The management of the Murray-Darling Basin

Terms of Reference

The management of the Murray-Darling Basin, and the development and implementation of the Basin Plan, with particular reference to:

(a) the implications for agriculture and food production and the environment;

(b) the social and economic impacts of changes proposed in the Basin;

(c) the impact on sustainable productivity and on the viability of the Basin;

(d) the opportunities for a national reconfiguration of rural and regional Australia and its agricultural resources against the background of the Basin Plan and the science of the future;

(e) the extent to which options for more efficient water use can be found and the implications of more efficient water use, mining and gas extraction on the aquifer and its contribution to run off and water flow;

(f) the opportunities for producing more food by using less water with smarter farming and plant technology;

(g) the national implications of foreign ownership, including:
    (i) corporate and sovereign takeover of agriculture land and water, and
    (ii) water speculators;

(h) means to achieve sustainable diversion limits in a way that recognises production efficiency;

(i) options for all water savings including use of alternative basins; and

(j) any other related matters.

Inquiry into management of the Murray Darling Basin – impact of mining coal seam gas

The Rural Affairs and Transport References Committee, as part of its inquiry into management of the Murray Darling Basin, is examining the impact of mining coal seam gas on the management of the basin.

The committee will examine:
The economic, social and environmental impacts of mining coal seam gas on:
• the sustainability of water aquifers and future water licensing arrangements;

• the property rights and values of landholders;
• the sustainability of prime agricultural land and Australia's food task;
• the social and economic benefits or otherwise for regional towns and the effective management of relationships between mining and other interests; and
• other related matters including health impacts.

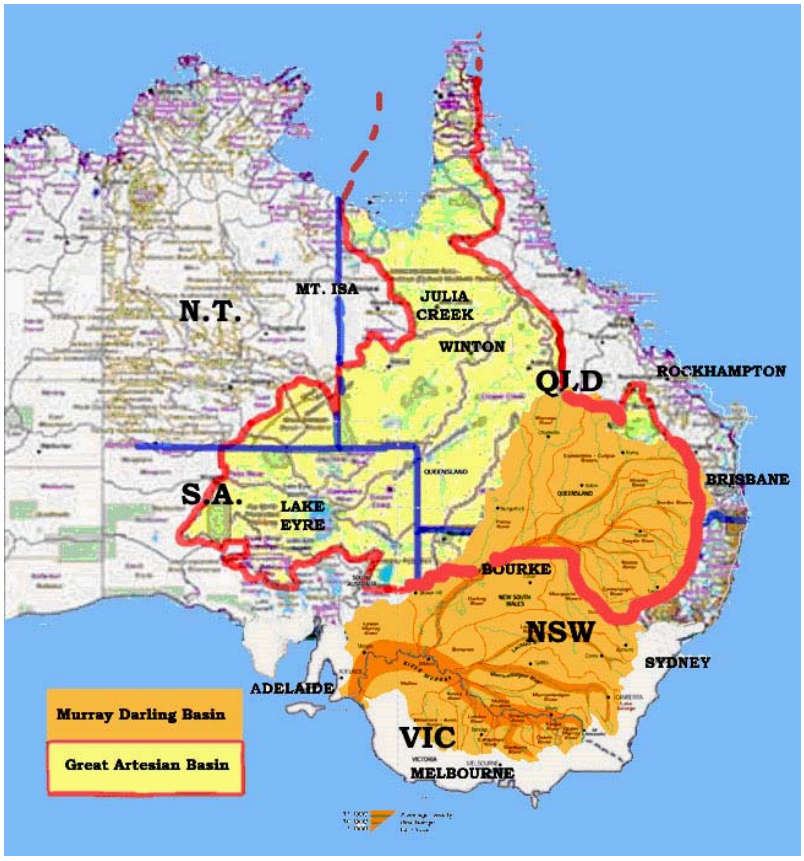
Submission by Chairman of the Australian Water Campaigners Inc

I am the Chairman of a group of voluntary water campaigners with no specific commercial "axe to grind" – perhaps excluding small personal land holdings. Our common points of interest are equity of water sharing, and sustainability of the Murray Darling Basin (MDB) water for future environmental use.

