences with aquifer re-injection, a recent study published by Stanford University has shown that re-injection of produced water can result in contamination of shallow aquifers and drinking water resources. It has also been noted by neighbouring countries such as Mexico, that the U.S. is polluting underground water sources through gas extraction and waste reinjection that they may need to use in the future. Mexico have a very different approach to water sustainability realising underground water needs to be protected for possible usage including human consumption. Also investigations already conducted in some states of the U.S. into the impacts of aquifer re-injection have reported the technique is behind the rapid increase in earthquakes in the USA., It is happening so often now, that seismic activity is reported at the same time of the weather. The high pressures involved may further fracture geological structures and result in new channels for water to migrate or be cross—contaminated. The damage may never be known and never be predicted and will only emerge over time. These risks cannot be managed. Scientists have limited capability to predict fractures from seismic activity because of uncertainty in the stress state of the geology, poor information of how injected water flows after injection and poor knowledge of faults that could slip under pressure. I do NOT support the government’s potential plans for permitting the extractive industry to reinject water, let alone be given financial credit for reinjecting that water back into aquifers.

Peter Small