Submission to the Senate Inquiry re Impacts of mining in Murray Darling Basin.
From:

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Terms of Reference:

a) the potential impacts of current and projected mining operations on all environmental values in the Murray Darling Basin, and, in particular, the potential impacts upon surficial and groundwater flows and quality in the alluvial flood plains at its headwaters in the Namoi Valley and the Darling Downs catchments; and

b) evaluation of the potential impacts in the context of the Murray Darling Plan and agricultural productivity.

I am a landholder in the Namoi Catchment. Having lived here since 1985, I am aware of the value of our scarce water resources. As an irrigator, I am also aware of restrictions, both voluntary and imposed by governments, on use of the scarce water resources in the Namoi and Murray Darling Basin (MDB).

In fact, the CAP on any increased extractions in the MDB is an example of couragous decision making by governement to conserve and protect the natural resources of the western NSW catchments. Severe reductions in water licenses, such as experienced in the Namoi, is another example of clawing back water use for the benefit of the environment and long term sustainability of agriculture.

Frequently, there is insufficient surface water to allow irrigation in the Upper Mooki region. There is strong evidence of interconnection between surface and groundwater in the Upper Mooki. Any further extraction, whether surface or groundwater will impact on our enterprise, which includes irrigation and intensive livestock.

Years of research has been undertaken on groundwater dependent ecosystems and further water development will impact on these areas which, in many cases, provide habitat for threatened or endangered species.

The water resources of the Namoi are too valuable and scarce for further development of coal mining or coal seam methane. Issues of over extraction and contamination are of great concern.

I suggest consideration must be given to the Precautionary Principle, Intergenerational Equity and Ecologically Sustainable Development when considering any further coal or coal seam methane development in the MDB and in particular the Namoi Catchment.

The risk to human health, the environment, and resource security is too great. The future of agricultural production

in the Namoi and MDB will be at risk if coal and coal seam methane developments proceed.

I refer to information available on the internet about impacts of mining in the MDB.

Level of Water Resource Development

Water Management Area	*Level of Water Resource Development*		
	Level of use	*Consumptive use as a proportion of inflows*	*Consumptive use as a proportion of water resource*
Inter-jurisdictional Areas			
Border Rivers#	*moderate*	*high*	*high*
Coopers Creek	*n/a*	*low*	*low*
Great Artesian Basin	*overused*	*high*	*high*
Lake Eyre Basin~	*high*	*moderate*	*moderate*
Murray Darling Basin#	*high*	*high*	*high*
Ord River	*low*	*low*	*low*
Snowy River	*high*	*low*	*low*

Figure 3: (National Water Commission, 2005)

The DPI publication clearly shows that the NSW government strongly encourages mining, as indicated by the multi-million dollar programs and initiatives being used by the Government to attract mining companies and encourage exploration (NSW Department of Primary Industries, 2007, p25) The fact that the NSW Government actively seeks to attract mining companies to explore in the basin, shows that it is also prepared to allocate or grant the water licences needed for these operations.

Future water use

In 2007 it is anticipated that total water demand by the MPEPP (minerals, petroleum, energy, pulp and paper) industries will be 31,333 ML/annum, rising to 52,214 ML/annum by 2015 if these new power plants, mines and smelter upgrades are commissioned.

Water consumption is projected to rise to the level of the current extraction limit by 2013, and by 2015 annual consumption will exceed the extraction limit by 18,000 ML. *(ACIL Tasman Pty Ltd, Water Reform and Industry p. 86.*

If these projects were to proceed, ***total additional annual water consumption*** *by MPEPP (minerals, petroleum, energy, pulp and paper) industries* ***could be around 430,000 ML/annum by 2015****.*

By comparison, this is in the order of ***69 per cent of total Sydney consumption****.*

This would represent ***an increase of around 50 per cent over the 2006 level of consumption by these industries.*** *(ACIL Tasman Pty Ltd, Water Reform and Industry; page 133.*
http://www.minerals.org.au/__data/assets/pdf_file/0013/20236/ACIL_Water_Reform_and_Industry_May07.pdf

How is the water used?

Mines require water for most stages of their operations, including those of:

a) *Exploration,*
b) *Ore extraction and processing,*
c) *Dust suppression,*
d) *Site amenities and for the*
e) *Irrigation of surrounding lands and rehabilitated areas*

Source: (NSW Minerals Council, 2007).

Enquiries into the ways in which water is used by the mining industry exposed a distinct lack of specific information. The water-use data that is available from the 2006-07 New South Wales Mineral Industry Annual provides no indication of the ways in which the water is used, indeed offering very little information about actual mining processes, preferring to emphasise the economic outcomes of mining rather than describe the means by which they are achieved.