Expressing our position in a single paragraph - we oppose profiteering upon common water resources in the MDB, and we oppose any mining and CSG industries which risk poisoning the water resources of the Great Artesian Basin and the MDB.

Your Committee's Terms of Reference C covers this concern: - **"the impact on sustainable productivity and on the viability of the Basin".**

I first wish the Committee to consider the overlap between the Great Artesian Basin (GAB) and the Murray Darling Basin. Please consider the attached map in which I have combined two separate official maps - of the GAB and the MDB in a simple overlay.



The approval of some 40,000 Coal Seam Gas (CSG) mines in southern Queensland, by the Minister for Environment, Tony Burke, is based upon an incomplete understanding by the Minster of the detailed, and as yet scientifically incomplete, hydrological advice relating to the Great Artesian Basin (which in this area, is intimately associated with the Murray Darling Basin).

Please refer to the following document: "Summary of advice in relation to the potential impacts of coal seam gas extraction in the Surat and Bowen basins, Queensland - Phase One Report Summary" Geoscience Australia and Dr M.A. Habermehl

In brief that paper is full of caveats, based upon the inadequate or incomplete (at the time) data available. The Minister's approval on 22 October 2010 of the 40000 wells in Queensland appears to ignore the caveats offered by Dr Haermehl.

The Department of Environment's full list of papers relevant to this proposal may be found at http://www.environment.gov.au/cgi-bin/epbc/epbc_ap.pl?name=current_referral_detail&proposal_id=4057 The minister made much play about the numerous strict conditions he imposed on the Project's approval. Most of those "conditions" are simply for "reporting" or even "review" - after the event (of a breach of the conditions). The EPBC Act Threatened Species involved get no satisfaction (or protection) from the "Bureaucratic conditions" such as the Minister boasted about. This is "green-washing" of the worst kind.

CSG Industry threat to the natural and agricultural values of the MDB region.

The CSG industry is proceeding apace in southern Queensland, without due understanding of the environmental threat which the industry poses. This is a national disgrace. Your Committee has the authority to recommend that this be stopped, or at the very least, to publicise your concerns to the national Media.

I now wish your Committee to consider the risks associated with the use by the CSG industry of large retention ponds for evaporation of "produced water" (backwash from the CSG bores). These holding ponds include any "fraccing fluids" which the Companies may or may not be injecting in to the aquifers and coal seams.

These retention ponds pose an awful risk to the environment. The water on the surface, in these retention ponds was once deep water, which was once safely contained within a highly saline environment, hundreds if not thousands of metres below the surface. Now it is lying on the surface, exposed to potential flooding and hence to washing over the soil surface, and into rivers and hence into the entire MDB system. This is artificial (un-natural) and unsafe.

Further, there is much talk of the use in the CSG industry of "fraccing fluids". Do they or do they not include BTEX* chemicals? *Benzene, Toluene, ethylbenzene and Xylene

Well, those chemicals exist in minute traces within coal seams naturally (as coal derivatives). While in the coal seam, they are not posing any risk to the environment. But when pumped to the surface in the CSG extraction process (as "produced water") they do pose a risk to the health of people, livestock and to the environment generally**. The risk of retention ponds being flooded must never be discounted, especially after the flooding experiences of the last two years in Queensland in particular.**

In addition I would refer you to the paper prepared from the National Parks Association of NSW by M. Atkinson in 2002, (attached) which sets out the "environmental hazards of

oil and gas exploration". This paper was ahead of its time, and has unfortunately, largely been ignored by the environmental movement. I draw it to the attention of the Committee.

Over-allocation of GAB Water.

