



**Dr W Somerville Submission to the NSW Chief Scientist and Engineer 's  
Review of Coal Seam Gas (CSG) Activities in NSW**

**Dr Wayne Somerville** to: csg.review

23/04/2013 07:08 AM

History:

This message has been replied to and forwarded .

To Professor Mary O'Kane  
NSW Chief Scientist & Engineer  
email: csg.review@chiefscientist.nsw.gov.au

Dear Professor O'Kane,

Please find attached my submission to the NSW Chief Scientist and Engineer's Review of Coal Seam Gas (CSG) Activities in NSW.

Please do not hesitate to contact me if you require further information regarding this submission, or I can be of any further assistance.

Yours faithfully,

**Dr Wayne Somerville**  
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Dr W Somerville Submission to NSW Chief Scientist's CSG Review.pdf

**Submission for NSW Chief Scientist and Engineer's Review of  
Coal Seam Gas (CSG) Activities in NSW**

To Professor Mary O'Kane  
NSW Chief Scientist & Engineer  
email: [csg.review@chiefscientist.nsw.gov.au](mailto:csg.review@chiefscientist.nsw.gov.au)

Submitted by Dr Wayne Somerville B.A.(Hons.), M.Clin.Psych., D.Psy, MAPS

Clinical and Consulting Psychologist

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22 April 2013

Professor Mary O'Kane  
NSW Chief Scientist & Engineer  
email: csg.review@chiefscientist.nsw.gov.au

Dear Professor O'Kane,

**RE: Review of Coal Seam Gas (CSG) Activities in NSW**

This submission addresses Term of Reference Number 2, which requested the Chief Scientist and Engineer to, "identify and assess any gaps in the identification and management of risk arising from coal seam gas exploration, assessment and production, particularly as they relate to human health, the environment and water catchments".

Although this submission is specifically concerned with the risk to aquifers that feed elevated springs and support rainforests in World Heritage National Parks in the Kyogle area, the comments are equally applicable to, and relevant for, similar water systems across the Northern Rivers region.

**Unassessed Risks of Lowered Water Tables Due to CSG Mining in the Northern Rivers**

It is generally understood by Governments, scientists, mining companies, and the public that the removal of water from, and depressurisation of, coal seam aquifers results in a lowering of water tables closer to the surface. For instance, the NSW Government's Aquifer Interference Policy assumes that CSG mining will lower water tables.

In his presentation of 14 November 2012<sup>1</sup>, Southern Cross University scientist Dr Isaac Santos discussed a number of as-yet-unassessed risks to local water systems from the proposed development of a CSG industry in the Northern Rivers.

Of particular concern was Dr Santos' observation that:

"We have had reports in Tara of ground water levels going down by 100 metres. I personally don't believe it is possible here because if the ground water levels go down by 100 metres we are going to have sea water replacing ground water. We are closer to the coast (than Tara) ... so that's the worst case scenario... Those are the sort of questions we should be asking..."

I note that Dr Santos recommended that:

"In every situation where we are going to potentially lower the water table we need to monitor that. It's very simple, we need to put in a series of monitoring wells." "What is surprising to me, is that in NSW as far as I know, there is not a single groundwater monitoring well that has been designed to look into CSG. I understand that the Government has released 3 million dollars to drill wells, they are coming, but they are not in the ground yet".<sup>2</sup>

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<sup>1</sup> Dr Isaac Santos & Dr Damien Maher, "Air, Water and CSG - Current research and future perspectives", public seminar at Southern Cross University, 14 Nov 2012. <http://www.youtube.com/watch?v=z7dfK5RfMTs>

<sup>2</sup> Ibid.

In his presentation, Dr Santos outlined a practical research program which would utilise measurements of naturally occurring radon gas to map the interaction of ground and surface water. As Dr Santos noted, such assessment of aquifer and surface water connectivity is necessary if CSG wells are to be established on sites where they will have minimal impact on groundwater.<sup>3</sup>

To date, most of the scientific and political debate concerning CSG-induced lowering of water tables has focused on impacts to groundwater systems used by farmers and agriculture.

I respectfully ask that the review by the Chief Scientist and Engineer recognises the absence of scientific consideration of the potentially devastating impacts of lowered water tables on unique ecological systems that depend on ridge-top aquifers in the Northern Rivers.

The eruptions about 20 million years ago of the Focal Peak volcano to the west and Mt Warning to the east resulted in the unique landscapes, diverse biota, concentration of rare and endangered species, and World Heritage rainforests for which the Northern Rivers has become world-famous.

The Toonumbar Valley, on the Richmond Range, where I and my wife live, is the water catchment for the Toonumbar Dam. Toonumbar Dam has been discussed as a potential source of drinking water for towns in the region, especially during times of drought. A system of aquifers that discharge water at close to the highest points in the Shire of Kyogle are a spectacular natural feature of the local landscape.

