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## Narrabri Gas Project

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William Newell <wllm.newell@gmail.com>  
To: nswchiefscientist@chiefscientist.nsw.gov.au

24 August 2014 09:31

Dear Madam,

William J Newell  
4 Baranbar Street  
Narrabri NSW 2390  
August 24, 2014

I would like to give you a summary of three years research on the question of what happens after CSG wells have been decommissioned. I will make the summary as brief as possible.

I apologise in advance if this information is already known to you and your team.

May I state at the outset that I have no political or ideological agenda. My concern is that future generations of our town and district have clean water both for agricultural pursuits and for town water systems.

The Pilliga Sandstone (GAB) on which CSG drilling will take place, underlies the Gunnedah Formation, an aquifer from which the town of Narrabri draws its town water. (Please see the Drillers Log (1) for the Nandewar Street bore.)

The Gunnedah Formation underlies the Narrabri Formation, a shallow aquifer that supplies bore water to many properties in the Namoi Valley and beyond. The three aquifers are interconnected (2).

The proposal to drill 850 wells through the sandstone will potentially connect these three aquifers with the briny coal seam aquifers. Therefore gas operators will fill decommissioned wells with cement to prevent cross - contamination.

The cement will degrade by the slow process of carbonation (4), (6) or by microbiological processes (5),(7), (11),(12). I recommend (7) here as it attempts to compare rates of degradation between the two processes.

The cement will shrink and crack allowing connectivity between the coal seams and the upper aquifers.

There are no CSG wells in Australia yet old enough to display these experimental findings. Older leaking wells in the USA and Canada may provide more information. (13), (14) ,(15).

An underground section of the trans - Alaska oil pipeline commenced leaking in 2006 due to the action of Sulfate reducing bacteria (SRB). This was only 32 years after the laying of the pipes. (16)

SRB could well be a problem for the Narrabri Gas Project. Lost circulation (3) of drilling fluids and / or casing cement provide a sulfate - rich environment as the Santos drilling system uses tonnes of Potassium Sulfate (10) and adds gypsum to well casing cement(9). The company includes a biocide (8) in its drilling mix in an attempt to control bacteria.

So what will happen when the project is over and wells have been cemented and abandoned?

My conclusion is that in the long term (carbonation) or short term (SRB) the attempt to protect aquifers will fail and cross - contamination will result in the pollution of agricultural and drinking water.

References may be found at the Dropbox address: <https://www.dropbox.com/sh/kt2wxqkk5tn61k/AADdGnW4auNE1HUd3M0-Ub7Ba?dl=0>

Thank you for your time.

Bill Newell