The estimates of the total extraction of produced water from the CSG bores has been analysed by the National Water Commission.
Source: http://www.nwc.gov.au/resources/documents/Coal_Seam_Gas.pdf

They conclude that: "Current projections indicate the Australian CSG industry could extract in the order of 7,500 gigalitres of co-produced water from groundwater systems over the next 25 years, equivalent to **~300 gigalitres per year**. In comparison, the current total extraction from the Great Artesian Basin is approximately 540 gigalitres per year." Position Statement Page 1.

Clearly that level of extraction of GAB water is unsustainable, and of course, coming from Southern Queensland mostly, that GAB water is inextricably linked with MDB water sharing plans and allocations and the environment.

A similarly bad situation will apply with the development of the CSG industry in the Pilliga region – the main southerly recharge zone for the GAB – if Eastern Star Gas is allowed to go ahead with its proposals in the Pilliga region.

The NSW Government seems set to approve the Eastern Star Gas development proposals for that Narrabri-Pilliga region. This area might not be a major agricultural area, but the environment of that area is unique and precious. Furthermore, the role of the GAB water which is captured in this area is very important to farmers who rely upon the GAB further down in the GAB system.

- "The Wilderness Society Newcastle is campaigning to prevent NSW largest coal seam gas development destroying the Pilliga Forest, near Coonabarabran. The Pilliga is the largest temperate woodland in eastern Australia, and home to unique threatened species such as the Pilliga Mouse. Eastern Star Gas is planning to put in 1100 gas wells, turning this iconic bushland into an industrial wasteland.

  The project includes pipelines through great farming country in the Liverpool Plains and Upper Hunter, and through private land on the outskirts of Branxton and Maitland. The project also includes NSW' first CSG export terminal, on Kooragang Island, threatening the health of the Hunter Estuary RAMSAR wetland."
- reference: http://www.wilderness.org.au/regions/new-south-wales/pillaga-coal-seam-gas-project-an-environmental-disaster

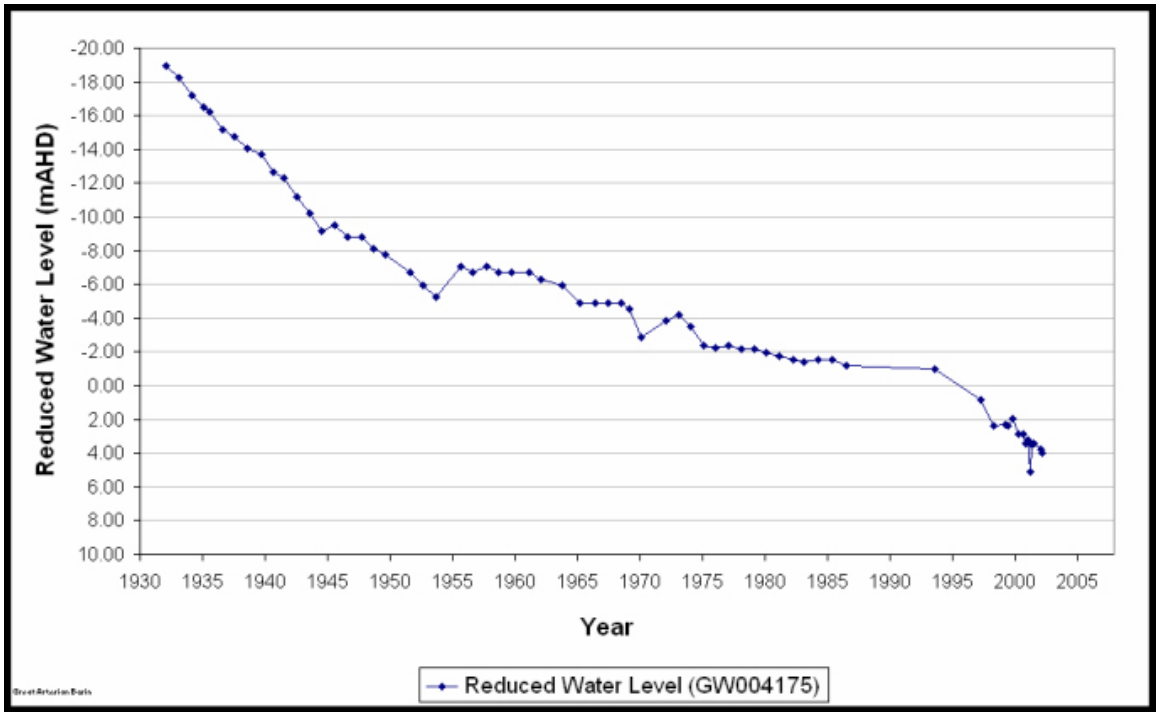
Depleting the GAB of this water is unsustainable.
Poisoning of the aquifers is unsustainable and irresponsible.