The following photograph of the World Heritage Toonumbar National Park indicates the approximate points where aquifers discharge at the heads of all the major creeks in the valley.

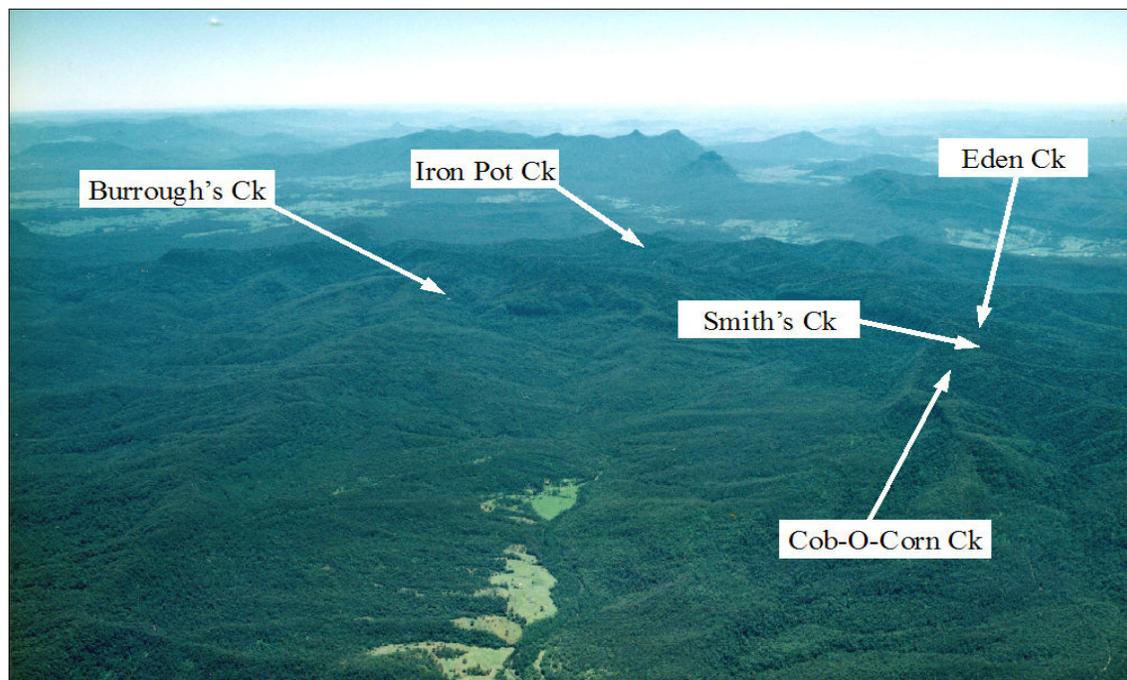


Figure 1. Location of ridge top aquifers feeding creeks in the Toonumbar National Park.

<sup>3</sup> Dr Isaac Santos & Dr Damien Maher, "Air, Water and CSG - Current research and future perspectives", public seminar at Southern Cross University, 14 Nov 2012. <http://www.youtube.com/watch?v=z7dfK5RfMTs>

The ridge-top aquifers in the Toonumbar National Park discharge sufficient water to maintain creek flows, and some spectacular waterfalls, near to the highest points along the mountain range, even during times of drought. For millions of years, these aquifers have supported the World Heritage rainforests in this area. During the most recent severe drought, the aquifer watered rainforests continued to thrive even while lower down in the valley 50-year-old Eucalypts died.

There have been proposals to establish thousands of CSG wells to the immediate north, west, east, and south of the Toonumbar National Park. It seems inevitable that almost any degree of CSG-related lowering of water tables in this area would have disastrous consequences on the mountaintop creeks and the precious rainforest communities they support.

I understand that there is as yet no definitive account of where the aquifers that discharge in the Toonumbar and Border Ranges National Parks originate from. I have been told by a scientist that the water could come from as far away as New Guinea. Given that aquifers can sometimes flow across vast distances, I note that even CSG industrialisation that occurs kilometres away, such as that occurring in the Darling Downs, could potentially impact on mountaintop aquifers in the Toonumbar and Border Ranges National Parks.

I respectfully request that in her report, the Chief Scientist and Engineer recognises the as-yet-unassessed risk of CSG-associated lowering of water tables to the mountaintop aquifer systems that support the unique biota of the volcanic landscapes of the Northern Rivers.

I further request that the report strongly recommends that CSG industrialisation in this region should not proceed until this threat to unique rainforests and other environments is fully understood and scientifically investigated.

Please contact me if you wish to discuss this submission, or if I can be of any further assistance to the Chief Scientist and Engineer in her research.

Yours faithfully,

A handwritten signature in black ink that reads "Wayne Somerville". The signature is written in a cursive style with a large initial 'W'.

Dr Wayne Somerville