In a fact sheet published by the NSW Minerals Council, a graph describing the relative water use for mines in the Hunter valley of NSW indicated that:

- *34 percent of water was used for 'dust mitigation'*
- *23 percent in 'product processing'*
- *14 percent in 'evaporation'*
- *13 percent in 'tailings'*
- *12 percent for 'in product coal' and*
- *2 percent for 'other' (see figure 3)*

Whilst these figures are area specific, they provide (in lieu of information specifically relating to the Murray-Darling basin) at least some indication of the ways in which water is used by mines, and can therefore provide some insight into the potential impacts of mining on the Murray-Darling basin and its water resources as outlined in the section below.

What are the effects of mining in the Murray-Darling Basin?

Whilst it is beyond the scope of this report to examine all of the potential impacts of mining in the Murray-Darling basin in depth, this section will outline some of the potential impacts of mining that are of particular concern to the Murray-Darling basin. Some negative impacts include:

a) *Increased salinity levels as a result of mining processes*
b) *An increased percentage of sustainable yield being used and increasing competition for scarce water resources*
c) *Increases in sediment loads as a result of mining operations, and the*
d) *Increased potential for heavy-metal and toxin pollution as a result of mining processes*

The lack of official literature that even acknowledges let alone considers the potential for these and other negative impacts from mining on the basin in either a singular or cumulative capacity immediately indicates the urgent need for further research to be undertaken and/or made available to the public.

a) Increased Salinity

The National Water Commission in the Australian Water Resources 2005 report described 'disturbances to the catchment and changes to nutrient and sediment loads' (National Water Commission, 2005, p67) as the greatest contributing factors to the degradation of the Murray-Darling Basin.

Whilst it appears that little study has been done into the actual effects that mining has on salinity levels in the basin, the potential of mining to increase salinity seems high when 'deep saline groundwater…can be used directly, such as for dust suppression' (NSW Minerals Council, 2007)

It is evident that operations that use highly saline groundwater for dust suppression not only disturb aquifiers, but are creating situations where salty runoff will inevitably enter waterways.

b) Impact on sustainable yield and water resource competition

In addition to its mineral wealth, the Murray-Darling basin also sustains a significant population and is one of the nations' most important agricultural areas. Much depends on Murray-Darling water and as a result, management of the distribution of water resources must take competing interests into consideration.

As mentioned above, the percentage of the Murray-Darling Basin's sustainable yield in use is already between 70 and 100 percent (National Water Commission, 2005, p) and it follows that any new water allocations granted will either increase the percentage of sustainable yield in use or mean that levels of sustainable use are exceeded.

Use that exceeds sustainable levels not only brings various stakeholder interests into direct competition for scarce and vital resources, but also damages the system

ensuring that less (if indeed any) water resources will be available for any purpose in the future.

c) Increased sediment loads

Mining (particularly open-cut mining) requires large earth-moving operations, which disturb huge amounts of rock and earth. As the large percentage of water required for dust suppression purposes indicates, these large earth-moving operations stir up and disperse large amounts of dirt, mineral and metal deposits.

These sedimentary deposits inevitably end up in waterways as they are washed by runoff into nearby creeks and rivers. Large-scale earthworks also often require the removal of trees. This can lead to the destabilisation of banks and increases the potential for erosion, which can only contribute to increasing sediment loads in waterways.

This is of particular concern for the Murray-Darling basin considering that the National Water Commission lists 'changes to sediment loads' as a major factor contributing to the basin's degradation.

d) Increased potential for heavy metal and toxic pollution

Mining operations often require the use of dangerous chemicals to extract metals/minerals from unwanted waste products. Gold mining for instance uses the toxic chemical cyanide to separate the gold from other sulphide minerals (National Mining Association 2002)

The use of such chemicals increases the potential for toxic pollution in a number of ways.

Firstly, these chemicals are often stored in tailings ponds, from which they can leach into groundwater and/or evaporate thus entering the water cycle. As the Murray-Darling basin is an agricultural region, the presence of toxic chemicals in the water cycle would inevitably mean the subsequent presence of toxic chemicals in the food chain.

The Murray-Darling basin is also home to over 10 percent of Australia's population, who source their drinking water from the system.

Secondly, chemicals must be transported to and from mine-sites. No transport system is infallible and the potential for contamination from spills is thus ever-present. A toxic chemical spill would have devastating and far-reaching effects for both the basin's environment and the many people who are sustained physically, economically and spiritually by it.