Relying upon evaporation of "produced water" (from CSG bores) is inadequate and unsafe.

The National Water Commission has a basic website on the GAB. Its figures are now 6 years out of date, and many of the links have not been maintained.

http://www.water.gov.au/RegionalWaterResourcesAssessments/SpecificGeographicRegion/TabbedReports.aspx?PID=QLD_GW_AP12072x
Still it does give a basic introduction.

There are some staggeringly bad tables and figures on the GAB in this website.
The question is does anyone in Government care?



Can your Committee not see the enormously bad trend here?
Historic over-use has been draining the Great Artesian Basin.

This is a trend which is being perpetuated, in fact greatly accelerated, by Minister Burke's decisions on CSG extraction in the Surat and Bowen Basins. On the basis of this information, the CSG extraction from the Great Artesian Basin ought to be stopped. If that is not within the power of the Committee, then at the very least, the Committee ought to make a statement to the Parliament and to the media of this country, recommending the immediate cessation of all CSG extraction from the Great Artesian Basin.

The resources of the GAB are too important to rural Australia to be threatened by a short-term industry such as the Coal Seam Gas industry.

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Supposed "treatment" of the CSG industry's "produced water" does not remove dangerous chemicals.

We are regularly told by the CSG industry that they can "treat" their "produced water". Plans are being drawn up for selling produced water to rural towns on the Darling Downs in Queensland.

I was told recently by an officer of the NSW Office of Water that the AGL Coal Seam Gas fields at Camden, NSW are allowed to dispose of their Produced Water ("after treatment") at the Elisabeth Macarthur Agricultural Institute at Camden. This is most concerning, for that is basically a highly sophisticated farm. Therefore treated water from the Coal Seam Gas is being used in a manner in which the CSG industry's by-products enter the human food chain.

I am advised that "treatment" of produced water (even by reverse osmosis procedures) cannot remove any **radioactive trace chemicals, and nor can that process remove "endocrine disruptor chemicals"**. This has enormous implications for health and public liability issues relating to the CSG industry. Years down the track, the CSG industry might well be proven to be at least as threatening to public health as the Asbestos industry, and the role of endocrine disrupting chemicals is likely to be the pivotal issue. Source:
http://www.endo-society.org/journals/scientificstatements/upload/edc_scientific_statement.pdf

I understand that any molecule smaller than an H2O molecule will pass through the reverse osmosis membrane. So any radioactive or toxic compounds, heavy metals or endocrine disruptors with smaller molecules than H2O remain in the water.

Also, a regularly identified problem is that Australian drinking water standards only measure for particular contaminants. So some tests of treated water only measure for whether or not these contaminants can be removed, not all possible contaminants.
Here are some useful sources:
http://cdm15025.contentdm.oclc.org/cdm4/item_viewer.php?CISOROOT=/p267501ccp2&CISOPTR=2626&CISOBOX=1&REC=16

http://env1.gist.ac.kr/upload/(3)%20Notes%20(EfOM-NOM%20characterization).pdf

A number of these environmental concerns have been raised by Prof. Gary Jones in his March 31 2011 Blog posting "Inside Water" on Coal Seam Gas and water. He writes:

"A number of water use, environmental and public health concerns have been raised. They include:

- Potential cross contamination between aquifers of differing water qualities, brought about by unsuitably controlled and monitored fraccing

- Contamination of surface water with the toxic chemicals used in the fraccing process, including the so-called BTEX group (benzene, toluene, ethylbenzene and xylene). Note, BTEX usage has now been banned in Queensland
- Leakage of methane gas from poorly sealed wells or fractures into aquifers or into atmosphere. (This is (presumably) what has led to the ignitable drinking water in the USA, highlighted in the documentary 'Gasland')
- The volume of groundwater that is brought to the surface which needs to flow somewhere (potential stream impacts). The pumped groundwater may be re-injected in some cases to re-pressurise exhausted seams.
- Potential subsidence of the surface, which would change drainage and erosion patterns in surface water flows. A potential cumulative regional-scale impacts of multiple developments have been highlighted in a recent report by Geoscience Australia (more on that next time)
- Salinity – Pumped groundwater typically contains significant concentrations of salts. The salinity of CSG water is variable but total dissolved solids values may vary from 200 to more than 10,000 milligrams per litre (cf. good quality drinking water which has total dissolved solids values of up to 500 milligrams per litre)."

Prof Gary Jones continues: "Then opposition spokesman on primary industries and energy Duncan Gay told the Weekend Australian Financial Review that there were "some agricultural lands in NSW where mining should not occur". Instead, there should be a "strategic approach to the whole interface of mining and agriculture".

His party won a landslide election victory last Saturday, so it will be interesting see if they follow through with their promise. Clearly, in a party coalition that traditionally represents both agricultural and big end of town interests, getting the balance between competing sectors right here is going to be challenging. Gay also said. "We're not anti-mining; we believe there should be balance. **Therein lies the political challenge!" (Prof. G. Jones)**

- Source: http://insidewater.ewater.com.au/2011/03/31/coal-seam-gas-in-australia/

Release of Methane from poorly designed wells and pipelines.

(substance starts off foamy, then gradually becomes more watery and an airborne vapour)

This is a recent, highly publicised example of an AGL Coal Seam Gas well at Glen Alpine (near Campbelltown, NSW) spraying "foam" from a well. The foam is visible – **the methane gas carrying the foam up into the atmosphere is not visible**.

This is just one example of the CSG industry's practices which is highly damaging to the Environment. As the Committee's inquiry is related to the MDB, it is worth noting that 40000 such wells have been approved by the Federal Environment Minister in Queensland and another 1000 are being proposed in the Pilliga region in NSW. Furthermore, as the **atmosphere is common, what happens at Campbelltown one day can (and will) affect the atmosphere across the MDB "tomorrow".** Indeed, as we all understand the atmospheric effects of Greenhouse gases is a Global issue.

In the light of the claims that the CSG industry is "cleaner than coal" I draw your attention to the attached Cornell University study which disproves those claims. "Preliminary Assessment of the Greenhouse Gas Emissions from Natural Gas obtained by Hydraulic Fracturing. Robert W. Howarth, et al.

I would remind you that methane is far more potent as a Greenhouse Gas than Carbon Dioxide. Methane is variously rated between 22 times more potent and 70 times more potent (than CSG) depending upon the immediate effect or the relative life-cycle of the two different gases in the atmosphere, before they break down. Either way, the practices of the CSG Industry in releasing methane from the wells, and potentially though untraceable releases through rock fractures and through river beds is unsafe, un-accounted for and ought to be stopped immediately. If your Committee does not have the

power to do that, it at least ought to recommend that outcome to Government and release its recommendation to that effect with the full force of the media available to it.

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